



**REQUEST FOR TENDER
FOR THE PROVISION OF CONSTRUCTION SERVICES FOR
IQALUIT AQUATIC CENTER – CHLORINE UPGRADE**

BID CALL: February 8, 2023

BIDS DUE: March 2, 2023 & 3:00 PM EST

2023-RFT-053

SECTION A – TENDER CALL

1. INTRODUCTION

- 1.1 The City of Iqaluit Department of Public Works and Engineering (the City) is issuing a Request for Tender (RFT) for qualified Proponents to provide construction services as further outlined in this RFT document. The purpose and objective of this project is to carry out the upgrades to the Aquatic Center Chlorination system.

2. BACKGROUND

2.1 Location:

Iqaluit is the capital of Nunavut and is located at the south end of Baffin Island, Frobisher Bay 64°31'N latitude and 68°31'W longitude. Access to Iqaluit is provided by regular scheduled commercial aircraft year-round, snowmobile trails from other Baffin Island communities in the winter, and sealift from the port of Montreal in the summer.

2.2 Geology and Terrain:

Iqaluit's location is above the tree line and within the continuous permafrost zone of Canada. The region generally consists of glacially scoured igneous/metamorphic terrain. In some locations, a thin layer of organic material is found.

2.3 Climate:

Iqaluit has an Arctic climate with January and July high and low mean temperatures of -21.5° C/ -29.7°C (high/low) and 11.4° C/3.7° C (high/low) respectively. The annual precipitation is made up of 19.2 cm of rainfall and 255.0 cm of snowfall for a total of 43.0 cm precipitation. The prevailing winds are northwest at 16.7 km/hr.

3. TENDER CALL

- 3.1 Proponents must submit their Tenders by electronic bid submission only, through MERX Canadian Public Tenders. MERX can be accessed via the following website link – <https://www.merx.com/>. Tenders must addressed to:

**City of Iqaluit
Attn: Sumon Ghosh
Director of Engineering
901 Nunavut Drive, P.O. Box 460
Iqaluit, Nunavut, X0A 0H0**

- 3.2 Tenders are required to conform to the conditions below. For further instructions on how to submit an electronic bid through MERX, refer to the MERX Electronic



CONSTRUCTION SERVICES
PART I – PROCUREMENT AND CONTRACT REQUIREMENTS



Bid Supplier Guide, via the following link –
<https://marketing.merx.com/Support/EBSGuide.pdf>. Alternatively, you can
contact MERX customer service at 1-800-964-6379.

- 3.3 Bidders must obtain a unique PIN number from MERX in order to upload electronic bid submission documents. It is important to keep this PIN number in a permanent location as it will be required each time you wish to submit a bid response to a call to tender.
- 3.4 Electronic Tenders are to be received before **February 27, 2023** at 3:00 PM EST local Iqaluit time.
- 3.5 The final decision on whether to accept late Bids is at the City's discretion.

END OF SECTION

SECTION B – TENDER CONDITIONS

1. SUBMISSION REQUIREMENTS

- 1.1 The Tenderer shall complete all documents pertaining to this Contract in ink or in type.
- 1.2 If the Tenderer is a corporation, an authorized officer of the corporation shall sign and seal the Form of Tender.
- 1.3 If the Tenderer is a partnership, a minimum of two partners shall sign the Form of Tender and signatures shall be witnessed.
- 1.4 If the Tenderer is a sole proprietorship, the sole proprietor shall sign the Form of Tender and the signature shall be witnessed.
- 1.5 The Tenderer shall submit its Tender by the date and time specified in Part I of the Tender.
- 1.6 The Tenderer shall submit to the City in their complete bid submission:

.i Completed Form of Tender Form, which includes:

.a Appendix A – Consent of Surety.

.b Appendix B – Cost Submission Form.

.ii Bid bond.

Failure to submit the required items identified in (ii) and (iii) may present a Major or Minor Irregularity on the bid. Refer to 1.7 and 1.8 on how Major and Minor Irregularities are to be addressed. The City shall be the sole judge of whether or not a Tender contains irregularities.

- 1.7 Bidders will be automatically disqualified for any Major Irregularities on their bid submission. Major Irregularities are defined as deviations from the competitive procurement process request that affects the price, quality, quantity or delivery, and is material to the award.
- 1.8 Tender irregularities that are Minor Irregularities will be handled in the first instance by conferring with the Tenderer to seek clarification. Minor Irregularities are defined as deviations from the competitive process request, which affects form, rather than substance. The effect on the price, quality, quantity or delivery is not material to the award. The bidder will be given the opportunity to adjust the irregularity and continue in the process. However, if an unsatisfactory irregularity remains after consulting with the Tenderer, the Tenderer may be disqualified.
- 1.9 The Tenderer shall submit electronic files through MERX for both their Security Deposit and Consent of Surety, alongside the electronic tender submission.

1.10 The successful Tenderer shall submit to the City the following documents within five (5) business days of the day the City notifies the successful Tenderer that the documentation should be sent to the City.:

- .i Valid City of Iqaluit Business License.
- .ii Form of Tender forms, which include
 - .a Appendix C – Subcontractors List.
 - .b Appendix D – Equipment List.
 - .c Appendix E – Product Suppliers List.
 - .d Appendix F – Labour & Equipment Rates.

2. INQUIRIES AND AMENDMENTS

2.1 All inquiries concerning this RFT are to be directed by email only to:

Rami Rahhal
Senior Project Manager
Colliers Project Leaders
rami.rahhal@colliersprojectleaders.com

and;

Jose Bueno
Assistant Project Manager
Colliers Project Leaders
jose.bueno@colliersprojectleaders.com

2.2 Written addendums issued as part of this RFT, in response to inquiries, will be posted publicly on the City's website and on MERX. Verbal explanations or instructions will not be binding.

2.3 Tenderers assume all risk of delivery of amendments. Without limiting the foregoing, the City shall not be held liable for any claim, demand or other action should a transmission be interrupted, not received in its entirety, received after the Closing Time, received by another electronic means other than specified through MERX, or for any other reason over which the City does not have control.

3. SECURITY DEPOSIT

3.1 Every submission shall be accompanied by a security deposit payable to the City of Iqaluit, in an amount not less than 10% of the total Tender amount. The

security deposit shall be in the form of one of the two following security deposit options and shall be submitted with the tenderer's electronic tender submission.:

3.2 OPTION #1: A Digital Bid Bond

- .i Tenderers shall submit a copy of the Digital Bid Bond and follow the submission instructions as stated above in Section 1.9.
- .ii If Tenderer's are using this option, the Tenderer and the Tenderer's Surety should refer to the digital bonding information on Surety Association of Canada's website. Information at this site includes:
 - .a A list of third parties that provide online surety digital bond services, such as Mobile Bonds or Xenex. The City does not endorse or promote any third-party digital bond service provider.
 - .b An Industry Checklist which digital bonds provided should meet.
- .iii The Digital Bid Bond shall be digitally verifiable. The results of the digital verification process shall provide a clear and immediate indication that the document received is the true document executed and that the content has not been changed or altered.
- .iv All instruction details for performing the digital verification of the bond should be included with the uploaded bond and be clear and concise.

3.3 OPTION #2: Scanned Paper Bid Bond / Certified Cheque, Bank Draft, Money Order (PDF Format)

- .i Tenderer's shall scan and attach a copy of the paper Bid Bond, Certified Cheque, Bank Draft or Money Order and follow the submission instructions as stated above in 1.9. Tenderer's will be required to provide to the City the original Bid Bond, Certified Cheques, Bank Draft, and/or Money Order that were scanned and attached with the tender submission within 72 hours of tender close. Failure to provide the above original document(s) or to enter into a contract may result in the tenderer being barred from future tender opportunities for the City of Iqaluit for an indeterminate period of time.
- .ii If an alternative Bid Bond is used, it is recommended that tenderer's request either an ink seal from their Surety or that they trace over the embossed seal prior to scanning to allow for the seal to be visible to the City.

- 3.4 Bid bonds shall be in the name of the City of Iqaluit as obligee and signed and sealed by the Tenderer and by a surety licensed to conduct business as a surety in Nunavut.
- 3.5 The City shall not pay interest on security deposits.
- 3.6 Bid bonds shall be Bid Bond Form CCDC Document No. 220, latest edition, effective until sixty (60) business days after the Closing Date.
- 3.7 Security deposits will be returned after delivery to the City of the required performance bond and labour and material payment bond by the successful Tenderer.
- 3.8 If the Contract is not awarded, all security deposits will be returned with reasonable promptness after such decision is made by the City.
- 3.9 After all executed contracts and bonds are received, and the contract award is made, the successful tenderer and the contract value will be posted on the MERX website. After contract award, the bid deposit of the successful tenderer and all tenderers shall be null and void.

4. CONSENT OF SURETY

- 4.1 Tenderers must submit with the Bid and Bid Bond, a “Consent of Surety,” stating that the surety is willing to supply the performance bond and labour and material payment bond as specified.
- 4.2 A “Consent of Surety” shall be in one of the two following options and shall be submitted with the Tenderer’s submission and as instructed above in 1.9.
 - .i The City’s “Consent of Surety” Form provided in Appendix A.
 - ii. Other “Consent of Surety” Form used by a Surety company and authorized by law to do business in the Territory of Nunavut, and acceptable to the City.

5. PERFORMANCE ASSURANCE

- 5.1 The accepted Bid shall provide security (by way of bonds or a security deposit) as stated in the Contract Documents.
- 5.2 The cost of all security shall be included in the Tender prices.

6. ORDER OF PRECEDENCE

- 6.1 The following order of precedence will apply:

Order of Precedence
Issued Addenda

CONSTRUCTION SERVICES
PART I – PROCUREMENT AND CONTRACT REQUIREMENTS

SUPPLEMENTAL CONDITIONS
PROCUREMENT AND CONTRACT REQUIREMENTS
SERVICE AGREEMENT
GENERAL CONDITIONS
TERMS OF REFERENCE
GENERAL REQUIREMENTS

7. TERMS AND CONDITIONS

- 7.1 Submission of a Bid constitutes acknowledgement that the Tenderer has read and agrees to be bound by all the terms and conditions of this RFT.
- 7.2 The City will not make any payments for the preparation of a response to this RFT. All costs incurred by a Tenderer will be borne by the Tenderer.
- 7.3 This is not an offer. The City does not, by virtue of this Tender call, commit to an award of a Bid, nor does it limit itself to accepting the lowest price or any Bid submitted, but reserves the right to award this Bid in any manner deemed to be in the City's best interest.
- 7.4 Tenderers may amend their Bid at any time prior to the closing date time. Tenderers may not amend their Bid after the closing date time.
- 7.5 The City has the right to cancel this RFT at any time and to reissue it for any reason whatsoever, without incurring any liability and no Tenderer will have any claim against the City as a result of the cancellation or reissuing of the RFT.
- 7.6 The City will not consider any Bid that is delivered to any address or in any manner other than that provided in Part I Tender Call of this RFT.
- 7.7 If a contract is to be awarded as a result of this RFT, it will be awarded to the Tenderer whose Bid for each service, in the City's opinion, provides the best potential value to the City and is capable in all respects to perform fully the contract requirements and has the integrity and reliability to assure performance of the contract obligations.
- 7.8 If the City decides to award a contract based on a submission received in response to this RFT, the Successful Tenderer(s) will be notified of the intent to award in writing, and the subsequent execution of a written agreement shall constitute the making of a Contract. Tenderers will not acquire any legal or equitable rights or privileges whatsoever until a Contract is signed by both parties.
- 7.9 Any resulting contract will be in the form of the City's standard "City of Iqaluit Services Agreement" and it will contain the relevant provisions of this Request for Tenders, the accepted bid as well as such other terms as may be mutually agreed upon, whether arising from the accepted bid or as a result of any negotiations prior or subsequent thereto. The City reserves the right to negotiate modifications with any Tenderer who has submitted a Bid.
- 7.10 A copy of the Services Agreement is included in RFT.
- 7.11 Any amendment made by the City to the Request for Tender will be issued in writing and posted onto the bidding platform in accordance with Section 2.

- 7.12 The Bid and accompanying documentation submitted by the Tenderers are the property of the City and will not be returned. Bid bonds will be returned to all unsuccessful Tenderers.
- 7.13 Tenderers must acknowledge receipt of any addenda issued by the City in their Bid on the Section C – Form of Tender document.
- 7.14 Tenderers shall disclose in their Bid any actual or potential conflicts of interest and/or existing business relationships it may have with the City, its elected or appointed officials or employees. The City may rely on such disclosure.
- 7.15 Tenderers and their agents will not contact any member of the City Council, City Staff or City Consultants with respect to this RFT, other than the City Representative named in Part I Tender Call, at any time prior to the award of a contract or the cancellation of this RFT.
- 7.16 If an arithmetical error is identified in the submitted Bid between any individual price and the price extension (e.g. Unit Price x Quantity of Units), the individual price shall govern. The price extension and the total Bid amount will be corrected accordingly.
- 7.17 For contracts that include multi-phased work which spans more than the current fiscal year, authorization to proceed with work phases that are to be completed in future years is conditional upon approval of capital spending by the City of Iqaluit Council for each future year. Contracts will only be executed for work that has approved funding under the current fiscal budget.

8. VALIDITY OF OFFER

- 8.1 Bids shall remain open for acceptance for a period of not less than sixty (60) business days from the closing date of this RFT.

9. TENDER INELIGIBILITY

- 9.1 Bids that are unsigned, improperly executed, submitted to a location or in a manner other than specified in this RFT, incomplete, conditional, illegible, obscure or contain arithmetical errors, additions not called for, reservations, qualifications, erasures, alterations, or irregularities of any kind, or which are otherwise not completed or submitted in strict compliance with the Instructions to Tenderers, may be rejected by the City whether they constitute as a Major or Minor Irregularity.
- 9.2 Notwithstanding anything to the contrary herein, the City may in its sole discretion elect to retain any such Bid for consideration and may waive any or all of the foregoing, on such terms or conditions as the City may consider appropriate, even if any of the foregoing would otherwise render the Bid null and void and the Bid may be considered in the same manner as Bids that fully conform to the requirements of the Tender Documents without qualification.

10. REVIEW AND ACCEPTANCE OF BID

- 10.1 Upon receipt of the Bids, the City in its discretion may elect to conduct a post tender meeting with one or more Tenderers to discuss in detail their respective bid submission and such other items as the City may consider appropriate or necessary without invalidating the procurement process.
- 10.2 Before award of the Contract, the Tenderer may be required to provide specific information with respect to its legal and or financial status.
- 10.3 **THE LOWEST OR ANY TENDER WILL NOT NECESSARILY BE ACCEPTED.**
- 10.4 Notwithstanding any custom of the trade to the contrary, the City reserves the right to reject the lowest Bid, even if the lowest Bid is a compliant Bid, accept any Bid or part thereof, negotiate any aspect of any Bid, advertise for new Bids, negotiate a contract as the City deems to be most advantageous to the City's interest without incurring any liability, and to award a contract to whomever the City in its sole and absolute discretion deems appropriate and solely in the best interest of the City and no Tenderer will have any claim against the City as a consequence. Unless required otherwise, the City shall not, at any time, be required to disclose any information to the Tenderers regarding the City's consideration and evaluation of Bids.
- 10.5 Following acceptance by the City, a written Notice of Award will be issued to the successful Tenderer. If the Tenderer fails for any reason to execute and return the Articles of Agreement within seven (7) working days of receipt for signature of the Articles of Agreement from the City, or fails to provide the performance bond and labour and material bond or other security deposit stipulated in GC 11 or to satisfy such other terms and conditions specified hereunder within any period specified, or such extension of time as may be granted by the City, then the City reserves the right to terminate the Tenderer's right to complete the Contract and to award the Contract to whomever the City considers appropriate. The bid bond shall forthwith become payable.
- 10.6 The City shall not be obligated in any manner to the successful Tenderer whatsoever until the Contract has been awarded and the Contract has been duly executed by the parties.
- 10.7 If the City receives no Bids satisfactory to the City in its sole discretion, the City reserves the right in its sole discretion to negotiate a contract for the whole or any part of the Work with any one or more persons whatsoever, including any one or more of the Tenderers, or to postpone or cancel this Bid and then issue a new tender, or to cancel or postpone some or all of the Work.
- 10.8 The City shall not, under any circumstances, be responsible for any costs, expenses, loss, damage or liabilities, whether direct, indirect, consequential or economic in nature, incurred by a Tenderer as a result of, in connection with or incidental to:

- .i The tendering of the work;
- .ii Costs incurred for the preparation of this Bid;
- .iii The acceptance or rejection of any Bid; or
- .iv The exercise by the City of its rights under this RFT.

10.9 By participation in the tendering process, the Tenderer on its own behalf and on behalf of all firms, corporations and individuals comprising the Tenderer, agrees that none of the City or its directors, officers, employees, agents and other representatives shall be liable to any Tenderer, or any firm, corporation or individual comprising the Tenderer, including in contract, tort, statutory duty, duty of fairness, duty of care, law, equity or otherwise, for any claims, direct or indirect, whether for costs, expenses, losses or damages, or loss of anticipated profits, or for any matter whatsoever, incurred in preparing and submitting a Bid, or negotiations of a Contract, or in any way arising in connection with the Bid Documents. The Tenderer further agrees on its own behalf and on behalf of all firms, corporations and individuals comprising the Tenderer, that the award of the Contract is in the sole discretion of the City and in no event shall the Tenderer or any firms, corporations or individuals comprising the Tenderer seek injunctive or other relief to prevent or delay the award of the Contract or the performance of any Work or services in relation thereto.

11. UNBALANCED TENDERS

11.1 The Tenderer shall not submit an unbalanced Tender.

11.2 The City shall have the right to:

- .i Deem a Tender to be unbalanced; and
- .ii Reject a Tender which may be, in its opinion, unbalanced.

12. COLLUSION

12.1 The Tenderer shall not engage in collusion of any sort and, in particular, shall:

- .i Ensure that no person or other legal entity, other than the Tenderer, has any undisclosed interest in the Tenderer's Tender; and
- .ii Prepare its Tender without any knowledge of, comparison of figures with or arrangement with any other person or firm preparing a Tender for the same work.

13. RIGHT TO ACCEPT OR REJECT TENDERS

- 13.1 Notwithstanding any other provision in this Contract, the City shall have the right to:
- .i Accept any Tender;
 - .ii Reject any Tender; and
 - .iii Reject all Tenders.
- 13.2 Without limiting the generality of 13.1, the City shall have the right to:
- .i Accept an irregular Tender;
 - .ii Accept a Tender which is not the lowest Tender; and
 - .iii Reject a Tender even if it is the only Tender received by the City.
- 13.3 Acceptance of the Tender shall occur at the time the City awards the Tender and not necessarily at the time the award is communicated to the successful Tenderer.

14. CONTRACT DOCUMENTS

- 14.1 The Tenderer shall obtain and review all Contract Documents as listed in the Form of Tender and all Addenda issued by the City pertaining to this Contract.

15. COMMENCEMENT AND COMPLETION OF WORK

- 15.1 The Tenderer, in submitting the Bid, agrees that the Tenderer can complete the Work by the date for completion stated in the Tender Form.

16. OMISSIONS, DISCREPANCIES AND INTERPRETATIONS

- 16.1 Tenderers finding discrepancies or omissions in the drawings or terms of reference or having doubt as to the meaning or intent thereof, shall at once notify the Purchasing Coordinator who will, if necessary, send written instructions or explanations to all Tenderers.
- 16.2 Oral interpretations made to any Tenderer shall not affect a modification of any provision of the Tender Documents. Only addenda written and issued by the City can be considered.
- 16.3 The City reserves the right in its sole discretion at any time, and for whatever reason to, by Addendum, modify, amend or otherwise change the Tender Documents. Any such Addendum shall be issued in writing and shall be expressly identified as an Addendum to these Tender Documents. All such changes shall become part of the Tender Documents and their effects shall be

reflected in the Tender prices. The City also reserves the right in its sole discretion to cancel this Tender at any time.

17. IRREVOCABILITY OF OFFER

- 17.1 The Tenderer shall not revoke its offer until after the expiration of sixty (60) business days after the opening of Tenders by the City.
- 17.2 If the Tenderer revokes its offer prior to the expiration of sixty (60) business days after the Tender opening, the Tenderer shall forfeit its Tender security deposit, but this shall not prohibit the City from pursuing and other legal remedy which it may have.

18. ALTERNATIVES & EQUALS

- 18.1 Where requested in this RFT, Tenderers may propose alternatives or equals to the stated scope of work. In case alternate or equals are requested in this RFT, the following will apply:
- .i Where the Tender Documents stipulate a particular product, alternatives or equals will be considered by the City up to ten (10) calendar days prior to the Closing Time.
 - .ii When a request to substitute an allegedly equal product is made to the City, the City may approve the substitution either as an equal or as an alternative and will issue an Addendum to all Tenderers. If a product is approved as equal, all Tenderers may use that product in place of the specified product. If the product is approved as an alternative, Tenderers shall base their prices upon the specified product and shall indicate in the Bid the change in price which will apply if use of the alternative product is allowed.
 - .iii In their submission of alternatives to products specified, Tenderers shall include and allow for any changes required in the Work to accommodate such alternative products. A later claim by the Contractor for an addition to the Contract Price because of changes in the Work necessitated by use of alternative products shall not be considered.
 - .iv Where selected products are stipulated in the Tender Documents the Bid shall be based on the use of only these selected products.
 - .v Bids with alternative products will not be considered, unless the alternative has been approved by the City and communicated to the Bidders through an Addendum as noted in 18.1(ii). Bids with alternatives that have not been approved by the City will be deemed non-compliant.
 - .vi Submissions shall provide sufficient information to enable the City to determine the acceptability of such products.

- .vii Provide complete information on required revisions to other work and products to accommodate each alternative product, and the amount of addition or reduction from Tender prices, including required revisions, for each alternative product.
- .viii Unless a bid for an alternative product is submitted in this manner and later accepted, provide the product specified.

19. PUBLIC OPENING

- 19.1 No public opening of bids will be completed for this competition. Video conference appointment by request only.

20. TENDER SIGNING

- 20.1 The Bid must be executed under seal by the Tenderer.
- 20.2 If the Tenderer is an individual or a partnership, the Bid shall be executed by the individual or a partner in the presence of a witness and the signatory must show the capacity in which he or she signs (e.g.: “Partner” or “Proprietor”).
- 20.3 If the Tenderer is a corporation, the Bid shall be executed under the seal of the company, affixed in the presence of the authorized officers or two directors.
- 20.4 If the Tenderer is a joint venture, each party to the joint venture shall execute the Bid under seal in the manner appropriate to such party.

21. APPENDICES TO FORM OF TENDER

- 21.1 Tenderers shall complete all Appendices attached to the Form of Tender and submit these with the Tender.

22. PROVISIONAL ITEMS

- 22.1 Once a Tenderer has been chosen by the City for the Project, it shall be open to the City to accept, reject or negotiate the Tenderer’s bid for any provisional item contained in the Bid. Should the City choose to reject the successful Tenderer’s bid for such provisional work, it shall be open to the City to call for new Bids for this work and the successful Tenderer for the Project may submit a Bid if he so chooses.

23. SUCCESSFUL TENDERER – BONDS

- 23.1 The successful Tenderer and its surety shall provide:
 - .i A performance bond signed and sealed by the Tenderer’s surety; and
 - .ii A labour and material payment bond signed and sealed by the Tenderer’s surety;

Each in the amount of at least fifty percent (50%) of the total Tender price. The cost of Bonds shall be included in the Tender price.

- 23.2 The surety of the successful Tenderer and the bonds referred to in 23.1 must be originals and shall be to the satisfaction of the City.

**24. SUCCESSFUL TENDERER – WORKERS’ SAFETY AND COMPENSATION
COMMISSION CERTIFICATE OF CLEARANCE**

- 24.1 The successful Tenderer shall provide the City with a valid Workers’ Safety and Compensation Commission Certificate of Clearance to the satisfaction of the City.

25. SUCCESSFUL TENDERER – EXECUTION OF ARTICLES OF AGREEMENT

- 25.1 The successful Tenderer shall execute in accordance with Section 1, in triplicate, the Articles of Agreement provided in the Contract Documents.
- 25.2 The successful Tenderer shall forward the executed Articles of Agreement to the City.

26. SUCCESSFUL TENDERER – INSURANCE

- 26.1 The successful Tenderer shall provide the City with an original Certificate of Insurance for each type of insurance coverage required by GC12.3 and any additional coverage specified in the Supplementary Conditions.
- 26.2 The Contractor shall carry insurance in accordance with the requirements detailed in the City's Service Agreement (Part II - Service Agreement of this RFT). The SA has all of the other insurance requirements

- 26.3 The Contractor shall carry insurance, which names the following as additional insureds:

	Address
<u>City of Iqaluit</u>	<u>1085 Mivvik Street, P.O. Box 460, Iqaluit, NU, X0A 0H0</u>
<u>Colliers Project Leaders</u>	<u>2720 Iris Street, Ottawa, ON, K2C 1E6</u>
<u>AME Group (Consulting Mechanical Engineers)</u>	<u>200 – 638 Smithe Street Vancouver, BC V6B 1E3</u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>

27. SUCCESSFUL TENDERER – TIME FOR COMPLETION

- 27.1 The successful Tenderer shall Substantially Perform the work by Friday, the 15th day of September, 2023.
- 27.2 The successful Tenderer shall Complete the Work by Monday the 29th day of September, 2023.

Note: The above dates can be amended based on the lead delivery times of the procured material to make it on the scheduled sealifts to Iqaluit.

- 27.3 The successful Tenderer acknowledges that time shall be deemed to be of the essence of the Contract. For the Tenderer's purpose of establishing a scheduled for the Work, it is anticipated that the Contract Award will be complete 30 calendar days after the opening of Tenders by the City, and then the Commence Work Order will be issued 3 business days after the Contract Award is complete. Milestone dates associated with the Contract will be adjusted, when possible, due to any delays caused by the City during the Contract Award and/or issuance of the Commence Work Order.
- 27.4 The Contract general timelines have been identified below.

ACTION	DATE
Opening Date for RFT	February 8, 2023
Deadline for Submitting Inquiries	February 23, 2023
Deadline for Inquiry Response	February 28, 2023
Closing Date for RFT	March 2, 2023, at 3:00 pm EST
Contract Award Date	March 14, 2023
Project Kick-Off	March 20, 2023

Substantial Performance	September 15, 2023
Completion	September 29, 2023

28. SUCCESSFUL TENDERER – SUBMISSION OF DOCUMENTATION

- 29.1 The successful Tenderer shall submit the documentation required in 1.1.10 within five (5) business days of the day the City notifies the successful Tenderer that the documentation should be sent to the City.
- 29.2 If the successful Tenderer fails to comply with 29.1 the City may, in its sole discretion, withdraw its acceptance of the Tender and the Tenderer shall have no recourse whatsoever against the City.

29. SUCCESSFUL TENDERER – COMMENCEMENT OF THE WORK

- 30.1 The successful Tenderer shall not commence the Work until it has received a Commence Work Order issued by the City.

30. COVID-19 MITIGATION MEASURES (CMM)

30.1 Definitions:

- .i COVID-19 Mitigation Measures (CMM) means measures required to be in compliance with the CMM Guidelines.
- .ii “CMM Guidelines” means all guidelines and regulations published by the Government of Nunavut Department of Health and the Canadian Construction Association *COVID-19 Standardized Protocols for All Canadian Construction Sites, Version 4, April 16, 2020* regarding measures to mitigate COVID-19.
- .iii “COVID-19 Change” means any change in the work caused by or attributable to changes in CMM or changes made to applicable laws, ordinances, rules, regulations, or codes of authorities having jurisdiction that pertain to the control of COVID-19 that come into force after the time of Bid Closing.

30.2 Instructions to Bidders:

- .i If, in the Owner’s sole opinion, substantial changes to the CMM Guidelines occur within five (5) business days of the Tender Closing, the Owner may adjust the Tender Closing as the Owner deems appropriate to allow for adjustment for these changes.
- .ii By submitting a Bid, the Contractor acknowledges its willingness and ability to execute the Work under the CMM in force as of the Bid Closing.

- .iii The Bidder shall ensure that all of its subcontractors are aware of the CMM and the CMM Guidelines.
- .iv The Bid is to assume that the CMM as of the date of Bid Closing are to be in effect up to and including December 31, 2023, following which the additional scope of work required to meet the Canadian Construction Association COVID-19, *Standardized Protocols for All Canadian Construction Sites, Version 4, April 16, 2020* should be assumed to be substantially eliminated.
- .v The incremental cost of any COVID-19 Change will be addressed as a Claim for Change in Contract Price.
- .vi Notwithstanding the foregoing, the Bidder acknowledges its obligation to adhere to the CMM Guidelines and any subsequent revision as part of its responsibility for health and safety on the Work Site.

30.3 Site-Specific Health and Safety Plan

- .i The Site-Specific Health and Safety Plan, as defined in Section K of the General Requirements (PART VI), is to specifically define CMM, a COVID Safety Plan, and is to comply with CMM Guidelines. The Site-Specific Health and Safety Plan is to be updated promptly after the CMM Guidelines are updated.
- .ii The Site-Specific Health and Safety Plan must consider best practices and requirements for construction sites, as provided by the Government of Nunavut (GN) and the Workers Safety and Compensation Commission (WSCC).

30.4 Site Shutdown Plan

- .i “Site Shutdown Plan” means a plan outlining the shutdown procedures for the project in the event of a shutdown directive from the City or governing authority relating to COVID-19.
- .ii The Site Shutdown Plan” shall address items such as how the site will be made safe, how any materials or equipment will be stored or removed, plans regarding any portion or work that requires ongoing monitoring and how the site will be kept secure. Associated timelines required for execution of the plan are to be identified. These procedures are to be updated as required as the project progresses.

30.5 Schedule Impact

- .i If the Contractor is delayed in completion of the Work by Force Majeure or by changes to the CMM, then the time of completion shall be extended by the Town for a period of time equal to the time lost due to such delays. Force Majeure is defined as labour disputes, strikes, lockouts, fire,

unusual delay by common carriers or unavoidable casualties, or such other cause beyond the reasonable control of the Contractor. The Contractor's lack of funds is not a cause beyond the Contractor's control. For clarity, any issues or delays in any way arising from or related to COVID-19 (or any similar or related disease), except for delays as a result of changes to the CMM, are expressly excluded and do not fall under the definition of Force Majeure. The Contractor agrees that the scheduling requirements of the Contract are reasonable in light of any issues that may arise from COVID-19's impact on the Work and the Project, and that the Contractor may not rely on COVID19 (or any similar or related disease) in any manner as a Reason or cause for delay except for delays as a result of changes to the CMM.

- .ii Notwithstanding the foregoing, no extension shall be made for delay unless the Contractor provides to the City written notice within five (5) Working Days of the commencement of the Force Majeure or commencement of the changes to the CMM.

30.6 Cost Impact

- .i In the case of a shut-down or suspension of the Work resulting from changes to the CMM Guidelines, the Contractor shall provide the City the value of any change in the Contract Price and/or Contract Time.
- .ii In the case of a shut-down or suspension of the Work resulting from changes to the CMM Guidelines, the Contractor is to provide, not less than monthly, and more frequently if requested, an accounting of actual incremental costs incurred for any Work required to maintain the Work Site in a safe and secure state.
- .iii Any adjustments to the Contract Amount associated with re-starting the Work is to be quantified within thirty (30) calendar days of such time that authorization to re-commence the Work has been provided.
- .iv When the change to the Work is caused by changes to the CMM Guidelines the City will pay net actual costs only. No allowance for mark-up, contributions to overhead, profit, or stand-by charges will be considered. Labour rates shall include only the actual wage paid to the employee, plus the payroll burden. The Contractor will mitigate cost and time impact to the Contract Amount and the Work Schedule. The Contractor is to provide detailed supporting documentation to substantiate reasonable incurred impact to the Contract Amount & the Work Schedule.
- .v No consideration will be given to adjustment of the Contract Amount or Work Schedule where the impact to the Contract Amount or Work Schedule is as a result of the Contractor's failure to comply with the CMM Guidelines.

END OF SECTION



CONSTRUCTION SERVICES
PART I – PROCUREMENT AND CONTRACT REQUIREMENTS



SECTION C – FORM OF TENDER

Date: _____

Submitted By: Name: _____

Address: _____

Telephone: _____

To: **City of Iqaluit
City Hall
Iqaluit, Nunavut**

Project: **Project Title: IQALUIT AQUATIC CENTER – CHLORINE UPGRADE
Project Number: 720073**

The undersigned Tenderer, having carefully examined the Tender Documents and the Site, and having full knowledge of the Work and of the materials and products to be furnished and used, hereby agrees to provide all necessary materials, products, supervision, labour and equipment and perform and complete all Work and fulfill everything for the stipulated lump sum price of:

(Total in Words)

Dollars

\$

in Canadian funds, which price includes all specified cash and contingency allowances and the applicable taxes in force at this date excluding GST.

We have included herewith the security deposit and Consent of Surety as required by the Instructions to Tenderers.

The undersigned also agrees:

1. That the provisions of the Instruction to Tenderers apply, including without limitation provisions that provide that City is in no way obligated to accept this Bid, the City may at its sole discretion to accept any Tender or part thereof or waive any defect, irregularity, mistake or insufficiency and accept any Tender or alternative bid, in whole or in part, which is deemed by the City to be most favorable to its interest, and that limit the City's liability.
2. That the estimate of quantities shown in Tender Documents serves only to provide a basis for comparing Bids and that no representations have been made by either the City or their Agent that the actual quantities correspond therewith, and further, that the City has the

right to increase or decrease the quantities in any or all items and to eliminate items entirely from the Work.

3. That this Bid is made without knowledge of the Bid prices to be submitted for the Work by any other company, firm or person.
4. That this Bid is made without connection or arrangement with any company, firm or person submitting a bid for the Work.
5. That this Bid is made without any undisclosed connection or arrangement with any other company, firm, or person having an interest in this Bid or in the proposed contract.
6. That this Bid is irrevocable for sixty (60) business days after the Closing Time and that the City may at any time within such period accept this Bid whether any other contract has previously been awarded or not and whether acceptance of another Bid has been given or not.
7. If this Bid is accepted by the City, to execute the Articles of Agreement and to present to the City the required security (by way of bonds or a security deposit) as stated in the General Conditions within seven (7) calendar days after the date of Notice of Award.
8. If this Bid is accepted within the time stated herein, and we fail to execute the Articles of Agreement and provide the required Bonds or security deposit, or we request to withdraw, the security deposit provided with the Bid shall be forfeited as damages to the City by reason of our failure, limited in amount to the lesser of the face value of the deposit or the difference between this Bid and the price the Contract is signed.
9. In the event our Bid is NOT accepted within the time stated herein the required security deposit shall be returned to the undersigned in accordance with the provisions in the Instructions to Bidders, unless a mutually satisfactory arrangement is made for its retention and validity for an extended period of time.
10. That payment for the Work done will be made on the basis of the quantities measured by the City or its Agent and at the Bid prices shown in the Tender Form which shall be compensation in full for the Work done under the terms of the Contract.
11. That payment of the contingency allowance or portion thereof will only be made in the event that the City or its Agent authorizes work, in which case the amount of payment will be determined as specified in the General Conditions. Any unused portion thereof will be retained by the City.
12. To commence and proceed actively with the Work on Site within seven (7) business days of the date of the execution of the contract, and to substantially perform the Work by **September 15, 2023**, subject to the provisions of Section 6 of the General Conditions for extension of the Contract Time.

13. That should the undersigned fail to complete the Work in the time specified above, he shall compensate the City of Iqaluit in accordance with GC 6 of the General Conditions.
14. That the undersigned has carefully examined the Work described herein, has become familiar with local conditions and the character and extent of the Work, has carefully examined every part of the proposed contract and thoroughly understands its terms and conditions, has determined the source of supply and transport of the materials required, has investigated labour conditions and has arranged for the continuous performance of the Work described in the Tender Documents.

15. **Appendices:**

- 16.1 Appendix A – Consent of Surety
- 16.2 Appendix B – Cost Submission Form
- 16.3 Appendix C – List of Subcontractors
- 16.4 Appendix D – List of Equipment
- 16.5 Appendix E – List of Product Suppliers
- 16.6 Appendix F – Labour and Equipment Rates

16. **Addenda**

- 17.1 The following Addenda have been received. The modifications to the Tender Documents noted therein have been considered and the effects are included in the Tender prices.

Addendum #:		Date:	
Addendum #:		Date:	
Addendum #:		Date:	
Addendum #:		Date:	
Addendum #:		Date:	
Addendum #:		Date:	
Addendum #:		Date:	

This Tender is executed under seal at _____ this _____ day of _____ 2023.

Name of Firm: _____

Address: _____



CONSTRUCTION SERVICES
PART I – PROCUREMENT AND CONTRACT REQUIREMENTS



FOR INDIVIDUAL OR PARTNERSHIP:

SIGNED, SEALED AND DELIVERED by:

(Tenderer – Please Print) _____ (Seal)
(Signature of Tenderer)

In the presence of:

(Witness – Signature)

Name: _____

Address: _____

Occupation: _____

FOR LIMITED COMPANY:

The Corporate Seal of:

(Tenderer – Please Print) _____ (Seal)

Was hereunto affixed in the presence of:

Authorized Signing Officer and Title

Authorized Signing Officer and Title

Note: If the Tender is by a joint venture, add additional forms of execution for each member of the joint venture in the appropriate form or forms as above.

END OF SECTION



CONSTRUCTION SERVICES
PART I – PROCUREMENT AND CONTRACT REQUIREMENTS



APPENDIX A – CONSENT OF SURETY

Herewith is the Consent of Surety of the Tender submitted.

By: _____

To: The City of Iqaluit

Dated: _____ 2023 and which is an integral part of the Tender

CONSENT OF SURETY COMPANY

Should it be required, the undersigned Surety Company hereby consents and agrees with the City to become bound as Surety in all performance bonds and labour and material payment bonds required by the Tender Documents, all for the fulfillment of the Contract for the Work covered by the annexed Tender, which may be awarded to:

(Name of Tenderer)

(Address)

At prices set forth in the attached Tender. The said Surety is legally entitled to do business in Nunavut.

The Corporate Seal of:

(Surety – Please Print)

Was hereunto affixed in the presence of:

(Authorized Signing Officer) Title

(Authorized Signing Officer) Title

END OF SECTION

APPENDIX B – COST SUBMISSION FORM

Date: _____

Project Name: **IQALUIT AQUATIC CENTER – CHLORINE UPGRADE**

I/We, _____
(Company Name)

Of _____
(Business Address)

have fully inspected the Site and examined all the conditions affecting the Work. I/we have also carefully examined all documents prepared for this Contract including Addenda thereto; and hereby offer to furnish all labour, materials, plant, equipment and services for the proper execution and completion of the items listed below, in accordance with the Contract Documents, including all Addenda thereto which are acknowledged hereinafter for the above project for the sums separately indicated as follows:

Item	Description	Qty	Unit	Unit Price	Total
1.	Mobilization/Demobilization	1	LS		\$
2.	Procurement including shipping to Iqaluit	1	LS		\$
3.	Installation & Commissioning	1	LS		\$

Sub-Total: \$ _____

GST: \$ _____

TOTAL: \$ _____

END OF SECTION

APPENDIX C – LIST OF SUBCONTRACTORS

Re: Bid for **IQALUIT AQUATIC CENTER – CHLORINE UPGRADE**

1. This List of Subcontractors Form is acknowledged and agreed to form an integral part of the Bid for:

IQALUIT AQUATIC CENTER – CHLORINE UPGRADE

2. The Subcontractors listed below will remain unchanged and will be used to perform the work of the trade section indicated, unless the Owner gives written permission to change one or more of the Subcontractors. Where subcontractors are not intended to be used for the work of the trade section indicated, the term “By Own Forces” is inserted.
3. Each Subcontractor listed below has been consulted and is fully acquainted with the extent and nature of the Work, the contract conditions and requirements, the proposed construction schedule, and has agreed to execute the Work in accordance with the terms of the Contract and for the Bid Price amount shown.

TRADE SECTION	SUBCONTRACTOR COMPANY NAME
Insert Scope Section/ Discipline	_____
Insert Scope Section/ Discipline	_____
Insert Scope Section/ Discipline	_____
Insert Scope Section/ Discipline	_____
Insert Scope Section/ Discipline	_____
Insert Scope Section/ Discipline	_____
Insert Scope Section/ Discipline	_____
Insert Scope Section/ Discipline	_____

Add rows if required.

END OF SECTION

APPENDIX D – LIST OF SUPPLIES

Re: Bid for **IQALUIT AQUATIC CENTER – CHLORINE UPGRADE**

This List of Supplies Form is acknowledged and agreed to form an integral part of the Bid for:
IQALUIT AQUATIC CENTER – CHLORINE UPGRADE

DESCRIPTION	SIZE	MAKE	MODEL

Add rows if required.

END OF SECTION

APPENDIX E – PRODUCT SUPPLIERS

Re: Bid for **IQALUIT AQUATIC CENTER – CHLORINE UPGRADE**

1. This List of Product Suppliers Form is acknowledged and agreed to form an integral part of the Bid for:

IQALUIT AQUATIC CENTER – CHLORINE UPGRADE

PRODUCT	PRODUCT SUPPLIER

Add rows if required.

END OF SECTION

APPENDIX F – LABOUR AND EQUIPMENT RATES

Re: Bid for **IQALUIT AQUATIC CENTER – CHLORINE UPGRADE**

1. This List of Product Suppliers Form is acknowledged and agreed to form an integral part of the Bid for:
IQALUIT AQUATIC CENTER – CHLORINE UPGRADE
2. The rates listed below will remain unchanged and will be used to measure payment for additional work, not include in the Contract Documents.

POSITION

RATE

Insert Position	
Insert Position	
Insert Position	
Insert Position	
Insert Position	

Add rows if required.

EQUIPMENT

RATE

Water stop Removal (PSM)	
Mortar Patching (PSM)	
Waterproof (PSM)	
Protective Material (PSM)	

END OF SECTION

SECTION D – ARTICLES OF AGREEMENT

THIS AGREEMENT MADE IN DUPLICATE THIS _____ DAY OF _____ 2023

BETWEEN:

THE CITY OF IQALUIT

(“the City”)

-and-

(“the Contractor”)

ARTICLES OF AGREEMENT

IN CONSIDERATION of the mutual promises and obligations contained in the Contract Documents, the City and the Contractor agree as follows:

A1. CONTRACT DOCUMENTS

1.1 The documents forming the Contract between the City and the Contractor, referred to herein as the Contract Documents shall consist of:

- a) these Articles of Agreement;
- b) the document attached hereto entitled “General Conditions”;
- c) the document attached hereto entitled “Supplementary General Conditions”;
- d) the documents attached hereto entitled “Plans and Specifications”;
- e) the documents attached hereto entitled “Tender Documents”; and
- f) any amendment or variation of the Contract Documents that is made in accordance with the General Conditions.

1.2 The City will designate a representative for the purposes of the Contract.

1.3 In the Contract:

- a) “Fixed Price Arrangement” means that part of the Contract that prescribes a lump sum as payment for performance of the Work to which it relates; and
- b) “Unit Price Arrangement” means that part of the Contract that prescribes the product of a price multiplied by a number of units of measurement of a class as payment for performance of the Work to which it relates.

- 1.4 Any of the provisions of the Contract that are expressly stipulated to be applicable only to a Unit Price Arrangement are not applicable to any part of the Work to which a Fixed Price Arrangement is applicable.
- 1.5 Any of the provisions of the Contract that are expressly stipulated to be applicable only to a Fixed Price Arrangement are not applicable to any part of the Work to which a Unit Price Arrangement is applicable.

A.2 DATE OF COMPLETION OF WORK AND DESCRIPTION OF WORK

2.1 The Contractor shall between the date of these Articles of Agreements and substantial completion in a careful and workmanlike manner, diligently perform and complete the following Work: **IQALUIT AQUATIC CENTER – CHLORINE UPGRADE**

A.3 CONTRACT PRICE

- 3.1 Subject to any increase, decrease, deduction or set-off that may be made under the Contract, the City shall pay the Contractor at the times and in the manner set out or referred to in the General Conditions.
- 3.1.1 the sum of \$ _____ in consideration for the performance of the Work or the part thereof that is subject to a Fixed Price Arrangement, excluding goods and services tax (GST); and
- 3.1.2 a sum that is equal to the aggregate of the products of the number of units of measurement of each class of labour, plant and material, as certified by the Engineer, multiplied in each case by the appropriate unit price that is set out in the Unit Price Table in consideration for the performance of the Work or the part thereof that is subject to a Unit Price Arrangement, excluding goods and services tax (GST).
- 3.2 For the information and guidance of the Contractor and the persons administering the Contract on behalf of the City, but not so as to constitute a warranty, representation or undertaking of any nature by either party, it is estimated that the total amount payable by the City to the Contractor for the part of the Work to which a Unit Price Arrangement is applicable will not exceed _____, GST excluded.
- 3.3 A3.1.1 is applicable only to a Fixed Price Arrangement.
- 3.4 A3.1.2 and A3.2 are applicable only to a Unit Price Arrangement.
- 3.5 The Contract Price shall exclude Goods and Services Tax.

A.4 ADDRESSES

- 4.1 For all purposes of the Contract, the Contractor's address shall be deemed to be:



CONSTRUCTION SERVICES
PART I – PROCUREMENT AND CONTRACT REQUIREMENTS



4.2 For all purposes of the Contract, the City's address shall be deemed to be:

City of Iqaluit
P.O. Box 460
Iqaluit, Nunavut, X0A 0H0

SIGNED, SEALED AND DELIVERED in the presences of:

CONTRACTOR:

Per:	_____	_____
	Signature	Witness
	_____	_____
	Name	Date

	Position	
Per:	_____	_____
	Signature	Witness
	_____	_____
	Name	Date

	Position	

MUNICIPAL CORPORATION OF THE CITY OF IQALUIT

Per:	_____	_____
	Mayor	Date
Per:	_____	_____
	Chief Administrative Officer	Date



CONSTRUCTION SERVICES
PART I – PROCUREMENT AND CONTRACT REQUIREMENTS



END OF SECTION



CONSTRUCTION SERVICES
PART II – SERVICE AGREEMENT



CITY OF IQALUIT SERVICES AGREEMENT

BETWEEN: THE MUNICIPAL CORPORATION OF THE CITY OF IQALUIT
(hereinafter referred to as the "CITY OF IQALUIT")

OF THE FIRST PART

AND: . **<CONTRACTOR NAME>**
(hereinafter referred to as the "Contractor")

OF THE SECOND PART

WHEREAS the CITY OF IQALUIT has requested the Contractor to provide a price to carry out the tankage remediation for the North and South Clearwell tanks and mixing chamber tank Iqaluit WTP.

AND WHEREAS the Contractor has agreed to provide such services to the CITY OF IQALUIT in its bid dated **<Bid Submission Date>**;

AND WHEREAS the CITY OF IQALUIT and the Contractor wish to set out the terms and conditions relating to the provision of such services;

THEREFORE the CITY OF IQALUIT and the Contractor agree as follows:

1. SERVICES AND PAYMENT

1.1 The Contractor agrees to provide to the CITY OF IQALUIT those services set out in the job description and scope of work provided on **<RFT Date>**. A copy of the bid is attached as Appendix "A".

1.2 The CITY OF IQALUIT agrees to pay for the services described above, a total amount not greater than **<Bid Value>**, for the provision of professional services based on the Bid dated **<Bid Submission Date>**.

2. TERM

2.1. This Contract shall commence on the **<Contract Commence Date>** and terminates on the **<Contract Termination Date>** unless otherwise terminated in accordance with the provisions of this Contract.

3. NOTICE AND ADDRESS

3.1 Any notice required to be given herein or any other communication required by this contract shall be in writing and shall be personally delivered, sent by facsimile, or posted by prepaid registered mail and shall be addressed as follows:



CONSTRUCTION SERVICES PART II – SERVICE AGREEMENT



i) If, to the CITY OF IQALUIT:

Rod Mugford
Acting Chief Administrative Officer
City of Iqaluit
P.O. Box 460
Iqaluit, NU
X0A 0H0
Fax: 979-5922

Reference:

ii) If to the Contractor at:

<Contractor Representative – Name>
<Contractor Organization Name>
<Contractor Address>

- 3.2 Every such notice and communication, if delivered by hand, shall be deemed to have been received on the date of delivery or if sent by prepaid registered mail shall be deemed to have been received on the seventh day after posting, or if by facsimile, 48 hours after the time of transmission, excluding from the calculation weekends and statutory holidays.

4. COMPLETE AGREEMENT

- 4.1 This Contract and its attachments constitute the complete Contract between the parties. Except as provided herein, it supersedes and shall take effect in substitution for all previous agreements. It is subject to change only by an instrument executed in writing by the City.
- 4.2 If this Contract arises from a request for proposals or tender call, the provisions of the request for proposals or tender call and the Contractor's bid or proposal submission are incorporated into this Contract and may be used to clarify, explain or supplement this Contract, but shall not be used to contradict any express terms of this Contract.
- 4.3 In the event of a conflict between this Contract, the Contractor's bid or proposal submission, and the City's original tender bid instructions or Request for Proposals, the more recently prepared document shall govern to the extent of such inconsistency.

5. GENERAL TERMS

- 5.1 Any information obtained from or concerning any department of the CITY OF IQALUIT or clients of any department of the CITY OF IQALUIT, by the contractor, its agents or employees in the performance of any contract shall be confidential. The Contractor shall take such steps as are necessary to ensure that any such information is not disclosed to any other person and shall maintain confidential and secure all material and information that is the property of the CITY OF IQALUIT and in the possession of or under the control of the Contractor. This clause survives the termination of this contract.
- 5.2 Time shall in every respect be of the essence. The Contractor shall deliver the services specified in the contract and according to the project schedule on costs. The CITY OF IQALUIT may grant reasonable extensions to the Contractor for delays, if the Contractor can show those delays were caused by circumstances beyond the control of the Contractor.
- 5.3 The Contractor is an independent Contractor with the CITY OF IQALUIT and nothing in this contract shall be construed or deemed to create the relationship of employee and employer or of principal and agent between the CITY OF IQALUIT and the Contractor. The Contractor is solely responsible for payments of all statutory deductions or contributions including but not limited to pension plans, unemployment insurance, income tax, workers' compensation and the Nunavut Payroll Tax.

