



**REGIONAL DISTRICT  
of Fraser-Fort George**

1967-2017 50 years of  
building strong communities

**INVITATION TO TENDER CS-17-03**

**ROBSON VALLEY RECREATION CENTRE  
INTER-CONNECT HEAT TRANSFER SYSTEM**



Robson Valley Community Centre  
441 Columbia Street, McBride, BC



Robson Valley Recreation Centre  
461 Columbia Street, McBride, BC

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## 1.0 INVITATION AND INSTRUCTIONS

The Regional District of Fraser-Fort George (the "Regional District") invites tenders for the Robson Valley Recreation Centre Inter-Connect Heat Transfer System to connect the Robson Valley Recreation Centre ("Recreation Centre") to the Robson Valley Community Centre ("Community Centre"), located in McBride, B.C.

The Inter-Connect Heat Transfer System project will transfer captured waste heat energy from the Recreation Centre and utilize it to heat the Community Centre located next door to the Recreation Centre.

The Regional District's objective is to award a contract to the successful tenderer who can demonstrate the ability to deliver a high quality, well managed project for the installation of the Inter-Connect Heat Transfer System.

For further information, please contact the Project Manager:

Lyle Lewis, Facilities Manager (the "Project Manager")  
Regional District of Fraser-Fort George  
461 Columbia Street, McBride BC  
Telephone: 250-569-7590  
Fax: 250-569-3337 / Email: [llewis@rdffg.bc.ca](mailto:llewis@rdffg.bc.ca)

### 1.1 Tender Documents

Tender documents may be obtained on, or after, Monday, March 13, 2017:

- a) in a PDF (public document format) file format from the Regional District's website at [www.rdffg.bc.ca](http://www.rdffg.bc.ca);
- b) on the BC Bid® website at [www.bcbid.gov.bc.ca](http://www.bcbid.gov.bc.ca);
- c) in hard copy from the Regional District Service Centre, 155 George Street, Prince George, BC between 8:00 a.m. and 5:00 p.m., Monday to Friday, excluding statutory holidays; or
- d) in hard copy from the Robson Valley Recreation Centre, 461 Columbia Street, McBride, BC during regular hours.

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

It is the sole responsibility of the tenderer to ascertain that they have received a full set of the ITT documents. Upon submission of their tender, the tenderer will be deemed conclusively to have been in possession of a full set of the ITT documents.

Inquiries relating to this ITT may be directed to the Project Manager:

Lyle Lewis, Facilities Manager (the "Project Manager")  
Regional District of Fraser-Fort George  
461 Columbia Street, McBride BC  
Telephone: 250-569-7590  
Fax: 250-569-3337 / Email: [llewis@rdffg.bc.ca](mailto:llewis@rdffg.bc.ca)

## 1.2 Mandatory Site Meeting

A **mandatory site meeting** will be held at 2:00 p.m. on Tuesday, March 21, 2017 at the Recreation Centre, 461 Columbia Street, McBride BC (the "Site"). A representative of the Regional District will provide an overview of the contract expectations and be available for questions pertaining to the ITT. The purpose of this meeting is for the tenderer to satisfy themselves as to the nature of the work, in general, to clarify their understanding of the scope of work, determine dimensions and to have clarified any questions regarding the attached drawings and specifications forming part of this ITT, and any other circumstances which may influence their tender submission. **Tender submissions received from any tenderer who did not attend the mandatory site meeting will be rejected.**

The Regional District will not, under any circumstances, make accommodations for rescheduling, or holding an additional site meeting or provide individuals access to the building.

## 1.3 Acknowledgement Letter

Upon receipt of this ITT, a potential tenderer will sign one copy of the Acknowledgement Letter, and either mail or deliver a hard copy of the signed Acknowledgement Letter to the Regional District at 155 George Street, Prince George, B.C. or email to Donna Munt, General Manager of Community Services, dmunt@rdffg.bc.ca.

A tenderer who signs and returns the Acknowledgement Letter is not obligated to submit a tender.

**Any tenderer who does not submit the Acknowledgement Letter will not be sent any amendments, addenda, or answers to questions and may be disqualified.**

## 1.4 Closing Date and Opening of Tenders

Sealed tenders will be received by the General Manager of Financial Services, at the Regional District of Fraser-Fort George, 3<sup>rd</sup> Floor, 155 George Street, Prince George, BC, not later than 2:00 p.m. local time on Friday, April 7, 2017. Tenders will be opened in public at 2:15 p.m. on Friday, April 7, 2017, at the Regional District Office.

## 1.5 Tender Submissions

Tenderers will complete and submit three (3) copies of pages 13 through 17, together with a start to completion work plan, in a **sealed envelope**. The following information **must be written on the outside of the sealed envelope containing the tender submission:**

1. Attention: General Manager of Financial Services  
Regional District of Fraser-Fort George  
3<sup>rd</sup> Floor, 155 George Street  
Prince George, BC V2L 1P8
2. INVITATION TO TENDER CS-17-03  
ROBSON VALLEY RECREATION CENTRE INTER-CONNECT HEAT TRANSFER SYSTEM
3. Responding tenderer's name and address.

Tenders submitted by fax, electronically, or not in the original Regional District format will **NOT** be accepted.

To be considered, tenders must be signed by an authorized signatory of the tenderer. By signing the tender, the tenderer is bound to statements made in response to this Invitation to Tender ("ITT"). Any tender received by the Regional District that is unsigned will be rejected.

**The Regional District will not be responsible for any costs incurred by tenderers as a result of the preparation or submission of a tender pertaining to this ITT.** The accuracy and completeness of the tender is the tenderer's responsibility. Should errors be discovered, they will be corrected by the tenderer at their expense.

Any tender received after the closing date and time, Friday, April 7, 2017 @ 2:00 p.m., will be considered disqualified and will be returned unopened to the tenderer.

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

#### 1.6 Regional District's Right to Reject Tender

The Regional District reserves the right, in its sole discretion, to waive informalities in tenders, reject any and all tenders, or accept the tender deemed most favourable in the interests of the Regional District. The lowest, or any tender, will not necessarily be awarded.

If a tender contains a defect, or fails in some way to comply with the requirements of this ITT, which, in the sole discretion of the Regional District, is not material, the Regional District may waive the defect or accept the tender.

The Regional District reserves the right to reject a tender based on potential or perceived conflict of interest.

The Regional District reserves the discretion to reject any tender where:

- a) one or more of the directors, officers, principals, partners, senior management employees, shareholders or owners of the tenderer, is an officer, employee or director of the Regional District, or is a member of the immediate family of an officer, employee or director of the Regional District; or
- b) in the case of a tender submitted by a tenderer who is an individual person, where that individual is an officer, employee or director of the Regional District, or is a member of the immediate family of an officer, employee or director of the Regional District.

By submitting a tender, the tenderer confirms that clauses a) and b) above are not applicable.

The Regional District reserves the right to reject any tender submitted by a tenderer who is, or whose principals are, at the time of tendering, engaged in a lawsuit against the Regional District in relation to work similar to that being tendered.

#### 1.7 Claim for Compensation

No tenderer shall have any claim for compensation of any kind whatsoever as a result of participating in this ITT.

In the event that the previous paragraph is found to be invalid by a court of competent jurisdiction, then this paragraph will apply. By submitting a tender, a tenderer agrees that they will not claim damages in excess of an amount equivalent to the reasonable costs incurred by the tenderer in preparing their tender for matters relating to this ITT or in respect of the competitive tender process, and the tenderer, by submitting a tender, waives any claim for loss of profits if a contract is not entered into with the tenderer.

## 1.8 Proof of Ability

Tenderers will be competent and capable of performing the work as described in Section 4.0 Scope of Work and as detailed in Appendix B – Scope of Work and in Appendix C – Inter-Connect Heat Transfer System Drawings. The tenderer may be required to provide evidence of previous experience and financial responsibility before a contract is awarded.

## 1.9 Sub-Contractors

The List of Sub-Contractors is to be completed by the tenderer and will form part of the Contract documents. The sub-contractors named in the List of Sub-Contractors will not be changed nor will additional sub-contractors be employed except with the written approval of the Regional District.

## 1.10 Discrepancies or Omissions

Tenderers finding discrepancies, errors, or omissions in this ITT, or requiring clarification on the meaning or intent of any part therein, should immediately request, in written form, either by mail, or email, clarification from the Project Manager. Upon receipt of the written request for clarification, the Project Manager will send written instructions or explanations to all tenderers registered as having returned the Acknowledgement Letter. No responsibility will be accepted for oral instructions. Any work done after discovery of discrepancies, errors or omissions, will be done at the tenderer's risk.

## 1.11 Location of Site

The Robson Valley Recreation Centre is located at 461 Columbia Street and the Robson Valley Community Centre is located at 441 Columbia Street, McBride, B.C.

## 2.0 TENDER FORMAT

Tenderers are asked to respond in a similar manner and submit **three (3) complete copies** of their tender. The following format and sequence, with all pages consecutively numbered, is to be followed in order to provide consistency in tenders and to ensure each tender receives full and complete consideration.

### a) Tenderers will complete pages 13 through 17:

- Tender Form: to be completed, signed, and witnessed.
- List of Sub-Contractors: to include sub-contractor's legal name and the work to be performed by the sub-contractor.
- Tenderer's Experience in Similar Work: a minimum of three (3) references are required, to include a brief description of projects similar in size and scope to this ITT, together with the corresponding contact names and phone numbers for reference checks. References must be for work performed within the last 10 years.
- Schedule of Prices: to include **Contract Price, GST Tax Registration Number, WorkSafeBC Registration Number, Work Completion Date, Tenderer's name, address, telephone number, and signature of authorized signatory.**

### b) A start to completion work plan: to include start date of construction, milestones and completion date.

### c) Additional information that the tenderer may choose to provide.

### d) **All amendments and addenda, if any, issued for this ITT. Each amendment and addenda must be signed by the tenderer and included with their tender submission and will form part of the tender documents.**

## 2.1 Tender Evaluation Process

Evaluation of tenders will be by a committee formed by the Regional District in order to provide a recommended award of contract (the "Contract"). Tenders should be clear, concise, and complete.

The following tender evaluation methodology will be used by the committee to evaluate the tenders received:

a) Compliance with ITT requirements	<b>5%</b>
b) Experience and references	<b>25%</b>
c) Start to Completion Workplan and acceptable schedule	<b>10%</b>
d) Price	<b><u>60%</u></b>
	<b>TOTAL 100%</b>

Where tender prices are the same, the Regional District will consider the tenderer's experience in similar work beyond the minimum standards established in this ITT.

Throughout the evaluation process, the Regional District, at its sole discretion, may request additional written clarification and/or supplemental information from selected tenderers as part of the evaluation process.

## 3.0 **CONTRACT**

### 3.1 Form of Contract

The form of Contract will be similar to the sample Contract in Appendix A and will include this ITT, Instructions to Tenderers, Tender Form, List of Sub-Contractors, Tenderer's Experience in Similar Work, Schedule of Prices, Start to Completion Work Plan, information provided by the tenderer, and all appendices, amendments, and addenda.

### 3.2 Examination of Contract Documents

The contractor will satisfy themselves as to the practicability of executing the work in accordance with the Contract, and they will be held to have satisfied themselves in every particular before making up their tender by inquiry, measurement, calculation and inspection of the Site.

The contractor will be deemed to have satisfied themselves as to the sufficiency of the Tender for the Work and the Contract Price stated in the Schedule of Prices. The Contract Price will cover all the contractor's obligations under the Contract, and all matters necessary to the proper completion and maintenance of the work, and will include the supply of all expertise, labour, transportation, equipment, materials, supervision, and services, taxes and assessments, together with the contractor's overhead and profit, except where otherwise provided for in the Contract.

