REQUEST FOR QUOTATIONS

Title: **West Village Energy Centre – Hot Water Boilers**

Reference No.: **1220-040-2016-043**

FOR THE SUPPLY OF GOODS AND SERVICES

(General Services)

TABLE OF CONTENTS

REQUEST FOR QUOTATIONS

1. INTRODUCTION

The City of Surrey (the "City") invites contractors to provide a quotation on the form attached as Schedule B to Attachment 1 (the "Quotation") for the supply of the goods (if any) and/or services described in Schedule A to Attachment 1 (the "Goods and Services"). The description of the Goods and Services sets out the minimum requirements of the City. A person that submits a Quotation (the "Contractor") should prepare a Quotation that meets the minimum requirements, and may as it may choose, in addition, also include goods, services or terms that exceed the minimum requirements.

2. ADDRESS FOR DELIVERY

A Quotation should be labelled with the Contractor's name, RFQ title and number. A Quotation should be submitted in the form attached to this RFQ as Schedule B – Quotation.

The Contractor may submit a Quotation either by email or in a hard copy, as follows:

(a) Email

If the Contractor chooses to submit by email, the Contractor should submit the Quotation electronically in a single pdf file to the City by email at: purchasing@surrey.ca.

PDF emailed Quotations are preferred and the City will confirm receipt of emails. Note that the maximum file size the City can receive is 10Mb. If sending large email attachments, Contractors should phone to confirm receipt. A Contractor bears all risk that the City's equipment functions properly so that the City receives the Quotation.

(b) Hard Copy

If the Contractor chooses NOT to submit by email, the Contractor should submit one original unbound Quotation and one (1) copy (two (2) in total) which should be delivered to the City at the office of:

Name: Richard D. Oppelt, Purchasing Manager
at the following location:

Address: Surrey City Hall
Finance & Technology Department – Purchasing Section
Reception Counter, 5th Floor West
13450 – 104 Avenue, Surrey, B.C., Canada, V3T 1V8

3. DATE

The City would prefer to receive Quotations on or before **April 11, 2016**. The City's office hours are 8:30 a.m. to 4:00 p.m., Monday to Friday, except statutory holidays.

4. INQUIRIES

All inquiries related to this RFQ should be directed in writing to the person named below (the "**City Representative**"). Information obtained from any person or source other than the City Representative may not be relied upon.

Name:	Richard D. Oppelt, Purchasing Manager
E-mail:	purchasing@surrey.ca
Reference:	1220-040-2016-043

5. ADDENDA

If the City determines that an amendment is required to this RFQ, the City's Representative will issue a written addendum by posting it on the BC Bid Website at www.bcbid.gov.bc.ca (the "BC Bid Website") and the City Website at www.surrey.ca (the "City Website") that will form a part of this RFQ. It is the responsibility of Contractor to check the BC Bid Website and the City Website for addenda. The only way this RFQ may be added to, or amended in any way, is by a formal written addendum. No other communication, whether written or oral, from any person will affect or modify the terms of this RFQ or may be relied upon by any Contractor. By delivery of a Quotation, the Contractor is deemed to have received, accepted and understood the entire RFQ, including any and all addenda.

6. NO CONTRACT

This RFQ is simply an invitation for quotations (including prices and terms) for the convenience of all parties. It is not a tender and no obligations of any kind will arise from this RFQ or the submission of Quotations. The City may negotiate changes to any terms of a Quotation, including terms in Attachment 1 and Schedules A and B and including prices, and may negotiate with one or more Contractors or may at any time invite or permit the submission of quotations (including prices and terms) from other parties who have not submitted Quotations.

7. ACCEPTANCE

A Quotation will be an offer to the City which the City may accept at any time by signing the copy of the Quotation and delivering it to the Contractor. A Quotation is not accepted by the City unless and until both the authorized signatory and the purchasing representative have signed on behalf of the City. Delivery of the signed Quotation by the City may be by fax or pdf email.

8. CONTRACTOR'S EXPENSES

Contractors are solely responsible for their own expenses in preparing and submitting Quotations, and for any meetings, negotiations or discussions with the City or its representatives and consultants, relating to or arising from the RFQ. The City will not be liable to any Contractor for any claims, whether for costs, expenses, losses or damages, or loss of anticipated profits, incurred by the Contractor in preparing and submitting a Quotation, or participating in negotiations for a contract, or other activity related to or arising out of this RFQ.

9. CONTRACTOR'S QUALIFICATIONS

By submitting a Quotation, a Contractor represents that it has the expertise, qualifications, resources, and relevant experience to supply the Goods and Services.

10. CONFLICT OF INTEREST

A Contractor must disclose in its Quotation any actual or potential conflicts of interest and existing business relationships it may have with the City, its elected or appointed officials or employees. The City may rely on such disclosure.

11. SOLICITATION OF COUNCIL MEMBERS, CITY STAFF AND CITY CONSULTANTS

Contractors and their agents will not contact any member of the City Council, City staff or City consultants with respect to this RFQ, other than the contact person named in Section 4, at any time prior to the award of a contract or the cancellation of this RFQ.

12. CONFIDENTIALITY

All Quotations become the property of the City and will not be returned to the Contractor. All Quotations will be held in confidence by the City unless otherwise required by law. Contractors should be aware the City is a "public body" defined by and subject to the *Freedom of Information and Protection of Privacy Act* of British Columbia.

13. SIGNATURE

The legal name of the person or firm submitting the Quotation should be inserted in the Quotation. The Quotation should be signed by a person authorized to sign on behalf of the Contractor and include the following:

(a) If the Contractor is a corporation then the full name of the corporation should be included, together with the names of authorized signatories. The Quotation should be executed by all of the authorized signatories or by one or more of them provided that a copy of the corporate resolution authorizing those persons to execute the Quotation on behalf of the corporation is submitted;

(b) If the Contractor is a partnership or joint venture then the name of the partnership or joint venture and the name of each partner or joint venturer should be included, and each partner or joint venturer should sign personally (or, if one or more person(s) have signing authority for the partnership or joint venture, the partnership or joint venture should provide evidence to the satisfaction of the City that the person(s) signing have signing authority for the partnership or joint venture). If a partner or joint venturer is a corporation then such corporation should sign as indicated in subsection (a) above; or

(c) If the Contractor is an individual, including a sole proprietorship, the name of the individual should be included.

14. MULTIPLE CONTRACTORS

The City reserves the right and discretion to divide up the Goods and Services, either by scope, geographic area, or other basis as the City may decide, and to select one or more Contractors to enter into discussions with the City for one or more Contracts to perform a portion or portions of the Goods and Services. If the City exercises its discretion to divide up the Goods and Services, the City will do so reasonably having regard for the RFQ and the basis of Quotations.

In addition to any other provision of this RFQ, Quotations may be evaluated on the basis of advantages and disadvantages to the City that might result or be achieved from the City dividing up the Goods and Services and entering into one or more Contracts with one or more Contractors.

15. PROCUREMENT AND INSTALLATION

The procurement date of the Boilers will be based on the estimated construction schedule as shown below. Contractors should provide methods used for price adjustments, if any, at time of procurement.

Item	**Tentative Date**
Boiler Selection	May 2016
Issue Tender for Construction Contractor	September 2016
Award Contract to Construction Contractor	November 2016
Boiler Procurement	December 2016
Completion of District Energy Centre	Spring 2018

The installation and connections of the Boilers will be procured separately to a qualified Construction Contractor. The Construction Contractor will be responsible for the receipt, storage, handling, and installation of the Boilers from the moment the Boilers are delivered on site. The approved shop drawings of the Boilers will be forwarded to the Construction Contractor for their information and use.

The City reserves the right to procure the Boilers directly or to have the Construction Contractor procure the Boilers.

ATTACHMENT 1

DRAFT QUOTATION AGREEMENT

Title: **West Village Energy Centre – Hot Water Boilers**

Reference No.: **1220-040-2016-043**

FOR THE SUPPLY OF GOODS AND SERVICES

TABLE OF CONTENTS

DRAFT QUOTATION AGREEMENT

DRAFT QUOTATION AGREEMENT

Reference RFQ Title: **West Village Energy Centre – Hot Water Boilers**

THIS AGREEMENT dated for reference this _____ day of _____, 201_.

AGREEMENT NO. 1220-040-2016-043

BETWEEN:

CITY OF SURREY
13450 - 104 Avenue
Surrey, B.C., Canada, V3T 1V8

(the "**City**")

AND:

_____
(Insert Full Legal Name and Address of Contractor)

(the "**Contractor**")

WHEREAS the City wishes to engage the Contractor to provide Goods and Services and the Contractor agrees to provide Goods and Services.

