REQUEST FOR PROPOSALS

CITY OF KENORA

REQUEST FOR PROPOSALS / ADVERTISEMENT

The City of Kenora (the "City") is seeking proposals in response to this RFP in relation to: **City of Kenora WWTP Blowers and Diffusers Pre-Purchase (the "Project").**

Proposals will be received by:

City of Kenora

1 Main Street South

Kenora, ON P9N 3X2

Attention: City Clerk

RE: RFP #413-012-25 City of Kenora WWTP Blowers and Diffusers Pre-Purchase

Time and date for the closing of the RFP is:
11:00:00 a.m. CST/CDT on June 25, 2026
(the "RFP Closing Date")

1. The work to be undertaken generally involves, but is not necessarily limited to: Furnishing all labor, equipment, material, software, and on-site services for the supply, assistance in the installation, and commissioning of positive displacement aeration blowers, secondary biological treatment aeration diffusers, and other system appurtenances necessary for complete and functional operation. All work shall be completed as set out in the drawings and specifications included with this Invitation to Tender.

2. The CITY's consultant for the Project is:

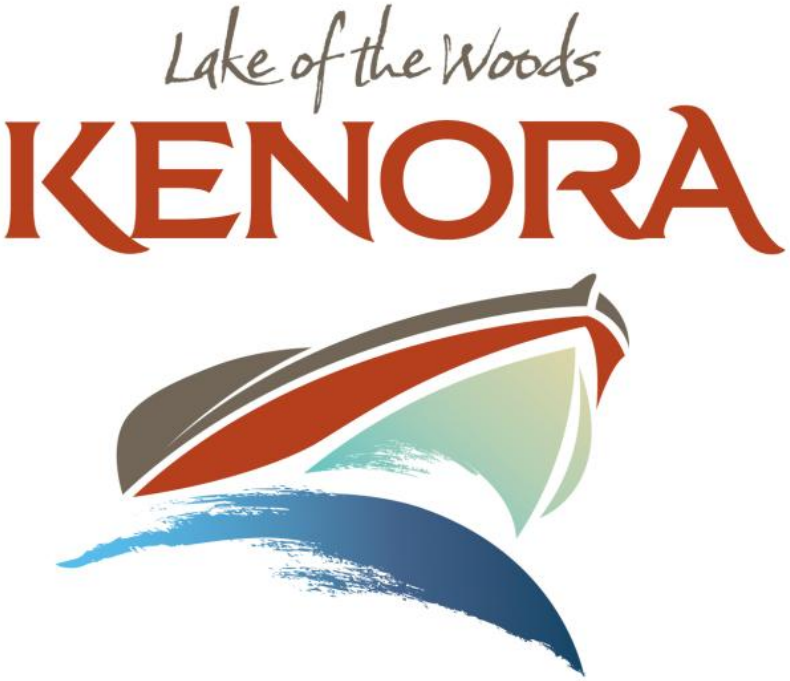
   Michael Blain, M.A.Sc., P.Eng.
   Process Engineer
   Associated Engineering (Ont.) Ltd.\
   Suite 200, 165 Commerce Valley Drive West
   Markham, ON L3T 7V8
   Email: blainm@ae.ca

3. The drawings and specifications for the Project can be obtained from Daniel Mach, P.Eng, Project Manager, Capital Project Delivery | dmach@kenora.ca or from MERX.com within **City of Kenora Wastewater Treatment Plant Blowers and Diffusers Pre-Purchase.**

4. All written inquiries regarding the technical aspects of the drawings and specifications for the Work shall be sent to Michael Blain, M.A.Sc., P.Eng., via email at blainm@ae.ca, however the bidder(s) acknowledge and agree that the CITY does not have an obligation to provide a response to any written inquiry and that it is in the sole and unfettered discretion of the CITY to provide any written response to a written inquiry.

5. Submission of a tender by a Bidder gives the CITY the right to require the Bidder to execute the contract to perform the Work as set out within the tender documents. Tenders may not be withdrawn after the Tender Closing and will be irrevocable and open for acceptance by the CITY for a period of sixty (60) days following the end of the day of the

Tender Closing. The Successful Bidder will be notified in writing of the award of the Tender when the CITY delivers a letter of intent to the Successful Bidder.



CITY OF KENORA

REQUEST FOR PROPOSALS

WWTP BLOWERS AND DIFFUSERS

PRE-PURCHASE

REQUEST FOR PROPOSAL ("RFP") WITH RESPECT TO THE:

WWTP BLOWER and DIFFUSER PRE-Purchase

1.0 PRE-PURCHASEINTRODUCTION

1.1 Purpose of RFP

1.1.1 The City of Kenora (the "City") seeks innovative proposals from interested parties for the following:

furnishing all labour, equipment, material, software, and on-site services for the supply, assistance in the installation, and commissioning of positive displacement aeration blowers, secondary biological treatment aeration diffusers, and other system appurtenances necessary for complete and functional operation. Services will include design, manufacturing, testing, supply, delivery, commissioning, and operator training. Installation of the equipment will be by others. ("**the Work**").

1.1.2 If the City receives a proposal acceptable to it, the City will select one (1) or more parties who submitted a proposal (the "Proponents") with whom the City, in its sole and unfettered discretion, will negotiate regarding the terms of a contract (the "Contract") to perform the Work.

1.2 Submission of RFP

1.2.1 Proponents shall submit their Proposal in an envelope marked "City of Kenora Request for Proposal for **WWTP Blower and Diffuser Pre-Purchase** (the "Proposals") on or before 11:00:00 a.m. CST/CDT] on **June 25, 2026** (the "RFP Closing Time") to:

City of Kenora
1 Main Street South
Kenora, ON P9N 3X2
Attention: City Clerk

RE: WWTP Blowers and Diffusers Pre-Purchase

No faxed or electronically submitted Proposals will be accepted by the City.

1.2.2 Proposals will be opened following the RFP Closing Time. No Proposal(s) submitted after the RFP Closing Time will be accepted.

1.2.3 Each Proponent may submit only one Proposal. Collusion between Proponents will be sufficient cause for the affected proposal(s) to be rejected outright by the City without further consideration.

1.2.4 Any inquiries respecting this RFP should be directed, in writing, to:

Michael Blain, P.Eng., at Associated Engineering Ontario Ltd.,

Telephone: 437-317-9052 or Email: blainm@ae.ca

1.2.5 Each Proponent shall designate within 5 days of the receipt of this RFP, and no later than 7 calendar days prior to the RFP Closing Time of this RFP, one (1) person to whom any additional information, as may be deemed relevant to this RFP by the City, may be communicated. The name and contact information is to be emailed to the City's designated contact person indicated in paragraph 1.2.4 above noted.

1.2.6 The City is under no obligation to respond to any inquiry submitted to it in respect of this RFP.

1.2.7 If the City, in its sole and unfettered discretion, determines that a written response to an inquiry is warranted, a written response will be prepared and distributed to all Proponents who have requested a copy of this RFP and completed the acknowledgment form. Such written response(s) will be issued in the form of an addendum to this RFP, and will be deemed to be part of this RFP.

1.2.8 No inquiry submitted to the City will be responded to after **June 22, 2026**

1.3 General Conditions Applicable to this RFP

1.3.1 Appendices and Addenda

The appendices to this RFP and any subsequent addenda are incorporated into and form part of this RFP. The information and data contained in any appendices and any subsequent addenda may form the basis upon which the Contract will be entered into with the City.

1.3.2 Disclaimer of Liability and Indemnity

By submitting a Proposal, a Proponent agrees:

1.3.2.1 to be responsible for conducting its own due diligence on data and information upon which its Proposal is based;

1.3.2.2 that it has fully satisfied itself as to its rights and the nature extended to the risks it will be assuming;

1.3.2.3 that it has gathered all information necessary to perform all of its obligations under its Proposal;

1.3.2.4 that it is solely responsible for ensuring that it has all information necessary to prepare its Proposal and for

independently verifying and informing itself with respect to any terms or conditions that may affect its Proposal;

1.3.2.5 to hold harmless the City, its elected officials, officers, employees, agents or advisors and all of their respective successors and assigns, from all claims, liability and costs related to all aspects of the RFP process;

1.3.2.6 that it shall not be entitled to claim against the City, its elected officials, officers, employees, insurers, agents or advisors on grounds that any information, whether obtained from the City or otherwise (including information made available by its elected officials, officers, employees, agents or advisors), regardless of the manner or form in which the information is provided is incorrect or insufficient;

1.3.2.7 that the City will not be responsible for any costs, expenses, losses, damages or liability incurred by the Proponent as a result of, or arising out of, preparing, submitting, or disseminating a Proposal, or for any presentations or interviews related to the Proposal, or due to the City's acceptance or non-acceptance of a Proposal; and

1.3.2.8 to waive any right to contest in any proceeding, case, action or application, the right of the City to negotiate with any Proponent for the Contract whom the City deems, in its sole and unfettered discretion, to have submitted the Proposal most beneficial to the City and acknowledges that the City may negotiate and contract with any Proponent it desires.

1.3.3 **No Tender and no Contractual Relationship**

The Proponent acknowledges and agrees that this procurement process is a Request for Proposal and is not a tendering process. It is part of an overall procurement process intended to enable the City to identify a potential successful Proponent. The submission of a Proposal does not constitute a legally binding agreement between the City and any Proponent. For greater certainty, by submission of its Proposal, the Proponent acknowledges and agrees that there will be no initiation of contractual obligations or the creation of contractual obligations as between the City and the Proponent arising from this RFP or the submission of a Proposal.

Further, the Proponent acknowledges that a Proposal may be rescinded by a Proponent at any time prior to the execution of the Contract.

1.4 **Discretion of City**

Notwithstanding any other provision of this RFP to the contrary, the provisions in this Section 1.4 prevail, govern and override all other parts of this RFP. The City is not bound to accept any Proposal. At any time prior to execution of the

Contract, the City may, in its sole and unfettered discretion, or for its own convenience, terminate the procurement process, cancel the Work or proceed with the Work on different terms. All of this may be done with no compensation to the Proponents or any other party.

The City reserves the right, in its sole and unfettered discretion, to:

1.4.1 utilize any designs, ideas or information contained in any of the Proposals for its sole use and benefit without making payment or otherwise providing consideration or compensation to any Proponent or any other party;

1.4.2 negotiate the specific contractual terms and conditions, including but not limited to the fee or price of the Work, and the scope of the Work;

1.4.3 waive any formality, informality or technicality in any Proposal, whether of a minor and inconsequential nature, or whether of a substantial or material nature;

1.4.4 receive, consider, and/or accept any Proposal, regardless of whether or not it complies (either in a material or non-material manner) with the submission requirements or is the lowest priced proposal, or not accept any Proposal, all without giving reasons;

1.4.5 determine whether any Proposal meets the submission requirements of this RFP; and

1.4.6 negotiate with any Proponent regardless of whether or not that Proponent is the Proponent that has received the highest evaluation score, and

1.4.7 negotiate with any and all Proponents, regardless of whether or not the Proponent has a Proposal that does not fully comply, either in a material or non-material way with the submission requirements for the RFP or any requirements contained within this RFP.

1.5 Selection

Selection of the successful Proponent, if any, is at the sole and unfettered discretion of the City.

1.6 Disqualification

The failure to comply with any aspect of this RFP (either in a material way or otherwise), shall render the Proponent subject to such actions as may be determined by City, including disqualification from the RFP process, suspension from the RFP process and/or imposition of conditions which must be complied with before the Proponent will have its privilege of submitting a Proposal reinstated.

1.7 Representations and Warranties

1.7.1 The City makes no representations or warranties other than those expressly contained herein as to the accuracy and/or completeness of the information provided in this RFP.

1.7.2 Proponents are hereby required to satisfy themselves as the accuracy and/or completeness of the information provided in this RFP.

1.7.3 No implied obligation of any kind by, or on behalf of, the City shall arise from anything contained in this RFP, and the express representations and warranties contained in this RFP, and made by the City, are and shall be the only representations and warranties that apply.

1.7.4 Information referenced in this RFP, or otherwise made available by the City or any of its elected officials, officers, employees, agents or advisors as part of the procurement process, is provided for the convenience of the Proponent only and none of the City, its elected officials, officers, employees, agents and advisors warrant the accuracy or completeness of this information. The Proponent is required to immediately bring forth to the City any conflict or error that it may find in the RFP. All other data is provided for informational purposes only.

2.0 DESCRIPTION OF THE WORK TO BE PERFORMED

Proponents are to review the General Specifications attached hereto as Appendix "A".

3.0 PROPOSAL REQUIREMENTS

The City reserves the right, but is not required, to reject any Proposal that does not include the requirements.

3.1 Description of the Proposal

3.1.1 Proposals shall include the legal name, address and telephone numbers of the individual, the principals of partnerships and/or corporations comprising the Proponent, and in the case of partnerships or corporations, the individual who will be the representative of the partnership or corporation.

3.1.2 Proposals shall include a list of previous work of a similar nature to the Work required by the City as set out in this RFP.

3.1.3 Prices for the Work shall be inserted by the Proponent in the forms attached hereto within Appendix "A" and the forms shall be submitted by the Proponent at the time of the submission of its Proposal.

3.2 Execution of the Proposal

Proposals shall be properly executed in full compliance with the following:

3.2.1 Proposals and the pricing form attached within Appendix “A”, must be signed by the representative for the Proponent;

3.2.2 if the Proposal is made by a corporation, the full name of the corporation shall be accurately printed, the signatures of its duly authorized officers signed, and the corporate seal shall be affixed;

3.2.3 if the Proposal is made by a partnership, the firm name or business name shall be accurately printed, and the Proposal shall be signed by a partner or partners who have authority to sign for the partnership;

3.2.4 if the Proposal is made by an individual carrying on business under a name other than his own, his business name together with the individual’s name shall be printed and the form signed; and

3.2.5 if the Proposal is made by a sole proprietor who carries on business in his own name, the proprietor shall print and sign their name.

4.0 MANDATORY SUBMISSION REQUIREMENTS

4.1 Documents to be Submitted with the Proposal

At the time of the submission of its Proposal, the Proponent shall provide all required documents as detailed in Appendix A.

4.2 Insurance to be carried by Successful Proponent

At the time of the submission of its Proposal, the Proponent shall provide evidence of insurance coverage as outlines by Appendix A, GC 1.4 INSURANCE.

4.3 Evaluation

4.3.1 After the RFP Closing Time, the City will review and evaluate all the Proposals received based upon the information supplied by the Proponents in accordance with the submission requirements of this RFP.

4.3.2 In evaluating the Proposals received, the City will consider all of the criteria listed in Appendix A, and the City will have the sole and unfettered discretion to award up to the maximum number of points for each criteria as listed below. By submitting a Proposal, the Proponent acknowledges and agrees that the City has, and is hereby entitled to exercise, the sole and unfettered discretion to award the points for the evaluation of the noted criteria.

4.3.3 By submitting a Proposal, each Proponent acknowledges and agrees that it waives any right to contest in any legal proceedings the decision of the City to award points in respect of the criteria (the “Evaluation Criteria”).

4.3.4 The City also reserves the right to accept conditions to be offered by and/or negotiated with the successful Proponent which are not specifically contained in this RFP. Such options and/or alternatives shall be included in the Proposal review process as part of the evaluation.

4.3.5 At all times, the City reserves the right to seek written clarification regarding a Proposal from a Proponent. Such clarification shall be deemed an amendment to such Proponent's Proposal.

4.4 Period Open for Consideration

The Proposals received shall remain open for the City’s consideration for a period of sixty (60) days following the RFP Closing Date in order to allow for the City to undertake the evaluation of the Proposals received and to undertake the negotiations as provided for herein.

The draft contract which will form the basis of the negotiations between the City and the selected Proponent(s) is attached hereto within Appendix “A”.

4.5 Information Disclosure and Confidentiality

All documents submitted to City will be subject to the protection and disclosure provisions of the *Freedom of Information and Protection of Privacy Act* ("FOIP"). FOIP allows persons a right of access to records in City's custody or control. It also prohibits City from disclosing the Proponent's personal or business information where disclosure would be harmful to the Proponent's business interests or would be an unreasonable invasion of personal privacy as defined in sections 17 and 21 of FOIP. Proponents are encouraged to identify what portions of their Proposals are confidential and what harm could reasonably be expected from its disclosure. However, the City cannot assure Proponents that any portion of the Proposals can be kept confidential under FOIP.

4.6 Independent Determination

A Proposal will not be considered by the City if it was not arrived at independently without collusion, consultation, communication or agreement as to any matter, such as prices, with any other Proponent.

4.7 Documents

All documents submitted by a Proponent shall become the property of City upon being presented, submitted, or forwarded to City. Should any documents be submitted electronically, notwithstanding the prohibition on same contained elsewhere in this RFP, then their content and the media they are contained in

shall also become the property of City upon their being presented, submitted or forwarded to City.

4.8 **Use of Documents, Drawings and Ideas**

Notwithstanding anything contained in this RFP as to the purpose for the submission of Proposals, the City may use the concepts, ideas, suggestions, and directions contained within the documents, drawings, plans, written descriptions and other materials contained in Proposals and in any communication surrounding the Proposals provided by the Proponents or their agents, for any purpose whatsoever including, but not limited to, use of portions of the Proposals or of ideas, information, enhancements to the Evaluation Criteria and designs contained therein in other City works. For clarity, the confidentiality obligations set out herein applicable to the City's use of information shall not interfere with the City's right to use concepts, ideas, suggestions and directions as herein described.

4.9 **Canadian Free Trade Agreement**

The provisions of the Canadian Free Trade Agreement ("CFTA") apply to this Proposal.

4.10 **Site Conditions**

The Proponent is responsible for inspecting the site of the Work and for making whatever inquiries or arrangements are necessary for it to become fully informed of the nature of the site of the Work, including, but not limited to, the soil structure and topography of the site, and of the Work to be performed and all matters which may in any way affect the Work. Without limiting the foregoing, by the submission of its Proposal, the Proponent acknowledges that it has investigated and satisfied itself as to:

4.10.1 the nature of the Work;

4.10.2 the location and all conditions relating to the site of the Work including, but not limited to, accessibility, general character, surface and sub-surface conditions, soil structure, utilities, road, uncertainties of seasonal weather and all other physical, topographical, geological and geographic conditions;

4.10.3 the general character, conditions, laws and restrictions applicable to the Work that might affect the performance of the Work;

4.10.4 all environmental risks, conditions, laws and restrictions applicable to the Work that might affect the Work; and

4.10.5 the magnitude of the construction required to execute and complete the Work.

The Proponent is fully responsible for obtaining all information required for the preparation of its Proposal. The City is not responsible for undertaking any

investigations to assist the Proponent. Any information, plans, drawings, shop drawings or existing equipment or facilities, photos of the original construction, reports or other documents which are not included or referred to in a Proposal (the "Non-Proposal Information"), form no part of such Proposal. City and City's consultants assume no responsibility of any kind whatsoever arising from or relating to its failure to include or refer to such Non-Proposal Information.

The Proponent's obligation to become familiar with the information described in herein is not lessened or discharged by reason of any technical reports, including soils reports or data, test hole drilling reports or other soils information, made available or supplied in conjunction with the proposal process. Any technical reports so provided are for informational purposes only and neither the City nor the City's consultants accept or assume any responsibility for the contents or accuracy of such technical reports, and the Proponent agrees that the City, the City's consultants and their representatives shall not be liable in any way to the Proponent in respect of such technical reports.

The Proponent further agrees that it shall not rely upon any oral information provided to it by the City, the City's consultants or any of their respective representatives.

4.11 **Law and Forum of Proposal**

The law to be applied in respect of this RFP shall be the law of the Province of Ontario and all civil actions commenced in relation to this RFP shall be adjudicated by the Courts of the Province of Ontario. By submitting a Proposal, the Proponent is deemed to have agreed to attorn to the jurisdiction of the Courts of the Province of Ontario.

Appendix “A”

Scope of Work, Specifications and Drawings

Associated Engineering | GLOBAL PERSPECTIVE. LOCAL FOCUS.

CONTRACT DOCUMENTS

City of Kenora

Wastewater Treatment Plant - Blower and Diffuser Pre-Purchase

May 2026

CONTRACT SPECIFICATIONS
FOR
CITY OF KENORA
WASTEWATER TREATMENT PLANT – BLOWER AND DIFFUSER PRE-PURCHASE

Ryan Thoren, M.A.Sc., P.Eng.
Project Manager

Michael Blain, M.A.Sc., P.Eng.
Process Engineer

Prepared by Associated Engineering Ontario Ltd.

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DOCUMENTS/SECTIONS **PAGES**

END OF SECTION

Part 1 General

1.1 SCOPE

.1 The Owner requests Proposals for the supply, assistance in the installation, and commissioning of positive displacement aeration blowers and secondary biological treatment aeration diffusers and lateral piping. Upon the completion of the review of the Proposals, it is the intent of the Owner to enter into a contract for the supply of the Goods as part of the Kenora Wastewater Treatment Plant (WWTP) Aeration Tank and System Upgrades.

.2 The Owner will at a later date retain a General Contractor to conduct the additional upgrades related to the secondary items pertaining to the blowers. When a General Contractor is selected the agreement with the Owner and the Supplier will be Novated into the agreement with the General Contractor.

.3 The equipment will be installed by the General Contractor in an existing facility. The equipment is to be fabricated, delivered, and supplied such that it will fit in the space available as shown on the contract drawings. The Supplier is required to provide assistance with the delivery, installation, start-up, and commissioning to ensure that it conforms to the design requirements.

1.2 DESCRIPTION OF SUPPLY

.1 This Request for Proposal is for the supply and delivery of the blowers, diffusers, and related systems to the FOB Point including design, insurance, equipment, controls, software, training, testing, start-up, and system support. The Goods supplied under the proposed contract will be installed by others during the construction stage. The Goods supplied under the proposed contract shall include, but are not necessarily limited to the following:

.1 Equipment design and submittal of Shop Drawings for review. The design and final shop drawings are to be sealed by Professional Engineer in the province of Ontario.

.2 Ensure the design of the blowers and ancillary systems complies with the technical Specifications.

.3 Supply of blowers, diffusers, and other system appurtenances necessary for complete and functional operation.

.4 Compatible with a 600-volt power supply to CSA standards. Should lower or higher voltages be required the Proponent shall include the necessary transformers to supply that power.

.5 Factory testing of the equipment.

.6 Provision of all necessary instruction to ensure satisfactory off-loading, storage, and installation at the Work Site and testing of the Goods supplied. The General Contractor retained by the Owner will provide all necessary labour, equipment and temporary storage at the FOB Point and off-load and install the Goods.

.7 Assistance to the General Contractor with developing, coordinating and conducting the field testing and commissioning of the equipment.

.8 Refer to Section 43 12 11 – Roatry Lobe Positive Displacement Blower and Section 46 51 46 – Mebrane Diffusers for supplier representative attendance requirements during installation, startup, commissioning, and training.

.9 Achieve a 30-calendar day performance verification.

.10 Submittal of operation and maintenance manuals for the supplied equipment.

.11 As required, and at no cost to the Owner, modification and/or replacement of the equipment to ensure that performance guarantees provided in the Proponent's Proposal are met.

.12 Provision of technical support for and repair of all defects to the equipment, at no cost to the Owner, during the one-year Warranty Period.

.13 Delivery of the Goods, freight expenses pre-paid to:

Kenora Wastewater Treatment Plant
Miller Rapids Rd
Kenora ON P9N 0C1

.14 Coordination of the delivery and installation of the Goods with the General Contractor.

.2 Delivery of the Goods to the FOB Point shall not be later than the dates indicated in Section 00 43 86 - Schedule of Supply and Delivery, unless otherwise agreed with the Owner in writing. Installation and on-site testing of the Goods shall be when stipulated by the General Contractor in coordination with the Owner.

1.3 PROPOSAL DOCUMENTS

.1 Proponents are advised to read and respond fully to all sections of the RFP including the schedules and supplements; an incomplete Proposal may be rejected.

1.4 VALIDITY OF PROPOSAL

.1 The Proposal submitted by the Proponent shall be valid for a period of 60 Days from the Proposal Closing, whether another Proposal has been accepted or not.

1.5 ENQUIRIES AND ADDENDA

.1 Enquiries should be addressed to:

Michael Blain, P.Eng.
Associated Engineering Ontario Ltd.
Suite 200 - 165 Commerce Valley Dr W
Markham, ON L3T 7V8

Telephone: 437-317-9052
Email: blainm@ae.ca

.2 Upon receipt of RFP Documents, verify that documents are complete. Notify Engineer should the documents be incomplete.

.3 Immediately notify Engineer upon finding discrepancies or omissions in RFP Documents.

.4 Any requests for explanations, interpretations or clarifications made by Proponents must be submitted in writing to the Engineer not less than 3 Business Days prior to the Proposal Closing.

.5 Any explanations, interpretations or clarifications will be made in the form of Addenda. Addenda will be in written form. Addenda will be sent to all known Proponents.

.6 All addenda become part of the RFP Documents. Include costs in the Total Proposal Price.

.7 Verbal advice from any person is only binding when confirmed by Addenda.

1.6 COMPLETION OF PROPOSAL

.1 Submit a complete Proposal that meets the requirements and Specifications of the RFP.

.2 The Proponent shall complete all applicable RFP Documents in ink or in type.

.3 Unit prices, in Canadian currency, shall be shown for each item specified including labour rates and shall be all inclusive, including but not limited to all packing, crating, freight, cartage, shipping charges, cost of unloading supplies at destination, incidental costs and all tariffs, excise taxes and duties.

.4 The Owner may exclude certain items and services listed in the Schedule of Proposal Prices after the Proposal Closing.

.5 Carefully review the RFP Documents and all Addenda issued by the Owner.

.6 The Proposal shall be in accordance with the terms and conditions contained in the RFP Documents. Any Proposal received which attempts to materially change or supersede these terms and conditions by, for example, including the Proponent's standard terms of sale may be rejected.

.7 If a Proposal contains a defect or fails in some way to comply with the requirements of the RFP Documents, which in the sole discretion of the Owner is not considered material, the Owner may waive the defect and accept the Proposal.

1.7 SOLICITATION

.1 If any director, officer, employee, agent or other representative of a Proponent makes any representation or solicitation to any director, officer, agent or employee of the Owner with respect to the Proposal, whether before or after the submission of the Proposal, the Owner shall be entitled to reject the Proposal.

1.8 SUBMISSION OF PROPOSALS

.1 Verbally transmitted Proposals or amendments to Proposals will not be considered.

.2 The Owner will not accept an amendment to a previously submitted Proposal unless:

.1 It is in writing.

.2 It is received prior to Proposal Closing.

.3 It is received at the specific location set out in Article 1.7 of this section.

.4 It indicates changes to a Proposal already submitted.

.5 It is signed by the person or persons who signed the original Proposal.

.3 The onus is on the Proponent to ensure timely receipt of Proposal amendments. Neither the Owner nor the Engineer makes any assurances regarding availability of fax communication lines or equipment and email boxes. To be considered, Proposal amendments must be received in full prior to Proposal Closing. No extension of the Proposal Closing will be given to accommodate Proposals or amendments to Proposals that do not comply with the requirements herein.

1.9 REQUIRED PROPOSAL FORMAT

.1 The Proponent shall submit to the Engineer the following completed and executed documentation:

.1 Section 00 42 00 – Proposal Form, including all Schedules.

.2 Section 00 43 14 – Consent of Security Company.

.3 Section 00 43 86 – Schedule of Supply and Delivery

.4 Section 00 73 60 – Insurance

.5 Acknowledgment of receipt of Addenda.

.6 All other applicable forms. Refer to Article 1.5 of Document 00 42 00 - Proposal Form.

1.10 VARIATION TO RFP DOCUMENTS

.1 If the Proponent wishes to submit a Proposal based on specifications or terms that differ from the Specifications or RFP Documents, it shall show in detail the proposed variations. Areas of non-compliance with the provisions of the Specifications sections must be detailed in Document 00 42 00 - Proposal Form Schedule L – Proposed Variations.

.2 Provide explanations for deviations.

.3 The acceptability of any such variations will be at the Owner's sole discretion.

.4 Unless otherwise expressly stated in the Proposal Form or corresponding documentation, the Proponent agrees to accept without reservation or amendment, the whole of the Specifications and RFP Documents.

1.11 EVALUATION METHODOLOGY

.1 The Proposal evaluation includes both economic and non-economic evaluation criteria.

.2 By submitting its Proposal, the Proponent acknowledges and agrees to the following:

.1 That the Engineer will provide the Owner with an estimate of additional and lifecycle costs that will be considered by the Owner in awarding the Contract;

.2 That the Owner shall be entitled to rely upon such estimates in making its decision in its sole and unfettered discretion;

.3 That the Proponent is not entitled to challenge the estimates or the manner in which they were made, including whether they contain errors or omissions; and

.4 That the Proponent shall have no claim against the Owner (or its employees, elected officials, officers, or directors or agents) in respect of the preparation of the estimates and the reliance thereon, whether arising in contract, tort or otherwise.

.3 Non-economic evaluation will include references, availability of local/regional support and spare parts, compliance with schedule, commercial, and technical requirements, and past service record. Proponents are required to provide this information.

.4 The Owner and Engineer may conduct visits to the Proponent's factory or field installations, as part of the evaluation process, to observe the manufacturing environment and equipment similar to that being proposed.

1.12 EVALUATION CRITERIA

.1 Proposals will be evaluated based on the parameters identified in Table 1.

Table 1 – Evaluation Parameters

Economic Criteria	Maximum Points
Total Proposal Price	40
Non-Economic Criteria	
General Compliance with Technical Terms	25
Local / Regional Support	8
Track Record - Successful Operation in Similar Conditions (Location, Climate, Installed Environment)	16
General Compliance with Commercial Terms	8
Spare Parts Delivery	3
Total Points Available	**100**

1.13 EVALUATION

.1 Economic:

.1 The economic evaluation be based on the Proponent's Total Proposal Price.

.2 Non-Economic:

.1 Points for non-economic evaluation parameters will be awarded based on assessment as follows:

.1 General compliance with technical terms: compliance with specifications based on overall assessment of the information. Areas of non-compliance must be detailed in Section 00 42 00 – Proposal Form, Schedule L - Proposed Variations.

.2 Track record - successful operation: successful operation in 5 similar facilities, climates and environments for a minimum of 3 years. References provided in Section 00 42 00 – Proposal Form, Schedule H -

Qualifications of Proponent may be contacted to confirm the operating conditions to obtain reports on reliable performance and details of any significant operational problems.

.3 Past service record: assessment of the Proponents past record of responsiveness and quality of service, based on information obtained from the references provided in Section 00 42 00 – Proposal Form, Schedule H - Qualifications of Proponent.

.4 General compliance with commercial terms: compliance with the Owner's terms and conditions. Areas of non-compliance must be detailed in Section 00 42 00 – Proposal Form, Schedule L - Proposed Variations.

.5 Spare parts delivery: delivery time for commonly needed spare parts, based on information provided in Section 00 42 00 – Proposal Form, Schedule B - List of Spare Parts, Consumables, Prices, Delivery Time and Storage Location.

1.14 CHANGES TO PROPOSAL WORDING

.1 The Proponent shall not change the wording of the Proposal after the Proposal Closing. Without restricting the generality of the foregoing, no words or comments shall be added to the Proposal, the terms and conditions, if any, or the Specifications unless requested by the Owner or the Engineer for purpose of clarification.

1.15 OWNERSHIP OF PROPOSALS

.1 All responses to this RFP become the property of the Owner.

1.16 OWNER'S RIGHT TO MODIFY TERMS

.1 The Owner in its sole discretion, reserves the right to modify the terms of the RFP at any time, both before and after the Proposal Closing.

1.17 ACCEPTANCE OF TERMS

.1 The submission of a Proposal constitutes the agreement of the Proponent that all the terms and conditions of this RFP are accepted by the Proponent and incorporated in its Proposal, except those conditions and provisions which are expressly excluded by the Proponent's Proposal and accepted in writing by the Owner.

1.18 NEGOTIATION

.1 Subsequent to the submission of Proposals, interviews and negotiations may be conducted with any of the proponents, but there shall be no obligation on the Owner to receive further information, whether written or oral, from any proponent nor to disclose the nature of any Proposal received.

1.19 ACCEPTANCE OF PROPOSALS

.1 Notwithstanding any other provision in the RFP Documents or any practice or custom in the industry, Owner, in its sole discretion, shall have the unfettered right to:

.1 Accept any Proposal.

.2 Reject any Proposal.

.3 Reject all Proposals.

.4 Waive defects in any Proposal.

.5 Accept a Proposal which is not the lowest priced Proposal.

.6 Reject a Proposal even if it is the only Proposal received by the Owner.

.7 Negotiate contract terms with any proponent.

.8 Negotiate changes or modifications to the scope of Work with any one or more Proponents without having any duty or obligation to advise any other Proponents or to allow them to vary their Proposal Prices due to changes to the scope of Work.

.2 Acceptance of any Proposal is subject to funding approval.

.3 The Owner will notify the successful Proponent in writing that its Proposal, including modifications thereto agreed by the parties in any subsequent negotiations, has been accepted.

.4 The written acceptance of the Proposal signed by a duly authorized representative of the Owner, shall be the only valid method of acceptance. Upon receipt thereof the successful Proponent shall commence shop drawing preparation.

1.20 CONFIDENTIALITY

.1 The Following Conditions Apply:

.1 The RFP Documents or any portion thereof, may not be used for any purpose other than submission of Proposals.

.2 The successful Proponent must agree not to divulge or release any information that has been given to it or acquired by it on a confidential basis during the course of carrying out its duties or performing its services.

.3 If the Proponent considers that any of its information is confidential, the Proponent shall identify that confidential information and advise the Owner in its Proposal.

.4 Proponents should identify the portions of its submissions which it is submitting in confidence, and which contain the following information:

.1 Trades secrets, commercial, financial, labour relations, scientific or technical information that, if revealed, could reasonably be expected to significantly harm the Equipment Supplier's competitive position or interfere with the Equipment Supplier's negotiating position and result in undue financial loss or gain to any person or organization; and/or

.2 Personal information regarding persons who would provide services related to this Agreement or who are the Equipment Supplier's references, including their names, addresses, phone numbers, qualifications, and experience and employment history.

.5 While the Owner will endeavour to use the Freedom of Information and Protection of Privacy Act (the Act) to protect the confidentiality of information identified by the Equipment Supplier as confidential, other sections of the Act may apply and the information may have to be disclosed to members of the public who request access to records in Owner custody and control.

.6 In this Request for Proposal, the Owner is providing general information concerning the Act for handling information and records. The Proponent may wish to seek its own legal advice on specific aspects of these obligations.

.7 All documents and data, including documents and data on electronic media, prepared by the Proponent in conjunction with the project will become the property of the Owner and may be made available under the Act. The Owner will have the right to reproduce the documents and data for its own internal use. Subject to the foregoing, copyright in the drawings prepared by the Proponent shall remain with the Proponent.

1.21 DISCLAIMERS/LIMITATIONS OF LIABILITY

.1 Neither acceptance of a Proposal nor execution of an Agreement shall constitute approval of any activity or development contemplated in any Proposal that requires any approval, permit or license pursuant to any federal, provincial, and local laws, regulations and ordinances. It is the responsibility of the successful Proponent (i.e., Equipment Supplier) to obtain such prior to commencement of the services under the anticipated contract.

.2 The Owner and the Engineer, their respective directors, officers, servants, employees, agents and consultants expressly disclaim any and all liability for representations, warranties express or implied or contained in, or for omissions from the RFP documents or any written or oral information transmitted or made available at any time to a proponent by or on behalf of the Owner. Nothing in the RFP documents is intended to relieve a Proponent from forming their own opinions and conclusions in respect of this RFP.

1.22 AGREEMENT

.1 The Owner shall not be obligated in any manner to any Proponent whatsoever until a written agreement has been duly agreed to by the parties relating to an accepted Proposal.

.2 Within 10 Business Days of receipt of written acceptance of the proposal from the Owner, the Proponent shall execute and deliver the Agreement, in triplicate, to the Owner.

1.23 NOVATION AGREEMENT

.1 The Owner will assign the Contract arising from acceptance of a Proposal hereunder to a General Contractor for the project when such General Contractor has been selected. The Equipment Supplier under the Contract will be required to join in a Novation Agreement in the form set out in Section 00 52 61 – Novation Agreement.

.2 The terms of the Contract, including the price and payment terms, will be included in the proposed information for the Construction Contract and the Contract Price for the Construction Contract, as defined therein, will include the Contract Price. Upon assignment of the Contract, the Equipment Supplier will become a subcontractor to the General Contractor.

.3 It is a requirement of the Contract that upon the assignment taking effect, the Equipment Supplier provide the General Contractor a performance bond in the same terms as those required to be provided to the Owner originally. At that time, the original bonds will be surrendered by the Owner to the Equipment Supplier.

Part 2 **Products**

Not Used.

Part 3 **Execution**

Not Used.

END OF SECTION

Part 1 General

1.1 PROPONENT'S NAME

.1 This Proposal for supply, delivery, and related support services for positive displacement aeration blower and secondary biological treatment aeration diffuser systems and other system appurtenances necessary for complete and functional operation at the City of Kenora Wastewater Treatment Plant Blower and Diffuser Pre-Purchase is submitted by:

Proponent Information

Proponent Name

Representative Name

Address

City/Province/PC

Phone

Email

1.2 PROPOSAL DOCUMENTS

.1 The Proposal Documents for this Contract include the following:

.1 All documents listed in Document 00 01 10 - Table of Contents.

.2 Addenda.

