Royal Canadian Mounted Police / Gendarmerie royale du Canada

RETURN BIDS TO:
RETOURNER LES SOUMISSIONS A :
Bid Receiving Unit/Réception des sousmissions
Procurement & Contracting Services Branch / Direction des Services d'acquisitions et des marchés
VISITOR'S CENTRE/CENTRE DES VISITEURS – Main Entrance/ entrée principale
73 Leikin Drive, Ottawa, Ontario
K1A 0R2
Telephone No. /no de telephone: 613-843-3798
Attn: Megan McCoy

REQUEST FOR PROPOSAL

DEMANDE DE PROPOSITION

Proposal to: Royal Canadian Mounted Police

We hereby offer to sell to Her Majesty the Queen in right of Canada, in accordance with the terms and conditions set out herein, referred to herein or attached hereto, the goods, services, and construction listed herein and on any attached sheets at the price(s) set out therefor.

Proposition aux : Gendarmerie royale du Canada

Nous offrons par la présente de vendre à Sa Majesté la Reine du chef du Canada, aux conditions énoncées ou incluses par référence dans la présente et aux appendices ci-jointes, les biens, services et construction énumérés ici sur toute feuille ci-annexée, au(x) prix indiqué(s).

Comments: - Commentaries :

Title – Sujet Removal and Installation of Communication Towers		**Date** June 23, 2014
Solicitation No. – N° de l'invitation 201500112		
Client Reference No. - No. De Référence du Client 201500112		
Solicitation Closes – L'invitation prend fin		
At /à :	2:00 PM	EST (Eastern Standard Time) HNE (heure normale de l'Est)
On / le :	August 5, 2014	
F.O.B. – F.A.B Destination	**GST – TPS** See herein — Voir aux présentes	**Duty – Droits** See herein — Voir aux présentes
Destination of Goods and Services – Destinations des biens et services See herein — Voir aux présentes		
Instructions See herein — Voir aux présentes		
Address Inquiries to – **Adresser toute demande de renseignements à** Jordan McKenna - Procurement Officer		
Telephone No. – No. de téléphone 613-843-5518		**Facsimile No. – No. de télécopieur** 613-825-0082

Delivery Required – **Livraison exigée** See herein — Voir aux présentes	**Delivery Offered** – **Livraison proposée**
Vendor/Firm Name, Address and Representative – Raison sociale, adresse et représentant du fournisseur/de l'entrepreneur:	
Telephone No. – No. de téléphone	**Facsimile No. – No. de télécopieur**
Name and title of person authorized to sign on behalf of Vendor/Firm (type or print) – Nom et titre de la personne autorisée à signer au nom du fournisseur/de l'entrepreneur (taper ou écrire en caractères d'imprimerie)	
Signature	**Date**

Canada

TABLE OF CONTENTS

PART 1 - GENERAL INFORMATION

1. Introduction

The bid solicitation is divided into seven parts plus attachments and annexes, as follows:

Part 1 General Information: provides a general description of the requirement;

Part 2 Bidder Instructions: provides the instructions, clauses and conditions applicable to the bid solicitation;

Part 3 Bid Preparation Instructions: provides bidders with instructions on how to prepare their bid;

Part 4 Evaluation Procedures and Basis of Selection: indicates how the evaluation will be conducted, the evaluation criteria that must be addressed in the bid, and the basis of selection;

Part 5 Certifications: includes the certifications to be provided;

Part 6 Security, Financial and Other Requirements: includes specific requirements that must be addressed by bidders; and

Part 7 Resulting Contract Clauses: includes the clauses and conditions that will apply to any resulting contract.

The Annexes include the Statement of Work, the Basis of Payment, and the Insurance Requirements.

The Appendices include: The RCMP Standards and Guidelines for Communication Sites, and the Geotechnical Reports.

2. Summary

The Royal Canadian Mounted Police has a requirement to install four (4) 80 foot (24.38m), self-support towers at the RCMP Detachments in Vulcan, Bonnyville, High Level, and Lloydminster Alberta (AB) and remove two existing towers and install two (2) 80 foot (24.38m) self-support towers at Ft. Vermilion and Grande Cache, Alberta (AB).

The RCMP Standards and Guidelines for Communication Sites V1.1 June 2013 (Appendix A) and the CSA S37-01 are reference documents that should be referred to when responding to this solicitation. .

This requirement is open only to those invited Supply Arrangement Holders under supply arrangement 201301568/XX who qualified under stream **1: *Supply and Installation***, and/or stream **2: *Repair and Maintenance (as per table 2-1 below),*** Region of Qualification: ***Western*.**

The period of the Contract will be for five (5) months from date of contract award.

Bidders are asked to submit bids for the following 6 locations. **Each location will be evaluated separately**. One (1) to Six (6) contracts may be awarded as a result of this solicitation.

Table 2-1

Location	**Open to vendors qualified under following SA Stream(s)**	**Requirement**
1. Fort Vermillion	1: Supply and Installation, and 2:	Removal and Installation

	Repair and Maintenance	
2. Grande Cache	1: Supply and Installation, and 2: Repair and Maintenance	Removal and Installation
3. Vulcan	1: Supply and Installation	Installation
4. Bonnyville	1: Supply and Installation	Installation
5. High Level	1: Supply and Installation	Installation
6. Lloydminster	1: Supply and Installation	Installation

The requirement is subject to the provisions of the North American Free Trade Agreement (NAFTA), the Agreement on Internal Trade (AIT) and the World Trade Organization-Agreement on Government Procurement (WTO-AGP).

3. Debriefings

Bidders may request a debriefing on the results of the bid solicitation process. Bidders should make the request to the Contracting Authority within 15 working days of receipt of the results of the bid solicitation process. The debriefing may be in writing, by telephone or in person.

4. Procurement Ombudsman

The Office of the Procurement Ombudsman (OPO) was established by the Government of Canada to provide an independent avenue for suppliers to raise complaints regarding the award of contracts under $25,000 for goods and under $100,000 for services. You have the option of raising issues or concerns regarding the solicitation, or the award resulting from it, with the OPO by contacting them by telephone at 1-866-734-5169 or by e-mail at boa.opo@boa.opo.gc.ca. You can also obtain more information on the OPO services available to you at their website at www.opo-boa.gc.ca.

PART 2 - BIDDER INSTRUCTIONS

1. Standard Instructions, Clauses and Conditions

All instructions, clauses and conditions identified in the bid solicitation by number, date and title are set out in the *Standard Acquisition Clauses and Conditions Manual*(https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual) issued by Public Works and Government Services Canada.

Revision to Departmental Name: As this solicitation is issued by Royal Canadian Mounted Police (RCMP), any reference to Public Works and Government Services Canada or PWGSC or its Minister contained in any term, condition or clause of this solicitation, including any individual SACC clauses incorporated by reference, will be interpreted as reference to RCMP or its Minister.

Bidders who submit a bid agree to be bound by the instructions, clauses and conditions of the bid solicitation and accept the clauses and conditions of the resulting contract.

The 2003 (2013-06-01) Standard Instructions - Goods or Services - Competitive Requirements, are incorporated by reference into and form part of the bid solicitation.

Section 01 – Code of Conduct and Certification – Bid of 2003 referenced above is amended as follows:

Delete subsection 1.4 and 1.5 in their entirety.

Subsection 5.4 of 2003, Standard Instructions - Goods or Services - Competitive Requirements, is amended as follows:

Delete: sixty (60) days
Insert: ninety (90) days

The 2003-1 (2008-05-12) Supplemental Standard Instructions - Telecommunications, are incorporated by reference into and form part of the bid solicitation.

2. Submission of Bids

Bids must be submitted only to RCMP Bid Receiving Unit by the date, time and place indicated on page 1 of the bid solicitation.

Due to the nature of the bid solicitation, bids transmitted by facsimile to RCMP will not be accepted.

3. Enquiries - Bid Solicitation

All enquiries must be submitted in writing to the Contracting Authority no later than five (5) calendar days before the bid closing date. Enquiries received after that time may not be answered.

Bidders should reference as accurately as possible the numbered item of the bid solicitation to which the enquiry relates. Care should be taken by bidders to explain each question in sufficient detail in order to enable Canada to provide an accurate answer. Technical enquiries that are of a proprietary nature must be clearly marked "proprietary" at each relevant item. Items identified as "proprietary" will be treated as such except where Canada determines that the enquiry is not of a proprietary nature. Canada may edit the questions or may request that the Bidder do so, so that the proprietary nature of the question is eliminated, and the enquiry can be answered with copies to all bidders. Enquiries not submitted in a form that can be distributed to all bidders may not be answered by Canada.

4. Applicable Laws

Any resulting contract must be interpreted and governed, and the relations between the parties determined, by the laws in force in Alberta.

Bidders may, at their discretion, substitute the applicable laws of a Canadian province or territory of their choice without affecting the validity of their bid, by deleting the name of the Canadian province or territory specified and inserting the name of the Canadian province or territory of their choice. If no change is made, it acknowledges that the applicable laws specified are acceptable to the bidders.

5. Improvement of Requirement During Solicitation Period

Should bidders consider that the specifications or Statement of Work contained in the bid solicitation could be improved technically or technologically, bidders are invited to make suggestions, in writing, to the Contracting Authority named in the bid solicitation. Bidders must clearly outline the suggested improvement as well as the reason for the suggestion. Suggestions that do not restrict the level of competition nor favour a particular bidder will be given consideration provided they are submitted to the Contracting Authority at least seven (7) days before the bid closing date. Canada will have the right to accept or reject any or all suggestions.

PART 3 - BID PREPARATION INSTRUCTIONS

1. Bid Preparation Instructions

Canada requests that bidders provide their bid in separately bound sections as follows:

Section I: Technical Bid (1 hard copy)

Section II: Financial Bid (1 hard copy)

Section III: Certifications (1 hard copy)

Prices must appear in the financial bid only. No prices must be indicated in any other section of the bid.

Canada requests that bidders follow the format instructions described below in the preparation of their bid:

a) use 8.5 x 11 inch (216 mm x 279 mm) paper;
b) use a numbering system that corresponds to the bid solicitation.

In April 2006, Canada issued a policy directing federal departments and agencies to take the necessary steps to incorporate environmental considerations into the procurement process Policy on Green Procurement (http://www.tpsgc-pwgsc.gc.ca/ecologisation-greening/achats-procurement/politique-policy-eng.html). To assist Canada in reaching its objectives, bidders should:

1) use 8.5 x 11 inch (216 mm x 279 mm) paper containing fibre certified as originating from a sustainably-managed forest and containing minimum 30% recycled content; and

2) use an environmentally-preferable format including black and white printing instead of colour printing, printing double sided/duplex, using staples or clips instead of cerlox, duotangs or binders.

Section I: Technical Bid

In their technical bid, bidders should demonstrate their understanding of the requirements contained in the bid solicitation and explain how they will meet these requirements. Bidders should demonstrate their capability and describe their approach in a thorough, concise and clear manner for carrying out the work.

The technical bid should address clearly and in sufficient depth the points that are subject to the evaluation criteria against which the bid will be evaluated. Simply repeating the statement contained in the bid solicitation is not sufficient. In order to facilitate the evaluation of the bid, Canada requests that bidders address and present topics in the order of the evaluation criteria under the same headings. To avoid duplication, bidders may refer to different sections of their bids by identifying the specific paragraph and page number where the subject topic has already been addressed.

Section II: Financial Bid

Bidders must submit their financial bid in accordance with the Basis of Payment in Annex "B". The total amount of Applicable Taxes must be shown separately, if applicable.

Section III: Certifications

Bidders must comply with all certification requirements, as indicated under Part 5.

PART 4 - EVALUATION PROCEDURES AND BASIS OF SELECTION

4.1. Evaluation Procedures

a) Bids will be assessed in accordance with the entire requirement of the bid solicitation

b) An evaluation team composed of representatives of Canada will evaluate the bids.

4.2 Evaluation of Price - A0220T (2013-04-25)

The price of the bid will be evaluated in Canadian dollars, Applicable Taxes excluded, FOB destination, Canadian customs duties and excise taxes included.

2. Basis of Selection

To be declared responsive, a bid must comply with all requirements of the bid solicitation;

The responsive bid with the lowest evaluated price for each site will be recommended for award.

PART 5 - CERTIFICATIONS

Bidders must comply with certifications as they were submitted under Supply Arrangement 201304568/XX.

Any change to the bidder's situation that may affect the submitted certifications must be reported to the Contracting Authority, immediately. Failure to comply with this request could result in removal from the Supply Arrangement.

The Contracting Authority has the right to ask for additional information to verify the Bidder's certifications. Failure to comply with this request will render the bid non-responsive or will constitute a default under the Contract.

PART 6 - SECURITY, FINANCIAL AND OTHER REQUIREMENTS

1. Security Requirement

There is no security requirement applicable to any resulting Contract.

2. Insurance Requirements– G1007T (2011-05-16)

The Bidder must provide a letter from an insurance broker or an insurance company licensed to operate in Canada stating that the Bidder, if awarded a contract as a result of the bid solicitation, can be insured in accordance with the Insurance Requirements specified in Annex C.

If the information is not provided in the bid, the Contracting Authority will so inform the Bidder and provide the Bidder with a time frame within which to meet the requirement. Failure to comply with the request of the Contracting Authority and meet the requirement within that time period will render the bid non-responsive.

PART 7 - RESULTING CONTRACT CLAUSES

The following clauses and conditions apply to and form part of any contract resulting from the bid solicitation.

1. Statement of Work

The Contractor must perform the Work in accordance with Annex "A" – Statement of Work**.**

2. Standard Clauses and Conditions

All clauses and conditions identified in the Contract by number, date and title are set out in the *Standard Acquisition Clauses and Conditions Manual*(https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual) issued by Public Works and Government Services Canada.

Revision to Departmental Name: As this contract is issued by Royal Canadian Mounted Police (RCMP), any reference to Public Works and Government Services Canada or PWGSC or its Minister contained in any term, condition or clause of this contract, including any individual SACC clauses incorporated by reference, will be interpreted as reference to RCMP or its Minister.

2.1 General Conditions

2035 (2013-06-27), General Conditions - Higher Complexity - Services, apply to and form part of the Contract.

Section 41 Code of Conduct and Certifications – Contract of 2035 referenced above is amended as follows:

Delete subsection 41.4 in its entirety.

3. Security Requirement

There is no security requirement applicable to the Contract.

4. Term of Contract

4.1 Period of the Contract

The period of contract is from date of award to five (5) months later.

5. Authorities

5.1 Contracting Authority

The Contracting Authority for the Contract is:

Name: Jordan McKenna
Title: Procurement Officer
Royal Canadian Mounted Police
Procurement and Contracting Branch
Directorate: Corporate Management and Comptrollership
Address: 73 Leikin Drive

Telephone: 613-843-5518
Facsimile: 613-825-0082
E-mail address:jordan.mckenna@rcmp-grc.gc.ca

The Contracting Authority is responsible for the management of the Contract and any changes to the Contract must be authorized in writing by the Contracting Authority. The Contractor(s) must not perform work in excess of or outside the scope of the Contract based on verbal or written requests or instructions from anybody other than the Contracting Authority.

5.2 Project Authority

The Project Authority for the Contract is:

Name: _____ (to be added at contract award)
Title: _____
Organization: _____
Address: _____

Telephone: ___-___-_____
Facsimile: ___-___-_____
E-mail address: _____

The Project Authority is the representative of the department or agency for whom the Work is being carried out under the Contract and is responsible for all matters concerning the technical content of the Work under the Contract. Technical matters may be discussed with the Project Authority; however, the Project Authority has no authority to authorize changes to the scope of the Work. Changes to the scope of the Work can only be made through a contract amendment issued by the Contracting Authority.

5.3 Contractor's Representative

Name: _____ (To be added at contract award)
Title: _____
Organization: _____
Address: _____

Telephone: ___-___-_____
Facsimile: ___-___-_____
E-mail address: _____

6. Payment

6.1 Basis of Payment

In consideration of the Contractor satisfactorily completing all of its obligations under the Contract, the Contractor will be paid a firm all-inclusive rate as specified in Annex "B" – Basis of Payment. Customs duties are included and Applicable Taxes are extra.

6.2 Additional Work

Following any tower inspection, repair, or tower removal, the Contractor will be permitted to claim up to a maximum of 4 additional hours for any service immediately required but not pre-authorized by the technical authority. The Contractor must document the additional service with before and after pictures of sufficient resolution such that the technical authority can clearly identify what additional work has been done. Any costs beyond 4 hours must be pre-approved in writing by the Contracting Authority prior to proceeding.

Rates for Additional work		
Maximum number of additional hours (a)	**Firm per diem rate (b)**	**Maximum allowable total (a) x(b)**
4	$	$

6.3 Other Direct Costs for Additional Work

The Contractor will be reimbursed for the direct expenses reasonably and properly incurred in the performance of the Additional Work (as outlined in section 6.2). These expenses will be paid at actual cost without mark-up, upon submission of an itemized statement supported by receipt vouchers.

Estimated Cost: $500.00

6.4 Other Allowable Expenses

The Contractor is permitted to claim the following direct costs reasonably and properly incurred plus the indicated mark-up. All costs must be pre-approved by the technical authority and the Contractor must submit an itemized statement supported by receipt vouchers prior to invoice payment.

Item	Unit of Measure	Mark up (%)
Equipment rental	Cost plus mark up	%
Sub-contractor work	Cost plus mark up	%

6.5 Goods and Services Tax/Harmonized Sales Tax

All prices and amounts of money in the Contract are exclusive of the Goods and Services Tax (GST) or Harmonized Sales Tax (HST), as applicable, unless otherwise indicated. The GST or HST, whichever is applicable, is extra to the price herein and will be paid by Canada.

The estimated GST/HST of $_____CAD (to be added at contract award) will be included in the total estimated cost on page 1 of the Contract. GST/HST, to the extent applicable, will be incorporated into all invoices and progress claims and shown as a separate item on invoices and progress claims. All items that are zero-rated, exempt or to which the GST does not apply, are to be identified as such on all invoices. The Contractor agrees to remit to Canada Revenue Agency any amounts of GST paid or due.

6.6 Disbursements and Travel Time

The all-inclusive firm rates specified are inclusive of overhead expenses such as administrative support, facsimile, courier, photocopying, mail, word processing, other operating costs and any time spent traveling to locations or "stand-by" requirements. Accordingly, separate billing of any items related to the routine cost of doing business or time spent traveling shall not be permitted under any resulting Contract.

6.7 Method of Payment –Single payment OR Multiple Payments (To be determined at contract award)

Single Payment

Canada will pay the Contractor upon completion and delivery of the Work in accordance with the payment provisions of the Contract if:

A. An accurate and complete invoice and any other documents required by the Contract have been submitted in accordance with the invoicing instructions provided in the Contract;
B. All such documents have been verified by Canada;
C. The Work delivered has been accepted by Canada.

OR

Multiple Payments

Canada will pay the Contractor upon completion of the Work at each site in accordance with the payment provisions of the Contract if:

A. an accurate and complete invoice and any other documents required by the Contract have been submitted in accordance with the invoicing instructions provided in the Contract;
B. all such documents have been verified by Canada;
C. the Work delivered has been accepted by Canada.

7. Invoicing Instructions

The Contractor must submit invoices in accordance with the section entitled "Invoice Submission" of the general conditions. Invoices cannot be submitted until all work identified in the invoice is completed.

8. Certifications

8.1 Compliance

Compliance with the certifications and related documentation provided by the Contractor in its bid is a condition of the Contract and subject to verification by Canada during the term of the Contract. If the Contractor does not comply with any certification, provide the related documentation or if it is determined that any certification made by the Contractor in its bid is untrue, whether made knowingly or unknowingly, Canada has the right, pursuant to the default provision of the Contract, to terminate the Contract for default.

9. Applicable Laws

The Contract must be interpreted and governed, and the relations between the parties determined, by the laws in force in Alberta.

10. Priority of Documents

If there is a discrepancy between the wording of any documents that appear on the list, the wording of the document that first appears on the list has priority over the wording of any document that subsequently appears on the list.

a) the Articles of Agreement;
b) 2035 (2013-06-27), General Conditions - Higher Complexity – Services;
c) Annex A, Statement of Work;
d) Annex B, Basis of Payment;
e) Annex C, Insurance Requirements;
f) the Contractor's bid dated _____,

11. Procurement Ombudsman

11.1 Dispute Resolution Services

The parties understand that the Procurement Ombudsman appointed pursuant to Subsection 22.1(1) of the *Department of Public Works and Government Services Act* will, on request, and consent of the parties, to participate in an alternative dispute resolution process to resolve any dispute between the

parties respecting the interpretation or application of a term or condition of this contract and their consent to bear the cost of such process, provide to the parties a proposal for an alternative dispute resolution process to resolve their dispute.

The Office of the Procurement Ombudsman may be contacted by telephone at 1-866-734-5169 or by e-mail at boa.opo@boa.opo.gc.ca.

11.2 Contract Administration

The parties understand that the Procurement Ombudsman appointed pursuant to Subsection 22.1(1) of the *Department of Public Works and Government Services Act* will review a complaint filed by [*the supplier or the Contractor or the name of the entity awarded this contract*] respecting administration of this contract if the requirements of Subsection 22.2(1) of the *Department of Public Works and Government Services Act* and Sections 15 and 16 of the *Procurement Ombudsman Regulations* have been met, and the interpretation and application of the terms and conditions and the scope of the work of this contract are not in dispute.

The Office of the Procurement Ombudsman may be contacted by telephone at 1-866-734-5169 or by e-mail at boa.opo@boa.opo.gc.ca.

