Public Works and Government Services Canada

Travaux publics et Services gouvernementaux Canada

RETURN BIDS TO:
RETOURNER LES SOUMISSIONS À:

Public Works and Government Services Canada
ATB Place North Tower
10025 Jasper Ave./10025 ave. Jaspe
5th floor/5e étage
Edmonton
Alberta
T5J 1S6
Bid Fax: (780) 497-3510

Request For a Standing Offer
Demande d'offre à commandes

Regional Individual Standing Offer (RISO)

Offre à commandes individuelle régionale (OCIR)

Canada, as represented by the Minister of Public Works and Government Services Canada, hereby requests a Standing Offer on behalf of the Identified Users herein.

Le Canada, représenté par le ministre des Travaux Publics et Services Gouvernementaux Canada, autorise par la présente, une offre à commandes au nom des utilisateurs identifiés énumérés ci-après.

Comments - Commentaires

Title - Sujet
Piping System Repairs

Solicitation No. - N° de l'invitation	**Date**
W0134-15CYNP/A	2015-04-15
Client Reference No. - N° de référence du client	**GETS Ref. No. - N° de réf. de SEAG**
DND-W0134-15CYNP	PW-$PWU-183-10421
File No. - N° de dossier	**CCC No./N° CCC - FMS No./N° VME**
PWU-4-37261 (183)	

Solicitation Closes - L'invitation prend fin
at - à 02:00 PM
on - le 2015-05-01

Time Zone
Fuseau horaire
Mountain Daylight Saving Time MDT

Delivery Required - Livraison exigée
See Herein

Address Enquiries to: - Adresser toutes questions à:	**Buyer Id - Id de l'acheteur**
Tikhonovitch (RPC), Alex	pwu183
Telephone No. - N° de téléphone	**FAX No. - N° de FAX**
(780)497-3541 ( )	(780)497-3510

Destination - of Goods, Services, and Construction:
Destination - des biens, services et construction:
DEPARTMENT OF NATIONAL DEFENCE
P.O.BOX 6550 STN FORCES
COLD LAKE
Alberta
T9M2C6
Canada

Security - Sécurité
This request for a Standing Offer includes provisions for security.
Cette Demande d´offre à commandes comprend des dispositions en matière de sécurité.

Instructions: See Herein

Instructions: Voir aux présentes

Vendor/Firm Name and Address
Raison sociale et adresse du fournisseur/de l'entrepreneur

Vendor/Firm Name and Address
Raison sociale et adresse du fournisseur/de l'entrepreneur

Telephone No. - N° de téléphone
Facsimile No. - N° de télécopieur

Name and title of person authorized to sign on behalf of Vendor/Firm (type or print)
Nom et titre de la personne autorisée à signer au nom du fournisseur/ de l'entrepreneur (taper ou écrire en caractères d'imprimerie)

Signature **Date**

Issuing Office - Bureau de distribution
Public Works and Government Services Canada
ATB Place North Tower
10025 Jasper Ave./10025 ave Jasper
5th floor/5e étage
Edmonton
Alberta
T5J 1S6

Canada

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SUPPORT THE USE OF APPRENTICES

Through Canada's Economic Action Plan 2013, the Government of Canada proposes to support the employment of apprentices in federal construction and maintenance projects. Refer to SI11.

PART 1 - GENERAL INFORMATION

1. Introduction

The Request for Standing Offers (RFSO) is divided into seven parts plus attachments and annexes, as follows:

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

Part 2, Offeror Instructions: provides the instructions applicable to the clauses and conditions of the RFSO;

Part 3, Offer Preparation Instructions: provides offerors with instructions on how to prepare their offer to address the evaluation criteria specified;

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

Part 5, Certifications: includes the certifications to be provided;

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

Part 7: 7A, Standing Offer, and 7B, Resulting Contract Clauses:

7A, includes the Standing Offer containing the offer from the Offeror and the applicable clauses and conditions;

7B, includes the clauses and conditions which will apply to any contract resulting from a call-up made pursuant to the Standing Offer.

The Annexes include the Statement of Work, the Basis of Payment, Health & Safety, Usage Reports, Offer, SRCL and other annexes.

2. Summary

Piping Systems Maintenance and Repairs, 4 Wing CFB Cold Lake, Cold Lake, AB.

Work under this standing offer includes the provision of skilled licensed labour, tools, equipment, supervision and material as requested by Department of National Defence in the form of call ups to supply, install and modify various piping systems at various locations at CFB Cold Lake, Cold Lake, Alberta. Services are to be provided on an “as required" basis. It is anticipated that 2 firms will be issued standing offers.

There is a security requirement associated with this requirement. For additional information, see Part 6 - Security, Financial and Insurance Requirements, and Part 7A - Standing Offer. Offerors should consult the "Security Requirements for PWGSC Bid Solicitations - Instructions for Bidders" document (http://www.tpsgc-pwgsc.gc.ca/app-acq/lc-pl/lc-pl-eng.html#a31) on the Departmental Standard Procurement Documents Web site.

The period of the standing offer will be for three (3) years from date of standing offer award.

This procurement contains MANDATORY requirements. See Part 4 and 5 of the RFSO for details.

Pursuant to section 01 of Standard Instructions 2006, Offerors must submit a complete list of names of all individuals who are currently directors of the Offeror. Furthermore, as determined by the Special Investigations Directorate, Departmental Oversight Branch, each individual named on the list may be requested to complete a Consent to a Criminal Record Verification form and related documentation.

3. Health & Safety Requirements

There are Health & Safety requirements associated with this requirement. See Annex C, Health & Safety Requirements - Alberta.

4. Debriefing

Offerors may request a debriefing on the results of the request for standing offers process. Offerors should make the request to the Standing Offer Authority within 15 working days of receipt of the results of the request for standing offers process. The debriefing may be in writing, by telephone or in person

5. Security Requirement

There is a security requirement associated with the requirement of the Standing Offer. For additional information, see Part 6 - Security, Financial and Insurance Requirements, and Part 7 - Standing Offer and Resulting Contract Clauses.

PART 2 - OFFEROR INSTRUCTIONS

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

Offerors who submit an offer agree to be bound by the instructions, clauses and conditions of the RFSO and accept the clauses and conditions of the Standing Offer and resulting contract(s).

The 2006 (2014-09-25) Standard Instructions - Request for Standing Offers - Goods or Services - Competitive Requirements, are incorporated by reference into and form part of the RFSO.

Subsection 5.4 of 2006, Standard Instructions - Request for Standing Offers - Goods or Services - Competitive Requirements, is amended as follows:

DELETE sixty (60) days and **INSERT** ninety (90) days

2. Submission of Offers

Offers must be submitted only to Public Works and Government Services Canada (PWGSC) Bid Receiving Unit by the date, time and place indicated on page 1 of the Request for Standing Offers.

2.1 Revision of Offer:

An offer submitted in accordance with these instructions may be revised by letter or facsimile, provided that the revision is received at the office designated for the receipt of offers (Offerding address) on or before the date and time set for the closing of the RFSO. The facsimile shall be on the offeror's letterhead or bear a signature that identifies the offeror.

A revision to the unit price schedule must clearly identify the change(s) in the unit price(s) and the specific item(s) to which each change applies.

A letter or facsimile submitted to confirm an earlier revision shall be clearly identified as a confirmation.

Failure to comply with any of the above provisions shall result in the rejection of the non-compliant revision(s) only. The offer shall be evaluated based on the original offer submitted and all other compliant revision(s).

Facsimile number for receipt of revisions: **(780) 497-3510**

2.2 Firm Price and/or Rates:

The Offeror is required to submit firm prices, rates or both that will apply for the entire period of the Standing Offer.

2.3 Form

Offers not submitted on the prescribed Offer Form will not be considered.

2.4 Alterations

Any alteration to the pre-printed or pre-typed sections of the Offer Form, or any condition or qualification placed upon the offer may be cause for disqualification of the offer. Alterations, corrections, changes or erasures made to statements or figures entered on the Offer Form by the

offeror shall be initialed by the person or persons signing the offer. Initials shall be original(s). Alterations, corrections, changes or erasures that are not initialed shall be deemed void and without effect.

2.5 Incomplete Offers

Incomplete offers may be rejected.

2.6 Taxes

The offeror is responsible for all applicable taxes.

Offerors are not to include any amounts for the Goods and Services Tax (GST) or Harmonized Sales Tax (HST), whichever is applicable. Any amount levied in respect of the GST/HST shall be billed as a separate item on invoices submitted by the contractor, and shall be paid in addition to the amount approved by Canada for work performed under any resulting Contract. The Contractor shall be required to remit the appropriate amount to the Canada Revenue Agency in accordance with the applicable legislation.

The Federal Government is exempt from the Quebec Sales Tax (QST). Offerors shall not include in their prices any amount that is intended to cover the QST on goods and services performed in the execution of the Work except for such amounts for which an Input Tax Refund is not available. The successful Offeror should make arrangements directly with the Province of Quebec to recover any QST paid by it in performing the Work under the resulting Contract.

2.7 Performance Evaluation

Offerors shall take note that the performance of the Contractor during and upon completion of the work shall be evaluated by Canada. The evaluation shall be based on the quality of workmanship; timeliness of completion of the work; project management, contract management and management of health and safety. Should the Contractor's performance be considered unsatisfactory, the Contractor's bidding privileges on future work may be suspended indefinitely.

An electronic version of the form PWGSC-TPSGC 2913, SELECT - Contractor Performance Evaluation Report Form, used to record the performance is available on the Public Works and Government Services Canada (PWGSC) Web site.

3. Enquiries - Request for Standing Offers

All enquiries MUST be submitted in writing to the Standing Offer Authority no later than five (5) calendar days before the Request for Standing Offers (RFSO) closing date. Enquiries received after that time may not be answered.

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

4. Applicable Laws

The Standing Offer and any contract resulting from the Standing Offer must be interpreted and governed, and the relations between the parties determined, by the laws in force in the province of work.

PART 3 - OFFER PREPARATION INSTRUCTIONS

1. General

1.1 Insert the hourly rate or unit price against each class of labour, plant, or item of specified material listed on the Unit Price Schedule of the Offer form. Insert the percentage mark-up for Unspecified Material, if any; mathematical extensions against all items including the Contractor's Mark-up on Unspecified Material if applicable, and Total Estimated Amount, GST/HST extra.

1.2 Submit the Offer, duly completed, to the office designated on page 1 of the RFSO in accordance with the Standard Instructions.

1.3 Sign and date the Offer in accordance with the RFSO.

2. Offer Preparation Instructions

Canada requests that offerors provide their offer in separately bound sections as follows:
Section I: Annex E - Financial Offer (1 hard copy)
Section II: Certifications (1 hard copy)

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

Canada requests that offerors follow the format instructions described below in the preparation of their offer.
(a) use 8.5 x 11 inch (216 mm x 279 mm) paper;
(b) use a numbering system that corresponds to that of the Request for Standing Offers.

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

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

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

Section I: Financial Offer
Offerors must submit their financial offer in accordance with Annex B, Basis of Payment. The total amount of Applicable Taxes must be shown separately, if applicable.

Payment by Credit Card

Canada requests that offerors complete one of the following:

(a) ( ) Government of Canada Acquisition Cards (credit cards) will be accepted for payment of call-ups against the standing offer.

The following credit card(s) are accepted:

VISA _____

Master Card _____

(b) ( ) Government of Canada Acquisition Cards (credit cards) will not be accepted for payment of call-ups against the standing offer.

The Offeror is not obligated to accept payment by credit card.
Acceptance of credit cards for payment of call-ups will not be considered as an evaluation criterion.

Section II: Certifications
Offerors must submit the certifications required under Part 5.

PART 4 - EVALUATION PROCEDURES AND BASIS OF SELECTION

1. Evaluation Procedures

(a) Offers will be assessed in accordance with the entire requirement of the Request for Standing Offers including the technical and financial evaluation criteria.

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

(c) Offers shall be evaluated on the basis of lowest price compliant offer, with the lowest offer being ranked first, the second lowest offer second.

1.1 Technical Evaluation

1.1.1 Mandatory Technical Criteria

a) MANDATORY REQUIREMENTS - Required as part of the Offer

i) Pursuant to the General Instructions, submission of Request for Standing Offer (RFSO), offers must be submitted to the office designated for the receipt of offers, and must be received on or before the date and time set for solicitation closing shown on page 1 of the RFSO. A rate must be entered for each item listed in the unit price schedule of the offer.

b) MANDATORY REQUIREMENTS - Precedent to issuance of a Standing Offer

i) Health & Safety Requirements
ii) Code of Conduct Certifications (see Part 5 - Certifications)
iii) Insurance
iv) Proof of Financial Capability - upon request (see Part 6)
v) Security Requirements
vi) Requisite certificates or licenses identified in the RFSO (eg: Journeyman Tickets) must be submitted must be submitted upon request by Canada.

1.2 Financial Evaluation

1.2.1 Price Schedule - A rate must be entered for each item.

1.2.2 Offers retained pursuant to Part 4, will be evaluated on the basis of the total estimated amount quoted, GST/HST extra. It is anticipated that two standing offers will be issued to the lowest compliant offerors.

2. Basis of Selection

2.1 Basis of Selection - Lowest Evaluated Price

An offer must comply with the requirements of the Request for Standing Offers to be declared responsive. The responsive offer with the lowest evaluated price will be recommended for issuance of a standing offer.

3. Ranking

3.1 2 firms will be issued a standing offer.

3.2 The firms submitting the lowest price compliant submission will be issued a Standing Offer.

3.3 The Value of the Work will be distributed proportionally between the ranked firms:

55% for the top ranked firm, 45% for the 2nd.

PART 5 - CERTIFICATIONS

Offerors must provide the required certifications to be issued a standing offer. Canada will declare an offer non-responsive if the required certifications are not completed and submitted as requested.

Compliance with the certifications offerors provide to Canada is subject to verification by Canada during the offer evaluation period (before issuance of a standing offer) and after issuance of a standing offer. The Standing Offer Authority will have the right to ask for additional information to verify offerors' compliance with the certifications before issuance of a standing offer. The offer will be declared non-responsive if any certification made by the Offeror is untrue, whether made knowingly or unknowingly. Failure to comply with the certifications or to comply with the request of the Standing Offer Authority for additional information will also render the offer non-responsive.

1. Mandatory Certifications Required Precedent to Issuance of a Standing Offer

1.1 Code of Conduct and Certifications - Related documentation

By submitting an offer, the Offeror certifies that the Offeror and its affiliates are in compliance with the provisions as stated in Section 01 Code of Conduct and Certifications - Offer of Standard Instructions 2006 (2014-09-25). The related documentation therein required will assist Canada in confirming that the certifications are true.

2. Additional Certifications Precedent to Issuance of a Standing Offer

The certifications listed below should be completed and submitted with the offer, but may be submitted afterwards. If any of these required certifications is not completed and submitted as requested, the Standing Offer Authority will so inform the Offeror and provide the Offeror with a time frame within which to meet the requirement. Failure to comply with the request of the Standing Offer Authority and meet the requirement within that time period will render the offer non-responsive.

2.1 Requisite certificates or licenses identified in the RFSO (eg: Journeyman Tickets) must be submitted upon request by Canada.

2.2 Health & Safety Requirements - per attached Annex C .

2.3 Insurance, (Annex F - Insurance Certificate);

2.4 Proof of Financial Capability - upon request, per article 2 of Part 6.

2.5 Security Requirement - per article 1 of Part 6.

PART 6 - SECURITY, FINANCIAL AND INSURANCE REQUIREMENTS

1. Security Requirement

1. Before issuance of a standing offer, the following conditions must be met:

(a) the Offeror must hold a valid organization security clearance as indicated in Part 7A - Standing Offer;

(b) the Offeror's proposed individuals requiring access to classified or protected information, assets or sensitive work site(s) must meet the security requirement as indicated in Part 7A - Standing Offer;

(c) the Offeror must provide the name of all individuals who will require access to classified or protected information, assets or sensitive work sites.

2. Offerors are reminded to obtain the required security clearance promptly. Any delay in the issuance of a standing offer to allow the successful offeror to obtain the required clearance will be at the entire discretion of the Standing Offer Authority.

3. For additional information on security requirements, bidders should consult the "Security Requirements for PWGSC Bid Solicitations - Instructions for Bidders" http://www.tpsgc-pwgsc.gc.ca/app-acq/lc-pl/lc-pl-eng.html#a31 document on the Departmental Standard Procurement Documents Web site

2. Financial Capability

Financial Statements: In order to confirm an offeror's financial capability to perform the Contract, the Standing Offer Authority may during the RFSO evaluation phase, request from that offeror current financial information. The requested financial information may include, but is not limited to, an offeror's most recent audited financial statements or financial statements certified by an offeror's chief financial officer. The information provided will be considered in the offer evaluation and selection process. If an offer is found to be non-responsive on the basis that an offeror is considered financially incapable of performing the Work, that offeror will receive a written notification from the Standing Offer Authority.

Should an offeror provide the requested information to Canada in confidence while indicating that the disclosed information is confidential, Canada will treat the information in a confidential manner in accordance with the Access to Information Act, R.S. 1985, c.A-1.

3. Insurance Requirements

The Offeror must provide a certificate from an insurance broker or an insurance company licensed to operate in Canada stating that the Offeror, if issued a standing offer as a result of the request for standing offer, can be insured in accordance with the Insurance Requirements specified in SACC Manual clause R2900D GC10 - Insurance (2008-05-12)

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

Certificate of Insurance attached at Annex F

1) Insurance Contracts

(a) The Contractor must, at the Contractor's expense, obtain and maintain insurance contracts in accordance with the requirements of the Certificate of Insurance. Coverage must be placed with an Insurer licensed to carry out business in Canada.

(b) Compliance with the insurance requirements does not release the Contractor from or reduce its liability under the Contract. The Contractor is responsible for deciding if additional insurance coverage is necessary to fulfill its obligation under the Contract and to ensure compliance with any applicable law. Any additional insurance coverage is at the Contractor's expense, and for its own benefit and protection

2) Period of Insurance

(a) The policies required in the Certificate of Insurance must be in force from the date of contract award and be maintained throughout the duration of the Contract.

3) Proof of Insurance

(a) Before commencement of the Work, and no later than thirty (30) days after acceptance of its bid, the Contractor must deposit with Canada a Certificate of Insurance on the form attached herein.

(b) Upon request by Canada, the Contractor must provide originals or certified true copies of all contracts of insurance maintained by the Contractor pursuant to the Certificate of Insurance.

4) Insurance Proceeds

In the event of a claim, the Contractor must, without delay, do such things and execute such documents as are necessary to effect payment of the proceeds.

5) Deductible

The payment of monies up to the deductible amount made in satisfaction of a claim must be borne by the Contractor.

PART 7 - CLAUSES & CONDITIONS

PART 7(A) - STANDING OFFER

1. Offer - attached at ANNEX E

.1 General Provisions
.2 Financial Terms
.3 Prices

2. Security Requirement

1. The Contractor/Offeror must, at all times during the performance of the Contract/Standing Offer, hold a valid **Designated Organization Screening (DOS)**, issued by the Canadian Industrial Security Directorate (CISD), Public Works and Government Services Canada (PWGSC).

2. The Contractor/Offeror personnel requiring access to sensitive work site(s) must **EACH** hold a valid **RELIABILITY STATUS**, granted or approved by CISD/PWGSC.

3. Subcontracts which contain security requirements are NOT to be awarded without the prior written permission of CISD/PWGSC.

4. The Contractor/Offeror must comply with the provisions of the:

(a) Security Requirements Check List and security guide (if applicable), attached at Annex H;
(b) Industrial Security Manual (Latest Edition).

For additional information on security requirements, proponents should consult the Industrial Security web site at: http://ssi-iss.tpsgc-pwgsc.gc.ca/index-eng.html.

3. Standard Clauses and Conditions

1) .1 General Conditions - Standing Offers - Goods or Services, 2005 (2014-09-25)

2) The documents identified by title, number and date in paragraph 1) are incorporated by reference and are set out in the Standard Acquisition Clauses and Conditions (SACC) Manual, issued by Public Works and Government Services Canada (PWGSC). The SACC Manual is available on the PWGSC Web site:

https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual/5/R

4. Term of Standing Offer

4.1 Period of the Standing Offer

The period for making call-ups against the Standing Offer is for three (3) years from date of establishment of the Standing Offer.

5. Authorities

5.1 Standing Offer Authority

The Standing Offer Authority is:

Alex Tikhonovitch
Public Works and Government Services Canada
Western Region
5th Floor ATB Place North Tower
10025 Jasper Avenue
Edmonton, Alberta T5J 1S6

Telephone: (780) 497-3541
Facsimile: (780) 497-3510
E-mail address: alex.tikhonovitch@pwgsc-tpsgc.gc.ca

The Standing Offer Authority is responsible for the establishment of the Standing Offer, its administration and its revision, if applicable. Upon the making of a call-up, as Contracting Authority, they are responsible for any contractual issues relating to individual call-ups made against the Standing Offer by any Identified User.

5.2 Project Authority

The Project Authority for the Standing Offer is identified in the call-up against the Standing Offer.

The Project Authority is the representative of the department or agency (Departmental Representative) for whom the Work will be carried out pursuant to a call-up against the Standing Offer and is responsible for all the technical content of the Work under the resulting Contract.

6. Identified users

The Identified User authorized to make call-ups against the Standing Offer is : The Department of National Defence (DND), CFB Cold Lake, Alberta.

7. Call-up Procedures

Proportional basis: call-ups shall be issued on a proportional basis such that the offeror of the highest ranked standing offer receives the largest predetermined amount of the work, the offeror of the second highest ranked standing offer receives the second largest predetermined amount of the work. This call-up procedure will be followed, unless an offeror did not perform satisfactorily on previous call-ups and a decision has been made not to call upon them again or if they are unable to respond within the specified response time or provide the requisite service, then another offeror may be contacted to perform the work.

For each individual Call-Up, contractors will be approached and considered using a Distribution System. This system will track all call-ups assigned to each contractor and will maintain a running total of the Value of Business Distributed. The system will contain for each contractor an Ideal Business Distribution percentage which has been established as follows; 55% of the business for the top ranked offeror and 45% for the 2nd ranked offeror. The contractor who is furthest under the ideal amount of business that they should have received in relation to the other consultant will be selected for the next call-up.

The Technical Authority will establish the scope of work to be performed by the successful firm and negotiate the level of effort required to perform the work based on the hourly rates contained in the SO.

Offerors estimated proportion based on Evaluation is:__%

8. CALL-UP INSTRUMENT

Public Works and Government Services Canada	Travaux publics et Services gouvemementaux Canada	**CALL-UP AGAINST A STANDING OFFER** COMMANDE SUBSÉQUENTE À UNE OFFRE PERMANENTE

In accordance with STANDING OFFER NO.: _____	Conformément à L'OFFRE PERMANENTE No. _____	Call-up no. - No de commande
Dated _____ and the terms and conditions therein, you are Requested to carry out the worked described below.	En date du _____ Et les modalités qui y sont énumérées, vous êtes prié d'exécuter les travaux décrits ci-après.	_____

Contractor's name and address - Nom et adresse de l'entrepreneur	Send invoice to - Expédier la facture à
Fax No. ( )	attention:

Project no. - No du projet	Note: Quote standing offer number, project number and call-up number on your invoice. Inscrire le numéro de l'offre permanente, le numéro du projet et le numéro de commande sur la facture.
Location of work - Endroit des travaux	Call-up cost, GST/HST extra - Coût de la commande, TPS en plus

Work description - Description des travaux

Certified pursuant to subsection 32 (1) of the Financial Administration Act Certifié en vertu du paragraphe 32 (1) de la Loi sur la gestion des finances publiques	
_____ Signature	_____ Date
Departmental Representative - Représentant du ministère	
_____ Signature	_____ Date

PWGSC-TPSGC 2829 (03/2006)

9. Limitation of Call-ups

Individual call-ups against the Standing Offer must not exceed $60,000.00 (Applicable Taxes included).

10. Financial Limitation

The total cost to Canada resulting from call ups against the Standing Offer must not exceed the sum of $262,500.00 (Applicable Taxes included) unless otherwise authorized in writing by the Standing Offer Authority. The Offeror must not perform any work or services or supply any articles in response to call ups which would cause the total cost to Canada to exceed the said sum, unless an increase is so authorized.

The Offeror must notify the Standing Offer Authority as to the adequacy of this sum when 75 percent of this amount has been committed, or three (3) months before the expiry date of the Standing Offer, whichever comes first. However, if at any time, the Offeror considers that the said sum may be exceeded, the Offeror must promptly notify the Standing Offer Authority.

11. Priority of Documents

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

a) the call up against the Standing Offer, including any annexes and any amendments;
b) the articles of the Standing Offer;
c) the general conditions 2005 (2014-09-25), General Conditions - Standing Offers - Goods or Services
d) any amendment or variation in the Standing Offer that is made in accordance with the terms and conditions of the Standing Offer;
e) the general conditions dated and listed in Part 7B, Resulting Contract Clauses;
f) the Supplemental general conditions;
g) Annexes:
   Annex A, Statement of Work, and any amendment to the solicitation document incorporated in the Standing Offer before the date of the Standing Offer;
   Annex B, Basis of Payment;
   Annex C, Health & Safety Requirements - Alberta;
   Annex D, Periodic Usage Report Form;
   Annex F, Insurence;
   Annex G, Voluntary Report for Apprentices Employed During the Contract;
   Annex H, Security Requirement Check List (SRCL).
h) the Offeror's offer Annex E, dated _____ (insert date of offer);

12. Certifications

12.1 Compliance

Compliance with the certifications provided by the Offeror is a condition of authorization of the Standing Offer and subject to verification by Canada during the term of the Standing Offer and of any resulting contract that would continue beyond the period of the Standing Offer. In the event that the Offeror does not comply with any certification or it is determined that any certification made by the Offeror in its offer is untrue, whether made knowingly or unknowingly, Canada has the right to terminate any resulting contract for default and set aside the Standing Offer.

13. Applicable Laws

The Standing Offer and any contract resulting from the Standing Offer must be interpreted and governed, and the relations between the parties determined, by the laws in force in the province of work.

14. Estimates

Where an estimate of the cost of performing specific work is required, the Identified User will provide the Offeror with a statement of the work required and the Offeror must provide the Identified User with an estimate of the cost of performing the specified work in accordance with the pricing provision of the Standing Offer. The Offeror must not undertake any of the specified work unless and until a call-up is issued by the Identified User. The estimated cost stated in the call-up must not be exceeded without the specific written authorization of the Identified User.

15. Offeror Contact Information

Name: _____
Title:_____
Address: _____
Telephone Number: _____
Fax Number:_____
Email: _____

PART 7 (B) - RESULTING CONTRACT CLAUSES

1) The following clauses and conditions apply to and form part of any contract resulting from a call-up against the Standing Offer:
   (a) Statement of Work - The Contractor must perform the Work described in the call-up against the Standing Offer;
   (b) General Conditions:

(i)	GC1	General Provisions	R2810D	(2015-04-01);
(ii)	GC2	Administration of the Contract	R2820D	(2015-02-25);
(iii)	GC3	Execution and Control of the Work	R2830D	(2015-02-25);
(iv)	GC4	Protective Measures	R2840D	(2008-05-12);
(v)	GC5	Terms of Payment	R2550D	(2015-02-25);
(vi)	GC6	Delays and Changes in the Work	R2865D	(2013-04-25);
(vii)	GC7	Default, Suspension or Termination of Contract	R2870D	(2008-05-12);
(viii)	GC8	Dispute Resolution	R2884D	(2008-05-12);
(ix)	GC10	Insurance	R2900D	(2008-05-12);

   (c) Supplementary Conditions:
   (d) Allowable Costs for Contract Changes Under GC6.4.1 R2950D (2015-02-25);
   (e) Any amendment issued or any allowable bid revision received before the date and time set for solicitation closing;
   (f) Any amendment incorporated by mutual agreement between Canada and the Contractor before acceptance of the bid; and
   (g) Any amendment or variation of the contract documents that is made in accordance with the General Conditions.

2) The documents identified by title, number and date in paragraph 1) are incorporated by reference and are set out in the Standard Acquisition Clauses and Conditions (SACC) Manual, issued by Public Works and Government Services Canada (PWGSC). The SACC Manual is available on the PWGSC Website:

   https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual/5/R

3) The language of the contract documents shall be the language of the Bid and Acceptance Form submitted.

4) A contract is formed between Canada and the Offeror only when a Call-up duly signed is issued by the Departmental Representative and accepted by the Offeror*. The Offeror shall then be referred to as "the Contractor" and the Contract includes the Offer, the Specifications referred to in the Unit Price Schedule, the General Conditions, and the Call-up .

5) Interpretation

"Accepted by the Offeror" * means that the Offeror has agreed to, and commenced performance of the work.

"Minister" includes a person acting for the Minister, the Minister's successor in office, their lawful deputy and their representatives appointed for the purpose of the Standing Offer.

"Departmental Representative" means the Project Authority who is the representative of the department or agency for whom the Work will be carried out pursuant to a call-up against the

Standing Offer and is responsible for all the technical content of the Work under the resulting Contract.

"Superintendent" or "Supervisor" means the employee or representative of the Contractor designated by the Contractor to act as Superintendent;

"Unit Price Table" means the table of prices per unit set out in the Offer; and

"Work" means, subject only to any express stipulation in the Contract to the contrary, everything that is necessary to be done, furnished or delivered by the Contractor to perform the Contract in accordance with the work as described in each Call-up, and in the technical specifications or statement of work.

SUPPLEMENTAL CONDITIONS

SC01 INSERT the following supplementary conditions in the resulting General Conditions:

1.1. T1204 - Direct Request by Customer Department

1.1.1 Pursuant to paragraph 221 (1)(d) of the Income Tax Act, R.S. 1985, c.1 (5th Supp.), payments made by departments and agencies to contractors under applicable services contracts (including contracts involving a mix of goods and services) must be reported on a T1204 Government Service Contract Payments slip.

1.1.2 To enable departments and agencies to comply with this requirement, the Contractor must provide Canada, upon request, its business number or Social Insurance Number, as applicable. (These requests may take the form of a general call-letter to contractors, in writing or by telephone).

1.2. Periodic Reports

1.2.1 The Offeror shall provide to the Standing Offer Authority biannual reports on usage of the Standing Offer, showing the number and total value of call-ups by each consignee. Reports shall be submitted in the format shown on the attached Annex D "Periodic Usage Report Form" and forwarded to the Standing Offer Authority no later than fifteen (15) days after the designated reporting period.

1.2.2 The Offeror understands that failure to comply may result in the setting aside of the Standing Offer.

SC02 Term of Contract

2.1 Period of the Contract

The Work must be completed in accordance with the call-up against the Standing Offer.

SC03 Payment

3.1 CHANGES TO GC5 R2550D - TERMS OF PAYMENT

DELETE GC5.4, GC5.5, and GC5.6 and **INSERT** the following:

GC5.4 Payment

.1 Terms of Payment

1. Where the duration of the work identified in a call-up is greater than 30 days, the Contractor may submit monthly progress claims, and shall be entitled to receive progress payments at monthly or other agreed intervals. Subject to verification by the Departmental Representative, payment of the Contractor's invoice for work satisfactorily completed shall be made not later than 30 days after receipt thereof. The due date shall be the 30th day following receipt of a properly submitted invoice.

2. The Contractor shall submit a separate invoice for each Call-up to the Departmental Representative in accordance with any invoicing instructions set out herein. The properly submitted invoice shall be delivered to the Departmental Representative in the agreed format with sufficient detail, information, and backup to permit verification.

   The Contractor's invoice shall show the following, as separate items:

   (a) the amount of the progress payment being claimed for Work satisfactorily performed excluding GST/HST;

   (b) the amount for any tax calculated (GST/HST) in accordance with the applicable federal tax legislation; and

   (c) the total amount which shall be the sum of the amounts referred to in (a) and (b) above.

3. The amount of the tax shown on the invoice shall be paid by Canada to the Contractor in addition to the amount of the progress payment for Work satisfactorily performed.

4. If, within 15 days of receipt of the invoice, additional information is requested by the Departmental Representative for the purpose of verification, the 30 day payment period shall commence upon receipt of the requested information. Payment shall be made prior to or on the thirtieth (30) day after receipt of the corrected invoice or the required information.

   .1 Any monthly progress payment made to the Contractor may be subject to a 10% holdback which shall be released to the Contractor with the final payment unless the amount held back is required by Canada to remedy any defect in the Contractor's work.

   .2 Where the duration of the Work identified in a call-up is equal to or less than thirty (30) days, the Contractor may receive a single payment as full consideration for the Work performed.

5. Upon completion of the Work in the progress claim, the Contractor maybe requested to provide a completed and signed statutory declaration containing a declaration that, up to the date of the progress claim, the Contractor has complied with all lawful obligations with respect to the Labour Conditions and that, in respect of the Work, all lawful obligations of the Contractor to its Subcontractors and Suppliers, referred to collectively in the declaration as "subcontractors and suppliers", have been fully discharged before any further payment is made.

6. Upon written notice by a Sub-Contractor, with whom the Contractor has a direct contract, of an alleged non payment to the Sub-Contractor, the Departmental Representative may provide the Sub-Contractor with a copy of the latest approved progress payment made to the Contractor for the Work.

7. Upon the satisfactory completion of all Work, the amount due, less any payments already made, shall be paid to the Contractor not later than thirty (30) days after receipt of a properly

submitted invoice, and upon request, with a Statutory Declaration in accordance with paragraph 5 above.

3.2 Basis of Payment - see Annex B

3.3 Limitation of Price

Canada will not pay the Contractor for any changes, modifications or interpretations of the Work unless they have been approved, in writing, by the Contracting Authority before their incorporation into the Work.

3.4 Supplemental Invoicing Instructions

.1 Invoices

.1 All invoices submitted for payment shall show:
- .1 Construction Engineering Work Order Number,
- .2 Construction Engineering File Number,
- .3 Requisition Number, DSS 942 (Requisition on Contract),
- .4 Public Works and Government Services Canada (PWGSC) Standing Offer Number, and
- .5 same address as on PWGSC contract.

.2 Invoices are to include a breakdown as follows:
- .1 Hourly rate per the Offer and hours of work for each tradesperson.
- .2 An itemized list of materials used, by cost, shall be shown on all invoices submitted for payment.
- .3 Extended total.
- .4 Good and Services Tax (GST/HST) shall be shown as a separate item.
- .5 Where subcontracting is involved a copy of subcontractor's invoice shall accompany the invoice against the requisition.
- .6 Where discount or markup is applicable, indicate separately.

.3 Invoices submitted for payment against this contract that are not properly identified will be returned to the Contractor for proper annotation before certification for payment is made.

3.4 Payment of Invoices by Credit Card *(see PART 3)*

The credit cards _____ and _____ are accepted.

Sections GC5.11 and GC5.12 of GC5 - Terms of Payment R2550D (2015-02-25) will not apply to payments made by credit cards.

ANNEXES

ANNEX A

STATEMENT OF WORK

Attached as PDF

ANNEX B

BASIS OF PAYMENT

.1 Basis of Payment

Payments in respect of the agreed price shall be made upon satisfactory performance of the Work, and upon approval of the Departmental Representative, but such payments shall not exceed the amount(s) as specified in the Call Up, for the Work without written authorization.

In consideration of the Contractor satisfactorily completing all of its obligations under the resulting Contract, the Contractor will be paid a firm price, Goods and Services Tax or Harmonized Sales Tax extra.

.1 Hourly Rates:

The Contractor will be paid firm hourly rates as follows, for work performed in accordance with the Contract.

See attached for details

ANNEX C

MANDATORY HEALTH AND SAFETY - *for Work in the Province of Alberta*

1.) SPECIAL INSTRUCTIONS TO BIDDERS (SI):

WCB AND SAFETY PROGRAM

1) The recommended Bidder shall provide to the Contracting Authority, prior to Standing Offer issue:

   1.1 a Workers Compensation Board Premium Rate Statement - Alberta, or equivalent documentation from another jurisdiction;

   1.2 a Workers Compensation Board letter of good standing, also listing covered Directors, Principals, Proprietor(s) or Partners who will be or who are anticipated to be present on the work site(s), or equivalent documentation from another jurisdiction; and

   1.3 a Certificate of Recognition (COR) or Registered Safety Plan (RSP). A health and safety policy and program, as required by other provincial/territorial Occupational Health and Safety Acts, will be acceptable in lieu of a COR or RSP.

2) The recommended Bidder shall deliver all of the above documents to the Contracting Authority on or before the date stated (usually 3-5 days after notification) by the Contracting Authority. Failure to comply with the request may result in the bid being declared non-compliant.

2.) SUPPLEMENTARY CONDITIONS (SC):

Workplace Safety and Health

1. EMPLOYER/PRIME CONTRACTOR

1.1 The Contractor shall, for the purposes of the Occupational Health and Safety Act, Alberta, and for the duration of the Work:

   1.1.1 act as the Employer, where there is only one employer on the work site, in accordance with the Authority Having Jurisdiction;

   1.1.2 accept the role of Prime Contractor, where there are two or more employers involved in work at the same time and space at the work site, in accordance with the Authority Having Jurisdiction; and

   1.1.3 agree, in the event of two or more Contractors working at the same time and space at the work site, without limiting the General Conditions, to Canada's order * to:

      1.1.3.1 accept, as the Prime Contractor, the responsibility for Canada's other Contractor(s); or

      1.1.3.2 accept that Canada's other Contractor is Prime Contractor and conform to that Contractor's Site Specific Health and Safety Plan.

** "order" definition: after contract award, Contractor is ordered by a Change Order*

2. SUBMITTALS

2.1 The Contractor shall provide to Canada:

2.1.1 prior to the pre-construction meeting, a transmittal and copy of a completed Notice of Project form PWGSC - TPSGC 458 (form will be provided to the proposed contractor prior to award), as sent to the Authority Having Jurisdiction (AHJ); and

2.1.2 prior to commencement of work and without limiting the terms of the General Conditions:

2.1.2.1 copies of all other necessary permits, notifications and related documents as called for in the scope of work/specifications and/or by the AHJ; and

2.1.2.2 a site specific Health and Safety Plan as requested.

NOTE: Please do not include any forms that include personal 3rd party information such as the names of the contractor's employees and their related claims information.

3. LABOUR AUTHORITY CONTACT*:*

The contact below represents the Labour Authority in the jurisdiction (AHJ). They are not representatives of the Workers Compensation.

Do not contact the people referenced below for issues pertaining to WCB or WCB Clearances. Those queries must be directed specifically to the WCB, and where the WCB has both a Labour and Compensation component, WCB issues must be directed to the Compensation/Employer Services sections.

ALBERTA South
Alberta Human Resources and Employment
Workplace Health and Safety
600 – 727, 7th Avenue S.W.
Calgary, Alberta, T2P 0Z5
Telephone: 1(866) 415-8690
Email: All submissions are to be scanned and emailed to
whs@gov.ab.ca

ALBERTA North
Alberta Human Resources and Employment
Workplace Health and Safety
10th Floor, 7th Street Plaza
10030-107 Street
Edmonton, Alberta, T5J 3E4
Telephone: 1(866) 415-8690
Email: All submissions are to be scanned and emailed to
whs@gov.ab.ca

ANNEX D
Periodic Usage Report Form

As a requirement of this Request for Standing Offer, a report shall be submitted as follows:

Return to:

Alex Tikhonovitch	780-497-3510	alex.tikhonovitch@pwgsc-tpsgc.gc.ca
Name	*Fax*	*Email Address*

at:

Public Works and Government Services Canada
Real Property Contracting, Acquisitions Branch
10025 Jasper Ave., 5th Floor
Telus Plaza North
Edmonton, AB T5J 1S6

REPORT ON THE VOLUME OF BUSINESS

SUPPLIER: _____

REPORT FOR THE PERIOD ENDING: _____

Description of Work	Call-up #	TOTAL BILLING

NIL REPORT: We have not done any business with the federal government for this period _____ _____.

PREPARED BY:

NAME: _____

SIGNATURE: _____

TELEPHONE NO.: _____

ANNEX E
OFFER

Description of Work: Department of National Defence Canada, Cold Lake, Alberta
Repair of Boiler Refractory Materials Standing Offer

1. OFFER

.1 This Standing Offer is made by the Offeror to Canada;

.2 This Offer is to furnish all necessary tools, plant, equipment, services, materials and labour to execute and complete the Work described above in careful and workmanlike manner;

.3 The Work shall be more particularly described in individual Call-ups to be issued by the Project Authority, hereinafter called the "Departmental Representative";

.4 Individual Call-ups may be issued, from time to time, during the period identified in Part 7A, clause 4.1, hereinafter called the "Term".

2. GENERAL PROVISIONS

.1 This Offer when signed by or on behalf of the Offeror, the Specifications referred to in the Unit Price Schedule below and the General Conditions shall constitute the complete Offer subject to the provisions contained therein;

.2 The Hourly Rate and the Unit Price, as offered, govern in calculating each Estimated Total Price; any errors in the extension of the Unit Price and in the addition of the Estimated Total Prices will be corrected in order to obtain the actual Total Estimated Amount;

.3 This Offer supersedes and cancels all communications, negotiations and agreements relating to the Work other than those contained in the Offer;

.4 that this tender may not be withdrawn for a period of 60 days following the tender closing time,

The Offeror agrees

.1 to carry out individual work projects as requisitioned from time to time by the Departmental Representative in **Call- ups Against a Standing Offer**, form PWGSC/TPSGC 2829 or 942 , copies of which the Offeror acknowledges to have in its possession, in accordance with the requirements set out therein and in consideration of payment of amounts to be determined pursuant to section 3. Below;

.2 to provide, on demand from the Departmental Representative, a detailed price estimate, calculated in accordance with section 4 below, and a proposed work schedule for each work project; and

.3 to commence Work promptly upon receipt of each Call-up issued pursuant to this Offer, duly signed by the Departmental Representative.

.5 This Offer does not constitute a binding contract between Canada and the Offeror. The Departmental Representative shall have the right to issue a Call-up with those other offerors which have also submitted offers to Canada.

.6 A contract is formed between Canada and the Offeror only when a Call-up duly signed is issued by the Departmental Representative and accepted by the Offeror. The Offeror shall then be referred to as "the Contractor" and the Contract includes the Offer, the Specifications referred to in the Unit Price Schedule below, the General Conditions and the Call-up .

.7 The estimated number of hours, the quantities of material and plant, and the amount of the Allowance for Unspecified material set out in the Unit Price Schedule are for the purpose of comparative evaluation of the offers and do not express an obligation on the part of Canada to order any or all of the work, material or plant listed therein.

.8 The Offeror declares that no bribe, gift or benefit has been or will be paid, given, promised or offered directly or indirectly to any official or employee of Canada or to a member of the family of such person, with a view to influence the entry into or the administration of any contract which may result from this Offer.

3. FINANCIAL TERMS

.1 Each item specified in the Unit Price Schedule in subsection 4.1 includes wages, traveling time and costs, allowances, supervision, liabilities as employer, insurance, and the use of all tools, tackle, etc., overhead, profit and all other liabilities whatsoever.