- 5.4 This contract shall be interpreted and governed in accordance with the laws of Nunavut and the laws of Canada as they apply in Nunavut.
- 5.5 No waiver by either party of any breach of any term, condition or covenant of this contract shall be effective unless the waiver is in writing and signed by both parties. A waiver, with respect to a specific breach, shall not affect any rights of the parties relating to other or future breaches.
- 5.6 The failure of either party at any time to require the performance of any provision or requirement of this contract shall not affect the right of that party to require the subsequent performance of that provision or requirement.
- 5.7 Title to any report, drawing, photograph, plan, specification, model, prototype, pattern, sample, design, logo, technical information, invention, method or process and all other property, work or materials which are produced by the Contractor in performing the contract or conceived, developed or first actually reduced to practice in performing the contract (herein called "the Property") shall vest in the CITY OF IQALUIT and the Contractor hereby absolutely assigns to the CITY OF IQALUIT the copyright in the property for the whole of the term of the copyright. The Contractor shall not be responsible for any loss or damage suffered by the City of Iqaluit or any third parties resulting from any unauthorized use or modification of the property, errors in transmission of the property, changes to the Property by others, the consequences of design defects due to the design of others, or defects in contract documents prepared by others, and the City of Iqaluit agrees to defend, indemnify, and hold the Contractor harmless from and against all claims, demands, losses, damages, liability and costs associated therewith. Subject to the foregoing, the Property may be relied by the City of Iqaluit for design and construction work undertaken by other parties with respect to the Services provided that such parties verify the accuracy and completeness of the Property to their satisfaction.
- 5.8 It is intended that all provisions of this agreement shall be fully binding and effective between the parties, but in the event that any particular provision or provisions or a part of one is found to be void, voidable or unenforceable for any reason whatever, then the remainder of the agreement shall be interpreted as if such provision, provisions, or part thereof, had not been included.
- 5.9 This contract may be extended by the written consent of the parties.
- 5.10 The CITY OF IQALUIT may delegate any of its authority and undertaking pursuant to this contract to any employee or contractor the CITY OF IQALUIT by notice in writing to the Contractor.
- 5.11 This contract shall ensure to the benefit of and be binding on the respective administrators, successors and assignment of each of the parties hereto.
6. CONTRACTOR RESPONSIBILITIES
- 6.1 The Contractor shall indemnify and hold harmless, the CITY OF IQALUIT, its officers, employees, servants and agents from and against all claims, actions, causes of action, demands, losses, costs, damages, expenses, suits or other proceedings by whomsoever made, brought or prosecuted in any manner based upon or related to the negligent acts, errors, or omissions of the Contractor under this contract.
- 6.2 The Contractor shall be liable to the CITY OF IQALUIT for any loss or damage to property or equipment that is supplied to or placed in the care, custody or control of the Contractor for use in connection with the contract if such loss or damage is attributable to the negligence or deliberate acts of the Contractor or its employees or agents.
- 6.3 If, in the opinion of the CITY OF IQALUIT acting reasonably, the Contractor is in default in respect of any obligation of the Contractor hereunder, the CITY OF IQALUIT may rectify such default and pursue a claim against the Contractor for any direct costs associated with any such remediation, including a reasonable allowance for the use of the CITY OF IQALUIT's own employees or equipment.

- 6.4 The Contractor may not assign or delegate work to be done under this contract, or any part thereof, to any other party without the written consent of the CITY OF IQALUIT. In the case of a proposed assignment of monies owing to the Contractor under this contract, the consent in writing of the CITY OF IQALUIT must be obtained.
- 6.5 The Contractor shall keep proper accounts and records of the services for a period of 3 years after the expiry or termination of this agreement. At any time during the term of this contract or during the three years following the completion or termination of this agreement, the Contractor shall produce copies of such accounts and records upon the written request of the CITY OF IQALUIT.
- 6.6 The Contractor shall notify the CITY OF IQALUIT immediately of any claim, action, or other proceeding made, brought, prosecuted or threatened in writing to be brought or prosecuted that is based upon, occasioned by or in any way attributable to the performance or non-performance of the services under this contract.
- 6.7 If at any time the Contractor considers their estimates indicate costs will exceed the project budget they will immediately advise the City of Iqaluit. If in the opinion of the City of Iqaluit, acting reasonably, the excess is due to design, costs factors or matters under the control or reasonably foreseeable by the Contractor, the CITY OF IQALUIT may require the Contractor to do everything by way of revision of the design to bring the cost estimate within the project budget. Costs of completing such revisions shall be based upon a level of compensation reasonably appropriate to the circumstances, including the reason for the revisions.
- 6.8 Except as required in the performance of services set out in this agreement, the Contractor must maintain as confidential all data and information made available to the Contractor, the CITY OF IQALUIT, or any other parties which is generated by or results from the Contractor's performance of the Services described in this Contract. All such data and information is the property of the City of Iqaluit. This clause shall survive the termination of the Contract.

7. TERMINATION

- 7.1 The CITY OF IQALUIT may terminate this contract at any time upon giving written notice to this effect to the Contractor if, in the opinion of the CITY OF IQALUIT, the Contractor is unable to deliver the service as required, the Contractor's performance of work is persistently faulty, in the event that the Contractor becomes insolvent or commits an act of bankruptcy, in the event that any actual or potential labor dispute delays or threatens to delay timely performance of the contract or the (Contractor's Sub-Contractor) defaults or fails to observe the terms and conditions of the contract in any material respect.
- 7.2 This contract shall terminate as of the day for termination set out in the written notice and the Contractor shall forthwith invoice the CITY OF IQALUIT for work performed to the date of termination.
- 7.3 Any invoice submitted by the Contractor pursuant to clause 7.2 shall be reviewed by the CITY OF IQALUIT to assess the amount which is properly due and owing for work done by the Contractor prior to termination.

8. FINANCIAL

- 1.1 The CITY OF IQALUIT, having given written notice of a breach, may withhold or hold back in whole or in part any payment due the Contractor without penalty, expense or liability, if in the opinion of the Contracting Authority, the Contractor has failed to comply with or has in any way breached an obligation of the Contractor. Any such hold back shall continue until the breach has been rectified to the satisfaction of the CITY OF IQALUIT.
- 8.2 The CITY OF IQALUIT may set off any payment due the Contractor against any monies owed by the Contractor to the CITY OF IQALUIT.
- 8.3 The City of Iqaluit will pay the Goods and Services Tax (GST).

- 8.4 Provided all terms and conditions on the part of the Contractor have been complied with, each invoice will be paid thirty (30) calendar days after receipt of the invoice, or thirty (30) calendar days after delivery of the services, whichever is later.
- 8.5 The CITY OF IQALUIT may, in order to discharge lawful obligations or to satisfy lawful claims against the Contractor or a Sub-Contractor arising out of the execution of work, pay any amount, which is due and payable to the Contractor under the contract, if any, directly to the obligee of and the claimants against the Contractor or Sub-Contractor.

9. INSURANCE AND LIABILITY

- 9.1 The Contractor's liability to the City of Iqaluit for claims arising out of this Agreement, or in any way relating to the Services, will be limited to direct damages and to the re-performance, without additional compensation, of any Services not meeting a normal professional standard of care and such liability will, in the aggregate, not exceed the amount of \$1,000,000.00. The limitations of liability will apply, to the extent permitted by law, whether Contractor's liability arises under breach of contract or warranty; tort, including negligence; strict liability; statutory liability; or any other cause of action, and will extend to and include Contractor's directors, officers, employees, insurers, agents and sub-contractor.
- 9.2 In no event will either party be liable to the other party for indirect or consequential damages including without limitation loss of use or production, loss of profits or business interruption.
- 9.3 The Contractor shall, without limiting his obligations or liabilities hereto, obtain, maintain and pay for during the period of this agreement, the following insurance with limits not less than those shown:
- a) Workers' Compensation insurance covering all employees engaged in the work in accordance with the statutory requirements of the Territory or Province having jurisdiction over such employees. If the Contractor is assessed any additional levy, extra assessment or super-assessment by a Workers' Compensation Board as a result of an accident causing injury or death to an employee of the Contractor or any sub-contractor, or due to unsafe working conditions, then such levy or assessment shall be paid by the Contractor at its sole cost and is not reimbursed by the CITY OF IQALUIT.
 - b) Employer's liability insurance with limits not less than \$500,000 for each accidental injury to or death of the Contractor's employees engaged in the work. If Workers' Compensation insurance exists, then in such event, the aforementioned Employer's Liability insurance shall not be required but the Comprehensive General Liability policy referred to in item (d) herein shall contain an endorsement providing for Contingent Employers' Liability insurance.
 - c) Motor Vehicle, water craft and snow craft standard liability insurance covering all vehicles and/or craft owned or non-owned, operated and/or licensed by the Contractor and used by the Contractor in the performance of this agreement in an amount not less than one million dollars (\$1,000,000.00) per occurrence for bodily injury, death and damage to property; and with respect to busses limits of not less than one million dollars (\$1,000,000.00) for vehicle hazards and not less than one million dollars (\$1,000,000.00) for Bodily Injury to or death of one or more passengers and loss of or damage to the passengers property in one accident.)
 - d) Comprehensive General Liability Insurance with limits of not less than \$5,000,000.00 (inclusive) per occurrence for bodily injury, death and damage to property including loss of use thereof. Such insurance shall include but not be limited to the following terms and conditions:
 - Products & Completed Operations Liability *
 - Contractor's Protective Liability



CONSTRUCTION SERVICES
PART II – SERVICE AGREEMENT



- Blanket Contractual Liability
- Broad Form Property Damage
- Personal Injury Liability
- Cross Liability
- Medical Payments
- Non-owned Automobile Liability *
- Contingent Employers Liability *
- Employees as Additional Insureds *

**WHERE APPLICABLE*

- e) Professional Liability Insurance with limits of not less than two hundred fifty thousand dollars (\$250,000.00) per claim and five hundred thousand dollars (\$500,000.00) in the annual aggregate, to cover claims arising out of the rendering of or failure to render any professional service under this contract or agreement.

All policies shall provide that thirty days written notice be given to the CITY OF IQALUIT prior to any cancellations of any such policies.

The Comprehensive General Liability Insurance policies shall name the CITY OF IQALUIT and any permitted sub-contractor's as additional insureds only with respect to the terms of this contract and shall extend to cover the employees of the insureds hereunder.

The Contractor shall be responsible for any deductibles, exclusions and/or insufficiency of coverage relating to such policies.

The Contractor shall deposit with the CITY OF IQALUIT prior to commencing with the work a certificate of insurance evidencing the insurance(s) required by this clause in a form satisfactory to the CITY OF IQALUIT and with insurance companies satisfactory to the CITY OF IQALUIT.

IN WITNESS WHEREOF the parties hereto have set their hand as of the date and year entered below.

FOR THE CITY OF IQALUIT:

FOR THE CONTRACTOR:

Name/Title

Name/Title

Signature

Signature

Date

Date

Witness

Witness

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1. GENERAL PROVISIONS

1.1 Definitions

The following terms, whenever used in the Contract Documents, shall mean:

- a) **“Adjustment”**: a change in either the Contract Price or the Contract Time, or both, in accordance with the applicable provisions of the Contract Documents;
- b) **“Applicable Laws”**: any and all applicable laws, rules, regulations, by-laws, codes and orders of any and all government bodies, agencies, authorities and courts;
- c) **“Arbitrator”**: the person appointed under GC 9.3(a);
- d) **“Articles of Agreement”**: the executed Articles of Agreement;
- e) **“Change Order”**: a written instrument prepared by the City Representative and signed by the City and the Contractor stating their agreement upon:
 - i. a change in the Work, and
 - ii. the method and/or the amount of Adjustment, if any;
- f) **“City”**: the party defined as such in the Articles of Agreement;
- g) **“City Representative”**: A Consultant, Owner’s Agent, and/ or Engineer designated as such in the Articles of Agreement, or such other person designated as such by the City from time to time, who will be responsible for administering the construction contract;
- h) **“Claim”**: any or all of:
 - i. a demand or assertion by the City or the Contractor seeking an interpretation of Contract terms, an Adjustment, or other relief with respect to the terms of this Contract;
 - ii. other disputes and matters in question between the City and the Contractor arising out of or relating to this Contract; and
 - iii. allegations by the City or the Contractor of errors or omissions on the part of the City Representative;
- i) **“Completion Date”**: the date of Substantial Performance of the Work, as certified by the City Representative;

- j) **“Construction Schedule”**: the Construction Schedule referred to in GC 3.6, including revisions thereto as provided in GC 3.6, GC 10.2(d) or otherwise required by the City Representative;
- k) **“Consultant”**: a person retained by the City to act as the City’s Representative;
- l) **“Contract”**: the undertaking by the parties to perform their respective duties and discharge their obligations as set out in the Contract Documents which represents the entire agreement between the parties;
- m) **“Contract Documents”**: the documents referred to in the Articles of Agreement and amendments agreed on by the parties in writing;
- n) **“Contract Price”**: the sum stated in the Articles of Agreement and as may be amended during the progress of the Work;
- o) **“Contract Time”**: the time stated in the Articles of Agreement, and as may be amended during the progress of the Work, elapsing from the date of commencement of the Work until the date of Substantial Performance of the Work, as certified by the City Representative;
- p) **“Contractor”**: the party defined as such in the Articles of Agreement;
- q) **“Day”**: a calendar day;
- r) **“Engineer”**: a person retained by the City to act as the City’s Representative;
- s) **“Final Completion”**: when the Work has been performed in accordance with the Contract Documents, as certified by the City Representative;
- t) **“GC”**: an acronym reference to a clause in these general conditions of this Contract;
- u) **“Holdback Payment Certificate”**: a certificate issued in accordance with GC 5.6;
- v) **“Lien Holdback”**: has the meaning given in GC 5.2(a)(i);
- w) **“Owner’s Agent”**: a person retained by the City to act as the City’s Representative;
- x) **“Project”**: the total construction of which the Work to be performed under this Contract may be the whole or a part;
- y) **“Referee”**: the person appointed under GC 9.2(a);

- z) **“Site”**: the land or actual place designated in the Contract Documents for the performance of the Work;
- aa) **“Subcontractor”**: a party having a direct contract with the Contractor for the performance of any part of the Work, or to supply products worked to a special design for the Work;
- bb) **“Substantial Performance”**: when the Work has progressed to the point where, in the opinion of the City Representative as evidenced by the certificate of Substantial Performance, it is sufficiently complete, in accordance with the Contract Documents, so that the Work can be utilized for the intended purpose;
- cc) **“Supplier”**: a party having a direct contract with the contractor to supply products not worked to a special design for the Work;
- dd) **“Work”**: all or any part of the construction and services required by the Contract Documents, including all labor, materials, equipment and services provided or to be provided by the Contractor to fulfill his obligations under this Contract.

1.2 Documents and Interpretation

- a) It is the intent of the Contract Documents to include all labour, materials, equipment and services necessary to perform the Work in accordance with the Contract Documents. Any labor, materials, equipment and services that may be reasonably inferred from the Contract Documents or from prevailing custom or trade usage as being required to produce the intended result, will be furnished and performed by the Contractor, whether or not specifically called for.
- b) The Contract Documents are complementary, and what is required by one document shall be as binding as if required by all.
- c) This Contract represents the entire agreement between the City and the Contractor and supersedes all prior negotiations, representations and agreements, either written or oral.
- d) When words or phrases which have a well-known technical or construction industry or trade meaning are used in the Contract Documents and are not otherwise defined, they shall be interpreted in accordance with that meaning.
- e) The Contract Documents shall not be construed to create a contractual relationship of any kind between:

- i. the City Representative and the Contractor, a Subcontractor, a Supplier, a subcontractor or its or their agent or employee, or other person performing any of the Work;
- ii. the City and a Subcontractor, a Supplier, or their agent, employee, or other person performing any of the Work, or
- iii. between any persons or entities other than the City and the Contractor.

The City Representative shall however, be entitled to demand performance and enforce the obligations of the parties under this Contract, to facilitate performance of the City Representative's duties.

- f) Clarifications and interpretations of the Contract Documents shall be issued by the City Representative as provided in GC 4.1.
- g) In the event of any inconsistency or conflict between provisions of the Contract Documents, the following shall apply:
 - i. documents of later date shall govern over earlier documents of the same classification;
 - ii. figured dimensions shown on drawings shall govern over scaled dimensions;
 - iii. drawings of larger scale shall govern over those of smaller scale;
 - iv. specifications shall govern over drawings;
 - v. the general conditions shall govern over the specifications;
 - vi. supplementary general conditions shall govern over the general conditions, and
 - vii. the Articles of Agreement shall govern over all documents.
- h) The City shall provide the Contractor with as many sets of Contract Documents as are reasonably required for the performance of the Work.
- i) The Contractor shall maintain a set of drawings on the Site and record accurately and legibly all deviations caused by Site conditions and written instructions or change orders ordered by the City Representative. The Contractor shall also keep one copy of all current Contract Documents and shop drawings on the Site, in good condition. These documents shall be available to the City Representative throughout the duration of the Work.

- j) All Contract Documents, including copies, and all models furnished by or to the Contractor are and shall remain the property of the City and are not to be used on other work. The Contract Documents are not to be copied or revised in any manner without the City's written consent.
- k) The division into sections, the table on contents, and the heading in the Contract Documents, other than in the drawings and specifications, form no part of this Contract but are inserted for convenience of reference only.
- l) Any reference to a statutory provision shall include any subordinate legislation made and from time-to-time amended, extended or re-enacted.
- m) Unless otherwise indicated, all dollar amounts referred to in this Contract are in lawful money of Canada.
- n) If any provision of this Contract is determined to be invalid or unenforceable in whole or in part, such invalidity or unenforceability shall attach only to such provision and everything else in this Contract shall continue in full force and effect, In the event that any provision of this Contract, as amended from time to time, shall be deemed invalid or void, in whole or in part, by any court of competent jurisdiction, the remaining terms and provisions of this Contract shall remain in full force and effect.
- o) The schedules, appendices and attachments to this Contract are an internal part of this Contract and a reference to this Contract includes a reference to the schedules, appendices and attachments.
- p) The language of the specifications and other documents comprising this Contract is in many cases written in the imperative for brevity. Clauses containing instruction, directions or obligations are directed to the Contractor and shall be construed and interpreted as if the words "the Contractor shall" immediately preceded the instructions, directions or obligations.
- q) Unless the context otherwise requires, wherever used herein the plural includes the singular, the singular includes the plural, and each of the masculine, feminine and neuter genders include all other genders.
- r) Unless otherwise provided in this Contract, all accounting and financial terms used in this Contract shall be interpreted and applied in accordance with Canadian generally accepted accounting principles, consistently applied from one period to the next.
- s) References containing terms such as:

- i. “hereof,” “herein,” “hereto,” “hereinafter,” and other terms of like import are not limited in applicability to the specific provision within which such references are set forth but instead refer to this Contract taken as a whole; and
- ii. “includes” and “including”, whether or not used with the words “without limitation” or “but not limited to”, shall not be deemed limited by the specific enumeration of items but shall in all cases be deemed to be without limitation and construed and interpreted to mean “includes without limitation” and “including without limitation”;
- t) Whenever the terms “will” or “shall” are used in this Contract in relation to the Contractor they shall be construed and interpreted as synonymous and to read “the Contractor shall”.

1.3 Notices

- a) Where a notice is required by the Contract Documents to be given in writing to the Contractor, it may be delivered personally to the Contractor or his site superintendent, or delivered or sent by mail or facsimile transmission to the Contractor’s address set out in the Articles of Agreement or to his office at or near the Site.
- b) Where a notice is required by the Contract Documents to be given in writing to the City Representative, it may be delivered personally, by email, or delivered or sent by mail or facsimile transmission to the City Representative’s address set out in the Articles of Agreement, or to the office of the City Representative at or near the Site.
- c) Notwithstanding the foregoing provisions of this GC 1.3, each party shall use the most expeditious method of giving the written notice or communication.
- d) A written notice or communication sent by mail shall be deemed to have been received ten (10) calendar days from the date of posting. Whenever a notice or communication is sent by facsimile transmission, acknowledgement from the receiving party must be given to the other party that the notice or communication has in fact been received, for it to be effective; this acknowledgement may be made verbally, in person or by telephone. If no such acknowledgement is given, it shall be deemed to have been received and be effective ten (10) calendar days from the date the original document was sent.

1.4 Rights and Renders

- a) No obligations or responsibilities of any kind by or on behalf of the City shall be implied into the Contract Documents if in the opinion of the City Representative, it is

not reasonable under the circumstances to imply that such obligations or responsibilities form part of the Contract Documents.

- b) Any failure by the City or the City Representative to enforce or to require the strict performance of any of the provisions of this Contract shall not, in any way constitute a waiver of those provisions and affect or impair those provisions or any right the City has at any time to avail itself of any remedies the City may have for any breach of these provisions or to require the Work to be performed in accordance with the Contract Documents.
- c) Except as expressly provided in the Contract Documents, the duties and obligations imposed by the Contract Documents and the rights and remedies available thereunder shall be in addition to and not a limitation of any duties, obligations, rights and remedies otherwise imposed or available by law.

1.5 Assignment

This Contract, or any part of it, or any benefit or interest in it, shall not be assigned by either party without the prior written consent of the other party, which consent shall not be unreasonably withheld. Notwithstanding the foregoing, the City has the right, in the event of any default by the Contractor, to assign all its rights and remedies against the Contractor to the Government of Nunavut.

1.6 Applicable Law

This Contract shall be deemed to have been made in Nunavut and shall be governed by and interpreted in accordance with the laws of Nunavut and the laws of Canada applicable therein.

1.7 Successors and Assigns

This Contract shall ensure to the benefit of and be binding upon the parties hereto and their lawful heirs, executors, administrators, successors and assigns.

2. CITY'S OBLIGATIONS

2.1 Payment

Subject to any other provision in the Contract Documents, the City shall make payments to the Contractor at the times and in the manner set out in GC 5.

2.2 Site Availability

- a) The City shall furnish, as indicated in the Contract Documents, the lands upon which the Work is to be performed, rights-of-way and easements for access to the Site and any other lands designated for the use of the Contractor. The Contractor shall

provide and pay for any additional lands and access the Contractor may require, in accordance with GC 3.10(a).

- b) Except for permits and fees which are the responsibility of the Contractor under GC 3.13, the City shall obtain and pay for necessary approvals, easements and charges required for the development of the Site and for the use or occupancy of permanent structures or for permanent changes in existing facilities.

2.3 Consultant, Owner’s Agent, and/ or Engineer as City Representative

- a) Unless otherwise provided in the Contract Documents, the City shall communicate with the Contractor through the Consultant, and the Contractor shall communicate with the City through the Consultant.
- b) If the contract with the Consultant is terminated, the City shall promptly appoint a replacement.

2.4 Reference Points

The City shall establish physical reference points for construction on the Site which are, in the opinion of the City Representative, necessary to enable the Contractor to proceed with the Work. The Contractor shall safeguard such reference points in accordance with GC3.11(b).

2.5 Materials Supplied by the City

Any materials, instructions, information or services required to be supplied by the City under this Contract shall be furnished with reasonable promptness to avoid delay in the orderly progress of the Work.

2.6 Control of the Work

Neither the City nor the City Representative shall supervise or have control or authority over, nor be responsible for, the Contractor’s means, methods, techniques or procedures of construction. Neither the City nor the City Representative will be responsible for the Contractor’s failure to perform the Work in accordance with the Contract Documents, nor for its failure to comply with Applicable Laws.

2.7 Limitation of Liability

In no event, including without limitation if the City breaches its obligations under this Contract, shall the City be liable to the Contractor, its Subcontractors, its Suppliers, or any other parties engaged directly or indirectly by or acting on their behalf, for indirect loss, consequential loss, loss of business opportunity or loss of anticipated profit.

3. CONTRACTOR'S OBLIGATIONS

3.1 General Obligations

Notwithstanding any omissions from the Contractor's tender, the Contractor is required to perform all of the Work required by the Contract Documents, including any Work which can be reasonably inferred from them as being necessary to produce the intended result. The Contractor is to perform the Work within the Contract Time, in accordance with the Construction Schedule referred to in GC 3.6.

3.2 Independent Contractor

The Contractor is an independent contractor and shall have complete control of the Work. The Contractor shall effectively direct and supervise the Work to ensure conformance with the Contract Documents. The Contractor shall be solely responsible for all construction means, methods, techniques, sequences and procedures and for coordinating all parts of the Work, except as may be otherwise specified in the Contract Documents.

Nothing in this Contract shall be construed to mean that the Contractor is an employee, agent or other representative of the City.

3.3 Review of Contract Documents

- a) By executing this Contract, the Contractor represents that the Contractor has reviewed the Contract Documents and has verified the dimensions, quantities and details described in them. Failure to discover or correct errors, omissions, conflicts or discrepancies which ought to have been discovered by such a review shall not relieve the Contractor from full responsibility for unsatisfactory Work, faulty construction or improper operations resulting therefrom, nor from rectifying such conditions at the Contractor's expense.
- b) If the Contractor proceeds with the Work in the face of an error, inconsistency or omission that the Contractor discovered, or that a competent Contractor reasonably experienced in the Work would have discovered, without additional instructions from the City Representative, then the Contractor shall at the Contractor's cost remove or replace any incorrectly constructed Work.

3.4 Site Conditions

- a) By executing this Contract, the Contractor represents that the Contractor is familiar with the conditions under which the Work is to be performed. The Contractor further represents that the Contractor understands the requirements of the Contract Documents and what effects the Site conditions will have on the Work. The Contractor's failure to visit the Site will not excuse the Contractor from the responsibility which otherwise would have been assumed, had the Contractor visited the Site.

- b) Following the start of the Work, if the subsurface conditions are substantially different from what could reasonably have been expected, based on a reasonable and proper examination of the Site by the Contractor and the information provided in the tender documents, if any, the Contractor must promptly notify the City Representative in writing prior to performing the Work. The Contractor may make a claim for changed site conditions in only accordance with GC 9.1.

3.5 Temporary Structures

The Contractor shall have the sole responsibility for the design, erection, operation, maintenance and removal of temporary structures and other temporary facilities and the design and execution of construction methods required in their use. The Contractor shall engage and pay for professional engineering personnel, registered to practice in Nunavut, skilled in the appropriate discipline, 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. The Contractor shall submit engineered documents to the City Representative, for review, before commencing temporary work.

3.6 Schedule

- a) Within fourteen (14) calendar days of executing the Articles of Agreement and as a condition of the first progress payment, the Contractor shall submit to the City Representative for review, a proposed Construction Schedule showing the anticipated time of commencement and completion of each of the major activities of the Work to be performed. This Construction Schedule shall include the sequence and coordination of the various operations and the estimated time required for the Work and shall provide sufficient detail to permit the City Representative to monitor the progress of the Work. The Contractor shall revise the proposed Construction Schedule as requested by the City Representative, and the Contractor shall perform the Work in strict adherence to the Construction Schedule, including revisions thereto required by the City Representative, unless it is changed in accordance with the terms of this Contract.
- b) If at any time it should appear to the City Representative that the actual progress of the Work does not conform to the Construction Schedule, the Contractor shall produce at the City Representative's request, a revised Construction Schedule showing the modifications necessary to ensure completion of the Work in accordance with the previously approved Construction Schedule and shall promptly adopt acceptable additional means and methods of construction, at no cost to the City, which will make up for the time lost and will ensure completion in accordance with the revised Construction Schedule.

- c) If the Contractor fails or refuses to revise the Construction Schedule as required by this GC, this Contract may be terminated at the City's option, in accordance with GC 10.3.
- d) The City Representative's review, comments, consent, acceptance or approval to the Construction Schedule shall not relieve the Contractor of any of the Contractor's obligations under this Contract.

3.7 Superintendent

- a) The Contractor shall assign a competent superintendent and necessary assistants, one or more of whom shall be in attendance at the Site at all times during the progress of the Work. The superintendent and necessary assistants, if any, shall be designated in writing to the City Representative and shall act as the Contractor's authorized representative at the Site. All written or oral communications to the superintendent shall be deemed to have been given to the Contractor. The superintendent shall only be replaced after the Contractor has received written approval from the City.
- b) The City may order the removal from the Work of any superintendent, supervisor, foreman or other employee who is in the opinion of the City, unfit for the Work, unskilled in the work assigned to him or otherwise unsuitable. Any person so removed shall not be re-employed on the Work by the Contractor or by a Subcontractor.

3.8 Subcontractors

- a) The Contractor shall not employ any Subcontractor without the approval of the City. Once the names of the proposed Subcontractors have been submitted, the Contractor shall not change these Subcontractors without the advance written consent of the City. If any changes are made without consent, this Contract may be terminated at the City's option, in accordance with GC 10.3.
- b) The City, through the City Representative, may, at any time during the performance of the Work, object to the use of a Subcontractor and direct the Contractor in writing to employ a different Subcontractor satisfactory to the City Representative.
- c) The Contractor shall be fully responsible to the City for the acts and omissions of Subcontractors, their agents, employees, and all parties engaged by the Contractor or its Subcontractors for the provision of work or the supply of materials.
- d) The Contractor agrees to incorporate the terms of the Contract Documents into all the Contractor's subcontract agreements.

- e) The Contractor shall maintain good order and discipline among the Contractor's employees and the Subcontractors engaged in the Work. The Contractor shall not employ, or permit Subcontractors to employ, workers who are not skilled in the assigned task. The Contractor shall employ sufficient workers to perform the Work in compliance with the Construction Schedule.

3.9 Other Contractors

- a) The City reserves the right to let separate contracts with other contractors or workers, or to undertake work using the City's own forces to do other work. If other contractors, workers or the City's own forces are sent onto the Site, with or without plant and material, the Contractor shall, to the satisfaction of the City, grant access to and cooperate with such persons and, in accordance with usual construction practice, coordinate the Work with the other work and connect to other work as specified or shown in the Contract Documents.
- b) The Contractor shall at all times remain the Constructor, with regards to the Health and Safety Act requirements. The City and other contractors entering the Contractors site shall be responsible for adhering to the Contractor's Health and Safety policy.
- c) If the sending of other contractors, workers or the City's own forces onto the Site results in a delay in the performance of the Work, which could not have been reasonably foreseen or anticipated by the Contractor when executing the Articles of Agreement, the Contractor may make a claim therefor in accordance with GC 6.2 and 9.1.
- d) If the Contractor discovers any deficiencies in any other work which might affect the Work, the Contractor shall immediately report such deficiencies to the City Representative and then confirm such report in writing.

3.10 Use of the Site

- a) The Contractor shall make every effort to confine the Contractor's equipment and plant, storage of materials and operations to limits indicated by the Contract Documents, by a specific direction of the City Representative or by Applicable Laws and shall not unreasonably occupy the Site. Where the Contractor requires additional land for the erection of temporary facilities and storage of materials, including access to them, the Contractor shall arrange for such and assume all costs and liabilities arising therefrom.
- b) The Contractor shall not load or permit to be loaded on any part of the Work, a weight or load or force that will endanger its safety or exceed the design loads.

- c) The Contractor shall not interfere in any way with the work or scheduling of any other contractor, worker or employee of the City. Subject to GC 3.9(b), in order to avoid or minimize such interference, the City may in its absolute discretion, establish schedules or methods and shall notify the Contractor accordingly.

3.11 Survey

- a) The Contractor shall provide the City Representative with assistance, as required, to make any surveys and measurements, and to establish or check lines and grades.
- b) The Contractor shall safeguard all points, stakes, grade marks and benchmarks made or established on the Work. The Contractor shall bear the expense of re-establishing them and for rectifying Work improperly installed due to the Contractor's failure to safeguard such points, stakes and marks. Additional surveys and staking required by the Contractor to perform the Work, shall be provided by the Contractor at its expense.

3.12 Protection of the Work, Property and the Public

- a) The Contractor shall be responsible for protecting the Work, the City's property at the Site including the Contract Documents and any plant and material, including plant and material supplied by the City to the Contractor, against loss or damage from any cause but subject to GC 3.15(c). In particular, the Contractor shall take necessary precautions, at the Contractor's expense, to ensure that:
 - i. no person, adjacent property, right, easement or privilege is injured, damaged or infringed by reason of the Contractor's activities in performing the Work;
 - ii. pedestrian and other traffic on any public or private road or waterway is not unduly impeded, interrupted or endangered by the performance or existence of the Work;
 - iii. fire hazards in or about the Work or the Site are minimized;
 - iv. adequate medical services are available to all persons employed on the Work at all times during the performance of the Work;
 - v. adequate sanitation measures are taken in respect of the Work; and
- b) The City Representative may order the Contractor to do such things and to perform such additional Work as the City Representative considers reasonable and necessary to ensure compliance with or to remedy a breach of GC 3.12(a) and the Contractor shall comply with the directions of the City Representative, at the Contractor's expense.

3.13 Permits

- a) The Contractor shall procure and post at the Site all permits, certificates and licenses required for the construction of the Work and shall be responsible for all fees in respect thereof.
- b) The Contractor will be responsible for procuring and coordinating all permits that the GN Office of the Chief Boiler and Gas Inspector regulates.
- c) The Contractor will be responsible for procuring and coordinating all permits issued by the City's Public Works and Engineering Department. Such permits include:
 - i. Water & Sewer Service Connection/ Disconnection Permit
 - ii. Utility Permit
 - iii. Road Closure Permit

Permit applications must be submitted to the City twenty (20) business days prior to the start of the works.

3.14 Applicable Laws

- a) The Contractor shall perform the Work and give any required notices in full compliance with all Applicable Laws, ordinances, rules, regulations, codes and orders of the municipal and other authorities having jurisdiction which are in or come into force during the performance of the Work.
- b) The Contractor shall have due regard for the protection of the environment in the performance of the Work and shall not place any materials, including without limitation, hazardous materials, or dispose of any such materials, or perform any Work in a manner contrary to applicable federal or territorial or municipal environmental laws and regulations, either at the Place of the Work, or at any other place or property.

3.15 Material and Plant Supplied by City

- a) The Contractor is liable for any loss or damage to material, plant or real property that is supplied or placed by the City in the care, custody and control of the Contractor for use in connection with the Work, whether or not that loss or damage is attributable to causes beyond the Contractor's control.
- b) The Contractor shall not use any material, plant or real property placed in the Contractor's care, custody and control by the City, except for the purpose of performing the Work.

- c) The Contractor is not liable to the City for any loss or damage to material, plant or real property if that loss or damage results from and is directly attributable to reasonable wear and tear.

3.16 Equipment, Plant and Material Supplied by Contractor

- a) Unless otherwise specified in the Contract Documents, the Contractor shall furnish and assume full responsibility for all materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities and all other facilities and incidentals necessary for the performance, testing, finishing, start-up and completion of the Work. All materials, equipment, facilities, etc., furnished by the Contractor shall be maintained in a working, clean and sanitary manner.
- b) Materials provided shall be new unless otherwise specified in the Contract Documents. Products that are not specified shall be of a quality best suited to their purpose and use, as approved by the City Representative.
- c) All equipment, plant and material owned by the Contractor and to be incorporated in the Work, from the time of initial delivery to the Site, shall be deemed to be the property of the City; provided always that the vesting of such property shall not prejudice the right of the Contractor to the sole use of the said equipment, plant and material for the purpose of performing the Work nor shall it affect the Contractor's responsibility to operate and maintain the same in accordance with the Contract Documents. The City shall not at any time be liable for the loss of, damage to or risk of loss of any of the Contractor's equipment, plant or materials.

3.17 Workers' Compensation Act

- a) The Contractor shall comply with and ensure compliance at time of tender by all Subcontractors, with the requirements of the Workers' Compensation Act, R.S.N.W.T. 1988, c. W-6, as duplicated for Nunavut by s. 29 of the Nunavut Act. The Contractor and its Subcontractors shall maintain accounts in good standing with the Workers' Safety and Compensation Commission. The Contractor shall provide verification from the Workers' Compensation Board that the Contractor's account is in good standing prior to the release of holdbacks, at the end of the warranty period and as requested by the City Representative. The City may refuse to make a payment to the Contractor unless the Contractor furnishes evidence from the Workers' Compensation Board that the Contractor's account is in good standing.
- b) If the City receives a notice from the Workers' Compensation Board that the Contractor's accounts, or any Subcontractors' accounts are not in good standing, or if a demand for payment is received, the City may suspend payments due to the Contractor until a letter of clearance is obtained or the City has paid the amount on behalf of the Contractor.

- c) If the City is required to pay any amount to the Workers' Compensation Board on behalf of the Contractor, or any Subcontractor, the City may deduct the amount from any amount owing to the Contractor under this or any other contract, or may demand a reimbursement by the Contractor to the City for the amount paid by the City.
- d) If at any time the performance of the Work is stopped because the Contractor unreasonably fails or refuses to comply with a regulation or order issued pursuant to the Workers Compensation Act, then such failure or refusal shall be considered a default under this Contract, and this Contract may be terminated at the City's option, in accordance with GC 10.3.

3.18 Occupational Health and Safety

- a) The Contractor shall be solely responsible for construction safety at the Site as and to the extent required by the Safety Act, in effect at time of tender, and any other applicable construction safety legislation, regulations and codes, any City safety Policies, as amended from time to time, and by good construction practice.
- b) In any case where, pursuant to the provisions of the Safety Act, R.S.N.W.T. 1988, c. S-1, as duplicated for Nunavut by s. 29 of the Nunavut Act, the Director of Inspections or a Safety Officer orders the Contractor or any Subcontractor performing the Work, to cease work because of failure to install or adopt safety devices directed by the regulations made under the said Act, or required by it, or because the Director of Inspections or a Safety Officer is of the opinion that conditions of immediate danger exist that would likely result in injury to any person, the City may exercise its right to terminate this Contract or suspend the Work immediately, in accordance with GC 10, until the default or failure is corrected.

3.19 Cutting and Patching

- a) The Contractor shall do all cutting, fitting or patching of the Work that may be required to tie in properly with the work of other contractors shown in, or reasonably inferable from the Contract Documents.
- b) The Contractor shall not endanger any existing Work by cutting, patching or otherwise, and shall not cut or alter the work of any other contractor save with the consent of the City Representative and then only to the extent permitted by the City Representative.
- c) The Contractor shall not unreasonably withhold from the City or a separate contractor the Contractor's consent to cutting or otherwise altering the Work in accordance with any direction given by the City Representative.

3.20 Defective Work

- a) Defective work, whether the result of poor workmanship, use of defective products or damage through carelessness or other act or omission of the Contractor or any Subcontractor, and whether incorporated in the Work or not, which has been rejected by the City Representative as failing to conform to the Contract Documents, shall be removed promptly from the Work and replaced or re-executed by the Contractor in accordance with the Contract Documents, at the Contractor's expense.
- b) Where any part of the Work is damaged by such removals, replacements or re-execution, it shall be made good, promptly, at the Contractor's expense.
- c) Where the Contractor fails to correct defective or rejected work within the time limits specified by the City Representative, the City may correct defective or rejected Work and deduct the cost of same from the Contract Price, or may terminate this Contract in accordance with GC 10.3.
- d) In cases of emergency, the City may take whatever action it deems necessary to correct defective or rejected Work and deduct the cost of same from the Contract Price.
- e) If, in the opinion of the City Representative, it is not expedient to correct defective work or work not done in accordance with the Contract Documents, the City may deduct from the Contract Price the difference in value between the Work as done and that required by this Contract, as determined and certified by the City Representative.

3.21 Testing and Inspection

- a) Unless otherwise specified in the Contract Documents, the Contractor shall not rely on the City's testing program, for the Contractor's own quality control, but shall perform such testing as may be required to ensure that the Work complies in all respects with the Contract Documents.
- b) Critical equipment such as the boilers should be assembled or supervised during the installation by the manufacture experts and approve the installation.
- c) The Contractor shall promptly provide the City Representative with two copies of all certificates, inspection and testing reports required by the Contract Documents or ordered by the City Representative.
- d) The City Representative may conduct quality control testing regarding the acceptability of materials used in the Work and the Contractor shall furnish for the

City Representative's approval such samples as the City Representative may reasonably require, at the Contractor's expense.

- e) The City Representative may order retesting of questioned Work. If such retesting shows the Work to comply with the provisions of this Contract, the City shall pay the cost of retesting. If the retesting shows that through the fault of the Contractor the Work does not so comply, the Contractor shall pay all associated costs. Testing which is paid for by the City shall not be subject to direction or control by the Contractor.
- f) The City Representative shall at all times have access to the Work and the Contractor shall provide proper facilities for such access and for inspection. If any Work should be covered without the approval or consent of the City Representative, it must, if required by the City Representative, be uncovered for examination and subsequently recovered, both at the Contractor's expense.
- g) Any inspection of the Work by the City Representative or the failure of the City Representative to make any inspection, or:
 - i. the thoroughness or lack of thoroughness of any inspection made by the City Representative;
 - ii. the failure of the City Representative to observe defective workmanship or materials either by the Contractor or a Subcontractor;
 - iii. the failure to direct the attention of the Contractor or Subcontractor, or of any other person, to the inadequacy of the manner in which this Contract is being performed, or
 - iv. the inadequacy or insufficiency of any equipment or material used in the performance of or incorporated in the Work,

shall not relieve the Contractor from the responsibility for any failure to supply materials and complete the Work strictly in accordance with the Contract Documents.

3.22 Site Cleanliness

- a) The Contractor shall maintain the Site in a tidy condition and free from the accumulation of waste material and debris, to the satisfaction of the City Representative.
- b) Before the issuance of a certificate of Substantial Performance, the Contractor shall remove all the Contractor's tools and material not required for the remaining Work, and all waste material and other debris, and shall ensure that the Work and the Site are clean and suitable for occupancy or use by the City, unless otherwise directed by the City Representative.

- c) Before the issuance of a certificate of Final Completion, the Contractor shall remove from the Site all the Contractor's tools and material and any waste material and other debris, to the satisfaction of the City Representative.
- d) If the Contractor fails or refuses to remove all such tools, materials, equipment and waste within a reasonable time after achieving Final Completion then, on written notice from the City Representative to the Contractor specifying a reasonable time to remedy such failure or refusal, the City may do or cause to be done the removal and all reasonable resulting costs incurred by the City may be deducted from any amounts owing by the City to the Contractor.
- e) The Contractor's obligations described above do not extend to waste material and other debris caused by the City's agents or other contractors.

3.23 Claims Against and Obligations of the Contractor

- a) The Contractor shall pay out and discharge all its lawful obligations and shall satisfy all lawful claims against it arising out of the performance of the Work at least as often as this Contract requires the City to pay the Contractor.
- b) The Contractor shall, in accordance with the Contract Documents and whenever requested to do so by the City Representative, make a statutory declaration regarding the existence and condition of any obligations of and claims against the Contractor, any Subcontractors, or Suppliers. Upon request by the City, the Contractor shall provide letters from its Subcontractors and Suppliers regarding the status of any accounts with the Contractor and the details of any claims, if any.
- c) The City may, in its absolute discretion, and at any time prior to the final release of holdbacks, in order to discharge lawful obligations of and satisfy lawful claims against the Contractor, any Subcontractors or Suppliers arising out of the performance of the Work, pay any amount that is due and payable to the Contractor pursuant to this Contract, directly to the obligees of and the claimants against, the Contractor, Subcontractor or Supplier. When the parties involved in the claim are in agreement on the validity and amount of the claim, the City may treat this as a lawful claim.
- d) Where no agreement is reached between the parties as referred to above, the City may withhold payment, without any obligation to pay interest, until the validity and amount of the Claim is established by legal proceeding. The City may, in its absolute discretion, bring the matter before the Nunavut Court of Justice by way of Interpleader, and shall dispose of the funds withheld in accordance with the direction of the Court.

- e) A payment made pursuant to this provision is, to the extent of the payment, a discharge of the City's liability to the Contractor under this Contract and may be deducted from an amount payable to the Contractor under this Contract.

3.24 Patent Rights

The Contractor shall indemnify the City from and against all claims, liabilities and proceedings for or on account of infringement of any patent rights, design trademark or name or other protected rights in respect of the Contractor's equipment, materials or tools used for or in connection with, or for incorporation into the Work, and from and against all damages, costs, charges and expenses whatsoever relating thereto.

3.25 Royalties

Except where otherwise stated, the Contractor shall pay all tonnage and other royalties, rent and other payments or compensation, if any, for obtaining building materials required for the Work.

3.26 Records to be Kept by Contractor

- a) The Contractor shall maintain complete records of the Contractor's estimated and actual costs of the Work together with all tender calls, quotations, contracts, correspondence, invoices and receipts. In accordance with the terms of this Contract, these documents shall be available for audit and inspection by the City or by persons acting on behalf of the City when requested. The Contractor shall furnish any such person with any information it may require from time to time in connection with these records.
- b) Records maintained by the Contractor shall be kept intact for six years following the end of the warranty period or such other period of time as directed by the City Representative.
- c) The Contractor shall ensure that all of its Subcontractors comply with the above requirements.

3.27 Public Ceremonies and Signs

- a) The Contractor shall not permit any public ceremony in connection with the Work without the prior written consent of the City.
- b) The Contractor shall not erect or permit the erection of any sign or advertising on the Site without the prior written consent of the City.

3.28 Non-Compliance by Contractor

- a) If the Contractor fails to comply, within a reasonable time, with any decision or direction given by the City Representative, the City may employ such methods as the City deems advisable to do that which the Contractor failed to do.
- b) The Contractor shall pay the City the total of all costs, expenses and damages incurred or sustained by the City by reason of the Contractor's failure to comply with any decision or direction referred to above, including the cost of any method employed by the City. Where the amounts owing to the Contractor under this Contract are insufficient to cover such costs, the Contractor shall pay the balance to the City immediately.

4. ADMINISTRATION BY CITY REPRESENTATIVE

4.1 City Representative's Duties and Authority

- a) The City Representative will administer this Contract on behalf of the City as provided in the Contract Documents.
- b) The City Representative will be the City's representative until the Work has been completed in accordance with the Contract Documents.
- c) Except as expressly stated in the Contract Documents, the City Representative shall have no authority to relieve the Contractor of any of the Contractor's obligations under this Contract.
- d) The City Representative will be the initial interpreter of the requirements of the Contract Documents and judge of the acceptability of the Work performed and shall deal with Claims as they arise, in accordance with GC 9.1.
- e) If any error, inconsistency, or omission in the Contract Documents is discovered, the City Representative shall provide directions or clarifications to the Contractor.
- f) During the progress of the Work, the City Representative shall have authority to reject Work that, in the City Representative's opinion, does not conform with the requirements of the Contract Documents, or to issue written additional instructions regarding the Work which may, in the opinion of the City Representative, be necessary to supplement or clarify the Contract Documents. Such additional instructions shall be consistent with the intent of the Contract Documents, shall not entitle the Contractor to an Adjustment and shall be binding upon and be carried out promptly by the Contractor.
- g) Wherever, under this Contract, the City Representative is required to exercise discretion by:
 - i. rendering a decision, opinion or consent.

- ii. expressing satisfaction or approval.
- iii. determining value; or
- iv. otherwise taking action which may affect the rights and obligations of the City or the Contractor,
the City Representative shall do so impartially, consistent with the terms of this Contract and having regard to all of the circumstances. Any such decision, opinion, consent, expression of satisfaction or approval, determination of value or action, may be opened up, reviewed or revised as provided in GC 9.

4.2 Observing the Work

The City Representative will visit the Site at intervals appropriate to the stage of construction to become generally familiar with the progress and quality of the completed Work and to determine in general if the Work is being performed in a manner indicating that the Work, when completed, will be in accordance with the Contract Documents. However, the City Representative will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. On the basis of such on-site observations, the City Representative will keep the City informed of the progress of the Work and will endeavor to guard the City against defects and deficiencies in the Work.

4.3 City Representative's Decision

Except as provided in GC 4.1(g), neither the City Representative's authority or responsibilities under GC 4 or under any other provision of the Contract Documents nor any decision made by the City Representative in good faith either to exercise or not exercise such authority or responsibility, shall create, impose or give rise to any duty or responsibility owed by the City Representative to the Contractor, any Subcontractor, Supplier, or to any surety for or employee or agent of any of them.

5. PAYMENT AND COMPLETION

5.1 Progress Payments

- a) At the end of each calendar month, or such other period as is agreed to between the City Representative and the Contractor, the Contractor shall deliver to the City Representative a written progress claim that describes the Work that has been completed and any material that was delivered to the Site but not yet incorporated into the Work since the last progress claim. The Contractor's progress claim shall be submitted on the last day of the month, for the month which progress is being claimed. If the last day coincides on a weekend or holiday, it will be issued on the following business day.

- b) The City Representative shall, within fourteen (14) business days of receipt of the Contractor's approved progress claim, review the claim and prepare a certificate for payment which may take the form of an endorsement on the progress claim. If the City Representative amends the progress claim, he will promptly notify the Contractor in writing, giving reasons for the amendment.
- c) Where the Contractor does not submit a progress claim or where the City Representative does not endorse the Contractor's progress claim, the City Representative may calculate the progress payment and prepare a certificate for payment by the City. Where unit prices apply, payment will be calculated on the basis of the unit prices specified in the Contract Documents and the units of Work completed as determined by the City Representative. Where a lump sum price applies, payment will be calculated on the basis of the City Representative's estimate of the percentage of the Work completed.
- d) The progress certificate will show, to the end of the period covered by the progress claim, the estimated value of all labour and materials incorporated into the Work, GST monies paid, all materials stored at the Site and all Change Orders certified by the City Representative. The certificate shall also show the aggregate of previous payments and the amounts withheld. The gross amount shown on such certificate, less the aggregate of all payments to date and sums withheld, shall become due and be payable by the City to the Contractor within thirty (30) calendar days following receipt by the City of the progress certificate.
- e) The estimates referred to above shall not bind the City or the City Representative in any manner in the preparation of the final estimate of the Work done, but shall be held to be approximate only and shall in no case be taken as an acceptance of the Work or as a release of the Contractor from the Contractor's responsibilities under this Contract.
- f) If for any reason the City disputes the net amount shown for payment on a progress certificate the City shall, within the time specified in this GC, pay to the Contractor any amount not disputed and also deliver to the Contractor and the City Representative written reasons for any deductions.

5.2 Contract Holdbacks

- a) The City will retain Contract holdbacks in accordance with the following:
 - i. ten percent from each progress payment made prior to the issuance of the first Holdback Payment Certificate by the City Representative (the "Lien Holdback"), and

- ii. five percent Owners Offset from any payments made to the Contractor following the issuance of the first Holdback Payment Certificate, other than from holdback payments.