12. Foreign Nationals (Canadian Contractor)

SACC Manual clause A2000C (2006-06-16) Foreign Nationals (Canadian Contractor)

13. Insurance Requirements

As per Supply Arrangement 201304568/XX - Refer to Annex C

Annex A

STATEMENT OF WORK (SOW)

Install Four (4) Communication Towers,

Vulcan, AB	Lat.: 50° 23' 46.0"	Long.: -113° 15' 18.0
Bonnyville, AB	Lat.: 54° 16' 17.0"	Long.: -110° 43' 39.0
High level, AB	Lat.: 58° 31' 09.0"	Long.: -117° 08' 07.0
Lloydminster, AB	Lat.: 54° 16' 42.0"	Long.: -110° 00' 28.0"

And

Remove and Install Communication Towers at Two (2) Locations,

Removal Location : Fort Vermilion, AB	Lat.: 58° 23' 13.0"	Long.: -116° 01' 06.0
Install Location : Fort Vermilion, AB	Lat.: 58° 22' 59.0"	Long.: -116° 00' 13.0
Removal Location : Grande Cache, AB	Lat.: 53° 53' 31.0"	Long.: -119° 06' 38.0
Install Location : Grande Cache, AB	Lat.: 53° 53' 30.0"	Long.: -119° 06' 52.0

Contents

1.0 Title

The RCMP has a requirement to Remove two (2) Communication Towers and install six (6) new 80 foot (24.38m) Communication Towers.

2.0 Background

The RCMP has legal obligations to ensure the safety of its members and general public under the Canadian Labor Code and the Canadian Occupational Health and Safety Regulations. As a result, the RCMP has initiated a national program to ensure that all its radio communication towers are compliant with applicable standards under Canadian Standards Association (CSA) S37-01. These standards define the design, construction and maintenance of communication towers and their accessories. The work needed to meet the compliancy standards is contracted to qualified companies. All work is scheduled as per applicable standards/guidelines.

3.0 Objectives

To meet the Canadian Labor Code (CLC) directive and to ensure the safe, serviceable condition of the RCMP's communication structures.

4.0 Scope of Work

The RCMP has a requirement to install four (4) new 80 foot (24.38m), self-support towers at the RCMP Detachments in Vulcan, Bonnyville, High Level, and Lloydminster Alberta (AB) and remove two existing towers and install two (2) 80 foot (24.38m) self-support towers at Ft. Vermilion and Grande Cache, Alberta (AB).

5.0 Tasks/Technical Specifications

5.1 Removal

5.1.1 Upon completion of the work the Contractor must leave the site in a clean and tidy condition subject to the satisfaction of the RCMP Project Authority or his designated representative.

5.1.2 The Contractor must supply and install caution signs as identified in the RCMP Standards and Guidelines for Communication Sites (Appendix A). These signs must be provided in French and English.

5.2 Installation

5.2.1 The Contractor is responsible for the supply and installation of all new towers in accordance with CSA S37-01 Standard, built of solid rounds, and as a minimum support wind pressure of 600 pa with radial ice of 41mm. The antennas and transmission lines are to be as defined in the CSLL (Communication Structure Load List) and the Contractor must ensure the tower will be built to support the required wind pressure and ice loading in their designated locations (Refer to Site Specific Details, Section 11.0).

Prior to tower installation, the Contractor shall provide the RCMP Project Authority with the proposed tower profile, foundation design and a complete set of drawings for review and approval.

5.2.2 The Contractor is responsible for the installation of a tower foundation based on geotechnical reports in Appendix B and the site specific requirements detailed in Section 11.0 of this document.

5.2.3 The Contractor must confirm all field dimensions, existing conditions and measurements on site, prior to fabrication.

5.2.4 The Contractor must provide detailed drawings of a proposed anti-climb system. The Contractor must supply and install the proposed anti-climb and fall arrest rail as per Appendix A - RCMP Standards and Guidelines for Communication Sites.

5.2.5 The Contractor must supply and install a new tower ground system in accordance with the RCMP Standards and Guidelines for Communication Sites (Appendix A). The new ground system will consist of but not be limited to: individual leg grounding, continuous ground riser, bottom and top tinned coated copper buss bars and a lightning rod and external buss bar connections. The components for the internal buss bar and surge protectors for each antenna must be provided to the RCMP technician on site. A tower ground ring must be electrically terminated to the RCMP building ground. The ground lead must be brought above ground and at a minimum of .91 meters.

5.2.6 The Contractor is responsible for supplying and installing all proposed transmission lines, antennas and mounts as indicated on the CSLL (Refer to Site Specific Details Section 11.0). All transmission line hangers must be heavy duty and constructed of material compatible with hot dip galvanized steel. Lines and feeders installed on antenna mounts are to be attached with line hangers. The transmission lines must be grounded to the waveguide port and to the top and bottom of the buss bars. The Contractor must supply and install an External Ground Bus bar (EGB) below the waveguide port(s) on the RCMP building. A 2/0 vinyl coated copper ground lead, and ground kits must be added to all the TX-lines and terminated on the new ground bar.

5.2.7 The Contractor must supply sufficient length of cable for feeding the lines through the entry port inside of the RCMP building and sealing the tower base end with expandable foam. The RCMP technician is responsible for any connections made inside the building.

5.2.8 The Contractor must supply all mounting hardware necessary to install the specified antennas.

5.2.9 The Contractor is responsible for supplying all N-type connectors for the transmission lines. The Contractor is responsible for the termination at the antenna only. The RCMP technician must complete any connections made inside the building.

5.2.10 The tower structure and all auxiliary components must be hot-dipped galvanized to conform with CSA S37-01 prior to installation.

5.2.11 The Contractor must complete antenna orientations, optimization, testing and commissioning, including a transmit sweep test.

5.2.12 The RCMP will identify the required obstruction lighting and markings that are required for the tower on a per site basis and identify how these requirements are to be met, unless otherwise requested by the Project Authority.

5.2.13 Upon completion of the work the Contractor must leave the site in a clean and tidy condition subject to the satisfaction of the RCMP Project Authority or his designated representative.

5.2.14 The Contractor must supply and install caution signs as identified in the RCMP Standards and Guidelines for Communication Sites (Appendix A). These signs must be provided in French and English.

6.0 Deliverables

6.1 Removal

Number	Title	Date Required	Details
1	Procedure Report	No more than 7 calendar days prior to removal of the communication tower.	A dismantling procedure for the safe removal of the communication tower. The report should include but is not limited to the following:
2	Final Report	Required no more than 7 calendar days following tower removal prior to final inspection	The report will include: Digital photos of the site after removal. The digital photos must be of sufficient resolution so as to provide the Project Authority with a clear understanding of how the tower removal meets the original RCMP removal requirement in section 11.

6.2 Installation

Number	Title	Date Required	Details
1	Tower Profile	No more than 10 calendar days following site visit	Proposed tower profile, foundation design and complete set of stamped manufacture's tower drawings. A copy of the tower profile and foundation drawings must be submitted to the RCMP Project Authority for verification prior to the procurement of materials, site preparation and tower installation.
2	Detailed drawings of a proposed anti-climb system	At least 10 calendar days prior to construction of anti-climb system	To be followed by the supply and installation of the anti-climb and fall arrest rail as per Appendix A- RCMP Standards and Guidelines for Communication Sites.
3	Test Report	Required no more than 48 hours following tower installation and prior to final inspection.	The following must be included in the report: results from Antenna orientations, optimization, testing and commissioning, including transmit sweep test results. One copy of the results is to be left with the local RCMP representative and one copy is to be provided to the RCMP Project Authority
4	"As Built" Drawings for the completed towers and foundations	Required no more than 48 hours following tower installation prior to final inspection	To be created as per Appendix A- RCMP Standards and Guidelines for Communication Sites and delivered to the Project Authority. Site specific drawings of the foundation must be included.

5	Final Report	Required no more than seven calendar days following tower installation and prior to final inspection	The report will include: Hard copy report including all pertinent details which would allow the reader to establish what work was performed. Digital photos of the site must be included. Photos must be of sufficient resolution so as to provide the Project Authority with a clear understanding of how the tower meets or does not meet the original RCMP construction specifications and abides by CSA S37 standards. .

7.0 Locations of Work

Install SIX (6) Communication Towers,

Fort Vermilion, AB	Lat.: 58° 22' 59.0"	Long.: -116° 00' 13.0
Vulcan, AB	Lat.: 50° 23' 46.0"	Long.: -113° 15' 18.0
Bonnyville, AB	Lat.: 54° 16' 17.0"	Long.: -110° 43' 39.0
Grande Cache, AB	Lat.: 53° 53' 30.0"	Long.: -119° 06' 52.0
High Level, AB	Lat.: 58° 31' 09.0"	Long.: -117° 08' 07.0
Lloydminster, AB	Lat.: 54° 16' 42.0"	Long.: -110° 00' 28.0"

And

Remove Two (2) Communication Towers,

Fort Vermilion, AB	Lat.: 58° 23' 13.0"	Long.: -116° 01' 06.0
Grande Cache, AB	Lat.: 53° 53' 31.0"	Long.: -119° 06' 38.0

8.0 Constraints

8.1 All on site Contractor personnel must be trained in safe climbing, working and tower rescue techniques. CSA approved safety equipment must be utilized at all times.

8.2 The Contractor must safeguard existing antennas, transmission lines, other tower attachments, tower members and connections. The Contractor must not alter or otherwise impair the performance of any of these items during the course of the work without the written approval of the RCMP Project Authority.

8.3 For all tower installations, the Contractor must use all new CSA Grade steel, hot dipped and galvanized and must comply with CSA S37-01.

8.4 The Contractor is responsible for the review and adherence to all safety regulations under the Canada Labor Code, all RCMP safety regulations, safety requirements of the Workers Compensation Commission, CSA Standards and any other applicable Provincial and Federal Regulations.

9.0 Travel

9.1 Transportation of all personnel, materials and equipment to and from the sites is the responsibility of the Contractor.

10.0 Inspection

10.1 **Random RCMP Inspections:**
Workmanship will be subject to an RCMP inspection at any time by the RCMP Project Authority or designated representative(s). The Contractor will make available any documentation such as drawings and specifications upon request of the Project Authority or designated representative, in order to facilitate his or her work. Any remedial work deemed necessary by the inspector will be completed by the Contractor at the Contractor's own expense.

10.2 **Acceptance Inspections:**
An acceptance inspection of the completed work may be done by an RCMP designated representative. All efforts will be made to have the inspection in conjunction with the completion of work at the sites. The Contractor must work with the RCMP Project Authority or designated representative to establish an estimated time for the final inspection.

The purpose of the acceptance inspection is to confirm completion of all required repairs and to ensure that the repairs are in compliance with CSA S37.

11.0 Site Specific Details

11.1 Fort Vermilion Detachment Tower Removal – Fort Vermilion, ALTA.

Introduction

Remove the old Fort Vermilion Repeater 50 foot (15.24m) tower which is located at the Ft. Vermilion Forestry yard and install a new 80 foot (24.38m) self-support at the new RCMP Fort Vermilion Detachment. The Fort Vermilion Repeater is moving to the new Detachment. Both sites are located in Fort Vermilion.

Fort. Vermilion Repeater - Forestry Yard

Coordinates: 58-23-13 N Lat. 116-01-06 W Long.
Address: 5001 - 46th Avenue, Fort Vermillion, Alberta
Site Access:
Existing Structure:

Forestry Yard Google Map

Forestry Yard Google Earth

11.1.1 - Requirements

1. The old tower must remain in service until the new one is ready for cutover. Once the new tower is installed and operational, the old tower which is located at the Forestry Yard in Fort Vermilion, AB, may be removed.

2. The existing tower is a 50foot (15.24m) Wind Turbine all weld self-support tower and related components. A safe dismantling plan and procedure must be planned and must be submitted to the Project Authority prior to beginning work. Care must be taken in removal of the tower and it is the responsibility of the Contractor to safeguard any building in its vicinity and to dispose of the communication tower and related components. The address for the Forestry Yard where the tower is to be removed is 5001 - 46th Avenue, Fort Vermillion, AB.

3. The existing tower foundation will be excavated to one foot below grade, cut, backfilled and leveled with excavated materials or ballast from the existing foundation element. No sharp edges or hazards should be within 1 foot of the final ground surface.

11.2 - **Fort Vermilion Detachment Tower Installation – Fort Vermillion, ALTA.**

Coordinates: 58-22-59 N Lat. 116-00-13 W Long.
Address: 4302-45th Street, Fort Vermilion, AB. T0H 1N0

Detachment Photo

Google Map

Google Earth

11.2.1 - Requirements

1. The old tower must remain in service until the new one is ready for cutover.

2. A new 80 foot (24.38m) tower will be installed at the location identified in site plan and photos included below.

3. The tower and foundation must be designed to incorporate all antennas and lines shown in the CSLL, the site drawings, the tower manufacturers' drawings and the antenna specifications (Outlined Below) and in accordance with the site specific wind and ice data (Outlined Below). A copy of the tower profile and foundation drawings must be submitted to the RCMP Project Authority for verification prior to the procurement of materials, site preparation and tower installation.

4. The geotechnical report that was completed in preparation for the new building construction has been attached in Appendix B. This is to be used for the design of the tower foundation.

5. The Contractor must supply and install the tower foundation as detailed in the CSLL, the Site drawings, the Tower Manufacturers Drawings and the Antenna Specifications (Outlined Below). Site specific drawings of the foundation must be included on the As-Built Drawings.

6. The Contractor is responsible to provide sufficient length for all specified transmission lines to accommodate the estimated 80 feet (24.38m) required for the future conduit run inside of the RCMP building. Since there no access conduit, the extra 80 feet (24.38m) for each antenna feed lines is to be coiled at the base of the tower and the ends are to be protected from the elements. The RCMP technicians will assume responsibility for fishing of the lines through the future access conduit port. The Contractor will supply the compatible N type female connector for each line and the RCMP will assume responsibility for their installation.

7. The Contractor must provide detailed drawings to supply and install a new panel anti-climb and fall arrest rail. The panel anti-climb must be 10 feet (3 m) with the fall arrest rail beginning at the top of the new panel anti-climb and extend to the top of the tower.

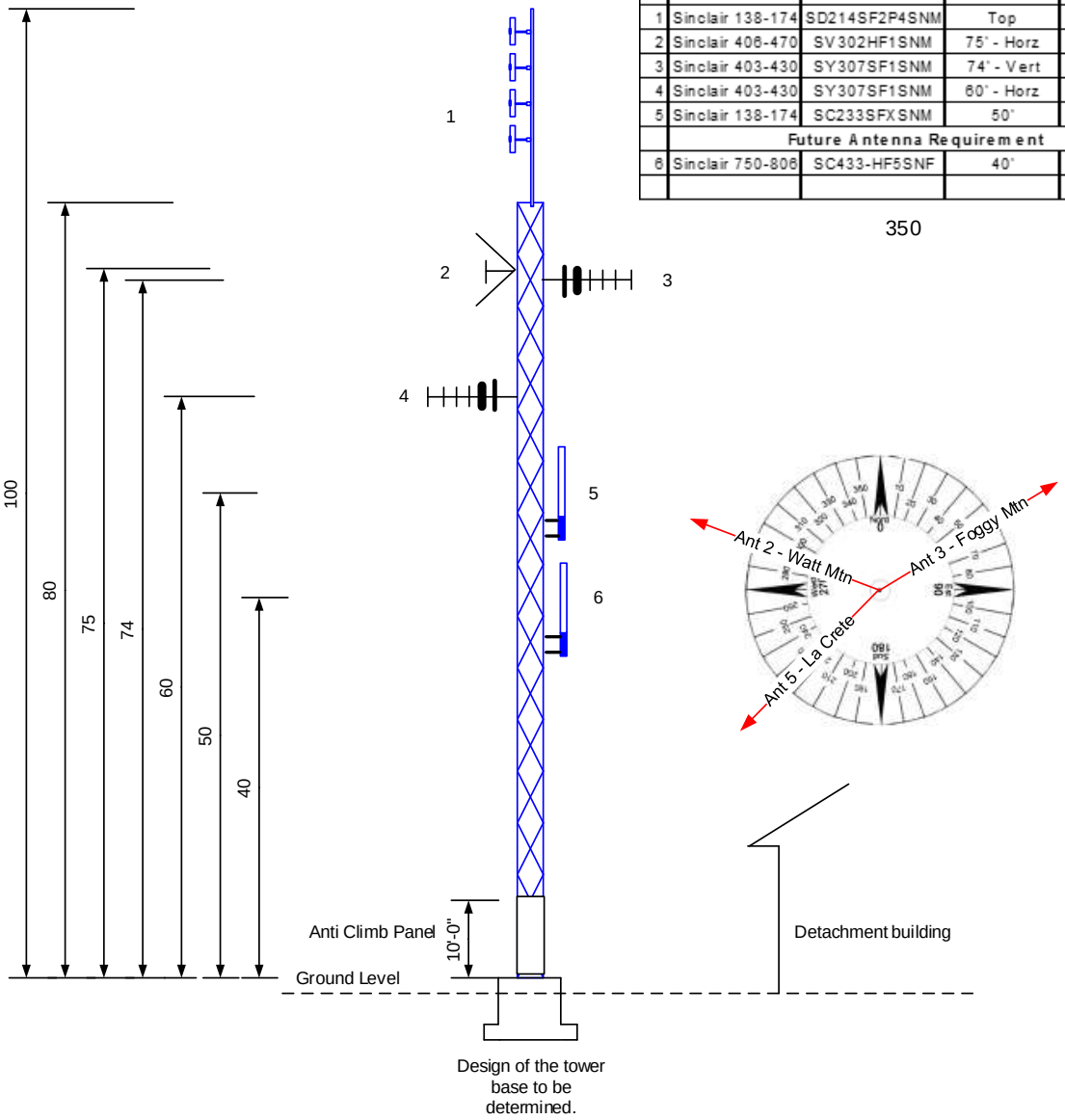
8. Transport Canada's Aeronautical Assessment stipulates that painting is not required, however lighting is as per TP 382 (Standards Obstruction Markings Information can be found within the Canadian Aviation Regulations Part. VI Standard 621.19.)

9. The Contractor must provide, supply and install caution signs in accordance with the RCMP Standards and Guidelines for Communication Sites (Appendix A). The signs must be in French and English.

11.2.2 - Communications Structure Load List (CSLL)

Fort Vermillion Detachment

Fort Vermillion Detachment - 2013-09-11				
	Lat:	58-22-59.8	Long:	116-00-13.6
	Wind:	Site Specific Stats	Ice:	CSA S37
	Fall Arrest	YES	Paint:	NO
	Security	Anti-climb	Lighting:	Yes
	Grounding	CSA S37	Cable:	LDF4-50
	TOWER	80'	MODEL	TBD
Antenna System Required				
#	Make	Model	Location/Pol	Bearing
1	Sinclair 138-174	SD214SF2P4SNM	Top	220 Dgr
2	Sinclair 406-470	SV302HF1SNM	75' - Horz	290 Dgr
3	Sinclair 403-430	SY307SF1SNM	74' - Vert	60 Dgr
4	Sinclair 403-430	SY307SF1SNM	60' - Horz	225 Dgr
5	Sinclair 138-174	SC233SFXSNM	50'	N/A
Future Antenna Requirement				
6	Sinclair 750-806	SC433-HF5SNF	40'	N/A



11.2.3 - Site/Tower/Antenna and TX Line Details

1. Site & Tower Specifications

Location: 4302-45th Street, Fort Vermillion, AB. T0H 1N0
Coordinates: 58-22-59 N Lat., 116-00-13 W Long.
Tower Height: 24.38 m (80 feet) Self-Support

2. Planned Antenna Loading

Antenna 1
Located above the top of the tower.
Azimuth = 220 degrees TN
Model: Sinclair SD214-SF2P4SNM
4 dipole, 8.5 dBd gain, 1/4 wave spacing, 138-174 MHZ

Antenna 2
Located side mounted at 22.86 m (75 feet)
Azimuth = 290 degrees TN
Polarization: Horizontal
Model: Sinclair SV302-HF1SNM
Corner Reflector antenna, 9.5 dBd gain, 406-470 MHZ

Antenna 3
Located side mounted at 22.55 m (74 feet)
Azimuth = 60 degrees TN
Polarization: Vertical
Model: Sinclair SY307-SF1SNM
Yagi directional antenna, 10 dBd gain, 403-430 MHZ

Antenna 4
Located side mounted at 18.3 m (60 feet)
Azimuth = 225 degrees TN
Polarization:Horizontal
Model: Sinclair SY307-SF1SNM
Yagi directional antenna, 10 dBd gain 403-430 MHZ

Antenna 5
Located side mounted at 15.2 m (50 feet)
Azimuth = N/A
Model: Sinclair SC233-SFXSNM
Collinear omni antenna, 3 dBd gain, 138-174 MHZ

3. Future Expansion/Loading of Antennas

The following antenna must be considered for tower loading as possible future installation of one additional antenna. This is not to be supplied or installed as part of this requirement.

Antenna 6 (Future Expansion)
Located side mounted at 12.19 m (40 feet)
Azimuth = N/A
Model: Sinclair SC433-HF5SNF
Collinear omni antenna, 2.5 dBd gain, 750-806 MHZ

4. Antenna Feed Lines

Andrew LDF4-50A

5. Cable Entry to Detachment Building

There no access conduit port therefore an extra 80' for each antenna feed lines is to be coiled at the base of the tower and the ends are to be protected from the elements.

6. Aeronautical Obstruction Marking

Transport Canada's Aeronautical Assessment stipulates that painting is not required, however lighting is as per TP382 (Standards Obstruction Markings Information can be found within the Canadian Aviation Regulations Part VI Standard 621.19.)

11.2.4 - Wind Data

Fort Vermillion, AB 30m Tower

Site Specific Hourly Wind Pressure Documentation Sheet

Site Information:

Name: Fort Vermillion, AB
Latitude: 58° 22' 59" N
Longitude: 116° 0' 13" W
Tower Height (m): 30
Elevation MSL (m): 277

UTM Coordinates:

Zone: 11
Easting (m): 558264
Northing (m): 6471790

Results:

Q_e (Pa): 280
Uncertainty of Q_e: [20%, -25%]
Q_{nbc} (Pa): 280
Icing: As per CAN/CSA S37-01
Return Period: 30

Wind Pressure Formula (for z in metres and result in Pa):

$$Q_h = 280(z/10)^{0.2}$$

Profile Formula General Form:

$$Q_h = 0.12919 \{[a_1 e^{(-a2\,z)} + a_3 \ln(z/z_h) / \ln(z/z_{01})]\, v_{01}\}^2 \; (z/10)^{0.2}$$

Site Values of Coefficients:

$$a_1 = 0.0000,\ a_2 = 1.0000,\ a_3 = 1.0000,\ z_h = 0.3500,\ z_{01} = 0.3500,\ v_{01} = 46.60 \text{ mph}$$

Definitions

Tower Height: Height of the tower from ground level at the base of the tower to the top of the structure.