THEREFORE in consideration of the payment of one ($1.00) dollar and other good and valuable consideration paid by each of the parties to the other (the receipt and sufficiency of which is hereby acknowledged) the City and the Contractor agree as follows:

1. DEFINITIONS AND INTERPRETATION

1.1 In these General Terms and Conditions:

(a) "Agreement" means this agreement and all schedules attached hereto;
(b) "Calendar Year" means the time period from January 1st to December 31st;
(c) "City" means the City of Surrey;
(d) "Contractor" means a contractor whose Quotation has been accepted by the City and who is providing the Goods and Services under this Agreement;
(e) "Disbursements" means the actual out-of-pocket costs and expenses as identified in Section B to Attachment 1, which the Contractor incurs in providing the Goods and Services;
(f) "Fees" means the price set out in Section B to Attachment 1, for the provision of the Goods and Services, unless otherwise agreed by the parties in writing, and includes all taxes;
(g) "Goods" means the equipment or materials (if any) as described generally in Schedule A, to Attachment 1, including anything and everything required to be done for the fulfilment and completion of this Agreement;
(h) "Indemnitees" has the meaning described in Section 11.2;
(i) "RFQ" means the Request for Quotations;

(j) "Services" means the services as described generally in Schedule A, to Attachment 1 including anything and everything required to be done for the fulfilment and completion of this Agreement;
(k) "Term" has the meaning described in Section 3.1; and
(l) "Year of the Term" as used herein shall mean each twelve-month period commencing on (START DATE).

1.2 This Agreement may be modified only by express and specific written agreement. In the event of a conflict between the provisions of any documents listed below, then the documents shall govern and take precedence in the following order:
(a) this Agreement;
(b) Addenda (if any);
(c) the RFQ; and
(d) other terms, if any, that are agreed to by the parties in writing.

1.3 The following attached Schedules are a part of this Agreement:

Schedule A – Specifications of Goods & Scope of Services; and
Schedule B – Quotation.

2. GOODS AND SERVICES

2.1 The Contractor covenants and agrees with the City to provide the Goods and Services in accordance with this Agreement. The Goods and Services provided will meet the specifications and scope set out in Schedule A, to Attachment 1, and as described in Schedule B, to Attachment 1.

2.2 The City may from time to time, by written notice to the Contractor, make changes in the specifications of Goods and scope of Services. The Fees will be increased or decreased by written agreement of the City and the Contractor according to the rates set out in Schedule B, to Attachment 1.

2.3 The Contractor will, if required in writing by the City, provide additional goods or services. The terms of this Agreement will apply to any additional goods or services, and the fees for additional goods or services will generally correspond to the fees as described in Schedule B, to Attachment 1. The Contractor will not provide any additional goods or services in excess of the specification of Goods and scope of Services requested in writing by the City.

2.4 The Contractor will perform the Services with that degree of care, skill and diligence normally provided by a qualified and experienced practitioner performing services similar to the Services, and on the understanding that the City is relying on the Contractor's experience and expertise. The Contractor represents that it has the expertise, qualifications, resources, and relevant experience to supply the Goods and Services.

2.5 The Contractor will deliver the Goods free and clear of all liens and encumbrances in the manner and to the destination stipulated. In the event of the Contractor's failure to meet this condition, the Contractor will, on written notice from the City, forthwith return all monies paid by the City on account of the Goods and in addition the City may by written notice terminate this Agreement without liability, and in such event, in addition to the

above, the Contractor will be liable for any and all expenses or losses incurred by the City resulting from such failure.

3. TERM

3.1 The Contractor will provide the Goods and Services for the period commencing on (START DATE) and terminating on (END DATE) (the "Term").

4. TIME

4.1 Time is of the essence.

5. FEES AND DISBURSEMENTS

5.1 The City will pay the Fees and Disbursements to the Contractor in accordance with this Agreement. Payment by the City of the Fees and Disbursements will be full payment for the Goods and Services and the Contractor will not be entitled to receive any additional payment from the City.

5.2 For greater certainty, costs of general management, non-technical supporting services and general overhead are deemed to be covered by the Fees and will not be subject to additional payment by the City. The Fees shall also include without limitation all costs of boxing, packing, crating, and loading and unloading the Goods at the prescribed destination.

6. PAYMENT

6.1 Subject to any contrary provisions set out in Schedule B, to Attachment 1, the Contractor will submit a monthly invoice to the City requesting payment of the portion of the Fees and Disbursements relating to the Goods and Services provided in the previous month. Invoices must include the Contractor's name, address and telephone number, the City's purchase order number <insert purchase order or contract reference number> , the Contractor's invoice number, the names, charge-out rates and number of hours worked in the previous month of all employees of the Contractor that have performed Services during the previous month; the percentage of Services completed and Goods delivered at the end of the previous month; the total budget for the Goods and Services and the amount of the budget expended to the date of the invoice; taxes (if any); and grand total of the invoice.

6.2 The Contractor will on request from the City provide receipts and invoices for all Disbursements claimed.

6.3 If the City reasonably determines that any portion of an invoice is not payable, then the City will so advise the Contractor.

6.4 The City will pay the portion of an invoice which the City determines is payable within 30 days of the receipt of the Invoice, except the City may hold back from payments 10% of the amount the City determines is payable to the Contractor until such time as the Contractor provides its final report to the City; and

6.5 If the Contractor offers the City a cash discount for early payment, then the City may, at the City's sole discretion, pay the portion of an Invoice which the City determines is payable at any time after receipt of the Invoice.

Invoices will be submitted by the Contractor by mail to:

Name: _____

Address: _____
_____
_____

6.6 Unless otherwise provided, all dollar amounts referred to in this Agreement are in lawful money of Canada.

6.7 If the Contractor is a non-resident of Canada and does not provide to the City a waiver of regulation letter, the City will withhold and remit to the appropriate governmental authority the greater of:
(a) 15% of each payment due to the Contractor; or
(b) the amount required under applicable tax legislation.

7. USE OF WORK PRODUCT

7.1 The Contractor hereby sells, assigns and transfers to the City the right, title and interest required for the City to use and receive the benefit of all the reports, drawings, plans, designs, models, specifications, computer software, concepts, products, designs or processes or other such work product produced by or resulting from the Services rendered by the Contractor. This section does not give the City the right to sell any such work product to any third party and the City may sell the work product only with the prior approval of the Contractor. The Contractor may retain copies of the work product.

8. PERSONNEL AND SUBCONTRACTORS

8.1 The Contractor will provide only personnel who have the qualifications, experience and capabilities to provide the Goods and perform the Services.

8.2 The Contractor will provide the Goods and Services using the personnel and sub-contractors as may be listed in the Quotation and the Contractor will not remove any such listed personnel or sub-contractors from the Services without the prior written approval of the City.

8.3 If the City reasonably objects to the performance, qualifications, experience or suitability of any of the Contractor's personnel or sub-contractors then the Contractor will, on written request from the City, replace such personnel or sub-contractors.

8.4 Except as provided for in Section 8.2, the Contractor will not engage any personnel or sub-contractors, or sub-contract or assign its obligations under this Agreement, in whole or in part, without the prior written approval of the City.

8.5 The Contractor will preserve and protect the rights of the City with respect to any Services performed under sub-contract and incorporate the conditions of this Agreement into all

sub-contracts as necessary to preserve the rights of the City under this Agreement. The Contractor will be as fully responsible to the City for acts and omissions of sub-contractors and of persons directly or indirectly employed by them as for acts and omissions of persons directly employed by the Contractor.

9. LIMITED AUTHORITY

9.1 The Contractor is not and this Agreement does not render the Contractor an agent or employee of the City, and without limiting the above, the Contractor does not have authority to enter into any contract or reach any agreement on behalf of the City, except for the limited purposes as may be expressly set out in this Agreement, or as necessary in order to provide the Goods and Services. The Contractor will make such lack of authority clear to all persons with whom the Contractor deals in the course of providing the Goods and Services. Every vehicle used by the Contractor in the course of providing the Goods and Services shall identify the Contractor by name and telephone number.