.2 Unspecified Material shall be reimbursed at net cost, as supported by invoices, plus Markup as established in section 4 of this Offer. "Net Cost" means all amounts reasonably and properly paid by the Offeror in respect of materials required for and used in the Work, and includes packing, handling and delivery charges, less any trade discounts received by the Offeror. The Offeror's Markup on Unspecified Material covers overheads, profit, and all other expenses whatsoever.

.3 The prices inserted in section 4 of this Offer include all applicable federal, provincial, and municipal taxes.

.1 However, they do not include any amount for the Goods and Services Tax (GST) or Harmonized Sales Tax (HST). The appropriate GST/HST amounts will be paid by Canada to the Offeror in addition to the amounts paid against the amount of the contract. The Offeror shall make appropriate remittances to Revenue Canada in accordance with the legislation.

.2 The prices do not include the Québec Sales Tax. The Offeror shall arrange directly with the Province of Québec for the reimbursement of Provincial Sales Tax paid to this Province for the purpose of any contract resulting from this Offer.

.4 Payment by Canada for the Offeror's own special equipment not covered by the Unit Price Schedule and required at the job site will be no greater than the local going rental rate for such equipment or the rate published by the local construction association for such equipment, whichever is the lower.

.5 The cost of subcontract work, including special equipment rentals approved by the Project Authority, shall be reimbursed at actual cost with the addition of ten (10) percent to cover overheads, profit, and all other expenses whatsoever. "Actual cost" means all amounts reasonably and properly paid by the Contractor for those parts of the Work carried out by subcontractors.

.6 Pricing

.1 The prices requested in the Offer are:
   .1 hourly rates for regular hours;
   .2 hourly rate for each hour outside of regular hours; and
   .3 mark up on allowance for unspecified material, replacement parts, required permits and certificates.

.2 The hourly rates requested in the offer and acceptance for specific types of service shall be the total cost to perform the work including but not limited to:
   .1 labour including supervision, allowances and liability insurance;
   .2 travel time;
   .3 transportation/vehicle expenses;
   .4 tools and tackle;
   .5 overhead and profit;
   .6 any other incidental expenses other than supply of materials and replacement parts relating to the delivery of labour.

.3 It is considered that regular hours of work fall between 0800 and 1600 hours, Monday to Friday.

4. PRICES

The Offeror agrees that the following are the prices referred to in sections 2 and 3 above &:

1. Unit Prices are to include ALL applicable expenses, including travel time and personnel expenses, to perform the work and are to remain firm for the period of the Standing Offer.

2. Service call rates will be paid only on the initial call-out. Should the work carry over to subsequent days, the labour rates only will apply.

3. Overtime must be authorized in advance by the Project Authority.

4. GST is not to be included in the prices but will be added as a separate item to any invoice issued against the Standing Offer.

5. A percentage mark-up on parts and materials must be provided otherwise it will be taken as zero.

6. Estimated usages are for evaluation purposes only and not to be construed as a firm commitment from Canada. Actual usage may vary from these amounts

7. For work carried over to subsequent days, accommodations will be reimbursed as per Travel Directive Policy. The current Travel Directive Policy is available at following website. Accomodation costs are not to include a mark-up and must be supported with receipts.

4.1 Unit Price Schedules - Rates

SCHEDULE A) Initial Year

Col. 1	Col. 2	Col. 3	Col. 4	Col. 5	Col. 6
Item	**Class of Labour, material or plant**	**Unit**	**Est. Hours/ Quantity**	**Unit Price $**	**Estimated total price $**
1	**Service call including the first hour of on-site productive labour:**				
A	**During Regular Working Hours (Monday through Friday, 08:00 - 16:00)**				
i	Journeyman Plumber	Per Call	12	$_____/Call	$_____
ii	Apprentice Plumber	Per Call	12	$_____/Call	$_____
iii	Labourer	Per Call	12	$_____/Call	$_____
iv	Journeyman Welder	Per Call	4	$_____/Call	$_____
B	**Outside Regular Working Hours (Monday through Friday)**				
i	Journeyman Plumber	Per Call	24	$_____/Call	$_____
ii	Apprentice Plumber	Per Call	24	$_____/Call	$_____
iii	Labourer	Per Call	24	$_____/Call	$_____
iv	Journeyman Welder	Per Call	24	$_____/Call	$_____
C	**Outside Regular Working Hours (Weekends and Statutory Holidays)**				
i	Journeyman Plumber	Per Call	1	$_____/Call	$_____
ii	Apprentice Plumber	Per Call	1	$_____/Call	$_____

iii	Labourer	Per Call	1	$_____/Call	$_____
iv	Journeyman Welder	Per Call	1	$_____/Call	$_____
2	**Labour only in addition to the above:**				
A	**During Regular Working Hours (Monday through Friday, 08:00 - 16:00)**				
i	Journeyman Plumber	Per Hour	24	$_____/Hour	$_____
ii	Apprentice Plumber	Per Hour	24	$_____/Hour	$_____
iii	Labourer	Per Hour	24	$_____/Hour	$_____
iv	Journeyman Welder	Per Hour	24	$_____/Hour	$_____
B	**Outside Regular Working Hours (Monday through Friday)**				
i	Journeyman Plumber	Per Hour	16	$_____/Hour	$_____
ii	Apprentice Plumber	Per Hour	16	$_____/Hour	$_____
iii	Labourer	Per Hour	16	$_____/Hour	$_____
iv	Journeyman Welder	Per Hour	8	$_____/Hour	$_____
C	**Outside Regular Working Hours (Weekends and Statutory Holidays)**				
i	Journeyman Plumber	Per Hour	16	$_____/Hour	$_____
ii	Apprentice Plumber	Per Hour	16	$_____/Hour	$_____
iii	Labourer	Per Hour	16	$_____/Hour	$_____
iv	Journeyman Welder	Per Hour	8	$_____/Hour	$_____
3	On-site kick off meeting including all applicable costs (one meeting at the start of the Standing Offer if applicable; not applicable if meeting is conducted by teleconference)	Meeting	1	$_____	$_____
4	Materials as supplied such as overhead doors, will be supplied at Offeror's cost plus a mark-up of ___ % (% mark up x $30,000 =) Verification of Offeror's cost to be provided upon request of the Project Authority	%	$30,000.00	_____ %	$_____
	Sub Total A): Estimated Total Amount 1st Year GST/HST Extra				$_____

4.1 Unit Price Schedules - Rates

SCHEDULE B) Year 2

Col. 1	Col. 2	Col. 3	Col. 4	Col. 5	Col. 6
Item	**Class of Labour, material or plant**	**Unit**	**Est. Hours/ Quantity**	**Unit Price $**	**Estimated total price $**
1	**Service call including the first hour of on-site productive labour:**				
A	**During Regular Working Hours (Monday through Friday, 08:00 - 16:00)**				
i	Journeyman Plumber	Per Call	12	$_____/Call	$_____
ii	Apprentice Plumber	Per Call	12	$_____/Call	$_____
iii	Labourer	Per Call	12	$_____/Call	$_____
iv	Journeyman Welder	Per Call	4	$_____/Call	$_____
B	**Outside Regular Working Hours (Monday through Friday)**				
i	Journeyman Plumber	Per Call	12	$_____/Call	$_____
ii	Apprentice Plumber	Per Call	12	$_____/Call	$_____
iii	Labourer	Per Call	12	$_____/Call	$_____
iv	Journeyman Welder	Per Call	4	$_____/Call	$_____
C	**Outside Regular Working Hours (Weekends and Statutory Holidays)**				
i	Journeyman Plumber	Per Call	1	$_____/Call	$_____
ii	Apprentice Plumber	Per Call	1	$_____/Call	$_____
iii	Labourer	Per Call	1	$_____/Call	$_____
iv	Journeyman Welder	Per Call	1	$_____/Call	$_____
2	**Labour only in addition to the above:**				
A	**During Regular Working Hours (Monday through Friday, 08:00 - 16:00)**				
i	Journeyman Plumber	Per Hour	192	$_____/Hour	$_____
ii	Apprentice Plumber	Per Hour	192	$_____/Hour	$_____
iii	Labourer	Per Hour	192	$_____/Hour	$_____
iv	Journeyman Welder	Per Hour	64	$_____/Hour	$_____
B	**Outside Regular Working Hours (Monday through Friday)**				
i	Journeyman Plumber	Per Hour	192	$_____/Hour	$_____
ii	Apprentice Plumber	Per Hour	192	$_____/Hour	$_____
iii	Labourer	Per Hour	192	$_____/Hour	$_____
iv	Journeyman Welder	Per Hour	64	$_____/Hour	$_____
C	**Outside Regular Working Hours (Weekends and Statutory Holidays)**				
i	Journeyman Plumber	Per Hour	192	$_____/Hour	$_____
ii	Apprentice Plumber	Per Hour	192	$_____/Hour	$_____
iii	Labourer	Per Hour	192	$_____/Hour	$_____
iv	Journeyman Welder	Per Hour	64	$_____/Hour	$_____

3	On-site kick off meeting including all applicable costs (one meeting at the start of the Standing Offer if applicable; not applicable if meeting is conducted by teleconference)	Meeting	1	$_____	$_____
4	Materials as supplied such as overhead doors, will be supplied at Offeror's cost plus a mark-up of ___ % (% mark up x $30,000 =) Verification of Offeror's cost to be provided upon request of the Project Authority	%	$30,000.00	_____ %	$_____
Sub Total B): Estimated Total Amount 2nd Year GST/HST Extra					$_____

4.1 Unit Price Schedules - Rates (continued)

SCHEDULE C) Year 3

Col. 1	Col. 2	Col. 3	Col. 4	Col. 5	Col. 6
Item	**Class of Labour, material or plant**	**Unit**	**Est. Hours/ Quantity**	**Unit Price $**	**Estimated total price $**
1	**Service call including the first hour of on-site productive labour:**				
A	**During Regular Working Hours (Monday through Friday, 08:00 - 16:00)**				
i	Journeyman Plumber	Per Call	12	$_____/Call	$_____
ii	Apprentice Plumber	Per Call	12	$_____/Call	$_____
iii	Labourer	Per Call	12	$_____/Call	$_____
iv	Journeyman Welder	Per Call	4	$_____/Call	$_____
B	**Outside Regular Working Hours (Monday through Friday)**				
i	Journeyman Plumber	Per Call	12	$_____/Call	$_____
ii	Apprentice Plumber	Per Call	12	$_____/Call	$_____
iii	Labourer	Per Call	12	$_____/Call	$_____
iv	Journeyman Welder	Per Call	4	$_____/Call	$_____
C	**Outside Regular Working Hours (Weekends and Statutory Holidays)**				
i	Journeyman Plumber	Per Call	1	$_____/Call	$_____
ii	Apprentice Plumber	Per Call	1	$_____/Call	$_____
iii	Labourer	Per Call	1	$_____/Call	$_____
iv	Journeyman Welder	Per Call	1	$_____/Call	$_____
2	**Labour only in addition to the above:**				
A	**During Regular Working Hours (Monday through Friday, 08:00 - 16:00)**				
i	Journeyman Plumber	Per Hour	192	$_____/Hour	$_____
ii	Apprentice Plumber	Per Hour	192	$_____/Hour	$_____
iii	Labourer	Per Hour	192	$_____/Hour	$_____
iv	Journeyman Welder	Per Hour	64	$_____/Hour	$_____
B	**Outside Regular Working Hours (Monday through Friday)**				
i	Journeyman Plumber	Per Hour	192	$_____/Hour	$_____
ii	Apprentice Plumber	Per Hour	192	$_____/Hour	$_____
iii	Labourer	Per Hour	192	$_____/Hour	$_____
iv	Journeyman Welder	Per Hour	64	$_____/Hour	$_____
C	**Outside Regular Working Hours (Weekends and Statutory Holidays)**				
i	Journeyman Plumber	Per Hour	192	$_____/Hour	$_____
ii	Apprentice Plumber	Per Hour	192	$_____/Hour	$_____
iii	Labourer	Per Hour	192	$_____/Hour	$_____
iv	Journeyman Welder	Per Hour	64	$_____/Hour	$_____

3	On-site kick off meeting including all applicable costs (one meeting at the start of the Standing Offer if applicable; not applicable if meeting is conducted by teleconference)	Meeting	1	$_____	$_____
4	Materials as supplied such as overhead doors, will be supplied at Offeror's cost plus a mark-up of ___ % (% mark up x $30,000 =) Verification of Offeror's cost to be provided upon request of the Project Authority	%	$30,000.00	_____ %	$_____
Sub Total C): Estimated Total Amount 3rd Year GST/HST Extra					$_____

4.2 TOTAL EVALUATED PRICE (Initial 1st Year + 2nd Year + 3rd Year)

Col. 1	Col. 2	Col. 3	Col. 4
Sub Total SCHEDULE A) Initial Year Term	**Sub Total SCHEDULE B) 2nd Year**	**Sub Total SCHEDULE C) 3rd Year**	**Total Evaluated Price** (col.1 + col.2 = col.3)
$ _____	**$** _____	**$** _____	**$** _____ **GST/HST Extra**

These items will be used for cost evaluation purposes only and do not constitute a guarantee or commitment on behalf of Canada of the quantity or amount to be used under the Standing Offer.

A rate must be entered for each item.

The Offeror agrees that the Price(s) per Unit as tendered govern in calculating the Total Evaluated Price. The Offeror understands that any errors in the extension of the Price per Unit, in the addition of the Estimated Total Price, and Estimated Total Amount will be corrected in order to obtain the Total Evaluated Price.

Cost will be evaluated on the Total Evaluated Price in Column 4.

APPENDIX 1
COMPLETE LIST OF EACH INDIVIDUAL WHO IS CURRENTLY ON THE OFFEROR'S BOARD OF DIRECTORS

NOTE TO OFFERORS: LEGIBLY PRINT OR TYPE DIRECTOR' SURNAMES AND GIVEN NAMES
NOTE TO OFFERORS: LEGIBLY PRINT OR TYPE DIRECTOR' SURNAMES AND GIVEN NAMES

APPENDIX 2 - VOLUNTARY CERTIFICATION TO SUPPORT THE USE OF APPRENTICES

Note; The contractor will be asked to fill out a report every six months as included a Annex G

Name: _____

Signature: _____

Company Name: _____

Company Legal Name: _____

Solicitation Number: _____

Optional information to provide: _____

Number of apprentices planned to be working on this contract: _____

Trades of those apprentices:

_____

_____

_____

_____

_____

A sample of the “Voluntary Reports for Apprentices Employed during the Contract” is provided at Annex G

ANNEX F

The Insurance Terms have been amended. Refer to Part 6 clause 3.

Please see the attached PDF document “Certificate of Insurance”

ANNEX G - VOLUNTARY REPORT FOR APPRENTICES EMPLOYED DURING THE CONTRACT (Sample)

(This report is not required at bid deposit)

The Contractor should compile and maintain records on the number of apprentices and their trade that were hired to work on the contract.

The Contractor should provide this data in accordance with the format below. If no apprentices were hired during the contract period, the Contractor should still provide a "nil" report.

The data should be submitted six months after the Contract award or at the end of the Contract, whichever comes first to the Contracting Authority.

Number of apprentices hired	Trade

ANNEX H

Refer to the attached SRCL

DEPARTMENT OF NATIONAL DEFENCE
4 WING - CFB COLD LAKE
WING CONSTRUCTION ENGINEERING

SPECIFICATION

PIPING REPAIRS STANDING OFFER AGREEMENT

4 Wing Cold Lake
COLD LAKE, Alberta
T9M 2C6

Project File :	**N/A**
Job Number:	**L-C252-9900/372**
Date:	**03/10/14**
Design OPI:	**Dwight Schock A.Sc.T.**
Project Manager	**Sgt. Davies**

END

LIST OF ANNEXES

ANNEX NO.	TITLE
ANNEX A	4 Wing Ground Disturbance Notice
ANNEX B	Hot Work Permit
ANNEX C	4 Wing Confined space Entry Permit
ANNEX D	Prime Contractor Agreement
ANNEX E	4 Wing Road Closure Notice
ANNEX F	4 Wing Environmental Incident & Emergency Plan

LIST OF DRAWINGS TITLE

END

PART 1 - GENERAL

1.1 Description of Work

.1 Work under this Contract comprises the labour, Work material and equipment necessary to repair, install and modify various piping system s at 4 Wing Cold Lake, Cold Lake, Alberta.

1.2 Security Authorization

.1 This project will be issued with an SRCL.

1.3 Contract Administration

.1 This contract will be administered in English

1.4 Documents Required

.1 Maintain at job site, one copy each of the following:
.1 Contract drawings.
.2 Specifications.
.3 Addenda.
.4 Reviewed shop drawings.
.5 Change orders.
.6 Other modifications to Contract.
.7 Copy of approved work schedule.
.8 Manufacturers' installation and application instructions.

1.5 Work Schedule

.1 Provide within 10 working days after Contract award, construction schedule showing anticipated progress stages and final completion of work within time period required by Contract documents.

.2 Interim reviews of work progress based on work schedule will be conducted as deemed by DND Rep and schedule updated by Contractor in conjunction with and to approval of DND Rep.

1.6 Contractor's Use of Site

.1 Exclusive and complete for execution of work except as follows:
.1 Movement around site shall be subject to restrictions imposed by Wing Commander and/or DND Rep.

1.6 Contractor's Use of Site (Cont'd)

.1 (Cont'd)
.2 Do not unreasonably encumber site with materials or equipment.

.2 PLER/Jimmy Lake special precautions:
.1 Day to day restrictions enroute to Jimmy Lake site may occur from time to time while military live range missions are underway. These restrictions are usually of short duration in terms of hours however may result in a full day.
.2 No work will be permitted during the Multi-nation Maple Flag exorcise.
.3 Normal working hours are from 0730 to 1600 but are subject to change.
.4 Weekend work is permitted with special arrangements.
.5 Obtain permission from Wing Operation Range Control 48hrs before proceeding to site.

1.7 Property Damage

.1 Contractor is responsible to make good any damage to DND property resulting from his work conducted on site. Repairs shall be carried out at the contractors expense.

.2 The contractor shall immediately notify the DND Rep or Contracting Authority of any damage incident. Damage to any surface feature or underground utility are included in this definition such as gas lines, power lines, water lines, buildings, survey markers, etc.

.3 Any tree removed or damaged during the work must be replaced with a trees equal to the total diameter of trees removed. The replacement trees should be no less than half the calliper of the trees that are damaged/removed. CE Roads and Grounds (Local 8432)should be contacted for a list of preferred species; each area will have specific requirements based on location, soils proximity to paved areas, moisture etc.

1.8 Codes and Standards

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

1.9 Workmanship

.1 Workmanship:
.1 Workmanship shall be executed by workers qualified in respective duties for which they are employed.
.2 Decisions as to quality or fitness of workmanship, in case of dispute, rest solely with DND Rep, whose decision is final.

.2 Qualification:
.1 All work shall be carried out by qualified journeyman or apprentice in accordance with the conditions of the Alberta Provincial Act respecting manpower, vocational training and qualification.
.2 Apprenticed employees registered in the provincial apprenticeship program shall be permitted to work only under the direct supervision of a qualified journeyman.

1.10 Project Meetings

.1 DND Rep will arrange project meetings, assume responsibility for setting times and recording and distributing minutes.

1.11 Project Layout

.1 Assume full responsibility for and execute complete layout of work to locations, lines and elevations indicated.

.2 Provide devices as required to lay out and construct project.

.3 Supply such devices as straight edges and templates required to facilitate DND Rep's inspection of work.

.4 Supply stakes and other survey markers required for project layout.

1.12 Location of Equipment and Fixtures

.1 Location of equipment, fixtures and outlets indicated or specified are to be considered as approximate.

.2 Locate equipment, fixtures and distribution systems to provide minimum interference and maximum usable space and in accordance with manufacturer's recommendations for safety, access and maintenance.

.3 Inform DND Rep of impending installations and obtain approval for actual location.

1.12 Location of Equipment and Fixtures (Cont'd)

.4 Submit field drawings to indicate relative position of various services and equipment as required by DND Rep.

.5 Before the start of construction, the Contractor will be responsible to identify and preserve DND Survey Monuments.

.6 If during construction, Contractor discovers a DND Survey Monument, (complete with marker post, 50 mm round pipe with 75 x 100 mm aluminum plate), do not disturb the area, carefully preserve survey monuments and inform DND Rep before proceeding.

.7 Should a DND Survey Monument be disturbed during construction, the Contractor will be responsible to re-survey and replace if the Monument if necessary, by a certified land surveyor approved by DND Rep.

1.13 Cutting and Patching

.1 Execute cutting, including excavation, fitting and patching required to allow proper fitting of construction elements.

.2 Where new elements connect with existing and where existing are altered, cut, patch and make good to match existing.

.3 Obtain DND Rep's approval before cutting, boring or sleeve load-bearing members.

.4 Make cuts with clean, true, smooth edges. Make patches inconspicuous in final assembly.

.5 Fit construction elements to pipes, sleeves, ducts and conduits.

1.14 Existing Services

.1 It is the Contractor's ultimate responsibility to obtain a properly completed "CE Work Clearance Request form" (Annex A) to establish the location and extent of service lines in the area of work, before any clearing/digging is started.

.2 Ten working days prior to the scheduled start date, the Contractor shall complete the "CE Work Clearance Request form".

1.14 Existing Services (Cont'd)

.3 The DND Rep will arrange for the form to be completed and signed by the authorized representative for:
- .1 Electrical Distribution.
- .2 POL Distribution.
- .3 Sewer/Water/Drainage System.
- .4 Heating Plant.
- .5 Fire Department.
- .6 UGSO (Unit General Safety Officer).
- .7 W TIS
- .8 Wing Operations.
- .9 Commercial Utility Companies.
- .10 TELUS(Ticket Number)
- .11 Alberta First Call

.4 Where work involves breaking into or connecting to existing services, carry out work at times directed by governing authorities, with minimum of disturbance to pedestrian and vehicular traffic.

.5 Submit schedule to and obtain approval from DND Rep for any shut-down or closure of active service or facility. Adhere to approved schedule and provide notice to affected parties.

.6 Where unknown services are encountered, immediately advise DND Rep and confirm findings in writing.

.7 Remove abandoned service lines within 2 m of structures. Cap or otherwise seal lines at cut-off points as directed by DND Rep.

.8 Record locations of maintained, re-routed and abandoned service lines.

1.15 Additional Drawings

.1 DND Rep may furnish, if requested, additional copies of drawings and specifications.

1.16 Alterations, Additions or Repairs to Existing Building

.1 Execute work with least possible interference or disturbance to occupants, public and normal use of premises. Arrange with DND Rep to facilitate execution of work.

.2 Where security has been affected by work of Contract, provide temporary means to maintain security.

1.16 Alterations, Additions or Repairs to Existing Building (Cont'd)

.3 Where elevators or conveyors exist in building, only those assigned for Contractor's use may be used for moving men and material within building. Protect walls of passenger elevators to approval of DND Rep before use. Accept liability for damage, safety of equipment and overloading of existing equipment.

.4 Provide temporary dust screens, barriers, and warning signs in locations where renovation and alteration work is adjacent to areas used by public or government staff.

1.17 Restoration of Disturbed Surfaces

.1 The Contractor shall be responsible for the restoration of all disturbed areas including adjacent areas to excavations, disturbed grassed areas, hard surfaces and any other area damaged due to work carried out, as indicated and to the satisfaction of the DND Rep.

1.18 Building Smoking Environment

.1 4 Wing Cold Lake has a smoking policy in effect. Contractor is to obtain a copy from DND Rep and adhere to it.

1.19 Asbestos Discovery

.1 If, during execution of contract work, workers uncover or disturb suspected asbestos products that are not covered in the contract specifications, STOP work in that area and advise DND Rep.

1.20 Security

.1 Access
.1 Work carried out under the terms of this contract will be conducted within the General Restricted Area (GRA) where special and unique security regulations are enforced. Individuals without authorized passes in their possession will not be permitted to enter the GRA.

.2 Clearances
.1 Work clearance will be granted in two possible ways, please see clause 1.2 for authorization:
.1 Security Mitigation Measures
.2 Security Requirements Check List.

1.20 Security (Cont'd)

.3 Security Mitigation Measures

.1 In the case of Security Mitigation Measures, contractor will have access to the GRA only under full time escort.

.2 At no time shall the contractor's employees or sub-contractors be found within the GRA without an authorized pass and escort.

.3 Every effort will be made to provide escorts according to the provided construction schedule.

.4 The Contractor shall give minimum 72 Hour’s notice (two working days) for the processing of the information and subsequent issue of the passes. The Contractor shall ensure that all employees are advised not to enter the GRA without prior authorization (GRA pass) and government issued photo identification.

.4 Security Requirements Check List

.1 All personnel employed by the Contractor and performing work within the GRA will be subject to a Reliability screening performed by Public Works and Government Services Canada Security Division. Prior to commencement of the Work, the Contractor and each of his personnel involved in the performance of the Contract must be security screened by the Canadian and International Industrial Security Division of the Department of Public Works and Government Services at the level of RELIABILITY STATUS.

.2 Information that the contractor must provide for this screening include: Date of Birth; Address; Country of Origin; Education/Professional qualifications; Employment history; and References/Personal Character. The security Division will perform Criminal Record check and Credit check on each applicant. If significant adverse information arises during the conduct of a security assessment, the individual will be notified, in person, and given an opportunity to explain the circumstances. If the Deputy Minister, PWGSC, after reviewing a security assessment, denies the granting of RELIABILITY STATUS, the individual(s) concerned shall be so notified in writing along with information relating to their right of appeal and subsequent admission to the GRA will be prohibited, pending the outcome of any appeal.

.3 The Contractor shall obtain GRA passes from the Wing Military Police Identification Section from information provided by the Contractor to the Contracting Authority or

1.20 Security (Cont'd)

.4 (Cont'd)

.3 (Cont'd)
Contract Inspector. The Contractor shall give minimum 48 hours notice (two working days) for the processing of the information and subsequent issue of the passes. The Contractor shall ensure that all employees are advised not to enter the GRA without prior authorization (GRA pass) and government issued photo identification.

.4 The Contractor shall be responsible for his sub-contractors, ensuring all security related requirements are met.

.5 The Contractor shall provide a list of employees and sub-contractors, complete with telephone numbers, who may be contacted during non-working hours in the event of any emergency.

.6 The Contractor shall ensure that all passes issued to his designated employees and sub-contractors are returned for cancellation prior to issuance of the DND Rep's final certificate of completion.

.5 CLAWR (Cold Lake Air Weapons Range)Special conditions.

.1 The contractor shall provide DND a list of personnel who need access to the area to perform work under the terms of the contract.

.2 All personnel are required to attend a 1 hour "Range Safety Briefing" prior to conducting any work or accessing the PLER site.

.3 Contractor shall provide schedule minimum 14 days in advance of scheduled work on site. Any changes to this schedule shall be provided to the inspector at a minimum of 48 hours advance notice (two working days) for processing of information and subsequent clearances to PLER. The Contractor shall ensure that all employees are advised not to enter the PLER without prior authorization.

.4 Information that the contractor must provide for access: name of individual(s), dates and times for access, location of work, phone number, drivers licence.

.5 Work clearance will be granted by DND through Wing Operations Mr. Dick Brakely @ local 7978.

.6 The Contractor shall be responsible for his sub-contractors, ensuring all security related requirements are met.

.7 Garbage or refuse shall be removed off the CLAWR.

.8 Feeding wildlife is prohibited.

1.20 Security (Cont'd)

.5 (Cont'd)
.9 All meals must be prepared and consumed in a suitable enclosed space or building.
.10 Report to Range Safety Officer (RSO) as required by DND.
.11 The Contractor shall provide a list of employees and sub-contractors, complete with telephone numbers, who may be contacted during non-working hours in the event of any emergency.

PART 2 - PRODUCTS

2.1 Not Used .1 Not Used.

PART 3 - EXECUTION

3.1 Not Used .1 Not Used.

END

PART 1 - GENERAL

1.1 Section Includes

.1 Shop drawings and product data.

.2 Samples.

1.2 Precedence

.1 For Federal Government projects, Division 1 Sections take precedence over technical specification sections in other Divisions of this Project Manual.

1.3 Administrative

.1 Submit to DND Rep submittals listed for review. Submit with reasonable promptness and in orderly sequence so as to not cause delay in Work. Failure to submit in ample time is not considered sufficient reason for an extension of Contract Time and no claim for extension by reason of such default will be allowed.

.2 Work affected by submittal shall not proceed until review is complete.

.3 Present shop drawings, product data, samples and mock-ups in SI Metric units.

.4 Where items or information is not produced in SI Metric units converted values are acceptable.

.5 Review submittals prior to submission to DND Rep. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and coordinated with requirements of Work and Contract Documents. Submittals not stamped, signed, dated and identified as to specific project will be returned without being examined and shall be considered rejected.

.6 Notify DND Rep, in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.

.7 Verify field measurements and affected adjacent Work are coordinated.

1.3 Administrative (Cont'd)

.8 Contractor's responsibility for errors and omissions in submission is not relieved by DND Rep's Consultant's review of submittals.

.9 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by DND Rep Consultant review.

.10 Keep one reviewed copy of each submission on site.

1.4 Shop Drawings

.1 The term "shop drawings" means drawings, diagrams, illustrations, schedules, performance charts, brochures and other data which are to be provided by Contractor to illustrate details of a portion of Work.

.2 Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connections, explanatory notes and other information necessary for completion of Work. Where articles or equipment attach or connect to other articles or equipment, indicate that such items have been coordinated, regardless of Section under which adjacent items will be supplied and installed. Indicate cross references to design drawings and specifications.

.3 Allow 14 days for DND Rep's review of each submission.

.4 Adjustments made on shop drawings by DND Rep are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to DND Rep prior to proceeding with Work.

.5 Make changes in shop drawings as DND Rep may require, consistent with Contract Documents. When resubmitting, notify DND Rep in writing of any revisions other than those requested.

.6 Accompany submissions with transmittal letter containing:
.1 Date.
.2 Project title and number.
.3 Contractor's name and address.
.4 Identification and quantity of each shop drawing, product data and sample.
.5 Other pertinent data.

1.4 Shop Drawings (Cont'd)

.7 Submissions shall include:
- .1 Date and revision dates.
- .2 Project title and number.
- .3 Name and address of:
  - .1 Subcontractor.
  - .2 Supplier.
  - .3 Manufacturer.
- .4 Contractor's stamp, signed by Contractor's authorized representative certifying approval of submissions, verification of field measurements and compliance with Contract Documents.
- .5 Details of appropriate portions of Work as applicable:
  - .1 Fabrication.
  - .2 Layout, showing dimensions, including identified field dimensions, and clearances.
  - .3 Setting or erection details.
  - .4 Capacities.
  - .5 Performance characteristics.
  - .6 Standards.
  - .7 Operating weight.
  - .8 Wiring diagrams.
  - .9 Single line and schematic diagrams.
  - .10 Relationship to adjacent work.

.8 After DND Rep's review, distribute copies.

.9 Submit prints, number as required by contractor plus two(2)copies to be retained by DND Rep, of shop drawings and data sheets for each requirement requested in specification Sections and as consultant may reasonably request.

.10 Delete information not applicable to project.

.11 Supplement standard information to provide details applicable to project.

.12 If upon review by DND Rep, no errors or omissions are discovered or if only minor corrections are made, copies will be returned and fabrication and installation of Work may proceed. If shop drawings are rejected, noted copy will be returned and resubmission of corrected shop drawings, through same procedure indicated above, must be performed before fabrication and installation of Work may proceed.

.13 The review of shop drawings by Department of National Defence (DND) is for sole purpose of ascertaining conformance with general concept.

1.4 Shop Drawings (Cont'd)

.13 (Cont'd) This review shall not mean that DND approves detail design inherent in shop drawings, responsibility for which shall remain with Contractor submitting same, and such review shall not relieve Contractor of responsibility for errors or omissions in shop drawings or of responsibility for meeting all requirements of construction and Contract Documents. Without restricting generality of foregoing, Contractor is responsible for dimensions to be confirmed and correlated at job site, for information that pertains solely to fabrication processes or to techniques of construction and installation and for co-ordination of Work of all sub-trades.

1.5 Product Data

.1 Manufacturers' catalogue sheets, brochures, literature, performance charts and diagrams, used to illustrate standard manufactured products.

.2 Submit 2 copies of product data.

.3 Sheet size: 215 x 280 mm.

.4 Delete information not applicable to project.

.5 Supplement standard information to provide details applicable to project.

.6 Cross-reference product data information to applicable portions of Contract documents.

1.6 Samples

.1 Submit for review samples in duplicate as requested in respective specification Sections. Label samples with origin and intended use.

.2 Deliver samples prepaid to DND Rep.

.3 Notify DND Rep in writing, at time of submission of deviations in samples from requirements of SOA Documents.

.4 Where color, pattern or texture is criterion, submit full range of samples.

.5 Adjustments made on samples by DND Rep are not intended to change Contract Price. If adjustments affect value of Work, state such

1.6 Samples (Cont'd)

.5 (Cont'd) in writing to DND Rep prior to proceeding with Work.

.6 Make changes in samples which DND Rep may require, consistent with Contract Documents.

.7 Reviewed and accepted samples will become standard of workmanship and material against which installed Work will be verified.

PART 2 - PRODUCTS

2.1 Not Used

.1 Not Used.

PART 3 - EXECUTION

3.1 Not Used

.1 Not Used.

END

PART 1 - GENERAL

1.1 Section Includes

.1 Informational and Warning Devices.

.2 Protection and Control of Public Traffic.

.3 Operational Requirements.

1.2 Precedence

.1 For Federal Government projects, Division 1 Sections take precedence over technical specification sections in other Divisions of this Project Manual.

1.3 References

.1 Uniform Traffic Control Devices for Canada, (UTCD) January 1976(distributed by Transportation Association of Canada).

.2 Manual of Uniform Traffic Control Devices for Streets and Highways, US FHWA, Part IV, - 1988.

1.4 Protection of Public Traffic

.1 Comply with requirements of Acts, Regulations and By-Laws in force for regulation of traffic or use of roadways upon or over which it is necessary to carry out Work or haul materials or equipment.

.2 When working on travelled way:
.1 Place equipment in position to present minimum of interference and hazard to traveling public.
.2 Keep equipment units as close together as working conditions permit and preferably on same side of travelled way.
.3 Do not leave equipment on travelled way overnight.

.3 Do not close any lanes of road without approval of DND Rep . Before re-routing traffic erect suitable signs and devices in accordance with instructions contained in Part D of UTCD.

1.4 Protection of Public Traffic (Cont'd)

.4 Keep travelled way graded, free of pot holes and of sufficient width for required number of lanes of traffic.
.1 Provide minimum 7 m wide temporary roadway for traffic in two-way sections through Work and on detours.
.2 Provide minimum 5 m wide temporary roadway for traffic in one-way sections through Work and on detours.

.5 Provide and maintain road access and egress to property fronting along Work under Contract and in other areas as indicated, unless other means of road access exist that meet approval of DND Rep.

1.5 Informational and Warning Devices

.1 Provide and maintain signs, flashing warning lights and/or other devices required to indicate construction activities or other temporary and unusual conditions resulting from Project Work which requires road user response.

.2 Supply and erect signs, delineators, barricades and miscellaneous warning devices as specified in Part D, Temporary Conditions Signs and Devices, of UTCD manual.

.3 Place signs and other devices in locations recommended in UTCD manual.

.4 Meet with DND Rep prior to commencement of Work to prepare list of signs and other devices required for project. If situation on site changes, revise list to approval of DND rep.

.5 Continually maintains traffic control devices in use by:
.1 Checking signs daily for legibility, damage, suitability and location. Clean, repair or replace to ensure clarity and reflectance.
.2 Removing or covering signs which do not apply to conditions existing from day to day.

1.6 Control of Public Traffic

.1 Provide competent flag persons, trained in accordance with, and properly equipped as specified in, UTCD manual in following situations:

1.6 Control of Public Traffic (Cont'd)

.1 (Cont'd)

.1 When public traffic is required to pass working vehicles or equipment which block all or part of travelled roadway.

.2 When it is necessary to institute one-way traffic system through construction area or other blockage where traffic volumes are heavy, approach speeds are high and traffic signal system is not in use.

.3 When workmen or equipment are employed on travelled way over brow of hills, around sharp curves or at other locations where oncoming traffic would not otherwise have adequate warning.

.4 Where temporary protection is required while other traffic control devices are being erected or taken down.

.5 For emergency protection when other traffic control devices are not readily available.

.6 In situations where complete protection for workers, working equipment and public traffic is not provided by other traffic control devices.

.7 At each end of restricted sections where pilot cars are required.

.8 Delays to public traffic due to contractor's operators: maximum 15min.

.2 Where roadway, carrying two-way traffic, to be restricted to one lane, for 24 h each day, provide portable traffic signal system. Adjust, as necessary, and regularly maintain system during period of restriction. Signal system to meet requirements of Part IV of Manual of Uniform Traffic Control Devices to Street and Highways, US FHWA.

1.7 Operational Requirements

.1 Maintain existing conditions for traffic throughout period of contract except that, when required for construction under contract and when measures have been taken as specified herein and approved by DND Rep to protect and control public traffic.

.2 Maintain existing conditions for traffic crossing right-of-way.

PART 2 - PRODUCTS

2.1 Not Used .1 Not Used.

PART 3 - EXECUTION

3.1 Not Used .1 Not Used.

END

PART 1 - GENERAL

1.1 Precedence

.1 For Federal Government projects, Division 1 Sections take precedence over technical specification sections in other Divisions of this Project Manual.

1.2 General Protection

.1 Do not disrupt airport business except as permitted by DND Rep.

.2 Provide temporary protection for safe handling of public, personnel, pedestrians and vehicular traffic:

.3 Provide barricades and lights where directed.

1.3 Movement of Equipment and Personnel

.1 In areas of airport not closed to aircraft traffic:
.1 Obtain DND Rep's approval on scheduling of Work.
.2 Control movements of equipment and personnel as directed by DND Rep .
.3 Provide qualified field personnel at locations designated by DND Rep to relay signals from airport traffic control tower to equipment and personnel wishing to cross live traffic areas.
.4 Obey signals from airport traffic control tower instantly.

1.4 Unserviceable Areas

.1 Mark off areas made unserviceable for aircraft by Work of this Contract by providing plainly visible danger markings by day and red lights by night. Open flames and inflammable fuels are not permitted.

.2 Park equipment not in use and stockpile materials so that stockpile tops are below 50 to 1 ratio from ends of useable landing strip and below 20 to 1 ratio from sides of aircraft traffic areas. Mark tops with red lights.

1.5 Trenching

.1 Obtain DND Rep's written permission to undertake trenching on pavements open to aircraft traffic which cannot be completed, backfilled and sealed within one working day.

1.6 Airport Facilities

.1 DND Rep will arrange for the location of underground facilities such as cables, pipes and ducts. Notify DND Rep of work areas sufficiently in advance of operations so that underground facilities can be located.

1.7 Paint Markings

.1 Any paint applied to the aerodrome surface must be approved by DND Rep.

.2 All markings must be of non-permanent type such as chalk or water soluble paint.

1.8 Radio Communications

.1 Base authority will assign call signs.

.2 Do not use control tower frequencies for idle chatter.

1.9 Flight Safety

.1 Prior to permitting personnel to cross active runways, taxiways, parking aprons or working within 60 m of active facility, establish radio contact with control tower and obtain specific clearances.

.2 Prior to starting work, obtain necessary closure of adjacent facilities.

.3 Maintain continuous radio watch. Obey all instructions promptly and explicitly.

.4 Radio:

.1 The Contractor's personnel and equipment authorized to enter the security area, will be given a DND two-way radio. If no radio are available, the Contractor shall be escorted to cross runways, taxiways or parking aprons.

.2 Any Contractor's employee found outside of the work site limit, will have his security pass revoked and will no longer be allowed inside the security area.

1.10 Cleaning FOD

.1 Where travel routes cross active runways, taxiways or parking aprons, broom clean immediately.

.2 Where access routes cross active runways, taxiways or parking aprons, keep crossings free of mud and debris at all times.

.3 See Section 01 74 11 - Cleaning for further FOD info.

PART 2 - PRODUCTS

2.1 Not Used

.1 Not Used.

PART 3 - EXECUTION

END

PART 1 - GENERAL

1.1 Precedence

.1 For Federal Government projects, Division 1 Sections take precedence over technical specification sections in other Divisions of this Project Manual.

.2 The contractor will be acting as the Prime Contractor for this contract and will certify this agreement in writing with the DND representative. Refer to Annex D for prime contractor's Agreement.

1.2 References

.1 Canada Labour Code, Part 2, Canada Occupational Safety and Health Regulations.

.2 Province of Alberta Occupational Health and Safety Act, R.S.A. 1980.

1.3 Submittals

.1 Make submittals in accordance with Section 01 33 00 - Submittal Procedures.

.2 Submit site-specific Health and Safety Plan: Within 7 days after date of Notice to Proceed and prior to commencement of Work. Health and Safety Plan must include:
.1 Results of site specific safety hazard assessment.
.2 Results of safety and health risk or hazard analysis for site tasks and operation found in work plan.

.3 Submit copies of Contractor's authorized representative's work site health and safety inspection reports to DND Rep weekly.

.4 Submit copies of reports or directions issued by Federal, Provincial and Territorial health and safety inspectors.

.5 Submit copies of incident and accident reports.

.6 Submit Material Safety Data Sheets (MSDS) to DND Rep.

1.3 Submittals (Cont'd)

.7 DND Rep will review Contractor's site-specific Health and Safety Plan and provide comments to Contractor within 10days after receipt of plan. Revise plan as appropriate and resubmit plan to DND Rep within 10 days after receipt of comments from DND Rep.

.8 DND Rep 's review of Contractor's final Health and Safety plan should not be construed as approval and does not reduce the Contractor's overall responsibility for construction Health and Safety.

.9 Medical Surveillance: Where prescribed by legislation, regulation or safety program, submit certification of medical surveillance for site personnel prior to commencement of Work, and submit additional certifications for any new site personnel to DND Rep.

.10 On-site Contingency and Emergency Response Plan: Address standard operating procedures to be implemented during emergency situations.

1.4 Filing of Notice

.1 File Notice of Project with Provincial authorities prior to commencement of Work.

1.5 Safety Assessment

.1 Perform site specific safety hazard assessment related to project.

1.6 Meetings

.1 Schedule and administer Health and Safety meeting with DND Rep prior to commencement of Work.

1.7 Project/Site Conditions

.1 Work at site may involve contact with:

.1 Asbestos.
.2 Lead Paint

1.8 General Requirements

.1 Develop written site-specific Health and Safety Plan based on hazard assessment prior to commencing any site Work and continue to implement, maintain, and enforce plan until final demobilization from site. Health and

1.8 General Requirements (Cont'd)

.1 (Cont'd)
Safety Plan must address project specifications.

.2 DND Rep may respond in writing, where deficiencies or concerns are noted and may request re-submission with correction of deficiencies or concerns.

1.9 Responsibility

.1 Be responsible for health and safety of persons on site, safety of property on site and for protection of persons adjacent to site and environment to extent that they may be affected by conduct of Work.