Q_e: "Site Specific Equivalent Wind Pressure at 10 m" => the wind pressure which, when using the 2/10 power law yields the same average wind pressure over the height of the tower as the Wind Pressure Profile Formula.

Q_{nbc}: 30-year return period regionally representative reference wind pressure at 10 m in the format of the National Building Code of Canada. As per the November 17, 1988 meeting of the CSA Antenna Tower Technical Committee, the Q_{nbc} value profiled with the 2/10 power law should comprise the minimum hourly average wind pressure at all heights above ground.

Wind Pressure Profile Formula: Formula for the 30-year return period design wind pressure as a function of height.

Height: the vertical distance (m) above ground level at the base of the tower.

Notes:

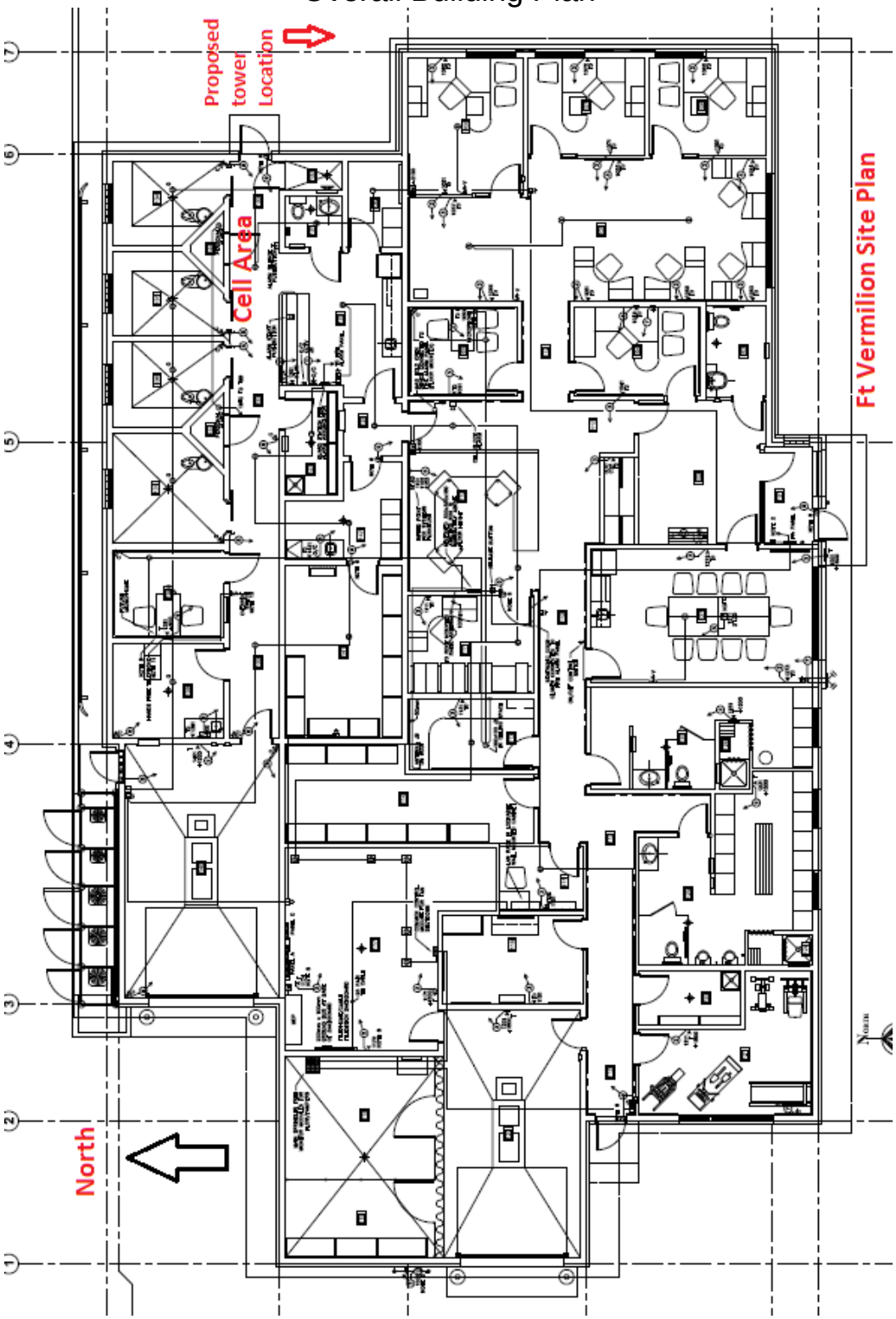
n.b. No wind pressure value less than 90% of the value at 10 m should be used for heights less than 10 m above ground.

- These wind pressures were evaluated using a version of the methods described by Taylor and Lee (1984) "Simple Guidelines for Estimating Wind Speed Variations Due to Small Scale Topographic Features", Climatological Bulletin 18 2, using the Boyd (1969) analysis of thirty year return period wind speeds (which is also used for the National Building Code of Canada), modified by a technique described by Wieringa (1980) "Representativeness of Wind Observations at Airports" Bulletin of the American Meteorological Society, 61 9, as input data. The uncertainty in NBCC regionally representative reference wind pressures is about [+15%,-15%].
- Environment Canada has not made and does not make any representations or warranties, either expressed or implied, arising by law or otherwise, respecting the accuracy of recommended climatic information. In no event will Environment Canada be responsible for any prejudice, loss or damages which may occur as a result of the use of design wind pressure recommendations.

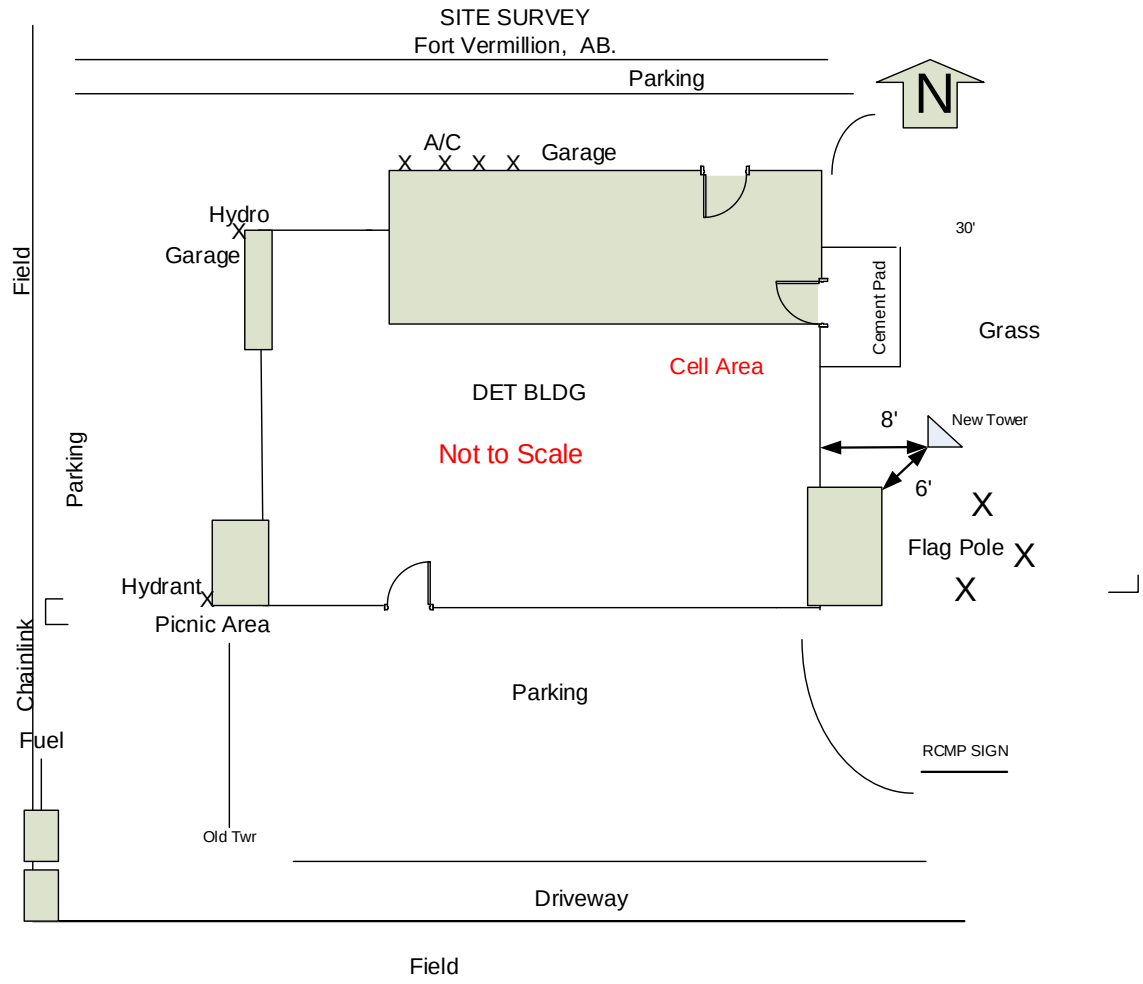
April 15, 2013

11.2.5 - Site Plan and Photographs

Overall Building Plan



11.2.6 - Site Survey



11.2.7 – SITE PHOTOS

Photo 1 - Tower Location Rear View

Photo 2 - Tower Location Side view

11.3 - Vulcan Detachment Tower Installation – Vulcan, ALTA.

Introduction

Install a new 80 foot (24.38m) self-support tower at the Vulcan Detachment located in the Tri-Services building in Vulcan, AB.

Coordinates: 50-23-46 N Lat., 113-15-18 W Long

Address: Vulcan Tri-Services Building, Elizabeth Street & 1st Ave South, Vulcan, AB
Municipal Lot # 243-077A Highway 534

Google Map

Google Earth

11.3.1 - Requirements

1. A new 80 foot (24.38m) self-support tower is to be installed at the location identified in site plan and photos included below.

2. The tower and foundation must be designed to incorporate all antennas and lines shown in the CSLL, the site drawings, the tower manufacturers' drawings and the antenna specifications (Outlined Below) and in accordance with the site specific wind and ice data (Outlined Below).

3. The geotechnical report that was completed in preparation for the new building construction has been included in Appendix B. This is to be used for the design of the tower foundation.

4. The Contractor must provide detailed site drawings to supply and install the tower foundation as detailed in the CSLL and the Site/Tower/Antenna Requirements data sheet provided below.

5. The Contractor must supply and install the tower foundation as per the CSLL, the Site drawings, the Tower Manufacturers Drawings and the Antenna Specifications (Outlined Below).

6. The specified transmission lines will be supported with a wave guide bridge extending from the tower (above the anti-climb panels) to the back wall of the Detachment building at the height of the existing 2" (50mm) radio access conduit. Refer to the site plan and photos provided below for the positioning of the access conduit relative to the tower placement. The Contractor will plan for the use of this conduit and will supply and install a rubber cable boot compatible with the conduit and specified transmission lines.

7. The Contractor is responsible to provide sufficient length for all specified transmission lines to accommodate the estimated 65 feet (19.8m) required for the conduit run inside of the RCMP building. The Contractor will not be required to enter the building as RCMP technicians will be present on site to assist with the fishing of the lines through the conduit, however, they will supply the compatible N type female connector for each line and the RCMP will assume responsibility for their installation.

8. The Contractor must provide detailed drawings to supply and install a new panel anti-climb and fall arrest rail. The panel anti-climb must be 10 feet (3 m) with the fall arrest rail beginning at the top of the new panel anti-climb and extend to the top of the tower.

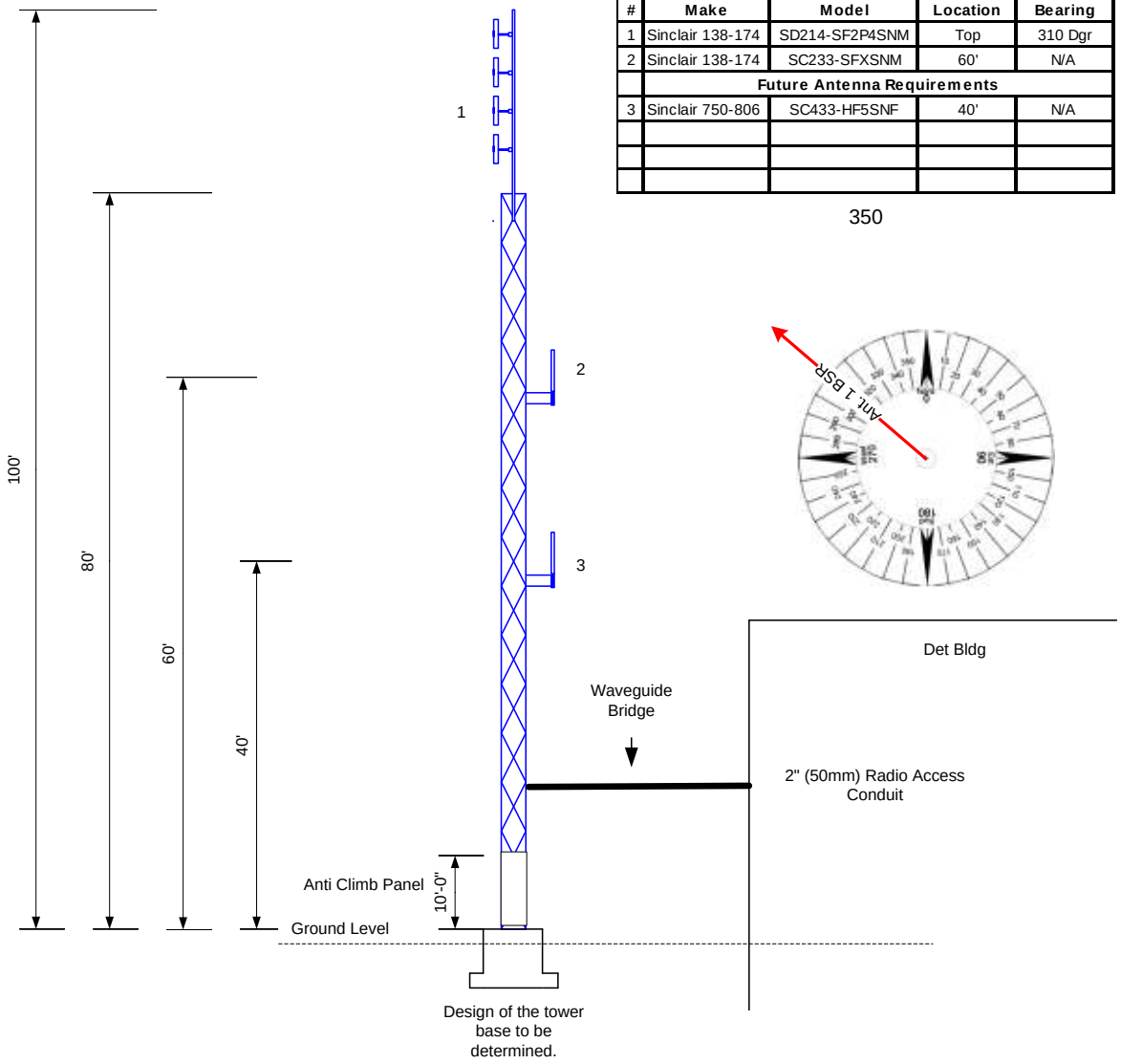
9. Painting and lighting is not required as per Transport Canada's Aeronautical Assessment.

10. The Contractor must provide, supply and install caution signs in accordance with the RCMP Standards and Guidelines for Communication Sites (Appendix A). The signs must be in French and English.

11.3.2 - Communications Structure Load List (CSLL)

VULCAN DET

Vulcan Detachment - 2013-05-21				
	Lat:	50-23-46	**Long:**	113-15-18
	Wind:	Site Specific Stats	**Ice:**	CSA S37
	Fall Arrest	Yes	**Paint:**	no
	Security	Anti climb	**Lighting:**	no
	Grounding	CSA S37	**Cable:**	LDF4-50A
	Tower Ht	80'	**MODEL**	TBD
Antenna System Required				
#	**Make**	**Model**	**Location**	**Bearing**
1	Sinclair 138-174	SD214-SF2P4SNM	Top	310 Dgr
2	Sinclair 138-174	SC233-SFXSNM	60'	N/A
	Future Antenna Requirements			
3	Sinclair 750-806	SC433-HF5SNF	40'	N/A



11.3.3 - Site/Tower/Antenna and TX Line Details

1. Site & Tower Specification

Location: Elizabeth Street & 1st Avenue South, Vulcan, Alberta
Coordinates: 50-23-46 N Lat., 113,15,18 W Long.
Tower Height:24.38 m (80 feet) Self-Support

2. Planned Antenna Loading

Antenna 1
Located above the top of the tower.
Azimuth = 310 degrees TN
Model: Sinclair SD214-SF2P4SNM
4 dipole, 8.5 dBd gain, 1/4 wave spacing, 138-174 MHZ

Antenna 2
Located side mounted at 18.29 m (60 feet)
Azimuth = N/A
Model: Sinclair SC233-SFXSNM
Collinear omni antenna, 3 dBd gain, 138-174 MHZ

3. Future Expansion/Loading of Antennas

The following antenna must be considered for tower loading as possible future installation of one additional antenna. This is not to be supplied or installed as part of this requirement.

Antenna 3 (Future Expansion)
Located side mounted at 12.19 m (40 feet).
Azimuth: N/A
Model Sinclair SC433-HF5SNF
Collinear omni antenna, 2.5 dBd gain, 750-806 MHZ

4. Antenna Feed Lines

Andrew LDF4-50A

5. Feed Line Entry to Detachment Building

There is a designated 2" (50mm) radio access conduit on the back wall of the Detachment building opposite the proposed tower location. Refer to the site plan and photos provided below for further details.

11.3.4 - Wind Data

Vulcan, AB 30m Tower

Site Specific Hourly Wind Pressure Documentation Sheet

Site Information:

Name: Vulcan, AB
Latitude: 50° 23' 46" N
Longitude: 113° 15' 18" W
Tower Height (m): 30
Elevation MSL (m): 1052

UTM Coordinates:

Zone: 12
Easting (m): 339730
Northing (m): 5585104

Results:

Q_e (Pa): 570
Uncertainty of Q_e: [20%, -25%]
Q_{nbc} (Pa): 570
Icing: As per CAN/CSA S37-01
Return Period: 30

Wind Pressure Formula (for z in metres and result in Pa):

$$Q_h = 570(z/10)^{0.2}$$

Profile Formula General Form:

$$Q_h = 0.12919 \{[a_1 e^{(-a2\,z)} + a_3 \ln(z/z_h) / \ln(z/z_{01})]\, v_{01}\}^2 \ (z/10)^{0.2}$$

Site Values of Coefficients:

$$a_1 = 0.0000,\ a_2 = 1.0000,\ a_3 = 1.0000,\ z_h = 0.0500,\ z_{01} = 0.0500,\ v_{01} = 66.49 \text{ mph}$$

Definitions

Tower Height: Height of the tower from ground level at the base of the tower to the top of the structure.

Q_e: "Site Specific Equivalent Wind Pressure at 10 m" => the wind pressure which, when using the 2/10 power law yields the same average wind pressure over the height of the tower as the Wind Pressure Profile Formula.

Q_{nbc}: 30-year return period regionally representative reference wind pressure at 10 m in the format of the National Building Code of Canada. As per the November 17, 1988 meeting of the CSA Antenna Tower Technical Committee, the Q_{nbc} value profiled with the 2/10 power law should comprise the minimum hourly average wind pressure at all heights above ground.

Wind Pressure Profile Formula: Formula for the 30-year return period design wind pressure as a function of height.

Height: the vertical distance (m) above ground level at the base of the tower.

Notes:

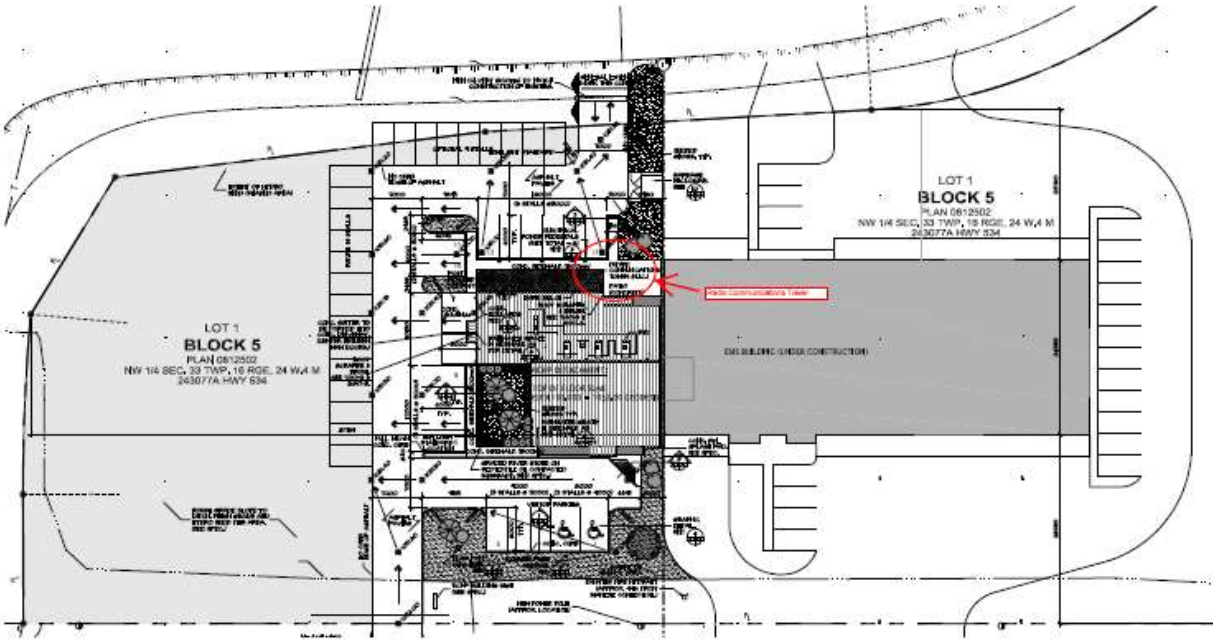
n.b. No wind pressure value less than 90% of the value at 10 m should be used for heights less than 10 m above ground.