9.2 The Contractor is an independent contractor. This Agreement does not create the relationship of employer and employee, a partnership, or a joint venture. The City will not control or direct the details, means or process by which the Contractor performs the Services. The Contractor will determine the number of days and hours of work required to properly and completely perform the Services. The Contractor is primarily responsible for performance of the Goods and Services and may not delegate or assign any Services to any other person except as provided for in section 8.4. The Contractor will be solely liable for the wages, fringe benefits, work schedules and work conditions of any partners, employees or sub-contractors.

10. CONFIDENTIALITY AND DISCLOSURE OF INFORMATION

10.1 Except as provided for by law or otherwise by this Agreement, the Contractor will keep strictly confidential any information supplied to, obtained by, or which comes to the knowledge of the Contractor as a result of the provision of the Goods or performance of the Services and this Agreement, and will not, without the prior express written consent of the City, publish, release, disclose or permit to be disclosed any such information to any person or corporation, either before, during or after termination of this Agreement, except as reasonably required to complete the Goods and Services.

10.2 The Contractor acknowledges that the City is subject to the *Freedom of Information and Protection of Privacy Act* of British Columbia and agrees to any disclosure of information by the City required by law.

10.3 The Contractor agrees to return to the City all of the City's property at the completion of this Agreement, including any and all copies or originals of reports provided by the City.

11. WARRANTIES

11.1 The Contractor warrants that the Goods shall be free from defects in design, materials, workmanship and title, shall conform in all respects to the terms of this Agreement, shall be fit and suitable and perform satisfactorily for the purposes and under the conditions made known to the Contractor by the City or which were reasonably inferable. The Goods shall be at least equal to the higher of national standards or codes (such as, by way of illustration, CSA or ASTM), or standards and codes customarily applicable at the place

where the City will use the Goods. The Goods shall be of the best quality, if no quality is specified. This general warranty is independent of and without prejudice to any specific warranty or service guarantee offered by the Contractor or third party manufacturer or supplier of the Goods in connection with the purpose for which the Goods were purchased. The Contractor shall assign to the City any warranty or service guarantee offered by a third party manufacturer or supplier of the Goods. Notwithstanding this assignment, if at any time up to one year from the date of delivery or installation (if applicable) the City determines the Goods or any part do not conform to these warranties, the City shall notify the Contractor within a reasonable time after such discovery, and the Contractor shall then promptly correct such nonconformity at the Contractor's expense. Goods used to correct a nonconformity shall be similarly warranted for one year from the date of installation. The Contractor's liability shall extend to all liabilities, losses, damages, claims and expenses incurred by the City caused by any breach of any of the above warranties.

11.2 The Contractor warrants and guarantees that Goods and Services delivered under this Agreement do not infringe any valid patent, copyright or trademark, foreign or domestic, owned or controlled by any other corporation, firm or person, and agrees to indemnify and save harmless the City and all of its elected and appointed officials, officers, employees, servants, representatives and agents (collectively the "Indemnitees"), from and against any and all claims, demands, causes of action, suits, losses, damages and costs, liabilities, expenses and judgments (including all actual legal costs) by reason of any claim, action or litigation arising out of any alleged or actual infringement of any patent, copyright or trademark, foreign or domestic, relating to the Goods and Services supplied under this Agreement.

12. INSURANCE AND DAMAGES

12.1 The Contractor will indemnify and save harmless the Indemnitees from and against all claims, demands, causes of action, suits, losses, damages and costs, liabilities, expenses and judgments (including all actual legal costs) for damage to or destruction or loss of property, including loss of use, and injury to or death of any person or persons which any of the Indemnitees incur, suffer or are put to arising out of or in connection with any failure, breach or non-performance by the Contractor of any obligation of this Agreement, or any wrongful or negligent act or omission of the Contractor or any employee or agent of the Contractor.

12.2 The indemnities described in Sections 11.2, 12.1 and 18.3 will survive the termination or completion of this Agreement and, notwithstanding such termination or completion, will continue in full force and effect for the benefit of the Indemnitees.

12.3 The Contractor will, without limiting its obligations or liabilities and at its own expense, provide and maintain throughout this Agreement the following insurances in forms and amounts acceptable to the City from insurers licensed to conduct business in Canada:

(a) Wrap-up Commercial General Liability insurance on an occurrence basis, in an amount not less than five million ($5,000,000) dollars inclusive per occurrence against death, bodily injury and property damage arising directly or indirectly out of the work or operations of the Contractor, subcontractors, consultants, their employees and agents. The insurance will include cross liability and severability of interests such that the coverage shall apply in the same manner and to the same

extent as though a separate policy had been issued to each insured. The insurance will include, but not be limited to: premises and operators liability, broad form products and completed operations, owners and contractors protective liability, blanket contractual, employees as additional insureds, broad form property damage, non-owned automobile, contingent employers liability, broad form loss of use, personal injury, and incidental medical malpractice. The City will be added as additional insured;

(b) automobile liability insurance on all vehicles owned, operated or licensed in the name of the Contractor in an amount not less than three million ($3,000,000) dollars per occurrence for bodily injury, death and damage to property; and

(c) contractors' equipment insurance in an all risks form covering construction machinery and equipment used for the performance of the Services.

(d) Builder's Risk Insurance

i. The Contractor will procure and maintain a Builders Risk Policy in an amount not less than the Contract Price, covering the replacement value of property insured. This policy shall remain in force until Substantial Completion, or until the City of Surrey has arranged to have this completed project added to their property policy.

ii. Deductibles per occurrence:

(a) $25,000 deductible with respect to Flood perils;
(b) $10,000 for testing and commissioning;
(c) $10,000 for direct damage resulting from all other insured perils.
(d) 10% Earthquake minimum $100,000

iii. For property insured under the Builders Risk Policy stored at an off site location or in transit, a limit of not less than the total of all values stored at any single location or the value of the largest single shipment transported by land to the Site if such shipment by land is not covered by marine cargo insurance.

iv. Either the Builders Risk Policy, pursuant to its terms or by an endorsement to the Builders Risk Policy, or a separate "Riggers/Hook Liability" policy procured by the Contractor, will cover and insure the full value of material and equipment lifted on Site by cranes during the performance of the Work.

v. Either the Builders Risk Policy, pursuant to its terms or by an endorsement to the Builders Risk Policy, or a separate "Machinery Breakdown Insurance" policy procured by the Contractor will cover testing and commissioning for the full value of material and equipment which has been installed in the permanent position into the project and including for a period of thirty (30) days after testing and commission is complete and the equipment is in operation.

v. All deductibles will be paid by the Contractor, except for claims arising out of damage caused by earthquake or floods (provided that for floods caused

or worsened by the activities of the Contractor, the Contractor shall pay the deductible) and except to the extent that claims arise out of the negligence of the City of Surrey, in which case the City of Surrey will pay only that proportion of the deductible which represents the proportion of contributory fault of the City of Surrey.

12.4 The Contractor will provide the City with evidence of the required insurance prior to the commencement of this Agreement. Such evidence will be in the form of a completed certificate of insurance acceptable to the City. The Contractor will, on request from the City, provide certified copies of all of the Contractor's insurance policies providing coverage relating to the Services, including without limitation any professional liability insurance policies. All required insurance will be endorsed to provide the City with thirty (30) days advance written notice of cancellation or material change restricting coverage. To the extent the City has an insurable interest, the builder's risk policy will have the City as first loss payee. The Contractor will be responsible for deductible amounts under the insurance policies. All of the Contractor's insurance policies will be primary and not require the sharing of any loss by the City or any insurer of the City.

12.5 The Contractor acknowledges that any requirement by the City as to the amount of coverage under any policy of insurance will not constitute a representation by the City that the amount required is adequate and the Contractor acknowledges and agrees that the Contractor is solely responsible for obtaining and maintaining policies of insurance in adequate amounts. The insurance policy coverage limits shall not be construed as relieving the Contractor from responsibility for any amounts which may exceed these limits, for which the Contractor may be legally liable.

12.6 The Contractor shall place and maintain, or cause any of its sub-contractors to place and maintain, such other insurance or amendments to the foregoing policies as the City may reasonably direct.

12.7 The Contractor hereby waives all rights of recourse against the City for loss or damage to the Contractor's property.

13. CITY RESPONSIBILITIES

13.1 The City will, in co-operation with the Contractor, make efforts to make available to the Contractor information, surveys, and reports which the City has in its files and records that relate to the Goods and Services. The Contractor will review any such material upon which the Contractor intends to rely and take reasonable steps to determine if that information is complete or accurate. The Contractor will assume all risks that the information is complete and accurate and the Contractor will advise the City in writing if in the Contractor's judgment the information is deficient or unreliable and undertake such new surveys and investigations as are necessary.

