REGIONAL DISTRICT
of Fraser-Fort George

INVITATION TO TENDER
PS-25-02

SUPPLY AND INSTALLATION OF ANTENNA TOWER

Date Issued:	Wednesday April 2, 2025
Closing Location:	Regional District Office 3rd Floor, 155 George Street, Prince George, BC V2L 1P8
Closing Time:	May 1, 2025 2:00 pm p.m. (Pacific Standard Time) No Public Opening
Inquiries:	Email Bonnie Seitz at bseitz@rdffg.bc.ca Deadline: April 10, 2025
Note:	Late submissions will not be considered

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INVITATION TO TENDER
PART A – INTRODUCTION

The Regional District of Fraser-Fort George (Regional District) invites tenders from qualified contractors to supply and install an antenna tower for Regional District property located at 9770 Lakeside Drive, Prince George, BC.

The Regional District's objective is to award a contract to the successful Tenderer who can demonstrate that their primary focus is the construction of communications towers and can deliver a high quality, well managed project.

TENDER DOCUMENTS

The Invitation to Tender (ITT) documents may be obtained on or after April 2, 2025

(a) in a PDF (Public Document Format) file format from the Regional District's website at www.rdffg.ca;

(b) on the BCBid® website at www.bcbid.gov.bc.ca.

All subsequent information regarding this ITT, including amendments, Addendum(s) and answers to questions will also be available as above.

It is the sole responsibility of the tenderer to ascertain that they have received a full set of Tender Documents. Upon submission of their bid, the tenderer will be deemed conclusively to have been in possession of a full set of Tender Documents (listed in Part B, Section 2.1).

Tenders not submitted in strict accordance with these instructions or not complying with the requirements in this ITT may be rejected.

To be considered, Tenders must be signed by an authorized signatory of the Tenderer. By signing the Tender, the Tenderer is bound to statements made in response to this ITT. Any Tender received by the Regional District that is unsigned will be rejected.

The lowest of any Tender will not necessarily be accepted. The Regional District of Fraser-Fort George reserves the right to accept or reject any or all Tenders.

TENDER SUBMISSION AND CLOSING LOCATION AND TIME:

The Regional District will accept Tenders submitted either by direct delivery (hand delivery, courier, or post/mail) or electronically to the Closing Location and Time, as outlined below.

Tenders will be received by the General Manager of Financial Services at the Regional District of Fraser-Fort George, 3rd floor, 155 George Street, Prince George, BC (the **"Closing Location")**, no later than 2:00 p.m. local time on May 1, 2025 (the **"Closing Time"**) or by email to purchasing@rdffg.bc.ca. There will not be a public opening for this Tender.

Tenders must be in English and must be submitted using the submission methods below.

The Closing Time and time for this tender is May 1, 2025, at 2:00 p.m.

For Tenders to be submitted by hard copy direct delivery:

Two complete copies of your Tender must be submitted in a sealed envelope with the following information written on the outside of the envelope containing the tender, as well as on the outside of the courier envelope/box (if sending by courier):

1. Attention: General Manager of Financial Services
   Regional District of Fraser-Fort George
   3rd Floor, 155 George Street
   Prince George, BC V2L 1P8
2. Invitation to Tender, PS-25-02 – Supply and Installation of Antenna Tower
3. Responding Tenderer's name and address

Facsimile Tenders will NOT be accepted.

For Tenders to be Submitted Electronically, with no Bid Security:

"Prince George Time" will be conclusively deemed to be the time indicated in the electronic timestamp the Tender receives upon delivery to the email address specified herein.

Tenderers must submit all portions of their Tender by email in accordance with the following:

Subject of the file to be: PS-25-02 – Supply and Installation of Antenna Tower (Insert Responding Tenderer's Name)

All emailed documents must be in PDF format and should be in one combined file. Tenderers should ensure that the files should not collectively exceed 35MB. Zip the files to reduce the size if needed. Submitting the files via Drop Box, FTP, or similar programs, is not acceptable.

Tenders must be submitted to purchasing@rdffg.bc.ca. DO NOT deliver a physical copy of the tender package to the Regional District of Fraser Fort George.

The Regional District does not assume any risk or responsibility or liability, including in contract or tort (including negligence), whatsoever to any Tenderer:

1. for ensuring that any electronic email system being operated by or for the Regional District is in good working order, able to receive transmissions, or not engaged in receiving other transmissions such that a Tenderer's electronic transmission, including the transmission of an electronic copy of its Tender, cannot be received;
2. for errors, problems or technical difficulties with respect to a Tenderer's electronic transmission, including the transmission of an electronic copy of its Tender;
3. that a Tenderer's electronic transmission, including the transmission of an electronic copy of its Tender, is received by the Regional District of Fraser-Fort George in its entirety or within any time limit specified by this Tender.

PART B – INSTRUCTIONS TO TENDERERS

The Regional District of Fraser-Fort George, hereinafter referred to as the Regional District, invites Tenders for: PS-25-02 Supply and Installation of Antenna Tower, from Tenderers who can demonstrate that their primary focus is construction of communication towers.

Instructions regarding obtaining the Tender Documents are contained in Part A: Introduction.

Questions relating to the tender or project must be directed to the Project Manager:
Bonnie Seitz, Community Services Leader
Regional District of Fraser-Fort George
155 George Street
Prince George, BC V2L 1P8
Email: bseitz@rdffg.bc.ca

Deadline for question submissions is 4:00 p.m. (local time) on April 10, 2025

Those questions that are determined to be of a common interest to all potential Tenderer's will be summarized and posted as Addendum(s) on the Regional District's website as well as the BCBid® website.

TENDER PROCESS

1.0 Definitions

1.1 "**Addendum(s)**" means all additional information regarding this ITT including amendments to the ITT.

1.2 "**BC Bid**" means the BC Bid website located at www.bcbid.ca.

1.3 "**Board**" means the Board of the Regional District.

1.4 "**Closing Location**" means the location specified in Part A - Introduction.

1.5 "**Closing Time**" means the closing time and date specified in Part A - Introduction.

1.6 "**Contract**" means the contract substantially in the form attached to this ITT.

1.7 "**Contractor**" means the successful Tenderer to the ITT who enters into a Contract with the Regional District.

1.8 "**Form of Tender**" means the form of tender attached to this ITT.

1.9 "**ITT**" means the solicitation described in this document, including any attached or referenced appendices, schedules or exhibits and as may be modified in writing from time to time by the Regional District by Addendum(s).

1.10 "**Must**" means a requirement that must be met in order for a Tender to receive consideration.

1.11 "**Project Manager**" means the Regional District's representative.

1.12 "**Regional District**" means the Regional District of Fraser-Fort George.

1.13 "**Should**", or "**May**" means a requirement having a significant degree of importance to the objective of the ITT, but which the Regional District would strongly prefer to be fulfilled, and which the Regional District may in its sole discretion elect to treat the failure to fulfill as a grounds for rejection of a Tender.

1.14 "**Tender**" means a submission in response to this ITT.

1.15 "**Tender Documents**" means the documents listed in section 2.1.

1.16 "**Tenderer**" means the person submitting a Tender.

1.17 "**Work**" means the total construction and related services required by the Tender documents.

2.0 Tender Documents

2.1 The Tender Documents are:

(a) Part A – Introduction;

(b) Part B – Instructions to Tenderers; and

(c) Appendices:

i. Appendix A – Bidder Checklist;

ii. Appendix B – Tender Form;

iii. Appendix C – Schedule of Prices – Tendered Price;

iv. Appendix D – List of Contractor's Personnel;

v. Appendix E – List of Subcontractors;

vi. Appendix F – Tender's Experience in Similar Work;

vii. Appendix G – Conflict of Interest Disclosure Statement

viii. Appendix H – Goods and Services Tax Information;

ix. Appendix I – Contract Agreement;

x. Appendix J – Scope of Work and Certifications; and

xi. Appendix K – Optional Equipment/Specifications.

2.2 If there is a conflict between or among the Specifications and the other Tender Documents, the other Tender Documents shall prevail over the Specifications.

3.0 Acceptance of Terms and Conditions

Submitting a Tender indicates acceptance of all the terms and conditions set out in the ITT, including those that follow and that are included in all appendices and any Addendum(s).

4.0 Submission Instructions

4.1 Each Tenderer must complete and provide Appendix B – H and J – K .

4.2 All prices and notations should be legibly written in a non-erasable medium. Erasures, interlineations, or other corrections should be initialed by an authorized signatory of the Tenderer.

4.3 Subject to any alternatives or options in respect of which the Regional District requests pricing or other information in an Appendix to the ITT, Tenders are to be all inclusive and without qualification or condition.

4.4 The Regional District may, at any time and for any reason, extend the Closing Time by means of a written amendment published on the Regional District's website, at www.rdffg.ca and at BC Bid.

4.5 Each Tender must be signed by an authorized signatory or authorized signatories of the Tenderer, as is necessary for due execution on behalf of the Tenderer. Each Tender by a company or partnership should specify the full name of the legal entity submitting the Tender.

4.6 It is the sole responsibility of the Tenderer to ascertain that they have received a full set of the Tender Documents. Upon submission of their Tender, the Tender will be deemed conclusively to have been in possession of a full set of the Tender Documents.

4.7 If the Regional District, in the Regional District's sole discretion, determines that a clarification, addition, deletion, or revision of the ITT is required then the Regional District will issue an addendum and the addendum will be posted on the Regional District website and BC Bid.

4.8 It is the sole responsibility of the Tenderer to check for Addendum(s). Addendum(s) issued during the time of Tendering must be signed by the Tenderer and included with the Tender and will become a part of the Tender documents.

4.9 The Regional District will not be responsible for any costs incurred by the respondent which may result from the preparation or submission of documents pertaining to this Tender. Accuracy and completeness of a Tender is the Tenderer's responsibility.

5.0 Discrepancies or Omissions

5.1 Tenderers finding discrepancies or omissions in the specifications or other documents herein or having doubts on the meaning or intent of any part thereof, should immediately request in

written form, either by email or by mail, clarification from the Project Manager. Upon receipt of the written request for clarification, The Project Manager may, in the person's sole discretion, send written instructions or explanations to all parties registered as having returned the acknowledgement letter, and make amendments to this ITT. No responsibility will be accepted for oral instructions. Any request must be received prior to April 10, 2025.

5.2 It is the responsibility of each Tenderer to thoroughly examine the Tender Documents and satisfy itself as to the full requirements of this ITT and their acceptability to the Tenderer.

6.0 Late Submissions

Tenders will be marked with their receipt time upon receipt. Only complete Tenders received before the Closing Time will be considered to have been received on time. Tenders received late will be marked late and not considered or evaluated. In case of a dispute, the Tender receipt time as recorded by the Regional District will prevail whether accurate or not.

7.0 Changes to Tenders

A Tenderer that has already submitted a Tender may amend its Tender prior to the Closing Time:

(a) For changes to price only, by submitting an amendment via email or mail at the address identified at the beginning of Part B of this Invitation to Tender, identifying a plus or minus variance to the Tenderer's Tender Price; or
(b) In all cases, by delivering a completely new Tender in accordance with Part A to this Invitation to Tender, clearly indicating it replaces the previously submitted Tender.

Any such revision must clearly identify the ITT number and the Closing Time. A Tender revision submitted as aforesaid shall effectively amend the Tender and the Regional District shall only review and evaluate the Tender as amended.

8.0 Bid Prices

8.1 The Tenderer will be deemed to have satisfied themselves as to the sufficiency of the Tender for the work and the price stated in the Schedule of Prices. These prices will cover all their obligations under the Contract, and all matters necessary to the proper completion and maintenance of the work, and will include the supply of all labour, equipment material, supervision, services, taxes and assessments, together with the Tenderer's overhead and profit, except where otherwise provided elsewhere in this ITT.

8.2 Tender prices must remain open for acceptance for a period of 60 days from the Closing Time unless otherwise stated by the Regional District.

9.0 Subcontractors

All Subcontractors, including affiliates of the Tenderer, should be clearly identified in the Tender as per the form attached as Appendix E.

A Tenderer may not subcontract to a firm or individual whose current or past corporate or other interests, may, in the Regional District's opinion, give rise to an actual, perceived or potential conflict of interest in connection with the services described in the Tender. This includes, but is not limited

to, involvement by the firm or individual in the preparation of the Tender or a relationship with any employee, contractor or representative of the Regional District involved in preparation of the Tender, participating in evaluation or in the administration of the Contract. If a Tenderer is in doubt as to whether a proposed Subcontractor might be in a conflict of interest, the Tenderer should consult with the Project Manager prior to submitting a Tender. By submitting a Tender, the Tenderer represents that it is not aware of any circumstances that would give rise to a conflict of interest that is actual, perceived or potential, in respect of the Tender.

10.0 Rejection of a Tender

10.1 The Regional District may, in its sole discretion, reject any and all Tenders, or accept the Tender deemed most favourable in the interests of the Regional District. The lowest, or any Tender, will not necessarily be awarded.

10.2 Tenders which contain qualifying conditions or otherwise fail to conform to the instructions contained in this ITT may be disqualified or rejected. The Regional District may, however, in its sole discretion, reject or retain for its consideration Tenders which are non-conforming because they do not contain the content or form required by the ITT, or for failure to comply with the process for submission set out in this ITT, whether or not such non-compliance is material.

10.3 The Regional District's intent is to enter into a Contract with the Tenderer who has submitted the best offer. The Regional District reserves the right to accept any or none of the Tenders submitted and will evaluate Tenders based on the best value offered to the Regional District and not necessarily the lowest price. The Regional District reserves the right in its sole unrestricted discretion to:

(a) accept any Tender which the Regional District deems most advantageous to itself;
(b) reject any and/or all irregularities in a Tender submitted;
(c) waive any defect or deficiency in a Tender whether or not that defect or deficiency materially or substantially affects the Tender and accept that Tender;
(d) reject any and/or all Tender for any reason, without discussion with the Tenderer(s);
(e) accept a Tender which is not the lowest Tender; and
(f) cancel or reissue the Tender without any changes.

10.4 Without limiting any other provision of this Tender, the Regional District may, in its sole discretion, reject a Tender submitted by a Tenderer, if the Tenderer or any officer or director of a corporate Tenderer, is, or has been within a period of two years prior to the Closing Time, engaged either directly or indirectly through another corporation or legal entity in a legal proceeding initiated in any court against the Regional District in relation to any contract with, or works or services provided to the Regional District.

11.0 Conflict of Interest

11.1 When submitting a Tender, the Tenderer must complete, sign and include with their Tender a conflict of interest disclosure statement (Appendix G).

11.2 Without limiting any other provision of this ITT, the Regional District may reject a Tender based on an actual, potential or perceived conflict of interest.

The Regional District may reject any Tender where:

a. one or more of the directors, officers, principals, partners, senior management employees, shareholders or owners of the Tenderer, is an officer, employee or director of the Regional District or a consultant involved in the procurement process, or is a member of the immediate family of an officer, employee or director of the Regional District or a consultant involved in the procurement process; or

b. in the case of a Tender submitted by a Tenderer who is an individual person, where that individual is an officer, employee or director of the Regional District or a consultant involved in the procurement process, or is a member of the immediate family of an officer, employee or director of the Regional District or a consultant involved in the procurement process.