- These wind pressures were evaluated using a version of the methods described by Taylor and Lee (1984) "Simple Guidelines for Estimating Wind Speed Variations Due to Small Scale Topographic Features", Climatological Bulletin 18 2, using the Boyd (1969) analysis of thirty year return period wind speeds (which is also used for the National Building Code of Canada), modified by a technique described by Wieringa (1980) "Representativeness of Wind Observations at Airports" Bulletin of the American Meteorological Society, 61 9, as input data. The uncertainty in NBCC regionally representative reference wind pressures is about [+15%,-15%].
- Environment Canada has not made and does not make any representations or warranties, either expressed or implied, arising by law or otherwise, respecting the accuracy of recommended climatic information. In no event will Environment Canada be responsible for any prejudice, loss or damages which may occur as a result of the use of design wind pressure recommendations.

April 15, 2013

11.3.5 - Site Plan and Photographs

Full site plan



Detailed Site Plan

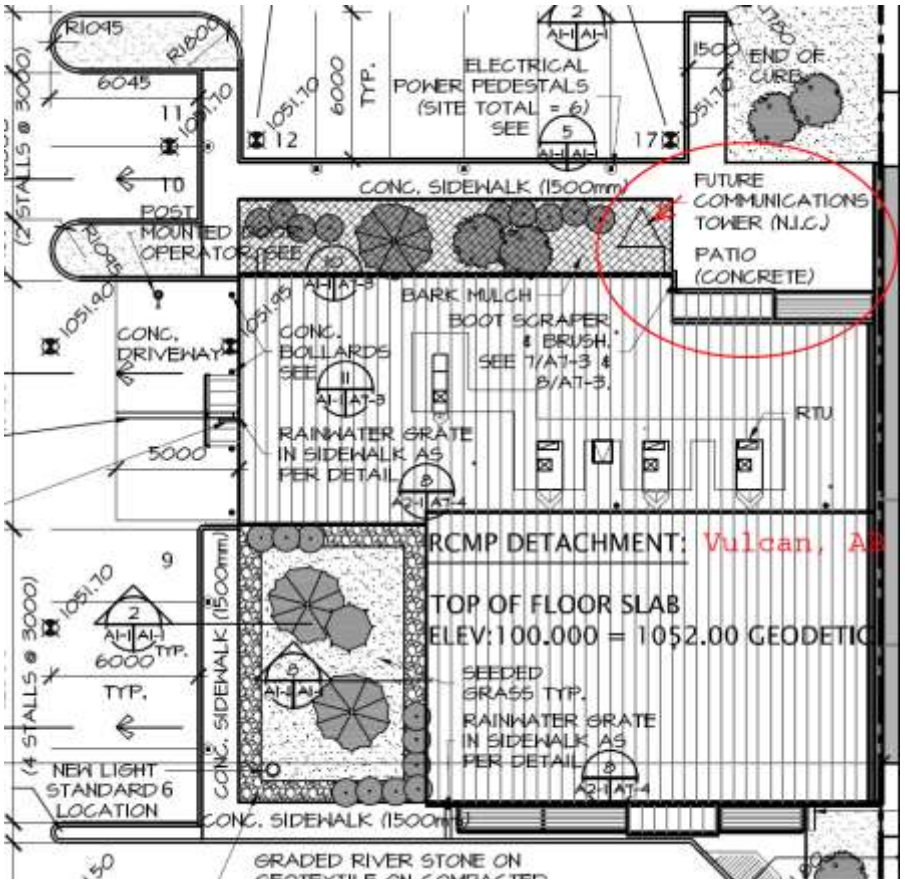


Photo 1 - Tower location & Access Conduit

Photo 2 - Tower location & Access Conduit

Photo 3 - Showing tower location

11.4 - Bonnyville Detachment Tower Installation – Bonnyville, ALTA.

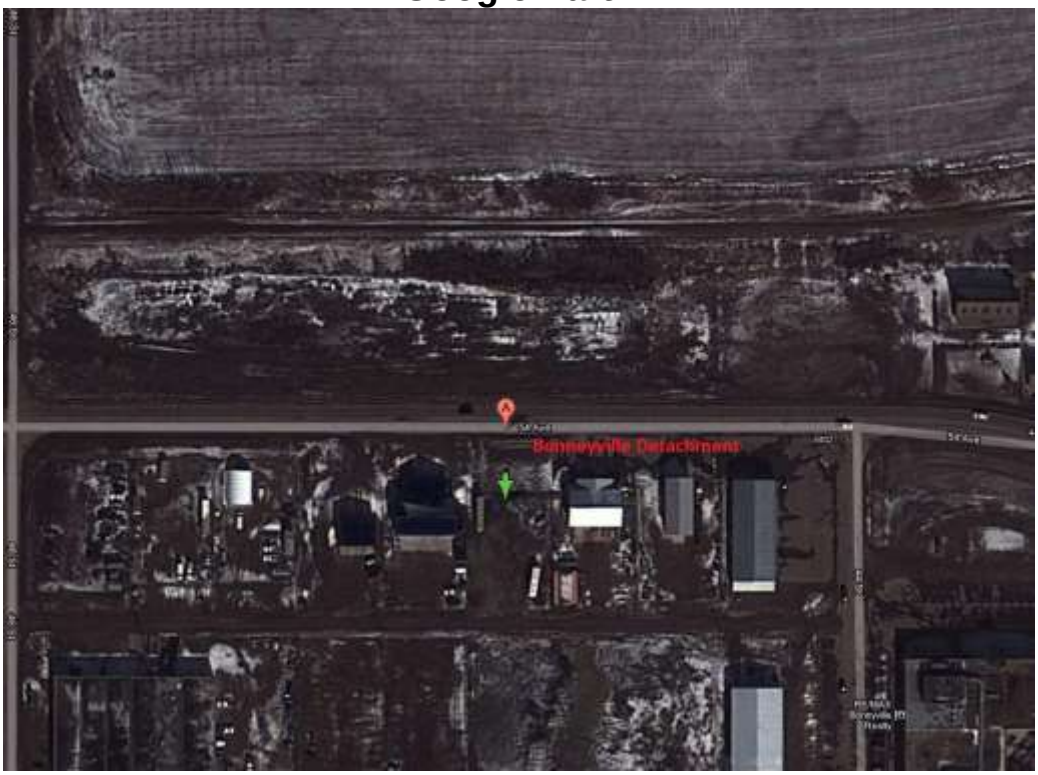
Introduction

Install a new 80 foot (24.38m) self-support tower at the Bonnyville Detachment located in Bonnyville, AB.

Coordinates: 54-16-17 N Lat. 110-43-39 W Long.
Address: 4515 - 54 Avenue, Bonnyville, AB T9N 0C2

Google Map

Google Earth



11.4.1 - Requirements

1. A new 80 foot (24.38m) self-support tower is to be installed at the location identified in site plan and photos included below.

2. The tower and foundation must be designed to incorporate all antennas and lines shown in the CSLL, the site drawings, the tower manufacturers' drawings and the antenna specifications (Outlined Below) and in accordance with the site specific wind and ice data (Outlined Below).

3. The geotechnical report that was completed in preparation for the new building construction has been included in Appendix B. This is to be used for the design of the tower foundation.

4. The Contractor must provide detailed site drawings to supply and install the tower foundation as detailed in the CSLL and the Site/Tower/Antenna Requirements data sheet provided below.

5. The Contractor must supply and install the tower foundation as per the CSLL, the Site drawings, the Tower Manufacturers Drawings and the Antenna Specifications (Outlined Below).

6. The specified transmission lines will be supported with a wave guide bridge extending from the tower (above the anti-climb panels) to the adjacent wall of the Detachment building at the height of the existing 2x2" (50EC) radio access conduits. Refer to the site plan and photos provided below for the positioning of the access conduit relative to the tower placement. The Contractor will plan for the use of this conduit and will supply and install a rubber cable boot compatible with the conduit and specified transmission lines.

7. The Contractor is responsible to provide sufficient length for all specified transmission lines to accommodate the estimated 50 feet (15.24m) required for the conduit runs inside of the RCMP building. The Contractor will not be required to enter the building as RCMP technicians will be present on site to assist with the fishing of the lines through the conduit, however, they will supply the compatible N type female connector for each line and the RCMP will assume responsibility for their installation.

8. The Contractor must provide detailed drawings to supply and install a new panel anti-climb and fall arrest rail. The panel anti-climb must be 10 feet (3 m) with the fall arrest rail beginning at the top of the new panel anti-climb and extend to the top of the tower.

9. Painting and lighting is not required as per Transport Canada's Aeronautical Assessment.

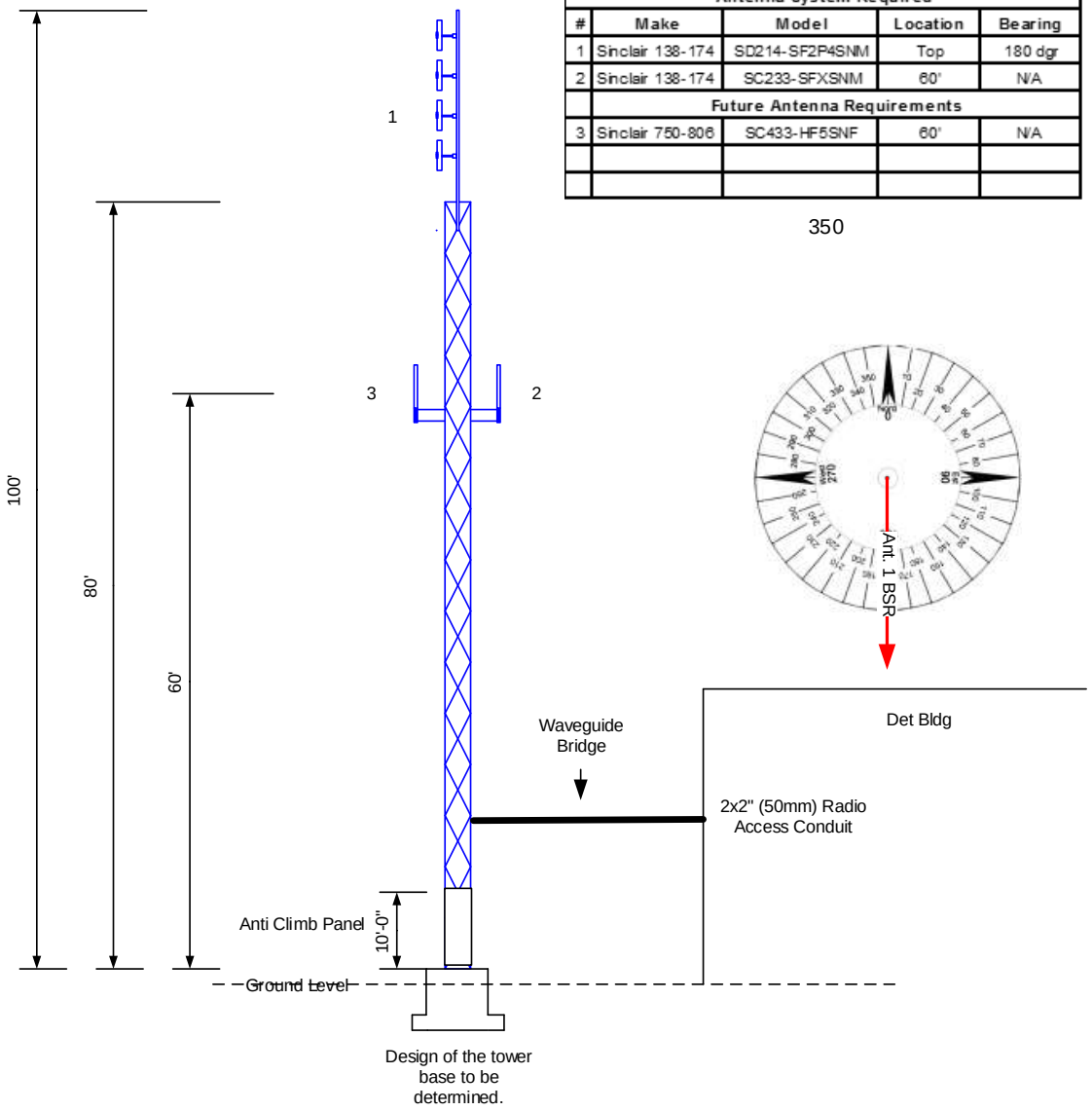
10. The Contractor must provide, supply and install caution signs in accordance with the RCMP Standards and Guidelines for Communication Sites (Appendix A). The signs must be in French and English.

11.4.2 - Communications Structure Load List (CSLL)

BONNYVILLE DET.

Bonnyville Detachment - 2013-009-11				
	Lat:	54-16-17	Long:	110-43-39
	Wind:	Site Specific Stats	Ice:	CSA S37
	Fall Arrest	Yes	Paint:	no
	Security	Anti climb	Lighting:	no
	Grounding	CSA S37	Cable:	LDF4-50A
	Tower Ht	80'	MODEL	TBD
Antenna System Required				
#	Make	Model	Location	Bearing
1	Sinclair 138-174	SD214-SF2P4SNM	Top	180 dgr
2	Sinclair 138-174	SC233-SFXSNM	60'	N/A
	Future Antenna Requirements			
3	Sinclair 750-806	SC433-HF5SNF	60'	N/A

350



11.4.3 - Site/Tower/Antenna and TX Line Details

1. **Site & Tower Specifications**

Location:	4515 - 54 Avenue Bonnyville, AB. T9N 0C2
Coordinates:	54-16-17 N Lat., 110-43-39 W Long.
Tower Height:	24.38 m (80 feet) Self-Support

2. **Planned Antenna Loading**

Antenna 1
Located above the top of the tower.
Azimuth = 180 degrees TN
Model: Sinclair SD214-SF2P4SNM
4 dipole, 8.5 dBd gain, 1/4 wave spacing, 138-174 MHZ

Antenna 2
Located side mounted at 18.29 m (60 feet)
Azimuth = N/A
Model: Sinclair SC233-SFXSNM
Collinear omni antenna, 3 dBd gain, 138-174 MHZ

1. **Future Expansion/Loading of Antennas**
The following antenna must be considered for tower loading as possible future installation of one additional antenna. This is not to be supplied or installed as part of this requirement.

Antenna 3 (Future Expansion)
Located side mounted at 18.29 m (60 feet)
Azimuth = N/A
Model: Sinclair SC433-HF5SNF
Collinear omni antenna, 2.5 dBd gain, 750-806 MHZ

1. **Antenna Feed Lines**

Andrew LDF4-50A

1. **Feed Line Entry to Detachment Building**

There is a designated 2x2" (50mm) radio access conduit on the back wall of the Detachment building opposite the proposed tower location. Refer to the site plan and photos provided below for further details.

11.4.4 - Wind Data

Bonnyville, AB 30m Tower

Site Specific Hourly Wind Pressure Documentation Sheet

Site Information:

Name: Bonnyville, AB
Latitude: 54° 16' 17" N
Longitude: 110° 43' 39" W
Tower Height (m): 30
Elevation MSL (m): 555

UTM Coordinates:

Zone: 12
Easting (m): 517746
Northing (m): 6013751

Results:

Q_e (Pa): 340
Uncertainty of Q_e: [20%, -25%]
Q_{nbc} (Pa): 340
Icing: As per CAN/CSA S37-01
Return Period: 30

Wind Pressure Formula (for z in metres and result in Pa):

$$Q_h = 340(z/10)^{0.2}$$

Profile Formula General Form:

$$Q_h = 0.12919 \{[a_1 e^{(-a2\,z)} + a_3 \ln(z/z_h) / \ln(z/z_{01})]\, v_{01}\}^2 \ (z/10)^{0.2}$$

Site Values of Coefficients:

$$a_1 = 0.0000,\ a_2 = 1.0000,\ a_3 = 1.0000,\ z_h = 0.1500,\ z_{01} = 0.1500,\ v_{01} = 51.57\ mph$$

Definitions

Tower Height: Height of the tower from ground level at the base of the tower to the top of the structure.

Q_e: "Site Specific Equivalent Wind Pressure at 10 m" => the wind pressure which, when using the 2/10 power law yields the same average wind pressure over the height of the tower as the Wind Pressure Profile Formula.

Q_{nbc}: 30-year return period regionally representative reference wind pressure at 10 m in the format of the National Building Code of Canada. As per the November 17, 1988 meeting of the CSA Antenna Tower Technical Committee, the Q_{nbc} value profiled with the 2/10 power law should comprise the minimum hourly average wind pressure at all heights above ground.

Wind Pressure Profile Formula: Formula for the 30-year return period design wind pressure as a function of height.

Height: the vertical distance (m) above ground level at the base of the tower.

Notes:

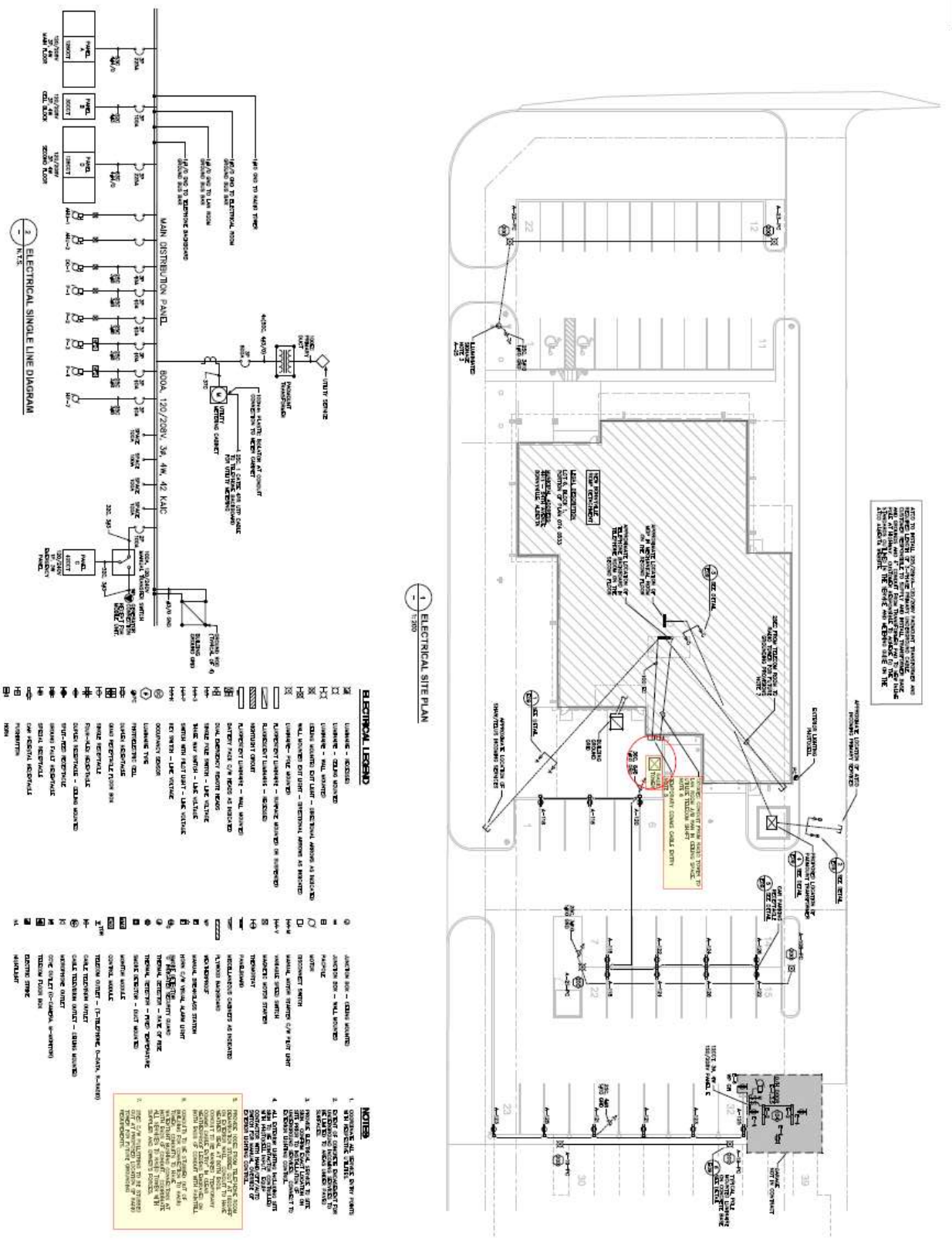
n.b. No wind pressure value less than 90% of the value at 10 m should be used for heights less than 10 m above ground.

- These wind pressures were evaluated using a version of the methods described by Taylor and Lee (1984) "Simple Guidelines for Estimating Wind Speed Variations Due to Small Scale Topographic Features", Climatological Bulletin 18 2, using the Boyd (1969) analysis of thirty year return period wind speeds (which is also used for the National Building Code of Canada), modified by a technique described by Wieringa (1980) "Representativeness of Wind Observations at Airports" Bulletin of the American Meteorological Society, 61 9, as input data. The uncertainty in NBCC regionally representative reference wind pressures is about [+15%,-15%].
- Environment Canada has not made and does not make any representations or warranties, either expressed or implied, arising by law or otherwise, respecting the accuracy of recommended climatic information. In no event will Environment Canada be responsible for any prejudice, loss or damages which may occur as a result of the use of design wind pressure recommendations.