13.2 The City will in a timely manner make all decisions required under this Agreement, examine documents submitted by the Contractor and respond to all requests for approval made by the Contractor pursuant to this Agreement.

13.3 If the City observes or otherwise becomes aware of any fault or defect in the delivery of Goods or the provision of Services, it may notify the Contractor, but nothing in this Agreement will be interpreted as giving the City the obligation to inspect or review the

Contractor's performance with regards to delivering Goods or the performance of the Services.

14. DEFICIENCIES

14.1 The City shall have a reasonable time to inspect and to accept the Goods and Services. The City may reject any Goods or Services not in accordance with this Agreement, whether due to damage resulting from improper packing, loading, unloading or otherwise. The City shall notify the Contractor of rejection of the Goods whereupon the Goods will be held subject to the disposition by the Contractor. Any costs or expenses incurred by the City as a result of the rejection of the Goods or Services are, immediately upon written demand by the City, payable by the Contractor, and may be set off against any payments owing by the City to the Contractor.

14.2 The City may hold back from payments otherwise due to the Contractor up to 150% of a reasonable estimate, as determined by the City, on account of deficient or defective Goods or Services. This holdback may be held, without interest, until replacement Goods are received or such deficiency or defect is remedied.

15. DEFAULT AND TERMINATION

15.1 In the event the Contractor does not deliver the Goods or perform the Services by the date specified in this Agreement, then:

(a) the City reserves the right to terminate this Agreement, in whole or in part, and in the event of such termination no payment will be owing by the City on account of this Agreement and the Contractor will be liable for any and all expenses or loss resulting from such failure or delay and will return all monies paid by the City; or

(b) if the City does not terminate this Agreement for late delivery or performance, the City may deduct and setoff from any payments owing to the Contractor all additional costs the City reasonably incurs on account of the late delivery or performance.

15.2 The City may by written notice at any time cancel this Agreement with respect to Goods which, as of the date of cancellation, have not been shipped.

15.3 The City may at any time and for any reason by written notice to the Contractor terminate this Agreement before the completion of all the Goods and Services, such notice to be determined by the City at its sole discretion. Upon receipt of such notice, the Contractor will perform no further Goods and Services other than the work which is reasonably required to complete the Goods and Services. Despite any other provision of this Agreement, if the City terminates this Agreement before the completion of all the Goods and Services, the City will pay to the Contractor all amounts owing under this Agreement for Goods and Services provided by the Contractor up to and including the date of termination, plus reasonable termination costs in the amount as determined by the City in its sole discretion. Upon payment of such amounts no other or additional payment will be owed by the City to the Contractor, and, for certainty, no amount will be owing on account of lost profits relating to the portion of the Goods and Services not performed or other profit opportunities.

15.4 The City may terminate this Agreement for cause as follows:

(a) If the Contractor is adjudged bankrupt, or makes a general assignment for the benefit of creditors because of its insolvency, or if a receiver is appointed because of its insolvency, the City may, without prejudice to any other right or remedy the City may have, terminate this Agreement by giving the Contractor or receiver or trustee in bankruptcy written notice; or

(b) If the Contractor is in breach of any term or condition of this Agreement, and such breach is not remedied to the reasonable satisfaction of the City within 5 days after delivery of written notice from the City to the Contractor, then the City may, without prejudice to any other right or remedy the City may have, terminate this Agreement by giving the Contractor further written notice.

15.5 If the City terminates this Agreement as provided by Section 15.4 then the City may:

(c) enter into contracts, as it in its sole discretion sees fit, with other persons to complete the Goods and Services;

(d) withhold payment of any amount owing to the Contractor under this Agreement for the performance of the Goods and Services;

(e) set-off the total cost of completing the Goods and Services incurred by the City against any amounts owing to the Contractor under this Agreement, and at the completion of the Goods and Services pay to the Contractor any balance remaining; and

(f) if the total cost to complete the Goods and Services exceeds the amount owing to the Contractor, charge the Contractor the balance, which amount the Contractor will forthwith pay.

16. CURING DEFAULTS

16.1 If the Contractor is in default of any of its obligations under this Agreement, then the City may without terminating this Agreement, upon 5 days written notice to the Contractor, remedy the default and set-off all costs and expenses of such remedy against any amounts owing to the Contractor. Nothing in this Agreement will be interpreted or construed to mean that the City has any duty or obligation to remedy any default of the Contractor.

17. DISPUTE RESOLUTION

17.1 The parties will make reasonable efforts to resolve any dispute, claim, or controversy arising out of this Agreement or related to this Agreement ("Dispute") using the dispute resolution procedures set out in this section.

17.2 Negotiation: The parties will make reasonable efforts to resolve any Dispute by amicable negotiations and will provide frank, candid and timely disclosure of all relevant facts, information and documents to facilitate negotiations.

17.3 Mediation: If all or any portion of a Dispute cannot be resolved by good faith negotiations within 30 days, either party may by notice to the other party refer the matter to mediation. Within 7 days of delivery of the notice, the parties will mutually appoint a mediator. If the parties fail to agree on the appointment of the mediator, then either party may apply to the British Columbia International Commercial Arbitration Centre for appointment of a mediator. The parties will continue to negotiate in good faith to resolve the Dispute with the assistance of the mediator. The place of mediation will be Surrey, British Columbia.

Each party will equally bear the costs of the mediator and other out-of-pocket costs, and each party will bear its own costs of participating in the mediation.

17.4 Litigation: If within 90 days of the request for mediation the Dispute is not settled, or if the mediator advises that there is no reasonable possibility of the parties reaching a negotiated resolution, then either party may without further notice commence litigation.

18. WCB AND OCCUPATIONAL HEALTH AND SAFETY

18.1 The Contractor agrees that it shall, at its own expense, procure and carry, or cause to be procured, carried and paid for, full Workers' Compensation Board coverage for itself and all workers, employees, servants and others engaged in or upon any work or service which is the subject of this Agreement. The Contractor agrees that the City has the unfettered right to set off the amount of the unpaid premiums and assessments for the Workers' Compensation Board coverage against any monies owing by the City to the Contractor. The City shall have the right to withhold payment under this Agreement until the Workers' Compensation Board premiums, assessments or penalties in respect of the work done or service performed in fulfilling this Agreement have been paid in full.

18.2 The Contractor shall provide the City with the Contractor's Workers' Compensation Board registration number and a letter from the Workers' Compensation Board confirming that the Contractor is registered in good standing with the Workers' Compensation Board and that all assessments have been paid to the date thereof prior to the City having any obligations to pay monies under this Agreement.

18.3 Without limiting the generality of any other indemnities granted by the Contractor in this Agreement, the Contractor shall indemnify and hold harmless the City, its elected and appointed officials, employees and agents, from all manner of claims, demands, costs, losses, penalties and proceedings (including all actual legal costs) arising out of or in any way related to unpaid Workers' Compensation Board assessments owing from any person or corporation engaged in the performance of this Agreement or arising out of or in any way related to the failure to observe safety rules, regulations and practices of the Workers' Compensation Board, including penalties levied by the Workers' Compensation Board.

18.4 The Contractor agrees that it is the "prime contractor" for the work as defined in the *Workers' Compensation Act,* R.S.B.C. 1996, c. 492 as amended and will ensure compliance with the *Workers Compensation Act* and Regulations in respect of the workplace. Without limiting its responsibilities under the legislation, the Contractor will coordinate the activities of employers, workers and other persons at the workplace relating to occupational health and safety. The Contractor shall have a safety program acceptable to the Workers' Compensation Board, shall provide first aid services, and shall ensure that all Workers' Compensation Board safety rules and regulations are observed during the performance of this Agreement, not only by the Contractor, but by all sub-contractors, workers, material personnel and others engaged by the Contractor in the performance of this Agreement. The prime contractor shall appoint a qualified coordinator for the purpose of ensuring the coordination of health and safety activities for the workplace. Prior to commencement of Construction, the Contractor shall complete and file a "Construction Notice of Project" with the Workers' Compensation Board and shall provide a copy of the same to the City confirming that the Contractor shall be the prime contractor responsible for coordination of safety and health under Part 3 of the *Workers' Compensation Act* and Part 20 of the WCB Occupational Health and Safety Regulations. That person will be the

person so identified in this Agreement, and the Contractor will advise the City immediately in writing if the name or contact number of the qualified coordinator changes.