A Tenderer who has any concerns regarding whether a current or prospective employee, advisor or member of that Tenderer is, or may be, a Restricted Party, is encouraged to request an advance decision by submitting to the Project Manager, not less than ten working days prior to the Closing Time, by email, the following information:

(a) names and contact information of the Tenderer and the person for which the advance opinion is requested;
(b) a description of the relationship that raises the possibility or perception of a conflict of interest or unfair advantage; and
(c) copies of any relevant documentation.

The Regional District may make an advance decision regarding whether the person is a Restricted Party, and whether the Regional District will reject a Tender based on the information provided.

12.0 Tender Evaluation

12.1 The purpose of this ITT is to select a Tenderer with the capability and experience to efficiently and cost effectively complete the work described in this ITT.

12.2 The Regional District shall be the sole judge of a Tender and its decision shall be final. The Regional District staff shall use the following criteria to evaluate tenders received:

a.	Tender Price	35 points
b.	Tenderer's Experience and Track Record	25 points
c.	Technical Proposal and Methodology	20 points
d.	Compliance and Certifications	15 points
e.	Health and Safety Record	5 points
	TOTAL	100 points

12.3 The Tenderer acknowledges that the Regional District may rely upon criteria that the Regional District deems relevant even though such criteria may not have been disclosed to the Tenderer. By submitting a Tender, the Tenderer acknowledges the Regional District's right under this clause and absolutely waives any right of action against the Regional District for the Regional District's failure to accept the Tenderer's Tender, whether or not such right of action arises in contract, negligence, bad faith or any other cause of action.

12.4 Notwithstanding any other provision in this ITT, the award of a Contract by the Regional District may be subject to the availability of funding and the approval of the Board.

13.0 Proof of Ability

The Tenderer will be competent and capable of performing the Work. The Tenderer is required to provide evidence of previous experience and financial responsibility before the contract is awarded.

14.0 Examination of Contract Documents and Site

14.1 The Tenderer will satisfy themselves as to the practicality of executing the work in accordance with the Contract, and they will be held to have satisfied themselves in every particular before making up their Tender by inquiry, measurement, calculation and inspection of the site.

14.2 The Tenderer may examine the site and its surroundings before submitting their Tender by request to the Project Manager. As part of the tender, Figure 1 – Ness Lake Tower Layout, Figure 2 – Site Location and an Attachment – GEO Technical Report have been included to assist in Tender preparation.

14.3 The Tenderer will examine the quantities and nature of the work and equipment necessary for the completion of the work, and the means to access to the site, the accommodation they may require, and in general, will obtain all relevant information as to risks, contingencies and other circumstances which may influence their Tender.

15.0 Liability for Errors

15.1 The Regional District will not be responsible for any costs incurred by Tenderers as a result of the preparation or submission of a Tender pertaining to this ITT. The accuracy and completeness of the Tender is the Tenderer's responsibility. If errors are discovered, they will be corrected by the Tenderer at their expense.

15.2 Tenderers acknowledge that the Regional District, in the preparation of the ITT supply of oral or written information to Tenderers, review of Tenders or the carrying out the Regional District's responsibilities under this ITT, does not owe a duty of care to Tenderers.

16.0 Limitation of Liability

Except for claims for costs of preparation of its Tender, each Tenderer, by submitting a Tender, irrevocably waives any claim, action, or proceeding against the Regional District including without limitation any judicial review or injunction application or against any of the Regional District's employees, advisors or representatives for damages, expenses or costs including costs of Tender preparation, loss of profits, loss of opportunity or any consequential loss for any reason including: any actual or alleged unfairness on the part of the Regional District at any stage of the Tender process; if the Regional District does not award or execute a contract; or, if the Regional District is subsequently determined to have accepted a noncompliant Tender or otherwise breached or fundamentally breached the terms of this ITT.

17.0 Ownership of Tenders and Freedom of Information

17.1 Tenders will be received and held in confidence by the Regional District, subject to the provisions of the Freedom of Information and Protection of Privacy Act and this ITT. Each Tender should clearly identify any information that is considered to be confidential or proprietary information.

17.2 As an exception to Tenders being received and held in confidence, Tenderers are advised and acknowledge that any contract entered into as a result of this Tender may be subject to Board approval, which may be discussed and voted on at a meeting of the Board that is open to the public. If Board approval is required, details of Tenders, including but not limited to proposed or negotiated fees, may be provided to the Board in a publicly available staff report, discussed at a Council meeting that is open to the public, and posted on a publicly available electronic agenda on the Regional District's website.

18.0 Confidentiality

In accordance with the *Freedom of Information and Protection of Privacy Act*, Tenderers will treat as confidential and will not, without prior written consent of the Regional District, publish, release, or disclose, or permit to be published, released, or disclosed, any information supplied to, obtained by, or which comes to the knowledge of a Tenderer as a result of this ITT except insofar as such publication, release or disclosure is required by the laws of British Columbia.

PART C – CONTRACT CONDITIONS

1. Form of Contract

A sample contract agreement is included as Appendix I.

2. Start and Duration of Contract

The term of the Contract will begin at 12:01 a.m., on the execution of the Contract and will conclude upon completion of the project. A construction start date will be mutually agreed upon by both the contractor and Regional District. Once construction begins the contractor will not stop until it is completed. This project must be completed no later than October 31, 2025.

3. Term and Termination

The term of this Contract shall commence as set out in Section 2. and shall continue in effect until terminated by either party as provided herein. Either party may terminate this Agreement at any time, with or without cause, by providing not less than 30 business days advance written notice to the other party. The Contractor or the Regional District may terminate this Agreement immediately in writing if either party becomes insolvent, enters bankruptcy, receivership, or other like proceeding (voluntary or involuntary) or makes an assignment for the benefit of creditors.

4. Intent of Contract Documents

This Contract is not an agreement of employment. The Contractor is an independent contractor, and nothing herein will be construed to create a partnership, joint venture, or agency and neither party will be responsible for the debts or obligations of the other.

5. Assignment of Contract

The Contractor will not sublet, sell, transfer, assign, or otherwise dispose of the Contract or any portions thereof, or their right, title or interest therein, or their obligations thereunder without written consent of the Regional District, except for an assignment to a bank of the payments to be received hereunder.

6. Payment

The Contractor will invoice the Regional District on a monthly basis. The invoice will itemize payment due for services delivered at the facility during the previous month on the Tender Sum in the Schedule of Prices. Invoices should quote contract number PS-25-02.

The Regional District will, by the thirtieth day of the month following that for which payment is required on receipt of an invoice and on advice from the Manager that the Work has been satisfactorily carried out, pay the Contractor for Work completed in accordance with the Contract in the previous month. No payment will be made for materials supplied by the Regional District.

7. Changes to the Contract Work

The Regional District, without invalidating the Contract, may make changes by altering, adding to, or deducting from the work. The Contractor will proceed with the work as changed and the work will

be executed under the provisions of the Contract. No changes will be undertaken by the Contractor without written order of the Regional District, except in an emergency endangering life or property, and no claims for additional compensation will be valid unless the change was so ordered. The Regional District will entertain no payment for extra work or changes in the Contract unless a "Change Order" form is completed and signed by the Regional District and the Contractor.

If, in the opinion of the Regional District, such changes affect the Contract amount, these will be adjusted at the time of ordering the changes. The value of the addition or deduction from the Contract amount will be decided by the Regional District based on a lump sum estimate submitted by the Contractor and accepted by the Regional District.

8. Insurance

The Contractor shall, without limiting its obligations or liabilities, and at its own expense, provide and maintain throughout the Contract term, the following insurance with insurers licenced in the Province of British Columbia, in forms acceptable to the Regional District. All required insurance (except automobile insurance on vehicles owned by the Contractor) shall be endorsed to show the Regional District as additional insured and to require that the Regional District be provided with 30 days' advance written notice of cancellation or material change. The Contractor will provide the Regional District with evidence of the required insurance, in a form acceptable to the Regional District, upon notification of award and prior to the execution and delivery of the Contract:

i. Commercial General Liability (CGL) in an amount not less than $3,000,000 inclusive per occurrence insuring against bodily injury and property damage and including liability assumed under the Contract. Such CGL coverage shall include the following liability extensions: Contingent Employers Liability, Broad Form Products & Completed Operations, Personal Injury, Blanket Contractual, and Cross Liability. The Regional District is to be added as an additional insured.

ii. Where the Contractor requires the use of Automobiles to undertake the work of the Contract, the Contractor will have the following:

   a. Automobile Liability on all vehicles owned, operated, or licenced in the name of the Contractor in an amount not less than $2,000,000 per occurrence.

   b. Non-owned Automobile Liability insurance in an amount not less than $2,000,000 per occurrence.

iii. Equipment insurance on all equipment owned or rented by the Contractor to its full insurable value.

The Contractor shall ensure that all sub-contractors forming from this Contract meet the insurance requirements outlined above.

It is the sole responsibility of the Contractor to determine if additional limits of liability insurance coverage are required to protect them from risk.

9. Damage to Existing Property

In the event of damage to the Regional District's property arising from actions of the Contractor, the procedure will be as follows:

1. The Contractor will immediately advise the Regional District of any damage to the Regional District's property.
2. Upon investigation, the Regional District will notify the Contractor of damages to be repaired.
3. If the Contractor does not reply within 72 hours, the Regional District will repair to the appropriate specifications or regulations and deduct the cost of the repair from payment to the Contractor.

10. WorkSafeBC

The Contractor will use due care and take all necessary precautions to assure the protection of persons and property while undertaking the Work and will comply with the Workers Compensation Act of the Province of British Columbia.

Prior to undertaking any of the Work in this Service Agreement, the Contractor will provide the Regional District with a Clearance Letter confirming they are in good standing with WorkSafeBC and will pay and keep current all assessments required by WorkSafeBC in relation to the Service Agreement amount.

Out of Province Contractors will be compliant with WorkSafeBC's registration requirements pertaining to out-of-province firms. Where WorkSafeBC registration requirements allow for a Contractor to be registered with another Province's Worker's Compensation Board or like organization, the Contractor will provide the Regional District with their registration number and written documentation confirming that the Contractor is in good standing with the appropriate Worker's Compensation Board, or like organization. The Contractor will pay and keep current all assessments required to maintain good standing in relation to the Service Agreement amount.

11. Indemnity and Release by Contractor

Notwithstanding the compliance of the Contractor with all the clauses concerning insurance, the Contractor shall indemnify, protect, and save harmless the Regional District, its officials, officers, employees, volunteers, servants, and agents from and against any and all liabilities, damages, losses, claims, costs, expenses of any kind whatsoever (including legal costs), and actions recoverable by any third party from the Regional District, arising from or caused by a negligent act or omission of, or breach of this Agreement on the part of, the Contractor, and shall be paid by the Contractor. If the Regional District pays, or is required to pay, any damages, costs, or fees on account of the actions, claims and demands herein recited, or if the property of the Regional District shall be charged in any way as a result of the aforesaid actions, causes of actions, and claims for demands, then the Regional District shall be entitled to recover from the Contractor all such damages, costs, fees or other charges together with any costs or expenses incurred in so doing. The Contractor covenants and agrees that this clause shall survive the termination of the Contract herein granted.

12. Force Majeure

If either the Contractor or the Regional District are prevented from performing their obligations under the Contract, or where the Regional District's work in respect of which the Contractor is providing Services cannot be performed, because of an act of God, an act of a legislative, administrative or judicial entity, fire, flood, labour strike or lock-out, epidemic, unusually severe weather, or other

similar cause outside of the control of the Parties (collectively "Force Majeure"), then the obligations of the Contractor and the Regional District under the Contract shall be suspended for so long as the condition constituting Force Majeure continues. The Party affected by Force Majeure shall provide the other Party with notice of the anticipated duration of the Force Majeure event, any actions being taken by the Party providing notice to avoid or minimize the effect of the Force Majeure event and shall make reasonable efforts to remove or mitigate the effects of the condition constituting Force Majeure. Upon the termination of the Force Majeure event, the Regional District shall grant to the Contractor a time extension for performance of any milestone dates required as part of the Services as may be agreed with the Contractor or, if the Regional District and the Contractor are unable to reach agreement, as determined by the dispute resolution process under Section 22 of the Contract. Where as a result of Force Majeure there is a material increase in the Contractor's cost of or the time required for the performance of the Services that is not offset by a decrease in cost, then the Regional District shall increase the amount of the service fee payable to the Contractor under Section 6 of this Agreement, as may be agreed by the Contractor, or as determined under Section 22 of the Contract. If the event of Force Majeure results in a material increase in the cost of the work to be performed in respect of which the Contractor is providing the Services, then the Regional District may choose not to proceed with the completion of the work and may terminate this Agreement. If the Regional District terminates this Agreement following the termination of the Force Majeure event, then it shall compensate the Contractor in accordance with Section 3 of this Agreement.

13. Ownership and Freedom of Information

13.1 Tenders will be received and held in confidence by the Regional District, subject to the provisions of the Freedom of Information and Protection of Privacy Act and this ITT. Each Tender should clearly identify any information that is considered to be confidential or proprietary information.

13.2 As an exception to Tenders being received and held in confidence, Tenderers are advised and acknowledge that any contract entered into as a result of this Tender may be subject to Board approval, which may be discussed and voted on at a meeting of the Board that is open to the public. If Board approval is required, details of Tenders, including but not limited to proposed or negotiated fees, may be provided to the Board in a publicly available staff report, discussed at a Council meeting that is open to the public, and posted on a publicly available electronic agenda on the Regional District's website.

14. Rights of Waiver

A waiver, or any breach of any provision of this ITT, will not constitute or operate as a waiver, or any other breach, of any other provisions, nor will any failure to enforce any provision herein operate as a waiver of such provisions or of any other provisions.

15. Severability

All paragraphs of the Contract are severable one from the other. Should a court of competent jurisdiction find that any one or more paragraphs herein are void or unenforceable, the validity of the remaining paragraphs hereof will not be affected.

16. Independent Contractor

The Contractor shall be fully independent and shall not act as an agent or employee of the Regional

District. The Contractor shall be solely responsible for its employees, and any subcontracts the Contractor lets, and for their compensation, benefits, contributions, and taxes, if any.

17. Character of Workers

The Contractor and workers must have sufficient knowledge, skill, and experience to perform properly the work assigned to them and to be tactful and courteous in dealing with the public and the Regional District's staff. Any supervisor or worker employed by the Contractor or Sub-Contractor who, in the opinion of the Owner, does not perform their work in a competent manner, appears to act in a disorderly or intemperate manner, appears to be under the influence of drugs or alcohol, or is negligent, or willfully misconducts themselves will, at the written request of the Owner, be removed from the site of the work immediately and will not be employed again in any portion of the work without the approval of the Senior Manager of Public Safety Services.

18. Assignment and Subcontracting

This Agreement does not create any right or benefit in anyone other than the Regional District and the Contractor and shall not be assigned by either party without the prior written approval of the other party.

19. Regional District's Termination of Contract

In the event of the breach or non-performance by the Contractor of any of the covenants, conditions, and agreements contained in the Contract to be performed, the Regional District reserves the right to terminate this Contract without notice. The Regional District may also deduct from the payments due to the Contractor any payments or expenditures it is required to make to remedy any such non-performance or breach hereof.