April 15, 2013

11.4.5 - Site Plan and Photographs

Full Site Plan



Detailed Site Plan

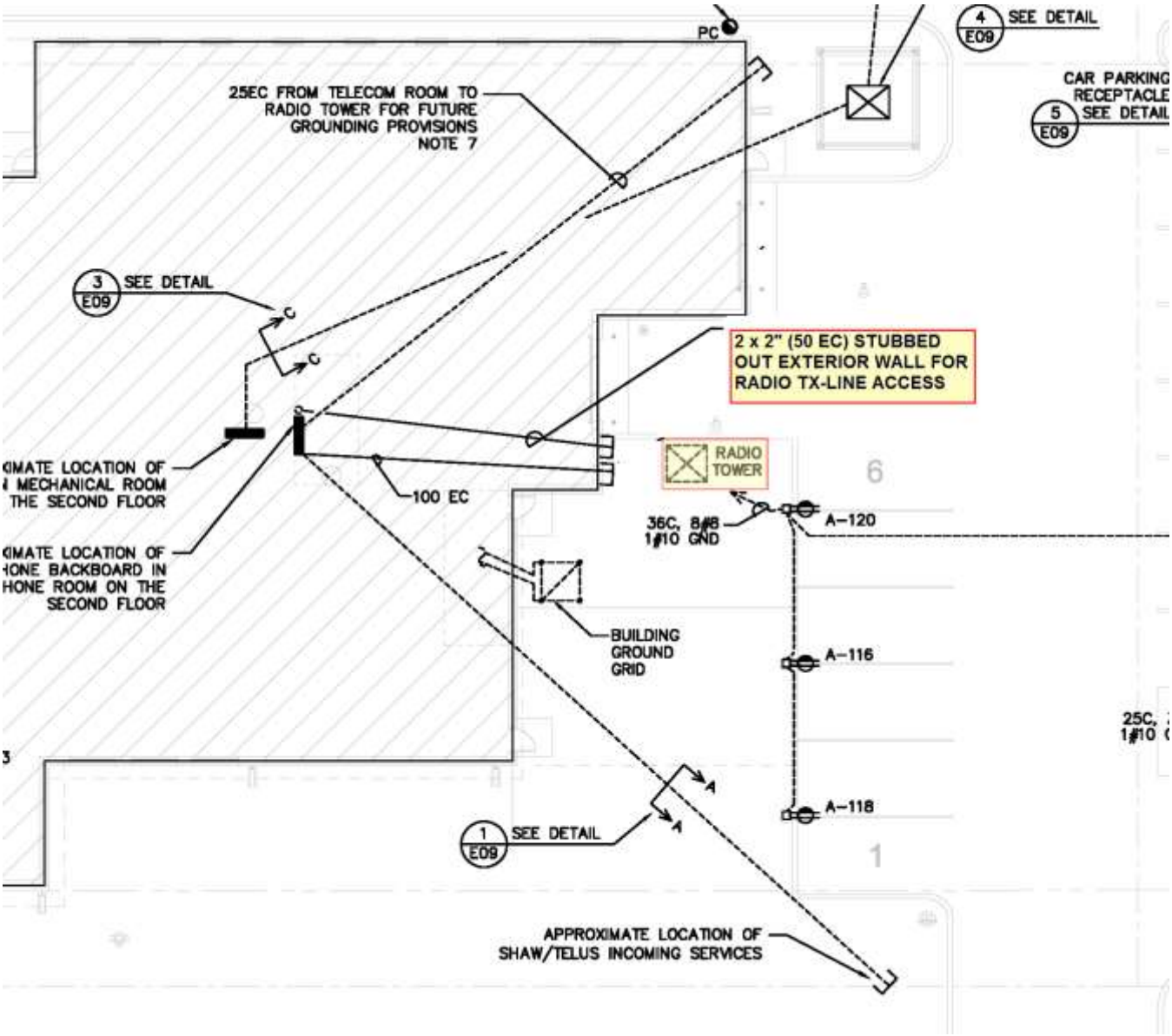


Photo 1 – Tower & Conduit Access Port Location

Photo 2 – Tower Location Side View

Photo 3 – Tower Location Rear View

11.5 - Lloydminster Detachment – Lloydminster, ALTA.

Introduction

Install a new 80 foot (24.38m) self-support tower at the new Detachment located in downtown Lloydminster, AB.

Coordinates: 53-16-42 N Lat. 110-00-28 W Long
Address: 5106 44th St., Lloydminster, AB

Google Map

Google Earth

11.5.1 - Requirements

1. A new 80 foot (24.38m) self-support tower is to be installed at the location identified in site plan and photos included below.

2. The tower and foundation must be designed to incorporate all antennas and lines shown in the CSLL, the site drawings, the tower manufacturers' drawings and the antenna specifications (Outlined Below) and in accordance with the site specific wind and ice data (Outlined Below).

3. The Foundation must be constructed using screw piles for each Tower Leg. This is due to a concern that the existing pavement at the Tower location would be detrimentally affected with the construction of a typical square base foundation.

4. The geotechnical report that was completed in preparation for the new building construction has been included in Appendix B. This is to be used for the design of the tower foundation.

5. The Contractor must provide detailed site drawings to supply and install the tower foundation as detailed in the CSLL and the Site/Tower/Antenna Requirements data sheet provided below.

6. The Contractor must supply and install the tower foundation as per the CSLL, the Site drawings, the Tower Manufacturers Drawings and the Antenna Specifications (Outlined Below).

7. There are 2 x 4" and 1 x 1" radio access conduits extending below grade to the planned tower location. Refer to the site plan and photos provided below for the positioning of the access conduit relative to the tower placement. The Contractor will plan for the use of these conduits and will supply and install an appropriate seal compatible with the conduit and specified transmission lines.

8. The Contractor is responsible to provide sufficient length for all specified transmission lines to accommodate the estimated 93 feet (28.3m) required for the conduit run to the terminating point inside of the RCMP building. The contractor will not be required to enter the building as RCMP technicians will be present on site to assist with the fishing of the lines through the conduit, however, they will supply the compatible N type female connector for each line and the RCMP will assume responsibility for their installation.

9. The Contractor must provide detailed drawings to supply and install a new panel anti-climb and fall arrest rail. The panel anti-climb must be 10 feet (3 m) with the fall arrest rail beginning at the top of the new panel anti-climb and extend to the top of the tower.

10. Painting and lighting is not required as per Transport Canada's Aeronautical Assessment.

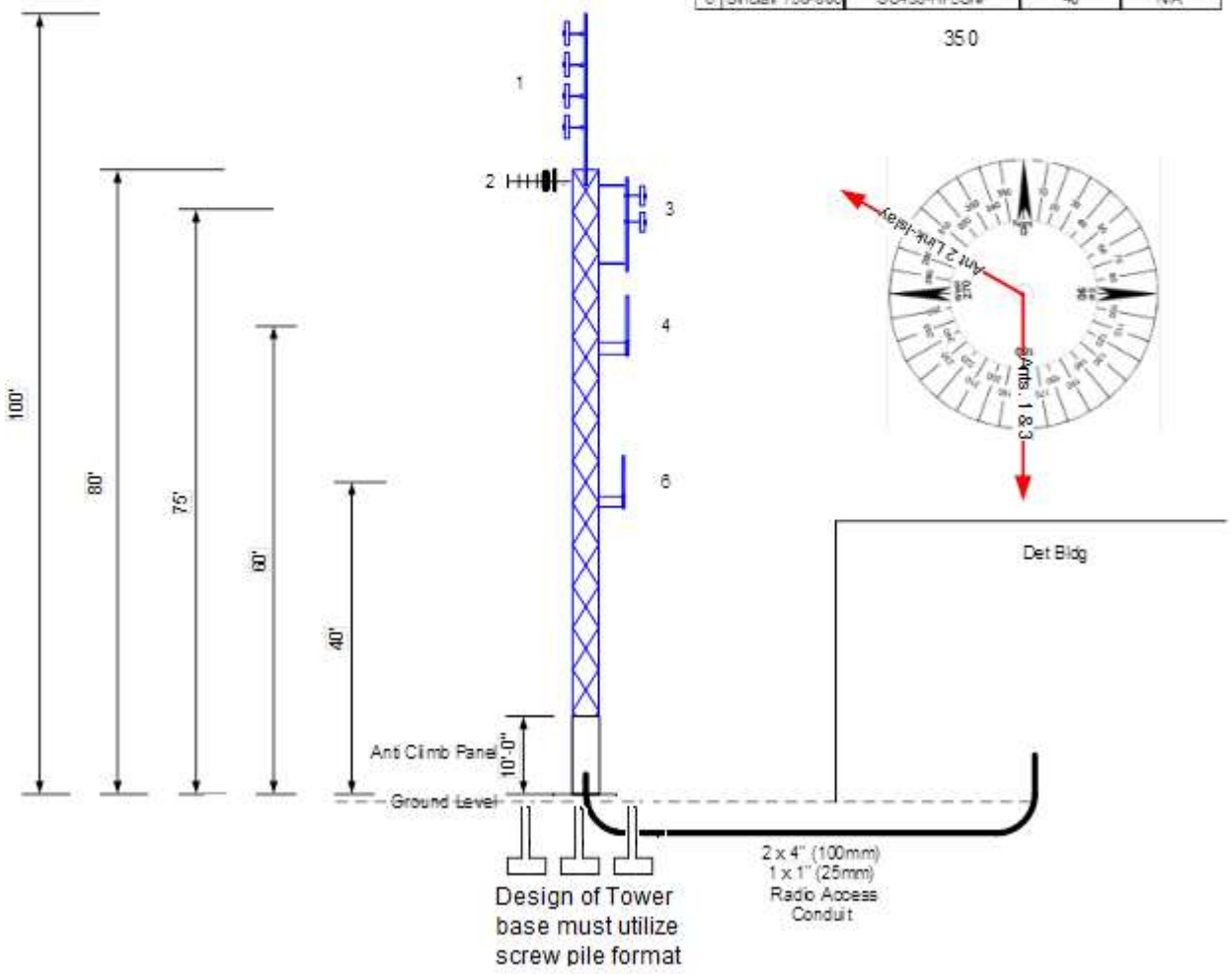
11. The Contractor must provide, supply and install caution signs in accordance with the RCMP Standards and Guidelines for Communication Sites (Appendix A). The signs must be in French and English.

11.5.2 - Communications Structure Load List (CSLL)

LLOYDMINSTER DET.

Lloydminster Detachment - 2013-09-11				
	Lat:	53-16-42	Long:	110-00-28
	Wind:	Site Specific Stats	Ice:	CSA S37
	Fall Arrest	Yes	Paint:	no
	Security	Anticlimb	Lighting:	no
	Grounding	CSA S37	Cable:	LDF4-50A
	Tower Ht	80'	MODEL	TBD
Antenna System Required				
#	Make	Model	Location	Bearing
1	Sinclair 138-174	SD214-SF2P4SNM	Top	180 Dgr
2	Sinclair 403-430	SY307-SF1SNM	80' -Vert	301 Dgr
3	Sinclair 138-174	SD212-SF2P4SNMDOO	75'	180 Dgr
4	Sinclair 138-174	SC233-SFXSNM	60'	N/A
5				
	Future Antenna Requirements			
6	Sinclair 750-806	SC433-HF5SNF	40'	N/A

350



11.5.3 - Site/Tower/Antenna and TX Line Details

1. Site & Tower Specifications

Location: 5106 44th St., Lloydminster, AB
Coordinates: 52-16-42 N Lat., 110-00-28 W Long.
Tower Height: 24.38 m (80 feet) Self-Support

2. Planned Antenna Loading

Antenna 1
Located above the top of the tower.
Azimuth = 180 Degrees TN
Model: Sinclair SD214-SF2P4SNM
4 dipole, 8.5 dBd gain, 1/4 wave spacing, 138-174 MHZ

Antenna 2
Located side mounted at 24.4 m (80 feet)
Azimuth = 301 Degrees TN
Polarization: Vertical
Model: Sinclair SY307-SF1SNM
Yagi Directional Antenna, 10 dBd gain, 403-430 MHZ

Antenna 3
Located side mounted at 22.56 M (75 feet).
Azimuth = 180 Degrees TN
Model: Sinclair SD212-SF2P4SNM(D00)
2 dipole, 5.5 dBd gain, 1/4 wave spacing, 138-174 MHZ

Antenna 4
Located side mounted at 18.29 m (60 feet)
Azimuth = N/A
Model: Sinclair SC233-SFXSNM
Collinear omni antenna, 3 dBd gain, 138-174 MHZ

3. Future Expansion/Loading of Antennas

The following antenna must be considered for tower loading as possible future installation of one additional antenna. This is not to be supplied or installed as part of this requirement.

Antenna 5 (Future Expansion)
Located side mounted at 12.19 m (40 feet)
Azimuth: N/A
Model: Sinclair SC433-HF5SNF
Collinear omni antenna, 2.5 dBd gain, 750-806MHZ

4. Antenna Feed Lines

Andrew LDF4-50A

5. Cable Entry Port to Detachment Building

There are 2 x 4" (100mm) and 1 x 1" (25mm) radio access conduits running under ground to the tower. The estimated length of the runs is 93' (28332mm). Refer to the site plan and photos provided below for further details.

11.5.4 - Wind Data

Lloydminster, AB 30m Tower

Site Specific Hourly Wind Pressure Documentation Sheet

Site Information:

Name: Lloydminster, AB
Latitude: 53° 16' 42" N
Longitude: 110° 0' 28" W
Tower Height (m): 30
Elevation MSL (m): 648

UTM Coordinates:

Zone: 12
Easting (m): 566158
Northing (m): 5903693

Results:

Q_e (Pa): 370
Uncertainty of Q_e: [20%, -25%]
Q_{nbc} (Pa): 370
Icing: As per CAN/CSA S37-01
Return Period: 30

Wind Pressure Formula (for z in metres and result in Pa):

$$Q_h = 370(z/10)^{0.2}$$

Profile Formula General Form:

$$Q_h = 0.12919 \{[a_1 e^{(-a2\,z)} + a_3 \ln(z/z_h) / \ln(z/z_{01})]\, v_{01}\}^2 \ (z/10)^{0.2}$$

Site Values of Coefficients:

$$a_1 = 0.0000,\ a_2 = 1.0000,\ a_3 = 1.0000,\ z_h = 0.1500,\ z_{01} = 0.1500,\ v_{01} = 53.81 \text{ mph}$$

Definitions

Tower Height: Height of the tower from ground level at the base of the tower to the top of the structure.

Q_e: "Site Specific Equivalent Wind Pressure at 10 m" => the wind pressure which, when using the 2/10 power law yields the same average wind pressure over the height of the tower as the Wind Pressure Profile Formula.

Q_{nbc}: 30-year return period regionally representative reference wind pressure at 10 m in the format of the National Building Code of Canada. As per the November 17, 1988 meeting of the CSA Antenna Tower Technical Committee, the Q_{nbc} value profiled with the 2/10 power law should comprise the minimum hourly average wind pressure at all heights above ground.

Wind Pressure Profile Formula: Formula for the 30-year return period design wind pressure as a function of height.

Height: the vertical distance (m) above ground level at the base of the tower.

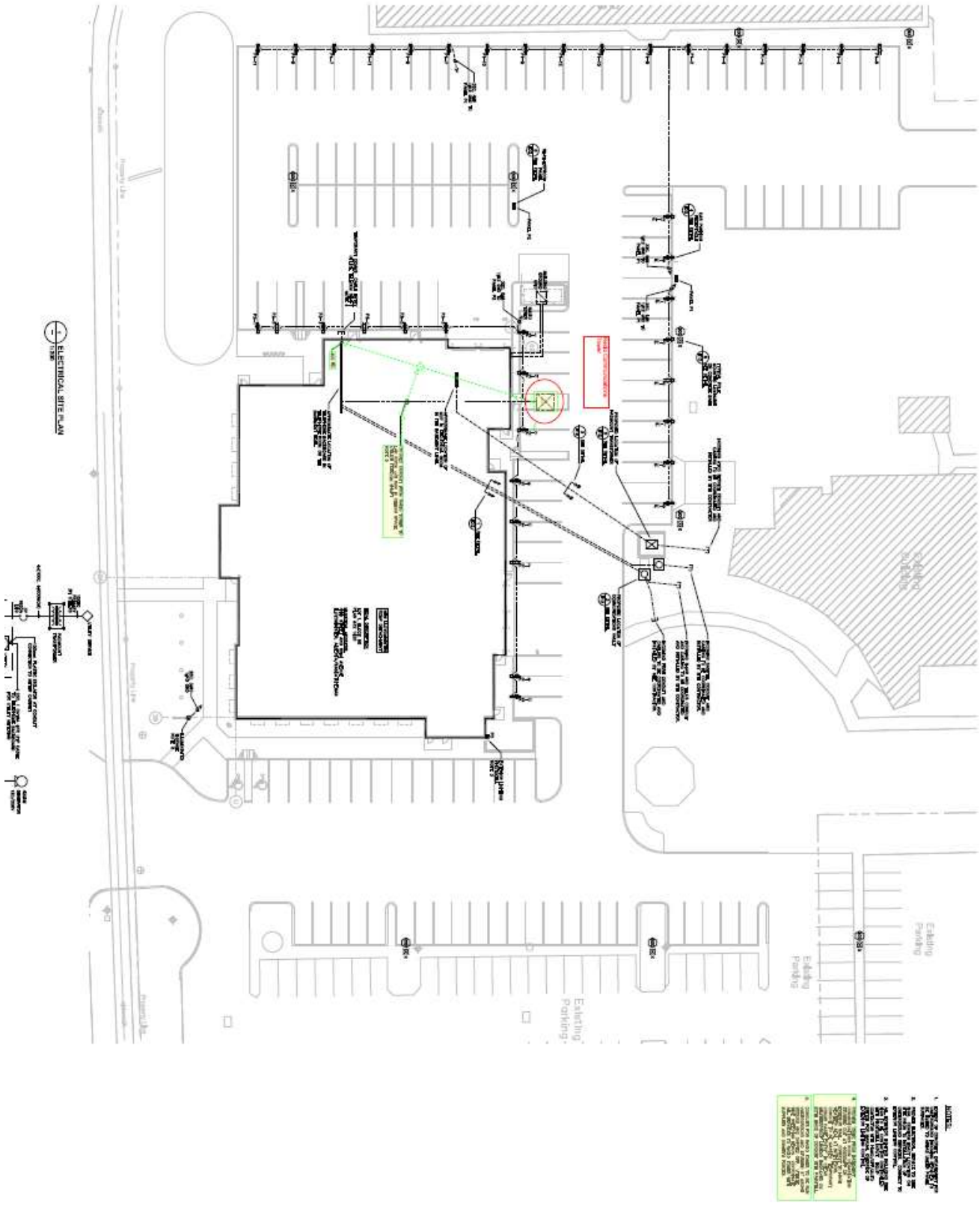
Notes:

n.b. No wind pressure value less than 90% of the value at 10 m should be used for heights less than 10 m above ground.

- These wind pressures were evaluated using a version of the methods described by Taylor and Lee (1984) "Simple Guidelines for Estimating Wind Speed Variations Due to Small Scale Topographic Features", Climatological Bulletin 18 2, using the Boyd (1969) analysis of thirty year return period wind speeds (which is also used for the National Building Code of Canada), modified by a technique described by Wieringa (1980) "Representativeness of Wind Observations at Airports" Bulletin of the American Meteorological Society, 61 9, as input data. The uncertainty in NBCC regionally representative reference wind pressures is about [+15%,-15%].
- Environment Canada has not made and does not make any representations or warranties, either expressed or implied, arising by law or otherwise, respecting the accuracy of recommended climatic information. In no event will Environment Canada be responsible for any prejudice, loss or damages which may occur as a result of the use of design wind pressure recommendations.