.2 Comply with and enforce compliance by employees with safety requirements of Contract Documents, applicable federal, provincial, territorial and local statutes, regulations, and ordinances, and with site-specific Health and Safety Plan.

1.10 Compliance Requirements

.1 Comply with Occupational Health and Safety Act, General Safety Regulation, Alberta. Reg. 1980. and 4 Wing Safety Measures listed below;

.2 Contractors and their personnel shall be familiar with this section and its requirements.

.3 Observe and enforce construction safety measures required by National Building Code 2005, Part 8; Provincial Government, Workmen's Compensation Board and municipal statutes and authorities.

.4 Hard hats and safety boots shall be worn at all times at construction site.

.5 Hard hats and safety boots shall be worn at all times while operating mobile equipment.

.6 Eye or face protection shall be worn when handling any material liable to injure or irritate the eyes or when engaging in any work producing hazard from flying objects or when operating power lawn equipment and tools.

.7 Hearing protection shall be worn when entering or working in a noise hazardous area. This is to include, but not limited, to the

1.10 Compliance Requirements (Cont'd)

.7 (Cont'd)
flight line when aircraft are running, shop operations where sound levels exceed 85 decibels and operators of vehicles or equipment which produce excessive noise.

.8 Respirators shall be worn when a worker is or may be exposed to an oxygen deficient area or to harmful concentration of gas, vapors, smoke, fumes, mist or dust.

.9 All employees who handle or are exposed to hazardous materials as defined under the Hazardous Product Act (WHMIS Legislation) shall be WHMIS trained in accordance with the act.

.10 Material safety data sheets (MSDS) for all materials falling under the WHMIS program shall be supplied to the work site by the Contractor/Sub-contractor or user(s), and readily accessible to all on-site personnel.

.11 No employee shall enter or be permitted to enter a hazardous confined space unless such entry is made in compliance with Occupational Safety and Health and Labour Canada Standards.

.12 Confined spaces entry permit must be obtained from the Fire Department and completed prior to the entry into a confined space.

.13 Safety belts and lifelines shall be worn when working at heights greater than 3.26 meters above floor level where it is impractical to provide adequate work platforms or staging.

.14 All elevated work sites shall have the area underneath cordoned off to prevent injuries from falling debris.

.15 All construction sites which present a potential hazard to the public shall be properly cordoned off and signs prominently placed, warning of possible dangers.

.16 No burning, cutting, welding or use of any heat producing device is allowed without a hot work permit from the Fire Department (Annex B). A pre-work inspection and post-work inspection is mandatory.
.1 Fire Department phone number for Safety/Fire Inspector is:
.1 840-8000 ext 8198.

1.10 Compliance Requirements (Cont'd)

.17 All accidents are to be reported through the DND Rep immediately.

.18 In addition to these 4 Wing Cold Lake's General Safety Contractor Regulations, all Alberta Occupational Health and Safety Regulations shall be adhered to at all times.

.19 In event of conflict between any provisions of above authorities the most stringent provisions govern.

.1 The following are the known hazardous substances and/or hazardous conditions at the work site which will be considered as health or environmental hazards and shall be properly managed should they be encountered as part of the work.

.2 Specific hazards that may impact significantly on the contract or present significant risk:

a. Excavation
b. Hot work
c. Fall Hazards
d. Heavy Equipment
e. Overhead/underground Utilities
f. Traffic

.3 Contractors are required to be aware of the known hazardous substances and/or hazardous conditions and are to include in their tender price all work associated in working with, in and around the hazards.

.4 The above lists shall not be construed as being complete and inclusive of all safety and health hazards encountered as a result of the Contractor’s operations during the course of work. Include the above items into the hazard assessment program specified herein.

1.11 Cell Phones

.1 Use of cellular phones are prohibited within Refueling Compounds.

.2 Cell phones shall not be operated within 15M of an aircraft.

1.12 Overloading

.1 Ensure no part of work is subjected to loading that will endanger its safety or will cause permanent deformation.

1.13 Hazardous Material

.1 All hazardous material must be identified and labelled in accordance with the Workplace Hazardous Material Information System (WHMIS) and copies of the Material Safety Data Sheet (MSDS) shall be supplied to both the Wing Fire Chief and DND Rep.

1.14 Unforeseen Hazards

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

1.15 Health and Safety Co-coordinator

.1 Employ and assign to Work, competent and authorized representative as Health and Safety Co-coordinator. Health and Safety Co-coordinator must:

.1 Have minimum 2 years' site-related working experience specific to construction activities taking place.

.2 Have working knowledge of occupational safety and health regulations.

.3 Be responsible for completing Contractor's Health and Safety Training Sessions and ensuring that personnel not successfully completing required training is not permitted to enter site to perform Work.

.4 Be responsible for implementing, enforcing daily and monitoring site-specific Contractor's Health and Safety Plan.

.5 Be on site during execution of any hazardous Work and report directly to and be under direction of site supervisor.

1.16 Posting of Documents

.1 Ensure applicable items, articles, notices and orders are posted in conspicuous location on site in accordance with Acts and Regulations of Province having jurisdiction, and in consultation with DND Rep.

1.17 Correction of Non-Compliance

.1 Immediately address health and safety non-compliance issues identified by authority having jurisdiction or by DND Rep.

.2 Provide DND Rep with written report of action taken to correct non-compliance of health and safety issues identified.

.3 DND Rep may stop Work if non-compliance of health and safety regulations is not corrected.

1.18 Work Stoppage

.1 Give precedence to safety and health of public and site personnel and protection of environment over cost and schedule considerations for Work.

PART 2 - PRODUCTS

2.1 Not Used

.1 Not used.

PART 3 - EXECUTION

3.1 Not Used

.1 Not used.

END

PART 1 - GENERAL

1.1 Precedence

.1 For Federal Government projects, Division 1 Sections take precedence over technical specification sections in other Divisions of this Project Manual.

1.2 Fire Department Briefing

.1 DND Rep will coordinate arrangements for contractor to be briefed on Fire Safety at their pre-work conference by Fire Chief before any work is commenced.

1.3 Reporting Fires

.1 Know location of nearest fire alarm box and telephone, including emergency phone number.

.2 Report immediately all fire incidents to the Fire Department as follows:
.1 Activate nearest fire alarm box, or
.2 Telephone 911 in case of EMERGENCY ONLY.

.3 Person activating fire alarm box will remain at the front entrance to direct Fire Department to scene of fire.

.4 When reporting fire by telephone, give location of fire, name or number of building and be prepared to verify the location.

1.4 Fire Safety Plan

.1 Submit a fire safety plan for the construction site prior to commencement of construction work. The fire safety plan shall conform to the National Fire Code of Canada.

.2 Post the fire safety plan at the entrance to the construction site or near the construction site's health and safety board.

.3 The fire safety plan shall conform to the National Fire Code of Canada, and shall contain, at minimum:
.1 Emergency procedures to be used in case of fire, including
.1 Sounding the fire alarm;
.2 Notifying the fire department;
.3 Instructing occupants on procedures to be followed when the fire alarm sounds;

1.4 Fire Safety Plan (Cont'd)

.3 (Cont'd)
.1 (Cont'd)
.4 Evacuating occupants, including special provisions for persons requiring assistance; and
.5 Confining, controlling and extinguishing fires.
.2 The appointment and organization of designated supervisory staff to carry out fire safety duties.
.3 The training of supervisory staff and other occupants in their responsibilities for fire safety.
.4 Documents including diagrams, showing the type, location and operation of building fire emergency systems.
.5 The holding of fire drills (where applicable).
.6 The control of fire hazards in the building.
.7 The inspection and maintenance of building facilities provided for the safety of occupants.

1.5 Interior and Exterior Fire Protection and Alarm Systems

.1 Fire protection and alarm system will not be:
.1 obstructed;
.2 shut-off; and
.3 left inactive at end of working day or shift without authorization from Fire Chief.

.2 Fire hydrants, standpipes and hose systems will not be used for other than fire-fighting purposes unless authorized by Fire Chief.

1.6 Fire Protection System Impairment

.1 Notify the DND Representative and Fire Chief 48 hours prior to shutting down any active fire protection system, including water supply, fire suppression, fire detection and life safety systems.

.2 Implement all fire protection system impairments in accordance with the National Fire Code of Canada and departmental policy.

1.7 Fire Extinguishers

.1 Supply fire extinguishers, as scaled by Fire Chief, necessary to protect work in progress and contractor's physical plant on site.

1.8 Installation and/or Repair of Roof to Include Contractors Physical Plant at Site

.1 Notify Fire Chief of location of any asphalt kettles and dates that kettles will be in use. Ensure personnel use and take precautions as follows :

.1 Use kettles equipped with thermometers or gauges in good working order.
.2 Locate kettles in safe place outside of building or, if approved by Fire Chief, on non-combustible roof. Locate to avoid danger of igniting combustible material below.
.3 Maintain continuous supervision while kettles are in operation and provide metal covers for kettles to smother any flames in case of fire. Fire extinguishers shall be provided as required in 1.4.
.4 Prior to start of work , demonstrate container capacities to Fire Chief.
.5 Use only glass fiber roofing mops.
.6 Used roofing mops will not be left unattended on roof and shall be stored away from building and combustible materials.
.7 All roofing materials will be stored in location no closer than 3 m to any structures.

1.9 Blockage of Roadways

.1 Advise Fire Chief of any work that would impede fire apparatus response. This includes violation of minimum overhead clearance, as prescribed by Fire Chief, erecting of barricades and digging of trenches.

.2 Wing Transport shall be advised of any work that would impede "Emergency" vehicles located at:

.1 Building 4 - Fire Hall
.2 Building 5 - Wing Transport
.3 Building 785 - MP Station
.4 Building 75 - Ambulance location

.3 Minimum horizontal clearance: clear width of not less than 5m.

.4 Minimum vertical clearance: overhead height of not less than 6m.

1.10 Smoking Precautions

.1 Smoking is prohibited in all DND buildings. Observe posted smoking restrictions near existing buildings.

1.11 Rubbish and Waste Materials

.1 Rubbish and waste materials are to be kept to a minimum.

.2 Burning of rubbish is prohibited.

.3 Removal:
.1 Remove all rubbish from work site at end of work day or shift or as directed.

.4 Storage:
.1 Store oily waste in approved receptacles to ensure maximum cleanliness and safety.
.2 Deposit greasy or oily rags and materials subject to spontaneous combustion in approved receptacles and removed as specified above.

1.12 Flammable and Combustible Liquids

.1 Handling, storage and use of flammable and combustible liquids are to be governed by the current National Fire Code of Canada.

.2 Flammable and combustible liquids such as gasoline, kerosene and naphtha will be kept for ready use in quantities not exceeding 45 liters provided they are stored in approved safety cans bearing Underwriters' Laboratory of Canada or Factory Mutual seal of approval. Storage of quantities of flammable and combustible liquids exceeding 45 liters for work purposes requires permission of Fire Chief.

.3 Transfer of flammable and combustible liquids is prohibited within buildings or jetties.

.4 Transfer of flammable and combustible liquids will not be carried out in vicinity of open flames or any type of heat-producing devices.

.5 Flammable liquids having a flash point below 38° C such as naphtha or gasoline will not be used as solvents or cleaning agents.

.6 Flammable and combustible waste liquids, for disposal, will be stored in approved containers located in a safe ventilated area. Quantities are to be kept to a minimum and Fire Department is to be notified when disposal is required.

1.13 Hazardous Substances

.1 Work entailing use of toxic or hazardous materials, chemicals and/or explosives, or otherwise creating hazard to life, safety or health, will be in accordance with National Fire Code of Canada.

.2 Obtain from Fire Chief a "Hot Work" permit(Annex B) for work involving welding, burning or use of blow torches and salamanders, in buildings or facilities.

.3 When Work is carried out in dangerous or hazardous areas involving use of heat, provide fire watchers equipped with sufficient fire extinguishers. Determination of dangerous or hazardous areas along with level of protection necessary for Fire Watch is at discretion of the Fire Chief. Contractors are responsible for providing fire watch service for work on a scale established and in conjunction with Fire Chief at pre-work conference.

.4 Where flammable liquids, such as lacquers or urethanes are to be used, proper ventilation shall be provided and all sources of ignition are to be eliminated. Fire Chief is to be informed prior to and at cessation of such work.

1.14 Questions or Clarifications

.1 Direct any questions or clarification on Fire Safety in addition to above requirements to the DND representative. DND is responsible to obtain clarifications from the Fire Chief.

1.15 Fire Inspection

.1 Site inspections by Fire Chief will be coordinated through DND Rep.

.2 Allow Fire Chief unrestricted access to work site.

.3 Co-operate with Fire Chief during routine fire safety inspection of work site.

.4 Immediately remedies all unsafe fire situations observed by Fire Chief.

PART 2 - PRODUCTS

2.1 Not Used .1 Not Used.

PART 3 - EXECUTION

3.1 Not Used .1 Not Used.

END

PART 1 - GENERAL

1.1 General

.1 Comply with all federal, provincial, and municipal regulatory requirements and guidelines for environmental protection and natural resource conservation

1.2 Precedence

.1 For Federal Government projects, Division 1 Sections take precedence over technical specification sections in other Divisions of this Project Manual.

1.3 Fires

.1 Fires and burning of rubbish on site not permitted.

1.4 Disposal of Wastes

.1 Do not bury rubbish and waste materials on site unless approved by DND Rep.

.2 Do not dispose of waste or volatile materials, such as mineral spirits, oil or paint thinner into waterways, storm or sanitary sewers.

.3 The contractor shall dispose of all rubbish and residue in accordance with existing provincial and/or municipal regulations and/or bylaws. A disposal manifest will be delivered to the Project Authority to ensure the waste has been accepted by a proper facility.

.4 Costs associated with appropriate removal, transportation and disposal of ALL WASTE is the responsibility of the Contractor

1.5 Drainage

.1 Provide temporary drainage and pumping as necessary to keep excavations and site free from water.

.2 Do not pump water containing suspended materials into waterways, sewer or drainage systems.

.3 Control disposal or runoff of water containing suspended materials or other

1.5 Drainage (Cont'd)

.3 (Cont'd) harmful substances in accordance with local authority requirements.

1.6 Site Clearing and Plant Protection

.1 Protect trees and plants on site and adjacent properties where indicated.

.2 Wrap in burlap, trees and shrubs adjacent to construction work, storage areas and trucking lanes, and encase with protective wood framework from grade level to height of 2 m.

.3 Protect roots of designated trees to drip line during excavation and site grading to prevent disturbance or damage. Avoid unnecessary traffic, dumping and storage of materials over root zones.

.4 Minimize stripping of topsoil and vegetation.

.5 Restrict tree removal to areas indicated or designated by DND Rep. See Section 01 00 01 1.6.3 for tree replacement requirements.

1.7 Work Adjacent to Waterways

.1 Do not operate construction equipment in waterways.

.2 Do not use waterway beds for borrow material.

.3 Do not dump excavated fill, waste material or debris in waterways.

.4 Design and construct temporary crossings to minimize erosion to waterways.

.5 Do not skid logs or construction materials across waterways.

.6 Avoid indicated spawning beds when constructing temporary crossings of waterways.

.7 Do not blast under water or within 100 m of indicated spawning beds.

1.8 Pollution Control

.1 Maintain temporary erosion and pollution control features installed under this contract.

1.8 Pollution Control (Cont'd)

.2 Control emissions from equipment and plant to local authority's 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.

1.9 Protection of Monitoring Wells

.1 Protect any and all existing groundwater monitoring wells. Report any disturbances or damage to the Project Authority immediately. Wing Environment will need to be informed

1.10 Halocarbons

.1 Refrigeration units will comply with the Federal Halocarbon Regulations (FHR), 2003.

.2 Halocarbon refrigerants shall be R410A or a suitable CFC free substitute. Non-halocarbon refrigerants are still acceptable.

.3 When the unit is installed, serviced, or decommissioned by a contractor, the Halocarbon Reporting Form must be completed and submitted to the Project Authority.

.4 Report all halocarbon releases to the Project Authority, Wing Fire Hall and Wing Environment.

1.11 Spill Response and Report

.1 Spill kits will be on site where there is potential for spillage onto the ground.

.2 Personnel on site will be educated in the use of spill kits and spill response based on the equipment on site.

.3 Secondary containment will be provided for generators or other fuel-powered equipment. This equipment will not be located within 30m of a waterway.

.4 Secondary containment for temporary fuel storage tanks, held on site by the contractor, will be implemented.

.5 Any spill, regardless of size, will be reported immediately to the Project Authority following the Environmental Incident and Emergency Plan, so proper reporting procedures can be implemented.

.6 An Environmental Incident Report will be completed and submitted to Wing Environment to report the spill within 24 hrs., follow-up may be required. Environmental Incident Report forms are available from W Env or Project Authority.

.7 Should the spill exceed the capabilities of the spill kits and the personnel on site, the Fire Department shall be contacted.

PART 2 - PRODUCTS

2.1 Not Used .1 Not Used.

PART 3 - EXECUTION

3.1 Not Used .1 Not Used.

END

PART 1 - GENERAL

1.1 Precedence .1 For Federal Government projects, Division 1 Sections take precedence over technical specification sections in other Divisions of this Project Manual.

1.2 Associations .1 ANSI - American National Standards Institute, 25 West 43rd Street, 4th Floor, New York, New York, U.S.A. 10036 URL http://www.ansi.org

.2 ARI - Air Conditioning and Refrigeration Institute, 4100 N Fairfax Drive, Suite 200, Arlington, Virginia, U.S.A. 22203 URL http://www.ari.org

.3 ASHRAE - American Society of Heating, Refrigeration and Air-Conditioning Engineers, 1791 Tullie Circle NE, Atlanta, Georgia, U.S.A. 30329 URL http://www.ashrae.org

.4 ASTM - American Society for Testing and Materials, 100 Barr Harbor Drive West, Conshohocken, Pennsylvania 19428-2959 URL http://www.astm.org

.5 AWPA - American Wire Producer's Association, 801 N Fairfax Street, Suite 211, Alexandria, VA U.S.A. 22314-1757 URL http://www.awpa.org

.6 AWPA - American Wood Preservers' Association, P.O. Box 5690, Granbury Texas, U.S.A. 76049-0690 URL http://www.awpa.com

.7 AWS - American Welding Society, 550 N.W. LeJeune Road, Miami, Florida U.S.A. 33126 URL http://www.amweld.org

.8 CCA Canadian Construction Association,75 Albert St., Suite 400 Ottawa, Ontario, K1P 5E7 URL http://www.cca-acc.com

.9 CCDC Canadian Construction Documents Committee, Refer to ACEC, CCA, CSC or RAIC

.10 CFFM - Canadian Forces Fire Marshal, 101 Colonel By Drive, 8NT MGen George R. Pearkes Bldg., Ottawa, Ontario K1A 0K2

.11 CGSB - Canadian General Standards Board, Place du Portage, Phase III, 6B1, 11 Laurier

1.2 Associations (Cont'd)

.11 (Cont'd) Street, Hull, Quebec K1A 0S5 URL http://w3.pwgsc.gc.ca/cgsb

.12 CISC - Canadian Institute of Steel Construction, 201 Consumers Road, Suite 300, Willowdale, Ontario M2J 4G8 URL http://www.cisc-icca.ca

.13 CLA - Canadian Lumbermen's Association, 27 Goulburn Avenue, Ottawa, Ontario, K1N 8C7 URL http://www.cla-ca.ca

.14 CRCA - Canadian Roofing Contractors Association, 155 Queen Street, Suite 1300, Ottawa, Ontario K1P 6L1 URL http://www.roofingcanada.com

.15 CSA - Canadian Standards Association International, 178 Rexdale Blvd., Toronto, Ontario M9W 1R3 URL http://www.csa-international.org

.16 CSC - Construction Specifications Canada, 120 Carlton Street, Suite 312, Toronto, Ontario M5A 4K2 URL http://www.csc-dcc.ca

.17 CSDMA - Canadian Steel Door Manufacturers Association, One Yonge Street, Suite 1801, Toronto, Ontario M5E 1W7

.18 CSSBI - Canadian Sheet Steel Building Institute, 652 Bishop St. N., Unit 2A, Cambridge, Ontario N3H 4V6 URL http://www.cssbi.ca

.19 CWC - Canadian Wood Council, 1400 Blair Place, Suite 210, Ottawa, Ontario K1J 9B8 URL http://www.cwc.ca

.20 EC - Environment Canada, Conservation and Protection, Inquiry Centre, 351 St. Joseph Blvd, Hull, Québec KIA 0H3 URL http://www.ec.gc.ca

.21 MPI - The Master Painters Institute, 4090 Graveley Street, Burnaby, BC V5C 3T6 URL http://www.paintinfo.com

.22 NABA - National Air Barrier Association, PO Box 2747, Winnipeg, Manitoba R3C 4E7 URL http://www.naba.ca

1.2 Associations (Cont'd)

.23 NLGA - National Lumber Grades Authority, 406-First Capital Place, 960 Quayside Drive, New Westminster, B.C. V3M 6G2

.24 NRC - National Research Council, Building M-58, 1200 Montreal Road, Ottawa, Ontario K1A 0R6 URL http://www.nrc.gc.ca

.25 NSPE National Society of Professional Engineers, 1420 King Street, Alexandria, VA U.S.A. 22314-2794 URL http://www.nspe.org

.26 QPL - Qualification Program List, c/o Canadian General Standards Board, Place du Portage, Phase III, 6B1, 11 Laurier Street, Hull, Quebec K1A 1G6 URL http://www.pwgsc.gc.ca/cgsb

.27 RAIC Royal Architectural Institute of Canada, 55 Murray Street, Suite 330, Ottawa, Ontario, K1N 5M3 URL http://www.raic.org

.28 SCC - Standards Council of Canada, 270 Albert Street, Suite 2000, Ottawa, Ontario K1P 6N7 URL http://www.scc.ca

.29 UL - Underwriters' Laboratories, 333 Pfingsten Road, Northbrook, Illinois, U.S.A. 60062-2096 URL http://www.ul.com

.30 ULC - Underwriters' Laboratories of Canada, 7 Crouse Road, Toronto, Ontario M1R 3A9 URL http://www.ulc.ca

1.3 Reference Standards

.1 Within the text of the specifications, reference may be made to the following standards:

.1 AA - Aluminum Association
.2 ACI - American Concrete Institute
.3 ACEC - Association of Consulting Engineers of Canada
.4 AISC - American Institute of Steel Construction
.5 ANSI - American National Standards Institute
.6 API - American Petroleum Institute
.7 ASPT - Association for Asphalt Paving Technologists
.8 ASME - American Society of Mechanical Engineers
.9 ASTM - American Society for Testing and Materials

1.3 Reference Standards (Cont'd)

.1 (Cont'd)

.10 AWMAC - Architectural Woodwork Manufacturers Association of Canada

.11 AWPA - American Wire Producers Association

.12 AWS - American Welding Society

.13 CCA - Canadian Construction Association

.14 CCDC - Canadian Construction Documents Committee

.15 CCME - Canadian Council of Ministers of the Environment

.16 CEC - Canadian Electrical Code (published by CSA)

.17 CEMA - Canadian Electrical Manufacturer's Association

.18 CEPA - Canadian Environmental Protection Act

.19 CGSB - Canadian General Standards Board

.20 CISC - Canadian Institute of Steel Construction

.21 CLA - Canadian Lumberman's Association

.22 CPCA - Canadian Painting Contractors' Association

.23 CPCI - Canadian Prestressed Concrete Institute

.24 CPMA - Canadian Paint Manufacturers Association

.25 CRCA - Canadian Roofing Contractors Association

.26 CSA - Canadian Standards Association

.27 CSC - Construction Specifications Canada

.28 CSSBI - Canadian Sheet Steel Building Institute

.29 ECP - Environmental Choice Program

.30 EIMA - EIFS Industry Manufacturer's Association

.31 EPA - Environmental Protection Agency

.32 FGMA - Flat Glass Manufacturers Association

.33 FM - Factory Mutual Engineering Corporation

.34 GRI - Geosynthetic Research Institute

.35 ICEA - Insulated Cable Engineers Association

.36 IEEE - Institute of Electrical and Electronic Engineers

.37 IPCEA - Insulated Power Cable Engineers Association

.38 LSGA - Laminators Safety Glass Association

.39 MSS Manufacturers Standardization Society of the Valve and Fittings Industry

.40 NAAMM - National Association of Architectural Metal Manufacturers

.41 NBC - National Building Code

1.3 Reference Standards (Cont'd)

.1 (Cont'd)

.42 NEMA - National Electrical Manufacturers Association

.43 NFPA - National Fire Protection Association

.44 NHLA - National Hardwood Lumber Association

.45 NLGA - National Lumber Grades Authority

.46 NSPE - National Society of Professional Engineers

.47 RAIC - Royal Archtectural Institute of Canada

.48 SSPC - Steel Structures Painting Council

.49 TTMAC - Terrazzo, Tile and Marble Association of Canada

.50 ULC - Underwriters' Laboratories of Canada

PART 2 - PRODUCTS

2.1 Not Used

.1 Not Used.

PART 3 - EXECUTION

.2 Not Used.

PART 2 - PRODUCTS

2.1 Not Used

.1 Not Used.

PART 3 - EXECUTION

3.1 Not Used

.1 Not Used.

END

PART 1 - GENERAL

1.1 Precedence

.1 For Federal Government projects, Division 1 Sections take precedence over technical specification sections in other Divisions of this Project Manual.

1.2 Installation and Removal

.1 Provide temporary utilities controls in order to execute work expeditiously.

.2 Remove from site all such work after use.

.3 Remove temporary facilities from site when directed by Engineer.

1.3 Dewatering

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

1.4 Water Supply

.1 DND can provide, free of charge, temporary water for construction purposes.

.2 Engineer will determine delivery points and quantitative limits. Engineer's written permission is required before any connection is made.

.3 Provide, at no cost to DND, all equipment and temporary lines to bring these services to work area.

.4 Supply of temporary services by DND is subject to DND requirements and may be discontinued by Engineer at any time without notice, without any acceptance of any liability for damage or delay caused by such withdrawal of temporary services.

1.5 Temporary Power and Light

.1 DND can provide, free of charge, temporary electric power for construction purposes

.2 Engineer will determine delivery points and quantitative limits. Engineer's written

1.5 Temporary Power and Light (Cont'd)

.2 (Cont'd) permission is required before any connection is made. Connect to existing power supply in accordance with Canadian Electrical Code.

.3 Provide, at no cost to DND, all equipment and temporary lines to bring these services to work area.

.4 Supply of temporary services by DND is subject to DND requirements and may be discontinued by Engineer at any time without notice, without any acceptance of any liability for damage or delay caused by such withdrawal of temporary services.

.5 Provide and maintain temporary lighting throughout project. Ensure level of illumination on all floors and stairs is not less than 162 lx.

.6 Electrical power and lighting systems installed under this Contract may be used for construction requirements only with prior approval of Engineer provided that guarantees are not affected. Make good damage to electrical system caused by use under this Contract. Replace lamps which have been used for more than 3 months.

1.6 Temporary Communication Facilities

.1 Provide and pay for temporary telephone, fax, data hook up, lines and equipment necessary for own use.

1.7 Fire Protection

.1 Provide and maintain temporary fire protection equipment during performance of Work required by governing codes, regulations and bylaws.

.2 Burning rubbish and construction waste materials is not permitted on site.

PART 2 - PRODUCTS

2.1 Not Used .1 Not Used.

PART 3 - EXECUTION

3.1 Not Used .1 Not Used.

END

PART 1 - GENERAL

1.1 Section Includes

.1 Construction aids.

.2 Office and sheds.

.3 Parking.

.4 Project identification.

1.2 Precedence

.1 For Federal Government projects, Division 1 Sections take precedence over technical specification sections in other Divisions of this Project Manual.

1.3 Related Sections

.1 Section 01 51 00 - Temporary Utilities.

1.4 References

.1 Canadian General Standards Board (CGSB)
.1 CGSB 1-GP-189M, Primer, Alkyd, Wood, Exterior.
.2 CAN/CGSB-1.59-97, Alkyd Exterior Gloss Enamel.

.2 Canadian Standards Association (CSA International)
.1 CAN/CSA-A23.1-00, Concrete Materials and Methods for Concrete Construction/Method of Test for Concrete.
.2 CSA O121-M1978 (R1998), Douglas Fir Plywood.
.3 CSA Z321-96, Signs and Symbols for the Occupational Environment.

1.5 Installation and Removal

.1 Provide construction facilities in order to execute work expeditiously.

.2 Remove from site all such work after use.

.3 Remove temporary facilities from site when directed by DND Rep.

1.6 Scaffolding

.1 Design and construct scaffolding in accordance with CAN/CSA-S269.2-M87 (R1998).

.2 Construct and maintain scaffolding in rigid, secure and safe manner.

.3 Erect scaffolding independent of walls. Remove promptly when no longer required.

.4 Provide and maintain scaffolding, ramps, ladders, swing staging, platforms or temporary stairs.

1.7 Hoisting

.1 Provide, operate and maintain hoists required for moving of workers, materials and equipment. Make financial arrangements with Subcontractors for use thereof.

.2 Hoists shall be operated by qualified operator.

1.8 Elevators

.1 Designated existing and permanent elevators may be used by construction personnel and transporting of materials. Co-ordinate use with DND Rep .

.2 Provide protective coverings for finish surfaces of cars and entrances.

1.9 Site Storage/Loading

.1 Confine work and operations of employees by Contract Documents. Do not unreasonably encumber premises with products.

.2 Do not load or permit to load any part of Work with a weight or force that will endanger the Work.

1.10 Construction Parking

.1 Parking will be permitted on site provided it does not disrupt performance of Work.

.2 Provide and maintain adequate access to project site.

1.10 Construction Parking (Cont'd)

.3 Build and maintain temporary roads where indicated and provide snow removal during period of Work.

.4 If authorized to use existing roads for access to project site, maintain such roads for duration of Contract and make good damage resulting from Contractors' use of roads.

.5 Clean runways and taxi areas where used by Contractor's equipment.

1.11 Security

.1 Erect temporary site enclosure using new 1.2 m high snow fence wired to rolled steel "T" bar fence posts spaced at 2.4 m oc. Provide one lockable truck gate. Maintain fence in good repair.

.2 Provide and pay for responsible security personnel to guard site and contents of site after working hours and during holidays as directed by DND Rep.

1.12 Equipment, Tool and Materials Storage

.1 Provide and maintain, in a clean and orderly condition, lockable weatherproof sheds for storage of tools, equipment and materials.

.2 Locate materials not required to be stored in weatherproof sheds on site in a manner to cause least interference with work activities.

1.13 Sanitary Facilities

.1 Provide sanitary facilities for work force in accordance with governing regulations and ordinances.

.2 Post notices and take such precautions as required by local health authorities. Keep area and premises in sanitary condition.

.3 Permanent facilities may be used on approval of DND Rep.

1.14 Construction Signage

.1 Signs and notices for safety and instruction shall be in English or Graphic symbols and shall conform to Z321-96.

.2 Maintain approved signs and notices in good condition for duration of project, and dispose of offsite on completion of project or earlier if directed by DND Rep.

PART 2 - PRODUCTS

2.1 Not Used

.1 Not Used.

PART 3 - EXECUTION

3.1 Not Used

.1 Not Used.

END

PART 1 - GENERAL

1.1 Section Includes
.1 Progressive cleaning.
.2 Final cleaning.

1.2 Precedence
.1 For Federal Government projects, Division 1 Sections take precedence over technical specification sections in other Divisions of this Project Manual.

1.3 Related Section
.1 Section 01 77 00 - Closeout Procedures.

1.4 Project Cleanliness
.1 Maintain Work in tidy condition, free from accumulation of waste products and debris, other than that caused by Owner or other Contractors.

.2 Remove waste materials from site at regularly scheduled times or dispose of as directed by DND Rep. Do not burn waste materials on site.

.3 Clear snow and ice from access to building, bank/pile snow in designated areas only.

.4 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.

.5 Remove all waste materials and debris from site and dispose off DND property. Provide following information to DND Rep:
.1 Provide a Certificate of Disposal indicating the following:
.1 Date of disposition.
.2 Time of disposition.
.3 Location of disposition.
.4 Name of Vehicle operator.
.5 Vehicle License Number.

.6 Provide on-site containers for collection of waste materials and debris.

.7 Provide and use clearly marked separate bins for recycling.

1.4 Project Cleanliness (Cont'd)

.8 Remove waste material and debris from site at end of each working day.

.9 Clean interior areas prior to start of finish work, and maintain areas free of dust and other contaminants during finishing operations.

.10 Store volatile waste in covered metal containers, and remove from premises at end of each working day.

.11 Provide adequate ventilation during use of volatile or noxious substances. Use of building ventilation systems is not permitted for this purpose.

.12 Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer.

.13 Schedule cleaning operations so that resulting dust, debris and other contaminants will not fall on wet, newly painted surfaces nor contaminate building systems.

.14 Foreign Object Damage control or FOD will be exercised on a continuous basis in vicinity of aircraft, runways or aprons. Control all blowing debris at all times. DND Rep will coordinate and approve Contractors plans to fulfill this requirement.

1.5 Final Cleaning

.1 In preparation for acceptance of the project, on an interim or final certificate of completion, perform final cleaning.

.2 When Work is Substantially Performed, remove surplus products, tools, construction machinery and equipment not required for performance of remaining Work.

.3 Remove waste products and debris other than that caused by others, and leave Work clean and suitable for occupancy.

.4 Prior to final review, remove surplus products, tools, construction machinery and equipment.

1.5 Final Cleaning (Cont'd)

.5 Remove waste products and debris other than that caused by Owner or other Contractors.

.6 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.

.7 Clean and polish glass, mirrors, hardware, wall tile, stainless steel, chrome, porcelain enamel, baked enamel, plastic laminate, and mechanical and electrical fixtures. Replace broken, scratched or disfigured glass.

.8 Remove stains, spots, marks and dirt from decorative work, electrical and mechanical fixtures, furniture fitments, walls, and floors.

.9 Clean lighting reflectors, lenses, and other lighting surfaces.

.10 Vacuum clean and dust building interiors, behind grilles, louver’s and screens.

.11 Wax, seal, shampoo or prepare floor finishes, as recommended by manufacturer.

.12 Inspect finishes, fitments and equipment and ensure specified workmanship and operation.

.13 Broom clean and wash exterior walks, steps and surfaces; rake clean other surfaces of grounds.

.14 Remove dirt and other disfiguration from exterior surfaces.

.15 Clean and sweep roofs, gutters, areaways, and sunken wells.

.16 Sweep and wash clean paved areas.

.17 Clean equipment and fixtures to a sanitary condition; clean or replace filters of mechanical equipment.

.18 Clean roofs, downspouts, and drainage systems.

.19 Remove debris and surplus materials from crawl areas and other accessible concealed spaces.

.20 Remove snow and ice from access to building.

.21 Leave entire work area neat and clean.

PART 2 - PRODUCTS

2.1 Not Used .1 Not Used.

PART 3 - EXECUTION

3.1 Not Used .1 Not Used.

END

PART 1 - GENERAL

1.1 Section Includes

.1 Administrative procedures preceding preliminary and final inspections of Work.

1.2 Precedence

.1 For Federal Government projects, Division 1 Sections take precedence over technical specification sections in other Divisions of this Project Manual.

1.3 Related Sections

.1 Section 01 78 00- Closeout Submittals.

1.4 Inspection and Declaration

.1 Contractor's Inspection: Contractor and all Subcontractors shall conduct an inspection of Work, identify deficiencies and defects, and repair as required to conform to Contract Documents.
.1 Notify DND Rep in writing of satisfactory completion of Contractor's Inspection and that corrections have been made.
.2 Request DND Rep's Inspection.

.2 DND Rep's Inspection: DND Rep and Contractor will perform inspection of Work to identify obvious defects or deficiencies. Contractor shall correct Work accordingly.

.3 Completion: submit written certificate that following have been performed:
.1 Work has been completed and inspected for compliance with Contract Documents.
.2 Defects have been corrected and deficiencies have been completed.
.3 Equipment and systems have been tested, adjusted and balanced and are fully operational.
.4 Operation of systems have been demonstrated to Owner's personnel.
.5 Work is complete and ready for Final Inspection.

.4 Final Inspection: when items noted above are completed, request final inspection of Work by DND Rep , and Contractor . If Work is deemed

1.4 Inspection and Declaration (Cont'd)	.4	Final Inspection:(Cont'd) incomplete by DND Rep , complete outstanding items and request reinspection.

PART 2 - PRODUCTS

2.1 Not Used	.1	Not Used.

PART 3 - EXECUTION

3.1 Not Used	.1	Not Used.

END

PART 1 - GENERAL

1.1 Section Includes

.1 As-built, samples, and specifications.

.2 Equipment and systems.

.3 Product data, materials and finishes, and related information.

.4 Operation and maintenance data.

.5 Spare parts, special tools and maintenance materials.

.6 Warranties and bonds.

.7 Final site survey.

1.2 Precedence

.1 For Federal Government projects, Division 1 Sections take precedence over technical specification sections in other Divisions of this Project Manual.

1.3 Related Sections

.1 Section 01 77 00 - Closeout Procedures.

1.4 Submission

.1 Prepare instructions and data using personnel experienced in maintenance and operation of described products.

.2 Prior to Substantial Performance of the Work, submit to the DND Rep, three final copies of operating and maintenance manuals in English.

.3 Ensure spare parts, maintenance materials and special tools provided are new, undamaged or defective, and of same quality and manufacture as products provided in Work.

.4 If requested, furnish evidence as to type, source and quality of products provided.

.5 Defective products will be rejected, regardless of previous inspections. Replace products at own expense.

.6 Pay costs of transportation.

1.5 Format

.1 Assemble, coordinate, bind and index required data into Operation and Maintenance Manual. Organize data in the form of an instructional manual.

.2 Organize data into same numerical order as contract specifications.

.3 Provide O & M manual in PDF format on CD. Manual is to be FULLY INDEXED or BOOKMARKED.

.4 Provide 1:1 scaled CAD files in dwg format on CD.

.5 Only If requested by the DND Rep provide O % M Manuals in Binders: vinyl, hard covered, 3 'D' ring, loose leaf 219 x 279 mm with spine and face pockets.

.6 Drawings: provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.

.7 When multiple binders are used, correlate data into related consistent groupings. Identify contents of each binder on spine.

.8 Cover: Identify each binder with type or printed title 'Project Record Documents'; list title of project and identify subject matter of contents.

.9 Provide tabbed fly leaf for each separate product and system, with typed description of product and major component parts of equipment.

.10 Text: Manufacturer's printed data, or typewritten data.

1.6 Contents - Each Volume

.1 Cover sheet containing:
.1 Date submitted.
.2 Project title, location and project number.
.3 Names and addresses of Contractor, and all Sub-contractors.

.2 Table of Contents.

.3 Warranties, guarantees.

.4 Copies of approvals, and certificates.

1.6 Contents - Each Volume (Cont'd)

.5 Provide data as specified in individual sections of this specification with schedule of products and systems, indexed to content of volume.

.6 For each product or system: list names, addresses and telephone numbers of subcontractors and suppliers, including local source of supplies and replacement parts.

.7 Nameplate information including equipment number, make, size, capacity, model number and serial number.

.8 Parts list.

.9 Installation details.

.10 Operating instructions.

.11 Maintenance instructions for equipment.

.12 Maintenance instructions for finishes.

.13 One complete set of reviewed final shop drawings and product data.

.14 Drawings: supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams.

.15 Typewritten Text: as required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.

1.7 As-built and Samples

.1 In addition to requirements in General Conditions, maintain one record copy of:
.1 Contract Drawings.
.2 Specifications.
.3 Addenda.
.4 Change Orders and other modifications to the Contract.
.5 Reviewed shop drawings, product data, and samples.
.6 Field test records.
.7 Inspection certificates.
.8 Manufacturer's certificates.

.2 Store record documents and samples in field office apart from documents used for

1.7 As-built and Samples (Cont'd)

.2 (Cont'd) construction. Provide files, racks, and secure storage.

.3 Label record documents and file in accordance with Section number listings in List of Contents of this Project Manual. Label each document "PROJECT RECORD" in neat, large, printed letters.

.4 Maintain record documents in clean, dry and legible condition. Do not use record documents for construction purposes.

.5 Keep record documents and samples available for inspection by DND Rep.

.6 Identify each drawing in lower right hand corner in letters 12 mm high to read: "As Built Drawings", with Signature of Contractor and Date.

1.8 Recording Actual Site Conditions

.1 Record information on set of black line opaque drawings, provided by DND Rep

.2 Provide felt tip marking pens, maintaining separate colors for each major system, for recording information.

.3 Maintain project record drawings and record accurately any deviations from Contract documents.

.4 Record information concurrently with construction progress to show all work as actually installed including change orders. Do not conceal Work until required information is recorded.

.5 Contract Drawings and shop drawings: legibly mark each item to record actual construction, including:
.1 Measured depths of elements of foundation in relation to finish first floor datum.
.2 Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
.3 Measured locations of internal utilities and appurtenances, referenced to visible and accessible features of construction.
.4 Field changes of dimension and detail.

1.8 Recording Actual Site Conditions (Cont'd)

.5 Contract Drawings and shop drawings:(Cont'd)
.5 Changes made by change orders.
.6 Details not on original Contract Drawings.
.7 References to related shop drawings and modifications.

.6 Specifications: legibly mark each item to record actual construction, including:
.1 Manufacturer, trade name, and catalogue number of each product actually installed, particularly optional items and substitute items.
.2 Changes made by Addenda and change orders.

.7 Other Documents: maintain manufacturer's certifications, inspection certifications, and field test records, required by individual specifications sections.

1.9 As Built Drawings

.1 At completion of project and prior to final inspection, transfer as-built notations to second paper drawing set and submit to DND Rep for review.
.1 Prepare as-built drawings in AutoCAD format following same conventions used for original design drawings or use DND CAD Standards i.e.: levels, colors, weights, etc.
.2 In addition to as-built printed set, drawings shall be submitted in electronic file format (both AutoCAD and PDF) on CD or DVD media.

1.10 As Built Survey Drawings

.1 Provide "As-Built Survey" with project deviations relative to DND survey monuments and obtain an accurate record of all manhole locations, catch basins, storm outfalls, sewer alignment, utilities (i.e.: elec, gas, telecom, etc), paint lines, roads, sidewalks, etc. pertinent to the project.

.2 Submit survey with final record drawing submission.

.3 Use GPS and Total station to survey new installations and surface features, including underground utility lines.

.4 All surveys to be performed by a Registered Alberta Land Surveyor.

1.10 As Built Survey Drawings (Cont'd)

.5 Horizontal and vertical accuracy shall be minimum Third Order. Vertical and horizontal control in the vicinity of survey shall be used.

.6 All control point information and coordinate system (NAD 83-UTM) used must be obtained at 4 Wing WCE GIS cell prior to starting the survey.

.7 Accuracy: Horizontal - third order (Northing & Easting coordinates); Vertical (control points, Building floor elevation, Manhole & catch basin only), - third order. Vertical (all other features), total station elevations.