18.5 The Contractor will ensure compliance with and conform to all health and safety laws, by-laws or regulations of the Province of British Columbia, including without limitation any regulations requiring installation or adoption of safety devices or appliances.

18.6 The Contractor shall fulfill all its duties, obligations, and responsibilities in such a manner that it ensures the safety of the public and in accordance with the safety regulations of the Workers' Compensation Board and shall install signs and barriers as required to ensure the safety of the public and of its employees in the use of the City facilities.

18.7 The Contractor understands and undertakes to comply with all the WCB Occupational Health and Safety Regulations for hazardous materials and substances, and in particular with the "Workplace Hazardous Materials Information System (WHMIS)" Regulations. All "Material Safety Data Sheets (MSDS)" shall be shipped along with the Goods, materials, products and any future MSDS updates will be forwarded.

19. BUSINESS LICENSE

19.1 The Contractor will obtain and maintain throughout the term of this Agreement a valid City of Surrey business license.

20. GENERAL PROVISIONS FOR GOODS

20.1 Documentation for shipments of Goods from outside Canada shall be provided by a Contractor by airmail and shall include all documents as required by law or customary practice. All packages shall be marked as follows:

> "Upon arrival, please contact customs broker:
> Livingston International Inc.
> Telephone: +1-604-685-3555
> Fax: +1-604-605-8231
> Email: cst19@livingstonintl.com "

20.2 If this Agreement pertains to the fabrication, assembly or other processing of the Goods, representatives of the City shall be permitted free access at all reasonable times for the purpose of inspection, testing or obtaining information as to the progress of the fabrication, assembly or processing.

20.3 The City may require that shop drawings be submitted by the Contractor for review prior to the delivery of the Goods. The City may require that a qualified registered professional engineer stamp and approve a shop drawing prior to submission. Any review of shop drawings by the City will not relieve the Contractor from its obligation to deliver Goods in full compliance with all requirements of this Agreement.

21. COMPLIANCE

21.1 The Contractor will provide the Services in full compliance with all applicable laws, building codes and regulations.

21.2 The Contractor will, as a qualified and experienced practitioner, interpret applicable codes, laws and regulations applicable to the performance of the Services. If an authority having jurisdiction imposes an interpretation which the Contractor could not reasonably have verified or foreseen prior to entering into this Agreement, then the City will pay the additional costs, if any, of making alterations so as to conform to the required interpretation.

22. JURISDICTION OF COUNCIL AND NON-APPROPRIATION

22.1 Nothing in this Agreement limits or abrogates, or will be deemed to limit or abrogate, the jurisdiction of the Council of the City in the exercise of its powers, rights or obligations under any public or private statute, regulation or by-law or other enactment.

22.2 The Contractor recognizes and agrees that the City cannot make financial commitments beyond the City's current fiscal year. The City will annually make bonafide requests for appropriation of sufficient funds to cover all payments covered by this Agreement. If City Council does not appropriate funds, or appropriates insufficient funds, the City will notify the Contractor of its intention to terminate or reduce the services so affected within 30 days after the non-appropriation becomes final. Such termination shall take effect 30 days from the date of notification, shall not constitute an event of default and shall relieve the City, its officers and employees, from any responsibility or liability for the payment of any further amounts under this Agreement.

23. WAIVER

23.1 Any failure of the City at any time or from time to time to enforce or require the strict keeping or performance of any of the terms and conditions contained in this Agreement shall not constitute a waiver of the terms and conditions and shall not affect or impair the terms or conditions in any way or the City's right at any time to avail itself of any remedies as the City may have for any breach of the terms and conditions.

24. APPLICABLE LAW

24.1 This Agreement shall be governed by and construed in accordance with the laws of the Province of British Columbia. The City and the Contractor accept the jurisdiction of the courts of British Columbia and agree that any action under this Agreement shall be brought in such courts.

25. NOTICES

25.1 Any notice, report or other document that either party may be required or may wish to give to the other must be in writing, unless otherwise expressly provided for, and will be deemed to be validly given to and received by the addressee:

(a) by hand, on delivery;
(b) by facsimile, on transmission; or
(c) by mail, five calendar days after posting.

25.2 The addresses for delivery will be as shown in the Quotation. In addition, the City may give notice to the Contractor by email at the Contractor's email address as shown in the

Quotation, which email will be deemed to be validly given and received by the Contractor on transmission. The Contractor may not give notice to the City by email.

26. MERGER AND SURVIVAL

26.1 The representations, agreements, covenants and obligations set out in this Agreement shall survive the delivery of the Goods and performance of the Services and payment of the Fees and Disbursements.

27. ENTIRE AGREEMENT

27.1 This Agreement, including the Schedules and any other documents expressly included by reference in this Agreement, contains the entire agreement of the parties regarding the provision of the Goods and Services, and no understandings or agreements, oral or otherwise, exist between the parties except as expressly set out in this Agreement. This Agreement supersedes and cancels all previous agreements between the parties relating to the Goods and Services.

27.2 In the event that the Contractor issues an invoice, packing slip, sales receipt, or any like document to the City, the City accepts the document on the express condition that any terms and conditions in it which constitute terms and conditions which are in addition to or which establish conflicting terms and conditions to those set out in this Agreement are expressly rejected by the City.

28. SIGNATURE

28.1 This Agreement shall be signed by a person authorized to sign on behalf of the Contractor.

28.2 This Agreement may be executed in or one or more counterparts all of which when taken together will constitute one and the same Agreement, and one or more of the counterparts may be delivered by fax transmission or as a PDF file.

29. Brand Names:

29.1 Unless otherwise stated, if, and wherever, the specifications state a brand name, a make, the name of manufacturer, a trade name or a vendor catalogue number, it is for the purpose of establishing a grade or quality of material only. It is not intended to rule out the use of other equivalent materials or equipment. If, however, Goods other than that specified are proposed in a Quotation, the Contractor is to include the name of such Goods, its manufacturer, any trade name and any applicable vendor catalogue number, and the City may request that the Contractor provide specific evidence of equivalency. Evidence of quality in the form of samples may be requested.

30. FUEL EMISSIONS DATA

30.1 As of January 1, 2013, the City requires contractors to report the quantity of fuel used to operate vehicles, equipment and machinery as part of the delivery of operating (non-capital) services defined as “Traditional Services” in the Carbon Neutral Workbook.v2 as part of the BC Climate Action Charter. Typical data to be submitted would include the following for each calendar year:

- Type of vehicle/vehicle class used to deliver the contracted services;
- Type of fuel consumed by each vehicle class; and
- Litres of fossil fuels consumed in relation to the service delivered under the contract.

30.2 Fuel consumption associated with the provision of these services must be provided to the City within thirty (30) days of the end of the calendar year or the termination of the contract, whichever is earlier. An excel-based Fuel Use Reporting template will be provided by the City. The most current version of the workbook is located on the Climate Action Toolkit website for your reference at http://toolkit.bc.ca/carbon-neutral-government

31. NON ROAD DIESEL ENGINE EMISSION REGULATION

31.1 If you **own, operate**, or **hire** diesel powered equipment, Metro Vancouver's Non-Road Diesel Engine Emissions Regulation Bylaw No 1161, 2012 (the Bylaw) may impact your business. The Bylaw came into force on January 1, 2012 and requires owners or operators to register and label Tier 0 and Tier 1 non-road diesel engines that are 25 horsepower (19kW) or greater in order to operate within Metro Vancouver. Tier 0 engines must have **90 days** of registration purchased by **December 31, 2014** or the engine(s) will be **prohibited from ever operating** in Metro Vancouver. To be fully registered an owner/operator must:

· provide required information (machine/engine/company details),
· pay fees, and
· label machines with Metro Vancouver issued registration number.

31.2 Other important information:

· Non-road Tier 1 engines must be registered and pay fees to operate,
· Failure to comply with the Bylaw may result in fines up to $200,000, and
· 80% of fees paid into the program can be recovered.

31.3 The City may, at its discretion, give preference to equipment that meets higher emission standards.

31.4 Contact Metro Vancouver staff at 604-451-6655, visit www.metrovancouver.org/nonroaddiesel or email nonroaddiesel@metrovancouver.org for more information about the Bylaw, the rebate program, and for assistance with the registration process.

32. ENUREMENT

32.1 This Agreement shall enure to the benefit of and be binding upon the respective successors and permitted assigns of the City and the Contractor.

IN WITNESS WHEREOF the parties hereto have executed this Agreement on the day and year first above written.