1.3 PROPONENT'S OFFER

.1 The Proponent offers to supply the Goods to the Kenora WWTP for the total Proposal price of:

Total Proposal Price (Line Item 20 in Schedule M) (exclusive of HST):	$	*
Harmonized Sales Tax (HST)	$	*

*To be completed by the Proponent.

1.4 PROPONENT'S DECLARATIONS

.1 The Proponent declares that it has read and understood and agrees to be bound by the RFP Documents.

.2 The Proponent has received and incorporated the requirements of Addenda numbered __ (to be completed by Proponent).

.3 The Proponent declares that it has fulfilled and complied with all of those obligations and requirements under the RFP Documents which are required to be fulfilled before Proposal Closing.

.4 The Proponent confirms, represents and warrants that all information which it has provided or will provide to the Owner is true and accurate in every respect.

.5 The Proponent also agrees:

.1 That the Owner is in no way obligated to accept this Proposal.

.2 That the Owner may, at Owner's discretion, accept other than the lowest priced Proposal.

.3 That should the Proposal form be improperly completed or be incomplete, the Owner shall have the right to disqualify and/or reject this Proposal.

.4 That this Proposal is made without knowledge of the Proposal prices to be submitted for this Work by any other company, firm, or person.

.5 That this Proposal is made without any connection or arrangement with any other company, firm, or person submitting a Proposal for this Work.

.6 That this Proposal is made without any undisclosed connection or arrangement with any other company, firm, or person having an interest in this Proposal or in the proposed Contract.

.7 That the Proponent hereby submitted itemized prices as required by the Specifications and agrees that these prices will be used for payment of Work additional to and deleted from the Contract and agrees that the prices quoted shall remain in force until the date of completion of the Contract.

.8 That the Proponent confirms that the itemized prices quoted include all necessary costs under the terms of the Contract, including but not limited to supply, fabrication and finishing, conveyance and delivery to the Work Site, packing, crating, freight, cartage, shipping charges, unloading, installation support, drafting charges, overhead, profit and all tariffs, duties and taxes, and excluding the HST.

.9 That this Proposal is valid for 60 Days after the closing date for receipt of Proposal and that Owner may at any time within such period accept this Proposal whether any other Proposal has previously been accepted or not.

.10 To execute the Form of Agreement and deposit with Owner a Performance Bond for the amount specified in Section 00 43 14 Consent of Surety within 10 Business Days of the date of receipt of written acceptance of the proposal from the Owner, such time limit being extended only on the written approval of Owner.

.11 To commence and proceed actively with the design and production of shop drawings promptly following receipt of the Notice to Proceed.

.12 To commence and proceed actively with the manufacture the Goods promptly following receipt of the Notice to Manufacture and Deliver, and to deliver Goods to the Work Site as set out in Section 00 43 86 - Schedule of Supply and Delivery.

.13 To compensate the Owner in accordance with the Contract Documents if the Work is not completed within the Contract Time.

.14 To do all extra work not reasonably inferable from the Specifications or Drawings but called for in writing by the Engineer and to accept as full compensation therefore payment in accordance with the provisions of the General Conditions.

.15 That payment for the work done will be made on the basis of the prices shown in the Proposal form which shall be compensation in full for the Work done under the terms of the Contract, exclusive of HST payable by Owner.

.16 That all prices shown in this proposal are in Canadian currency, including the hourly rates for labour.

.17 That if the Proponent, for any reason whatsoever, fails or defaults, in the opinion of the Engineer, in respect of any matter or thing which is an obligation of the Proponent in the terms of this Proposal, the Owner at its opinion may either:

.1 Consider the Proponent has abandoned the offer made or the Contract if the offer has been accepted, whereupon the acceptance, if any, of the Owner shall be null and void; and

.2 Further, the Proponent will fully indemnify and save harmless the Owner, the Engineer and their respective officers, employees and agents from all loss, damage, liability, cost, charge and expense whatever which it, they or any of them may suffer, incur or be put to by reason of such default or failure of the Proponent.

.18 That the Proponent agrees to join in an assignment and Novation Agreement in the form set out in Section 00 52 61 Novation Agreement, as soon as the Construction Contract between the Owner and the General Contractor has been executed.

1.5 SUPPLEMENTS TO PROPOSAL FORM

.1 The Proponent shall complete all the following supplements to the Proposal form, which shall form part of the Proposal:

.1 Schedules:

.1 The Proponent shall complete all the attached Sections where input is required from the Proponent.

.2 The Proponent shall complete all attached Schedules in this Section.

.3 The completed Schedules shall form part of the Contract Documents.

.2 Acknowledgement of receipt of Addenda.

.3 Section 00 43 14 - Consent of Security Company.

.4 Section 00 43 86 – Schedule of Supply and Delivery

.5 Section 00 73 60 – Insurance

.2 Compliance with technical terms:

.1 Complete Schedule L – Proposed Variations, detailing all variances from the technical Specifications, including Addenda updates. Provide explanations for deviations.

.3 Compliance with commercial terms:

.1 Complete Schedule L – Proposed Variations, detailing all variances from the commercial terms. Provide explanations for deviations.

Part 2 Products

Not Used.

Part 3 Execution

3.1 EXECUTION BY PROPONENT

This proposal is executed under seal at _____
this _____ day of _____, 2026.

_____
Name of Firm

_____
Address

_____

For Individual or Partnership:

SIGNED, SEALED AND DELIVERED by:

_____ _____
Proponent (please print) Signature

IN THE PRESENCE OF:

_____ _____
Name Title

_____
Address

_____ Seal
City/Prov/PC

_____
Occupation

3.2 FOR LIMITED COMPANY

The Corporate Seal of

_____

Proponent (please print)

WAS HEREUNTO AFFIXED IN THE PRESENCE OF:

Seal

_____

Authorized Signing Officer

_____

Authorized Signing Officer

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

Part 4 INDEX OF SCHEDULES

Schedule A

Product Brochure

Provide a submission outlining the proposed product and how it will meet the design intent of the technical specifications. This will include product literature, drawings, specifications, and any other documents the Proponent wishes to submit.

Schedule B

List of Spare Parts, Consumables, Prices, Delivery Time and Storage Location

Provide quantity of spare parts and special tools recommended by manufacturers as set out in the Specifications, complete with prices current at the time of submission of the Proposal, standard delivery time and estimated frequency of replacement and dispatch location for all parts that have been proposed. The unit prices shall include all applicable custom duties, shipping charges to site and federal sales tax.

Recommended Spare Parts:

Description	Qty.	Unit Price	Standard Time Delivery	Run-time Interval between Maintenance Activity	Dispatch Location

Total Price of Required and Recommended Spare Parts	**$**

Additional numbered pages outlining this portion of the Proposal may be attached to this page and/or separate documents listed above may be submitted with these schedules.

Schedule C

Maintenance Requirements

Describe the recommended maintenance requirements for the proposed equipment in this application. This Schedule should be completed in harmony with Schedule B - List of Spare Parts, Consumables, Prices, Delivery Time and Storage Location.

Component Requiring Maintenance	Description of Maintenance Activity	Run-time Interval between Maintenance Activity	Special Maintenance Requirements e.g., remove to service, confined space procedures apply, etc.

Additional numbered pages outlining this portion of the Proposal may be attached to this page and/or separate documents listed above may be submitted with these schedules.

Schedule D
Additional Prices

1.0 COMMISSIONING / TESTING / INSTRUCTION / TRAINING SUPPORT

The Proponent agrees that the days stipulated in the Specifications for site services are not necessarily concurrent and are at the discretion of the Owner. If additional or fewer person days are required for site services, the total price will be adjusted upward or downward respectively, in accordance with the following unit rates as applicable.

The unit rate per 8 hour person day shall be inclusive of all payroll burdens, overhead, profit and other relevant costs.

The costs, if any, for additional person days required to correct faulty designed or manufactured equipment and Materials shall be borne by the Equipment Supplier.

1.1 WORK HOUR RATES

	Engineer	**Service Technician**	**Other (Specify)**
Number of days included in quoted price	_____	_____	_____
Number of trips included in quoted price	_____	_____	_____
Hours per standard working day	_____ hrs	_____ hrs	_____ hr
Regular charge-out rate	$ _____ /hr	$ _____ /hr	$ _____ /hr
Premium (% mark-up) for hours in excess of standard working day, weekends or holiday	_____ %	_____ %	_____ %
Standby or layover rates (if applicable)	$ _____ /hr	$ _____ /hr	$ _____ /hr

1.2 TRAVEL TIME

Travel and living expenses, for additional work approved by Owner, will be reimbursed. Local travel, meals and lodging will be paid at cost. Copies of invoices must be submitted.

Service and technical personnel will be dispatched from:

_____

Provide the location from which operator instruction and training personnel will be dispatched:

2.0 SHOP RATES

Provide hourly rates for shop re-work.

	Drafting/ Engineering	**Shop Floor Personnel (Specify Trade)**	**Other (Specify)**
Hours per standard working day	_____ hr	_____ hr	_____ hr
Regular charge-out rate	$ _____ /hr	$ _____ /hr	$ _____ /hr
Premium (% mark-up) for hours in excess of standard working day, weekends or holiday	_____ %	_____ %	_____ %
Standby or layover rates (if applicable)	$ _____ /hr	$ _____ /hr	$ _____ /hr

3.0 STORAGE RATES

The intention is to manufacture and deliver equipment in a timely manner after the Notice to Manufacturer and Deliver has been issued. In the event that the General Contractor is not ready to accept equipment based on the Equipment Supplier's Schedule, provide a daily rate for storage at the point of manufacturer.

$_____/day

Additional numbered pages outlining this portion of the Proposal may be attached to this page and/or separate documents listed above may be submitted with these schedules.

Schedule E
Site Storage Requirements

The Proponent shall state the minimum requirements for storage of the equipment at the FOB Point. Such storage requirements shall be provided by the General Contractor if the equipment is delivered according to the equipment delivery schedule provided in Section 00 43 86 – Schedule of Supply and Delivery.

_____

_____

_____

_____

State which items require sheltered or heated storage.

Weights and Dimensions:

Itemize individual pieces on quotation:

Total shipping weight (kg): _____

Dimensions of largest component (m): _____

Weight of largest component (kg): _____

Dimensions of second largest component (m): _____

Weight of second largest component (kg): _____

Additional numbered pages outlining this portion of the Proposal may be attached to this page and/or separate documents listed above may be submitted with these schedules.

Schedule F

Special Maintenance Requirements During Storage On-Site

State any special maintenance required to the equipment whilst in storage on-site or off-site. Such maintenance shall be provided by the Equipment Supplier or its Subcontractor. The General Contractor's responsibility will be limited to providing storage as specified in Schedule F, including provision of electrical power for motor space heaters, if required by the Equipment Supplier or the Engineer.

Additional numbered pages outlining this portion of the Proposal may be attached to this page and/or separate documents listed above may be submitted with these schedules.

Schedule G
Elements Requiring Re-Assembly

State which parts of the equipment, if any, will be dismantled for shipping, and will therefore, require re-assembly by the General Contractor under the supervision of the Equipment Supplier, under the General Construction Contracts. Details of the Work involved may be submitted with the detailed shop drawings after receipt of written acceptance of the proposal from the Owner.

Additional numbered pages outlining this portion of the Proposal may be attached to this page and/or separate documents listed above may be submitted with these schedules.

Schedule H

Qualifications of Proponent

Provide a list of projects where the Proponent has supplied wastewater blowers for similar applications in North America in the last fifteen (15) years. Arrange list chronologically, with the most recent first, and provide the details requested.

Project Experience				
Project Name & Location	**Approximate Value Equipment Supply (CAN$)**	**Year Completed**	**Plant Capacity (m^3/d)**	**Reference Contact (Phone No. & Email)**

Additional numbered pages outlining this portion of the Proposal may be attached to this page and/or separate documents listed above may be submitted with these schedules.

Schedule I
List of Subcontractors

It is our intention that the following work will be subcontracted to the firms indicated below. All other work will be performed by our own forces, except as authorized in writing by Engineer.

Trade	Name and Address of Subcontractor

Additional numbered pages outlining this portion of the Proposal may be attached to this page and/or separate documents listed above may be submitted with these schedules.

Schedule J
Quality Management

QUALITY CONTROL AND QUALITY ASSURANCE

.1 Provide details of Quality Control and Quality Assurance measures currently in place for the following:

a. Design Work:
   i. Lab testing
   ii. Shop drawing control.
   iii. Design change management.
b. Manufacturing:
   i. Material control.
   ii. Material testing.
   iii. Shop testing.
c. Installation:
   i. Inspection, monitoring, supervision.
   ii. Acceptable tolerances.
   iii. Material testing.
   iv. Performance testing.

.2 Define QA/QC procedures for commissioning.

.3 Define deliverables for all.

Proponent to list company management system (e.g., ISO 14001).

_____

_____

_____

_____

Additional numbered pages outlining this portion of the Proposal may be attached to this page and/or separate documents listed above may be submitted with these schedules.

Schedule K
Warranty and Warranty Period Services

WARRANTY AND WARRANTY PERIOD SERVICES

.1 Provide scope of the warranty and associated services.

.2 Detail any exceptions to the specified warranty requirements described in Article 4.4 of the General Conditions.

.3 Detail specific extended warranty or additional items offered in the proposal.

.4 List the nearest service centre location that has fully trained technicians.

.5 List location of parts centre and list all relevant stock items carried.

.6 Describe technical support and available hours.

Additional numbered pages outlining this portion of the Proposal may be attached to this page and/or separate documents listed above may be submitted with these schedules.

Schedule L
Proposed Variations

The following technical and contractor variations are proposed for the submission.

Variation	Description

Schedule M
Lump Sum Price Breakdown

Provide a lump sum price break down for the submission.

Item	Description		Lump Sum Price
1	Initial Design, Engineering, and Shop Drawings	$	
2	Blower Equipment Supply and Delivery`	$	
3	Diffuser Equipment Supply and Delivery	$	
4	Installation Assistance, Witnessing of Equipment Installation, and Certification of Installation by the Blower Supplier (refer to Section 43 12 11, item 3.1.2)	$	
5	Installation Assistance, Witnessing of Equipment Installation, and Certification of Installation for by the Diffuser Supplier for Both Process Trains (refer to Section 46 51 46, item 3.1.2)	$	
6	Supervision of Start-up Testing by the Blower Supplier (refer to Section 43 12 11, item 3.1.2)	$	
7	Supervision of Start-up Testing by the Diffuser Supplier for Both Process Trains (refer to Section 46 51 46, item 3.1.2)	$	
8	Commissioning and Performance Evaluation by the Blower Supplier (refer to Section 43 12 11, item 3.1.2)	$	
9	Commissioning and Performance Evaluation by the Diffuser Supplier for Both Process Trains (refer to Section 46 51 46, item 3.1.2)	$	
10	Operator and Maintenance Training by the Blower Supplier (refer to Section 43 12 11, item 3.1.2)	$	
11	Operator and Maintenance Training by the Diffuser Supplier (refer to Section 46 51 46, item 3.1.2)	$	
12	Record Documents	$	
13	Required Spare Parts	$	
14	Warranty and Support	$	
15	Total Base Scope (sum of line items 1-14)	$	
16	PROVISIONAL – Three additional, non-consecutive site visits for training, commissioning, or installation support from a technical representative of the blower supplier (refer to Section 43 12 11, item 3.1.2)	$	
17	PROVISIONAL – Three additional, non-consecutive site visits for training, commissioning, or installation support from a technical representative of the diffuser supplier (refer to Section 46 51 46, item 3.1.2)	$	

18	PROVISIONAL: Additional cost to provide diffuser grid piping in 304SS instead of PVC	$	
19	Total Provisional (sum of line items 16-18)	$	
20	Total (Base Scope + Provisional) (sum of line items 15 and 19)	$	

END OF SECTION

Supplement to Proposal Form

We, the undersigned Surety Company, do hereby consent and agree to become bound as guarantor in a Performance Bond and in the amount of fifty percent (50%) of the total proposal price for the fulfilment of the Contract, with

……..
as principal for the works specified in the RFP Documents entitled

……..
which Contract may be awarded within sixty (60) days from the closing date of proposals to

…….
at the price(s) set forth in the Proposal Form. The Bonds shall be issued in the form and manner specified within the Contract Documents.

We confirm that we will issue new bonds in favour of the General Contractor upon execution of the Novation Agreement and the surrender of the original bonds.

We hereby further declare that our Company is licensed to conduct business in the province or territory wherein the work is located and has a net worth greater than the amount of the required guarantee.

Surety Company

Signature for Surety Company

Title

Place ……

Date ……

END OF SECTION

Part 1 General

1.1 GENERAL

.1 The delivery schedule is based on an estimated project substantial completion date of December 28, 2027.

.2 Modifications to the proposed schedule may be allowed to the extent that it does not compromise the General Contractor's ability to complete the project on time.

1.2 SCHEDULE OF SUPPLY AND DELIVERY

.1 The preliminary schedule is as follows:

Milestone	Date
a) Written acceptance of the proposal by the Owner	June 29, 2026
b) Notice to Proceed	July 10, 2026
c) Completion of design, shop drawing production and design submittals. Notice to manufacture.	September 18, 2026
d) Delivery of Equipment to FOB Point	April 2027
e) Installation, Performance Testing, Start-up and Commissioning of the First Process Train	April to November 2027
f) Installation, Performance Testing, Start-up and Commissioning of the Second Process Train	April to November 2028

.2 Proponent to identify any issues, concerns, or constraints with the preliminary schedule.

.3 Based on the preliminary schedule above, prepare a Schedule of Supply and Delivery (Schedule) in the form of a horizontal bar chart.

.4 The Schedule should be the Proponent’s best realistic delivery.

.5 Provide horizontal time scale identifying the first work day of each week.

.6 Show delivery dates of submittals and major pieces of equipment.

.7 Submit electronic copy of initial Schedules within 10 Business Days after Notice to Proceed.

.8 Engineer will review Schedule and return reviewed copy within 10 Business Days after receipt.

.9 No progress payment will be approved until receipt of a Schedule acceptable to Engineer.

.10 Distribute copies of the finalized Schedule to both the Engineer and Owner.

.11 Distribute copies of the finalized Schedule to suppliers of component equipment and subcontractors. Instruct recipients to report to Equipment Supplier, within 10 Business Days, any problems anticipated by the timetable shown in the Schedule.

.12 Revise and resubmit the Schedule and the work plan within 5 Business Days after notification by the Engineer that the previously reviewed Schedule is not being met. Show changes in the operations proposed to complete the construction work within the Contract Time.

.13 If, during the course of Work, the Contract Time is extended, correct the Schedule and work plan to show the revised commencement and completion dates of the affected parts of Work.

.14 In the event that the General Contractor is not prepared to accept equipment based on the Equipment Supplier's Schedule, Equipment Suppliermay be required to store and maintain equipment as provided for in Schedule F of Section 00 42 00 - Proposal Form.

Part 2 Products

Not Used.

Part 3 Execution

Not Used.

END OF SECTION

THIS AGREEMENT made this ____ day of _____, 2026.

BETWEEN:

_____
(Herein called "The Supply Contractor")

OF THE FIRST PART

AND:

CITY OF KENORA
(Herein called "The Owner")

OF THE SECOND PART

1. The Equipment Supplier shall provide all the labour, equipment, and materials required to supply the Goods, as required by the Contract Documents.

2. The Owner shall pay the Equipment Supplier the Contract Price, as required by the Contract Documents.

3. The Contract Price shall be the sum in Canadian dollars of the following:

   (a) the total Proposal Price, as set out in Section 00 42 00 – Proposal Form;
   (b) any and all variations to the Proposal Price that are negotiated and agreed upon subsequent to the Proposal Closing and set out in the Contract Documents; and
   (c) any payments made on account of changes, as may be required by the Contract Documents.

4. The Contract Price shall be the entire compensation owing to the Equipment Supplier by the Owner for the Goods and shall cover and include overhead, profit, transportation, storage, customs and excise duties or charges, financing costs and all other costs and expenses whatsoever incurred in performing the Contract.

5. The Equipment Supplier shall supply all Goods to the FOB Point no later than set out on the Section 00 43 86 Schedule of Supply and Delivery as the date of delivery of Goods to the FOB Point.

6. The Contract Documents shall form a part of this Agreement as though recited in full.

7. The Contract supersedes all prior negotiations, representations or agreements, whether written or oral except those expressly listed and is the entire agreement between the Owner and the Equipment Supplier with respect to the subject matter of this Agreement. All, or any, previous communications are hereby abrogated and withdrawn and no stipulations, representations or agreements by the Owner or the Engineer or their officers, agents or employees shall be binding on the Owner or the Engineer unless contained in this Contract and no local, general or trade customs or previous course of dealing or performance shall alter or vary the terms hereof.

8. The Equipment Supplier shall not assign the Contract, or any portion of the Contract, or any payments due or to become due under the Contract, without the express written consent of the Owner.

9. No action or failure to act by the Owner or the Engineer shall constitute a waiver of any right or duty afforded any of them under the Contract or constitute an approval or acquiescence in any breach thereunder, except as may be specifically agreed in writing.

10. This Agreement shall enure to the benefit of and be binding upon the Owner and the Equipment Supplier and their respective heirs, executors, legal representatives, successors and permitted assigns.

11. The Owner will enter into a Construction Contract with a General Contractor of the Owner's choosing for the installation of equipment supplied under this Contract. The Equipment Supplier under this Contract agrees to join in an assignment and Novation Agreement in the form set out in Section 00 52 61 Novation Agreement as soon as the Construction Contract between the Owner and General Contractor has been signed.

12. The terms of the Contract, including the price and payments, will be included in the bid information for the Construction Contract, and the Contract price of the Construction Contract, as defined therein, will include the prices of the Contract. The Equipment Supplier shall provide a Performance Bond, in the sum of 50% of the Contract Price, in favour of the General Contractor.

13. Time shall be of the essence of this Agreement.

IN WITNESS WHEREOF the Equipment Supplier and the Owner have executed this Agreement as of the _____ day of _____, 2026.

For Individual or Partnership:
SIGNED, SEALED AND DELIVERED by:

Equipment Supplier (please print)	Signature
in the presence of:	Title
Name	
Address	
City/Prov/PC	Seal
Occupation	

For Limited Company:

The Corporate Seal of:

Equipment Supplier (please print)

was hereunto affixed in the presence of:

Authorized Signing Officer	Title	Seal
Authorized Signing Officer	Title	

NOTE: If Equipment Supplier is a joint venture, add additional forms of execution for each member of the joint venture in the appropriate form or forms as above.

For Corporate Owner:

The Corporate Seal of:

_____
Owner (please print full corporate name)
was hereunto affixed in the presence of:

_____
Authorized Signing Officer Title Seal

_____
Authorized Signing Officer Title

For Individual Owner:

_____ _____
Owner (please print) Signature

_____
Signature of Witness

_____
Address of Witness

_____
Occupation

END OF SECTION

FORM OF NOVATION AGREEMENT

BETWEEN:

(OWNER)

AND:

(CONTRACTOR)

AND:

(SUPPLIER)

WHEREAS:

A. Owner entered into a Contract with Equipment Supplier dated [____], for the supply of wastewater blowers and diffusers (Supply Contract), which is annexed hereto as Appendix "A";

B. It is a requirement of the Supply Contract that the Equipment Supplier enter into a Novation Agreement with the General Contractor selected by the Owner;

C. Owner entered into a contract with Contractor dated [____], for the Kenora WWTP Aeration Tank and System Upgrades (Construction Contract);

D. It is a requirement of the Construction Contract that the Contractor enter into a Novation Agreement with Equipment Supplier so that Equipment Supplier becomes a subcontractor to Contractor;

NOW THEREFORE in consideration of the premises and of the mutual agreements hereinafter contained the parties agree as follows;

1. The Contractor and Equipment Supplier agree to be bound by the terms of the Supply Contract, annexed hereto as Appendix "A", with the Contractor assuming all the rights and obligations of the Owner as set out therein.

2. Equipment Supplier retains all the rights and obligations set out in the Supply Contract and henceforth accepts the Contractor in place of the Owner.

3. Equipment Supplier agrees that henceforth it is a subcontractor to the Contractor in respect of the Construction Contract.

4. Equipment Supplier hereby releases the Owner from all of the Owner's obligations under the Supply Contract and from all claims of every nature whatsoever arising therefrom, excepting only those claims, if any, already notified to the Owner in writing, and acknowledges that it will henceforth look only to the Contractor for the discharge of the Owner's obligations thereunder and that only the Contractor may exercise the rights of the Owner thereunder.

5. Henceforth, the terms and conditions of the Construction Contract insofar as they can apply to a subcontract shall govern the relations between the Contractor and the Supplier; provided nevertheless, that if any term of the Construction Contract is inconsistent with any payment provision or Special Condition or Special Provision in the Supply Contract such payment provision, Special Condition or Special Provision of the Supply Contract shall prevail.

6. The Owner and Equipment Supplier agree that the Supply Contract between them has been terminated.

7. It is agreed that as of the date hereof [$ _____] is owing to the Equipment Supplier under the Supply Contract.

IN WITNESS WHEREOF the parties have hereunto affixed their hands and seals this _____ day of ____, 20 .

For Corporate Owner:

The Corporate Seal of:

Owner (please print full corporate name)	Seal
• was hereunto affixed in the presence of:	
•	
Authorized Signing Officer	Title
Authorized Signing Officer	Title

For Individual Owner:

Owner (please print)	Signature
Signature of Witness	
Address of Witness	
Occupation	

For Individual or Partnership:
SIGNED, SEALED AND DELIVERED by:

Contractor (please print)	Signature
in the presence of:	Title
Name	
Address	
City/Prov/PC	Seal
Occupation	

For Limited Company:

The Corporate Seal of:

Contractor (please print)	
• was hereunto affixed in the presence of:	
Authorized Signing Officer Title	Seal
Authorized Signing Officer Title	

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

For Individual or Partnership:
SIGNED, SEALED AND DELIVERED by:

Equipment Supplier (please print)	Signature
in the presence of:	Title
Name	
Address	
City/Prov/PC	Seal
Occupation	

For Limited Company:

The Corporate Seal of:

Equipment Supplier (please print)	
• was hereunto affixed in the presence of:	
Authorized Signing Officer Title	Seal
Authorized Signing Officer Title	

NOTE: If Supplier is 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

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PART 1 GENERAL

GC 1.1 DEFINITIONS

The following words and terms, unless the context otherwise requires, in all Contract Documents, shall have the meanings set out below. Wherever the singular or masculine or neuter is used it will be interpreted as meaning the plural or feminine or body politic or corporate, and *vice versa*, as the context requires.

"Addenda" means the supplemental written conditions, specifications or drawings issued prior to execution of the Agreement which modify or interpret the RFP Documents by addition, deletion, clarification, or corrections.

"Agreement" means the agreement set out in Section 00 52 01 - Form of Agreement.

“Business Day” means days between and including Monday through Friday and does not include weekends or statutory holiday recognized in the province or territory wherein the Work Site is located.

“**Change**” means an increase or addition to, a reduction or deletion from or an extension of the Work or the Schedule as set out in Section 00 43 86 - Schedule Of Supply And Delivery, or the replacement of a proposed Subcontractor or supplier, which results in a material change to the Contract Time or Contract Price.

“**Change Directive**” means a written instruction signed by the Owner and issued by the Engineer to the Equipment Supplier directing the Equipment Supplier to proceed with a Change despite the absence of an agreement as to adjustment of the Contract Price or Contract Time, or both, as applicable.

“**Change Order**” means a written record of a Change prepared by the Engineer and signed by the Owner, the Engineer and the Equipment Supplier stating their agreement to a Change, and setting out a description of the Work covered by the Change Order, the price or method of valuation of the Work and the change in the Contract Price or adjustment of the Contract Time, or both, as applicable.

“**Completion Certificate**” means a certificate issued by the Engineer stating that the total performance of all work, other than the Equipment Supplier’s obligations in respect of the performance of the warranty provisions set out herein has been achieved.

“Confidential Information” means all information that is acquired by, or becomes known to, the Equipment Supplier or any of its Personnel, or Subcontractors as a result of, directly or indirectly, performing the Work, or otherwise being involved in the Project and which is in the nature of one of the following categories of information:

1. all information with respect to the Owner’s operations, the Project and this Contract; or

2. all personal information as defined in the Freedom of Information and Protection of Privacy legislation in the jurisdiction in which the Work is performed.

"Consequential Damages" has the meaning set out in GC 6.1.10.

"**Construction Act**" means the applicable provincial or territorial lien legislation, including regulations enacted pursuant to that lien statute, at the Work Site, current at the date of the Notice to Manufacture and Deliver and as may be revised during the Contract Time.

"Construction Contract" means the agreement between the Owner and the General Contractor who is to install the Goods supplied pursuant to the Contract.

"**Construction Equipment**" means all tools, machinery and equipment whether operated or not operated, which are required for preparing, fabricating, conveying, erecting or otherwise performing the Work but are not incorporated into the Work.

"Contract" means the agreement formed by the Owner's acceptance of the Proponent's Proposal including any and all contract terms that are negotiated and agreed upon subsequent to the Proposal Closing for completion of the work and set out in the Contract Documents.

"Contract Documents" means the following documents:

.1 the RFP Documents
.2 the executed Proposal Form
.3 the executed Bond
.4 the executed Agreement
.5 the General Conditions
.6 the Notice of Award
.7 the Notice to Manufacture and Deliver
.8 Change orders
.9 Such other documents as may be specifically included.

"Contract Price" or **"Contract Amount"** shall mean the amount stated in the Agreement as the contract price for the complete work of the Contract.

"Contract Time" shall mean the date by which the provisions of the Contract require the total performance of all work, other than the Equipment Supplier's obligations in respect of the performance of the warranty provisions set out herein. The date is either a fixed date as provided in the Contract Documents or may be established by reference to a stated number of Days from the Notice to Manufacturer and Deliver, as provided in the Contract Documents.

"Day" means calendar day.

"**Defective Goods**" means Goods or any portion thereof that are found to be non-conforming, unsatisfactory, defective, of inferior quality or workmanship, or fail to meet any guarantee of operating or other specifications contained herein, or any other requirements of the Contract Documents.

"**Deficiencies**" means one or more defects or deficiencies in the Work or Materials, including Work omitted or not performed as provided for in this Contract.

"Drawings" means the drawings included in the RFP Documents together with those prepared by the Owner and the General Contractor and the Equipment Supplier pursuant to the terms of the Contract and include:

.1 Modifications of drawings issued by Addenda;

.2 Drawings submitted by the General Contractor or Equipment Supplier during the progress of the work and accepted by the Owner either as attachments to change orders or as non-modifying supplements to the drawings in the RFP Documents including drawings issued by Addenda;

.3 Drawings submitted by the Owner to the General Contractor or Equipment Supplier during the progress of the work either as attachments to change orders or as explanatory supplements to the drawings in the RFP Documents including drawings issued by Addenda;

"Engineer" means Associated Engineering acting through a delegate duly appointed to act on its behalf, or such other engineer, architect or Person as may from time to time be duly authorized and appointed in writing by the Owner.

"FOB Point" has the meaning set out in Section 00 21 16 - Instructions to Proponents and means the location to which the Goods are delivered by the Equipment Supplier.

"**Force Account**" means the method of calculating payment the Equipment Supplier shall receive for work performed as set out in GC 7.7 FORCE ACCOUNT.

"Force Majeure" means a cataclysmic phenomenon of nature, including earthquake, flood or cyclone. Rain, snow, wind, high water, or any other natural phenomenon which might reasonably have been anticipated from historical records of the general locality of the Work shall be deemed not to be acts of God.

"General Contractor" means the individual, partnership, corporation, or combination thereof, including joint venturers who or which are to install the Goods supplied pursuant to the Contract.

"Goods" means all the labour, Materials, equipment, software, licences, supplies, services, accessories, tools, spare parts, maintenance materials and other items necessary for the execution, completion and fulfilment of work set out in the Contract Documents.

"**Governmental Authority**" means any federal, provincial, first nation or municipal government, official, administrative, regulatory, or legislative authority, commission, tribunal or court or any of the respective agencies or departments thereof having jurisdiction over any aspect of the Project, the Work, this Contract, or any matters arising thereunder.

"Herein" and "Hereof", and similar expressions wherever used in the Contract Documents, shall relate to the whole of the Contract Documents and not to any one (1) paragraph alone, unless the context specifically requires it.

"Inspector" shall mean a person or company authorized by the Engineer or the Owner to inspect the work of the Contract or any part thereof.

"**Law**" means the common law and all applicable decrees, statutes, laws, by-laws, rules, orders, codes, directives and regulations in effect from time to time and made or issued by any Governmental Authority having jurisdiction over any aspect of the Project, the Work, this Contract, the Owner, the General Contractor, Equipment Supplier and the Subcontractors, and includes any applicable replacement, amendment or supplementary legislation, and any applicable regulations, and further includes the OH&S Legislation.

"**Materials**" means materials, supplies, machinery, equipment and fixtures which are or which are to be permanently incorporated into the Work.

"**Milestone Date**" means any date or dates specified in the Contract Documents for completion of specified portions of the Work, including the dates of Substantial Performance of the Work and total performance of the Work.

"Notice" means any notice, order, request or other communication given by the Owner, the Equipment Supplier, or the Engineer, in writing and delivered personally, by commercial courier or transmitted by email.

"Notice of Award" means a communication from the Owner, or the Engineer on behalf of the Owner, to the successful proponent of the Owner's acceptance of the proponent's proposal or modified proposal, including negotiated adjustments to that proposal, if any. Upon receipt of the Notice of Award the successful proponent becomes the Equipment Supplier.

"**Notice to Proceed**" is a direction from the Owner, or the Engineer on behalf of the Owner, advising the Equipment Supplier is to commence and proceed actively with the design and preparation of shop drawings and preparation of Submittals under the Contract.

"Notice to Manufacture and Deliver" means a communication from the Owner, or the Engineer on behalf of the Owner, to the Equipment Supplier authorizing the Equipment Supplier to proceed with the manufacture of the equipment following acceptance by the Engineer of design submittals as set out in the RFP Documents.

"Owner" means the party identified as such in the Section 00 52 01 - Form of Agreement.

"**Party**" means one of the parties to this Contract and Parties means the Owner and the Equipment Supplier, collectively, as the case may be.

"**Payment Certificate**" has the meaning set out in GC 7.1 PAYMENTS TO EQUIPMENT SUPPLIER.

"**Personnel**" means, without limitation:

(a) in relation to either Party and its affiliates, elected officials, directors, officers, employees, contract personnel, non-employed representatives, contractors, consultants and agents, including those who are assigned or seconded to the Project; and

(b) in relation to any other Person, each of their respective elected officials, directors, officers, employees, contract personnel, non-employed representatives, contractors, consultants and agents, including those who are assigned or seconded to the Project.

"**Prime Contractor for Safety**" means "Prime Contractor", "Constructor", "Principal Contractor", or such other position of similar import as the case may be according to the location of the Work Site, as is defined in the OH&S Legislation.

"**Project**" means the project identified in Article 1 of Section 00 52 01 - Form of Agreement.

"Proponent" means the individual, partnership, corporation, or a combination thereof, including joint venturers, who or which execute the Proposal Form.

"Proposal" means the Proponent's proposal in response to the RFP including made in the Proposal Form set out in the RFP Documents.

"Proposal Closing" means the closing for receipt of proposals, as set out in Section 00 21 16 - Instructions to Proponents.

"RFP Documents" means the documents and drawings set out in Section 00 42 00 - Proposal Form.

"**Schedule**" has the meaning set out in Section 00 43 86 - Schedule of Supply and Delivery.

"Specifications" means that part of the Contract Documents consisting of general requirements and written descriptions of the technical features of Materials, equipment, construction systems, standards and workmanship.

"Submittals" means the information which shall be submitted to the Engineer in accordance with the Contract and detailed in the Specifications.

"Equipment Supplier" or **"Supplier"** means the individual, partnership, corporation or combination thereof, including joint venturers who or which execute the Agreement (may also be referred to in the Documents and elsewhere as "Vendor" or "Proponent").

"Subcontractor" shall mean any person, firm, or corporation having a contract with the Equipment Supplier for the execution of a part or parts of the work included in this Contract, and a person, firm, or corporation furnishing Materials called for in this Contract and worked to a special design according to the drawings or specifications but does not include one who merely furnishes Materials not so worked.

"Substantial Performance" shall have the meaning as described in the Construction Act with respect to the work of the Equipment Supplier and Subcontractors under this Contract.

"Equipment Supplier's Plant and Equipment" means the equipment, Materials, supplies and all other items (except labour) brought onto the Work Site by the Equipment Supplier to carry out the work, but not to be incorporated in the Goods.

"**Warranty Period**" means that period of time set out in GC 4.4 WARRANTY AND GUARANTEE during which the Equipment Supplier is obligated to warrant the Work.

"**Work**" means and includes anything and everything required to be done for the fulfilment and completion of the Contract.

"Work Site" means the site where the Goods are to be installed at the Owner's facility for which the Goods are being supplied, as stipulated elsewhere in the Contract Documents.

GC 1.2 JOINT VENTURES

1.2.1 If the Equipment Supplier is a joint venture of two or more entities, the grants, covenants, provisos and claims, rights, powers, privileges and liabilities of the Equipment Supplier shall be joint and several.

GC 1.3 CONTRACT REQUIREMENTS

1.3.1 Successors' Obligations: The Contract shall enure to the benefit of and be binding upon not only the parties hereto but also their respective successors and permitted assigns.

1.3.2 Assignment of Contract: The Contract shall not be assigned in whole or in part by the Equipment Supplier without the prior written consent of the Owner. Involuntary assignment of the Contract as a result of, inter alia, bankruptcy, assignment of the Contract for the benefit of creditors or appointment of a receiver, or insolvency shall be deemed default under the Contract entitling the Owner to terminate the Contract as hereinafter provided.