.8 Control points and temporary iron bars used, along with their coordinates and elevations must be indicated on each survey drawing.

.9 An electronic drawing copy of existing site will be provided by WCE GIS.

.10 Provide one as-built hard copy drawing set. Submit final drawing set on full size media using DND CAD Standard Drawing Sheet.

.11 In addition to as-built printed set, drawings shall be submitted in electronic file format (both AutoCAD and PDF) on CD/DVD.

.12 Provide as-built electronic copy in AutoCAD 3D file format. Ensure all features are drawn in 3D (x y z).

.13 Follow DND CAD and GIS Standards for easy incorporation of data into existing GIS spatial database.

.14 Provide comma delimited ASCII text file for each survey point: Point Number, Easting, Northing, Elevation, Feature Class Name/Layer Name/Survey Code and optional description.

.15 For information regarding WCE GIS system contact: 4WCE GIS Co-coordinator at (780)840-8000 ext 8251.

1.11 Water Valve Markers

.1 Install DND supplied blue marker stake at each water valve location. Markers are provided by DND WCE Plumbing Shop @ loc 8427.

1.12 Equipment and Systems

.1 Each Item of Equipment and Each System: include description of unit or system, and component parts. Give function, normal operation characteristics, and limiting conditions. Include performance curves, with engineering data and tests, and complete nomenclature and commercial number of replaceable parts.

.2 Panel board circuit directories: provide electrical service characteristics, controls, and communications.

.3 Include installed color coded wiring diagrams.

.4 Operating Procedures: include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shut-down, and emergency instructions. Include summer, winter, and any special operating instructions.

.5 Maintenance Requirements: include routine procedures and guide for trouble-shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.

.6 Provide servicing and lubrication schedule, and list of lubricants required.

.7 Include manufacturer's printed operation and maintenance instructions.

.8 Include sequence of operation by controls manufacturer.

.9 Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.

.10 Provide installed control diagrams by controls manufacturer.

.11 Provide Contractor's coordination drawings, with installed color coded piping diagrams.

.12 Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.

1.12 Equipment and Systems (Cont'd)

.13 Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.

.14 Include test and balancing reports.

.15 Additional requirements: As specified in individual specification sections.

1.13 Materials and Finishes

.1 Building Products, Applied Materials, and Finishes: include product data, with catalogue number, size, composition, and color and texture designations. Provide information for re-ordering custom manufactured products.

.2 Instructions for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.

.3 Moisture-protection and Weather-exposed Products: include manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.

.4 Additional Requirements: as specified in individual specifications sections.

1.14 Spare Parts

.1 Provide spare parts, in quantities specified in individual specification sections.

.2 Provide items of same manufacture and quality as items in Work.

.3 Deliver to location as directed; place and store.

.4 Receive and catalogue all items. Submit inventory listing to DND Rep. Include approved listings in Maintenance Manual. Include the following:
.1 Part number.
.2 Identification of equipment or system for which parts are applicable.
.3 Installation instructions as applicable.
.4 Name and address of nearest supplier.

.5 Obtain receipt for delivered products and submit prior to final payment.

1.15 Maintenance Materials

.1 Provide maintenance and extra materials, in quantities specified in individual specification sections.

.2 Provide items of same manufacture and quality as items in Work.

.3 Deliver to location as directed; place and store.

.4 Receive and catalogue all items. Submit inventory listing to DND Rep. Include approved listings in Maintenance Manual.

.5 Identify, on carton or package, color, room No., system or area as applicable where item is used

.6 Obtain receipt for delivered products and submit prior to final payment.

1.16 Special Tools

.1 Provide special tools, in quantities specified in individual specification section.

.2 Provide items with tags identifying their associated function and equipment.

.3 Deliver to location as directed; place and store.

.4 Receive and catalogue all items. Submit inventory listing to DND Rep. Include approved listings in Maintenance Manual and Include the following:
.1 Identification tag reference.
.2 Identification of equipment or system for which tools are applicable.
.3 Instruction on intended use of tool.

1.17 Storage, Handling and Protection

.1 Store spare parts, maintenance materials, and special tools in manner to prevent damage or deterioration.

.2 Store in original and undamaged condition with manufacturer's seal and labels intact.

.3 Store components subject to damage from weather in weatherproof enclosures.

.4 Store paints and freezable materials in a heated and ventilated room.

1.17 Storage, Handling and Protection (Cont'd)

.5 Remove and replace damaged products at own expense and to satisfaction of DND Rep.

1.18 Warranties and Bonds

.1 Separate each warranty or bond with index tab sheets keyed to Table of Contents listing.

.2 List subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.

.3 Obtain warranties and bonds, executed in duplicate by subcontractors, suppliers, and manufacturers, within ten days after completion of the applicable item of work.

.4 Except for items put into use with Owner's permission, leave date of beginning of time of warranty until the Date of Substantial Performance is determined.

.5 Verify that documents are in proper form, contain full information, and are notarized.

.6 Co-execute submittals when required.

.7 Retain warranties and bonds until time specified for submittal.

PART 2 - PRODUCTS

2.1 Not Used

.1 Not Used.

PART 3 - EXECUTION

3.1 Not Used

.1 Not Used.

END

PART 1 - GENERAL

1.1 General .1 This section covers items common to all sections of Division 21-23.

1.2 Equipment List .1 Complete list of equipment and materials to be used on the various repairs to be performed and forming part of Standing Offer Agreement documents by adding manufacturer's name, model number and details of materials, and submit for approval.
.1 Submit for approval within 48 hrs. after receiving work order.

1.3 Equipment Installation .1 Unions or flanges: provide for ease of maintenance and disassembly.
.1 Space for servicing, disassembly and removal of equipment and components: provide as recommended by manufacturer or as indicated.
.2 Equipment drains: pipe to floor drains.
.3 Install equipment, rectangular cleanouts and similar items parallel to or perpendicular to building lines.

PART 2 - PRODUCTS

2.1 Anchor Bolts and Templates .1 Supply anchor bolts and templates for installation by other divisions.

2.2 Trial Usage .1 Engineer may use equipment and systems for test purposes prior to acceptance. Supply labor, material, and instruments required for testing.
.1 Trial usage to apply to following equipment and systems:
.1 Sprinkler Systems.
.2 Hydronic Systems.
.3 Domestic Hot and Cold Water Systems
.4 Steam and Condensate Systems.
.5 Incoming Domestic Water Systems.
.6 Natural Gas Systems.
.7 Light Fuel Oil Systems.
.8 Compresses Air Systems.

2.2 Trial Usage (Cont'd)

.1 (Cont'd)

.1 (Cont'd)

.9 Standpipe and Hose Systems.

2.3 Protection of Openings

.1 Protect equipment and systems openings from dirt, dust, and other foreign materials with materials appropriate to system.

2.4 Electrical

.1 Electrical work to conform to Canadian Electrical Code.

2.5 Sleeves

.1 Pipe sleeves: at points where pipes pass through masonry, concrete or fire rated assemblies and as indicated.

.1 Schedule 40 steel pipe.

.2 Sleeves with annular fin continuously welded at midpoint:

.1 Through foundation walls.

.2 Where sleeve extends above finished floor.

.3 Sizes: minimum 6mm clearance all around, between sleeve and un-insulated pipe or between sleeve and insulation.

.4 Terminate sleeves flush with surface of concrete and masonry walls, concrete floors on grade and 25 mm above other floors.

.5 Fill voids around pipes:

.1 Caulk between sleeve and pipe in foundation walls and below grade floors with waterproof fire retardant non-hardening mastic. . 2 Where sleeves pass through walls or floors, provide space for fire-stopping. Where pipes/ducts pass through fire rated walls, floors and partitions, maintain fire rating integrity. . 3 Ensure no contact between copper tube or pipe and ferrous sleeve. . 4 Fill future-use sleeves with lime plaster or other easily removable filler. . 5 Coat exposed exterior surfaces of ferrous sleeves with heavy application of zinc rich paint to CAN/CGSB-1.181-99.

2.6 Preparation for Fire-stopping

.1 Fire-stopping material and installation within annular space between pipes, ducts, insulation and adjacent fire separation.
.1 Un-insulated unheated pipes not subject to movement: no special preparation.
.2 Un-insulated heated pipes subject to movement: wrap with non-combustible smooth material to permit pipe to move without damaging fire-stopping material.
.3 Insulated pipes and ducts: ensure integrity of insulation and vapor barrier at fire separation.

2.7 Escutcheons

.1 On pipes passing through walls, partitions, floors and ceilings in finished areas.

.2 Chrome or nickel-plated brass or Type 302 stainless steel, one-piece type with set screws.

.3 Outside diameter to cover opening or sleeve.

.4 Inside diameter to fit around finished pipe.

2.8 Tests

.1 Give 24 hrs. written notice of date for tests.

.2 Insulate or conceal work only after testing and approval by Engineer.

.3 Conduct tests in presence of Consultants.

.4 Bear costs including retesting and making good.

.5 Piping:
.1 General: maintain test pressure without loss for 4 hrs. unless otherwise specified.
.2 Hydraulically test steam and hydronic piping systems at 1 ½ times system operating pressure or minimum 860 kPa, whichever is greater.
.3 Test natural gas systems to CAN1-B149.1-M95 and requirements of authorities having jurisdiction.
.4 Test fuel oil systems to CAN/CSA-B139-M91 1976, CSA B139S1-1982 and authorities having jurisdiction. . 5 Test drainage, waste and vent piping to National Building Code and authorities having jurisdiction.

2.8 Tests (Cont'd)

.5 Piping:(Cont'd)
.3 Insulated pipes and ducts:(Cont'd)
.5 Test domestic hot, cold and recirculation water piping at 1½ times system operating pressure or minimum 860 kPa, whichever is greater.
.6 Test fire systems in accordance with authorities having jurisdiction and as specified elsewhere.

.6 Equipment: test as specified in relevant sections.

.7 Prior to tests, isolate all equipment or other parts which are not designed to withstand test pressures or test medium.

2.9 Spare Parts

.1 Furnish spare parts in accordance with Section 01731 - Maintenance Materials Special Tools and Spare Parts.

2.10 Special Tools

.1 Provide one set of special tools required to service equipment as recommended by manufacturers and in accordance with Section 01731 - Maintenance Materials Special Tools and Spare Parts.

2.11 Access Doors

.1 Supply access doors to concealed mechanical equipment for operating, inspecting, adjusting and servicing.

.2 Flush mounted 600 x 600 mm for body entry and 300 x 300 mm for hand entry unless otherwise noted. Doors to open 180_3, have rounded safety corners, concealed hinges, screwdriver latches and anchor straps.

.3 Material:
.1 Special areas such as tiled or marble surfaces: use stainless steel with brushed satin or polished finish as directed by Engineer.
.2 Remaining areas: use prime coated steel.

.4 Installation:
.1 Locate so that concealed items are accessible.
.2 Locate so that hand or body entry (as applicable) is achieved.

2.11 Access Doors (Cont'd)

.4 Installation:(Cont'd)
.2 Remaining areas:(Cont'd)
.3 Installation is specified in applicable sections.

.5 Acceptable material: Zurn, LeHage, Acudoor.

2.12 Dielectric Couplings

.1 General:
.1 To be compatible with and to suit pressure rating of piping system.
.2 Pipes NPS 2 and under: isolating unions.
.3 Pipes NPS 2 ½ and over: isolating flanges.

2.13 Drain Valves

.1 Locate and low points and at section isolating valves unless otherwise specified.
.1 Minimum NPS = unless otherwise specified: bronze, with hose end male thread and complete with cap and chain.

2.14 Valve Operators

.1 Provide valves with hand-wheel operators for globe and gate valves; handle for ball and butterfly valves or as existing valve being replaced. Refer to specific section for specific valve operators for specific locations. In case of dispute Engineer will determine type of operator to be installed.

2.15 Shop Drawings and Product Data

.1 Submit shop drawings and product data in accordance with Section 01 33 00 - Shop Drawings, Product Data, Samples and Mock-ups.
.1 Shop drawings and product data shall show:
.1 Mounting arrangements.
.2 Operating and maintenance clearances. eg. access door swing spaces.
.2 Shop drawings and product data shall be accompanied by:
.1 Detailed drawings of supports and anchor bolts. . 2 Points of operation on performance curves. . 3 Manufacturer to certify as to current model production. . 4 Certification of compliance to applicable codes.

2.16 Existing Systems

.1 Connections into existing systems to be made at time approved by Engineer.

.2 Be responsible for damage to existing plant by this work.

2.17 Cleaning

.1 Clean mechanical (building) systems in accordance with Section 01 74 11 - Cleaning.

.2 In preparation for final acceptance, clean and refurbish all equipment and leave in operating condition including replacement of all filters in all piping systems.

2.18 As-Built Drawings

.1 See section 01 33 00.

END

PART 1 - GENERAL

1.1 SUMMARY

.1 Section Includes:
.1 Thermal insulation for piping and piping accessories in commercial type applications.

.2 Provide materials and labour to repair or replace existing piping insulation from existing piping systems at 4 Wing Cold Lake. Replacement of insulation to be as specified as follows and shall match existing installed insulation. The specifications include the most common insulation systems, which will be encountered at 4 Wing Cold Lake. If any specialty item has to be replaced the original shop drawings from the Maintenance Manual shall be consulted by Engineer and communicated to Contractor.

1.2 REFERENCES

.1 American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE)
.1 ASHRAE Standard 90.1-01, Energy Standard for Buildings Except Low-Rise Residential Buildings (IESNA co-sponsored; ANSI approved; Continuous Maintenance Standard).

.2 American Society for Testing and Materials International (ASTM)
.1 ASTM A 167-99 Specification for Stainless Steel and Heat-Resistant Chromium-Nickel Steel Plate. Sheet and Strip.
.2 ASTM B 209M-04, Standard Specification for Aluminum and Aluminum Alloy Sheet and Plate Metric.
.3 ASTM C 335-04, Standard Test Method for Steady State Heat Transfer Properties of Horizontal Pipe Insulation.
.4 ASTM C 411-04, Standard Test Method for Hot-Surface Performance of High-Temperature Thermal Insulation.
.5 ASTM C 449/C 449M-00, Standard Specification for Mineral Fiber-Hydraulic-Setting Thermal Insulating and Finishing Cement.
.6 ASTM C 533-2004, Calcium Silicate Block and Pipe Thermal Insulation.
.7 ASTM C 547-2003, Mineral Fiber Pipe Insulation.
.8 ASTM C 795-03, Standard Specification for Thermal Insulation for Use in Contact with Austenitic Stainless Steel.

1.2 REFERENCES (Cont'd)

.2 (Cont'd)
.9 ASTM C 921-03a, Standard Practice for Determining the Properties of Jacketing Materials for Thermal Insulation.

.3 Canadian General Standards Board (CGSB)
.1 CGSB 51-GP-52Ma, Vapor Barrier, Jacket and Facing Material for Pipe, Duct and Equipment Thermal Insulation.
.2 CAN/CGSB-51.53-95, Poly (Vinyl Chloride) Jacketing Sheet, for Insulated Pipes, Vessels and Round Ducts

.4 Department of Justice Canada (Jus)
.1 Canadian Environmental Assessment Act (CEAA), 1995, c. 37.
.2 Canadian Environmental Protection Act (CEPA), 1999, c. 33.
.3 Transportation of Dangerous Goods Act (TDGA), 1992, c. 34.

.5 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
.1 Material Safety Data Sheets (MSDS).

.6 Manufacturer's Trade Associations
.1 Thermal Insulation Association of Canada (TIAC): National Insulation Standards (Revised 2004).

.7 Underwriters' Laboratories of Canada (ULC)
.1 CAN/ULC-S102-03, Surface Burning Characteristics of Building Materials and Assemblies.
.2 CAN/ULC-S701-2001, Thermal Insulation, Polystyrene, Boards and Pipe Covering.
.3 CAN/ULC-S702-1997, Thermal Insulation, Mineral Fiber, for Buildings
.4 CAN/ULC-S702.2-03, Thermal Insulation, Mineral Fiber, for Buildings, Part 2: Application Guidelines.

1.3 DEFINITIONS

.1 For purposes of this section:
.1 "CONCEALED" - insulated mechanical services in suspended ceilings and non-accessible chases and furred-in spaces.
.2 "EXPOSED" - will mean "not concealed" as specified.

.2 TIAC ss:
.1 CRF: Code Rectangular Finish.
.2 CPF: Code Piping Finish.

1.4 SUBMITTALS

.1 Submittals: in accordance with Section 01 33 00 - Submittal Procedures.

.2 Product Data:
.1 Submit manufacturer's printed product literature, specifications and datasheet in accordance with Section01 33 00 - Submittal Procedures. Include product characteristics, performance criteria, and limitations.
.1 Submit two copies of Workplace Hazardous Materials Information System (WHMIS) Material Safety Data Sheets (MSDS) in accordance with Section 01 33 00 - Submittal Procedures.

.3 Shop Drawings:
.1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.

.4 Samples:
.1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
.2 Submit for approval: complete assembly of each type of insulation system, insulation, coating, and adhesive proposed. Mount sample on 12 mm plywood board. Affix label beneath sample indicating service.

1.5 DELIVERY, STORAGE AND HANDLING

.1 Packing, shipping, handling and unloading:
.1 Deliver, store and handle materials in accordance with manufacturer's written instructions.
.2 Deliver materials to site in original factory packaging, labelled with manufacturer's name, address.

.2 Storage and Protection:
.1 Protect from weather, construction traffic.
.2 Protect against damage.
.3 Store at temperatures and conditions required by manufacturer.

PART 2 - PRODUCTS

2.1 FIRE AND SMOKE RATING

.1 In accordance with CAN/ULC-S102-1988(R2000).

.1 Maximum flame spread rating: 25.
.2 Maximum smoke developed rating: 50.

2.2 INSULATION

.1 Mineral fiber specified includes glass fiber, rock wool, slag wool.

.2 Thermal conductivity ("k" factor) not to exceed specified values at 24 degrees C mean temperature when tested in accordance with ASTM C 335-95.

.3 TIAC Code A-1: rigid moulded mineral fiber without factory applied vapor retarder jacket.
.1 Mineral fiber: to CAN/ULC-S702-1997.
.2 Maximum "k" factor: to CAN/ULC-S702-1997.

.4 TIAC Code A-3: rigid moulded mineral fiber with factory applied vapor retarder jacket.
.1 Mineral fiber: to CAN/ULC-S702-1997.
.2 Jacket: to CGSB 51-GP-52Ma.
.3 Maximum "k" factor: to CAN/ULC-S702-1997.

.5 TIAC Code C-2: mineral fiber blanket faced with factory applied vapor retarder jacket (as scheduled in PART 3 of this section).
.1 Mineral fiber: to CAN/ULC-S702-1997.
.2 Jacket: to CGSB 51-GP-52Ma.
.3 Maximum "k" factor: to CAN/ULC-S702-1997.

.6 TIAC Code A-6: flexible unicellular tubular elastomer Insulation: with vapor retarder jacket.
.1 Jacket: to CGSB 51-GP-52Ma.
.2 Maximum "k" factor: CAN/ULC-S702-1997.
.3 Certified by manufacturer: free of potential stress corrosion cracking corrodants.

2.3 INSULATION SECUREMENT

.1 Tape: self-adhesive, aluminum, plain reinforced, 50 mm wide minimum.

.2 Contact adhesive: quick setting.

.3 Canvas adhesive: washable.

.4 Tie wire: 1.5 mm diameter stainless steel.

.5 Bands: stainless steel, 19 mm wide, 0.5 mm thick.

2.4 CEMENT

.1 Thermal insulating and finishing cement:
.1 Hydraulic setting or Air drying on mineral wool, to ASTM C 449/C 449M-00.

2.5 VAPOUR RETARDER LAP ADHESIVE

.1 Water based, fire retardant type, compatible with insulation.

2.6 INDOOR VAPOUR RETARDER FINISH

.1 Vinyl emulsion type acrylic, compatible with insulation.

2.7 OUTDOOR VAPOUR RETARDER FINISH

.1 Vinyl emulsion type acrylic, compatible with insulation.

.2 Reinforcing fabric: fibrous glass, untreated 305 g/m^2.

2.8 JACKETS

.1 Polyvinyl Chloride (PVC):
.1 One-piece moulded type to CAN/CGSB-51.53-95 with pre-formed shapes as required.
.2 Colours: by Engineer .
.3 Minimum service temperatures: -20 degrees C.
.4 Maximum service temperature: 65 degrees C.
.5 Moisture vapour transmission: 0.02 perm.
.6 Thickness: .5 mm.
.7 Fastenings:
.1 Use solvent weld adhesive compatible with insulation to seal laps and joints.
.2 Tacks.

2.8 JACKETS (Cont'd)

.1 (Cont'd)
.7 Fastenings:(Cont'd)
.3 Pressure sensitive vinyl tape of matching color.
.8 Special requirements:.
.1 Outdoor: UV rated material at least 0.5 mm thick.

.2 Canvas:
.1 220 gm/m^2 cotton, plain weave, treated with dilute fire retardant lagging adhesive to ASTM C 921-02.
.2 Lagging adhesive: compatible with insulation.

.3 Aluminum:
.1 To ASTM B 209-02a.
.2 Thickness: 0.50 mm sheet.
.3 Finish: corrugated.
.4 Joining: longitudinal and circumferential slip joints with 50 mm laps.
.5 Fittings: 0.5 mm thick die-shaped fitting covers with factory-attached protective liner.
.6 Metal jacket banding and mechanical seals: stainless steel, 19 mm wide, 0.5 mm thick at 300 mm spacing.

.4 Stainless steel:
.1 Type: 304.
.2 Thickness: 0.25 mm.
.3 Finish: corrugated.
.4 Joining: longitudinal and circumferential slip joints with 50 mm laps.
.5 Fittings: 0.5 mm thick die-shaped fitting covers with factory-attached protective liner.
.6 Metal jacket banding and mechanical seals: stainless steel, 19 mm wide, 0.5 mm thick at 300 mm spacing.

2.9 REMOVEABLE PREFABRICATED INSULATION & ENCLOSURES

.1 Application: expansion joints valves.

.2 Design: to permit movement of expansion joint and to permit periodic removal and replacement without damage to adjacent insulation.

.3 Insulation:
.1 Flexible or preformed to fit components.
.2 Thickness to match application.
.3 Chilled water systems: provide vapor barrier.

2.9 REMOVEABLE PREFABRICATED INSULATION & ENCLOSURES (Cont'd)

.3 Insulation:(Cont'd)
.4 Enclosure: aluminum 1.3 mm thick, stainless steel 1.3 mm thick or to match adjacent pipe jacketing.

PART 3 - EXECUTION

3.1 MANUFACTURER'S INSTRUCTIONS

.1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheet.

3.2 PRE-INSTALLATION REQUIREMENT

.1 Pressure testing of piping systems and adjacent equipment to be complete, witnessed and certified.

.2 Surfaces clean, dry, and free from foreign material.

3.3 INSTALLATION

.1 Install in accordance with TIAC National Standards.

.2 Apply materials in accordance with manufacturer’s instructions and this specification.

.3 Use two layers with staggered joints when required nominal wall thickness exceeds 75 mm.

.4 Maintain uninterrupted continuity and integrity of vapor retarder jacket and finishes.
.1 Install hangers, supports outside vapor retarder jacket.

.5 Supports, Hangers:
.1 Apply high compressive strength insulation, suitable for service, at oversized saddles and shoes where insulation saddles have not been provided.

3.4 REMOVABLE, PRE-FABRICATED, INSULATION AND ENCLOSURES

.1 Application: at expansion joints, valves, primary flow measuring elements flanges and unions at equipment.

.2 Design: to permit movement of expansion joint and to permit periodic removal and replacement without damage to adjacent insulation.

.3 Insulation:
.1 Insulation, fastenings and finishes: same as system.
.2 Jacket: aluminum SS high temperature fabric.

3.5 INSTALLATION OF ELASTOMERIC tight INSULATION

.1 Insulation to remain dry. Overlaps to manufacturer’s instructions. Ensure joints.

.2 Provide vapor retarder as recommended by manufacturer.

3.6 PIPING INSULATION SCHEDULES

.1 Includes valves, valve bonnets, strainers, flanges and fittings unless otherwise specified.

.2 TIAC Code: A-1.
.1 Securements: SS Bands at 300 mm on center.
.2 Seals: lap seal adhesive, lagging adhesive.
.3 Installation: TIAC Code 1501-H.

.3 TIAC Code: A-3.
.1 Securements: SS bands at 300 mm on center.
.2 Seals: VR lap seal adhesive, VR lagging adhesive.
.3 Installation: TIAC Code: 1501-C.

.4 TIAC Code: A-6.
.1 Insulation securements: SS Wire at 300 mm oc.
.2 Seals: lap seal adhesive, lagging adhesive.
.3 Installation: TIAC Code:.

.5 TIAC Code: C-2 with vapor retarder jacket.
.1 Insulation securements: SS Banding atr 300 mm oc..
.2 Seals: lap seal adhesive, lagging adhesive.

3.6 PIPING INSULATION SCHEDULES (Cont'd)

.5 TIAC Code:(Cont'd)
.3 Installation: TIAC Code: 1501-C.

.6 TIAC Code: A-2.
.1 Insulation securements: SS Banding atr 300 mm oc..
.2 Seals: lap seal adhesive, lagging adhesive.
.3 Installation: TIAC Code: 1501-H.

.7 Thickness of insulation as listed in Annex C-Insulation Table.
.1 Run-outs to individual units and equipment not exceeding 4000 mm long.
.2 Do not insulate exposed run outs to plumbing fixtures, chrome plated piping, valves, fittings.

.8 Finishes:
.1 Exposed indoors: aluminum or SS jacket.
.2 Exposed in mechanical rooms: canvas, aluminum, SS or PVC jacket.
.3 Concealed, indoors: canvas on valves, fittings. No further finish.
.4 Use vapor retarder jacket on TIAC code A-3 insulation compatible with insulation.
.5 Outdoors: water-proof SS jacket.
.6 Finish attachments: SS screws bands, at 150 mm on center. Seals: closed.
.7 Installation: to appropriate TIAC code CRF/1 through CPF/5.

3.7 CLEANING

.1 Proceed in accordance with Section 01 74 11 - Cleaning.

.2 Upon completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.

END

PART 1 - GENERAL

1.1 SUMMARY

.1 Section Includes:
.1 Materials and installation for standpipe and hose systems.

.2 Provide materials and labour to repair existing Standpipe and Hose Systems at 4 Wing Cold Lake. Replacement of fixtures to be as specified as follows and shall match existing installed devices. The specifications include the most common devices, which will be encountered at 4 Wing Cold Lake. If any specialty item has to be replaced the original shop drawings from the Maintenance Manual shall be consulted by Engineer and communicated to Contractor.

1.2 REFERENCES

.1 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
.1 Material Safety Data Sheets (MSDS).

.2 National Fire Protection Association (NFPA)
.1 NFPA 14-03, Standard for the Installation of Standpipe and Hose Systems.

1.3 SUBMITTALS

.1 Product Data:
.1 Submit manufacturer's printed product literature, specifications and datasheet in accordance with Section 01 33 00 - Submittal Procedures. Include product characteristics, performance criteria, and limitations.

.2 Shop Drawings:
.1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.
.1 Shop drawings: submit drawings stamped and signed by professional engineer registered or licensed in Province of Alberta, Canada.
.2 Submit complete plans for review and approval before commencement of work.

.3 Samples:
.1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
.2 Submit samples of:
.1 Firehose nozzles.
.2 Section of hose.

1.3 SUBMITTALS (Cont'd)

.4 Quality assurance submittals: submit following in accordance with Section 01 33 00 - Submittal Procedures.
.1 Test reports:
.1 Submit certified test reports for packaged fire pumps from approved independent testing laboratories, indicating compliance with specifications for specified performance characteristics and physical properties.
.2 Instructions: submit manufacturer's installation instructions.
.3 Manufacturer's Field Reports: manufacturer's field reports specified.

.5 Closeout Submittals:
.1 Provide maintenance data for standpipe and hose system for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

1.4 SYSTEM DESCRIPTION

.1 Design system to ANSI/NFPA 14-2000 and following parameters:
.1 Combined with sprinkler systems: hydraulic and pipe schedule.

1.5 QUALITY ASSURANCE

.1 Qualifications:

.1 Installer: company or person specializing in fire suppression installations approved by manufacturer.

PART 2 - PRODUCTS

2.1 PIPE, FITTINGS AND VALVES

.1 Pipe:
.1 Ferrous: to ANSI/NFPA 14-2000.
.2 Copper tube: to ANSI/NFPA 14-2000.

.2 Fittings and joints to ANSI/NFPA 14-2000:
.1 Ferrous: screwed, welded, flanged or roll grooved.
.2 Copper tube: screwed, soldered, brazed.

.3 Valves:
.1 ULC listed for fire protection service.
.2 Up to NPS 2: bronze, screwed ends, OS&Y gate.

2.1 PIPE, FITTINGS AND VALVES (Cont'd)

.3 Valves:(Cont'd)
.3 NPS 2 1/2 and over: cast iron, flanged roll grooved ends, indicating butterfly valve.
.4 Check valves: swing type, composition disc.

.4 Pipe hangers:
.1 ULC listed for fire protection services.

.5 Drain valve: NPS 1, complete with hose end, cap and chain.

.6 Inspector's test connections: NPS 1 gate valve.

2.2 CABINETS

.1 To ANSI/NFPA 14-2000 and ULC listed: flush, surface semi-recessed type as existing, constructed of 1.6 mm thick steel, 180 degrees opening door of 2.5 mm thick steel with hinge same side as water supply and latching device.

.2 Cabinets to maintain fire resistive rating of construction in which they occur.

.3 Cabinet door: with 5 mm full glass panel.

.4 Large enough to accommodate angle valve, hose rack, fire hose nozzle and spanner, and NPS 2 1/2 fire department valve.

2.3 HOSE RACK

.1 ULC listed, swivel type with pins to permit hose to be hung in folds stationary-type rack with pins designed for 180 degrees movement. Locking device shall prevent flow of water into hose until last fold is removed from rack. Complete with hose, nozzle and angle valve.

2.4 FIRE HOSE AND NOZZLE

.1 Hose: ULC listed, 38 mm nominal diameter, 23 m long, synthetic jacket, synthetic rubber lined.

.2 Nozzle: ULC listed, 38 mm nominal diameter, forged brass adjustable combination fog-straight stream with shut-off.

2.5 ANGLE VALVES

.1 ULC listed for fire service. NPS 1 1/2 cast or forged brass complete with hand wheel, open or drip connections, or hydrolator valve. Where water pressure exceeds 690 kPa, provide ULC listed pressure reducing device.

2.6 SWINGING HOSE REEL

.1 ULC listed, designed so hose can be removed from reel when water is flowing, and with 20 mm nominal diameter hose 23 m long, and nozzle.

2.7 FIRE DEPARTMENT VALVE

.1 ULC listed, NPS 2 1/2 forged or cast brass angle valve: with thread compatible with local fire department, complete with hand wheel, cap and chain. Cap to be part of ULC listing for valve.

2.8 PUMPER CONNECTION

.1 To ANSI/NFPA 14-2000, ULC listed, Siamese type, location as indicated. Threads to be compatible with local fire department complete with threaded metal caps and chains.(internal lug quick connect.

.2 Polished bronze surface mounted with identifying sign cast on plate.

2.9 PRESSURE GAUGES

.1 90 mm diameter, to Section 23 05 21 - Thermometers and Pressure Gauges - Piping Systems.

2.10 FINISHES

.1 In finished areas, chrome plate valves, nozzles, fittings , hose rack and spanner.

.2 Cabinets.
.1 Tub: prime coated.
.2 Door and frame: No. 4 satin finish stainless steel.

PART 3 - EXECUTION

3.1 MANUFACTURER'S INSTRUCTIONS

.1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheet.

3.2 INSTALLATION

.1 Install and test to acceptance in accordance with ANSI/NFPA 14-2000.

.2 Testing to be witnessed by Canadian Forces Fire Marshal and authority having jurisdiction.

.3 Run inspectors test connections to sight glass.

.4 Install drain pipes and valves to drain parts of systems and so arranged that any one standpipe riser can be drained without shutting down any other parts of systems.

.5 Install 90 mm diameter pressure gauge in accordance with Section 23 05 21 - Thermometers and Pressure Gauges - Piping Systems at top of risers and in accordance with ANSI/NFPA 14-2000.

3.3 FIELD QUALITY CONTROL

.1 Manufacturer's Field Services:
.1 Obtain written report from manufacturer verifying compliance of Work, in handling, installing, applying, protecting and cleaning of product and submit Manufacturer's Field Reports as described in PART 1 - SUBMITTALS.
.2 Provide manufacturer's field services consisting of product use recommendations and periodic site visits for inspection of product installation in accordance with manufacturer's instructions.
.3 Schedule site visits, to review Work, as directed in PART 1 - QUALITY ASSURANCE.

3.4 SITE TEST

.1 General:
.1 In accordance with ANSI/NFPA 14-2000, supplemented as specified.

3.4 SITE TEST (Cont'd)

.2 Testing witnessed by Canadian Forces Fire Marshal authority having jurisdiction.

.3 Timing:
.1 Connect fire hoses when flushing out and pressure tests have been completed.
.2 Charge system with water when there is no possibility of freeze-up.
.3 Perform tests after pressure booster pumps have been tested.

.4 Co-ordination:
.1 Co-ordinate tests with performance verification of:
.1 Fire pumps.
.2 Standpipe and hose systems.
.3 Fire alarm systems. Co-ordinate tests with performance verification of fire pumps.
.4 Wet Dry pipe sprinkler systems.

.5 Procedures:
.1 Verify that system is complete prior to start-up and testing procedures.
.2 Verify that ULC labels are visible.
.3 Fill system with water for pressure. Record water supply pressure.
.4 Pressure test piping system as required by authority having jurisdiction.
.5 Startup fire pumps and jockey pumps.
.6 Verify flow switches are operational.
.7 Verify valves in system are visible and monitored.
.8 Flushing: Fill with water, let stand at operating pressure for 1 week. Drain risers separately, then drain main.
.9 Flush buried mains and lead-in connections before making connection to indoor sprinkler system.
.10 Perform flow tests, including tests of pre-action systems, as required by:
.1 Authority having jurisdiction.
.2 Applicable NFPA standards such as 13, 14, 20, 1273.
.3 Local building codes.
.11 Adjust pressure switches.

.6 Sundry checks:
.1 Verify that properly sized pressure restricting discs are installed where required.

.7 Identification:
.1 Verify devices are properly labelled, identifying area served, etc.

3.4 SITE TEST (Cont'd)

.8 Report:
.1 In addition to reports required by ANSI/NFPA 14-2000 4, include the following:
.1 Copy of schematic and valve schedule.

.9 Posted Instructions:
.1 Prepare schematic, mount behind glare-free glass and install where directed.
.2 Prepare valve schedule, mount behind glare-free glass and install where directed.

.10 Documentation:
.1 Provide written certification to Engineer that system was installed, flushed and tested in accordance with appropriate codes,.
.2 Certificate to include:
.1 Contractors name.
.2 Contractors address.
.3 Contractors license number.
.4 List of approved materials and devices installed.
.5 Description of system test conducted.
.6 Dates of flushing and testing.
.7 Certification that connections conform to acceptable standards.
.8 Certification that system is complete and in service.
.9 Approved signage has been provided and attached as appropriate.
.10 Hose threads of system and test connections match those of responding fire department.

END

PART 1 - GENERAL

1.1 REFERENCES

.1 American National Standards Institute/National Fire Prevention Association (ANSI/NFPA)
.1 ANSI/NFPA 13-2002, Installation of Sprinkler Systems.
.2 ANSI/NFPA 24-2002, Installation of Private Fire Service Mains and Their Appurtenances.
.3 ANSI/NFPA 25-2002, Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems.

.2 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
.1 Material Safety Data Sheets (MSDS).

.3 Underwriter's Laboratories of Canada (ULC)
.1 CAN4-S543-M84, Standard for Internal Lug Quick Connect Couplings for Fire Hose.

1.2 SAMPLES

.1 Submit samples of following:
.1 Each type of sprinkler head.
.2 Signs.

1.3 REPAIRS

.1 Provide materials and labour to repair existing sprinkler systems at 4 Wing Cold Lake. Replacement of fixtures to be as specified as follows and shall match existing installed devise. The specifications include the most common devices, which will be encountered at 4 Wing Cold Lake. If any specialty item has to be replaced the original shop drawings from the Maintenance Manual shall be consulted by Engineer and communicated to Contractor.

1.4 SUBMITTALS

.1 Product Data:
.1 Submit manufacturer's printed product literature, specifications and datasheet in accordance with Section 01 33 00 - Submittal Procedures.

1.4 SUBMITTALS (Cont'd)

.2 Shop Drawings:
.1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.

.3 Quality assurance submittals: submit following in accordance with Section 01 33 00 - Submittal Procedures.
.1 Test reports:
.1 Certificates: submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.
.2 Instructions: submit manufacturer's installation instructions.
.2 Manufacturer's Field Reports: manufacturer's field reports specified.

.4 Closeout Submittals:
.1 Submit maintenance and engineering data for incorporation into manual specified in Section 01 78 00 - Closeout Submittals in accordance with ANSI/NFPA 13-2002 and 20.
.2 Manufacturer's Catalog Data, including specific model, type, and size for:
.1 Pipe and fittings.
.2 Alarm valves.
.3 Valves, including gate, check, and globe.
.4 Water motor alarms.
.5 Sprinkler heads.
.6 Pipe hangers and supports.
.7 Pressure or flow switch.
.8 Fire department connections.
.9 Excess pressure pump.
.10 Mechanical couplings.
.3 Field Test Reports:
.1 Preliminary tests on piping system.
.4 Records:
.1 As-built drawings of each system.
.1 After completion, but before final acceptance, submit complete set of as-built drawings of each system for record purposes.
.2 Submit drawings on as per 01 78 00 Closeout submittals.
.5 Operation and Maintenance Manuals:
.1 Provide maintenance data for incorporation into manual specified in Section 01 78 00 - Closeout Submittals. in accordance with ANSI/NFPA 13-2002.

1.5 QUALITY ASSURANCE

.1 Qualifications:

.1 Installer: company or person specializing in wet sprinkler systems approved by manufacturer.

1.6 MAINTENANCE

.1 Extra Materials:

.1 Provide maintenance materials in accordance with Section 01 78 00 - Closeout Submittals.

.2 Provide spare sprinklers and tools as required by ANSI/NFPA 13-2002.

PART 2 - PRODUCTS

2.1 PIPE, FITTINGS AND VALVES

.1 Pipe:

.1 Ferrous: to ANSI/NFPA 13-2002.

.2 Pipe thickness to be **Schedule 40** or thicker

.3 Copper tube: to ANSI/NFPA 13-2002.

.2 Fittings and joints to ANSI/NFPA 13-2002:

.1 Ferrous: screwed, welded, flanged or roll grooved.

.2 Copper tube: screwed, soldered, brazed.

.3 Provide welded, threaded, grooved-end type fittings into which sprinkler heads, sprinkler head riser nipples, or drop nipples are threaded.

.4 Plain-end fittings with mechanical couplings and fittings which use steel gripping devices to bite into pipe when pressure is applied will not be permitted.

.5 Rubber casketed grooved-end pipe and fittings with mechanical couplings are permitted in pipe sizes 32 mm and larger.

.6 Fittings: ULC approved for use in wet pipe sprinkler systems.

.7 Ensure fittings, mechanical couplings, and rubber gaskets are supplied by same manufacturer.

.8 Side outlet tees using rubber casketed fittings are not permitted.

.9 Sprinkler pipe and fittings: metal.

.3 Valves:

.1 ULC listed for fire protection service.

.2 Gate valves: open by counterclockwise rotation.

2.1 PIPE, FITTINGS AND VALVES (Cont'd)

.3 Valves:(Cont'd)
.3 Provide rising stem valve beneath each alarm valve in each riser when more than one alarm valve is supplied from same water supply pipe.
.4 Check valves: flanged clear opening swing-check type with flanged inspection and access cover plate for sizes 10 cm and larger.

.4 Pipe hangers:
.1 ULC listed for fire protection services in accordance with NFPA.

2.2 SPRINKLER HEADS

.1 General: to ANSI/NFPA 13-2002 and ULC listed for fire services.

.2 Sprinkler Head Type:
.1 Type A: upright bronze.
.2 Type B: pendant chrome link and lever type.
.3 Type C: pendant chrome glass bulb type.
.4 Type D: recessed polished chrome glass bulb/fusible link type with ring and cup.
.5 Type E: flush polished chrome link and lever type.
.6 Type F: side wall polished chrome link and lever type.

2.3 ALARM CHECK VALVE

.1 Alarm check valve to ANSI/NFPA 13-2002 and ULC listed for fire service.

.2 Provide variable pressure type alarm valve complete with retarding chamber, if existing, alarm shutoff valve, drain valve, and for proper operation of system.

2.4 SUPERVISORY SWITCHES

.1 General: to ANSI/NFPA 13-2002 and ULC listed for fire service.

.2 Valves:
.1 Mechanically attached to valve body, with normally open and normally closed contacts and supervisory capability.

.3 Pressure or flow switch type:
.1 With normally open and normally closed contacts and supervisory capability.

2.4 SUPERVISORY SWITCHES (Cont'd)

.3 Pressure or flow switch type:(Cont'd)
.2 Provide switch with circuit opener or closer for automatic transmittal of alarm over facility fire alarm system.
.3 Connect into building fire alarm system.

.4 Pressure alarm switch:
.1 With normally open and normally closed contacts and supervisory capability.

2.5 WATER GONG

.1 To ANSI/NFPA 13-2002 and ULC listed for fire service. Location as indicated.

2.6 FIRE DEPARTMENT CONNECTION

.1 Provide connections approximately 1.5 m above finish grade, location as directed.

.2 To ANSI/NFPA 13-2002 and ULC S543 listed, Siamese type, same as existing.

.3 Polished bronze chrome plated recessed or exposed of approved two-way type with plug, chain, and identifying fire department connection escutcheon plate.

.4 Thread specifications: compatible with local fire department.

2.7 EXCESS PRESSURE PUMP

.1 Provide pumps on each sprinkler piping riser.

.2 Pumps:
.1 Double acting displacement type, open cylinder design, direct drive, ULC listed, complete with relief valve.

.3 Pump and motor unit:
.1 Approved for automatic wet pipe fire extinguishing sprinkler systems; complete with pilot light panel, differential motor control switch, high pressure switch, and low pressure switch.
.2 EEMAC Class B squirrel cage induction 1725 rpm, continuous duty, drip proof, ball bearing, maximum temperature rise 50 degrees C, 0.25 kW, 120/1/60.
.3 Capacity: 7.6 L/min.

.4 Electrical power supply by Division 26.

2.7 EXCESS PRESSURE PUMP (Cont'd)

.5 Pump operation switch: to operate excess pressure pump with pressure differential of 103 kPa.

.6 Shut-off valve and strainer on pump inlet. Relief valve, check valve and shut-off valve on discharge connections.