CITY OF SURREY
by its authorized signatory:

_____
(Signature of Authorized Signatory)

_____
(Print Name and Position of Authorized Signatory)

< ☐ NAME OF CONTRACTOR>

I/We have the authority to bind the Contractor.

_____
(Legal Name of Contractor)

_____	_____
(Signature of Authorized Signatory)	(Signature of Authorized Signatory)
_____	_____
(Print Name and Position of Authorized Signatory)	(Print Name and Position of Authorized Signatory)

SCHEDULE A

SPECIFICATIONS OF GOODS AND SCOPE OF SERVICES

1. PURPOSE

The City invites Quotations from experienced and qualified Contractors for the provision of everything required including all skilled labour, tools, materials, equipment for the **West Village Energy Centre Hot Water Boilers** and any other requirements.

2. SPECIFICATIONS OF GOODS AND SCOPE OF SERVICES

Services to be performed by the Contractor should include but are not limited to the following:

The project is located in the City of Surrey, British Columbia, and generally includes the supply, and commissioning of multiple complete hot water boiler packages. The boilers will be a forced draft water tube design. The boilers will be packaged with a natural gas fuel fired fully modulating burner, complete with controls, burner management system, and other accessories as described in the specifications included as Schedule A-1. The boilers shall be capable of operating to provide hot water continuously at a supply temperature of up to 115 ºC (240 ºF) at a minimum operating pressure of 275 kPag (40 psig). The boilers design pressure (pressure relief setting) will be 1103 kPa (160 psig).

The boilers that will be installed in this Energy Centre will form the primary means of providing heating to the buildings connected to the district heating system. The Energy Centre will be located near 104 Avenue and 133 Street in Surrey, BC.

The scope also includes scheduled maintenance contracts of various durations (1, 2 or 5 years).

Refer to the detailed specifications in Schedule A-1.

SCHEDULE A-1

HOT WATER BOILER SPECIFICATION

West Village Energy Centre

Hot Water Boiler

Specification 42 11 13

CONTENTS

SECTION 42 11 13 – PACKAGED BOILER

1 PART 1 – GENERAL

1.1 INTENT

This specification is intended to describe the major requirements for the equipment to be supplied. The boiler packages shall include all details and components necessary to be operated in the manner described in this document even though every miscellaneous item may not be mentioned in these specifications.

1.2 SYSTEM DESCRIPTION

The project is located in the City of Surrey, British Columbia, and generally includes the supply, and commissioning of multiple complete hot water boiler packages. The boilers will be a forced draft water tube design. The boilers will be packaged with a natural gas fuel fired fully modulating burner, complete with controls, burner management system, and other accessories as described in this specification. The boilers shall be capable of operating to provide hot water continuously at a supply temperature of up to 115 °C (240 F) at a minimum operating pressure of 275 kPag (40 psig). The boilers design pressure (pressure relief setting) will be 1103 kPa (160 psig).

Each boiler will be installed and operated as parallel units, (lead, lag 1, lag 2, lag 3).

The boilers that will be installed in this plant will form the primary means of providing heating to the area buildings connected to the district heating system.

1.3 REQUEST FOR QUOTATION (RFQ) REQUIREMENTS

.1 Information to be included in RFQ response.

- .1 Provide a narrative statement of specification compliance, including a specific list of specification deviations, exceptions, and or exclusions.
- .2 Engineering data to be included in RFQ response and with formal submittal shop drawings:
  - .1 Manufacturer or vendor to provide unit performance data at full load and part load for summer and winter, in their standard format.
  - .2 Submit data in the format of the data sheets found in the appendices.
  - .3 Performance is based on constant flow through each boiler, with the following winter and summer normal operating conditions.

- Summer Operation, 45 °C Plant Return Temperature with blended Boiler Inlet Temperature of 60.0 °C & Outlet / Supply Temperature of 80 °C.
- Shoulder Operation, 50 °C Plant Return Temperature with blended Boiler Inlet Temperature of 68.0 °C & Outlet / Supply Temperature of 88 °C.
- Winter Operation, 55 °C Plant Return Temperature with blended Boiler Inlet Temperature of 75.0 °C, & Outlet/Supply Temperature of 95 °C

.4 Descriptions of complete boiler system proposed, including controls and communication interfaces.

.5 Package general arrangement drawings with maintenance space requirements, including access platform support points. General arrangement drawings must represent the total unit on a single drawing and will include the boiler vessel, burner, FD fan, and relief valves.

.6 Dimensioned economizer general arrangement drawing.

.7 Economizer performance datasheet in manufacturers standard format.

.8 Sizes, type of, locations, and details of process and utility connections will be provided on drawings.

.9 Maximum allowable differential water temperature across boiler at minimum inlet temperature.

.10 Minimum allowable differential water temperature across boiler.

.11 Minimum water flow and inlet temperature allowed through boiler for continuous operation.

.12 Maximum rate of heat up (degrees C per hour)

.13 Guaranteed Minimum continuous output; i.e. turndown capability, assuming the gas pressure delivered to the inlet of the gas train is between 103 kPag to 137 kPag..

.14 Required boiler gas train, flow, connection location, type and size.

.15 Amount of combustion air for the boilers, including any air preheating which may be required.

.16 The maximum electric power requirements for the skid package.

.17 Noise generation (dB vs. Hz) of the boilers which will be limited to 85 dBa or lower at 1.5 meter from the skid edge.

.18 Noise spectrum of the FD fan at 1.5 m; (dBa at each octave band)

.19 Guaranteed NOx and CO emission data corrected to 3% O2, dry basis.

.20 List of communicated control and operational parameters that are available for monitoring by the plant control system.
.21 Factory recommended planned maintenance schedule and description of maintenance tasks and frequency, based on 30 year life.
.22 Provide guaranteed maximum time to respond to an emergency service request.
.23 Identify nearest service centre / technician to project site that can provide boiler repairs/troubleshooting; burner repairs/trouble shooting; burner controls repairs/troubleshooting.
.24 Provide a recommended list of spare parts for the first 2 years of operation with pricing.
.25 Provide supporting design information and existing operational references that demonstrates the proposed boiler system is a proven and suitable design for the service described.
.26 Provide an estimate of reliability or availability of the type/model of boiler proposed.
.27 Provide an outline of course topics to be covered during each training session.
.28 Provide a list of items or assemblies that are expected to be shipped loose in order to prevent damage or to facilitate shipping.
.29 Provide list of installation references for the same service and size of hot water boilers being proposed.

.2 Service Contract - Optional

.1 The proponents are requested to provide with the RFQ response a separate proposal for three scheduled service contracts based on the following durations:
    .1 One (1) Year
    .2 Two (2) Year
    .3 Five (5) Year.
.2 Provide list of scheduled service tasks to be performed based on a unit operating 6000 hrs per year.
.3 Provide a list of scheduled service tasks in addition to the annual scheduled maintenance that would be required to be performed at 3, 5 and 10 year intervals.

.3 Operator Training

.1 The training described in item 1.8 below shall be proposed.

.4 Post Startup Visits

.1 The post startup site visits described in item 1.9.4 below shall be proposed.

1.4 STANDARDS

.1 The Manufacturer shall comply with all regulations of Authorities having jurisdiction, where applicable, including, but not limited to the following:

.1 ANSI/ASME Boiler and Pressure Vessel Code, Section IV, [Latest Edition]; Hot Water Boilers.
.2 ANSI/ASME Boiler and Pressure Vessel Code, Section VIII, [Latest Edition]; Unfired Pressure Vessels.
.3 ANSI/ASME B31.1 Power Piping Code, [Latest Edition]
.4 ANSI/ASME B31.9 Building Service Piping Code, [Latest Edition]
.5 ANSI Z21.13 - [Latest Edition], Gas-Fired Low-Pressure Steam and Hot Water Boilers.
.6 ASHRAE – Design Standards applicable to exhaust gas or combustion air duct design
.7 BC Safety Authority: Operating Power Engineers Regulation
.8 CAN1 - 3.1 - [77 (Latest Edition)], Industrial and Commercial Gas-Fired Package Boilers.
.9 CAN/CGA - B149.1 M [Latest Edition], Natural Gas Installation Code.
.10 CAN/CGA - B149.3 [Latest Edition], Field Approval of Fuel Related Components on Appliances and Equipment.
.11 CSA B51 – Latest Edition, Boiler, Pressure Vessel, and Pressure Piping Code.
.12 CCME – National Emission Guideline for Commercial/Industrial Boilers and Heaters [1998]
.13 CSA C22.1-2002 – Canadian Electrical Code, 19th Edition, BC Electrical Safety Code and Bulletins, latest Edition, and regulations of the local inspection authority.
.14 IEEE Standard 519-1992 – Recommended Practices and Requirements for Harmonic Control in Electrical Power Systems.
.15 NBIC - National Board Inspection Code; Latest
.16 The National Fire Safety Code and the Fire Safety Regulations of the Province of British Columbia.
.17 Safety Standards for Electrical Equipment, Canadian Electrical Code, Part II.
.18 SMACNA – Duct Construction Standard

1.5 RELATED DOCUMENTS

.1 Project Boiler floor equipment layout.