20. Contractor's Termination of Contract

The Contractor shall have the right to terminate the Contract in the event the Regional District fails to pay for the Work performed except as provided in the Contract Documents within 30 days from the specified date of payment and fails to remedy such default within 10 days of the Contractor's written notice to do so.

21. Regional District's Right to Correct Deficiencies

The Regional District shall have and retain full authority to inspect the work of the Contractor to ensure that the requirements of the Contract are being fulfilled. Upon failure of the Contractor to perform the work in accordance with the Contract Documents, and after five days written notice to the Contractor, or without notice if any emergency or danger to the work or public exists, the Regional District may, without prejudice to any other remedy they may have, correct such deficiencies. The cost of Work performed by the Regional District in correcting deficiencies shall be paid by the Contractor or may be deducted from monies payable to the Contractor.

22. Dispute Resolution

If a claim, dispute, or controversy arises out of or relates to the interpretation, application, enforcement, or performance of services under this agreement, the Contractor and the Regional District agree first to try in good faith to settle the dispute by negotiations between the Contractor

and the Regional District. If such negotiations are unsuccessful, the Contractor and the Regional District agree to attempt to settle the dispute by arbitration if both parties agree. If the dispute cannot be settled through arbitration, the Contractor and the Regional District may agree to attempt to settle the dispute through good faith mediation. If the dispute cannot be resolved through mediation and unless otherwise mutually agreed, the dispute shall be settled by litigation in an appropriate court in the Province of British Columbia.

23. Permit and Regulations

The Contractor will, at their own expense unless pre-approved in writing by the Regional District, procure all other permits, certificates, and licenses required by law for the execution of the work and will comply with all federal, provincial, and local laws and regulations affecting the execution of the work, save in so far as the Contract Documents specifically provide otherwise.

24. Scope of Work

This Regional District requires Services as laid out in Appendix J “Scope of Work and Certifications” and Appendix K “Optional Equipment/Specifications” in Invitation to Tender PS-25-02 Supply and Installation of Antenna Tower.

25. Project Manager’s Status

The Project Manager or their delegate will be the Regional District's representative during the period of operation and will observe the Work in progress on behalf of the Regional District for the purpose of ensuring that the Work has been satisfactorily carried out. The Project Manager will have the authority to stop the Work whenever such a stoppage may be necessary, in their opinion, to ensure the proper execution of the Work in accordance with the provisions of the Contract.

If at any time the Project Manager is of the opinion that there exists a danger to life or to property, they may order the Contractor to stop Work or to take such remedial measures as is considered necessary.

The Contractor will comply with such an order immediately. Neither the giving nor the carrying out of such orders thereby entitles the Contractor to any extra payment, and the Regional District will not be held liable for any damages or any breach of laws, bylaws or regulations that may result.

26. Protection of Work and Property

The Contractor shall take all reasonable precautions necessary to protect the Regional District’s property from damage during the performance of the Contract and shall make good on any damage to the Regional District’s property caused by the Contractor, its Sub-Contractor, employees, or agents during the performance of the Contract.

27. Occupational Health and Safety

The Contractor will ensure that they follow all occupational health and safety policies and procedures established by the Regional District. Contractors, their employees, or agents not complying with the Regional District’s health and safety expectations will be required to stop Work. They will not be allowed to resume Work until the safety requirements are met.

28. Goods and Services Tax (GST)

Federal law states that a 5% tax be paid on all goods and services. If the Contractor does not qualify as a small supplier, then the Contractor is required to identify the tax (GST/PST, as applicable) on all invoices, and the Regional District is liable to pay this amount to the Contractor.

29. Disputed Work

If, in the opinion of the Contractor, they are being required to perform work beyond that which the Contract requires him to do, whether at the discretion of the Regional District or otherwise, they will, within five days, deliver to the Project Manager a written notice of protest in the form prescribed herein prior to proceeding with any of the disputed work. The five-day time period commences from the time of direction given by the Manager or the time at which the Contractor determines that he is required to perform such work, whichever occurs first.

The Contractor will keep accurate and detailed cost records that should indicate the cost of the work done under protest. The Contractor will not be entitled to payment if they fail to keep and produce such records.

30. Notice of Protest

TO: Public Safety Services Leader
Regional District of Fraser-Fort George
FROM: (Contractor)
DATE:

SUBJECT: THE CONTRACT

Date of Direction:

You have required me to perform the following work that is beyond the scope of the Contract.
(Set out details of work).
(Include dates where applicable)

The additional costs and claim for this work is as follows:
(Set out details of cost)

All supporting documentation and invoices are attached.

I understand that I am required to keep accurate and detailed cost records, which will indicate the cost of the work done under protest, and failure to keep such records will be a bar to any recovery by me.

Signature of Contractor

APPENDIX A – BIDDER CHECKLIST

Before submitting your tender bid, check the following points:

- ❑ Has the Tender Form been signed and witnessed? _____
- ❑ Is the Schedule of Prices completed? _____
- ❑ Are the following pages included?

  - Schedule of Prices – Tendered Price _____
  - List of Contractor's Personnel _____
  - List of Subcontractors _____
  - Tenderer's Experience in Similar Work _____
  - Goods and Services Tax Information
  - Conflict of Interest Disclosure Statement _____ __
  - Addendum(s) _____

- ❑ Are the documents complete? _____
- ❑ Are the documents enclosed in a sealed envelope? _____

Note: Your Tender may be disqualified if ANY of the applicable foregoing points have not been complied with.

If submitting by hard copy:

Tenderers should ensure that the Tender is returned in a sealed envelope clearly marked on the outside with:

- ❑ Attention: General Manager of Financial Services
  Regional District of Fraser-Fort George
  155 George Street
  Prince George, BC
  V2L 1P8

- ❑ INVITATION TO TENDER - PS-25-02
  Supply and Installation of Antenna Tower

- ❑ Responding Organization's name and address.

If submitting by email:

Tenderers should ensure that the files should not collectively exceed 35MB. Tenders must be submitted to purchasing@rdffg.bc.ca. DO NOT deliver a physical copy of the tender package to the Regional District of Fraser Fort George.

Subject of the file to be:

PS-25-02 Supply and Installation of Antenna Tower. (Insert Responding Tenderer's Name)

APPENDIX B – TENDER FORM

Date: _____

Regional District of Fraser-Fort George
3rd Floor, 155 George Street
Prince George, BC V2L 1P8

ATTENTION: General Manager of Financial Services

Dear Sir/Madam:

Having carefully examined the Instructions to Tenderers, Form of Tender, Contract Agreement, General Conditions of Contract and Operational Specifications and subsequent written Addendum(s) (if any), the undersigned agrees to furnish all labour, transportation, equipment, materials, supervision and services and to do all work necessary for and reasonably incidental, as specified in accordance with the ITT, to do the work.

I/We agree that in consideration of having my/our tender submission considered for the Total Contract Price as shown on the Schedule of Prices, this price is open for acceptance for 60 days from the date of the tender opening and will not be withdrawn during that period of time.

It is understood that payment will be made for the work on the basis of the awarded Contract only and that any approved extras or refunds will be made by mutual agreement between the Regional District and me/us.

I/We agree that the Subcontractor(s) employed will be as listed on the List of Subcontractors and further agree that no changes or additions will be made to the list without written approval of the Regional District.

If I am/we are notified in writing of the acceptance of our tender, I/we agree that within 14 days of the date of the acceptance notice I/we will enter into a contract and execute an agreement for the stated sum in the form of the specimen submitted to guarantee completion of the contract in accordance with the contract documents and within the time stated in the Tender documents.

I/We agree that the Regional District reserves the right to waive informalities in tenders, reject any or all tenders, or accept the tender deemed most favourable in the interests of the Regional District.

I/We agree that tenders which contain qualifying conditions or otherwise fail to conform to the instructions contained in this ITT may be disqualified or rejected. I/We agree that the Regional District may, however, in its sole discretion, reject or retain for its consideration tenders which are non-conforming because they do not contain the content or form required by the ITT, or for failure to comply with the process for submission set out in the ITT, whether or not such non-compliance is material.

I/We agree that except for a claim for the reasonable cost of preparation of this tender, by submitting a tender, I/We irrevocably waive any claim, action, or proceeding against the Regional District including, without limitation, any judicial review or injunction application, and any claim against the

Regional District and its elected officials, officers and employees for damages, expenses or costs, loss of profits, loss of opportunity or any consequential loss for any reason, including any such claim, action or proceeding arising from:

1) any actual or alleged unfairness on the part of the Regional District at any stage of the tender process, including without limitation any alleged unfairness in the evaluation of a tender or award of a contract;

2) a decision by the Regional District not to award a contract to that tenderer; or

3) the Regional District's award of a contract to a tenderer whose tender does not conform to the requirements of this ITT.

I/We hereby acknowledge receipt and inclusion of the following Addendum(s) to the ITT Documents:

Addendum No. _____ dated: _____ Addendum No. _____ dated: _____

Addendum No. _____ dated: _____ Addendum No. _____ dated: _____

Addendum No._____ dated: _____ Addendum No. _____ dated: _____

Signed and Delivered by:

Signature of Authorized Signatory	Name of Tenderer
Name of Authorized Signatory (Please print)	Address
Title	City, Province, Postal Code

Signed in the presence of:

Signature	Address
Name of Witness (Please print)	City, Province, Postal Code

APPENDIX C - SCHEDULE OF PRICES – TENDERED PRICE

Tender Price

Lump sum tendered price for [INSERT PROJECT] (excluding GST)	$_____
GST	$_____
Total including GST	$_____
TOTAL Contract Value (including GST)	$_____

APPENDIX D - LIST OF CONTRACTOR'S PERSONNEL

The Contractor agrees that the personnel employed by them will be as listed below and further agrees that any changes or additions made to this list will be made in writing to the Regional District.

Name of Employee	**Employee's Experience / Qualifications**

Name of Onsite Supervisor	**Supervisor's Experience / Qualifications**

APPENDIX E - LIST OF SUBCONTRACTORS

The Contractor agrees that the Subcontractors engaged by it will be as listed below and further agrees that any changes or additions made to this list will be made in writing to the Regional District.

Name of Subcontractor	Address of Subcontractor	Work to Be Performed by Subcontractor

APPENDIX F - TENDERER'S EXPERIENCE IN SIMILAR WORK

The Contractor is to demonstrate that they have a minimum of five years of current customer service experience as well as staff supervision experience. List professional and recent experience.

Year	Work Performed	Reference Contact (name and phone number)	Value

APPENDIX G - CONFLICT OF INTEREST STATEMENT

PS-25-02
Supply and Installation of Antenna Tower

Bidder Name: _____

The Bidder, including its officers, employees, and any person or other entity working on behalf of or in conjunction with, the Bidder on this Procurement Process:

- ☐ is free of any conflict of interest that could be perceived to improperly influence the outcome of this procurement process.
- ☐ has not, and will not, participate in any improper procurement practices that can provide the Bidder with an unfair competitive advantage including obtaining and using insider type information to prepare a solicitation offer or participating in bid rigging.
- ☐ has an actual, perceived or potential conflict of interest regarding this procurement process as a result of:

State reason(s) for Conflict of Interest:

_____

_____

_____

_____

By signing below I certify that all statements made on this form are true and correct to the best of my knowledge.

_____ _____
Print Name of Person Signing Disclosure Authorized Representative of

_____ _____
Signature of Person Making Disclosure Date Signed

APPENDIX H - GOODS AND SERVICES TAX INFORMATION

Supplier: _____
Name

_____
Address

_____
City Province

_____
Postal Code Phone Number

Are you a GST Registrant? Yes_____ No_____

If YES, please indicate your registration number: _____

If NO, please fill in the following (check appropriate box):

- ❑ Supplier qualifies as a small supplier under s. 148 of the legislation
- ❑ Other: Specify _____

_____ _____
Signature of Authorized Person Print Name

_____ _____
Title Date

APPENDIX I - CONTRACT AGREEMENT

BETWEEN:

REGIONAL DISTRICT OF FRASER-FORT GEORGE, a local government incorporated pursuant to the *Local Government Act* and having its business office located at:
155 George Street
Prince George, BC V2L 1P8

(hereinafter called "the Regional District")

OF THE FIRST PART

AND:

CONTRACTOR
a company duly incorporated under the laws of British Columbia and having a place of business at:
address
address, pc

(hereinafter called the “Contractor”)

OF THE SECOND PART

WITNESSETH that the Contractor and the Regional District undertake and agree as follows:

1. The Contractor will:

   (a) Provide all necessary labour, equipment, transportation, materials, supervision, and services to perform all of the work, and fulfill everything as set forth in, and in strict accordance with, the Contract documents for “Invitation to Tender PS-25-02 – Supply and Installation of Antenna Tower.

   (b) Commence to actively proceed with the work of the Contract on date of execution.

2. The Regional District will pay to the Contractor as full compensation for the performance and fulfilment of this Contract, the sum or sums of money specified herein in the manner and at the times specified in the Contract Documents.

3. The Invitation and Instructions to tenderers, Tender Form, List of Contractors Personnel, List of Subcontractors, Tender’s Experience in Similar Work, Schedule of Prices, Conflict of Interest Statement, Goods and Services Tax Information, all appendices, amendments and Addendum(s), as well as the tenderer’s submission, are incorporated herein, to the intent and purpose as though recited in full herein, and the whole will form the Contract and will endure to the benefit of, and be binding upon, the parties hereto and their successors, executors, administrators, and assigns.

4. No implied contract of any kind whatsoever, by or on behalf of the Regional District, will arise or be implied from anything contained in this Contract or from any position or situation of the parties at any time, it being understood and agreed that the express contracts, covenants and

agreements made herein by the parties hereto are, and will be, the only contract, covenants and agreements on which any rights against the Regional District may be founded.

5. Subject to Clause 4, this Contract will supersede all communications, negotiations, and agreements, either written or verbal, made between the parties hereto in respect of matters pertaining to this Contract prior to the execution and delivery hereof.

6. All communications in writing between the parties will be deemed to have been received by the addressee if delivered to the individual, or to a member of a firm, or to the Regional District for whom they are intended, or if sent by hand delivery, mail or registered mail as follows:

The contractor at _____
address

The Regional District at 155 George Street, Prince George, BC V2L 1P8.

IN WITNESS WHEREOF the parties have duly executed this Contract.

SIGNED ON BEHALF OF THE)
REGIONAL DISTRICT OF FRASER-FORT GEORGE)
)

_____)
Senior Manager of Public Safety Services) Date
)

_____)
GM of Legislative and Corporate Services) Date
)

SIGNED ON BEHALF OF)
CONTRACTOR)
)
)
)

_____)
Signature) Date
)
)

_____)
(Name and Title) (Please print)

APPENDIX J – SCOPE OF WORK AND CERTIFICATIONS

The Contractor will provide all labour, equipment, transportation, materials, supervision, and services to perform all of the work necessary to construct an antenna tower, including footings, foundation and transmission line bridge and installation of antennas, lines, and associated parts. Optionally supply the antenna, and lines, and optionally perform antenna and line sweep tests. All required geotechnical work will be done by the Regional District and provided to the successful tenderer. Tenderers are not to include the cost for geotechnical work in their tender submission.