### 3.3 Award of Contract

The Contract is expected to be awarded not later than April 20, 2017. All tenderers will be advised, in writing, as to the awarding of the Contract.

The Regional District may, in its sole discretion, delay the date of awarding the Contract if deemed appropriate by the Regional District.



The tenderer awarded the Contract (the "Contractor"), will have seven (7) calendar days to provide the required insurance certificate under Section 10.0 and proof of WorksafeBC coverage under Section 12.0, upon notification that the Regional District has accepted its tender.

#### **4.0 SCOPE OF WORK**

The Scope of Work is for the construction of the Inter-Connect Heat Transfer System as detailed in Appendix B – Scope of Work and Appendix C – Inter-Connect Heat Transfer System Drawings.

#### **5.0 START TO COMPLETION WORK PLAN**

As specified in Section 2.0 (b), the tender submission will include a start to completion work plan. At a minimum, the work is to be completed by June 30, 2017. At the discretion of the Regional District, the Contract completion date may be extended.

#### **6.0 WARRANTY**

The Contractor shall provide a one-year warranty against defects on all work completed. The one-year warranty period will begin on the project completion date and will be over and above the fifty-five (55) day performance assurance holdback referred to in Section 8.0.

#### **7.0 CONTRACT PRICE**

The Schedule of Prices must be completed and included in the tender package. All prices for the work shall be stated in Canadian dollars. Any applicable Federal or Provincial taxes, or levies, must be included in the Contract Price, but are to be listed separately from the Contract Price. The Contract Price must be open for acceptance for sixty (60) days from the time of tender opening, unless otherwise stated by the Regional District.

#### **8.0 PAYMENT**

1. The Regional District will inspect the work before making payment.
2. Following completion of the work, the Regional District will pay for the work completed to the Regional District's satisfaction, by the thirtieth (30<sup>th</sup>) day of the month following that for which payment is required on receipt of an invoice from the Contractor.
3. The Regional District will withhold a 10% holdback under the Contract for fifty-five (55) days as a performance assurance holdback. The holdback will be released to the Contractor once the following three conditions have been satisfied:
  - a) the work has been completed to the satisfaction of the Regional District;
  - b) the Regional District has received notification from WorkSafeBC that all required WorkSafeBC assessments have been paid for the period covering the Contract term; and
  - c) the fifty-five (55) day performance assurance holdback has lapsed.
4. The Regional District, without invalidating the Contract, may make changes by altering, adding to, or deducting from the work. The Contractor will proceed with the work as changed and the work will be executed under the provisions of the Contract. No changes will be undertaken by the Contractor without written order of the Regional District, except in an emergency endangering life or property, and no claims for additional compensation will be valid unless the change was so ordered. The Regional District will entertain no payment for extra work or changes in the Contract unless a "Change Order" form is completed and signed by the Regional District and the Contractor.



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

5. No payment will be made for materials supplied by the Regional District.

## **9.0 LICENSES AND PERMITS**

The Contractor shall, at their expense, obtain all licenses, permits, approvals, and insurance required under the laws of the Province of British Columbia with regard to its own activity under the Contract.

## **10.0 INSURANCE**

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

- i. Commercial General Liability (CGL) in an amount not less than \$5,000,000 inclusive per occurrence insuring against bodily injury and property damage and including liability assumed under the Contract. The Regional District is to be added as an additional insured.
- ii. Automobile Liability on all vehicles owned, operated, or licenced in the name of the Contractor in an amount not less than \$2,000,000 per occurrence. Such CGL coverage shall include the following liability extensions: Contingent Employers Liability, Broad Form Products & Completed Operations, Personal Injury, Blanket Contractual, and Cross Liability.
- iii. Non-owned Automobile Liability insurance in an amount not less \$2,000,000 per occurrence.
- iv. Equipment insurance on all equipment owned or rented by the Contractor to its full insurable value.

The Contractor shall ensure that all sub-contractors forming from this Contract meet the insurance requirements outlined in Clause 10.

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

## **11.0 DAMAGE TO EXISTING PROPERTY OR FACILITY**

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

1. The Contractor will immediately advise the Regional District of any damage to the Regional District's facility or property.
2. Upon investigation, the Regional District will notify the Contractor of damages to be repaired.
3. If the Contractor does not reply within twenty-four (24) hours, the Regional District will repair, to the appropriate specifications or regulations, and deduct the cost of the repair from payment to the Contractor.

## **12.0 WORKSAFEBC**

The Contractor will use due care and take all necessary precautions to assure the protection of persons or property at the Site and will comply with the *Workers' Compensation Act* of the Province of British Columbia.

Prior to undertaking any of the work, the Contractor will provide its WorkSafeBC number and will keep current all assessments required by WorkSafeBC in relation to, and for, the duration of the work. The Contractor will provide a clearance letter from WorkSafeBC to the Regional District prior to commencement of the work.

## **13.0 INDEMNITY**

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

## **14.0 OWNERSHIP OF TENDERS AND FREEDOM OF INFORMATION**

Tenders will be received and held in confidence by the Regional District, subject to the provisions of the *Freedom of Information and Protection of Privacy Act* and this ITT. Each tender should clearly identify any information that is considered to be confidential or propriety information. Tenderers are responsible to review the *Freedom of Information and Protection of Privacy Act* for further information.

All documents, including tenders, submitted to the Regional District become the property of the Regional District. The Regional District will provide a debriefing for tenderers, upon request by a tenderer, subject to the *Freedom of Information and Protection of Privacy Act*.

## **15.0 RIGHTS OF WAIVER**

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

## **16.0 SEVERABILITY**

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

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**ACKNOWLEDGEMENT LETTER**

The undersigned has received a complete set of ITT CS-17-03, Robson Valley Recreation Centre Inter-Connect Heat Transfer System documents.

\_\_\_\_\_  
Authorized Signatory Signature

\_\_\_\_\_  
Name of Tenderer

\_\_\_\_\_  
Name (Please print)

\_\_\_\_\_  
Address

\_\_\_\_\_  
Title

\_\_\_\_\_  
City, Province, Postal Code

\_\_\_\_\_  
Phone Number

\_\_\_\_\_  
Email

\_\_\_\_\_  
Date

I/We presently intend to  provide  not provide a Tender.

Please return immediately by mail or by email to:

Donna Munt, General Manager of Community Services  
Regional District of Fraser-Fort George  
155 George Street  
Prince George, BC V2L 1P8

Email: [dmunt@rdffg.bc.ca](mailto:dmunt@rdffg.bc.ca)

## TENDERER CHECKLIST

Before submitting your Tender, check the following points:

- Have you submitted the Acknowledgement Letter?
- Was the mandatory site meeting attended?
- Has the Tender Form been signed and witnessed?
- Has the List of Sub-Contractors been completed?
- Has the Tenderer's Experience in Similar Work been completed?
- Has the Schedule of Prices been completed?
- Has the Start to Completion Work Plan been included?
- Are all amendments and/or addenda, if any, included and signed?
- Is the Tender complete?
- Have you included three (3) complete copies of your Tender?
- Is the Tender enclosed in a **sealed** envelope?

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

Ensure that the Tender is returned in a **sealed** envelope clearly marked on the outside with:

- Attention: General Manager of Financial Services  
Regional District of Fraser-Fort George  
3<sup>rd</sup> Floor, 155 George Street  
Prince George, BC V2L 1P8
- INVITATION TO TENDER CS-17-03  
ROBSON VALLEY RECREATION CENTRE INTER-CONNECT HEAT TRANSFER SYSTEM
- Tenderer's name and address

## TENDER FORM

Date: \_\_\_\_\_

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

ATTENTION: General Manager of Financial Services

Dear Sir/Madam:

Having carefully examined the Instructions to Tenderers, form of Tender, Sample Contract, Scope of Work, and Drawings, subsequent written amendments or addenda (if any), and having satisfied myself/ourselves as to the sufficiency of the Tender, the undersigned agrees to furnish all expertise, labour, transportation, equipment, materials, supervision and services and to do all work necessary for and reasonably incidental, as specified in accordance with the ITT, to do the work.

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

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

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

I/We agree to provide to the Regional District accurate information regarding material and labour costs, where necessary, for grant application(s) being made by the Regional District.

If I am/we are notified in writing of the acceptance of our Tender, I/we agree that within seven (7) days from the date of the acceptance notice I/we will enter into a contract for the Contract Price. The form of contract will be the Sample Contract in Appendix A.

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

I/We hereby acknowledge receipt and inclusion of the following addenda to the Tender Documents:

Addendum No. \_\_\_\_\_ dated: \_\_\_\_\_ Addendum No. \_\_\_\_\_ dated: \_\_\_\_\_

Addendum No. \_\_\_\_\_ dated: \_\_\_\_\_ Addendum No. \_\_\_\_\_ dated: \_\_\_\_\_

Signed and Delivered by:

\_\_\_\_\_  
Authorized Signatory Signature

\_\_\_\_\_  
Name of Tenderer

\_\_\_\_\_  
Name of Authorized Signatory (Please print)

\_\_\_\_\_  
Address

\_\_\_\_\_  
Title

\_\_\_\_\_  
City, Province, Postal Code

Signed in the presence of:

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Address

\_\_\_\_\_  
Name of Witness (Please print)

\_\_\_\_\_  
City, Province, Postal Code



**LIST OF SUB-CONTRACTORS**

The Contractor advises that they will be sub-contracting the following parts of the work to the sub-contractor(s) listed below. In the Contractor's opinion, the sub-contractor(s) named are reliable and competent to perform that part of the work for which each is listed. Please indicate not applicable on this page if sub-contractors are not required and include it with your Tender submission. The sub-contractors named in the List of Sub-Contractors will not be changed nor will additional sub-contractors be employed except with the written approval of the Regional District.

Sub-Contractor's Legal Name	Work to be Performed by Sub-Contractor

**CONTRACTOR'S EXPERIENCE IN SIMILAR WORK**

(A minimum of three references, for work performed within the last 10 years)

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

**SCHEDULE OF PRICES**

The contract price submitted below reflects the full cost, including taxes, for the work as specified in ITT CS-17-03.

Price (not including taxes)	\$
	_____
Taxes Payable	\$
	_____
Other (please specify):	\$
	_____
<hr/>	
<b>CONTRACT PRICE:</b>	<b>\$</b>
	<b>_____</b>

Are you a GST Registrant?  Yes  No

If YES, Tax Registration Number: \_\_\_\_\_

If NO, please complete the following:

Supplier qualifies as a small supplier under s. 148 of the legislation  Yes  No

WorkSafeBC Registration Number: \_\_\_\_\_

Work Completion Date: \_\_\_\_\_

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

**APPENDIX A – CONTRACT**

BETWEEN:

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

(hereinafter called "the Regional District")

OF THE FIRST PART

AND:

**THE CONTRACTOR**

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

(hereinafter called the "Contractor")

OF THE SECOND PART

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

1. The Contractor will:
  - (a) Provide all necessary expertise, labour, transportation, equipment, materials, supervision, and services to perform all of the work, and fulfill everything as set forth in, and in strict accordance with, the contract documents for the project entitled "Invitation to Tender CS-17-03 Robson Valley Recreation Centre Inter-Connect Heat Transfer System".
  - (b) Commence to actively proceed with the work of the Contract on or before May 1, 2017 and work to be completed by June 30, 2017.
2. The Regional District will pay to the Contractor, as full compensation for the performance and fulfillment of this Contract, \$ to be determined (plus applicable taxes) in Canadian funds, at the times specified in the contract documents.
3. The Invitation and Instructions to Tenderers, Tender Form, List of Sub-Contractors, Tender's Experience in Similar Work, Schedule of Prices, Start to Completion Work Plan, any information that the Tenderer provides, and all amendments and addenda are incorporated herein, to the intent and purpose as though recited in full herein, and the whole will form the Contract and will endure to the benefit of, and be binding upon, the parties hereto and their successors, executors, administrators, and assigns.
4. No implied contract of any kind whatsoever, by or on behalf of the Regional District, will arise or be implied from anything contained in this Contract or from any position or situation of the parties at any time, it being understood and agreed that the express contracts, covenants and agreements made herein by the parties hereto are, and will be, the only contract, covenants and agreements on which any rights against the Regional District may be founded.