5.3 Substantial Performance

- a) When the Contractor considers the Work ready to be utilized for its intended purpose, the Contractor may apply in writing to the City Representative to issue a Certificate of Substantial Performance. The Contractor shall prepare and submit with its application a comprehensive list of deficiencies and/or incomplete items to be completed or corrected, a statutory declaration as per GC 3.23(b) and particulars of, or a waiver of, all outstanding claims against the City, arising out of the Work. The Contractor shall proceed promptly to complete and correct the items on the list. Failure to include an item on this list does not alter the Contractor's responsibility to complete the Work in accordance with the Contract Documents.
- b) Following the receipt of an application from the Contractor for a certificate of Substantial Performance, the City Representative shall, with reasonable promptness, make an inspection and assessment of the Work. Within seven (7) calendar days of the inspection, the City Representative shall notify the Contractor of his approval, or reasons for, disapproval of the application. If the City Representative determines that the Work is substantially completed, he shall issue a certificate of Substantial Performance to the City and the Contractor. A list of items to be completed or rectified shall accompany the certificate. If the City Representative does not consider the Work to be substantially completed, he shall notify the Contractor in writing of the reasons why and list the items to be completed or rectified, of which the City Representative is aware.
- c) The City may deduct from the Contract Price, or any amounts due to the Contractor, the costs associated with the City Representative being called upon to perform more than one inspection for the purpose of determining Substantial Performance, when in the opinion of the City Representative, the Work was clearly not yet substantially complete.
- d) The certificate of Substantial Performance shall establish the date of Substantial Performance and shall fix the time within which the Contractor shall complete or correct all items on the list accompanying the certificate. Warranties required by the Contract Documents shall commence on the date of Substantial Performance, unless otherwise provided, in the certificate of Substantial Performance.
- e) Similarly, in accordance with the procedure set out above, the City Representative may in its absolute discretion, issue a Certificate of Substantial Performance in respect of any part of the Work which has been both completed to the satisfaction of the City Representative and which the City has elected to occupy or use prior to completion.

- f) In addition to other holdbacks as provided by the Contract Documents, when considering Substantial Performance, the City may hold back from payments otherwise due to the Contractor the amount that is two times of the amount of a reasonable estimate, as determined by the City Representative, on account of deficient or defective Work already paid for. This holdback may be held, without interest, until such deficiency or defect is remedied. The items of defect or deficiency and the amounts of related holdback shall be listed separately on the payment certificate.

5.4 Final Completion

- a) Following Final Completion of the Work, including any testing, the Contractor shall provide the City Representative with the following:
- i. a statutory declaration as referred to in GC 3.23(b) that:
 - A. the Work has been completed in accordance with the Contract Documents; and
 - B. no claims exist or alternatively setting out the particulars of any claims relating to personal injury or death or property loss or damage arising out of the Work, and any alleged infringement by the Contractor of a patent or other property right in performing this Contract; and
 - ii. particulars of, or a waiver of, all outstanding claims against the City, arising out of the Work.
- b) Following receipt of the documents referred to in GC 5.4(a), the City Representative shall, with reasonable promptness, conduct an inspection and assessment of the Work to verify that the Work has been completed in accordance with the Contract Documents. Within fourteen (14) calendar days of receipt of the above documents, the City Representative shall either issue a certificate of Final Completion to the City and the Contractor or a list of items to be completed or rectified, of which the City Representative is aware. The City may deduct from monies owed to the Contractor the costs associated with the City Representative being called upon to perform more than one inspection.
- c) Receipt by the Contractor of the certificate of Final Completion shall entitle the Contractor to payment in accordance with GC 5.5.

5.5 Final Progress Payment

- a) The final progress payment certificate will be prepared following the issuance of the certificate of Final Completion. The final progress payment certificate will show the total amount payable to the Contractor, less any amounts retained.
- b) The final progress payment amount shall be paid by the City to the Contractor within thirty (30) calendar days following receipt by the City of the final progress payment certificate.

5.6 Holdback Release

- a) Forty-five (45) calendar days following the date of the issuance of the certificate of Substantial Performance by the City Representative, the Contractor may apply to the City for release of fifty percent of the Lien Holdback. The Contractor shall with such application provide the City Representative with a statutory declaration as referred to in GC 3.23(b), with the content referred to in GC 5.4(a)(i), and the particulars of a waiver of, all outstanding claims against the City, arising out of the Work. The City Representative shall, within fourteen (14) calendar days' receipt of the Contractor's application, issue a Holdback Payment Certificate or a list of items to be rectified prior to payment.
- b) Following the release of fifty percent of the Lien Holdback in accordance with GC 5.6(a), the Contractor may apply in writing for release of the remainder of all Contract lien holdback funds retained by the City, provided an irrevocable letter of credit, in a form acceptable to the City and from a bank and branch acceptable to the City, for the same amount is presented for the City's consideration. The City may, in its absolute discretion, accept or reject the Contractor's irrevocable letter of credit in place of the remainder of all Contract holdback funds.
- c) The irrevocable letter of credit referred to in this provision must be for the same amount as the remainder of all Contract lien holdback funds and must remain in place until expiry of the warranty period referred to in GC 11.4. Should the Contractor's irrevocable letter of credit be scheduled to expire prior to the end of such warranty period, the City may, at any time within the fourteen (14) calendar days prior to the expiry date, call upon and draw down the irrevocable letter of credit, unless the Contractor presents a renewal thereof with an expiry date beyond the warranty period.
- d) One year following the date of the issuance of the Certificate of Substantial Performance by the City Representative, the Contractor may apply to the City for release of the remainder of all Contract holdbacks or the return of irrevocable letters of credit, if any. The City Representative shall, within fourteen (14) calendar days of receipt of the Contractor's application, issue a Holdback Payment Certificate or a list of items to be rectified prior to payment.

- e) The City may withhold from monies owing to the Contractor, an amount equal to the City Representative's estimate of the value of all outstanding deficiencies.
- f) Subject to any applicable lien legislation requirements, holdback payments shall become payable or irrevocable letters of credit shall be returned by the City to the Contractor, within thirty (30) calendar days following receipt by the City of the Holdback Payment Certificate.

5.7 Delay in Making Payment

- a) Delay by the City in making payments when they are due pursuant to this provision shall not be a breach of this Contract by the City.
- b) Unless otherwise stated in this Contract, when the City delays in making a payment that is due pursuant to this clause, the Contractor shall be entitled to receive simple interest on the amount that is overdue, at the prime lending rate of the main banker of the City.

5.8 Right of Set-off

Without limiting any right of set-off or deduction given or implied by law or elsewhere in the Contract Documents, the City may set-off any amount payable to the City by this Contractor against any amount payable to the Contractor under this Contract.

6. TIME AND DELAYS

6.1 Time of the Essence

Time is of the essence of this Contract, including without limitation the dates and time limits stated in the Contract Documents. By executing this Contract, the Contractor confirms that this Contract Time is a reasonable period for performing the Work.

6.2 Delays

- a) Where a delay occurs in the progress of the Work and:
 - i. the delay is attributable to or within the control of the Contractor or its Subcontractors or was reasonably foreseeable by them at the time this Contract was entered into, the Completion Date will not be adjusted. The Contractor will be liable to the City for all costs and expenses incurred by the City, as well as for any losses resulting from the City's inability to utilize the Work for its intended purpose resulting from the delay, and the City may deduct such costs from payments owing to the Contractor under this Contract;
 - ii. the delay is due to an act or neglect by the City, the City Representative, or other contractor, or of an employee of any of them, then the Contractor may make a Claim therefor, in accordance with GC 9.1, or

- iii. the cause for the delay does not fall within the circumstances described in (i) or (ii) above, the Contractor may make a Claim for an Adjustment in the Contract Time (but not for an Adjustments of the Contract Price), in accordance with GC 9.1. This shall be the Contractor's sole and exclusive remedy for such delays.
- b) In no event will adverse weather be considered to be a cause of delay beyond the Contractor's or its Subcontractors' control or not reasonably foreseeable by them at the time this Contract was entered into.

7. ASSESSMENTS AND DAMAGES FOR LATE COMPLETION

7.1 Late Completion

- a) For the purposes of this General Condition, "period of delay" means the number of days commencing on the Completion Date fixed by the Articles of Agreement and ending on the day immediately preceding the day on which the certificate of Substantial Performance is issued but does not include any day within a period of extension granted pursuant to GC 9.1 and 6.2, or any other day on which, in the opinion of the City Representative, completion of the Work was delayed for reasons beyond the control of the Contractor.

8. CHANGE ORDERS

8.1 Changes in the Work

- a) Without invalidating this Contract, the City may, through the City Representative, direct in writing the Contractor to make changes in the Work by adding to, deleting from or revising the Work.
- b) When no Change Order has been issued by the City Representative, and the Contractor claims that any of the Work being performed or proposed constitutes a change in the Work entitling the Contractor to an Adjustment, the Contractor may make a Claim therefore in accordance with GC 9.1.
- c) Changes in the Work directed by the City shall not be initiated, and shall not be carried out by the Contractor, without the prior written authorization of the City through the City Representative.
- d) Upon receipt of a Change Order from the City Representative, the Contractor shall promptly proceed with the Work involved under the applicable provisions of the Contract Documents, except as specifically provided in the Change Order.

- e) The City Representative may in writing direct the Contractor to proceed with the Change notwithstanding that a Change Order has not been prepared or agreed at the time of such direction, and upon receipt of such direction the Contractor shall promptly proceed with the Work as aforesaid. If the parties fail to agree upon the price for such Change, the price therefor shall be as set out in GC 8.2(f) or (i), as applicable.
- f) If notice of any change in the Work is required by the provisions of any bond to be given to a surety, the Contractor will be responsible for giving such notice, and the amount of each applicable bond shall be adjusted accordingly. For the purposes of this provision, the Contractor will be considered to be the surety's agent.

8.2 Valuation of Changes

- a) When a change results in a decrease in the Work, the Contract Price shall be decreased by an amount to be determined by the City Representative, with such decrease valued in the same manner as if it were an increase.
- b) When a change causes an increase in the Work, the Contract Price shall be increased in accordance with this provision.
- c) If this Contract specifies unit prices for changes to the Work, and the City Representative concurs in their use on a particular change or portion thereof, then the Contractor shall be paid for such change or portion, a sum determined by applying the unit prices to the actual quantum, as measured by the City Representative, determined after completion of the Change.
- d) Where this Contract specifies force account rates for labour, equipment and materials, and the City Representative concurs in their use on a particular change or portion thereof, then the Contractor shall be paid for such change or portion, a sum determined by applying the force account rates to the number of hours of labour and equipment expended and quantities of materials utilized. The Contractor shall present records of the work done to the City Representative for approval, at the times and in the manner specified by the City Representative.
- e) If there are changes, or portions of changes, for which unit prices or force account rates are not applicable or specified, then the Contractor shall propose to the City Representative a fixed price for such changes or portions. Upon agreement by the City on the amount thereof, the proposed fixed price shall become the sum the Contractor shall be paid for such change or portion.
- f) If the Contractor and the City are unable to agree on a fixed price, then the Contractor shall be reimbursed its costs for performing the changes as directed by the City Representative, consistent with the following:

- i. wages, salaries and travelling expenses of the Contractor's employees while actually engaged on the Work, excluding any and all expenses of head office personnel;
 - ii. workers' compensation assessments, unemployment insurance premiums, pension plan payments and paid holidays;
 - iii. rental cost of machinery and equipment that is used in the performance of the Work, or an allowance for depreciation if owned by the Contractor;
 - iv. operation and maintenance costs for machinery and equipment used in the performance of the Work, other than costs of repairs arising out of defects existing before it was brought on to the Site;
 - v. cost of materials necessary for and incorporated into the Work or consumed in the performance of the Work;
 - vi. cost of premiums for all bonds and insurance;
 - vii. other expenses incurred by the Contractor as approved in advance by the City Representative for the proper performance of the Work;
 - viii. Subcontractor costs calculated in accordance with GC 8.2(f) (i to vii) above; and
 - ix. an allowance for profit and all other expenditures or costs, including overhead, general administration costs, financing and interest charges, and every other cost, charge and expense, in an aggregate amount that is equal to twenty percent of the expenses referred to in GC 8.2(f) (i to vii), and equal to ten percent of the expenses referred to in GC 8.2(f) (viii) above.
- g) Whenever the cost of any Work is to be determined in accordance with GC 8.2(f), the Contractor will establish and maintain records in accordance with GC 3.26.
- h) Pending final determination of cost, amounts not in dispute shall be included in progress payments.
- i) If the method of valuation of any increase cannot be promptly agreed upon, the City Representative shall determine the method of valuation and issue a written authorization for the change setting out the method of valuation.

8.3 Contingency Allowance

- a) The Contract Price includes the contingency allowance, if any, stated in the Contract Documents.

- b) Expenditures under the contingency allowance shall be authorized in the same manner as for a Change Order in accordance with GC 8, and the value shall be determined in accordance with GC 8.2.
- c) The unexpended portion of the contingency allowance shall be credited to, and paid to, the City as a condition of achieving Substantial Performance, unless otherwise agreed to by the City.

9. DISPUTE RESOLUTION

9.1 City Representative's Decision

- a) Where a Claim arises out of, or in connection with this Contract or the performance of the Work, whether during the performance of the Work or after its completion and whether before or after termination of this Contract, the Claim shall, in the first place, be referred in writing to the City Representative in accordance with this provision.
- b) A written notice stating the general nature of the Claim shall be delivered by the party making the Claim to the other party and to the City Representative promptly, and in no event later than seven (7) calendar days after the occurrence of the event giving rise to the Claim. Any Work for which a Claim has been made, shall be kept readily accessible and shall not be covered up without the express permission of the City Representative.
- c) Notice of the extent of the Claim with supporting data shall be delivered within fourteen (14) calendar days after such occurrence. The Contractor shall keep contemporaneous records as may reasonably be necessary to support the Contractor's Claim, which may be inspected by the City Representative, as he deems necessary.
- d) The City Representative shall review the information submitted, consult with the parties and make reasonable efforts to obtain agreement between the City and the Contractor regarding the Claim. The parties agree that, both during and after the performance of the Work, each of them shall use their best efforts to resolve any disputes arising between them by amicable negotiations, and shall provide frank, candid and timely disclosure of all relevant facts, information and documents to facilitate those negotiations. The City Representative may request the parties to refer the matter to more senior levels of management within their organizations, in an effort to resolve the Claim.
- e) Where the City and the Contractor reach an agreement on the Claim, the City Representative will, where appropriate, prepare a Change Order for the City's

approval, which shall be sufficient to effect a change in this Contract, in accordance with the terms of the Change Order and the Contract Documents.

- f) If the City and the Contractor cannot reach an agreement regarding the Claim, the City Representative shall decide the matter and notify the parties in writing of his decision, within fourteen (14) calendar days of the last submission, and in no event later than thirty (30) calendar days following the date of the occurrence giving rise to the Claim. Valuation of Adjustments in the Contract Price shall be determined by the City Representative in accordance with GC 8.2.
- g) Unless this Contract has already been terminated, the Contractor shall, in every case, proceed with the Work with all due diligence and the City and the Contractor shall give effect forthwith to every such decision of the City Representative unless and until the same shall be revised, as hereinafter provided.
- h) Where either party disputes the decision of the City Representative or where the City Representative fails to notify the parties of his decision in accordance with GC 9.1(f) then either party may, within fourteen (14) calendar days, notify the other party of its intention to refer the matter to the Referee in accordance with GC 9.2 or Arbitrator in accordance with GC 9.3, as application. No referral may be made unless such notice is given. Notices shall be copied to the City Representative for information.
- i) If the City Representative has given notice of his decision as to a matter in dispute to the parties and no notice of intention to refer the matter to the Referee has been given by either the City or the Contractor within thirty (30) calendar days, the City Representative's decision shall become final and binding upon the parties.
- j) No act by the claimant shall be construed as a renunciation or waiver of any of its rights or recourses provided the claimant has given the required notices and carried out the instructions specified. The presentation of a Claim shall not be grounds for delay or interruption of the Work.

9.2 Appointment of Referee

- a) If the City and the Contractor agree to appoint a Referee, the City and the Contractor shall name, within thirty (30) calendar days of the parties signing this Contract, a Referee who may be called upon during the performance of, or after the completion of the Work, to settle any Claims or disputes arising under this Contract. Where the Referee appointed in accordance with this provision refuses to act, is incapable of acting or dies, the parties shall name a new Referee at the earliest opportunity. Should the parties be unable to agree on a Referee within the time specified, the City Representative whose decision shall be final, shall name a Referee.

- b) Where either party has disputed a decision of the City Representative in accordance with GC 9.1(h), the Referee shall review the decision of the City Representative and may, if he deems it appropriate, require the parties to supply him with further information or documentation, giving each party an opportunity to respond. The Referee may inspect the Work after giving reasonable notice to each party of the time he intends to do so.
- c) Not later than thirty (30) calendar days after receipt of the last documentary submission, where the matter has not been resolved in accordance with GC 9.2(b), the Referee shall issue his written decision with reasons to the parties.
- d) The costs of retaining the Referee shall be shared equally between the City and the Contractor, unless the Referee directs otherwise. The City may deduct such costs assessed against the Contractor by the Referee, from any amount due and payable by the City to the Contractor under this Contract.

9.3 Appointment of Arbitrator

- a) If the parties agree to appoint a Referee, then within fourteen (14) calendar days after the Referee has rendered his decision, either party may, by written notice to the other party and to the City Representative for information, refer the decision of the Referee to arbitration pursuant to this GC 9.3. If the parties have not agreed to appoint a Referee, then within the fourteen-day period referred to in GC 9.1(h), either party may refer to decision of the City Representative to arbitration pursuant to this 9.3. Upon any such referral, the parties shall appoint a single Arbitrator, for arbitration in accordance with the Arbitration Act, R.S.N.W.T. 1988, c. A-5, as duplicated for Nunavut by s. 29 of the Nunavut Act, subject to the following provisions:
 - i. the Arbitrator shall have the authority to call upon the Referee to give evidence during the arbitration proceedings, including all documentation prepared by the Referee or reviewed by him;
 - ii. the decision of the Arbitrator shall be final and binding upon the parties who covenant that their disputes shall be so decided by arbitration alone and not by recourse to any court by way of action at law;
 - iii. arbitration proceedings may be commenced prior to or after completion of the Work, provided that the obligations of the City, the City Representative and the Contractor shall not be altered by reason of the arbitration being conducted during the progress of the Work;
 - iv. before the arbitration proceeds on the substantive issues, a budget for the proceedings shall be established by the Arbitrator and each party shall deposit, as security for costs, a sum equal to half of such budget with the Arbitrator,

who shall thereupon deposit such funds in an interest bearing trust account with a chartered bank. Subject to the award and payment of costs as hereinafter provided, the balance of the security deposits and interests shall be properly returned to the respective parties; and

- v. the cost of arbitration may be awarded against the parties hereto or against any one of them as the Arbitrator may decide.
- b) If a Claim involves the Work of a Subcontractor, either the City or the Contractor may join such Subcontractor as a party to the arbitration between the City and the Contractor. The Contractor shall include in all its subcontracts specific provision whereby its Subcontractors consent to being joined in an arbitration between the City and the Contractor involving the Work of such Subcontractors. Nothing in this provision nor in the provision of such subcontracts consenting to joinder shall create any claim, right or cause of action in favour of the Subcontractors as against the City or the City Representative, that does not otherwise exist.
- c) If no notice is received within the time limits set out or referred to in GC 9.3(a), the decision of the Referee shall be final and binding on the parties.
- d) The Contractor agrees that it shall join other arbitration proceedings with respect to the Project, as requested in writing by the City.

9.4 Adherence to Provisions

- a) The provisions, including without limitation, procedure and sequences, outlined in GC 9.1 to 9.3 for the resolution of disputes shall be strictly adhered to by both parties.

10. WITHDRAWAL, SUSPENSION AND TERMINATION

10.1 Withdrawal of the Work

- a) After giving the Contractor seven (7) calendar days written notice within which the Contractor may remedy any delay or default specified, the City may, through the City Representative, withdraw the Work from the Contractor where the Contractor is not diligently performing the Work to the satisfaction of the City Representative or has not completed the Work within the time specified in this Contract.
- b) On withdrawal of the Work, the City may:
 - i. take possession of all plant, equipment and materials on the Site and ordered by the Contractor for the Work but not yet delivered to the Site; and
 - ii. complete the Work withdrawn from the Contractor.

- c) Withdrawal of the Work by the City does not terminate this Contract and does not relieve the Contractor of its obligation to complete the remainder of the Work.
- d) The Contract Price will be reduced by the value of the Work withdrawn, as determined by the City Representative. The Contractor shall be liable to the City for all extra costs incurred by the City to complete the Work withdrawn from the Contractor, including all amounts set out in GC 10.3(d) notwithstanding that the Contractor may not be in default hereunder, and the City may deduct such costs from payments owing to the Contractor under this Contract.

10.2 Suspension of the Work

- a) The City may through the City Representative suspend the progress of the Work at any time by giving the Contractor a written notice, which shall include the reason for the suspension.
- b) Where such a suspension results in a delay in the progress of the Work, the rights of the parties shall be determined in accordance with GC 6.2(a)(i), (ii) or (iii) as applicable, and shall be based on the reason for the suspension.
- c) During the period of suspension, the Contractor shall protect, preserve and maintain the Work in a manner satisfactory to the City and shall not remove any part of the plant, equipment and materials from the Site without the prior written consent of the City.
- d) Following the suspension, the Construction Schedule shall be revised by the Contractor, for approval by the City, and the Work shall be completed as provided in the revised schedule.
- e) Where the Work or any part thereof is suspended on the written instructions of the City and if permission to resume Work is not given by the City within a period of thirty (30) calendar days from the date of suspension, the Contractor may request permission from the City to proceed with the Work. If the City does not grant permission within fourteen (14) calendar days' receipt of the Contractor's written request, the Contractor may elect to treat the suspension, where it affects only part of the Work, as an omission of such Work by giving a further notice to the City to that effect or, where it affects the whole of the Work, treat this Contract as having been cancelled by the City, in accordance with GC 10.4.

10.3 Termination by City

- a) Without limitation, any or all of the following actions by or circumstances relating to the Contractor shall constitute default on the part of the Contractor:

- i. committing or threatening to commit any act of insolvency or bankruptcy, voluntary or otherwise;
 - ii. having a receiver appointed on account of insolvency or in respect of any property;
 - iii. making a general assignment for the benefit of creditors.
 - iv. failing to comply with or persistently disregarding statutes, regulations, bylaws or directives of competent authorities relating to the Work.
 - v. failing to comply with any requests, instruction or direction of the City Representative;
 - vi. failing to pay accounts relating to the Work as they come due.
 - vii. failing to prosecute the Work with skill and diligence.
 - viii. assigning or subletting this Contract or any portion thereof without the required consent from the City.
 - ix. failing or refusing to correct defective or deficient Work; and
 - x. being otherwise in default in carrying out any of its obligations under this Contract, whether such default is similar or dissimilar in nature to the causes listed previously.
- b) The Contractor shall immediately advise the City in writing of any default listed in GC 10.3(a)
- c) If the Contractor is in default under this Contract, the City shall be entitled to any or all of the following:
- i. take possession of all Work in progress, materials and construction equipment at the Site, at no additional charge for the retention or use of the construction equipment;
 - ii. eject and exclude from the Site all personnel of the Contractor and any Subcontractor;
 - iii. terminate the City's utilization of the Contractor to perform the Work;
 - iv. finish the Work by whatever means the City may deem appropriate under the circumstances; and

- v. withhold any further payments to the Contractor until the Contractor's liability to the City is ascertained.
- d) The Contractor shall be liable to the City for:
 - i. the extra expense of finishing the Work, including compensation to the City for additional engineering, managerial and administrative services;
 - ii. the cost of correcting deficiencies in that portion of the Work performed by the Contractor; and
 - iii. all other loss, damage and expense occasioned to the City by reason of the Contractor's default,and the City may deduct such amounts from payments owing to the Contractor under this Contract.
- e) Any action by the City under this GC 10.3 shall be without prejudice to the City's other rights or remedies under any security held by the City for performance of this Contract by the Contractor.

10.4 Contract Cancellation

- a) The City shall have the right which may be exercised from time to time, with or without cause, and on fourteen (14) calendar days' written notice to the Contractor, to cancel any uncompleted or unperformed portion of the Work. In the event of such cancellation, the Contractor shall be entitled to the following:
 - i. reimbursement at this Contract rate for all items completed and delivered;
 - ii. reimbursement for the costs to the Contractor for Work in progress and expenses incurred in the course of the Work, plus a reasonable return on such costs and expenses; and
 - iii. reimbursement for costs and expenses directly caused by the cancellation.
- b) Title to all Work for which reimbursement is made shall vest in the City.
- c) The City shall not be liable to the Contractor for indirect loss, consequential loss, loss of business opportunity or loss of anticipated profit on the cancelled portion or portions of the Work.
- d) This section shall not apply to situations in which the City is entitled to terminate this Contract by reason of default by the Contractor.

10.5 Termination by Contractor

- a) If the City should be adjudged bankrupt, or makes a general assignment for the benefit of creditors because of the City's insolvency, or if a receiver is appointed because of the City's insolvency, the Contractor may, without prejudice to any other right or remedy the Contractor may have, by giving the City or receiver or trustee in bankruptcy notice in writing, terminate this Contract.
- b) If the Work should be stopped or otherwise delayed for a period of thirty (30) calendar days or more under an order of a court or other public authority and providing that such order was not issued as the result of an act or fault of the Contractor or of anyone directly or indirectly employed or engaged by the Contractor, the Contractor may, without prejudice to any other right or remedy the Contractor may have, by giving the City notice in writing, terminate this Contract.
- c) If the Contractor terminates this Contract under the conditions set out above, the Contractor shall be entitled to be paid for all work performed including reasonable profit, for loss sustained upon products and construction machinery and equipment, and such other damages as the Contractor may have sustained as a result of the termination of this Contract.

11. BONDS AND WARRANTY

11.1 Obligations to Provide Contract Security

- a) The Contractor shall promptly provide to the City the surety bonds called for in the Contract Documents, not later than ten (10) business days following receipt by the Contractor of the letter of acceptance.
- b) Such bonds shall be issued by a duly licensed surety company authorized to transact the business of suretyship in Nunavut and shall be maintained in good standing until the fulfillment of this Contract.
- c) Prior to or at the time of making a Claim under such bonds, the City shall send written notification to the Contractor, stating the nature of the default for which a Claim is being made.

11.2 Prescription of Acceptable Contract Security

- a) The Contractor shall deliver to the City:
 - i. a performance bond and a labor and material payment bond each in an amount that is equal to and not less than fifty percent of the Contract Price referred to in the Articles of Agreement; or

- ii. a security deposit in an amount that is equal to ten percent of the Contract Price referred to in the Articles of Agreement.
- b) The performance bond and the labor and material payment bond referred to in GC 11.2(a)(i) shall be in a form as approved by the Federal Treasury Board (Federal Contracts).
- c) A security deposit referred to in GC 11.2(a)(ii) shall be in a form of:
 - i. an irrevocable letter of credit in a form acceptable to the City and from a bank and branch acceptable to the City; or
 - ii. a certified cheque or bank draft from a bank acceptable to the City and made payable to the City.
- d) Should the Contractor's irrevocable letter of credit be scheduled to expire prior to the Completion Date set out in the Articles of Agreement, the City may, at any time within the fourteen (14) calendar days prior to the expiry date, call upon and draw down the irrevocable letter of credit, unless the Contractor presents a renewal thereof with an expiry date beyond the anticipated date for Final Completion, as determined by the City Representative.

11.3 Return of Security Deposit

- a) Following issuance of the certificate of Substantial Performance, the City may, in its absolute discretion, release all or part of the security deposit referred to herein.
- b) Following issuance of the certificate of Final Completion, the Contractor shall, subject to the terms of this Contract, be entitled to the remainder of any security deposit.
- c) Interest shall not be paid on security deposits.

11.4 Warranty

- a) The Contractor warrants and guarantees that the Work is and shall be free from all defects or deficiencies in, or arising from, materials or workmanship in any part of the Work for the period of one year from the date of Substantial Performance of the Work, as certified by the City Representative, or such longer period as may be specified in the Contract Documents for certain products or Work.
- b) The Contractor shall promptly correct, at its own expense, defects or deficiencies in the Work which appear prior to and during the warranty described in GC 11.4(a). The Contractor shall correct and pay for all damages resulting from corrections made under this provision.

- c) Work performed to correct defects or deficiencies shall be warranted and guaranteed to be free from defects or deficiencies, on the same basis as the original Work, for a period of one year from the day said work was completed.
- d) The City or the City Representative shall promptly give the Contractor written notice of observed defects and deficiencies.
- e) If any defects or deficiencies in the Work appear at any time prior to the end of the warranty period, the City Representative may instruct the Contractor to search for the cause thereof. If such defect or deficiency is one for which the Contractor is liable, the cost of the Work carried out in searching shall be at the Contractor's expense, and it shall in such case remedy such defect or deficiency at its own cost; otherwise it shall be at the City's expense.
- f) In an emergency or to prevent an emergency or if the Contractor neglects for any reason to correct defects or deficiencies within a reasonable time, the City may perform the Work or direct another party, on the City's behalf, to do the Work. All costs associated with the correction of such defects or deficiencies shall be paid for by the Contractor and the City may deduct such costs from amounts owing to the Contractor.

12. INDEMNIFICATION AND INSURANCE

12.1 Indemnification by Contractor

- a) The Contractor shall defend, indemnify and save harmless the City and the City Representative, their agents and employees from and against all claims, demands, losses, costs, damages, actions, suits, or proceedings arising out of or attributable to the Contractor's performance of the Work, or by reason of any matter or thing done, permitted or omitted to be done, by the Contractor, its Subcontractors, its Suppliers or their agents or employees, whether occasioned by negligence or otherwise. Such indemnity shall survive completion or termination of this Contract.
- b) Nothing contained in the Contract Documents or any approval, express or implied, of the City Representative or City shall relieve the Contractor of any liability for latent defects or any liability which may be imposed by law.

12.2 Indemnification by City

The City shall, subject to any law that affects the City's rights, powers, privileges or obligations, indemnify and save the Contractor harmless from and against all claims, demands, losses, costs, damages, actions, suits or proceedings arising out of his activities under this Contract that are directly attributable to:

- a) lack of or a defect in the City's title to the Site whether real or alleged; or
- b) an infringement or an alleged infringement by the Contractor of any patent of invention or any other kind of intellectual property occurring while the Contractor was performing any act for the purposes of this Contract employing a model, plan or design or anything related to the Work that was supplied by the City to the Contractor.

12.3 Policies of Insurance

Without restricting the generality of GC 12.1, the Contractor shall provide and maintain the insurance coverages listed in this provision. Unless otherwise stipulated, the duration of each insurance policy shall be from the date of commencement of the Work until the date of issuance of the certificate of Final Completion. Prior to commencement of the Work, the Contractor shall provide the City with confirmation of coverage in the format attached as Appendix A to these General Conditions, and, if required, a certified true copy of the policies certified by an authorized representative of the Insurer. The Contractor shall ensure that any Subcontractors comply with the insurance requirements outlined in this GC 12. The insurance coverages required are as follows:

a) General Liability Insurance

Contractor's comprehensive general or commercial general liability insurance shall have limits of not less than five million dollars (\$5,000,000) per occurrence with a property damage deductible not exceeding two thousand five hundred dollars (\$2,500). The insurance provided shall be no less broad than the insurance provided by IBC Form 2100 or its equivalent replacement and shall include a standard non-owned automobile policy including a blanket contractual liability endorsement. To achieve the required limit, umbrella or excess liability insurance may be used. All liability coverage shall be maintained for completed operations hazards from the date of Final Completion of the Work, as set out in the certificate of Final Completion, on an ongoing basis for a period of not less than six years from the date of such certificate. The City shall be added as an additional insured with respect to liability arising out of the operations of the named insured. The policy shall be endorsed to provide the City with not less than thirty (30) calendar days' written notice in advance of any cancellation, change or amendment restricting coverage.

b) Automobile Liability Insurance

Automobile liability insurance in respect of licensed vehicles shall have limits of not less than five million dollars (\$5,000,000) inclusive per occurrence for bodily injury, death, and damage to property and covering all licensed vehicles owned or leased by the Contractor, endorsed to provide the City with not less than fifteen (15) calendar days' written notice in advance of any cancellation, change or amendment restricting coverage.

c) Property and Boiler and Machinery Insurance

- i. “All risks” property insurance shall be in the joint names of the Contractor, the City and the City Representative, insuring not less than the sum of the amount of the Contract Price and the full value of all labour, tools, equipment and materials that are to be provided by the City for incorporation into the Work, with a deductible not exceeding two thousand five hundred dollars (\$2,500). The insurance provided shall be no less broad than the insurance provided by IBC Form 4042 or its equivalent replacement. The policy will contain a waiver of rights of subrogation against all those insured by the policy. Such coverage shall be maintained continuously until the date the certificate of Final Completion is issued or an earlier date specified by the City;
- ii. the policy will allow for partial or total use or occupancy of the Work. If because of such use or occupancy the Contractor is unable to provide coverage, the Contractor shall notify the City in writing prior to such use pay for property and, if necessary, boiler insurance insuring the full value of the Work as in (i) above, including coverage for such use or occupancy and shall provide the Contractor with proof of such insurance. The Contractor shall refund to the City the unearned premium applicable to the Contractor’s policy upon termination of coverage;
- iii. where, due to the nature of the Work, the full insurable value of the Work is substantially less than the Contract Price, the City may, at its sole discretion, reduce the amount of insurance required or waive the course of construction insurance requirement;
- iv. where such risks exist, the Contractor shall provide boiler and machinery insurance insuring not less than the replacement value of boilers, pressure vessels and other objects insurable under a boiler & machinery policy and forming part of the Work.
- v. the policies shall provide that, in the event of a loss or damage, payment shall be made to the City and the Contractor as their respective interests may appear. The Contractor shall act on behalf of the City for the purpose of claiming the amount of loss or damage from the Insurers. When the extent of the loss or damage is determined, the Contractor shall proceed to restore the Work. Loss or damage shall not affect the rights and obligations of either party under this Contract except that the Contractor shall be entitled to such reasonable extension of Contract Time relative to the extent of the loss or damage in accordance with the terms of this Contract; and
- vi. the Contractor shall be responsible for deductible amounts under the policies except where such amounts may be excluded from the Contractor’s responsibility in accordance with the Contract documents.

d) Aircraft and Watercraft Liability Insurance

Where such risks exist, the Contractor shall obtain aircraft and watercraft liability insurance with respect to owned or non-owned aircraft and watercraft if used directly or indirectly in the performance of the Work, including use of additional premises, and shall have limits of not less than two million dollars (\$2,000,000) inclusive per occurrence for bodily injury, death and damage to property including loss of use thereof, and limits of not less than two million dollars for aircraft passenger hazard. Such insurance shall be in a form acceptable to the City. The policies shall be endorsed to provide the City with not less than fifteen (15) calendar days' written notice in advance of any cancellation, change or amendment restricting coverage.

e) Contractor's Equipment Insurance

The Contractor shall give proof of insurance in a form acceptable to the City of "all risks" Contractor's equipment insurance covering construction machinery and equipment used by the Contractor for the performance of the Work, including boiler insurance on temporary boilers and pressure vessels. The insurance shall be in a form acceptable to the City and shall not allow subrogation claims by the insurer against the City. The policies shall be endorsed to provide the City with not less than fifteen (15) calendar days' written notice in advance of cancellation, change or amendment restricting coverage.

f) Other Insurance

The Contractor shall provide, maintain and pay for any additional insurance required to be provided by law, or which the Contractor considers necessary to cover risks not otherwise covered by insurance specified in the Contract Documents.

12.4 Insurance General

- a) All required insurance policies shall be with insurers licensed to underwrite insurance in Nunavut and signed by representatives licensed to do so for insurance in Nunavut.
- b) The Contractor shall require and ensure that its Subcontractors maintain liability insurance comparable to that required above.
- c) If the Contractor fails to provide or maintain insurance as required by this General Condition or elsewhere in the Contract Documents, then the City shall have the right to provide and maintain such insurance and give evidence to the Contractor and the City Representative. The Contractor shall pay the cost thereof to the City on demand or the City may deduct the costs from monies which are due or may become due to the Contractor.

- d) Where an insurer fails or refuses to pay any claims under an insurance policy covering the activities of the Contractor or a Subcontractor relating to or arising out of the Work, the Contractor shall not be released from any liability arising under this Contract.

13. LOCAL AND INUIT INVOLVEMENT

13.1 Requirements for Inuit, Local and Nunavut Content

- a) The Contractor shall, in the performance of the Work, employ Inuit, Local and Nunavut workers and use Inuit, Local and Nunavut content to the greatest extent possible and at a minimum, no less than the amounts tendered by the Contractor in Appendix J-2 “Substantiation of Bid Adjustment” of the tender. Workers shall meet all levels of proficiency, qualification and expertise as dictated by Applicable Laws and/or as defined in the Contract Documents.
- b) The Contractor shall provide to the City Representative a schedule indicating the anticipated total monthly value of all Inuit, Local and Nunavut content and labour to be expended in the execution of the Work. This schedule shall provide the benchmark for ensuring compliance by the Contractor with the requirements for the use of Inuit, Local and Nunavut content during the performance of the Work.

13.2 Requirement for Community Meetings

- a) If required under this RFT (if the NNI Policy applies), The Contractor shall arrange meetings on a monthly basis, or other basis as may be mutually agreed by the parties to this contract, to monitor the use of Inuit, Local and Nunavut labour and Inuit, Local and Nunavut content. The Contractor shall give the City five (5) business days’ notice of all meetings called under GC 13.2. The Contractor shall take reasonable steps to ensure that these meetings include the following representatives:
 - i. a community representative who has been designated to speak on behalf of the community (if available);
 - ii. a community manpower representative (if available);
 - iii. the Contractor; and
 - iv. the City Representative.
- b) In addition to the community meetings contemplated in GC 13.2(a), the Contractor shall arrange a community meeting prior to the start of the Work which shall be arranged on the same terms as indicated in GC 13.2(a) and at that meeting shall:

- i. provide a schedule referred to in GC 13.1(b) above to the community representative;
 - ii. request from the community manpower representative or from the City if no community manpower representative has been delegated, a list of workers available in the community; and
 - iii. identify specific types of workers required during the project such as plumbers, painters or electricians and how many of those workers are required and when they are required and based on information received in accordance with GC 13.2(b)(ii) maintain a list of community manpower.
- c) At the community meetings contemplated in GC 13.2(a), the Contractor shall:
 - i. provide employment reports identifying workers used during the past month (to substantiate information provided on Appendix J-2 “Substantiation of Bid Adjustment”);
 - ii. provide a schedule referred to in GC 13.2(b)(i), or such schedule as amended, if necessary; and
 - iii. provide a consolidated report at the time of Substantial Performance, which shall confirm the total amount of Inuit, Local and Nunavut content used. This report will identify Inuit, Local and Nunavut payroll separately. This consolidated report shall be a condition precedent to the release of payment.
- d) The City shall attend all community meetings organized by the Contractor in accordance with this GC 13.2 and when requested by the Contractor shall identify and contact potential community workers who may be available to be employed on the Work, identify alternate workers if those workers initially identified are not available to work, and assist in confirming the residency of local workers.

13.3 Monitoring the Level of Inuit, Local and Nunavut Labour

- a) The Contractor is responsible to ensure that every worker identified as Local or Nunavut meets the qualifying requirements, which are, for Nunavut, being ordinarily resident in Nunavut for the past 12 months, and for Local being a Nunavut resident ordinarily resident in the subject community for the past 4 months. The Contractor may be required to provide proof of residency of workers at any time throughout the course of performing the Work.
- b) Reasonable proof of Nunavut and Local residency shall be any of the following:

- i. being listed on the Nunavut Tunggavik Inc. (NTI) enrolment list and provision of a physical address where residing;
 - ii. if the last 12 months have been spent as ordinarily resident in Nunavut and a physical address of such residence has been provided, then
 - A. provides a valid Nunavut Health Care Card effective at least 9 months prior to start date of employment on the Work; and/or
 - B. provides another accepted proof of residency such as: a Nunavut General Hunting License, a Nunavut Driver's Licence, a lease or rental receipt, or a certified Schedule T222 Income Tax return from the previous year or proof that Income Tax was paid in the Nunavut during the previous tax year; or
 - iii. is included on a list of approved Local or Nunavut residents verified by the municipality of their residence.
- c) The Contractor is responsible to ensure that every worker identified as Inuit is on the NTI Inuit enrolment list or would qualify to be on the list.
- d) If requested by the City to do so, the Contractor shall obtain a signed consent form from workers which verifies their residency and permits the City to obtain any and all information required to support the worker's claim of residency and/or Inuit status. A worker does not need to comply with the requirements of this clause if the worker is on the NTI Inuit enrolment list.

13.4 Requirement for Using Hotels or Bed and Breakfast

- a) If performance of the Work is undertaken where a Commercial Room and Board Facility (as defined below) exists within a Community (as defined below), the Tenderer is required to use a Commercial Room and Board Facility to house and feed all workers directly employed by the Contractor, any Subcontractor or agent or any other business working on the Project. The Contractor, Subcontractor, agent or other business are not required to use Commercial Room and Board Facilities for workers who are Local Residents.
- b) In this Contract:
 - i. "Commercial Room and Board Facility" means a Hotel or a Bed and Breakfast (Tourist Home) that holds a Tourist Establishment License issued by the Government of Nunavut under the *Travel and Tourism Act*.
 - ii. "Community" means a community in which the Work (as defined in the Contract) is being performed and includes the entire area within a 20- kilometer radius of that community.

- c) The Commercial Room and Board Facility must:
 - i. meet the applicable requirements under the *Public Health Act*, and of the *Eating or Drinking Place Regulations*; and
 - ii. meet all applicable requirements of the *Public Health Act* the *Fire Prevention Act* and applicable regulations thereunder, and any other applicable Government of Nunavut or federal legislation.

14. TRANSPORTATION OF MATERIALS

14.1 Marine Transport Resources

- a) Whenever marine (water) transport is to be utilized, the Contractor may use, and space may be booked directly with the following carrier:
 - i. Nunavut Sealink and Supply (NSSI),
By ships loading at the Montreal area Port of Ste-Catherine
 - ii. Nunavut Eastern Arctic Shipping (NEAS)
By ships loading at the Port of Valleyfield, Salaberry-de-Valleyfield
- b) The annual shipping rates offered by marine carriers are dependent upon anticipated cargo quantities including the materials for construction projects; therefore, Contractors may tender using the published sailing schedules and rates available from the above marine carriers.
- c) In exceptional or extraordinary circumstances, where the specified marine carrier's sailing schedule is in substantial conflict with the Construction Schedule, the City will review the circumstances, taking into account the adverse impact on the project and the specified marine carrier's interests, and the City may provide authorization to allow the relevant cargo to be shipped with a marine carrier other than the specified marine carrier, depending upon the circumstances; and such authorization must be in writing.
- d) If a Contractor uses a marine carrier other than the City contracted marine carrier without the City's written authorization to do so, the Contractor shall be responsible for extra freight cost, administrative costs or any other costs, incurred by the City which result directly or indirectly from the Contractor's failure to use the City specified marine carrier as set out in this GC 14. The Contractor shall also be responsible to refund to the City any monies saved by the Contractor by using a marine carrier other than the specified marine carrier as set out in this GC 14.

END OF SECTION

Amend the General Conditions as follows:

1. COVID-19 Restrictions and Protocols

1. All Tenderer's shall abide by the CMM Guidelines and measures. Due to current travel restrictions, local personnel shall be used where possible, unless measures mandated by local Health Authorities are implemented (e.g. selfisolation, social distancing, etc.)
2. Tenderers are to review the current travel restriction orders, self isolation orders and other regulations put forth by the Government of Nunavut and local health authorities. Tenderers to review the "Travel Restrictions Order #2", "Order Respecting Social Distancing and Gatherings #9" and "Protocol – Critical Employee and Isolation" orders provided in Part 7 – Other Reference Documents. Current regulations and information can be found on the GN website:

<https://gov.nu.ca/health/information/travel-and-isolation>
3. Tenderers are to provide all costs and assumptions to abide by the travel and work restrictions identified in Sections 2.1 and 2.2 above, that are required to complete the scope of work identified in the Tender Documents.
4. For the purposes of the Tender, it should be assumed that the project will be classified as an essential service, and that Contractors will require to follow the protocols for essential works in the documents listed above.

END OF SECTION



CONSTRUCTION SERVICES
PART V – SCOPE OF SERVICES



GENERAL:

PLEASE REFER TO THE ENCLOSED TECHNICAL SPECIFICATIONS & DRAWINGS



IQALUIT AQUATIC CENTRE - CHLORINE UPGRADE

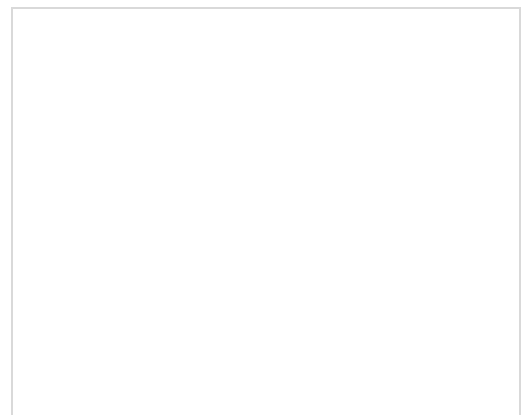
PROJECT NO.: 449b-001-22

MECHANICAL SPECIFICATION

Issued for Tender
January 31st, 2023

200 – 638 Smithe Street
Vancouver, BC V6B 1E3

T 604-684-5995



PROFESSIONAL'S SEAL & SIGNATURE

COMMON WORKS

1. GENERAL

1.1 GENERAL SCOPE

- .1 'Provide' shall mean supply and install.
- .2 'consultant' shall mean a member group consulting professional engineers.
- .3 Provide complete, fully tested and operational systems to meet the requirements described herein and in complete accord with applicable codes and ordinances. All new equipment shall be fully integrated with existing equipment to provide a fully functioning system.
- .4 Contract documents and drawings are diagrammatic. They establish scope, material and installation quality but are not detailed installation instructions.
- .5 Follow manufacturers' recommended installation instructions, details and procedures for equipment, supplemented by requirements of the contract documents.
- .6 Before submitting tender, visit and examine the site and note all characteristics and features affecting the work. No allowances will be made for any difficulties encountered or any expenses incurred because of any conditions of the site or item existing thereon, which is visible or known to exist at the time of tender.
- .7 Clarifications or requests for alternate materials or equipment must be submitted in writing to the consultant no later than seven (7) working days prior to the mechanical trades' closing tender date. Approval of requests shall only be given by addendum.
- .8 Make reference to existing electrical, mechanical, structural and architectural drawings in addition to this set of new drawings when setting out work. Consult with respective divisions in setting out locations for ductwork, equipment, and piping, so that conflicts are avoided and symmetrical even spacing is maintained. Jointly work out all conflicts on site before fabricating or installing any materials or equipment.

1.2 CODE COMPLIANCE, PERMITS AND FEES

- .1 All work shall comply with current editions of the national, provincial and municipal codes, standards, acts and bylaws and will meet the requirements of the authority having jurisdiction.
- .2 Obtain all permits and pay all fees applicable to the scope of work. Contractor shall arrange for inspections of the work by the authorities having jurisdiction and shall provide certificates indicating final approval.

1.3 TENDER PRICE BREAKDOWN

- .1 Submit a tender price breakdown within thirty (30) days of tender closing and before first progress claim, in a format agreed to with the consultant. As a minimum include equipment, materials and labour for mechanical, plumbing, sheet metal, fire protection and controls.

1.4 SUBMITTALS

Comply with division 1 – submission and closeout procedures and in addition the following:

- .1 Contractor shall provide and submit to the consultant assurance of professional design and commitment for field review schedule s-b and assurance of professional field review and compliance schedule s-c for seismic engineering.

- .2 Shop drawings: provide shop drawings for all equipment as electronic files (file format: .dwg, .dxf, pdf, or comparable). When manufacturer's cut sheets apply to a product series rather than a specific product, the data specifically applicable to the project shall be highlighted or clearly indicated by other means. Each submitted piece of literature and drawings shall clearly reference the specification and/or drawing that the submittal is to cover. General catalogs shall not be accepted as cut sheets to fulfill submittal requirements.
- .3 closeout submittals: provide a minimum of two (2) mechanical operation and maintenance manuals and one digital copy, prepared by the tab contractor.
- .4 Operation and maintenance manual approved by, and final copies deposited with the consultant a minimum of 7-days before final inspection.
- .5 Operation and maintenance manual to include but not limited to: layman's description of the systems and associated controls; operational instructions, servicing, maintenance, operation and trouble-shooting instructions for each item of equipment; warranties; equipment manufacturer's performance datasheets indicating point of operation as left after commissioning is complete; testing, adjusting and balancing reports.
- .6 Site records: contractor shall maintain 1 set of white prints at contractors cost to mark changes as work progresses and as changes occur. Use different colour waterproof ink for each service. Do not use pencil or black ink. Transfer information weekly to show work as actually installed. Drawings shall be available for reference purposes and review.
- .7 Record drawings: use final site record to electronically produce cad and pdf files thus forming a "record drawing" set. Identify each drawing in lower right hand corner in letters at least 12 mm high as follows: - "record drawings: this drawing has been revised to show mechanical systems as installed" (signature of contractor) (date). Perform testing, adjusting and balancing for hvac using record drawings. Submit record drawings to consultant for approval and make corrections as directed. Perform testing, adjusting, and balancing for hvac using record drawings. Provide completed reproducible record drawings with final operating and maintenance manuals within two (2) weeks of substantial completion. Failure to submit drawings will result in the work being undertaken by the owner and deducted from the contractor's hold back amount. Cost to transfer record information onto reproducible media & auto-cad or revit are this contractor's responsibility. Consultant will release cad drawings to contractor after signing a copyright form. Should the contractor choose to utilize this consultant for transferring as built information to record drawings, allow \$400 / sheet for all drawings in the construction set. This will cover costs for drafting time & printing costs.

1.5 QUALITY OF WORK

All work shall be by qualified tradesmen with valid provincial trade qualification certificates. Spot checks will be made by the consultant. Work which does not conform to standards may be rejected by the consultant. The contractor shall redo rejected work to the accepted standard at no cost to the owner.

1.6 METRIC CONVERSION

All units are expressed in SI units. On all submittals (shop drawings etc.) Use the same si units as stated in the specification.

Where pipes are specified with metric dimensions and imperial sized pipes are available, provide equivalent nominal imperial sized pipe as indicated in the table, and provide at no extra cost adapters to ensure compatible connections to all metric sized fittings, equipment and piping.