1.3.3 Waiver of Rights: Except as herein provided, no act or failure to act by the Equipment Supplier, the Owner, or the Engineer at any time with respect to the exercise of any right or remedies conferred upon them under this Contract shall be deemed to be a waiver on the part of the Equipment Supplier, the Owner or the Engineer, as the case may be, of any of their rights or remedies. No waiver shall be effective except in writing. No waiver of one right or remedy shall act as a waiver of any other right or remedy or as a subsequent waiver of the same right or remedy.

1.3.4 Amendment of Contract Documents: The Contract Documents shall not be amended except as specifically agreed in writing signed by both the Owner and the Equipment Supplier.

1.3.5 The Owner will assign the Contract arising from the acceptance of a Proposal hereunder to a General Contractor, when the General Contractor has been selected. The Equipment Supplier shall execute a tripartite Novation Agreement with the Owner and the General Contractor.

GC 1.4. INSURANCE

1.4.1 The Equipment Supplier shall obtain and continuously carry, while the Work is being performed and while any remedial or Warranty Work is being undertaken, at the Equipment Supplier's own expense and cost, the insurance coverage as specified in Section 00 73 60 – Insurance, unless otherwise indicated in writing by the Owner. The Owner reserves the right to supplement or add insurance coverage from time to time as may be required, by Change Order.

1.4,2 The insurance maintained by the Owner or the Equipment Supplier shall in no manner limit the Equipment Supplier's obligations to indemnify or otherwise perform the obligations required of it pursuant to the terms of this Contract.

1.4.3 Prior to commencing the Work, the Equipment Supplier shall provide the Owner with Certificates of Insurance in a form acceptable to the Owner and evidence the insurance coverage is in accordance with the requirements of the Contract.

1.4.4 Deductibles, if any, which are applicable to the specified insurance, shall be borne by the Equipment Supplier.

GC 1.5 PERFORMANCE BOND

1.5.1 The Equipment Supplier shall, prior to commencement of the Work, pay for and provide to the Owner a performance bond, in the amount of 50% of Contract Price, covering the performance of this Contract, including any warranty requirements.

1.5.2 The Owner shall not be obligated to make any payment to the Equipment Supplier until such time as the bonds specified in GC 1.4 have been delivered to the Owner by the Equipment Supplier.

The bonds specified in GC 1.4 shall be:

.1 In the form which is in accordance with the latest edition of the CCDC approved bond forms;

.2 Issued by a duly licensed surety company authorized to transact the business of suretyship in the province or territory of the Work Site;

.3 Acceptable to the Owner; and

.4 Maintained in good standing until the fulfillment of the Contract.

GC 1.6 LAWS, REGULATIONS AND PERMITS

1.6.1 This Contract shall be governed by the Laws of the Province or Territory where the Work Site is located an

d the Parties agree to attorn to the exclusive jurisdiction of the Courts of that Province or Territory.

1.6.2 The Equipment Supplier shall comply with all federal, territorial, provincial, and local laws, regulations and ordinances affecting the execution of the work.

1.6.2 The Equipment Supplier shall give all notices required by law and shall comply with all laws, acts, ordinances, rules and regulations relating to or affecting the Goods. If any permits, authorizations, approvals or licences from any government or governmental agencies are necessary or desirable for the execution of the work, they shall be obtained by the Equipment Supplier at its own expense, provided that the Equipment Supplier shall not make application for any such permit, authorization, approval or licence without first obtaining the written consent of the Owner.

1.6.3 Patents, Royalties and Copyright:

.1 The Equipment Supplier shall pay all fees, royalties or claims for any patented invention, article, process or method that may be used upon or in a manner connected with the Goods or with the use of the Goods by the Owner. Before final payment is made on the account of this Contract, the Equipment Supplier shall, if requested by the Owner, furnish acceptable proof of a proper release from all such fees or claims.

.2 If the Equipment Supplier, its agent, employee or any of them is prevented from furnishing or using any invention, article, Materials or Drawings supplied or required to be supplied or used under this Contract, the Equipment Supplier either shall promptly pay such royalties and secure the requisite licences or, subject to written approval by the Owner, substitute other articles, Materials or appliances in lieu thereof which are of equal or better efficiency, quality, finish, suitability and market value to those planned or required under the Contract.

.3 The Equipment Supplier shall submit to the Engineer descriptive information of these proposed substitutions. Approval by the Owner of any substitutions shall not relieve the Equipment Supplier of its responsibility if the substitutions do not function as well as the original specified in the Contract and shall not be deemed an assumption of risk or responsibility by the Owner. Approval shall only mean the Owner has no objection to the substitution being utilized at the Equipment Supplier's risk. If the Owner refuses to approve the substitution, the Equipment Supplier shall pay such royalties and secure such valid licences as may be requisite for the Owner, its directors, officers, agents and employees or any of them, to use such invention, article, Materials or appliance without being disturbed or in any way interfered with by any proceeding in law or equity on account thereof.

GC 1.7 CURRENCY

1.7.1 All references to money in the Contract Documents shall be interpreted as meaning lawful currency of Canada.

GC 1.8 LOCAL CONDITIONS

1.8.1 The Equipment Supplier shall, by personal inspection, examination, calculations or tests, or by any other means, satisfy itself with respect to the local conditions to be encountered and the quantities, quality, and practicability of the work and of its methods of procedure.

GC 1.9 ASSIGNMENT OF CONTRACT

1.9.1 Neither party shall sublet, sell, transfer, assign, or otherwise dispose of the Contract or any portions thereof, or the right, title, or interest therein, or obligations thereunder without written consent of the other party, except for an assignment to a bank of the payments to be received hereunder.

GC 1.10 HEADINGS

1.10.1 Headings to parts, divisions, sections, clauses and forms are inserted for convenience of reference only and shall not affect the interpretation of the Contract Documents.

GC 1.11 EXECUTION OF THE CONTRACT AGREEMENT

1.11.1 The Equipment Supplier shall deliver the following documents to the Engineer within ten (10) Business Days of the date of the Notice of Award:

(a) Certificates of Insurance in accordance with GC 9 INSURANCE;

(b) evidence of compliance with the requirements of the Workers Compensation Legislation including payments due thereunder;

(c) bonds in accordance with GC 1.5 PERFORMANCE BOND; and

(d) Schedule in accordance with GC 6.1 CONTRACT TIME.

1.11.2 The Engineer shall deliver the Contract Documents in a form ready for signing to the Equipment Supplier.

1.11.3 The Equipment Supplier shall sign the Contract Documents and return them to the Engineer within five (5) Business Days after receiving them and the Engineer shall forward them to the Owner for signing.

1.11.4 The Owner shall sign the Contract Documents and return them to the Engineer within fifteen (15) Business Days after receiving them and the Engineer shall deliver the Equipment Supplier's copies to the Equipment Supplier.

PART 2 OWNER - EQUIPMENT SUPPLIER RELATIONS

GC 2.1 AUTHORITY OF ENGINEER

2.1.1 The Engineer shall have authority to act on behalf of the Owner only to the extent provided for in this Contract or as the Owner may authorize, from time to time, but only to the extent that such authorization is communicated to the Equipment Supplier by Notice from the Owner.

2.1.2 The duties, responsibilities, and limitations of authority of the Engineer shall only be modified or extended by a Notice issued by the Owner to the Equipment Supplier.

2.1.3 The Engineer shall, to the extent specifically provided for in this Contract, be a representative of the Owner during the performance of the Work until the date of the total performance of the Work and the completion of the Warranty Work. The Engineer's instructions to the Equipment Supplier shall be forwarded directly from the Engineer, or alternatively through the Owner, as may be determined appropriate by the Owner from time to time.

2.1.4 The Engineer shall visit the Work Site at intervals appropriate to the progress of the Work to observe the progress and quality of the Work and to determine if the Work is proceeding in general conformity with this Contract.

2.1.5 The Engineer may provide at the Work Site one or more Personnel to assist in carrying out the Engineer's responsibilities.

2.1.6 Based upon the Engineer's observations and evaluation of the Equipment Supplier's applications for payment, the Engineer shall make an assessment as to the amounts owing to the Equipment Supplier under this Contract and shall issue Payment Certificates as provided for in PART 7 PAYMENT.

2.1.7 The Engineer shall not be responsible for, and shall not have control, charge, or supervision of means, methods, techniques, sequences, or procedures, quality assurance or safety or environmental protection programs and other programs required in connection with the Work in accordance with applicable Law or general practice.

2.1.8 The Engineer shall not be responsible for the Equipment Supplier's failure to carry out its obligations in accordance with the Contract Documents. The Engineer shall not have control over, charge of, or be responsible for the acts or omissions of the Equipment Supplier or any Person for whom the Equipment Supplier is responsible at Law.

2.1.9 The Engineer shall be, in the first instance, the interpreter of the requirements of this Contract and shall make determinations as to the performance under the Contract by the Owner and the Equipment Supplier and the Subcontractors. Interpretations and determinations of the Engineer shall be consistent with the intent of the Contract Documents.

2.1.10 Claims, disputes, and other matters in question relating to the performance of the Work or the interpretation of the Contract Documents, shall be referred initially by Notice to the Engineer for the Engineer's interpretation and determination. The Engineer's interpretation and determinations shall be given by Notice to both the Owner and the Equipment Supplier.

2.1.11 The Engineer shall have authority to reject work which, in the Engineer's opinion, does not conform to the requirements of this Contract. Whenever the Engineer considers it necessary or advisable, the Engineer shall have authority to require inspection or testing of Work, whether or not such Work is fabricated, installed or completed. However, neither the authority of the Engineer to act, nor any decision either to exercise or not exercise such authority, shall give rise to any duty or responsibility of the Engineer to the Equipment Supplier.

2.1.12 During the progress of the Work, from time to time the Engineer may issue instructions to the Equipment Supplier. The Equipment Supplier shall comply with the instructions with reasonable promptness or in accordance with a schedule for implementation of such instructions agreed to by the Engineer and the Equipment Supplier.

2.1.13 The Engineer shall review and take appropriate action upon the Equipment Supplier's submittals such as shop drawings and samples.

2.1.14 The Engineer shall prepare Change Orders, Change Directives, and Contemplated Change Notices as provided in PART 7 PAYMENT. Neither a Change Order nor a Change Directive shall constitute a Change unless signed by the Owner.

2.1.15 The Engineer shall conduct reviews of the Work to verify Substantial Performance of the Work and total performance of the Work prior to issuance of the Completion Certificate.

2.1.16 The Engineer shall make reasonable efforts to promptly review and take appropriate action with respect to documents submitted by the Equipment Supplier, including written warranties and related documents, and upon the Owner's request, shall establish a process for the Owner's review of some or all such documents.

2.1.17 In the event that the Equipment Supplier believes that the Engineer is not promptly reviewing or taking appropriate action with respect to any submittals or documents submitted by the Equipment Supplier, the Equipment Supplier shall, within five (5) Business Days of such determination, provide Notice to the Engineer and the Owner setting out which submittals or documents have not been promptly reviewed or in relation to which the Engineer has not taken appropriate action and the effect of such conduct. If the Equipment Supplier does not provide such Notice within the specified time, the Equipment Supplier shall have no Claim against the Owner for any reason relating to the conduct of the Engineer with respect to the review of submittals or documents submitted by the Equipment Supplier.

GC 2.2 REVIEW OF THE WORK

2.2.1 The Owner and the Engineer shall have access to the Work at all times provided they follow the Equipment Supplier's safety requirements.

2.2.2 The Equipment Supplier shall supply sufficient, safe, and proper facilities at all times for the review of the Work by the Owner, the Engineer and inspection by Governmental Authorities. If parts of the Work are in preparation at locations other than the Work Site, the Owner and the Engineer shall be given access to such parts of the Work.

2.2.3 The Owner may review the Work Site at any time to observe whether the Equipment Supplier is fulfilling its responsibilities as Prime Contractor for Safety and under the OH&S Legislation. Reviews may include: Work Site conditions, work processes, procedures and documentation of Work Site safety related activities. Observed infractions or possible infractions will be reported to the Engineer and the Equipment Supplier for further investigation and action by the Equipment Supplier.

2.2.4 The Equipment Supplier shall promptly deliver to the Engineer two copies of any certificates and inspection reports relating to the Work, or any portion thereof.

2.2.5 Within ten (10) Business Days of the commencement of the Work, the Owner and the Engineer, in conjunction with the Equipment Supplier, shall jointly develop a schedule of items of work which are designated for special tests, inspections, or approvals.

2.2.6 If the Equipment Supplier covers or permits to be covered, work that has been designated for special tests, inspections, or approvals before such special tests, inspections, or approvals are

made, given or completed, the Equipment Supplier shall, if so directed, uncover such work, have the inspections or tests satisfactorily completed, and re-perform all covering work, all at the Equipment Supplier's expense, regardless of the outcome of the tests.

2.2.7 The Engineer may order any portion or portions of the Work to be examined to confirm the work is in accordance with the requirements of this Contract. If the Engineer provides Notice to the Equipment Supplier that the work is not in accordance with the requirements of this Contract, the Equipment Supplier shall correct the work and pay the cost of examination, correction and restoration. If, on such examination, the work has been completed in accordance with the requirements of this Contract, the Owner shall be responsible for the cost of examination and restoration.

2.2.8 Neither the failure of the Engineer, or an inspection agency appointed by the Owner or the Engineer, to carry out any reviews or inspections, nor errors or omissions in the performance of such reviews and inspections by the Engineer, or an appointed inspection agency, shall relieve the Equipment Supplier from responsibility that the Work, or any portion thereof, is performed in accordance with this Contract.

2.2.9 The Equipment Supplier shall continuously monitor and inspect the work of the Subcontractors for Deficiencies and ensure that all such Deficiencies are promptly corrected.

2.2.10 The Equipment Supplier shall implement and follow a quality assurance program with respect to the performance of the Work and shall ensure the compliance of the Subcontractors with its quality assurance program, to ensure that the quality of the Work meets or exceeds the standards of performance and quality required by this Contract.

GC 2.3 RESPONSIBILITIES OF THE EQUIPMENT SUPPLIER

2.3.1 The Equipment Supplier shall advise the Engineer in writing of the name of the Equipment Supplier's authorized representative.

2.3.2 The Equipment Supplier shall diligently manage the Work so that it is executed faithfully, expeditiously and in accordance with the Contract Documents.

2.3.3 The Equipment Supplier shall manage, coordinate and conduct all factory tests as provided for in the Contract Documents.

2.3.4 The Equipment Supplier shall provide all necessary instruction to the General Contractor for off-loading, storing, testing and installation of goods, within the destination facility and supervisory personnel to monitor the General Contractor's work with respect to the off-loading, storing, testing and installation of goods, within the destination facility. The Equipment Supplier shall, by monitoring, personal inspection, examination or by other means available, satisfy itself that the off-loading, storing, testing and installation work is in strict accordance with the Equipment Supplier's requirements.

2.3.5 The Equipment Supplier shall properly package all Goods for safe shipment to the Work Site and a Notice of shipment shall be sent by the Equipment Supplier to the General Contractor and the Owner at least 2 weeks before the Goods are shipped. The Notice of shipment shall state the number of the order, the kind of goods, the Equipment Supplier's name and the carrier and route by which the shipment is being made. The Notice of shipment shall indicate

appropriate instructions, considerations or other information regarding the proper storage, handling, transfer, off-loading and installation of the Goods.

2.3.6 The Equipment Supplier shall arrange to have the Goods delivered to the FOB Point between 8:00 A.M. and 3:00 P.M, Monday to Friday, statutory holidays excepted. The Owner shall not be responsible for Goods delivered outside the acceptable time for delivery.

2.3.8 The Equipment Supplier alone shall at all times be responsible for the safety of its employees, its subcontractors' employees and other persons and equipment lawfully engaged in execution of the Work in connection with the supply of Goods and in compliance with the requirements and regulations of the authorities having jurisdiction, including the Prime Contractor for Safety at the Work Site.

GC 2.4 OWNER - EQUIPMENT SUPPLIER CO-ORDINATION

2.4.1 Performance under the Contract may be dependent upon other work by the Owner, the General Contractor or other contractors on and about the Work Site during the time the Equipment Supplier is performing the work. The Equipment Supplier shall fully co-operate and co-ordinate its work with the work of the Owner, the General Contractor and other contractors so that work on the entire scheme of development may be performed with utmost speed consistent with good practice.

GC 2.5 DISPUTES

2.5.1 Except as otherwise specifically provided, questions regarding meaning, interpretation and intent of the Contract or Contract Documents shall be referred by the Equipment Supplier in writing to the Engineer for its decision. The Engineer shall, within fifteen (15) Business Days, respond to the Equipment Supplier in writing with its decision. Failure of the Equipment Supplier to notify the Owner in writing of disagreement with the Engineer's decision within ten (10) Business Days of receipt of the Engineer's decision shall constitute a waiver of the Equipment Supplier's right to thereafter assert a claim resulting from such decision.

GC 2.6 SUBCONTRACTS

2.6.1 No Subcontractor other than those named in the Proposal Form shall be employed by the Equipment Supplier without the written approval of the Engineer. Subcontractors named in the Proposal Form and those subsequently approved shall not be changed without the written consent of the Engineer. The Equipment Supplier is responsible to the Owner for the acts and omissions of said Subcontractors and of their employees, to the same extent that the Equipment Supplier is responsible for the acts or omissions of persons employed by the Equipment Supplier. Nothing in the Contract Documents shall create any contractual relation between any Subcontractor and Owner. The Equipment Supplier shall bind every Subcontractor to the terms of the Contract Documents.

GC 2.7 ORAL AGREEMENTS

2.7.1 No oral instruction, objection, claim, or notice by any party to the others shall affect or modify any of the terms or obligations contained in any of the Contract Documents and none of the provisions of the Contract Documents shall be held to be waived or modified by reason

of any act or failure to act whatsoever, other than by a waiver or modification thereof in writing and agreed to by the parties to the Contract.

PART 3 SPECIFICATIONS AND DRAWINGS

GC 3.1 INTERPRETATION OF SPECIFICATIONS AND DRAWINGS

3.1.1 General: The Specifications and Drawings are intended to be explanatory of each other. Work specified on the Drawings and not in the Specifications, or vice versa, shall be executed as if specified in both.

3.1.2 Request for Clarification: If the Equipment Supplier requires any clarification concerning the Goods, it shall direct its request in writing for clarification to the Engineer.

GC 3.2 DIVISION OF SPECIFICATIONS AND DRAWINGS

3.2.1 Specifications and Drawings are divided into groups for the convenience of the Owner and the Engineer. These divisions are not for the purpose of apportioning work or responsibility for work among subcontractors, suppliers and manufacturers.

GC 3.3 CONFLICTING PROVISIONS, ERRORS AND OMISSIONS IN CONTRACT DOCUMENTS

3.3.1 Conflicting Provisions: In case of any inconsistency or conflict between the provisions of the Contract Documents, the provisions of such documents and Addenda thereto will take precedence and govern in the following order:

.1 Agreement
.2 Supplementary General Conditions
.3 General Conditions
.4 Specifications
.5 Drawings
.6 Executed Proposal Form
.7 Instructions to Proponent
.8 Request for Proposal (RFP)
.9 All Other Documents.

3.3.2 Figured dimensions on a drawing take precedence over measurements scaled from the drawing, and large-scale drawings take precedence over those of a smaller scale. Supplementary drawings and specifications supersede their antecedents. In case of conflict between figured dimensions on a drawing and the dimensions of a specified product, the dimensions of the specified product will govern.

3.3.3 The Equipment Supplier shall review the Contract Documents provided by the Owner or the Engineer and shall promptly provide Notice to the Engineer of any of the following that the Equipment Supplier discovers or becomes aware of:

.1 Any errors, inconsistencies, omissions or ambiguities in the Contract Documents;
.2 Doubt as to the meaning or intent of any part of the Contract Documents;
.3 Any variance between the content of the Contract Documents and the Law; or modifications required to be made to the Contract Documents as a result of revisions made to the Law.

3.3.4 If the Equipment Supplier fails to provide Notice as required herein or proceeds with the Work before receiving clarification of or revisions to the Contract Documents from the Engineer the Equipment Supplier shall be responsible for and shall bear the costs, expenses, and damages attributable to any such failure, or of proceeding in such manner.

3.3.5 Unless otherwise expressly agreed to in writing by the Owner, nothing contained in the Contract Documents shall create any contractual relationship between:

.1 The Owner or its Personnel and any Subcontractor or its Personnel, or other Persons engaged in the performance of the Work; or

.2 The Engineer or its Personnel and the Equipment Supplier, or any Subcontractor, or their respective Personnel, or other Persons engaged by them in the performance of the Work.

GC 3.4 ELECTRONIC INFORMATION

3.4.1 At the Equipment Supplier's request and at the Owner's option, the Engineer may provide the Equipment Supplier with electronic copies of the Drawings, design digital terrain model, building information model or other such information.

3.4.2 If the Engineer does provide such information, it is provided "as is" and at the Equipment Supplier's request, without warranty of any kind, whether express or implied. All implied warranties, including, without limitation, implied warranties of accuracy, completeness, merchantability, fitness for a particular purpose, and non-infringement, are hereby expressly disclaimed.

3.4.3 Under no circumstances will the Owner or the Engineer be liable to any Person for any direct, indirect, special, incidental, or other damages including Consequential Damages and, without limitation, any loss of programs or information, based on any use of this information or any information referenced therein, even if the Owner or the Engineer has been specifically advised of the possibility of such damages.

PART 4 MATERIALS, EQUIPMENT AND WORKMANSHIP

GC 4.1 GENERAL

4.1.1 The Goods shall be new and of the quality specified. All work related to the Contract Documents shall be done with new Materials, articles, equipment and workmanship of the best quality and description, by properly skilled workers and in strict conformity with and as required by the Contract Documents. Materials and equipment shall be the product of suppliers or manufacturers of established good reputation, regularly engaged in the supply or manufacture of such Materials or equipment.

GC 4.2 DEMONSTRATION OF COMPLIANCE WITH CONTRACT REQUIREMENTS

4.2.1 Inspection:

.1 Inspections and testing shall not in any way relieve the Equipment Supplier from any of its obligations or responsibilities under the Contract Documents, and shall not in any way prejudice or constitute a waiver of any rights or remedies of the Owner or any guarantees, warranties or covenants in favour of the Owner, and the Owner shall be entitled to rely on the expertise and obligations of the Equipment Supplier and its subcontractors and their consultants and engineers to the same extent as if such inspections and testing by the Owner or the Engineer or an Inspector had not taken place.

.2 If the Contract Documents, laws, ordinances, or any public regulatory authority requires parts of the Goods to be specially inspected, tested or approved, the Equipment Supplier agrees that the Goods shall comply.

.3 The Goods are subject to inspection and acceptance by the Engineer within a reasonable time after receipt. The Engineer will notify the Equipment Supplier in writing of the rejection of any of the Goods, which are not in accordance with the Contract Documents, and the Goods will be held subject to disposition by the Equipment Supplier at the Equipment Supplier's risk and subject to all charges accruing as a result of such rejection.

.4 Notwithstanding any prior payment therefore, all Goods are subject to inspection and testing by the Owner or the Engineer at the Work Site and if the Goods are to be incorporated into the operating facility, the Owner's or the Engineer’s inspection and testing of the Goods may be made under operating conditions after the Goods have been installed.

4.2.2 Certification: Where compliance of Goods, Materials or equipment with the Contract Documents is not readily determinable through inspection and tests, the Engineer may require that the Equipment Supplier provide, at the Equipment Supplier's expense, properly authenticated documents, certificates or other satisfactory proof of compliance. These documents, certificates or other proof shall include performance characteristics, Materials of construction and the physical or chemical characteristics of Materials.

4.2.3 Expenses: Unless otherwise specified in the Contract Documents, the Engineer's travel, subsistence and labour expenses for review and testing shall be paid by the Owner. If the Equipment Supplier requests the Engineer to review and test Goods, Materials or equipment at the point of manufacture, then the additional costs to the Owner for travel, subsistence and labour expenses shall be paid by the Equipment Supplier and may be deducted by the Owner from any payment due to the Equipment Supplier under the Contract. After a review by the Engineer, if the Goods, Materials or equipment require further review by the Engineer, then the additional costs to the Owner for travel, subsistence, and labour expenses shall be paid by the Equipment Supplier and may be deducted from any payment due to the Equipment Supplier under the Contract.

GC 4.3 DEFECTIVE OR IMPROPER GOODS

4.3.1 Correction of Defective Goods: If upon inspection, testing or otherwise the Goods or any portion thereof are found to be non-conforming, unsatisfactory, defective, or inferior quality or workmanship, or fail to meet any guarantee of operating or other specifications contained herein, or any other requirements of the Contract Documents, then without prejudice to any other rights or remedies, the Engineer may give notice of its dissatisfaction to the Equipment

Supplier in writing and the Equipment Supplier shall immediately upon receipt of such notice do all things that are required to satisfy the Engineer. Any verbal notice of dissatisfaction shall be confirmed in writing by the Engineer if requested by the Equipment Supplier within one Business Day of the verbal notice. If the Equipment Supplier refuses or neglects to do all things that are required to satisfy the Engineer within ten (10) Business Days from the receipt of notice, the Owner may employ some other person to do so and all expenses and costs consequent thereon or incidental thereto shall be charged to the Equipment Supplier. The employment of such other person or the doing of the said work by the Owner itself shall not affect the Equipment Supplier's duties and liabilities hereunder or relieve the Equipment Supplier from the performance and fulfilment of any or all of the Equipment Supplier's warranties, covenants, undertakings, obligations and duties under the Contract.

4.3.2 Return of Defective Goods: If upon inspection, testing or otherwise the Goods or any portion thereof are found to be non-conforming, unsatisfactory, defective, or inferior quality or workmanship, or fail to meet any guarantee of operating or other specifications contained herein, or any other requirements of the Contract Documents, then without prejudice to any other rights or remedies, the Owner may return the Goods or any part thereof to the Equipment Supplier at the Equipment Supplier's sole cost and all amounts theretofore paid by the Owner to the Equipment Supplier on account of the Contract Price of such returned Goods, shall be repaid to the Owner by the Equipment Supplier. The Equipment Supplier shall advise the Owner, in writing, where to return the Goods, and failing such advice from the Equipment Supplier, the Equipment Supplier agrees to accept the returned Goods at the Equipment Supplier's registered office. Neither the inspection nor failure to make inspection, nor acceptance of Goods shall release the Equipment Supplier from any warranties or other provisions of this Contract nor impair the Owner's right to reject non-conforming Goods. The Owner reserves the right even after it has paid for accepted Goods to make a claim against the Equipment Supplier on account of any Goods which do not prove to be satisfactory or are defective irrespective of the Owner's failure to notify the Equipment Supplier of a rejection of non-conforming Goods or revocation of acceptance thereof, or to specify with particularity any defect in non-conforming Goods after rejection or acceptance thereof.

4.3.3 Retention of Defective Work: If in the opinion of the Engineer any portion of the work done under the Contract is defective or not in accordance with the Contract Documents and if the defect or imperfection is not of sufficient magnitude or importance to make the Goods dangerous or undesirable, or if the removal of such Goods is impracticable, or will create conditions which are dangerous or undesirable, the Owner shall have the right and authority to retain such Goods instead of requiring the defective or imperfect Goods to be removed and reconstructed, but the Owner shall be entitled to make such deductions from the payments due or to become due to the Equipment Supplier as are just and reasonable.

4.3.4 No Implied Approval: The fact that the Engineer or the Owner has not disapproved of or rejected any part of the Goods or any of the plant used in connection therewith shall not be deemed or be construed to be an acceptance of any such part of the Goods or any such Materials.

GC 4.4 WARRANTY AND GUARANTEE

4.4.1 The Equipment Supplier agrees that the Goods manufacturer's standard warranty will be to the benefit of the Owner and that the Goods are free from all defects arising from faulty construction, manufacturing, Materials, equipment or workmanship for a period of the lesser

of one (1) year from the date of Substantial Performance or thirty (30) months from the date of final shipment.

4.4.2 The Equipment Supplier warrants and guarantees that the Goods are free from all defects arising from faulty construction, manufacturing, installation, Materials, equipment or workmanship in any part of the Goods for a period of two years commencing from the date of acceptance by the Engineer after each operational testing under each construction contract. During the warranty period, the Equipment Supplier, upon the receipt of notice in writing from the Owner or the Engineer, shall promptly make all repairs arising out of the defects. The Owner shall be entitled to make such repairs, if ten (10) Business Days after the giving of such notice to the Equipment Supplier, the Equipment Supplier has failed to make or undertake with due diligence the repairs. In case of an emergency, where, in the opinion of the Owner or the Engineer, delay could cause serious loss or damage, or inconvenience to the public, repairs may be made without notice being sent to the Equipment Supplier. The costs of any repair made by the Owner in connection with this clause shall be charged to the Equipment Supplier and the Equipment Supplier shall reimburse the Owner for such costs. All covenants and agreements shall continue to be binding on the Equipment Supplier until they have been fulfilled.

4.4.3 If completion of repairs or replacement parts takes more than four (4) weeks, then the Equipment Supplier shall provide and install temporary facilities at the Equipment Supplier’s expense until the repairs are completed.

4.4.4 The Owner is relying on Equipment Supplier's skill and judgment in selecting and providing the proper Goods and any applicable services for the Owner's particular application. The Equipment Supplier warrants to the Owner and its successors in interest that the Goods and any services covered hereby will correspond with the description of the same in the Contract Documents, will conform to all applicable Specifications, will be new and of the best quality and, unless otherwise specified, will be fit for the purpose for which they are to be used and will conform in all aspects, both in the manufacture and use thereof, with all applicable safety orders or regulations applicable in the place of the Work. The Equipment Supplier also warrants that the Goods are free and clear of all liens and encumbrances whatsoever and that the Equipment Supplier has a good and marketable title to the same.

4.4.5 The Equipment Supplier warrants and guarantees that the Goods are free from all defects arising at any time from faulty design in any part of the Goods.

PART 5 INDEMNIFICATION OF OWNER

GC 5.1 INDEMNIFICATION

5.1.1 The Equipment Supplier shall at all times and without limitation, be fully liable for, and shall indemnify and save harmless the Owner and its Personnel, including the Engineer, from and against all liabilities, losses, injuries, costs, damages, legal fees and disbursements on a solicitor and own client basis, disbursements, fines, penalties, expenses, all manner of actions, causes of action, claims, demands and proceedings, all of whatever nature and kind, which any of the Owner and its Personnel, including the Engineer, may sustain, pay or incur or which may be brought or made against all or any of them, and whether or not incurred, in connection with any action or other proceedings or claims or demands made by third parties, relating to, or resulting from or arising out of all or any of the following:

.1 The misconduct, negligent action or negligent failure to act, as the case may be, of the Equipment Supplier or any of those Persons for whom the Equipment Supplier is responsible at Law (including, without limitation, any of its Personnel or Subcontractors);

.2 The costs of repairs, clean-up or restoration paid by the Owner and any fines levied against the Owner or the Equipment Supplier;

.3 Any breach, violation or non-performance of any representation, warranty, obligation, covenant, condition or agreement in this Contract set forth and contained on the part of the Equipment Supplier to be fulfilled, kept, observed or performed, as the case may be;

.4 Any damages to third parties caused by, resulting at any time from, arising out of or in consequence of the misconduct, negligent action or failure to act of the Equipment Supplier or any of those Persons for whom the Equipment Supplier is responsible at Law (including, without limitation, any of its Personnel or Subcontractors); or

.5 Any damages, costs, fines, expenses and penalties that the Owner is required to pay on account of the Equipment Supplier performing the Work in breach of any Workers Compensation Legislation order or regulation.

The provisions herein are in addition to and shall not prejudice any other rights of the Owner at Law or in equity.

5.1.2 The Owner shall indemnify and hold harmless the Equipment Supplier and its Personnel from and against claims, demands, losses, costs, damages, actions, suits, or proceedings arising out of the Equipment Supplier's performance of the Contract which are attributable to a lack of or defect in title to the Work Site.

5.1.3 If the Owner performs work at the Work Site at the same time as the Equipment Supplier is performing the Work, then the Owner shall indemnify and hold harmless the Equipment Supplier and its Personnel from and against claims, demands, losses, costs, damages, actions, suits or proceedings by third parties that arise out of or are attributable to, any act or omission or alleged act or omission of the Owner and its Personnel in the performance of that work.

5.1.4 If it becomes necessary for the Owner or its Personnel, including the Engineer, to take or to become involved in any action, including but not limited to legal proceedings, to enforce any term of this Contract, the Equipment Supplier shall be liable for and will pay to the Owner and its Personnel, including the Engineer, all costs, including but not limited to legal fees and disbursements on a solicitor and own client basis, incurred by the Owner and its Personnel, including the Engineer, in relation to the action to enforce any term of this Contract.

5.1.5 The Equipment Supplier represents that it has fully investigated all Specifications, including any furnished by the Owner, in connection with the Goods and based on such investigation and its past experience and superior knowledge with respect to such Goods has determined that the production and supply thereof will not infringe any patent, trademark or copyright.

5.1.6 The Equipment Supplier warrants to the Owner and its successors in interest that the manufacture, sale or use of the Goods and any services covered by this Contract, whether manufactured in accordance with the Owner's Specifications or otherwise, do not and will not infringe upon any patent, trademark or copyright. The Equipment Supplier shall save harmless and indemnify the Indemnified Parties from and against all actions, claims, demands, proceedings, suits, losses, damages, costs and expenses of whatsoever kind or nature arising in any way from liability of any nature or kind for or on account of any copyrighted or un-copyrighted composition, secret or other process, patented or un-patented invention, articles or appliances manufactured or used in connection with the Goods, and used or to be used by the Owner before or after completion of the work unless otherwise stipulated in this Contract, and if the Equipment Supplier shall fail to save harmless and indemnify in manner aforesaid, any money collected from the Indemnified Parties shall be charged to the Equipment Supplier.

GC 5.2 SHIPMENT OF GOODS/DAMAGE TO GOODS

5.2.1 The Goods will be delivered by the Equipment Supplier to the FOB Point.

5.2.2 The Equipment Supplier will be responsible and pay for all transportation, freight, insurance, storage, customs or excise charges or duties and all other costs and expenses whatsoever incurred in connection with the Goods prior to the Goods being delivered to the FOB Point.

5.2.3 Notwithstanding any shipping instructions or otherwise, the Equipment Supplier shall assume and pay any and all loss or damage to the Goods from any cause whatsoever until their unloading at the FOB Point.

5.2.4 If loss or damage to the Goods occurs for which the Equipment Supplier is responsible, the Equipment Supplier shall immediately effect repairs or replace any property as necessary in order to make good any such loss or damage. If the Equipment Supplier refuses or neglects to do so, the Owner may make good any such loss or damage, either by itself or by employing some other person, and the expense of doing so shall be charged to the Equipment Supplier. If any repair or replacement of property is performed on the goods as a result of loss or damage to the goods for which the Equipment Supplier is responsible the Equipment Supplier represents and warrants that the warranty provided herein shall not be affected or changed to any manner or respect whatsoever.

PART 6 PROGRESS AND COMPLETION

GC 6.1 CONTRACT TIME

6.1.1 Execution of the Work: Time shall be strictly of the essence. The Equipment Supplier shall supply the Goods and all portions of the work thereof shall be completed in accordance with the Contract Documents. The Equipment Supplier acknowledges that the Schedule for the Work and supply of the Goods as set out in the Contract Documents is reasonable.

6.1.2 Schedule: The Equipment Supplier shall provide a Schedule and reports in accordance with the Contract requirements for scheduling and coordinating the Work and supply of Goods within the prescribed time. Contract Time extensions, if any, under the Contract shall be incorporated into updated Schedules. The failure of the Equipment Supplier to comply with this requirement shall entitle the Owner to terminate the Equipment Supplier's right to continue with the Work and supply of Goods or to delay progress payments.

6.1.3 Progress: If the Work or supply of the Goods falls behind Schedule, the Equipment Supplier shall advise the Engineer what actions will be taken to return the Work or supply of the Goods or portions thereof to comply with the Schedule including:

.1 Increase manpower in quantities and crafts;
.2 Increase the number of working hours per shift, shifts per working day, working days per week, or the amount of equipment, or any combination of the foregoing; and
.3 Reschedule activities.

6.1.4 The Equipment Supplier upon request of the Engineer shall prepare a proposed Schedule revision to make up the delay in progress and ensure completion of the Work and supply of the Goods in accordance with the Contract Documents. The proposed Schedule revisions shall be submitted to the Engineer in accordance with the Contract. All costs and expenses of getting the Work or supply of Goods back on Schedule shall be for the Equipment Supplier's account.

6.1.5 None of the services performed by the Engineer in monitoring, reviewing and reporting on the status and progress of the Work or supply of the Goods shall relieve the Equipment Supplier of responsibility for planning and managing the Work or supply of the Goods in conformance with the Contract Documents.

6.1.6 If the Engineer makes any suggestion to the Equipment Supplier relating to the Work or supply of the Goods which is not set out or provided for in the Contract Documents and which the Equipment Supplier adopts and uses, in whole or in part, such adoption or use shall be at the risk of the Equipment Supplier. The Owner and the Engineer shall bear no risk or responsibility for the adoption and use of such suggestion and without limitation will not be responsible for any defects, non-compliance with the Contract Documents or delay in the Work or supply of the Goods, which may result from the adoption and use of such suggestion.