5. Subject to Section 3.0, this Contract will supersede all communications, negotiations, and agreements, either written or verbal, made between the parties hereto in respect of matters pertaining to this Contract prior to the execution and delivery hereof.
6. All communications in writing between the parties will be deemed to have been received by the addressee if delivered to the individual, or to a member of a firm, or to the Project Manager of the Regional District for whom they are intended, or if sent by hand delivery, mail or registered mail as follows:

The Contractor at: \_\_\_\_\_  
(Address)

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

7. The Contractor is to coordinate all parts of this Contract as indicated in Appendix B - Scope of Work and Appendix C - Inter-Connect Heat Transfer System Drawings. Where it is beyond control of the Contractor to meet the completion date as stipulated herein, the Contractor must immediately notify the Regional District in writing. It shall be at the Regional District's sole discretion to extend the completion date or waive any part or clause of this Contract.

IN WITNESS WHEREOF the parties have duly executed this Contract.

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

\_\_\_\_\_  
Chair

\_\_\_\_\_  
Date

\_\_\_\_\_  
Corporate Officer

\_\_\_\_\_  
Date

SIGNED ON BEHALF OF  
**THE CONTRACTOR**

DO NOT SIGN, SAMPLE ONLY

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
(Name and Title) (Please print)

DO NOT SIGN, SAMPLE ONLY

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
(Name and Title) (Please print)

## APPENDIX B– SCOPE OF WORK

The Contractor will supply, install and complete all the work as indicated below for an inter-connect heat transfer system to transfer captured heat energy from the Recreation Centre to the Community Centre.

A previously installed waste energy recovery system captures 1.5 M BTUs hourly and utilizes that energy to heat the Recreation Centre building. Energy produced is monitored by the DDC system, which indicates that 500,000 BTUs per hour are utilized by the Recreation Centre during peak operation, leaving 1M BTUs currently available for transfer to the Community Centre.

The take-off for the inter-facility piping is already in place at the Recreation Centre. Transfer of energy to Community Centre is to be controlled and monitored by the DDC and the existing centralized computerized HVAC monitoring system.

Work will be in accordance with all the relevant components of the working drawings (Appendix C) titled RVRC Inter-Connect Heat Transfer System Drawings.

The Scope of work includes but not limited to:

- a. the expertise, labour, transportation, equipment, materials, supervision, and services necessary to supply and complete the installation of an inter-connect heat transfer system from the RVRC to the RVCC;
- b. earthworks, including investigation of existing underground infrastructure, approximately 175' of trenching to accommodate the piping between the RVRC and the RVCC, and the supply imported backfill materials;
- c. trench to be at a depth suitable to accommodate severe winter temperatures, clay soil and some traffic above;
- d. appropriate material layering will be utilized for pipe bedding and backfill;
- e. connection of the inter-connect system with existing DDC (centralized controls); and
- f. an outdoor air pre-heat coil to be added to the intake of the air-handling unit located in the mezzanine level of the RVCC's mechanical room to pre-condition cold air, at which point the existing air handling unit will boost the temperature to the desired set point.



**APPENDIX C – RVRC Inter-Connect Heat Transfer System DRAWINGS**

ENVIRONMENTAL PROTECTION

- 1.0 GENERAL
  - .1 Section 01 57 01 addresses general requirements for temporary controls and environmental protection. This section is not intended to identify all and/or specific requirements. This section must be referenced to and interpreted simultaneously with all other sections pertinent to the works described herein.
  - .2 Comply with General Conditions, Clause 20.4, Environmental Laws.
- 1.1 Section 01 57 01 Includes
  - .1 Temporary Erosion and Sediment Control
  - .2 Temporary Pest Control
  - .3 Environmental Protection
  - .4 Temporary Storm Water Pollution Control
- 1.2 Temporary Erosion and Sediment Controls
  - .1 Drainage
    - .1 Provide temporary drainage and pumping as necessary to keep excavations and site free from water.
    - .2 Do not discharge water containing suspended materials into watercourses, sewer or drainage systems.
    - .3 Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with Federal, Provincial and Municipal requirements.
  - .2 Work Adjacent to Watercourses
    - .1 Work around watercourses shall be done in accordance with the most recent version of the "Land Development Guidelines" published by the Provincial Ministry of Environment.
    - .2 Do not operate construction equipment in
    - .3 Do not use watercourse beds for borrow material without approval from Federal, Provincial and Municipal authorities.
    - .4 Do not dump excavated fill, waste material or debris in or adjacent to watercourses.
    - .5 Design and construct temporary crossings to minimize erosion to watercourses.
    - .6 Do not skid logs or construction materials across watercourses.
    - .7 Avoid spawning beds when constructing temporary crossings of watercourses.
    - .8 Do not blast under water or within 100 m of spawning beds without approval from Federal, Provincial and Municipal authorities.
  - .3 Products for Temporary Erosion and Sediment Controls:
    - .1 Silt Barrier Fence:
      - .1 Silt fence to be manufactured from a woven, slit film geotextile material with a shiny to smooth surface texture designed to reduce velocity of runoff to point that suspended particles settle out due to reduction of hydraulic energy.

.2 Silt Barrier Fence Minimum Requirements:

PROPERTY	VALUE
Grab Tensile	500 N
Mullen Burst	1900 kPa
Elongation at Break	25% Maximum
Opening	600 µm maximum
U.V. Rating @ 500 hrs	90% Retained
Efficiency	> 75% minimum
Construction	Woven (tape)
Texture	Smooth, Shiny
Posts	4 x 4 cm, treated
Post Spacing (centres)	2 metre maximum
Permittivity	10 L/s/m <sup>2</sup>
Above values are "Minimum Average Roll Values"	

.4 Execution for Temporary Erosion and Sediment Controls:

.1 Silt Barrier Fence Placement:

- .1 Place silt barrier in a manner that will intercept runoff at or close to right angles to flow. In areas where problem is severe, erect two or more silt barriers parallel to each other, until required degree of control is achieved.
- .2 Fence height as specified on Contract Drawings.
- .3 Position posts in such a manner that Fence structure remains naturally taut and placed or driven a minimum of 500 mm into ground. Posts to always be positioned downstream.
- .4 Where a 500 mm depth is impractical or impossible to adequately secure or to brace posts to prevent overturning of fence due to sediment loading.
- .5 Bury excess geotextile at bottom of silt fence minimum of 150 mm in trench located upstream such that no flow can pass under fence.
- .6 Splice subsequent lengths of barrier only at support post locations. Splice by wrapping geotextile fabric completely around each of two abutting support posts, as detailed on Contract Drawings, such that the gap between abutting posts is completely covered by both sections of fabric.

.2 Silt Barrier Fence Quantities:

- .1 Limit silt fence to handle area equivalent to maximum 100 m<sup>2</sup> per 3 m of fence.
- .2 Do not use where site slope is steeper than 3:1, and water flow rates exceed 0.03 m<sup>2</sup>/s per 3 m of fence.
- .3 Silt barrier to have efficiency > 75%. Employ successive, parallel fences to achieve required degree of control.

.3 Silt Fence Maintenance:

ENVIRONMENTAL PROTECTION

- .1 Maintain integrity of silt fences as long as necessary to contain sediment runoff. Inspect all temporary silt fences immediately after each rainfall and at least daily during prolonged rainfall. Immediately correct any deficiencies.
- .2 In addition, make daily review of location of silt fences in areas where construction activities have changed natural contours and drainage runoff to ensure that silt fences are properly located for effectiveness. Where deficiencies exist, install additional silt fences. Should silt fence become damaged or otherwise ineffective while barrier is still necessary, repair or replace promptly.
- .3 Remove sediment deposits when deposit reaches approximately one-third of height of silt fence or install second silt fence upslope.
- .4 Do not remove silt fence until Contract Administrator directs that it be removed.

1.3 Temporary Pest Controls NOT USED

1.4 Environmental Protection

- .1 Fires:
  - .1 Fires and burning of rubbish on site not permitted without approval of the Contract Administrator. All fires to conform to Provincial and Municipal regulations.
- .2 Site Clearing and Plant Protection:
  - .1 Protect trees and plants on site and adjacent properties where shown on Contract Drawings.
  - .2 Protect roots of designated trees to dripline during excavation and site grading to prevent disturbance or damage. Avoid unnecessary traffic, dumping and storage of materials over root zones.
  - .3 Minimize stripping of topsoil and vegetation.
  - .4 Restrict tree removal to areas indicated or designated by Contract Administrator.
- .3 Pollution Control:
  - .1 Maintain temporary erosion and pollution control features installed under this Contract.
  - .2 Control emissions from equipment and plant to local authorities emission requirements.
  - .3 Prevent sandblasting and other extraneous materials from contaminating air beyond application area, by providing temporary enclosures.
  - .4 Cover or wet down dry materials and rubbish to prevent blowing dust and debris. Provide dust control for temporary roads.

1.5 Temporary Storm Water Pollution Controls NOT USED

ENVIRONMENTAL PROTECTION

1.6	Payment	.1	Payment for all work performed under this Section will be incidental to payment for work described in other Sections unless shown otherwise in the Schedule of Quantities and Prices.
1.7	Inspection and Testing	.1	Refer to <u>General Conditions, Clause 4.12, Inspections.</u>
1.8	Clean Up	.1	At completion of construction phase or as directed by Contract Administrator, remove and dispose of any silt accumulations, dress area to give a pleasing appearance, and vegetate all bare areas as specified in Supplementary Specifications or as shown on Contract Drawings.
2.0	PRODUCTS		NOT USED
3.0	EXECUTION		NOT USED

**END OF SECTION 01 57 01**

- 1.0 GENERAL
- .1 Section 31.05.17 refers to those portions of the work that are unique to the supply and processing of aggregates. This section must be referenced to and interpreted simultaneously with all other sections pertinent to the works described herein.
- 1.1 Related Work
- .1 Section 31.05.17 includes specifications for aggregates and granular materials referred to in the following sections:
- .1 Shrub and Tree Preservation Section 31.11.41
  - .2 Excavating, Trenching and Backfilling Section 31.23.01
  - .3 Roadway Excavation, Embankment And Compaction Section 31.24.13
  - .4 Granular Base Section 32.11.23
  - .5 Granular Subbase Section 32.11.16.1
  - .6 Unit Paving Section 32.14.01
  - .7 Portland Cement Concrete Pavement Section 32.13.13
  - .8 Waterworks Section 33.11.01
  - .9 Storm Sewers Section 33.40.01
  - .10 Pipe Culverts Section 33.42.13
  - .11 Sanitary Sewers Section 33.30.01
  - .12 Sewage Force mains Section 33.34.01
- .2 Section 31.05.17 does not include specifications for aggregates to be incorporated into controlled density fill, hot-mix asphalt concrete paving, pavement crack filling, ready-mixed concrete or granular materials for landscaping purposes. These specifications are specified as follows:
- .1 Controlled Density Fill Section 31.23.23
  - .2 Hot-Mix Asphalt Concrete Paving Section 32.12.16
  - .3 Pavement Crack Cleaning and Filling Prior to Overlay Section 32.01.17.7
  - .4 Cast-in-Place Concrete Section 03.30.53
  - .5 Topsoil and Finish Grading Section 32.91.21
  - .6 Seeding Section 32.92.20
  - .7 Hydraulic Seeding Section 32.92.19
  - .8 Sodding Section 32.92.23
  - .9 Planting of Trees, Shrubs and Ground Covers Section 32.93.01