2.8 PRESSURE GAUGES

.1 ULC listed and to Section 23 05 21 - Thermometers and Pressure Gauges - Piping Systems.

.2 Maximum limit of not less than twice normal working pressure at point where installed.

2.9 SIGNS

.1 Attach properly lettered and approved metal signs to each valve and alarm device to ANSI/NFPA 13-2002.

.2 Permanently fix hydraulic design data nameplates to riser of each system.

2.10 ANTIFREEZE

.1 Antifreeze loops to ANSI/NFPA 13-2002, locations as indicated.

2.11 SPARE PARTS CABINET

.1 Provide metal cabinet with extra sprinkler heads and sprinkler head wrench adjacent to each alarm valve. Number and types of extra sprinkler heads as specified in ANSI/NFPA 13-2002.

PART 3 - EXECUTION

3.1 MANUFACTURER'S INSTRUCTIONS

.1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheet.

3.2 INSTALLATION

.1 Install, inspect and test to acceptance in accordance with ANSI/NFPA 13-2002 and ANSI/NFPA 25-1998.

.2 Install excess pressure pumps across alarm valve in accordance with manufacturer’s instructions.

.3 Install water gong to ANSI/NFPA 13-2002.

3.3 FIELD QUALITY CONTROL

.1 Site Test, Inspection:

.1 Perform test to determine compliance with specified requirements in presence of Departmental Representative Engineer.

.2 Test, inspect, and approve piping before covering or concealing.

.3 Preliminary Tests:

.1 Hydrostatically test each system at 200 psig for a 2 hour period with no leakage or reduction in pressure.

.2 Flush piping with potable water in accordance with ANSI/NFPA 13-2002.

.3 Piping above suspended ceilings: tested, inspected, and approved before installation of ceilings.

.4 Test alarms and other devices.

.5 Test water flow alarms by flowing water through inspector's test connection. When tests have been completed and corrections made, submit signed and dated certificate in accordance with ANSI/NFPA 13-2002.

.4 Formal Tests and Inspections:

.1 Do not submit request for formal test and inspection until preliminary test and corrections are completed and approved.

.2 Submit written request for formal inspection at least 15 days prior to inspection date.

.3 Repeat required tests as directed.

.4 Correct defects and make additional tests until systems comply with contract requirements.

.5 Furnish appliances, equipment, instruments, connecting devices, and personnel for tests.

.6 Authority of Jurisdiction, will witness formal tests and approve systems before they are accepted.

3.3 FIELD QUALITY CONTROL (Cont'd)

.2 Manufacturer's Field Services:

.1 Obtain written report from manufacturer verifying compliance of Work, in handling, installing, applying, protecting and cleaning of product and submit Manufacturer's Field Reports as described in PART 1 - SUBMITTALS.

.2 Provide manufacturer's field services consisting of product use recommendations and periodic site visits for inspection of product installation in accordance with manufacturer's instructions.

END

PART 1 - GENERAL

1.1 REFERENCES

.1 American National Standards Institute/National Fire Protection Association (ANSI/NFPA)
.1 ANSI/NFPA 13-2002, Standard for the Installation of Sprinkler Systems.
.2 ANSI/NFPA 25-2002, Standard for the Inspection, Testing and Maintenance of Water-Based Fire Protection Systems.

.2 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
.1 Material Safety Data Sheets (MSDS).

.3 Underwriter's Laboratories of Canada (ULC)
.1 CAN/ULC S543-M1984, Internal Lug Quick Connect Coupling for Fire Hose.

1.2 SUBMITTALS

.1 Product Data:
.1 Submit manufacturer's printed product literature, specifications and datasheet in accordance with Section 01 33 00 - Submittal Procedures

.2 Shop Drawings:
.1 Submit shop drawings and product data in accordance with Section 01 33 00 - Submittal Procedures and in accordance with ANSI/NFPA 13-2002.

.3 Samples:
.1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
.2 Submit samples of following:
.1 Each type of sprinkler head.
.2 Signs and valve tags.

.4 Quality assurance submittals: submit following in accordance with Section 01 33 00 - Submittal Procedures.
.1 Test reports:
.1 Test hydrostatically to meet requirements of fire protection system to which it will be connected.
.2 Certificates: submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.
.3 Instructions: submit manufacturer's installation instructions.

1.2 SUBMITTALS (Cont'd)

.4 Quality assurance submittals:(Cont'd)
.4 Manufacturer's Field Reports: manufacturer's field reports specified.

.5 Closeout Submittals:
.1 Provide maintenance data for incorporation into manual specified in Section 01 78 00 - Closeout Submittals in accordance with ANSI/NFPA 13-2002.

1.3 QUALITY ASSURANCE

.1 Qualifications:

.1 Installer: company or person specializing in fire sprinkler installations with documented experience or approved by manufacturer.

1.4 MAINTENANCE

.1 Extra Materials:
.1 Provide maintenance materials in accordance with Section 01 78 00 - Closeout Submittals.
.2 Provide spare sprinklers and tools as required by ANSI/NFPA 13-2002.

PART 2 - PRODUCTS

2.1 PIPE, FITTINGS AND VALVES

.1 Pipe:
.1 Ferrous: to ANSI/NFPA 13-2002.
.2 Pipe thickness to **Schedule 40** or thicker
.3 Copper tube: to ANSI/NFPA 13-2002.

.2 Fittings and joints to ANSI/NFPA 13-2002:
.1 Ferrous: screwed, welded, flanged or roll grooved.
.2 Copper tube: screwed, soldered, brazed.

.3 Auxiliary valves:
.1 ULC listed for fire protection service.
.2 Up to NPS 2: bronze, screwed ends, OS & Y gate.
.3 NPS 2 1/2 and over: cast iron, flanged or roll grooved ends, indicating butterfly valve.
.4 Swing check valves.
.5 Ball drip.

2.1 PIPE, FITTINGS AND VALVES (Cont'd)

.3 Auxiliary valves:(Cont'd)
.6 Tamper devices wired back to fire alarm panel.

.4 Pipe hangers:
.1 ULC listed for fire protection services.

2.2 SPRINKLER HEADS

.1 General: to ANSI/NFPA 13-2002 and ULC listed for fire services.

2.3 SPRINKLER HEAD TYPE A

.1 Upright bronze.

2.4 SPRINKLER HEAD TYPE B

.1 Pendant chrome link and lever type.

2.5 SPRINKLER HEAD TYPE C

.1 Pendant chrome glass bulb type.

2.6 SPRINKLER HEAD TYPE D

.1 Recessed polished chrome, glass bulbar fusible link type with ring and cup.

2.7 SPRINKLER HEAD TYPE E

.1 Flush polished chrome link and lever type.

2.8 SPRINKLER HEAD TYPE F

.1 Side wall polished chrome link and lever type.

2.9 AUXILIARY SUPERVISORY SWITCHES

.1 General: to ANSI/NFPA 13-2002 and ULC listed for fire service.

.2 Valves:
.1 Mechanically attached to valve body, with normally open and normally closed contacts and supervisory capability.

.3 Flow switch type:
.1 With normally open and normally closed contacts and supervisory capability.

2.9 AUXILIARY SUPERVISORY SWITCHES (Cont'd)

.4 Pressure alarm switch:
.1 With normally open and normally closed contacts and supervisory capability.

2.10 WATER GONG

.1 To ANSI/NFPA 13-2002 and ULC listed for fire service. Location to be determined by engineer.

2.11 FIRE DEPARTMENT CONNECTION

.1 To ANSI/NFPA 13-2002 and ULC listed, Siamese type, location as indicated. Thread specifications to be compatible with local fire department and existing Siamese.

.2 Polished chrome plated exposed with identifying sign cast on plate. Threaded metal caps and chains.

2.12 DRY PIPE VALVE

.1 ULC listed.

.2 Cast iron, flanged type, sized to suit water main.

.3 Components:
.1 Accelerator.
.2 Air maintenance device with low pressure alarm.
.3 Alarm pressure switch with supervisory capability.
.4 Pressure gauges.
.5 Drain valve.
.6 Test valve with associated piping.
.7 Shut off valve - OS & Y with tamper-proof device wired back to fire alarm panel.

2.13 PRE-ACTION /DELUGE ALARM VALVE

.1 ULC listed.

.2 Cast iron, flanged type, sized to suit water main.

.3 Components:
.1 Accelerator.
.2 Air maintenance device with low pressure alarm.

2.13 PRE-ACTION /DELUGE ALARM VALVE (Cont'd)

.3 Components:(Cont'd)
.3 Alarm pressure switch with supervisory capability.
.4 Test valve and associated piping.
.5 Drain valve.
.6 Electrical tripping device.
.7 Shut off valve - OS & Y with tamper-proof device wired back to fire alarm panel.

2.14 COMPRESSED AIR SUPPLY

.1 Automatic Air Compressor.

.2 ULC listed.

.3 Capacity:
.1 To restore normal air pressure in system within 30 minutes.
.2 To provide air pressure in accordance with instruction sheet furnished with dry pipe valve.

.4 Piping: ferrous, NPS 3/4 screwed joints and fittings, to ANSI/NFPA 13-2002.

2.15 NITROGEN

.1 General:
.1 Introduce Nitrogen to system through pressure regulator set to maintain system pressure.

.2 Storage containers:
.1 Floor mounted anchored to wall.
.2 Location as indicated by engineer.
.3 One bank for initial use and one bank to be connected in reserve.
.4 Piping: ferrous NPS 3/4 screwed, welded fittings to ANSI/NFPA 13-2002.
.5 Provide:
.1 Visual indication of status of nitrogen supply.
.2 Pressure switch for indication of discharge of container to show at main fire alarm panel.
.3 Common header.
.4 Directional flow valves.

2.16 PRESSURE GAUGES

.1 ULC listed and to Section 23 05 21 - Thermometers and Pressure Gauges - Piping Systems.

.2 Maximum limit of not less than twice normal working pressure at point where installed.

2.17 RELIEF VALVE

.1 ULC listed.

2.18 SPARE PARTS CABINET

.1 For storage of maintenance materials, spare sprinkler heads and special tools.

.2 Construct to sprinkler head manufacturers standard.

PART 3 - EXECUTION

3.1 MANUFACTURER'S INSTRUCTIONS

.1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheet.

3.2 INSTALLATION

.1 Install, inspect and test to acceptance in accordance with ANSI/NFPA 13-2002 and ANSI/NFPA 25-1998.

.2 Testing to be witnessed by Canadian Forces Fire Marshal or authority having jurisdiction.

.3 Install water gong as indicated.

.4 Install fire department connections as indicated.

.5 Install spare parts cabinet as indicated.

.6 Pressure gauges:
- .1 Location:
  - .1 On water side and air side of dry pipe valve.
  - .2 At air receiver.
  - .3 In each independent pipe from air supply to dry pipe valve.
  - .4 At exhausters and accelerators.
- .2 Install to permit removal.

3.2 INSTALLATION (Cont'd)

.6 Pressure gauges:(Cont'd)
.3 Locate so as not subjected to freezing.

.7 Valve identification:
.1 Identify drain valve, by-pass valves and main shut-off valve and all auxiliary valves.

3.3 FIELD QUALITY CONTROL

.1 Manufacturer's Field Services:
.1 Obtain written report from manufacturer verifying compliance of Work, in handling, installing, applying, protecting and cleaning of product and submit Manufacturer's Field Reports as described in PART 1 - SUBMITTALS.
.2 Provide manufacturer's field services consisting of product use recommendations and periodic site visits for inspection of product installation in accordance with manufacturer's instructions.

3.4 CLEANING

.1 Proceed in accordance with Section 01 74 11 - Cleaning.

END

PART 1 - GENERAL

1.1 SECTION INCLUDES

.1 Materials and installation for copper domestic water service used in the following:
- .1 Copper incoming domestic water service, up to NPS 2 1/2.
- .2 Hard drawn copper domestic hot and cold water services inside building.
- .3 Soft copper tubing inside building.
- .4 Soft copper buried tubing outside building, as in between potable water source and meter inside building.

1.2 REFERENCES

.1 American National Standards Institute (ANSI)/American Society of Mechanical Engineers International (ASME).
- .1 ANSI/ASME B16.15-02, Cast Bronze Threaded Fittings, Classes 125 and 250.
- .2 ANSI/ASME B16.18-01, Cast Copper Alloy Solder Joint Pressure Fittings.
- .3 ANSI/ASME B16.22-01, Wrought Copper and Copper Alloy Solder Joint Pressure Fittings.
- .4 ANSI/ASME B16.24-01, Cast Copper Alloy Pipe Flanges and Flanged Fittings, Class 150, 300, 400, 600, 900, 1500 and 2500.

.2 American Society for Testing and Materials International, (ASTM).
- .1 ASTM A 307-03, Standard Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength.
- .2 ASTM B 88M-03, Standard Specification for Seamless Copper Water Tube (Metric).
- .3 ASTM F 492-95, Standard Specification for Propylene and Polypropylene (PP) Plastic-Lined Ferrous Metal Pipe and Fittings.

.3 American Water Works Association (AWWA).
- .1 AWWA C111-00, Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings.

.4 Canadian Standards Association (CSA International).
- .1 CSA B242-M1980 (R1998) (R1998), Groove and Shoulder Type Mechanical Pipe Couplings.

.5 Department of Justice Canada (Jus).
- .1 Canadian Environmental Protection Act, 1999, c. 33 (CEPA).

1.2 REFERENCES (Cont'd)

.6 Health Canada/Workplace Hazardous Materials Information System (WHMIS).
.1 Material Safety Data Sheets (MSDS).

.7 Manufacturer's Standardization Society of the Valve and Fittings Industry (MSS).
.1 MSS SP-67-2002, Butterfly Valves.
.2 MSS SP-70-1998, Cast Iron Gate Valves, Flanged and Threaded Ends.
.3 MSS SP-71-2002, Cast Iron Swing Check Valves, Flanged and Threaded Ends.
.4 MSS-SP-80-03, Bronze Gate, Globe, Angle and Check Valves.

.8 National Research Council (NRC)/Institute for Research in Construction.
.1 NRCC 38728, National Plumbing Code of Canada (NPC) - 1995.

.9 Transport Canada (TC).
.1 Transportation of Dangerous Goods Act, 1992, c. 34 (TDGA).

1.3 SUBMITTALS

.1 Submittals in accordance with Section 01 33 00 - Submittal Procedures.

.2 Submit product data for following: piping.

.3 Provide maintenance data for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

1.4 REPAIRS

.1 Provide materials and labour to replace existing copper piping systems at 4 Wing Cold Lake. Replacement of fixtures to be as specified as follows and shall match existing installed devices. The specifications include the most common devices, which will be encountered at 4 Wing Cold Lake. If any specialty item has to be replaced the original shop drawings from the Maintenance Manual shall be consulted by Engineer and communicated to Contractor.

PART 2 - PRODUCTS

2.1 PIPING

.1 Domestic hot, cold and recirculation systems, within building.
.1 Above ground: copper tube, hard drawn, type K or L: to ASTM B 88M-99.
.2 Buried or embedded: copper tube, soft annealed, type K : to ASTM B 88M-99, in long lengths and with no buried joints.

2.2 FITTINGS

.1 Bronze pipe flanges and flanged fittings, Class 150 and 300: to ASME B16.24-2001.

.2 Cast bronze threaded fittings, Class 125 and 250: to ASME B16.15-1985 (R1994) (R1994).

.3 Cast copper, solder type: to ANSI B16.18-2001.

.4 Wrought copper and copper alloy, solder type: to ASME B16.22-2001.

.5 NPS 2 and larger: roll grooved to CSA B242-M1980 (R1998) (R1998).

2.3 JOINTS

.1 Rubber gaskets, 1.6 mm thick: to AWWA C111.

.2 Bolts, nuts, hex head and washers: to ASTM A 307-02, heavy series.

.3 Solder: 95/5 tin copper alloy or silver.

.4 Teflon tape: for threaded joints.

.5 Grooved couplings: designed with angle bolt pads to provide rigid joint, complete with EPDM flush seal gasket.

.6 Dielectric connections between dissimilar metals: dielectric fitting to ASTM F 492-95, complete with thermoplastic liner.

2.4 GATE VALVES

.1 NPS 2 and under, soldered:
.1 Rising stem: to MSS SP-80-1997, Class 125, 860 kPa, bronze body, screw-in bonnet, solid wedge disc as specified Section 23 05 22 - Valves - Bronze.

2.4 GATE VALVES (Cont'd)

.2 NPS 2 and under, screwed:
.1 Rising stem: to MSS SP-80-1997, Class 125, 860 kPa, bronze body, screw-in bonnet, solid wedge disc as specified Section 23 05 22 - Valves - Bronze.

.3 NPS 2-1/2 and over, in mechanical rooms, flanged:
.1 Rising stem: to MSS SP-70-1998, Class 125, 860 kPa, flat flange faces, cast-iron body, OS&Y bronze trim specified Section 23 05 23 - Valves - Cast Iron.

.4 NPS 2-1/2 and over, other than mechanical rooms, flanged:
.1 Non-rising stem: to MSS SP-70-1998, Class 125, 860 kPa, flat flange faces, cast-iron body, bronze trim, bolted bonnet specified Section 23 05 23 - Valves - Cast Iron: Gate, Globe, Check.

2.5 GLOBE VALVES

.1 NPS2 and under, soldered:
.1 To MSS SP-80-1997, Class 125, 860 kPa, bronze body, renewable composition disc, screwed over bonnet as specified Section 23 05 22 - Valves - Bronze.
.2 Lock shield handles: as existing.

.2 NPS 2 and under, screwed:
.1 To MSS SP-80-1997, Class 150, 1 MPa, bronze body, screwed over bonnet, renewable composition disc as specified Section 23 05 22 - Valves - Bronze.
.2 Lock shield handles: as existing.

2.6 SWING CHECK VALVES

.1 NPS 2 and under, soldered:

.1 To MSS SP-80-1997, Class 125, 860 kPa, bronze body, bronze swing disc, screw in cap, regrind able seat as specified Section 23 05 22
- Valves - Bronze.

.2 NPS 2 and under, screwed:
.1 To MSS SP-80-1997, Class 125, 860 kPa, bronze body, bronze swing disc, screw in cap, regrind able seat as specified Section 23 05 22 - Valves - Bronze.

.3 NPS 2-1/2 and over, flanged:
.1 To MSS SP-71-2002, Class 125, 860 kPa,

cast iron body, flat flange faces, regrind

2.6 SWING CHECK VALVES (Cont'd)

.3 NPS 2-1/2 and over, flanged:(Cont'd)
.1 (Cont'd)
renewable seat, bronze disc, bolted cap specified Section 23 05 23 - Valves - Cast Iron: Gate, Globe, Check.

2.7 BALL VALVES

.1 NPS 2 and under, screwed:
.1 Class 150.
.2 Bronze body, stainless steel ball, PTFE adjustable packing, brass gland and PTFE seat, steel lever handle as specified Section 23 05 22 - Valves - Bronze.

.2 NPS 2 and under, soldered:
.1 To ANSI B16.18-2001, Class 150.
.2 Bronze body, stainless steel ball, PTFE adjustable packing, brass gland and PTFE seat, steel lever handle, with NPT to copper adaptors as specified Section 23 05 22 - Valves - Bronze.

2.8 BUTTERFLY VALVES

.1 NPS 2-1/2 and over, wafer lug:
.1 To MSS SP-67-2002, Class 200.
.2 Cast iron body, ductile iron chrome plated disc, stainless steel stem, EPT liner.
.3 Lever operated, NPS8 and over, gear operated.

.2 NPS 2-1/2 and over, grooved ends:
.1 Class 300, bubble tight shut-off, bronze body.
.2 Operator:
.1 NPS 4 and under: lever handle.
.2 NPS 6 and over: gear operated..

PART 3 - EXECUTION

3.1 INSTALLATION

.1 Install in accordance with NPC Code and local authority having jurisdiction.

.2 Assemble piping using fittings manufactured to ANSI standards.

.3 Install CWS piping below and away from HWS and HWC and other hot piping so as to maintain temperature of cold water as low as possible.

3.1 INSTALLATION (Cont'd)

.4 Connect to fixtures and equipment in accordance with manufacturer's written instructions unless otherwise indicated.

.5 Buried tubing:
.1 Lay in well compacted washed sand in accordance with AWWA Class B bedding.
.2 Bend tubing without crimping or constriction. Minimize use of fittings.

3.2 VALVES

.1 Isolate equipment, fixtures and branches with ball valves.

.2 Balance recirculation system using lock shield globe valves. Mark settings and record on
as-built drawings on completion.

3.3 PRESSURE TESTS

.1 Conform to requirements of Section 23 05 00 - Common Work Results - Mechanical.

.2 Test pressure: greater of 1.5 time’s maximum system operating pressure or 860 kPa.

3.4 PRE-START-UP INSPECTIONS

.1 Systems to be complete, prior to flushing, testing and start-up.

.2 Verify that system can be completely drained.

.3 Ensure that pressure booster systems are operating properly.

.4 Ensure that air chambers, expansion compensators are installed properly.

3.5 DISINFECTION

.1 Flush out, disinfect and rinse system to requirements of authority having jurisdiction

.2 Upon completion, provide laboratory test reports on water quality for Departmental Representative approval.

3.6 START-UP

.1 Timing: Start up after:
.1 Pressure tests have been completed.

.2 Disinfection procedures have been completed.

3.6 START-UP (Cont'd)

.1 Timing:(Cont'd)
.3 Certificate of static completion has been issued.
.4 Water treatment systems operational.

.2 Provide continuous supervision during start-up.

.3 Start-up procedures:
.1 Establish circulation and ensure that air is eliminated.
.2 Check pressurization to ensure proper operation and to prevent water hammer, flashing and/or cavitation.
.3 Bring HWS storage tank up to design temperature slowly.
.4 Monitor piping HWS and HWC piping systems for freedom of movement, pipe expansion as designed.
.5 Check control, limit, safety devices for normal and safe operation.

.4 Rectify start-up deficiencies.

END

PART 1 - GENERAL

1.1 SUMMARY

.1 Section Includes:
.1 The installation of drainage waste and vent piping.

1.2 REFERENCES

.1 American Society for Testing and Materials International, (ASTM).
.1 ASTM B 32-03, Specification for Solder Metal.
.2 ASTM B 306-02, Specification for Copper Drainage Tube (DWV).
.3 ASTM C 564-03a, Specification for Rubber Gaskets for Cast Iron Soil Pipe and Fittings.

.2 Canadian Standards Association (CSA International).
.1 CSA B67-1972 (R1996), Lead Service Pipe, Waste Pipe, Traps, Bends and Accessories.
.2 CSA B70-02, Cast Iron Soil Pipe, Fittings and Means of Joining.
.3 CSA B125-01, Plumbing Fittings.

1.3 REPAIR

.1 Provide materials and labour to repair existing Drainage Waste & Vent Piping - Cast Iron & Copper piping systems at 4 Wing Cold Lake. Replacement of fixtures to be as specified as follows and shall match existing installed devices. The specifications include the most common devices, which will be encountered at 4 Wing Cold Lake. If any specialty item has to be replaced the original shop drawings from the Maintenance Manual shall be consulted by Engineer and communicated to Contractor.

PART 2 - PRODUCTS

2.1 MATERIAL

2.2 COPPER TUBE AND FITTINGS

.1 Above ground sanitary and vent Type DWV to: ASTM B 306-02.
- .1 Fittings.
  - .1 Cast brass: to CSA B125-01.
  - .2 Wrought copper: to CSA B125-01.
- .2 Solder: tin-lead, 50:50, type 50A , to ASTM B 32-00e1.

2.3 CAST IRON PIPING AND FITTINGS

.1 Buried sanitary and vent minimum NPS 3, to: CSA B70-02,
- .1 Joints.
  - .1 Mechanical joints.
    - .1 Neoprene or butyl rubber compression gaskets: to ASTM C 564-97 or CSA B70-02.
    - .2 Stainless steel clamps.
  - .2 Hub and spigot.
    - .1 Caulking lead: to CSA B67-1972 (R1996).
    - .2 Cold caulking compounds.

.2 Above ground sanitary and vent: to CSA B70-02.
- .1 Joints.
  - .1 Hub and spigot.
    - .1 Caulking lead: to CSA B67-1972 (R1996).
  - .2 Mechanical joints.
    - .1 Neoprene or butyl rubber compression gaskets with stainless steel clamps.

PART 3 - EXECUTION

3.1 INSTALLATION

.1 Install in accordance with Canadian Plumbing Code and local authority having jurisdiction.

.2 Install buried pipe on 150mm bed of clean washed sand. shaped to accommodate hubs and fittings, to line and grade as indicated or as existing. Backfill with 150mm clean washed sand.

.3 Install above ground piping parallel and close to walls and ceilings to conserve headroom and space, and to grade as indicated.

3.2 TESTING

.1 Pressure test buried systems before backfilling.

.2 Hydraulically test to verify grades and freedom from obstructions.

END

PART 1 - GENERAL

1.1 SUMMARY

.1 Section Includes:
.1 The installation of drainage waste and venting piping - plastic.

1.2 REFERENCES

.1 American Society for Testing and Materials International, (ASTM).
.1 ASTM D 2235-01, Specification for Solvent Cement for Acrylonitrile-Butadiene-Styrene (ABS) Plastic Pipe and Fittings.
.2 ASTM D 2564-02, Specification for Solvent Cements for Poly(Vinyl-Chloride) (PVC) Plastic Piping Systems.

.2 Canadian Standards Association (CSA International).
.1 CSA-Series B1800-02, Plastic No pressure Pipe Compendium.
.2 CSA-B181.2-02, PVC Drain, Waste and Vent Pipe and Pipe Fittings.
.3 CSA-B182.1-02, Plastic Drain and Sewer Pipe and Pipe Fittings.

1.3 REPAIRS

.1 Provide materials and labour to repair existing Drainage Waste & Vent Piping - Plastic piping systems at 4 Wing Cold Lake. Replacement of fixtures to be as specified as follows and shall match existing installed devices. The specifications include the most common devices, which will be encountered at 4 Wing Cold Lake. If any specialty item has to be replaced the original shop drawings from the Maintenance Manual shall be consulted by Engineer and communicated to Contractor.

PART 2 - PRODUCTS

2.1 MATERIAL

2.2 PIPING AND FITTINGS

.1 For buried DWV piping to:

.1 CSA-B181.1.
.2 CSA-B181.2.
.3 CSA-B182.1.

2.3 JOINTS

.1 Solvent weld for PVC: to ASTM D 2564.

.2 Solvent weld for ABS: to ASTM D 2235.

PART 3 - EXECUTION

3.1 INSTALLATION

.1 Install in accordance with Canadian Plumbing Code.

.2 Install buried pipe on 150mm bed of clean washed sand. shaped to accommodate hubs and fittings, to line and grade as indicated or as existing. Backfill with 150mm clean washed sand.

.3 Install above ground piping parallel and close to walls and ceilings to conserve headroom and space, and to grade as indicated.

3.2 TESTING

.1 Pressure test buried systems before backfilling.

.2 Hydraulically test to verify grades and freedom from obstructions.

END

PART 1 - GENERAL

1.1 SUMMARY

.1 Section Includes:

.1 Materials and installation for piping, fittings, equipment used in compressed air systems.

.2 Provide materials and labour to repair existing Compressed Air Systems at 4 Wing Cold Lake. Replacement of fixtures to be specified as follows and shall match existing installed devices. The specifications include the most common devices, which will be encountered at 4 Wing Cold Lake. If any specialty item has to be replaced the original shop drawings from the Maintenance Manual shall be consulted by Engineer and communicated to Contractor.

1.2 REFERENCES

.1 American Society of Mechanical Engineers (ASME)

.1 ASME Boiler and Pressure Vessel Code Section VIII Pressure Vessels.

.1 BPVC-VIII B - 2004, BPVC Section VIII - Rules for Construction of Pressure Vessels Division 1.

.2 BPVC-VIII-2 B - 2004, BPVC Section VIII - Rules for Construction of Pressure Vessels Division 2 - Alternative Rules.

.3 BPVC-VIII-3 B - 2004, BPVC Section VIII - Rules for Construction of Pressure Vessels Division 3 - Alternative Rules High Press Vessels.

.2 ASME B16.5-03, Pipe Flanges and Flanged Fittings.

.3 ASME B16.11-01, Forged Fittings, Socket-Welding and Threaded.

.4 ASME B31.1-2001 and ASME 31.4

.2 American Society for Testing and Materials International (ASTM)

.1 ASTM A 53/A53M-04, Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless.

.2 ASTM A 181/A 181M-01, Standard Specification for Carbon Steel Forgings for General Purpose Piping.

.3 ASTM B 241/B 241M-02

1.2 REFERENCES (Cont'd)

.3 Canadian Standards Association (CSA International)
.1 CSA B51-03, Boiler, Pressure Vessel, and Pressure Piping Code.

.4 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
.1 Material Safety Data Sheets (MSDS).

1.3 SUBMITTALS

.1 Submittals in accordance with Section 01 33 00 - Submittal Procedures.

.2 Product Data:
.1 Submit manufacturer's printed product literature, specifications and datasheet for piping, fittings and equipment.

.3 Shop Drawings:
.1 Submit shop drawings to indicate project layout including layout, dimensions and extent of piping system.
.1 Vertical and horizontal piping locations and elevations and connections details.
.2 Certificates: submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.
.3 Instructions: submit manufacturer's installation instructions.
.4 Closeout Submittals: submit maintenance and engineering data for incorporation into manual specified in Section 01 78 00 - Closeout Submittals

PART 2 - PRODUCTS

2.1 REFRIGERATED AIR DRYER

.1 Self-contained, hermetically sealed, complete with air cooled heat exchanger, compressor, automatic controls, moisture removal trap, wiring, piping and refrigerant charge.

.2 Inlet and outlet connections to be factory insulated.

.3 Capacity:
.1 as existing

.4 Electrical supply: as existing

2.2 COMBINATION FILTER-REGULATOR

.1 Factory assembled, heavy-duty with mounting bracket and low pressure side relief valve.

.2 Maximum inlet pressure: 800 kPa.

.3 Operating temperature: minus 18 degrees C to plus 52 degrees C.

.4 Filter element: 40 micron. Bowls: polycarbonate.

.5 Pressure range in regulator: 34 kPa to 800 kPa.

.6 Gauge range: 0 kpa to 1100 kPa.

2.3 PIPING

.1 Piping:
.1 to ASTM A 53/A 53M-02, schedule 80 seamless black steel.
.2 to ASTM B 241/B 241M-02 seamless aluminum with corresponding fittings and couplings.
.3 Acceptable material: Transair, ARO, Crane, Grinell.

.2 Fittings:
.1 NPS2 and smaller: to ASME B16.11-2001, schedule 80 steel, socket welded.
.2 NPS2 1/2 and larger: to ASME B16.11-2001, schedule 80 steel, butt or socket welded.

.3 Couplings: to ASME B16.11-2001, socket welded or threaded half coupling type.

.4 Unions: 1000 kPa malleable iron with brass-to-iron ground seat.

.5 Dissimilar metal junctions: use dielectric unions or Polyaramid with fiber glass and plated brass(for connection of aluminum piping only)

.6 Flanges:
.1 NPS2 and smaller: to ASME B16.5-1996, forged steel, raised face and socket welded.
.2 NPS2 1/2 and larger: to ASME B16.5-1996, forged steel, raised face and slip-on or weld neck.

.7 Joints:
.1 NPS2 and smaller: socket welded.
.2 NPS2 1/2 and larger: butt welded.

2.4 BALL VALVES

.1 Three piece design or top entry for ease of in-line maintenance.
.1 To ASTM A 181/A 181M-01, Class 70, carbon steel body socket welded or screwed ends, carbon steel ball and associated trim suitable for compressed air application.
.2 To withstand 1034 kPa maximum pressure.

2.5 COUPLERS/ CONNECTORS

.1 Industrial interchange series, full-bore.

.2 Maximum inlet pressure: 1700 kPa.

.3 Valve seat: moulded nylon.

.4 Body: zinc plated steel.

.5 Threads: NPT.

PART 3 - EXECUTION

3.1 MANUFACTURER'S INSTRUCTIONS

.1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheet.

3.2 COMPRESSOR STATION

.1 Install on vibration isolators on housekeeping pad as indicated.

3.3 REFRIGERATED AIR DRYER

.1 Install on three-valve bypass.

.2 Install tee connection after dryer for emergency connection to instrument control air system.

3.4 COMPRESSED AIR LINE FILTER

.1 Install on discharge line from refrigerated air dryer.

3.5 MAIN AIR PRESSURE REGULATORS

.1 Install at air compressor station.

.2 Install additional regulators on connections to equipment as indicated.

3.6 COMPRESSED AIR PIPING CONNECTIONS AND INSTALLATION

.1 Install flexible connection in accordance with Section 23 05 16 - Expansion Fittings and Loops for HVAC Piping.

.2 Install shut-off valves at outlets, major branch lines and in locations as indicated.

.3 Install quick-coupler chucks and pressure gauges on drop pipes.

.4 Install unions to permit removal or replacement of equipment.

.5 Install tees in lieu of elbows at changes in direction of piping. Install plug in open ends of tees.

.6 Grade piping at 1 % slope minimum.

.7 Install compressed air trap and pressure equalizing pipe at moisture collecting points. Drain pipe to nearest floor drain.

.8 Make branch connections from top of main.

.9 Install compressed air trap at bottom of risers and at low points in mains, piped to nearest drain. Distance between drain points to be 30 m maximum.

.10 Provide drain from refrigerated air dryer.

.11 Weld steel piping in accordance with Section 23 05 17 - Pipe Welding and;
.1 To ASME code and requirements of authority having jurisdiction.
.2 Weld concealed and inaccessible piping regardless of size.

3.7 FIELD QUALITY CONTROL

.1 Site Tests/Inspection:

.1 Testing: pressure test in accordance with requirements of Section 23 05 00 - Common Work Results - Mechanical, for 4 h minimum, to 1100 kPa, with outlets closed and with compressor isolated from system. Pressure drop not to exceed 10 kPa.

.2 Manufacturer's Field Services:

3.8 CLEANING

.1 Cleaning: blow out piping to clean interior thoroughly of oil and foreign matter.

.2 Check entire installation is approved by authority having jurisdiction.

.3 Perform cleaning operations in accordance with manufacturer's recommendations.

.4 Upon completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.

END

PART 1 - GENERAL

1.1 SUMMARY

.1 Section Includes:
.1 Valves, gate, globe, and check.

1.2 REFERENCES

.1 American National Standards Institute (ANSI)/American Society of Mechanical Engineers (ASME).
.1 ASME B16.1-1998, Cast Iron Pipe Flanges and Flanged Fittings.

.2 American Society for Testing and Materials International (ASTM).
.1 ASTM A 49-01, Specification for Heat-Treated Carbon Steel Joint Bars.
.2 ASTM A 126-95(2001), Specification for Gray Iron Castings for Valves, Flanges, and Pipe Fittings.
.3 ASTM B 61-02, Specification for Steam or Valve Bronze Castings.
.4 ASTM B 62-02, Specification for Composition Bronze or Ounce Metal Castings.
.5 ASTM B 85-03, Specification for Aluminum-Alloy Die Castings.
.6 ASTM B 209-04, Specification for Aluminum and Aluminum-Alloy Sheet and Plate.

.3 Manufacturers Standardization Society of the Valve and Fittings Industry, Inc. (MSS).
.1 MSS SP-70-1998, Cast Iron Gate Valves, Flanged and Threaded Ends.
.2 MSS SP-71-2002, Grey Iron Swing Check Valves, Flanged and Threaded Ends.
.3 MSS SP-82-1992, Valve Pressure Testing Methods.
.4 MSS SP-85-2002, Cast Iron Globe and Angle Valves, Flanged and Threaded Ends.

1.3 SUBMITTALS

.1 Submittals in accordance with Section 01 33 00 - Submittal Procedures.

.2 Product Data: submit WHMIS MSDS - Material Safety Data Sheets in accordance with Section 02 61 33 - Hazardous Materials.
.1 Submit shop drawings and product data in accordance with Section 01 33 00 - Submittal Procedures.
.2 Submit data for valves specified in this section.

1.3 SUBMITTALS (Cont'd)

.3 Closeout Submittals:
.1 Submit maintenance data for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

1.4 REPAIRS

.1 Provide materials and labour to replace existing cast iron valves in piping systems at 4 Wing Cold Lake. Replacement of fixtures to be as specified as follows and shall match existing installed devices. The specifications include the most common devices, which will be encountered at 4 Wing Cold Lake. If any specialty item has to be replaced the original shop drawings from the Maintenance Manual shall be consulted by Engineer and communicated to Contractor.

PART 2 - PRODUCTS

2.1 MATERIAL

.1 Valves:
.1 Except for specialty valves, to be of single manufacturer.

.2 Standard specifications:
.1 Gate valves: MSS SP-70-1998.
.2 Globe valves: MSS SP-85-2002.
.3 Check valves: MSS SP-71-2002.

.3 Requirements common to valves, unless specified otherwise:
.1 Body, bonnet: cast iron to ASTM B 209-02a Class B.
.2 Connections: flanged ends to ANSI B16.1.
.3 Inspection and pressure testing: to MSS SP-82-1992.
.4 Bonnet gasket: non-asbestos.
.5 Stem: to have precision-machined Acme or 60 degrees V threads, top screwed for hand wheel nut.
.6 Stuffing box: non-galling two-piece ball-jointed packing gland, gland bolts and nuts.
.7 Gland packing: non-asbestos.
.8 Hand wheel: Die-cast aluminum alloy to ASTM B 85-02 or malleable iron to ASTM A 49-01 of bronze to ASTM B 62-02.
.9 Identification tag: with catalogue number, size, other pertinent data.

.4 All products to have CRN registration numbers.

2.2 GATE VALVES .1 NPS 2 1/2 - 8, non-rising stem, inside screw, bronze trim, solid wedge disc:
.1 Body and multiple-bolted bonnet: with bosses in body and bonnet for taps and drains, full length disc guides designed to ensure correct re-assembly. Class 125.
.2 Disc: solid offset taper wedge, bronze to ASTM B 62-02.
.3 Seat rings: renewable bronze to ASTM B 62-02, screwed into body.
.4 Stem: bronze to ASTM B 62-02.
.5 Operator: Hand wheel Manual gear: Hydraulic:.
.6 Bypass: complete with union and gate or globe valve as Section 23 05 22 - Valves - Bronze,.

.2 NPS 10 - 24, non-rising stem, inside crew, bronze trim, solid wedge disc:
.1 Body and multiple-bolted bonnet: cast iron to ASTM A 126-95(2001) Class B for sizes up to NPS 14, Class C for sizes NPS 16 and over, with bosses in body and bonnet for taps and drains, full length disc guides designed to ensure correct re-assembly, body tie ribs between bonnet and end flanges.
.2 Pressure ratings: Class 125.
.3 Disc: solid offset taper wedge, with bronze rings to ASTM B 62-02 rolled into cast iron disc, secured to stem.
.4 Seat rings: renewable bronze to ASTM B 62-02 screwed into body.
.5 Stem: bronze to ASTM B 62-02.
.6 Operator: Hand wheel Manual gear:.
.7 Bypass: complete with union and gate or globe valve as Section 23 05 01 - Installation of Pipework.

.3 NPS 2 1/2-8, outside screw and yoke (OS&Y), bronze trim, solid wedge disc:
.1 Body and multiple-bolted bonnet: with bosses in body and bonnet for taps and drains, full length disc guides designed to ensure correct re-assembly, yoke, yoke hub, yoke sleeve and nut. Class 125.
.2 Disc: solid offset taper wedge, bronze to ASTM B 62-02 up to NPS 3, cast iron with bronze disc rings on other sizes, secured to stem through integral forged T-head disc-stem connection.
.3 Seat rings: renewable bronze screwed into body.
.4 Stem: nickel-plated steel.
.5 Pressure-lubricated operating mechanism.
.6 Operator: Hand wheel Manual gear.

2.2 GATE VALVES (Cont'd)

.3 (Cont'd)
.7 Bypass: complete with union and gate or globe valve as Section 23 05 01 - Installation of Pipework.

.4 NPS 10 - 24, outside screw and yoke (OS&Y), bronze trim, solid wedge disc:
.1 Body and multiple-bolted bonnet: NPS 10 - 14: cast iron to ASTM A 126-95(2001) Class B. With bosses in body and bonnet for taps and drains, full length disc guides designed to ensure correct re-assembly, body tie ribs between bonnet and end flanges, yoke, yoke hub, yoke sleeve and nut.
.2 Pressure ratings: Class 125.
.1 NPS 10-12: WP = 1.4 Mpa CWP.
.2 NPS 14-24: WP = 1.03 Mpa CWP.
.3 Disc: solid offset taper wedge, bronze disc rings to ASTM B 62-02 rolled into cast iron disc, secured to stem through integral forged T-head disc-stem connection.
.4 Seat rings: renewable bronze to ASTM B 62-02 screwed into body.
.5 Stem: nickel-plated steel.
.6 Pressure-lubricated operating mechanism.
.7 Operator: Hand wheel Manual gear
.8 Bypass: complete with union and gate or globe valve as Section 23 05 22 - Valves - Bronze.

2.3 UNDERWRITERS APPROVED GATE VALVE

.1 NPS 2 1/2 - 14, OS&Y:
.1 Approvals: UL and FM approved for fire service.
.2 UL and FM Label: on valve yoke.
.3 Body, Bonnet: cast iron to ASTM A 126-95(2001) Class B. Wall thicknesses to ANSI B16.1 and ULC 262 (B).
.4 Bonnet bushing, yoke sleeve: bronze, to FM requirements.
.5 Packing gland: bronze.
.6 Stem: manganese bronze. Diameter to ULC ORD-C262-1992 (B).
.7 Stuffing box dimensions, gland bolt diameter: to ULC ORD-C262-1992 (B).
.8 Bosses for bypass valve, drain: on NPS 4 and over.
.9 Disc: solid taper wedge. Up to NPS 3: bronze. NPS 4 and over: cast iron with bronze disc rings.
.10 Disc seat ring: self-aligning, Millwood undercut on NPS 3 - 12.

2.3 UNDERWRITERS APPROVED GATE VALVE (Cont'd)

.1 (Cont'd)
.11 Pressure rating:
.1 NPS 2-1/2 - 12: 1.7 Mpa CWP.
.2 NPS 14-1.2: 1.2 MPa CWP.
.12 Operator: hand wheel.
.13 Bypass: complete with union and gate globe valve as per existing.

2.4 GLOBE VALVES

.1 NPS 2 1/2 - 10, OSY:
.1 Body: with multiple-bolted bonnet.
.2 WP: 860 kPa steam, 1.4 MPa CWP.
.3 Bonnet-yoke gasket: non-asbestos.
.4 Disc: bronze to ASTM B 62-02, fully guided from bottom, securely yet freely connected to stem for swivel action and accurate engagement with disc.
.5 Seat ring: renewable, regrind able, screwed into body.
.6 Stem: bronze to ASTM B 62-02.
.7 Operator: Hand wheel.
.8 Bypass: complete with union and gate or globe valve aspen existing.