1. The Contractor is responsible for regularly scheduling the cleanup and disposal of all materials and debris generated by their activities during the course of the work.

2. The Contractor is responsible for removal of a portion of the adjacent fence during construction and restore the fence after construction if this is needed to construct the tower.

3. The Contractor will not interfere with the day-to-day operations on the property or other work being conducted on the property while completing the work required.

4. The Regional District accepts no responsibility for damage, vandalism or theft to any of the Contractor's equipment used or stored at the site.

5. The Contractor will exercise good public relations while fulfilling their responsibilities under the Contract and will ensure that their employees do the same.

6. The Contractor will ensure that workers have sufficient knowledge, skill and experience to properly and safely perform the work.

If the unit is non-compliant on any of these specifications as outlined in Appendix J and K, then the fourth column on this form MUST be completed detailing what the variation being supplied is and the reason for the variation.

		Compliant	Noncompliant	State the variation being supplied if line item is noncompliant
1.0	**Tower Specifications – General**			
1.1	Unless otherwise specifically stated, any references to the antenna tower shall include the complete installed tower structure including footings, foundation and transmission line bridge.			
1.2	The antenna tower shall be designed and constructed to provide a projected reliable, usable life of at least 50 years, based on normal, periodic preventative maintenance throughout the projected life of the tower.			
1.3	The antenna tower structure and all tower structure materials shall be hot galvanized steel construction.			
1.4	The concrete tower base, including footings and foundation shall be treated with a concrete sealant to prevent moisture penetration, and cracking during freezing weather conditions.			
1.5	Screw anchor foundations are acceptable as long as they meet all engineering requirements. The design, construction and installation of the complete tower, which includes the tower structure, footings, foundation and other support structures shall as a minimum: a. meet latest CSA standard CSA S37, based on all antennae and antenna transmission lines installed as detailed on Figure 1; b. not exceed a twist and/or tilt of 1.0 degrees. c. painted to meet Canadian Obstruction Markings requirements, which is standard orange and white. d. meet all Canadian Aviation Regulations (CARs) Standards Obstruction Markings			

		Compliant	Noncompliant	State the variation being supplied if line item is noncompliant
	621.19, be certified; and e. all drawings shall be signed and sealed by a Professional Engineer, qualified in the design of large self-supporting tower structures.			
2.0	**Antenna and Antenna Transmission Line Physical Loading on the Tower**			
2.1	The tower shall be designed, constructed, and installed based on supporting the antennas and antenna transmission lines as detailed in Figure 1.			
2.2	Please note that the antenna locations and types are for tower design reference purposes only.			
2.3	Construction of the tower shall include mounting pipes for the antennas listed on Figure 1 that cannot be directly clamped to the tower legs.			
3.0	**Height Above Ground Level**			
3.1	The top of the tower shall extend 45 m (147.638 ft) above ground level.			
3.2	The height of the tower above ground shall exclude all top mounted antennas, all mountings for antennas, and lightning rods.			
4.0	**On Tower RF Transmission Line Guideways**			
4.1	The tower shall include a transmission line (cable) guideway over the entire height of the tower, for attaching and routing the antenna transmission lines as specified in Figure 1, including space for a total of 8 lines.			
4.2	The transmission line guideways shall be permanently attached to the tower and shall be designed specifically to attach the RF transmission lines with stainless steel clamps and hangers.			

		Compliant	Noncompliant	State the variation being supplied if line item is noncompliant
4.3	The guideways shall provide for vertical cable support mounting holes at intervals of no greater than 1m (3.28 ft), to prevent cable droop, or cable stretch caused by the natural weight of the cables over the entire height of the tower.			
4.4	The width of the guideway shall be sufficient to permit horizontal spacing of each transmission line to the next so that each line can be independently removed and installed without affecting the installation of the other lines.			
4.5	The outdoor ethernet cables may be replaced with elliptical wave guides depending on microwave radio selection.			
4.6	The Contract excludes all clamps and hangers for securing the cables to the guideway.			
5.0	**Tower Climbing Provisions**			
5.1	The tower shall be supplied complete with a permanently attached ladder and fall arrest cable or rail system that meets all CSA and WorkSafeBC standards for personnel safety, for climbing and working on the tower.			
5.2	Contractor to include 3 fall arrest cable slide/trollies.			
5.3	CSA/WorkSafeBC approved personnel climbing provisions shall be installed on the tower in such a way as to avoid interference with the cable guideways and prevent inadvertent damage to the cables or antenna systems on the tower by personnel using the equipment.			

		Compliant	Noncompliant	State the variation being supplied if line item is noncompliant
6.0	**Tower Electrical Grounding**			
6.1	The Contractor shall supply and install all grounding for the tower. The grounding shall meet the BC electrical.			
6.2	The tower grounding will consist of a circular ground ring around the tower with 2.4 m (8 ft) ground rods connected to the ground ring conductor at 3 m to 4.6 m (10 ft. to 15 ft.) intervals.			
6.3	Ground rings shall be installed in direct contact with the earth at a depth of 1.2 m (4 ft) below the earth's surface, or below the frost line, whichever is deeper.			
6.4	The ground ring shall be bonded separately to each tower leg.			
6.5	In all cases the ground connection shall be with #1 AWG minimum stranded copper wire. The wire shall be securely bonded at each end using listed irreversible high-compression fittings.			
6.6	The ground connections to the tower and the transmission line bridge, including the transmission line bridge supports, shall be via proper copper-bronze electrical connectors that are attached to the steel structure with threaded stainless steel or copper-bronze bolts, lock washer and nuts.			
6.7	The Contractor shall supply and install a tower ground bus and connect it to the tower grounding system. The ground bus shall be mounted on the tower near the transmission line bridge for ground connections to the antenna lines before they leave the tower to the transmission line bridge.			

		Compliant	Noncompliant	State the variation being supplied if line item is noncompliant
6.8	A ground wire will be provided to be used to connect to the communication C-Can ground bar. This would be on the west side of the tower. The exact location to be discussed with the RDFFG radio technicians.			
6.9	The tower ground system shall be connected to the existing ground system. We have no records of how the building is grounded though most of the Regional District of Fraser-Fort George fire halls have a radial ground circling the building. If the building radial ground is not accessible, a ground wire shall be routed underground to the antenna line cable port entrance and connected to the inside ground bar.			
6.10	The actual routing of the site grounding system will be determined between the Contractor and the Regional District Project Manager or designate as part of the final design approval process.			
7.0	**Site Commissioning and Acceptance**			
7.1	The commissioning procedure shall clearly demonstrate that the tower is constructed and installed in full compliance with the Contract prior to acceptance by the Regional District.			
8.0	**Warranty – Terms and Conditions**			
8.1	Contractor to provide a minimum one-year, all-inclusive warranty for: design; materials; equipment; parts; labour; construction; installation; and include regular service and maintenance for the first year. Warranty to begin as of date of acceptance by the Regional District.			

		Compliant	Noncompliant	State the variation being supplied if line item is noncompliant
8.2	All written quotes shall clearly state the detailed terms and conditions of the warranty offered.			
8.3	Tenderers shall clearly state all special provisions, unique terms and conditions, and related costs to warranty the design, construction, and installation on the Schedule of Prices in “Other” if warranty exceeds the minimum shown above, otherwise warranty cost will be taken to be included in the Contract Price on the Schedule of prices.			
9.0	**Warranty – Service and Maintenance During Warranty Period**			
9.1	Tenderers shall clearly state on the Schedule of Prices their maximum response time to be on-site to correct problems where an emergency exists, for critical tower structure issues, or for safety related concerns.			
9.2	Tenderers will also provide on the Schedule of Prices their maximum response time to be on-site to correct non-emergency situations.			
10.0	**Documentation to be supplied by contractor – pre-ordering and pre-construction/installation approval documentation**			
10.1	The Contractor shall supply one hard copy and one electronic copy (format to be determined by the Regional District) of pre-order and pre-construction/installation drawings/schematics for the tower, foundation, footings, transmission line bridge, and grounding system.			
10.2	All structural design drawings shall be signed and sealed by a Professional Engineer registered with the Association of Professional Engineers of British Columbia.			

		Compliant	Noncompliant	State the variation being supplied if line item is noncompliant
11.0	**Documentation to be supplied by the contractor – as built drawings and documentation**			
11.1	The Contractor shall supply at least two complete hard copy sets and one electronic copy (format to be determined by the Regional District) of as built construction documentation (drawings, schematics, etc.) of the tower, foundation, footings, transmission line bridge, and grounding system.			
11.2	As built drawings for the project shall include those that clearly show where the below ground conductors and ground rods are located.			
11.3	As built drawings shall show the type of cable guideway, and capacity of all guideway provisions.			
11.4	All documentation shall be complete and unabridged and shall be in a bound or 3-ring binder manual format.			
11.5	All documentation, drawings, and schematics provided by the Contractor to the Regional District become the property of the Regional District.			
12.0	**Contract Price**			
12.1	The Contract price on the “Schedule of Prices” is a fixed price that will not change without a change order subject to Section 10.0 Changes, and there will be no passing on of price increases to the Regional District following the signing of a contract. If you are non-compliant with this statement, please “check” the “non-compliant” column and provide page numbers in the bid submission that provide detail on potential costs that are being proposed to be passed onto the Regional District after the contract execution.			

APPENDIX K – OPTIONAL EQUIPMENT/SPECIFICATIONS

		Price (excluding taxes)
1.0	**Supply of Antenna and Line and Associated Parts**	
1.1	Supply the antennas and lines numbered 1,2,4, and 6 listed on Figure 1 tower drawing.	
1.2	Supply the antenna line connectors and ground kits. Connectors are N-female.	
1.3	Supply antenna line stainless steel hangers, hardware, and any required stainless-steel clamps for mounting the hangers for horizontal antenna line runs.	
2.0	**Install of Antennas and Lines**	
2.1	Install antennas numbered 1,2,4, and 6 listed on Figure 1 tower drawing.	
2.2	Install the antenna line hangers, lines, and connectors for the above.	
2.3	Horizontal runs of antenna lines on the tower shall be supported by clamps and hangers, Ty wraps are not acceptable.	
2.4	Install antenna line ground kits at the top of the tower, and where the lines leave the tower to the transmission line bridge. The bottom ground kit wires will be bolted to the supplied ground bus bar.	
2.5	All antenna connectors and ground kits outside the building shall be properly weather proofed. The contractor will discuss the method to be used for the antenna connector weather proofing with the Regional District of Fraser-Fort George technical staff before the work is done.	

		Price (excluding taxes)
3.0	**Concrete slab for communications site C-Can**	
3.1	Supply and construct an 8-foot by 12-foot concrete slab on the west side of the tower to be used to place our communications C-Can on.	
3.2	This should be slab on grade construction with a thickness of 4 to 6 inches, with 15m rebar with 16 inches spacing each way.	
3.3	It should be as close to the tower legs concrete piers as practical from an engineering standpoint. What is the minimum distance that the concrete slab can be to the tower pier?	
4.0	**Perform Antenna and Line Sweeps Tests**	
4.1	Perform antenna and line sweep tests for the antenna and lines numbered 1, 2, 3, and 6 listed on Figure 1 tower drawing, and provide the test results.	

Figure 1 – Ness Lake Tower Layout

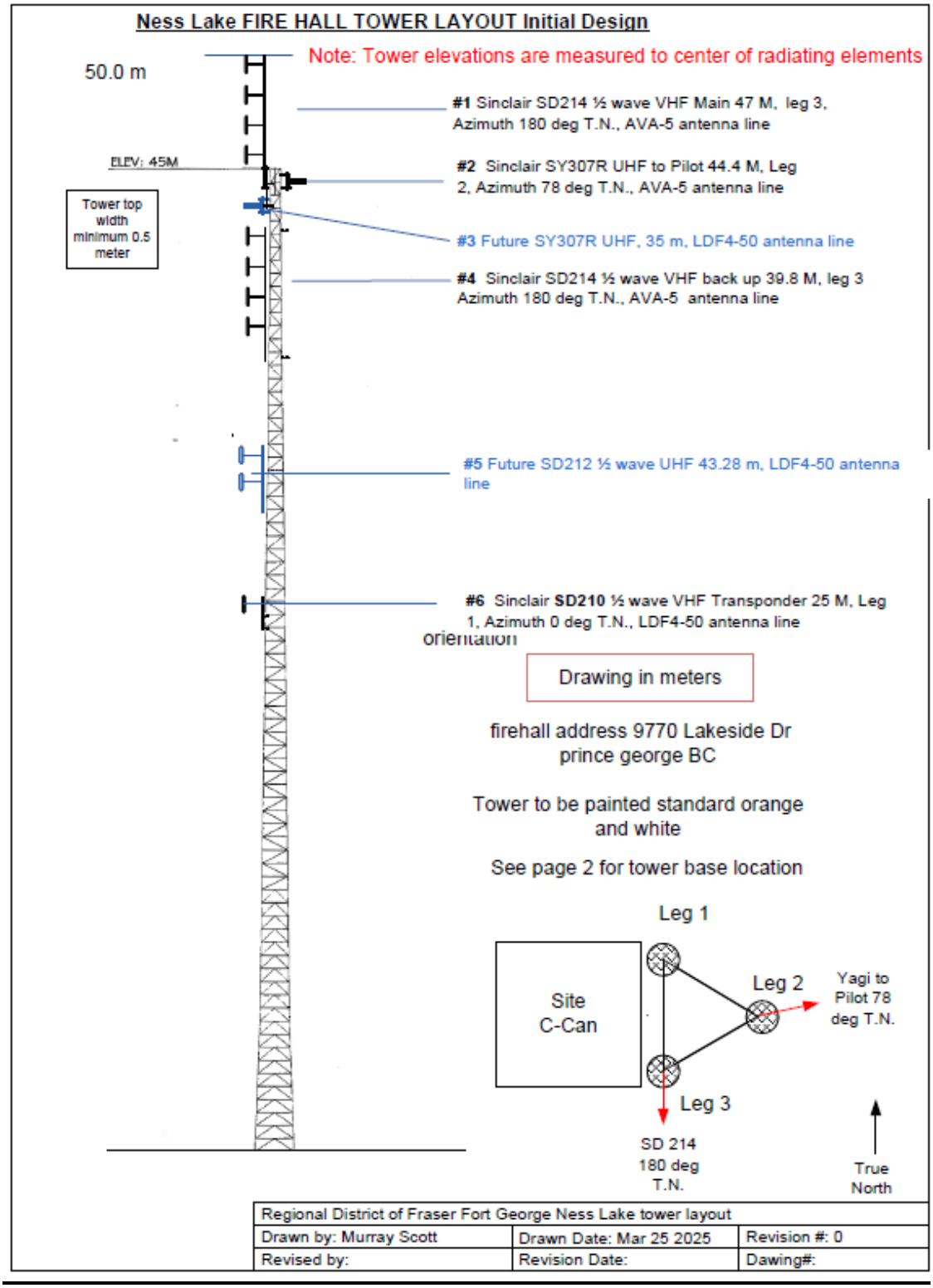
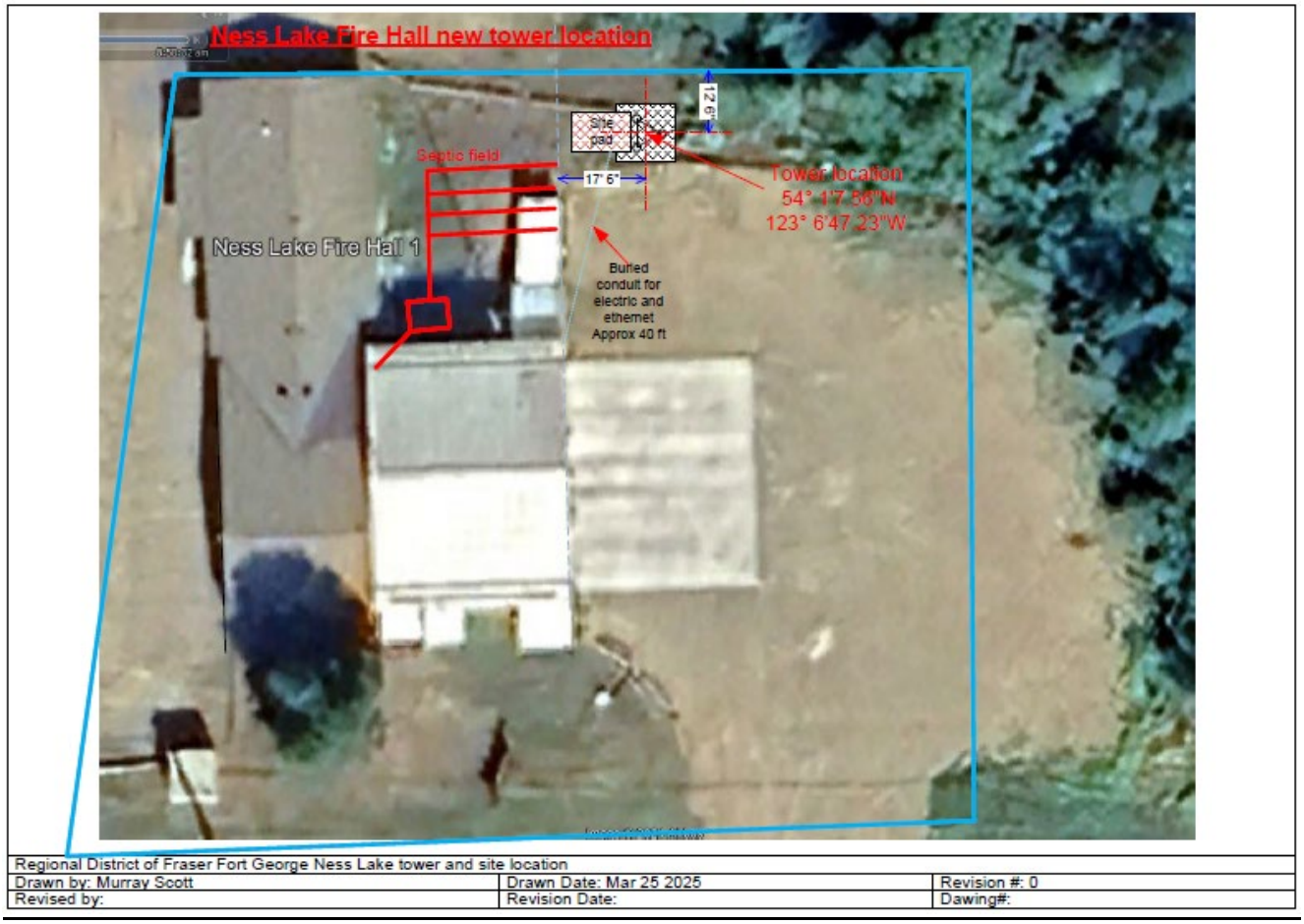