When CSA approved SI metric pipes are provided, the contractor shall provide at no extra cost adapters to ensure compatible connections between the si metric pipes and all new and existing pipes, fittings, and equipment.

Equivalent nominal diameter of pipes

15MM = NPS ½

20MM = NPS ¾

25MM = NPS 1

30MM = NPS 1-1/4

40MM = NPS 1-1/2

50MM = NPS 2

65MM = NPS 2-1/2

75MM = NPS 3

100MM = NPS 4

150MM = NPS 6

200MM = NPS 8

The metric duct sizes are expressed as 25 mm = 1 inch.

1.7 DRAWINGS AND SPECIFICATIONS

Should any discrepancy appear between drawings and specifications obtain written clarification from the consultant during the tender period. Without a written clarification the better quality and/or greater quantity of work or materials shall be estimated, performed and furnished within the tendered price.

1.8 CUTTING, PATCHING AND CORING

Provide holes and sleeves, cutting and fitting required for mechanical work. Relocate improperly located holes and sleeves. All work shall be coordinated with other trades.

Obtain written approval from the structural consultant before cutting or burning structural members.

provide x-ray of all required penetrations of the floor. X-ray use for locating in floor rebar and conduit to be done after normal working hours. Take necessary precautions to protect computer equipment when x-raying floors. Coordinate with owner.

1.9 COMPLIANCE WITH ENERGY BY-LAW

All equipment installed on this project shall comply with the national energy code of canada for buildings – 2015, ashrae standard 90.1 – 2016 and the city of vancouver building by-law energy utilization requirements.

1.10 INSTALLATION OF EQUIPMENT

Pipe all equipment drains to building drains except systems containing glycol.

Unions and flanges shall be provided in piping or ductwork to permit easy removal of equipment.

Maintain permanent access to equipment for maintenance.

1.11 CONNECTIONS TO EXISTING SERVICES

Maintain liaison with the owner and provide a mutually acceptable schedule to interrupt, reroute, or connect to existing building services with the minimum of interruption of those services.

1.12 SELECTIVE DEMOLITION

Remove from site all equipment, ducting or piping which is no longer required because of work under this contract. Except as otherwise stated, salvageable materials from area of demolition shall become the property of the owner at his discretion.

The intent is for a haz-mat contractor to remove all asbestos containing material prior to the proposed project work taking place. Notify the consultant if asbestos containing material is suspected to remain on site.

1.13 EQUIPMENT AND MATERIALS

Where two or more products of the same type are required, products shall be of the same manufacturer.

Notify the consultant in writing ten (10) days prior to the tender close, any materials or equipment specified which is not currently available or will not be available for use as called for herein. Failing this, the contract will assume that the most expensive alternate has been included in the tender price.

Approved equivalents and/or alternatives to specified products shall be equal to the specified product in every respect, operate as intended, and meet the space, capacity, and noise requirements outlined.

The contractor shall be fully responsible for any additional labour and materials required by any trades or other contractors to accommodate the use of other than specified materials or equipment. The contractor shall bear any and all costs for design/system modifications to accommodate the "alternate" equipment. Extras will not be approved to cover such work.

1.14 DELIVERY, STORAGE AND HANDLING

Store materials and equipment in accordance with the manufacturer's recommendations in a clean, dry, well-ventilated area.

Replace defective or damaged materials with new.

1.15 FIRESTOPPING AND SMOKE SEALS

Provide firestopping system(s) to provide and maintain a fire resistance rating, as indicated on drawings and in accordance with UL, WH, ULC, CUL or FM design details for all mechanical work in divisions 21, 22, 23 and 25

For renovation projects, in addition to the necessary new penetrations, provide the firestopping for all existing mechanical assemblies where firestopping is damaged, discontinued or absent within the construction area.

All firestop system installations must meet the requirements of can4-s115-m or ulc s-115-m tested assemblies that provide a fire rating

a manufacturer's direct representative (not distributor or agent) shall be on-site during the initial installation of firestop systems to train appropriate contractor personnel in correct selection and installation procedures. This will be done per manufacturer's written recommendations published in their literature and drawing details.

1.16 ACCESS DOORS

Provide access doors for maintenance or adjustment of all parts of the mechanical system.

Provide 300 mm x 300 mm minimum size for inspection and hand access.

600 mm x 600 mm minimum size, larger if indicated on drawings, where entry is required and access is difficult.

1.17 GUARANTEE / WARRANTY

Furnish a written guarantee stating that all work executed in this contract will be free from defective workmanship and materials for a period of one (1) year from the date of substantial performance.

1.18 BALANCING

Balance exhaust fans and air outlets to air quantities indicated on the drawings and in this specification.

Submit a pdf copy of the report to the consultant within two (2) weeks after substantial completion. Failure to submit the report within the specified time will result in the work being done by the owner and the costs deducted from final payment.

Balancing shall be performed to the following:

AIR-TERMINAL OUTLETS	±10%
AIR-CENTRAL EQUIPMENT	±5%

Provide a drop test of all fire dampers and a letter/certificate confirming this work.

Cooperate with the balancing agency and make any corrections as required by balancing agency.

Provide balancing valves and dampers, pulleys, sheaves etc. As requested by the balancing agency and/or necessary to properly adjust or correct the systems to design flows, without additional cost to owner.

1.19 COMMISSIONING AND DEMONSTRATION

Be responsible for the performance and commissioning of all equipment supplied and re-used under divisions 22 and 23 including fans, pumps and tanks.

Confirm operation and review condition of all existing air valves, fan-coil units hrv and associated control devices in the renovated area. Submit report noting any remedial work required.

At the conclusion of commissioning, demonstrate the operation of the systems to the consultant and then to the owner's operating staff.

At the completion of the commissioning, testing, balancing and demonstration submit to the consultant a letter certifying that all work specified under this contract is complete, clean and operational in accordance with the specification and drawings.

1.20 FLASHING AND ROOF CURBS

Provide curbs, flash and counter flash as required where mechanical equipment passes through weather or waterproofed walls, floors and roofs.

1.21 SEISMIC CONTROL

Provide seismic restraints for all required equipment, piping, and ductwork in accordance with the latest edition of the seismic restraints manual for mechanical systems produced by smacna, and the latest edition of the ashrae application handbook chapter 49, seismic restraints.

the contractor shall retain the services of a qualified professional seismic engineer (seismic engineer) registered in the Territory of Nunavut. The seismic engineer shall design and review the installation of all seismic restraints as well as mechanical equipment and mechanical system

supports. The restraints and supports shall be specifically designed to fasten to the structure indicated in the contract documents and installed in the field. The complete design for these systems shall comply with all applicable building code requirements.

Seismic engineer shall provide and submit to the owner's consultant schedule 3-B: letter confirming engagement.

Submit shop drawings of all seismic restraint details prepared and sealed by the seismic engineer. Prior to substantial completion, the seismic engineer shall visit the site and verify the seismic restraint installation as required to satisfy the assurance of professional field review and compliance schedule [c-b] [c-2] of the building code.

The contractor shall obtain approval for the location of all restraint fixing points from the structural engineer, on site, prior to installation.

Where equipment is mounted on spring or resilient mounts for vibration isolation it shall be the responsibility of the manufacturer of the mount to incorporate seismic restraint. Provide steel frame bases where necessary to achieve this and also avoid overturning. The manufacturer shall supply certificates, signed by a professional engineer registered within the jurisdiction, verifying the design of the seismic restraints is in accordance with this section.

1.22 VIBRATION ISOLATION

Provide neoprene isolators for deflections 6mm (1/4") and under.

Provide either neoprene or steel spring isolators for deflections between 6mm and 12mm (1/2").

Provide steel spring isolators for deflections of 12mm (1/2") and over.

Provide adjustable limit stops for spring isolation mounts on equipment with operating weights substantially different from the installed weights

All spring isolators shall be "open spring" unless otherwise stated. Seismically rated housed spring isolators may be used in lieu provided that they meet this project's requirements for seismic restraint.

Select isolators in accordance with equipment weight distribution to allow for an average deflection meeting or exceeding the specified deflection requirements and so that no isolator has a deflection less than 80% of the static deflection specified. A minimum of 4 isolators are required for each piece of equipment, unless specified otherwise.

1.23 SUBSTANTIAL AND TOTAL PERFORMANCE

Prior to requesting an inspection for substantial performance, provide a complete list of items, which are deficient.

A certificate of substantial performance will not be granted unless the following items are completed and available to the owner's consultant:

- Schedule 3-B for seismic engineering.
- Fire stopping and fire damper test letter
- Draft operating/maintenance manuals have been submitted for review.
- All mechanical systems have been commissioned and are capable of operation with alarm controls functional and automatic controls in operation.
- Air and water systems have been balanced with draft report submitted to the consultant.
- Operating and maintenance demonstrations have been provided to the owner.
- Record drawings have been submitted.
- All previously identified deficiencies have been corrected and accepted.

- Prior to a total performance inspection provide declaration in writing that substantial performance deficiencies have been corrected and final tab reports and o&m manuals have been submitted.
- The consultant shall provide one (1) visitation for the purpose of total performance inspection. Subsequent visitations if required shall be at the expense of the contractor.

2. PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

Listed manufacturers are acceptable for their ability to meet the general design intent, quality and performance characteristics of the specified product. The list does not endorse the acceptability of all products available from the listed manufacturers/suppliers.

It remains the responsibility of the contractor to ensure the products supplied are equal to the specified products in every respect, operate as intended, and meet the performance specifications and physical dimensions of the specified product.

The contractor shall be fully responsible for any additional work or materials, to accommodate the use of equipment from the acceptable manufacturers and suppliers listed.

2.2 FIRESTOPPING AND SMOKE SEALS

Use the same manufacturer throughout the project and compatible materials for restoration work.

Provide fill material components for each firestopping system as needed. Use only components specified by the firestopping manufacturer for the designated fire-resistance-rated systems.

Acceptable manufacturers: 3M, HILTI, AD FIREBARRIER, TREMCO

2.3 PIPE HANGERS AND SUPPORTS

Provide hangers and supports to secure equipment in place, prevent vibration, protect against damage from earthquake, maintain grade, provide for expansion and contraction, and accommodate insulation.

Natatorium and chemical room(s): all hangers and supports shall be epoxy coated in the natatorium

Provide galvanized hangers and supports for all piping except hangers and supports shall be copper plated or epoxy coated for copper piping.

Toggle hangers and/or strap hangers shall not be used for pipe hangers.

Power actuated fasteners and "drop-in" anchors shall not be used.

Provide ring type hangers for piping up to nps 1½ and clevis type hangers for piping over nps 1½.

2.4 ACCESS DOORS

Drywall surface: extruded aluminum frame with gypsum board inlay and structural corner elements. Hinge to be concealed 2-point hinge, non-corroding with screwdriver operated cam latch.

Tile surface: universal design, stainless steel door (16ga) and stainless steel frame (18ga), door flush to frame, rounded safety corners, continuous concealed hinge, screwdriver operated cam latch, #4 satin stainless steel finish.

Plaster walls and ceiling: steel door (14ga) and steel frame (14ga), door flush to frame edge, expansion casing bead and 75 mm wide galvanized lath surround recessed 18 mm to receive

plaster, continuous concealed hinge, screwdriver operated cam latch, prime coat grey painted finish.

Fire rated walls non-combustible construction: uninsulated steel door (16ga) and steel frame (16ga), door flush to frame edge, 25mm mounting frame with masonry anchor straps, concealed self-closing hinge, flush key latch, prime coat grey painted finish, ulc rated 2 hour 'b' label.

Fire rated walls combustible construction: insulated steel door (20ga) for maximum 250°C rise after 30 minutes and steel frame (16ga), door flush to frame edge, 25mm mounting frame with masonry anchor straps, concealed self-closing hinge, flush key latch, prime coat grey painted finish, ulc rated 1-1/2 hour 'b' label.

Fire rated ceilings: 50mm insulated steel door (16ga) and steel frame (16ga), door flush to frame edge, 25mm mounting frame with masonry anchor straps, concealed upswing self-closing hinge, handle latch, white baked enamel finish, size 600mm x 600mm (24" x 24") ulc rated 2 hour 'b' label.

Ductwork: ultra low leakage type, flat oval design, galvanized steel frame (22ga), double skin galvanized steel door (22 ga) with 25mm insulation fully enclosed in panel, bulb type seal integrally fastened to door, lever cam locks. Provide stainless steel in lieu of galvanized steel in stainless steel ductwork.

Acceptable manufacturers: MAXAM, ACUDOR, MILCOR, CAN.AQUA, MIFAB, BILCO, BAUCOPLUS

2.5 IDENTIFICATION

Identify piping with labels and flow arrows. Provide identification at 15m (50ft) maximum intervals, before and after pipes passing through walls, at all sides of tees, behind access doors. Use brady b-500 vinyl cloth labels for non insulated pipes and b-350 for insulated pipes.

Provide 20mm (3/4") diameter brass tags, secure to valve stems with key chain. Provide a valve directory at all mechanical rooms, in the o&m manuals and a digital copy cross referenced with any associated controls nomenclature.

Each piece of equipment shall be identified with its equipment schedule identification, e.g. supply fan sf-1, cooling coil cc-1, pump p-1 with lamacoid plates having 6mm (1/4") minimum letter size.

Acceptable manufacturers: brady

2.6 VIBRATION ISOLATION

Neoprene washer/bushing: a one piece molded bridge bearing neoprene washer/bushing. The bushing shall surround the anchor bolt and have a flat washer face to avoid metal to metal contact. Use washer/bushing only on light-weight equipment.

Acceptable manufacturer: mason hg hemi grommet or equal

Neoprene pad isolators: neoprene or neoprene / steel / neoprene pad isolators. Minimum static deflection 2.5 mm (0.1") or greater.

Acceptable manufacturer: mason wmsw or equal

Rubber floor mounts: bridge bearing neoprene mountings. Minimum static deflection of 5mm (0.2") or greater and all directional seismic capability.

Acceptable manufacturer: mason raa or nd or equal

Spring floor mounts: spring isolators built into a ductile iron or steel housing to provide all directional seismic snubbing. The snubber shall be adjustable vertically and allow a maximum of 6mm (1/4") travel in all directions before contacting the resilient snubbing collars. Molded

neoprene cup or 1/4" (6mm) neoprene acoustical friction pad between the baseplate and the support. Spring diameters shall be no less than 0.8 of the compressed height of the spring at rated load. Springs shall have a minimum additional travel to solid equal to 50% of the rated deflection.

Acceptable manufacturer: mason sslfh or equal

Spring hangers: hangers shall consist of rigid steel frames containing minimum 32mm (1 1/4") thick neoprene elements at the top and a steel spring seated in a steel washer reinforced neoprene cup on the bottom. Provide a combination rubber and steel rebound washer as the seismic upstop for suspended piping, ductwork and equipment. Rubber thickness shall be a minimum of 6mm (1/4"). Colour coded springs, rust resistant, painted box type hangers. To maintain stability the boxes shall not be articulated as clevis hangers nor the neoprene element stacked on top of the spring.

Acceptable manufacturer: mason hd, hs or equal

Alternate vibration isolation acceptable manufacturers, korfund, vibro-acoustics

3. EXECUTION

3.1 PAINTING REPAIRS AND RESTORATION

Do painting in accordance with division 09 - interior painting. Prime and touch up marred finished paintwork to match original. Restore to new condition, finishes which have been damaged.

Clean exposed bare metal surfaces supplied under divisions 21, 22, 23 and 25. Apply at least one coat of corrosion resistant primer paint to all supports and equipment fabricated from ferrous metal.

3.2 DEMONSTRATION

Supply tools, equipment, personnel to demonstrate and instruct the operating, and maintenance personnel in operating, controlling, adjusting, trouble-shooting, and servicing of all systems and equipment during regular work hours, prior to acceptance.

3.3 FIRESTOPPING AND SMOKE SEALS

The owner's consultant shall conduct mandatory destructive reviews for each type of installation. Destructive testing shall be at the discretion of the owner's consultant and authority having jurisdiction.

Allow for destructive testing of 5% of fire stopping applications. Should installations not conform to manufacturer's listed assembly, an additional 25% of installations may be destructively tested and should there be more failures, the contractor will be responsible to remove all fire stopping products and reinstall products correctly, at no additional cost to the project.

Tag all penetrations and every 3 meters of joint seal with printed tags. Tags shall indicate product, system #, date installed, installed by: (name and phone number of subcontractor) and re-penetrated by & date.

Tags shall state: caution! Firestop - do not remove, puncture or discontinue unless prepared to re-seal immediately with specified product.

Comply with manufacturer's instructions for installation of through-penetration joint materials. Where possible, use metal sleeves for floor penetrations to prevent/mitigate the consequences of leakage or flooding.

Perform under this section patching and repairing of firestop caused by cutting or penetrating of existing firestop systems already installed by other trades.

3.4 PIPE HANGERS AND SUPPORTS

Pipe support spacing and hanger rod diameter shall be:

PIPE SIZE: NPS 1/2	ROD DIAMETER 9MM (3/8"), SPACING 1.8M (6')
PIPE SIZE: NPS 3/4 TO 1½	ROD DIAMETER 9MM (3/8"), SPACING 2.4M (8')
PIPE SIZE: NPS 2 TO 2½	ROD DIAMETER 9MM (3/8"), SPACING 3M (10')
PIPE SIZE: NPS 3 TO 4	ROD DIAMETER 16MM (5/8"), SPACING 3.6M (12')
PIPE SIZE: NPS 6 TO 12	ROD DIAMETER 22MM (7/8"), SPACING 4.3M (14')

3.5 PIPE PRESSURE TESTING

Advise consultant or project manager 48 hours minimum prior to performance of pressure tests. Hydrostatic test: 150% of working pressure, but not less than 860 kpa (125 psig). For pp-r piping, do not exceed 1034 kpa (150 psi). For pex piping, do not exceed 690 kpa (100 psi). Maintain test pressure without loss for 4 hours minimum unless specified for longer period of time in relevant mechanical sections.

Prior to tests, isolate equipment and other parts which are not designed to withstand test pressure or media.

Conduct tests in presence of construction manager or project manager.

Examine all joints for leaks and remake all leaking joints with new materials. Pay costs for repairs or replacement, retesting, and making good. Consultant to determine whether repair or replacement is appropriate.

Insulate or conceal work only after approval and certification of tests by authorities.

Pressure test all gas piping in accordance with csa b149.1. Purge all piping after pressure tests in accordance with csa b149.1.

Submit copies of pressure test reports for all sections of piping.

3.6 ACCESS DOORS

Provide all access doors required to access work installed by divisions 21, 22, 23 and 25. Be responsible for coordinating locations, cutting opening and installing panels. Any secondary supports, blocking etc. Will be by the ceiling or wall contractor. Ensure that equipment is within view and accessible for operating, inspecting, adjusting, servicing without using special tools.

3.7 VIBRATION ISOLATION

Neoprene washer/bushing: isolate variable frequency drive controller using neoprene washer/bushing isolators or soft grommets such that structure borne noise transmission to occupied space is less than airborne noise transmission.

Rubber floor mounts: mount in-line pumps on two (2) rubber floor mount isolators under each support foot. For equipment mounted on a slab on grade mount on rubber floor mount isolators unless otherwise specified. Provide protection of the rubber element from contact with oil in the mechanical room.

Spring floor mounts: isolate all floor or pier mounted equipment on spring floor mount isolators, unless otherwise specified.

Spring hangers: locate isolation hangers as near to the overhead support structure as possible. Installation shall permit hanger box or rod to move through a 30 degrees arc without metal to metal contact. All discharge ductwork runs for a distance of 15m (50') from the connected

equipment shall be isolated from the building structure by means of spring hangers. Spring deflection shall be a minimum of 19mm (0.75").

1. SECTION 22 51 13 – SWIMMING POOL PIPING

1.1 SUMMARY

- .1 Section includes:
 - .1 The installation of pool piping above & below grade.
 - .2 Installation of valves and accessories.
- .2 Related sections
 - .1 Read in conjunction with all architectural front-end documents. Note any discrepancies at time of bid.
 - .2 Common works
 - .3 22 51 16 – swimming pool pumps
 - .4 22 51 19 – swimming pool treatment
 - .5 Integrated automation control sequences
- .3 American society for testing and materials international, (astm).
 - .1 Astm d 1784, rigid poly (vinyl-chloride) (pvc) compounds and chlorinated poly (vinyl chloride) (cpvc) compounds.
 - .2 Astm d 2564, solvent cement for poly (vinyl-chloride) (pvc) plastic piping systems.
- .4 Canadian standards association (csa international).
 - .1 Csa-b137.3, rigid pvc pipe for pressure applications.
 - .2 Csa-b137.6, cpvc pipe, tube & fittings.
 - .3 Csa b137.4 hdpe high density poly-ethylene

1.2 MAINTENANCE

- .1 Extra materials:
 - .1 Furnish following spare parts:
 - .1 Butterfly valves: one per size installed.
 - .2 Ball valves: one per size installed.
 - .3 Valve handles: two of each size.
 - .4 Gaskets for flanges: one for every ten flanges.

2. PRODUCTS

2.1 PIPING MATERIAL

- .1 Chemical feed piping up to 25mm diameter:
 - .1 Suction side of pump polyethylene to csa b 137.1-m
 - .2 Discharge side of pump – pvc sch. 80 / pvc sch. 80 double containment piping. To astm d2467 specifications for pressure piping.
 - .3 Bulk feed piping: pvc schedule 80 to csa-b137.3

2.2 JOINTS & FITTINGS

- .1 Solvent weld for pvc: to astm d2564.

- .2 Solvent weld for abs: to astm d2235.
- .3 Compression fitting for polyethylene tubing
- .4 Galvanized pipe - teflon tape: for threaded joints.
- .5 Copper pipe - solder: 95/5 - tin copper alloy: lead free.
- .6 Flanged connections to all equipment or dissimilar materials
- .7 Saddle tees not to be use below or above grade.

2.3 VALVES:

- .1 Ball valves:
 - .1 Pool water up to 50 mm:
 - .1 All pvc ball valves are to be "safe-bloc" (or equal) with epdm seals and cushioned teflon ball seats.
 - .2 Carriers for teflon seats will be screw-in type internally adjustable from both ends.
 - .3 Pvc compound will be type i, grade 1, cell classification 12454-a, with minimum suffix "b" designation for chemical resistance as per astm d-1784.
 - .2 Chemical injection:
 - .1 PvdF to 50 mm - all pvdF ball valves are to be "safe-bloc" (or equal) with teflon seals and cushioned teflon ball seats.
 - .2 Carriers for teflon seats will be screw-in type internally adjustable from both ends.
 - .3 Acceptable manufacturer:
 - .1 Chemline
 - .2 Hayward
- .2 Butterfly valves:
 - .1 75 mm to 300 mm
 - .1 Wafer style bodies one piece molded, with a full set of ansi class 150 flange locating bolt holes.
 - .2 Discs shall be solid pvc; complete have double epdm o-ring seals at the top and bottom assuring that the shaft is non-wetted.
 - .3 Shaft shall be one piece high tensile stainless steel having an engagement over the full length of the disc with no disc screws.
 - .4 Seat shall be removable epdm and shall provide 100% bubble tight closure all sizes, with two concentric convex molded rings on flanged face to function as a low torque gasket. Seal shall effectively isolate the body and shaft from the fluid media.
 - .5 75 mm to 150 mm shall have hand lever molded of polypropylene over a steel core and have a polycarbonate 13-position lock.
 - .6 200 mm to 600 mm are to be supplied with baked epoxy coated waterproof gear operator, with pvc covered handwheel shaft and o-ring seal, ss fasteners, sealed visual position indicator and open/close travel stops which allows adjustment for seat wear.
 - .7 Provide chain-operator for frequent-use valves placed at high level.

- .8 One piece molded pvc bodies, are to be made of type 1, grade 1, cell classification 12454-a, with minimum suffix "b" designation for chemical resistance as per astm d-1784.
- .9 Pvc, compound and epdm seals shall meet csa standard b-137.0 para 5.2.1 environmental requirements for toxicity.
- .2 Acceptable manufacturer:
 - .1 Chemline
 - .2 Hayward
- .3 Wafer check valves
 - .1 40mm to 600mm:
 - .1 Polypropylene wafer check valves 40 mm to 600 mm with 316ss disc springs and with epdm o-ring disc seal.
 - .2 Valve will be wafer type designed to fit between ansi class 150 flanges
 - .3 Provide required companion spacer for installation of check valve.
 - .4 Provide flange gaskets between valve and flange and companion spacer and flange.
 - .5 Required flange gaskets will be full face class 150, raised face low torque type of solid epdm (or teflon ptfe bonded epdm).
 - .6 Polypropylene shall conform to astm d-4101 material requirements
 - .7 All valves shall be custom tagged with the manufacturer's inspection number to provide traceability.
 - .2 Acceptable manufacturer:
 - .1 Chemline
 - .2 Hayward
 - .3 Braukmann
- .4 Pressure regulating valves
 - .1 12mm to 50mm:
 - .1 All pvc pressure regulating valves, 12 mm to 50 mm are to be fully field adjustable for 100kpa to 900kpa downstream steam pressure.
 - .2 Solvent-weld union ends 12 mm to 50 mm shall be schedule 80 and conform to astm d-2464.
 - .3 65 mm to 100 mm
 - .1 All pvc, fully adjustable between 100kpa and 621kpa through the exchange or springs. Stem seal will be teflon ptfe bellows to assure reliable operation. Static seals will be viton.
 - .2 Flanged ends 65 mm to 100 mm shall be ansi class 150, all pvc flanged bodies will be one piece molded.
 - .4 Acceptable manufacturer:
 - .1 Chemline
 - .2 Hayward
- .5 Air release valve
 - .1 12 mm ø air release valve. Static seals will be viton.

- .2 Acceptable manufacturer:
 - .1 Chemline
 - .2 Hayward
 - .3 Braukmann
- .6 Flow control valves:
 - .1 25mm polyethylene plate drilled with single orifice suitable to produce restricted flowrate in given system application.
 - .2 Plate to be installed between flanges and gaskets. Plate to be drilled to ansi #150 bolt pattern suitable to diameter of pipeline installation.

2.4 Pipe hangers & supports:

- .1 General requirements:
 - .1 Construct pipe hanger and support to manufacturer's recommendations utilizing manufacturer's regular production components, parts, and assemblies.
 - .2 Base maximum load ratings on allowable stresses prescribed by asme b31.1 or mss sp58.
 - .3 Ensure that supports, guides, anchors do not transmit excessive quantities of heat to building structure.
 - .4 Design hangers and supports to support systems under conditions of operation, allow free expansion and contraction, prevent excessive stresses from being introduced into pipework, or connected equipment.
 - .5 Provide for vertical adjustments after erection and during commissioning. Amount of adjustment in accordance with mss sp58.
 - .6 Provide seismic restraints for all piping. Retain seismic engineer to approve restraint of pool piping systems. Refer to section 23 05 48 – vibration and seismic control for mechanical
 - .7 Restrain piping against water hammer as experienced under any operating conditions, using appropriate restraints.
 - .8 Hangers and restraints located in the aquatic area, aquatic storage rooms, and basement and main floor mechanical rooms shall be epoxy coated.
- .2 Finishes:
 - .1 Provide epoxy marine grade coating on all supports located in aquatic area, aquatic storage rooms, basement and main floor mechanical rooms. Painting by qualified trade or factory supplied with cost incurred by this contract. Paint before installing hangers.
 - .2 Provide fiberglass unistrut-channel or pvc angle supports in pool surge tanks/submerged areas.
 - .3 All metal anchors in pool surge tanks/submerged areas to be 316l stainless steel.
 - .4 Ensure steel hangers in contact with copper piping are copper plated or epoxy coated.
 - .5 All hangers, rod, and supports required for un-encased pool piping below grade to be stainless steel.
- .3 Upper attachment structural: suspension from upper flange of i-beam:
 - .1 Cold piping nps 2 maximum: ductile iron top-of-beam c-clamp with hardened steel cup point setscrew, locknut, and carbon steel retaining clip, ul listed to mss sp69.

- .2 Cold piping nps 2 1/2 or greater, hot piping: malleable iron top-of-beam jaw-clamp with hooked rod, spring washer, plain washer, and nut ul listed.
- .4 Upper attachment to concrete:
 - .1 Ceiling: carbon steel welded eye rod, clevis plate, clevis pin, and cotters with weldless forged steel eye nut. Ensure eye 6-mm minimum greater than rod diameter.
 - .2 Concrete inserts: wedge shaped body with knockout protector plate ul listed to mss sp69.
- .5 Shop and field-fabricated assemblies:
 - .1 Trapeze hanger assemblies.
 - .2 Steel brackets:
- .6 Hanger rods: threaded rod material to mss sp58:
 - .1 Ensure that hanger rods are subject to tensile loading only.
 - .2 Provide linkages where lateral or axial movement of pipework is anticipated.

2.5 Pool testing and balancing:

- .1 Pool systems verification:
 - .1 Flushed, filled, vented.
 - .2 Correct pump rotation.
 - .3 Strainers in place, baskets clean.
 - .4 Isolating and balancing valves installed, open.
 - .5 Calibrated balancing valves installed, at factory settings.
 - .6 Chemical treatment systems complete, operational
- .2 System data
 - .1 The following information shall be provided:

3. EXECUTION

3.1 INSTALLATION

- .1 Install in accordance with provincial plumbing code and bc health code.

3.2 POOL PIPING & CONNECTIONS:

- .1 All piping shall be stored above grade and covered for protection from weather. Piping sitting on the ground will be marked & will not be allowed to be installed. Unprotected piping creates bacterial growth when the systems are filled and heated.
- .2 All acid and chlorine feed piping shall be double containment type to protect facility operator from potential leaks. Ipex double containment piping or equal.
- .3 Support piping upon or against structure prior to encasement with mechanical supports as required. Restrain against movement prior to concrete pour.
- .4 Mechanical room piping layout to allow ready access to critical/regularly used valves by operator. Verify status of particular with consultant prior to beginning installation if in question.
- .5 Provide flange connections when connecting to equipment.
- .6 Provide flange connections when changing materials.

- .7 All unions to be s-80 pvc, c/w epdm o-rings. All unions to be by one manufacturer to ensure easy resupply of o-rings.
- .8 Apply silicone grease to all system o-rings and union threads to ensure ease of assembly.
- .9 Provide seismic restraints as per direction of seismic engineer, and provide additional restraints against water hammer in piping as may be required.
- .10 All flange bolts and washers shall be suitable for a corrosive environment. Acceptable materials are stainless steel or equal.
- .11 Torque all flange bolts, observing flange torque requirements, prior to system start-up to ensure long-term water tightness of system.
- .12 Maintain clearance to allow flange bolt removal.
- .13 Use spigot flanges where required to reduce equipment layout dimensions where necessary.
- .14 P.v.c. pipe shall not be threaded on site. Use tees and not saddles for large differential connections. Drill and tapping of pipe shall be used as a last resort under the following conditions:
 - .1 No drill and tapping whatsoever shall be used under slab. Drill and tap in mechanical room space on the mechanical room side of all isolation valves only.
 - .2 Where possible, tap one size larger and required and install thread x thread reducing bushing to strengthen tapping installation.
 - .3 Only use sch-80 pipe for tapping. Locate tappings as required for equipment installation.
 - .4 In mechanical room only, drill and tap for equipment where reducing tees prevent proper device installation (i.e. flow switches and temperature sensors) and where:
 - .5 Threads ≤ 25 mm diameter are tapped into pipes ≥ 150 mm diameter. For larger tappings or smaller pipes, use reducing tees. Do not tap pipes < 150 mm diameter except in case of chemical injection points, which require exposure to centre of flow within pipeline.
 - .6 Tap, thread, glue, and epoxy all tapped connections except equipment/chemical injection points. Repair all leaks after pressure testing as required.
- .15 Pipe fastening
 - .1 P.v.c. hot air welding in strict accordance with manufacturers recommendations shall be allowed only for non-leak flanges or back welding of glued fittings, or by permission of the engineer.
 - .2 Obtain manufacturers procedure literature before welding of pipe. Submit this literature to engineer as part of shop drawings. Have the procedures on site during installation of all piping.
 - .3 When welding is allowed, the contractor shall demonstrate to the engineer his ability to properly weld p.v.c. piping prior to welding finished products.
 - .4 All cementing shall be done at temperatures exceeding 5°C. Submit manufacturers written procedures if welding at colder temperatures.
 - .5 Piping must be cut square and all burrs removed from inside and outside of cut end of pipe.
 - .6 All piping shall be cleaned prior to cementing.
 - .7 Following manufacturers published literature for priming and gluing of pipe ensuring the use of correct size of brush and that fittings are twisted 90° prior to glue setting.

- .8 For pipes over 300 mm, joints shall be clamped for specified curing time.

3.3 VALVES:

- .1 Ball valves:
 - .1 Socket weld ball valves. Maintain upstream/downstream pipe alignment and tension to prevent unequal or excessive compression of valve components.
 - .2 Locate valves (whenever possible) at easy accessible elevations.
 - .3 Lubricate o-rings and threads with minimal silicone-grade grease.
- .2 Butterfly valves:
 - .1 Connect butterfly valves with flanges. Maintain upstream/downstream pipe alignment and tension to prevent unequal or excessive compression of valve components.
 - .2 Provide chain operators for regularly-used butterfly valves located at high level.
- .3 Check valves:
 - .1 Install check valves on parallel pump systems.
 - .2 Install check valves to protect flow from reversing. Refer to drawings.
 - .3 Align check valves to ensure proper operation and to prevent valve jamming in open position.
 - .4 Install a check valve at the tee of the chemical feed injector and main filtration pipe.
- .4 Pressure regulating valves:
 - .1 Pressure regulating valves are to be used to protect pumps from dead heading. Install regulator on a by-pass line to re-circulate flow into the suction side of the pump.

3.4 SUPPORTS & HANGERS:

- .1 Refer to section 23 05 29 – hangers & supports for mechanical piping & equipment for additional information.
- .2 Hangers to be epoxy coated in all mechanical rooms and chemical room(s).
- .3 Provide all required reinforcing bar, blocking, straps for proper support and concrete coverage when concrete encasing piping.
- .4 Minimum one hanger per section of pipe.
- .5 Install hangers a maximum 300mm away from an elbow. Support on both sides of elbows.
- .6 Provide seismic restraints as per direction of seismic engineer.
- .7 Provide restraints against water hammer in particular piping locations as required and determined at time of equipment startup.

3.5 FIRESTOPPING

- .1 Conform to requirements of section 22 07 11 fire stopping

3.6 TESTING

- .1 Pressure test above grade piping, including all equipment, as a whole prior to system startup.
- .2 All pool related piping shall be tested to a minimum of 1.5 times system dead head pressure, or 517 kpa, whichever is greater, for a period of eight hours.

- .3 Test equipment with lesser pressure ratings at lower test pressure. Isolate prior to testing remainder of equipment and piping at higher pressure if applicable.
- .4 Cycle test pressure twice for mechanical room piping test to ensure all mechanical connections endure pressure changes.
- .5 All pvc pipe pressure tests shall be with water or glycol. Air pressure tests are not permitted.
- .6 All underground pool piping shall be tested and passed prior to encasing piping in concrete. Maintain test during pipe encasement and piping will be tested again four days after concrete encasement.
- .7 Pool filters shall be tested to 344 kpa for a period of eight hours. Test filters prior to introduction of sand media.
- .8 All piping or equipment that fails tests will be replaced at no cost to the owner
- .9 All pressure tests to be documented and placed into maintenance manuals. Document to indicate what is being tested, start/finish times of test, pressure start pressure, finish pressure and witness.
- .10 The pool mechanical consultant will be unable to inspect all underground pool piping. Photos must be taken of piping roughed in, reinforcement in place and during the encasement concrete pour. Photos will be kept on site and turned over to the consultant at completion. Consultant will not sign off underground piping unless photos are available at all times on site.

END OF SECTION

1. SECTION 22 51 16 – SWIMMING POOL PUMPS

1.1 SUMMARY

- .1 Section includes:
 - .1 The supply and installation of pool aquatic pumps.
- .2 Related sections
 - .1 Read in conjunction with all architectural front-end documents. Note any discrepancies at time of bid.
 - .2 Common works
 - .3 22 51 13 – swimming pool piping
 - .4 22 51 19 – swimming pool treatment
 - .5 Integrated automation control sequences

1.2 REFERENCES

- .1 Electrical equipment manufacturers advisory council (eemac).
- .2 National electrical manufacturers association (nema).
 - .1 Nema mg 1-[2003], motors and generators.
- .3 National sanitation foundation
 - .1 Standard 50 – swimming pool pumps
- .4 Canadian standards association.
 - .1 UI-1081: standard for safety: swimming pool pumps

1.3 SUBMITTALS

- .1 Submittals in accordance with section 21 05 01 – common work results mechanical
- .2 Product data:
 - .1 Submit manufacturer's printed product literature, specifications, and data sheet for fixtures and equipment.
- .3 Shop drawings.
 - .1 Submit shop drawings to indicate:
 - .1 Equipment, including connections, fittings, control assemblies, and ancillaries. Identify whether factory or field assembled.
 - .2 Wiring and schematic diagrams.
 - .3 Dimensions and recommended installation.
 - .4 Pump performance and efficiency curves. Supply parallel pump curves for parallel pump applications.
 - .5 Specify maximum turndown for vfd-duty applications.
 - .6 When alternate equipment is supplied, it is the contractor's responsibility to match pump curves and flowrates to suit hydraulic characteristics. Provide notice to consultant at time of tender and again during shop drawing review. Additional costs due to alternate equipment including power shall be this contractor's responsibility.

- .7 Provide information on seal corrosion resistance for verification that it matches the specified application.
- .8 All pumps to carry csa or nsf certificate for swimming pool safety.
- .4 Instructions: submit manufacturer's installation instructions.
- .5 Closeout submittals: submit maintenance and engineering data for incorporation into manual specified in section 21 05 01 – common work results mechanical, include:
 - .1 Manufacturers name, type, model year, capacity, and serial number.
 - .2 Details of operation, servicing, and maintenance.
 - .3 Recommended spare parts list with names and addresses

1.4 WARRANTY

- .1 As a separate price per section 21 05 01 – common work results mechanical provide the following additional warranty:
- .2 for the work of this section 22 51 16 – swimming pool pumps, the 12 months warranty period prescribed in subsection gc 32.1 of general conditions "c" is extended to number of years specified for each product.
- .3 contractor hereby warrants swimming pools pumps in accordance with ccdc2 gc 24, with an extended year for parts and labour for pump seals and all internal wetted components including casing, impellers, and shaft from pool chemistry corrosion.

2. PRODUCTS

2.1 EQUIPMENT

- .1 Do component selection and sizing to: CAN/CSA-B214.

2.2 CHEMICAL METERING PUMPS:

- .1 General: positive displacement, cul approved, fully adjustable output. Capable of injecting chemicals against a 4.1 bar pressure.
- .2 Housing: urethane painted cast aluminum and thermoplastic composite.
- .3 Head: acrylic material resistant to corrosive chemicals.
- .4 Valves: ceramic ball type, renewable seat seal ring, or cartridge valve assembly.
- .5 Motor: totally enclosed with no exposed moving parts. Solid state electronic pulser fully encapsulated.
- .6 Controls: all electronics to be housed in a chemical resistant enclosure. Dial knobs for manual adjustment for stroke length and stroke frequency.
- .7 Accessories:
 - .1 5m of 12mm polyethylene tubing c/w compression fittings.
 - .2 Foot valve with one piece strainer.
 - .3 Injection check back pressure valve with dilating orifice.
 - .4 Foot valve auto-flush fitting for mechanical mixture application, c/w adjustable-interval solenoid valve.
- .8 Acceptable manufacturer:
 - .1 Stenner
- .9 Contractor to provide additional tubing as required.

- .10 Contractor to provide one (1) additional tubing kit per pump for future maintenance.
- .11 Commissioning agent shall provide comprehensive training for the maintenance of these pumps including replacing parts.

3. EXECUTION

3.1 INSTALLATION

- .1 Ensure that pump body does not support piping or equipment. Provide stanchions or hangers for this purpose. Refer to manufacturer's installation instructions for details.

END OF SECTION

1. SECTION 22 51 19 – SWIMMING POOL TREATMENT

1.1 SUMMARY

- .1 Section includes:
 - .1 The installation of aquatic disinfection and chemical treatment systems.
- .2 Related sections
 - .1 Read in conjunction with all architectural front-end documents. Note any discrepancies at time of bid.
 - .2 Common works
 - .3 22 51 13 – swimming pool piping
 - .4 22 51 16 – swimming pool pumps
 - .5 Integrated automation control sequences

1.2 REFERENCES

- .1 National sanitation foundation (nsf) standard 50
- .2 Canadian standards association (csa)

1.3 SUBMITTALS

- .1 Submittals in accordance with section 21 05 01 common work results mechanical.
- .2 Product data:
 - .1 Submit manufacturer's printed product literature, specifications, and data sheet for fixtures and equipment.
- .3 Shop drawings.
 - .1 Submit shop drawings to indicate:
 - .1 Equipment, including connections, fittings, control assemblies, and ancillaries. Identify whether factory or field assembled.
 - .2 Wiring and schematic diagrams.
 - .3 Dimensions and recommended installation.
 - .4 Provide equipment from specified equipment lists. When proposing alternate equipment with electrical/hydraulic characteristics different from those of specified equipment, contractor is responsible for ensuring compatibility of associated equipment intended to complete a single mechanical system – i.e. pumps, chemical treatment equipment. Note alternates at time of tender. Any costs occurred due to changes will be covered by this contractor.
- .4 Instructions: submit manufacturer's installation instructions.
- .5 Closeout submittals: submit maintenance and engineering data for incorporation into manual specified in 21 05 01 common work results mechanical, include:
 - .1 Manufacturers name, type, model year, capacity, and serial number.
 - .2 Details of operation, servicing, and maintenance.
 - .3 Recommended spare parts list with names and addresses

1.4 QUALITY ASSURANCE

- .1 All work to be of the highest quality according to best trade practice and in strict accordance with manufacturers printed specifications.
- .2 Provide warranties with shop drawings as requested in the following pool sections.
- .3 Supply only equipment, design features, and materials approved by the Canadian Standards Association or the National Foundation. If equipment supplied does not conform to the above, it is the manufacturer's responsibility to get Ministry of Health approval.

1.5 WARRANTY

- .1 As a separate price per 21 05 01 common work results mechanical provide the following additional warranty:
- .2 For the work of this section 22 51 19 – swimming pool treatment, the 12 months warranty period prescribed in subsection gc 32.1 of general conditions "c" is extended to number of years specified for each product.
- .3 Contractor hereby warrants swimming pool treatment system in accordance with ccdc2 gc 24, with extended years as follows. This extended warranty covers parts and labour from pool chemistry corrosion or equipment failure.
 - .1 Chemical controllers
 - .1 The controller shall be covered by a standard manufacturer's 5 year warranty.
 - .2 Orp and pH sensors shall be covered by a standard manufacturer's 2 year warranty.
 - .3 Other sensors and flow cell components shall be covered by a standard manufacturer's 1 year warranty.

2. PRODUCTS

2.1 GENERAL

- .1 All chemical systems shall be designed to handle their specific requirements based on the following pool criteria:

2.2 LIQUID CHLORINE FEED SYSTEM:

- .1 General: to be used for all pools with one common mixing tank and separate chemical metering pumps, (one for each pool), and wired into each pool chemical feed controller.
- .2 Pumps: refer to section 22 51 16 pool pumps for selection and specification.
- .3 Mixing tank: per schedule on drawings
 - .1 Lid to have non-metal hinges and be sealed air tight with gasket. Hinge to be located such that suction piping is not disrupted.
 - .2 Provide holes on non-hinged side of lid for suction/air bleed piping. Seal holes once piping is installed.
- .4 Provide locked and armored exterior chlorine fill port..

2.3 POOL TEST KIT:

- .1 Test kit – measure the following:
 - .1 Free chlorine
 - .2 Total chlorine

- .3 Ph .6.8 – 8.2
- .4 Low range chlorine 0 – 3.0 ppm
- .5 Total alkalinity
- .6 Calcium hardness
- .7 Acid demand
- .8 Base demand
- .9 Bromine and total dissolved solids
- .10 Dalite comparator lamp, with bromine slide and reagents.

3. EXECUTION

3.1 INSTALLATION

- .1 All equipment and materials used for chemical treatment shall be manufactured specifically for such use.
- .2 The installation of all equipment shall be in accordance with the manufacturer's requirements.
- .3 The installation of all chemical disinfection equipment shall be in accordance with the ministry of health swimming pool regulations, and worker's compensation board standards.
- .4 Confirm equipment to be in good order, shipped complete, and undamaged upon receipt of equipment from supplier and provide photo evidence to this effect. Note any damage at time of receipt. The contractor assumes responsibility for state of equipment throughout installation and start-up process.
- .5 Maintain manufacturer-required access clearances and electrical panel clearances when positioning equipment and planning piping layout. Install equipment level on housekeeping pads, with exception of filters. Incorporate seismic restraint provisions into equipment layout.
- .6 Plumb all required connections and valves; use pipe schedules and types as noted in drawings and specification. Make pipe size reductions as required. Provide union or flange connections to units for removal and maintenance. Do not allow equipment to support full weight of associated piping.
- .7 Place isolation valves generally near equipment rather than circulation piping branches. Adhere to schematic for valving arrangement.
- .8 Pressure test all equipment in accordance with section 22 51 13 – swimming pool piping.
- .9 Provide all interlocks and control wiring included with equipment for a disinfection as shown on the schematics and described herewith. Wiring between pool mechanical equipment including line voltage to be by mechanical controls scope.
- .10 Refer to section 22 51 13 for procedures in pool filling and super chlorinated. Once this is completed, bring and maintain the water to the following recommended levels:
 - .1 Free available chlorine - 0.5 to 1.5 ppm
 - .2 Combined chlorine - 0.2 ppm maximum
 - .3 Ph - 7.4 to 7.8
 - .4 Total alkalinity - 100 ppm
 - .5 Calcium hardness - 250 ppm

- .11 Provide sufficient chemicals to start and run all pools prior to substantial completion. Owner to provide chemicals and maintain pool systems between substantial completion and building occupancy.
- .12 Regularly monitor the above levels during the filling process and add chemicals as required to maintain these values. The contractor shall ensure that the water is properly treated to prevent any damage to the grout.
- .13 Identification: provide lamocoids for identification of all equipment. Adhere lamocoids to equipment. Where equipment does not present even surfaces to create a durable bond, use non-metal strapping to attach lamocoids to equipment. Refer to section 23 05 54 identification for further scope of work,
- .14 Warranties: submit all warranty activation information on behalf of owner; provide information to owner prior to substantial completion with system spare parts required.

3.2 CHLORINE & PH FEED SYSTEM:

- .1 Mount feed pumps on brackets located above liquid chlorine tank and acid tank respectively. Ensure pumps are mounted within manufacturer's specified vertical clearance from bottom of tanks.
- .2 Suction lines from tanks to pump shall be sealed at tank penetration.
- .3 All acid feed and chlorine feed lines to run within a double containment piping system from pump discharge to injection point. Venting to terminate @ injector and pump.
- .4 Orient injectors to avoid damage during routine operation and ensure injector tip is centered within pipe flowstream.
- .5 Ensure no kinks or breaks are present in polyethylene supply tubing for all systems.
- .6 Provide low-point drain for each system.
- .7 Provide required commissioning work and incorporate manufacturer's start-up and commissioning information into project operation manuals. Refer to section 22 51 25 for commissioning requirements.

3.3 TESTING

- .1 Testing of pool piping and equipment shall conform to section 22 51 25 and the following clauses.
- .2 System verification
 - .1 Installation data:
 - .1 Manufacturer, model, type;
 - .2 Recorded data:
 - .1 Pertinent settings of chemical controller responsible for ensuring excess chlorine dosing/consumption does not occur.
 - .2 Chemical controller
 - .1 Make adjustment of controller chlorine and acid feed parameters to maintain 3ppm chlorine residual and ph approximately 7.4 in all pools. Make set point adjustments as required by the consultant or at owner's request.
 - .2 Co-ordinate with system commissioning agent to verify operation of all interlocks. Work together to achieve complementary adjustment of chemical controller and chemical feed systems such that chemical controller neither causes the chlorine system to overfeed chlorine when engaged, or to "short cycle" the chlorine system when engaged.

- .3 Ensure ph feed system parameters are balanced with chlorine feed parameters to maintain consistent pool ph throughout chemical feed cycles.
- .4 Introduce bather load into pools to test responsiveness of chemical control system.
- .5 Recorded data:
 - .1 Probe calibration date and time.
 - .2 Operator passwords.
 - .3 Monitored chemistry setpoints.
 - .4 Chemical controller overfeed timers.
 - .5 Chemical controller high/low ph chlorine lockout settings.
 - .6 High and low chemical level alarm settings.
 - .7 Ph and chlorine feed hysteresis.
 - .8 Proportional span vs. Set point chemical feed settings.

END OF SECTION

1. GENERAL

1.1 Summary

- .1 Section Includes:
 - .1 General requirements relating to commissioning of project's components and systems, specifying general requirements to PV of components, equipment, sub-systems, systems, and integrated systems.
- .2 Acronyms:
 - .1 AFD - Alternate Forms of Delivery, service provider.
 - .2 BMM - Building Management Manual.
 - .3 Cx - Commissioning.
 - .4 PCx – Pool Commissioning Agent
 - .5 EMCS - Energy Monitoring and Control Systems.
 - .6 O&M - Operation and Maintenance.
 - .7 PI - Product Information.
 - .8 PV - Performance Verification.
 - .9 TAB - Testing, Adjusting and Balancing.

1.2 General

- .1 The PCx cannot be done by the installing contractor.
- .2 The PCx must have successfully commissioned two aquatic centres of similar size in the past 5 years.
- .3 The PCx can be the building Cx agent provided he meets the two items above. If this is a different agent, the PCx agent shall report to the overall building Cx agent.
- .4 Refer to commissioning sections for items that may not be covered within the section.
- .5 Cx is a planned program of tests, procedures and checks carried out systematically on systems and integrated systems of the finished Project. Cx is performed after systems and integrated systems are completely installed, functional and Contractor's Performance Verification responsibilities have been completed and approved. Objectives:
 - .1 Verify installed equipment, systems and integrated systems operate in accordance with contract documents and design criteria and intent.
 - .2 Ensure appropriate documentation is compiled into the BMM.
 - .3 Effectively train O&M staff.
- .6 The pool Contractor assists in PCx process, operating equipment and systems, troubleshooting and making adjustments as required.
 - .1 Systems to be operated at full capacity under various modes to determine if they function correctly and consistently at peak efficiency. Systems to be interactively with each other as intended in accordance with Contract Documents and design criteria.
 - .2 During these checks, adjustments to be made to enhance performance to meet environmental or user requirements.
- .7 Design Criteria: as per client's requirements or determined by designer. To meet Project functional and operational requirements.