2.5 BYPASSES FOR GATE AND GLOBE VALVES

.1 Locations: on valves as indicated.

.2 Position of bypass valve on main valves: to match existing.

.3 Size of bypass valve:
.1 Main valve up to NPS 8: NPS 3/4.
.2 Main valve NPS 10 and over: NPS 1.

.4 Type of bypass valves:
.1 On gate valve: globe, with bronze disc, bronze trim, to Section 23 05 22 - Valves - Bronze. Pressure rating to match main valve.
.2 On globe valve: globe, with bronze disc, bronze trim, to Section 23 05 22 - Valves - Bronze. Pressure rating to match main valve.

2.6 VALVE OPERATORS

.1 Install valve operators as follows:
.1 to match existing being replaced

2.7 CHECK VALVES

.1 Swing check valves, Class 125:

2.7 CHECK VALVES (Cont'd)

.1 (Cont'd)

.1 Body and bolted cover: with tapped and plugged opening on each side for hinge pin. Flanged ends: plain faced with smooth finish.

.1 Up to NPS 16: cast iron to ASTM A 126-95(2001) Class B.

.2 NPS 18 and over: cast iron to ASTM A 126-95(2001) Class C.

.2 Ratings:

.1 NPS 2 1/2 - 12: 860 kPa steam; 1.4 MPa CWP.

.2 NPS 14 - 16: 860 kPa steam; 1.03 MPa CWP.

.3 NPS 18 and over: 1.03 MPa CWP.

.3 For steam, water, non-corrosive oil or gas.

.1 Disc: rotating for extended life.

.2 Up to NPS 6: bronze to ASTM B 62-02.

.3 NPS 8 and over: bronze-faced cast iron.

.4 Seat rings: renewable bronze to ASTM B 62-02 screwed into body.

.5 Hinge pin, bushings: renewable bronze to ASTM B 62-02.

.6 For oil, gas, gasoline, other fluids which corrode bronze but do not corrode iron or steel.

.7 Disc: A126 Class B, secured to stem, rotating for extended life.

.8 Seat: cast iron, integral with body.

.9 Hinge pin: exelloy; bushings: malleable iron.

.10 Identification tag: fastened to cover.

.11 Hinge: galvanized malleable iron.

.2 Swing check valves, NPS 2 1/2 - 8 Class 250:

.1 Body and bolted cover: cast iron to ASTM A 126-95(2001) Class B with tapped and plugged opening on each side for hinge pin.

.2 Flanged ends: 2 mm raised face with serrated finish.

.3 Rating: 250 psi steam; 500 psi CWP.

.4 Disc: rotating for extended life.

.1 Up to NPS 3: bronze to ASTM B 61-02.

.2 NPS 4 - 8: Iron faced with ASTM B 61-02 bronze.

.5 Seat rings: renewable bronze to ASTM B 61-02, screwed into body.

.6 Hinge pin, bushings: renewable, bronze to ASTM B 61-02.

.7 Hinge: galvanized malleable iron.

.8 Identification tag: fastened to cover.

2.8 SILENT CHECK VALVES

.1 Construction:
.1 Body: malleable or ductile iron with integral seat.
.2 Pressure rating: class 125, WP = 860 kPa.
.3 Connections: grooved ends.
.4 Disc: bronze or stainless steel renewable rotating disc.
.5 Seat: renewable, EPDM.
.6 Stainless steel spring, heavy duty.

PART 3 - EXECUTION

3.1 INSTALLATION

.1 Install rising stem valves in upright position with stem above horizontal.

END

PART 1 - GENERAL

1.1 SECTION INCLUDES

.1 Materials and installation for flexible connections, expansion joints, anchors and guides for building services piping.

1.2 REFERENCES

.1 American Society for Testing and Materials International, (ASTM).
.1 ASTM A 53/A 53M-02 53M-02, Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless.
.2 ASTM A 105/A105M-03, Standard Specification for Carbon Steel Forgings, for Piping Applications.

1.3 SUBMITTALS

.1 Submittals in accordance with Section 01 33 00 - Submittal Procedures.

.2 Submit product data and indicate for items as applicable:
.1 Manufacturer, model number, line contents, pressure and temperature rating.
.2 Movement handled, axial, lateral, angular and the amounts of each.
.3 Nominal size and dimensions including details of construction and assembly.

.3 Submit maintenance data in accordance with Section 01 78 00 - Closeout Submittals.

1.4 REPAIRS

.1 Provide materials and labour to replace existing Flexible Connections, Expansion Joints, Anchors and Guides in piping systems at 4 Wing Cold Lake. Replacement of fixtures to be as specified as follows and shall match existing installed devices. The specifications include the most common devices, which will be encountered at 4 Wing Cold Lake. If any specialty item has to be replaced the original shop drawings from the Maintenance Manual shall be consulted by Engineer and communicated to Contractor.

PART 2 - PRODUCTS

2.1 SLIP TYPE EXPANSION JOINTS

.1 Application: for axial pipe movement, as existing.

.2 Repacking: under full line pressure.

.3 Body and packing housings: Class 150, 1MPa Class 300, 2MPa carbon steel pipe to ASTM A 53/A 53M-02 53M-02, Grade B. Wall thickness to match pipe with raised face slip-on or weld neck flanges to match pipe or ends for welding.

.4 Slip or traverse sleeves: carbon steel pipe to ASTM A 53/A 53M-02 53M-02, Grade B, hard chrome plated.

.5 Anchor base: construction steel, welded to body.

.6 Guides (internal and external): embody into packing housing with concentric alignment of slip or traverse sleeve with packing housing.

.7 Extension limit stop: stainless steel, to prevent over-extension with accessible and removable pins.

.8 Packing rings: 6 minimum, PTFE or graphite impregnated non-asbestos.

.9 Thermal plastic packing: PTFE or graphite impregnated non-asbestos slug supplied loose.

.10 Lubricating fittings: pet cocks with grease nipple.

.11 Plunger body and plunger:
.1 Plunger body: heavy wall carbon steel welded to body.
.2 Plunger: carbon steel with hex head for use with socket wrench.

.12 Lubricant: to manufacturer's recommendations.

.13 Lubricant gun: complete with hose assembly.

.14 Drip connection: 20 MPa forged steel to ASTM A 105/A 105M-02 105M-02. Include half coupling with drain plug.

2.2 BELLOWS TYPE EXPANSION JOINTS

.1 For axial, lateral or angular movements, as indicated.

.2 Maximum operating pressure: kPa as indicated.

.3 Maximum operating temperature: degrees C as indicated.

.4 Type A: controlled or free flexing, factory tested to 1 ½ times maximum working pressure. Furnish test certificates.

.5 Type B: externally pressurized, or constant volume, pressure balanced, designed to eliminate pressure thrust, factory tested to 1 ½ times maximum working pressure. Furnish test certificates.

.6 Bellows:
.1 Multiple bellows, hydraulically formed, two ply, austenitic stainless steel for specified fluid, pressure and temperature, water treatment and pipeline cleaning procedures.

.7 Reinforcing or control rings:
.1 2 piece nickel iron.

.8 Ends:
.1 Flanges to match pipe.

.9 Liner:
.1 Austenitic stainless steel in direction of flow.

.10 Shroud:
.1 Carbon steel, painted.

2.3 FLEXIBLE CONNECTION

.1 Application: to suit motion as existing.

.2 Minimum length in accordance with manufacturer's recommendations.

.3 Inner hose: bronze stainless steel corrugated.

.4 Braided wire mesh bronze stainless steel outer jacket.

.5 Diameter and type of end connection: as existing.

2.3 FLEXIBLE CONNECTION (Cont'd)

.6 Operating conditions:
.1 To match system requirements.

2.4 ANCHORS AND GUIDES

.1 Anchors:

.1 Provide as existing.

.2 Alignment guides:
.1 Provide as existing.
.2 To accommodate specified thickness of insulation.
.3 Vapor barriers, jackets to remain uninterrupted.

PART 3 - EXECUTION

3.1 INSTALLATION

.1 Install expansion joints with cold setting, as existing. Make record of cold settings.

.2 Install expansion joints and flexible connections in accordance with manufacturer's instructions.

.3 Install pipe anchors and guides as indicated. Anchors to withstand 150 % of axial thrust.

END

PART 1 - GENERAL

1.1 REFERENCES

.1 American National Standards Institute/American Society of Mechanical Engineers (ANSI/ASME)
- .1 ASME B31.1-2001, Power Piping.
- .2 ASME B31.3-2002, Process Piping Addenda A.
- .3 ASME B31.3-2002, Process Piping Addenda B.
- .4 ANSI/ASME Boiler and Pressure Vessel Code-1998:
  - .1 Section I: Power Boilers.
  - .2 Section V: Non destructive Examination.
  - .3 Section IX: Welding and Brazing Qualifications.

.2 American National Standards Institute/American Water Works Association (ANSI/AWWA)
- .1 ANSI/AWWA C206-1997, Field Welding of Steel Water Pipe.

.3 American Welding Society (AWS)
- .1 AWS C1.1-2000, Recommended Practices for Resistance Welding.
- .2 ANSI Z49.1-1999, Safety Welding, Cutting and Allied Process.
- .3 AWS W1-2000, Welding Inspection Handbook..

.4 Canadian General Standards Board (CGSB)
- .1 CAN/CGSB-48.2-92, Spot Radiography of Welded Butt Joints in Ferrous Materials.

.5 Canadian Standards Association (CSA International)
- .1 CSA W47.2-M1987 (R1998), Certification of Companies for Fusion Welding of Aluminum.
- .2 CSA W48-01 series-01, Filler Metals and Allied Materials for Metal Arc Welding.
- .3 CSA B51-03, Boiler, Pressure Vessel and Pressure Piping Code.
- .4 CAN/CSA-W117.2-01, Safety in Welding, Cutting and Allied Processes.
- .5 CSA W178.1-02, Certification of Welding Inspection Organizations.
- .6 CSA W178.2-01, Certification of Welding Inspectors.

1.2 QUALIFICATIONS

.1 Welders
.1 Welding qualifications in accordance with CSA B51-03.
.2 Use qualified and licensed welders possessing certificate for each procedure performed from authority having jurisdiction.
.3 Furnish welder's qualifications to Engineer .
.4 Each welder to possess identification symbol issued by authority having jurisdiction.
.5 Certification of companies for fusion welding of aluminum in accordance with CSA W47.2-M1987 (R1998).

.2 Inspectors
.1 Inspectors qualified to CSA W178.2-01.

1.3 QUALITY ASSURANCE

.1 Registration of welding procedures in accordance with CSA B51-03.

.2 Copy of welding procedures available for inspection.

.3 Safety in welding, cutting and allied processes in accordance with CAN/CSA-W117.2-01.

1.4 CLAIMS

.1 Claims against the Crown for delays in completion of project will not be entertained for failure of welds to pass examinations.

PART 2 - PRODUCTS

2.1 ELECTRODES

.1 Electrodes: in accordance with CSA W48-01 Series.

PART 3 - EXECUTION

3.1 WORKMANSHIP

.1 Welding: in accordance with ASME B31.1-2001 , ANSI/ASME Boiler and Pressure Vessel Code, Sections I and IX and ANSI/AWWA C206-1997, using procedures conforming to AWS B3.0, AWS C1.1-2000, applicable requirements of provincial authority having jurisdiction.

3.2 INSTALLATION REQUIREMENTS

.1 Identify each weld with welder's identification symbol.

.2 Backing rings:
.1 Where used, fit to minimize gaps between ring and pipe bore.
.2 Do not install at orifice flanges.

.3 Fittings:
.1 NPS 2 and smaller: install welding type sockets.
.2 Branch connections: install welding tees or forged branch outlet fittings.

3.3 INSPECTION AND TESTS - GENERAL REQUIREMENTS

.1 Review weld quality requirements and defect limits of applicable codes and standards with Engineer before work is started.

.2 Formulate "Inspection and Test Plan" in co-operation with Engineer .

.3 Do not conceal welds until they have been inspected, tested and approved by inspector.

.4 Provide for inspector to visually inspect welds during early stages of welding procedures in accordance with Welding Inspection Handbook. Repair or replace defects as required by codes and as specified.

3.4 SPECIALIST EXAMINATIONS AND TESTS

.1 General

.1 Perform examinations and tests by specialist qualified in accordance with CSA W178.1-02 and CSA W178.2-01 and approved by Engineer.

3.4 SPECIALIST EXAMINATIONS AND TESTS (Cont'd)

.1 (Cont'd)
.2 To ANSI/ASME Boiler and Pressure Vessels Code, Section V, CSA B51-03 and requirements of authority having jurisdiction.
.3 Inspect and test 100% of welds in accordance with "Inspection and Test Plan" by non-destructive visual examination and magnetic particle (hereinafter referred to as "particle") tests or full gamma ray radiographic (hereinafter referred to as "radiography") tests.

.2 Hydrostatically test welds to requirements of ASME B31.1-2001.

.3 Visual examinations: include entire circumference of weld externally and wherever possible internally.

.4 Failure of visual examinations:
.1 Upon failure of welds by visual examination, perform additional testing as directed by Engineer of total of up to 10% of welds, selected at random by Engineer by radiographic or particle tests.

.5 Full radiographic tests for piping systems.
.1 Spot radiography to CAN/CGSB-48.2-92.
.1 Conduct spot radiographic tests of up to 10% of welds, selected at random by Engineer from welds which would be most difficult to repair in event of failure after system is operational.
.2 Radiographic film:
.1 Identify each radiographic film with date, location, name of welder, and submit to Engineer . Replace film if rejected because of poor quality.
.3 Interpretation of radiographic films:
.1 By qualified radiographer.
.4 Failure of radiographic tests:
.1 Extend tests to all welds by welder responsible when those welds fails tests.

.6 Magnetic particle tests for piping systems.

3.5 DEFECTS CAUSING REJECTION

.1 As described in ASME B31.1-2001 and ANSI/ASME Boiler and Pressure Vessels Code.

.2 In addition, to above:
.1 Undercutting greater than 0.8 mm adjacent to cover bead on outside of pipe.

3.5 DEFECTS CAUSING REJECTION (Cont'd)

.2 In addition, to above:(Cont'd)
.2 Undercutting greater than 0.8 mm adjacent to root bead on inside of pipe.
.3 Undercutting greater than 0.8 mm at combination of internal surface and external surface.
.4 Incomplete penetration and incomplete fusion greater than total length of 38 mm in 1500 mm length of weld depth of such defects being greater than 0.8 mm.
.5 Repair cracks and defects in excess of 0.8 mm in depth.
.6 Repair defects whose depth cannot be determined accurately on basis of visual examination or radiographic or particle tests.

3.6 REPAIR OF WELDS WHICH FAILED TESTS

.1 Re-inspect and re-test repaired or re-worked welds at Contractor's expense.

END

PART 1 - GENERAL

1.1 SECTION INCLUDES

.1 Materials and installation for thermometers and pressure gauges in piping systems.

1.2 REFERENCES

.1 American Society of Mechanical Engineers (ASME).
- .1 ASME B40.100-01, Pressure Gauges and Gauge Attachments.
- .2 ASME B40.200-01, Thermometers, Direct Reading and Remote Reading.

.2 Canadian General Standards Board (CGSB).
- .1 CAN/CGSB-14.4-M88, Thermometers, Liquid-in-Glass, Self-Indicating, Commercial/Industrial Type.
- .2 CAN/CGSB-14.5-M88, Thermometers, Bimetallic, Self-Indicating, Commercial/Industrial Type.

1.3 SUBMITTALS

.1 Submittals in accordance with Section 01 33 00 - Submittal Procedures.

.2 Submit shop drawings and product data.

.3 Submit manufacturer's product data for following items:
- .1 Thermometers.
- .2 Pressure gauges.
- .3 Stop cocks.
- .4 Syphons.
- .5 Wells.

PART 2 - PRODUCTS

2.1 GENERAL

.1 Design point to be at mid-point of scale or range.

.2 Ranges: as existing.

2.2 DIRECT READING THERMOMETERS

.1 Industrial, variable angle type, and liquid filled, 125 mm scale length: to CAN/CGSB-14.4-M88.

2.3 REMOTE READING THERMOMETERS

.1 100 mm diameter liquid filled activated dial type: to CAN/CGSB-14.5-M88, accuracy within one scale division, brass movement, stainless steel capillary, stainless steel spiral armor, stainless steel bulb and polished stainless steel case for wall mounting.

2.4 THERMOMETER WELLS

.1 Copper pipe: copper or bronze.

.2 Steel pipe: brass or stainless steel.

2.5 PRESSURE GAUGES

.1 112 mm, dial type: to ASME B40.100, Grade 2A, stainless steel bourdon tube having 0.5% accuracy full scale unless otherwise specified.

.2 Provide:
.1 Siphon for steam service.
.2 Snubber for pulsating operation.
.3 Diaphragm assembly for corrosive service.
.4 Casketed pressure relief back with solid front.
.5 Bronze stop cock.
.6 Oil filled for high vibration applications.

PART 3 - EXECUTION

3.1 GENERAL

.1 Install so they can be easily read from floor or platform. If this cannot be accomplished, install remote reading units.

.2 Install between equipment and first fitting or valve.

3.2 THERMOMETERS

.1 Install in wells on piping. Provide heat conductive material inside well.

.2 Install in locations as existing

3.2 THERMOMETERS (Cont'd)

.3 Use extensions where thermometers are installed through insulation.

3.3 PRESSURE GAUGES

.1 Install in existing locations:

.2 Use extensions where pressure gauges are installed through insulation.

3.4 NAMEPLATES

.1 Install engraved lamicoid nameplates, identifying medium.

END

PART 1 - GENERAL

1.1 SUMMARY

.1 Section Includes:
.1 Bronze - valves.

1.2 REFERENCES

.1 American National Standards Institute (ANSI)/ American Society of Mechanical Engineers (ASME).
.1 ASME B1.20.1-1983 (R2001), Pipe Threads, General Purpose (Inch).
.2 ANSI B16.18-2001, Cast Copper Alloy Solder Joint Pressure Fittings.

.2 American Society for Testing and Materials International, (ASTM).
.1 ASTM A 276-04, Specification for Stainless Steel Bars and Shapes.
.2 ASTM B 62-02, Specification for Composition Bronze or Ounce Metal Castings.
.3 ASTM B 283-99a, Specification for Copper and Copper Alloy Die Forgings (Hot-Pressed).
.4 ASTM B 505/B505M-02, Specification for Copper-Base Alloy Continuous Castings.

.3 Manufacturers Standardization Society of the Valve and Fittings Industry, Inc. (MSS).
.1 MSS SP-25-1998, Standard Marking System for Valves, Fittings, Flanges and Unions.
.2 MSS-SP-80-2003, Bronze Gate Globe, Angle and Check Valves.
.3 MSS SP-110-1996, Ball Valves, Threaded, Socket-Welding, Solder Joint, Grooved and Flared Ends.

1.3 SUBMITTALS

.1 Submittals in accordance with Section 01 33 00 - Submittal Procedures.

.2 Product Data: submit WHMIS MSDS - Material Safety Data Sheets in accordance with Section 02 61 33 - Hazardous Materials.
.1 Submit shop drawings and product data in accordance with Section 01 33 00 - Submittal Procedures.
.2 Submit data for valves specified in this section.

.3 Closeout Submittals:

1.3 SUBMITTALS (Cont'd)

.3 Closeout Submittals:(Cont'd)
.1 Submit maintenance data for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

1.4 REPAIRS

.1 Provide materials and labour to replace existing bronze valves in piping systems at 4 Wing Cold Lake. Replacement of fixtures to be as specified as follows and shall match existing installed devices. The specifications include the most common devices, which will be encountered at 4 Wing Cold Lake. If any specialty item has to be replaced the original shop drawings from the Maintenance Manual shall be consulted by engineer and communicated to Contractor.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Valves:
.1 Except for specialty valves, to be single manufacturer.
.2 All products to have CRN registration numbers.

.2 End Connections:
.1 Connection into adjacent piping/tubing:
.1 Steel pipe systems: Screwed ends to ASME B1.20.1-1983 (R2001).
.2 Copper tube systems: Solder ends to ANSI B16.18-2001.

.3 Lock shield Keys:
.1 Where lock shield valves are specified, provide 4 keys of each size: malleable iron cadmium plated.

.4 Gate Valves:
.1 Requirements common to gate valves, unless specified otherwise:
.1 Standard specification: MSS SP-80-1997.
.2 Bonnet: union with hexagonal shoulders.
.3 Connections: screwed with hexagonal shoulders.
.4 Inspection and pressure testing: to MSS SP-80-1997. Tests to be hydrostatic.
.5 Packing: non-asbestos.
.6 Hand wheel: non-ferrous.

2.1 MATERIALS (Cont'd)

.4 Gate Valves:(Cont'd)
.1 (Cont'd)
.7 Hand wheel Nut: bronze to ASTM B 62-02.
.2 NPS 2 and under, non-rising stem, solid wedge disc, Class 125
.1 Body: with long disc guides, screwed bonnet with stem retaining nut.
.2 Operator: Hand wheel.
.3 NPS 2 and under, non-rising stem, solid wedge disc, Class 150:
.1 Body: with long disc guides, screwed bonnet with stem retaining nut.
.2 Operator: Hand wheel.
.4 NPS 2 and under, rising stem, split wedge disc, Class 125:
.1 Body: with long disc guides, screwed bonnet and stem retaining nut.
.2 Disc: split wedge, bronze to ASTM B 283-99a, loosely secured to stem.
.3 Operator: Hand wheel Lock shield.
.5 NPS 2 and under, rising stem, solid wedge disc, Class 125:
.1 Body: with long disc guides, screwed bonnet.
.2 Operator: Hand wheel.
.6 NPS 2 and under, rising stem, solid wedge disc, Class 150:
.1 Body: with long disc guides, screwed union bonnet.
.2 Operator: Hand wheel.

.5 Globe Valves:
.1 Requirements common to globe valves, unless specified otherwise:
.1 Standard specification: MSS SP-80-1997.
.2 Bonnet: union with hexagonal shoulders.
.3 Connections: screwed with hexagonal shoulders.
.4 Pressure testing: to MSS SP-80-1997. Tests to be hydrostatic.
.5 Stuffing box: threaded to bonnet with gland follower, packing nut, high grade non-asbestos packing.
.6 Hand wheel: non-ferrous.
.7 Hand wheel Nut: bronze to ASTM B 62-02.
.2 NPS 2 and under, composition disc, Class 125:
.1 Body and bonnet: screwed bonnet.
.2 Disc and seat: renewable rotating PTFE disc or composition to suit service conditions, regrind able bronze seat,

2.1 MATERIALS (Cont'd)

.5 Globe Valves:(Cont'd)
.2 (Cont'd)

loosely secured to bronze stem to ASTM B 505-96.
.3 Operator: Hand wheel Lock shield.

.3 NPS 2 and under, composition disc, Class 150:
.1 Body and bonnet: union bonnet.
.2 Disc and seat: renewable rotating PTFE disc in easily removable disc holder, regrind able bronze seat, loosely secured to bronze stem to ASTM B 505-96.
.3 Operator: Hand wheel Lock shield.

.4 NPS 2 and under, plug disc, Class 150, screwed ends:
.1 Body and bonnet: union bonnet.
.2 Disc and seat ring: tapered plug type with disc stem ring of AISI S420 stainless steel to ASTM A 276-02a, loosely secured to stem.
.3 Operator: Hand wheel.

.5 Angle valve, NPS 2 and under, composition disc, Class 150:
.1 Body and bonnet: union bonnet.
.2 Disc and seat: renewable rotating PTFE disc in slip-on easily removable disc holder having integral guides, regrind able bronze seat, loosely secured to stem.
.3 Operator: Hand wheel Lock shield.

.6 Check Valves:
.1 Requirements common to check valves, unless specified otherwise:
.1 Standard specification: MSS SP-80-1997.
.2 Connections: screwed with hexagonal shoulders.

.2 NPS 2 and under, swing type, bronze disc, Class 125:
.1 Body: Y-pattern with integral seat at 45 degrees, screw-in cap with hex head.
.2 Disc and seat: renewable rotating disc, two-piece hinge disc construction; seat: regrind able.

.3 NPS 2 and under, swing type, bronze disc:
.1 Body: Y-pattern with integral seat at 45 degrees, screw-in cap with hex head.
.2 Disc and seat: renewable rotating disc, two-piece hinge disc construction; seat: regrind able.

2.1 MATERIALS (Cont'd)

.6 Check Valves:(Cont'd)

.4 NPS 2 and under, swing type, composition disc, Class 200:

.1 Body: Y-pattern with integral seat at 45 degrees, screw-in cap with hex head.

.2 Disc: renewable rotating disc of number 6 composition to suit service conditions, bronze two-piece hinge disc construction.

.5 NPS 2 and under, horizontal lift type, composition disc, Class 150:

.1 Body: with integral seat, union bonnet ring with hex shoulders, cap.

.2 Disc: renewable PTFE or no. 6 composition rotating disc in disc holder having guides top and bottom, of bronze to ASTM B 62-02.

.6 NPS 2 and under, vertical lift type, bronze disc, Class 125:

.1 Disc: rotating disc having guides top and bottom, disc guides, retaining rings.

.7 Silent Check Valves:

.1 NPS 2 and under:

.1 Body: cast high tensile bronze to ASTM B 62-02 with integral seat.

.2 Pressure rating: Class 125 WP= 860 KPA Steam,1.4 MPA WOG

.3 Pressure rating: Class 150 WP= 1.03 MPA Steam,2.07 MPA WOG

.4 Connections: screwed ends to ANSI B1.20.1 and with hex. shoulders.

.5 Disc and seat: renewable rotating disc.

.6 Stainless steel spring, heavy duty.

.7 Seat: regrind able.

.8 Ball Valves:

.1 NPS 2 and under:

.1 Body and cap: cast high tensile bronze to ASTM B 62-02.

.2 Pressure rating: Class 125 1.4-MPa WOG, 860 kPa steam.

.3 Connections: Screwed ends to ANSI B1.20.1 and with hexagonal shoulders or solder ends to ANSI.

.4 Stem: tamperproof ball drive.

.5 Stem packing nut: external to body.

.6 Ball and seat: replaceable stainless steel hard chrome solid ball and Teflon seats.

.7 Stem seal: TFE with external packing nut.

2.1 MATERIALS (Cont'd)

.8 Ball Valves:(Cont'd)
.1 NPS 2 and under:(Cont'd)
.8 Operator: removable lever handle.

PART 3 - EXECUTION

3.1 INSTALLATION

.1 Install rising stem valves in upright position with stem above horizontal.

.2 Remove internal parts before soldering.

.3 Install valves with unions at each piece of equipment arranged to allow servicing, maintenance, and equipment removal.

END

PART 1 - GENERAL

1.1 SUMMARY .1 Section Includes:
.1 Valves Cast Steel, gate, globe, and check.

1.2 REFERENCES .1 American National Standards Institute (ANSI)/American Society of Mechanical Engineers (ASME).
.1 ANSI/ASME B16.5-2003, Pipe Flanges and Flanged Fittings.
.2 ASME B16.10-2000, Face-to-Face and End-to-End Dimensions Valves.
.3 ASME B16.25-1997, Butt-welding Ends.
.4 ASME B16.34-1996, Valves - Flanged, Threaded and Welding End.

.2 American Petroleum Institute (API).
.1 API 598-1996, Valve Inspection and Testing.

.3 American Society for Testing and Materials International, (ASTM).
.1 ASTM A 49-01, Specification for Heat-Treated Carbon Steel Joint Bars.
.2 ASTM A 193/A193M-04, Specification for Alloy-Steel and Stainless Steel Bolting Materials for High-Temperature Service.
.3 ASTM A 194/A194M-03b, Specification for Carbon and Alloy Steel Nuts for Bolts for High-Pressure and High-Temperature Service.
.4 ASTM A 216/A 216M-93(1998), Specification for Steel Castings, Carbon Suitable for Fusion Welding for High-Temperature Service.
.5 ASTM B 85-03, Specification for Aluminum-Alloy Die Castings.

.4 Manufacturers Standardization Society of the Valve and Fittings Industry, Inc. (MSS).
.1 MSS SP-25-1998, Standard Marking System for Valves, Fittings, Flanges and Unions.
.2 MSS SP-61-2003, Pressure Testing of Steel Valves.

1.3 SUBMITTALS .1 Submittals in accordance with Section 01 33 00 - Submittal Procedures.

1.3 SUBMITTALS (Cont'd)

.2 Product Data: submit WHMIS MSDS - Material Safety Data Sheets in accordance with Section 02 61 33 - Hazardous Materials.
.1 Submit shop drawings and product data in accordance with Section 01 33 00 - Submittal Procedures.
.2 Submit data for valves specified this section.
.3 Submit product data in accordance with Section 01 33 00 - Submittal Procedures.

.3 Closeout Submittals:
.1 Submit maintenance data for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

1.4 REPAIRS

.1 Provide materials and labour to replace existing cast steel valves in piping systems at 4 Wing Cold Lake. Replacement of fixtures to be as specified as follows and shall match existing installed devices. The specifications include the most common devices, which will be encountered at 4 Wing Cold Lake. If any specialty item has to be replaced the original shop drawings from the Maintenance Manual shall be consulted by Engineer and communicated to Contractor.

PART 2 - PRODUCTS

2.1 MATERIAL

.1 Valves:
.1 Except for specialty valves, to be of single manufacturer.
.2 Valves to be individually tested.

.2 Requirements common to valves, unless specified otherwise:
.1 Pressure-temperature ratings: to ANSI B16.34.
.2 Inspections and tests: to API 598.
.3 Pressure Testing: to MSS SP-61-1999.
.4 Flanged valves:
.1 Face-to-face dimensions: to ANSI B16.10.
.2 Flange dimensions: to ANSI B16.5 with 1.6 mm raised face.
.5 Butt-weld valves:
.1 End-to-end dimensions: to ANSI B16.10.

2.1 MATERIAL (Cont'd)

.2 (Cont'd)
.5 Butt-weld valves:(Cont'd)
.2 End dimensions: to ANSI B16.25 bored for standard pipe schedule.
.6 Hand wheel: non-heating type with raised rim of die-cast aluminum alloy to ASTM B 85-02 or malleable iron to ASTM A 49-01.
.7 Markings: to MSS SP-25-1998.
.8 Identification:
.1 Plate showing catalogue number, size, material of body disc, stem seat, fluid, pressure-temperature rating.
.2 Body markings: manufacturer, size, primary service rating, material symbol.
.9 CRN registration number required for all products.

2.2 GATE VALVES

.1 NPS 2 1/2 - 12, rising stem, OS&Y, solid wedge disc, flanged OR butt-weld ends, Class
150 OR300:
.1 Body and multiple-bolted integral yoke and bonnet: cast steel to ASTM A 216/A 216M-93(1998) WCB, with full length disc guides designed to ensure correct re-assembly.
.2 Body/bonnet joint: Flat or Male-female face with corrugated metallic gasket.
.3 Bonnet studs: to ASTM A 193/A 193M-01b Type B7.
.4 Bonnet nuts: to ASTM A 194/A 194M-01a Type 2H.
.5 Stuffing box: including non-galling two-piece ball jointed packing gland, with swing-type eye bolts and nuts.
.6 Gland packing: containing corrosion inhibitor to prevent stem pitting.
.7 Yoke sleeve: Ni-Resist, minimum melting point above 954 degrees C.
.8 Hydraulic grease fitting: for lubrication of yoke sleeve bearing surfaces.
.9 Disc: with disc stem ring to connect to stem, guided throughout its travel.
.1 NPS 2 1/2 - 6: Solid corrosion and heat resistant 13% chromium steel with minimum hardness of 350 HB.
.2 NPS 8 and larger: Carbon steel faced with corrosion and heat resistant 13 chromium steel with minimum hardness of 350 HB.
.10 Seat ring: seamless carbon steel with hard-faced cobalt-chromium-tungsten alloy seating surface, slipped in, seal welded, ground to match disc.

2.2 GATE VALVES (Cont'd) .1 (Cont'd)
.11 Stem: heat treated corrosion and heat resistant 13% chromium steel with accurately-cut precision-machined Acme or 60 degrees V threads, top screwed for hand wheel nut, T-head disc-stem connection.
.12 Operator: see elsewhere this section.

2.3 GLOBE VALVES .1 NPS 2 1/2 - 12, rising stem, OS&Y, flanged or butt-weld ends, Class 150 or 300:
.1 Body and multiple-bolted integral yoke and bonnet: cast steel to ASTM A 216/A 216M-93(1998) WCB.
.2 Body/bonnet joint: Flat or Male-female face with corrugated metallic gasket.
.3 Bonnet studs: to ASTM A 193/A 193M-01b Type B7.
.4 Bonnet nuts: to ASTM A 194/A 194M-01a Type 2H.
.5 Stuffing box: including non-galling two-piece ball-jointed packing gland, with swing-type eye bolts and nuts.
.6 Gland packing: containing corrosion inhibitor to prevent stem pitting.
.7 Yoke bushing: Ni-Resist, minimum melting point above 954 degrees C.
.8 Hydraulic grease fitting: for lubrication of yoke sleeve bearing surfaces.
.9 Disc: Plug type with 15 degrees taper seat and bottom guide or ball type with 35 degrees taper seat.
.10 Seat rings: with 1.6 mm thick cobalt-chromium-tungsten alloy facings with minimum hardness of 375 HB (cold), slipped in, seal welded, ground to match disc.
.11 Stem: heat treated corrosion and heat resistant 13% chromium steel with bonnet bushing, long engagement with yoke bushing for accurate seating, accurately-cut precision-machined Acme or 60 degrees V threads, top screwed for hand wheel nut.
.12 Operator: see elsewhere this section.

2.4 VALVE OPERATORS .1 Valve operators to match existing being replaced.

2.5 BYPASSES FOR GATE AND GLOBE VALVES

.1 Locations: on valves being replaces same as existing

2.6 CHECK VALVES

.1 NPS 2 1/2 and over, flanged or butt-weld ends, Class150 or300: swing check.
.1 Body and multiple-bolted cap: cast steel to ASTM A 216/A 216M-93(1998) WCB.
.2 Cap studs: to ASTM A 193/A 193M-01b Type B7.
.3 Cap nuts: to ASTM A 194/A 194M-01a Type 2H.
.4 Body/cap joint: male-female face with corrugated metallic gasket.
.5 Disc: heat treated corrosion and heat resistant 13% chromium steel.
.6 Seat rings: heat treated corrosion and heat resistant 13% chromium steel, slipped in, seal welded, ground to match disc.

2.7 SILENT CHECK VALVES

.1 Construction:
.1 Body: Cast steel to ASTM A 216/A 216M-93(1998) with integral seat.
.2 Pressure rating: Class 125,.
.3 Connections: Flanged or Wafer ends.
.4 Double bronze disc with SS seat and stem. Renewable disc, seat, stem and spring. Spring rating must match system design for silent operation and installation.
.5 Stainless steel spring, heavy duty.
.6 Seat: regrind able.

PART 3 - EXECUTION

3.1 INSTALLATION

.1 Install in accordance with manufacturer's recommendations in upright position with stem above horizontal.

END

PART 1 - GENERAL

1.1 SUMMARY

.1 Section Includes:
.1 Plug Valves - Lubricated plug valves, Eccentric plug valves.

1.2 REFERENCES

.1 American National Standards Institute (ANSI)/ American Society of Mechanical Engineers (ASME).
.1 ASME B1.20.1-1983 (R2001), Pipe Threads, General Purpose (Inch).
.2 ASME B16.1-1998, Cast Iron Pipe Flanges and Flanged Fittings.
.3 ASME B16.11-2001, Forged Fittings, Socket-Welding and Threaded.
.4 ASME B16.25-1997, Butt-welding Ends.
.5 ASME B16.34-1996, Valves - Flanged, Threaded and Welding End.
.6 ASME B16.10-2000, Face to Face and End to End Dimensions of Valves.

.2 American Society for Testing and Materials International (ASTM).
.1 ASTM A 126-95(2001), Specification for Gray Iron Castings for Valves, Flanges, and Pipe Fittings.
.2 ASTM B 62-02, Specification for Composition Bronze or Ounce Metal Castings.
.3 ASTM B 209-04, Specification for Aluminum and Aluminum-Alloy Sheet and Plate.

.3 Manufacturer's Standardization Society of the Valves and Fittings Industry Inc. (MSS).
.1 MSS SP-78-1998, Cast Iron Plug Valves, Flanged and Threaded Ends.

1.3 SUBMITTALS

.1 Submittals in accordance with Section 01 33 00 - Submittal Procedures.

.2 Product Data: submit WHMIS MSDS - Material Safety Data Sheets in accordance with Section 02 61 33 - Hazardous Materials.
.1 Submit shop drawings and product data in accordance with Section 01 33 00 - Submittal Procedures.
.2 Submit product data in accordance with Section 01 33 00 - Submittal Procedures.
.3 Submit data for valves specified this Section.

1.3 SUBMITTALS (Cont'd)

.3 Closeout Submittals:
.1 Submit maintenance data for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

1.4 REPAIRS

.1 Provide materials and labour to replace existing lubricated plug valves in piping systems at 4 Wing Cold Lake. Replacement of fixtures to be as specified as follows and shall match existing installed devices. The specifications include the most common devices, which will be encountered at 4 Wing Cold Lake. If any specialty item has to be replaced the original shop drawings from the Maintenance Manual shall be consulted by Engineer and communicated to Contractor.

PART 2 - PRODUCTS

2.1 MATERIAL

.1 Valves:
.1 Except for specialty valves, to be of single manufacturer.
.2 Products to have CRN registration number.

2.2 ECCENTRIC PLUG VALVES - SCREWED ENDS

.1 General:
.1 Dead-tight shut-off on liquids and gases at pressure differentials up to 1.2 MPa in forward direction, 520 kPa in reverse direction.

.2 Up to NPS 2, screwed ends: .. Body: cast iron to ASTM B 209-02a Class B
.1 Plug:
.1 NPS 1/2 and 3/4: bronze to ASTM B 62-02.
.2 NPS 1 to NPS 2: bronze to ASTM B 62-02.
.2 Bearings: permanently lubricated, bronze to ASTM B 62-02 in upper and lower journals.
.3 Seals: double-seal consisting of:
.1 Plastic seat coating between plug and body.
.2 Resilient seal molded into groove in plug face.
.3 for Petroleum and Natural Gas service: Seal materials- BUNA Stem seals with Neoprene Petroleum HYCAR plug seals.

2.2 ECCENTRIC PLUG VALVES - SCREWED ENDS (Cont'd)

.2 Up to NPS 2, screwed ends:(Cont'd)
.3 Seals:(Cont'd)
.4 for high temperature chemicals to 149 degrees C :VITON stem seals with Fluorinated hydrocarbon plug seals.
.5 dual temperature and high temperature water service to 121 deg C isobutene-isoprene plug seals.
.4 End connections: screwed roll grooved.
.5 Operators: lever with adjustable memory stop.

.3 NPS 2 1/2 to NPS 4, flanged ends: .. Body: cast iron to ASTM B 209-02a Class B .. Plug: nickel-plated cast iron to ANSI
.1 Bearings: permanently lubricated, bronze to ASTM B 62-02 in upper and lower journals.
.2 Seals: double-seal consisting of:
.1 Plastic seat coating between plug and body.
.2 Resilient seal molded into groove in plug face.
.3 Seal materials: BUNA Stem seals with Neoprene Petroleum HYCAR plug seals.
.4 VITON stem seals with Fluorinated hydrocarbon plug seals.
.5 Isobutene Isoprene stem seal with isobutene-isoprene plug seals.
.3 End connections: flanged to ANSI B16.1 roll grooved.
.4 Operators: lever with adjustable memory stop.

2.3 LUBRICATED PLUG VALVES

.1 Principle of operation:

.1 Special sealing compound used to effect tight seal. When line pressure applied to valve in closed position, parallel plug forced against downstream side of valve. The metal-to-metal contact and sealing compound ensures leak-tight seal.

.2 Testing to specifications: MSS SP-78-1998 for non-shock pressure at specified temperature.

.3 End connections:
.1 NPS ½ to 2: screwed ends.
.2 NPS 2½ to 12: flanged ends.

.4 Valve:
.1 Body: cast iron to ASTM A 126-95(2001) Class B semi-steel.

2.3 LUBRICATED PLUG VALVES (Cont'd)

.4 Valve:(Cont'd)
.2 Pressure rating: NPS ½ to 12:
.1 Screwed end valves: screwed to NPT standards.
.2 Flanged end valves: flanged to ANSI B16.1 Class 125, 200 psig from -28 Degrees C to 65 degrees C. Flanged valves NPS 2-8 face dimensions in accordance with ANSI B16.10 short pattern, making them interchangeable with Class 125 flanged cast iron gate valves.
.3 Hydrostatic tests: body 300 psig. Seat: 100 psig.
.3 Plug: cylindrical or tapered, with regular round pattern port - 90 degrees from full open to fully closed, complete with PFTE thrust ring: 100% full port.
.4 Number of ports: as indicated.
.5 Ends: with hexagon shoulders, ends screwed to ANSI B1.20.1 Flanged to ANSI B16.1 butt welding to ANSI B16.25.
.6 Lubrication system, nickel-plated.
.7 Lubricant: to suit type, temperature and pressure of contained fluid.
.8 Provide sealing compound injection gun designed for use with pre-packed sealing compound cartridges and valve fitted with button head nipples and combination sealing screws.
.9 Feeding system: lubricant forced into lubrication grooves between seating surfaces of plug and body to form positive seal, leak-proof operation, and corrosion preventing film. Lubricant receptacle to hold additional lubricant. Lubricant screw for lubrication. Check valve to prevent reverse flow of lubricant. O-rings between body and plug.

.5 Operator:
.1 Up to NPS 5: manual lever.
.2 NPS 6 - 8: CGA approved gear-operated hand wheel.
.3 NPS 6 - 12: gear-operated hand wheel with screwed bottom cover.
.4 NPS 14 - 24: gear-operated hand wheel with fully enclosed gearing.

.6 Accessories: lubricant gun.

PART 3 - EXECUTION

3.1 INSTALLATION OF LUBRICATED PLUG VALVES

.1 Install with line pressure acting to hold plug against body ports which are to be cut-off from higher pressure.

3.2 COMMISSIONING OF LUBRICATED PLUG VALVES

.1 Determine the type of sealing compound for particular application.

.2 Open and close valve at least 3 times to ensure distribution of sealing compound evenly and to ensure tight shut-off.

.3 When operating valve, ease valve off body to ensure that plug is free to float.

.4 Determine frequency of re-lubrication during commissioning of remainder of system.

END

PART 1 - GENERAL

1.1 SUMMARY

.1 Section Includes:
.1 Concrete housekeeping pads, hangers and supports for mechanical piping, ducting and equipment.

1.2 REFERENCES

.1 American National Standards Institute/American Society of Mechanical Engineers (ANSI/ASME)
.1 ANSI/ASME B31.1-04, Power Piping.

.2 American Society for Testing and Materials International (ASTM)
.1 ASTM A 125-96(2001), Specification for Steel Springs, Helical, Heat-Treated.
.2 ASTM A 307-04, Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength.
.3 ASTM A 563-04a, Specification for Carbon and Alloy Steel Nuts.