Figure 2 – Site Location



Regional District of Fraser Fort George Ness Lake tower and site location		
Drawn by: Murray Scott	Drawn Date: Mar 25 2025	Revision #: 0
Revised by:	Revision Date:	Dawing#:

ATTACHMENT – GEO TECHNICAL REPORT

McElhanney

BEST MANAGED COMPANIES CANADA

Regional District of Fraser-Fort George

Ness Lake Fire Hall Tower

Geotechnical Assessment Report

12/18/2024 | Revision 0

Submitted to: Regional District of Fraser-Fort George
Prepared by McElhanney Ltd.

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1. Introduction

McElhanney Ltd. (McElhanney) was retained by Murray Scott of the Regional District of Fraser-Fort George (the Client) to provide geotechnical engineering services to support the design and construction of a new radio tower at the Ness Lake Volunteer Fire Department in Prince George, B.C. This report provides the results of the geotechnical assessment and analysis, as well as preliminary recommendations on geotechnical aspects of site development, foundation design, and construction at the site. The property location is shown on Figure 1 (Appendix A).

Authorization to proceed was provided by Murray Scott via e-mail correspondence on November 7, 2024. This report is subject to the Statement of Limitations – Geotechnical Services (Appendix E).

1.1 SCOPE OF WORK

McElhanney has completed this geotechnical assessment in general accordance with the proposal dated September 27, 2024. In conducting the geotechnical assessment and submitting this report, McElhanney has:

- Completed a desktop review of previous studies and existing public data including surficial geology, bedrock and seismic hazard;
- Performed a field assessment including drilling two (2) boreholes;
- Completed laboratory testing on select soil samples; and
- Prepared this report summarizing the results of the geotechnical assessment and geotechnical recommendations for the design and construction of the proposed development.

2. Project and Site Description

The site is located within at 9770 Lakeside Drive, beside Ness Lake Regional Park. The proposed location for the radio tower is on the back north side of the existing parking lot behind the Volunteer Fire Department building. The topography is generally flat in the parking lot area, and slopes down away from the lot along the edges. Figure 1 in Appendix A shows the site location.

Based on discussions and preliminary design plans with the Client, the proposed development will consist of a self-supporting radio tower on a foundation of shallow concrete spread footings.

2.1 LOCAL GEOLOGY

The geological history of Ness Lake and the surrounding Prince George region illustrates the natural processes that have shaped the region over millennia.

During the Pleistocene epoch, glaciers dominated the landscape, carving valleys and leaving behind outwash deposits around 12,000 to 14,000 years ago. The retreat of these glaciers led to the formation of numerous small lakes, including Ness Lake, which occupies a glacially scoured depression.

The surrounding area is part of the Nechako Plateau, characterized by volcanic and sedimentary rock layers. These rocks were formed from ancient lava flows and sedimentary deposits during the Mesozoic era, approximately 65 to 200 million years ago.

As the glaciers retreated, glacio-lacustrine sediments such as fine sands, silts and clays accumulated in low-lying areas. Rivers and streams flowing into Ness Lake have since deposited additional sediments, contributing to its current shape and ecology. Glacial, volcanic and sedimentary processes have been involved in the geological history of the Ness Lake area.

3. Field Assessment

The Geotechnical Field Assessment was carried out on November 13 and 14, 2024, and consisted of drilling two (2) boreholes located beneath the proposed pad footprint of the tower. The boreholes were drilled by Geotech Drilling using a truck-mounted ODEX drill. The boreholes were advanced to depths ranging between 11.0 and 11.85 metres below ground surface (mbgs). A BC One Call Ticket was submitted and reviewed prior to the field assessment to identify underground utilities. A utility location subcontractor was also on the site prior to the field assessment to further identify the location of underground utilities.

Following completion of the boreholes, a piezometer was installed in both holes to measure the water level. The subsurface conditions encountered in the boreholes were observed and recorded by a McElhanney representative. The soils observed in the field were classified in accordance with the Modified Unified Soil Classification System (MUSCS). The borehole locations were surveyed by McElhanney with a handheld GPS and are accurate to within 4 metres. Figure 2 in Appendix A shows the borehole locations.

Upon completion of the field program, select soil samples were submitted to McElhanney Ltd. in Prince George, B.C. for index testing including moisture contents, Atterberg Limits and grain size analyses. The laboratory testing results are summarized on the borehole logs in Appendix B and the laboratory test reports in Appendix C.

4. Soil and Groundwater Conditions

A summary of the subsurface conditions observed at the borehole locations is provided below. The detailed borehole logs are included in Appendix B. Note that subsurface conditions across the site may vary in areas not specially investigated. All depths provided in this section are referenced from the ground surface at the time of field investigation.

4.1 TOPSOIL

A 10 cm thick layer of topsoil was present across the site. The topsoil was loamy and contained rootlets.

4.2 SILT

Silt was found underlying the topsoil and extended to the termination depths of both boreholes (11.0 and 11.85 mbgs). The silt contained trace sand and clay. Two grain size analyses were conducted in the silt. The analyses reported between 3.4 to 7.5 percent sand and between 92.5 to 96.6 percent fines.

The silt was low plastic. Two Atterberg Limit tests reported Liquid Limits between 24.8 and 25.7 percent and Plastic Limits between 21.9 and 23.6 percent.

The silt was brown and moist with an average moisture content of 25 percent. No sloughing was noted during drilling.

4.3 GROUNDWATER

Groundwater seepage was not encountered during drilling. Groundwater reading in the standpipes were taken on December 5, 2024, and no groundwater was encountered in either pipe. Groundwater elevations are expected to fluctuate on a seasonal basis and will be highest after periods of heavy precipitation and snowmelt.

4.4 ROUTINE LABORATORY TESTING

The laboratory index test results are summarized below in Table 4.4.

Table 4.4: Summary of Laboratory Test Results

Borehole No.	Sample No.	Depth (mbgs)	Grain Size Distribution (%)			Liquid Limit (%)	Plastic Limit (%)	Moisture Content (%)
			Fines	Sand	Gravel			
24-01	S-01	1.2	96.6	3.4	0.0	-	-	31.2
	S-02	4.8	-	-	-	25.7	23.6	23.0
	S-03	7.8						29.4
24-02	S-01	1.2						29.9
	S-02	2.5	-	-	-	24.8	21.9	18.1
	S-03	5.5	92.5	7.5	0.0	-	-	15.2
	S-04	8.6						30.9
	S-05	11.6						26.9

*Modified Unified Soil Classification System (MUSCS)

5. Discussion and Recommendations

5.1 GEOTECHNICAL EVALUATION

The geotechnical recommendations provided in this report are based on the understanding of the proposed preliminary development plans provided by the client and the site conditions as described in preceding sections. It is recommended that once the development plan/design has been completed, McElhanney should be consulted to provide input into the detailed design.

Based on our project understanding and the findings of this geotechnical assessment, the site appears to be suitable for the proposed development from a geotechnical perspective with consideration of the recommendations and discussion provided in this report. Shallow foundations supported on stiff native silt or Engineered Fill are considered a suitable foundation for the development.

The moisture content tests reported an average of 25 percent, with higher values in Borehole 24-01 than 24-02. One of the reported moisture contents was within 3 percent of the Liquid Limit, but the soil properties observed and the SPT blow counts observed in the field point to a stiff soil. It is possible the moisture content is being reported higher than in-situ due to minor collection/sampling or storage errors.

The following sections provide discussion and recommendations as input for planning and design based on the current project understanding.

5.2 SITE PREPARATION

The following recommendations are provided for subgrade preparation of grade-supported load-bearing structures:

- Remove any existing vegetation, organic soil, loose fill soils/materials and other deleterious materials underlying all building structures and paved areas. Undesirable soil or debris may be encountered during construction that will necessitate consultation with McElhanney and possible revisions to these recommendations and construction procedures. An observational approach should be adopted whereby the contractor and engineering team work collaboratively to identify risks and design site-specific remedial approaches.
- All prepared subgrades should be inspected in the field by the Geotechnical Engineer of Record or their representative to confirm that the subgrade conditions are consistent with the design conditions assumed in this report.
- Soft, loose, wet, and/or otherwise unsuitable subgrade surfaces can be repaired by sub-excavation and replaced with Engineered Fill (Section 5.3). To maintain subgrade uniformity, soft area repair should be carried out using soil of similar characteristics to the in-situ subgrade soils.
- Subject to field review at the time of construction, any sub-excavations within the proposed development limits should be backfilled to design subgrade elevation with approved fill material in

accordance with the material selection, placement and compaction specifications for Engineered Fill (Section 5.3).

General site grading fills outside of the building structure envelope, if required to raise local site grades, should consist of approved common fill comprising clean inorganic granular materials from local or imported sources. Subject to surface grading, drainage and settlement tolerances required for site grading design, common fill materials may be placed in uniform layers not exceeding 200 mm compacted thickness and compacted as per Section 5.3.

5.3 ENGINEERED FILL

Any fill soil placed to support structural or grade supported elements of the development must be Engineered Fill consisting of well-graded sand and gravel with less than 5% fines (material passing the 0.075 mm sieve) and a maximum aggregate size not exceeding 75 mm. Any granular materials proposed for use as Engineered Fill should be tested and approved by the Geotechnical Engineer before placement. Table 5.3.1 provides recommended gradations for granular base, granular sub-base (well graded gravel) and drain rock materials. The Well Graded Gravel is considered an approved gradation for Engineered Fill.

Table 5.3.1: Recommended Granular Fill Gradations

SIEVE SIZE (mm)	CRUSHED GRANULAR BASE COURSE (GBC)	WELL GRADED GRAVEL / GRANULAR SUB-BASE (GSB) (SCREENED PIT RUN)	FRACTURED DRAIN ROCK	RADON ROCK	
	MMCD TYPE 2	MMCD		SIZE 5 CONC. AG.	20 MM SUBDRAIN
75		100	-		
38					
25	100	50 - 85		90 - 100	
20	100		100	20 - 55	100
19	80 - 100		0 - 100		
14				0 - 10	90 - 100
9.5	50 - 85		0 - 5	0 - 5	45 - 75
4.75	35 - 70		0		0 - 15
2.36	25 - 50		-		0 - 5
1.18	15 - 35		-		
0.300	5 - 20		-		
0.150		0 - 15			
0.075	0 - 5	0 - 5	-	<2	<2

Notes: Gradations are presented for the 2019 Master Municipal Construction Documents (MMCD), Section 31 05 17 Aggregate and Granular Materials. Regardless of specification used, it is preferred that there be less than 5% fines (<0.075 mm). Size #5 Concrete Aggregate. ASTM C33.

Fill required to bring the site up to grade, including backfill around the footings, should be well graded select sand or gravel. The existing native soils found on site are not suitable as engineered fill around structures due to the high fines content.

Table 5.3.2: Recommended Compaction Levels

Fill Location	Recommended Minimum Compaction Level (% of SPMDD*)
Building Areas	
New fill greater than 0.6 m thickness (including trenches)	100%
New fill less than 0.6 m thick (including trenches)	98%
Engineered fill below footings	100%
Under structural concrete slabs	95%
Under concrete slab-on-grade	98% (100% for top 150mm)
Other Development Areas	
Under paved or concrete areas, access roads, parking	98%
Exterior building area outside of pavement structures	95%

** SPMDD – Standard Proctor Maximum Dry Density*

The lift thicknesses should be governed by the ability of the selected compaction equipment to uniformly achieve the recommended density. However, it is generally recommended to use lifts with a maximum compacted thickness of 200 mm for granular fill. Uniformity is of most importance. Granular fill is best compacted with large smooth drum vibratory rollers. In areas which require higher compaction, it is recommended that granular fill be placed at moisture contents 0 to 2 percent below the Optimum Moisture Content (OMC). This will help reduce compactive effort and potential risk of subgrade disturbance needed to achieve maximum density.