1.6 PRODUCT DELIVERY REQUIREMENTS

The boiler package must be fully assembled and wired at the supplier's facility. The unit would then be prepared for delivery.

Drain boilers and dry completely for freeze protection, prior to shipment. Seal off all pipe and electrical openings to prevent ingress of weather. Wrap and or cover all exterior surfaces to protect from damage during transit to the project site. Ship boilers pre-assembled complete with lifting lugs and weather protected bearing in mind the hazards of transportation and construction sites. Quotations should include a complete list of loose-shipped items and field installation requirements.

All necessary field connections, wire jumpers, bolts, nuts, etc. shall be suitably packed and identified to facilitate field assembly.

Quotations shall allow for delivery to job site.

1.7 SUBMITTALS FOLLOWING AWARD

.1 The Manufacturer shall furnish to the Owner four copies of shop drawings within 15 working days of receipt of order to be reviewed for compliance with this and other specifications, to determine the adequacy of engineering, drawing presentation and information content. The submittals shall also include other information that the Engineer may deem necessary in order to make clear the Work intended or to show its relation to adjacent Work of other trades. The Manufacturer shall make any changes in such drawings or diagrams that the Engineer may require consistent with the Contract and shall submit four copies of the revised prints to the Engineer. When submitting shop and setting drawings the Manufacturer shall notify the Engineer in writing of changes. The Manufacturer should include for the cost of "certified drawings ".

.2 The Manufacturer shall submit certified information on all products included in the work. All drawings shall be prepared and submitted to the Engineer in printed and electronic form. Indicate the following:

.1 Complete Bill of Materials
.2 Descriptions of all boiler package component systems to be supplied.
.3 General arrangement showing dimensions, weights, center of gravity, interface points, instrumentation test connections complete with drawings of the boilers.
.4 Boiler layout including required additional services such as floor drains, embedded conduits, compressed air connections.
.5 Skid Package anchoring requirements and details
.6 Burner assembly and gas train details
.7 Burner management system details

.8 Emission control system details
.9 Safety system details
.10 Electrical power and control system details
.11 Control description and remote control system details
.12 Minimum system water quality requirements.
.13 Combustion air requirements.
.14 Submit for review complete electrical power and control system details. Provide diagrams, which are fully comprehensive, so that any circuit, including conductors can be followed completely. The wiring diagrams shall show wiring between panel components and devices, panel terminal blocks and all remote equipment and devices. Number or identify each component including conductors and terminals blocks with a unique tag. Include the following:
- Power wiring diagrams.
- Control wiring diagrams (panel, interconnection, loops, etc.).
- Control panel and components layout.
- Complete Bills of materials (motors, modulating valves, instrumentation, control equipment and devices, etc.)
- Electrical and control equipment and devices boiler plan.

.15 Boiler control system description including start-up and shut down sequence, normal operation (local and remote control mode), emergency shutdowns, and restart requirements following an outtage. All programming instructions, data addresses, and serial communication protocols required to allow the boiler to be remotely monitored, and remotely controlled from the central plant operating control room. Plant control is via digital controller.
.16 Boiler and Performance test reports.
.17 Preparation and submission of all documentation needed to obtain ASME, CRN, and CSA approval certifications, and gas train approvals.
.18 A description of reassembly of ship loose parts for the installing Contractor to follow.
.19 Boiler control system programmed settings following onsite commissioning.

1.8 OPERATION & MAINTENANCE TRAINING & MANUALS;

.1 Manuals

The Manufacturer shall supply four (4) binders containing a complete system manual, including all manufacturers' documentation. The O & M manuals to include recommended operating procedures for normal and emergency situations, troubleshooting guideline, illustrated parts lists complete with catalogue numbers, electrical and controls schematic diagrams, flow diagrams for fuel system, copy of commissioning reports, and recommended maintenance instructions and schedules. The

manuals, including installation guidelines, to be provided with delivery of the boilers.

The manufacturer will also supply one (1) Flash Drive/Memory Stick of the above manual in searchable Adobe PDF format.

Binder Type: ACCO Model P5426-E to suit
thickness required, plastic coated catalogue binders with hot stamped lettering front and spine. Binders are available from Vancouver Bookbinding Ltd. (Ph. 872-8132)

.2 Training:

The manufacturer shall provide three (3) onsite training session(s) to the Owner.

Session 1 will be provided prior to the installation of the boilers and would be aimed at a larger target audience of Owner Staff. Duration of session 1 should be a minimum of one half day.

Session 2 would be delivered to the Owners plant operators,

The training should be a minimum of one day (8hr) in duration. This will include for both classroom instruction and hands on training in normal operation and maintenance of the equipment and associated control system. The training session shall cover:

- Equipment/component/control system description and overview,
- equipment operation and recommended procedures,
- equipment troubleshooting,
- scheduled maintenance tasks,
- Lifecycle maintenance tasks such as overhauls and component replacement.

The proponent to include a course outline in their quotation and indicate the time allowed for providing this training.

The third training session would occur 6 months after Session 2. It is intended to be a followup training session to respond to questions. Duration would be a minimum one half day.

Provide reimbursable rates for additional training shall be provided should the Owner wish to obtain more specific instruction in certain areas.

1.9 WARRANTY & POST STARTUP INSPECTION

.1 Refer to Owners commercial terms and conditions section of the RFQ package for warranty requirements.

.2 Provide guarantee that the boilers supplied are capable of operating continuously without water hammer when operating at 275 kPag minimum operating pressure, over the entire operating water temperature range indicated.

.3 The Boilers shall be warranted against thermal stress failures for a minimum ten (10) years.

.4 The Manufacturer to offer the following visits to be provided.

- .1 Two (2) post startup site visits.
- .2 First visit during the warranty/guarantee period. The date and time of this visit shall be coordinated with the Owner.
- .3 The Manufacturer shall carry out the following procedures during the visit;
  - .1 Operate the boiler if not running.
  - .2 Check and adjust the control system and measure & record boiler performance;
  - .3 Visually inspect the entire system.
  - .4 Produce and submit a report to the Engineer and Owner of the results of each visit including adjustments made to control.
- .4 Second visit to occur 12 months after the first, with the same tasks to be performed.

.5 Manufacturer Inspection reports shall be provided to the Owner, after each visit during installation, commissioning, startup, and post startup.

.6 Manufacturer shall provide a certification letter to the Owner following startup confirming that specified NOx emission limits have been met. The letter shall be supported by printed results from an NOx concentration analysis.

.7 Should the NOx emission limits be exceeded, the Manufacturer, at their cost, shall adjust, repair, or replace their equipment until the emission limits are achieved. The Manufacturer will be required to pay for followup NOx emission testing needed to confirm the emission levels meet specification requirements.

1.10 TERMS AND CONDITIONS

The successful Manufacturer shall be required to conform to Owner's Instructions to Proponents and General Conditions identified in the Instructions document.