6.1.7 Extension of Contract Time: If the Equipment Supplier wishes to claim an extension of the time allowed for the completion of all or any portion of the Work or supply of the Goods by reason of being ordered to perform extra work or furnish extra Materials, or consequent upon any delay occasioned by strikes, lockouts (other than by the Equipment Supplier alone), Force Majeure or any other cause beyond the control of the Equipment Supplier, whether or not of similar kind or nature, the Equipment Supplier must give notice in writing to the Engineer within ten (10) Business Days after any such order has been given or such delay has first arisen, stating the reason for such delay and requesting an extension of time. In such event, the Engineer shall advise the Owner of the notice it received from the Equipment Supplier and shall review the request within fifteen (15) Business Days and make a recommendation to the Owner about the disposition of the request. The Owner, after receipt of the Engineer's recommendation, shall reasonably determine what extension of time, if any, the Equipment Supplier shall be allowed for the supply of Goods.

6.1.8 No claim by the Equipment Supplier for an extension of the time allowed for the completion of all or part of the supply of the Goods shall be considered or allowed by the Owner unless it is for and results from one or more of the events or causes set out in GC 6.1.7.

6.1.9 The Owner's determination under GC 6.1.7 shall not in any way affect the adequacy of the Contract Price or derogate from the rights of the Owner under any provision of the Contract Documents. Any extension of time granted pursuant to GC 6.1.7 shall be deemed to be in full

and final compensation and satisfaction for any actual or probable losses, claims, damages, costs, expenses, causes of action or injuries sustained or sustainable by the Equipment Supplier in respect of any matter or things for which an extension of time is granted.

6.1.10 Consequential Damages: The Owner, and the Engineer shall not be liable to the Equipment Supplier for, and the Equipment Supplier hereby waives recovery from them of, loss of profits or anticipated profits, loss of production, impact costs, overhead, claims of the Equipment Supplier's customers, suppliers or contractors, or other indirect or consequential damages arising at any time from any cause whatsoever, whether arising under tort, implied or statutory warranties, strict liability or breach of contract ("Consequential Damages") notwithstanding any right or remedy available to the Equipment Supplier at law or in equity to Consequential Damages.

GC 6.2 LATE COMPLETION

6.2.1 The Equipment Supplier acknowledges that if the Equipment Supplier fails to complete the Work within the Contract Time or fails to meet a specified Milestone Date for any part of the Work, the Owner will incur additional administrative and overhead costs and will be required to pay additional compensation to the Engineer (collectively “Additional Overhead”). The Equipment Supplier agrees that in the event the Equipment Supplier fails to complete the Work within the Contract Time or fails to meet a specified Milestone Date for any part of the Work, the Owner may deduct from any monies owing to the Equipment Supplier for the Work, as a genuine pre-estimate of the Owner’s Additional Overhead, the amount specified in Section 00 73 50 SUPPLEMENTARY CONDITIONS for each Business Day the Work or any portion of the Work remains incomplete after the applicable Contract Time or Milestone Date.

6.2.2 The rights set out in GC 6.2.1 are in addition to any other rights the Owner may have and are in no way exclusive. The Equipment Supplier acknowledges that in the event no amount for Additional Overhead is specified in the Section 00 73 50 SUPPLEMENTARY CONDITIONS the Owner may seek to recover from the Equipment Supplier any loss and damages suffered or incurred in respect of Additional Overhead, in addition to any other claim the Owner may have at law.

6.2.3 No bonus will be allowed by the Owner for completion of the Work in less than the Contract Time.

GC 6.3 SUSPENSION OF WORK BY OWNER

6.3.1 The Owner may at any time suspend the Work, or any portion thereof, provided that the Owner gives the Equipment Supplier five (5) Business Days written notice of suspension. The Equipment Supplier shall resume work upon written notice of the Owner within ten (10) Business Days after the date set forth in such notice, or in a subsequent notice to resume work. The Owner will reimburse the Equipment Supplier for direct and provable costs and expenses incurred by the Equipment Supplier necessitated by such suspension of work or portion thereof, but the Equipment Supplier shall not recover from the Owner payment for any loss of profits or damages. If the suspension notice lasts more than ninety (90) Days, the Equipment Supplier may, on ten (10) Business Days written notice, terminate the contract.

GC 6.4 OWNER'S TERMINATION OF CONTRACT

6.4.1 The Owner may terminate the Contract if the Equipment Supplier at any time becomes bankrupt, makes an assignment of his property for the benefit of his creditors, or if a receiver or liquidator should be appointed. Such termination shall be effective upon the Owner giving notice thereof.

6.4.2 If at any time the Owner forms the opinion that the Equipment Supplier is in default under this Contract because the Equipment Supplier:

.1 Has breached a fundamental term of the Contract or is in substantial breach of the terms of the Contract;

.2 Has failed to commence the Work or supply the Goods, within the time specified in the Contract Documents;

.3 Has failed or is failing to furnish or to maintain a detailed Schedule;

.4 Has become in any way unable to carry on the work or supply the Goods or any part thereof;

.5 Has abandoned the Work or failed to supply the Goods; or

.6 Has repeatedly failed to make prompt payments to subcontractors, suppliers or others for labour, material or equipment, then the Owner may give notice in writing to the Equipment Supplier of such opinion and require that such default or defaults be remedied forthwith. If, within twenty-one (21) Business Days of such notice, such default or defaults are not remedied to the satisfaction of the Owner, the Owner may terminate the Contract. Such termination shall be effective immediately.

6.4.3 Upon termination, the Owner may take all Goods out of the Equipment Supplier's hands and employ such means as the Owner may see fit to complete the Work. In such case:

.1 The Equipment Supplier shall have no claim for any further payment except for any outstanding amounts due in respect of the Goods;

.2 No objection or claim shall be raised or made by the Equipment Supplier by reason of or on account of the ultimate cost of the Goods so taken over for any reason proving greater than, in the opinion of the Equipment Supplier, it should have been;

.3 Notwithstanding Part 7, all materials provided by the Equipment Supplier for the purposes of supply of the Goods will become or remain and be the property of the Owner for all purposes incidental to the completion of supply of the Goods and the Owner shall maintain any licence granted hereunder for the use, operation, modification, repair and maintenance of the Goods;

.4 The Owner may assign all rights and privileges granted to the Owner in this clause to another Equipment Supplier retained by the Owner to continue with the Work or supply of the Goods.

6.4.4 If the Equipment Supplier's right to supply the Goods is terminated in accordance with the provisions section, the Equipment Supplier shall not be entitled to receive any further payment until the Work and supply of Goods is completed.

6.4.5 Except as hereinbefore provided, the Equipment Supplier shall have no claim against the Owner for any reason whatsoever by reason of the termination of the Contract.

GC 6.5 EQUIPMENT SUPPLIER'S TERMINATION OF CONTRACT

6.5.1 The Equipment Supplier shall have the right to terminate the Contract for any of the following reasons:

.1 In the event the Owner fails to pay, except as provided in the Contract Documents, any sum certified by the Engineer and payable by the Owner under the Contract within twenty (20) Business Days from the due date of payment, and fails to remedy such default within ten (10) Business Days of the Equipment Supplier's written notice to do so.

.2 In the event the Owner suspends work as provided for herein for more than ninety (90) Days.

In such event, the Equipment Supplier will receive from the Owner payment for all work performed and losses sustained in respect of any Materials. For termination under .1 or .2 above, the Equipment Supplier will be paid for loss of profits, damages and expenses. Such termination shall be effective upon the Equipment Supplier giving notice thereof.

GC 6.6 TERMINATION FOR CONVENIENCE

6.6.1 The Owner, in its sole discretion, shall have the right, which may be exercised at any time, to terminate all or a portion of the Work or this Contract, without reason or cause, by giving not less than thirty (30) Days' Notice to the Equipment Supplier.

6.6.2 If the Work or this Contract is terminated by the Owner pursuant to GC 6.1.1, the Equipment Supplier shall be entitled to:

.1 The portion of the Contract Price owed but unpaid to the date of termination, computed in accordance with this Contract; and

.2 Reasonable costs incurred by the Equipment Supplier in terminating the Work or this Contract, including the cost of materials that cannot reasonably be returned to their Supplier and any return-to-supplier costs.

6.6.3 If the Work or this Contract is terminated by the Owner pursuant to GC 6.6, the Owner shall not be liable to the Equipment Supplier for any claims or Consequential Damages or any amounts other than as stated in GC 6.6.2, as applicable, except as expressly provided for herein, and the Equipment Supplier shall indemnify and hold harmless the Owner, its Personnel, including the Engineer, from any such claims for amounts not provided for in GC 6.6.

PART 7 PAYMENT

GC 7.1 PAYMENTS TO EQUIPMENT SUPPLIER

7.1.1 Progressive payments to the Equipment Supplier will be made as provided for in Section 01 10 00 SUMMARY OF WORK.

7.1.2 The Equipment Supplier shall submit to the Engineer at each scheduled payment event, a request for a payment to the Equipment Supplier. If requested by the Engineer, the Equipment Supplier shall provide such additional information as may be reasonably required to support the request for a payment. Such information may include satisfactory evidence of

payment for equipment, Materials and labour including payments to subcontractors and suppliers.

7.1.3 Within ten (10) Business Days after receipt of the request for a schedule payment, the Engineer will review the request and recommend to the Owner the amount of the schedule payment to be made to the Equipment Supplier by issuance of Payment Certificate. Subject to the provisions of the Contract, the Owner will, after receipt of the Engineer's Payment Certificate, process the payment.

7.1.4 The Owner may withhold from any scheduled payment:

.1 Any deduction the Owner may be entitled to under the Contract;
.2 Such reasonable amount as the Owner determines appropriate for any part of the Goods that are not supplied or with respect to work otherwise not in compliance with the Contract Documents.
.3 Holdbacks in accordance with applicable legislation.

7.1.5 Every amount charged to the Equipment Supplier or owed to the Owner by the Equipment Supplier shall be paid by the Equipment Supplier to the Owner on demand or, in the Owner's discretion, may be set off by the Owner from monies due to the Equipment Supplier under this Contract or recovered by the Owner from the Equipment Supplier or its Surety.

7.1.6 Payments may be withheld in accordance the Contract until the relevant operating manuals and all operating and maintenance Materials together with all warranties have been delivered to the Engineer.

7.1.7 In addition to any other remedy the Owner may have in the Contract or law, until expiry of the Warranty Period, the Owner may refuse to make payment because of subsequently discovered evidence or test results, and shall be compensated for any payment previously made to the Equipment Supplier to such extent as may be necessary to protect the Owner from loss as a result of:

.1 Defective or damaged Goods;
.2 A deductive change order;
.3 Failure of the Equipment Supplier to perform the Work or supply the Goods in accordance with the Contract Documents, including failure to maintain the supply of the Goods in accordance with the Schedule;
.4 Disregard by the Equipment Supplier of the authority of the Engineer or the Law.

7.1.8 The Owner may refuse to make payment of the full amount because of claims made against the Owner on account of the Equipment Supplier's performance or supply of Goods. In such case, the Owner shall give the Equipment Supplier prompt written notice stating the reasons for each action.

7.1.9 The Owner, may withhold from payment to the Equipment Supplier:

.1 Any set-off the Owner may be entitled to under the Contract;
.2 The amount of any bona fide lien claim asserted against the Owner or which the Owner acting reasonably anticipates will be made against the Owner.

7.1.10 Prior to payment to the Equipment Supplier, if requested by the Owner, the Equipment Supplier shall deliver to the Owner a statutory declaration in form satisfactory to the Owner declaring that all subcontractors, labour and accounts for Materials and equipment have been paid.

GC 7.2 CONSTRUCTION ACT

7.2.1 The amounts withheld to comply with the Construction Act will be retained by the Owner until payment is due in accordance with the provisions of the relevant legislation. In those cases where Work is such that the Construction Act does not apply or does not require the retention of holdback, the Owner will nevertheless retain holdbacks to the same extent as if such legislation applied to the Work.

GC 7.3 SUBSTANTIAL PERFORMANCE

7.3.1 Substantial Performance shall be as defined under the Construction Act.

GC 7.4 HOLDBACK RELEASE DOCUMENTS

7.4.1 Upon the expiry of the statutory time for filing liens under the Construction Act, the Equipment Supplier shall submit the following documents to the Engineer:

.1 An application for payment of the holdback amount;

.2 A sworn declaration in a form acceptable to the Engineer to state that all accounts for labour, subcontracts, materials, construction equipment, and other indebtedness which may have been incurred by the Equipment Supplier in the Substantial Performance of the Work and for which the Owner might in any way be held responsible have been paid in full, except for amounts properly retained as a holdback or as an identified amount in dispute; and

.3 Documents satisfactory to the Engineer showing compliance with the applicable Workers Compensation Legislation at the Work Site including payments due thereunder.

GC 7.5 CHANGE ORDERS / CHANGE DIRECTIVES

7.5.1 The Owner may at any time make any change in the Goods within the general scope of the Work including a deceleration or an acceleration of the supply of the Goods or any portion thereof by issuing a Change Order or Change Directive to the Equipment Supplier.

7.5.2 When the Engineer and the Owner agree to adjustments to the Contract Price or the Contract Time, or both, and the method to be used to determine the adjustments, a Change Order signed by the Engineer, the Owner and the Equipment Supplier shall be issued revising the Contract Price or the Contract Time, or both, as applicable. The value of Work performed as the result of a Change Order shall be included in Payment Certificate.

7.5.3 If the Owner requires the Equipment Supplier to proceed with a Change prior to the Owner and the Equipment Supplier agreeing upon the adjustment in Contract Price and Contract Time, the Owner, through the Engineer, may issue a Change Directive. Upon receipt of a Change Directive, the Equipment Supplier shall proceed promptly with the Change and, in the case of an emergency identified in a Change Directive, proceed immediately with the Change. An adjustment in the Contract Price for a Change carried out by way of a Change Directive shall be determined on the basis of Force Account in accordance with GC 7.7 FORCE ACCOUNT.

GC 7.6 EXTRA WORK

7.6.1 Extra work means the furnishing of goods, Materials and equipment or the doing of work not directly or by implication called for in the Contract. If the Owner requires extra work it may do it itself or by the employment of others or it may direct the Equipment Supplier to do the extra work by the issuance of a Change Order at a mutually agreed upon price or a Change Directive. If the Owner and the Equipment Supplier cannot agree upon a price and the Equipment Supplier intends to assert a claim for an adjustment under this section, it must, within ten (10) Business Days after receipt of a Change Order or Change Directive, submit to the Engineer a written statement setting forth the general nature and monetary extent of such claim, unless the Engineer extends this period. The statement of a claim hereunder may be included in this written statement.

7.6.2 Nevertheless, the giving of such a written statement to the Engineer shall not relieve the Equipment Supplier of its obligations to carry out and obey Change Orders and Change Directives.

GC 7.7 FORCE ACCOUNT

7.7.1 Compensation for Work done on a Force Account basis, authorized by a Change Order or Change Directive issued by the Engineer, shall be calculated as follows:

.1 Labour - All classifications of labour not priced separately in the Section 00 42 00 PROPOSAL FORM will be paid for at rates actually paid by the Equipment Supplier. A payroll assessment of thirty percent (30%) of the hourly wage will be allowed to cover all costs including pension, holiday pay, payroll administration, insurance and similar benefits. Small tool allowance will be at the rate of four percent (4%) of gross cost of labour. The Equipment Supplier will be allowed a further ten percent (10%) mark-up on the total of the foregoing as the allowance for overhead and a further ten percent (10%) mark-up on the resulting subtotal as allowance for profit.

.2 Construction Equipment - The rates for equipment, vehicles and power tools shall include operator's wages, all maintenance and operating costs and Equipment Supplier's profit. No additional mark-up of Construction Equipment charges shall be allowed.

.3 Materials supplied by the Equipment Supplier shall be paid for at supplier's invoice price plus an additional payment of ten percent (10%) of cost to cover handling and indirect overhead costs, plus ten percent (10%) of all costs including indirect overhead as profit.

.4 Construction Equipment rentals - The allowance to the Equipment Supplier for profit, superintendence, and all other expense related shall be ten percent (10%) of the rental agency's invoice to the Equipment Supplier for the rental of tools and miscellaneous equipment.

.5 For subcontract work, the allowance to the Equipment Supplier for profit, superintendence, and all other expenses shall be ten percent (10%) of the Subcontractor's invoice for such work performed.

7.7.2 In the event that, in its sole discretion, Engineer deems that, any or all prices and rates for Force Account that are included in the Section 00 42 00 PROPOSAL FORM are not fair and reasonable compared with normal industry standards, Engineer may order recalculation of any or all prices and rates based on the Equipment Supplier's actual costs, as provided for in section 7.7.1 items .1 and .2.

7.7.3 For the purposes of calculating Force Account rates as provided for in Section 7.7.1 items .1 to .5, upon request by Engineer, Equipment Supplier shall submit a detailed and verifiable statement of actual cost of labour, Construction Equipment, Materials and subcontracted Work. Pending receipt of such statements, Engineer shall apply normal industry-standard Force Account rates discounted by 20% to facilitate inclusion of interim payments for Force Account in Payment Certificates, on an ongoing basis.

7.7.4 Subcontractor's Force Account invoices to the Equipment Supplier shall be calculated and submitted for review as described in Section 7.7.1 items .1 to .2, unless otherwise instructed by the Engineer.

7.7.5 On a daily basis, the Equipment Supplier shall keep an accurate, complete and up-to-date record in a form satisfactory to the Engineer, showing on a shift-by-shift basis, all Equipment Supplier and Subcontractor labour, Construction Equipment and Materials to be paid by Force Account. Daily Force Account records shall be submitted by the Equipment Supplier to the Engineer for review within one (1) Business Day of the subject Work being performed. The submission to the Engineer or countersignature by the Engineer of daily Force Account records shall not at any time be deemed to be an admission that the Work is properly chargeable to Force Account.

7.7.6 The Owner shall not be liable to pay for any Work based on Force Account for which the daily Force Account records were not prepared and submitted in accordance with Section 7.7.5.

GC 7.8 WORK AND MATERIALS OMITTED

7.8.1 The Equipment Supplier shall, when ordered by Change Order, omit goods, Materials or equipment or work to be done or furnished under the Contract Documents and the value of the omitted goods, Materials, equipment or work will be deducted from the total Contract Price. The value of the omitted goods, Materials, equipment or work will be valued on the basis of the actual direct cost saving to the Equipment Supplier and based on the breakdown of prices submitted by the Equipment Supplier pursuant to Section 00 42 00 PROPOSAL FORM.

GC 7.9 COMPLETION CERTIFICATE

7.9.1 When the Equipment Supplier is of the opinion that Work has been completely performed, the Equipment Supplier shall submit a written request to Engineer for a final inspection. The Engineer will make an inspection and will notify the Equipment Supplier in writing of any defects or Deficiencies, which require to be corrected before all the Work has been performed. When the defects or Deficiencies, if any, have been corrected and the Equipment Supplier has submitted to the Engineer a written statement that all claims and demands of the Equipment Supplier for extra work or otherwise in connection with the Contract have been presented in writing to the Engineer, the Engineer will recommend to the Owner that a Completion Certificate be issued to the Equipment Supplier.

7.9.2 The Owner, subject to the Owner's acceptance of this recommendation, will issue the Completion Certificate.

END OF SECTION

ADDITIONAL GENERAL CONDITIONS

The following General Conditions are hereby added:

GC 1.10 CANADIAN ANTI-SPAM LEGISLATION

In accordance with Canadian anti-spam legislation, each Party consents to contacting the other Party and its personnel through electronic messages relating to the Project. Following completion of the Project, either Party may withdraw consent by contacting the other Party.

GC 6.2 LATE COMPLETION

Add GC 6.2.4 as follows:

6.2.4 The pre-estimate of the Owner's additional costs pursuant to GC 6.2.1 shall be $1,000 per Working Day.

END OF SECTION

Without limiting any of Contractor's obligations or liabilities under the Contract Documents, Contractor shall, and shall cause its Subcontractors to, obtain and continuously carry, while Work is being performed and, unless otherwise specified in this Section, while any remedial or warranty work is being undertaken, at Contractor's own expense and cost, the following insurance coverage with minimum limits not less than those stated:

Commercial General Liability Insurance

Commercial General Liability Insurance, in a form acceptable to Owner, 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.

Commercial General Liability policy shall include the following:

a. Additional Insured: Owner and Engineer are added as additional insured, but only with respect to liability arising out of the Contractor's performance of the Contract.
b. Bodily Injury and Property Damage to third parties arising out of the operations of the Contractor.
c. Products and Completed Operations: Coverage for bodily injury or property damage arising out of goods or products manufactured, sold, handled, or distributed by the Contractor and/or arising out of operations that have been completed by the Contractor.
d. Personal Injury: While not limited to, the coverage must include Violation of Privacy, Libel and Slander, False Arrest, Detention or Imprisonment and Defamation of Character.
e. Cross Liability/Separation of Insureds: Without increasing the limit of liability, the policy must protect all insured parties to the full extent of coverage provided. Further, the policy must apply to each Insured in the same manner and to the same extent as if a separate policy had been issued to each.
f. Blanket Contractual Liability: The policy must, on a blanket basis or by specific reference to the Contract, extend to assumed liabilities with respect to contractual provisions.
g. Employees must be included as Additional Insured.
h. Employers' Liability (or confirmation that all employees are covered by Worker's compensation (WSIB) or similar program).
i. Broad Form Property Damage including Completed Operations: Expands the Property Damage coverage to include certain losses that would otherwise be excluded by the standard care, custody or control exclusion found in a standard policy.
j. Notice of Cancellation: The Insurer will provide the Owner thirty (30) Days written notice of policy cancellation.
k. Owners' or Contractors' Protective Liability: Covers the damages that the Contractor becomes legally obligated to pay arising out of the operations of a subcontractor.
l. Non-Owned Automobile Liability - Coverage for suits against the Contractor resulting from the use of hired or non-owned vehicles.
m. All Risks Tenants Legal Liability - to protect the Contractor for liabilities arising out of its occupancy of leased premises.
n. Sudden and Accidental Pollution Liability (minimum 120 hours): To protect the Contractor for liabilities arising from damages caused by accidental pollution incidents.

Professional Liability Insurance

For Personnel providing professional services, Professional Liability Insurance with declared limits at commencement of each policy year of not less than $2,000,000 per claim and in the aggregate.

All policies of insurance shall be in a form acceptable to Owner and shall not allow subrogation claims by the insurer against Owner or Engineer.

All policies of insurance that Contractor is required to obtain will be considered as primary insurances in relation to insurances held by Owner or Engineer without any right of contribution from any policies of insurance held by Owner or Engineer.

All policies of insurance shall provide that at least 30 Days prior written notice be given to Owner in the event of cancellation or amendment restricting coverage.

Prior to commencing Work, Contractor shall provide Owner with Certificates of Insurance in a form acceptable to Owner, and with a letter from the insurer stating that the insurance provided complies with the requirements of the Contract.

Deductibles, if any, which are applicable to the insurance specified herein, shall be borne by Contractor.

The specified limits of insurance and coverages in no way define or limit the obligation of Contractor to indemnify Owner in the event of loss.

Owner makes no representation or warranty with respect to the extent or adequacy of the insurance protection afforded by the insurance policies that are specified in this section. Contractor shall be fully responsible to determine additional insurance coverages that may be necessary and advisable for protection of Contractor or to fulfil Contractor’s obligations under this Contract.

END OF DOCUMENT

Part 1 General

1.1 WORK COVERED BY CONTRACT DOCUMENTS

.1 Work to be carried out under this Contract in general includes the following equipment supply for the City of Kenora (the City) Wastewater Treatment Plant (WWTP) aeration system:

- .1 Supply of three (3) positive displacement aeration blowers for secondary biological treatment.
- .2 Supply of fine bubble membrane diffusers, including lateral piping, for secondary biological treatment.

.2 The work will be carried out at the City of Kenora Wastewater Treatment Plant located at Miller Rapids Rd, Kenora, ON P9N 0C1.

.3 Factory testing of the equipment.

.4 Start-up, integration, and commissioning of all equipment in coordination with the General Contractor and plant operations.

.5 Owner staff training.

.6 All items as shown on the Contract Drawings and as detailed in these Specifications.

1.2 AWARD OF CONTRACT

.1 Without limiting the rights of the City of Kenora, the City may refuse to award the Contract in whole or in part to any tenderer to perform the work described in the tender if the City does not have the necessary funding or signed agreement in place.

1.3 WORK SEQUENCE AND TIMELINES

.1 The City of Kenora WWTP is an operating wastewater treatment plant, and construction will be staged so that the plant remains in operation at all times.

.2 The following general timelines are anticipated:

- .1 Delivery of equipment to site in May 2027.
- .2 Installation and commissioning of the first two blowers (BLO001 and BLO002) in 2027.
- .3 Installation and commissioning of the third blower (BLO003) in 2028.

.3 The above timelines are subject to change based on the General Contractor’s schedule. However, should the schedule be extended, the Equipment Supplier may supply equipment to site which will be stored by the General Contractor until it can be installed.

1.4 CONSTRUCTION SEQUENCING AND CONSTRAINTS

.1 The Equipment Supplier is to coordinate the completion of the Work described in Section 1.1.1 of this Specification In addition, the Contractor is to adhere to the following:

.1 Contractor is to prepare and maintain a detailed sequencing schedule using a computerized scheduling software package for the Equipment Supply Contract. The baseline schedule is to be submitted within 10 working days of Order to Commence Work in both electronic (native software format) and portable document format (PDF). At a minimum, this will include the following:

.1 Project award

.2 Shop drawing preparation

.3 Shop drawing review by the Engineer and City (allow two weeks for review)

.4 Shop drawing revisions

.5 Equipment fabrication

.6 Equipment delivery

1.5 PRODUCT DELIVERY REQUIREMENTS

.1 Care:

.1 Ship, handle, and store the Goods to prevent damage.

.2 Damaged items will not be permitted as part of the Goods except in cases of minor damage that has been satisfactorily repaired and is acceptable to the Engineer.

.2 Transportation:

.1 Pay all costs of transportation of the Goods to the FOB Point.

.2 Provide protection against damage from moisture, freezing, dust, handling, or other cause during transport from manufacturer's premises to Work Site.

.3 Items or components of items with unique numbering systems such as mechanical and electrical equipment and instruments shall be clearly tagged with such numbers.

.4 Use stiffeners where necessary to maintain shapes and to give rigidity.

.5 Deliver parts of Goods in assembled units where possible.

.6 Wrap or otherwise seal bearing housings, vents and other types of openings to prevent contamination by grit and dirt.

.7 Correct any damage to conform to the requirements of this Contract before the Goods are incorporated into the work and pay the costs arising out of dismantling, inspection, repair and reassembly as necessary.

1.6 PROGRESS PAYMENTS

.1 Contractor is to provide a detailed price breakdown for billing purposes within 2 weeks of the order to commence work in both electronic (native software format) and portable document format (PDF). The Engineer is to provide a sample prior to Contract Order to Commence. Breakdown is to be based on the Specification divisions and provide adequate detail to monitor project progress. Mobilization and demobilization costs will be

based on a prorated schedule based on overall timeline. A maximum of 5% of the total contract value is allowed for these services.

.2 Progress draws will be based on Schedule M – Lump Sum Price Breakdown in Section 00 42 00 – Proposal Form. The maximum draws at the following milestones are:

.1 No more than 10% of the overall purchase price may be paid for technical submittals. Line items 1 and 2 of Schedule M – Lump Sum Price Breakdown shall not exceed 10% of the overall purchase price.

.2 At the time of equipment delivery, a maximum of 80% of the equipment supply value (line item 3 on Schedule M for blowers, line item 4 on Schedule M for diffusers) will be paid. An additional 10% of these line items will be paid upon successful commissioning of the first process train, and the final 10% of these line items will be paid upon commissioning of the second process train.

.3 Site visits (line items 4-11 in Schedule M) will be paid out as they are completed. Should the number of visits specified in Division 43 and 46 not be completed, the payment for these line items will be prorated according to the actual number of days onsite.

.4 Any provisional items will only be paid if the Owner provides direction, in writing, that the Equipment Supplier is to proceed with the additional services.

1.7 HEALTH AND SAFETY

.1 Maintain copies of all health and safety documentation required by the Occupational Health and Safety Act, its regulations, and the Contractor's health and safety procedures onsite. Submit copies of the project safety plan and any other related documents to the Engineer and City for their records.

1.8 DRAWINGS AND SPECIFICATIONS FURNISHED

.1 City responsibilities:

.1 Provide one electronic copy of Drawings and Specifications to the Contractor.

.2 Provide site specific health and safety training for Contractor prior to the start of the project.

.2 Equipment Supplier responsibilities:

.1 Pay for additional copies of Drawings and Specifications if required.

1.9 SUPPLEMENTARY DRAWINGS

.1 Engineer may furnish supplementary Drawings to assist proper execution of work. Such Drawings will be issued for clarification only and will have same meaning and intent as if included with plans referred to in Contract Documents.

1.10 SUBMITTALS

.1 Shop Drawings and product data:

.1 The term "Shop Drawings" means drawings, diagrams, illustrations, schedules, performance charts, brochures and other data, which are to be provided to

illustrate details of a portion of Work. Refer to General Conditions for additional definition of Shop Drawings.

.2 Detail all Shop Drawings using the metric system.

.3 Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connections, wiring diagrams, panel layouts with bills of material, explanatory notes and other information necessary for completion of Work. Where articles or equipment attach or connect to other articles or equipment, indicate that such items have been coordinated, regardless of the Section under which the adjacent items will be supplied and installed. Indicate cross-references to Design Drawings and Specifications.

.4 Adjustments made on Shop Drawings by Engineer are not intended to change the Contract Amount. If adjustments affect the value of Work, state such in writing to Engineer prior to proceeding with Work.

.5 Make such changes in Shop Drawings as Engineer may require, consistent with Contract Documents. When resubmitting, notify Engineer in writing of any revisions other than those requested.

.6 Shop Drawings shall be reviewed and stamped by the Contractor prior to submission and shall be dated. Shop Drawings submitted by a subcontractor or supplier directly to the Engineer will not be reviewed.

.7 Maintain a complete Shop Drawing record showing the review status of all Shop Drawings on the work. Provide Engineer with a copy of this record on a monthly basis or as requested by Engineer.

.8 Drawings prepared by a Professional Engineer that require to be signed and sealed shall include calculations and assumptions as requested by the Engineer.

.9 Submittals:

.1 For each submittal or submittal package, prepare a Submittal Transmittal Form in a form acceptable to the Engineer. Type or print the appropriate information on the form to fully describe the submittal(s) being sent for review. Retain 1 copy of the form and the submittal or submittal package for filing and record purposes before Drawings are sent to the Engineer. Number each transmittal form in sequential order, for record and tracking purposes.

.2 Submit Submittal Transmittal Form, Shop Drawings and other submittals electronically in Adobe PDF format as part of one file to Engineer for review.

.3 Submissions shall include:

.1 Project title.

.2 Specification Section.

.3 Date and revision dates.

.4 Name and address of:

.1 Subcontractor.

.2 Supplier.

.3 Manufacturer.

.4 Apply Shop Drawing stamp, signed by Contractor’s authorized representative certifying approval of submissions, verification of field measurements and compliance with Contract Documents.

.5 Details of appropriate portions of Work as applicable:

.1 Fabrication.

.2 Layout, showing dimensions, including identified field dimensions, and clearances.

.3 Capacities.

.4 Performance characteristics.

.5 Standards.

.6 Operating weight.

.7 Relationship to adjacent work.

.10 Submit 1 electronic copy of product data sheets or brochures for requirements requested in Specification Sections and as Engineer may reasonably request where Shop Drawings will not be prepared due to standardized manufacture of product.

.11 Submit 1 electronic copy of Shop Drawings for each requirement requested in Specification Sections and as Engineer may reasonably request.

.12 Submittals will be returned via an electronic copy with 1 or more of the following notations. Take action as noted:

.1 “REVIEWED” – Make and distribute additional copies promptly as required for execution of Work.

.2 "REVIEWED AS NOTED" - Make and distribute additional copies as required for execution of Work, incorporating the Engineer’s notations.

.3 "REVISE & RESUBMIT" - Make the necessary revisions and resubmit revised Drawings for review. Show the drawing number of the first such revised Drawing and show the latest revision number applicable to the Drawing by adding a suffix to the drawing number as - "REV. 1", "REV. 2", etc.

.4 "NOT REVIEWED" - This notation indicates when Engineer has not reviewed the Drawing. It may also be used in combination with the notation to revise and resubmit the Drawing where Engineer lacks sufficient information to complete the review and requires resubmitting the Drawing for review after revision.

.5 Drawings will be marked "REVIEWED" together with the notation to "REVISE & RESUBMIT" when Engineer requires Contractor to resubmit a revised Drawing showing corrections made as a result of Engineer's notations on the Shop Drawings. This procedure will not relieve Contractor of responsibility for errors or omissions in the Shop Drawings or of responsibility for meeting all requirements of Contract.

.13 Use only those Shop Drawings on the work that bear the "REVIEWED" notation.

.14 Do not revise Shop Drawings marked "REVIEWED" unless resubmitted to Engineer for further review.

.15 Catalogue pages or Drawings applicable to an entire family or range of equipment will not be accepted as Shop Drawings unless they are clearly marked to show the pertinent data for the particular materials.

.16 Manufacturers' catalogues, manuals, or price lists will not be accepted as Shop Drawings. Such materials may be used as supplemental information to the Shop Drawings.

.17 Determine which Shop Drawings have, in addition to those drawings specifically mentioned in the Contract, design elements requiring the seal of a Professional Engineer registered in the Province of Ontario, in accordance with the applicable provincial or federal engineering acts or other governing legislation. Seal such Drawings before submitting them for review. Submit for review engineering calculations signed by the registered Professional Engineer responsible for the Shop Drawing design elements.

.18 If upon review by Engineer, no errors or omissions are discovered or if only minor corrections are made, an electronic marked-up copy will be returned, and fabrication and installation of Work may proceed. If Shop Drawings are rejected, an electronic marked-up copy will be returned and resubmission of corrected Shop Drawings, through the same procedure indicated above, must be performed before fabrication and installation of Work may proceed.

.19 Owner may deduct, from payments due to Contractor, costs of additional engineering work incurred if correct Shop Drawings are not submitted after 1 review by Engineer.

.20 Review by Engineer is for the sole purpose of ascertaining conformance with the general design concept. This review does not mean that Engineer approves the detail design inherent in the Shop Drawings, responsibility for which remains with Contractor, and such review does not relieve Contractor of the responsibility for errors or omissions in the Shop Drawings or of the responsibility for meeting all requirements of the Contract Documents. Contractor is responsible for dimensions to be confirmed and correlated at the jobsite, for information that pertains solely to fabrication processes or to techniques of construction and installation and for coordination of the work of all subtrades.

.2 Once shop drawings are returned as REVIEWED or REVIEWED AS NOTED, the Equipment Supplier shall provide the submittals in CAD format to allow the Engineer to incorporate details of the equipment into the suppliers' design.

1.11 OPERATION AND MAINTENANCE MANUALS

.1 Prior to commissioning the first blower and diffusers, the Equipment Supplier shall supply one electronic copy and two hard copies of an Operation and Maintenance Manual, which the General Contractor will incorporate into the overall plant Operation and Maintenance Manual.

.2 Provide the following information for each piece of major equipment. Refer to each piece of equipment by its name and tag number. Where manufacturer's literature covers several models or options, highlight the applicable information and cross out redundant information.

.1 Index of information in that section in order of appearance.

.2 Description of system, components, and technical data. Include interfaces, sequences, operations, characteristic changes for seasonal operations.

.3 Maintenance and operating instructions including:

.1 Installation instructions

.2 Procedure for starting

.3 Proper adjustment

.4 Test procedures
.5 Procedure for operating
.6 Procedure for shutdown
.7 Safety precautions
.8 List of electrical relay settings and control and alarm contact settings

.4 Troubleshooting data

.5 Preventative maintenance program complete with:

.1 Suggested check list sheets.
.2 List of points to be greased or oiled.
.3 Recommended type, grade and temperature range of lubricants.
.4 List of wear points to be inspected and/or adjusted regularly.
.5 Suggested schedule for lubrication and inspection.

.6 Schematic, single line, and wiring diagrams.

.7 Equipment tag list.

.8 Recommended spare parts list.

.9 Certification, guarantee, warranty.

.10 Service representatives: Name, address and telephone number.

.11 Suppliers for replacement parts: Name, address, and telephone numbers.

.12 Test results: Witness testing and commissioning and provide reports.

.13 Test data for piping systems (degreasing, flushing, disinfection).

.14 Hydrostatic or air tests performance.

.15 Equipment alignment certificates.

.16 Balancing data for air and water systems.

.17 Inspection approval certificates for all types of systems; plumbing and piping, hot air and ventilating, electrical supervisory, etc.

1.12 DEMONSTRATION AND TRAINING

.1 Description:

.1 This section contains requirements for training the Owner's personnel, by persons retained by the Equipment Supplier specifically for the purpose, in the proper operation and maintenance of the Goods and systems supplied under this Contract.

.2 Quality assurance:

.1 Provide on-the-job training of the Owner's personnel. Training sessions are to be conducted by qualified, experienced 5 years minimum), manufacturer-trained representatives. Training includes instruction in equipment operation, preventative maintenance regular maintenance, troubleshooting, and repair for operators, plant mechanics, electricians, and electronics technicians.

.3 General:

.1 Coordinate training with General Contractor.

.2 Conduct training sessions for the Owner's operation and maintenance personnel on the operation, care, and maintenance of the Goods supplied under this Contract. Training will take place at the Work Site or a nearby location provided by the Owner and under the conditions specified in the following paragraphs.

.4 Location:

.1 Field training sessions will take place at the installed location of the Goods.