- 1.2 References**
- .1 The abbreviated standard specifications for testing, materials, fabrication and supply, referred to herein, are fully described in Section 01 42 00 – Reference Specifications – Site and Infrastructure.
- 1.3 Approvals**
- .1 Inform Contract Administrator of proposed source and provide samples or access for sampling at least 2 weeks prior to commencing production.
- .2 If materials from proposed source do not meet specified requirements, locate alternative source or demonstrate that material from source in question can be processed to meet specified requirements.
- .3 Should a change of material source be proposed during work, advise Contract Administrator 2 weeks in advance of proposed change to allow sampling and testing.
- .4 Acceptance of material does not preclude future rejection if it is subsequently found to lack uniformity, or if it fails to conform to requirements specified.
- 1.4 Measurement and Payment**
- .1 Payment for all work performed under in this Section will be included under payment for work requiring aggregates and granular materials in other Sections unless specifically shown otherwise as separate pay items.
- 1.5 Inspection and Testing**
- .1 Refer to General Conditions, Clause 4.12, Inspections.
- 2.0 PRODUCTS**
- 2.1 Materials - General**
- .1 Gravel to be composed of inert, durable material, reasonably uniform in quality and free from soft or disintegrated particles. In absence of satisfactory performance records over a five year period for particular source of material, soundness to be tested according to ASTM C88 or latest revised issue. Maximum weight average losses for coarse and fine aggregates to be 30% when magnesium sulphate is used after five cycles.
- .2 All crushed gravel when tested according to ASTM C136 and ASTM C117, or latest revised issue, to have a generally uniform gradation and conform to following gradation limits and 60% of the material passing each sieve must have one or more fractured faces. Determination of the amount of fractured material shall be in accordance with the Ministry of Transportation and Highways' Specification I-11, Fracture Count for Coarse Aggregate, Method "A", which determines fractured faces by count. The Plasticity Index for crushed gravel to not exceed 6.0.
- 2.2 Native Material**
- .1 To be any workable soil free of organic or foreign matter; any material obtained within limits of Contract may be deemed native material for purposes of payment if it is approved by the Contract Administrator. Native material is not acceptable if it is impracticable to control its water content or compact to specified density.

**2.3 Pit Run Gravel**

- .1 To be well graded granular material, substantially free from clay lumps, organic matter and other extraneous material, screened to remove all stones in excess of maximum diameter specified in material description (300 mm Pit Run Gravel, 200 mm Pit Run Gravel, 100 mm Pit Run Gravel). Material to compact to specified density and conform to following gradations:

Sieve Designation	Percent Passing		
(300 mm dia)			(100)
(200 mm dia)	---		(100)
(100 mm dia)	---		(100)
75 mm	---		100
50 mm	70	-	100
25 mm	50	-	100
4.75 mm	22	-	100
2.36 mm	10	-	85
0.075 mm	2	-	8

- .2 Recycled concrete free from contaminated and other extraneous material, conforming to the specified gradations may be used as pit run gravel.

**2.4 Pit Run Sand**

- .1 To be well graded pit run sand, free from organic materials and conform to following gradations:

Sieve Designation	Percent Passing		
12.5 mm			100
4.75 mm	35	-	100
2.36 mm	20	-	70
1.18 mm	13	-	50
0.600 mm	8	-	35
0.300 mm	5	-	25
0.150 mm	2	-	15
0.075 mm	0	-	6

**2.5 River Sand**

- .1 River sand to be free of organic material and conform to the following gradation:

Sieve Designation	Percent Passing
19mm	100
4.76mm	80 - 100
0.60mm	20 - 100
0.42mm	10 - 100
0.25mm	0 - 80
0.15mm	0 - 50
0.074mm	0 - 4

**2.6 Drain Rock**

- .1 To consist of clean round stone or crushed rock conforming to following gradations:

Sieve Designation	Percent Passing	
	Coarse	Fine (Torpedo Gravel)
25.0mm	100	
19.0mm	0 - 100	
9.5mm	0 - 5	100
4.75mm	0	50 - 100
2.36mm		10 - 35
1.18mm		5 - 15
0.600mm		0 - 8
0.300mm		0 - 5
0.150mm		0 - 2
0.075mm		0

- .2 Drain rock to be used only where specified on Standard Detail Drawings or Contract Drawings. Use of drain rock other than as specified requires approval of Contract Administrator after examination of soils against which drain rock will be placed.

- 2.7 Granular Pipe Bedding and Surround Material .1 Crushed or graded gravels: to conform to following gradations:

Sieve Designation	Percent Passing	
	Type 1*	Type 2*
25.0 mm	100	100
19.0 mm	90 - 100	90 - 100
12.5 mm	65 - 85	70 - 100
9.5 mm	50 - 75	
4.75 mm	25 - 50	40 - 70
2.36 mm	10 - 35	25 - 52
1.18 mm	6 - 26	15 - 38
0.600 mm	3 - 17	6 - 27
0.300 mm		3 - 20
0.075 mm	0 - 5	0 - 8

\*Type 1: *standard gradation*

\*Type 2: *to be used only in dry trench conditions and with Contract Administrator's prior approval*

Recycled concrete free from contaminated and other extraneous material, conforming to the Type 1 gradations, may be used as pipe bedding and surround material.

- .2 Other permissible materials: only where shown on Contract Drawings or directed by Contract Administrator shall drain rock, pit run sand, river sand or approved native material be used for bedding and pipe surround.

- 2.8 Select Granular Sub-base .1 To be well graded granular material, substantially free from lumps and organic matter, screened if required to conform to following gradations:

Sieve Designation	Percent Passing	
75 mm		100
25 mm	50	- 85
0.150 mm	0	- 15
0.075 mm	0	- 8

- 2.9 **Crushed Granular Sub-base** .1 To be 75 mm crushed gravel conforming to following gradations:

Sieve Designation	Percent Passing	
80 mm		100
75 mm		100
38 mm	60 -	100
25 mm	-	
19 mm	35 -	80
12.5 mm	-	
9.5 mm	26 -	60
4.75 mm	20 -	40
2.36 mm	15 -	30
1.18 mm	10 -	20
0.6 um	5 -	15
0.3 um	3 -	10
0.18 um	-	
0.15 um	-	
0.075 um	0 -	5

- 2.10 **Granular Base** .1 To be 19 mm crushed gravel conforming to following gradations:

Sieve Designation	Percent Passing	
19 mm		100
12.5 mm	75 -	100
9.5 mm	60 -	90
4.75 mm	40 -	70
2.36 mm	27 -	55
1.18 mm	16 -	42
0.600 mm	8 -	30
0.300 mm	5 -	20
0.075 mm	2 -	8

- .2 Where shown on the contract drawings or directed by the Contract Administrator, Type 2\_19 mm crushed gravel conforming to following gradations is permissible:

Sieve Designation	Type 2 Percent Passing		
25 mm			100
19 mm	80	-	100
9.5 mm	50	-	85
4.75 mm	35	-	70
2.36 mm	25	-	50
1.18 mm	15	-	35
0.300 mm	5	-	20
0.075 mm	0	-	5

**2.11 Recycled Aggregate Material**

- .1 Aggregates containing recycled material may be utilized if approved by the Contract Administrator. In addition to meeting all other conditions of this specification, recycled material should not reduce the quality of construction achievable with quarried materials. Recycled material should consist only of crushed portland cement concrete; other construction and demolition materials such as asphaltic pavements, bricks, plaster, etc. are not acceptable.

**2.12 Pit Fines, Overburden and Cyclone sand**

- .1 **Pit Fines:** Fine aggregate which is a by-product of gravel washing and screening, conforming to the following:

Sieve Designation	Percent Passing		
4.76 mm			100
0.42 mm	80	-	100
0.074 mm	0	-	4

- .2 **Cyclone Sand** Inorganic fine sand produced as a by-product of gravel processing and conforming to the following:

Sieve Designation	Percent Passing		
4.76 mm			100
0.42 mm	80	-	100
0.25 mm	50	-	100
0.15 mm	0	-	70
0.074 mm	0	-	20

- .3 **Overburden** Inorganic, silty, native material as a by-product of gravel mining and conforming to the following:

Sieve Designation	Percent Passing
150 .mm	100
76.00 mm	85 - 100
4.76 mm	45 - 100
0.42 mm	25 - 100
0.074 mm	20 - 60

**3.0 EXECUTION**

**3.1 Handling**

- .1 Handle and transport aggregates to avoid segregation, contamination and degradation
- .2 Do not use intermixed or contaminated materials. Remove and dispose rejected materials within 48 h of rejection.

**END OF SECTION 31 05 17**

EXCAVATING, TRENCHING AND BACKFILLING

- |   |     |  |
|---|-----|--|
| <b>1.0 GENERAL</b>                                | .1  | <u>Section 31 23 01</u> refers to those portions of the work that are unique to excavating, trenching and backfilling of underground utility installations and related structures. This section must be referenced to and interpreted simultaneously with all other sections pertinent to the works described herein. This section shall also refer to installation of pipe and conduit installed for telephone and cable television, gas and electrical services. |
| <b>1.1 Related Work</b>                           | .1  | Environmental Protection <span style="float: right;"><u>Section 01 57 01</u></span>  |
|   | .2  | Rock Removal <span style="float: right;"><u>Section 31 23 17</u></span>  |
|   | .3  | Controlled Density Fill <span style="float: right;"><u>Section 31 23 23</u></span>   |
|   | .4  | Aggregates and Granular Materials <span style="float: right;"><u>Section 31 05 17</u></span>   |
|   | .5  | Waterworks <span style="float: right;"><u>Section 33 11 01</u></span>  |
|   | .6  | Storm Sewers <span style="float: right;"><u>Section 33 40 01</u></span>  |
|   | .7  | Pipe Culverts <span style="float: right;"><u>Section 33 42 13</u></span>   |
|   | .8  | Manholes and Catchbasins <span style="float: right;"><u>Section 33 44 01</u></span>  |
|   | .9  | Sanitary Sewers <span style="float: right;"><u>Section 33 30 01</u></span>   |
|   | .10 | Sewage Force mains <span style="float: right;"><u>Section 33 34 01</u></span>  |
|   | .11 | Topsoil and Finish Grading <span style="float: right;"><u>Section 32 91 21</u></span>  |
| <b>1.2 References</b>                             | .1  | The abbreviated standard specifications for testing, materials, fabrication and supply, referred to herein, are fully described in <u>Section 01 42 00</u> – Reference Specifications – Site and Infrastructure.   |
| <b>1.3 Definitions</b>                            | .1  | Rock Excavation: As defined in <u>Section 31 23 17</u> - Rock Removal.   |
|   | .2  | Common Excavation: excavation of materials of whatever nature, which are not included under definitions of rock excavation including dense tills, hardpan, partially cemented materials, clay or frozen materials which can be ripped and excavated with heavy construction equipment.   |
|   | .3  | Over-excavation: excavation below design elevation of bottom of specified bedding, and including backfilling of resultant excavation with specified material, as authorized by Contract Administrator.   |
|   | .4  | Removals: removal and disposal at an approved location off-site of surface concrete structures and walks, curbs, gutters, manholes, catchbasins, pipes, culverts, endwalls, and any other structures on surface or underground specifically designated on Contract Drawings for removal. Removals to include backfilling of resultant excavation with specified material.  |
|   | .5  | Native Topsoil: to <u>Section 32 91 21</u> - Topsoil and Finish Grading.   |
| <b>1.4 Protection of Work Property and Public</b> | .1  | Comply with <u>General Conditions, Clause 4.3, Protection of Work, Property, and the Public.</u>   |
| <b>1.5 Safety Requirements</b>                    | .1  | Comply with <u>General Conditions, Clause 4.2, Safety.</u>   |