April 15, 2013

11.5.5 - Site Plan and Photographs
Full Site Plan



11.5.6 - Detailed Site Plan

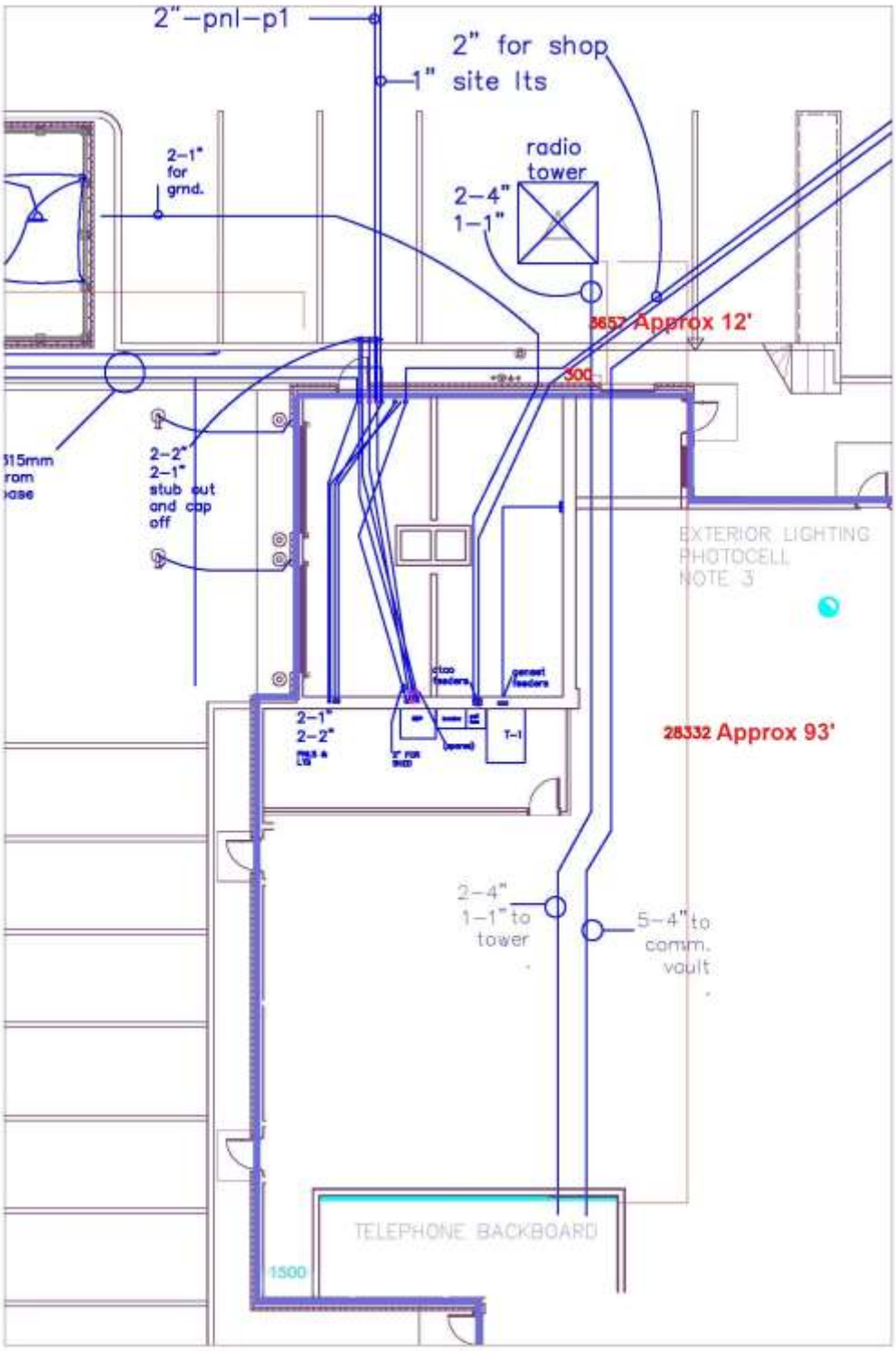


Photo 1 – Side View of Proposed New Tower Location

Photo 2 – Back View of Proposed New Tower Location

11.6 Grande Cache Detachment – Grande Cache, ALTA.

Introduction

Remove existing 68 foot (20.7m) tower at the old Detachment location and install a new 80 foot (24.38m). self-support tower at the new Grande Cache Detachment. Both sites are located in Grande Cache, AB

Old Detachment:

Coordinates: 53-53-31 N Lat. 119-06-38 W Long.
Address: 10001 Hoppe Ave., Grande Cache, AB

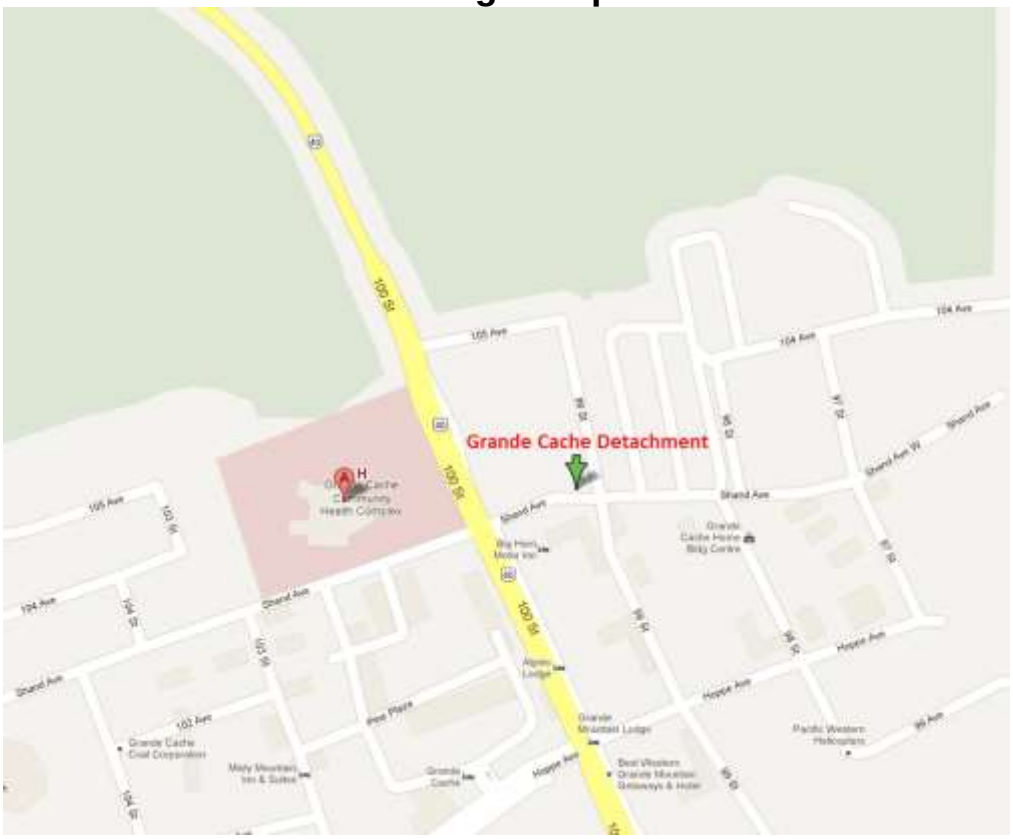
Google Map

Google Earth

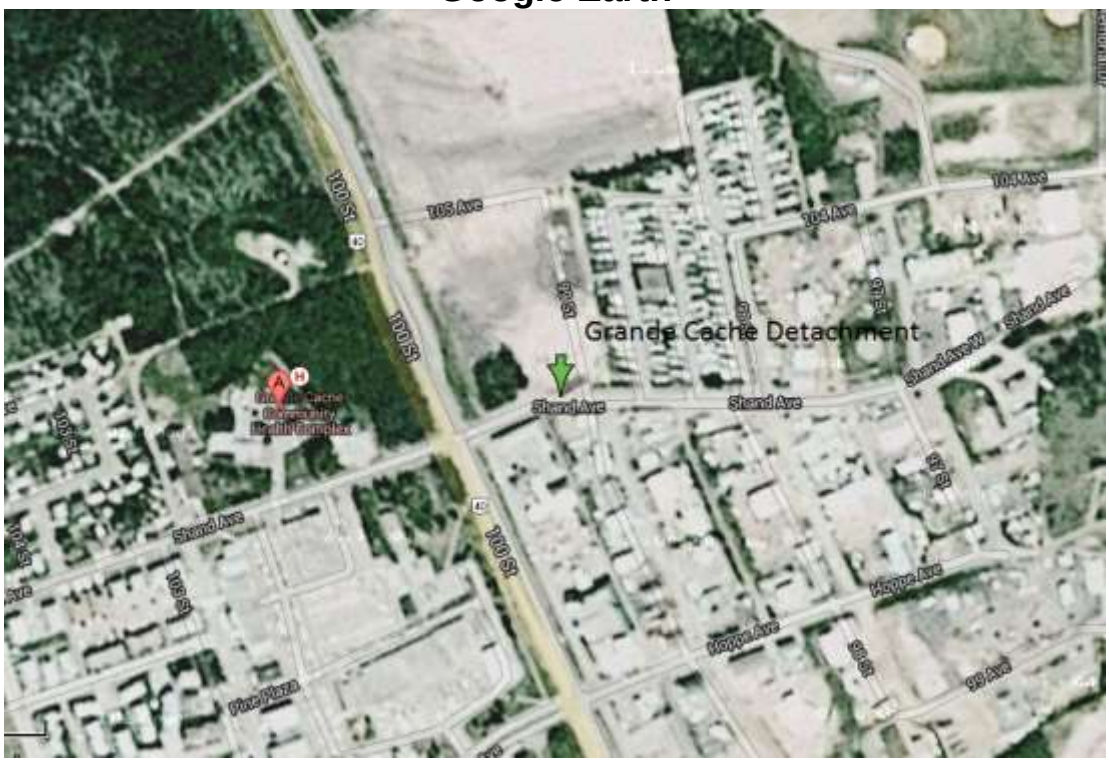
New Detachment:

Coordinates: 53-53-30 N Lat. 119-06-52 W Long.
Address: 10021 Shand Avenue, Grande Cache, Alberta

Google Map



Google Earth



11.6.1 - Requirements

1. The old tower must remain in service until the new one is ready for cutover. Once the cutover is complete remove the existing 68foot (20.7m) Wind turbine self-support tower (see photos provided below) and related components. A proper dismantling procedure must be detailed by the contractor Care must be taken in removal of the tower and it is the responsibility of the contractor to safeguard the RCMP detachment building and to dispose of the communication tower and related components. The address/location for the old Detachment where the tower is to be removed is 10001 Hoppe Ave., Grande Cache, AB. Lat./Long.: 53-53-31 N Lat. 119-06-38 W Long.

2. The existing tower foundation will be excavated to one foot below grade, cut, backfilled and leveled with excavated materials or ballast from the existing foundation element. No sharp edges or hazards should be within 1 foot of the final ground surface.

3. A new 80 foot (24.38m) tower will be installed at the location identified in site plan and photos included below.

4. The tower and foundation must be designed to incorporate all antennas and lines shown in the CSLL, the site drawings, the tower manufacturers' drawings and the antenna specifications (Outlined Below) and in accordance with the site specific wind and ice data (Outlined Below).

5. The geotechnical report that was completed in preparation for the new building construction has been included in Appendix B. This is to be used for the design of the tower foundation.

6. The Contractor must provide detailed site drawings to supply and install the tower foundation as detailed in the CSLL and the Site/Tower/Antenna Requirements data sheet provided below.

7. The Contractor must supply and install the tower foundation as per the CSLL, the Site drawings, the Tower Manufacturers Drawings and the Antenna Specifications (Outlined Below).

8. There is an existing radio access conduit at 4" (100mm) below grade that extends from the vicinity of the planned tower base to the detachment building. Refer to the site plan and photos provided below for the positioning of the access conduit relative to the tower placement. The contractor will plan for the use of this conduit and will seal the tower base end with expandable foam.

9. The Contractor is responsible to provide sufficient length for all specified transmission lines to accommodate the estimated 100 feet (30.48m) required for the conduit run inside of the RCMP building. The Contractor will not be required

to enter the building as RCMP technicians will be present on site to assist with the fishing of the lines through the conduit, however, they will supply the compatible N type female connector for each line and the RCMP will assume responsibility for their installation.

10. The Contractor must provide detailed drawings to supply and install a new panel anti-climb and fall arrest rail. The panel anti-climb must be 10 feet (3 m) with the fall arrest rail beginning at the top of the new panel anti-climb and extend to the top of the tower.

11. Painting and lighting is not required as per Transport Canada's Aeronautical Assessment.

12. The Contractor must provide, supply and install caution signs in accordance with the RCMP Standards and Guidelines for Communication Sites (Appendix A). The signs must be in French and English.

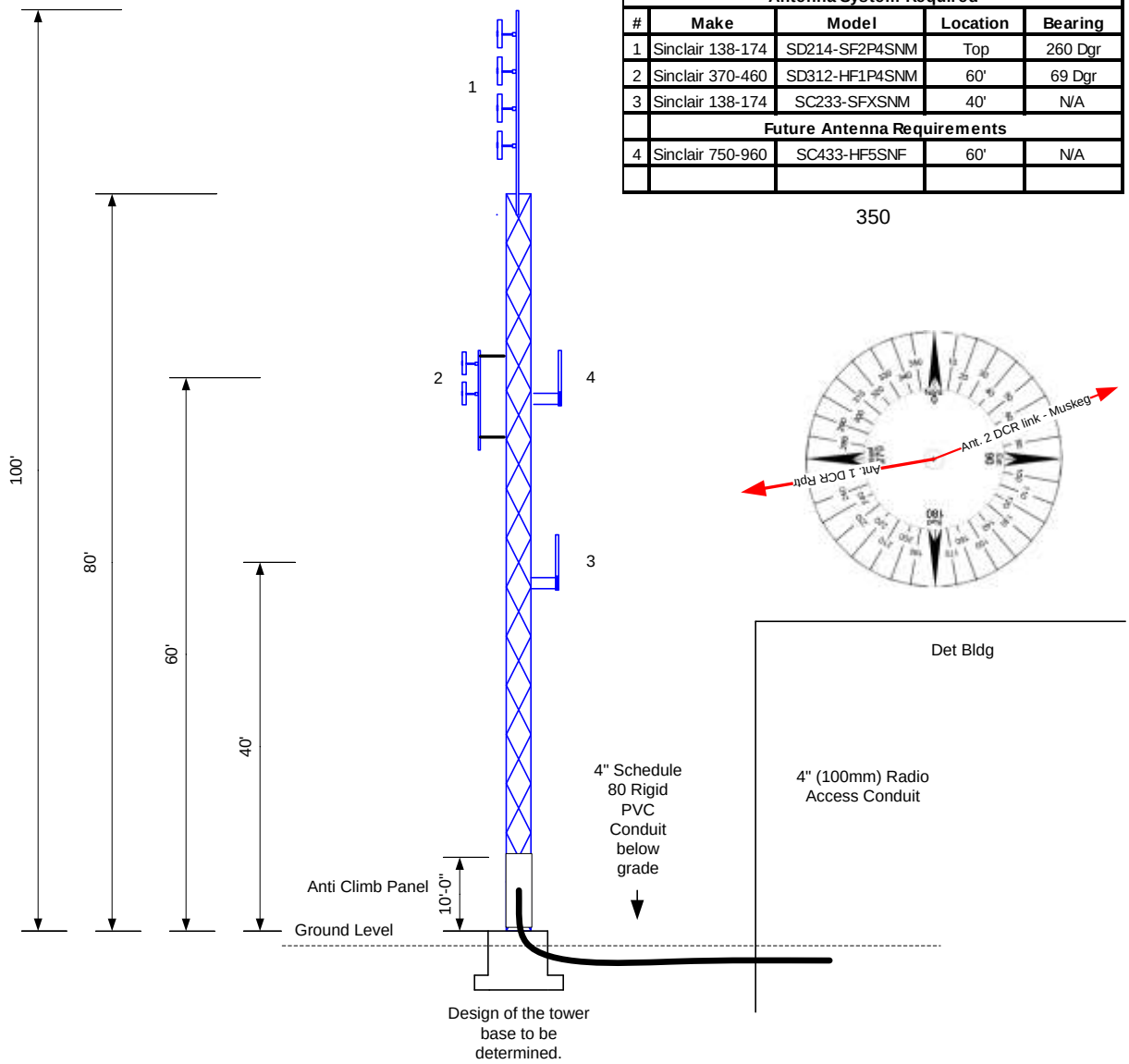
11.6.2 - New Tower Communications Structure Load List (CSLL)

GRANDE CACHE DET.

Grande Cache Detachment - 2013-05-21				
	Lat:	53-53-30	**Long:**	119-06-52
	Wind:	Site Specific Stats	**Ice:**	CSA S37
	Fall Arrest	Yes	**Paint:**	no
	Security	Anti climb	**Lighting:**	no
	Grounding	CSA S37	**Cable:**	LDF4-50A
	Tower Ht	80'	**MODEL**	TBD

Antenna System Required				
#	**Make**	**Model**	**Location**	**Bearing**
1	Sinclair 138-174	SD214-SF2P4SNM	Top	260 Dgr
2	Sinclair 370-460	SD312-HF1P4SNM	60'	69 Dgr
3	Sinclair 138-174	SC233-SFXSNM	40'	N/A
	Future Antenna Requirements			
4	Sinclair 750-960	SC433-HF5SNF	60'	N/A

350



11.6.3 - Site/Tower/Antenna and TX Line Details

1. Site & Tower Specifications

Location: 10021 Shand Avenue, Grande Cache, Alberta
Coordinates: 53-53-30 N Lat., 119-06-52 W Long.
Tower Height: 24.38 m (80 feet) Self-Support

2. Planned Antenna Loading

Antenna 1
Located above the top of the tower.
Azimuth = 260 degrees TN
Model: Sinclair SD214-SF2P4SNM
4 dipole antenna, 8.5 dBd gain, ¼ wave spacing, 138-174 MHZ

Antenna 2
Located side mounted at 18.29 m (60 feet)
Azimuth = 69 Degrees TN
Model: Sinclair SD312-HF1P4SNM
2 dipole antenna, 5.5 dBd gain, HD, ¼ wave spacing, 370-460 MHZ

Antenna 3
Located side mounted at 12.19 m (40 feet)
Azimuth = N/A
Model: Sinclair SC233-SFXSNM
Collinear omni antenna, 3 dBd gain, 138-174 MHZ

3. Future Expansion/Loading of Antennas

The following antenna must be considered for tower loading as possible future installation of one additional antenna. This is not to be supplied or installed as part of this requirement.

Antenna 4 (Future Expansion)
Located side mounted at 18.29 m (60 feet)
Azimuth: N/A
Model: Sinclair SC433-HF5SNF
Collinear omni, 2.5 dBd gain, HD, 750-806 MHZ

4. Antenna Feed Lines

Andrew LDF4-50A

5. Cable Entry Port to Detachment Building

There is a designated 4" (100mm) Schedule 80 Rigid PVC radio access conduit below grade extending from the building to the general vicinity of the proposed radio tower base. Refer to the site plan and photos provided below for further details.

11.6.4 - Wind Data

Grande Cache, AB 30m Tower

Site Specific Hourly Wind Pressure Documentation Sheet

Site Information:

Name: Grande Cache, AB
Latitude: 53° 53' 30" N
Longitude: 119° 6' 52" W
Tower Height (m): 30
Elevation MSL (m): 1275

UTM Coordinates:

Zone: 11
Easting (m): 361049
Northing (m): 5973540

Results:

Q_e (Pa): 410
Uncertainty of Q_e: [20%, -25%]
Q_{nbc} (Pa): 410
Icing: As per CAN/CSA S37-01
Return Period: 30

Wind Pressure Formula (for z in metres and result in Pa):

$$Q_h = 410(z/10)^{0.2}$$

Profile Formula General Form:

$$Q_h = 0.12919 \{[a_1 e^{(-a2\,z)} + a_3 \ln(z/z_h) / \ln(z/z_{01})]\, v_{01}\}^2 \; (z/10)^{0.2}$$

Site Values of Coefficients:

$$a_1 = 0.0000,\ a_2 = 1.0000,\ a_3 = 1.0000,\ z_h = 0.5000,\ z_{01} = 0.5000,\ v_{01} = 56.61 \text{ mph}$$

Definitions

Tower Height: Height of the tower from ground level at the base of the tower to the top of the structure.

Q_e: "Site Specific Equivalent Wind Pressure at 10 m" => the wind pressure which, when using the 2/10 power law yields the same average wind pressure over the height of the tower as the Wind Pressure Profile Formula.

Q_{nbc}: 30-year return period regionally representative reference wind pressure at 10 m in the format of the National Building Code of Canada. As per the November 17, 1988 meeting of the CSA Antenna Tower Technical Committee, the Q_{nbc} value profiled with the 2/10 power law should comprise the minimum hourly average wind pressure at all heights above ground.

Wind Pressure Profile Formula: Formula for the 30-year return period design wind pressure as a function of height.

Height: the vertical distance (m) above ground level at the base of the tower.

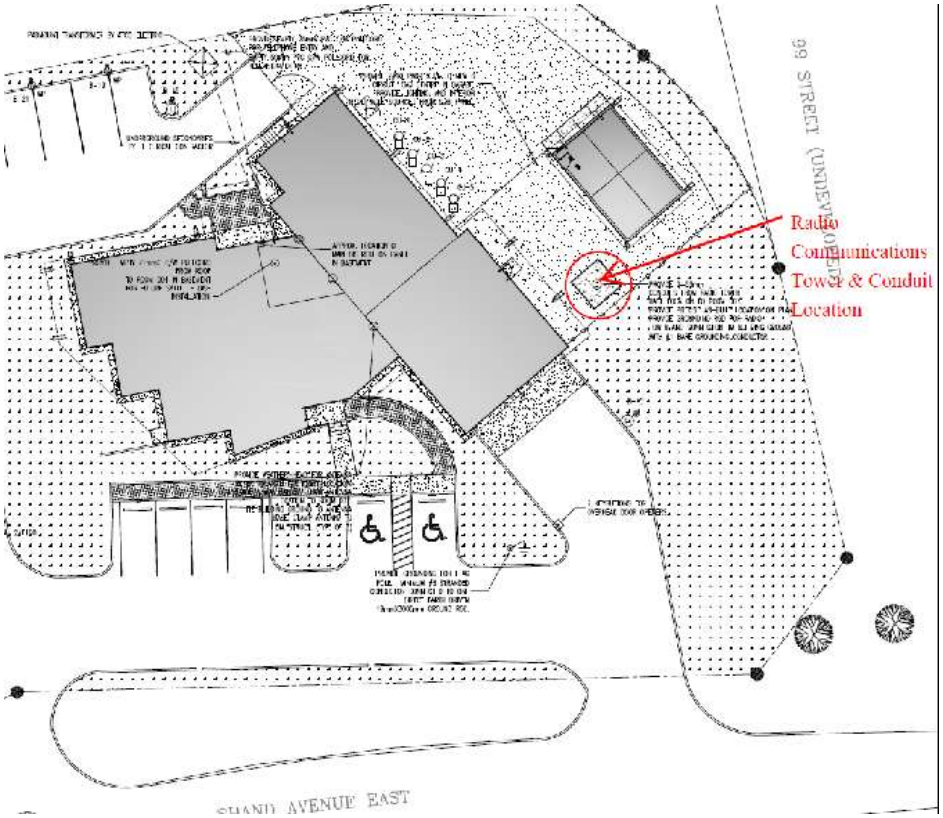
Notes:

n.b. No wind pressure value less than 90% of the value at 10 m should be used for heights less than 10 m above ground.

- These wind pressures were evaluated using a version of the methods described by Taylor and Lee (1984) "Simple Guidelines for Estimating Wind Speed Variations Due to Small Scale Topographic Features", Climatological Bulletin 18 2, using the Boyd (1969) analysis of thirty year return period wind speeds (which is also used for the National Building Code of Canada), modified by a technique described by Wieringa (1980) "Representativeness of Wind Observations at Airports" Bulletin of the American Meteorological Society, 61 9, as input data. The uncertainty in NBCC regionally representative reference wind pressures is about [+15%,-15%].
- Environment Canada has not made and does not make any representations or warranties, either expressed or implied, arising by law or otherwise, respecting the accuracy of recommended climatic information. In no event will Environment Canada be responsible for any prejudice, loss or damages which may occur as a result of the use of design wind pressure recommendations.