Fill placement and compaction during the winter months is challenging due to the difficulty in moisture conditioning fill soils and obtaining high compaction levels. Materials and methodology should be reviewed prior to construction if cold weather compaction of fills is proposed. High compaction levels can only be achieved using fill soils that are unfrozen. Structural fills or engineered fills that support structures/features that are sensitive to movement, must not be placed on soil that is in a frozen state or has recently been in a frozen state.

5.4 CSA CODE REQUIREMENTS FOR FOUNDATIONS

The proposed tower should be designed based on the CSA Standard for Antennas, Towers, and Antenna-supporting Structures (CSA S37-18). According to Section 11.1.1.1 of the CSA Standard, the requirements of Section 4.2 of the National Building Code of Canada (NBC) shall apply, except as modified in Clause 11 of the CSA Standard. Therefore, the use of Limit States Design (LSD) is required for the design of this tower foundation. The limit states of LSD design are classified into two groups; the Ultimate Limit States (ULS) and the Serviceability Limit States (SLS).

It must be noted that the structural engineer should understand the design relaxations in the CSA Standard compared to the NBC. A risk analysis is also recommended to determine if there are any

detrimental effects of a serviceably failure to any objects/structures in the area that are current or planned, as well as any risk to life and to the environment.

5.4.1 Ultimate Limit States (ULS)

The ULS case is primarily concerned with safety and the levels of load and resistance at the point of collapse or structural failure. The geotechnical value for this case is the ultimate resistance. For foundation design this ultimate resistance value is reduced using a Geotechnical Resistance Factor (GRF) which is based on the reliability index of the geotechnical data used to determine the ultimate resistance for the foundation loading case. The ULS design requirements of the NBC reference the Structural Commentaries in the NBC User Guide, but the GRF values for towers are provided in Section 11.2 of CSA S37-18 as summarized in the following table.

Table 5.4.1: Geotechnical Resistance Factors

Structure type		Resistance by bearing on rock or soil (positive engagement)		Resistance by friction with the soil	
Self-supporting structures	Uplift	Φ = 0.5 when resisted by only one rock anchor bolt as described in Clause 11.4	Φ = 0.75	Φ = 0.4 for driven piles or drilled caissons with the base narrower than the top	Φ = 0.5 for driven piles or drilled caissons with the base equal to the top
	Bearing	Φ = 0.75		Φ = 0.75	
Guyed masts	Uplift	Φ = 0.5 when resisted by only one rock anchor bolt as described in Clause 11.4	Φ = 0.75	Φ = 0.4 for driven piles or drilled caissons with the base narrower than the top	Φ = 0.5 for driven piles or drilled caissons with the base equal to the top
	Bearing	Φ = 0.60		Φ = 0.50	
	Lateral	Φ = 0.75		Φ = 0.75	

**CSA S37-18 Table 12 and Clauses 11.2 to 11.4*

5.4.2 Serviceability Limit States (SLS)

The SLS occurs when the foundation loads cause movements or vibrations that are greater than are tolerable for the intended use of the structure. The SLS case is addressed by determining the maximum available resistance to keep the foundation deformation within tolerable limits under service loads (i.e. settlement, lateral deflection, etc.). Typically, the foundation loads, configurations and serviceability tolerances must be known to properly determine geotechnical SLS resistance values. In some foundation

cases, like small footings, basic assumptions can be used to provide preliminary SLS resistance values under specific stated conditions.

For axial loading conditions, the SLS resistance is addressed by determining the limiting load to keep foundation settlements within tolerable limits. Tolerable total and differential settlements should be verified by the structural engineer, but for normal structures the tolerable limit of total settlement for foundations is typically about 25 mm.

5.4.3 Soil Parameters

The table below provides the various parameters for the silt encountered on site.

Table 5.4.3: Soil Parameters

Soil Parameter	Silt
Depth (mbgs)	0.1 – 12+
Unit Weight, γ (kN/m^3)	18
Internal Friction Angle, Φ (degrees)	30
Coefficient of Active Earth Pressure, K_A	0.33
Coefficient of Passive Earth Pressure, K_P	3.0

5.4.4 Seismic Classification

The BCBC requires buildings to be designed to resist a minimum earthquake force. The formula for obtaining minimum earthquake force is dependent of several factors including Foundation Factors (F_a and F_v) which should be determined using a Site Class of D for this site (BCBC Table 4.1.8.4.-A). The subsurface soil found on the site is stiff native silt extending at least 12 metres deep. Based on the results of the investigation, the silt appears to extend across the site and as such this material will govern the seismic site classification.

The BCBC 2024 references 2020 NBCC seismic data, however there is a conditional grace period until 2025 that can be considered. We have provided both the 2020 and 2015 NBCC seismic values and recommend the greater of the two (2020) be used for design purposes.

The NBCC 2020 seismic hazard calculation for this site is peak horizontal ground acceleration (PGA) corresponding to a design earthquake having a 2% probability of being exceeded in 50 years of 0.0816g and peak ground velocity (PGV) of 0.191 m/s (NBCC 2020, Appendix D).

The NBCC 2015 seismic hazard calculation for this site is peak horizontal ground acceleration (PGA) corresponding to a design earthquake having a 2% probability of being exceeded in 50 years of 0.048g and peak ground velocity (PGV) of 0.083 m/s (NBCC 2015, Appendix D).

5.5 SHALLOW FOUNDATIONS

Shallow concrete foundations consisting of spread footings supported on stable stiff native silt or Engineered Fill are considered suitable for the proposed tower for this site. Based on the findings of the field investigation, footings should be founded directly on existing compact stiff silt or Engineered Fill placed over the stiff till subgrade, if elevations must be raised, that has been prepared in accordance with Section 5.3 and approved by the Geotechnical Engineer.

Recommendations for design and construction of shallow concrete footing foundations for these sites are as follows:

- The subgrade bearing surfaces for all foundation construction must be inspected and approved by a Geotechnical Engineer or their representative prior to placing formwork or Engineered Fill.
- To ensure a uniform stress distribution, the entire foundation must be constructed on a uniform bearing surface (e.g. avoiding a mixture of soils). Constructing portions of the foundation on varying subgrade materials may result in differential settlement. Where a level and uniform bearing surface cannot be achieved over an uneven subgrade (such as cobbly granular soils), a minimum 100 mm thick leveling course of Granular Base Course (GBC) compacted to 100% SPMDD could be placed below foundation elements meeting the specification provided in Table 5.3.1 (Section 5.3). In order to reduce the potential for frost heave, foundations should be provided with a minimum amount of cover as detailed in Table 5.5.1.

Table 5.5.1: Recommended Minimum Foundation Frost Cover Depths for Design

Minimum Foundation Soil Cover (To Base of Foundation)	Foundations
1.0 m	Exterior foundation for a permanently heated building
1.6 m	Exterior isolated unheated foundation of low consequence if heaving occurs
2.1 m	Tower foundations exposed to frost

For conventional spread footings, the following bearing pressures recommendations for design are provided based on the minimum foundation depth of 1.5 m.

Table 5.5.2: Recommended Bearing Capacities for Design[1]

Subgrade Type	Range Of Foundation Widths (m)	Depth (m)	Spread Footings	
			Factored ULS[2]	SLS[3]
Stiff Undisturbed Native Silt	0.6 – 2.0	1.5 – 2.1	110	75
Stiff Undisturbed Native Silt	1.0 - 2.0	Below 2.1	120	80

Notes:
1. Based on Canadian Foundation Engineering Manual 4th Edition, Canadian Geotechnical Society, Section 10.
2. ULS – Ultimate Limit State, based on semi-empirical data and calculated using a geotechnical resistance factor of 0.75.
3. SLS – Serviceability Limit State, based on SPT data gathered in the field investigation for native materials, valid for settlements less than 25 mm

If very strict settlement tolerances are required or if larger footings are proposed, the footing sizes and settlement potential should be reviewed. Detailed settlement analysis for footings requires details on footing dimension and load combinations. This information was not available at the time of writing. Further analysis can be performed once this information is available.

If poor, weak, or deeper than expected fill or soil conditions are encountered, the Geotechnical Engineer must be engaged to review the site conditions and potentially revise the bearing capacity, and/or provide recommendations for subgrade strengthening (i.e. sub-excavation and replace and/or geosynthetic reinforcement).

Groundwater seepage and/or surface water runoff must not be allowed to enter or collect in foundation excavations. Any water or snow that accumulates in the footing excavations must be removed and the subgrade allowed to dry before construction of the footings.

5.5.1 Sliding Resistance

The sliding resistance of a shallow footing is provided through base friction between the concrete footing and bearing soils. Friction on the sides of the footing is typically ignored. Some additional resistance may be provided through passive soil resistance behind the footing.

The ultimate sliding resistance of shallow concrete footings bearing on clay and silt subgrade may be estimated by multiplying the total normal forces due to the vertical foundation dead load by a friction coefficient of 0.25 for alluvial or clay till deposits or 0.55 for gravel bearing surfaces. A GRF of 0.8 should be used to determine the factored sliding resistance.

Passive soil resistance against a footing is also considered to resist lateral movements. The lateral resistance provided by the passive pressure of the soil acting on the vertical face of the footing in the opposite direction of the lateral force may be calculated by the following formula.

$$F = 0.5\ K_P\ \gamma\ (H^2 - d^2)\ W + K_P\ Q\ (H - d)$$

where: F = Ultimate lateral resistance on footing at depth between d and H below grade (kN)
K_P = coefficient of passive lateral earth pressure
γ = total unit weight of backfill at 95 percent of SPMDD ~ 20 kN/m^3
H = depth below grade to base of footing (m)
d = depth below grade to top of footing (m)
W = width of footing
Q = any surcharge loading at the ground surface (kPa)

This total ultimate lateral resistance should be factored for ULS design by a GRF of 0.5 applied to the ultimate passive resistance. Passive earth pressure coefficients and friction angles between soil and concrete are given in Section 5.4.3.

5.6 SITE DRAINAGE

Positive surface drainage should be maintained away from the development and trench areas in all directions, considering existing infrastructure adjacent to the proposed development. Surface drainage of all developed areas should be maintained with a recommended minimum 2% cross-slope, particularly leading away from structures and foundations. Steeper grades of 5% should be maintained within 3 m of the foundation elements. The site grading must be designed such that water cannot pond on or beside parking areas, roadways or buildings. Ponding or infiltration of surface water should not be permitted within 5 m of structure foundations.

5.7 GROUNDWATER AND SURFACE WATER

Groundwater was not encountered during the investigation and groundwater was not encountered in the standpipes after drilling. Where groundwater seepage is encountered during construction, the groundwater should not be permitted to collect in the bottom of the excavations during construction and a contingency plan should be made to pump out or drain excavations with sump pumps and to divert water away from the excavation. If significant groundwater seepage is encountered the geotechnical engineer should be contacted to review.

5.8 TEMPORARY EXCAVATIONS

To protect existing utilities and adjacent infrastructure during construction, and to allow for safe worker access, temporary excavation slopes must be constructed as per most current applicable Worksafe BC regulations and this report.

Based on the soils encountered, it is recommended that temporary excavation slopes be sloped no steeper than 1.5 Horizontal to 1 Vertical (1.5H:1V) within the stiff silt encountered at this site. These trench sideslopes are intended to extend from top to bottom, with no vertical cut allowed. Soils below the groundwater table are expected to be unstable due to high infiltration rates leading to erosion and piping, and general excavation slope instability. Flatter slopes or other temporary support measures may be required if significant seepage or groundwater inflow conditions are encountered, and especially where loose fill zones or pockets are encountered. If steeper slopes or cuts greater than 6 m are to be considered, or poor/saturated soil conditions are encountered, the Geotechnical Engineer must be consulted to review. In general, it is not advised to excavate below the groundwater table without obtaining additional geotechnical engineering input.

Cobbles and boulders were not noticed during the investigation, but mechanical and/or manual scaling of excavation faces should be undertaken and a visual scan of the walls should occur prior to any workers enter an excavation. Removal of small or large boulders can significantly weaken the surrounding soils, causing overlying soils to collapse and become a rock fall hazard, even with the cut slopes meeting the above inclination recommendations. As such, flattening of the slope may be required in localized areas. Removal of larger rocks should be performed carefully and not simply pushed down the cut face.

It is noted that McElhanney is not responsible for safe temporary working slopes design as per Worksafe BC regulations unless expressly retained to do so

5.9 TRENCH BACKFILL

The trench backfill should be placed in maximum vertical lifts of 200 mm compacted thickness (or less to suit available compaction equipment) and compacted uniformly to meet the specifications presented in this report. The pipe bedding should be compatible with the size, type and class of pipe and the requirements of pipe provider. In the absence of special provisions and specifications, for preliminary design, it is recommended to use a minimum thickness of 100 mm of granular pipe bedding material below the pipe. The bedding should also extend to a width sufficient to permit compaction with vibratory plate compactors and should extend vertically a minimum of 300 mm above the top of the pipe. The granular bedding and structural envelope should meet the specifications of the civil design and the pipe manufacturer’s recommendations.

Table 5.9: Recommended Gradation for Pipe Bedding (Type 1 and 3)

Sieve Size (mm)	Type 1 (Standard)	Type 3 (Drain Rock)
	Percent Passing (%)	
50		100
38		90 – 100
25		20 – 60
19	90 – 100	0 – 15
12.5	65 – 85	
9.5	50 – 75	0 – 15
4.75	25 – 50	
2.36	10 – 35	
1.18	6 – 26	
0.600	3 – 17	
0.075	0 – 5	

Master Municipal Construction Documents (MMCD, 2019)

For utilities placed above the water table (not encountered during the investigation or after in the standpipes) the Type 1 Pipe Bedding should be used. For any deeper utility installations or where significant groundwater seepage is encountered, the Type 3 bedding may be required.

Backfilling above pipe bedding zone should be performed based on recommendations provided for Engineered Fill compaction depending on the area type, and at the very least achieve a minimum of 95% SPMDD.

5.1 CONCRETE RECOMMENDATIONS

Water soluble sulphate concentrations in this area are known to contain a negligible potential for sulphate attack of subsurface concrete. As per CSA A23.1-M14, a General Use (GU) hydraulic cement is recommended with a minimum 28-day compressive strength of 28 MPa and a water cement ratio of 0.5. General Use Hydraulic (Type GU or GUb) cement may be used for all concrete in contact with soil at the site.

6. Design and Construction Review

The recommendations provided are based on assumptions of project layout, including the incorporation of below grade areas. Once the final design has been prepared, it is recommended that the design be reviewed by McElhanney to verify that the geotechnical recommendations were incorporated and what further geotechnical assessment may be required for final design and construction.

Siting of proposed structures must be reviewed by the Geotechnical Engineer to ensure conformance with our slope setback recommendations. It is strongly recommended that we be provided with the site plan and structural design for review at the concept stage of design.

To issue applicable Building Code Schedules and/or construction QA/QC letters, all foundation, backfill and Engineered Fill must be reviewed by the geotechnical engineer as specified in this report. McElhanney can provide these construction reviews, as well as material testing services during construction if requested.