.3 Factory Mutual (FM)

.4 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
.1 Material Safety Data Sheets (MSDS).

.5 Manufacturer's Standardization Society of the Valves and Fittings Industry (MSS)
.1 MSS SP58-2002, Pipe Hangers and Supports - Materials, Design and Manufacture.
.2 ANSI/MSS SP69-2003, Pipe Hangers and Supports - Selection and Application.
.3 MSS SP89-2003, Pipe Hangers and Supports - Fabrication and Installation Practices.

.6 Underwriter's Laboratories of Canada (ULC)

1.3 SYSTEM DESCRIPTION

.1 Design Requirements:

.1 Construct pipe hanger and support to manufacturer's recommendations utilizing manufacturer's regular production components, parts and assemblies.
.2 Base maximum load ratings on allowable stresses prescribed by MSS SP-58-1993. ASME B31.1-2001 or

1.3 SYSTEM DESCRIPTION (Cont'd)

.1 (Cont'd)

.3 Ensure that supports, guides, anchors do not transmit excessive quantities of heat to building structure.

.4 Design hangers and supports to support systems under conditions of operation, allow free expansion and contraction, prevent excessive stresses from being introduced into pipework or connected equipment.

.5 Provide for vertical adjustments after erection and during commissioning. Amount of adjustment in accordance with MSS SP-58-1993.

1.4 SUBMITTALS

.1 Submittals: in accordance with Section 01 33 00 - Submittal Procedures.

.2 Shop drawings: submit drawings stamped and signed by professional engineer registered or licensed in Province of Alberta, Canada.

.3 Submit shop drawings and product data for following items:

.1 Bases, hangers and supports.
.2 Connections to equipment and structure.
.3 Structural assemblies.
.4 Riser Clamps.
.5 Shield’s and Saddles
.6 Sway Braces

.4 Closeout Submittals:

.1 Provide maintenance data for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

PART 2 - PRODUCTS

2.1 GENERAL

.1 Fabricate hangers, supports and sway braces in accordance with ANSI B31.1 and MSS SP-58-1993.

.2 Use components for intended design purpose only. Do not use for rigging or erection purposes.

2.2 PIPE HANGERS

.1 Finishes:

.1 Pipe hangers and supports: galvanized after manufacture.

2.2 PIPE HANGERS (Cont'd)

.1 Finishes:(Cont'd)
.2 Use electro-plating galvanizing processor hot dipped galvanizing process.
.3 Ensure steel hangers in contact with copper piping are epoxy coated.

.2 Upper attachment structural: suspension from lower flange of I-Beam:
.1 Cold piping NPS 2 maximum: malleable iron C-clamp with hardened steel cup point setscrew, locknut and carbon steel retaining clip to MSS SP-58-1993.
.1 Rod: 13 mm min.
.2 Cold piping NPS 2 1/2 or greater, hot piping: malleable iron beam clamp, eye rod, jaws and extension with carbon steel retaining clip, tie rod, nuts and washers, UL listed to MSS SP-58-1993.

.3 Upper attachment structural: suspension from upper flange of I-Beam:
.1 Cold piping NPS 2 maximum: ductile iron top-of-beam C-clamp with hardened steel cup point setscrew, locknut and carbon steel retaining clip, UL listed to MSS SP-69-2002.
.2 Cold piping NPS 2 1/2 or greater, hot piping: malleable iron top-of-beam jaw-clamp with hooked rod, spring washer, plain washer and nut UL listed.

.4 Upper attachment to concrete:
.1 Ceiling: carbon steel welded eye rod, clevis plate, clevis pin and cotters with weld less forged steel eye nut. Ensure eye 6 mm minimum greater than rod diameter. Minimum two expansion cases and bolts for each hanger.
.2 Concrete inserts: wedge shaped body with knockout protector plate UL listed to MSS SP-69-2002.

.5 Shop and field-fabricated assemblies: to MSS SP-58-1993
.1 Trapeze hanger assemblies:.
.2 Steel brackets:.
.3 Sway braces for seismic restraint systems.

.6 Hanger rods: threaded rod material to MSS SP-58-1993
.1 Ensure that hanger rods are subject to tensile loading only.
.2 Provide linkages where lateral or axial movement of pipework is anticipated.
.3 Do not use 22 mm or 28 mm rod.

2.2 PIPE HANGERS (Cont'd)

.7 Pipe attachments: material to MSS SP-58-1993:
.1 Attachments for steel piping: carbon steel galvanized type 1.
.2 Attachments for copper piping: copper plated black steel type 1.
.3 Suspend hot piping, copper and steel, with horizontal movement in excess of 25 mm; hot steel piping middle attachment(rod) 300 mm or less; pipe roller to MSS SP-58-1993 type 43.
.4 Bottom supported hot piping, steel and copper: pipe roller stand to MSS SP-58-1993 type 45
.5 Use insulation shields for hot pipework.
.6 Oversize pipe hangers and supports.

.8 Adjustable clevis: material to MSS SP-69-2002 UL listed, clevis bolt with nipple spacer and vertical adjustment nuts above and below clevis.
.1 Ensure "U" has hole in bottom for riveting to insulation shields.

.9 Yoke style pipe roll: carbon steel yoke, rod and nuts with cast iron roll, to MSS SP-69-2002.

.10 U-bolts: carbon steel to MSS SP-69-2002 with 2 nuts at each end to ASTM A 563-00.
.1 Finishes for steel pipework: galvanized.
.2 Finishes for copper, glass, brass or aluminum pipework: galvanized, with formed portion plastic coated epoxy coated.

.11 Pipe rollers: cast iron roll and roll stand with carbon steel rod to MSS SP-69-2002.

2.3 SADDLES/SHEILDS

.1 Cold piping NPS 1 1/4 and over: protection shields with high-density insulation under shield with un interrupted vapor barrier

.2 Hot Piping NPS 1 1/4 and over: protection saddle with insulation under saddle.

2.4 RISER CLAMPS

.1 Steel or cast iron pipe: galvanized back carbon steel to MSS SP-58-1993, type 42, UL listed.

.2 Copper pipe: carbon steel copper plated to MSS SP-58-1993, type 42.

2.4 RISER CLAMPS (Cont'd)

.3 Bolts: to ASTM A 307-02.

.4 Nuts: to ASTM A 563-00.

2.5 INSULATION PROTECTION SHIELDS

.1 Insulated cold piping:

.1 64 kg/m^3 density insulation plus insulation protection shield to: MSS SP-69-2002, galvanized sheet carbon steel. Length designed for maximum 3 m span.

.2 Insulated hot piping:
.1 Curved plate 300 mm long, with edges turned up, welded-in center plate for pipe sizes NPS 12 and over, carbon steel to comply with MSS SP-69-2002.

2.6 CONSTANT SUPPORT SPRING HANGERS

.1 Springs: alloy steel to ASTM A 125-96(2001), shot peened, magnetic particle inspected, with +/-5% spring rate tolerance, tested for free height, spring rate, loaded height and provided with Certified Mill Test Report (CMTR).

.2 Load adjustability: 10 % minimum adjustability each side of calibrated load. Adjustment without special tools. Adjustments not to affect travel capabilities.

.3 Provide upper and lower factory set travel stops.

.4 Provide load adjustment scale for field adjustments.

.5 Total travel to be actual travel + 20%. Difference between total travel and actual travel 25 mm minimum.

.6 Individually calibrated scales on each side of support calibrated prior to shipment, complete with calibration record.

2.7 VARIABLE SUPPORT SPRING HANGERS

.1 Vertical movement: 13 mm minimum, 50 mm maximum, use single spring pre-compressed variable spring hangers.

.2 Vertical movement greater than 50 mm: use double spring pre-compressed variable spring

2.7 VARIABLE SUPPORT SPRING HANGERS (Cont'd)

.2 (Cont'd) hanger with 2 springs in series in single casing.

.3 Variable spring hanger complete with factory calibrated travel stops. Provide certificate of calibration for each hanger.

.4 Steel alloy springs: to ASTM A 125-96(2001), shot peened, magnetic particle inspected, with +/-5 % spring rate tolerance, tested for free height, spring rate, loaded height and provided with CMTR.

2.8 EQUIPMENT SUPPORTS

.1 Fabricate equipment supports not provided by equipment manufacturer from structural grade steel. Submit calculations with shop drawings.

2.9 EQUIPMENT ANCHOR BOLTS AND TEMPLATES

.1 Provide templates to ensure accurate location of anchor bolts.

2.10 OTHER EQUIPMENT SUPPORTS

.1 Fabricate equipment supports from structural grade steel.

.2 Submit structural calculations with shop drawings.

PART 3 - EXECUTION

3.1 MANUFACTURER'S INSTRUCTIONS

.1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheet.

3.2 INSTALLATION

.1 Install in accordance with:
.1 manufacturer's instructions and recommendations.

.2 Vibration Control Devices:
.1 Install on piping systems at pumps, boilers, chillers, cooling towers, and as indicated.

3.2 INSTALLATION (Cont'd)

.3 Clamps on riser piping:
.1 Support independent of connected horizontal pipework using riser clamps and riser clamp lugs welded to riser.
.2 Bolt-tightening torques to industry standards.
.3 Steel pipes: install below coupling or shear lugs welded to pipe.
.4 Cast iron pipes: install below joint.

.4 Clevis plates:
.1 Attach to concrete with 4 minimum concrete inserts, one at each corner.

.5 Provide supplementary structural steelwork where structural bearings do not exist or where concrete inserts are not in correct locations.

.6 Use approved constant support type hangers where:
.1 vertical movement of pipework is 13 mm or more,
.2 transfer of load to adjacent hangers or connected equipment is not permitted.

.7 Use variable support spring hangers where:
.1 transfer of load to adjacent piping or to connected equipment is not critical.
.2 variation in supporting effect does not exceed 25 % of total load.

3.3 HANGER SPACING

.1 Plumbing piping: to Canadian Plumbing Code, Provincial Coder authority having jurisdiction.

.2 Fire protection: to applicable fire code.

.3 Gas and fuel oil piping: up to NPS 1/2: every 1.8 m.

.4 Copper piping: up to NPS 1/2: every 1.5 m.

.5 Flexible joint roll groove pipe: in accordance with table below, but not less than one hanger at joints.

.6 Within 300 mm of each elbow.

3.3 HANGER SPACING (Cont'd)

.6 (Cont'd)

Maximum Pipe Size : NPS	Maximum Spacing Steel	Maximum Spacing Copper
up to 1-1/4	2.1 m	1.8 m
1-1/2	2.7 m	2.4 m
2	3.0 m	2.7 m
2-1/2	3.6 m	3.0 m
3	3.6 m	3.0 m
3-1/2	3.9 m	3.3 m
4	4.2 m	3.6 m
5	4.8 m	
6	5.1 m	
8	5.7 m	
10	6.6 m	
12	6.9 m	

.7 Pipework greater than NPS 12: to MSS SP-69-2002.

3.4 HANGER INSTALLATION

.1 Install hanger so that rod is vertical under operating conditions.

.2 Adjust hangers to equalize load.

.3 Support from structural members. Where structural bearing does not exist or inserts are not in suitable locations, provide supplementary structural steel members.

3.5 HORIZONTAL MOVEMENT

.1 Angularity of rod hanger resulting from horizontal movement of pipework from cold to hot position not to exceed 4 degrees from vertical.

.2 Where horizontal pipe movement is less than 13 mm, offset pipe hanger and support so that rod hanger is vertical in the hot position.

3.6 FINAL ADJUSTMENT

.1 Adjust hangers and supports:

.1 Ensure that rod is vertical under operating conditions.
.2 Equalize loads.

.2 Adjustable clevis:
.1 Tighten hanger load nut securely to ensure proper hanger performance.

3.6 FINAL ADJUSTMENT (Cont'd)

.2 Adjustable clevis:(Cont'd)
.2 Tighten upper nut after adjustment.

.3 C-clamps:
.1 Follow manufacturer's recommended written instructions and torque values when tightening C-clamps to bottom flange of beam.

.4 Beam clamps:
.1 Hammer jaw firmly against underside of beam.

END

PART 1 - GENERAL

1.1 SUMMARY

.1 Section Includes:
.1 Materials and installation for light fuel oil piping from oil tanks to boilers.
.2 Provide materials and labour to replace existing Pipe Valve and Fittings - Fuel Oil Systems at 4 Wing Cold Lake. Replacement of fixtures to be as specified as follows and shall match existing installed devices. The specifications include the most common devices, which will be encountered at 4 Wing Cold Lake. If any specialty item has to be replaced the original shop drawings from the Maintenance Manual shall be consulted by Engineer and communicated to Contractor.

1.2 REFERENCES

.1 American Society of Mechanical Engineers (ASME)
.1 ASME B16.3-1998, Malleable-Iron Threaded Fittings.
.2 ASME-B16.9-01, Factory-Made Wrought Steel Butt-welding Fittings.

.2 American Society for Testing and Materials International (ASTM)
.1 ASTM A 47/A 47M-99, Standard Specification for Ferritic Malleable Iron Castings.
.2 ASTM A 53/A53M-04, Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc Coated, Welded and Seamless.
.3 ASTM B 61-02, Standard Specification for Steam or Valve Bronze Castings.
.4 ASTM B 75M-99, Standard Specification for Seamless Copper Tube.

.3 Canadian Standards Association (CSA International)
.1 CSA-B139-04, Installation Code for Oil Burning Equipment.
.2 CSA-B140.0-03, Oil Burning Equipment: General Requirements.

.4 Health Canada / Workplace Hazardous Materials Information System (WHMIS)
.1 Material Safety Data Sheets (MSDS).

1.2 REFERENCES (Cont'd)

.5 Manufacturers Standardization Society of the Valve and Fitting Industry (MSS)
.1 MSS-SP-80-03, Bronze Gate, Globe, Angle and Check Valves.

1.3 SUBMITTALS

.1 Submittals in accordance with Section 01 33 00 - Submittal Procedures.

.2 Product Data:
.1 Submit manufacturer's printed product literature, specifications and datasheet for piping, fittings and equipment.

.3 Certificates: submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.

.4 Instructions: submit manufacturer's installation instructions.

.5 Closeout submittals: submit maintenance and engineering data for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

PART 2 - PRODUCTS

2.1 FILL VENT AND CARRIER PIPE

.1 Copper: type K L, soft copper tubing, to ASTM B 75M-99 in long lengths.

.2 Steel pipe: to ASTM A 53/A 53M-02, Schedule 40, continuous weld or electric resistance welded, screwed.

2.2 STEEL PIPE COATING

.1 Bituminous paint: in accordance with manufacturer's recommendations.

2.3 JOINTING MATERIAL

.1 Screwed fittings: Teflon tape.

.2 Soldered fittings: 50/50 95/5.

2.4 FITTINGS

.1 Steel:
.1 Malleable iron: screwed, banded, Class 150 to ASME B16.3-1998.
.2 Welding: butt-welding to ASME B16.9-2001.
.3 Unions: malleable iron, brass to iron, ground seat, screwed, to ASTM A 47M-90.
.4 Nipples: Schedule 40, to ASTM A 53/A 53M-02.

.2 Copper:
.1 Piping: soldered type.
.2 Connections to equipment: compression.

2.5 GATE VALVES

.1 NPS 2 and under, screwed bonnet:
.1 Rising stem: to MSS SP-80-1997, Class 125, 860 kPa, bronze body, solid wedge disc as specified under Section 23 05 22 - Valves - Bronze.

2.6 GLOBE VALVES

.1 NPS 2 and under, screwed:
.1 To MSS SP-80-1997, Class 125, 860 kPa, bronze body, screwed over bonnet, renewable bronze disc composition disc suitable for oil service as specified under Section 23 05 22 - Valves - Bronze.
.2 Lock shield handles: as indicated.

2.7 BALL VALVES

.1 NPS 2 and under:
.1 Bronze body, screwed ends, TFE seal, hard chrome ball, full port, 4 MPa, WOG as specified under Section 23 05 22 - Valves - Bronze.

2.8 SWING CHECK VALVES

.1 NPS 2 and under, screwed:

.1 To MSS SP-80-1997, Class 125, 860 kPa, bronze body, bronze swing disc, renewable composition disc suitable for oil service, screw in cap, regrind able seat as specified under Section 23 05 22 - Valves - Bronze.

2.9 LUBRICATED PLUG COCKS

.1 NPS 2 and under, screwed:

.1 To ASTM B 61-02, Class 150, 1 MPa, bronze body.

2.10 OIL FILTER

.1 Duplex type replaceable cartridge type as recommended by oil burner manufacturer.

.2 Furnish spare filter cartridge.

PART 3 - EXECUTION

3.1 MANUFACTURER'S INSTRUCTIONS

.1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheet.

3.2 PIPING

.1 Install piping in accordance with Section 23 05 01 - Installation of Pipework, supplemented as specified.

.2 Install oil piping system in accordance with CAN/CSA-B139-M91 and CAN/CSA-B140.0-M87.

.3 Slope piping down in direction of storage tank unless otherwise indicated.

.4 Apply two coats of bituminous paint to buried steel outer casing, fill and vent piping.

.5 Suction and return piping inside building:
.1 Buried in boiler room floor: soft copper tubing installed inside conduit extending 150 mm above floor at ends and with bends formed from conduit without use of fittings. Inside steel conduit to be 3 pipe sizes larger than carrier pipe.
.2 Elsewhere: steel, with screwed fittings.
.3 Install filter and gate valve at burners.
.4 Where suction line enters building, install union, gate valve, anti-syphon device and cap (for priming purposes).

3.2 PIPING (Cont'd)

.6 Fill, vent, suction and return outside building:
.1 Steel piping welded throughout except at tanks where use electrically isolating fittings.
.2 Grading: slope piping at 1 % minimum back to tanks.

.7 Install suction and return buried piping in outer casings in accordance with provincial regulations.

.8 Piping at tanks:
.1 Suction: terminate 150 mm from bottom of tank with foot valve and strainer.
.2 Return: terminate mm from bottom of tank with return bend.
.3 Vent: extend into tank and terminate less than 25 mm from top. Terminate open end 3600 mm above grade with return bend vent alarm and removable 10 mesh copper screen.
.4 Fill: terminate as indicated with locking cap, chain and padlock.
.5 Dipstick: extend tube to within 150 mm from bottom of tank. Terminate at grade with cap and chain and watertight cover.

.9 Interconnections between tanks:
.1 Interconnect fill, vent, suction, return to ensure equal level in tanks.
.2 Valve to permit isolation of tanks without interfering with use of other tanks.

3.3 VALVES

.1 Install valves with stems upright or horizontal unless approved otherwise by Engineer.

.2 Install ball valves at branch take-offs, to isolate pieces of equipment and as indicated.

.3 Install globe valves for balancing and in by-pass around control valves.

.4 Install swing check valves on discharge of pumps and as indicated.

.5 Install plug cocks as indicated.

3.4 OIL FILTERS

.1 Install as indicated.

.2 At time of acceptance, replace filter cartridge with new.

3.5 FIELD QUALITY CONTROL

.1 Site Tests/Inspection:

.1 Test system in accordance with CAN/CSA-B139-M91 and CAN/CSA-B140.0-M87 and authorities having jurisdiction.
.2 Isolate tanks from piping pressure tests.
.3 Maintain test pressure during backfilling.

3.6 CLEANING

.1 Flush after pressure test with number 1 number 2 fuel oil for a minimum of two hours. Clean strainers and filters.

.2 Dispose of fuel oil used for flushing out in accordance with requirements of authority having jurisdiction.

.3 Check vents from regulators, control valves are terminated in approved location and are protected against blockage and damage.

.4 Check entire installation is approved by authority having jurisdiction.

END

PART 1 - GENERAL

1.1 SUMMARY

.1 Section Includes:
.1 Materials and installation for piping, valves and fittings for gas fired equipment.
.2 Provide materials and labour to repair existing Piping, Valves and Fittings - Gas Systems at 4 Wing Cold Lake. Replacement of fixtures to be as specified as follows and shall match existing installed devices. The specifications include the most common devices, which will be encountered at 4 Wing Cold Lake. If any specialty item has to be replaced the original shop drawings from the Maintenance Manual shall be consulted by Engineer and communicated to Contractor.

1.2 REFERENCES

.1 American Society of Mechanical Engineers (ASME)
.1 ASME B16.5-03, Pipe Flanges and Flanged Fittings.
.2 ASME B16.18-01, Cast Copper Alloy Solder Joint Pressure Fittings.
.3 ASME B16.22-01, Wrought Copper and Copper Alloy Solder-Joint Pressure Fittings.
.4 ASME B18.2.1-1996, Square and Hex Bolts and Screws Inch Series.

.2 American Society for Testing and Materials International (ASTM)
.1 ASTM A 47/A 47M-99, Standard Specification for Ferritic Malleable Iron Castings.
.2 ASTM A 53/A53M-04, Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc Coated, Welded and Seamless.
.3 ASTM B 75M-99, Standard Specification for Seamless Copper Tube Metric.
.4 ASTM B 837-01, Standard Specification for Seamless Copper Tube for Natural Gas and Liquefied Petroleum (LP) Gas Fuel Distribution Systems.

.3 Canadian Standards Association (CSA International)
.1 CSA W47.1-03, Certification of Companies for Fusion Welding of Steel.

.4 Canadian Standards Association (CSA)/Canadian Gas Association (CGA)
.1 CAN/CSA B149.1HB-00, Natural Gas and Propane Installation Code Handbook.

1.2 REFERENCES (Cont'd)

.4 (Cont'd)
.2 CAN/CSA B149.2-00, Propane Storage and Handling Code.

.5 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
.1 Material Safety Data Sheets (MSDS).

1.3 SUBMITTALS

.1 Submittals in accordance with Section 01 33 00 - Submittal Procedures.

.2 Co-ordinate submittal requirements and provide submittals required by Section 01 47 15 - Sustainable Requirements: Construction.

.3 Product Data:
.1 Submit manufacturer's printed product literature, specifications and datasheet for piping, fittings and equipment.
.2 Indicate on manufacturers catalogue literature following: valves.

.4 Certificates: submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.

.5 Instructions: submit manufacturer's installation instructions.

.6 Closeout Submittals: submit maintenance and engineering data for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Materials and products in accordance with Section 01 47 15 - Sustainable Requirements: Construction.

2.2 PIPE

.1 Copper tube: to ASTM B 837-01.

.2 Steel pipe: to ASTM A 53/A 53M-02, Schedule 40, seamless as follows:
.1 NPS ½ to 2, screwed.
.2 NPS 2 ½ and over, plain end.

2.3 JOINTING MATERIAL

.1 Screwed fittings: pulverized lead paste.

.2 Welded fittings: to CSA W47.1-92 (R2001).

.3 Flange gaskets: nonmetallic flat.

.4 Brazing: to ASTM B 837-01 antimony 50/50.

2.4 FITTINGS

.1 Steel pipe fittings, screwed, flanged or welded:
.1 Malleable iron: screwed, banded, Class 150.
.2 Steel pipe flanges and flanged fittings: to ASME B16.5-1996.
.3 Welding: butt-welding fittings.
.4 Unions: malleable iron, brass to iron, ground seat, to ASTM A 47M-90.
.5 Bolts and nuts: to ASME B18.2.1-1996.
.6 Nipples: schedule 40, to ASTM A 53/A 53M-02.

.2 Copper pipe fittings, screwed, flanged or soldered:
.1 Cast copper fittings: to ANSI B16.18-2001.
.2 Wrought copper fittings: to ASME B16.22-2001.

2.5 VALVES

.1 Provincial Code approved, lubricated ball type.

PART 3 - EXECUTION

3.1 MANUFACTURER'S INSTRUCTIONS

.1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheet.

3.2 PIPING

.1 Install in accordance with Section applicable Provincial Codes, CAN/CSA B149.1, CAN/CSA B149.2,.

.2 Install drip points:
.1 At low points in piping system.
.2 At connections to equipment.

3.3 VALVES

.1 Install valves with stems upright or horizontal unless otherwise approved by Engineer.

.2 Install valves at branch take-offs to isolate pieces of equipment, and as indicated.

3.4 FIELD QUALITY CONTROL

.1 Site Tests/Inspection:

.1 Test system in accordance with CAN/CSA B149.1 CAN/CSA B149.2 and requirements of authorities having jurisdiction.

3.5 ADJUSTING

.1 Purging: purge after pressure test in accordance with CAN/CSA B149.1 CAN/CSA B149.2.

.2 Pre-Start-Up Inspections:
.1 Check vents from regulators, control valves, terminate outside building in approved location, protected against blockage, damage.
.2 Check gas trains, entire installation is approved by authority having jurisdiction.

END

PART 1 - GENERAL

1.1 SUMMARY

.1 Section Includes:
.1 Copper piping valves and fittings for hydronic systems.

1.2 REFERENCES

.1 American National Standards Institute (ANSI)/American Welding Society (AWS)
.1 ANSI/AWS A5.8/A5.8M-04, Specification Filler Metals for Brazing and Bronze Welding.

.2 American Society of Mechanical Engineers (ASME)
.1 ASME B16.4-1998, Gray-Iron Threaded Fittings.
.2 ASME B16.15-1985 (R1994), Cast Bronze Threaded Fittings.
.3 ANSI B16.18-2001, Cast Copper Alloy, Solder Joint Pressure Fittings.
.4 ASME B16.22-2001, Wrought Copper and Copper-Alloy Solder Joint Pressure Fittings.

.3 American Society for Testing and Materials International (ASTM)
.1 ASTM B 32-04, Standard Specification for Solder Metal.
.2 ASTM B 61-02, Standard Specification for Steam or Valve Bronze Castings.
.3 ASTM B 62-02, Standard Specification for Composition Bronze or Ounce Metal Castings.
.4 ASTM B 88M-03, Standard Specification for Seamless Copper Water Tube Metric.
.5 ASTM E 202-04, Standard Test Methods for Analysis of Ethylene Glycols and Propylene Glycols.

.4 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
.1 Material Safety Data Sheets (MSDS).

.5 Manufacturers Standardization Society (MSS)
.1 MSS SP-67-2002, Butterfly Valves.
.2 MSS SP-70-1998, Cast Iron Gate Valves, Flanged and Threaded Ends.
.3 MSS SP-71-2002, Grey Iron Swing Check Valves, Flanged and Threaded Ends.
.4 MSS SP-80-2003, Bronze Gate, Globe, Angle and Check Valves.
.5 MSS SP-85-2002, Cast Iron Globe and Angle Valves, Flanged and Threaded Ends.

1.3 SUBMITTALS

.1 Product Data:
.1 Submit manufacturer's printed product literature, specifications and datasheet in accordance with Section 01 33 00 - Submittal Procedures. Include product characteristics, performance criteria, and limitations.
.1 Submit two copies of Workplace Hazardous Materials Information System (WHMIS) Material Safety Data Sheets (MSDS) in accordance with Section 01 33 00 - Submittal Procedures.

.2 Shop Drawings:
.1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.

.3 Closeout Submittals:
.1 Provide maintenance data for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

1.4 REPAIRS

.1 Provide materials and labour to replace existing Hydronic Systems - Copper systems at 4 Wing Cold Lake. Replacement of fixtures to be as specified as follows and shall match existing installed devices. The specifications include the most common devices, which will be encountered at 4 Wing Cold Lake. If any specialty item has to be replaced the original shop drawings from the Maintenance Manual shall be consulted by Engineer and communicated to Contractor.

PART 2 - PRODUCTS

2.1 TUBING

.1 Type A or B hard drawn copper tubing: to ASTM B 88M-99.

2.2 FITTINGS

.1 Cast bronze threaded fittings: to ASME B16.15-1985 (R1994) (R1994).

.2 Wrought copper and copper alloy solder joint pressure fittings: to ASME B16.22-2001.

.3 Cast iron threaded fittings: to ASME B16.4-1998.

2.2 FITTINGS (Cont'd)

.4 Cast copper alloy solder joint pressure fittings: to ANSI B16.18-2001.

2.3 FLANGES

.1 Brass or bronze: threaded.

.2 Cast iron: threaded.

.3 Orifice flanges: slip-on, raised face, 2100 kPa.

2.4 JOINTS

.1 Solder, tin-antimony, 95:5: to ASTM B 32-00e1.

.2 Silver solder BCUP: to AWS A5.8-1992 (R2003) (R2003).

.3 Brazing: as indicated.

2.5 VALVES

.1 Connections:
.1 NPS 2 and smaller: ends for soldering.
.2 NPS 2 1/2 and larger: flanged grooved ends.

.2 Gate Valves Application: isolating equipment, control valves, pipelines:
.1 NPS 2 and under:
.1 Mechanical Rooms: Class 125, rising stem wedge disc, as specified Section 23 05 22 - Valves - Bronze.
.2 Elsewhere: Class 125, non- rising stem, solid wedge disc, as specified Section 23 05 22 - Valves - Bronze.
.2 NPS 2 1/2 and over:
.1 Mechanical Rooms: rising stem, wedge disc, bronze trim, as specified Section 23 05 23 - Valves - Cast Iron.
.1 Operators:.
.2 Elsewhere: Non- rising stem, solid wedge disc, bronze trim, as specified Section 23 05 23 - Valves - Cast Iron.
.1 Operators: as existing.

.3 Butterfly valves: application: isolating each cell or section of multiple component equipment (e.g. multi-section coils, multi-cell cooling towers):
.1 NPS 2 1/2 and over: lug type grooved ends: as specified Section 23 05 17 - Pipe Welding.

2.5 VALVES (Cont'd)

.4 Globe valves: application: throttling, flow control, emergency bypass:
- .1 NPS 2 and under:
  - .1 Mechanical Rooms: with PFTE disc, as specified Section 23 05 22 - Valves - Bronze.
  - .2 Elsewhere: globe, with composition disc, as specified Section 23 05 22 - Valves - Bronze.
- .2 NPS 2 1/2 and over:
  - .1 With composition bronze disc, bronze trim, as specified Section 23 05 23 - Valves - Cast Iron.
  - .2 Operators: as existing.

.5 Balancing, for TAB:
- .1 NPS 2 and under:
  - .1 Mechanical Rooms: globe, with plug disc as specified Section 23 05 22 - Valves - Bronze.
  - .2 Elsewhere: globe, with plug disc as specified Section 23 05 22 - Valves - Bronze.

.6 Drain valves: gate, Class 125, non-rising stem, solid wedge disc, as specified Section 23 05 22 - Valves - Bronze.

.7 Bypass valves on gate globe valves NPS 8 and larger: NPS 3/4, globe, with PFTE disc as specified Section 23 05 22 - Valves - Bronze.

.8 Swing check valves:
- .1 NPS 2 and under:
  - .1 Class 125, swing, with composition disc, as specified Section 23 05 22 - Valves - Bronze.
  - .2 NPS 2 1/2 and over:
    - .1 Flanged/ Grooved ends: as specified Section 23 05 23 - Valves - Cast Iron.

.9 Ball valves:
- .1 NPS 2 and under: as specified Section 23 05 22 - Valves - Bronze.

.10 Lubricated Plug Valves:
- .1 NPS 2 1/2 and over: as specified Section 23 05 23 - Valves - Cast Iron.

PART 3 - EXECUTION

3.1 MANUFACTURER'S INSTRUCTIONS

.1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheet.

3.2 PIPING INSTALLATION

.1 Connect to equipment in accordance with manufacturer's instruction unless otherwise indicated.

.2 Install concealed pipes close to building structure to keep furring space to minimum. Install to conserve headroom and space. Run exposed piping parallel to walls. Group piping where ever practical.

.3 Slope piping in direction of drainage and for positive venting.

.4 Use eccentric reducers at pipe size change installed to provide positive drainage or positive venting.

.5 Provide clearance for installation of insulation and access for maintenance of equipment, valves and fittings.

.6 Assemble piping using fittings manufactured to ANSI standards.

3.3 VALVE INSTALLATION

.1 Install rising stem valves in upright position with stem above horizontal.

.2 Install butterfly valves on chilled water and condenser water lines only.

.3 Install ball valves at branch take-offs and to isolate each piece of equipment, and as indicated.

.4 Install globe valves for balancing and in by-pass around control valves as indicated.

.5 Install swing check valves in horizontal lines on discharge of pumps and as indicated.

.6 Install chain operators on valves NPS 2 1/2 and over where installed more than 2400 mm above

3.3 VALVE INSTALLATION (Cont'd)

.6 (Cont'd) floor in Boiler Rooms and Mechanical Equipment Rooms.

.7 Install ball valves for glycol service.

3.4 CIRCUIT BALANCING VALVES

.1 Install flow measuring stations and flow balancing valves as indicated.

.2 Remove hand wheel after installation and TAB is complete.

.3 Tape joints in prefabricated insulation on valves installed in chilled water mains.

3.5 FLUSHING AND CLEANING

.1 Flush and clean in presence of Engineer.

.2 Flush after pressure test for a minimum of 4h.

.3 Fill with solution of water and non-foaming, phosphate-free detergent 3% solution by weight. Circulate for minimum of 8h.

.4 Refill system with clean water. Circulate for at least 4h. Clean out strainer screens/baskets regularly. Then drain.

.5 Refill system with clean water. Circulate for at least 2h. Clean out strainer screens/baskets regularly. Then drain.

.6 Drainage to include drain valves, dirt pockets, strainers, low points in system.

.7 Re-install strainer screens/baskets only after obtaining Engineer's approval.

3.6 FILLING OF SYSTEM

.1 Refill system with clean water adding water treatment as specified or glycol as existing.

3.7 FIELD QUALITY CONTROL

.1 Testing:
.1 Test system in accordance with Section 2. 05 00 - Common Work Results - Mechanical
.2 For glycol systems, retest with ethylene glycol to ASTM E 202-00, inhibited, for use in building system after cleaning. Repair leaking joints, fittings or valves.

3.7 FIELD QUALITY CONTROL (Cont'd)

.2 Balancing:
.1 Balance water systems to within plus or minus 5 % of design output.

.3 Glycol Charging:
.1 Provide mixing tank and positive displacement pump for glycol charging.
.2 Retest for concentration to ASTM E 202-00 after cleaning.

END

PART 1 - GENERAL

1.1 SUMMARY

.1 Section Includes.
.1 Materials and installation for steel piping, valves and fittings for hydronic systems in building services piping.
.2 Provide materials and labour to replace existing Hydronic Systems - Steel systems at 4 Wing Cold Lake. Replacement of fixtures to be as specified as follows and shall match existing installed devices. The specifications include the most common devices, which will be encountered at 4 Wing Cold Lake. If any specialty item has to be replaced the original shop drawings from the Maintenance Manual shall be consulted by Engineer and communicated to Contractor.

1.2 REFERENCES

.1 American Society of Mechanical Engineers (ASME).
.1 ASME B16.1-1998, Cast Iron Pipe Flanges and Flanged Fittings.
.2 ASME B16.3-1998, Malleable Iron Threaded Fittings.
.3 ASME B16.5-03, Pipe Flanges and Flanged Fittings.
.4 ASME B16.9-01, Factory-Made Wrought Butt-welding Fittings.
.5 ASME B18.2.1-03, Square and Hex Bolts and Screws (Inch Series).
.6 ASME B18.2.2-1987 (R1999), Square and Hex Nuts (Inch Series).

.2 American Society for Testing and Materials International, (ASTM).
.1 ASTM A 47/A 47M-99, Standard Specification for Ferritic Malleable Iron Castings.
.2 ASTM A 53/A 53M-02, Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc Coated Welded and Seamless.
.3 ASTM A 536-84(1999)e1e1, Standard Specification for Ductile Iron Castings.
.4 ASTM B 61-02, Standard Specification for Steam or Valve Bronze Castings.
.5 ASTM B 62-02, Standard Specification for Composition Bronze or Ounce Metal Castings.

1.2 REFERENCES (Cont'd)

.2 (Cont'd)
.6 ASTM E 202-00, Standard Test Method for Analysis of Ethylene Glycols and Propylene Glycols.

.3 American Water Works Association (AWWA).
.1 AWWA C111-00, Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings.

.4 Canadian Standards Association (CSA International).
.1 CSA B242-M1980 (R1998), Groove and Shoulder Type Mechanical Pipe Couplings.
.2 CSA W48-01, Filler Metals and Allied Materials for Metal Arc Welding (Developed in cooperation with the Canadian Welding Bureau).

.5 Manufacturer's Standardization of the Valve and Fittings Industry (MSS).
.1 MSS SP-67-2002, Butterfly Valves.
.2 MSS SP-70-1998, Cast Iron Gate Valves, Flanged and Threaded Ends.
.3 MSS SP-71-2002, Cast Iron Swing Check Valves Flanged and Threaded Ends.
.4 MSS-SP-80-03, Bronze Gate, Globe, Angle and Check Valves.
.5 MSS SP-85-2002, Cast Iron Globe and Angle Valves, Flanged and Threaded Ends.

1.3 SUBMITTALS

.1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.

.2 Closeout Submittals.
.1 Provide maintenance data for incorporation into manual specified in Section 01 78 00 - Closeout Submittals

PART 2 - PRODUCTS

2.1 PIPE

.1 Steel pipe: to ASTM A 53/A 53M-02, Grade B, as follows:
.1 To NPS6: sched 40.
.2 NPS8 and over, sched 30.
.3 NPS12 and over, 10 mm wall thickness.

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2.2 PIPE JOINTS

.1 NPS2 and under: screwed fittings with PTFE tape or lead-free pipe dope.

.2 NPS2-1/2 and over: welding fittings and flanges to CSA W48-01.

.3 Roll grooved: standard or rigid coupling to CSA B242-M1980 (R1998).

.4 Flanges: raised face, weld neck to AWWA C111.

.5 Orifice flanges: slip-on raised face, 2100 kPa.

.6 Flange gaskets: to AWWA C111.

.7 Pipe thread: taper.

.8 Bolts and nuts: to ASME B18.2.1-1996 and ASME B18.2.2-1987 (R1999).

.9 Roll grooved coupling gaskets: type EPDM.

2.3 FITTINGS

.1 Screwed fittings: malleable iron, to ASME B16.3-1998, Class 150.

.2 Pipe flanges and flanged fittings:
.1 Cast iron: to ASME B16.1-1998, Class 125.
.2 Steel: to ASME B16.5-1996.

.3 Butt-welding fittings: steel, to ASME B16.9-2001.

.4 Unions: malleable iron, to ASTM A 47M-90 and ASME B16.3-1998.

.5 Fittings for roll grooved piping: malleable iron to ASTM A 47M-90 or ductile iron to ASTM A
536-84(1999)e1.

2.4 VALVES

.1 Connections:
.1 NPS2 and smaller: screwed ends.
.2 NPS2.1/2 and larger: Flanged or grooved ends.

.2 Gate valves: to MSS SP-80-1997 Application: Isolating equipment, control valves, pipelines:

2.4 VALVES (Cont'd)

.2 Gate valves:(Cont'd)
.1 NPS2 and under:
.1 Mechanical Rooms: Class 125, rising stem, solid wedge disc, as specified Section 23 05 22 - Valves - Bronze.
.2 Elsewhere: Class 125, non- rising stem, solid wedge disc, as specified Section 23 05 22 - Valves - Bronze.
.2 NPS21/2 and over:
.1 Mechanical Rooms: rising stem, solid wedge disc, bronze trim, as specified Section 23 05 23 - Valves - Cast Iron: Gate, Globe, Check.
.1 Operators:.
.2 Elsewhere: Non- rising stem, solid wedge disc, bronze trim, as specified Section 23 05 23 - Valves - Cast Iron: Gate, Globe, Check.
.1 Operators: as existing

.3 Butterfly valves: to MSS SP-67-2002
Application: Isolating cells or section of multiple component equipment (e.g. multi-section coils, multi-cell cooling towers):
.1 NPS21/2 and over: Lug type Grooved ends: as specified Section 23 05 17 - Pipe Welding.

.4 Globe valves: to MSS SP-80-1997 85
Application: Throttling, flow control, emergency bypass:
.1 NPS2 and under:
.1 Mechanical Rooms: with PTFE disc, as specified Section 23 05 22 - Valves - Bronze.
.2 Elsewhere: Globe, with composition disc, as specified Section 23 05 22 - Valves - Bronze.
.2 NPS21/2 and over:
.1 With composition bronze disc, lead free bronze trim, as specified Section 23 05 23 - Valves - Cast Iron: Gate, Globe, Check.
.2 Operators: as existing.

.5 Balancing, for TAB:
.1 NPS2 and under:
.1 Mechanical Rooms: Globe, with plug disc as specified Section 23 05 22 - Valves - Bronze.
.2 Elsewhere: Globe, with plug disc as specified Section 23 05 22 - Valves - Bronze.

2.4 VALVES (Cont'd)

.6 Drain valves: Gate, Class 125, non-rising stem, solid wedge disc, as specified Section 23 05 22 - Valves - Bronze

.7 Bypass valves on gate valves NPS8 and larger: NPS3/4, Globe, with PTFE disc as specified Section 23 05 22 - Valves - Bronze

.8 Swing check valves: to MSS SP-71-2002.
- .1 NPS2 and under:
  - .1 Class 125, swing, with composition disc, as specified Section 23 05 22 - Valves - Bronze.
- .2 NPS21/2 and over:
  - .1 Flanged Grooved ends: as specified Section 23 05 23 - Valves - Cast Iron: Gate, Globe, Check.

.9 Silent check valves:
- .1 NPS2 and under:
  - .1 As specified Section 23 05 22 - Valves - Bronze.
- .2 NPS21/2 and over:
  - .1 Flanged Grooved ends: as specified Section 23 05 23 - Valves - Cast Iron: Gate, Globe, Check.

.10 Ball valves:
- .1 NPS2 and under: as specified Section 23 05 22 - Valves - Bronze.

.11 Lubricated Plug Valves
- .1 NPS21/2 and over:
  - .1 As specified Section 23 05 23 - Valves - Cast Iron: Gate, Globe, Check

PART 3 - EXECUTION

3.1 MANUFACTURER'S INSTRUCTIONS

.1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheet.

3.2 PIPING INSTALLATION

.1 Connect to equipment in accordance with manufacturer's instruction unless otherwise indicated.

.2 Install concealed pipes close to building structure to keep furring space to minimum.

3.2 PIPING INSTALLATION (Cont'd)

.2 (Cont'd)
Install to conserve headroom and space. Run exposed piping parallel to walls. Group piping where ever practical.

.3 Slope piping in direction of drainage and for positive venting.

.4 Use eccentric reducers at pipe size change installed to provide positive drainage or positive venting.

.5 Provide clearance for installation of insulation and access for maintenance of equipment, valves and fittings.

.6 Assemble piping using fittings manufactured to ANSI standards.

.7 Saddle type branch fittings may be used on mains if branch line is no larger than half the size of main. Hole saw or drill and ream main to maintain full inside diameter of branch line prior to welding saddle.

3.3 VALVE INSTALLATION

.1 Install rising stem valves in upright position with stem above horizontal.

.2 Install butterfly valves on chilled water and condenser water lines only.

.3 Install ball valves at branch take-offs and to isolate each piece of equipment, and as indicated.

.4 Install globe valves for balancing and in by-pass around control valves as indicated.