1.3 Commissioning Overview

- .1 PCx to be a line item of the Pool Contractor's cost breakdown.
- .2 PCx activities supplement field quality and testing procedures described in relevant technical sections.
- .3 PCx is conducted in concert with activities performed during Construction and PCx stages to ensure the built facility is constructed and proven to operate satisfactorily under various occupancy conditions to meet functional and operational requirements. PCx activities includes transfer of critical knowledge to facility operational personnel.
- .4 The Consultant will issue Interim Acceptance Certificate when:
 - .1 Completed PCx documentation has been received, reviewed for suitability and approved by Consultant.
 - .2 Equipment, components and systems have been commissioned.
 - .3 O&M training has been completed.

1.4 Non-Conformance To Performance Verification Requirements

- .1 Should equipment, system components, and associated controls be incorrectly installed or malfunction during PCx, correct deficiencies, re-verify equipment and components within the unfunctional system, including related systems as deemed required by the Consultant, to ensure effective performance.
- .2 Costs for corrective work, additional tests, inspections, to determine acceptability and proper performance of such items to be borne by Contractor. Above costs to be in form of progress payment reductions or hold-back assessments.

1.5 Pre-Cx Review

- .1 During Construction:
 - .1 Co-ordinate provision, location and installation of provisions for Cx.
- .2 Before start of PCx:
 - .1 Have completed PCx Plan up-to-date.
 - .2 Ensure installation of related components, equipment, sub-systems, systems is complete.
 - .3 Fully understand Cx requirements and procedures.
 - .4 Have Cx documentation shelf-ready.
 - .5 Understand completely design criteria and intent and special features.
 - .6 Submit complete start-up documentation to Consultant.
 - .7 Have PCx schedules up-to-date and submitted to the building Cx agent. Project schedule shall include flushing, filling, heating then the detailed commissioning process.
 - .8 Ensure systems have been cleaned thoroughly.
 - .9 Verify completion of TAB procedures on systems, submit TAB reports to Consultant for review and approval.
 - .10 Ensure "As-Built" system schematics are available.
- .3 Inform Consultant in writing of discrepancies and deficiencies on finished works.

1.6 Conflicts

- .1 Report conflicts between requirements of this section and other sections to Consultant before start-up and obtain clarification.
- .2 Failure to report conflict and obtain clarification will result in application of most stringent requirement.

1.7 Commissioning Schedule

- .1 Co-ordinate with overall mechanical and building commissioning schedule and commissioning agents.
- .2 Commissioning schedule to include equipment installation inspection during construction.
- .3 Commissioning schedule shall make allowance for equipment adjustment and troubleshooting such that all equipment is operational at end of commissioning process.
- .4 Pool commissioning requires supporting mechanical systems (i.e. plumbing, drainage, HVAC) to be operational prior to final pool commissioning.
- .5 Pool commissioning to include all required staff training. Schedule training to ensure staff availability. Maintain all training requirements in spite of delays incurred during equipment startup/commissioning.
- .6 Owner is required to sign off on all staff training prior to commissioning being considered complete.
- .7 Owner to assume control of pool mechanical systems once staff training has been completed.
- .8 Contractor assumes liabilities and costs for inspections. Including disassembly and re-assembly after approval, starting, testing and adjusting, including supply of testing equipment.

1.8 Procedures

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

1.9 Start-Up Documentation

- .1 Assemble start-up documentation and submit to consultant or owner's representative for approval before commencement of commissioning.
 - .1 Signed installation/start-up check lists.
 - .2 Start-up reports,
 - .3 Step-by-step description of complete start-up procedures, to permit owner's maintenance staff to repeat start-up at any time.

1.10 Operation and Maintenance of Equipment and Systems

- .1 After start-up, operate and maintain equipment and systems as directed by equipment/system manufacturer.
- .2 With assistance of manufacturer develop written maintenance program and submit consultant or owner's representative for approval before implementation.
- .3 Operate and maintain systems for length of time required for commissioning to be completed.
- .4 After completion of commissioning, operate and maintain systems until issuance of certificate of interim acceptance.

1.11 Extent of PCx

- .1 Commission pool systems and associated equipment:
 - .1 Aquatic Systems:
 - .1 Chemical controller operation and interface
 - .2 Chlorine treatment including fill safety controls
 - .3 pH control

1.12 Instruments / Equipment

- .1 Submit to consultant or owner's representative for review and approval:
 - .1 Complete list of instruments proposed to be used.
 - .2 Listed data including, serial number, current calibration certificate, calibration date, calibration expiry date and calibration accuracy.
- .2 Provide the following equipment as required:
 - .1 2-way radios.
 - .2 Ladders.
 - .3 Equipment as required to complete work.

1.13 Commissioning Performance Verification

- .1 Carry out PCx:
 - .1 Under accepted simulated operating conditions, over entire operating range, in all modes.
 - .2 On independent systems and interacting systems.
- .2 PCx procedures to be repeatable and reported results are to be verifiable.
- .3 Follow equipment manufacturer's operating instructions.

1.14 Witnessing Commissioning

- .1 Consultant or owner's representative to witness activities and verify results.

1.15 Deficiencies, Faults, Defects

- .1 Correct deficiencies found during start-up and PCx to satisfaction of consultant or owner's representative.
- .2 Report problems, faults or defects affecting PCx to consultant or owner's representative in writing. Stop PCx until problems are rectified.

1.16 Completion of Commissioning

- .1 Upon completion of PCx leave systems in normal operating mode.
- .2 Except for warranty and seasonal verification activities specified in PCx specifications, complete PCx prior to issuance of Certificate of Completion.
- .3 PCx to be considered complete when contract PCx deliverables have been submitted and accepted by consultant or owner's representative.

1.17 Training

- .1 Provide staff training to allow operator takeover, troubleshooting, maintenance, and operation of installed pool mechanical systems.
- .2 Provide draft manuals and operating instructions prior to start of staff training. Instructions to be revised and supplemented based on results of commissioning.
- .3 Provide training outline and list of tasks for consultant review prior to beginning of commissioning process.
- .4 Ensure equipment is operational and in proper adjustment prior to start of staff training. Consultant will not consider training complete if owner is not trained on operating equipment and such equipment is not left in operational conditions.
- .5 Provide minimum 1 day training covering information described under tab 1.2, 1.3, 1.4 section 21 05 01. Provide additional half-day of training as required. Training to be in addition to equipment specific manufacturer representative training.
- .6 Demonstrate both proper and improper operational conditions to staff such that staff can identify improper conditions and rectify them.
- .7 Provide follow-up support in answering operator questions as required.
- .8 Staff training is not intended to provide comprehensive training in pool mechanical operation. Owner to ensure qualified staff are available to perform maintenance and follow training provided.
- .9 Identify potential shortcomings in staff understanding of system operation.

1.18 Performance Verification Tolerances

1.19 Owner's Performance Testing

- .1 Performance testing of equipment or system by consultant or owner's representative will not relieve Contractor from compliance with specified start-up and testing procedures.

1. GENERAL

1.1 SECTION SCOPE

Provide a complete system of automatic controls to match the base building standard with regard to control devices, components, wiring and materials. All control work associated with the work of divisions 22 and 23.

1.2 RELATED REQUIREMENTS

This section of the specification forms part of the contract documents and is to be read, interpreted and coordinated with all other parts. For general conditions refer to heating, ventilation and air conditioning (hvac) section.

1.3 CODE COMPLIANCE

All work shall comply with current editions of the national, provincial and municipal codes, standards, acts and bylaws and will meet the requirements of the authority having jurisdiction.

1.4 ACCEPTABLE CONTRACTORS

All controls work is to be done by the base building contractor.

1.5 EXAMINATION OF EXISTING SYSTEM

This project involves renovation to an existing control system. The contractor shall inspect the system prior to tender close and include in his bid all control components required to provide a fully operational system including replacement of existing defective components where noted in the project documents.

1.6 DESIGN REQUIREMENTS

Design and provide conduit and wiring linking elements of system to the existing building energy monitoring and control system emcs.

Supply sufficient programmable controllers of types to meet project requirements. Quantity and points contents as reviewed by consultant prior to installation.

Provide utility power to emcs as indicated.

2. PRODUCTS

2.1 THERMOSTATS

Relocate and reconnect existing thermostats as shown on the drawings.

Provide new thermostats where indicated of building standard type. Ensure operating characteristics are compatible with control components (i.e. direct/reverse acting).

All thermostats to be wall or column mounted [to match existing base building mounting height] [at 1200mm above finished floor] unless specifically noted otherwise.

All thermostats, existing and new, are to be calibrated prior to air balancing. Contact building owner if an existing thermostat needs replacing.

2.2 CONTROL COMPONENTS

Provide control valves and damper actuators as required to meet the sequence of operation and meet the design intent. Valves and actuators shall match the base building standard unless noted otherwise.

Control valves for new mechanical equipment shall be provided by controls contractor for installation by the mechanical contractor.

Where existing devices are re-used, verify operation and re-calibrate as required.

Verify correct operation of controlled devices including existing [air valve actuators], control valves, etc. Within the area of renovation.

Control valves and actuators to be compatible with base building standard unless noted otherwise. New control valve operation to be compatible with existing.

Report any existing control device which need replacement. Replacement will be by building management or via change order, at the discretion of the owner.

3. EXECUTION

3.1 SEQUENCE OF OPERATION

1. Chlorine exhaust fan – EF-01:
 - a. To run continuously (24/7).
 - b. Interlocked with existing strobe light outside the door to the chlorine room:
 - i. Strobe light on when fan is on
 - ii. Strobe light off when fan is off
 - c. To turn off when:
 - i. If HRU-3.1 fails or is turned off
 - ii. If temperature stat in chlorine room falls below 10°C
 - d. If EF-01 fails or is turned off then e/a motorized damper to close
 - e. Existing push-button to be disabled/removed.
2. Acid exhaust fan – EF-02:
 - a. To run continuously (24/7).
 - b. Interlocked with existing strobe light outside the door to the acid room:
 - i. Strobe light on when fan is on
 - ii. Strobe light off when fan is off
 - c. To turn off when:
 - i. If HRU-3.1 fails or is turned off
 - ii. If temperature stat in chlorine room falls below 10°C
 - d. If EF-02 fails or is turned off then e/a motorized damper to close
 - i. Existing push-button to be disabled/removed.
3. Existing heat recovery unit – HRU-3.1:
 - a. New e/a motorized damper to be interlocked with operation of HRU-3.1
 - i. If HRU-3.1 fails or is turned off then e/a motorized damper to close
4. Chlorine injection pumps – PP-023, PP-024 and PP-025:
 - a. Controls to be interlocked with existing chemical controllers

END OF SECTION

1. GENERAL

1.1 SYSTEM CLEANING AND CHEMICAL TREATMENT

Employ services of the existing building's water treatment firm or if there is not one, a firm specializing in hydronic system chemical treatment. This firm shall submit a schedule of work to be performed, chemical types and quantity to be used. At the completion of the chemical treatment a report shall be submitted to outline the work performed and details of procedures to be used by the building operator for continued water quality testing and chemical treatment.

Provide test kits as required along with adequate chemicals and reagents for one year of testing. Appropriate test kits will be provided to properly test each system installed under this contract.

Clean and flush all new hot and cold closed loop water system piping. Provide a certificate for this work.

1.2 GRILLES, LOUVRES AND DIFFUSERS

Airflow tests and sound level measurement shall be made in accordance with applicable adc equipment test codes, ashrae standards and amca standards.

The manufacturer shall certify catalogued performance and ensure correct application of air outlet types.

Outside louvers shall bear amca seal for free area and water penetration.

Project conditions: review requirements of outlets as to size, finish and type of mounting prior to submitting shop drawings and schedules of outlets. Positions indicated are approximate only. Check locations of outlets and make necessary adjustments in position to conform with architectural features, symmetry, and lighting arrangement.

2. PRODUCTS

2.1 DUCTWORK AND ACCESSORIES

Provide ductwork constructed, reinforced, sealed, and installed to withstand 1-½ times the working static pressure.

Provide low pressure ductwork 500 pa (2" w.g.) for supply ductwork and plenums on systems without terminal mixing boxes or air valves, supply ductwork downstream from terminal mixing boxes or air valves, outdoor air ductwork and plenums, return air ductwork and plenums, exhaust and relief air ductwork and plenums, unless noted otherwise.

Low pressure insulated flexible ductwork shall be equal to thermaflex type m-kc.

Provide medium pressure ductwork to 1000 pa (4"w.g.) for supply air ductwork downstream from supply air handling units discharge, to terminal mixing boxes or air valves, exhaust and return air ductwork downstream of return/exhaust air valves to the return/exhaust fans and discharge ductwork from the return/exhaust fans to the air handling units and/or relief opening.

Where flexible air ducts are used to connect terminal mixing boxes or air valves to metal ducts, the flexible air ducts shall be rated for 30.5 m/s (6000 fpm) velocity and 2500 pa (10" w.g.). Maximum stretched length of flexible air duct shall be 300 mm (12"). Do not use flexible duct to change direction.

Where flexible air ducts are attached to metal insulated duct, furnish flexible air ducts with fiberglass wool insulation and metalized jacket. Thermaflex m-kc or equal.

fabricate kitchen exhaust ductwork in accordance with nfpa 96 standard for ventilation control and fire protection of commercial cooking operations. Minimum 1.52 mm (16ga) carbon steel, welded at seams and joints. Provide residue traps at base of vertical risers with provisions for cleanout. Provide access doors for duct cleaning at every change of direction and every 6 m (20') of duct run.

fabricate dishwasher exhaust: minimum 1.22 mm (18ga) stainless steel, welded at seams and joints. Provide residue traps at base of vertical risers with provisions for cleanout. Provide access doors for duct cleaning at every change of direction and every 6 m (20') of duct run.

2.2 DUCT SEALING

Duct sealing low pressure ductwork 500 pa (2" w.g.) and under shall be smacna seal class a. Seal all supply, return and exhaust duct joints, longitudinal as well as transverse joints as follows:

Slip joints: apply heavy brush-on high pressure duct sealant. Apply second application after the first application has completely dried out. Where metal clearance exceeds 1.5 mm (1/16") use heavy mastic type sealant.

Flanged joints: soft elastomer butyl or extruded form of sealant between flanges followed by an application of heavy brush-on high pressure duct sealant.

Other joints: heavy mastic type sealant.

Duct sealing medium pressure ductwork to 1000 pa (4"w.g.) shall be the same as 500 pa ductwork except provide a combination of woven fabrics and sealing compound followed by an application of high pressure duct sealant.

Duct tapes as a sealing method are not permitted, except on residential ductwork – minimum 2 wraps of 2" wide (50mm) foil duct tape is acceptable.

Do not insulate any section of the ductwork until it has been inspected and approved of duct sealant application, by the consultant.

Ductwork in chemical rooms should be airtight.

2.3 DUCT HANGERS AND SUPPORTS

Hangers and supports to smacna standards.

Strap hangers: of same material as duct but next sheet metal thickness heavier than duct.

Maximum size duct supported by strap hanger: 500 mm.

Hangers: galvanized steel angle with galvanized steel rods to smacna.

Note: Hangers in chemical room to be epoxy-coated.

Toggle hangers and/or strap hangers shall not be used.

Power actuated fasteners and "drop-in" anchors shall not be used.

2.4 DUCT AND BREECHING INSULATION

Exposed rectangular ducts: external rigid insulation, service temperature 5°C to 232°C (41°F to 450°F), mineral fiber board for low and medium temperature applications, all service aluminum foil-scrim kraft (fsk) vapour barrier jacket with glass fibre reinforcement, factory applied. Density 36kg/m³ (2.25 pcf), minimum rsi 0.76/25mm (r 4.3/in)

Round ducts and concealed rectangular ducts: external flexible insulation, service temperature 5°C to 232°C (41°F to 450°F), glass fiber or mineral fiber flexible blanket for low and medium temperature applications, all service aluminum foil-scrim kraft (fsk) vapour barrier jacket with glass fibre reinforcement, factory applied. Density 12kg/m³ (0.75pcf), minimum rsi 0.49/25mm (r 2.8/in) (installed)

Acoustic lining ducts: internal flexible duct liner, flexible mineral fiber blanket, for low and medium temperature acoustical applications, airstream surface faced with a black mat bonded to the fibreglass substrate, air velocity rating 25.4 m/s (5,000 ft/min). Density 24kg/m³ (1.5 pcf), minimum rsi 0.74/25mm (r 4.2/in)

Acoustic lining plenums: internal rigid duct liner, rigid mineral fiber board, for low and medium temperature acoustical applications, airstream surface faced with a black mat bonded to the fibreglass substrate, air velocity rating 25.4 m/s (5,000 ft/min). Density 48kg/m³ (3 pcf), minimum rsi 0.76/25mm (r 4.3/in)

Breeching insulation: external semi-rigid insulation, service temperature up to 538°C (1000°F), glass fiber or mineral fiber flexible blanket for high temperature applications. Density 25kg/m³ (1.6pcf), minimum rsi 0.25/25mm (r 1.4/in)

2.5 DUCTWORK FINISH JACKETS

Thermocanvas jacket: fire rated, 170g (6 oz) fire retardant canvas jacket for covering mechanical insulation indoors, 25/50 fire class, plain wave cotton, no dyes.

Utility finish: over rigid insulation for rectangular ductwork and flexible insulation for round ductwork. Apply continuous metal corner bead to all corners. Adhere vapor retarder tape over all joints and breaks in vapor retarder, and at all corners.

Aluminum jacket: 51 mil (22 ga.) Thick stucco or smooth aluminum jacketing with longitudinal slip joints and 50mm (2") end laps with factory applied protective liner on interior surface.

2.6 PREFORMED PIPE INSULATION

Chilled water piping with a service temperature of -40°C to 5°C (-40°F to 41°F) shall be pre-formed and pre-slit flexible foamed elastomeric or closed cell insulation with self-adhesive self seal or lap seal joints, maximum "k" value at 24°C (75°F) = 0.039 w/m.°C (0.27 btu.in/hr.ft².°F)

Chilled water and heating water piping with a service temperature of 5°C to 315°C (41°F to 599°F) shall be preformed insulation, fine fibrous glass or formed mineral fibre pipe insulation with all service jacket vapour retarder (asj). Asj shall be re-enforced with glass fibre, factory applied with pressure sensitive lap closure. Maximum "k" value at 38°C (100°F) = 0.035 w/m.°C (0.24 btu.in/hr.ft².°F)

2.7 GRILLES, LOUVRES AND DIFFUSERS

Acceptable manufactures for air terminals: e.h. price, titus, anemostat, nailor.

Acceptable manufacturers for louvres: airolite, penn, airstream, west vent, nailor, ruskin.

Provide baffles to direct air away from walls, columns or other obstructions within the radius of diffuser operation.

Provide plaster frame for diffusers located in plaster surfaces and anti-smudge frames or plaques on diffusers located in rough textured surfaces such as acoustical plaster.

Provide 30 mm margin frame on grilles with [countersunk screw holes] [concealed fastening].

Provide opposed blade balance damper, accessible from grille face on all grilles located in drywall ceilings or bulkheads.

All grilles and dampers shall be aluminum in wet areas and chemical rooms (i.e. showers, aquatic areas, dishwashing etc.)

In gymnasium, aquatic centres, front blades shall be front pivoted, welded in place or securely fastened to be immobile.

Fabricate goosenecks of minimum 1.3 mm (18 ga.) Galvanized steel. Mount on minimum 300 mm (12 in.) High curb base where size exceeds 225 mm x 225 mm (9 in. X 9 in.).

Refer to grilles and diffuser schedule for types and capacities.

2.8 EQUIPMENT

All equipment shall be csa approved for its intended use.

Refer to exhaust fan schedules for requirements.

3. EXECUTION

3.1 DUCTWORK AND ACCESSORIES

Fabricate ductwork in accordance with smacna duct construction standards – metal and flexible, nfpa 90a standard for the installation of air-conditioning and ventilating systems, and nfpa 90b standard for the installation of warm air heating and air-conditioning systems

Prior to fabrication of ductwork, check all ceiling spaces and heights and conflicts with other trades.

Duct sizes indicated are inside clear dimensions. For acoustically lined or internally insulated ducts allow for insulation thickness and maintain interior clear dimensions indicated.

Connect outlet terminals to low pressure ducts with 900mm (36") maximum length of stretched flexible duct. Hold in place with strap or clamp, caulk sealed. Do not use flexible duct to change directions.

Provide a flexible connection where low pressure ducts are connected to fan equipment, terminal boxes or any other apparatus. Joint shall be screwed or bolted flexible gasketed joint, minimum 50mm (2") wide.

Provide fire dampers where ducts cross fire separations. Fire dampers shall be ulc listed and "dynamic"; rated to close under airflow. Refer to architectural drawings for fire separation ratings and locations.

Provide balancing dampers where indicated on drawings and at points on low pressure supply, return and exhaust ducts where branches are taken from larger ducts.

Modify ceiling system where required to accommodate grilles and diffusers.

Size round ducts, installed in place of rectangular ducts, from ashrae table of equivalent rectangular and round ducts. No variation of duct configuration or sizes permitted except by permission from the consultant.

Exposed round ductwork to be spiral lock seam type only.

Provide duct hangers and supports in accordance with smacna manuals.

Confirm the existing base building standards prior to submitting tender.

Ductwork shall be galvanized steel unless noted otherwise.

3.2 DUCT HANGERS AND SUPPORTS

Duct support shall be:

UP TO 750MM DUCT SIZE: ANGLE SIZE 25X25X3 MM WITH 6MM ROD SIZE

751 TO 1050MM DUCT SIZE: ANGLE SIZE 40X40X3 MM WITH 6MM ROD SIZE

1051 TO 1500MM DUCT SIZE: ANGLE SIZE 40X40X3 MM WITH 10MM ROD SIZE

Upper hanger attachments shall be:

For concrete: manufactured concrete inserts.

For steel joist: manufactured joist clamp.

For steel beams: manufactured beam clamps.

3.3 DUCT AND BREECHING INSULATION

Install all ductwork insulation to the thermal insulation association of canada best practices guide.

DUCT INSULATION MINIMUM THICKNESS TABLE (ASHRAE 90.1 ZONE 8)

Note (1): air temperatures 15°C to 49°C (60°F to 120°F).

Note (2): provide 38mm (1-1/2") flexible duct insulation on all exhaust air ductwork from outside wall or roof to damper but a minimum of 1.5 m (5 ft.) Inside building.

Note (3): mixed air includes tempered air downstream of heat recovery units.

Note (4): plenums located outside the building shall be insulated to the values listed in the exterior column.

Note (5): provides 1 hour fire rating. Thickness shall be doubled for 2 hour applications.

Note (6): factory installed ductwork and plenums provided with equipment need not comply with this table provided they meet the requirements of the relevant csa standard for that equipment and is insulated to rsi 0.58 (r3.3) or greater. Refer to necb article 5.2.12.1 for relevant csa standards.

3.4 DUCT FINISHES TABLE

Indoors concealed; factory finish

Indoors exposed in mechanical room and elsewhere; canvas jacket as per tiac standard crf/1 - crd/1

Indoors, exposed in utility areas, parkade, etc.; utility finish as per tiac code crf/2 - crd/2

Indoor exposed in utility areas, parkade, etc. Provide a utility finish as per tiac code crf/2 and crd/2

Outdoors; aluminum jacket as per tiac code crf/3 - crd/3

3.5 PIPING FINISH SCHEDULE

Indoors concealed; factory finish

Indoors exposed in mechanical room and elsewhere; canvas jacket

Indoors, exposed in utility areas, parkade, etc.; pvc jacket

Outdoors; aluminum jacket

3.6 GRILLES, LOUVRES AND DIFFUSERS

Paint ductwork visible behind air outlets matte black.

All air outlets mounted in a t-bar ceiling shall be seismically restrained by either secure attachment to solid ductwork, which is braced at the outlet or wire hangers attached to structure. Wire hangers shall be a minimum of two (2) per outlet and one per 1200 mm length.

Air outlets other than t-bar mounting must be securely attached to the building elements.

FANS													
EQUIPMENT TAG	SERVICE	LOCATION	TYPE	MANUFACTURER	MODEL	AIR FLOW (LPS)	E. S. P. (PA)	F. P. (RPM)	MOTOR SIZE	DRIVE TYPE	SOUND LEVEL (SONES)	WEIGHT (KG)	NOTES
EF-1	CHILDREN ROOM EXHAUST	POOL MECHANICAL ROOM	INLINE MIXED FLOW	CANAM	TI 250	350	125	2,625	FRAC	DIRECT	4.5	8.3	1.2
EF-2	BULK FREEZING ROOM EXHAUST	POOL MECHANICAL ROOM	INLINE MIXED FLOW	CANAM	TI 250	350	125	2,625	FRAC	DIRECT	4.5	8.3	1.2
NOTES:													
1. FAN TO COME WITH 3 YEAR WARRANTY													
2. ULV RESISTANT PLASTIC CASB (UL84)													

SUPPLIER INSTALL WIRE CODES:

M - MECHANICAL
E - ELECTRICAL
G - GENERAL CONTRACTOR

STARTER CODES:

MAN - MANUAL STARTER
MAG - MAGNETIC STARTER
MRR - MOTOR RATED RELAY, 25 VAC COIL
PCS - PACKAGED CONTROL SYSTEM
VFD - VARIABLE FREQUENCY DRIVE
RVS - REDUCED VOLTAGE STARTER
WS - WALL SWITCH
CP - CONTROL PANEL
HQA - MAGNETIC STARTER W/ HOA SWITCH W/ AUX. CONTACTS

SUPPLIER/INSTALL/WIRE CODES:	CONTROL/DEVICE CODES:
M - MECHANICAL	AQUA - PUMP CONTROLLED BY ADJUSTAST
E - ELECTRICAL	BM - BUILDING MANAGEMENT SYSTEM
G - GENERAL CONTRACTOR	ES - E-STOP SWITCH
STARTER CODES:	ET - LINE VOLTAGE TEST/STAT
MAN - MANUAL STARTER	FA - FIRE ALARM
MRT - MOTOR RATED RELAY, 25 VAC COIL	FAP - FIRE ALARM PANEL
PCS - PACKAGED CONTROL SYSTEM	FS - FLOW SWITCH
RFV - REDUCED VOLTAGE STARTER	GS - GAS SENSITOR
RV - WALL SWITCH	H - HUMIDITY SENSOR
CP - CONTROL PANEL	I = INTERLOCK, SEE NOTES
HA - MAGNETIC STARTER WITH HA SWITCH W/ AUX. CONTACTS	LOUT - WIRE TO LIGHT SWITCH
	L5 - LEVEL SWITCH
	OC - OCCUPANCY SENSOR
	PS - PRESSURE SWITCH
	R, STAT - REVERSE ACTING THERMOSTAT
	TC - TIME CLOCK
	T - LOW VOLTAGE TEST/STAT OR SENSOR
	TB - TAMPER SWITCH
	VS - VARIABLE SPEED SWITCH
	WE - WALL SWITCH

ELECTRICAL LOAD CODES:
BHP = BREAK HORSEPOWER
FLA = UNIT FULL LOAD AMPS
HP = UNIT OR MOTOR HORSE POWER
PH = POWER PHASE
MCA = MINIMUM CIRCUIT AMPS
VOLT = REQUIRED SUPPLY VOLTAGE

MISCELLANEOUS CODES:
FFCP = FIRE FIGHTERS CONTROL PANEL
FRAC = FRACTIONAL HORSEPOWER
INT = INTEGRAL PART OF UNIT

GENERAL NOTES:

- A. ALL FIRE ALARM DEVICES WIRED BY ELECTRICAL
- B. CONTROL PANELS ARE SHIPPED LOSS & REQUIRE FIELD WIRING
- C. PCS EQUIPMENT REQUIRES SINGLE SOURCE POWER CONNECTION, UNLESS NOTED OTHERWISE
- D. CP, VFD EQUIPMENT REQUIRES POWER WIRING TO AND FROM CONTROL PANEL TO CONTROLLED EQUIPMENT

NOTES:

MECHANICAL RENOVATION NOTES

1. CONTRACTOR IS RESPONSIBLE FOR REVIEWING AND VERIFYING ACTUAL ON-SITE CONDITIONS AND EQUIPMENT LOCATIONS PRIOR TO ANY AND ALL DEMOLITION WORK AND/OR EQUIPMENT REMOVAL.

2. CONTRACTOR SHALL BE RESPONSIBLE TO SHOW AS PART OF THE BID ALL COSTS ASSOCIATED WITH CUTTING AND PATCHING THAT IT IS REQUIRED TO INSTALL ALL NEW PIPE WORK AS REQUIRED TO THE SITE CONDITIONS. THE WORKMAN SHALL BE RESPONSIBLE TO PROVIDE THE BEST QUALITY OF WORK AND TO MEET THE APPLICABLE PERFORMANCE AND QUALITY STANDARDS FOR THE PROJECT.

3. CONTRACTOR TO PROPERLY SEAL AND REPAIR ANY AND ALL DAMAGE THAT IS A RESULT OF REMOVAL OR DEMOLITION WORK. THIS INCLUDES BUT IS NOT LIMITED TO WALLS, FLOORS, AND CEILING.

4. THE EXISTING DRAWINGS HAVE BEEN PREPARED, IN PART, ON THE BASIS OF INFORMATION COMPILED AND FURNISHED BY OTHERS. AS A RESULT THE ENGINEER WILL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH HAVE BEEN INCORPORATED INTO THIS DOCUMENT.

5. DURING REMOVAL OF ITEMS SO INDICATED, CATCHMENT SHOULD BE USED TO PREVENT DAMAGE TO ANY EQUIPMENT HAVING SALVAGE VALUE. ALL REUSABLE SALVAGED MATERIAL REMAIN THE PROPERTY OF THE OWNER AND BE RETAINED FOR THEIR INSPECTION. ONLY ITEMS AGREED BY THE OWNER SHALL BE DISPOSED OF BY THE CONTRACTOR.

6. ALL EQUIPMENT TO REMAIN UNLESS SPECIFICALLY NOTED. SHOULD THERE BE ANY DISCREPANCIES, CONTRACTOR TO INFORM ENGINEER AND AVOID AWAYT DIRECTION PRIOR TO ANY WORK.

MECHANICAL ABBREVIATIONS			
AD	AREA DRAIN	INV	INVERT
AFI	ABOUT FINISHED FLOOR	JS	JUNCTION SINK
AHU	AIR HANDLING UNIT	KW	KILOWATT
ARCH	ARCHITECTURAL	KS	KITCHEN SINK
BB	BARBERSHOP DRAIN	LV	LAVATORY
BD	BACKDRAFT DAMPER	LAT	LEAVING AIR TEMPERATURE
BF	BOTTLE FILLER	LSB	LOADS
BFP	BACKFLOW PREVENTER	LWT	LEAVING WATER TEMPERATURE
BR	BRAIN HORSEPOWER	MAU	MAKE-UP AIR UNIT
BT	BRUSH THERMAL UNIT / HOUR	MAX	MAXIMUM
CD	CONTROL DAMPER	MH	MANHOLE
CE	CLEARANCE	MBH	1000 BRITISH THERMAL UNITS/HOUR
CFM	CUBIC FEET PER MINUTE	MD	MOTORIZED DAMPER
CLG	CELING	MECH	MECHANICAL
CO	CLEANOUT	MIN	MINIMUM
CONN	CONNECTION	MJ	MAKE-UP MECHANICAL WATER
COW	COMPLETE WITH	NFHB	NON FREEZE WALT HYDRANT
DB	DRY BULB	NC	NOT IN CONTRACT
DB	DRY BULB	NO	NOISE CRITERION/NOTATION CLOSED
CTE	CONNECT TO EXISTING	NO	NORMALLY OPEN
DOW	DIRECT DOWD WATER	NTS	NOT TO SCALE
DCC	DIRECT DIGHT CONTROL	OIA	OUTSIDE AIR
DEG	DEGREE	OBD	OPPOSITE BLADE DAMPER
DF	DRAINING FOUNTAIN	OD	OPEN EXISTD DUCT
DHW	DOMESTIC HOT WATER	OD	OUTSIDE DIAMETER
DA	DAMETER	PO	PLUMBING AND DRAINAGE INSTITUTE
DW	DRAIN	PC	POINT OF CONNECTION
DW	DISH WASHER	PRV	PRESSURE REDUCING VALVE
DWD	DRAINING	PSI	POUNDS PER SQUARE INCH
DWH	DISH HOT WATER RECIRCULATION	R/R	RETURN AIR
EIA	EXHAUST AIR	RF	RETURN FAN
EAT	ENTERING AIR TEMPERATURE	RM	ROOM
EX	EXHAUST FAN	RRM	REVOLUTIONS PER MINUTE
EFF	EFFICIENCY	RAIN	RAIN WATER LEADER
ELEC	ELECTRICAL	SA	SIA SUPPLY AIR
ENT	ENTERING	SF	SURFY FAN
ESP	EXTERNAL STATIC PRESSURE	SH	SHOWER
EWI	ENTERING WATER TEMPERATURE	SK	SINK DRAIN ABOVE
EXH	EXHAUST	SS	STAINLESS STEEL
F	FIRE MAN	SP	STATIC PRESSURE
FD	FLOOR DRAIN	SPEC	SPECIFICATION
FE	FIRE EXTINGUISHER	ST	STAINLESS STEEL
FLA	FLUE LOAD APPAS	ST	STORM MAIN
FLR	FLOOR	TIA	TRANSFER AIR DUCT
FM	FEET PER MINUTE	TAD	TRANSFER AIR DUCT
FT	FEET/FOOT	TBC	TO BE CONFIRMED
GA	GALLONS	TBD	TO BE DETERMINED
GPM	GALLONS PER MINUTE	TD	TRENCH DRAIN
GWS	GYPNUM WALL BOARD	THRU	THROUGH
HD	HUB DRAIN	TS	TAMPER SWITCH
HB	HOB BIRD	TSP	TOTAL STATIC PRESSURE
HP	HORSEPOWER	TY	TYPICAL
HCR	HEATING COIL RETURN	UP	UPRUAL
HCS	HEATING COIL SUPPLY	V	VENT
HRR	HEAT RECOVERY RETURN	VFD	VARIABLE FREQUENCY DRIVE
HRS	HEAT RECOVERY SUPPLY	VENT	VENT THROUGH ROOF
HWR	HEATING WATER RETURN	W	WATER MAIN
HWS	HEATING WATER SUPPLY	WB	WET BULB
ID	INSIDE DIAMETER	WC	WATER CLOSET
IN	INVERT ELEVATION	WCO	WALL CLEANOUT
IN	INCH	WG	WATER GAUGE

CONSULTANT:

SEAL:

PROJECT TITLE:

IQALUIT AQUATIC CENTRE - CHLORINE UPGRADE

PROJECT ADDRESS:

900 NIQUNNGUSIARIAQ

DRAWN BY	IG
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DATE	BY
TIME	ALSO

SCALE	NIS
1-5	1-5

DATE _____

COVER SHEET, SYMBOLS AND SCHEDULES

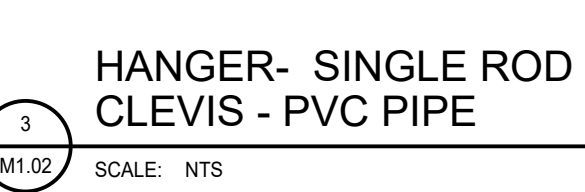
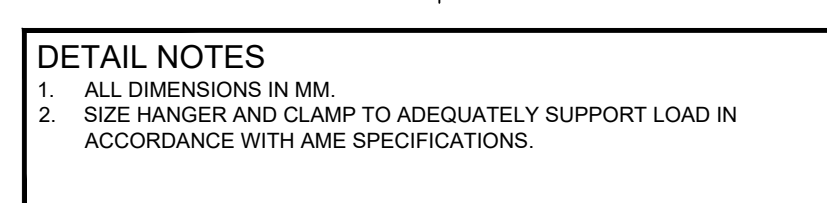
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449b-001-22

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SEAL:

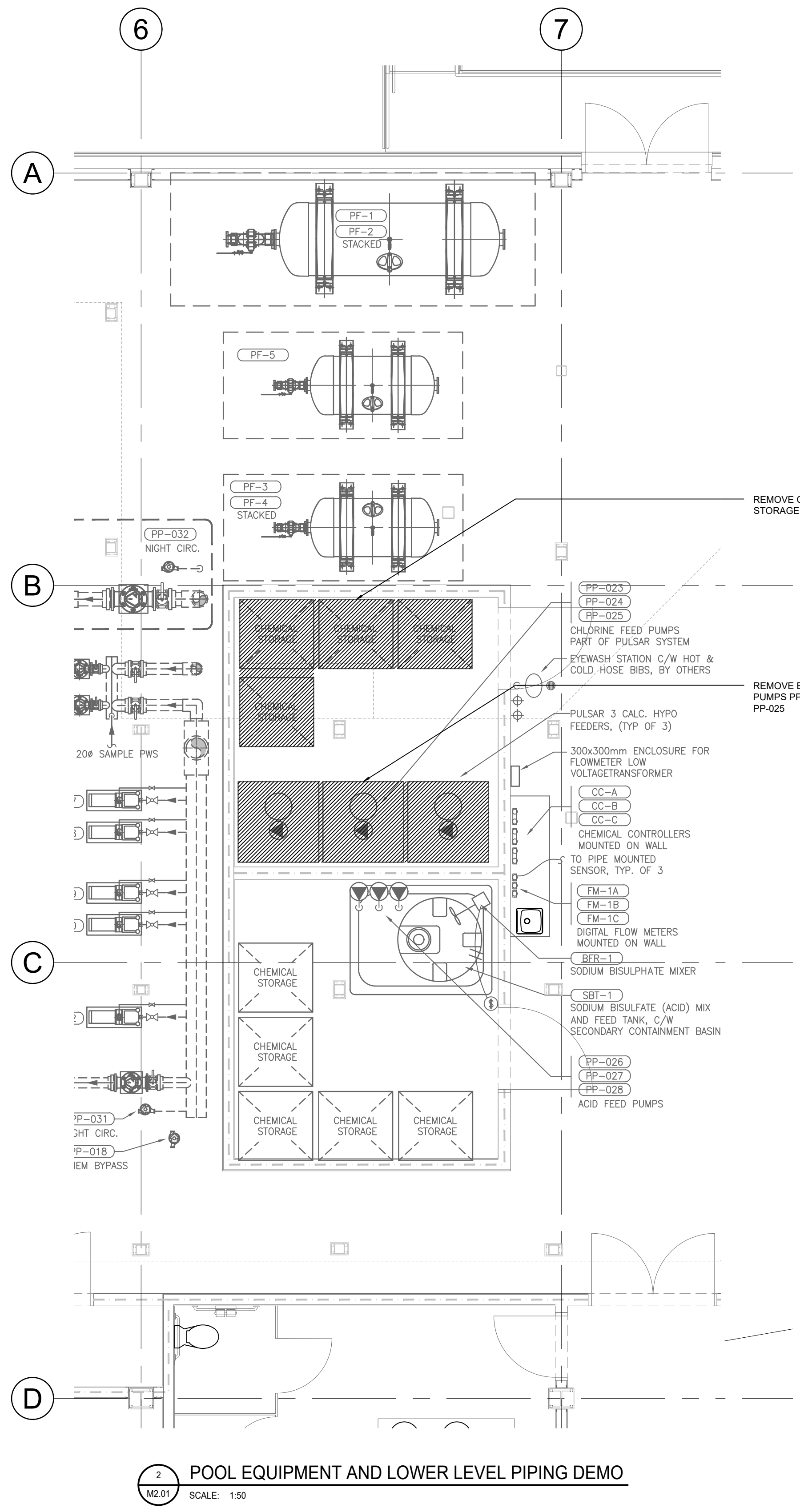
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**IQUALUIT AQUATIC
CENTRE - CHLORINE
UPGRADE**

PROJECT ADDRESS:
900 NIQUNNGUSIARIAQ

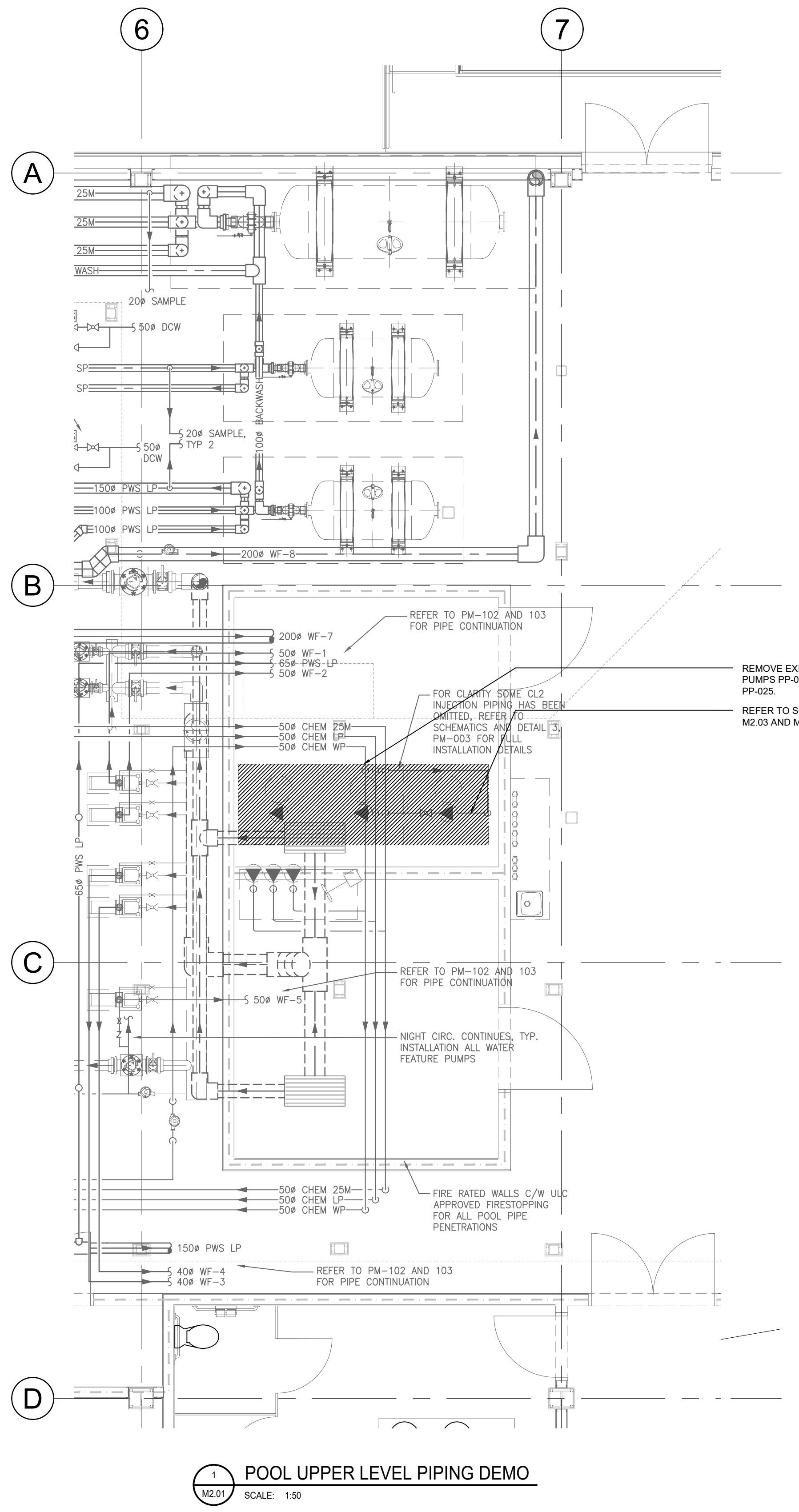
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SCALE	NTS
DATE	OCT 26, 2022

DRAWING TITLE:
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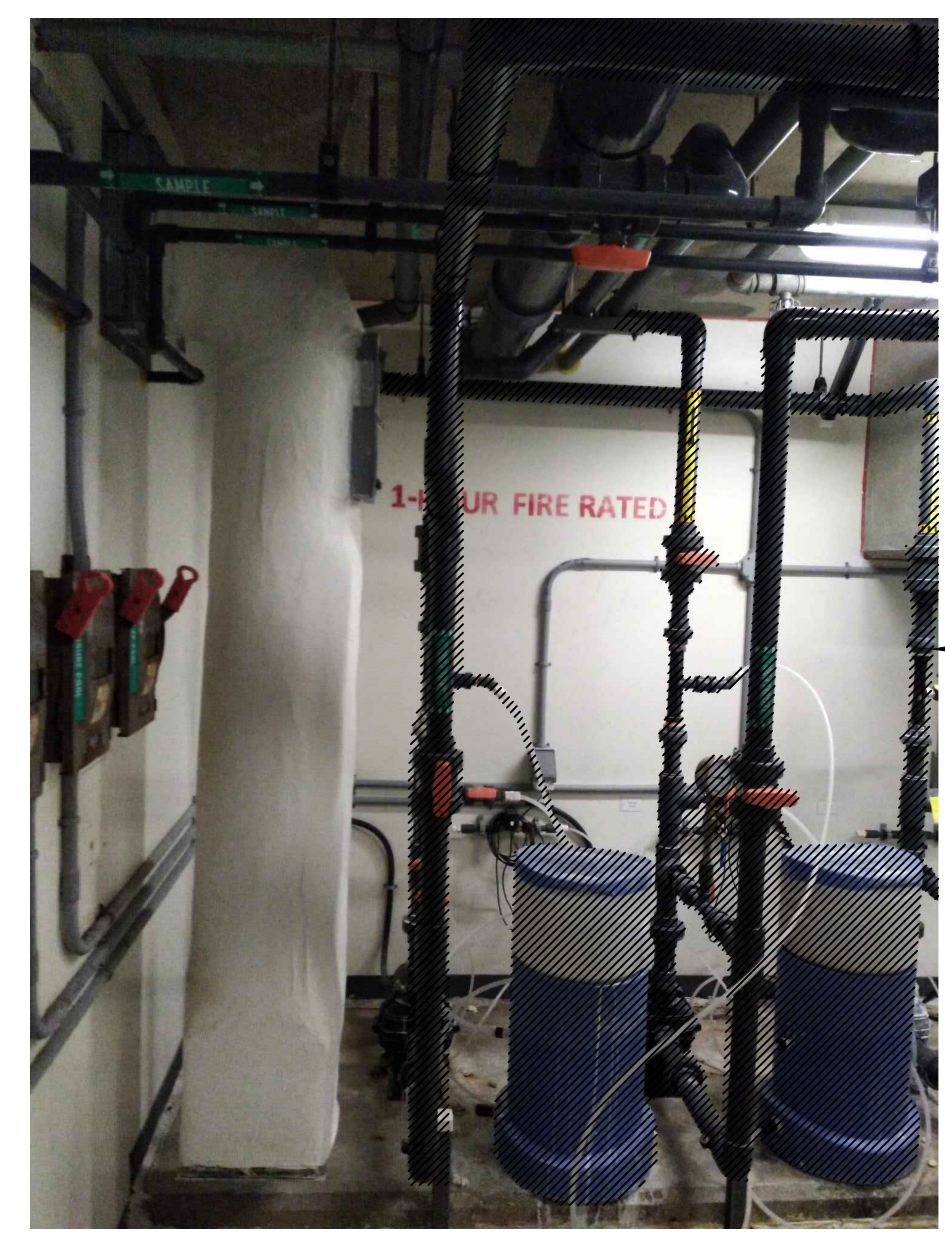
PROJECT NO.	DRAWING NO.
449b-001-22	M1.02



2 POOL EQUIPMENT AND LOWER LEVEL PIPING DEMO
M2.01 SCALE: 1:50



1 POOL UPPER LEVEL PIPING DEMO
M2.01 SCALE: 1:50



3 EXISTING CALCIUM HYPOCHLORITE SYSTEM
M2.01 SCALE: NTS

REMOVE CALCIUM HYPOCHLORITE PUCK FEEDER, INJECTION PUMPS AND PIPEWORK

REV.	DATE	DESCRIPTION
1.	2022.12.06	ISSUED FOR PROGRESS
2.	2023.01.31	ISSUED FOR TENDER

CONSULTANT:

SEAL:

PROJECT TITLE:
IQUALUIT AQUATIC CENTRE - CHLORINE UPGRADE

PROJECT ADDRESS:
900 NIQUUNGUSIARIAQ

DRAWN BY	JG
CHECKED BY	EN
SCALE	NTS
DATE	OCT 26, 2022

DRAWING TITLE:
POOL PLAN DEMO



CONSULTANT:

SEAL:

PROJECT TITLE:

IQALUIT AQUATIC CENTRE - CHLORINE UPGRADE

PROJECT ADDRESS:

900 NIQUNNGUSIARIAQ

DRAWN BY	JG
CHECKED BY	EN
SCALE	NTS
DATE	OCT 26, 2022

DRAWING TITLE:

POOL PLAN RENO

PROJECT NO.