7. Limitations

This report has been prepared for the exclusive use of REGIONAL DISTRICT OF FRASER-FORT GEORGE**.** Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. **McElhanney Ltd.** accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report. No other warranty, expressed or implied, is made. The Statement of Limitations – Geotechnical Services that govern the use of this report and our geotechnical consulting services on this project are attached (Appendix E) and are to be considered part of this report.

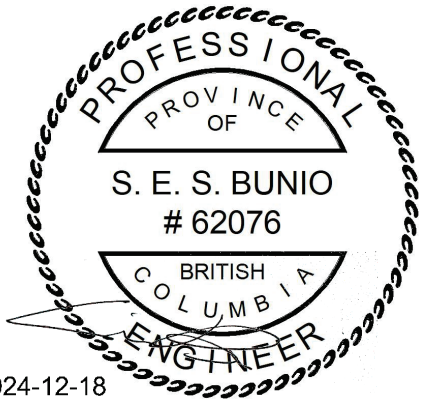
The recommendations provided in this report or in other correspondence related to this project are based on the information available on the proposed development, observations made at the subject site, interpretation of the data obtained from subsurface investigations, and our experience with similar soils and subsurface conditions. As the soils investigation represents a very small statistical sampling of the subsurface conditions, subsurface conditions could vary significantly from those described in this report, and in such instances, adjustments to design and construction of the proposed structures might be necessary, and McElhanney must be notified immediately when site conditions differ from those described in this report.

8. Closure

We trust that this information is sufficient for your present needs. Should you have any questions or require additional information, please do not hesitate to contact the author of this report.

Sincerely,
McElhanney Ltd.

Prepared By:



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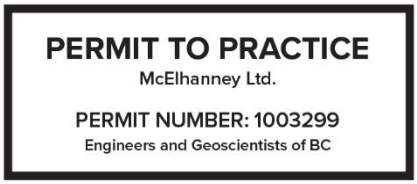

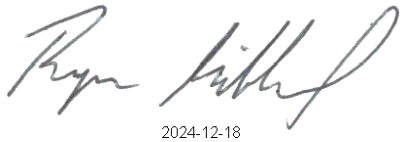

2024-12-18

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Appendices:

Appendix A - Figures
Appendix B - Borehole Logs
Appendix C - Laboratory Test Results
Appendix D - NBCC 2015 & 2020 Seismic Hazard Calculations
Appendix E - Statement of Limitations – Geotechnical Services

APPENDIX A – FIGURES

Tower base approximate location

McElhanney

REGIONAL DISTRICT OF FRASER FORT GEORGE

GEOTECHNICAL INVESTIGATION AT NESS LAKE FIRE HALL

SITE OVERVIEW

FIGURE 1

Our file: 2341-21215-15
Prepared by: Sian Bunio

APPENDIX B – BOREHOLE LOGS

CLIENT:	Regional District of Fraser Fort George	PROJECT:	Ness Lake Fire Station	BOREHOLE No.	BH 24-01
CONTRACTOR:	Geotech Drilling	CO-ORDS N/E:	5985618.00 492587.00	PROJECT No.	2341-21215-15
METHOD:	ODEX/Truck Mounted	LOCATION:	Ness Lake Regional Park, BC	ELEVATION:	790.00 m

DEPTH (m)	ELEVATION (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	N Value / Moisture Content (%) / Plastic/Liquid Limit (%) / Fines Content (%) (20 40 60 80)	WELL DIAGRAM	REMARKS
0	790		0.10 TOPSOIL 789.90 SILT: trace sand, trace clay, stiff, low plastic, brown, moist					
1	789			SPT S-01	4-4-5-5 (9)	▲ ● □		GSA: Cobbles 0% Gravel 0% Sand 3.4% Fines 96.6% Moisture 31.2%
2	788							
3	787							
4	786							
5	785			SPT S-02	4-5-7-7 (12)	▲ ● I		Limits: LL 25.7 PL 23.6 PI 2.0 Moisture 23.0%
6	784							
7	783							
8	782			SPT S-03	4-4-9-10 (13)	▲ ●		Moisture 29.4%
9	781							
10	780							
11	779		11.00 779.00 Terminated at 11.00 m. Terminated at limit of exploration at 11.0 mbgs. Groundwater not encountered. Sloughing not observed.					
12	778							

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LOGGED BY:	KR	START DATE:	November 13, 2024
REVIEWED BY:	SB	COMPLETION DATE:	November 13, 2024
COMPLETION DEPTH:	11.00 m		Sheet 1 of 1

CLIENT:	Regional District of Fraser Fort George	PROJECT:	Ness Lake Fire Station	BOREHOLE No.	BH 24-02
CONTRACTOR:	Geotech Drilling	CO-ORDS N/E:	5985623.00 492581.00	PROJECT No.	2341-21215-15
METHOD:	ODEX/Truck Mounted	LOCATION:	Ness Lake Regional Park, BC	ELEVATION:	798.00 m

DEPTH (m)	ELEVATION (m)	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	REMARKS
0	798	0.10 TOPSOIL 797.90			
		SILT: sandy, trace clay, stiff, low plastic, brown, moist	G S-01		Moisture 29.9%
1	797				
2	796	2.00 796.00			
		SILT: trace sand, trace clay, stiff, low plastic, brown, moist	SPT S-02	4-6-6-7 (12)	Limits: LL 24.8 PL 21.9 PI 2.9 Moisture 18.1%
3	795				
4	794				
5	793		SPT S-03	5-6-7-9 (13)	GSA: Cobbles 0% Gravel 0% Sand 7.5% Fines 92.5% Moisture 15.2%
6	792				
7	791				
8	790		SPT S-04	10-7-8-12 (15)	Moisture 30.9%
9	789				
10	788				
11	787		SPT S-05	9-10-9-11 (19)	Moisture 26.9%
		11.85 786.15			
12	786	Terminated at 11.85 m. Terminated at limit of exploration at 11.85 mbgs. Groundwater not encountered. Sloughing not observed.			

▲ N Value
● Moisture Content (%)
I Plastic/Liquid Limit (%)
□ Fines Content (%)
20 40 60 80

WELL DIAGRAM

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LOGGED BY:	KR	START DATE:	November 14, 2024
REVIEWED BY:	SB	COMPLETION DATE:	November 14, 2024
COMPLETION DEPTH:	11.85 m		Sheet 1 of 1

APPENDIX C – LABORATORY TEST REPORTS

McElhanney Ltd

12-556 North Nechako Road,
Prince George, BC,V2K 1A1

SIEVE ANALYSIS REPORT
Series 8 16 30 50

TO
Regional District of Fraser Fort George
155 George Street
Prince George,
BC, V2L 1P8

ATTN : Murray Scott

PROJECT NO. 2341-21215-15
CLIENT Regional District of Fraser Fort George
CC

PROJECT Ness Lake Fire Hall
Geotechnical Investigation

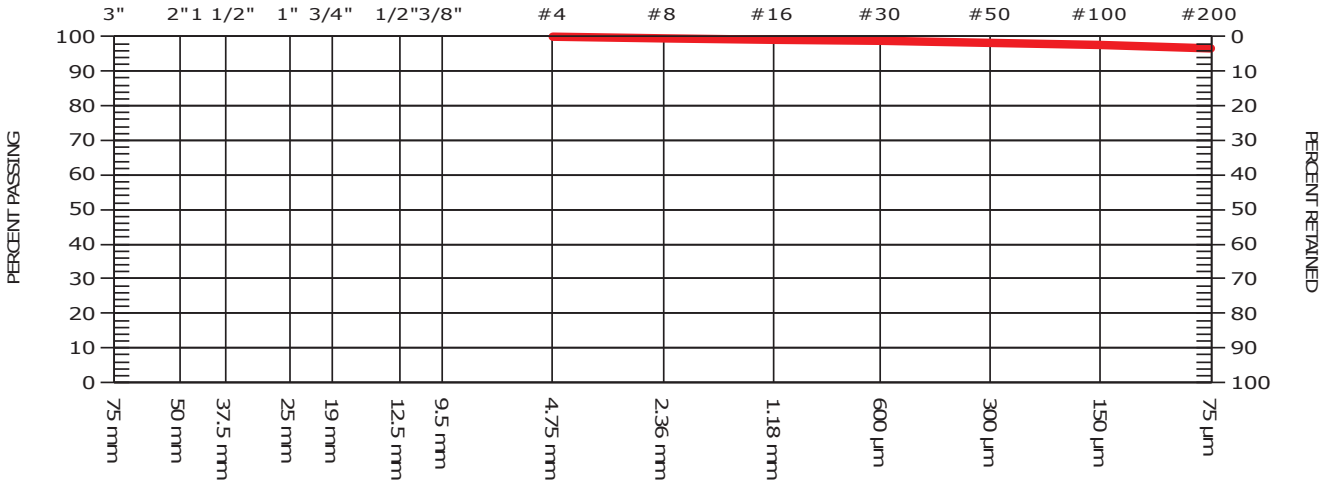
Ness Lake
Prince George, BC

CONTRACTOR

SIEVE TEST NO. 1 DATE TESTED 2024.Nov.29 DATE SAMPLED 2024.Nov.13 DATE RECEIVED 2024.Nov.14

SUPPLIER Native
SOURCE BH24-01
SPECIFICATION
MATERIAL TYPE

SAMPLED BY Kai Runtz
TESTED BY Ben Lui
TEST METHOD WASHED



GRAVEL SIZES		PERCENT PASSING	GRADATION LIMITS
3"	75 mm		
2"	50 mm		
1 1/2"	37.5 mm		
1"	25 mm		
3/4"	19 mm		
1/2"	12.5 mm		
3/8"	9.5 mm		

SAND SIZES AND FINES		PERCENT PASSING	GRADATION LIMITS
No. 4	4.75 mm	100.0	
No. 8	2.36 mm	99.5	
No. 16	1.18 mm	99.1	
No. 30	600 µm	98.8	
No. 50	300 µm	98.2	
No. 100	150 µm	97.6	
No. 200	75 µm	96.6	

MOISTURE CONTENT: 31.2%

COMMENTS
BH24-01
1.0-1.6m

PER. Gerald Stevenson

2024.Dec.02

McElhanney Ltd

12-556 North Nechako Road,
Prince George, BC,V2K 1A1

SIEVE ANALYSIS REPORT
Series 8 16 30 50

TO

Regional District of Fraser Fort George
155 George Street
Prince George,
BC, V2L 1P8

ATTN : Murray Scott

PROJECT NO. 2341-21215-15
CLIENT Regional District of Fraser Fort George
CC

PROJECT Ness Lake Fire Hall
Geotechnical Investigation

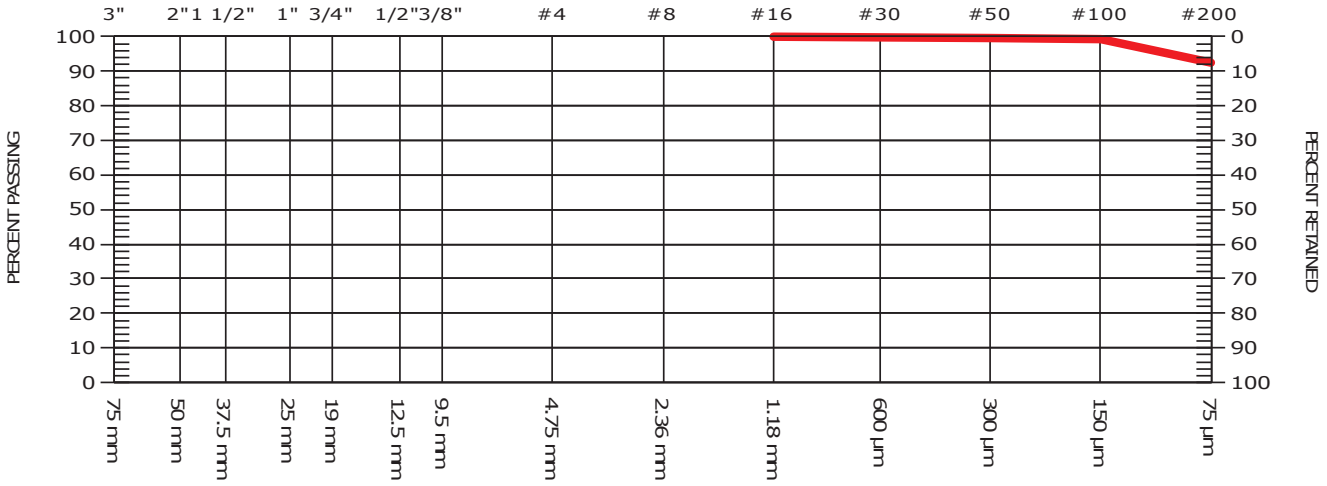
Ness Lake
Prince George, BC

CONTRACTOR

SIEVE TEST NO. 2 DATE TESTED 2024.Nov.29 DATE SAMPLED 2024.Nov.14 DATE RECEIVED 2024.Nov.14

SUPPLIER Native
SOURCE BH24-02
SPECIFICATION
MATERIAL TYPE

SAMPLED BY Kai Runtz
TESTED BY Ben Lui
TEST METHOD WASHED



GRAVEL SIZES		PERCENT PASSING	GRADATION LIMITS
3"	75 mm		
2"	50 mm		
1 1/2"	37.5 mm		
1"	25 mm		
3/4"	19 mm		
1/2"	12.5 mm		
3/8"	9.5 mm		

SAND SIZES AND FINES		PERCENT PASSING	GRADATION LIMITS
No. 4	4.75 mm		
No. 8	2.36 mm		
No. 16	1.18 mm	100.0	
No. 30	600 µm	99.8	
No. 50	300 µm	99.6	
No. 100	150 µm	99.3	
No. 200	75 µm	92.5	