EXCAVATING, TRENCHING AND BACKFILLING

- .2 Design and install trench shoring in accordance with the regulations of the WorkSafe BC.
- 1.6 Blasting** .1 Ensure all blasting operations comply with Section 31.23.17 - Rock Removal.
- 1.7 Disposal** .1 Dispose of all surplus spoil from excavations on-site and/or off-site as shown on Contract Drawings or as specified in Contract Documents. Suitability of excavated material for use as native bedding or trench backfill will be governed by 2.0 of this Section. Dumping of spoil on private property will be permitted only upon written approval from property owner and provided all necessary permits and approvals have been obtained.
- 1.8 Limitations of Open Trench** .1 Excavate trenches only as far in advance of pipe laying operation as safety, traffic, and weather conditions permit and, in no case, to exceed 30 m. Before stopping work on last day of work before each weekend or holiday, completely backfill every trench. If circumstances do not permit complete backfilling of all trenches, adequately protect all open trenches or excavations with approved fencing or barricades and, where required, with flashing lights.
- 1.9 Permits and Approvals** .1 Comply with General Conditions, Clause 20, Laws, Notices, Permits and Fees.
- 1.10 Measurement and Payment**
- .1 With the exception of pay items specifically identified hereunder, payment for all other work performed under this Section will be included under payment for work involved in trenchwork as described in other Sections.
- .2 Additional payment for trench excavation by hand will only be made in addition to the work items involving trenchwork where excavation by machinery is not practicable and only under prior approval by Contract Administrator. Payment will be based on before and after excavation cross-section areas at sufficient equal intervals over the length of trench so excavated.
- .3 Payment for over-excavation including backfilling will only be made for over-excavation authorized by Contract Administrator. Payment will be based on before and after excavation cross-section areas at sufficient equal intervals over the length of over-excavation.
- .4 Payment for removal and disposal of disused pipes and headwalls encountered during trench excavation to specific disposal site will be in addition to trenchwork with no deduction of payment from such trenchwork. No payment will be made under this item for removal and disposal carried out as part of the operation for removal and disposal of excavated materials from trenchwork.
- .5 All costs incurred as a result of unauthorized excavation beyond neat lines or limits of excavation shown on Contract Drawings or Standard Detail Drawings including remedial backfilling will be to Contractor's cost.
- .6 Measurement for excavation of new channels and ditches will be based on before and after excavation cross-section areas at sufficient equal intervals over the entire length of the channels or ditches.
- .7 Payment for cleaning and deepening of existing channel or ditch will be made separately for each location or over sections with generally similar cross sections before and after cleaning.

EXCAVATING, TRENCHING AND BACKFILLING

- .8 Payment for swales in boulevard or other locations as shown on Contract Drawings includes excavation, grading, addition and removal of native materials as required to form swales to suit local conditions and to provide proper drainage.
- 1.11 Inspection and Testing** .1 Refer to General Conditions, Clause 4.12, Inspections.
- 2.0 PRODUCTS**
- 2.1 General** .1 Unless shown otherwise on Contract Drawings the materials specified in 2.2 of this Section are approved for their respective uses.
- 2.2 Use of Specified Materials** .1 Backfill for over-excavated trench or structure excavations to be one of the following:
- .1 Granular pipe bedding and surround material.
  - .2 Pit run sand.
  - .3 Drain rock (only where approved by Contract Administrator).
  - .4 Concrete.
  - .5 Controlled density fill.
- .2 Pipe bedding and surround: see applicable Sections:
- .1 Waterworks Section 33 11 01
  - .2 Storm Sewers Section 33 40 01
  - .3 Pipe Culverts Section 33 42 13
  - .4 Sanitary Sewers Section 33 30 01
  - .5 Sewage Force mains Section 33 34 01
  - .6 Roadway Lighting Section 26 56 01
- .3 Trench and excavation backfill to be one of the following:
- .1 Approved native material.
  - .2 Pit run gravel.
  - .3 Pit run sand.
  - .4 Controlled density fill.
- .4 Surface treatment to be:
- .1 Restoration to match existing conditions.
  - .2 Subgrade, subbase and base for works described in other Sections.
  - .3 Topsoil, grass, sod or requirements for landscaping works described in other Sections.
- 2.3 Materials** .1 Refer to Section 31 05 17- Aggregates and Granular Materials for specifications for approved granular materials and approved native material.

- .2 Other granular materials: granular materials approved for roadwork (subbase, base,) also acceptable for trench backfill subject to approval of Contract Administrator.
- .3 Concrete: to Section 03 30 53 – Cast-In-Place Concrete, to be minimum 20 MPa.
- .4 Controlled Density Fill: to Section 31 23 23 – Controlled Density Fill, to be maximum 0.5 MPa.

### 3.0 EXECUTION

#### 3.1 Site Preparation

- .1 Remove all brush, weeds, grasses and accumulated debris to an approved offsite location.
- .2 Cut pavement or sidewalk neatly along limits of proposed excavation as shown on Standard Detail Drawing G4 in order that surface may break evenly and cleanly. Cut beyond limits shown only if authorized by Contract Administrator.
- .3 Where trench passes through lawn, neatly cut and remove sod before trench excavation. Save sod for replacement upon backfilling trench.
- .4 Strip topsoil after area has been cleared and stockpile in locations as shown on Contract Drawings. Stockpile height not to exceed 2 m. Avoid mixing topsoil with subsoil. Dispose of unused topsoil as specified. Do not handle topsoil while in wet or frozen condition or in any manner in which soil structure is adversely affected.

#### 3.2 Stockpiling

- .1 Stockpile fill materials in areas designated by Contract Administrator. Stockpile granular materials in manner to prevent segregation.

#### 3.3 Excavation

- .1 Connection to existing mains:
  - .1 Prior to or at commencement of construction, check existing main for line and elevation at point of connection. If found different from Contract Drawings report such difference to Contract Administrator immediately. Comply with General Conditions, Clause 4.5, Errors, Inconsistencies or Omissions in the Contract Documents.
  - .2 Connections to existing waterworks systems to be made by Municipal crews unless shown otherwise on Contract Drawings. Make all necessary arrangements with Contract Administrator to schedule work to prevent construction delays.
  - .3 Connections to existing sanitary and storm sewer systems to be made by Contractor unless shown otherwise on Contract Drawings. Notify Contract Administrator minimum 48h in advance of scheduled connection. Make connection in presence of Contract Administrator.
  - .4 To prevent damage to existing utilities, excavate last 300 mm over utility by hand.

- .2 Surface drainage:
  - .1 Provide suitable temporary ditches or other approved means of handling drainage prior to excavation and during construction to protect construction area and adjacent and other affected properties. Provide siltation controls to protect natural watercourses or existing municipal drainage facilities.
  - .2 Comply with Section 01 57 01 - Environmental Protection.
- .3 Excavation to grade: excavate trenches to allow pipe to be laid to alignment and grades required with allowance for specified pipe bedding.
- .4 Excavation below grade: when bottom of excavated trench at subgrade is unstable and in opinion of Contract Administrator, cannot adequately support pipe, install pipe using concrete bedding as shown on Contract Drawings or over-excavate trench to suitable subgrade or as directed by Contract Administrator. Backfill over-excavation with specified materials and compact to minimum 95% Modified Proctor density in compliance with ASTM D1557. Use drain rock backfill only if authorized by Contract Administrator.
- .5 Trench width: excavate trench to section and dimensions shown on Standard Detail Drawing G4. If width exceeds maximum allowable, Contractor may be required to demonstrate that specified pipe is still adequate or provide pipe with approved higher strength class or provide approved higher class of bedding. All additional requirements as a result of excessive trench width to be to Contractor's cost.
- .6 Hand excavation: excavate by hand if necessary to preserve or minimize damage to existing trees, shrubs, buildings and all similar existing features or facilities.
- .7 Trench bottom conditions: remove disturbed or softened material from trench bottom before placing bedding material. Maintain trench free from water and soft materials during placement of pipe bedding, pipe installation and trench backfill to ensure proper compaction of granular materials.
- .8 Trench drainage:
  - .1 During pipe laying, jointing, bedding and backfilling, keep trench free of water by pumping or other appropriate means. Provide pumps and dewatering equipment and take precautions to prevent any damage to adjoining buildings, structures, roads or land from prolonged or excessive pumping by installing shoring, sheeting or other supportive measures. Discharge water from excavations in such a manner as not to cause nuisance, injury, loss or damage. Contractor to be responsible for any claims or actions arising from such discharge of water.
  - .2 Keep bell holes free from water during jointing. Diverting trench water through newly laid system not allowed, unless authorized by Contract Administrator.
- .9 Disposal of surplus soil: dispose of surplus excavated soil off-site. Side-casting not allowed in restricted areas where, in opinion of Contract Administrator, side-casting would create interference with flow of traffic. In such case, temporarily store materials or dispose to an approved site. Provisions of Provincial Contaminated Sites Legislation must be met prior to disposal of soil offsite.

- .10 Native Backfill: Where native backfill is approved for re-use, and side-casting not allowed, transport approved material to other locations where material is required or temporarily store at approved site. Protect stored material from contamination, segregation and weather.
- .11 Rock Excavation: Rock excavation to Section 31 23 17 - Rock Removal.
- .12 Maintain roads used for transporting materials and equipment in clean condition. Clean, flush and/or sweep on daily basis and more frequently if directed by Contract Administrator.

### 3.4 Pipe Installation

- .1 Related work: Pipe installation, including bedding, pipe laying, and granular surround to be in accordance with following sections:
  - .1 Waterworks Section 33 11 01
  - .2 Storm Sewers Section 33 40 01
  - .3 Pipe Culverts Section 33 42 13
  - .4 Manholes and Catchbasins Section 33 44 01
  - .5 Sanitary Sewers Section 33 30 01
  - .6 Sewage Force mains Section 33 34 01
- .2 Concrete encasement or protection: where specified or required by Contract Administrator provide concrete encasement of pipe or slab protection as shown on Standard Detail Drawings G6 and G7. Do not place backfill material until concrete has taken its initial set and in no case less than 1 h.
- .3 Anchor blocks: where specified or required by Contract Administrator provide anchor blocks as shown on Standard Detail Drawing G8. Ensure all concrete anchor blocks at least 150 mm into undisturbed ground on bottom and sides of trench. Concrete strength as specified on Standard Detail Drawing G8.

### 3.5 Backfill and Compaction

- .1 General: Place backfill carefully in trench to prevent damage to installed pipe.
- .2 Shoring: during backfill and compaction of trench, remove shoring in such a manner as to allow proper compaction and to prevent trench walls from collapsing. Remove all bracing and/or shoring from trench.
- .3 Backfill Materials:
  - .1 Boulevards and easements: for trenches in boulevards, easements or other areas not subjected to vehicle loading, and outside of ditchlines, backfill with approved native material except as shown otherwise on Contract Drawings.
  - .2 Roads, driveways and shoulders: for trenches in paved or gravelled roads, driveways, shoulders or other areas subjected to vehicle loading, backfill with imported granular material or approved native material as specified on Contract Drawings.  
Road shoulder is that portion of right-of-way between travelled portion of road, either paved or gravelled, and road ditch. Where no ditch exists, ensure shoulder width minimum of 1.5 m.