11.6.5 - Site Plan and Photographs

Full Site Plan



Detailed Site Plan

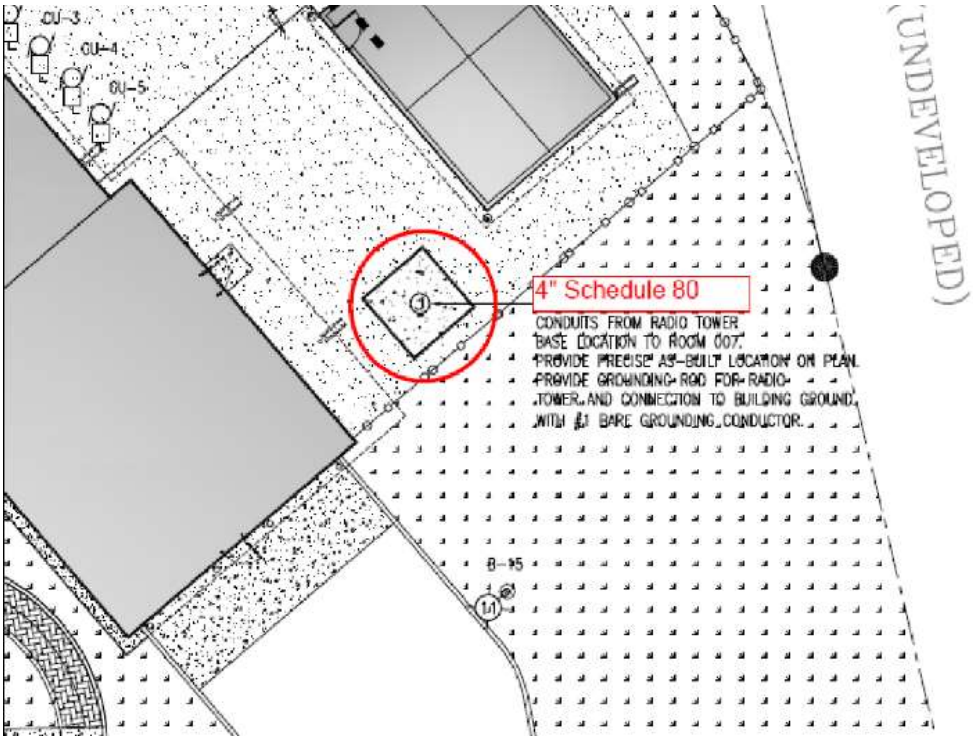


Photo 1 – New Tower Location Side View

Photo 2 – New Tower Location Rear View

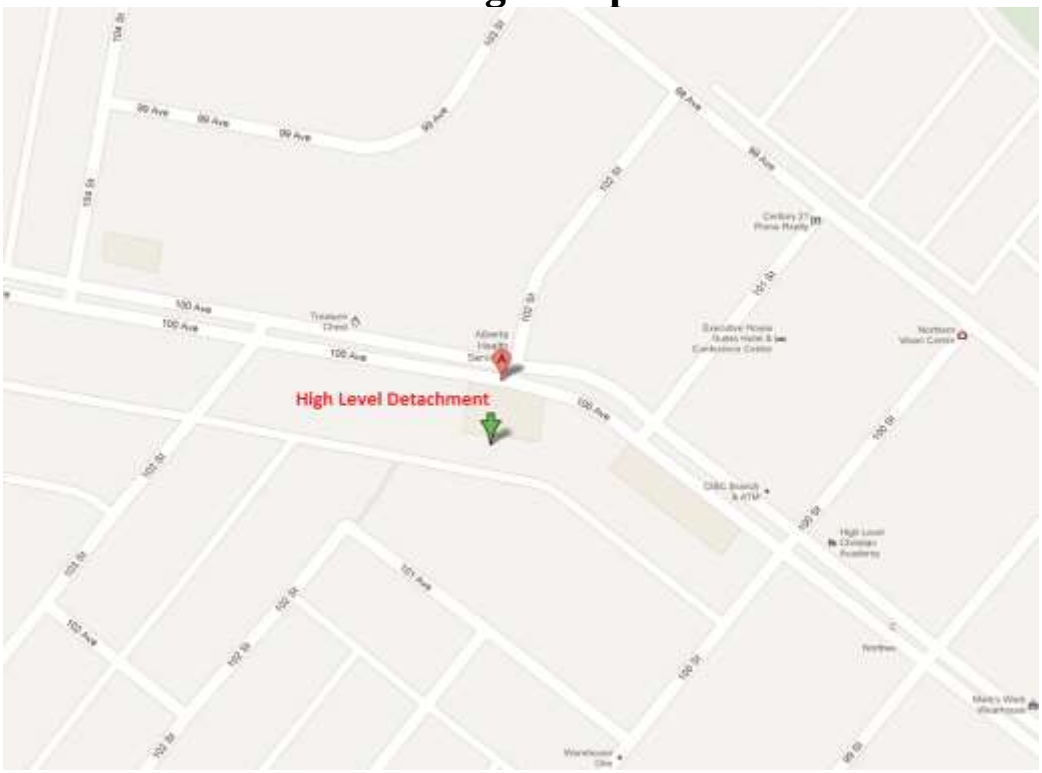
Photos of Old Tower to be Removed

11.7 - High Level Detachment – High Level, ALTA.

Introduction

Install a new 80 foot (24.38m) self-support tower at the new High Level Detachment located in High Level, AB
Coordinates: 58-31-09 N Lat. 117-08-07 W Long.
Address: 10203 - 100 Avenue, High Level, Alberta

Google Map



Google Earth

11.7.1 - Requirements

1. The tower and foundation must be designed to incorporate all antennas and lines shown in the CSLL, the site drawings, the tower manufacturers' drawings and the antenna specifications (Outlined Below) and in accordance with the site specific wind and ice data (Outlined Below). A copy of the tower profile and foundation drawings must be submitted to the RCMP Project Authority for verification prior to the procurement of materials, site preparation and tower installation.

2. The geotechnical report that was completed in preparation for the new building construction has been included in Appendix B. This is to be used for the design of the tower foundation.

3. The Contractor must provide detailed drawings to supply and install the tower foundation as detailed in the CSLL and the Site/Tower/Antenna Requirements data sheet provided below.

4. The Contractor must supply and install the tower foundation as detailed in the CSLL, the Site drawings, the Tower Manufacturers Drawings and the Antenna Specifications (Outlined Below).

5. There is a radio access conduit 4" (100mm) below grade that extends from the vicinity of the planned tower base location to the detachment building. Refer to the site plan and photos provided below for the positioning of the access conduit relative to the tower placement. The Contractor will plan for the use of this conduit and seal the tower base end with expandable foam.

6. The Contractor is responsible to provide sufficient length for all specified transmission lines to accommodate the estimated 150 feet (45.7m) required for the conduit run inside of the RCMP building. The contractor will not be required to enter the building as RCMP technicians will be present on site to assist with the fishing of the lines through the conduit, however, they will supply the compatible N type female connector for each line and the RCMP will assume responsibility for their installation.

7. The Contractor must provide detailed drawings to supply and install a new panel anti-climb and fall arrest rail. The panel anti-climb must be 10 feet (3 m) with the fall arrest rail beginning at the top of the new panel anti-climb and extend to the top of the tower.

8. Painting and lighting is not required as per Transport Canada's Aeronautical Assessment.

9. The Contractor must provide, supply and install caution signs in accordance with the RCMP Standards and Guidelines for Communication Sites (Appendix A). The signs must be in French and English.

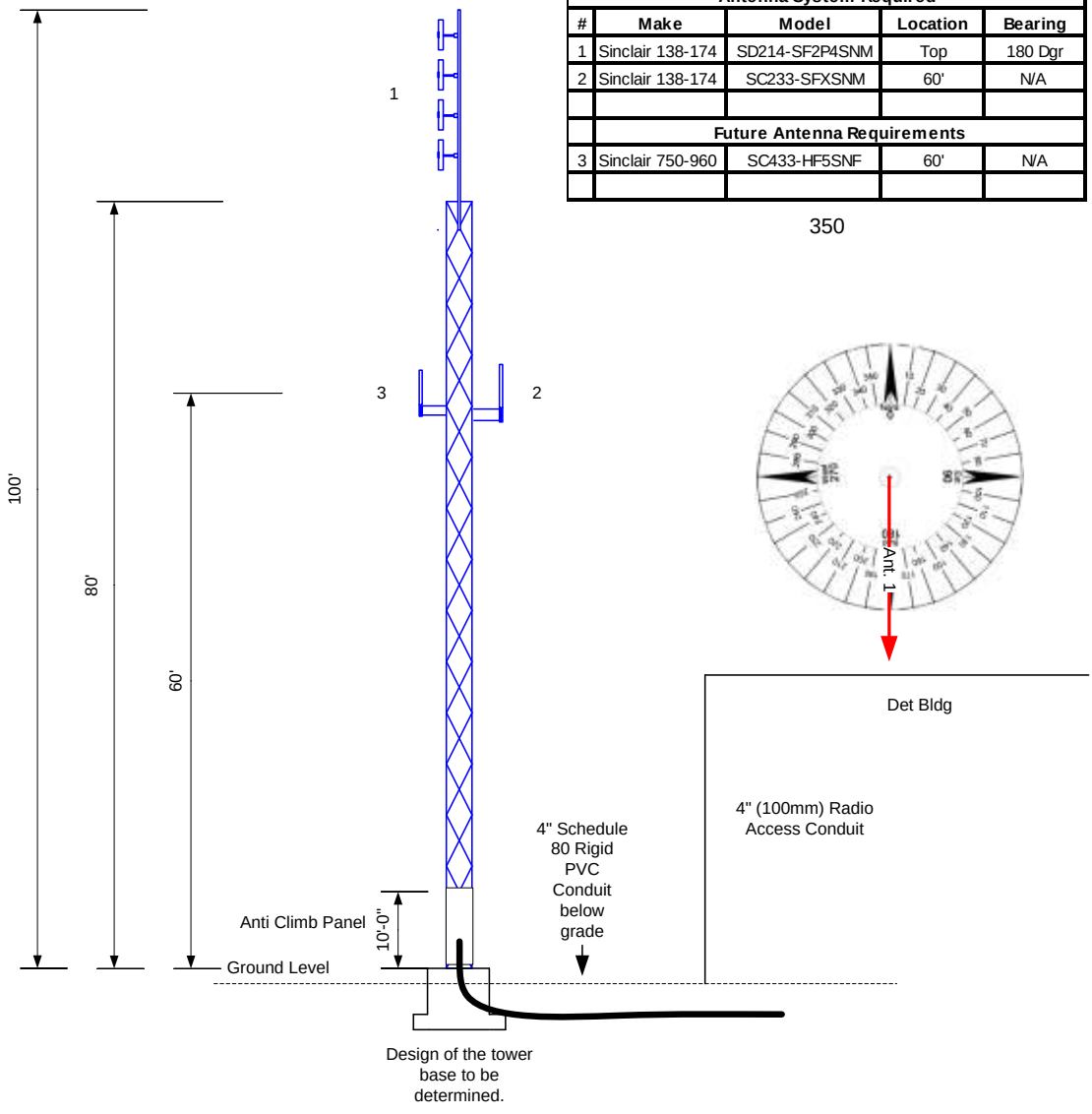
11.6.2 - Communications Structure Load List (CSLL)

HIGH LEVEL DET.

High Level Detachment - 2013-05-21				
	Lat:	58-31-09	**Long:**	117-08-07
	Wind:	Site Specific Data	**Ice:**	CSA S37
	Fall Arrest	Yes	**Paint:**	no
	Security	Anti climb	**Lighting:**	no
	Grounding	CSA S37	**Cable:**	LDF4-50A
	Tower Ht	80'	**MODEL**	TBD

Antenna System Required				
#	**Make**	**Model**	**Location**	**Bearing**
1	Sinclair 138-174	SD214-SF2P4SNM	Top	180 Dgr
2	Sinclair 138-174	SC233-SFXSNM	60'	N/A
	Future Antenna Requirements			
3	Sinclair 750-960	SC433-HF5SNF	60'	N/A

350



11.6.3 - Site/Tower/Antenna and TX Line Details

1. Site & Tower Specifications

Location: 10203 - 100 Avenue, High Level, Alberta
Coordinates: 58-31-09 N Lat., 117-08-07 W Long.
Tower Height: 24.38 m (80 feet) Self-Support

2. Planned Antenna Loading

Antenna 1
Located above the top of the tower.
Azimuth = 180 degrees TN
Model: Sinclair SD214-SF2P4SNM
4 dipole antenna, 8.5 dBd gain, ¼ wave spacing, 138-174 MHZ

Antenna 2
Located side mounted at 18.29 m (60 feet)
Azimuth = N/A
Model: Sinclair SC233-SFXSNM
Collinear omni antenna, 3 dBd gain, 138-174 MHZ

3. Future Expansion/Loading of Antennas

The following antenna must be considered for tower loading as possible future installation of one additional antenna. This is not to be supplied or installed as part of this requirement.

Antenna 3 (Future Expansion)
Located side mounted at 18.29 m (60 feet)
Azimuth: N/A
Model: Sinclair SC433-HF5SNF
Collinear omni antenna, 2.5 dBd gain, HD, 750-806 MHZ

4. Antenna Feed Lines

Andrew LDF4-50A

5. Cable Entry Port to Detachment Building

There is a designated 4" (100mm) Schedule 80 Rigid PVC radio access conduit below grade extending from the building to the general vicinity of the proposed radio tower base. Refer to the site plan and photos provided below for further details.

11.6.4 - Wind Data

High Level, AB 30m Tower

Site Specific Hourly Wind Pressure Documentation Sheet

Site Information:

Name: High Level, AB
Latitude: 58° 31' 9" N
Longitude: 117° 8' 7" W
Tower Height (m): 30
Elevation MSL (m): 326

UTM Coordinates:

Zone: 11
Easting (m): 492120
Northing (m): 6486521

Results:

Q_e (Pa): 280
Uncertainty of Q_e: [20%, -25%]
Q_{nbc} (Pa): 280
Icing: As per CAN/CSA S37-01
Return Period: 30

Wind Pressure Formula (for z in metres and result in Pa):

$$Q_h = 280(z/10)^{0.2}$$

Profile Formula General Form:

$$Q_h = 0.12919 \{[a_1 e^{(-a2\,z)} + a_3 \ln(z/z_h) / \ln(z/z_{01})]\, v_{01}\}^2 \; (z/10)^{0.2}$$

Site Values of Coefficients:

$$a_1 = 0.0000,\ a_2 = 1.0000,\ a_3 = 1.0000,\ z_h = 0.1000,\ z_{01} = 0.1000,\ v_{01} = 46.60\ mph$$

Definitions

Tower Height: Height of the tower from ground level at the base of the tower to the top of the structure.

Q_e: "Site Specific Equivalent Wind Pressure at 10 m" => the wind pressure which, when using the 2/10 power law yields the same average wind pressure over the height of the tower as the Wind Pressure Profile Formula.

Q_{nbc}: 30-year return period regionally representative reference wind pressure at 10 m in the format of the National Building Code of Canada. As per the November 17, 1988 meeting of the CSA Antenna Tower Technical Committee, the Q_{nbc} value profiled with the 2/10 power law should comprise the minimum hourly average wind pressure at all heights above ground.

Wind Pressure Profile Formula: Formula for the 30-year return period design wind pressure as a function of height.

Height: the vertical distance (m) above ground level at the base of the tower.

Notes:

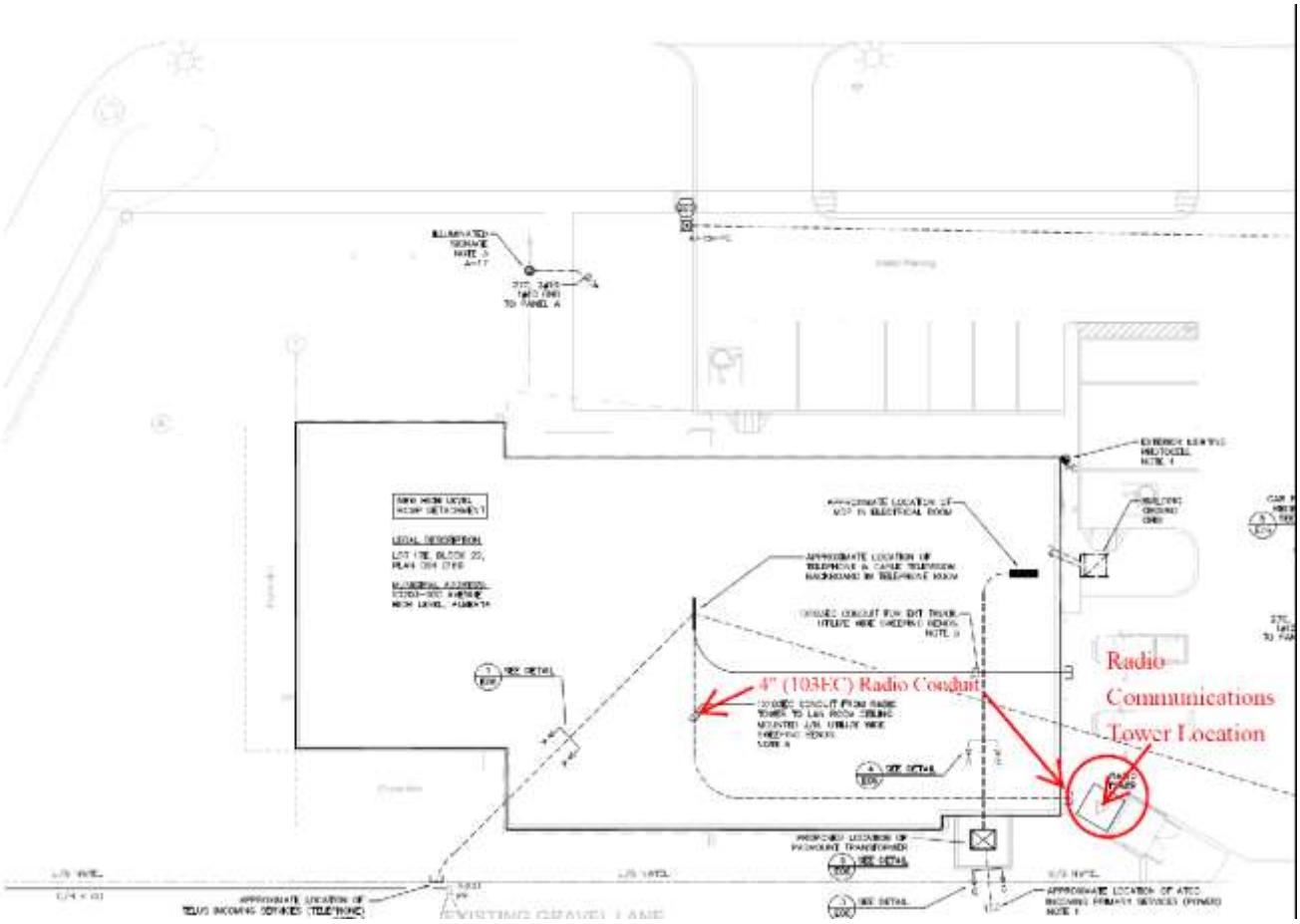
n.b. No wind pressure value less than 90% of the value at 10 m should be used for heights less than 10 m above ground.

- These wind pressures were evaluated using a version of the methods described by Taylor and Lee (1984) "Simple Guidelines for Estimating Wind Speed Variations Due to Small Scale Topographic Features", Climatological Bulletin 18 2, using the Boyd (1969) analysis of thirty year return period wind speeds (which is also used for the National Building Code of Canada), modified by a technique described by Wieringa (1980) "Representativeness of Wind Observations at Airports" Bulletin of the American Meteorological Society, 61 9, as input data. The uncertainty in NBCC regionally representative reference wind pressures is about [+15%,-15%].
- Environment Canada has not made and does not make any representations or warranties, either expressed or implied, arising by law or otherwise, respecting the accuracy of recommended climatic information. In no event will Environment Canada be responsible for any prejudice, loss or damages which may occur as a result of the use of design wind pressure recommendations.

April 15, 2013

11.6.5 - Site Plan and Photographs

Full Site Plan



Detailed Site Plan

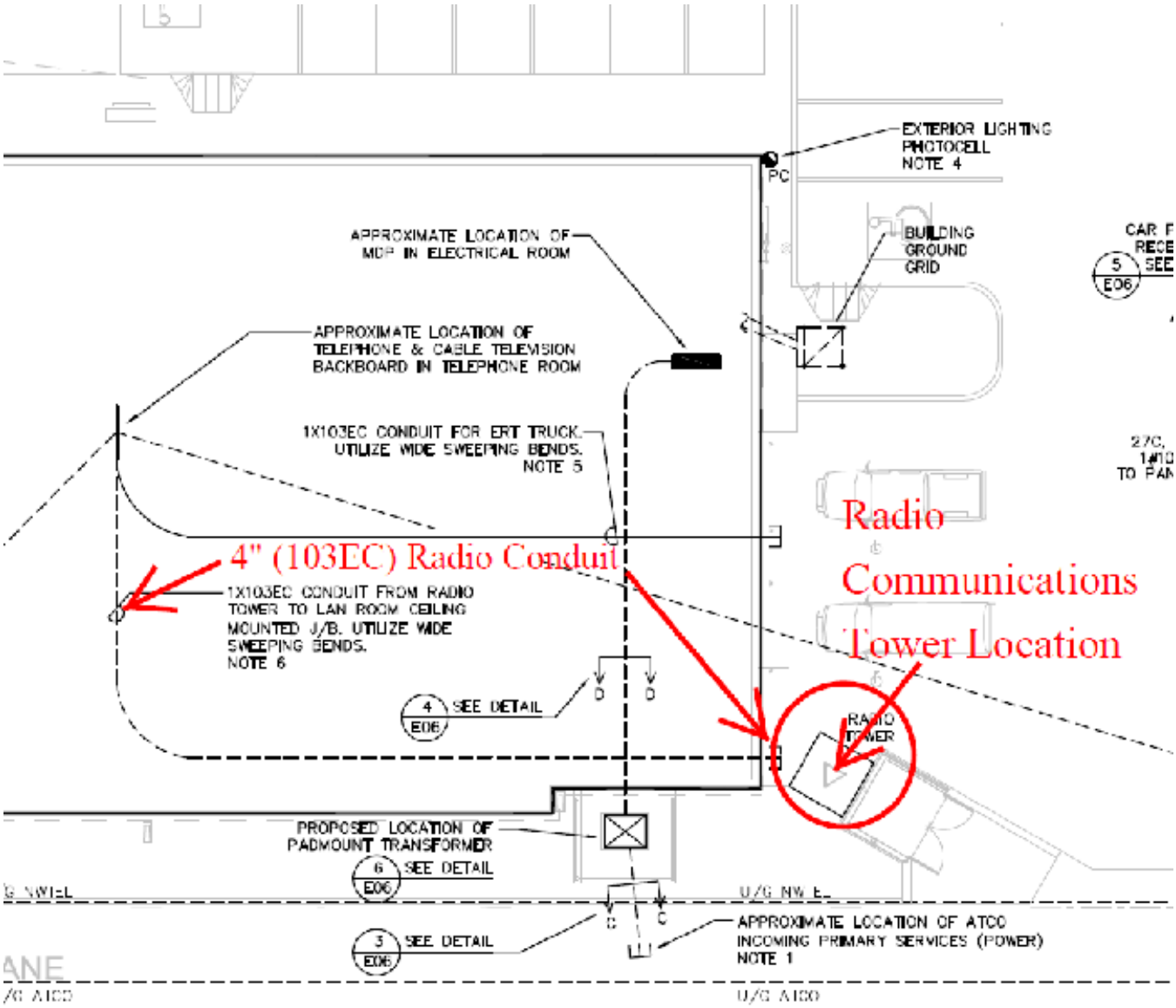


Photo 1 – Tower Location

12.0 Antenna Specifications

12.1 Sinclair SD214 Series

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Antennas
Low Band, Aviation, and VHF Antennas
SD214 Series

< Home
< Family
< Series

SD214-SF2P4SNM
(SRL210C4NM*2-4)

4 dipole antenna, 8.5 dBd gain, offset, 138-174 MHz

- 4-bay dipole antenna that covers the 138-174MHz band
- 8.5 dBd gain in offset pattern (1/4 wave configuration)
- 300W power handling

The SD214 series is a rugged 4-bay exposed dipole antenna designed for applications where moderate gain is required. These premium-quality antennas are well suited to public safety/public security applications.