.5 Lesson plans:

.1 Prepare formal written lesson plan for each training session and coordinate with the Engineer. Lesson plan shall contain an outline of the material to be presented along with a description of visual aids to be utilized during the session. Include a time allocation for each subject. Furnish 5 copies of necessary training manuals, handouts, visual aids and reference materials at least 3 weeks prior to each training session. Provide electronic versions in pdf format of all training materials to the Owner and Engineer.

.6 Format and content:

.1 Include time in the classroom and at the installed location of the Goods for each training session. As a minimum, cover the following topics for each item of equipment:

.1 Familiarization.

.2 Safety.

.3 Operation.

.4 Troubleshooting.

.5 Preventive maintenance.

.6 Corrective maintenance.

.7 Parts.

.8 Local representatives.

.7 Video recording:

.1 The Owner may record each training session. After taping, the material may be edited and supplemented with professionally produced graphics to provide a permanent record for the Owner's use.

.8 General requirements:

.1 Conduct training in conjunction with the operational testing and commissioning periods. Schedule classes such that classroom sessions are interspersed with field instruction in logical sequence. Arrange to have the training conducted on consecutive Business Days, with no more than 4 hours of classes scheduled for any one day.

.2 Provide acceptable operation and maintenance manuals, as defined in Division 01, for the specific equipment to the Owner's at least 3 weeks prior to the start of any training.

.9 Operator classroom training:

.1 As a minimum, classroom equipment training for operations personnel will include:

.1 The Goods' specific location in the plant and an operational overview. Use slides and Drawings to aid discussion.

.2 Purpose and plant function of the Goods.

.3 The operating theory of the Goods.

.4 Start-up, shutdown, normal operation, and emergency operating procedures, including system integration and electrical interlocks, if any.

.5 Safety items and procedures.

.6 Routine preventative maintenance, including specific details on lubrication and maintenance of corrosion protection of the Goods and ancillary components.

.7 Operator detection, without test instruments, of specific equipment trouble symptoms.

.8 Required equipment exercise procedures and intervals.

.9 Routine disassembly and assembly of Goods if applicable (as judged by the Owner on a case-by-case basis) for purposes such as operator inspection of equipment.

.10 Operator hands-on training:

.1 As a minimum, hands-on training for operations personnel will include:

.1 Discussing, demonstrating, and performing standard operating procedures and round checks.

.2 Discussing and performing the preventative maintenance activities.

.3 Discussing and performing start-up and shutdown procedures.

.4 Performing the required equipment exercise procedures.

.5 Performing routine disassembly and assembly of equipment if applicable.

.6 Identifying and reviewing safety items and performing safety procedures, if feasible.

.11 Maintenance classroom training:

.1 Classroom equipment training for the maintenance and repair personnel will include:

.1 Basic theory of operation.

.2 Description and function of equipment.

.3 Routine start-up and shutdown procedures.

.4 Normal and major repair procedures.

.5 Equipment inspection and troubleshooting procedures.

.6 Safety procedures.

.7 Preventive and normal maintenance.

.12 Maintenance hands-on training:

.1 Hands-on training for maintenance and repair personnel will include:

.1 Locating and identifying equipment components.

.2 Reviewing the equipment function and theory of operation.

.3 Reviewing normal repair procedures.

.4 Performing routine start-up and shutdown procedures.

.5 Reviewing and performing the safety procedures.

.6 Reviewing and using equipment manufacturer's manuals in the hands-on training.

1.13 COMMISSIONING

.1 Refer to Section 43 12 11 – Rotary Lobe Positive Displacement Blower and Section 46 15 46 – Membrane Diffusers for commissioning procedures.

.2 Substantial Completion will not be awarded until commissioning is complete and the blowers and diffusers have been turned over to the City.

Part 2 Products

Not Used.

Part 3 Execution

Not Used.

END OF SECTION

Part 1 General

1.1 GENERAL REQUIREMENTS

.1 This section specifies the engineering, designing, supply, delivery, supervision of installation, programming, and site assistance with testing and commissioning of three (3) rotary lobe positive displacement blowers complete with electric motors, acoustic enclosure,), and all necessary appurtenances. Three DN200 (8") intake air connector with louvres (separate for three blowers) are required in the blower supply package.

.2 The blowers will be provided for the City of Kenora Wastewater Treatment Plant. A total of three (3) new blowers are required, in a two duty one standby configuration. The blowers will be installed within the blower room that is part of the main building.

.3 The three blowers will be connected to a common DN350 discharge header using reducers (by others), with a maximum of two blowers supplying air to operate at the same time. The new blowers are to meet all performance requirements specified in Section 2.

.4 Refer to the drawings in Appendix A for the blower room layout. Drawings show a typical blower layout within the gallery of the blower room. The blowers, motors, and acoustic enclosures must fit within the available dimensions and layout with minimum required spacing for equipment access. The owner will determine the locations of the control in the blower room based on the panel dimensions.

1.2 DEFINITIONS

.1 Normal cubic metres per minute (N m^3/min): The volumetric flow rate in cubic metres per minute at 20°C, 101.5 kPaA and 60% relative humidity.

.2 Actual cubic metre per minute (A m^3/min): The volumetric flow rate in cubic metres per minute actually entering the blower under the specified environmental conditions.

.3 Discharge pressure: The gauge pressure at the compressor discharge in kPa at site conditions.

.4 Absolute pressure: Sum of the gauge pressure and atmospheric pressure in kilopascals (kPaa).

.5 Gauge pressure: in kilopascals (kPag):

.1 Dissolved Oxygen: Dissolved oxygen concentration in aeration tank (DO).

.2 Shaft efficiency: The ratio of the isentropic power for compression of a perfect gas to the power driving the blower shaft. Shaft efficiency is calculated in accordance with the latest edition of the ASME Power Test Code for Compressors and Exhausters.

1.3 REFERENCE STANDARDS

.1 Conform to the latest edition of the following reference standards:

- .1 American Gear Manufacturers Association (AGMA)
  - .1 AGMA 6001, Design and Selection of Components for Enclosed Gear Drives.
- .2 American National Standards Institute (ANSI)
  - .1 ANSI H35.1, Alloy and Temper Designation Systems for Aluminum.
  - .2 ANSI B16.1, Cast Iron Pipe Flanges and Flange Fittings, Class 25, 125, 250 and 800.
  - .3 ANSI B16.5, Pipe Flanges and Flanged Fittings.
  - .1 ANSI-B11.19, Performance Requirements for Safeguarding.
- .3 American Society of Mechanical Engineers
  - .1 ASME PTC-10-65, Power Test Code (PTC) for Centrifugal Compressors and Exhausters.
- .4 American Society for Testing and Materials
  - .1 ASTM A36, Specifications for Structural Steel.
  - .2 ASTM A48, Specification for Gray Iron Castings.
  - .3 ASTM A276, Stainless Steel and Heat-Resisting Steel Bars and Shapes.
- .5 ABMA STD 9, Load Ratings and Fatigue Life for Ball Bearings.
- .6 CSA, Canadian Standards Association.
- .7 Institute of Electrical and Electronic Engineers (IEEE)
  - .1 IEEE 519: Harmonic Specifications.
- .8 Canadian Electric Code (CEC).
- .9 National Electrical Manufacturers Association (NEMA).
- .10 Occupational Health and Safety Act (OHSA) – Ontario OEA
- .11 Ontario Code (OBC) 2020 and National Building Code of Canada (NBCC) 2020; where there are conflicts, the more onerous requirement will be followed.

1.4 EQUIPMENT LIST

Equipment Name	Equipment No.
Aeration Blower 1	BL001
Aeration Blower 2	BL002
Aeration Blower 3	BL003

1.5 QUALIFICATIONS

.1 The Equipment Supplier shall have blowers of the type specified herein successfully operating in a similar aerated digester application for a minimum of five (5) years in each of at least five (5) wastewater treatment facilities in North America. Provide list of references with proposal.

.2 If equipment is not manufactured by the Equipment Supplier including welding and machining, the name and contact information of manufacturing facility must be supplied. If more than one manufacturer is used all companies and facilities must be provided for review.

.3 If patents protecting equipment are not owned by manufacturer, then an affidavit must be supplied stating owner of design and expiration of licensing agreement.

1.6 COORDINATION

.1 Allow for iterative design coordination with the Engineer as necessary and until satisfaction has been achieved in the sole judgement of the Engineer.

.2 Coordinate with other divisions to ensure that there are no conflicts or gaps in the work.

.3 Coordinate equipment delivery/offloading, installation, testing, and training with the Engineer and General Contractor.

.4 Tag all equipment in accordance with the Engineer's preferred tagging convention and in conformance with applicable Region of Waterloo Standards.

1.7 QUALITY ASSURANCE

.1 Compliance with the performance requirements of the specifications shall not relieve the vendor of his responsibilities of supplying equipment having the specified structural, mechanical, corrosion resistance and operational features.

.2 Structural design: Design all steel structural components so that the stresses developed under installation and operating conditions will not exceed the allowable stresses defined by the latest AISC Standards and the aforementioned standards.

1.8 SUBMITTALS

.1 Provide the following information in one complete submittal in accordance with 01 11 00 Summary of Work.

.2 Shop drawings must be for the specific unit which is being supplied. Drawings or information which shows multiple options will not be accepted.

.3 Equipment Shop Drawing Submittals:

.1 Submit all shop drawings in electronic format, PDF.

.2 Provide the equipment 3D model file, compatible with Revit 2019 or 2017 (preferred) or 2017 3D AutoCAD, for incorporation in design model and drawings.

.3 Submit shop drawings, detailed specifications and data describing the materials listed below:

.1 Blower Data

.2 Complete bill of materials for all equipment

.3 Manufacturer of all components supplied

.4 Model numbers of all components supplied

.5 RPM

.6 Capacity – m^3/min or cfm

.7 Discharge pressure

.8 Weight of package assembly, blower stage and motor

.9 Free field sound pressure level of complete package at 1m distance, +/- 2 dB(A)

.10 List of recommended special tools and spare parts for 2 years' operation.

.11 Brake horsepower required at rated capacity and pressure

.12 Rated maximum pressure rise of blowers

.13 Motor data including makes and models, motor frame sizes and dimensions, motor and insulation ratings, start-up and operating current ratings, operating voltage and amperage tolerances, complete with drawings.

.14 Anti-vibration mounts.

.15 Heat rejection rates for all motorized equipment.

.16 Anchor bolt layout drawings and anchoring design details signed and sealed by an Engineer licensed to practice in the Province of Ontario.

.17 Accessories and other appurtenances.

.18 Test report upon request, per DIN EN 10204, in accordance with ISO 1217.

.19 Drawings, specifications, catalogue cuts and descriptive literature detailing the power and control system including control logic, all control devices, wiring/interconnection diagrams and construction.

.20 Provide details of cabinetry, hardware and field-mounted instruments, and unit weights.

.21 Clearance requirements around each side and above each blower unit for maintenance purposes.

.22 Proposed surface preparation and factory paint.

.4 Submittals during or after fabrication:

.1 Prior to unit delivery to site, submit all shop performance testing reports.

.1 Factory certified performance test.

.2 Certified factory performance curves based upon pressure-capacity, power capacity, efficiency-capacity curves, and surge points.

.2 Site performance validation and testing reports:

.1 Detailed information regarding blower performance tests in accordance with ASME PTC-13 requirements.

.2 Certification that process air blowers operate under first critical speed.

.3 Certified balancing test logs.

1.9 OPERATION AND MAINTENANCE INFORMATION

.1 Provide operation and maintenance data for incorporation into operation and maintenance manual in accordance with Section 01 11 00 – Summary of Work. Coordinate with Contractor for inclusion into facility Operation and Maintenance manual.

.2 Provide Manufacturer's written installation warranty and incorporate into operation and maintenance manual in accordance with Section 01 11 00 – Summary of Work.

Part 2 Products

2.1 DESIGN CRITERIA

.1 Digester Aeration Blower Units (3): Rotary lobe blowers that meet the following performance requirements:

- .1 Inlet air temperature range: -25ºC to + 35ºC.
- .2 Design nominal condition: 20 ºC, 60% humidity
- .3 Site elevation above MSL, 325.0 m.
- .4 Indoors with minimal climate control (heating to prevent freezing).
- .5 Type: Rotary lobe blower.
- .6 Inlet pressure: 98 kPaa (14.2 psia)
- .7 Pressure differential: 56.2 kPag, (8.15 psig)
- .8 Flowrate at inlet condition: 55 Nm^3/min (2119 Inlet Cubic Feet per Minute (ICFM))
- .9 Turndown:
  - .1 Minimum turndown flowrate 15 Nm^3/min at 7.4 psi
  - .2 Blower to be able to operate within the above mentioned conditions while maintaining required pressure and flow without the risk of reaching surge conditions.
  - .3 Performance to be within high efficiency range and normal operating conditions of the blower.
- .10 Noise at 1 m free field measurement: <= 77 dB(A) (with acoustic enclosure).
- .11 Maximum Blower Speed: <5000 rpm

.2 Footprint of blowers must fit the allocated area in the gallery, including any maintenance clearances and auxiliary equipment. See included plan and section in the drawings in Appendix A.

.3 Blowers to be equipped with inverter duty rated, premium efficiency motors

.4 Individual blower horsepower shall not exceed 125 HP.

.5 The blowers shall operate smoothly without abnormal noise, vibration or excessive heat throughout the range of operating conditions. Provide vibration isolation mounts.

.6 The impellers shall be statically and dynamically balanced per DIN ISO 1940. Each impeller/shaft shall be supported by anti-friction bearings and fixed to control the axial location of the impeller/shaft in the unit.

.7 Blower manufacturer to assist with the commissioning of the blowers.

.8 Ensure ancillary equipment meets electrical and building code clearances.

2.2 MATERIALS

.1 The system package shall include blowers, sound enclosure, and spare parts with ancillary equipment and features as specified to make a complete and fully functional system.

.2 All field connections for structural components are to be bolted. Field welding is not permitted.

.3 Isolate or carefully select dissimilar metals to prevent galvanic corrosion.

.4 Provide epoxy-coated carbon steel components, unless otherwise noted:

Component	Material
Blower casing	close-grained cast iron EN-GJL-200 (GG-20) equivalent to ASTM A48 class 30, or ASTM A48 class 35
Rotor/shaft	C45N (AISI 1043 equivalent), or ASTM A536 Gr. 60-40-18
Timing gears (Helical)	16MnCr5E comparable with AISI 5115, or ASTM A29/A29M
Blower Enclosure	Painted steel ASTM A1008/A1008M or approved alternate
Painted Finish	Powder coated or 2 coat epoxy paint standard or approved alternate

2.3 EQUIPMENT COMPONENTS

.1 Blower:

.1 Provide each rotary lobe blower with intake filter silencer, discharge silencer, vibration isolation mounts, pressure safety valve, discharge manifold, check valve, flexible connectors, inlet flexible sleeve, acoustic enclosure and instrumentation, integral cooling system requiring no external connections, variable frequency drive, instrumentation and control system.

.2 Provide each blower with 200 mm (8 in.) intake connectors with acoustic box.

.3 Provide threaded casing drains at the low points, complete with stainless steel plugs.

.4 Provide the blower with lifting lugs capable of supporting the complete unit (blower enclosure housing blower, motor and base).

.5 Align the blower and motor on the base at the factory prior to shipment.

.6 Provide enclosure for V-belt drives in accordance with OHSA Regulation requirements.

.7 Provide an unloading or start-up safety valve if required.

.2 Inlet Filter Silencer:

.1 Each blower shall be supplied with one combination inlet filter silencer.

.2 The filter media efficiency must meet the requirements of Filter class G4 acc. to DIN EN 779, or equivalent class in ISO 16890. The inlet filter silencer shall be suitable for indoor installation and mounted directly to the inlet flange of the blower. Silencer shall be located upstream of the inlet filter. Filter and silencer performance losses shall be included by the blower vendor in the blower performance calculation. The inlet silencer shall be a combination chamber and absorptive design for maximum sound attenuation.

.3 Discharge Silencer:

.1 Each blower shall be supplied with one combination base frame and discharge silencer.

.2 The silencer shall be a chamber type design for maximum sound attenuation and shall not use fibrous materials or any absorption materials or internal diffusers.

.3 The silencer shall feature a single shell made from EN: S235JR, DIN: St 37-2, US: equivalent to ASTM A283 Grade B. The silencer must be designed per Pressure Devise Guideline PED 97/23/EG (AD 2000). The temperature rating shall be 150ºC. The design of the silencer must accommodate being bolted directly to the blower discharge flange with no intermediary pieces and to ensure that there will be no disturbing pipe beating sound or pipe harmonics whether one blower or multiple blowers are running.

.4 Discharge silencer performance losses shall be included by the blower vendor in the blower performance calculation. The discharge silencer shall be designed to reduce the pressure sound level by an average of 20dB across the blower performance range. The blower manufacturer shall supply a stainless steel grounding lug fully welded to the base.

.5 The base frame shall be designed to maintain alignment of both the blower internal components and the drive during operation. The base frame and discharge silencer combination shall be designed to resist distortion while being installed on vibration isolating mounts

.4 Discharge Check Valve:

.1 Provide air blower discharge check valve for each blower capable of providing an airtight seal upon closure with minimum pressure loss when open.

.2 Check valve shall be of the full-bore, flapper type design with a steel body, and steel flap embedded in EPDM with full-contact seal.

.3 The valve shall be removable without disturbing the piping.

.4 The check valve shall be factory-assembled.

.5 Flexible Connectors:

.1 Each blower package shall be connected to the process piping via flexible connector(s) located downstream of the discharge silencer and upstream of the inlet silencer.

.2 The flexible connectors shall be sized for a standard, schedule 10S stainless steel pipe diameter and shall prevent the transmission of sound and vibrations from the blower package into the piping.

.3 The flexible connectors shall be suitable for the maximum operating temperature and pressure ratings of the equipment in the air stream.

.4 Pipe supplier must ensure no pipe load is applied to the flexible sleeve.

.6 Pressure Safety Valve:

.1 Type: spring-loaded relief valve, field adjustable.

.2 If the blower package is supplied with a sound enclosure, the pressure relief valve shall also be housed by the sound enclosure and shall relieve into a segmented section of the sound enclosure.

.7 Variable Frequency Drive:

.1 Each blower will be powered by an existing variable frequency drive (VFD).

.8 Drive Unit:

.1 Blower manufacturer will be responsible for adequate motor sizing, and coordinating the starting torque requirement of the blower and the motor.

.2 Each blower shall be supplied with a TEFC inverter duty motor that shall operate on 600 Volts, 3 Phase, 60 Hertz current. All frame sizes shall be NEMA standard suitable for overhung belt drive. The motor nominal rating after any corrections for ambient conditions shall be at least 10% above the maximum operating brake horsepower. The motor shall have a minimum 1.15 service factor.

.3 Each blower will be supplied by an existing free-standing VFD which can accommodate a 92 kW (125 hp) motor. Accordingly, the maximum motor size shall be 92 kW (125 hp).

.9 Noise Control at Free Field:

.1 Electric driver and blower systems not to exceed 75 dBA at free field, 1 m away, while running continuously.

.2 Electric driver and blower systems not to exceed 80 dBA at free field, 1 m away, while starting up.

.3 Attenuate noise and vibration in the blower package such that vibration is not transmitted from the blower package to the piping.

Vibration level as measured at the casing, in the X/Y planes of the bearings, shall not exceed 12 mm/s RMS when operating at the specified operating pressures and speed. The vibration levels shall be checked at start-up and documented in the field start up report.

2.4 BLOWER ELECTRICAL

.1 All 600V components shall be separated from circuits operating 120V and below.

.2 Sufficient clearance around the electrical panel shall be provided as per CEC requirement.

.3 All electrical components shall be selected for installation within a CSA Category 2 corrosive environment and shall be constructed within corrosion resistant enclosures meeting NEMA 4X or approved equivalent.

.4 All electrical, instrumentation and control components shall be CSA certified. If the Supplier's equipment does not conform to the requirements of the subclause, Supplier shall be responsible for obtaining special inspection for ESA approval. The Supplier shall bear the costs of any required changes to meet the CSA certification.

2.5 BLOWER CONTROLS

.1 Blower Automatic Control:

.1 The below noted automatic control will be programmed by the System Integrator contracted by the general contractor for this project. Automatic control will be programmed in the existing plant PLC. The blower vendor is not responsible for supplying a PLC control panel or executing PLC programming. It has been listed below for information and reference purposes. The control items noted below should be reviewed by the Blower Vendor. The Blower Vendor is responsible to highlight to the Engineer and Region any control items which might not be compatible with their proposed blower supply.

.2 Blower control to have a minimum air flow setpoint. The DO controls to be subject to the minimum flow setpoint. That is, maintaining the minimum flow takes precedence over maintaining DO setpoint, if measured DO concentrations are greater than the minimum DO setpoint. If measured DO concentrations are below the DO setpoint, air flow required to maintain the DO at setpoint takes precedence over the minimum air flow setpoint.

.3 Blower control to have timer for period start/stop operations.

.4 The three blowers will act as Duty1/Duty2/Standby set. When all blowers are in REMOTE mode, the main plant PLC will act as the supervisory controller to determine which blowers are in which spot in the duty rotation and will send the start/stop command to the blowers via hardwired connection. Speed setpoint and speed reference will also be wired to the main plant PLC.

.5 All blower system alarms, warnings, process values (e.g. pressure, flow, temperature, DO) and operating setpoints to be available in a data table for the main plant PLC to read over Ethernet communications and to be able to display values and alarms in the plant control room.

.6 Blowers may also be operated in LOCAL mode directly from the VFDs. In this case the blower speed will be directly set by plant operations staff.

.2 Instruments:

.1 Provide as a minimum, the following instrumentation for each unit, rated for installation inside a CSA Category 2 corrosive environment:

.1 Inlet air filter dirty indicator

.2 Discharge air pressure gauge.

.3 Any additional instrumentation needed for safe operation of the blowers.

2.6 SPARE PARTS

.1 Provide the following spare parts for each blower:

.1 One (1) V-belt set
.2 One (1) oil change
.3 Two (2) air filter.
.4 One (1) set special tools required for maintenance, if any.
.5 Two (2) fuses for every type of fuse.

Part 3 Execution

3.1 EQUIPMENT SUPPLIER'S REPRESENTATIVE

.1 The Equipment Supplier's representative is required to attend site and provide training for operations and maintenance staff, witness equipment condition during offloading, certify the installation, witness start-up testing, modify control system programming, witness and optimize operation during commissioning, and ensure the equipment is installed and operated as intended.

.2 The minimum site attendance is identified in the following table. A "day" is defined as eight working hours on site, and does not include travel time. Visits shall be presumed to be non-consecutive.

Visit Number	Description/Task	Duration (days)
1	Installation Assistance, Witnessing of Equipment Installation, and Certification of Installation of BLO001 and BLO002	1
2	Start-up Testing of BLO001 and BLO002	1
3	Installation Assistance, Witnessing of Equipment Installation, and Certification of Installation of BLO003, and Start-up Testing of BLO003	1
4	Commissioning and Performance Evaluation	2
5	Operator and Maintenance Training	1
	TOTAL BASE SCOPE DAYS ONSITE	7
P	Provisional Visits (non-consecutive)	3
	TOTAL VISITS TO BE ACCOUNTED FOR	10

3.2 WARRANTY

.1 The Equipment Supplier to provide a warranty period in accordance with GC 4.4 Warranty and Guarantee, in Section 00 72 50 – General Conditions.

3.3 FACTORY TESTING

.1 Conduct factory acceptance testing prior to unit shipment to site.

.1 Performance test with ambient air shall follow ISO 1217:2009/AMD 1: 2016, Displacement compressors – Acceptance tests. This test shall include noise and vibration measurements.

.2 Test each blower to determine the performance characteristics.

.3 Notify the Engineer of a factory test at least four (4) weeks prior to the estimated test date. The Engineer reserves the right to witness factory testing.

.4 Test each blower at constant speed and extending from not less than 25% of the design air flow to the operating point.

.5 Produce pressure-capacity, power-capacity and efficiency-capacity curves and surge points for the service conditions relating to minimum temperature, maximum temperature, and an intermediate average temperature; express capacity as normal m^3/min.

.6 Record noise and vibration levels within 10 - 1,000 Hz frequency range, and for the noise measurements in a free field at a distance of 1 m.

.7 Certify the test logs and guaranteed blower characteristic curves.

.8 All test equipment must be calibrated and certified by an independent testing agency. The test equipment calibration must have been performed no more than twelve (12) months prior to the test date.

.9 Provide detailed information regarding the blower performance tests including a complete piping and instrumentation diagram per ASME PTC-10. ASME tests are not required for blowers built from parts cast in patterns from which previous units have been cast, built and tested.

.10 Specify all instruments, pipe sizes and conditions used during testing.

.11 Submit test reports.

.12 Verify control panel to blower connectivity/control and control philosophy.

3.4 DELIVERY

.1 Equipment Supplier will be responsible for delivery to the Kenora WWTP.

.2 Ship equipment pre-assembled to the degree which is practicable; equipment to be appropriately crated and delivered to protect against damage during shipment.

.3 Provide storage instructions indicated specific requirements to ensure there is no weathering, corrosion, contamination, mechanical damage, distortion, or any other deterioration of the components.

.4 Identify all other special storage requirements and ensure requirements are clearly communicated to and understood by the Region and General Contractor.

.5 Coat all exposed machined surfaces with corrosion resistant compound prior to shipment.

3.5 INSTALLATION

.1 General Contractor will perform the installation of the blowers.

.2 The General Contractor is to ensure the equipment is installed plumb, square and true in accordance with the Equipment Supplier's written requirements and instructions.

.3 Include the recommended oil and grease for the first twelve (12) months of operation.

.4 Nameplates, plant equipment identification and maintenance direction signs must be clearly visible. Apply manufacture supplied warning and maintenance instructions in conspicuous locations.

.5 Prior to the blower start-up, manufacturer's representative shall verify and sign off on correct installation.

3.6 START-UP TESTING

.1 Equipment Supplier to provide factory-trained engineer/technician to inspect the installation of the equipment, test the equipment, supervise the initial operation of the treatment system, demonstrate the performance of the equipment, and to instruct the Owner's personnel in the operation of the equipment.

.2 The blower manufacturer to develop test procedures in accordance with the provisions contained in Division 1 and, as a minimum, include the following for each blower and motor set:

.1 Static tests of all control and protective circuits.

.2 Not less than two (2) cold starts on each blower.

.3 Not less than twenty-four (24) hours of continuous operation at full load for each blower.

.4 Vibration survey on each blower and motor assembly under normal operating conditions.

.5 Certify, in writing, the correctness of the installation.

3.7 COMMISSIONING AND PROCESS PERFORMANCE EVALUATION

.1 Commissioning of the blower system to occur while the wastewater treatment facility aeration tanks are maintaining steady-state performance.

.2 During start-up and commissioning of the blower system, the Equipment Supplier is to make all initial adjustments to the equipment and operate the equipment intermittently for two (2) continuous days at 8 hours per day, to demonstrate that the system performs its intended functions.

.3 In the event of a mechanical failure occurs, the testing period shall cease, and corrective action taken. After completion of the corrective action the commissioning period will be restarted for another two (2) day period until satisfactory operation is achieved.

.4 In the event that the blower system fails to meet the required performance, the testing period shall cease, and corrective action taken upon approval of the Engineer. After completion of the corrective action the commissioning period to be restarted for another two (2) day period until satisfactory operation is achieved.

.5 All costs associated with failure to achieve the required performance or mechanical failure are solely the responsibility of the General Contractor and/or Equipment Supplier.

3.8 OPERATOR TRAINING

.1 Provide training sessions to instruct the Owner's personnel in the operation and maintenance of the system, in accordance with Section 01 11 00 – Summary of Work. Training of the Owner's personnel to be provided by an experienced factory engineer. Training to include a hands-on demonstration of all aspects of the operation and a simulation of all control and alarm functions.

.2 General Contractor is responsible for overall coordination of training activities, including three (3) separated training sessions on different days.

.3 Equipment Supplier to coordinate training activities with General Contractor and integrate with other training components if necessary. Provide training only after Engineer's acceptance of treatment facility Operating and Maintenance Manuals.

.4 Owner to set training date. Equipment Supplier to be given at least four (4) weeks notice prior.

END OF SECTION

Part 1 General

1.1 DESCRIPTION

.1 This section specifies the design, supply, delivery, certification of installation, testing, training, spare parts and specials tools, start-up and system support services for floor-mounted fine bubble aeration membrane disc diffusers and distribution headers/laterals, couplings, supports, hold-downs, anchors and all necessary accessories for a contact stabilization process for secondary wastewater treatment consisting of two parallel process trains. Each process train consists of a Stabilization Zone (also referred to as a reaeration zone) which consists of two rectangular cells, and a Contact Zone, which consists of one cell.

.2 Each of the parallel process trains include three tanks each respectively in generally rectangular shapes. One tank is designated as the Contact Zone where screened/de-gritted wastewater is fed. The other two tanks are designated as the Stabilization Zone where return activated sludge (RAS) is fed. The side water depth in all tanks is approximately 4.5 m.

.3 Diffusers must fit within the tanks without modification to the tank configurations. Refer to the drawings in Appendix A for the reactor tank dimensions and layout. Drawings show a diffuser layout within the tank area for indicative purposes only.

.4 The fine-bubble membranes must be capable performing an in-situ cleaning procedure utilizing process aeration air in order to maintain the membrane and its perforations in a clean state.

.5 The Equipment Supplier is to provide a manufacturer's trained representative to inspect the offloading and installation, and to supervise the site testing and commissioning of the diffuser equipment. The Equipment Supplier will also provide training to the Owner's operational and maintenance staff.

1.2 DEFINITIONS

.1 Normal cubic metres per minute (N m^3/min): the volumetric flow rate in cubic metres per minute at 20°C, 101.5 kPaA and 60% relative humidity.

.2 Actual cubic metre per minute (A m^3/min): the volumetric flow rate in cubic metres per minute actually entering the blower under the specified environmental conditions.

.3 Absolute pressure, kilopascals: kPaA.

.4 Gauge pressure, kilopascals: kPag.

.5 Polyvinyl Chloride: PVC

.6 Biochemical Oxygen Demand: (BOD)

.7 All terms in the description of the aeration system performance are as described in "A Standard for the Measurement of Oxygen Transfer in Clean Water" ASCE.

1.3 REFERENCE STANDARDS

.1 Refer to the latest version of all reference standards.

.2 Wherever the requirements of the specifications exceed those of these codes, the requirements of the specifications shall govern. Code compliance is mandatory.

.3 To ensure the latest proven technology is included in the system provided, equipment supplied under this section is manufactured after the date the contract is awarded.

.4 Conform to the latest edition of the following reference standards:

- .1 American Society for Testing and Materials (ASTM)
  - .1 ASTM A480, General Requirements for Flat-Rolled Stainless and Heat-Resisting Steel Plate, Sheet, and Strip.
  - .2 ASTM D1785, Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120
  - .3 ASTM D1248, Standards Specification for Polyethylene Plastics Extrusion Materials for Wire and Cable
  - .4 ASTM D2564, Standard Specification for Solvent Cement for Poly(Vinyl Chloride) (PVC) Plastic Piping Systems
  - .5 ASTM D2241, Standard Specification for Poly(Vinyl Chloride) (PVC) Pressure Rated Pipe (SDR Series)
  - .6 ASTM A276/A276M Standard Specification for Stainless Steel Bars and Shapes.
  - .7 ASTM F593, Standard Specification for Stainless Steel Bolts, Hex Cap Screws, Studs
- .2 Canadian Standards Association (CSA)
  - .1 CSA C22.1, Canadian Electrical Code.
- .3 National Electrical Manufacturer's Association (NEMA)
  - .1 NEMA ICS 2, Industrial Control Devices, Controllers and Assemblies.
  - .2 NEMA ICS 6, Enclosure for Industrial Controls and Systems.
- .4 National Fire Protection Association
  - .1 NFPA 820, Fire Protection in Wastewater Treatment and Collection Facilities.
- .5 Occupational Health and Safety Act.
  - .1 Ontario Health and Safety Act (OHSA) Regulation
- .6 Ontario Building Code (OBC) 2024 and National Building Code of Canada (NBCC) 2025; where there are conflicts, the more onerous requirement will be followed.

1.4 QUALIFICATIONS

.1 The Equipment Supplier shall provide fine-bubble membrane diffusers of the type specified herein, and which are successfully operating in a similar application for a minimum of five (5) years in each of at least five (5) wastewater treatment facilities in North America. Provide list of references with proposal.

.2 If equipment is not manufactured by the Equipment Supplier, including welding and machining, the name and contact information of manufacturing facility must be supplied.

.3 If patents protecting equipment are not owned by manufacturer, then an affidavit must be supplied stating owner of design and expiration of licensing agreement.

1.5 COORDINATION

.1 Allow for iterative design coordination with the Engineer as necessary and until the Engineer is satisfied.

.2 Coordinate with other divisions to ensure that there are no conflicts or gaps in the work.

.3 Coordinate equipment delivery/offloading, installation, testing, and training with the Engineer and General Contractor.

.4 Tag all equipment in accordance with the Engineer's preferred tagging convention.

1.6 QUALITY ASSURANCE

.1 The complete diffuser assembly shall be supplied, tested, and warrantied by the diffuser manufacturer.

.2 Compliance with the performance requirements of the specifications shall not relieve the vendor of his responsibilities of supplying equipment having the specified structural, mechanical, corrosion resistance and operational features.

.3 Structural Design: Design all steel structural components so that the stresses developed under installation and operating conditions will not exceed the allowable stresses defined by the latest AISC Standards and the aforementioned standards.

.4 Diffuser equipment must be manufactured by a company with no less than five (5) years' experience in the manufacture of polyurethane flat sheet membrane diffusers.

1.7 SUBMITTALS

.1 Provide the following information in one complete in accordance with Section 01 11 00 – Summary of Work.

.2 Shop drawings must be for the specific unit which is being supplied. Drawings or information which shows multiple options will not be accepted.

.3 Provide the following information in one complete submittal.

.1 Provide the equipment 3D model file, compatible with Revit 2019 or 2017 (preferred) or 2017 3D AutoCAD, for incorporation in design model and drawings.

.2 Dimensioned drawings showing the aeration piping system including the location and elevation of diffusers, manifolds and laterals, pipe supports, expansion joints, connection to droplegs, purge system and locations for additional diffusers where required.

.3 The Manufacturer's catalogue information including diffuser type designation and operating characteristics, including requirements for clean water storage of diffusers.

.4 Details of anchorage and support design; signed and sealed by an Engineer licensed to practice in the Province of Ontario.

.5 Calculations establishing the maximum air flow to each cell, in N m^3/min, based on the specified maximum oxygen requirements for each tank, the required diffuser depth and the manufacturer's anticipated oxygen transfer efficiency for each tank. Calculations to be signed and sealed by a professional engineer registered to practice in Ontario.

.6 Calculations establishing the number of diffusers proposed for each cell based on the maximum air flow per cell established above, and the proposed maximum air flow per diffuser and/or any other factors. Clearly state any other factors considered which impact the number of diffusers. Calculations to be signed and sealed by a registered professional engineer registered to practice in Ontario.

.7 A curve showing the oxygen transfer efficiency of the proposed system for a representative layout section at different air flux rates in the design range. The flux rate (N m^3/min / m^2) shall be based on the horizontally projected area of the diffuser.

.8 Calculations verifying that the air flow per diffuser will not vary by more than 2.5 percent within a grid at the minimum and maximum specified air flow rate. Calculations to be signed and sealed by a professional engineer registered to practice in Ontario.

.9 Pressure loss of the diffuser system for each design condition.

.10 The name(s) of the manufacturer's qualified technical representative, who will be responsible for training installation personnel and witnessing installation, testing and commissioning. Provide a list of projects on which they have worked, and their responsibility on these projects. Acceptance of the manufacturer's representative is subject to the approval of the Engineer.

.11 Submit at least one report by a recognized independent testing agency (such as: Stenstrom, Rosso or Redmon) documenting SOTE and AOTE (off gas testing) of the diffusers substantially the same as those used for this project at a domestic installation that has been operating for a minimum of 10 years. Report shall detail testing performed on a full-scale installation in North America or Europe.

.12 Oxygen transfer performance data from a minimum of three previous testing programs to demonstrate conformance with the specifications and design oxygen transfer efficiency. Provide information consisting of factory test data and analysis from previous non-steady state clean water oxygen transfer tests. The tests to have been conducted according to the procedures outlined in the "ASCE Standards: Measurement of Oxygen Transfer in Clean Water". The test information to include a complete description of the test procedure and conditions, tank and diffuser configuration, submergence and air flow rate.

.13 Data from accelerated endurance tests on diffusers. The accelerated endurance test to comprise a minimum of 180,000 expansion and contraction cycles, minimum cycle time to be 5 seconds of air on and 5 seconds of air off. Conduct tests with a full-size diffuser assembly submerged under a minimum of 300 mm of water. Data to prove that diffuser exhibits less than a 5 % change in aperture

size and elasticity. The report verifying the findings of the test program to be signed and sealed by a registered professional engineer.

.14 Operating and maintenance data as specified in Section 01 11 00 - Operating and Maintenance Data. Include as a minimum:

.1 Complete description of operation together with general arrangement and detailed drawings, and

.2 Parts catalogues including a list of repair and replacement parts with section drawings illustrating the connections and identifying numbers.

.3 Routine inspection and preventative maintenance.

.15 Submit installation instructions, with dimensional drawings, points of electrical plumbing connection requirements clearly shown, and equipment offloading and installation instructions.

.16 Submit field installation assembly drawings and all installation requirements.

.17 Start-up, testing and adjustment procedures.

.4 Submittals during or after fabrication:

.1 Prior to unit delivery to site, submit all shop performance testing reports.