.5 Install swing check valves in horizontal lines on discharge of pumps and as indicated.

.6 Install chain operators on valves NPS 2 1/2 and over where installed more than 2400 mm above floor in Boiler Rooms and Mechanical Equipment Rooms.

.7 Install ball valves for glycol service.

3.4 CIRCUIT BALANCING VALVES

.1 Install flow measuring stations and flow balancing valves as indicated.

.2 Remove hand wheel after installation and TAB is complete.

.3 Tape joints in prefabricated insulation on valves installed in chilled water mains.

3.5 FLUSHING AND CLEANING

.1 Flush and clean in presence of Engineer.

.2 Flush after pressure test for a minimum of 4h.

.3 Fill with solution of water and non-foaming, phosphate-free detergent 3% solution by weight. Circulate for minimum of 8h.

.4 Refill system with clean water. Circulate for at least 4h. Clean out strainer screens/baskets regularly. Then drain.

.5 Refill system with clean water. Circulate for at least 2h. Clean out strainer screens/baskets regularly. Then drain.

.6 Drainage to include drain valves, dirt pockets, strainers, low points in system.

.7 Re-install strainer screens/baskets only after obtaining Engineer's approval.

3.6 FILLING OF SYSTEM

.1 Refill system with clean water adding water treatment as specified or glycol as existing.

.2 Record and Provide quantity if glycol added to engineer.

3.7 FIELD QUALITY CONTROL

.1 Testing:
.1 Test system in accordance with Section 2. 05 00 - Common Work Results - Mechanical
.2 For glycol systems, retest with ethylene glycol to ASTM E 202-00, inhibited, for use in building system after cleaning. Repair leaking joints, fittings or valves.

.2 Balancing:
.1 Balance water systems to within plus or minus 5 % of design output.

3.7 FIELD QUALITY CONTROL (Cont'd)

.3 Glycol Charging:
.1 Provide mixing tank and positive displacement pump for glycol charging.
.2 Retest for concentration to ASTM E 202-00 after cleaning.

END

PART 1 - GENERAL

1.1 SUMMARY

.1 Section Includes.

.1 Materials and installation of piping, valves and fittings required for pressure joint piping systems for hydronic systems in building services piping.

.2 Provide materials and labour to replace existing Press Joint Piping Systems - Hydronic systems at 4 Wing Cold Lake. Replacement of fixtures to be as specified as follows and shall match existing installed devices. The specifications include the most common devices, which will be encountered at 4 Wing Cold Lake. If any specialty item has to be replaced the original shop drawings from the Maintenance Manual shall be consulted by Engineer and communicated to Contractor.

1.2 REFERENCES

.1 American Society for Testing and Materials International, (ASTM).

.1 ASTM A 53/A 53M-02, Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc Coated Welded and Seamless.

.2 ASTM A 135-01, Standard Specification for Electric-Resistance-Welded Steel Pipe.

.3 ASTM A 795-00, Standard Specification for Black and Hot-Dipped Zinc-Coated (Galvanized) Welded and Seamless Steel Pipe for Fire Protection Use.

.4 ASTM B 61-02, Standard Specification for Steam or Valve Bronze Castings.

.5 ASTM B 62-02, Standard Specification for Composition Bronze or Ounce Metal Castings.

.6 ASTM E 202-00, Standard Test Methods for Analysis of Ethylene Glycols and Propylene Glycols.

.2 Manufacturer's Standardization of the Valve and Fittings Industry (MSS).

.1 MSS SP-71-2002, Cast Iron Swing Check Valves Flanged and Threaded Ends.

.2 MSS-SP-80-03, Bronze Gate, Globe, Angle and Check Valves.

1.3 SUBMITTALS

.1 Submit product data in accordance with Section 01 33 00 - Submittal Procedures.

.2 Submit data for following:
.1 Valves.
.2 Couplings, Components.

.3 Closeout Submittals.
.1 Provide maintenance data for incorporation into manual specified in Section 01 78 00 - Closeout Submittals

PART 2 - PRODUCTS

2.1 PIPING

.1 Steel pipe: to ASTM A 53/A 53M-02 ASTM A 795-00 A.TM A 135, minimum wall thickness 1.45 mm

2.2 FITTINGS

.1 Cold drawn steel complete with grade "C" Butylene or grade "T" Nitrile O-ring.

2.3 GATE VALVES

.1 Rising stem, screwed ends:
.1 To MSS SP-80-1997, Class 125, 860 kPa, bronze body, screw-in bonnet, solid wedge disc as specified Section 23 05 22 - Valves - Bronze.

2.4 GLOBE VALVES

.1 To MSS SP-80-1997, Class 125, 860 kPa, lead free bronze body, screw-over bonnet, renewable composition disc suitable for service stainless steel disc as specified Section 23 05 22 - Valves - Bronze.

2.5 SWING CHECK VALVES

.1 To MSS SP-80-1997, Class 125, 860 kPa, lead free bronze body, screw-in cap, and bronze swing disc, regrind able seat as specified Section 23 05 22 - Valves - Bronze.

2.6 BALL VALVES

.1 To ASTM B 62-02, 4 MPa WOG, bronze body, hard chrome solid ball, TFE seal, PTFE adjustable packing, PTFE seat, lever handle.

2.7 SILENT CHECK VALVES

.1 To ASTM B 62-02, Class 125, 860 kPa, cast steel, wafer style, lead free brass seat rings, lead free brass inner valve, stainless steel spring heavy duty spring when in vertical down flow applications as specified Section 23 05 22 - Valves - Bronze

2.8 LUBRICATED PLUG COCKS

.1 To ASTM B 61-02, Class 150, 1 MPa, lead free bronze body.

2.9 CIRCUIT BALANCING VALVES (CBV)

.1 General:
.1 Y style globe valve, designed to provide precise flow measurement and control, with valve ports for connected to differential pressure meter.
.2 Accuracy:
.1 Readout to be within plus or minus 2% of actual flow at design flow rate.

.2 Pressure die-cast dezincification resistant copper alloy or stainless steel construction, 1.7MPa, 121 degrees C, screwed ends, Teflon disc, screw-in bonnet.
.1 Flow control: at least four 4 full turns of hand wheel with digital hand wheel and tamperproof concealed mechanical memory.

.3 Insulation: use prefabricated 5.4R polyurethane as insulation

.4 Drain connection:
.1 NPS3/4 valve and capped, suitable for hose socket.
.2 Incorporated into valve body or provided as separate item.

PART 3 - EXECUTION

3.1 PIPING

.1 Install press joint piping system in accordance with manufacturer's latest recommendations.

.2 Visibly mark both ends of pipe with proper insertion depths prior to assembly and installation.

3.2 VALVES

.1 Install valves as indicated in Section 23 05 22 - Valves - Bronze.

.2 Install calibrated balancing valves for balancing purposes as indicated.

3.3 PRESSURE TESTS

.1 Test system in accordance with Section 2. 05 00 - Common Work Results - Mechanical

.2 Test pressure: test with water to greater of 1 1/2 times maximum system operating pressure or 860 kPa.

3.4 CLEANING AND START UP

.1 In accordance with Section 23 08 02 - Cleaning and Start-up of Mechanical Piping Systems.

.2 Flush and clean in presence of Engineer.

.3 Flush after pressure test for minimum of 4 hours.

.4 Fill with solution of water and non-foaming, phosphate-free detergent 3% solution by weight. Circulate for minimum of 8 hours.

.5 Refill system with clean water. Circulate for at least 4 hours. Clean out strainer screens/baskets regularly. Then drain.

.6 Refill system with clean water. Circulate for at least 2 hours. Clean out strainer screens/baskets regularly. Then drain.

.7 Drainage to include drain valves, dirt pockets, strainers, every low point in system.

3.4 CLEANING AND START UP (Cont'd)

.8 Re-install strainer screens/baskets after obtaining Engineer approval.

.9 Refill system with clean water adding water treatment as specified or propylene glycol as existing.

3.5 TESTING AND BALANCING

.1 Balance water systems to within plus or minus 5 % of design output.

.2 Refer to Section for applicable procedures and to Section 23 05 00 - Common Work Results - Mechanical.

3.6 GLYCOL CHARGING

.1 Provide mixing tank and positive displacement pump for glycol charging.

.2 Retest for concentration to ASTM E 202-00 after cleaning.

.3 Provide report to Engineer.

END

PART 1 - GENERAL

1.1 SECTION INCLUDES

.1 Materials and installation of steel piping valves, fittings for steam and condensate building service piping to include low pressure Blrs and equipment

.2 Provide materials and labour to replace existing Steel Piping Valves & Fittings Steam & Condensate up to 860 kPa systems at 4 Wing Cold Lake. Replacement of fixtures to be as specified as follows and shall match existing installed devices. The specifications include the most common devices, which will be encountered at 4 Wing Cold Lake. If any specialty item has to be replaced the original shop drawings from the Maintenance Manual shall be consulted by Engineer and communicated to Contractor.

1.2 REFERENCES

.1 American National Standards Institute (ANSI).
.1 ASME B16.1-1998, Cast Iron Pipe Flanges and Flanged Fittings.
.2 ASME B16.25-1997, Butt welding Ends.
.3 ASME B16.3-1998, Malleable Iron Threaded Fittings.
.4 ANSI/ASME B16.5-03, Pipe Flanges and Flanged Fittings.
.5 ANSI/ASME B16.9-01, Factory-Made Wrought Steel Butt welding Fittings.
.6 ANSI B18.2.1-03, Square and Hex Bolts and Screws (Inch Series).
.7 ASME B18.2.2-1987 (R1999), Square and Hex Nuts (Inch Series).

.2 American Water Works Association (AWWA).
.1 AWWA C111-2000, Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings.

.3 American Society for Testing and Materials International, (ASTM).
.1 ASTM A 47/A 47M-99, Standard Specification for Ferritic Malleable Iron Castings.
.2 ASTM A 53/A 53M-02, Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc Coated, Welded and Seamless.
.3 ASTM A 126-95(2001), Standard Specification for Gray Iron Castings for Valves, Flanges, and Pipe Fittings.

1.2 REFERENCES (Cont'd)

.4 Canadian Standards Association (CSA International).
.1 CSA W48-01, Filler Metals and Allied Materials for Metal Arc Welding (Developed in cooperation with the Canadian Welding Bureau).

.5 Manufacturers Standardization Society of the Valve and Fittings Industry, Inc.
.1 MSS SP-70-1998, Cast Iron Gate Valves, Flanged and Threaded Ends.
.2 MSS SP-71-2002, Gray Iron Swing Check Valves, Flanged and Threaded Ends.
.3 MSS SP-80-1997, Bronze Gate, Globe, Angle and Check Valves.
.4 MSS SP-85-2002, Gray Iron Globe and Angle Valves, Flanged and Threaded Ends.

1.3 SUBMITTALS

.1 Submittals in accordance with Section 01 33 00 - Submittal Procedures.

.2 Product Data: submit WHMIS MSDS - Material Safety Data Sheets in accordance with Section 02 61 33 - Hazardous Materials.
.1 Submit shop drawings and product data in accordance with Section 01 33 00 - Submittal Procedures.
.2 Submit product data in accordance with Section 01 33 00 - Submittal Procedures.
.3 Submit data for valves specified this Section.

.3 Closeout Submittals:
.1 Submit maintenance data for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

PART 2 - PRODUCTS

2.1 PIPE

.1 Steel pipe: to ASTM A 53/A 53M-02, Grade B, as follows:
.1 Steam;
.1 To NPS 6: sch 40.
.2 NPS 8 and over: sch 30
.2 Condensate: sch 80.

2.2 PIPE JOINTS

.1 NPS 2 and under: screwed fittings with PTFE tape or lead-free dope.

.2 NPS 2-1/2 and over: welding fittings and flanges to CSA W48-01.

.3 Flanges: plain or raised face. Flange gaskets to AWWA C111.

.4 Pipe thread: taper.

.5 Bolts and nuts: carbon steel, to ASME B18.2.1-1996 and ASME B18.2.2-1987 (R1999).

.6 Butt welding ends: to ASME B16.25-1997 as indicated.

2.3 FITTINGS

.1 Pipe flanges: cast-iron to ASME B16.1-1998, Class 125.

.2 Screwed fittings: malleable iron to ASME B16.3-1998, Class 150.

.3 Steel pipe gaskets, flanges and flanged fittings: to ASME B16.5-1996.

.4 Butt welding fittings: steel to ASME B16.9-2001.

.5 Unions: malleable iron, to ASTM A 47M-90 and ASME B16.3-1998.

2.4 VALVES

.1 Connections:
- .1 NPS 2 and smaller: screwed ends.
- .2 NPS 2 1/2 and larger:
  - .1 Flanged welded grooved ends.

.2 Gate valves: Application: Steam service, for isolating equipment, control valves, pipelines.
- .1 NPS 2 and under:
  - .1 Mechanical Rooms: Class 125, rising stem, solid wedge disc, as specified Section 23 05 22 - Valves-Bronze.
  - .2 Elsewhere: Class 125, non- rising stem, solid wedge disc, as specified Section 23 05 22 - Valves-Bronze.
- .2 NPS 2 1/2 -8:
  - .1 Mechanical Rooms: Class 150, rising stem, solid wedge disc, cast iron, lead-free bronze trim, as specified Section 23 05 23 - Valves - Cast Iron: Gate, Globe, Check.

2.4 VALVES (Cont'd)

.2 Gate valves:(Cont'd)
.2 NPS 2 1/2 -8:(Cont'd)
.2 Operators: as existing
.3 Elsewhere: Class 150, Non- rising stem, solid wedge disc, cast iron with lead- free bronze trim, as specified Section 23 05 23 - Valves - Cast Iron: Gate, Globe, Check.
.1 Operators: as existing
.3 NPS 10 and over:
.1 Mechanical Rooms: Class 150, rising stem, solid wedge disc, cast steel with lead- free bronze trim, as specified Section 23 05 24 - Valves - Cast Steel.
.1 Operators: as existing
.2 Elsewhere: Class 150, Non- rising stem, solid wedge disc, cast steel with lead- free bronze trim, as specified Section 23 05 24 - Valves - Cast Steel.
.1 Operators: as existing

.3 Globe valves: Application: Steam service, throttling, flow control, emergency bypass.
.1 NPS 2 and under:
.1 Mechanical Rooms: with PFTE disc as specified Section 23 05 22 - Valves - Bronze.
.2 Elsewhere: with composition disc as specified Section 23 05 22 - Valves - Bronze.
.2 NPS 2 1/2 and over:
.1 With composition lead-free bronze disc, cast iron with bronze trim, to Section 23 05 23 - Valves - Cast Iron: Gate, Globe, Check.
.1 Operators: as existing

.4 Gate valves: Application: Pumped and gravity condensate return service, steam drip point assemblies.
.1 NPS 2 and under:
.1 Mechanical Rooms: Class 125, rising stem, solid wedge disc, as specified Section 23 05 22 - Valves-Bronze.
.2 Elsewhere: Class 125, non- rising stem, solid wedge disc, as specified Section 23 05 22 - Valves - Bronze.
.2 NPS 2 1/2 and over:
.1 Mechanical Rooms: Class 125, rising stem, solid wedge disc, cast iron, lead-free bronze trim, as specified Section 23 05 23 - Valves - Cast Iron: Gate, Globe, Check.
.1 Operators: as existing

2.4 VALVES (Cont'd)

.4 Gate valves:(Cont'd)
.2 NPS 2 1/2 and over:(Cont'd)
.2 Elsewhere: Class 125, non- rising stem, solid wedge disc, cast iron with lead-free bronze trim, as specified Section 23 05 23 - Valves - Cast Iron: Gate, Globe, Check.

.5 Drain valves: Gate, Class 125, non-rising stem, solid wedge disc, as specified Section 23 05 22 - Valves - Bronze.

.6 Bypass valves around large size gate and globe valves: as specified Section 23 05 24 - Valves - Cast Steel.

.7 Lift check valves:
.1 NPS 2 and under: Class 125, lift, with composition disc, as specified Section 23 05 22 - Valves - Bronze.

2.5 VALVE OPERATORS

.1 Hand wheel: on valves except as specified.

PART 3 - EXECUTION

3.1 PIPING

.1 Connect branch lines into top of mains.

.2 Install piping in direction of flow with slopes as follows, unless otherwise indicated:
.1 Steam: 1:240.
.2 Condensate return: 1:70.

.3 Make provision for thermal expansion as indicated.

.4 Drip pocket: line size.

.5 Provide clearance for installation of insulation and access for maintenance of equipment. valves and fittings.

.6 Ream inside of pipes. Clean scale and dirt from both inside and outside of pipes before assembly.

.7 Assemble piping using fittings manufactured to ANSI standards.

.8 Saddle type branch fittings may be used on mains if branch line is half size or smaller

3.1 PIPING (Cont'd)

.8 (Cont'd)
than main. Hole saw or drill and ream main to maintain full inside diameter of branch line prior to welding saddle

3.2 Commissioning Steam Distribution Systems

.1 Timing: commission steam distribution systems only after:
.1 Pressure tests have been successfully completed.
.2 Water treatment system has been commissioned.

.2 Remove steam trap internals until pressure tests and flushing have been completed.

.3 Instrumentation: verify accuracy of pressure gauges by comparison with calibrated test gauges.

.4 Steam coils: ensure complete drainage of all steam, condensate.

.5 Verify proper operation of components of system including, but not necessarily limited to:
.1 Steam traps - verify no blow-by.
.2 Flash tanks.

.6 Verify operation of provisions for pipe movement including expansion joints, loops, guides, and anchors. . 1 If sliding type expansion joints bind or if bellows type expansion joints flex incorrectly, shut down system, re-align, and repeat start-up procedures.

.7 Verify adequacy of accessibility to expansion joints for servicing.

.8 Slowly charge entire system with low-pressure steam, monitoring expansion joints, loops, guides, anchors, other provisions for pipe movement.

.9 Treat steam, for flushing and cleaning purposes, with higher than normal volatile mains (concentration to be determined in conjunction with water treatment Contractor or Central Heating Plant Operator). Flush out for minimum of 4 h in presence of Engineer.

.10 Starting at steam drip point or steam trap assembly closest to steam source, check that condensate is blown out of previous section of steam main, then replace steam trap internals

3.2 Commissioning Steam Distribution Systems (Cont'd)

.10 (Cont'd) and reconnect to condensate return main. Repeat this procedure for subsequent steam trap assemblies, and drip points.

.11 Adjust piping system as necessary to eliminate water hammer.

.12 Clean out strainer baskets repeatedly until system is thoroughly clean.

.13 Re-tighten bolts to compensate for heat-caused relaxation.

.14 Adjust valve steam packing as systems settle down.

.15 Monitor systems for proper operation of steam traps, thermostatic vents, and flash tanks.

.16 Verify pot ability of water services.

3.3 Valves

.1 Install valves with stems upright or angled 45 deg above horizontal unless approved otherwise by Engineer.

.2 Install gate valves at branch take-offs and to isolate each piece of equipment and as indicated.

.3 Install globe valves in bypasses around control valves.

.4 Install globe valves around, NPS 8 and over, gate valves.

.5 Install rising stem valves in upright position with stem above horizontal.

.6 Install chain operators over 2.4 m above floor.

3.4 Testing

.1 Test pressure: 1-1/2 times maximum system operating pressure or 860 kPa , whichever is greater.

END

ANNEX A

4 Wing Ground Disturbance & Clearance Notice

R-2010-08-010

Project Name: _____ **Project File No.:** _____

Contact Name: _____ **Telephone #:** _____ **RETURN FAX #:** _____

Organization: _____ **Work Start Date:** _____ **Disturbance Depth:** _____

Work Location (incl. Base address and Legal with diagram/sketch attached) _____ **Site pre-marked:** _____

Description of Work: _____

Utility / Contact Information	Remarks & Date	Name and sign-off
Wing Operations Loc 8006/Fax 780-840-7341		
4 Wing Fire Dept Loc 8401/Fax 780-840-7317		
PMO - GIS Records Loc 8251/Fax 780-840-7316		
Wing Environment Loc 8430/ Fax 780-840-7305		
TIS Line/Help Desk Loc 7053 /Fax 780-840-7349	Remedy Ticket #	
Electrical- CE Electrical Loc 8429/ Fax 780-840-4029		
Water/Sewer/Steam/Gas -CE Plumbing Loc 8427/ Fax 780-840-4000		
WFE Loc 8960/8411/ Fax 780-840-7314		

Alberta 1-Call Phone: 1-800-242-3447	Ticket #	*No response required*
Eastlink Fax 780-826-7028		
Canada Locators Fax 1-780-636-3575	(Telus)	
Alberta Supernet Fax 1-780-488-9875		
ATCO Electric Fax 780-594-3090		
ATCO Gas Fax 780-594-3090		
ATCO PIPELINES 1-780-808-0777		
ALTA GAS Fax 780-826-4712		

DCC Loc 7058 Fax: 780-594-6161	*Information only*	*No response required*

INSTRUCTIONS:

- * ALLOW MINUMUM 5 WORKING DAYS NOTICE FOR COMPLETION OF NOTICE LOCATES.
- In case of any delay beyond 14 days or conditions at job site change the entire ground disturbance permit process must be completed again.
- A person does not commit an offence under the act if he can demonstrate that he made all reasonable efforts to procure inspection and supervision required for the undertaking.
- The contractor shall confirm to their satisfaction that the work area is clearly staked/ marked and correctly color coded to Standards. Contractor shall not proceed with any ground disturbance if work area is not properly identified or if doubts to actual location of marked utilities.
- ALL ground disturbances within 1 meter of marked/flagged electrical/communications and within 5 meters of gas lines must be hand exposed by hand digging (or hydrovac) prior to use of mechanical equipment.

Annex B

4 WING COLD LAKE
HOT WORK AUTHORIZATION PERMIT# _____

Date : _____ Start Time : _____ Expiry Time : _____ Date : _____

INSPECTOR : Rank _____ Name _____ LOCATION : _____

Type of work : O Welding/Cutting O Soldering O Hot Roofing O Other _____

CONFINED SPACE : O Yes O No
Confinced Space Entry Permit on site O Yes O No

- Note : If a confined space entry permit is required and not on site, then a hot work authorization chit may not be issued.
- Before approving any hot work, the Fire Inspector shall inspect the work site and surrounding area to confinn that all precautions have been taken to prevent fire lAW NFPA SIB.
- If hot work is to be done in a Hangar, all Aircraft SHALL be removed.

GENERALPRECAVJJ	FIRE WATCl!
( ) Sprinkler/alarms in service. (if applicable) ( ) Welding Equipment in good repair.	( ) To be provided during and 30 min after operation. ( ) Serviceable Fire Extinguisher. ( ) Trained in Action in event of a Fire.
WITHIN liM OF WORK AREA	**WORK WITHIN WALLS OR CEILINGS**
( ) Combustible Products removed from area. ( ) Combustible floors wet down or covered with non combustible material. ( ) Flammable and Combustible liquids removed or safely stored. ( ) Wall and floor openings covered. ( ) If practicle. covers suspended beneath work to collect sparks.	( ) Non combustible construction and without combustible coverings. ( )Combustibles removed from other side of partition. HERMAN NELSON t!P JERS ( )Personnel trained in proper start-up, shut down and re-fueling procedures prior to use. ( ) Fire extinguisher available.

Haf ROOFING OPERATIONS

( ) Tar kettle located in a safe location at least 5 meters from an exit or combustible materials, including walls, or on a non-<:ombustible roof (unless approved by WFC).
( ) Thermostate on the kettle is operational and kettle is constantly supervised.
( ) Servicable Dry Chemical or C02 fire extinguisher available.
( ) A metal lid that can be closed in case of a fire.
( ) lnfonn the contractor that : used mops and rags shall be cleaned and stored away from the building and other combustible materials at the end of each work day or disposed separate from other waste.

NOT LEFI' ON mE ROOF.

CONTRACTOR: Name: _____ COMPANY _____
Address: _____
Phone Number: _____ Cell Phone : _____

I have received the Fire Department briefing and agree to comply with all regulations. The Fire Department shall be notified of any changes affecting the operations authorized by this permit.
Failure to comply with these safety precautions may result in you or your company being held responsible for any damages incurred
The Fire Department is to be notified at 840-8000 Loc 8401 when the inspection 30 minutes after the completion of any hot work for that day has been completed.

Signature of on site Supervisor _____

Approved by _____ Wing Fire Department.

Fire Department Emergency Number 840-8333 OR Loc. 8333

ANNEX C
4 Wing Confined Space Entry Permit

NOTE: This permit is valid only for the work and time described!
Fire Hall must be notified prior to entry Ph 840-8000 Ext 8401 EMERGENCY RESCUE PHONE EXT 911

Permit # _____ **Date:** _____/_____/_____ **Time of Entry:** _____ **Hrs** **Expiration:** _____**Hrs**

Type/Class of Space: _____ **Location:** _____

Unit/Section: _____ **Supervisor:** _____

Description of Work: _____

_____

ATMOSPHERIC TESTER **Make:** _____ **Model:** _____ **Ser#;** _____

Date of Last Calibration: _____/_____/_____ **Calibrator:** _____

Pre Entry Test Results				
TEST	**ACCEPTABLE LEVEL**		**AMOUNT TESTED**	**SIGNATURE**
Oxygen	Min 19.5% Max 23%			
Explosive Gases	5% LEL			
Carbon Monoxide (CO)	10 ppm (max)			
Hydrogen Sulfide (H_2S)	5 ppm (max)			
Toxic Gases	50% of TLV (max)			

EQUIPMENT REQ'D	Y	N	TYPE USED	PRE ENTRY REQUIREMENTS	Y	N
Respirators				Hazard Assessment Report Reviewed		
Air Line Respirators				Bleed Pressure		
SCBA Equip				Drain		
Ventilation Equip				Purge		
Communications				Ventilation		
Fall Arrest Equip				Electrical Lockout/Tagout		
Mechanical Lifting Device				Blinding/Blanking		
Personal Alarms				Hot Work Permit (Fire Hall)		
Fire Extinguishers				All Safety Equip on Site		
Life Jackets				Barricades/Signs Erected		
Barricades				Fire Hall Notified		
Non Sparking Tools				Others (Specify)		

Special Instructions _____

_____

I certify that I have performed all required tests and preventive measures (IAW the Hazard Assessment Report) for the safe entry into this confined space.

_____ _____
Qualified Person (Print) **Signature**

I certify that I have reviewed the Hazard Assessment Report and have been briefed on all tests and preventive measures required for safe entry into this confined space.

_____ _____ _____
_____ _____ _____
First Name (print) **Last Name (**print) **Signature**

I certify that all personnel have exited this confined space and the Fire Hall has been notified.

_____ _____
Name (print) **Signature**

NOTE: This report is to be retained by the supervisor for a minimum of two years

ANNEX E

4 Wing Road Closure Notice

R-2010-08-10

Project Name: _____ **Project File No.:** _____

Contact Name: _____ **Telephone #:** _____ **RETURN FAX #:** _____

Organization: _____ **Road Closure Start Date:** _____ **Road Closure End Date:** _____

Road Closure Start Time: _____ **Road Closure End Time:** _____

Work Location (incl. Base address and Legal with diagram/sketch attached) _____

Description of Work: _____

Contact Information	Remarks & Date	Name and sign-off
4 Wing Fire Dept Loc 8401/Fax 780-840-7317		
Wing Ops O Fax 780-840-7341 (If within GRA)		
Wing Logistics Fax 780-840-7366		*John White*
NCO I/C GPV Fax 780-840-4028		
Wing Secur O Fax 780-840-7339		
DCC Loc 7058 Fax: 780-594-6161	*Information only*	*No response required*

INSTRUCTIONS:

- * ALLOW MINUMUM 7 WORKING DAYS NOTICE FOR COMPLETION OF NOTICE.
- In case of any delay during an active closure past the stated “work end date” the entire road closure permit process must be completed again a minimum of 48 hours in advance.
- A person does not commit an offence under the act if he can demonstrate that he made all reasonable efforts to procure inspection and supervision required for the undertaking.
- The contractor shall provide traffic accommodation to the satisfaction of the designated 4 Wing Representative.
- The contractor shall provide road closure notice to effected businesses and or residents a minimum of 48 hours in advance of scheduled closure as required by 4 Wing Representative.
- Contractor shall not proceed with any closure of work area prior to sign off from above 4 Wing representative sections listed above.
- The following closure(s) will apply to all except authorized and emergency vehicles.

CERTIFICATE OF INSURANCE

Travaux publics et Services gouvernementaux Canada
Public Works and Government Services Canada

Description and Location of Work	Contract No.
Piping System Repairs Standing Offer, 4 Wing, CFB Cold Lake, AB.	Project No.

Name of Insurer, Broker or Agent	Address (No., Street)	City	Province	Postal Code

Name of Insured (Contractor)	Address (No., Street)	City	Province	Postal Code

Additional Insured
Her Majesty the Queen in Right of Canada as represented by the Minister of Public Works and Government Services

Type of Insurance	Insurer Name and Policy Number	Inception Date D / M / Y	Expiry Date D / M / Y	Limits of Liability		
				Per Occurrence	Annual General Aggregate	Completed Operations Aggregate
Commercial General Liability				**$**	**$**	**$**
Umbrella/Excess Liability				**$**	**$**	**$**
Builder's Risk / Installation Floater				**$**		

I certify that the above policies were issued by insurers in the course of their Insurance business in Canada, are currently in force and include the applicable insurance coverage's stated on page 2 of this Certificate of Insurance, including advance notice of cancellation / reduction in coverage.

Name of person authorized to sign on behalf of Insurer(s) (Officer, Agent, Broker)

Telephone number

Signature

Date D / M / Y

General

The insurance policies required on page 1 of the Certificate of Insurance must be in force and must include the insurance coverage listed under the corresponding type of insurance on this page.

The policies must insure the Contractor and must include Her Majesty the Queen in Right of Canada as represented by the Minister of Public Works and Government Services as an additional Insured.

The insurance policies must be endorsed to provide Canada with not less than thirty (30) days notice in writing in advance of a cancellation of insurance or any reduction in coverage.

Without increasing the limit of liability, the policies must protect all insured parties to the full extent of coverage provided. Further, the policies must apply to each Insured in the same manner and to the same extent as if a separate policy had been issued to each.

Commercial General Liability

The insurance coverage provided must not be substantially less than that provided by the latest edition of IBC Form 2100.
The policy must either include or be endorsed to include coverage for the following exposures or hazards if the Work is subject thereto:

(a) Blasting.
(b) Pile driving and caisson work.
(c) Underpinning.
(d) Removal or weakening of support of any structure or land whether such support be natural or otherwise if the work is performed by the insured contractor.

The policy must have the following minimum limits:

(a) **$5,000,000** Each Occurrence Limit;
(b) **$10,000,000** General Aggregate Limit per policy year if the policy contains a General Aggregate; and
(c) **$5,000,000** Products/Completed Operations Aggregate Limit.

Umbrella or excess liability insurance may be used to achieve the required limits.

Builder's Risk / Installation Floater

The insurance coverage provided must not be less than that provided by the latest edition of IBC Forms 4042 and 4047.
The policy must permit use and occupancy of any of the projects, or any part thereof, where such use and occupancy is for the purposes for which a project is intended upon completion.
The policy may exclude or be endorsed to exclude coverage for loss or damage caused by asbestos, fungi or spores, cyber and terrorism.
The policy must have a limit that is **not less than the sum of the contract value** plus the declared value (if any) set forth in the contract documents of all material and equipment supplied by Canada at the site of the project to be incorporated into and form part of the finished Work. If the value of the Work is changed, the policy must be changed to reflect the revised contract value.
The policy must provide that the proceeds thereof are payable to Canada or as Canada may direct in accordance with GC10.2, "Insurance Proceeds" (https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual/5/R/R2900D/2).

RECEIVED
DEC 11 2014

Government of Canada / Gouvernement du Canada

Contract Number / Numéro du contrat
W0134-15CYNP
Security Classification / Classification de sécurité
UNCLASSIFIED

SECURITY REQUIREMENTS CHECK LIST (SRCL)
LISTE DE VÉRIFICATION DES EXIGENCES RELATIVES À LA SÉCURITÉ (LVERS)

PART A - CONTRACT INFORMATION / PARTIE A - INFORMATION CONTRACTUELLE

1. Originating Government Department or Organization / Ministère ou organisme gouvernemental d'origine: National Defence
2. Branch or Directorate / Direction générale ou Direction: CAS
3. a) Subcontract Number / Numéro du contrat de sous-traitance
3. b) Name and Address of Subcontractor / Nom et adresse du sous-traitant
4. Brief Description of Work / Brève description du travail: Materials and Repair Various Piping Systems
5. a) Will the supplier require access to Controlled Goods? Le fournisseur aura-t-il accès à des marchandises contrôlées? ☑ No Non ☐ Yes Oui
5. b) Will the supplier require access to unclassified military technical data subject to the provisions of the Technical Data Control Regulations? Le fournisseur aura-t-il accès à des données techniques militaires non classifiées qui sont assujetties aux dispositions du Règlement sur le contrôle des données techniques? ☑ No Non ☐ Yes Oui
6. Indicate the type of access required / Indiquer le type d'accès requis
6. a) Will the supplier and its employees require access to PROTECTED and/or CLASSIFIED information or assets? Le fournisseur ainsi que les employés auront-ils accès à des renseignements ou à des biens PROTÉGÉS et/ou CLASSIFIÉS? (Specify the level of access using the chart in Question 7. c) (Préciser le niveau d'accès en utilisant le tableau qui se trouve à la question 7. c) ☑ No Non ☐ Yes Oui
6. b) Will the supplier and its employees (e.g. cleaners, maintenance personnel) require access to restricted access areas? No access to PROTECTED and/or CLASSIFIED information or assets is permitted. Le fournisseur et ses employés (p. ex. nettoyeurs, personnel d'entretien) auront-ils accès à des zones d'accès restreintes? L'accès à des renseignements ou à des biens PROTÉGÉS et/ou CLASSIFIÉS n'est pas autorisé. ☐ No Non ☑ Yes Oui
6. c) Is this a commercial courier or delivery requirement with no overnight storage? S'agit-il d'un contrat de messagerie ou de livraison commerciale sans entreposage de nuit? ☑ No Non ☐ Yes Oui
7. a) Indicate the type of information that the supplier will be required to access / Indiquer le type d'information auquel le fournisseur devra avoir accès

Canada ☐	NATO / OTAN ☐	Foreign / Étranger ☐

7. b) Release restrictions / Restrictions relatives à la diffusion

No release restrictions / Aucune restriction relative à la diffusion ☐	All NATO countries / Tous les pays de l'OTAN ☐	No release restrictions / Aucune restriction relative à la diffusion ☐
Not releasable / À ne pas diffuser ☐		
Restricted to: / Limité à : ☐	Restricted to: / Limité à : ☐	Restricted to: / Limité à : ☐
Specify country(ies): / Préciser le(s) pays :	Specify country(ies): / Préciser le(s) pays :	Specify country(ies): / Préciser le(s) pays :

7. c) Level of information / Niveau d'information

PROTECTED A / PROTÉGÉ A ☐	NATO UNCLASSIFIED / NATO NON CLASSIFIÉ ☐	PROTECTED A / PROTÉGÉ A ☐
PROTECTED B / PROTÉGÉ B ☐	NATO RESTRICTED / NATO DIFFUSION RESTREINTE ☐	PROTECTED B / PROTÉGÉ B ☐
PROTECTED C / PROTÉGÉ C ☐	NATO CONFIDENTIAL / NATO CONFIDENTIEL ☐	PROTECTED C / PROTÉGÉ C ☐
CONFIDENTIAL / CONFIDENTIEL ☐	NATO SECRET / NATO SECRET ☐	CONFIDENTIAL / CONFIDENTIEL ☐
SECRET / SECRET ☐	COSMIC TOP SECRET / COSMIC TRÈS SECRET ☐	SECRET / SECRET ☐
TOP SECRET / TRÈS SECRET ☐		TOP SECRET / TRÈS SECRET ☐
TOP SECRET (SIGINT) / TRÈS SECRET (SIGINT) ☐		TOP SECRET (SIGINT) / TRÈS SECRET (SIGINT) ☐

Government of Canada / Gouvernement du Canada

Contract Number / Numéro du contrat
W0134-15CYNP
Security Classification / Classification de sécurité UNCLASSIFIED

PART A (continued) / PARTIE A (suite)

8. Will the supplier require access to PROTECTED and/or CLASSIFIED COMSEC information or assets? — ☑ No / Non ☐ Yes / Oui
Le fournisseur aura-t-il accès à des renseignements ou à des biens COMSEC désignés PROTÉGÉS et/ou CLASSIFIÉS?
If Yes, indicate the level of sensitivity:
Dans l'affirmative, indiquer le niveau de sensibilité :

9. Will the supplier require access to extremely sensitive INFOSEC information or assets? — ☑ No / Non ☐ Yes / Oui
Le fournisseur aura-t-il accès à des renseignements ou à des biens INFOSEC de nature extrêmement délicate?

Short Title(s) of material / Titre(s) abrégé(s) du matériel :
Document Number / Numéro du document :

PART B - PERSONNEL (SUPPLIER) / PARTIE B - PERSONNEL (FOURNISSEUR)

10. a) Personnel security screening level required / Niveau de contrôle de la sécurité du personnel requis

☑ RELIABILITY STATUS / COTE DE FIABILITÉ	☐ CONFIDENTIAL / CONFIDENTIEL	☐ SECRET / SECRET	☐ TOP SECRET / TRÈS SECRET
☐ TOP SECRET – SIGINT / TRÈS SECRET – SIGINT	☐ NATO CONFIDENTIAL / NATO CONFIDENTIEL	☐ NATO SECRET / NATO SECRET	☐ COSMIC TOP SECRET / COSMIC TRÈS SECRET
☐ SITE ACCESS / ACCÈS AUX EMPLACEMENTS			

Special comments:
Commentaires spéciaux : _____

NOTE: If multiple levels of screening are identified, a Security Classification Guide must be provided.
REMARQUE : Si plusieurs niveaux de contrôle de sécurité sont requis, un guide de classification de la sécurité doit être fourni.

10. b) May unscreened personnel be used for portions of the work? — ☑ No / Non ☐ Yes / Oui
Du personnel sans autorisation sécuritaire peut-il se voir confier des parties du travail?
If Yes, will unscreened personnel be escorted? — ☑ No / Non ☐ Yes / Oui
Dans l'affirmative, le personnel en question sera-t-il escorté?

PART C - SAFEGUARDS (SUPPLIER) / PARTIE C - MESURES DE PROTECTION (FOURNISSEUR)

INFORMATION / ASSETS / RENSEIGNEMENTS / BIENS

11. a) Will the supplier be required to receive and store PROTECTED and/or CLASSIFIED information or assets on its site or premises? — ☑ No / Non ☐ Yes / Oui
Le fournisseur sera-t-il tenu de recevoir et d'entreposer sur place des renseignements ou des biens PROTÉGÉS et/ou CLASSIFIÉS?

11. b) Will the supplier be required to safeguard COMSEC information or assets? — ☑ No / Non ☐ Yes / Oui
Le fournisseur sera-t-il tenu de protéger des renseignements ou des biens COMSEC?

PRODUCTION

11. c) Will the production (manufacture, and/or repair and/or modification) of PROTECTED and/or CLASSIFIED material or equipment occur at the supplier's site or premises? — ☑ No / Non ☐ Yes / Oui
Les installations du fournisseur serviront-elles à la production (fabrication et/ou réparation et/ou modification) de matériel PROTÉGÉ et/ou CLASSIFIÉ?

INFORMATION TECHNOLOGY (IT) MEDIA / SUPPORT RELATIF À LA TECHNOLOGIE DE L'INFORMATION (TI)

11. d) Will the supplier be required to use its IT systems to electronically process, produce or store PROTECTED and/or CLASSIFIED information or data? — ☑ No / Non ☐ Yes / Oui
Le fournisseur sera-t-il tenu d'utiliser ses propres systèmes informatiques pour traiter, produire ou stocker électroniquement des renseignements ou des données PROTÉGÉS et/ou CLASSIFIÉS?

11. e) Will there be an electronic link between the supplier's IT systems and the government department or agency? — ☑ No / Non ☐ Yes / Oui
Disposera-t-on d'un lien électronique entre le système informatique du fournisseur et celui du ministère ou de l'agence gouvernementale?

Government of Canada / Gouvernement du Canada

Contract Number / Numéro du contrat
W0184-15CYNP
Security Classification / Classification de sécurité
UNCLASSIFIED

PART C - (continued) / PARTIE C - (suite)

For users completing the form manually use the summary chart below to indicate the category(ies) and level(s) of safeguarding required at the supplier's site(s) or premises.
Les utilisateurs qui remplissent le formulaire manuellement doivent utiliser le tableau récapitulatif ci-dessous pour indiquer, pour chaque catégorie, les niveaux de sauvegarde requis aux installations du fournisseur.

For users completing the form online (via the internet), the summary chart is automatically populated by your responses to previous questions.
Dans le cas des utilisateurs qui remplissent le formulaire en ligne (par Internet), les réponses aux questions précédentes sont automatiquement saisies dans le tableau récapitulatif.

SUMMARY CHART / TABLEAU RÉCAPITULATIF

Category / Catégorie	PROTECTED / PROTÉGÉ			CLASSIFIED / CLASSIFIÉ			NATO				COMSEC					
	A	B	C	CONFIDENTIAL / CONFIDENTIEL	SECRET	TOP SECRET / TRÈS SECRET	NATO RESTRICTED / NATO DIFFUSION RESTREINTE	NATO CONFIDENTIAL / NATO CONFIDENTIEL	NATO SECRET	COSMIC TOP SECRET / COSMIC TRÈS SECRET	PROTECTED / PROTÉGÉ: A	B	C	CONFIDENTIAL / CONFIDENTIEL	SECRET	TOP SECRET / TRÈS SECRET
Information / Assets / Renseignements / Biens																
Production																
IT Media / Support TI																
IT Link / Lien électronique																

12. a) Is the description of the work contained within this SRCL PROTECTED and/or CLASSIFIED?
La description du travail visé par la présente LVERS est-elle de nature PROTÉGÉE et/ou CLASSIFIÉE?

☑ No / Non ☐ Yes / Oui

If Yes, classify this form by annotating the top and bottom in the area entitled "Security Classification".
Dans l'affirmative, classifier le présent formulaire en indiquant le niveau de sécurité dans la case intitulée « Classification de sécurité » au haut et au bas du formulaire.

12. b) Will the documentation attached to this SRCL be PROTECTED and/or CLASSIFIED?
La documentation associée à la présente LVERS sera-t-elle PROTÉGÉE et/ou CLASSIFIÉE?

☑ No / Non ☐ Yes / Oui

If Yes, classify this form by annotating the top and bottom in the area entitled "Security Classification" and indicate with attachments (e.g. SECRET with Attachments).
Dans l'affirmative, classifier le présent formulaire en indiquant le niveau de sécurité dans la case intitulée « Classification de sécurité » au haut et au bas du formulaire et indiquer qu'il y a des pièces jointes (p. ex. SECRET avec des pièces jointes).