- .3 Ditches: backfill with imported granular material or approved native material as specified on Contract Drawings.
  - .4 Contract Administrator may permit native material for all above uses subject to suitability of native material for said use. Native material approved for re-use to be handled, stockpiled and compacted using construction method appropriate for given moisture content and weather conditions.
  - .5 Controlled Density Fill: Place controlled density fill in accordance with Section 31 23 23 - Controlled Density Fill.
  - .4 Compaction: place backfill and compact to following Modified Proctor densities in compliance with ASTM D1557. (All following references to density imply compliance with ASTM D1557).
    - .1 Boulevards and easements to minimum 90%.
    - .2 Roads, driveways, shoulders, re-shaped ditches and sidewalks to minimum 95%.
    - .3 Use caution in pipe zone to ensure no damage to pipe.
- 3.6 Surface Restoration**
- .1 General:
    - .1 Restore all disturbed surfaces to condition at least equal to that which existed prior to construction.
    - .2 Make good any damage to adjacent lands or improvements.
    - .3 Resolve all reasonable claims arising from Contractor's actions and obtain written releases from land owners following final restoration.
  - .2 Boulevards and easements:
    - .1 Restore surface to minimum 100 mm depth.
    - .2 Restore unimproved surfaces with material equal to that removed at surface.
    - .3 Restore gardens with approved topsoil or bark mulch to match existing conditions.
    - .4 Restore lawns with approved topsoil and seed or sod to match existing lawn.
    - .5 Restore gravel surfaces with matching granular materials.
    - .6 Complete final restoration immediately upon completion of trench backfilling.
  - .3 Gravelled roads and driveways:
    - .1 Restore surface with minimum 75 mm to 100 mm thick lift of 19 mm granular road base material.
    - .2 Compact to minimum 95% Modified Proctor density.
    - .3 Complete final restoration immediately upon completion of trench backfilling.

- .4 Ditches:
  - .1 Re-shape ditches to specified lines, grades and sections and restore surface with minimum 300 mm of specified material to ensure stability of ditch slopes and bottom.
  - .2 Compact to minimum 95% Modified Proctor density.
  - .3 Complete final restoration immediately upon completion of trench backfilling.
- .5 Base preparation for paved surfaces:
  - .1 Paved surfaces to include all paved roads, driveways, sidewalks and parking areas.
  - .2 If native material used for backfill provide specified depth of subbase as shown on Contract Drawings.
- .6 Temporary pavement patching:
  - .1 Patch arterial and collector roads same day excavation made.
  - .2 Patch all other roads within 24 h of closing trench.
  - .3 Patching material to be hot-mix asphalt on all roads unless specified otherwise, cold-mix may be used only where directed by Contract Administrator.
  - .4 Place temporary pavement to 50 mm minimum thickness.
  - .5 Maintain temporary patch to ensure safe and smooth conditions.
- .7 Permanent pavement restoration:
  - .1 Install permanent pavement within 30 days of placement of temporary patch or sooner where directed by Contract Administrator.
  - .2 Remove broken or cracked pavement as well as any paved areas showing settlement and dispose off-site.
  - .3 Remove underlying granular road base material as required to permit placement of specified thickness of permanent pavement. Ensure remaining base meets specified thickness. Material and placement of road base to Section 32.11.23 – Granular Base.
  - .4 Compact base to minimum 95% Modified Proctor density.
  - .5 Restore pavement as detailed on Standard Detail Drawing G5. If thickness of existing pavement permits, grind 35 mm depth along edge of pavement. Dry if necessary and paint clean, dry edge with asphalt emulsion (tack coat).
  - .6 Place and compact hot-mix pavement material to minimum thickness as shown on Standard Detail Drawing G5.
  - .7 Material and placement of hot-mix pavement to Section 32.12.16 - Hot-Mix Asphalt Concrete Paving.
  - .8 Restore surface to smooth condition and match with grade of adjacent pavement.

EXCAVATING, TRENCHING AND BACKFILLING

- .9 Where shown on Contract Drawings place hot-mix overlay over restored trench section and adjacent pavement to Section 32.12.16 - Hot-Mix Asphalt Concrete Paving.
- .10 Maintain restored pavements in complete repair during Maintenance Period. Effect repairs within 14 days from receipt of written notice from Contract Administrator or immediately if so directed by Contract Administrator if dangerous situation exists.



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**END OF SECTION 31 23 01**

ROCK REMOVAL

- |  |    |   |
|--|----|---|
| <b>1.0 GENERAL</b>                     | .1 | Section 31 23 17 refers to those portions of the work that require rock removal. This section must be referenced to and interpreted simultaneously with all other sections pertinent to the works described herein.   |
| <b>1.1 Related Work</b>                | .1 | Clearing and Grubbing <span style="float: right;">Section 31 11 01</span>   |
|  | .2 | Excavating, Trenching and Backfilling <span style="float: right;">Section 31 23 01</span>   |
|  | .3 | Roadway Excavation, Embankment and Compaction <span style="float: right;">Section 31 24 13</span>   |
| <b>1.2 References</b>                  | .1 | The abbreviated standard specifications for testing, materials, fabrication and supply, referred to herein, are fully described in Section 01 42 00 – Reference Specifications – Site and Infrastructure.   |
| <b>1.3 Definitions</b>                 | .1 | Rock is defined as all solid rock in form of bedrock, masses, ledges, seams or layers and includes igneous rock of any sort, conglomerate, sandstone or shale, that requires breaking by continuous drilling and blasting before excavation and removal. Rock also includes rocks having individual volumes in excess of 1.0 m <sup>3</sup> , removed by blasting or other means. |
|  | .2 | Trench rock removal is defined as rock to be removed during excavation of utility trenches generally as shown on Standard Detail Drawing G4.  |
|  | .3 | Mass rock removal is defined as rock to be removed during roadway excavation, site grading, or other excavation work, generally, but not necessarily, in larger quantities, and not within the more confining limits of excavation specified for trench excavation.   |
|  | .4 | Dense tills, hardpan, partially cemented materials, clay or frozen materials which do not require breaking by continuous drilling and blasting before excavation and removal <u>are not</u> classified as rock.   |
| <b>1.4 Qualifications</b>              | .1 | Retain licensed explosives blaster holding valid Blasters Certificate to supervise and program blasting work, and to determine precautions, preparation and operations techniques.  |
| <b>1.5 Blasting Operation Proposal</b> | .1 | Submit to Contract Administrator for approval, written proposal of operations for removal of rock by blasting.  |
|  | .2 | Indicate proposed method of carrying out work. Include details on protective measures, time of blasting and other pertinent details.  |
|  | .3 | No blasting to proceed without written approval of Contract Administrator.  |
| <b>1.6 Measurement and Payment</b>     | .1 | Unauthorized rock removed, i.e. rock removed prior to examination and measurement by Contract Administrator, will not be classified as rock excavation. Rock removal exceeding limits shown on Contract Drawings, where so directed and authorized in writing by Contract Administrator, will be paid in accordance with provisions under this Section.                           |
|  | .2 | No payment will be made for removal of rock, including all subsequent remedial backfilling, in excess of limit shown on Contract Drawings unless authorized by Contract Administrator.  |

ROCK REMOVAL

- .3 Payment for rock removal by blasting includes all necessary drilling, vibration monitoring and control to limits specified and all warning and protective measures required to ensure safe blasting. Payment will be made at the respective unit prices bid for trench rock and mass rock.  
Measurement for volume removed from solid rock masses will be calculated from cross-sections of original rock surface and design subgrade lines for excavation. Where design subgrade lines are less than 300 mm below original rock surface, actual volumes removed will be measured up to a maximum of 300 mm below original rock surface.
  - .4 Payment for removal of individual boulders and rock will not be made for boulders and rock fragments which can be lifted by equipment available on site. Such boulders and rock fragments will be paid for under common excavation. Individual boulders and rock fragments larger than the above payment limit will be treated as mass rock.  
Volume of boulders and rock fragments will be determined by measuring three maximum mutually perpendicular dimensions with volume to be product of these three dimensions.
  - .5 Measurement for rock removal where blasting is specifically prohibited will be made as specified under 1.6.3 of this Section.
- 1.7 **Seismic Survey and Monitoring**
- .1 Contract Administrator will arrange for assessment of adjacent buildings and structures to determine existing conditions and will provide building and structure owners with proposed blasting procedures and copies of assessment reports and seismic recording operations.
  - .2 Cost of seismic survey and monitoring reports will be paid by Owner.
- 1.8 **Inspection and Testing**
- .1 Refer to General Conditions, Clause 4.12, Inspections.
- 1.9 **Protection of Work, Property and Public**
- .1 Comply with General Conditions, Clause 4.3, Protection of Work, Property, and the Public.
- 2.0 **PRODUCTS** NOT USED
- 3.0 **EXECUTION**
- 3.1 **Blasting and Vibration Control**
- .1 Complete all blasting before any structural elements are installed within 15 m from blast holes.
  - .2 Minimize ground vibrations which may damage structures or shatter or damage rock mass to remain.
  - .3 Blasting not permitted within distance of 30 m of concrete or grout less than 24 hours after pouring.
  - .4 Maintain complete and accurate record of all drilling and blasting operations. Submit records to Contract Administrator at end of each shift.
- 3.2 **Rock Removal**
- .1 Strip rock of all earth.
  - .2 Notify Contract Administrator within reasonable time to enable Contract Administrator to obtain necessary measurements.

- .3 Do blasting operations in accordance with municipal bylaws.
- .4 Remove rock to alignments, profiles, and cross sections as shown on Contract Drawings.
- .5 Locations where explosive blasting is not permitted, if applicable, are shown on Contract Drawings.
- .6 Use methods, techniques and procedures for control of all factors affecting operations in order to produce smooth and sound peripheral surfaces of all completed excavations, to minimize overbreak, and to avoid damage to adjacent structures.
- .7 Excavate trenches in accordance with Section 31 23 01 - Excavating, Trenching and Backfilling and to section shown on Standard Detail Drawing G4.
- .8 Excavate rock for concrete walls, columns and footings to horizontal surfaces not exceeding slope shown on Contract Drawings. Scale, pressure wash and broom clean rock surfaces to assist concrete bond.
- .9 Except as specified otherwise or as directed by Contract Administrator employ pre-shearing, cushion blasting or other smooth wall drilling and blasting techniques to achieve final excavation surfaces.
- .10 Remove boulders and fragments which may slide or roll into excavated areas.
- .11 Correct unauthorized rock removal at no extra cost, in accordance with backfilling requirements specified in Section 31 23 01 - Excavating, Trenching and Backfilling.

**3.3 Rock Disposal**

- .1 Dispose of surplus removed rock at an approved location off-site.

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**END OF SECTION 31 23 17**

**Robson Valley Recreation Centre  
2017 Heat Recovery Connection to Community Centre – Mechanical Systems  
Project 3127603**

**1. INTENT**

- 1.1. Intent of this specification is to obtain an offer to perform work for Robson Valley Recreation Centre heat recovery upgrade located at 461 Columbia St., McBride, British Columbia for a Stipulated Price contract, in accordance with Contract Documents. Perform work as described in sections 2 to 8 of this specification.
- 1.2. Visit project site prior to submitting bid.
- 1.3. Owner reserves right to reject a proposed contractor for a reasonable cause.
- 1.4. Construct work in stages to accommodate owner's continued use of the premises during construction.
- 1.5. Coordinate progress schedule and coordinate with owner during construction.
- 1.6. Maintain fire access and control at all times.
- 1.7. Coordinate use of premises under direction of owner.
- 1.8. Obtain and pay for use of additional storage or work areas if required under this contract.