.2 Prior to unit delivery to site, submit all inspection reports.

.3 Site performance validation and testing reports.

1.8 ENVIRONMENTAL CONDITIONS

.1 Air Temperature, (max.), °C: 30

.2 Air Temperature, (min.), °C: -10

.3 Relative humidity at max. temp., percent: 50

.4 Relative humidity at min. temp., percent: 80

.5 Site elevation above MSL, m: 322.0 m

Part 2 Products

2.1 FUNCTION

.1 Furnish equipment, under this section, for transferring oxygen into mixed liquor of the activated sludge aeration tanks for the purpose of removing carbonaceous BOD as present within municipal wastewater that has been preliminarily treated via 25 mm screening and grit removal via a detritor.

.2 The diffused air equipment must provide adequate mixing of the tank contents to prevent solids deposition and assure uniform distribution of the mixed liquor.

.3 Air rates to the Stabilization and Contact Zones in each process train will be varied independently to maintain the desired dissolved oxygen concentration.

.4 The aeration system must be sized to meet both mixing and oxygen requirements in all zones of the aeration tanks.

2.2 CAPACITIES AND PERFORMANCES

.1 Design equipment for the conditions listed below.

.2 Actual oxygen transfer requirement (OTR) (kg/d) for one process train only assuming both process trains in operation:

Tank	Actual Oxygen Transfer Rate (kg O_2/d) Average	Actual Oxygen Transfer Rate (kg O_2/d) Future Maximum
Contact Zone	590	900
Stabilization Zone	1465	N/A

.3 Tank side water depth: Refer to Appendix A.

.4 Aeration Tank dimensions: Refer to Appendix A:

.1 Each individual Contact Zone measures approximately 14.3 m by 4.5 m.

.2 The Stabilization Zone consists of two separate tanks:

.1 The stabilization zone for Tanks 1 and 4 measure 32.5 m by 2.1 m.

.2 The stabilization zone for Tanks 2 and 3 measure 32.5 m by 5.6 m.

.3 Each Aeration Zone shall be supplied with a separate dropleg, for a total of six droplegs.

.5 Maximum system pressure at maximum air flow at top of each dropleg, inclusive of static head and allowance for diffuser fouling and aging: 50.9 kPag.

.6 Allowance for diffuser fouling and aging: 3.4 kPag.

.7 Process conditions:

.1 Alpha: 0.5

.2 Beta: 0.98

.3 Diffuser fouling factor: 0.85

.4 Mixed liquor temperature, (min, Winter Condition), °C: 10

.5 Mixed liquor temperature, (max, Summer Condition), °C: 25

.6 Residual dissolved oxygen concentration, mg/L: 2.0

.8 Disc diffusers system must be capable of operating at 10.3 to 82.1 N m^3//m^2/hr membrane flux rate continuously and at a rate of 5.1 to 10.3 and 82.1 to 120 N m^3/ m^2/hr.for several hours per day in mixed liquor.

.9 The system shall be capable of intermittent operation without negative effects.

.10 Design the aeration system to achieve minimum Standard Oxygen Transfer Efficiencies (SOTE's) under the most severe design conditions. The most severe design condition is defined as the maximum oxygen demand, the residual dissolved oxygen given, maximum ambient temperatures, and maximum mixed liquor temperatures. Under the most severe condition, the SOTE's in any aeration basin shall not be less than 35%.

2.3 MATERIALS

.1 General:

Component	Material
Diffuser Membrane	EPDM
Diffuser Frame	PVC
Droplegs (supplied by General Contractor)	Stainless Steel, Schedule 10, Type 304L to ASTM A774 and ASTM A778
Manifold/Header/Distribution laterals	PVC, Schedule 80
Piping supports and anchors	Stainless Steel, Type 304/304L
Fasteners and Anchors	Stainless Steel, Type 316/316L

.1 Ensure materials conform to ASTM specifications where possible. State all deviations.

.2 Membrane Diffuser:

.1 Fabricate the disc diffuser membranes of homogenous thermoplastic material from the polyurethane group of materials. The membrane to be manufactured as a seamless, calendared sheet without defects or repairs. Membrane materials containing plasticizers or softener are not permitted.

.3 Pipe and Fittings:

.1 All joints for PVC piping and fittings are full faced solvent welded with solvent welding cement conforming to the requirements of ASTM D2564.

.2 PVC with 2 percent TiO_2 ultraviolet light inhibitor, ASTM D1784, and ASTM D1785 Schedule 80 for submerged air manifolds constructed of PVC.

.3 Provide PVC distribution laterals with 2 percent TiO_2 ultraviolet light inhibitor, ASTM D1784, ASTM D1785 Schedule 80.

.4 Equipment Supplier to confirm whether PVC material selection is suitable for expected temperature range of process air. If not suitable, provide stainless steel, schedule 10, Type 304/304L or CPVC.

.5 If PVC or CPVC is suitable as noted in the previous clause and forms the basis for the Equipment Supplier's bid, the Equipment Supplier shall identify as a provisional item on the pricing form the additional cost to supply Schedule 10 304/304L stainless steel in place of PVC or CPVC.

2.4 EQUIPMENT COMPONENTS

.1 General:

.1 Equip each aeration zone with one aeration diffuser grid per zone.

.2 The layout and distribution of diffusers shown are for illustration purposes only.

.3 Design the diffuser grids as necessary to meet the requirements of this specification, within the floor coverage limitations shown and described herein.

.4 Diffuser mounting as shown is approximate. Determine the actual diffuser distribution needed to meet specified aeration requirements.

.5 For each aeration system, supply:

.1 The aeration diffusers.

.2 Connection devices between the diffusers and the distribution laterals.

.3 The distribution laterals.

.4 Manifold piping.

.5 Connection devices to six (6) droplegs (one per tank).

.6 All structural piping supports required to minimize deflection under installation and operating loads.

.2 Diffuser General Requirements:

.1 Provide disc diffusers of the non-clog flexible membrane type with flat sheet configuration. The design to allow a complete flexing cycle to be performed to maintain the membrane and its perforations in a clean state. When the pressure in the air distribution system is brought below the hydrostatic pressure at the depth of the diffusers, then the pressure on the inside of the membrane shall also be below the hydrostatic pressure and the membrane shall collapse on to the flat base plate causing a flexing movement of the membrane that minimizes mixed liquor intrusion into the diffuser systems.

.2 Mount each diffuser into a fixed piping grid system supported to resist thrust generated by expansion/contraction. Space the diffusers on the piping grid to provide uniform air distribution over the floor of the cells.

.3 Incorporate an air flow control orifice if required for even air flow distribution among all diffuser units and to assure that the air flow to any one device is within plus or minus 2.5 % of the average value at the minimum and maximum specified air flow rate.

.3 Membrane Diffusers:

.1 Fix the membrane to the membrane holder in a manner which does not introduce unbalanced stresses but which does increase sealing pressures as the air flow rate to the diffuser rises.

.2 Diffuser perforations should be designed to prevent back-flow. When air flow ceases, this device will allow the pressure of the water above the diffuser to close the main flow passage and prevent backflow into the diffuser and air piping.

.3 Ensure the maximum diffuser flux rate is such that the stress in the diffuser material is within elastic loading limits with a safety factor of at least 10.

.4 The surface of the membrane shall be smooth to minimize biological growth from attaching.

.5 Membrane to be capable of producing fine bubbles of 1 mm in diameter, or less, across the entire surface.

.6 Membranes to behave like a check-valve such that pores close when air is shut off. Membranes shall hold air after air valve is closed and shall not release air until approximately 0.7 - 1.4 kpa differential pressure is applied. This is to ensure proper operation of flex cycle, to ensure even air distribution along the length of the diffuser, and to ensure suitability of membrane for intermittent operation.

.4 Manifold and Air Distribution Piping:

.1 Design air distribution piping system for easy field installation and include provisions for level adjustment, for rotational adjustment of the distribution laterals, and for thermal expansion of all piping elements over the specified operating temperature range.

.2 The Equipment Supplier to supply all necessary submerged distribution piping for the system starting at a point approximately 1.00 m above the tank floor. Droplegs are to be provided by the General Contractor. Coupling to be a stainless steel band coupling, compatible with selected piping materials, compatible with process environment, and to be provided by the Equipment Supplier.

.3 Drawings show proposed location of the six droplegs (typical for all aeration zones) that allow for the droplegs to be accessible from the secondary clarifier walking bridges (supplied by others).

.4 Perform all welding in the manufacturer's shop. Field welding will not be permitted.

.5 Fabricate the submerged air manifold in sections maximum 6.0 m long.

.6 Design the manifold piping so that the invert of all piping is held at a constant elevation throughout the entire area. Accomplish any required changes in piping diameter using eccentric reducers.

.7 Distribution laterals shall be easily connected and disconnected to allow purging of debris after installation but before operation. Each distribution pipe shall be supplied with a removable end cap or plug to allow purging of the air lines.

.8 Provide connections between sections of the submerged air manifold of fixed pipe couplings designed so that individual manifold sections can be rotated independently of adjacent sections for proper alignment. Couplings between segments of the distribution piping must be 304/304L stainless steel.

.9 Provide fixed joints in conjunction with guide-type supports. Expansion will take place by the sliding of the lateral pipe through the non-gripping supports.

.10 Provide coupled connections at the manifold bottom centerline for connection to the distribution laterals.

.11 Support each manifold by floor-mounted stainless steel epoxy-type anchors and supports, that provide a spacing of 50 mm between the top of floor and underside of the diffuser panel.

.12 Connect distribution laterals to the centerline of the manifold at the couplings provided.

.13 Space supports to meet the performance requirements and criteria herein.

.14 Provide positive type connection joints bolted, flanged or threaded union type for all submerged lateral and manifold joints. Bell and spigot slip-on joints are not acceptable. Provide all joints of the positive locking type.

.5 Anchors and Supports:

.1 Provide support system to securely anchor the manifold and distribution laterals to the cell floor. This may utilize a threaded rod-type system or a pipe stand and worm gear clamp system.

.2 Secure the supports to the floor with stainless steel epoxy-type anchor bolts designed with a pull-out strength safety factor of 10 or more.

.3 Stainless steel support rods shall have a minimum diameter of 12.5 mm and to not extend more than 20 mm above the top surface of the diffusers. Exposed threaded rods to be covered with EPDM threaded rod safety caps (colour: Safety Orange). Trimmed rods to be ground down to eliminate all sharp edges prior to capping.

.4 Stainless steel support plates shall have a minimum thickness of 4.8 mm.

.5 Provide stainless steel pipe clamps incorporated into supports with minimum thickness of 1.8 mm. Each support to be provided with a 38 mm wide bearing surface contoured to fit the pipe being supported. For the guide-type supports, provide a 6 mm clearance around the pipe and have chamfered edges to prevent binding of the pipe.

.6 Provide all supports with a method to provide for angular alignment adjustment and for plus or minus 40 mm of vertical adjustment to allow level installation. Support to be infinitely adjustable within its limits by raising and lowering of nuts on threaded support rods or by modifying angle of support struts.

.7 Design and fabricate the supports in such a manner that the elevation of the horizontal surfaces of all diffuser elements are within plus or minus 5 mm of a common horizontal plane.

.8 Provide sufficient supports to limit deflection of the laterals to ensure that the tolerance noted on the elevation of diffuser elements is not exceeded.

.9 Design the support system to resist all buoyancy forces with a margin of safety of at least 10 for PVC pipes and at least 5 for stainless steel pipes.

.10 Supports to be designed to withstand horizontal forces from hose-downs, submersible mixers, mixed liquor recycle and flow from across cell partition wall draining holes during filling and draining of tanks.

.11 Secure the supports to the floor with stainless steel epoxy-type anchor bolts designed with a pull-out strength safety factor of 10 or more.

.12 For each anchor bolt, provide double stainless steel nuts. Each anchor is to be double-nutted to ensure that the connection does not loosen due to dynamic forces through its life.

.6 Purge System:

.1 Aeration system to be designed as such to prevent the accumulation of moisture or water within the aeration grid. Provide a minimum of one (1) purge system, per aeration grid, to drain the entire submerged aeration piping system and blow off moisture collected using aeration air, if necessary.

2.5 SPARE PARTS

.1 Provide as a minimum, the following spare parts.

.1 Diffuser elements and assemblies: 2 percent of each size of diffuser provided, rounded to the nearest whole integer.

.2 Diffuser holders: 2 percent of total, rounded to the nearest whole integer.

.3 Piping supports (inclusive of hardware): 20

.4 Plugs for unused diffuser takeoff locations: 10 percent of total take-offs.

.5 Distribution lateral fixed joints: 5 percent of total

.6 Distribution lateral repair couplings: 5 per pipe diameter.

.2 Provide a list of all spare parts which may be required within five years of placing the system in operation, complete with prices in accordance with required submittals.

.3 Tag spare parts and store according to manufacturer's recommendations. Deliver materials to Owner with a transmittal including a complete parts list for sign-off by Owner and Engineer.

Part 3 Execution

3.1 EQUIPMENT SUPPLIER'S REPRESENTATIVE

.1 The Equipment Supplier's representative is required to attend site and provide training for operations and maintenance staff, witness equipment condition during offloading, certify the installation, witness start-up testing, modify control system programming, witness and optimize operation during commissioning, and ensure the equipment is installed and operated as intended.

.2 The minimum site attendance is identified in the following table along with the form that is required to be completed on each of these trips. A "day" is defined as eight working hours on site.

Visit Number	Description/Task	Duration (days)
1	Installation Assistance, Witnessing of Equipment Installation, and Certification of Installation for Diffusers in First Process Train	1
2	Supervision of Start-up Testing of Diffusers in First Process Train	1
3	Commissioning and Performance Evaluation of Diffusers in First Process Train	1
4	Installation Assistance, Witnessing of Equipment Installation, and Certification of Installation for Diffusers in Second Process Train	1
5	Supervision of Start-up Testing of Diffusers in Second Process Train	1

Visit Number	Description/Task	Duration (days)
6	Commissioning and Performance Evaluation of Diffusers in Second Process Train	1
7	Operator and Maintenance Training	1
	TOTAL BASE SCOPE DAYS ONSITE	7
P	Provisional Visits (non-consecutive)	3
	TOTAL VISITS TO BE ACCOUNTED FOR	10

3.2 WARRANTY

.1 The Equipment Supplier to provide a warranty period in accordance with GC 4.4 Warranty and Guarantee, in Section 00 72 50 – General Conditions.

3.3 FACTORY TESTING

.1 Conduct factory acceptance testing prior to unit shipment to site. Make allowances for witness of factory acceptance testing by the Engineer.

.2 Conduct the following quality assurance testing on the diffuser material prior to fabrication:

- .1 Optical
- .2 Haptical
- .3 Tensile
- .4 Fourier Transform Infrared Spectroscopy
- .5 Thickness

.3 All diffusers shall be tested in the factory for air flow uniformity, bubble distribution and confirmation of no leaks. All individual membranes shall be tested for pressure drop and given a unique serial number which shall be printed on the diffuser membrane. All test results associated with the membrane serial number shall be maintained at the manufacturer's facility for a period of 5 years.

.4 Notify the Engineer of a factory test at least four (4) weeks prior to the estimated test date. The Engineer reserves the right to witness factory testing.

3.4 DELIVERY, STORAGE, AND HANDLING

.1 Deliver, store, and handle equipment in accordance with Section 01 11 00 – Summary of Work. Coordinate with Contractor as necessary.

.2 Ship equipment pre-assembled to the degree which is practicable; equipment to be appropriately crated and delivered to protect against damage during shipment.

.3 Provide storage instructions indicated specific requirements to ensure there is no weathering, corrosion, contamination, mechanical damage, distortion, or any other deterioration of the components.

.4 Identify all other special storage requirements and ensure requirements are clearly communicated to and understood by the General Contractor

3.5 INSTALLATION

.1 Conform to the requirements of 01 11 00 – Summary of Work.

.2 The General Contractor is to ensure the equipment is installed plumb, square and true in accordance with the Equipment Supplier's written requirements and instructions.

.3 Nameplates, plant equipment identification and maintenance direction signs must be clearly visible. Apply manufacture supplied warning and maintenance instructions in conspicuous locations.

3.6 START-UP TESTING

.1 General Contractor to conduct start-up testing in accordance with Section 01 11 00 – Summary of Work, prior to commissioning and performance evaluation.

.2 Equipment Supplier to provide factory trained engineer/technician to inspect the installation of the equipment, test the equipment, supervise the initial operation of the treatment system, demonstrate the performance of the equipment, and to instruct the Owner's personnel in the operation of the equipment.

.3 Prior to unit start-up, all installed equipment shall be inspected for proper alignment, proper connection and satisfactory performance in accordance with Section 01 11 00 – Summary of Work.

.4 During Start-Up Testing, the General Contractor to create conditions in the field to test all operating features and alarms.

.1 Oxygen Transfer Performance Test:

.1 General Contractor to conduct clean water oxygen transfer performance test to show aeration system for each aeration zone meets specified oxygen transfer requirements. Conduct tests at airflow rates of 100% and 75% of maximum month air demand.

.2 Conduct oxygen transfer performance test in accordance with ANSI/ASCE standards 2-91, "Measurement of Oxygen Transfer in Clean Water," (ASCE Standard).

.3 The Owner may waive the requirement for the Oxygen Transfer Performance Test for one to all aeration zones and provide a credit for same based on the proposed price.

3.7 COMMISSIONING AND PROCESS PERFORMANCE EVALUATION

.1 Commissioning of the membrane diffuser system to occur upon the wastewater treatment facility aeration tanks achieving steady-state performance.

.2 Actual Oxygen Transfer Performance Test:

.1 General Contractor to conduct actual water oxygen transfer performance test after steady-state operation to show aeration system for each aeration zone meets calculated oxygen transfer requirements. Conduct tests at airflow rates of 100% and 75% of maximum month air demand.

.2 Conduct in-process actual oxygen transfer performance test in accordance with ANSI/ASCE standards 18-91, "Standard Guideline for In-Process Oxygen Transfer Testing," (ASCE Standard).

.3 The Owner may waive the requirement for the Actual Oxygen Transfer Performance Test for one to all aeration zones and provide a credit for same based on the proposed price.

.3 In the event of a mechanical failure occurs, the testing period shall cease, and corrective action taken. After completion of the corrective action the commissioning period will be restarted for another five (5) day period until satisfactory operation is achieved.

.4 In the event that the aeration system fails to meet the required performance, the testing period shall cease, and corrective action taken upon approval of the Engineer. After completion of the corrective action the commissioning period to be restarted for another five (5) day period until satisfactory operation is achieved.

.5 All costs associated with failure to achieve the required performance or mechanical failure are solely the responsibility of the General Contractor and/or Equipment Supplier.

3.8 OPERATOR TRAINING

.1 Provide training sessions to instruct the Owner's personnel in the operation and maintenance of the system, in accordance with Section 01 11 00 Summary of Work. Training of the Owner's personnel to be provided by an experienced factory engineer. Training to include a hands-on demonstration of all aspects of the operation and a simulation of all control and alarm functions.

.2 General Contractor is responsible for overall coordination of training activities.

.3 Equipment Supplier to coordinate training activities with General Contractor and integrate with other training components if necessary. Provide training only after Engineer's acceptance of treatment facility Operating and Maintenance Manuals.

.4 Owner to set training date. Equipment Supplier to be given at least four (4) weeks notice prior.

END OF SECTION

CITY OF KENORA
KENORA WASTEWATER TREATMENT PLANT AERATION UPGRADES

DRAWING INDEX			
SHEET No.	DRAWING No.	REVISION	DRAWING DESCRIPTION
01	5904-01-G-001	B	COVER PAGE
02	5904-01-G-101	B	SITE PLAN
PROCESS			
03	5904-01-D-001	B	EQUIPMENT AND PIPING SYMBOLS
04	5904-01-D-002	B	EQUIPMENT AND PIPING IDENTIFICATION
05	5904-01-D-003	B	INSTRUMENT SYMBOLS AND IDENTIFICATION
06	5904-01-D-004	B	BLOWER ROOM AND AERATION TANK - P&ID
07	5904-01-D-101	B	BLOWER ROOM PLAN
08	5904-01-D-102	B	AERATION TANK PLAN
09	5904-01-D-301	B	BLOWER ROOM SECTIONS
10	5904-01-D-302	B	AERATION TANK SECTION
ELECTRICAL			
11	5904-01-E-001	B	ELECTRICAL LEGEND
12	5904-01-E-002	B	MCC-1 SINGLE LINE

PROJECT NO. 2025-5904-01
ISSUED FOR BLOWER AND DIFFUSER PRE-PURCHASE
MAY 2026

PLOT DATE: 2026-05-19 10:19:22 AM
SAVE DATE: 2026-05-19 8:41:54 AM SAVED BY: ZHUANGW
DWG PATH: \\ae.ca\data\working\ton\2025-5904-00\process\pre-purchase\blower&diffuser package\5904-01-g-001_b.dwg

Associated Engineering

CANADA BEST MANAGED COMPANIES
Platinum member

CITY OF KENORA
KENORA WWTP
AERATION UPGRADES

2025-5904-01

PRELIMINARY/ FOR DISCUSSION
NOT FOR CONSTRUCTION

DRAFT

REV	DATE	DESIGN	DRAWN	DESCRIPTION
B	05MAY2026	M. BLAIN	W. ZHUANG	ISSUED FOR PRE-PURCHASE
A	27FEB2026	M. BLAIN	P. MCCALLEN	ISSUED FOR 30% REVIEW

DRAWING	REVISION	SHEET
5904-01-G-001	B	XX

Associated Engineering

BEST MANAGED COMPANIES
Platinum member

PRELIMINARY/ FOR DISCUSSION
NOT FOR CONSTRUCTION
DRAFT

REV	DATE	DESIGN	DRAWN	DESCRIPTION
B	05MAY2026	M. BLAIN	W. ZHUANG	ISSUED FOR PRE-PURCHASE
A	03MAR2026	M. BLAIN	P. MCCALLEN	ISSUED FOR 30% REVIEW

CITY OF KENORA
KENORA WWTP

AERATION UPGRADES

2025-5904-01

SCALE: NTS

Lake of the Woods KENORA

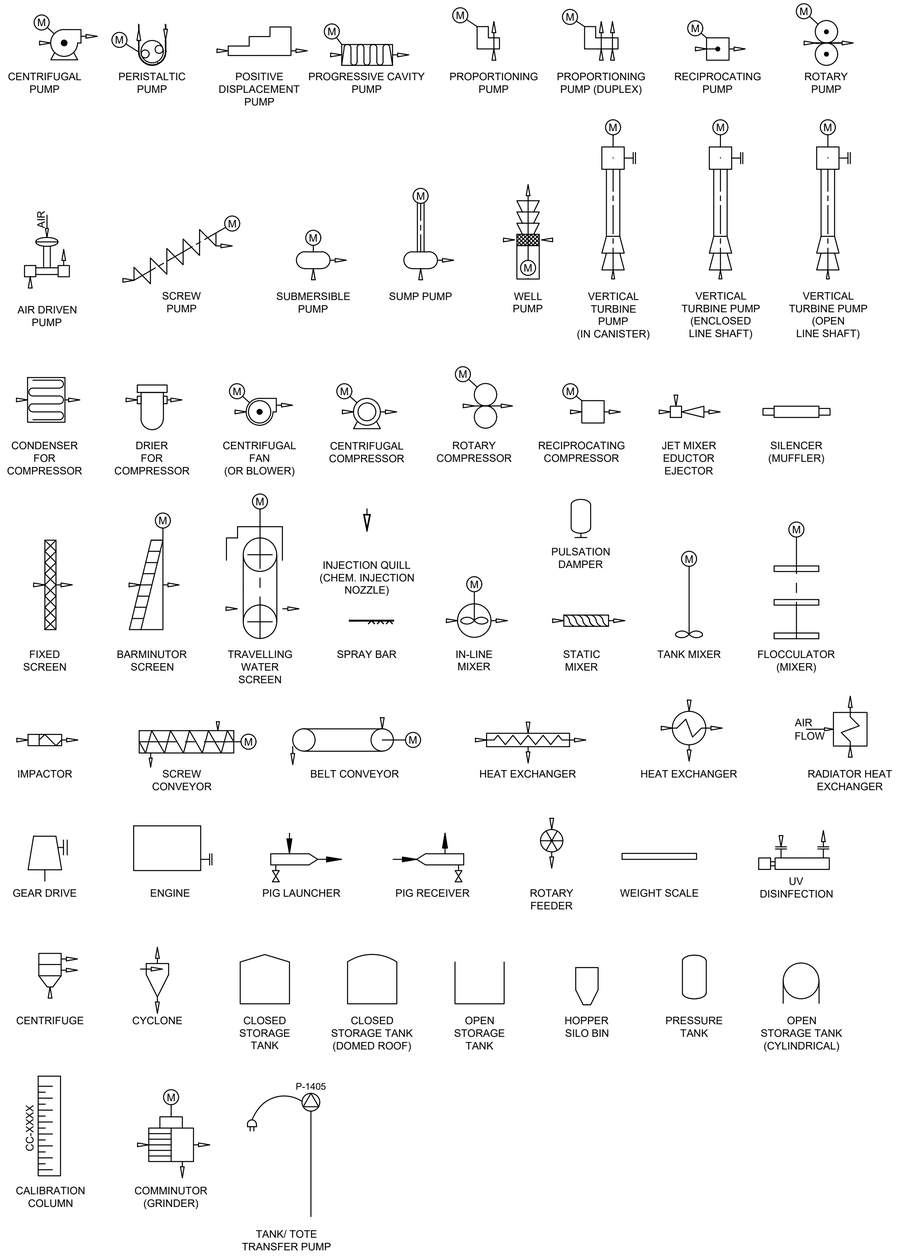
GENERAL
SITE PLAN

DRAWING	REVISION	SHEET
5904-01-G-101	B	XX

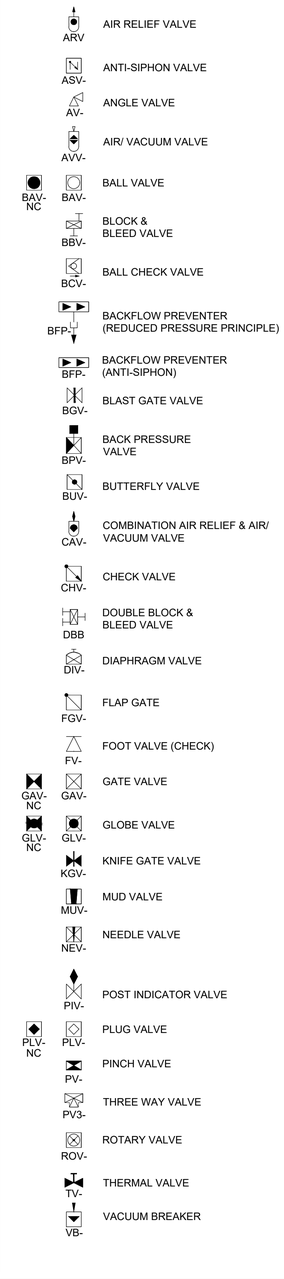
IF NOT 50 mm ADJUST SCALES
50 mm

SCALE(S) SHOWN ARE INTENDED FOR ANSI D (22X34) SIZE DRAWINGS, TABLOID (11X17) SIZE DRAWINGS ARE 1/2 OF SCALE(S) SHOWN UNLESS NOTED OTHERWISE

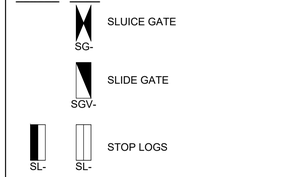
EQUIPMENT SYMBOLS



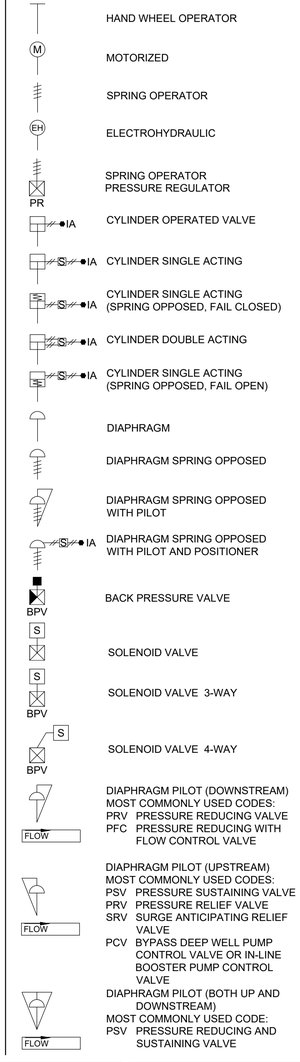
PIPING VALVE SYMBOLS



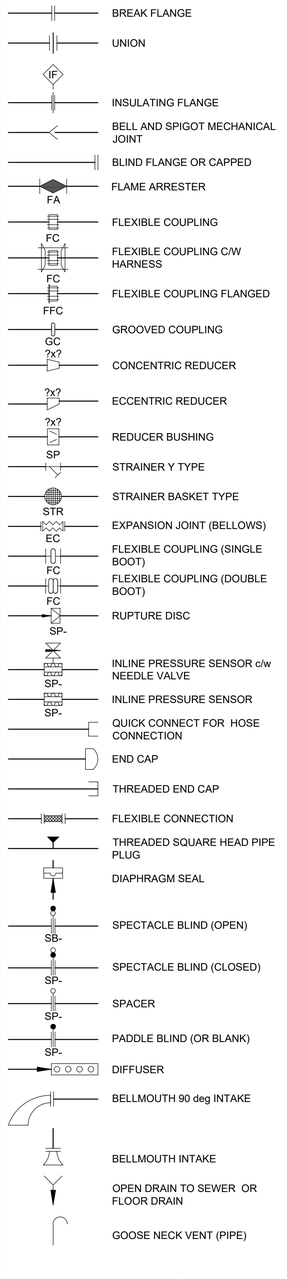
CHANNEL VALVE SYMBOLS



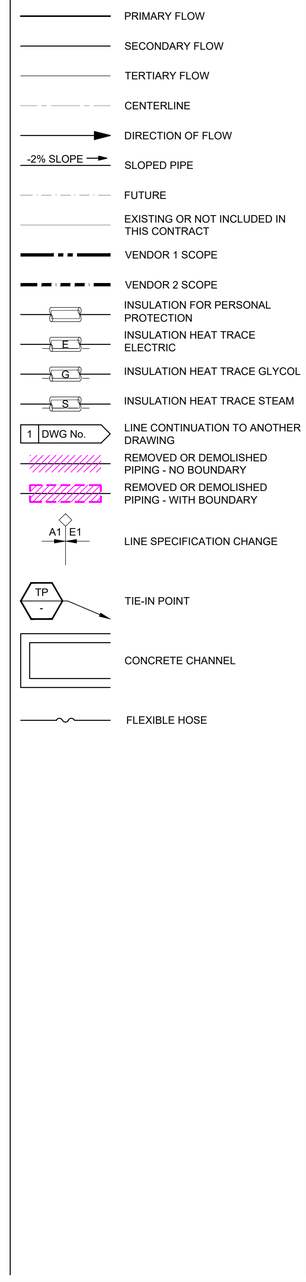
OPERATOR AND ACTUATOR SYMBOLS



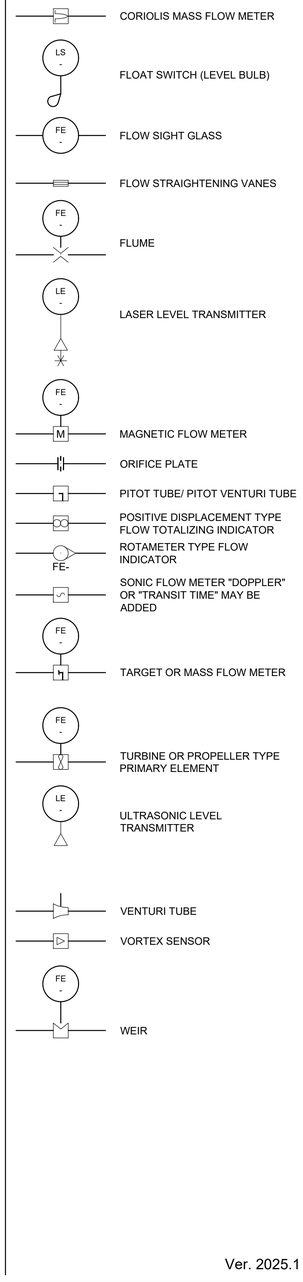
PIPE FITTINGS AND SPECIALITY ITEMS



LINE SYMBOLS



FLOW AND LEVEL SYMBOLS



Ver. 2025.1

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Associated Engineering

BEST MANAGED COMPANIES Platinum member

PRELIMINARY/ FOR DISCUSSION NOT FOR CONSTRUCTION

DRAFT

REV	DATE	DESIGN	DRAWN	DESCRIPTION
B	05MAY2026	M. BLAIN	W. ZHUANG	ISSUED FOR PRE-PURCHASE
A	03MAR2026	M. BLAIN	P. MCCALLEN	ISSUED FOR 30% REVIEW

CITY OF KENORA
KENORA WWTP

AERATION UPGRADES

2025-5904-01

SCALE: NTS

Lake of the Woods KENORA

PROCESS
LEGEND
EQUIPMENT & PIPING SYMBOLS

DRAWING	REVISION	SHEET
5904-01-D-001	B	XX

IF NOT 50 mm ADJUST SCALES
50 mm

SCALE(S) SHOWN ARE INTENDED FOR ANSI D (22X34) SIZE DRAWINGS, TABLOID (11X17) SIZE DRAWINGS ARE 1/2 OF SCALE(S) SHOWN UNLESS NOTED OTHERWISE

EQUIPMENT IDENTIFICATION

PWP - 43 - 401 (A,B etc)

- DUPLICATION IDENTIFIER (OPTIONAL USAGE)
- SEQUENCE NUMBER (IN NUMERICAL ORDER STARTING WITH 1 (ONE) FOR EACH DIFFERENT PIECE OF EQUIPMENT
- AREA NUMBER (IF REQUIRED)
- EQUIPMENT SYMBOL

CODE	EQUIPMENT
AA	AMMONIA ANALYZER
AAP	AQUEOUS AMMONIA PUMP
AASP	AQUEOUS AMMONIA SOLUTION PUMP
AAST	AQUEOUS AMMONIA SOLUTION TANK
AAT	AQUEOUS AMMONIA TANK
AC	AIR COMPRESSOR
ACF	ACTIVATED CARBON FEEDER
ACSP	ACTIVATED CARBON SOLUTION PUMP
ACST	ACTIVATED CARBON SOLUTION TANK
AD	AREA DRAIN
AER	AERATOR
AET	AERATION TANK
AF	AIR FILTER
ACG	AIR GAS COMPRESSOR (RECARBONATION UNIT)
AGD	AMMONIA GAS DETECTOR
AH	ALUMINUM HOPPER
AID	AIR DIFFUSER
ALF	ALUM FEEDER
ALP	AIR LIFT PUMP
AMF	AMMONIATOR (FEEDER)
ANP	ANAEROBIC POND (TANK)
AP	AEROBIC POND (TANK)
AP	ANALYSIS POINT
ART	AIR RECEIVER TANK
ASC	AIR SCRUBBER
ASP	ALUM SOLUTION PUMP
AT	ALUM TANK
BAR	BARMINUTOR
BC	BELT CONVEYOR
BF	BYPASS FILTER
BFP	BACK FLOW PREVENTER
BLO	BLOWER
BP	BAFFLE PLATE
BRP	BACKWASH WATER RECYCLE PUMP
BRT	BRINE TANK
BSP	BACKWASH SUPPLY PUMP
BWP	BACKWASH WASTE PUMP
CAC	CALIBRATION CHAMBER
CCC	CHLORINE CONTACT CHAMBER
CDG	CHLORINE DIOXIDE GENERATOR
CEC	CHLORINE EXPANSION CHAMBER
CEF	CENTRIFUGE
CGA	CHLORINE GAS ANALYZER
CGC	CHLORINE GAS CYLINDER
CGD	CHLORINE GAS DETECTOR
CGE	CHLORINE GAS EVAPORATOR
CGF	CHLORINATOR (FEEDER)
CL	CLARIFIER
CLS	CLARIFIER (SECONDARY)
CDM	CLARIFIER DRIVE MOTOR
CRDM	CLARIFIER RAKE DRIVE MOTOR
CLST	CHLORINE SOLUTION TANK
CO	CLEAN OUT
COAP	COAGULANT AID PUMP
COAT	COAGULANT AID TANK
COF	CARBON DIOXIDE FEEDER (CO2)
COM	COMMINUTOR
COMP	COMPRESSOR (INSTRUMENT AIR)
CR	CRANE
CRSP	CITRIC ACID PUMP
CRST	CITRIC ACID TANK
CSP	CAUSTIC SODA PUMP
CTF	CUT THROAT FLUME
CUSP	CAUSTIC SODA SOLUTION PUMP
DCL	DUST COLLECTOR
DEC	DECHLORINATOR
DL	DOCK LEVELLER
DLT	DILUTION TANK (UNSPECIFIED SERVICE)
DRS	DRIVE SHAFT
DT	DAY TANK
E	ELEVATOR
ED	EDUCTOR OR EJECTOR
ENG	ENGINE
ES	EXHAUST SILENCER (MUFFLER)
EV	EVAPORATOR