449b-001-22

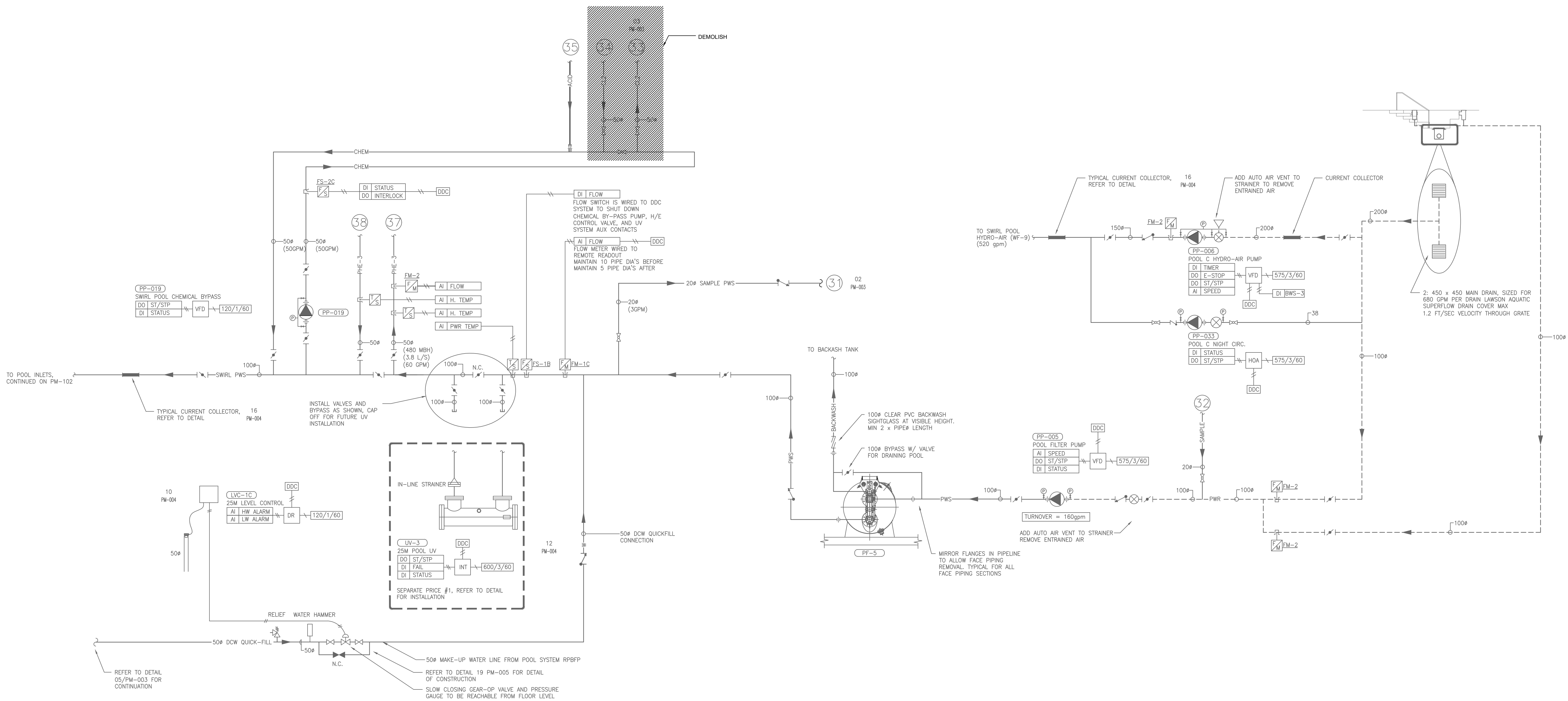
DRAWING NO.

M2.02



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THE CONTRACTOR SHALL CHECK AND VERIFY ALL DIMENSIONS AND REPORT ALL ERRORS AND OMISSIONS TO THE CONSULTANT PRIOR TO COMMENCING THE WORK.
THESE DRAWINGS ARE NOT TO BE SCALED.

REV.	DATE	DESCRIPTION
1.	2022.12.06	ISSUED FOR PROGRESS
2.	2023.01.31	ISSUED FOR TENDER



POOL C - SWIRL POOL SCHEMATIC - DEMO
SCALE: NTS

CONSULTANT:

SEAL:

PROJECT TITLE:
IQUALUIT AQUATIC CENTRE - CHLORINE UPGRADE

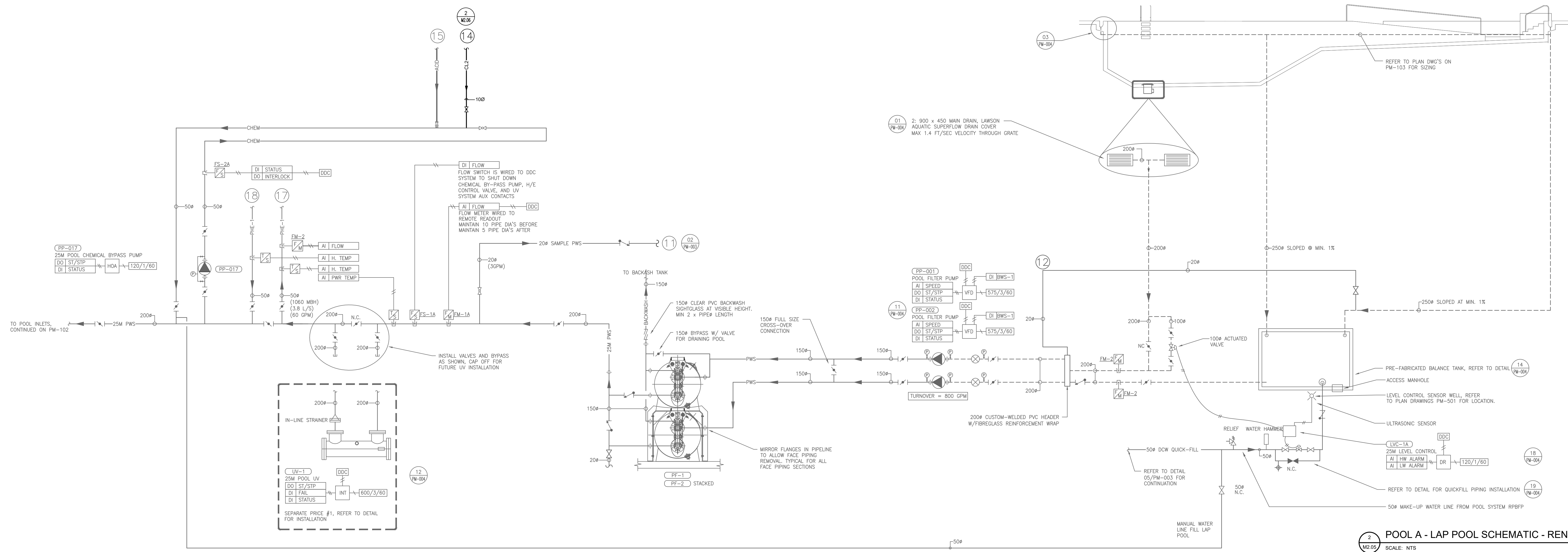
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900 NIQUUNGUSIARIAQ

DRAWN BY: JG
CHECKED BY: EN
SCALE: NTS
DATE: OCT 26, 2022

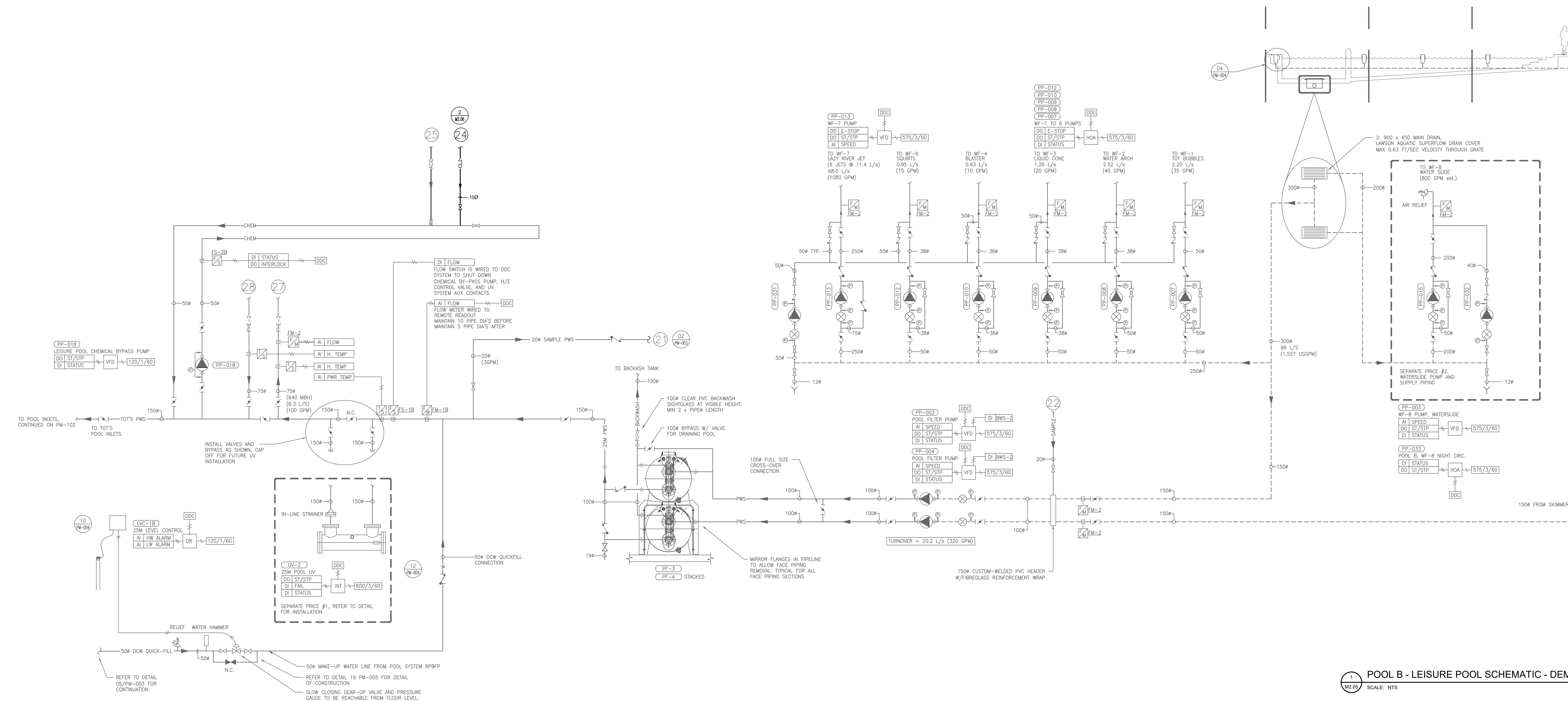
DRAWING TITLE:
POOL SCHEMATIC DEMO II

PROJECT NO. 449b-001-22 **DRAWING NO.** M2.04

REV.	DATE	DESCRIPTION
1.	2022.12.06	ISSUED FOR PROGRESS
2.	2023.01.31	ISSUED FOR TENDER



POOL A - LAP POOL SCHEMATIC - RENO
SCALE: NTS





GENERAL WORKS

1.1 GENERAL SCOPE
PROVIDE SHALL BEALN REPLY AND INSTALL
CONSULTANT SHALL BEALN REPLY GROUP CONSULTING PROFESSIONAL ENGINEERS
PROVIDE COMPLETE, FULLY TESTED AND OPERATIONAL, SYSTEMS TO MEET THE REQUIREMENTS DESCRIBED HEREIN AND IN COMPLETE ACCORDANCE WITH APPLICABLE CODES AND ORDINANCES. ALL NEW EQUIPMENT SHALL BE FULLY INTEGRATED WITH EXISTING EQUIPMENT AND SYSTEMS TO PROVIDE A FULLY FUNCTIONING SYSTEM.
PROVIDE DRAWINGS, MATERIALS AND PROGRAMS. THEY ESTABLISH SCOPE, MATERIALS AND INSTALLATION QUALITY BUT NOT DETAILED INSTALLATION INSTRUCTIONS.
FOLLOW MANUFACTURERS' RECOMMENDED INSTALLATION INSTRUCTIONS, DETAILS AND PROCEDURES FOR EQUIPMENT, SUPPLEMENTED BY REQUIREMENTS OF THE CONTRACT DOCUMENTS.
PROVIDE TO THE OWNER A RECORD DRAWING SET OF THE PROJECT. THE RECORD DRAWING SET SHALL BE SUBMITTED TO THE CONSULTANT NO LATER THAN SEVEN (7) WORKING DAYS PRIOR TO THE MECHANICAL TRADER CLOSING TENDER DATE. APPROVAL OF ANY CONDITIONS OF THE SITE OR ITEM EXISTING THEREIN, WHICH IS VISIBLE OR KNOWN TO EXIST AT THE TIME OF TENDER.
CLARIFICATIONS OR REQUESTS FOR CLARIFICATIONS OF THE PROJECT SHALL BE SUBMITTED IN WRITING TO THE CONSULTANT NO LATER THAN SEVEN (7) WORKING DAYS PRIOR TO THE MECHANICAL TRADER CLOSING TENDER DATE. APPROVAL OF ANY CONDITIONS OF THE SITE OR ITEM EXISTING THEREIN, WHICH IS VISIBLE OR KNOWN TO EXIST AT THE TIME OF TENDER.
MAKE REFERENCE TO EXISTING ELECTRICAL, MECHANICAL, STRUCTURAL AND ARCHITECTURAL DRAWINGS IN ADDITION TO THIS SET OF NEW DRAWINGS WHEN NOTING DAY WORK. CONSULT WITH RESPECTIVE AGENCIES IN SETTING OUT LOCATION OF THE PROJECT. PROVIDE TO THE OWNER A RECORD DRAWING SET OF THE PROJECT. THE RECORD DRAWING SET SHALL BE SUBMITTED TO THE CONSULTANT NO LATER THAN SEVEN (7) WORKING DAYS PRIOR TO THE MECHANICAL TRADER CLOSING TENDER DATE. APPROVAL OF ANY CONDITIONS OF THE SITE OR ITEM EXISTING THEREIN, WHICH IS VISIBLE OR KNOWN TO EXIST AT THE TIME OF TENDER.

1.2 CODE COMPLIANCE, PERMITS AND FEES
ALL WORK SHALL COMPLY WITH CURRENT EDITIONS OF THE NATIONAL, PROVINCIAL AND MUNICIPAL CODES, STANDARDS, ACTS AND BYLAWS AND WILL MEET THE REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION.
OBTAIN ALL NECESSARY PERMITS AND PAY ALL FEES NECESSARY TO THE ISSUE OF WORK. CONTRACTOR SHALL ARRANGE FOR INSPECTIONS OF THE WORK BY THE AUTHORITIES HAVING JURISDICTION AND SHALL PROVIDE CERTIFICATES INDICATING FINAL APPROVAL.

1.3 TENDER PRICE AND PAYMENT
THE TENDER PRICE SHALL BE THE TOTAL PRICE FOR THE WORK. CONTRACTOR SHALL PROVIDE A SUMMARY OF THE WORK IN A FORMAT AGREED TO WITH THE CONSULTANT. AS A MINIMUM INCLUDE EQUIPMENT, MATERIALS AND LABOUR FOR MECHANICAL, PLUMBING, STEEL, METAL, FIRE PROTECTION AND CONTROLS.

1.4 SUBMITTALS
COMPLY WITH DIVISION 1 - SUBMISSION AND CLOSEOUT PROCEDURES AND IN ADDITION THE FOLLOWING:
CONSULTANT SHALL PROVIDE AND SUBMIT TO THE CONSULTANT ASSURANCE OF PROFESSIONAL DESIGN, DESIGN AND COMMITMENT FOR FIELD REVIEW SCHEDULE 5-B AND ASSURANCE OF PROFESSIONAL, FIELD REVIEW AND COMPLIANCE SCHEDULE 5-C FOR DESIGN ENGINEERING.
CONSULTANT SHALL PROVIDE SHOP DRAWINGS FOR ALL EQUIPMENT AS ELECTRONIC FILES (PDF, DWG, DWF, D3D, OR COMPARABLE), WHEN MANUFACTURERS' SHOP DRAWINGS ARE PROVIDED TO THE PROJECT. THESE SHALL BE FULLY INTEGRATED WITH THE PROJECT DRAWINGS AND SHALL BE SUBMITTED TO THE CONSULTANT NO LATER THAN SEVEN (7) WORKING DAYS PRIOR TO THE MECHANICAL TRADER CLOSING TENDER DATE. APPROVAL OF ANY CONDITIONS OF THE SITE OR ITEM EXISTING THEREIN, WHICH IS VISIBLE OR KNOWN TO EXIST AT THE TIME OF TENDER.
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1.5 RECORDS
CONSULTANT SHALL PROVIDE A SUMMARY OF THE WORK IN A FORMAT AGREED TO WITH THE CONSULTANT. AS A MINIMUM INCLUDE EQUIPMENT, MATERIALS AND LABOUR FOR MECHANICAL, PLUMBING, STEEL, METAL, FIRE PROTECTION AND CONTROLS.
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1.6 TESTING
CONSULTANT SHALL PROVIDE A SUMMARY OF THE WORK IN A FORMAT AGREED TO WITH THE CONSULTANT. AS A MINIMUM INCLUDE EQUIPMENT, MATERIALS AND LABOUR FOR MECHANICAL, PLUMBING, STEEL, METAL, FIRE PROTECTION AND CONTROLS.
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1.7 DRAWINGS AND SPECIFICATIONS
CONSULTANT SHALL PROVIDE A SUMMARY OF THE WORK IN A FORMAT AGREED TO WITH THE CONSULTANT. AS A MINIMUM INCLUDE EQUIPMENT, MATERIALS AND LABOUR FOR MECHANICAL, PLUMBING, STEEL, METAL, FIRE PROTECTION AND CONTROLS.
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1.8 CUTTING, PATCHING AND CORING
CONSULTANT SHALL PROVIDE A SUMMARY OF THE WORK IN A FORMAT AGREED TO WITH THE CONSULTANT. AS A MINIMUM INCLUDE EQUIPMENT, MATERIALS AND LABOUR FOR MECHANICAL, PLUMBING, STEEL, METAL, FIRE PROTECTION AND CONTROLS.
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1.9 COMPLIANCE WITH ENERGY BY-LAW
CONSULTANT SHALL PROVIDE A SUMMARY OF THE WORK IN A FORMAT AGREED TO WITH THE CONSULTANT. AS A MINIMUM INCLUDE EQUIPMENT, MATERIALS AND LABOUR FOR MECHANICAL, PLUMBING, STEEL, METAL, FIRE PROTECTION AND CONTROLS.
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1.10 INSTALLATION OF EQUIPMENT
CONSULTANT SHALL PROVIDE A SUMMARY OF THE WORK IN A FORMAT AGREED TO WITH THE CONSULTANT. AS A MINIMUM INCLUDE EQUIPMENT, MATERIALS AND LABOUR FOR MECHANICAL, PLUMBING, STEEL, METAL, FIRE PROTECTION AND CONTROLS.
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1.11 EQUIPMENT AND MATERIALS
CONSULTANT SHALL PROVIDE A SUMMARY OF THE WORK IN A FORMAT AGREED TO WITH THE CONSULTANT. AS A MINIMUM INCLUDE EQUIPMENT, MATERIALS AND LABOUR FOR MECHANICAL, PLUMBING, STEEL, METAL, FIRE PROTECTION AND CONTROLS.
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1.12 DELIVERY, STORAGE AND HANDLING
CONSULTANT SHALL PROVIDE A SUMMARY OF THE WORK IN A FORMAT AGREED TO WITH THE CONSULTANT. AS A MINIMUM INCLUDE EQUIPMENT, MATERIALS AND LABOUR FOR MECHANICAL, PLUMBING, STEEL, METAL, FIRE PROTECTION AND CONTROLS.
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1.13 PRECASTING AND SHOCKE SEALS
CONSULTANT SHALL PROVIDE A SUMMARY OF THE WORK IN A FORMAT AGREED TO WITH THE CONSULTANT. AS A MINIMUM INCLUDE EQUIPMENT, MATERIALS AND LABOUR FOR MECHANICAL, PLUMBING, STEEL, METAL, FIRE PROTECTION AND CONTROLS.
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1.14 COMMISHONING AND DEMONSTRATION
CONSULTANT SHALL PROVIDE A SUMMARY OF THE WORK IN A FORMAT AGREED TO WITH THE CONSULTANT. AS A MINIMUM INCLUDE EQUIPMENT, MATERIALS AND LABOUR FOR MECHANICAL, PLUMBING, STEEL, METAL, FIRE PROTECTION AND CONTROLS.
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1.15 FLASING AND ROOF CURBS
CONSULTANT SHALL PROVIDE A SUMMARY OF THE WORK IN A FORMAT AGREED TO WITH THE CONSULTANT. AS A MINIMUM INCLUDE EQUIPMENT, MATERIALS AND LABOUR FOR MECHANICAL, PLUMBING, STEEL, METAL, FIRE PROTECTION AND CONTROLS.
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1.16 SEISMIC CONTROL
CONSULTANT SHALL PROVIDE A SUMMARY OF THE WORK IN A FORMAT AGREED TO WITH THE CONSULTANT. AS A MINIMUM INCLUDE EQUIPMENT, MATERIALS AND LABOUR FOR MECHANICAL, PLUMBING, STEEL, METAL, FIRE PROTECTION AND CONTROLS.
CONSULTANT SHALL PROVIDE A SUMMARY OF THE WORK IN A FORMAT AGREED TO WITH THE CONSULTANT. AS A MINIMUM INCLUDE EQUIPMENT, MATERIALS AND LABOUR FOR MECHANICAL, PLUMBING, STEEL, METAL

1

PROVIDE EYE MARINE GRADE COATING ON ALL SUPPORTS LOCATED IN AQUATIC AREA, AQUATIC STORAGE ROOMS, BASEMENT AND MAIN FLOOR MECHANICAL ROOMS. PAINTING BY QUALIFIED TRADE OR FACTORY SUPPLIED WITH COORDINATION WITH THE CONTRACTOR. PROVIDE ALL NECESSARY HANDLING PROCEDURES.

2

PROVIDE REINFORCED LINER/UTL CHAMBER, OR PVC MANGE SUPPORTS IN POOL, RISERS, STAINLESS STEEL.

3

ALL METAL ANCHORS IN POOL, RISERS, TANGERS/UMBRELLAS ARE TO BE 316L STAINLESS STEEL.

4

ENFORCE STEEL HANGERS IN CONTACT WITH COPPER PIPING AND COPPER ALLOY DISCREETLY COATED.

5

ALL HANGERS, ROD, AND SUPPORTS REQUIRED FOR UNLACED POOL, PIPING BELOW GRADE TO BE STAINLESS STEEL.

3

UPPER ATTACHMENT STRUCTURAL, SUBSTENSION FROM UPPER FLANGE OF BEAM

1

CHECK CARBON STEEL, WELDED EYE ROD, KLEVIS PLATE, CLEVIS PIN, AND COTTERS WITH WELDED FORGED STEEL EYE NUT. ENSURE EYE-ARM MINIMUM GREATER THAN ROD DIAMETER.

2

CONCRETE INSERTS TO BE CONCRETE WITH COTTER/PROTECTOR PLATE UNLESS TIE TO MISS SP9.

5

SHOULDER FABRICATED TO SPECIFICATIONS

1

TRAPEZOID HANGER ASSEMBLIES

2

STEEL BRACKETS

6

HANGER RODS: THREADED ROD MATERIAL TO MISS SP9.

1

ENSURE THAT HANGER RODS ARE SUBJECT TO TENSILE LOADING ONLY.

2

PROVIDE LINKAGES WHERE LATERAL OR AXIAL MOVEMENT OF PIPEROW IS ANTICIPATED.

4

POOL TESTING AND BALANCING

1

POOL SYSTEM VERIFICATION

1

FLUSHED, FILL, VENTED.

2

PRIME PUMP ROTATION

3

STRAINERS IN PLACE, BASKETS CLEAN.

4

ISOLATING AND BALANCING VALVES INSTALLED, OPEN.

5

CALIBRATED BALANCING VALVES INSTALLED, AT FACTORY SETTINGS.

6

CHEMICAL TREATMENT SYSTEMS COMPLETE, OPERATIONAL.

6

EXECUTION

6

INSTALLATION

1

INSTALL IN ACCORDANCE WITH PROVIDING PLUMBING CODE AND BC HEALTH CODE.

6

POOL PIPING & CONNECTIONS:

1

ALL PIPING SHALL BE STORED ABOVE GRADE AND COVERED FOR PROTECTION FROM WEATHER. PIPING SITTING ON THE GROUND WILL BE MARKED & WILL NOT BE ALLOWED TO BE INSTALLED. UNPROTECTED PIPING CREATES BACTERIAL GROWTH WHEN THE SYSTEMS ARE FILLING AND DRAINING.

2

UNDERLAP PIPING TO BE LEFT UNENCAVED BY EXPLICIT DIRECTION OF MECHANICAL CONSULTANT. ONLY PIPES TO BE BRACED AGAINST WATER HAMMER USING ROD SUPPORTS IF NECESSARY.

3

ONLY USE SCHEDULE 40S FOR TAPPING. LOCATE TAPPIINGS AS REQUIRED FOR EQUIPMENT INSTALLATION.

4

SUPPORT PIPING UPON OR AGAINST STRUCTURE PRIOR TO ENCASMENT WITH MECHANICA. SUPPORTS AS REQUIRED. RESTRAIN AGAINST MOVEMENT PRIOR TO COHESIVE POUR.

5

MECHANICAL ROOM AND CHEMICAL ROOM PIPING LOCATED TO ALLOW READY ACCESS TO CRITICAL, REGULARLY USE VALVES BY OPERATOR. VERIFY STATUS OF PARTICIPANT PRIOR TO CONCRETE POUR.

6

PROVIDE FLANGE CONNECTIONS WHEN CONNECTING TO EQUIPMENT.

7

INSTALLATION IN CONCRETE.

8

ALL UNIONS TO BE 8-16 PVC, CIV EPDM O-RINGS. ALL UNIONS TO BE BY ONE MANUFACTURER TO ENSURE EASY RESPLY OF O-RINGS.

9

APPLY SLOTTED GRADE TO ALL SYSTEM RINGS AND UNIONS THROUGH TO ENSURE EASY OF ASSEMBLY.

10

PROVIDE RESISTANT RESTRAINTS AS PER DIRECTION OF JESSIE ENGINEER, AND PROVIDE ANTI-CORROSION RESTRAINTS AGAINST WATER HAMMER IN PIPING AS MAY BE REQUIRED.

11

ALL FLANGE BOLTS AND WASHERS SHALL BE SUITABLE FOR A CORROSIVE ENVIRONMENT. ACCEPTABLE MATERIALS ARE STAINLESS STEEL OR EQUAL.

12

TORQUE LOGS SHALL BE SUBMITTED TO THE JESSIE ENGINEER TO MEET TORQUE REQUIREMENTS. PRIOR TO SYSTEM START UP TO ENSURE LONG TERM WATER TIGHTNESS OF SYSTEM.

13

INSTALL FLANGES TO ALLOW FLANGE ROD REMOVAL.

14

SHOULDER CLEANSURES WHERE REQUIRED TO REDUCE EQUIPMENT LOCATED UNDER IMPOSSIBLE WHERE NECESSARY.

15

SPROUT CLEANING WARE REQUIRED TO REDUCE EQUIPMENT LOCATED UNDER IMPOSSIBLE WHERE NECESSARY.

16

PIPS SHALL NOT BE THREADED ORITE. USE TEES AND NOT ADJES FOR LARGE DIFFERENTIAL CONNECTIONS. DRAIN AND TAPPING OF PIPES SHALL BE USED AS A LAST RESORT UNDER THE FOLLOWING CONDITIONS:

1

NO DRILL AND TAPPING WHATSOEVER SHALL BE USED UNDER SLAB. DRILL AND TAP IN MECHANICAL ROOM SPACE OR IN THE MECHANICAL ROOM OF ALL ISOLATION VALVES ONLY.

2

WHERE POSSIBLE, TAP ON SIZE LARGER AND REQUIRED AND NOTAL. THREAPE TAPING REDUCING BUSTING TO STRENGTHEN TAPPING INSTALLATION.

3

ONLY USE SCHEDULE 40S FOR TAPPING. LOCATE TAPPIINGS AS REQUIRED FOR EQUIPMENT INSTALLATION.

4

IN MECHANICAL ROOM ONLY, DRILL AND TAP IN MECHANICAL ROOMS WHERE REDUCING TEES PREVENT PROPER DEVICE INSTALLATION E.G. FLOW SWITCHES AND TEMPERATURE SENSORS) AND WHERE THREAPE > 20MM DIAMETER ARE TAPPED INTO PIPES > 100MM DIAMETER. FOR LARGER TAPINGS ON SMALLER PIPES, USE REDUCING TEES. DO NOT TAP PIPES > 100MM DIAMETER EXCEPT IN CASE OF CHEMICAL INJECTION POINTS, WHICH REQUIRE EXPOSURE TO CENTRE OF FLOW WITH PIPELINE.

5

THREAD, GUE, AND EPOXY ALL TAPPED CONNECTIONS EXCEPT EQUIPMENT CONNECTIONS. REPAIR ALL HOOKS AFTER PRESSURE TESTING AS REQUIRED.

17

PIPE FASTENING

1

P.V.C. HOT AIR WELDING IN TAPPED CONNECTIONS WITH MANUFACTURERS RECOMMENDATIONS SHALL BE ALLOWED ONLY FOR NON-LEAK FLANGES OR BACK WELDING OF GUE FITTINGS, OR BY PERMISSION OF THE ENGINEER.

2

OBTAIN MANUFACTURERS PROCEDURE LITERATURE BEFORE WELDING OF PIPE. SUMMIT THIS LITERATURE TO ENGINEER AS PART OF SHOP DRAWINGS. HAVE THE PROCEDURES ON SITE DURING INSTALLATION OF ALL PIPING.

3

WHEN WELDING IS ALLOWED, THE CONTRACTOR SHALL DEMONSTRATE TO THE ENGINEER HIS ABILITY TO PROPERLY WELD P.V.C. PIPING PRIOR TO WELDING FINISHES PRODUCTS.

4

ALL CEMENTING SHALL BE DONE AT TEMPERATURES EXCEEDING 50°C. SUMMIT MANUFACTURERS WRITING PROCEDURES IF WELDING AT COLDER TEMPERATURES.

5

ALL PIPING SHALL BE CLEANED PRIOR TO CEMENTING.

6

ALL PIPING SHALL BE CLEANED PRIOR TO CEMENTING.

7

FOLLOWING MANUFACTURERS PUBLISHED LITERATURE FOR PUMPING AND GUMING OF PIPE ENSURING THE USE OF CORRECT SIZE OF BRUSH AND THAT FITTINGS ARE TWISTED W/ PRIOR TO GUE SETTING.

3

VALVES:

1

BALL VALVES

1

BOCKET WELDED BALL VALVES: MANTAIN UPSTREAM/DOWNSTREAM PIPE ALIGNMENT AND TENSION TO PREVENT UNEQUAL OR EXCESSIVE COMPRESSION OF VALVE COMPONENTS.

2

LOCATE VALVES WHENEVER POSSIBLE AT EASY ACCESSIBLE ELEVATIONS.

3

LOCATE DRINGS AND THREAPE WITH MINIMAL SLOTTED-GRADE GRADE.

2

BUTTERFLY VALVES

1

CONNECT BUTTERFLY VALVES WITH FLANGES. MANTAIN UPSTREAM/DOWNSTREAM PIPE ALIGNMENT AND TENSION TO PREVENT UNEQUAL OR EXCESSIVE COMPRESSION OF VALVE COMPONENTS.

2

LOCATE OAH OPERATORS FOR REGULARLY USED BUTTERFLY VALVES LOCATED AT HIGH LEVEL.

3

CHECK VALVES

1

INSTALL CHECK VALVES ON PARALLEL PUMP SYSTEMS.

2

INSTALL CHECK VALVES TO PROTECT FLOW FROM REVERSING. REFER TO DRAWINGS.

3

ALIGN CHECK VALVES TO ENSURE PROPER OPERATION AND TO PREVENT VAPOR LAMING ON OPEN POSITION.

4

INSTALL CHECK VALVES AT THE TEE OF THE CHEMICAL FEED INJECTION AND MAIN FILTRATION PIPE.

4

PRESSURE REGULATING VALVES

1

PRESSURE REGULATING VALVES ARE TO BE USED TO PROTECT PIPES FROM DEAD HEADING. INSTALL REGULATOR ON A 90-DEGREE TEE TO PRE-CHARGE FLOW INTO THE INJECTION SIDE OF THE PUMP.

4

SUPPORTS & HANGERS:

1

REFER TO SECTION 22.01.09 - HANGERS & SUPPORTS FOR MECHANICAL PIPING & EQUIPMENT FOR ADDITIONAL INFORMATION.

2

HANGERS TO BE EPOXY COATED IN ALL MECHANICAL ROOMS AND CHEMICAL ROOMS.

3

PROVIDE HANGER END REINFORCING BAR BLOCKING, STRAPS FOR PROPER SUPPORT AND CORRECT COVERAGE WHEN CONCRETE ENCAING PIPING.

4

MINIMUM ONE HANGER PER SECTION OF PIP.

5

INSTALL HANGERS A MAXIMUM 300MM AWAY FROM AN ELBOW. SUPPORT ON BOTH SIDES OF ELBOWS.

6

PROVIDE BRACK RESTRAINTS AS PER DIRECTION OF JESSIE ENGINEER TO MEET TORQUE REQUIREMENTS.

7

PROVIDE RESTRAINTS AGAINST WATER HAMMER IN PARTICULAR PIPING LOCATIONS AS REQUIRED AND ESTIMATED TIME OF EQUIPMENT STARTUP.

6

FRESHSTOPPING

1

CONFORM TO REQUIREMENTS OF SECTION 22.01.11 FIRE STOPPING

6

TESTING

1

PRESSURE TEST ABOVE GRADE PIPING, INCLUDING ALL EQUIPMENT, AS A WHOLE PRIOR TO SYSTEM STARTUP.

2

ALL POOL, RELATING PIPING SHALL BE TESTED TO A MINIMUM OF 1.1 TIMES SYSTEM DEAD HEAD PRESSURE, OR 511 KPA, WHICHEVER IS GREATER, FOR A PERIOD OF EIGHT HOURS.

3

EQUIPMENT WITH LESSER PRESSURE RATINGS AT LOWER TEST PRESSURE. ISOLATE PRIOR TO TESTING REASONS OF EQUIPMENT AND PIPING AT HIGHER PRESSURE IF APPLICABLE.

4

CYCLE TEST PRESSURE TWICE FOR MECHANICAL ROOM PIPING TEST TO ENSURE ALL MECHANICAL COMPONENTS ENDURE PRESSURE CHANGES.

5

ALL PIPING TO BE TESTED TO FAILURE. TEST RESULTS SHALL BE REPAIRED & TESTED TO THE CRACK.

6

ALL UNDERGROUND POOL, PIPING SHALL BE TESTED AND PASSED PRIOR TO ENCAING PIPING IN CONCRETE. MANTAIN TEST DURING PIPE ENCAINGMENT AND PIPING WILL BE TESTED AGAIN FOUR DAYS AFTER CONCRETE ENCAINGMENT.

7

POOL, PIPING SHALL BE TESTED TO 50 KPA FOR A PERIOD OF EIGHT HOURS. TEST FILTERS PRIOR TO INTRODUCTION OF SAND MEDIA.

8

ALL PIPING TO BE TESTED TO FAILURE. TEST RESULTS SHALL BE REPAIRED & TESTED TO THE CRACK.

9

ALL PRESSURE TESTS TO BE DOCUMENTED AND PLACED INTO MAINTENANCE MANUAL. DOCUMENT TO INDICATE WHAT IS BEING TESTED, STARTUP/TIME TABLE OF TEST, PRESSURE START PRESSURE, FINISH PRESSURE AND WITNESS.

10

ALL PIPING TO BE TESTED TO FAILURE. TEST RESULTS SHALL BE REPAIRED & TESTED TO THE CRACK.

11

PHOTOS WILL BE KEPT ON FILE AND TURNED OVER TO THE CONSULTANT AT COMPLETION. CONSULTANT WILL NOT SIGN OFF PIPING UNLESS PHOTOS ARE AVAILABLE AT ALL TIMES ON SITE.

7

SECTION 22.11.19 - SWIMMING POOL TREATMENT

1

SUMMARY

1

SECTION INCLUDES:

1

THE INSTALLATION OF AQUATIC DISINFECTION AND CHEMICAL TREATMENT SYSTEMS.

2

RELATE CONDITIONS

1

READ IN CONJUNCTION WITH ALL ARCHITECTURAL, FRONT END DOCUMENTS. NOTE ANY DISCREPANCIES AT TIME OF BID.

2

COMMON WORKS

22.11.19 - SWIMMING POOL PIPING

22.11.19 - SWIMMING POOL PUMPS

5

INTEGRATED AUTOMATIC CONTROL SEQUENCES

2

REFERENCES

1

NATIONAL SANITATION FOUNDATION (NSF) STANDARD 50

2

CANADIAN STANDARDS ASSOCIATION (CSA)

3

SUBMITTALS

1

SUBMITTALS IN ACCORDANCE WITH SECTION 21.05.01 COMMON WORK RESULTS MECHANICAL.

2

PRODUCT DATA.

1

SUBMIT MANUFACTURERS PRINTED PRODUCT LITERATURE, SPECIFICATIONS, AND DATA SHEET FOR FUTURES AND EQUIPMENT.

3

SHOP DRAWINGS

1

SUBMIT SHOP DRAWINGS TO INDICATE:

1

EQUIPMENT, INCLUDING CONNECTIONS, FITTINGS, CONTROLS, ASSEMBLIES, AND ANCHLURES. IDENTIFY WHETHER FACTORY OR FIELD ASSEMBLED.

2

WIRING AND SCHEMATIC DIAGRAMS.

3

DIMENSIONS AND RECOMMENDED INSTALLATION.

4

PROVIDE EQUIPMENT FROM SPECIFIED EQUIPMENT LISTS. WHEN PROPONGING A ALTERNATE EQUIPMENT WITH ELECTRICAL/HYDRAULIC CHARACTERISTICS DIFFERENT FROM THOSE OF SPECIFIED EQUIPMENT, CONTRACTOR RESPONSIBLE FOR PROVIDING A SINGLE MANUFACTURER LITERATURE LITER

[illegible]

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A. SUMMARY OF WORK

1. DEFINITION

- 1.1 The City of Iqaluit is hereinafter and elsewhere in the Contract Documents referred to as the Owner. The contract documents may refer to “the Owner”, “the City of Iqaluit”, “the City” and “City”. All these have the same meaning as “the Owner”.
- 1.2 The contract documents may refer to “City Representative”, “Engineer”, “Consultant”, “Owners Agent” and “Contract Administrator”. All these have the same meaning as “City Representative”.
- 1.3 Where the word “provide” is used in any General Requirements sections or the Terms of Reference, it shall mean furnishing and incorporating a specified item, product, or material in the Works, including all necessary labour, materials, and equipment to perform the Work required, ready for use by the Owner.

2. GENERAL SUMMARY

- 2.1 Recognize that the Work under the Contract is to be performed in a facility, location, area that must be kept in continuous uninterrupted operation, or where municipal services must be maintained. Plan and schedule the Work consistent with specified operational constraints and with the objective of uninterrupted operation of the existing facility, structure, and/or service provided by the City.
- 2.2 Supervise, organize, coordinate and direct all construction operations described in the contract documents, regardless of the section in which the works are specified. The Contractor shall resolve conflicts arising between trades, sub-contractors, suppliers and/or other contractors working in the adjacent area.
- 2.3 Construct and test foundations, structures, pipelines, buildings, tanks, equipment and other facilities shown on the contract drawings and specified within the terms of reference.
- 2.4 Supply, install, calibrate and commission all mechanical, electrical, process, instrumentation and communication equipment shown on the contract drawings and specified within the terms of reference. Include operating assistance to the Owner as described.
- 2.5 In addition to constructing the works shown on the drawings and described within the terms of reference, design, construct, and maintain, unless otherwise specified on shown on the drawings or described in the terms of reference, all temporary works and facilities required for the construction of the works. Remove temporary works and facilities when construction is completed. Temporary works and facilities include, but are not limit to, the following:
 - .1 All security fencing whether permanent or temporary.
 - .2 Shoring and bracing systems for excavations whether part of all is left in place or not, shall be designed, approved and stamped by a Professional Engineer Licensed in Nunavut.

- .3 Construction access roads and related items.
- .4 Excavation and/or dewatering systems.
- .5 Formwork for concrete.
- .6 Falsework and bracing for formwork or for other parts of the works while under construction.
- .7 Bracing and shoring for partially completed steelwork, precast concrete, existing structures and pipelines, or other assembly.
- .8 Scaffolding.
- .9 Temporary bypass pumping systems to divert flows away from the work area so that services are uninterrupted, while ensuring the work can be performed safely.
- .10 Protection for existing structures and facilities as necessary for the construction to proceed.
- .11 Temporary power and/or utilities necessary to existing City buildings and/or facilities, in order to ensure services are not interrupted as a result of the work.
- .12 Curtains to control the migration of dust during work inside existing buildings, structures, and rooms.
- .13 Temporary barriers and enclosures.
- .14 Temporary utilities (water, power, light, instrumentation, heating, ventilation services and sanitary facilities, etc.).
- .15 Piping and equipment support.
- .16 Snow removal around the job site.
- .17 Temporary vehicular access and parking development, maintenance, and restoration.
- 2.6 Contractor to be responsible for all means and methods required to execute the work, as described in the Terms of Reference.

3. WORK BY OTHERS

- 3.1 Coordinate work of other Contractors. Report promptly to City Representative, in writing, any defects which may interfere with proper execution of the Work for this contract.

4. CODES AND PERFORMANCE REQUIREMENTS

- 4.1 Perform work in accordance with National Building Code of Canada (NBC) and any other code of territorial or local application provided that in any case of conflict or discrepancy, the more stringent requirements shall apply.

- 4.2 Meet or exceed the requirements of:
- .1 Contract documents.
 - .2 General requirements and terms of reference.
 - .3 Addenda.
 - .4 Reviewed Shop Drawings.
 - .5 Field Instructions and Change Orders.
 - .6 Other modifications to Contract.
 - .7 Field test reports.
 - .8 Copy of approved work schedule.
 - .9 Manufacturer's installation and application instructions.

5. WORK COMPLIANCE

- 5.1 Provide all work during its progress and at its completion to the lines, levels, and grades shown.
- 5.2 Build all work in a thoroughly substantial and workmanlike manner, in accordance with the Contract Drawings, General Requirements, and Terms of Reference, subject to such modifications and additions as may be deemed necessary during its execution. In no case will any work more than the requirements of the Drawings, General Requirements or Terms of Reference be paid for, unless approved in writing by the City Representative.

6. ENGINEER DESIGN

- 6.1 Where general requirements or terms of reference require work to be designed by an engineer, engage a professional engineer licensed in the Territory of Nunavut within demonstrated experience to design such work.

7. DOCUMENTS REQUIRED

- 7.1 Maintain at job site, one copy each document as follows:
- .1 Contract Documents
 - .2 Contract Drawings
 - .3 Addenda
 - .4 Reviewed Shop Drawings
 - .5 List of Outstanding Shop Drawings

- .6 Change Orders
- .7 Other Modifications to Contract
- .8 Field Test Reports
- .9 Copy of Approved Works Schedule
- .10 Site Specific Health and Safety Plan and Other Safety Related Documents
- .11 Current as-built document of construction work in progress
- .12 Other documents as specified

8. SUBSTANTIAL COMPLETION

- 6.1 In addition to the requirements in the General Conditions and Supplementary General Conditions, Substantial Completion shall only be issued once the following requirements have been addressed to the satisfaction of the City Representative:
 - .1 Successful testing, start-up and commissioning of all equipment and/or systems specified in the Contract Documents.

END OF SECTION

B. CONTRACTORS USE OF PREMISES

1. DESCRIPTION

- 1.1 This Section specifies requirements for the Contractor's use of project site during the construction.

2. GENERAL

- 2.1 Normal working hours shall be Monday to Friday, 7:00am to 5:00pm, excluding statutory holidays. Work shall be permitted outside of these hours by obtaining written approval from the City Representative and Owner, five (5) working days in advance of the planned work.
- 2.2 The Contractor shall arrange with the City for easements for construction, storage and access to all the Works within the Owner's property line.
- 2.3 Do not enter upon or occupy with workers, tools or materials any land other than public streets, roadways, rights-of-way's or easements shown on the Contract Drawings except after written consent has been received from the property owner.
- 2.4 The Contractor shall obtain written approval from the City Representative for shutdown and tie-in work to existing facilities and structures. The City's staff will be responsible for operations of the existing facilities and structures during the construction period.
- 2.5 The Contractor shall obtain written approval from the City Representative for work that will be executed within a municipal right-of-way, and for partial or full closure of municipal roadways.
- 2.6 Do not impede normal operation of existing facilities and structures.
- 2.7 A temporary fence and access gate are to be erected to separate the work area from the plant operating area as specified herein and as directed by the City Representative.

3. STAGING AREA

- 3.1 The staging area will be identified on the contract drawings or provided by the City Representative at the pre-construction meeting.
- 3.2 Locate construction trailers, laydown areas, and temporary buildings under the direction of the City Representative.

4. WORK AREA

- 4.1 Contractor shall clearly delineate the entire perimeter of his working area with a sturdy metal fence of at least 1.8m height, with sufficient access gates, complete with signage identifying company name, site contact telephone number, and emergency contact information prior to commencement of any work.

- 4.2 All points of entry into the Contractor's working area, including stair and walkways, shall be similarly controlled by sturdy barriers and signage. Do not impede emergency egress from any area.
- 4.3 Confine operations within easements for construction, storage and access.
- 4.4 Install, secure and maintain fencing along working and storage areas, access routes and both sides of easements.
- 4.5 Do not enter upon or occupy any land with labor, tools or materials other than the easements for construction except after written consent has been received from property owner.
- 4.6 Do not encumber site with materials or equipment.
- 4.7 Where the work takes place in different areas of the facilities, structures, or work areas at different times of the contract, a 'rolling' definition of working area can be utilized.

5. STORAGE

- 5.1 Contractor shall provide suitable storage areas, as well as security if needed, for construction materials. Storage and security of construction materials will be the responsibility of the Contractor.
- 5.2 Contractor shall obtain permission from the City Representative before storing any materials in any new facility or work areas under construction.
- 5.3 Excess materials resulting from any or all excavations are the property of the Owner. Its disposal by the Contractor as part of the contract shall be as directed by the Owner unless the Owner waives this requirement. Under this circumstance, the contractor shall be responsible for the disposal of any or all of the excess materials.

6. ENTRY OF OWNER'S STAFF INTO CONTRACTOR'S WORKING LIMITS

- 6.1 The Owner may require access to the work site during the construction period for the purpose of maintaining normal operation of City infrastructure and services. Cooperate with the Owner in scheduling construction activities to facilitate the Owner's usage and to minimize conflict.
- 6.2 Maintain the entire works free of debris, snow and ice at all times, including access to all buildings, facilities and structures which continues to be operated and/or maintained by Owner's staff.
- 6.3 Prepare a written procedure regarding the entry of Owner's staff into the construction site and submit to the City Representative for review. The procedure must be communicated to all operating staff who may enter the construction site.
- 6.4 The existing facilities and/or structures operate 24 hours per day, 7 days per week. In the event of conflict between construction activities and general operations, operations shall



CONSTRUCTION SERVICES
PART IV – GENERAL REQUIREMENTS



have priority. Take every precaution to avoid interfering within routine operation and maintenance.

END OF SECTION

C. COORDINATION

1. CONSTRUCTION COORDINATION WITH CITY OPERATIONS STAFF

- 1.1 The existing facilities, structures and systems operate 24 hours a day, 7 days per week. In the event of a conflict between construction operations and routine City operations, City operations have priority. Take every precaution to avoid interfering with routine operation and maintenance activities. Reschedule construction activities, if required, without change to the contract price.
- 1.2 Coordinate activities on the site and in the existing buildings/ facilities/ structures with the City Representative.
- 1.3 Perform work continuously during critical shutdowns, connections and changeover, and as required to prevent interruption of City operations.
- 1.4 The Contractor must identify work activities that may impact the operation and maintenance activities of the City operations staff, in advance of the scheduled work, at least 5 business days prior to the work. The Contractor shall submit to the City Representative a detailed work plan listing work activities for the next 14 calendar days, detailing the works that will affect City operations staff.
- 1.5 Do not close lines, open or close valves, or take other action which would affect the operation of the existing systems, except as specifically required by the Contract Documents and only after the prior authorization of the City Representative has been obtained.
- 1.6 Coordinate the proposed work with the City Representative prior to process shutdowns. Under no circumstances stop the work at the end of a normal working day if such action may cause a cessation of any facility or structure operating process. In such cases, remain on site until the necessary work is complete.
- 1.7 Coordinate activities on the site and in the existing buildings/ facilities with the City Representative.
- 1.8 Perform work continuously during critical shutdown, connection and changeover, and as required to prevent interruption of the facility operation or City services.
- 1.9 Shutdown of existing facilities/ structures and tie-ins:
 - .1 When the Contractor requires a part of an existing facility, structure, or process system shutdown for execution of construction activities, a formal shutdown request must be made in writing at least 14 calendar days in advance of the requested shutdown date. The shutdown request shall describe in detail the proposed method, and the procedures proposed to accomplish each portion of the Work that requires an interruption to the operation of the existing facility, structure or system. The Contractor shall not begin any such Work until it has received written acceptance of the methodology and approach from the City Representative. The Contractor shall include in its plan the specific number of

work hours to complete each facility interruption, along with measures to mitigate risk to the City.

- .2 The Contractor participating in the planning and execution of the shutdown shall coordinate with the City staff on the planning of the shutdown activity. The Contractor and City staff shall work together to establish a shutdown specific energy and equipment lockout strategy that is required for each shutdown of existing facilities, structures, and systems for all work that includes the Contractor's work to connect new systems to the existing facilities and structures. The operator is not obliged to provide the shutdown within the 14-day period if the effectiveness of the plant operations could be compromised. The operator will not unreasonably delay or refuse to make the plant processes or systems available for the Contractor's construction activities. A delay or refusal shall be based on the operator's opinion that the performance of the plant will be compromised.
- .3 At each location where tie-in is required, the Contractor shall provide a complete system of temporary works including bulkheads, pumps, power, equipment, and labor as necessary to maintain facility/ structure/ system operations, and to allow for construction of the new structures/ systems.
- .2 All temporary equipment, tools, materials, labor, and miscellaneous equipment must be scheduled and available at the Site in advance of any shutdowns. The Owner will not be responsible for delays or claims as a result of the Contractors lack of coordination.
- .3 The City reserves the right to cancel any scheduled shutdown if system or weather conditions dictate, at no additional cost to the City.
- .4 Prior to making major tie-ins to existing process units and structures, demonstrate that the equipment installed in all new structures is fully functional. Connections to existing works will not be permitted until all equipment in the new adjacent works operates to the satisfaction of the City Representative. No claim for delay will be entertained due to unsatisfactory operation of any equipment.
- .10 Operations provided by City staff:
 - .i Access to City facilities and structures.
 - .ii Opening and closing of existing valves and gates in existing buildings, structures, or systems.
 - .iii Isolation of existing process piping.
- .11 In the event any existing facility or structure is damaged, changes mode of operation or there is a risk of actual process upset due to the Contractor's work activity, the Contractor shall stop work immediately, contact the City Operations representative, report the incident to the City Representative, and make the Contractor's on-site resources available at the request and direction of the City Operations Representative at no extra cost to the project to mitigate any damage.