The design of these antennas provides for coverage between 118 to 225 MHz in 3 sub bands, 118-138 MHz for civil aviation applications, 138-174 MHz for private mobile networks, public safety and public security and 220-225 MHz for transportation networks.

The standard connector offerend is an N-type male.

Application Notes

- SD214-SF2P4SNM specifications are shown at the series level

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Region	United States	Europe, Middle East and Africa	Caribbean and Latin America	Canada and rest of the world
Telephone	USA: 1 800 288 2763	International: +44 (0) 1223 42 03 03	International: +1 305 235 2706	Canada: 1 800 263 3238 International: +1 905 727 0165
E-mail	salesusa@sinctech.com	salesuk@sinctech.com	salesla@sinctech.com	salescan@sinctech.com

Sinclair SD214 Series Cont'd

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Antennas
Low Band, Aviation, and VHF Antennas
SD214 Series

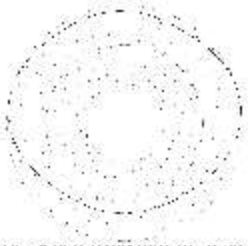
Notes
*1 : #130 clamp recommended

Electrical Specifications		
Frequency Range	MHz	138 to 174
Gain	dBd (dBi)	8.5 (10.6)
Pattern		offset
Input VSWR (max)		1.5:1
Polarization		vertical
Horizontal beamwidth	degrees	210
Vertical beamwidth	degrees	17
Electrical tilt (available)		0
Average power input (max)	W	300 Watts
Lightning protection		DC ground

Ordering Information
2 x #130 clamps recommended (not included).
N-female connector available as option.

Mechanical Specifications			
Height	in (mm)	240 (6096)	
Depth	in (mm)	4 (102)	
Width	in (mm)	23 (584)	
Connector		N (male)	
Weight	lbs (kg)	45.5 (20.7)	
Base pipe diameter	in (mm)	2.4 (60)	
Base pipe mounting length	in (mm)	72 (1829)	
Mounting hardware		clamps not supplied	*1
Shipping dimensions	in (mm)	247x44x6 (6274x1118x152)	
Shipping weight	lbs (kg)	65 (29.5)	

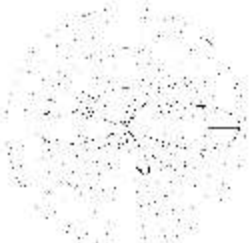
SINCLAIR TECHNOLOGIES



MEASURED RADIATION PATTERN
VERTICAL POLARIZATION
Azimuth

Environmental Specifications		
Rated wind velocity (no ice)	mph (km/h)	130 (209)
Rated wind velocity (1/2" radial ice)	mph (km/h)	90 (145)
Projected area (Flat Plate Equivalent)	ft² (m²)	4.51 (0.42)
Projected area (ice)	ft² (m²)	7.51 (0.7)
Lateral thrust (100mph)	lbs (N)	152 (676.1)
Torsional moment	ft-lbs (Nm)	157 (212)
Bending moment	ft-lbs (Nm)	761 (1027.4)

SINCLAIR TECHNOLOGIES



MEASURED RADIATION PATTERN
VERTICAL POLARIZATION
Elevation

12.2 Sinclair SD212 Series

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Antennas
Low Band, Aviation, and VHF Antennas
SD212 Series

< Home
< Family
< Series

SD212-SF2P4SNM
(SRL210C2NM*2-4)

2 dipole antenna, 5.5 dBd gain, offset, 138-174 MHz

- 2-bay dipole antenna that covers the 138-174 MHz band
- 5.5 dBd gain in offset pattern (1/4 wave configuration)
- 300 W power handling

The SD212 series is an extremely rugged 2-bay exposed dipole antenna designed for applications where moderate gain is required. These premium-quality antennas are well suited to public safety/public security applications.

The design of these antennas provides for coverage between 118 to 225 MHz in 3 sub bands, 118-138MHz for civil aviation applications, 138-174MHz for private mobile networks, public safety and public security and 220-225MHz for transportation networks.

The standard connector offerend is N male which is terminated on a 1 foot cable. Clamps are not included but recommended is the set of #130 clamps.

www.sinctech.com

Application Notes

- The SD212 is available in half-wave configuration (P2) providing 5.0 dBd gain in a bidirectional pattern, and a quarter-wave configuration (P4) providing a 5.5 dBd gain in an offset pattern (gain varies slightly with frequency).

- Sub bands:
  118-138 MHz (F1)
  138-174 MHz (F2)
  216-225 MHz (F3)

Region	United States	Europe, Middle East and Africa	Caribbean and Latin America	Canada and rest of the world
Telephone	USA: 1 800 286 2763	International: +44 (0) 1223 42 03 03	International: +1 305 235 2706	Canada: 1 800 263 3238 International: +1 905 727 0165
E-mail	salesusa@sinctech.com	salesuk@sinctech.com	salesla@sinctech.com	salescan@sinctech.com

Sinclair SD212 Series Cont'd

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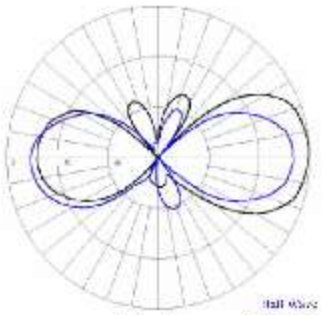
Antennas
Low Band, Aviation, and VHF Antennas
SD212 Series

Notes
*1 : recommend clamp #130

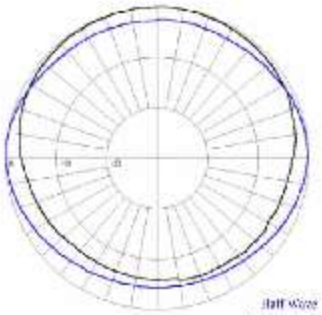
Electrical Specifications		
Frequency Range	MHz	138 to 174
Gain	dBd (dBi)	5.5 (7.6)
Pattern		offset
Input VSWR (max)		1.5:1
Polarization		vertical
Horizontal beamwidth	degrees	210
Vertical beamwidth	degrees	34
Average power input (max)	W	300 Watts
Lightning protection		DC ground

Ordering Information
2 x #130 clamps recommended (not included).

Mechanical Specifications			
Height	in (mm)	120 (3048)	
Depth	in (mm)	2.5 (64)	
Width	in (mm)	23 (584)	
Connector		N (male)	
Weight	lbs (kg)	21 (9.5)	
Base pipe diameter	in (mm)	1.9 (48)	
Base pipe mounting length	in (mm)	36 (914)	
Mounting hardware		clamps not supplied	*1
Shipping dimensions	in (mm)	124x4x44 (3150x102x1118)	
Shipping weight	lbs (kg)	45 (20.4)	



Environmental Specifications		
Rated wind velocity (no ice)	mph (km/h)	145 (233)
Rated wind velocity (1/2" radial ice)	mph (km/h)	110 (177)
Tip deflection	degrees	3.2
Projected area (Flat Plate Equivalent)	ft² (m²)	1.83 (0.17)
Projected area (ice)	ft² (m²)	3.25 (0.3)
Lateral thrust (100mph)	lbs (N)	68 (302.5)
Torsional moment	ft-lbs (Nm)	34 (45.9)
Bending moment	ft-lbs (Nm)	218 (294.3)



12.3 Sinclair SC233 Series

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Antennas
Low Band, Aviation, and VHF Antennas
SC233 Series

< Home
< Family
< Series

SC233-SFXSNM

(SRL233-XXXX)

Collinear omni antenna, 3 dBd gain, 138-174 MHz

- Low cost antenna
- Designed to withstand the severe demands of marine service
- Excellent horizon coverage

The SC233 is a lightweight, 3 dB collinear antenna constructed of high strength fiberglass with an aluminum coaxial skirt and base pipe. The combined features of light weight, medium gain, and low cost make this antenna a natural choice for moderate base station antenna requirements. Mounting clamps are provided for parallel mounting to a minimum 1.9 inch diameter support pipe.

Region	United States	Europe, Middle East and Africa	Caribbean and Latin America	Canada and rest of the world
Telephone	USA: 1 800 268 2763	International: +44 (0) 1223 42 03 03	International: +1 305 235 2706	Canada: 1 800 263 3238 International: +1 905 727 0165
E-mail	salesusa@sinctech.com	salesuk@sinctech.com	saleslа@sinctech.com	salescan@sinctech.com

Sinclair SC233 Series Cont'd

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Antennas
Low Band, Aviation, and VHF Antennas
SC233 Series

Notes
*1 : Specify operating frequency
*2 : Based on 100mph and 0 inches of ice.
*3 : Based on 100mph and 0 inches of ice.
*4 : Based on 100mph and 0 inches of ice.

Electrical Specifications			
Bandwidth	MHz	2	
Frequency Range	MHz	138 to 174	*1
Gain	dBd (dBi)	3 (5.1)	
Pattern		Omni- directional	
Input VSWR (max)		1.5:1	
Polarization		vertical	
Vertical beamwidth	degrees	35	
Average power input (max)	W	100 Watts	
Impedance	Ω	50	
Lightning protection		DC ground	

Ordering Information
Specify operating frequency.

Mechanical Specifications			
Length	in (mm)	145 (3683)	
Depth	in (mm)	1.5 (38)	
Width	in (mm)	1.5 (38)	
Connector		N (male)	
Weight	lbs (kg)	3.5 (1.6)	
Weight iced	lbs (kg)	15 (6.8)	
Base pipe diameter	in (mm)	0.9 (22)	
Mounting hardware		#135B clamp	
Shipping dimensions	in (mm)	157x4x4 (3988x102x102)	
Shipping weight	lbs (kg)	25 (11.4)	

SINCLAIR TECHNOLOGIES

MEASURED RADIATION PATTERN
VERTICAL POLARIZATION

Environmental Specifications			
Rated wind velocity (no ice)	mph (km/h)	115 (185)	
Rated wind velocity (1/2" radial ice)	mph (km/h)	85 (137)	
Tip deflection	degrees	2	*2
Projected area (Flat Plate Equivalent)	ft² (m²)	0.61 (0.06)	
Projected area (ice)	ft² (m²)	1.33 (0.12)	
Lateral thrust (100mph)	lbs (N)	21 (93.4)	*3
Bending moment	ft-lbs (Nm)	66 (89.1)	*4
Temperature range	°F (°C)	-40 to +140 (-40 to +60)	

12.4 Sinclair SY307 Series

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Antennas
UHF and Tetra Antennas
SY307 Series

< Home
< Family
< Series

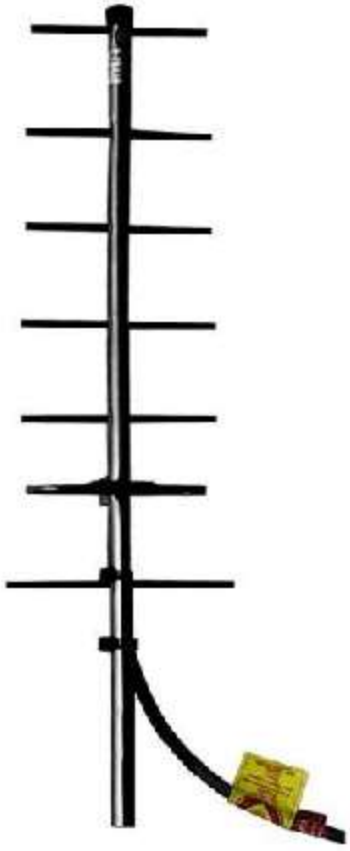
SY307-SF1SNM

(SRL307NM*1)

Yagi directional antenna, 10 dBd gain, black anodized, 403-430 MHz

- Rugged 7-element 10 dBd gain yagi antenna.
- Reflector and director elements are 3/8 inch diameter aluminum rods.
- 360 degree welds to the boom and anodized for increased durability and extended life.

The SY307 is a rugged 7-element 10 dBd gain yagi antenna. Reflector and director elements are 3/8 inch diameter aluminum rods welded with 360 degree welds to the boom and anodized for increased durability and extended life.



Application Notes

- Stacking of yagis provides increased gain. Stacking kits are available for 2 and 4 antenna configurations

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Region	United States	Europe, Middle East and Africa	Caribbean and Latin America	Canada and rest of the world
Telephone	USA: 1 800 258 2763	International: +44 (0) 1223 42 03 03	International: +1 305 235 2706	Canada: 1 800 263 3238 International: +1 905 727 0165
E-mail	salesusa@sinctech.com	salesuk@sinctech.com	saleslа@sinctech.com	salescan@sinctech.com

Sinclair SY307 Series Cont'd

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Antennas
UHF and Tetra Antennas
SY307 Series

Notes
*1 : Antenna Impedance is 50 Ohms
*2 : NF& NM Available

Electrical Specifications			
Bandwidth	MHz	27	
Frequency Range	MHz	403 to 430	
Gain	dBd (dBi)	10 (12.1)	
Pattern		Directional	
Input VSWR (max)		1.5:1	*1
Polarization		vertical or horizontal	
Horizontal beamwidth	degrees	55	
Vertical beamwidth	degrees	41	
Front to back ratio	dB	20	
Average power input (max)	W	250	
Lightning protection		DC ground	

Ordering Information
Specify frequency of operation.

Mechanical Specifications			
Height	in (mm)	44 (1118)	
Depth	in (mm)	3 (76)	
Width	in (mm)	14.3 (363)	
Connector		N (male)	*2
Weight	lbs (kg)	3.5 (1.6)	
Finish		anodize black	
Mounting hardware		#115 clamp (included)	
Shipping dimensions	in (mm)	47x6x18 (1194x152x457)	
Shipping weight	lbs (kg)	8 (3.6)	

SINCLAIR TECHNOLOGIES

MEASURED RADIATION PATTERN
VERTICAL POLARIZATION

Environmental Specifications		
Projected area (Flat Plate Equivalent)	ft² (m²)	0.4 (0.04)
Projected area (ice)	ft² (m²)	1 (0.09)
Lateral thrust (100mph)	lbs (N)	15.6 (69.4)
Bending moment	ft-lbs (Nm)	24 (32.4)
Temperature range	°F (°C)	-40 to +140 (-40 to +60)

SINCLAIR TECHNOLOGIES

MEASURED RADIATION PATTERN
VERTICAL POLARIZATION

12.5 Sinclair SV302 Series

SINCLAIR
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Antennas
UHF and Tetra Antennas
SV302 Series

< Home
< Family
< Series

SV302-HF1SNM
(SRL302AHD*1)

Corner reflector directive antenna, 9.5 dBd gain, HD, 406-470 MHz

- Offers reliable service in severe weather and ice conditions
- Broad band operation
- Excellent for multicoupling

The SV302 is a rugged corner reflector which covers the entire 406-470 or 450-512 MHz range. Because of its broadband operation, it is an excellent antenna for multicoupling several systems or for use with widely spaced duplex frequencies. High power rated and/or heavier duty models are also available. The SV302 is a single feed version of the SV3022 illustrated.

Sinclair SV302 Series Cont'd

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Antennas
UHF and Tetra Antennas
SV302 Series

Electrical Specifications		
Bandwidth	MHz	64
Frequency Range	MHz	406 to 470
Gain	dBd (dBi)	9.5 (11.6)
Pattern		Directional
Input VSWR (max)		1.5:1
Polarization		vertical or horizontal
Horizontal beamwidth	degrees	45
Vertical beamwidth	degrees	60
Front to back ratio	dB	20
Average power input (max)	W	125
Lightning protection		DC ground

Mechanical Specifications		
Height	in (mm)	30 (762)
Depth	in (mm)	23 (584)
Width	in (mm)	50 (1270)
Connector		N (male)
Weight	lbs (kg)	30 (13.6)
Shipping dimensions	in (mm)	32x10x31in ()
Shipping weight	lbs (kg)	35 (15.9)

Environmental Specifications		
Rated wind velocity (no ice)	mph (km/h)	125 (201)
Rated wind velocity (1/2" radial ice)	mph (km/h)	85 (137)
Lateral thrust (100mph)	lbs (N)	202 (898.5)

SINCLAIR TECHNOLOGIES

MEASURED RADIATION PATTERN
VERTICAL POLARIZATION

SINCLAIR TECHNOLOGIES

MEASURED RADIATION PATTERN
VERTICAL POLARIZATION

12.6 Sinclair SC433 Series

SINCLAIR
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Antennas
700-1000 MHz Antennas
SC433 Series

< Home
< Family
< Series

SC433-HF5SNF
(SRL433NHD*5)

Collinear omni antenna, 2.5 dBd gain, HD, 750-806 MHz

- Low profile with high power handling capability
- Ideal for in-city microcell applications
- Durable heavy duty long lasting fiberglass radome construction

The SC433 offers moderate gain for use in paging and data systems where omnidirectional coverage is required, or additional power-handling capability is needed.

www.sinctech.com

Region	United States	Europe, Middle East and Africa	Caribbean and Latin America	Canada and rest of the world
Telephone	USA: 1 800 286 2763	International: +44 (0) 1223 42 03 03	International: +1 305 235 2706	Canada: 1 800 263 3238 International: +1 905 727 0165
E-mail	salesusa@sinctech.com	salesuk@sinctech.com	salesla@sinctech.com	salescan@sinctech.com

Sinclair SC433 Series Cont'd

SINCLAIR
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Antennas
700-1000 MHz Antennas
SC433 Series

Electrical Specifications		
Frequency Range	MHz	750 to 806
Gain	dBd (dBi)	2.5 (4.6)
Pattern		Omni- directional
Input VSWR (max)		1.5:1
Polarization		vertical
Vertical beamwidth	degrees	33
Average power input (max)	W	500
Lightning protection		DC ground

Mechanical Specifications		
Length	in (mm)	40.8 (1036)
Depth	in (mm)	2.5 (64)
Width	in (mm)	2.5 (64)
Connector		N (female)
Weight	lbs (kg)	7.4 (3.4)
Base pipe diameter	in (mm)	2.5 (64)
Shipping dimensions	in (mm)	73x5x6 (1854x127x152)
Shipping weight	lbs (kg)	25 (11.4)

SINCLAIR TECHNOLOGIES

MEASURED RADIATION PATTERN
VERTICAL POLARIZATION

Environmental Specifications		
Rated wind velocity (no ice)	mph (km/h)	150 (242)
Rated wind velocity (1/2" radial ice)	mph (km/h)	110 (177)
Lateral thrust (100mph)	lbs (N)	16.7 (74.3)
Temperature range	°F (°C)	-22 to +140 (-30 to +60)

ANNEX B
FINANCIAL PROPOSAL PRESENTATION SHEET
(BASIS OF PAYMENT)

Name of Firm: _____

Address: _____

_____

_____

Contact Person:_____

Phone number: (_____) _____-_____ Fax number: (_____) _____-___

Email: _____@_____

Bidders must provide an all-inclusive firm lot price for a minimum of one (1), and a maximum of six (6) sites listed below. Applicable taxes extra.

Each site will be evaluated separately.

Site	Open to vendors qualified under following SA Streams	Requirement	Proposed all-inclusive firm price
1. Ft. Vermillion	1: Supply and Installation, and 2: Repair and Maintenance	Removal and Installation	
2. Grande Cache	1: Supply and Installation, and 2: Repair and Maintenance	Removal and Installation	
3. Vulcan	1: Supply and Installation	Installation	
4. Bonnyville	1: Supply and Installation	Installation	
5. High Level	1: Supply and Installation	Installation	
6. Lloydminster	1: Supply and Installation	Installation	

Bidders must provide the following rates to be used only if and when required by the Project Authority. Rates will not be used in the evaluation of bids but must respect ceiling rates as per Supply Arrangement 201304568/XX.

Item	Unit of Measure	Mark up (%)
Equipment rental	Cost plus mark up	%
Sub-contractor work	Cost plus mark up	%

Rates for Additional work (As per Part 7, section 6.2)		
Maximum number of additional hours (a)	**Firm per diem rate (b)**	**Maximum allowable total (a) x(b)**
4	$	$

Appendix A - RCMP Standards and Guidelines For Communication Sites

Note: attached as a separate pdf document.

Appendix B – Geotechnical Reports

Note: attached as a separate pdf documents.