**2. DRAWINGS**

- 2.1. 3127603M1  
3127603M2

**3. QUALITY ASSURANCE**

- 3.1. All work and materials to be in conformance with all applicable CSA codes, ASME standards, ASTM standards, Provincial and Local Inspection Department Regulations, and Authorities having jurisdiction.
- 3.2. Piping and valve materials shall be constructed to ASTM & ANSI Standards.

- 3.3. Contractor to give all notices, obtain all permits, and pay all fees in order that the work herein specified may be carried out.
- 3.4. The contractor will employ and have on-site at all times qualified journeyman installers and apprentices versed in the proper installation of mechanical piping systems.
- 3.5. The contractor must have a current Canadian Federation of Construction Safety Associations COR (certificate of recognition). Submit a copy of COR certificate with tender submission.
- 3.6. The contractor must have a minimum of five (5) years of recognizable experience performing similar work on mechanical systems in the Province of British Columbia.
- 3.7. Include with the tender submission a list of three reference sites with contact information where similar work was performed.
- 3.8. Contractor to be responsible for daily clean-up up of debris and maintenance of a safe work area.
- 3.9. Contractor is responsible for all craning and lift equipment required.
- 3.10. If any construction equipment must be driven on the ice surfaces, obtain prior permission from the owner. No oil leakage onto the ice surfaces is permitted. Any oil leakage clean up costs will be charged to the contractor.
- 3.11. The contractor prior to installation shall complete necessary installation permits as required with the authorities having jurisdiction.
- 3.12. Hazardous or dangerous goods and materials required by this contract will be stored and utilized in a manner approved by the Owner notwithstanding the provision of WHIMS and any dangerous goods legislation.
- 3.13. The contractor shall submit to the owner a complete set of shop drawings for approval prior to fabrication or installation of any equipment.
- 3.14. Furnish a written guarantee stating that all work executed in this contract will be free from defective workmanship and materials for a period of one (1) year from the date of acceptance by the owner. The Contractor shall, at his own expense, repair and replace any work which fails or becomes defective during the term of the guarantee/warranty, providing such work is not due to improper usage. The period of guarantee specified shall not in any way supplant any other guarantees of a longer period but shall be binding on work not otherwise covered.

#### **4. WORKMANSHIP**

- 4.1. Workmanship shall be of a high standard throughout and shall be a minimum of the current trade practices for industrial refrigeration installations in similar facilities.
- 4.2. Install and test all equipment and material in accordance with the manufacturer's recommendations.
- 4.3. Pressure test all piping according an agreed upon test procedure. Provide a witnessed pressure test report to the owner.
- 4.4. Any materials or work not in accordance with the design drawings or specification shall be removed, replaced, and reinstalled to the satisfaction of the engineer.
- 4.5. All pipe shall be stored with shipping plugs to prevent contamination.
- 4.6. Exposed piping shall run parallel or perpendicular to the building lines.
- 4.7. Any alternate materials must be submitted in writing prior to submission of tender.

#### **5. AS-BUILTS & MANUALS**

- 5.1. Provide two (2) copies of redlined as-built flow diagrams to the engineer.
- 5.2. Provide (2) copies of installation, operation, and maintenance manuals for the equipment installed in this contract. The IOM shall include manufacturer product data, shop drawings, installation drawings, maintenance schedule recommendations, warranty certificate, and MSDS information. The IOM shall be contained in a new three-ring binder.

#### **6. EQUIPMENT DESCRIPTION**

- 6.1. Mechanical piping to be seamless hard drawn copper tube type L or K ASTM B88, or steel pipe ASTM A53B Schedule 40 pipe ERW.
- 6.2. Copper tubing may use soldered fittings, wrought copper or brass, up to 1-5/8" OD. 2-1/8" OD and up may use grooved fittings, Anvil Gruvlok, Victaulic, or approved equal.
- 6.3. Steel pipe fittings up to 1-1/2" NPS shall be screwed, 150# malleable iron acceptable.



- 6.4. Steel pipe system fittings 2" NPS and up shall be grooved cast iron fittings or butt-weld SCH40 SA234 Gr. WPB wrought steel fittings.
- 6.5. Viega Press fittings and valves, Apollo Press fittings and valves, or pre-approved equal shall be acceptable for steel or copper piping systems in all sizes provided by the respective manufacturer.
- 6.6. Grooved steel pipe fittings shall be Anvil Gruvlok, Victulic, or approved equal.
- 6.7. ANSI pattern flanges shall be forged steel, 150#, SA105, raised face, weld neck, grooved, slip on, or threaded type.
- 6.8. Provide fastenings, supports, and support channels as required for all piping and equipment. Utilize trapeze hangers where applicable. Single pipes shall be suspended with clevis type hangers. Provide anchors, guides, expansion joints, expansion loops, as required.
- 6.9. Design piping system appropriately for the design working pressure and temperatures shown on the drawing. Allow adequate flexibility for stresses due to thermal expansion, wind loads, pipe weight, and seismic loads, as required.
- 6.10. Install linear expansion joints or expansion loops as required by the geometry or temperature conditions of the piping system.
- 6.11. Valves up to 1-1/2" NPS shall be full port ball type, bronze body, hard chrome ball, Teflon seats, level handle. Threaded or grooved end as applicable. Crane, Kitz, Red & White, or approved equal.
- 6.12. Valves 2" NPS and up shall be butterfly type, cast iron body, stainless or aluminum bronze disc, EPDM seat, lever handle. Crane, Keystone, Bray, Challenger, or approved equal.
- 6.13. Circuit balancing valves shall be SA Armstrong CBV. Threaded or grooved end as applicable.
- 6.14. Auto air vents shall be SA Armstrong #67 or approved equal.
- 6.15. Provide corrosion protection by painting for any exposed carbon steel piping installed outdoors as required.
- 6.16. Insulate the mechanical piping system where exposed to outdoor ambient temperatures. Insulation located outdoors shall be 1" ITW Trymer 2000XP with 20 mil aluminum protective jacket. Provide galvanized insulation support shields at pipe

support locations.

- 6.17. Provide permanent pipe labelling as required. Pipe markers shall be placed at 20'-0" intervals, and at each change in pipe direction or branch connection.
- 6.18. Provide piping unions or flanges as required to allow equipment such as fan-coils, strainers, heat exchangers, controls valves, and other equipment to be effectively serviced or replaced if required.
- 6.19. Provide (1) fresh air pre-heat coil to serve AHU-1 fresh air intake. Finned coil shall be 5/8" OD copper tube, aluminum fin, and galvanized coil support frame with duct flanges. Maximum fin spacing shall be 10 fins per inch. Coil shall be designed to pre-heat 2,000 CFM of outside fresh air from -30°F to 70°F. Glycol flow shall be 16 USGPM at 95°F entering and 65°F leaving temperature. Depth of coil not to exceed 5 rows deep and cause more than 0.25" WG air side pressure drop at 2,000CFM air flow. Coil glycol connections to be male pipe threads.
- 6.20. Provide (1) summer filter rack in the ductwork on the intake side of the new pre-heat coil. Provide initial set of summer filters and one spare set for owner.
- 6.21. Provide (1) new Delta Controls DAC Ethernet application controller in the community hall mechanical room. Controller shall be installed inside of a NEMA 1 CSA panel enclosure and include all required control transformers and relays necessary for complete and functional control of the pre-heat coil and motorized control valve.
- 6.22. Install (1) new CAT6 Ethernet cable from the new DAC controller to the existing ice plant DDC Ethernet switch to allow for integration of the pre-heat control strategy into the ice plant DDC system. Communication cable to be installed in buried conduit (conduit and trench by others). Install sensors as required on the drawings.

## **7. EXECUTION**

- 7.1. Install a complete hydronic piping system as shown on the drawings. Connect glycol piping from existing tie-in valves in the curling club to the buried piping, and from the buried piping to the air pre-heat coil in the Community Centre mechanical room.
- 7.2. Provide all required isolation and control valves to provide a complete and functional hydronic air pre-heat system.
- 7.3. Mount (1) pre-heat finned coil in the fresh air intake ductwork. Ensure coil is reasonably accessible for cleaning. Provide all ductwork components and fabrication as required to complete installation and re-seal ductwork joints with mastic sealant.

- 7.4. Mount (1) summer filter rack in the fresh air intake ductwork. Ensure sufficient clearance so that filters can be installed and removed.
- 7.5. Coordinate final connection to buried piping glycol supply and return lines. Buried piping loop pump by others.
- 7.6. Install and wire (1) DDC controller to air temperature sensors and control valve as required. Connect DDC controller to ice plant DDC system.
- 7.7. Add a control sequence for the fresh air pre-heat sequence to the DDC system. To the existing HMI graphics, add (1) new control screen. The operator shall be able to make adjustment to the air temperature set-point as required and view the current valve position command. If either the outdoor air exceeds 68°F or both ice plant compressors are off, the valve shall be fully open B to AB. When either one or both ice plant compressors are on, and the outdoor ambient is less than 68°F, the control sequence shall modulate the three way control valve to maintain 70°F supply air temperature.
- 7.8. Provide adequate piping support, restraint, and flexibility for piping system.
- 7.9. Pressure test piping system for 24 hours with water to 50 psig. Check for leaks and repair. Provide a signed pressure test report, witnessed by the owner. Provide 48 hours' notice before pressure to owner and engineer.
- 7.10. Completely flush piping system with clean city water and drain.
- 7.11. Top-up existing glycol system, as required to maintain expansion tank pressure, with 40wt% ethylene glycol mix and corrosion inhibitor to glycol manufacturer's recommendations. Provide a complete glycol chemistry report including freeze point, hardness, pH, suspended solids, and inhibitor level after 1 month operation.
- 7.12. Balance glycol flow to the pre-heat coil with a differential pressure manometer. Provide a balance report for the pre-heat coil.

## **8. SUBMITTALS**

- 8.1. Submit shop drawings and product data to owner prior to commencing work.
- 8.2. Indicate the following: valves, pipe material, fittings, coils, corrosion inhibitor.

**Robson Valley Recreation Centre  
2017 Heat Recovery Connection to Community Centre – Buried Piping  
Project 3127603**

**1. INTENT**

- 1.1. Intent of this specification is to obtain an offer to perform work for Robson Valley Recreation Centre heat recovery upgrade located at 461 Columbia St., McBride, British Columbia for a Stipulated Price contract, in accordance with Contract Documents.
- 1.2. Perform work as described in sections 2 to 5 of this specification.
- 1.3. Visit project site before submitting bid.
- 1.4. Owner reserves right to reject a proposed contractor for a reasonable cause.
- 1.5. Construct work in stages to accommodate owner's continued use of the premises during construction.
- 1.6. Coordinate progress schedule and coordinate with owner during construction.
- 1.7. Maintain fire access and control at all times.
- 1.8. Coordinate use of premises under direction of owner.
- 1.9. Obtain and pay for use of additional storage or work areas if required under this contract.

**2. QUALITY ASSURANCE**

- 2.1. Contractor to give all notices, obtain all permits, and pay all fees in order that the work herein specified may be carried out.
- 2.2. Contractor must supply all fencing, barricades, and security as required to ensure worksite is safe to the public after hours and during construction.
- 2.3. Polyethylene piping joints and fittings shall be fusion welded construction. Installers shall be qualified in the use of fusion welded HDPE pipe installation as required.
- 2.4. Furnish a written guarantee stating that all work executed in this contract will be free from defective workmanship and materials for a period of one (1) year from the date of acceptance by the owner. The Contractor shall, at his own expense, repair and replace any work which fails or becomes defective during the term of the guarantee/warranty, providing such work is not due to improper usage. The period of guarantee specified

shall not in any way supplant any other guarantees of a longer period but shall be binding on work not otherwise covered.