- .12 Contractor shall supply and maintain all appropriate and necessary equipment for confined space entry operations in accordance with applicable regulations.
- .13 The Contractor shall coordinate confined space entry operations where multiple parties are involved in accordance with the Nunavut Safety Act and Occupational Health and Safety Regulations.

2. COORDINATION OF TRADES AND SUBCONTRACTORS

- 2.1 The Contractor shall ensure cooperation with and between the trades and Subcontractors to ensure that the Work is carried out expeditiously and in a satisfactory manner. The Contractor shall be responsible for all extra costs arising from failure to properly coordinate the Work with the work of others
- 2.2 Coordinate civil, structural, architectural, mechanical, electrical, and instrumentation and work for the equipment and systems being constructed. Planning and coordinate the work in a timely manner so that the work proceeds expeditiously.
- 2.3 Extras will not be considered, based on differences of interpretation of the terms of references, as to which trade shall supply and install certain items or materials. Such coordination is entirely the responsibility of the Contractor.

3. COOPERATION WITH OTHER CONTRACTORS

- 3.1 Other contracts may be awarded to construct adjacent work to which this contract work connects.
- 3.2 At the interference with other contracts, jointly plan and coordinate with other contractors the work so that the project:
 - .1 Will not be delayed.
 - .2 Will not be endangered in any way.
 - .3 Will be correctly connected.
 - .4 Will not cause the City to be designated as the “Prime Contractor” as set out in the Safety Act.
- 3.3 Where any equipment is supplied by the Owner, coordinate unloading, transfer, installation, testing and placing into operation.
- 3.4 Where other work is in progress within or adjacent to the limits of this Contract, cooperate and coordinate with other Contractor(s), Utility Companies and the City of Iqaluit, and allow reasonable, free access to their work at all times.
- 3.5 Cooperate and make suitable working arrangements with other Contractor(s).
- 3.6 Notify the City Representative in advance and obtain approval in writing from the City Representative for all arrangements made with other Contractor(s).

4. UTILITY NOTIFICATION AND COORDINATION

- 4.1 Coordinate the Work with various utilities within Project limits. The Contractor shall notify applicable utilities prior to commencing the Work. The Contractor shall also notify the applicable utilities if any damage occurs, or if conflicts or emergencies arise during the execution of the Work.
- 4.2 Should any piping, sewers, cables or similar services be encountered during performance of the work that are not known from the City or other utility companies records, the Contractor shall notify the City Representative and the appropriate utility agency and shall not proceed with their removal or cutting until direction has been provided.

5. WORKING WITHIN THE A CITY EASEMENT AND/OR RIGHT-OF-WAY

- 5.1 For construction work that will be taking place within a City easement and/or right-of-way, the Contractor must submit to the City Representative a completed City of Iqaluit Utility Permit application, along with all supplementary documents, for review and approval with the Department of Public Works and Engineering.
- 5.2 Supplementary documents shall include:
 - .1 Brief work plan methodology describing the work that will be taking place within the easement and/or right-of-way, the means of construction, temporary structures that will be used, the equipment that will be used.
 - .2 Schedule outlining duration of work, along with all phases and activities that will comprise the work.
 - .3 Traffic control plan (if applicable).
- 5.3 Utility permits must be submitted 20 business days in advance of the planned Work. The Contractor will not be granted an extension of time to the Contract, should they fail to submit a permit application within the timelines stipulated.
- 5.4 No work can proceed until approval has been provided in writing by the City Representative.
- 5.5 The Contractor must account for the time to review and approve permit applications within their construction schedule.
- 5.6 Pay relevant permit fees and charges.

6. PARTIAL OR FULL CLOSURE OF A MUNICIPAL ROADWAY

- 6.1 For construction work that will require a partial or full closure of a municipal roadway, the Contractor must submit to the City Representative a completed City of Iqaluit Road Closure Permit Application, along with all supplementary documents, for review and approval with the Department of Public Works and Engineering.

- 6.2 Supplementary documents shall include:
- .1 Brief work plan methodology describing the work that will be taking place within the easement and/or right-of-way, the means of construction, temporary structures that will be used, the equipment that will be used.
 - .2 Schedule outlining duration of work, along with all phases and activities that will comprise the work.
 - .3 Traffic control plan. Refer to Section E Special Project Procedures regarding traffic control plan requirements.
- 6.3 Road closure permits must be submitted 20 business days in advance of the planned Work. The Contractor will not be granted an extension of time to the Contract, should they fail to submit a permit application within the timelines stipulated.
- 6.4 No work can proceed until approval has been provided in writing by the City Representative.
- 6.5 The Contractor must account for the time to review and approve permit applications within their construction schedule.
- 6.6 Pay relevant permit fees and charges.

7. WATER AND SEWER CONNECTIONS/ DISCONNECTIONS

- 7.1 For tie-in to City water and/or sewer infrastructure, the Contractor must submit to the City Representative a completed City of Iqaluit Water & Sewer Connection/ Disconnection Permit Application, along with all supplementary documents, for review and approval with the Department of Public Works and Engineering.
- 7.2 Supplementary documents shall include:
- .1 Brief work plan methodology describing the work that will be taking place within the easement and/or right-of-way, the means of construction, temporary structures that will be used, the equipment that will be used.
 - .2 Schedule outlining duration of work, along with all phases and activities that will comprise the work, along with dates/ times when City operations support is required to shutdown/ isolation of City systems.
 - .3 Traffic control plan (if applicable). Refer to Section E Special Project Procedures regarding traffic control plan requirements.
 - .4 By-pass plan (if applicable). Refer to Section E Special Project Procedures regarding by-pass plan requirements.
- 7.3 Utility permits must be submitted 20 business days in advance of the planned Work. The Contractor will not be granted an extension of time to the Contract, should they fail to submit a permit application within the timelines stipulated.

- 7.4 No work can proceed until approval has been provided in writing by the City Representative.
- 7.5 The Contractor must account for the time to review and approve permit applications within their construction schedule.
- 7.6 Pay relevant permit fees and charges.

8. WORKING IN EXISTING BUILDINGS

- 8.1 Obtain permission in writing from the City Representative prior to commencing work within an existing City building and/or facility, at least 7 business day prior to the start of work. The Contractor is to notify the City Representative what work will be taking place within the existing building, along with the measures that will be taken in order to ensure separation of work from City operations. Refer to Section E Special Project Procedures work permits.
- 8.2 The Contractor shall be responsible for enforcement of fire protection methods and procedures and adherence to local fire regulations, including any applicable requirements of the Safety Act and Occupational Health and Safety Regulations during the execution of the Work.
- 8.3 The Contractor shall ensure that existing fire protection and alarm systems are not obstructed, shut-off or made inactive at any time for the duration of the Contract. The Contractor shall not use any fire hydrant, standpipe or hose system for other than fire protection purposes.

END OF SECTION

D. REGULATORY REQUIREMENTS

1. SUBMITTALS

- 1.1 Quality Control Submittals: Submit certificates from inspecting authorities for electrical work and pressure piping, etc.

2. APPLICABLE CODES

- 2.1 Comply with the latest edition of the following statutes and codes and all amendments thereto:
- .1 The Nunavut Building Code Act and Regulations.
 - .2 National Building Code of Canada.
 - .3 Safety Act and Occupational Health and Safety Regulations.
 - .4 Nunavut Boilers and Pressure Vessel Act and Regulations.
 - .5 Canadian Electrical Code.
 - .6 Nunavut Electrical Protection Act.
 - .7 Nunavut Gas Protection Act.
 - .8 Codes and Standards of the National Fire Protection Association (NFPA).
 - .9 Nunavut Environmental Protection Act.
 - .10 Nunavut Waters and Nunavut Surface Rights Tribunal Act.
 - .11 City of Iqaluit Municipal Design Guidelines.
 - .12 City of Iqaluit By-Laws:
 - .i By-Law No. 200 Water & Sewer Services.
 - .ii By-Law No. 137 Highway Obstructions.
 - .iii By-Law No. 138 Highway Occupancy.
 - .iv By-Law No. 319 Highway Traffic.
- 2.2 The Contractor shall conform to and enforce strict compliance with the Safety Act and Occupational Health and Safety Regulations. For purposes of the Safety Act and Occupational Health and Safety Regulations, the Contractor will be designated the “Prime Contractor” and assumes the responsibilities of the “Prime Contractor” as set out in the Act and its regulations.

3. PERMITS, APPROVALS, AND LICENCES

- 3.1 Apply for, obtain, and pay for all permits, approvals, and licenses required for the project, including but not limited to:
- .1 Canadian Standards Association (CSA).
 - .2 Field certification of equipment.
 - .3 Electrical supply and inspection authorities including Government of Nunavut Electrical Safety authority. Contractor shall apply for permit, and review of installations.
 - .4 City of Iqaluit utility permits.
 - .5 City of Iqaluit road closure permits.
 - .6 City of Iqaluit water and sewer service connection/ disconnection permits.
 - .7 Government of Nunavut Building permits.
 - .8 Government of Nunavut Boiler and Pressure Vessel permits.
 - .9 Government of Nunavut Gas and Liquified Petroleum Gas permits.
 - .10 Other permits required for the work from governing federal, territorial and municipal authorities having jurisdiction.
- 3.2 Arrange for regular inspections and a final inspection with:
- .1 The territorial electrical safety inspector.
 - .2 The territorial building inspector.
- 3.3 Arrange for all other regular inspections and final inspections.
- 3.4 The Contractor shall be solely responsible, without limitations, for any delays arising from the Contractor's failure to plan for the required inspections and to ascertain the availability of the Permit/Approval/Licensing Inspectors to complete the required inspections for the Works under this Contract. The related costs and expenses incurred by the Contractor shall be borne by the Contractor, with no change in the Contract Price and/or Contract Time.

END OF SECTION

E. SPECIAL PROJECT PROCEDURES

1. UTILITIES

- 1.1 The Contractor's attention is drawn to the presence of utilities on and around this site. The locations of utilities as shown on the Contract Drawings are approximate only and are not guaranteed. The Contractor shall be responsible for obtaining a stake-out of the utility from the company involved. The Contractor shall co-ordinate his work with the Utility Company and the Owner of concerned, should there be any bracing, removal or relocation of the pole lines or underground utility required. There will be no additional payment to the Contractor for any delays due to the relocation of utilities.

2. LIMITS OF CONSTRUCTION

- 2.1 The Contractor shall note that all work is to be contained within the limits of construction as noted in the Contract Documents. Trespassing outside these limits is not allowed. These requirements will be strictly enforced.
- 2.2 The Contractor shall coordinate the use of premises for staging, construction, storage and access area under the direction of the City Representative.

3. WORK PERMITS

- 3.1 When working in existing City facilities, buildings, and structures, the Contractor is to abide by the Owner's Location Work Permit. Contractor's site representatives will be expected to attend an initial meeting to complete this Permit together with the Owner at minimum every 7 business days in advance or with every change in location or nature of the work, to review safe work procedures as it relates to work within the existing facility. No work will be allowed to take place in existing facilities until the Location Work Permit procedure is utilized.
- 3.2 Provide a detailed work plan and schedule outlining all proposed tasks and timing for the related work. Meet with the City Representative and Owner as may be required to clarify and coordinate activities and timing. The City will review the request and return with comments if any.

4. TRAFFIC CONTROL

- 4.1 The Contractor shall develop a site-specific Traffic Control Plan (TCP) as per the site condition and submit to the City Representative for review and approval. TCP must be submitted 7 business days prior to start of construction work.
- 4.2 Contractor shall follow all standards traffic control procedures in accordance with the requirements of the Safety Act and Occupational Health and Safety Regulations.
- 4.3 Comply with requirements relevant City of Iqaluit By-Laws with respect to road obstructions and occupancy.
- 4.4 When working on travelled ways:

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- .1 Place equipment in position which presents minimum interference and hazard to travelling public.
- .2 Keep equipment units as close together as working conditions permit and preferably on same side of travelled way.
- .3 Do not leave equipment on travelled way overnight.
- 4.5 Do not close any lanes or roads without approval of City Representative via a Road Closure permit. Before re-routing traffic erect suitable signs and devices approved by City Representative.
- 4.6 Keep travelled ways graded, free of pot-holes and of sufficient width for required number of lanes of traffic.
- 4.7 Keep travelled ways free of snow:
 - .1 Pile snow in designated location(s).
 - .2 Do not pile snow on construction site or on adjacent property.
- 4.8 As indicated, provide graveled detours or temporary roads to facilitate passage of traffic around restricted construction area:
 - .1 Do grading for detour in accordance with City Representative's written approval.
- 4.9 Provide and maintain road access and egress to property fronting along Work under Contract and in other areas as indicated, unless other means of road access exist that meet approval of City Representative.
- 4.10 Provide and maintain signs, flashing warning lights and other devices required to indicate construction activities or other temporary and unusual conditions resulting from Project Work which requires road user response.
- 4.11 Supply and erect signs, delineators, barricades (concrete jersey barriers) and miscellaneous warning devices as required by the City of Iqaluit.
- 4.12 Place signs and other devices in locations approved by City Representative.
- 4.13 Meet with City Representative prior to commencement of Work to prepare list of signs and other devices required for project. If situation on site changes, revise list to approval of City Representative.
- 4.14 Continually maintain traffic control devices in use by:
 - .1 Checking signs daily for legibility, damage, suitability and location. Clean, repair or replace to ensure clarity and reflectance.
 - .2 Removing or covering signs which do not apply to conditions existing from day to day.

- 4.15 Provide competent flag persons and properly equipped as Directed by City Representative.
- .1 When public traffic is required to pass working vehicles or equipment that block all or part of travelled roadway.
 - .2 When it is necessary to institute one-way traffic system through construction area or other blockage where traffic volumes are heavy, and traffic signal system is not in use.
 - .3 When workmen or equipment are employed on travelled way over brow of hills, high snowbanks, around sharp curves or at other locations where oncoming traffic would not otherwise have adequate warning.
 - .4 Where temporary protection is required while other traffic control devices are being erected or taken down.
 - .5 For emergency protection when other traffic control devices are not readily available.
 - .6 In situations where complete protection for workers, working equipment and public traffic is not provided by other traffic control devices.
 - .7 At each end of restricted sections as directed by City Representative.
 - .8 Delays to public traffic due to contractor's operators: maximum 15 minutes.
- 4.16 Where roadway, carrying two-way traffic, is restricted to one lane, for 24 hours each day, provide portable traffic signal system. Adjust, as necessary, and regularly maintain system during period of restriction. Signal system to meet requirements of Part IV of Manual of Uniform Traffic Control Devices for Streets and Highways.
- 4.17 Maintain existing conditions for traffic throughout period of contract except that, when required for construction under contract and when measures have been taken as specified and approved by City Representative to protect and control public traffic.
- 4.18 Maintain existing conditions for traffic crossing right-of-way.
- .1 Maintain existing conditions for traffic crossing right-of-way except when required for construction.
 - .2 Delays to public traffic: maximum 15 minutes.

5. WORK IN HAZARDOUS AREAS

- 5.1 Before commencing the day's work and while working in areas that may contain an explosive, toxic or oxygen deficient atmosphere, test for explosive, toxic gases, and oxygen deficiencies. If a hazardous condition is found, make the work area safe before commencing or continuing work.

- .1 Provide and maintain a suitable detection meter. Use this meter continuously. Calibrate the meter to sound an alarm at a preset warning level.
- .2 Recalibrate the meter at times recommended by the manufacturer.
- 5.2 Smoking is not permitted in the hazardous areas and other areas designated by the City. The Contractor shall post “No Smoking” signs as required.
- 5.3 Use non-sparking tools in areas where an explosive atmosphere may exist.
- 5.4 Perform work in hazardous locations in accordance with the requirements of the Safety Act and Occupational Health and Safety Regulations.
- 5.5 It is the Contractor’s responsibility (as Prime Contractor) to establish the classification of the work areas for the purpose of this contract.
- 5.6 Work Procedures for Hazardous Locations:
 - .1 Contractor is a Prime Contractor on this project and is responsible for site safety.
 - .2 Construction activities that occur in hazardous locations require continuous combustible gas monitoring by the Contractor when the potential for a hazardous atmosphere exists.
- 5.7 Metering for Toxic, Combustible Gas, H₂S and Oxygen Deficiency:
 - .1 Utilize a suitable portable gas detection meter to continuously monitor for toxic gases, combustible gases, hydrogen sulfide and oxygen deficiency in the surrounding atmosphere. Set meter to sound alarm at a preset warning level. The Contractor shall demonstrate to the City Representative that the meter has recently been calibrated by a certified technician and is adequately functional for the intended purpose.
- 5.8 Meter Operator:
 - .1 When the potential for a hazardous atmosphere exists have a competent worker operate and read the portable meter continuously while construction activities occur in the designated hazardous locations. This meter operator is not permitted to assist in the construction activity in any way. Locate meter operator in the immediate vicinity of construction activity. If work in two or more different hazardous locations is required at the same time, provide the additional meter operator and meter.
- 5.9 Logbook:
 - .1 Maintain a logbook with:
 - .i Date.

- .ii Name of meter operator.
- .iii Explosive gas and oxygen deficiency readings every ½ hour.
- .2 Construction activity type:
 - .i Location of construction activity.
 - .ii Submit logbook to the City Representative when construction is complete.

5.10 Firefighting Equipment:

- .1 Provide and maintain suitable firefighting equipment when working in the designated hazardous locations. Train personnel in the use of firefighting equipment.

6. WORK IN CONFINED SPACES

- 6.1 For the purposes of this Contract, the following areas in existing operating process areas are identified as confined space locations:

- .1 Access vaults (AV's).
- .2 Manholes (MH's).
- .3 Tanks, vessels, and sumps

- 6.2 All work and entry into the identified Confined Spaces is to be done in accordance with the Nunavut Safety Act, R.S.N.W.T. 1988,c.S-1 – 2016, and the Nunavut Occupational Health and Safety Regulations, R-003-2016 – 2016.

- 6.3 The Contractor is responsible for all duties to ensure the work performed in the confined spaces is carried out in accordance with the Nunavut Safety Act, R.S.N.W.T. 1988,c.S-1 – 2016, and the Nunavut Occupational Health and Safety Regulations, R-003-2016 – 2016. The Contractor is responsible for all actions to ensure the duties imposed on employers by the Nunavut Safety Act, R.S.N.W.T. 1988,c.S-1 – 2016, and the Nunavut Occupational Health and Safety Regulations, R-003-2016 – 2016 are performed to protect the health and safety of all workers working in the confined spaces. For all confined space entries, involving workers from any employer, the Contractor is responsible for all coordination for work activities, confined space assessment, development of entry plans, permitting, supply of equipment for atmospheric testing and monitoring, ventilation, access and egress, entry, monitoring, control, rescue planning, and the initiation and implementation of rescue procedures in accordance with the Regulations.

- 6.4 The Contractor shall maintain all appropriate documentation required under the Regulation and provide daily copies to the City Representative.

- 6.5 The Contractor shall supply all required safety, monitoring, control and personal protective equipment required for confined space entry operation, including, but not limited to entry and rescue equipment, atmosphere monitors (see Section 5) and breathing apparatus/ respiratory protection.
- 6.6 The Contractor shall ensure that all workers entering or interacting with the identified confined spaces are appropriately trained and that proof of training is provided upon request.

7. STORAGE AND PROTECTION OF MATERIALS AND EQUIPMENT

- 7.1 Protect materials and equipment after unloading, from weather, dust, dirt and moisture, both before and after erection and placing. Observe manufacturer's written instructions for temporary storage.
- 7.2 Maintain equipment in good condition, as per manufacturer's instructions.
- 7.3 Provide manufacturer's written instructions for the storing of equipment during the construction period, well in advance of equipment delivery.
- 7.4 Store specialty items to ensure protection from damage to materials or finish.
- 7.5 Store materials subject to water absorption off the ground. Protect materials from other damage due to environmental conditions using waterproof covers.
- 7.6 As work proceeds and upon completion, promptly clean up and remove from site surplus materials resulting from foregoing work.

8. DISPOSAL OF MATERIAL OFF-SITE

- 7.1 Material designated to be removed from the site must be promptly removed.
- 7.2 Make necessary arrangements for environmentally safe transportation and ultimate disposal in compliance with all applicable Regulations and Guidelines at no cost to the City, unless noted otherwise.
- 7.3 Carry out additional chemical analysis of site materials suspected to be contaminated and determine applicable Regulations and Guidelines as may be required to determine the environmental quality of materials encountered and to determine suitable means for transportation and ultimate disposal. Notify the City Representative of concerns and provide copy of test results. Payment for haulage and disposal fees for contaminated excavated material will be considered Extra Work to this Contract as required.
- 7.4 Removal all waste material to the City's West 40 Landfill. Contractor will be responsible for all costs associated with loading, transportation and haulage, and tipping fees from the project site to the landfill.

9. ENVIRONMENTAL CONSIDERATIONS DURING CONSTRUCTION

9.1 Equipment Fueling:

- .1 Designate an area within the working limits, a minimum of 30 meters away from open water courses, to be used exclusively for fueling construction equipment.
- .2 Submit for review a plan for the interception and rapid clean-up of fuel spills should they occur.
- .3 Maintain the apparatus for cleaning up fuel spills on site.

9.2 Cleaning Equipment:

- .1 Keep construction equipment clean so that no debris is deposited on the City roadways.
- .2 Contain construction debris in a designated area within the working limits.
- .3 Dispose of debris off-site.

9.3 Noise Control:

- .1 Use only vehicles and equipment equipped with effective muffling devices. Provide noise barriers on stationary engines and compressors. Provide noise barriers on stationary engines and compressors.
- .2 Comply with City of Iqaluit Noise By-Law.
- .3 Consider noise attenuation measures in the approach and submissions for noise generating activities.

9.4 Dust Control:

- .1 Use water, or other methods to control dust as directed by the City Representative. Do not use chemical means of dust control without prior written approval from the City Representative. The use of petroleum products will not be allowed at any time.
- .2 Submit dust control plan detailing proposed methods to control dust on site for the review and acceptance by the City Representative.

10. PROTECTION OF EXISTING STRUCTURES AND PROPERTY

- 10.1 The Contractor will be held fully responsible by the City for any damage to utilities, properties, buildings, homes or structures adjacent to or in the general area of the work, through settlement of ground, vibration or shock resulting from any cause relating to the work carried out under this Contract. Make good and repair such damage at own expense.

- 10.2 Refer to Section N – Preservation and Protection.

11. EROSION AND SEDIMENT CONTROL

- 11.1 Prepare and implement a separate detailed erosion and sediment control plan for the duration of the work.
- 11.2 Correct all erosion control deficiencies noted by the City Representative. Maintain appropriate measures in place until the construction is fully completed.
- 11.3 Cooperate with the City Representative and the Owner for periodic inspections (during and after construction).

12. DAMAGE BY VEHICLES AND OTHER EQUIPMENT

- 12.1 If at any time, in the opinion of the City Representative, damage is being or is likely to be done to any road, highway, improvements or property therein, other than such portions as are part of the work, by the Contractor's vehicles or other equipment whether licensed or unlicensed, the Contractor shall, on the direction of the City Representative and at the Contractor's own expense, make changes in or substitutions for such vehicles or other equipment or shall alter loadings or shall in some manner remove the cause.

13. PROPERTY OWNER'S LETTER OF RELEASE

- 13.1 The Contractor will be required, when instructed by the City Representative, to provide a letter from the Owner and/or Owners of property adjacent to the work or on which the work was constructed, clearly stating that the reinstatement work carried out by the Contractor has been completed satisfactorily.
- 13.2 This letter of release will only be required where damage has been caused to private property or where work takes place on private property or easement.

14. UTILITY OWNER'S LETTER OF RELEASE

- 14.1 The Contractor will be required, when instructed by the City Representative, to provide a letter from the owners of utilities stating that all services damaged during construction of the work have been satisfactorily repaired.

15. INCLEMENT WEATHER

- 15.1 Make adequate protection and take all necessary precautions at times of inclement weather.
- 15.2 Inclement weather or extra work caused by such weather will not be accepted as reason for additional payment or an extension to the time of completion.

16. SNOW PLOWING

- 16.1 The Contractor shall be responsible for snow and ice removal in the designated construction area and related access roads for each group of primary clarifiers as well as Contractor's staging and storage area at its own cost.
- 16.2 Snow plowing shall be under the direction of the City Representative and shall not block any municipal roadways, easements, access roads or driveways for the general public or City operating staff to access.
- 16.3 Snow is to be disposed of at the designated snow disposal area, as directed by the City Representative.

END OF SECTION

F. CONSTRUCTION SEQUENCING

1. GENERAL

- 1.1 The Work is to be completed in the time stated in the Form of Tender. In this regard, the Contractor is responsible for scheduling the sequencing of work.
- 1.2 This Section includes mandatory construction sequencing constraints and a suggested general sequence of construction that will satisfy the mandatory constraints required in the execution of the Work.
- 1.3 The Contractor shall plan to perform the work activities in such a sequence that does not necessitate the removal from service any essential part or component of the existing works without first having a temporary facility to enable continuous normal operation of the existing water pollution control plant and process or has fully commissioned new facilities that are capable of operating in place of the part or component of the existing works that the Contractor must demolish and/or modify.
- 1.4 The Contractor's sequencing of work shall consider the submission of technical submittals and shop drawings for review and approval, prior to the commencement of work in the field.
- 1.5 The Contractor's schedule shall incorporate a logical sequence of construction activities, such that the work be completed in a manner that is safe, efficient, and interruption free as per the time stated in the Form of Tender.

2. COORDINATION

- 2.1 It is noted that the proposed works must be constructed so as not to interfere with or cause any un-scheduled interruption of operation of existing City process systems and services.
- 2.2 Coordinate the requirements of this Section with the other requirements of the Contract Documents.
- 2.3 Refer to Section C for other coordination requirements.

3. SERVICES PROVIDED BY THE CONTRACTOR

- 3.1 The Contractor shall coordinate the construction activities with the City Representative in advance as per Section C.
- 3.2 The Contractor shall provide the required temporary construction, drainage, grading, sedimentation and erosion control measures for the construction area.
- 3.3 The Contractor shall provide the necessary temporary power, pumping facilities, ventilation equipment, pipes, valves, fittings, diversions, temporary bulkheads, or any other equipment and systems, as required during construction.

4. SERVICES PROVIDED BY THE CITY

- 4.1 The City will undertake all necessary isolations and shut-downs of operating equipment and systems.
- 4.2 The City will provide access to existing City buildings, facilities, and structures.

5. SEQUENCE OF CONSTRUCTION

- 5.1 Prior to mobilization, the Contractor will be required to adhere to the following sequencing requirements:
 - .1 Submit technical submittals to the City Representative for review and approval. Technical submittals will consist of the following:
 - .i Contractor Site-Specific Health and Safety Plan.
 - .ii Contractor trade certificates and training records.
 - .iii Construction schedule.
 - .iv Traffic Control Plan (if applicable).
 - .v Erosion and Sediment Control Plan (if applicable).
 - .vi Quality Assurance and Quality Control Plan.
 - .2 Obtain confirmation from the City Representative that the technical submittals presented above have been approved.
- 5.2 The City Representative may choose to delay mobilization activities, at no additional cost or impact to the project schedule, should the specified technical submittals not be submitted and approved prior to the start of mobilization activities.
- 5.3 Prior to initiating construction activities in the field, the Contractor will be required to adhere to the following sequencing requirements:
 - .1 Submit relevant shop drawings to the City Representative for review and approval prior to commencing the installations in the field.
 - .2 Obtain confirmation from the City Representative that the shop drawing(s) have been approved.
 - .3 Commence relevant installations related to approved shop drawings in the field.
- 5.4 The City Representative may choose to reject the installations in the field, at no additional cost or impact to the project schedule, if the relevant shop drawings are not approved prior to installation in the field.

- 5.5 The City Representative will be provided five (5) business days to review relevant technical submittals and shop drawings. The City assumes only one (1) round of reviews for technical submittals and shop drawings. The Contractor will not be granted an extension of time or a change to the contract price, should the Contractor not address all review comments from the first submission, and require a subsequent review of a second or further resubmission(s).
- 5.6 Prior to backfilling an excavated trench where new civil installations or repairs have taken place, allow for the inspection of the works by the City Representative. Should the Contractor backfill the site, while failing to present the works and provide indication to the City Representative that the works are ready for an inspection, the Contractor will be required to re-excavate the site in order to allow for an inspection of the works to take place at no change to the contract price and no extension to the contract schedule.

END OF SECTION

G. PAYMENT PROCEDURES

1. TERMS OF PAYMENT

- 1.1 Make applications for payment on account as provided in Agreement as Work progresses.
- 1.2 Applications for payment will be made monthly.
- 1.3 The date for Contractors submission of monthly application for payment shall be on the last business day of the month.
- 1.4 The Contractor shall be reimbursed on a monthly basis in accordance with the instructions provided in the Bid Form.
- 1.5 For administrative purposes, the monthly application for payment shall be in the form of a progress payment and must indicate:
 - .1 Contract/ Project Title.
 - .2 City of Iqaluit Service Contract number.
 - .3 Progress payment number.
 - .4 Date progress payment issued.
 - .5 Period progress payment covers.
- 1.6 The Contractor is to provide all relevant back-up material to validate the work that is being claimed in the monthly progress payment. This includes, but is not limited to, daily timesheets for labor and equipment, material costs, back-up invoices, etc. For work completed on a time and materials basis where daily timesheets are produced, the Contractor must present timesheets to the City Representative at the end of each workday for review and approval.
- 1.7 The City shall reimburse Contractors for mark-ups from sub-contractors and/ or suppliers for parts, materials, and labor up to a maximum of 15%. Back-up invoices from sub-contractors and/ or suppliers/ vendors must be submitted as part of monthly application for payment. Monthly progress claims will be returned if back-up invoices are not provided.
- 1.8 No payment will be made for the cost of work incurred to remedy errors or omissions for which the Contractor is responsible.
- 1.9 Additional work that has been completed outside the scope of services identified in the contract, without written approval from the City Representative via the change order process, will not be paid. Contemplated changes must be presented to the City Representative for review. Should the contemplated change be endorsed, it will be presented to the City for approval via a change order. Once approved, the Contractor may proceed with the work in the field. Failure to comply with this requirement may result in no payment.

- 1.10 All progress payment claims are to be submitted to the City Representative; they are not to be submitted to the City's Finance Department.
- 1.11 The City will pay all invoices on a Net 30 basis, meaning payments will be made by the City within Thirty (30) calendar days of receipt and acceptance of the invoice, or the receipt and acceptance of the goods or services, whichever is later.

2. SCHEDULE OF VALUES

- 2.1 Make schedule of values out in such form and supported by such evidence as City Representative may reasonably direct and when accepted by City Representative, be used as basis for applications for payment.
- 2.2 Include statement based on schedule of values with each application for payment. Schedule of values to follow Terms of Reference sections outline.
- 2.3 Support claims for products delivered to Place of Work by not yet incorporated into Work by such evidence as City Representative may reasonably require establishing value and delivery of products.

3. APPLICATION FOR PAYMENT

- 3.1 Each month prepare a draft application for payment in the form of a progress payment claim for review and acceptance by the City Representative before submitting the monthly application for signature and payment.
- 3.2 Application for payment must show a schedule of values, for each item of approved breakdown of Contract Price established in the Contract, the following:
 - .1 Percentage and value of Work completed to date.
 - .2 Percentage and value of Work previously approved for payment.
 - .3 Percentage and value claimed this payment period.
 - .4 Percentage and value of Work remaining to be completed.
 - .5 Include separate line items for each approved Change Order executed, along with the information requested in 3.2(1), 3.2(2), 3.2(3), and 3.2(4).
- 3.3 Application for payment must include timesheets, back-up invoices from sub-contractors and/ or suppliers/ vendors, whichever applies. Where mark-ups apply per the Contract, ensure they are clearly shown.
- 3.4 Include an updated cash flow expenditure forecast with the application for payment.
- 3.5 Submit application for payment to the City Representative on the last business day of each month.

- 3.6 To assist the Contractor with preparation of application for payment, the City Representative is available to meet with the Contractor on an agreed date each month, on or prior to last day of month, to review progress of Work.
- 3.7 The Contractor and City Representative shall agree on quantity of Work performed and due for payment. Once quantity has been agreed upon, Contractor shall submit the final application for payment along with a corresponding invoice for the amount being claimed.
- 3.8 The following shall be included for the first application for payment:
- .1 Approved monthly progress claim.
 - .2 Coinciding invoice.
 - .3 A copy of Workers Safety Compensation Board Certificate of Clearance.
 - .4 Updated construction schedule.
 - .5 Updated cash flow projection.
- 3.9 The following shall be included for the second application for payment and onwards:
- .1 Approved monthly progress claim.
 - .2 Coinciding invoice.
 - .3 A copy of Workers Safety Compensation Board Certificate of Clearance.
 - .4 Statutory Declaration certifying that payment has actually been made in full to all subcontractors, suppliers, workmen, and others for labour, materials, and services required by Contract up to and including latest progress payment.
 - .5 Updated construction schedule.
 - .6 Updated cash flow projection.
- 3.10 The City shall not release monies for Payment Certificates until the Contractor has provided all of the supporting documentation, as specified herein.
- 3.11 Deviations from the above specified requirements or incomplete submissions shall require resubmission of the application for payment.

4. NONPAYMENT FOR REJECTED OR UNUSED PRODUCTS

- 4.1 Payment will not be made for the following:
- .1 Loading, hauling, and disposing of rejected material.
 - .2 Quantities of material wasted or disposed of in a manner not called for under Contract Documents.

- .3 Rejected loads of material, including material rejected after it has been placed by reason of failure of Contractor to conform to provisions of Contract Documents.
- .4 Material not unloaded from transporting vehicle.
- .5 Defective Work not accepted by Owner.
- .6 Material remaining on hand after completion of Work.

END OF SECTION

H. PROJECT MEETINGS

1. GENERAL

- 1.1 The City Representative will schedule the project meetings throughout progress of the Work.
- 1.2 The City Representative will prepare meeting agenda with regular participant input and distribute the written notice of each meeting, preside at meetings, record minutes to include significant proceedings and decisions, and reproduce and distribute copies of minutes within five (5) business days after each meeting to participants and parties affected by meeting decisions.
- 1.3 Representatives of Contractor, Subcontractor and suppliers attending meetings shall be qualified and authorized to act on behalf of the party each represents.

2. PRECONSTRUCTION MEETING

- 2.1 After award of Contract, the City Representative will request a meeting of parties in contract to discuss and resolve administrative, health and safety procedures and responsibilities.
- 2.2 Preconstruction meeting will be held via teleconference. Teleconference instructions will be provided by the City Representative.
- 2.3 Preconstruction meeting agenda may include the following, as a minimum:
 - .1 Introductions.
 - .2 Project Initiation.
 - .i Service Contract Review.
 - .ii Securities/ Bonds.
 - .iii Insurance.
 - .iv WSCC Certificate of Clearance.
 - .3 Safety.
 - .i Site Safety Requirements.
 - .ii WSCC “New Operations & High Hazard Work” Notice.
 - .iii Joint Health and Safety Committee or Occupational Health and Safety Representative.
 - .iv Site Audits, Inspections and Incident Reporting.
 - v. Training, Qualifications and Trade Certificates.

- .4 Project Execution Requirements .
 - .i Summary of Work.
 - .ii Working Hours, Working Days
 - .iii Construction Sequencing/ Coordination.
 - .iv Contractor's Use of Premises.
 - .v Authorities Having Jurisdiction (GN/ Federal permits and inspections).
 - .vi Special Project Procedures (Work Permits, Traffic Control, etc.).
 - .vii Project Meetings.
 - .viii Submittals and Shop Drawings.
 - .ix Payment Procedures.
 - .x Change Orders.
 - .xi Quality Control.
 - .xii Closeout Requirements.
- .5 Project Schedule.
 - .i Schedule Submission.
 - .ii Key Milestone Dates.
 - .iii Substantial Completion Submission Requirements.
 - .iv Warranty (if applicable).
- .6 Communication Structure
 - .i Stakeholder Representation.
 - .ii Communication Flow.
 - .iii Communication of Changes in Scope, Schedule or Cost.
 - .iv Site Communication Memos – RFI's, SI's, CCN's.
- .7 Document Control
- .8 Other Business and Questions.

2.4 Attendees will include:

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- .1 Owner's representatives.
- .2 City Representative.
- .3 Contractor's project manager.
- .4 Contractor's resident site superintendent.
- .5 Contractor's quality control representative.
- .6 Others as appropriate.

3. PROGRESS MEETINGS

- 3.1 City Representative will schedule regular progress meetings at site, conducted bi-weekly to review the Work progress, progress schedule, shop drawings and technical submittal schedule, application for payment, contract modifications, and other matters needing discussion and resolution.
- 3.2 Progress meetings will be held via teleconference. Teleconference instructions will be provided by the City Representative.
- 3.3 Project progress review meeting agenda may include the following, as a minimum:
 - .1 Introductions.
 - .i Confirm Acceptance of Previous Meeting Minutes.
 - .2 Safety.
 - .i Safety Share.
 - .ii Site Safety Audits, Inspections and Incident Reporting.
 - .3 Submittals and Shop Drawings.
 - .i Status of Technical Submittal Submissions/ Reviews.
 - .ii Status of Shop Drawing Submissions/ Reviews.
 - .4 Site Communications.
 - .i Request for Information (RFI) – Status Update/ Outstanding Items.
 - .ii Site Instructions (SI) – Status Update/ Outstanding Items.
 - .iii Contemplated Change Notices (CCN) – Status Update/ Outstanding Items.
 - .5 Financial.

- .i Progress Claims – Status Update/ Outstanding Items.
 - .ii Change Orders – Status Update/ Outstanding Items.
 - .iii Service Contract Financial Review.
 - .6 Work Progress.
 - .i Work Completed (Since Last Meeting).
 - .ii Work Planned (Three-Week Look-ahead/ Schedule) Review.
 - .iii Issues/ Concerns/ Risks and Mitigation Measures.
 - .iv City/ Engineer Coordination Requirements.
 - .7 Quality Control.
 - .i Contractor Activities.
 - .ii Status of Permitting and Inspections.
 - .8 Other Business and Questions.
- 3.4 Attendees will include:
- .1 Owner's representative.
 - .2 City representative.
 - .3 Contractor's project manager.
 - .4 Contractor's site superintendent.
 - .5 Others as appropriate.

4. OTHER MEETINGS

- 4.1 In accordance with Contract Documents and as may be required by the Owner and/or City Representative.
- 4.2 Brief meetings attended by the Contractor's key personnel, the City Representative and as required, the Owner's representative, may be coordinated in order to help assist with other project related discussions such as isolation requirements, critical path tasks, schedule, quality, commissioning, claims, deficiencies, etc. in order to help with the progress of the work. The Contractor is to accommodate other meetings at no additional cost to the contract.
- 4.3 Meetings will be held via teleconference. Teleconference instructions will be provided by the City Representative.



CONSTRUCTION SERVICES
PART IV – GENERAL REQUIREMENTS



END OF SECTION

I. CONSTRUCTION PROGRESS SCHEDULE

1. CONTRACTOR'S RESPONSIBILITIES

- 1.1 Prepare and submit to the City Representative a Construction Progress Schedule including a comprehensive work breakdown schedule complete with sequencing or implementation of each work tasks and work packages within five (5) business days of award of Contract. The schedule must reflect working days/ hours as per the contract. The schedule must show the following as a minimum:
 - .1 Mobilization and other preliminary activities such as installation of site fencing, trailer, signage, traffic control measures, etc.
 - .2 Submission of shop drawings, technical submittals, product data, material lists and samples.
 - .3 Delivery of any critical equipment and/or materials that will be key to the Works.
 - .4 Submission of key requests to the City such as isolation requests and City permit applications.
 - .5 Isolation and/or shutdown of City processes or systems by City Operations personnel, implementation of temporary by-pass systems, etc.
 - .6 Commencement and completion of work of each section of the terms of reference for each of the contract components as required y and described in the plans and terms and reference.
 - .7 Critical hold points which require the inspection and/or witness of the works by the City Representative, as described in the contract documents.
 - .8 Testing activities, commissioning, start-up and operating of the new equipment and/or systems.
 - .9 Substantial performance and final completion dates within time period required by the Contract Documents.
 - .10 Demobilization
- 1.2 Schedule shall represent a practical plan to complete the work within the Contract period and shall convey the plan to execute the work. Schedules as developed shall show the sequence and interdependencies of activities required for complete performance of the work.
- 1.3 Use extra forces and equipment, or revise method of operation when progress of work is not sufficient to meet Project Schedule.
- 1.4 Reviews of work progress based on Construction Schedule, will be conducted by the City Representative and schedule updated by Contractor in conjunction with and subject to approval of the City Representative.

- 1.4 Construction schedule shall be updated monthly with the payment schedule for the duration of the Contract.
- 1.5 Failure to include any element of work required for performance of the Contract or failure to properly sequence the work shall not excuse the Contractor from completing all work within the Contract Time.
- 1.6 All schedule submittals, excluding monthly progress reports, are subject to approval by the City Representative. The City Representative retains the right to withhold appropriate monies (up to the full value of the current progress payment) from progress payments until the Contractor submits an acceptable construction progress schedule. Update schedule updates acceptable to the City Representative.
- 1.7 Certify in writing and have signed by major subcontractors that the construction progress schedule have been discussed in detail with all major subcontractors and major suppliers as it relates to their respective work and submit a copy of the certificate to the City Representative.
- 1.8 All schedules shall be developed utilizing industry standard “best practices” including, but not limited to:
 - .1 No open-ended activities.
 - .2 No use of constraints other than those defined in the Contract Documents without the prior approval of the City Representative.
 - .3 No negative leads or lags.
 - .4 No excessive leads or lags without prior justification and approval from the City Representative.
 - .5 For individual schedule construction activities, do not exceed 14 calendar days in duration without prior approval of the City Representative. Subdivide activities exceeding 14 calendar days in duration to an appropriate level.
 - .6 Sufficiently describe schedule activities to include what is to be accomplished in each work area. Express activity durations in whole days. Clearly define work that is to be performed by subcontractors.
 - .7 Create the schedule in conformance with the work-hours, constraints, and Activity Code Structure, set forth in these Contract Documents.
 - .8 Activity Code Structure
 - .i Each activity shall be identified with codes including as a minimum:
 - .a The party responsible for performing the work.
 - .b Where work is to be subcontracted, the subcontractor to be responsible for performing the work.

2. CONSTRUCTION SEQUENCING

- 2.1 Contractor is instructed to perform this work without disrupting current operating facilities, structures, and/or City services when applicable.
- 2.2 Contractor to prepare schedule and duration of all anticipated by-passes or shutdown of any existing facility. Schedule to be reviewed by the Owner for approval. Furthermore, the Contractor shall provide notice as described in Section C - Coordination to the Owner for each and every scheduled by-pass, tie-in to and shutdown of existing facilities, structures, processes, or systems. Required notice plus the Owner's approval are required for all non-scheduled by-passes, tie-in to and shutdowns.
- 2.3 Any and all un-scheduled shutdown is the responsibility of the Contractor. Thus, all or any additional labour, testing, material and equipment required by the Owner to correct or assist in coordination and correction of deficiencies as a result of an un-scheduled shut down is at the Contractor's costs.

3. MONTHLY CONSTRUCTION SCHEDULE UPDATE

- 3.1 Submit once per month, a monthly construction progress schedule update showing the progress of the work to date. The updated progress schedule must be submitted with the monthly progress payment application.
- 3.2 Include with the update an electronic back-up of the native schedule file.
- 3.3 Payment will not be made without an approved construction progress schedule, and monthly construction progress schedule update.
- 3.4 The monthly construction progress schedule update shall have a data date as of the last day of the corresponding month (i.e. for schedules submitted at the beginning of February the data date shall be January 31).
- 3.5 Incorporate actual progress, start dates, completion dates, and progress up to the data date in the schedule update. All changes and revision made in the monthly construction progress schedule update shall be addressed in the narrative accompanying the submittal.
- 3.6 Change Orders will be addressed in accordance with the General Conditions and incorporated into the Contract construction progress schedule as individual schedule activities.
- 3.7 Payment will not be made without current approved monthly construction progress schedule update.
- 3.8 Any changes made to the schedule shall also include changes to the cost loading/ expenditure forecast. All the remaining activities to be completed shall equate to the remaining cost of the Work. Any addition or deletions to activities to the schedule will require subsequent revisions to ensure that the schedule continues to correlate to the current Schedule of Values.

- 3.9 If according to the current updated Contract construction progress schedule, the work is fourteen or more days behind the Contract completion date, or the schedule contains fourteen or more days of negative float, considering all granted time extensions, submit, prior to the next progress payment, a revised recovery schedule, showing a work plan to complete the work within the original schedule period. Include with the submittal a detailed narrative describing the means and methods proposed to achieve the work in the time period. The City Representative may withhold approximate progress payments until a revised schedule, acceptable to the City Representative, is submitted by the Contractor at no additional expense to the Owner.

4. RE-BASELINE CONTRACT CONSTRUCTION PROGRESS SCHEDULE

- 4.1 If, in the opinion of and at the request of the City Representative, the work has significantly fallen behind and/or the nature or plan of the work has changed from that which was originally portrayed in the Contract construction progress schedule, a Re-Baselined construction progress schedule shall be submitted that portrays the plan to complete the remaining Contract Work.
- 4.2 The Re-Baselined construction progress Contract Schedule shall be cost-loaded and be the basis for all subsequent monthly construction progress schedule updates.

5. THREE-WEEK LOOK-AHEAD

- 5.1 Submit a Gantt chart format depicting the intended work activities for the upcoming three-week period plus one-week retrospective look on a weekly basis.
- 5.2 All activities in the Three-Week Look-Ahead Schedule must correlate to an activity in the current monthly construction progress schedule update either as a one-to-one match, or as a subset of activities whose cumulative duration correlate to an activity in the monthly construction progress schedule update.
- 5.3 Note and explain in writing all deviations, including but not limited to sequences of work, timing, and durations or activities, from the Contract construction progress schedule or monthly construction progress schedule updates. These deviations must be addressed in the following monthly construction progress schedule update.
- 5.4 Portray all activities clearly and legibly on the schedule and include logical activity numbers.
- 5.5 Submit the schedule at the bi-weekly construction progress meeting.

6. MONTHLY EXPENDITURE/ CASH FLOW FORECAST

- 6.1 Submit on a monthly basis, an update to the monthly expenditure/ cash flow forecast. The cash flow forecast is to be submitted as part of the Contractors monthly progress payment application.
- 6.2 The Monthly Expenditure/ Cash Flow Forecast shall be presented in a manner that best illustrates how the Contractor intends to invoice, on a monthly basis, based on the Contractor understanding of the Work, methodologies to be used, and the Contract construction progress schedule.

7. REVIEW, UPDATE AND REVISIONS

- 7.1 Allow for the City Representative review and comments according to the following schedule from the date of receipt.
- .1 Draft Contract construction progress Schedule: 7 calendar days
 - .2 Contract construction progress Schedule: 4 calendar days
 - .3 Monthly construction progress schedule Updates: 4 calendar days
 - .4 Three-Week Look-Ahead Schedule: 2 calendar days
- 10.2 Make all corrections to the schedule requested by the City Representative and resubmit the schedule for approval if requested. If the Contractor does not agree with the City Representative's comments, provide written notice of disagreement within five (5) business days from the receipt of City Representative comments for the Preliminary 60-day, Contract Construction Progress Schedule, Monthly Construction Progress Schedule Updates, and Three-Week Look-ahead Schedules. City Representative's comments for which the Contractor disagrees shall be resolved in a meeting held for that purpose, if necessary.

8. REQUESTS FOR TIME EXTENSIONS

- 8.1 Be responsible for submitting a written request for all extensions of Contract Time in accordance with the General Conditions. Requests not submitted in writing, without the required documentation and not submitted in a time consistent with the General Conditions will not be considered.
- 8.2 Include in the request documentation and written justification for the extension of time, supporting evidence and specific references to the schedule.
- 8.3 Also include with request an analysis of a calendar time-scaled Construction Progress Schedule and reports depicting the time impact basis of the request with the affected areas prominently highlighted. Use only the most current accepted schedule at the time the impact occurred when determining time extension request.
- 8.4 If the City Representative finds that the Contractor is entitled to an extension of time of any completion date under the provisions of the Contract, the City Representative's determination of the total number of days extension will be based upon the current analysis of the Contract Construction Progress Schedule and upon data relevant to the extension. Extensions of time for performance under all of the provisions of the Contract will be granted only to the extent that equitable time adjustments for the activity or activities affected exceed the total float along the paths involved of the accepted and current Contract Construction Progress Schedule.

END OF SECTION

J. SUBMITTAL PROCEDURES

1. SUMMARY

- 1.1 This section defines the submittals to the Owner, or their designate, necessary before, during and after construction, which include as a minimum:
 - .1 Site-Specific Health and Safety Plan.
 - .2 Construction Progress Schedule.
 - .3 Shop Drawings for permanent and temporary works.
 - .4 Product data and samples.
 - .5 QA/QC tests and reports.
 - .6 Concrete mix design.
 - .7 Erosion and Sediment Control Plan.
 - .8 Selective Demolition Plan and Schedule.
 - .9 Guaranties and Warranties.
 - .10 Traffic Control Plan.
 - .11 Temporary works plans (i.e. By-Pass Plan, Servicing Plan, Water Management Plan, Shoring/ Bracing Plan, Critical Lift Plan, etc.).
- 1.2 For submittals facsimile transmissions will not be acceptable.
- 1.3 Do not proceed with work until the City Representative reviews relevant submissions.
- 1.4 Refer to individual sections for other submission requirements.

2. ADMINISTRATIVE

- 2.1 Submit to the City Representative a list of all submittals and shop drawings for review within seven (7) business days of the Award of the Contract. Submit within reasonable promptness and in orderly sequence so as not to cause delay in Work. Failure to submit in ample time is not considered sufficient reason for an extension of Contract Time and no claim for extension by reason of such default will be allowed.
- 2.2 Work affected by submittals shall not proceed until review is complete.
- 2.3 Present shop drawings, technical submittals, product data and reports in SI Metric units.
- 2.4 Present shop drawings, technical submittals, product data and reports in the English language.

- 2.5 Where items or information is not produced SI Metric units, converted values are acceptable.
- 2.6 Review submittals prior to submission to City Representative. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and coordinated with requirements of Work and Contract Documents. Submittals not stamped, signed, dated and identified as to specific project will be returned without being examined and shall be considered rejected.
- 2.7 Notify the City Representative, in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.
- 2.8 Verify that field measurements and affected adjacent work are coordinated.
- 2.9 Contractor's responsibility for errors and omissions in submission is not relieved by City Representative's review of submittals.
- 2.10 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by the City Representative's review.
- 2.11 Keep one reviewed copy of each submission on site for reference during the construction.
- 2.12 Refer to other individual sections for specific requirements on shop drawings submission.