CODE	EQUIPMENT
FAP	FLUOSILICIC ACID (FLUORIDE) PUMP
FASP	FLUOSILICIC ACID (FLUORIDE) SOLUTION PUMP
FAST	FLUOSILICIC ACID (FLUORIDE) SOLUTION TANK
FAT	FLUOSILICIC ACID (FLUORIDE) TANK
FBP	FILTERED BLEND PUMP
FD	FLOOR DRAIN
FF	FLUORIDE FEEDER
FLT	FILTER (PROCESS WATER)
FOF	FUEL OIL FILTER
FS	FIXED SCREEN (BAR OR MESH)
FSP	FUEL SUPPLY PUMP
FT	FUEL TANK
FUD	FUNNEL DRAIN
FWP	FIRE WATER PUMP
GD	GEAR DRIVE
GEN	GENERATOR
GTC	GRIT CHAMBER
HB	HOSE BIBB
HD	HUB DRAIN
HEX	HEAT EXCHANGER
HPC	HYPOCHLORINATOR
HRGT	HIGH RATE GRAVITY THICKENER
IMP	IMPACTOR
L	LAGOON
LE	LEVEL ELEMENT
LF	LIME FEEDER
LH	LIME HOPPER
LS	LIME SILO
LSK	LIME SLAKER
LSP	LIME SOLUTION (SLURRY) PUMP
LST	LIME SOLUTION (SLURRY) TANK
M	MOTOR (ELECTRIC)
MFP	MEMBRANE FEED PUMP
MH	MANHOLE
MV	METER VAULT
MX	MIXER (MECHANICAL)
ORP	OXYGEN REDUCTION POTENTIAL
P	PUMP (UNSPECIFIED SERVICE)
PCF	POWDER CARBON FEEDER
PD	PULSATION DAMPER
PF	POLYELECTROLYTE FEEDER
PGT	PROPANE GAS TANK
PL	PIG LAUNCHER
PMU	POLYELECTROLYTE MIX UNIT
PP	POLYELECTROLYTE PUMP
PPF	POTASSIUM PERMANGANATE FEEDER
PPH	POTASSIUM PERMANGANATE HOPPER
PPSP	POTASSIUM PERMANGANATE SOLUTION PUMP
PPST	POTASSIUM PERMANGANATE SOLUTION TANK
PR	PIG RECEIVER
PSD	PRIMARY SLUDGE DIGESTER
PSWP	PLANT SERVICE WATER PUMP
PT	POLYELECTROLYTE TANK
PWP	POTABLE WATER PUMP
PYSP	POLYELECTROLYTE SOLUTION PUMP
PYST	POLYELECTROLYTE SOLUTION TANK
RCC	RECARBONATION CHAMBER
RES	RESERVOIR
RS	ROTARY SCREEN
RT	ROCK TRAP
RWP	RAW WATER PUMP

CODE	EQUIPMENT
SACP	SULPHURIC ACID PUMP
SACSP	SULPHURIC ACID SOLUTION PUMP
SACST	SULPHURIC ACID SOLUTION TANK
SACT	SULPHURIC ACID TANK
SB	SUBMERGED BURNER
SBOX	SPLITTER BOX (CHAMBER)
SCC	SCREW CONVEYOR
SC	SCRAPER
SCP	SCREW PUMP
SDT	SEDIMENTATION TANK
SEP	SEWAGE PUMP
SP	SERVICE PUMP
SEQP	SEQUESTERANT PUMP
SG	SIGHT GLASS
SHSP	SODIUM HYPOCHLORITE SOLUTION PUMP
SHST	SODIUM HYPOCHLORITE SOLUTION TANK
SIF	SILICATOR (FEEDER)
SIL	SILENCER
SL	STOP LOGS
SLP	SLUDGE PUMP
SN	SPRAY NOZZLE
SOF	SODA ASH FEEDER
SOH	SODA ASH HOPPER
SOSP	SODA ASH SOLUTION PUMP
SPST	SODA ASH SOLUTION TANK
SP	SEWAGE PUMP
SRS	SEPTAGE RECEIVING SYSTEM
SS	SERVICE SINK
SSD	SECONDARY SLUDGE DIGESTER
STR	STRAINER (Y OR BASKET)
SUP	SUMP
SUP	SUPERNATANT PUMP
SWC	SCREENING WASHER COMPACTOR
T	TANK (UNSPECIFIED SERVICE)
TFP	TRUCK FILL PUMP
TH	THICKENER
TWS	TRAVELING WATER SCREEN
TP	TRANSFER PUMP
UV	ULTRAVIOLET
UVL	ULTRAVIOLET DISINFECTION LAMP BANK
UVG	ULTRAVIOLET GENERATOR
VB	VALVE BOX
VFD	VARIABLE FREQUENCY DRIVE (ELEC)
VOS	VALVE OPERATOR STAND
VSD	VARIABLE SPEED DRIVE (MECH)
VV	VALVE VAULT
WP	WASTE PUMP
WS	WEIGH SCALE

LINE IDENTIFICATION

300 - PW - 101 - A1 - C - D

- EXTERNAL PIPE COATING
- INTERNAL PIPE LINING
- PIPE MATERIAL CODE
  - CODE LETTERS USED DEPENDS ON COATING REQUIRED
- LINE NUMBER
- COMPONENT
  - USED ONLY ON DESIGNATED PROJECTS
- COMMODITY
- LINE SIZE (IN MILLIMETRES)

CODE	COMMODITY
AA	AQUEOUS AMMONIA
AAS	AERATION AIR SUPPLY
ACS	ACTIVATED CARBON SOLUTION
AL	ALUM LIQUID
ALS	ALUM SLUDGE
AMG	AMMONIA GAS (ANHYDROUS)
AML	AMMONIA LIQUID (ANHYDROUS)
AMS	AMMONIA SOLUTION
AP	ALUM POWDER (DRY)
AQAS	AQUEOUS AMMONIA SOLUTION
ARL	AIR RELIEF LINE
AS	AIR SCOUR
ASC	ANTISCALENT
ASS	ACTIVATED SLUDGE
ASW	ALUM SOLUTION WASTE
AVL	AIR VACUUM LINE
AWS	AIR WASH SUPPLY
BPE	BACK WASH - PLANT EFFLUENT (SEWAGE)
BPW	BACK PULSE WATER
BWR	BACK WASH RETURN
BWS	BACK WASH SUPPLY
BWW	BACK WASH WASTE
CD	CENTRIFUGE DECANT
CDG	CHLORINE DIOXIDE GAS
CDS	CHLORINE DIOXIDE SOLUTION
CG	CARBON DIOXIDE GAS
CHW	CHEMICAL WASTE
CIP	CLEAN IN PLACE
CLG	CHLORINE GAS
CLL	CHLORINE LIQUID
CLS	CHLORINE SOLUTION
COA	COAGULANT AID
CON	CONCENTRATE
CR	CITRIC ACID
CRS	CITRIC ACID SOLUTION
DBS	DIGESTED BIOSOLIDS
DCW	DOMESTIC COLD WATER
DDT	DIGESTER DECANT
DFR	DIESEL FUEL RETURN
DFS	DIESEL FUEL SUPPLY
DHW	DOMESTIC HOT WATER
DHWR	DOMESTIC HOT WATER RECIRCULATION
DIS	DIGESTED SLUDGE
DR	DRAIN
DS	PHOSPHATE SODIUM SULPHITE
DWB	DEWATERED BIOSOLIDS
EAS	EXCESS ACTIVATED SLUDGE
EE	ENGINE EXHAUST
EFF	EFFLUENT
FA	FLUOSILICIC ACID (FLUORIDE)
FIL	FILTERED WATER
FLO	FLUSHING OIL
FLT	FILTRATE
FLW	FLUSHING WATER
FTW	FILTER TO WASTE DRAIN
FW	FIRE WATER
GRE	GREASE
GR	GRIT LINE
GLR	GLYCOL RETURN
GLS	GLYCOL SUPPLY
HDCA	HYDROCHLORIC ACID
HL	HYDRATED LIME (DRY)
HLS	HYDRATED LIME SLURRY
HWR	HOT WATER RETURN
HWS	HOT WATER SUPPLY
IA	INSTRUMENT AIR (FILTERED & DRIED)
LAS	AMMONIA SULPHATE SOLUTION
LO	LUBRICATING OIL
LPG	LIQUID PROPANE GAS
LS	LIME SOLUTION
MET	METHANOL
ML	MIXED LIQUOR
MLSS	MIXED LIQUOR SUSPENDED SOLIDS
NGH	NATURAL GAS
OV	OVERFLOW PIPE
PAC	POWDER ACTIVATED CARBON (DRY)
PACS	POWDER ACTIVATED CARBON (SOLUTION

CODE	COMMODITY
PE	PLANT EFFLUENT (WASTE WATER)
PERW	PERMEATE WATER
PFW	FLUSHING LINE (USUALLY PW)
PHWR	POTABLE HOT WATER RETURN
PHWS	POTABLE HOT WATER SUPPLY
PLS	PRIMARY LIME SLUDGE
PLY	POLYELECTROLYTE SOLUTION
PLYS	POLYMER SOLUTION
PPE	PRIMARY PLANT EFFLUENT
PPS	POTASSIUM PERMANGANATE SOLUTION
PRL	PRESSURE RELIEF LINE
PS	PRIMARY SLUDGE
PSW	PLANT SERVICE WATER (NON-DRINKABLE WATER)
PW	POTABLE WATER (SAFE FOR HUMAN CONSUMPTION)
QL	QUICK LIME (DRY)
RAS	RETURN ACTIVATED SLUDGE
RCR	RECOVERY CLEAN RECIRCULATION
RCS	RECIRCULATED SLUDGE
RF	RECYCLED FLOW
RS	RETURN SLUDGE
RSW	RAW SANITARY WASTE
RTW	RINSE TO WASTE
RW	RAW WATER (NOT SAFE FOR HUMAN CONSUMPTION)
RWCR	RAW WATER COOLING RETURN
RWCS	RAW WATER COOLING SUPPLY
RWD	REWASH DRAIN
SA	SERVICE AIR
SAM	SAMPLE LINE
SAS	SURPLUS ACTIVATED SLUDGE
SAT	SODIUM ACETATE
SBD	SLUDGE BLOW DOWN
SBS	SODIUM BISULFITE SOLUTION
SC	SCUM LINE
SDG	SULFUR DIOXIDE GAS
SDL	SLUDGE DRAWOFF LINE
SDS	SULFUR DIOXIDE SOLUTION
SEL	SENSING LINE
SEPS	SEPTAGE SEWAGE
SEQ	SEQUESTERANT
SHDS	SODIUM HYDROXIDE (CAUSTIC SODA)
SHS	SODIUM HYPOCHLORITE
SLD	SUPERNATANT LIQUOR DRAWOFF
SLPA	SULPHURIC ACID
SLS	SECONDARY LIME SLUDGE
SO	SUPERNATANT OVERFLOW
SOS	SODA ASH SOLUTION
SPE	SURFACE WASH-PLANT EFFLUENT (SEWAGE)
SRL	SURGE RELIEF LINE
SRS	SCREENED RAW SEWAGE
SSS	SODIUM SILICATE SOLUTION
SUP	LAGOON SUPERNATANT
SW	SANITARY WASTE (RAW SEWAGE)
TD	THICKENER DECANT
TO	THICKENER OVERFLOW
TS	THICKENER SLUDGE
TU	THICKENER UNDERFLOW
TW	TREATED WATER (PRIMARY TREATMENT, NOT YET SAFE FOR HUMAN CONSUMPTION)
UD	UNDER DRAIN (WEEPING TILE)
VA	VACUUM LINE
VE	VENTILATION PIPE
VSS	VOLATILE SUSPENDED SOLIDS
WAS	WASTE ACTIVATED SLUDGE
WLS	WASTE LIME SLUDGE
WW	WASTE WATER (EFFLUENT)
ZW	ZEOLITE SOFTENED WATER

VALVE / SPECIALTY IDENTIFICATION

GAV - 43 - 401

- SEQUENCE NUMBER (IN NUMERICAL ORDER STARTING WITH 1 FOR EACH DIFFERENT PIECE OF EQUIPMENT)
- AREA NUMBER (IF REQUIRED)
- VALVE TYPE

CODE	MATERIAL & FLANGE RATING
A1	STEEL PIPE 900mm Dia AND SMALLER 150 POUND FLANGE RATING
A1A	STEEL PIPE 200mm Dia AND SMALLER 150 POUND FLANGE RATING GAS SERVICE ONLY
A1G	GALVANIZED STEEL PIPE 100mm Dia AND SMALLER 150 POUND FLANGE RATING
A2	STEEL PIPE 900mm Dia AND SMALLER 300 POUND FLANGE RATING
A3	STEEL PIPE 1050mm Dia AND LARGER 150 POUND FLANGE RATING
A4	STEEL PIPE 1050mm Dia AND LARGER 300 POUND FLANGE RATING
A5	STEEL PIPE 600mm Dia AND SMALLER 150 POUND FLANGE RATING
A6	STEEL PIPE 600mm Dia AND SMALLER 300 POUND FLANGE RATING
A7	STEEL PIPE 300mm Dia AND SMALLER A1 PIPE CODE (VICTAULIC COUPLED)
A8	STEEL PIPE 100mm Dia AND SMALLER A2 PIPE CODE (CHLORINE GAS, CARBON DIOXIDE GAS)
D1	CONCRETE PIPE - PRESSURE PIPE
D2	CONCRETE PIPE - REINFORCED
D3	CONCRETE PIPE - NON REINFORCED
E1	PVC PIPE (PRESSURE PIPE)
E2	PVC PIPE - GRAVITY SERVICE
E3	POLYETHYLENE PIPE
E4	CPVC PIPE (PRESSURE PIPE)
E5	PLASTIC FLEXIBLE TUBING
E6	RUBBER HOSE
E7	PVDF PIPE (PRESSURE PIPE)
F1	CAST IRON PRESSURE PIPE
F2	CAST IRON DRAINAGE PIPE
F3	DUCTILE IRON PIPE - PRESSURE SERVICE
G1	COPPER PIPE - TYPE K
G2	COPPER PIPE - TYPE L
H1	STAINLESS STEEL PIPE
H2	STAINLESS STEEL TUBING
H3	STEEL TUBING
J1	CORRUGATED METAL PIPE - GALVANIZED
J2	CORRUGATED METAL PIPE (WEEPING TILE)
P1	PLASTIC DWV, COPPER DWV, CAST IRON DWV PLUMBING SERVICE

CODE	PIPE TREATMENT
A	CEMENT MORTAR LINING
B	INTERNAL HOT APPLIED COAL TAR LINING
C	INTERNAL EPOXY LINING
D	YELLOW JACKET COATED
E	EXTERNAL HOT APPLIED COAL TAR COATING
F	EXTERNAL EPOXY COATED
G	INSULATED
H	FLEXIBLE ELASTOMERIC INSULATION
I	INSULATION C/W JACKET (HIGH TEMPERATURE)

NOMINAL PIPE DIAMETER CONVERSION

INCH	mm	INCH	mm	INCH	mm	INCH	mm
1/8	6	3 1/2	90	20	500	66	1650
1/4	8	4	100	22	550	72	1800
3/8	10	5	125	24	600	78	1950
1/2	15	6	150	27	675	84	2100
3/4	20	8	200	30	750	90	2250
1	25	10	250	36	900	96	2400
1 1/4	32	12	300	42	1050	102	2550
1 1/2	40	14	350	48	1200	108	2700
2	50	15	375	54	1350	114	2850
2 1/2	65	16	400	60	1500	120	3000
3	80	18	450				

NOTES:

1. PIPE SIZES 2" AND SMALLER - CONVERSION BASED ON EUROPEAN ISO STANDARD.
2. PIPE SIZES FROM 2"-60" - CONVERSION BASED ON CSA STANDARD Z245.1.
3. OTHER PIPE SIZES ARE U.S. CONVERSIONS TO THE METRIC SYSTEM.

CODE	VALVE / SPECIALTY ITEM
ARV	AIR RELIEF VALVE
ASV	ANTI-SYPHON VALVE
AV-	ANGLE VALVE
AVV	AIR/ VACUUM VALVE
BAV	BALL VALVE
BBV	BLOCK & BLEED VALVE
BCV	BALL CHECK VALVE
BFP	BACK FLOW PREVENTER
BGV	BLAST GATE VALVE
BPV	BACK PRESSURE VALVE
BUV	BUTTERFLY VALVE
BV	BLOCK VALVE
CAV	COMBINATION AIR RELIEF & AIR/ VACUUM VALVE
CHV	CHECK VALVE
CSC	CAR SEAL CLOSED
CSO	CAR SEAL OPEN
DBB	DOUBLE BLOCK & BLEED VALVE
DIV	DIAPHRAGM VALVE
FA	FLAME ARRESTER
FC	FLEXIBLE DRESSER COUPLING
FCC	FLANGED/ FLEXIBLE DRESSER COUPLING
FCV	FLOW CONTROL VALVE
FGV	FLAP GATE VALVE
FV	FOOT VALVE
GAV	GATE VALVE
GLV	GLOBE VALVE
KGV	KNIFE GATE VALVE
LC	LOCK CLOSED
LO	LOCK OPEN
MUV	MUD VALVE
NC	NORMALLY CLOSED
NEV	NEEDLE VALVE
PIV	POST INDICATOR VALVE
PLV	PLUG VALVE
PRV	PRESSURE RELIEF VALVE
PV	PINCH VALVE
ROV	ROTARY VALVE
SB	SPECTACLE BLIND
SG	SLUICE GATE VALVE
SGV	SLIDE GATE VALVE
TV-	THERMAL VALVE
TWV	THREE (3) WAY VALVE
VB	VACUUM BREAKER
VC	VICTAULIC COUPLING
WG	WEIR GATE

Ver. 2025.1

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Associated Engineering

BEST MANAGED COMPANIES
Platinum member

PRELIMINARY/ FOR DISCUSSION
NOT FOR CONSTRUCTION
DRAFT

REV	DATE	DESIGN	DRAWN	DESCRIPTION
B	05MAY2026	M. BLAIN	W. ZHUANG	ISSUED FOR PRE-PURCHASE
A	03MAR2026	M. BLAIN	P. MCCALLEN	ISSUED FOR 30% REVIEW

CITY OF KENORA
KENORA WWTP

AERATION UPGRADES

2025-5904-01

SCALE: NTS

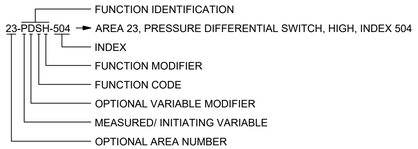
Lake of the Woods KENORA

PROCESS
LEGEND
EQUIPMENT & PIPING IDENTIFICATION

DRAWING	REVISION	SHEET
5904-01-D-002	B	XX

IF NOT 50 mm ADJUST SCALES
50 mm
SCALE(S) SHOWN ARE INTENDED FOR ANSI D (22X34) SIZE DRAWINGS, TABLOID (11X17) SIZE DRAWINGS ARE 1/2 OF SCALE(S) SHOWN UNLESS NOTED OTHERWISE

INSTRUMENT, DEVICE AND SIGNAL IDENTIFICATION:



MEASURED/INITIATING VARIABLES

A	ANALYSIS (SEE SPECIAL MODIFIERS)
C	CONDUCTIVITY
E	VOLTAGE
F	FLOW
I	CURRENT
J	POWER
JY	POWER FACTOR
K	TIME
L	LEVEL
P	PRESSURE
S	SPEED/ FREQUENCY
T	TEMPERATURE
V	VIBRATION/ MECHANICAL ANALYSIS
W	WEIGHT/ FORCE
Y	EVENT/ STATE/ PRESENCE
Z	POSITION

VARIABLE MODIFIERS

D	DIFFERENTIAL
K	TIME RATE OF CHANGE
Q	INTEGRATE/TOTALIZE

FUNCTION MODIFIERS

HH	HIGH-HIGH
H	HIGH
M	MIDDLE
L	LOW
LL	LOW-LOW
O	OPEN
C	CLOSE/CLOSED
R	RUN
S	STOP

INSTRUMENT/SENSOR FUNCTION CODES

E	ELEMENT/SENSOR
I	LOCAL INDICATION WITHOUT TRANSMITTER
IT	LOCAL INDICATION WITH TRANSMITTER; OR, SIGNAL FROM TRANSMITTER WITH LOCAL INDICATION
L	LIGHT
QS	TOTALIZING PULSE
S	SWITCH OR SIGNAL FROM SWITCH
T	TRANSMITTER WITH NO LOCAL INDICATION; OR, SIGNAL FROM TRANSMITTER WITH NO LOCAL INDICATION
XA	FAULT

MOTOR AND MOTOR SIGNAL FUNCTION IDENTIFICATION LETTERS

HS	HAND SWITCH (SEE SPECIAL MODIFIER)
HSA	EMERGENCY STOP
JL	MOTOR POWERED - LIGHT
JS	MOTOR POWERED - SWITCH OR SIGNAL FROM SWITCH
KQI	RUNTIME ACCUMULATOR / ELAPSED TIME METER
SC	SPEED COMMAND/CONTROL WITHOUT INDICATION
SIC	SPEED COMMAND/CONTROL WITH INDICATION
SI	LOCAL SPEED DISPLAY WITHOUT TRANSMITTER
SIT	SPEED DISPLAY WITH TRANSMITTER; OR, SIGNAL FROM TRANSMITTER WITH LOCAL DISPLAY
ST	SPEED TRANSMITTER/SIGNAL WITHOUT LOCAL DISPLAY
VYAH	TORQUE ALARM HIGH
XA	FAULT (SEE SPECIAL MODIFIER FOR SPECIFIC FAULTS)
XAL	FAULT LIGHT (SEE SPECIAL MODIFIER FOR SPECIFIC FAULTS)
XC	MAINTAINED RUN COMMAND
XMCR	MOMENTARY START COMMAND
XMCS	MOMENTARY STOP COMMAND
XL	STATUS LIGHT (SEE SPECIAL MODIFIER)
YS	READY STATUS
YL	READY LIGHT

VALVE FUNCTION

VYAH	TORQUE ALARM - HIGH
Y	SOLENOID VALVE COMMAND
ZCO	OPEN COMMAND
ZCC	CLOSE COMMAND
ZC	ANALOG POSITION COMMAND
ZSO	OPEN POSITION SWITCH
ZSC	CLOSED POSITION SWITCH
ZI	LOCAL POSITION INDICATION
ZIT	LOCAL POSITION INDICATION WITH TRANSMITTER; OR, SIGNAL FROM TRANSMITTER WITH LOCAL POSITION INDICATION
ZT	POSITION TRANSMITTER WITHOUT LOCAL INDICATION; OR, SIGNAL FROM POSITION TRANSMITTER WITHOUT LOCAL INDICATION

NOTE:
VALVE POSITION/TORQUE SIGNALS USE THE PROCESS VARIABLE THE VALVE IS INTENDED TO CONTROL AS THE INITIATING VARIABLE, WITH POSITION/TORQUE ENCODED IN THE FUNCTION CODE.
E.G.:
FZT FLOW-CONTROLLING VALVE POSITION TRANSMITTER

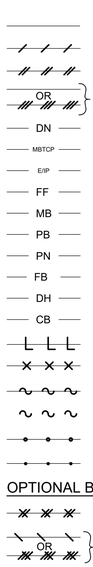
USER INTERFACE FUNCTION IDENTIFICATION LETTERS

HSI	MAINTAINED HAND SWITCH (SEE SPECIAL MODIFIER)
HMS	MOMENTARY PUSHBUTTON (SEE SPECIAL MODIFIER)
HMSR	MOMENTARY START BUTTON
HMSS	MOMENTARY STOP BUTTON
HMSO	MOMENTARY OPEN BUTTON
HMSC	MOMENTARY CLOSE BUTTON

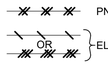
SPECIAL MODIFIERS

AMM(FREE)	FREE AMMONIA
AMM(GAS)	GASEOUS AMMONIA
CL(FREE)	FREE CHLORINE
CL(MONO)	MONOCHLORAMINES
CL(TOTAL)	TOTAL CHLORINE
CL2	CHLORINE GAS
H2S	HYDROGEN SULFIDE
CH4	METHANE
LEL	EXPLOSIVE GAS
CO	CARBON MONOXIDE
NOX	NITROGEN OXIDES
DO	DISSOLVED OXYGEN
I/P	CURRENT TO PNEUMATIC
ORP	OXIDATION-REDUCTION POTENTIAL
PC	PARTICLE COUNTER
TSS	TOTAL SUSPENDED SOLIDS
TUR	TURBIDITY
VOC	VOLATILE ORGANIC CARBON
SMO	SMOKE
SEC	SECURITY SYSTEM
HOA	HAND/ OFF/ AUTO
ROH	REMOTE/ OFF/ HAND
LOR	LOCAL/ OFF/ REMOTE
L/R	LOCAL/ REMOTE
O/C	OPEN/ CLOSE
O/O/C	OPEN/OFF/CLOSE
ON	ON/ OFF
RUN	RUN/STOP

SIGNAL/MESSAGING LINE TYPES

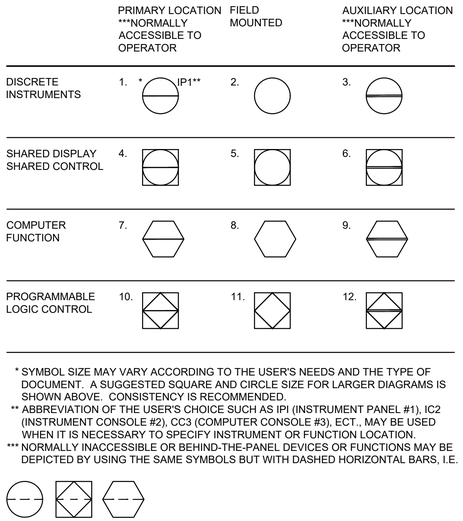


OPTIONAL BINARY (ON-OFF) SYMBOLS



NOTE:
'OR' MEANS USER'S CHOICE. CONSISTENCY IS RECOMMENDED.

INSTRUMENT SYMBOLS



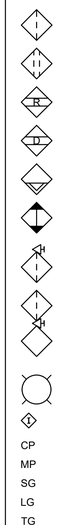
* SYMBOL SIZE MAY VARY ACCORDING TO THE USER'S NEEDS AND THE TYPE OF DOCUMENT. A SUGGESTED SQUARE AND CIRCLE SIZE FOR LARGER DIAGRAMS IS SHOWN ABOVE. CONSISTENCY IS RECOMMENDED.
** ABBREVIATION OF THE USER'S CHOICE SUCH AS IP! (INSTRUMENT PANEL #1), IC2 (INSTRUMENT CONSOLE #2), CC3 (COMPUTER CONSOLE #3), ECT., MAY BE USED WHEN IT IS NECESSARY TO SPECIFY INSTRUMENT OR FUNCTION LOCATION.
*** NORMALLY INACCESSIBLE OR BEHIND-THE-PANEL DEVICES OR FUNCTIONS MAY BE DEPICTED BY USING THE SAME SYMBOLS BUT WITH DASHED HORIZONTAL BARS, I.E.

POWER SUPPLY SYMBOLS/ABBREVIATIONS*

○	AIR SUPPLY (PLANT AIR, HEADER SUPPLY REGULATED eg ADJUSTED TO 552 kPa)			
⬢	FILTERED AIR SUPPLY (REGULATED eg ADJUSTED TO 138 kPa)			
ES	ELECTRIC SUPPLY	HS	HYDRAULIC SUPPLY	
GS	GAS SUPPLY	NS	NITROGEN SUPPLY	
SS	STEAM SUPPLY	SS	STEAM SUPPLY	
WS	WATER SUPPLY			
AS	AIR SUPPLY	IA	INSTRUMENT AIR	OPTIONS
		PA	PLANT AIR	

* THE SUPPLY LEVEL MAY BE ADDED TO THE INSTRUMENT SUPPLY LINE, E.G., AS-100, A 100-PSIG AIR SUPPLY; ES-24DC, A 24 VOLT DIRECT CURRENT POWER SUPPLY.
** THE PNEUMATIC SIGNAL SYMBOL APPLIES TO A SIGNAL USING ANY GAS AS THE MEDIUM. IF A GAS OTHER THAN AIR IS USED, THE GAS MAY BE IDENTIFIED BY A NOTE ON THE SIGNAL SYMBOL OR OTHERWISE.
*** ELECTROMAGNETIC PHENOMENA INCLUDE HEAT, RADIO WAVES, NUCLEAR RADIATION, AND LIGHT.

MISCELLANEOUS SYMBOLS



CP	CONTROL PANEL
MP	MARSHALLING PANEL
SG	LEVEL SIGHT GLASS (WINDOW-STYLE)
LG	LEVEL SIGHT GLASS (TUBE-STYLE)
TG	THERMOMETER (TUBE-STYLE)

Ver. 2025.1

PLOT DATE: 2026-05-19 10:49:41 AM
SAVE DATE: 2026-05-05 11:42:42 AM SAVED BY: ZHUANGW
DWG PATH: \\ae.ca\data\working\tor\2025-5904-00\process\pre-purchase\blower&diffuser package\5904-01-d-003.dwg

Associated Engineering

CANADA'S BEST MANAGED COMPANIES
Platinum member

PRELIMINARY/ FOR DISCUSSION
NOT FOR CONSTRUCTION

DRAFT

REV	DATE	DESIGN	DRAWN	DESCRIPTION
B	05MAY2026	M. BLAIN	W. ZHUANG	ISSUED FOR PRE-PURCHASE
A	03MAR2026	M. BLAIN	P. MCCALLEN	ISSUED FOR 30% REVIEW

CITY OF KENORA
KENORA WWTP

AERATION UPGRADES

2025-5904-01

SCALE: NTS

Lake of the Woods KENORA

PROCESS
LEGEND
INSTRUMENT SYMBOLS & IDENTIFICATION

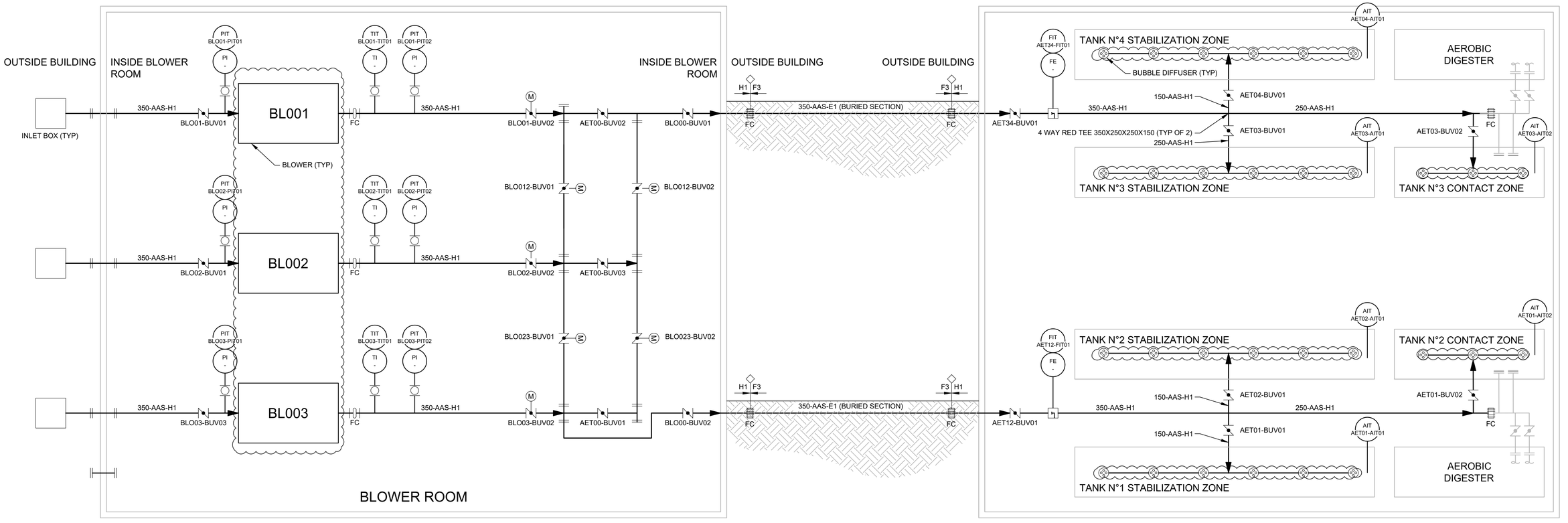
DRAWING	REVISION	SHEET
5904-01-D-003	B	XX

IF NOT 50 mm ADJUST SCALES
50 mm

SCALE(S) SHOWN ARE INTENDED FOR ANSI D (22X34) SIZE DRAWINGS, TABLOID (11X17) SIZE DRAWINGS ARE 1/2 OF SCALE(S) SHOWN UNLESS NOTED OTHERWISE

LOCAL PLC
CONTROL PANEL/SCADA

CONTROL
PANEL/MCC



LEGEND

CLOUDED PORTION DENOTES SCOPE OF SUPPLY FOR EQUIPMENT PROCUREMENT CONTRACT

EQUIPMENT DATA

PLOT DATE: 2026-05-19 10:19:49 AM
SAVE DATE: 2026-05-19 8:30:51 AM SAVED BY: ZHUANGW
DWG PATH: q:\2025-5904-00\process\pre-purchase\blower&diffuser package\5904-01-d-004_b.dwg

Associated Engineering

BEST MANAGED COMPANIES
Platinum member

PRELIMINARY/
FOR DISCUSSION
NOT FOR CONSTRUCTION
DRAFT

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CITY OF KENORA
KENORA WWTP

AERATION UPGRADES

2025-5904-01

SCALE: NTS

Lake of the Woods KENORA

PROCESS
PROCESS AND INSTRUMENTATION DIAGRAM
BLOWER ROOM AND AERATION TANK

DRAWING	REVISION	SHEET
5904-01-D-004	B	XX

IF NOT 50 mm ADJUST SCALES
50 mm

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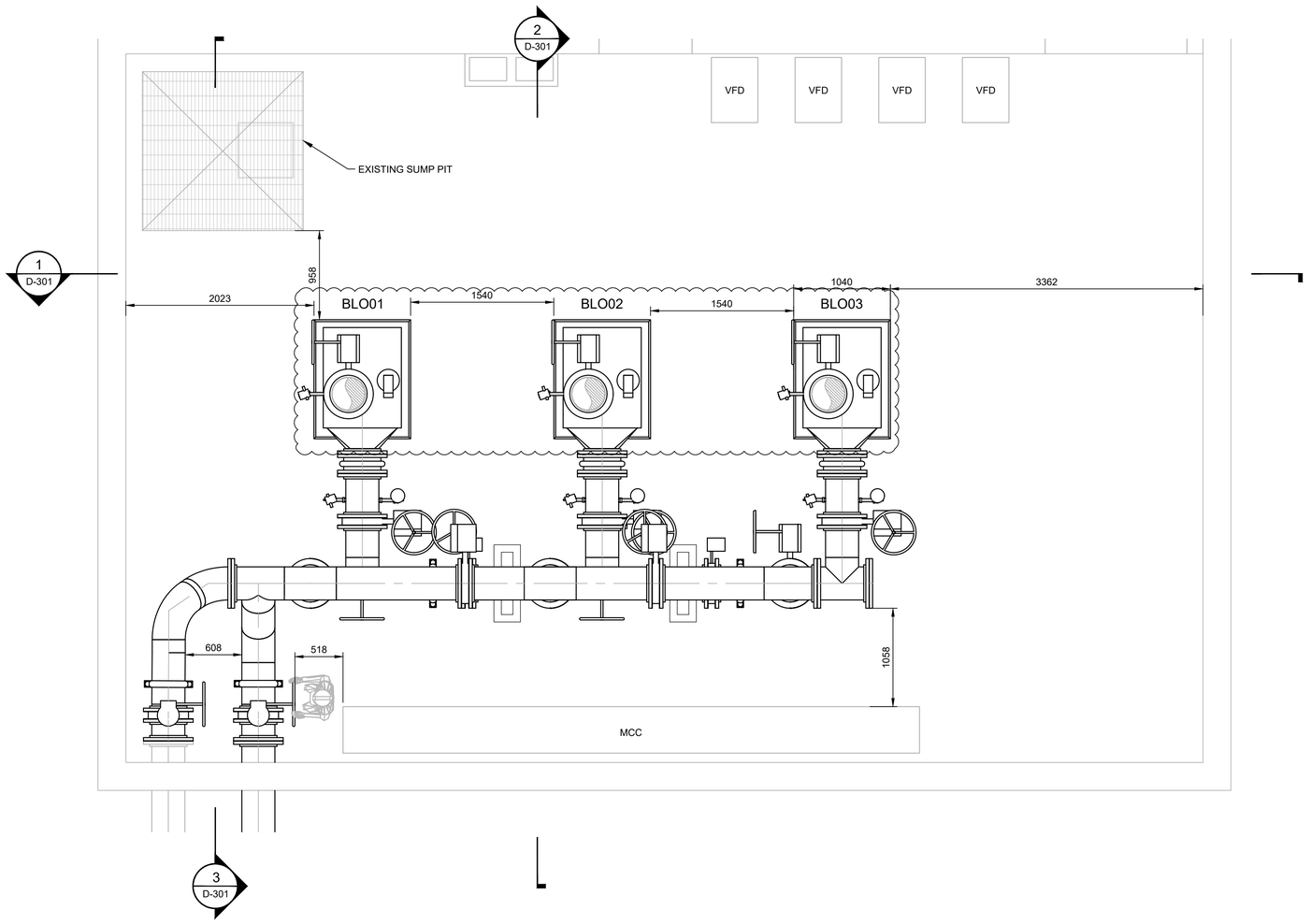

1 D-101 PLAN 1:30

LEGEND

CLOUDED PORTION DENOTES SCOPE OF SUPPLY FOR EQUIPMENT PROCUREMENT CONTRACT

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Canada's Best Managed Companies Platinum member

REV	DATE	DESIGN	DRAWN	DESCRIPTION
B	05MAY2026	M. BLAIN	W. ZHUANG	ISSUED FOR PRE-PURCHASE
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CITY OF KENORA
KENORA WWTP

AERATION UPGRADES

2025-5904-01

SCALE: NTS

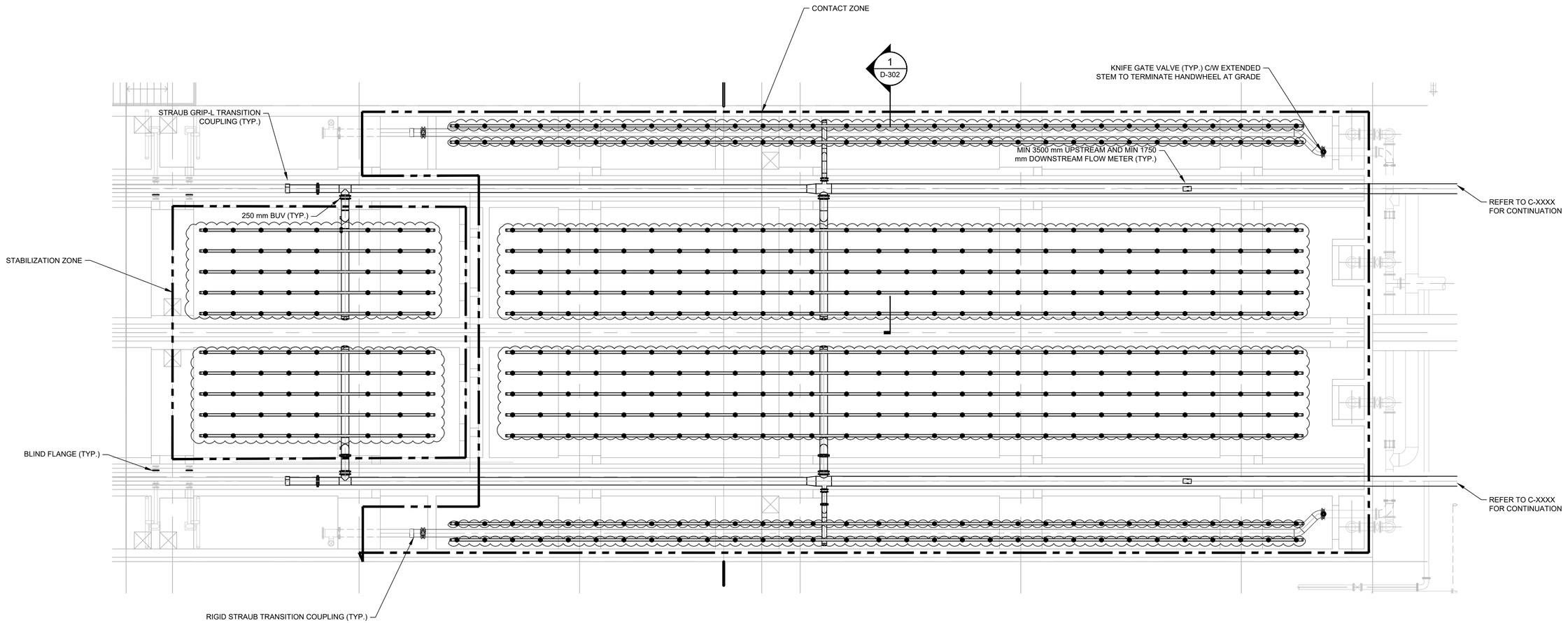
Lake of the Woods KENORA

PROCESS
PLAN
BLOWER ROOM

DRAWING	REVISION	SHEET
5904-01-D-101	B	XX

IF NOT 50 mm ADJUST SCALES
50 mm

SCALE(S) SHOWN ARE INTENDED FOR ANSI D (22X34) SIZE DRAWINGS, TABLOID (11X17) SIZE DRAWINGS ARE 1/2 OF SCALE(S) SHOWN UNLESS NOTED OTHERWISE



1 D-102 PLAN 1:75

NOTES:

1. PIPING UP TO AND INCLUDING THE DROP LEGS WILL BE PROVIDED BY OTHERS. THE NUMBER AND ARRANGMENT OF DIFFUSERS IN THE AERATION TANKS ARE SHOWN ONLY AS AN INDICATION OF THE SCOPE AND THE GENERAL CONFIGURATION OF THE TANKS, AND ARE TO BE REVISED AS REQUIRED FOR THE DIFFUSER SUPPLIER TO ACHIEVE THE REQUIREMENTS OUTLINED IN SPECIFICATION SECTION 46 51 46.