### **3. DRAWINGS**

- 3.1. 3127603M1  
3127603M2  
MMCD DRAWING G4

### **4. EXECUTION**

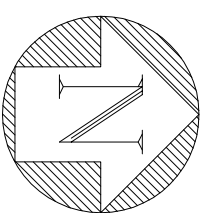
- 4.1. All trenching work shall be in accordance with Master Municipal Specification sections:
  - 01 57 01 – Environmental Protection
  - 31 05 17 – Aggregates and Granular Materials
  - 31 23 01 – Excavating, Trenching, and Backfilling
  - 31 23 17 – Rock Removal
- 4.2. Provide a utility trench as shown on the drawings.
- 4.3. Trench to link to penetrations through existing walls in the Robson Valley Recreation Centre and the Robson Valley Community Centre.
- 4.4. Provide any required survey services to locate trench.
- 4.5. Coordinate schedule with owner and mechanical contractor.
- 4.6. Locate all existing utilities as required, mark, and verify with the Regional District of Fraser-Fort George.
- 4.7. Verify trench routing with the Regional District of Fraser-Fort George prior to digging.
- 4.8. Provide granular fill base for piping in trench. Compact to 95% SD.
- 4.9. Install two (2) HDPE polyethylene glycol utility lines. Pipes shall be 2" NPS, PE3408/PE3608, SDR11 minimum wall thickness. Pipes shall be pre-insulated with 1" thick urethane insulation and include factory supplied insulation joint kits. Outside jacket of insulation shall be HDPE and suitable for direct burial as directed by the insulation manufacturer.
- 4.10. Pipes shall be minimum 1.5m below existing grade. Contractor is to verify local soil conditions and frost penetration prior to pipe burial.

- 4.11. Install flexible piping connectors at each location where the buried piping rises above grade to account for any movement of the ground relative to the structures. Connectors to be Colton Industries model PCSSF or equal.
- 4.12. Install (1) 1" NPS CSA 22.2 211.2 rigid PVC electrical conduit alongside mechanical piping. Include sweeps, transitions and fittings to terminate conduit run inside the respective building adjacent to the mechanical piping terminations. Install a pull string in the conduit for future use by the mechanical contractor.
- 4.13. Install blind flanges on piping or isolate with valves. Pressure test with water to 50psig for 48 hours prior to backfilling. Pressure test to be witnessed by owner.
- 4.14. Coordinate location of pipe penetrations into buildings on site with owner and mechanical contractor.
- 4.15. Provide backfill and compaction as required. Provide results of compaction test to the owner.
- 4.16. Restore grade surface to match existing.
- 4.17. Drain pipes and flush with clean water. Provide flushing report to owner.
- 4.18. Coordinate final fill with ethylene glycol heat transfer fluid with the mechanical contractor. If there is any risk of ambient temperatures falling below freezing the piping system must be emptied of water.

## **5. COMPLETION**

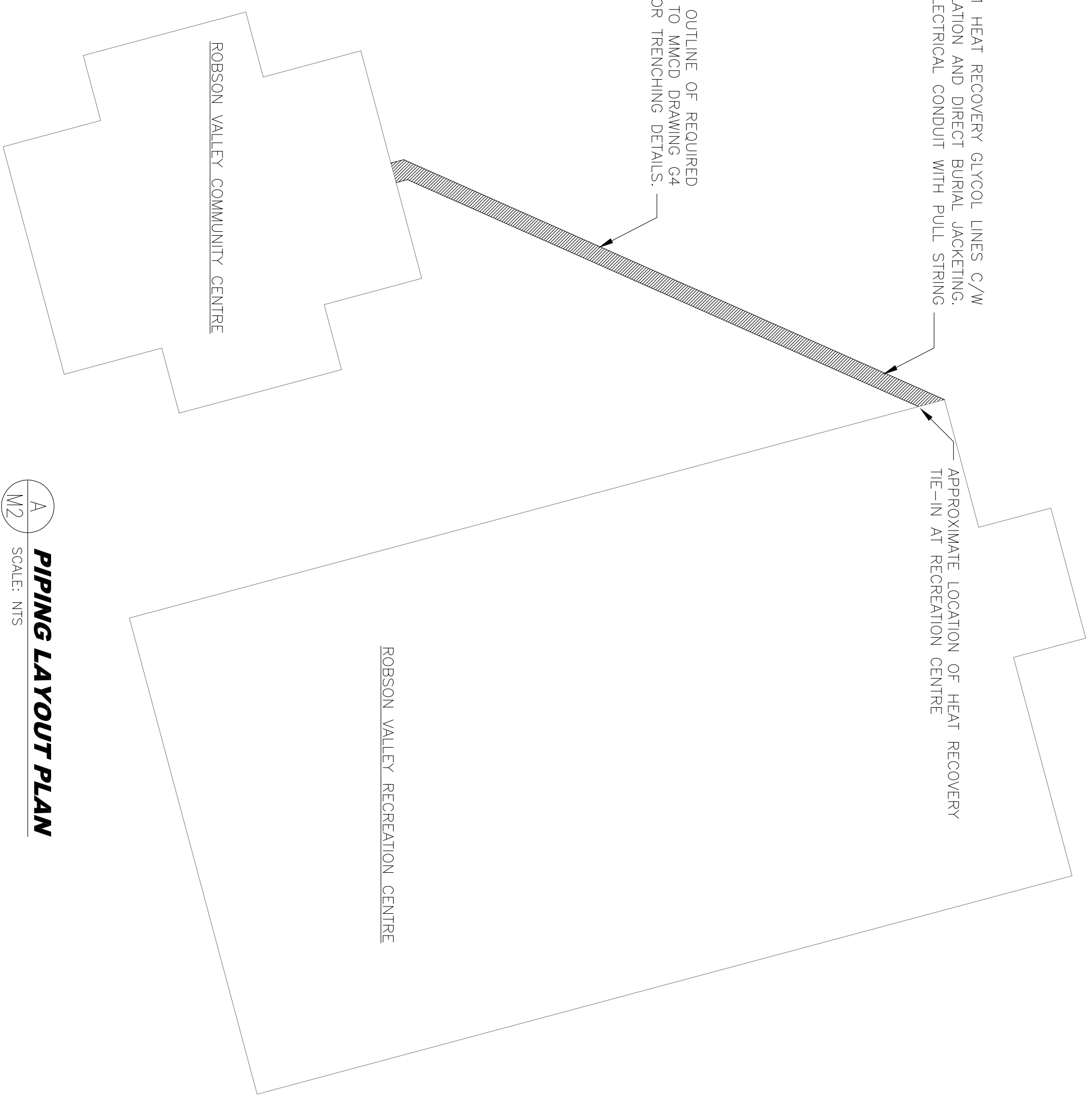
- 5.1. Provide an accurate as-built layout or survey of the trench and piping to the owner.
- 5.2. Provide copies of all material shop drawings and test reports to the owner.





- (2) 2" NPS HDPE SDR11 HEAT RECOVERY GLYCOL LINES C/W
- 1" FACTORY INSULATION AND DIRECT BURIAL JACKETING.
- (1) 1" NPS PVC ELECTRICAL CONDUIT WITH PULL STRING

APPROXIMATE OUTLINE OF REQUIRED TRENCHING. REFER TO MMCD DRAWING G4 FOR TRENCHING DETAILS.



A  
M2

**PIPING LAYOUT PLAN**  
SCALE: NTS

SAP REFERENCE NO.				
REV	DATE	DESCRIPTION	BY	APP'D
1	MAR 8/17	RE-LOCATE TRENCH PER EXISTING HEAT RECOVERY PIPING	GH	

**TORONTO** **CIMCO** **REFRIGERATION**

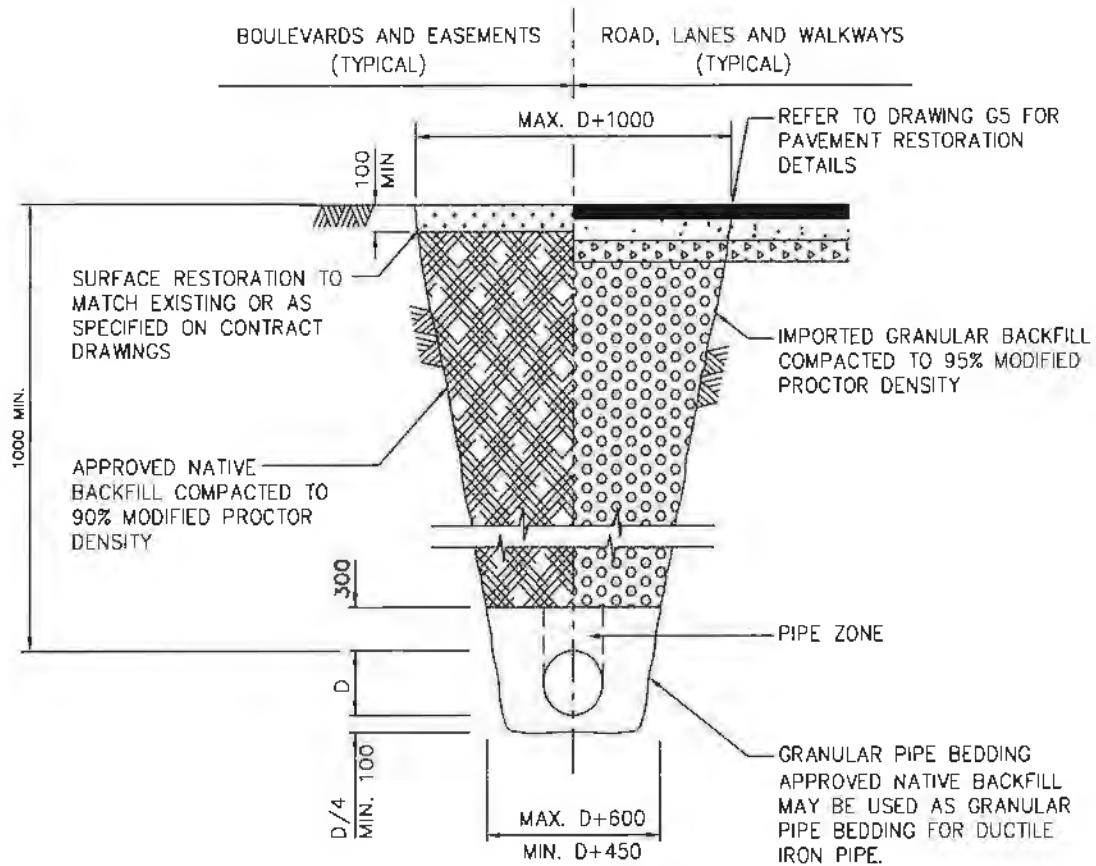
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 • St. John's • Toronto • Vancouver • Victoria • Winnipeg, CT  
 • North Salt Lake, UT • Syracuse, NY • Billings, MT

FOR: ROBSON VALLEY RECREATION CENTRE  
461 COLUMBIA  
MCBRIDE, BC V0J 2E0

DRAWN: GH  
 DATE: FEB 2/17  
 CHECKED: [ ]  
 SCALE: NTS  
 TITLE: HEAT RECOVERY INTEGRATION PIPING LAYOUT  
 JOB NO.: 3127603  
 DWG. NO.: M2  
 REV.: 1

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- NOTE: 1. TRENCHING TO COMPLY WITH ALL REQUIREMENTS OF WORKSAFE BC.  
 2. REFER TO CONTRACT DRAWINGS, SECTION 31 23 01 FOR DETAILED SPECIFICATIONS.

NOT TO SCALE

2008

UTILITY TRENCH

DRAWING NUMBER:

**G4**