3. PROCEDURES

- 3.1 Direct all submittals to the City Representative.
- 3.2 Unless indicated otherwise, submit one (1) electronic copy of all submittals.
- 3.3 Electronic Submittals:
 - .1 Each electronic submittal shall be searchable in Adobe Acrobat Portable Document Format (PDF).
 - .2 Electronic submittal that contains more than 10 pages in PDF format shall contain internal book marking from an index page to major sections of the document.
 - .3 PDF files shall be set to open "Bookmarks and Page" view.
 - .4 Include a copy of the Transmittal of Contractor's Submittal form with each electronic submittal.
 - .5 Submit new electronic files for each resubmittal.
 - .6 Detailed procedures for handling electronic submittals will be discussed at the preconstruction meeting.
 - .7 Submittals without electronic copies will be rejected by the City Representative.

3.4 List of Submittals:

- .1 Within seven (7) working days of Contract Award, submit a complete list of anticipated submittals and shop drawings, as per the requirements of the contract.
- .2 For each section of the general requirements and terms of reference, the Contractor shall provide a table listing all the submittals anticipated for that section of the Contract. The table shall include the following information:
 - .i General Requirements or Terms of Reference Section.
 - .ii Total number of submittals for this Section.
 - .iii Shop drawings associated with each submittal.
 - .iv Revision and status for each submittal.

3.5 Transmittal of Submittal:

- .1 Accompany each submittal with a transmittal letter, containing:
 - .i Project title and number.
 - .ii Date of submittal.
 - .iii Names of Contractor, Subcontractor or Supplier, and manufacturer as appropriate.
 - .iv Numbering and Tracking System:
 - .a Sequentially number each submittal.
 - .b Resubmission of submittal shall have original number with sequential alphabetic suffix.
 - .v Name, tag No. and quantity of equipment/ system included in each submittal.
 - .vi General Requirement and Terms of Reference Section and paragraph to which submittal applies.
 - .vii Deviation or variation from Contract Documents.
 - .viii Contractor's stamp, signature and statement to certify that the submittal has been reviewed, checked, and approved for compliance with Contract Documents.
 - .ix Include the Contractor's written response to each of the City Representative's review comments with resubmission of submittals stamped "Revise and Resubmit".

.x Other pertinent data.

3.6 Processing Time:

- .1 Time for review shall commence on City Representative's receipt of submittal.
- .2 The City Representative will act upon the Contractor's submittal and transmit response to Contractor not later than five (5) working days after receipt, unless otherwise specified.
- .3 Resubmittals will be same review time unless otherwise specified.
- .4 No claims will be allowed that arise because of delays in re-submissions and review of shop drawings.

3.7 Resubmittals:

- .1 Clearly identify each correction or change made and include revision date.
- .2 Provide clear response to each itemized comment by the City Representative on the submittal, whether or not action has been taken, and description of action.
- .3 No adjustment of Contract Times or Price will be allowed due to delays in progress of Work caused by rejection and subsequent resubmittals.
- .4 The Contractor is noted that the first two submission of each submittal (original submittal and subsequent resubmittal) will be reviewed at no charge to the Contractor. Any cost for processing/ reviewing submittals which have been reviewed two times or more will be deducted from the contract amount owed to the Contractor.

3.8 Incomplete Submittals:

- .1 The City Representative will return entire submittal for the Contractor's revision if preliminary review deems it incomplete.
- .2 When any of the following are missing, submittal will be deemed incomplete:
 - .i Transmittal of Contractor's submittal, completed and signed.
 - .ii Insufficient number of copies.
 - .iii All requested information is not provided.
 - .iv Submittals missing Professional Engineer's seal and signature, where it is required.

END OF SECTION

K. HEALTH AND SAFETY REQUIREMENTS

1. REFERENCES

- 1.1 Canada Labour Code, Part 2, Canada Occupational Safety and Health Regulations.
- 1.2 Nunavut Safety Act, R.S.N.W.T. 1988, c-S-1 most recently amended and in force June 19, 2016.
- 1.3 Nunavut Occupational Health and Safety Regulations, R-003-2016, most recently amended and in force June 19, 2016.

2. GENERAL REQUIREMENTS

- 2.1 The Contractor shall hold the responsibility of *Prime Contractor*, as described in the Nunavut Safety Act, and shall be solely responsible for construction safety, ensuring compliance to the Safety Act and Regulations.
- 2.2 Perform site specific safety hazardous assessment related to project.
- 2.3 Develop written site-specific Health and Safety Plan based on hazard assessment prior to commencing any site Work and continue to implement, maintain, and enforce plan until final demobilization from site.
- 2.4 The Contractor shall file a *New Operations & High Hazard Work* notice for the Works with the Workers' Safety and Compensation Commission (WSCC) prior to commencement of Work. Submit relevant documents to City Representative, providing indication that notice has been submitted. The Contractor will not be allowed to commence construction activities until notice has been filed and acknowledged by WSCC. Failure to submit a notice and provide record of such communication to the City Representative prior to the start of Works will not be considered sufficient reason for an extension of Contract Time and no claim for extension by reason of such default will be allowed. The *New Operations & High Hazard Work* notice must be posted at the construction site as per requirements of the Safety Act.
- 2.5 Meet or exceed the latest revision of all Local, Federal, Territorial laws, regulations, standards, and industry best practices relating to health and safety.
- 2.6 Be solely responsible for safety of the Work under this Contract and for complying with and ensuring that every person on the Site complies with the requirements contained within the Contract Documents and regulatory requirements.
- 2.7 Perform the Work, or ensure that it is performed, in a manner to avoid risk of injury, security or damage to persons or property, adjacent property, or environment.
- 2.8 Provide safe access, egress, and equipment in accordance with Occupational Health and Safety Regulations for entry into all areas by the employees, subcontractors, City, and Consultant. Where hazardous areas or confined space entry exists, implement procedures defined by the latest revision of the applicable Occupational Health and Safety Regulations or the Electrical Code.

- 2.9 Prior to the commencement of the Work, review and become fully familiarized with all Local, Territorial, and Federal regulatory requirements and the following documentation:
- i. Nunavut's Safety Act and applicable regulations.
 - ii. Nunavut's Workers' Compensation Act and applicable regulations.
 - iii. Nunavut's Environmental Protection Act and application regulations.
 - iv. Canadian Electrical Code.
 - v. Contract Documents.
- 2.10 The Contractor shall be solely responsible for construction safety for this Contract and for complying with and ensuring that every person on the Site complies with the measures and requirements contained in:
- i. Nunavut's Safety Act and applicable regulations.
 - ii. Nunavut's Workers' Compensation Act and applicable regulations.
 - iii. Nunavut's Environmental Protection Act and application regulations.
 - iv. Canadian Electrical Code.
 - v. Contract Documents.
- 2.11 In event of a conflict between any provisions of the above authorities, the most stringent provision shall govern.
- 2.12 Provide and maintain first aid, hygiene, washrooms, potable water, and fire protection equipment at the Site in accordance with the applicable regulatory requirements. The Contractor shall designate trained employees to be in charge of first aid on the Site.
- 2.13 Establish, maintain, and mark clear routes, paths and points for routine and emergency exit to, from and within the Site for personnel and vehicles.
- 2.14 The Contractor shall erect signs relating to safety on the Site, and signs or notices required by the applicable territorial and local regulations or by the Contract Documents.
- 2.15 Erect signage acceptable to the City at all entry points to the Site to advise personnel entering the Site of the requirements respecting the use and wearing of personal protective equipment. And the Contractor shall ensure compliance with these requirements.
- 2.16 Erect signage acceptable to the City at all entry points to the Site to advise the employees, Subcontractors and other individuals entering the Site that:
- i. All personnel and employees on the Site are required to comply with safety policies, procedures and instructions of the Contractor.

- ii. That any personnel failing to adhere to the safety policies, procedures and instructions of the Contractor may be removed from the Site and denied further access.
- 2.17 The Contractor shall post warning signs at hazardous areas or where hazardous materials are stored and install protective barriers. The Contractor shall instruct personnel of proper safety procedures.
- 2.18 The Contractor shall identify all areas which are considered to be hazardous locations and comply with requirements of the Government of Nunavut Labour Standards Office.
- 2.19 Smoking is not permitted in hazardous areas or other areas as designated by the City. The Contractor shall post “No Smoking” signs as required.
- 2.20 The Contractor shall inspect the physical condition of the workplace at least weekly, or as often as required by territorial health and safety regulatory requirements, in order to ensure that the Work is performed safely and that the Site is maintained in accordance with the territorial regulatory requirements and the Contract Documents. The Contractor shall prepare and maintain a documented record of each inspection describing the scope of inspection and findings. Copies of all safety inspections shall be kept on Site and available for review by the City Representative.
- 2.21 Safety equipment such as gas detection equipment for explosive or toxic gases or oxygen deficiency, fall protection devices, etc., shall be made available by the Contractor to the City Representative for the access to the site when required. The Contractor shall be responsible for the coordination of the multiple-party access to the hazardous and confined space on the Site.
- 2.22 The Contractor should use the lock-out /tag-out whenever electrical work is required. Switch off the breaker in the MCC or power panel and follow the lock and tag procedure before starting the work.
- 2.23 Ensure adequate coordination and communication between all parties on site in regard to safety.
- 2.24 In addition to Occupation Health and Safety Act and applicable Regulations reporting requirements, report all incidents, near misses, spills, environmental damage, and property damage to the City Representative immediately within four (4) hours of the event. An incident investigation must be conducted, and a copy of the complete report provided to the City Representative within 24 hours.
- 2.25 Ensure that all employees and subcontractors are competent, as prescribed by the applicable legislation, in performing the Work and have been trained on the Contractor’s Site-Specific Health and Safety Plan and COVID-19 Mitigation Plan prior to starting Work on the Contract. The Contractor shall make available all training records for the City Representative’s review.
- 2.26 The Contractor shall ensure all workers that perform work be certified under the Trades and Qualifications and Apprenticeship Act for their specific work activity. No worker shall perform a type of work unless he/ she is certified to do so.

- 2.27 The Contractor shall appoint a competent person, as defined by the Safety Act, as a supervisor.
- 2.28 The Contractor shall appoint a Joint Health and Safety Committee or Occupational Health and Safety Representative, as defined by the Safety Act, for the project.
- 2.29 The supervisor shall supervise the work at all times either personally or by having an identified assistant do so personally. The assistant must comply with all the same requirements that the supervisor is held to.
- 2.30 The supervisor shall inspect the work site and equipment associated with the project at least once a week. A copy of the inspection report must be provided to the City Representative.
- 2.31 The Contractor shall remove waste material and debris from the work site(s) to a disposal area at least once a day or more frequently if necessary, to prevent the creation of a hazardous condition.
- 2.32 The Contractor shall ensure that a First Aid kit is provided and maintained on site at all times, in accordance with relevant health and safety regulations.
- 2.33 The Contractor shall ensure that fire-extinguishing equipment is provided and maintained on site at all times, in accordance with relevant health and safety regulations.
- 2.34 The Contractor shall ensure that all vehicles, machinery, tools and equipment used on the work site are operated and maintained in accordance with relevant health and safety regulations.
- 2.35 The Contractor will be required to conduct weekly safety audits, in order to ensure compliance to the Site-Specific Health and Safety Plan. Safety Audit reports are to be submitted to the City Representative on a weekly basis.
- 2.36 City Representative may respond in writing, where deficiencies or concerns are noted and may request re-submission with correction of deficiencies or concerns.
- 2.37 Ensure applicable items, articles, notices and orders are posted in conspicuous location on site in accordance with Acts and Regulations of Territory having jurisdiction, and in consultation with City Representative.

3. SUBMITTALS

- 3.1 Make submittals in accordance with Section J – Submittal Procedures.
- 3.2 The Contractor shall submit a Site-Specific Health and Safety Plan within seven (7) business days after the Award of the Contract, to address the requirements of the above referenced regulations and contract documents.
- 3.3 A Site-Specific Health and Safety Plan must be in place prior to the start of construction activities. If a Site-Specific Health and Safety Plan has not been submitted prior to the start of the Works, the City Representative may issue a stop work order, until one is presented which meets the requirements of the regulations and contract documents.

Failure to submit a Site-Specific Health and Safety Plan within the required timelines, which meets the requirements of the contract, will not be sufficient reason for an extension of Contract Time or additional compensation, and no claim for extension or additional costs by reason of such default will be allowed.

3.4 The Contractor shall provide a health and safety plan which as a minimum will include:

.1 A Site-Specific Health and Safety Management Plan, includes:

- .i Introduction, roles and responsibilities for:
 - .a Site Supervisor
 - .b Project Manager
 - .c Site Safety Coordinator
 - .d Site Workers
 - .e Occupational Health and Safety Representative
 - .f Joint Health and Safety Committee
- .ii Contractor Project/ Contract Organizational Chart
- .iii Training and certification of workers.
- .iv Orientation for new works or visitors to site.
- .v Project hazard assessment and safety procedures.
- .vi Safety meetings format and schedule.
- .vii Site safety audits, inspections, and incident reporting.
- .viii Workplace hazardous materials information.
- .ix Tagging and lock out procedures.
- .x Confined space entry procedure.
- .xi Work on or near live apparatus.
- .xii Hot works procedures.
- .xiii Posting of information.
- .xiv Housekeeping.

.2 A Hazardous Identification Plan, includes primary environmental hazards, personal conduct and hygiene, potential hazards which include:

- .i Survey work in traffic.
- .ii Physical.
- .iii Working at heights.
- .iv Fire and explosion.
- .v Confined space entry.
- .vi Cranes, hoists, and rigging.
- .vii Crane suspended personnel platforms.
- .viii Biological.
- .ix Stress and fatigue.
- .x Noise.
- .xi Cold Weather.
- .xi Wildlife
- .xii Personal security.
- .xiii Adverse weather conditions.
- .xiv Other site activities.
- .3 A Personal Protective Equipment Inventory, which includes:
 - .i Requirements for all site personnel.
 - .ii Selection, maintenance and continual assessment.
- .4 An Emergency Preparedness and Response Plan, which addresses:
 - .i First aid.
 - .ii Fire protection.
 - .iii Critical injury.
 - .iv Accident or incident.
- .5 A COVID-19 Mitigation Plan, which addresses:
 - .i Isolation and quarantine.
 - .ii Social distancing.

- .iii Hand washing and hygiene.
- .iv Masks.
- .6 The plan shall be reviewed by all workers prior to the start of work. The Contractor must obtain sign-off from all workers providing acknowledgement that the plan has been reviewed.
- .7 The plan shall be posted in a visible location on the work site prior to the commencement of any work.

4. CHEMICALS

- 4.1 The Contractor must provide a list of all chemicals to be used on site and a copy of the Material Safety Data Sheet (MSDS) for each chemical to the City Representative prior to being brought onto the job site.
- 4.2 The Contractor must ensure each chemical container brought on site is clearly labelled with the identity of the chemical, information for the safe handling of the chemical and the location of the MSDS.
- 4.3 The Contractor must ensure adequate measures are taken to control the distribution, within the application area or throughout the building, of fumes/ vapours before applying flammable, noxious or volatile materials.
- 4.4 The Contractor may be required to schedule the application of hazardous materials which might affect the well-being of any workers or disrupt work of other contractors and cannot be adequately controlled to prevent such occurrences to evening or weekend periods.
- 4.5 The Contractor must ensure workers wear the required personal protective equipment (respiratory protection, protective clothing, hand protection, eye/face protection, etc.) when working with chemicals.
- 4.6 The Contractor must ensure the safe use and disposal of all chemicals that they are using. No chemicals and/or chemical waste product shall be disposed of on site without prior approval of City Representative.
- 4.7 The Contractor may not store chemicals and compressed gas cylinders on site without approval of the City Representative. If approved, the contractor must ensure incompatible chemicals are stored separately.

5. DESIGNATED SUBSTANCES / HAZARDOUS WASTE

- 5.1 The Contractor shall provide a work plan for the removal of designated substances, in accordance with all applicable legislation, for review and approval to the City Representative.
- 5.2 The Contractor shall provide evidence of competency with regards to the Environmental Protection Act and its regulations, a copy of safe handling work plan prior to commencing with work in the area.

- 5.3 The Contractor shall register the project as a waste generator site, if not already registered, for the waste that will be generated as a result of the work activities related to the project.
- 5.4 The Contractor shall ensure and provide evidence that all hazardous wastes removed from the sites sent to a licensed waste disposal site by a licensed carrier and advise the responsible individual when necessary testing is to be carried out.
- 5.5 The Contractor shall retain copies of all hazardous waste manifests on file.
- 5.6 The Contractor shall inspect the project daily to monitor compliance with designated substances and hazardous waste regulations.
- 5.7 The Contractor shall provide access to the responsible individual for review of all inspection reports.

6. FALL PROTECTION

- 6.1 The Contractor shall comply with the requirements of Sections 57 to 59 of R.R.N.W.T. 1990, c.S-1.
- 6.2 The Contractor shall provide, upon request, proof of worker training in the use of their fall protection systems.
- 6.3 The Contractor shall be responsible for supplying and maintaining all equipment needed to perform this role.

7. CONFINED SPACE ENTRY

- 7.1 The Contractor shall comply with the requirements of Section 36 to 37 of R.R.N.W.T. 1990, c.S-1.

8. LADDERS

- 8.1 The Contractor shall comply with the requirements of Sections 246 to 259 of R.R.N.W.T. 1990, c.S-1.
- 8.2 The Contractor shall be responsible for supplying and maintaining all equipment needed to perform this role.

9. WELDING/ CUTTING

- 9.1 The Contractor shall comply with the requirements of Sections 154 to 167 of R.R.N.W.T. 1990, c.S-1.
- 9.2 The Contractor shall be responsible for supplying and maintaining all equipment needed to perform this role.

10. SCAFFOLDING

- 10.1 The Contractor shall comply with the requirements of Sections 260 to 327 of R.R.N.W.T. 1990, c.S-1.
- 10.2 The Contractor shall design, erect, inspect, maintain and use scaffolding equipment materials, and components in accordance with CAN/CSA-S269.2-M87 (Access Scaffolding for Construction Purposes).
- 10.3 The Contractor shall be responsible for supply and maintaining all equipment needed to perform this role.

11. MOBILE EQUIPMENT

- 11.1 The Contractor shall comply with the requirements of Sections 200 to 242 of R.R.N.W.T. 1990, c.S-1.
- 11.2 The Contractor shall be responsible for supplying and maintaining all equipment needed to perform this role.

12. CONSTRUCTION TOWERS AND HOISTS

- 12.1 The Contractor shall comply with the requirements of Sections 433 to 464 of R.R.N.W.T. 1990, c.S-1.
- 12.2 The Contractor shall provide, upon request, proof of worker training in the safe operation of the crane or similar hoisting device.
- 12.3 The Contractor shall make available all logbooks, inspection records and tests for cranes of similar hoisting devices, upon request.
- 12.4 The Contractor shall be responsible for supplying and maintaining all equipment needed to perform this role.

13. EXCAVATING AND TRENCHING

- 13.1 The Contractor shall ensure no person enters and excavation unless another worker is working above ground close to the excavation or to the means of access to it.
- 13.2 The Contractor shall arrange the locating of buried services prior to commencing an excavation.
- 13.3 The Contractor shall comply with the requirements of Sections 396 to 432 of R.R.N.W.T. 1990, c.S-1.

14. UNFORESEEN HAZARDS

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

15. CORRECTION OF NON-COMPLIANCE

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- 15.1 Immediately address health and safety non-compliance issues identified by authority having jurisdiction or by City Representative.
- 15.2 Provide City Representative with written report of action taken to correct non-compliance of health and safety issues identified.
- 15.3 City Representative may stop Work if non-compliance of health and safety regulations is not corrected. Delays due to a stop work caused by non-compliance of health and safety regulations will not be considered sufficient reason for an extension of Contract Time and/or Price, and no claim for extension by reason of such default will be allowed.

END OF SECTION

L. QUALITY CONTROL

1. CONTRACTOR'S RESPONSIBILITY

- 1.1 The Contractor is to implement their own field quality control system that will include, but is not limited to, the following activities:
- .1 Shop drawings, technical submittals, product data and sample reviews.
 - .2 Compaction of backfill and granular base courses.
 - .3 Concrete testing, aggregate testing and cement testing for both cast-in-place concrete, and precast concrete items.
 - .4 Concrete mix design.
 - .5 Welding of structural steel and pipe joints.
 - .6 Pressure testing of pipes.
 - .7 Torque of high-strength bolts.
 - .8 Load tests of structural items.
 - .9 Subgrade examination for load bearing capability if required.
 - .10 Instrumentation calibration and testing.
 - .11 Performance testing of equipment.
- 1.2 The Contractor is responsible to coordinate and execute the necessary quality control systems, as per the instructions stipulated in the contract documents, in order to validate that the work meets the requirements of the contract documents.
- 1.3 The Contractor is responsible for providing results obtained from the inspection of testing of works as per the relevant field quality control systems, in order to validate compliance with the instructions provided in the contract documents.
- 1.4 Failure to submit relevant inspection and testing results to validate work conformance to the contract documents may render the work non-conforming and may require the Contractor to reperform the work. Delays and additional costs due to rework and re-performance of tests will not be considered sufficient reason for an extension of Contract Time and/or Price, and no claim for extension by reason of such default will be allowed.

2. SUBMITTALS

- 2.1 Make submittals in accordance with Section J – Submittal Procedures.
- 2.2 The Contractor shall submit a Quality Assurance & Quality Control Plan within ten (10) business days after the Award of the Contract.

- 2.3 A Quality Assurance & Quality Control Plan must be in place prior to the start of construction activities in order to ensure that necessary quality control systems are in place for the works. The Quality Assurance & Quality Control Plan must be reviewed by all Contractor workers in the field.
- 2.4 The Quality Assurance & Quality Control Plan Inspection must include the following sections at a minimum:
 - .1 Introduction and project description.
 - .2 Contractor key personnel
 - .3 Roles and responsibilities of Contractor, City Representative, and Owner.
 - .4 Submittals (shop drawings, technical submittals, product data, etc.).
 - .i Submittal schedule.
 - .ii Process, review and acceptance.
 - .5 Quality control systems.
 - .6 Inspection and verification requirements.
 - .7 Acceptance criteria.
 - .8 Sample inspection and test forms.
 - .9 Construction deficiencies.
 - .10 Documentation process.
- 2.5 The Contractor shall include relevant inspection and testing milestones within the Construction Progress Schedule. Relevant milestones must also be captured in the Contractor's Three-Week Look-Ahead Schedule.

3. INSPECTION

- 3.1 Allow City Representative access to Work. If part of Work is in preparation at locations other than Place of Work, allow access to such Work whenever it is in progress.
- 3.2. Give timely notice requesting inspection if Work is designated for special test, inspections or approvals by City Representative instructions, or law of Place of Work.
- 3.3 If Contractor covers or permits to be covered Work that has been designated for special tests, inspections or approvals before such is made, uncover such Work, have inspections or tests satisfactorily completed and make good such Work.
- 3.4 City Representative may order any part of Work to be examined if Work is suspected to be not in accordance with Contract Documents. If, upon examination such work is found not in accordance with Contract Documents, correct such Work and pay cost of

examination and Documents, correct such Work and pay cost of examination and correction. If such Work is found in accordance with Contract Documents, Owner shall pay cost of examination and replacement.

4. INDEPENDENT INSPECTION AGENCIES

- 4.1 Unless indicated otherwise, independent Inspection/ Testing Agencies may be engaged by City Representative for purpose of inspecting and/or testing portions of Work. Cost of such services will be borne by Owner.
- 4.2 Employment of inspection/ testing agencies does not relax responsibility to perform Work in accordance with Contract Documents.
- 4.3 If defects are revealed during inspection and/or testing, appointed agency will request additional inspection and/or testing to ascertain full degree of defect. Correct defect and irregularities as advised by City Representative at no cost to Owner. Pay costs for retesting and reinspection.

5. ACCESS TO WORK

- 5.1 Allow inspection/ testing agencies access to Work, off site manufacturing and fabrication plants.
- 5.2 Cooperate to provide reasonable facilities for such access.

6. PROCEDURES

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

7. REJECTED WORK

- 7.1 Remove defective Work, whether result of poor workmanship, use of defective products or damage and whether incorporated in Work or not, which has been rejected by City Representative as failing to conform to Contract Documents. Replace or re-execute in accordance with Contract Documents.
- 7.2 Make good other Contractor's work damaged by such removals or replacements promptly.
- 7.3 If in opinion of City Representative it is not expedient to correct defective Work or Work not performed in accordance with Contract Documents, Owner may deduct from Contract Price difference in value between Work performed and that called for by Contract Documents, amount of which shall be determined by City Representative.

8. REPORTS

- 8.1 Submit of inspection and test reports to City Representative.
- 8.2 Provide copies to Subcontractor of work being inspected or tested.

9. SPECIAL INSTRUCTIONS

- 9.1 Compaction Testing:
 - .1 Complete compaction tests as per the requirement of the Contract Documents, when performing trenching, bedding and backfilling work.
 - .2 All material testing (backfill densities and concrete testing) shall be performed by an accredited agency and certified by a Professional Engineer. All test results shall be submitted to the City Representative with a report indicating any deficiencies and remediation.
- 9.2 Pressure Tests:
 - .1 Complete pressure tests for new pipeline installations to verify installation meets required design and operating scenarios.
 - .2 Visual inspections of all lines are required prior to Substantial Certificate of Completion. Any deflections, sags obstructions and other defects affecting the performance of the line shall be corrected and the line re-inspected prior to Substantial Certificate of Completion.

END OF SECTION

M. TEMPORARY UTILITIES

1. INSTALLATION AND REMOVAL

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

2. DEWATERING

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

3. WATER SUPPLY

- 3.1 Provide continuous supply of potable water for construction use.
- 3.2 Arrange for supply and appropriate utility company and pay all costs for installation, maintenance and removal.
- 3.3 Pay for utility charges at prevailing rates.

4. TEMPORARY HEATING AND VENTILATION

- 4.1 Provide temporary heating required during construction period, including attendance, maintenance and fuel.
- 4.2 Construction heaters used inside building must be vented to outside or be non-flameless type. Solid fuel salamanders are not permitted.
- 4.3 Provide temporary heat and ventilation in enclosed areas as required to:
 - .1 Facilitate progress of Work.
 - .2 Protect Work and products against dampness and cold.
 - .3 Prevent moisture condensation on surfaces.
 - .4 Provide ambient temperatures and humidity levels for storage, installation and curing of materials.
- 4.4 Provide adequate ventilation to meet health regulations for safe working environment.
- 4.5 Ventilating:
 - .1 Provide local exhaust ventilation to prevent harmful accumulation of hazardous substances into atmosphere of occupied areas.
 - .2 Dispose of exhaust materials in manner that will not result in harmful exposure to persons.

- .3 Prevent accumulations of dust, fumes, mists, vapours or gases in areas occupied during construction.
- .4 Ventilate storage spaces containing hazardous or volatile materials.
- .5 Ventilate temporary sanitary facilities.
- .6 Continue operation of ventilation and exhaust system for time after cessation of work process to assure removal of harmful contaminants.
- 4.7 Permanent heating system of building, may be used when available. Be responsible for damage to heating system if use is permitted.
- 4.8 On completion of Work for which permanent heating system is used, replace filters, seals, etc. to ensure system is 'like-new' at substantial completion.
- 4.9 Pay costs for maintaining temporary heat, when using permanent heating system.
- 4.10 Maintain strict supervision of operation of temporary heating and ventilating equipment and be responsible for damage to Work due to failure in providing adequate heat and protection during construction.

5. TEMPORARY POWER AND LIGHT

- 5.1 Pay for temporary power during construction for temporary lighting and operating of power tools.
- 5.2 Arrange for connection with appropriate utility company. Pay all costs for installation, maintenance and removal.
- 5.3 Temporary power for electric cranes and other equipment requiring in excess of above is responsibility of Contractor.
- 5.4 Provide and maintain temporary lighting throughout project. Ensure level of illumination on all floors and stairs is not less than 162 lx.
- 5.5 Connect to power supply in accordance with Canadian Electrical Code and provide meters and switching.
- 5.6 Electrical power and lighting systems installed under this Contract may be used for construction requirements only with prior approval of City Representative provided that guarantees are not affected. Make good damage to electrical system caused by use under this Contract. Replace lamps which have been used for more than 3 months.

6. TEMPORARY COMMUNICATION FACILITIES

- 6.1 Provide and pay for cell phone usage for own use. Provide and pay for connection to Internet for own use.

7. FIRE PROTECTION

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- 7.1 Provide and maintain temporary fire protection equipment during performance of Work required by governing codes, regulations and bylaws.
- 7.2 Burning rubbish and construction waste materials is not permitted on site.

END OF SECTION

N. PRESERVATION AND PROTECTION

1. DESCRIPTION

- 1.1 This Section specifies requirements for preservation and protection of existing and new utilities, services, buildings and structures.

2. GENERAL

- 2.1 Comply with all requirements and regulations of the City of Iqaluit and Utility Companies, especially those pertaining to protective work, inspection and safety.

3. MAINTENANCE AND PROTECTION OF EXISTING UTILITIES, SERVICE, STRUCTURES AND PROPERTIES

- 3.1 The Contractor will be held fully responsible by the Owner for any damage to utilities, services, properties, buildings, or structures adjacent to or in the general area of the work, through settlement of ground, vibration or shock resulting from any cause relating to the work carried out under this Contract. Make good and repair all such damage at own expense.
- 3.2 The Contractor shall supply and install the shoring, bracing and support system at his own judgment and at his own cost to protect the existing utilities, services, buildings and structures from damage for the duration of the construction. The cost for this item shall be included in the tender price and the contractor shall not make any claim against the Owner for extra work on this item.
- 3.3 Confirm all underground services to locate, stake and clearly mark in the field all services which are located on or near the line of the proposed work.
- 3.4 Sustain in their places and protect from direct or indirect injury, all water and gas mains, sewers and drains, conduits, cables, service pipes, poles, sidewalks, curbs, embankments, structures, equipment and other property in the vicinity of the work.
- 3.5 Sustain and support structures that are uncovered, weakened, endangered or threatened.
- 3.6 Notify the City Representative immediately (and follow up in writing) if and when any damage to such facilities occur during the planned execution of work. Provide all necessary written documentation such as incident reports, accident reports, investigative reports and preventative measures to be implemented within 48 hours of any incident taking place, in a format that clearly identifies details such as the report author, his/her role in the project, the company the author represents, date, signature, etc., all on Company letterhead.
- 3.7 Repair immediately all items that are damaged during construction, at no cost to the Owner.
- 3.8 Immediately report all damages occurred on the plant's property, existing services and structure during construction to the City Representative.

- 3.9 Prevent dust and dirt from entering existing buildings or areas where equipment is stored or is operating.
- 3.10 Prevent dust, water or other deleterious substances from entering areas with existing electrical, heating, ventilating, pumping and other equipment. The Contractor will be held responsible for any damage caused by work carried out under this Contract.
- 3.11 Where existing wall sections are removed or where pipes are installed through existing walls or where any dust-generating operation is necessary, provide a suitable temporary wall or enclosure suitably reinforced and sealed to prevent dust or water entering the area. When work is completed, remove temporary dust control device and thoroughly clean all areas affected by the work.
- 3.12 Control groundwater level to prevent damage to any pipe or structure due to water pressure during and after construction and until the completed works are accepted.
- 3.13 Control vibration levels to prevent damage to concrete work during construction, existing structures, equipment, and utilities. Control use of vibration producing construction techniques or equipment.

4. PROTECTION, SOUNDNESS AND REPAIR OF NEW CONSTRUCTION

- 4.1 Protect all newly constructed work from damage. Prevent heavy loading of newly constructed work and repair all damage. Construct all works watertight and correct all imperfect work.
- 4.2 If, in the final inspection, any deficiencies are found, repair or replace the defective work. Be responsible for satisfactory maintenance and repair of all work undertaken for the specified guaranteed maintenance period. Protect and store all equipment supplied under this Contract.

5. PROTECTION AGAINST FREEZING

- 5.1 Furnish all necessary temporary hoarding, heating equipment and fuel for heated workspaces where required, in order to ensure installation of equipment and materials are performed per the specifications and guidelines of manufacturer.

6. SURVEY MONUMENTS

- 6.1 Maintain survey monuments, iron bars, round iron pipes and stakes for marking property boundaries and locations.
- 6.2 Where monuments, pipes or stakes are located on the line of the trench or within the limits of the work, the Contractor shall report to the City Representative.
- 6.3 Do not remove survey monuments without receiving prior approval. Pay for or replace monuments which were removed without approval.

END OF SECTION

O. MATERIALS AND EQUIPMENT

1. GENERAL

- 1.1 Provide all materials and equipment new. Reconditioned equipment is not acceptable.
- 1.2 Co-operate with other trades prior to installation of work under the contract. Should the Contractor fail to do so, such works, if required, shall be removed, relocated and/or modified as directed by the City Representative, without additional cost to the Owner.
- 1.3 Should the Contractor fail to correspond with requests, or should they misdirect other trades, such corrections and/or additional work, as directed by the City Representative shall be at the Contractor's expense.
- 1.4 Work shall be performed in accordance with the Safety Act and Regulations.

2. SUBMITTALS

- 2.1 Make submittals in accordance with Section J – Submittal Procedures.
- 2.2 Submit shop drawings and product data sheets, as described in the Contract Documents, for all civil, structural, architectural, building mechanical, process mechanical, electrical, instrumentation and communication installations.

3. EQUIPMENT DELIVERY AND INSPECTION

- 3.1 The Works shall be delivered, F.O.B. to the WTP site, City of Iqaluit, Nunavut. The Supplier shall coordinate delivery, offloading and on-site storage of the equipment.
- 3.2 Deliver products in accordance with accepted current progress schedule and coordinate to avoid conflict with the Work and conditions at site. Coordinate the delivery of materials and equipment in advance of the work in order to ensure there are no impacts to downstream installation activities.
- 3.3 Deliver products in undamaged condition, in manufacturer's original container or packaging, with identifying labels intact and legible. Include on label, date of manufacture and shelf life, where applicable.
- 3.4 Unload products in accordance with manufacturer's instructions for unloading or as specified. Record receipt of products delivered to the site. Inspect for completeness and evidence of damage during shipment.
- 3.5 Remove damaged products from site and expedite delivery of identical new undamaged products, and remedy incomplete or lost products to provide that specified, so as not to delay progress of the Work.

4. HANDLING, STORAGE, AND PROTECTION

- 4.1 Handle and store products in accordance with manufacturer's written instructions and in a manner to prevent damage. Provide manufacturer's recommended maintenance during storage, installation, and until products are accepted for use by Owner.
- 4.2 Arrange storage in a manner to provide easy access for inspection. Make periodic inspections of stored products to assure that products are maintained under specified conditions, and free from damage or deterioration. Keep running account of products in storage to facilitate inspection and to estimate progress payments for products delivered, but not installed in the Work.
- 4.3 Store electrical, instrumentation, and control products, and equipment with bearings in weather-tight structures as per manufacturer's instructions. Protect electrical, instrumentation, and control products, and insulation against moisture, water, and dust damage. Connect and operate continuously all space heaters furnished in electrical equipment.
- 4.4 Store fabricated products above ground on blocking or skids and prevent soiling or staining. Store loose granular materials in well-drained area on solid surface to prevent mixing with foreign matter. Cover products that are subject to deterioration with impervious sheet coverings; provide adequate ventilation to avoid condensation.
- 4.5 Store finished products that are ready for installation in dry and well-ventilated areas. Do not subject to extreme changes in temperature or humidity.
- 4.6 Hazardous Materials: Prevent contamination of personnel, storage building, and site. Meet requirements of product specification, codes, and manufacturer's instructions.

END OF SECTION

P. CONSTRUCTION FACILITIES

1. MOBILIZATION

- 1.1 Mobilization shall include, but not be limited to, the following items:
- .1 Obtaining required permits.
 - .2 Filing necessary notices with WSCC.
 - .3 Moving in the Contractor's field offices and equipment required within the first month after issuance of the Commence Work Order.
 - .4 Providing temporary construction fencing to prevent unauthorized access to the work area before starting construction on site.
 - .5 Providing temporary construction roads and signage if required.
 - .6 Providing temporary construction power, wiring, and lighting facilities.
 - .7 Providing onsite communication facilities, including telephones and internet services.
 - .8 Providing onsite sanitary facilities and potable water facilities as specified and as required by Laws and Regulations, and governing agencies.
 - .9 Arranging for and erection of Contractor's work and storage yard including temporary fencing.
 - .10 Posting required notices and establishing safety programs and procedures.
 - .11 Coordinate safety programs and procedures with the Owner.
 - .12 Having Contractor's superintendent at site full time.
 - .13 Removing debris and trash, etc. as needed for Contractor to gain access to do his Work.
- 1.2 Use area designated for Contractor's temporary facilities as shown in the Contract Documents.

2. INSTALLATION AND REMOVAL

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

3. SCAFFOLDING

- 3.1 Provide and maintain scaffolding, ramps, ladders, platforms and temporary stairs.

4. HOISTING

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

5. STAGING AREA

- 5.1 The staging area (the Contractor's laydown area) as shown within the contractor documents.

6. SITE STORAGE/ LOADING

- 6.1 Confine work and operations of employees by Contract Documents. Do not unreasonably encumber premises with products.
- 6.2 Do not load or permit to load any part of Work with a weight or force that will endanger the Work.
- 6.3 Ensure that any aerosol or gas products are stored according to manufacturer's written instructions in a securely locked facility.

7. CONSTRUCTION PARKING

- 7.1 Parking will be permitted on site provided it does not disrupt performance of Work or interfere with access, egress and parking for neighboring sites, or local traffic.
- 7.2 Provide and maintain adequate access to project site.
- 7.3 Build and maintain temporary roads where indicated or required and provide snow removal during period of Work.

8. SECURITY

- 8.1 Provide and pay for responsible security personnel to guard site and contents of site after working hours and during holidays.

9. OFFICES

- 9.1 Provide office heated to 22°C, lighted 750 lx and ventilated, of sufficient size to accommodate site office, eating area for workers, and furnished with drawings laydown table. Furnish site trailer as required.
- 9.2 Provide a clearly marked and fully stocked first-aid case in a readily available location.
- 9.3 Subcontractors may provide their own offices as necessary. Direct location of these offices to be approved by the City Representative.

10. EQUIPMENT, TOOL AND MATERIALS STORAGE

- 10.1 Provide and maintain, in a clean and orderly condition, lockable weatherproof sheds for storage of tools, equipment and materials.
- 10.2 Locate materials not required to be stored in weatherproof sheds on site in a manner to cause least interference with work activities.
- 10.3 Stored materials and debris on site must be secured and contained within the construction site, so not to disturb the general public.

11. SANITARY FACILITIES

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

12. CONSTRUCTION SIGNAGE

- 12.1 Provide and erect, within 5 working days prior to construction mobilization, a project sign in a location designated by the City Representative.
- 12.2 Provide a construction sign 1220 x 2440mm, of plywood construction painted with exhibit lettering produced by a professional sign painter. Details of sign message to be provided to City Representative for review/ approval prior to fabrication. Wording shall in in Inuktitut, English and French official languages.
- 12.3 Provide site sign temporary mounting comprising foundation, framing, and supports.
- 12.4 Direct requests for approval to erect a Contractor signboard to City Representative. For consideration general appearance of Contractor signboard must conform to project identification site sign. Wording shall in in Inuktitut, English and French official languages.
- 12.5 Signs and notices for safety and instruction shall be in all Nunavut official languages graphic symbols.
- 12.6 Maintain approved signs and notices in good condition for duration of project, and dispose of off-site on completion of project, or earlier if directed by City Representative.

13. CLEAN-UP

- 13.1 Remove construction debris, waste materials, packaging material from work site daily.
- 13.2 Clean dirt or mud tracked onto paved or surfaced roadways.
- 13.3 Store materials resulting from demolition activities that are salvageable.
- 13.4 Stack stored new or salvaged material not in construction facilities.

END OF SECTION

Q. TEMPORARY BARRIERS AND ENCLOSURES

1. INSTALLATION AND REMOVAL

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

2. GUARD RAILS AND BARRICADES

- 2.1 Provide secure, rigid guard rails and barricades around deep excavations, open shafts, open stair wells, open edges of floors and roofs.
- 2.2 Provide concrete jersey barriers for use as barricades around deep excavation sites, and as a means to separate vehicular traffic.
- 2.2 Provide as required by governing authorities.

3. WEATHER ENCLOSURES

- 3.1 Provide weather tight enclosures to unfinished door and window openings, tops of shafts and other openings in floors, walls, and roofs.
- 3.2 Close off floor areas where walls are not finished; seal off other openings; enclose building interior work for temporary heat.
- 3.3 Design enclosures to withstand wind pressure and snow loading.

4. DUST TIGHT SCREENS

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

5. ACCESS TO SITE

- 5.1 Provide and maintain access roads, crossings, ramps and construction access routes as may be required for access to Work.
- 5.2 Provide temporary fencing around perimeter of Work site, in order to delineate construction site from the public.

6. PUBLIC TRAFFIC FLOW

- 6.1 Provide and maintain competent signal flag operators, barricades and lights as required to perform Work and protect the public.
- 6.2 Refer to Section E – Special Project Procedures (Traffic Control).

7. FIRE ROUTES

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

8. PROTECTION FOR OFF-SITE AND PUBLIC PROPERTY

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

9. PROTECTION OF BUILDING FINISHES

- 9.1 Provide protection for finished and partially finished building finishes and equipment during performance of Work.
- 9.2 Provide necessary screens, covers, and hoardings.
- 9.3 Be responsible for damage incurred due to lack of or improper protection.

END OF SECTION

R. CLOSEOUT PROCEDURES

1. SECTION INCLUDES

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

2. INSPECTION AND DECLARATION

- 2.1 Contractor's Inspection: Contractor and all Subcontractors shall conduct an inspection of Work, identify deficiencies and defects, and repair as required to conform to Contract Documents.
- i. Notify City Representative in writing of satisfactory completion of Contractor's Inspection and that corrections have been made.
 - ii. Request City Representative's Inspection.
- 2.2 City Representative's Inspection: City Representative and Contractor will perform inspection of work to identify obvious defects or deficiencies. Contractor shall correct Work accordingly.
- 2.3 Completion: submit written certificate that following have been performed:
- i. Work has been completed and inspected for compliance with Contract Documents.
 - ii. Defects have been corrected and deficiencies have been completed.
 - iii. Equipment and systems have been tested, adjusted and are fully operational.
 - iv. Certificates required by other Regulatory Agencies have been submitted.
 - v. Operation of systems have been demonstrated to Owner's personnel.
 - vi. Work is complete and ready for final inspection.
- 2.4 Final Inspection: when items noted above are completed, request final inspection of Work by Owner, City Representative, and Contractor. If Work is deemed incomplete, complete outstanding items and request reinspection.
- 2.5 Declaration of Substantial Performance: when Owner and City Representative consider deficiencies and defects have been corrected and it appears requirements of Contract have been substantially performed, make application for certificate of Substantial Performance. No later than 21 calendar days after receipt of application, City Representative will review Work to verify validity of application, and no later than 7 calendar days after completing review, will notify Contractor if Work or designated portion of Work is substantially performed.
- 2.6 Commencement of Lien and Warranty Periods: date of Owner's acceptance of submitted declaration of Substantial Performance shall be date for commencement for warranty

period and commencement of lien period unless required otherwise by lien statute of Place of Work.

- 2.7 Final Payment: when Owner and City Representative consider final deficiencies and defects have been corrected and it appears requirements of Contract have been totally performed, make application for final payment. If Work is deemed incomplete by Owner and City Representative, complete outstanding items and request reinspection. City Representative will, no later than 21 calendar days after receipt of an application for final payment, review Work to verify validity of application. City Representative will give notification that application is valid or give reasons why it is not valid, no later than 7 calendar days after reviewing Work
- 2.8 Payment of Holdback: after issuance of certificate of Substantial Performance of Work, submit an application for payment of holdback amount in accordance with terms of payment.

END OF SECTION

S. CLOSEOUT SUBMITTALS

1. SECTION INCLUDES

- 1.1 As-built, samples, and terms of reference.
- 1.2 Equipment and systems.
- 1.3 Product data, materials and finishes, and related information.
- 1.4 Operations and maintenance data.
- 1.5 Spare parts, special tools and maintenance materials.
- 1.6 Warranties and bonds.
- 1.7 Final site survey.

2. SUBMISSION

- 2.1 Make submittals in accordance with Section J – Submittal Procedures.
- 2.2 Prepare inspections and data using personnel experience in maintenance and operation of described products.
- 2.3 Copy will be returned after final inspection, with City Representative's comments.
- 2.4 Revise content of documents as required prior to final submittal.
- 2.5 Provide evidence as to type, source and quality of products provided as part of the Work.
- 2.6 Defective products will be rejected, regardless of previous inspections. Replace products at own expense.
- 2.7 Pay costs of transportation.

3. AS-BUILTS AND SAMPLES

- 3.1 In addition to requirements in General Conditions, maintain at the site on record copy of:
 - i. Contract Drawings.
 - ii. Terms of Reference.
 - iii. Addenda.
 - iv. Change Orders and other modifications to Contract.
 - v. Reviewed shop drawings, product data, and samples.
 - vi. Field test reports.

- vii. Inspection certificates.
 - viii. Manufacturer's certificates.
 - 3.2 Store record documents and samples in field office apart from documents used for construction. Provide files, racks, and secure storage.
 - 3.3 Label record documents and file in accordance with Section number listings in List of Contents of this Project Manual.
 - 3.4 Maintain record documents in clean, dry and legible condition. Do not use record documents for construction purposes.
 - 3.5 Keep record documents and samples available for inspection by City Representative.
- 4. RECORDING ACTUAL SITE CONDITIONS**
 - 4.1 Record information on set of blue line opaque drawings.
 - 4.2 Provide felt tip marking pens, maintaining separate colours for each major system, for recording information.
 - 4.3 Record information concurrently with construction progress. Do not conceal Work until required information is recorded.
 - 4.4 Contract Drawings and shop drawings: legibly mark each item to record actual construction.
- 5. EQUIPMENT AND SYSTEMS**
 - 5.1 Each Item of Equipment and Each System: include description of unit or system, and component parts. Give function, normal operation characteristics, and limiting conditions. Include performance curves, with engineering data and tests, and complete nomenclature and commercial number of replaceable parts.
 - 5.2 Panel board circuit directories: provide electrical service characteristics, controls, and communications.
 - 5.3 Include installed color coded wiring diagrams.
 - 5.4 Operating Procedures: include start-up, break-in, and routine normal operating instructions and sequences. Include stopping, shut-down, and emergency instructions. Include summer, winter, and any special operating instructions.
 - 5.5 Maintenance Requirements: include routine procedures and guide for troubleshooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
 - 5.6 Providing servicing and lubrication schedule, and list of lubricants required.
 - 5.7 Include manufacturer's printed operation and maintenance instructions.

- 5.8 Include sequence of operation by controls manufacturer.
- 5.9 Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
- 5.10 Provide installed control diagrams by controls manufacturer.
- 5.11 Provide Contractor's coordination drawings, with installed color-coded piping drawings.
- 5.12 Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagram.
- 5.13 Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.
- 5.14 Include test and balancing reports as specified in Section J – Quality Control.
- 5.15 Additional requirements: as specified in individual terms of reference sections.

6. MATERIALS AND FINISHES

- 6.1 Building Products, Applied Materials, and Finishes: include product data, with catalogue number, size, composition, and color and texture designations. Provide information for re-ordering products.
- 6.2 Instructions for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.
- 6.3 Moisture-protection and Weather-exposed products: include manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.
- 6.4 Additional Requirements: as specified in individual terms of reference sections.

7. SPARE PARTS

- 7.1 Provide spare parts, in quantities specified in individual terms of reference sections.
- 7.2 Provide items of same manufacturer and quality as items in Work.
- 7.3 Deliver to site; place and store in location designated by City Representative.
- 7.4 Receive and catalogue all items. Submit inventory listing to City Representative. Include approved listings in Maintenance Manual.
- 7.5 Obtain receipt for delivered products and submit prior to final payment.

8. MAINTENANCE MATERIALS

- 8.1 Provide maintenance and extra materials, in quantities specified in individual terms of reference sections.

- 8.2 Provide items of same manufacturer and quality as items in Work.
- 8.3 Deliver to site; place and store in location designated by City Representative.
- 8.4 Receive and catalogue all items. Submit inventory listing to City Representative. Include approved listings in Maintenance Manual.
- 8.5 Obtain receipt for delivered products and submit prior to final payment.

9. STORAGE, HANDLING AND PROTECTION

- 9.1 Store spare parts, maintenance materials, and special tools in manger to prevent damage or deterioration.
- 9.2 Store in original and undamaged condition with manufacturer's seal and labels intact.
- 9.3 Store components subject to damage from weather in weatherproof enclosures.
- 9.4 Store paints and freezable materials in a heated and ventilated room.
- 9.5 Remove and replace damaged products at own expense and to satisfaction of City Representative.

10. PRE-WARRANTY CONFERENCE

- 10.1 Meet with City Representative, to develop understanding of requirements of this section. Schedule meeting prior to contract completion, and at time designated by City Representative.
- 10.2 City Representative will establish communication procedures for:
 - i. Notification of construction warranty defects.
 - ii. Determine priorities for type of defect.
 - iii. Determine reasonable time for response.
- 10.3 Provide name, telephone number and address of licensed and bonded company that is authorized to initiate and pursue construction warranty work action.
- 10.4 Ensure contact is located within local service area and warranted construction, is continuously available, and is responsive to inquiries for warranty work action.

11. WARRANTIES AND BONDS

- 11.1 Separate each warranty or bond with index tab sheets keyed to Table of Contents listing.
- 11.2 List subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.

- 11.3 Obtain warranties and bonds, executed in duplicate by subcontractors, suppliers, and manufacturers, within ten (10) working days after completion of the applicable item of work.
- 11.4 Except for items put into use with Owner's permission, leave date of beginning of time of warranty until the Date of Substantial Performance is determined.
- 11.5 Verify that documents are in proper form, contain full information, and are notarized.
- 11.6 Co-execute submittals when required.
- 11.7 Retain warranties and bonds until time specified for submittal.

END OF SECTION