MOISTURE CONTENT: 15.2%

COMMENTS
BH24-02
5.25-5.85m

Page 1 2024.Dec.02

PER. Gerald Stevenson

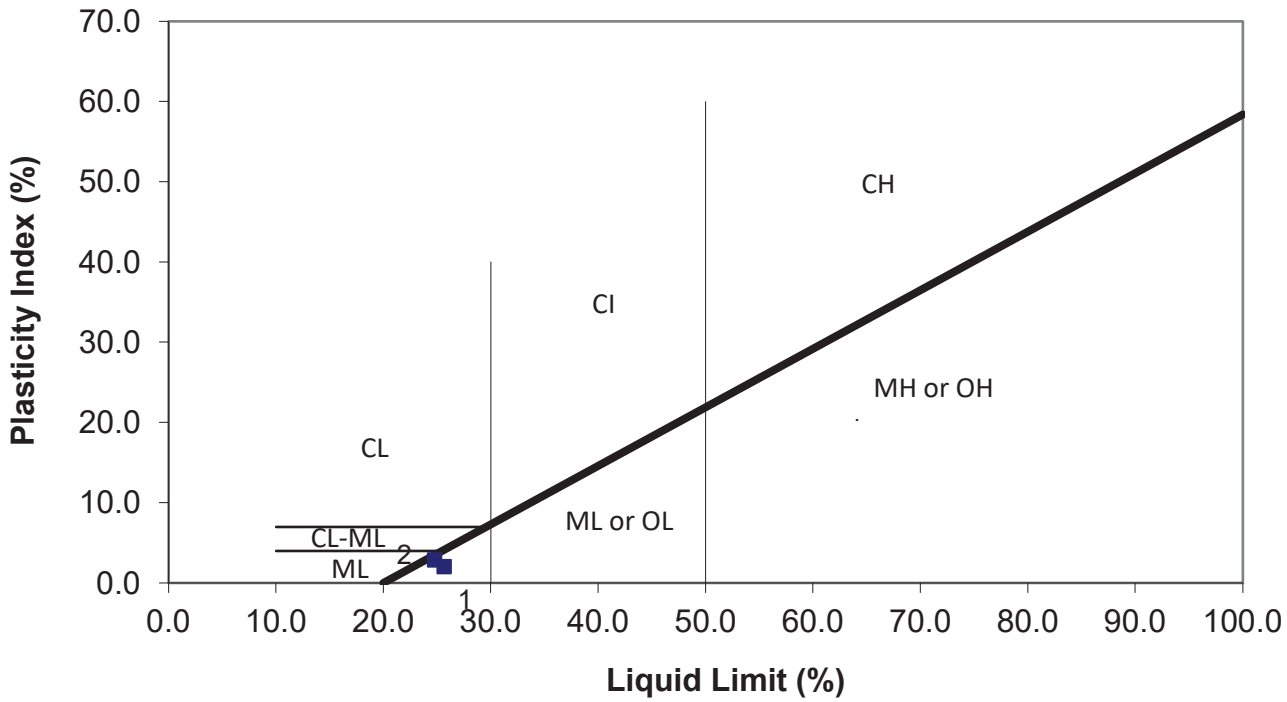
McElhanney Consulting Services Ltd.
12-556 North Nechako Rd
Prince George BC
Canada V2K 1A1
Tel 250 561 2299
Fax 250 563 1941
www.mcelhanney.com

ATTERBERG LIMITS
Laboratory Analysis Report
ASTM D4318

PROJECT NAME: Ness Lake Fire Hall
PROJECT NO. 2341-21215-15
DATE SAMPLED: Nov 13 & Nov 14, 2024 **DATE TESTED:**

Sample I.D.	#	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Soil Classification	Natural Water Content (%)	Soil Description / Comments
24-02 S02	1	24.8	21.9	2.9	0	18.1	
24-01 S02	2	25.7	23.6	2.0	0	23	

Plasticity Chart



Tested by: Benjamin Lui Reviewed by: Gerald Stevenson

McElhanney

McElhanney Ltd.
12-556 North Nechako Rd
Prince George BC
Canada V2K 1A1
Tel 250 561 2299
Fax 250 563 1941
www.mcelhanney.com

MOISTURE CONTENT WORKSHEET
Oven Dry Method
ASTM D2216

PROJECT NAME: Ness Lake VFD Tower
PROJECT NO. 2341-21515-15
CLIENT: RDFFG

DATE SAMPLED: 2024-11-14
SAMPLED BY: K.Runtz
DATE TESTED: 2024-11-29
TESTED BY: Ben Lui

CONTAINER	BB	FF	GG	13	21	16
TH/TP NO.	24-01	24-01	24-02	24-02	24-02	24-02
SAMPLE NO.	S02	S03	S01	S02	S04	S05
SAMPLE DEPTH	4.5-5.1	7.4-8.1	0.1-1.5	2.25-2.85	8.25-8.85	11.25-11.85
WET SOIL & TARE	312.40	327.40	367.20	326.00	334.60	361.60
DRY SOIL & TARE	293.30	301.70	331.70	310.40	318.20	332.40
TARE WT	210.10	214.30	213.00	224.10	223.20	223.70
WT OF WATER	19.10	25.70	35.50	15.60	25.70	29.20
WT OF DRY SOIL	83.20	87.40	118.70	86.30	83.20	108.70
MOISTURE CONTENT %	**23.0**	**29.4**	**29.9**	**18.1**	**30.9**	**26.9**

CONTAINER	AA	17				
TH/TP NO.	24-01	24-02				
SAMPLE NO.	S01	S03				
SAMPLE DEPTH	1.0-1.6	5.25-5.85				
WET SOIL & TARE	415.00	428.60				
DRY SOIL & TARE	367.50	401.50				
TARE WT	215.30	223.20				
WT OF WATER	47.50	27.10				
WT OF DRY SOIL	152.20	178.30				
MOISTURE CONTENT %	**31.2**	**15.2**				

CONTAINER						
TH/TP NO.						
SAMPLE NO.						
SAMPLE DEPTH						
WET SOIL & TARE						
DRY SOIL & TARE						
TARE WT						
WT OF WATER						
WT OF DRY SOIL						
MOISTURE CONTENT %						

COMMENTS:

Reviewed: Gerald Stevenson

APPENDIX D – NBCC 2015 & 2020 SEISMIC HAZARD CALCULATIONS

2015 National Building Code Seismic Hazard Calculation

INFORMATION: Eastern Canada English (613) 995-5548 français (613) 995-0600 Facsimile (613) 992-8836
Western Canada English (250) 363-6500 Facsimile (250) 363-6565

Site: 54.018N 123.113W

2024-12-12 15:59 UT

Probability of exceedance per annum	0.000404	0.001	0.0021	0.01
Probability of exceedance in 50 years	2 %	5 %	10 %	40 %
Sa (0.05)	0.057	0.030	0.018	0.005
Sa (0.1)	0.084	0.044	0.025	0.007
Sa (0.2)	0.110	0.061	0.036	0.010
Sa (0.3)	0.107	0.063	0.038	0.012
Sa (0.5)	0.086	0.053	0.034	0.012
Sa (1.0)	0.058	0.038	0.027	0.012
Sa (2.0)	0.040	0.028	0.020	0.009
Sa (5.0)	0.019	0.013	0.009	0.004
Sa (10.0)	0.006	0.004	0.003	0.002
PGA (g)	0.048	0.027	0.016	0.005
PGV (m/s)	0.083	0.059	0.043	0.018

Notes: Spectral (Sa(T), where T is the period in seconds) and peak ground acceleration (PGA) values are given in units of g (9.81 m/s^2). Peak ground velocity is given in m/s. Values are for "firm ground" (NBCC2015 Site Class C, average shear wave velocity 450 m/s). NBCC2015 and CSAS6-14 values are highlighted in yellow. Three additional periods are provided - their use is discussed in the NBCC2015 Commentary. Only 2 significant figures are to be used. **These values have been interpolated from a 10-km-spaced grid of points. Depending on the gradient of the nearby points, values at this location calculated directly from the hazard program may vary. More than 95 percent of interpolated values are within 2 percent of the directly calculated values.**

References

National Building Code of Canada 2015 NRCC no. 56190; Appendix C: Table C-3, Seismic Design Data for Selected Locations in Canada

Structural Commentaries (User's Guide - NBC 2015: Part 4 of Division B)
Commentary J: Design for Seismic Effects

Geological Survey of Canada Open File 7893 Fifth Generation Seismic Hazard Model for Canada: Grid values of mean hazard to be used with the 2015 National Building Code of Canada

See the websites www.EarthquakesCanada.ca and www.nationalcodes.ca for more information

Government of Canada / Gouvernement du Canada

2020 National Building Code of Canada Seismic Hazard Tool

This application provides seismic values for the design of buildings in Canada under Part 4 of the National Building Code of Canada (NBC) 2020 as prescribed in Article 1.1.3.1. of Division B of the NBC 2020.

Seismic Hazard Values

User requested values

Code edition	NBC 2020
Site designation X_S	X_D
Latitude (°)	54.018
Longitude (°)	-123.113

Please select one of the tabs below.

NBC 2020 | Additional Values | Plots | API | Background Information

The NBC 5% damped spectral acceleration values can be viewed in the NBC tab. Additional hazard values for your site can be found below.

The 5%-damped spectral acceleration (S_a(T), where T is the period, in s) and peak ground acceleration (PGA) values are given in units of acceleration due to gravity (g, 9.81 m/s^2). Peak ground velocity (PGV) is given in m/s. Probability is expressed in terms of percent (%) exceedance in 50 years.

By default, all probabilities for the user-specified site designation are shown. Other site designations can be selected from the respective drop-down menu in the table. In low hazard regions, a minimum value of 0.001g for T ≤ 2.0s and of 0.0001g for T > 2.0s is assigned. Further information on the calculation of seismic hazard is provided in the *Background Information* tab.

Site Designation XD	**Probability** All	**$S_a(0.05)$**	**$S_a(0.1)$**	**$S_a(0.2)$**	**$S_a(0.3)$**	**$S_a(0.5)$**	**$S_a(1.0)$**	**$S_a(2.0)$**	**$S_a(5.0)$**	**$S_a(10.0)$**	**PGA**	**PGV**
X_D	2	0.0877	0.138	0.197	0.212	0.191	0.139	0.112	0.0658	0.0343	0.0816	0.191
X_D	2.5	0.0767	0.12	0.173	0.186	0.169	0.126	0.101	0.0581	0.0293	0.0719	0.174
X_D	3.5	0.0622	0.0971	0.14	0.151	0.139	0.107	0.0861	0.0477	0.0226	0.059	0.149
X_D	5	0.0492	0.0764	0.11	0.12	0.112	0.0899	0.0719	0.0379	0.0166	0.0473	0.125
X_D	7	0.0389	0.06	0.0864	0.0949	0.0913	0.0755	0.0597	0.0296	0.012	0.038	0.104
X_D	10	0.0299	0.0456	0.0658	0.0732	0.0725	0.0619	0.0479	0.0217	0.00809	0.0298	0.0833
X_D	14	0.0229	0.0343	0.0498	0.0564	0.0577	0.0503	0.0378	0.0152	0.00519	0.0233	0.0656
X_D	20	0.0169	0.0247	0.0362	0.0418	0.0445	0.0391	0.028	0.00952	0.00297	0.0176	0.0478
X_D	30	0.0116	0.0161	0.024	0.0288	0.032	0.0275	0.0183	0.00514	0.00146	0.0124	0.0306
X_D	40	0.00849	0.0114	0.0172	0.0213	0.0244	0.0201	0.0126	0.00319	0.000887	0.00929	0.0211

Download CSV

← Go back to the seismic hazard calculator form

Date modified: 2021-04-06

APPENDIX E – STATEMENT OF LIMITATIONS

Statement of Limitations – Geotechnical Services

Use of this Report. This report was prepared by McElhanney Ltd. (**"McElhanney"**) for the particular site, design objective, development and purpose (the "**Project**") described in this report and for the exclusive use of the client identified in this report (the "**Client**"). The data, interpretations and recommendations pertain to the Project and are not applicable to any other project or site location and this report may not be reproduced, used or relied upon, in whole or in part, by a party other than the Client and Building Authority, without the prior written consent of McElhanney. The Client may provide copies of this report to its affiliates, contractors, subcontractors and regulatory authorities for use in relation to and in connection with the Project provided that any reliance, unauthorized use, and/or decisions made based on the information contained within this report are at the sole risk of such parties. McElhanney will not be responsible for the use of this report on projects other than the Project, where this report or the contents hereof have been modified without McElhanney's consent, to the extent that the content is in the nature of an opinion, and if the report is preliminary or draft. This is a technical report and is not a legal representation or interpretation of laws, rules, regulations, or policies of governmental agencies. The professional services retained for this Project include only the geotechnical aspects of the subsurface conditions at the site, unless otherwise specifically stated and identified in this report. In particular, environmental conditions such as surface and subsurface contamination are outside the scope of this report.

Standard of Care and Disclaimer of Warranties. This study and report have been prepared in accordance with generally accepted engineering and scientific judgments, principles and practices. McElhanney expressly disclaims any and all warranties in connection with this report including, without limitation, any warranty that this report and the associated site review work has uncovered all potential geotechnical liabilities associated with the subject property.

Effect of Changes. All evaluations and conclusions stated in this report are based on facts, observations, site-specific details, legislation and regulations as they existed at the time of the site assessment. Some conditions are subject to change over time and the Client recognizes that the passage of time, natural occurrences, and direct or indirect human intervention at or near the site may substantially alter such evaluations and conclusions. Construction activities can significantly alter soil, rock and other geologic conditions on the site. McElhanney should be requested to re-evaluate the conclusions of this report and to provide amendments as required prior to any reliance upon the information presented herein upon any of the following events: a) any changes (or possible changes) as to the site, purpose, or development plans upon which this report was based, b) any changes to applicable laws subsequent to the issuance of the report, c) new information is discovered in the future during site excavations, construction, building demolition or other activities, or d) additional subsurface assessments or testing conducted by others.

Subsurface Risks. Soil, rock and groundwater data were collected in general accordance with the standards and methods described in the document. The classification and identification of soils, rocks and geologic formations was based on commonly accepted methods employed in the practice of geotechnical engineering and related disciplines. Interpretations of groundwater levels and flow direction are based on water level observations at selected test hole locations and are expected to fluctuate. Observations at test holes indicate the approximate subsurface conditions at those locations only. Subsurface conditions between test holes were based, by necessity, on judgement and assumptions of what exists between the actual locations sampled, and may vary significantly from actual site conditions and all persons making use of this report should be aware of, and accept, this risk. Even a comprehensive sampling and testing program, implemented in accordance with appropriate equipment by experienced personnel, may fail to detect all or certain conditions.

Information from Client and Third Parties. McElhanney has relied in good faith on information provided by the Client and third parties noted in this report and has assumed such information to be accurate, complete, reliable, non-fringing, and fit for the intended purpose without independent verification. McElhanney accepts no responsibility for any deficiency, misstatements or inaccuracy contained in this report as a result of omissions or errors in information provided by third parties or for omissions, misstatements or fraudulent acts of persons interviewed.

Underground Utilities and Damages. In the performance of the services, McElhanney has taken reasonable precautions to avoid damage or injury to subterranean structures or utilities. Subsurface sampling may result in unavoidable contamination of certain subsurface areas not known to be previously contaminated such as, but not limited to, a geologic formation, the groundwater or other hydrous body. McElhanney will adhere to an appropriate standard of care during the conduct of any subsurface sampling.

Independent Judgments. McElhanney will not be responsible for the independent conclusions, interpretations, interpolations and/or decisions of the Client, or others, who may come into possession of this report, or any part thereof. This restriction of liability includes decisions made to purchase, finance or sell land or with respect to public offerings for the sale of securities.

Construction. The subsurface information contained in this report were obtained for the owner's information and design. The extent and detail of assessments necessary to determine all relevant conditions that may affect construction costs would normally be greater than the assessments carried out for this report. Accordingly, a contingency fund to allow for the possibility of variations of subsurface conditions should be included in the construction budget to cover costs associated with modifications of the design and construction procedures resulting from conditions that vary from the assumptions in this report. If during construction, subsurface conditions are found to be other than those described in this report, McElhanney is to be notified and may alter or modify the geotechnical report recommendations. If McElhanney is not retained to provide services during construction, then McElhanney is not responsible for confirming or recording that subsurface conditions do not materially differ from those interpreted conditions contained in this report or for confirming or recording that construction activities have not adversely affected subsurface conditions or the recommendations contained in this report.

Contact
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403-973-4602
sbunio@mcelhanney.com

McElhanney

CANADA BEST MANAGED COMPANIES