LEGEND

CLOUDED PORTION DENOTES SCOPE OF SUPPLY FOR EQUIPMENT PROCUREMENT CONTRACT

Associated Engineering

CANADA'S BEST MANAGED COMPANIES
Platinum member

REV	DATE	DESIGN	DRAWN	DESCRIPTION
B	05MAY2026	M. BLAIN	W. ZHUANG	ISSUED FOR PRE-PURCHASE
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CITY OF KENORA
KENORA WWTP

AERATION UPGRADES

2025-5904-01

SCALE: NTS

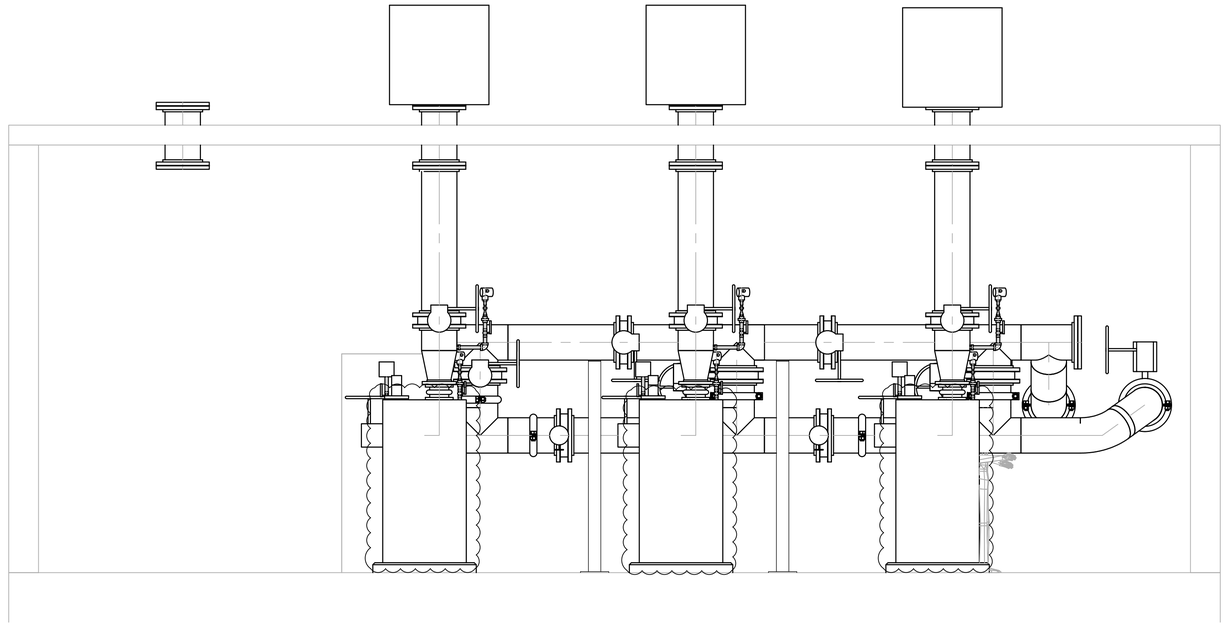
Lake of the Woods KENORA

PROCESS
PLAN
AERATION TANK

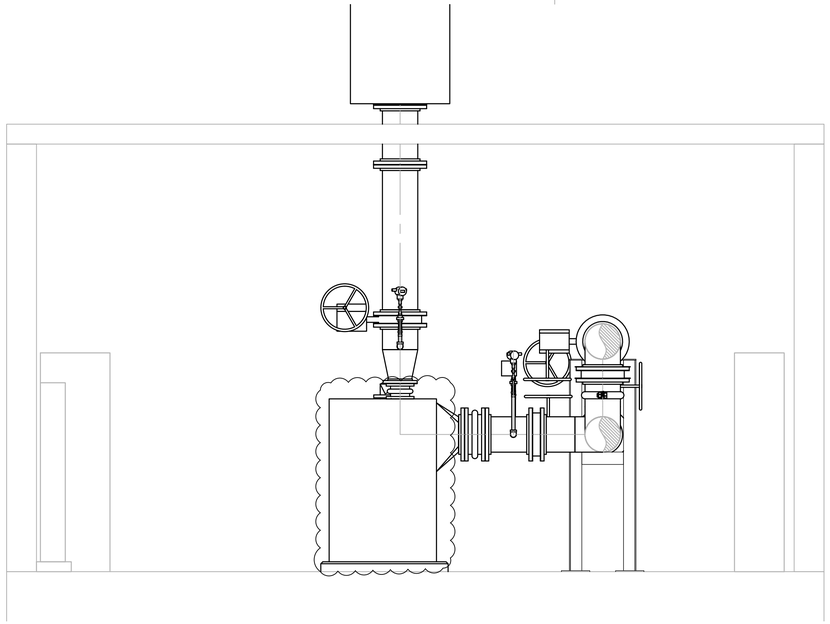
DRAWING	REVISION	SHEET
5904-01-D-102	B	XX

IF NOT 50 mm ADJUST SCALES
50 mm

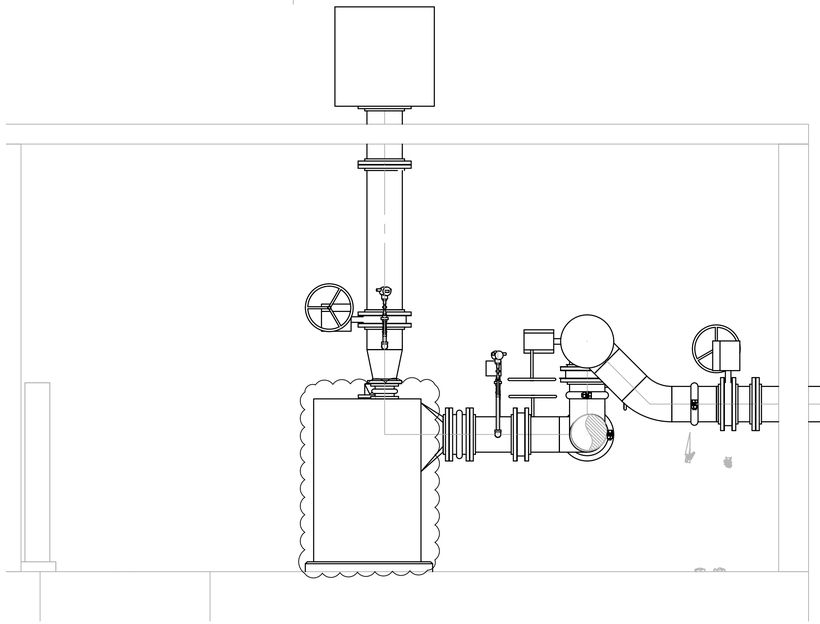
SCALE(S) SHOWN ARE INTENDED FOR ANSI D (22X34) SIZE DRAWINGS, TABLOID (11X17) SIZE DRAWINGS ARE 1/2 OF SCALE(S) SHOWN UNLESS NOTED OTHERWISE



1 / D-101 SECTION 1:30



2 / D-101 SECTION 1:30



3 / D-101 SECTION 1:30

LEGEND

CLOUDED PORTION DENOTES SCOPE OF SUPPLY FOR EQUIPMENT PROCUREMENT CONTRACT

Associated Engineering

2025 BEST MANAGED COMPANIES
Platinum member

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CITY OF KENORA
KENORA WWTP

AERATION UPGRADES

2025-5904-01

SCALE: NTS

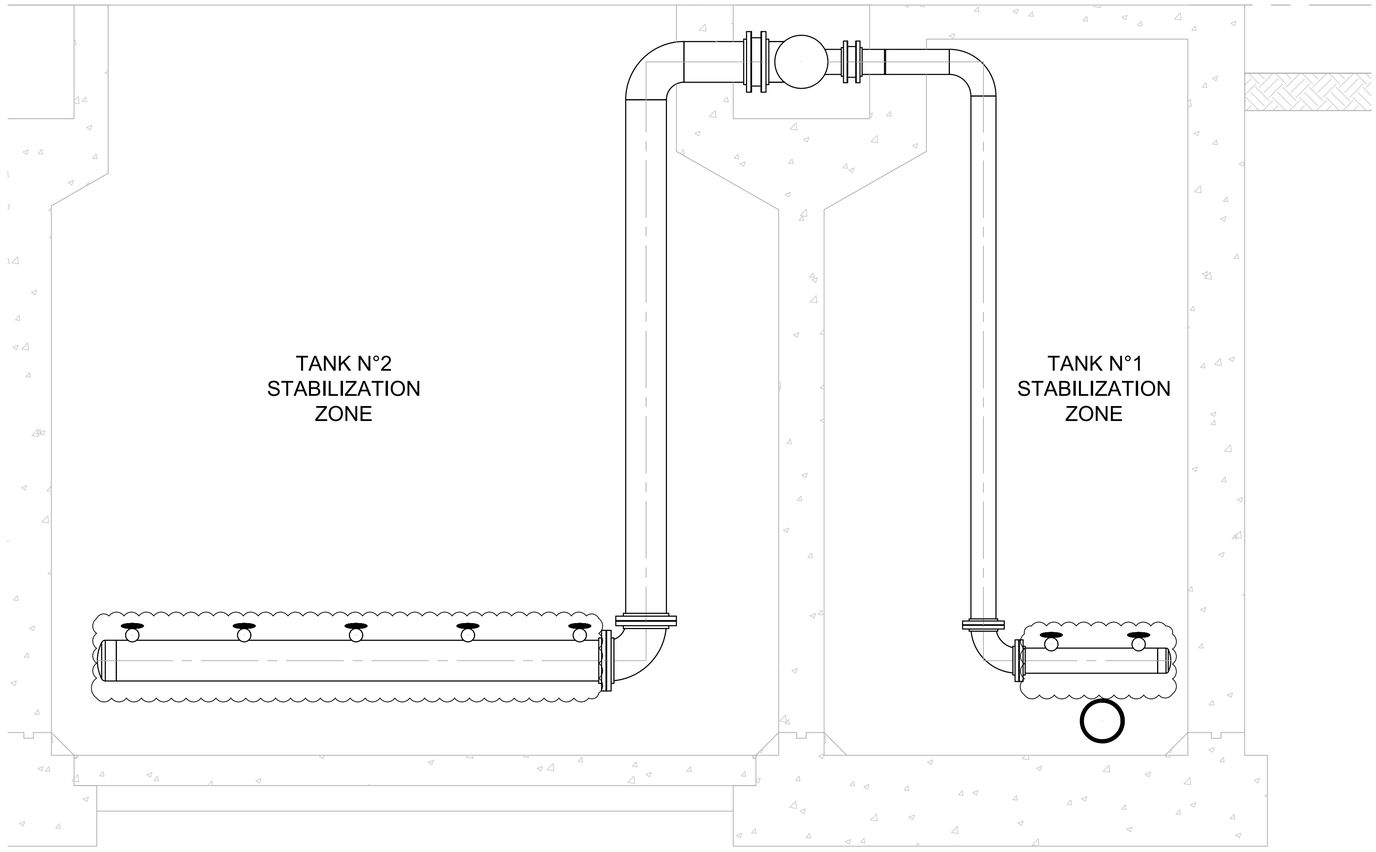
Lake of the Woods KENORA

PROCESS
SECTION (1)
BLOWER ROOM

DRAWING	REVISION	SHEET
5904-01-D-301	B	XX

IF NOT 50 mm ADJUST SCALES
50 mm

SCALE(S) SHOWN ARE INTENDED FOR ANSI D (22X34) SIZE DRAWINGS, TABLOID (11X17) SIZE DRAWINGS ARE 1/2 OF SCALE(S) SHOWN UNLESS NOTED OTHERWISE



1 / D-102 SECTION 1:20

LEGEND

CLOUDED PORTION DENOTES SCOPE OF SUPPLY FOR EQUIPMENT PROCUREMENT CONTRACT

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Platinum member

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CITY OF KENORA
KENORA WWTP

AERATION UPGRADES

2025-5904-01

SCALE: NTS

PROCESS
SECTION
AERATION TANK

DRAWING	REVISION	SHEET
5904-01-D-302	B	XX

IF NOT 50 mm ADJUST SCALES
50 mm
SCALE(S) SHOWN ARE INTENDED FOR ANSI D (22X34) SIZE DRAWINGS, TABLOID (11X17) SIZE DRAWINGS ARE 1/2 OF SCALE(S) SHOWN UNLESS NOTED OTHERWISE

LAYOUT SYMBOLS

CABLE, CONDUIT AND WIRE

- CONDUIT RUN ON SURFACE (WALL OR CEILING)
- CONDUIT RUN IN SLAB (OR BELOW GRADE)
- CONDUIT CAPPED
- CONDUIT GOING UP
- CONDUIT GOING DOWN
- FLEXIBLE CONDUIT
- CONDUIT HOME RUN c/w NUMBER OF WIRES
- CONDUIT EXPANSION JOINT
- CONDUIT BEND
- BARE GROUND WIRE
- OVERHEAD POWER SERVICE ENTRANCE
- OVERHEAD TELEPHONE SERVICE ENTRANCE
- JUNCTION BOX - CEILING SPACE
- JUNCTION BOX - FLUSH MOUNTED
- JUNCTION BOX - WALL MOUNTED
- JUNCTION BOX - UNDERGROUND
- JUNCTION BOX - MOTOR / EQUIPMENT
- MULTI-CABLE TRANSIT (MCT)
- SPARE WIRE LOOP
- CABLE OR CONDUIT DESIGNATION (PC-101): PC - POWER, TC - TELEPHONE, CC - CONTROL, IC - INSTRUMENTATION, HC - HEATING
- PANEL "A", CIRCUIT "10", SWITCH "b" (A10-b)

POWER

- POWER TRANSFORMER (XFMR)
- MAIN DISTRIBUTION PANEL "A" (PNL "A")
- SPLITTER (SPLTR)
- MOTOR AND/OR EQUIPMENT TAG c/w NAME, PLANT AREA AND NUMBER (MUA2D 5005)
- MOTOR (M)
- MOTORIZED DAMPER (D)
- MOTOR OPERATED VALVE (MOV)
- SOLENOID OPERATED VALVE (SOV)
- ELECTRIC HEATER
- SINGLE RECEPTACLE
- DUPLEX RECEPTACLE
- DUPLEX RECEPTACLE - WEATHERPROOF (WP)
- SPLIT DUPLEX RECEPTACLE
- ISOLATED GROUND RECEPTACLE
- GROUND FAULT (GFCI) RECEPTACLE
- ABOVE COUNTER DUPLEX RECEPTACLE
- ABOVE COUNTER SPLIT DUPLEX RECEPTACLE
- ABOVE COUNTER GROUND FAULT (GFCI) RECEPTACLE
- FLOOR MOUNTED SINGLE RECEPTACLE
- FLOOR MOUNTED DUPLEX RECEPTACLE
- SPECIAL SINGLE PHASE RECEPTACLE
- SPECIAL THREE PHASE RECEPTACLE

NOTE:
SYMBOLS AND ABBREVIATIONS SHOWN ON LEGENDS AND THIS SHEET MAY/MAY NOT BE USED WITHIN THE CONTRACT DRAWINGS.

- OVERHEAD REEL DUPLEX RECEPTACLE
- SINGLE PHASE POWER CONNECTION
- THREE PHASE POWER CONNECTION
- WELDING RECEPTACLE (W)

NOTE:
SYMBOLS AND ABBREVIATIONS SHOWN ON LEGENDS AND THIS SHEET MAY/MAY NOT BE USED WITHIN THE CONTRACT DRAWINGS.

LIGHTING

- LUMINAIRE TYPE "A" (A)
- SURFACE MOUNTED OR SUSPENDED LUMINAIRE
- RECESSED LUMINAIRE
- SURFACE MOUNTED OR SUSPENDED 610 x 610 LUMINAIRE
- RECESSED 610 x 610 LUMINAIRE
- STRIP LUMINAIRE
- WALL MOUNTED LUMINAIRE
- SURFACE MOUNTED OR SUSPENDED UNSWITCHED LUMINAIRE
- RECESSED UNSWITCHED LUMINAIRE
- AREA LIGHTING LUMINAIRE
- SURFACE MOUNTED OR SUSPENDED LUMINAIRE
- LUMINAIRE ON EMERGENCY POWER
- RECESSED LUMINAIRE
- RECESSED LUMINAIRE ON EMERGENCY POWER
- WALL MOUNTED LUMINAIRE
- POLE MOUNTED LUMINAIRE
- CEILING MOUNTED EXIT SIGN c/w OPTIONAL DIRECTIONAL ARROW
- WALL MOUNTED EXIT SIGN c/w OPTIONAL DIRECTIONAL ARROW
- TENON MOUNTED LUMINAIRE
- EMERGENCY LIGHTING UNIT c/w BATTERY PACK, CHARGER AND TWO HEADS
- WALL MOUNTED SINGLE EMERGENCY LIGHTING HEAD c/w JUNCTION BOX
- WALL MOUNTED DOUBLE EMERGENCY LIGHTING HEAD c/w JUNCTION BOX
- 1 LAMP BALLAST (REMOTE MOUNTED) (B)
- 2 LAMP BALLAST (REMOTE MOUNTED)

FIRE ALARM

- FIRE ALARM PANEL AND / OR ANNUNCIATOR
- BREAK GLASS STATION (F or PS)
- FIRE ALARM BELL (F)
- FIRE ALARM HORN AND STROBE c/w CANDELA LEVEL (F cd)
- FIRE ALARM PHONE (F)
- FIRE ALARM SPEAKER (F)
- SMOKE DETECTOR
- SMOKE DETECTOR - DUCT MOUNTED
- COMBINATION HEAT DETECTOR
- HEAT DETECTOR - FIXED TEMPERATURE
- HEAT DETECTOR - RATE-OF-RISE
- FIRE ALARM STROBE LIGHT c/w CANDELA LEVEL (F cd)
- END-OF-LINE RESISTOR

- FLOW SWITCH (FS)
- PRESSURE SWITCH (PS)
- TAMPER SWITCH (Z)
- GAS DETECTOR (G)
- INFRARED DETECTOR (IN)
- ULTRAVIOLET DETECTOR (U)
- MAGNETIC DOOR RELEASE (D)
- ELECTRIC DOOR LOCK (L)
- PRE-SIGNAL BUZZER (F)
- CONTROL RELAY MODULE (CR)
- ISOLATOR BASE MODULE (I)
- ADDRESSABLE ALARM RELAY MODULE (ARM)

ABBREVIATIONS

BD	- BUS DUCT
CB	- CIRCUIT BREAKER
DB	- DUCT BANK
DS	- DISCONNECT SWITCH
MCC	- MOTOR CONTROL CENTRE
PDP	- POWER DISTRIBUTION PANEL
PNL	- BRANCH PANEL BOARD
SWB	- SWITCHBOARD
T or XFMR	- TRANSFORMER
UPS	- UNINTERRUPTIBLE POWER SUPPLY

COMMUNICATIONS

- TELEPHONE TERMINAL BOARD (TTB)
- TELEPHONE / DATA OUTLET - SIMPLEX
- TELEPHONE/DATA OUTLET: DUPLEX
- 19" 2-POST RACK (2P)
- 19" 4-POST RACK (4P)
- 19" WALL MOUNTED RACK (WM)
- ANTENNA (XX)
- WIFI CONNECTION POINT (WiFi)
- SPEAKER - CEILING MOUNTED (S)
- SPEAKER - WALL MOUNTED (S)

GROUNDING

- GROUND BUS
- GROUND COMPRESSION CONNECTION
- EQUIPMENT GROUND CONNECTION
- THERMIT WELD GROUND CONNECTION
- GROUND ROD
- GROUND WELL AND ROD
- GROUND GRID w/ WELLS AND RODS

SECURITY

- CARD READER
- SINGLE DOOR ALARM CONTACT
- DOUBLE DOOR ALARM CONTACT
- SECURITY CAMERA - CEILING MOUNTED (C P)
- DOME SECURITY CAMERA - CEILING MOUNTED (C)
- DOME SECURITY CAMERA - WALL MOUNTED (C)
- MOTION DETECTOR (xxx)
  REX - REQUEST TO EXIT
  LTG - LIGHTING CONTROL
  SEC - SECURITY SENSOR
  CAM - CAMERA ACTIVATION

CONTROL

- SINGLE POLE SWITCH (SWITCH "a") PANEL "A" CIRCUIT "x" (Ax a)
- 2 SWITCHES IN 2 GANG BOX
- 3 SWITCHES IN 3 GANG BOX
- 4 SWITCHES IN 4 GANG BOX
- TWO POLE SWITCH (2)
- THREE WAY SWITCH (3)
- FOUR WAY SWITCH (4)
- SWITCH c/w PILOT LIGHT (X)
- MANUAL MOTOR SWITCH (M)
- MANUAL MOTOR SWITCH c/w PILOT LIGHT (M)
- KEY OPERATED SWITCH (K)
- EXPLOSION PROOF SWITCH (EP)
- WEATHERPROOF SWITCH (WP)
- LOW VOLTAGE SWITCH (CIRCUIT "a") (a)
- LOW VOLTAGE SWITCH (K-KEY OPERATED, P-PILOT LIGHT) (K, P)
- DIMMER SWITCH
- SPECIAL LOW VOLTAGE SWITCH UNIT (SEE SPECIFICATIONS)
- LOW VOLTAGE SWITCHING RELAY CABINET (RC)
- MOTION SENSOR SWITCH (M)
- PHOTOELECTRIC CELL (P)
- DISCONNECT SWITCH - FUSED
- DISCONNECT SWITCH - UNFUSED
- MANUAL MOTOR STARTER
- MAGNETIC MOTOR STARTER
- COMBINATION MAGNETIC STARTER
- LOW VOLTAGE THERMOSTAT (T)
- LINE VOLTAGE THERMOSTAT (T)
- HUMIDISTAT (H)
- ON-OFF CONTROL STATION (OI)
- HAND-OFF-AUTO SELECTOR SWITCH (HOA)
- LOCKOUT STOP CONTROL STATION (LO)
- LOCAL-OFF-REMOTE CONTROL STATION (LOR)
- SELECTOR SWITCH (HOA, LOR, LO or OA)
- START-STOP PUSHBUTTON AND SELECTOR SWITCH (HOA, LOR, LO or OA)
- LOCKOUT STOP PUSHBUTTON (LOS)
- START-STOP PUSHBUTTON
- EMERGENCY SHUTDOWN PUSHBUTTON (ESD)
- THERMISTOR CONTROL TRIPPING UNIT
- TIME SWITCH (TS)
- LOW VOLTAGE TRANSFORMER (XX = TRANSFORMER NUMBER) (LVT XX)

GENERAL

- KEYNOTE (KN)
- DEMOLITION SCOPE

SINGLE LINE DIAGRAM & SCHEMATIC SYMBOLS

- EQUIPMENT BUS
- BUS EXTENSION / CONNECTION
- 4160 V, 1200 A, 150 MVA, 52 — POWER CIRCUIT BREAKER
- 4160 V, 1200 A, 150 MVA, 52 — DRAWOUT POWER CIRCUIT BREAKER
- AMMETER SWITCH (AS)
- VOLTMETER (VS)
- XXX:X — CURRENT TRANSFORMER c/w RATIO AND QUANTITY
- XXX:X QTY — ZERO SEQUENCING CURRENT TRANSFORMER c/w RATIO AND QUANTITY
- V-V QTY — POTENTIAL TRANSFORMER c/w VOLTAGE RATING AND QUANTITY
- KEY OPERATED INTERLOCK (K)
- MOTOR OPERATED SWITCH (M)
- DIGITAL METERING SYSTEM (DMS)
- UTILITY POWER METER (M)
- SURGE ARRESTER
- SURGE ARRESTER AND SURGE CAPACITOR
- DRAWOUT FUSED POTENTIAL TRANSFORMER (V-V)
- DELTA-DELTA TRANSFORMER (A)
- DELTA-WYE GROUND TRANSFORMER
- DELTA-WYE RESISTOR GROUND TRANSFORMER
- CLOSED DELTA
- THREE PHASE WYE
- THREE PHASE WYE TO GROUND
- THREE PHASE ZIGZAG TO GROUND
- THREE PHASE WYE w/ RESISTOR TO GROUND
- MALE AND FEMALE DISCONNECT DEVICE
- 100AT 225AF 3P — CIRCUIT BREAKER
- 100AT 225AF 3P — DRAWOUT CIRCUIT BREAKER
- NON-FUSED DISCONNECT SWITCH
- FUSED DISCONNECT SWITCH
- FUSED HRC DISCONNECT SWITCH
- LOAD BREAK DISCONNECT SWITCH
- FUSED LOAD BREAK DISCONNECT SWITCH
- HORN GAP SWITCH
- INTERRUPTER SWITCH
- FUSED INTERRUPTER SWITCH
- GROUND SWITCH
- kVAR — CAPACITOR FOR PF CORRECTION c/w kVAR RATING
- NORMALLY OPEN CONTACT
- NORMALLY CLOSED CONTACT
- PLC — PROGRAMMABLE LOGIC CONTROLLER
- H1 XXX H2 / XXX X1 X2 — CONTROL POWER TRANSFORMER

- REACTOR
- HARMONIC FILTER
- TRANSFER SWITCH (A = AUTO, M = MANUAL) (or)
- FLEX CONNECTOR
- JUNCTION BOX MOUNTED NEAR MOTOR (J)
- RESISTANCE TEMPERATURE DETECTOR (RTD)
- FVNR MAGNETIC STARTER c/w SIZE
- FVR (REVERSING) STARTER c/w SIZE
- TWO SPEED STARTER c/w SIZE
- THERMAL OVERLOAD RELAY
- ELECTRONIC OVERLOAD c/w RATIO AND QUANTITY (X:X, X)
- VARIABLE SPEED DRIVE (HZ)
- SOFT START REDUCED VOLTAGE (S/S)
- GENERATOR
- SQUIRREL CAGE MOTOR (HP)
- MOTORIZED VALVE (HP)
- LIGHTING OR POWER PANEL

PANEL 'A'

- SPECIAL SINGLE PHASE RECEPTACLE
- SPECIAL THREE PHASE RECEPTACLE
- WELDING RECEPTACLE (W)
- MOTOR SPACE HEATER (xxW)
- SOLID STATE SURGE PROTECTIVE DEVICE
- SURGE PROTECTIVE DEVICE (SPD)
- TEST SWITCH (FT-1) (T S)
- SHORTING TERMINAL BLOCK (S B)
- GROUND TO EARTH
- BATTERY (+ -)
- PROTECTIVE RELAY c/w QUANTITY (1 LINE) (50 QTY)
- PROTECTIVE RELAY c/w QUANTITY (2 LINE) (50 51 QTY)
- RELAY SHUNT
- SINGLE or THREE PHASE MOTOR (X HP)
- RELAY COIL (X)
- TIMING RELAY COIL w/ TDE - TIME DELAY ENERGIZED, TDD - TIME DELAY DE-ENERGIZED AND TIME RANGE (TD TD_ 0-30 SECS)

COIL ABBREVIATIONS

CR	- CONTROL RELAY
RA	- AUXILIARY RELAY
PFR	- POWER-FAIL RELAY
OTR	- OVERLOAD-TRIP RELAY
CC	- CLOSING COIL
HC	- HOLDING COIL
LC	- LIGHTING CONTACT COIL
M	- MOTOR STARTER COIL

- INDICATING PILOT LIGHT c/w LENS COLOUR (A) R = RED, G = GREEN, A = AMBER, Y = YELLOW, W = WHITE
- ELAPSED TIME METER (ETM)
- MOTOR OVERLOAD CONTACT (O/L)
- FUSE c/w FUSE No. or AMP RATING (x A)
- CONDUIT SEAL WP-WEATHERPROOF, EP-EXPLOSION PROOF
- RESISTOR c/w RESISTANCE RATING (X OHMS)
- SERIES COIL OR SOLENOID VALVE
- SURGE SUPPRESSOR (SUPPRESSOR)
- MOTOR SURGE SUPPRESSOR (M)
- INDICATING LIGHT PUSH TO TEST c/w COLOR TYPE (G)
- SEMICONDUCTOR DIODE
- WIRE WITH WIRE NUMBERS (113)
- MECHANICAL CONNECTION
- WIRES CROSSOVER
- WIRES CONNECTED
- FIELD CONNECTION
- NORMALLY CLOSED MUSHROOM HEAD PUSHBUTTON - MOMENTARY
- NORMALLY OPEN PUSHBUTTON - MOMENTARY
- NORMALLY CLOSED PUSHBUTTON - MOMENTARY
- THREE POLE CIRCUIT BREAKER (CONTROL SCHEMATIC ONLY)
- THREE POLE DISCONNECT SWITCH (CONTROL SCHEMATIC ONLY)
- SINGLE POLE SINGLE THROW DISCONNECT SWITCH
- SINGLE POLE DOUBLE THROW DISCONNECT SWITCH
- TWO (2) POSITION SELECTOR SWITCH (ON-OFF SWITCH SHOWN IN ON POSITION) (ON OFF)
- THREE (3) POSITION SELECTOR SWITCH (HAND-OFF-AUTO SHOWN IN HAND POSITION) (H O A)
- DUAL TRANSFER SWITCH (C 1 2)
- FLOW SWITCH NORMALLY OPEN OR CLOSED (3)
- LEVEL SWITCH NORMALLY OPEN OR CLOSED
- LIMIT SWITCH NORMALLY OPEN OR CLOSED
- PRESSURE SWITCH NORMALLY OPEN OR CLOSED
- TEMPERATURE SWITCH NORMALLY OPEN OR CLOSED
- TERMINALS - TYPE AND LOCATION ASSIGNMENT DESIGNATED BY PROJECT DESIGN

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DATE: 2026-05-05, Weijun Zhuang

Associated Engineering
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PRELIMINARY/ FOR DISCUSSION
NOT FOR CONSTRUCTION
DRAFT

REV	DATE	DESIGN	DRAWN	DESCRIPTION
B	05MAY2026	G. DHILLON	K. TUMA	ISSUED FOR PRE-PURCHASE
A	03MAR2026	G. DHILLON	K. TUMA	ISSUED FOR 30% REVIEW

CITY OF KENORA
KENORA WWTP

AERATION UPGRADES

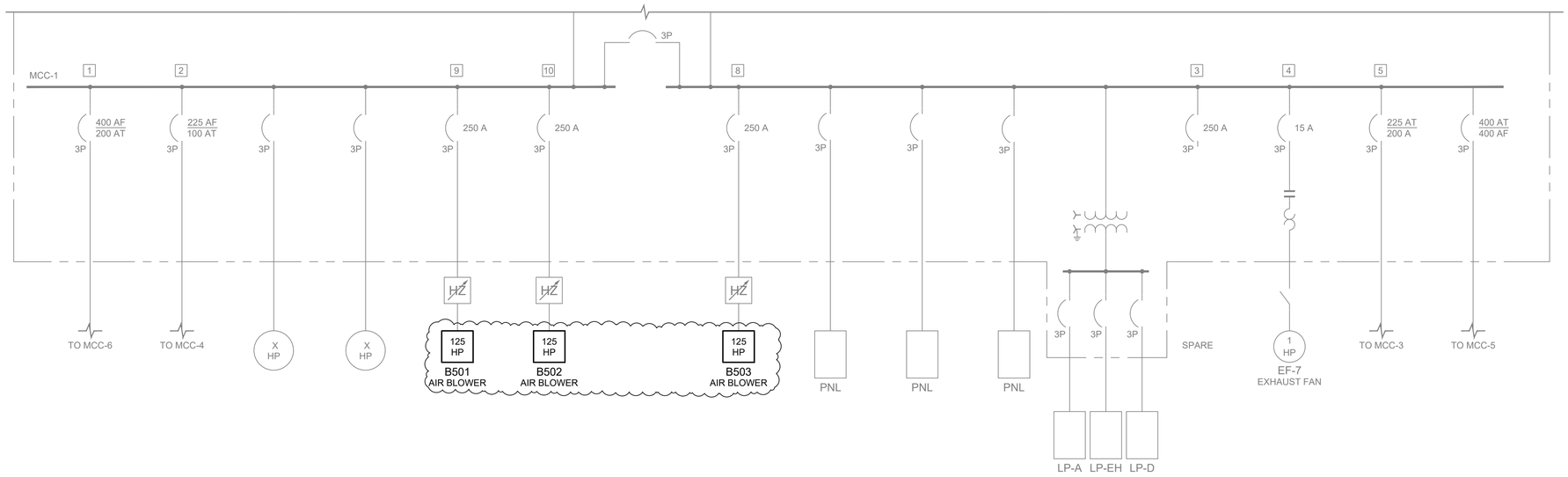
2025-5904-01

SCALE: NTS

Lake of the Woods KENORA

ELECTRICAL LEGEND

DRAWING	REVISION	SHEET
5904-00-E-001	B	XX



1 ED-001 DIAGRAM NTS
EXISTING MCC-1 SINGLE LINE

LEGEND

CLOUDED PORTION DENOTES SCOPE OF SUPPLY FOR EQUIPMENT PROCUREMENT CONTRACT

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SCALE: NTS

Lake of the Woods
KENORA

ELECTRICAL
DIAGRAM
PROPOSED MCC-1 SINGLE LINE

DRAWING	REVISION	SHEET
5904-00-E-002	B	XX