2 PART 2 – PRODUCTS

2.1 SCOPE OF WORK

.1 The project generally includes the supply, and commissioning of:
  .1 Three (3) - packaged hot water boilers with the following output capacities
    - Boiler Package #1: 1000 BHP output
    - Boiler Package #2: 1000 BHP output
    - Boiler Package #3: 300 BHP output
.2 The Manufacturer is requested to provide optional standalone pricing for each of the following:
  .1 Boiler Package #4: 1500 BHP output (in accordance with this specification)
  .2 Boiler Package #5: 300 BHP output (in accordance with this specification)
  .3 Boiler Package #6: Condensing Boiler - 100 BHP (Refer to description in Section 2.11 below.)
  .4 Boiler Package #7: Condensing Boiler 300 BHP (Refer to description in Section 2.11 below.)
  .5 Economizer for Boiler Package #3 (Refer to description in Section 2.4 below).
.3 Each boiler package supplied will be a complete and integrated package encompassing the boiler, gas train, burner, FD fan and all associated controls.
.4 Each boiler will operate at a minimum waterside pressure of 275 kPag when producing hot water in excess of 100 °C.
.5 All of the boilers will be capable of operating on natural gas as the primary fuel.
.6 The hot water boilers shall be configured, equipped, and locally controlled, to meet the operational and safety requirements identified in the Power Engineer, Boiler and Pressure Vessel Safety Regulation 104 for the Province of British Columbia and CSA B51 boiler code.
.7 The manufacturer is responsible for complying with the safety regulations and requirements as enforced by the local provincial boiler safety authority (BCSA).
.8 Access to skid mounted controls will be provided as required by BCSA based on National Board inspection code requirements.
.9 The Manufacturer shall perform all work according to this request for proposal. The work shall include, but not be limited to, the supply and commissioning of the individual boiler packages, package design and drawings, supply and installation of mechanical, controls, and electrical components forming each boiler package, and the factory cleaning, testing and field commissioning of the supplied systems as described in this specification and drawings.
.10 The Manufacturer will provide the components described in the specification as a base bid. Alternative products may be proposed but shall be clearly identified as options or alternates to the base

bid. The pricing for these alternatives shall be separate from the base bid pricing.

2.2 GENERAL

.1 Packaged boiler complete with:
- .1 Fully modulating, 10% to 100%, burner and necessary accessories and controls to operate as a general supervision plant according to the regulations of the Operating Engineers Act as enforced by BCSA, and as described in this specification.
- .2 Factory tested for electrical and control function, pilot light off/fail test, low flame / flame fail test.
- .3 Ready for connection to piping, electrical power, controls and flue gas exhaust breaching.
- .4 Designed, constructed, and tested to ANSI/ASME Boiler and Pressure Vessel Code, Section IV or equivalent.
- .5 CRN (Canadian Registration Number), to CSA B51.
- .6 Boiler/burner package to bear CSA, CGA / ULC labels as applicable.
- .7 Complete boiler package will be inspected, approved, with nameplates and labels as required by BCSA.
- .8 A means will be provided to allow the skid package to be secured to the housekeeping pad. Manufacturer to describe proposed anchoring system.
- .9 All components forming the skid mounted boiler package shall be securely attached in order to resist damage due to seismic induced forces acting through the package centre of gravity. The level of seismic acceleration is estimated at 0.46 G.

.2 Package Configuration:
- .1 FD Fan – to be centrally located on the package or offset to the right when facing the burner end. Complete with ducting to burner air inlet.
- .2 The FD fan shall be supplied with vibration isolating spring mounts, if it is to be installed off of the boiler skid. The isolation springs shall be sized to achieve 99% isolation efficiency and shall include seismic restraints.
- .3 The ducting conveying the combustion air to the burner will not have any 90 degree bends.
- .4 Gas Train Connection: to be located on the left side of the package when facing the burner end.

.3 Performance:
- .1 The water circulating through the boiler will be treated water with a pH range of 8.5 to 10.5.
- .2 The boiler will be provided a constant flow of water based on a 20 C temperature differential.

.3 Hot water Normal Operation: up to 95 °C outlet water temperature, 75.0 °C inlet water temperature at design operation. Outlet water temperature is continuously reset between 80 °C to 95 °C based on outdoor ambient temperature.

.4 Boiler efficiency (Gas), (HHV): Minimum 82% at all firing rates between 10% and 100%.

.5 All supplied boilers and forced draft fans shall be designed to operate with an economizer installed.

.6 Maximum backpressure at boiler exhaust outlet: positive (+) 20 mm W.G.

.7 Minimum backpressure at boiler exhaust outlet: negative (-) 10 mm W.G.

.8 Flue gas temperature leaving boiler: Not to exceed 200°C

.4 Electrical and Control System;

.1 A single point boiler package power supply connection will be provided. Supply Voltage: 575 V AC, 3 phase, 60 Hz. All power to the boiler package will be sourced from this point. Provide main disconnecting means.

.2 Boiler control system power: Manufacturer to provide on skid control power transformation.

.3 The 600 V power feed shall be terminated into a dedicted panel or junction box that is installed on skid, and fed to the power consumers from this point. 600 V and 120V/24V circuits and components to be housed in separate panels.

.4 Transformation from 600 V to lower voltages shall occur in the same panel as the 600 V feed is terminated in.

.5 All on skid interconnecting wiring shall be provided and installed at the factory.

.6 All on skid conduits shall be liquid tight with wiring penetrations into electrical enclosures shall be sealed against water ingress.

.7 Power and control components: CSA certified with identified labels attached.

.8 The boxes, cabinets and enclosures shall be sized for control devices and equipment installed. Enclosure rating: EEMAC 12 or EEMAC 4 minimum.

.9 Provide each motor and other equipment with suitable controller and devices that will function as specified and shown. Provide magnetic motor controllers for induction motors rated in horsepower complete with overload protection and over current device (motor protector type circuit breaker).

.10 The operator interface devices shall be heavy-duty, watertight, unless listed otherwise. All pilot lights shall be transformer type with LED lamps.

.11 The control devices (control relays, timers, limit switches, pressure switches, temperature switches, etc.) shall meet the requirements of the application. The control device contacts shall be normally open, field convertible or SPDT type.

.12 Provide lockable power disconnecting means for skid electrical power supply.

.13 Motors: In accordance with electric motor specification, contained in this specification.

.14 Factory pre-wired control system. Boiler shall be capable of operation in local and remote control mode. All control operations and features shall be available from local control panel in local mode and selected control operations from remote controller in remote mode.

.15 All control panels and VFD's when specified, shall be mounted and wired on the boiler skid. Panels shall be vibration isolated when mounted onskid.

.16 Hardwired control interface:

.1 Boiler on/off status - dry contacts, rated 120V AC.

.2 Boiler start/stop control input – dry contact, rated 120 V AC.

.3 Boiler Circulation pump start stop request – dry contact, rated 120V AC

.4 Boiler General Alarm - dry contact, rated 120 V AC

.17 Each boilers controller will allow for remote monitoring of boiler data/status and remote control of the boiler through a boiler master control panel.

.18 The plant control system will monitor and remotely control the boilers through this management panel.

.1 Refer to item 2.7.5 below for communicated input/output to the boiler controller.

.19 Use standard products of manufacturers regularly engaged in the production of such equipment, and conforming to manufacturer's latest standard design. Use materials, equipment, apparatus, or other products approved for the location or area classification.

.20 Provide lamicoid nameplates and labels describing the name or function of the labeled equipment; mechanically fasten labels (tape or adhesive fixings are only acceptable inside enclosures). Identify power, control and signal wiring with permanent markings (both ends). Maintain phase sequence and color coding throughout. Identify all terminal blocks.

.5 Thermal insulation:

.1 The Manufacturer shall provide sufficient thickness of insulation in conjunction with water cooled top, rear and side walls, to prevent the jacket operating temperature from exceeding 35 ^{o}C at all boiler loads. Seal insulation at all hand holes, manholes, mud holes, and piping connections with insulating cement or asphaltic paint. Finish with heat resisting paint.

.2 Insulation and or insulating media shall be securely fastened to the interior surface of the boiler case, in such a manner that also allows for removal and replacement.

.6 Exhaust Gas Opening Connection:
.1 Provide – carbon steel exhaust opening flanged steel spool piece that allows for the mounting of exhaust sampling ports, exhaust gas sensing probe(s), temperature gauges, pressure gauges, or manometers. The flanged connection will also allow the exhaust breeching to be mated to boiler exhaust connection.

.7 Exterior Jackets:
.1 Heavy gauge metal, finished with heat resisting paint. The jacket to be installed in such a manner that also allows for removal and replacement.

.8 Skid Mounting:
.1 Structural steel base, lifting lugs.
.2 Skid structure designed to be installed on vibration isolating matts located at spaced intervals under the skid rails.
.3 Skid structure designed to be moved into final installed location while resting on rollers.

.9 Access Ladder and Platform:
.1 Provide access ladder and platform to reach control devices installed on skid as required by National Board Inspection Requirements.

2.3 WATER TUBE HOT WATER BOILER

.1 Packaged water tube design with multiple tube passes.
.2 Waterside Maximum Allowable Working Pressure: 1103 kPag at 121 °C.
.3 Tube sheet thicknesses and tube wall thicknesses shall exceed ASME design requirements.
.4 Single flanged water inlet and single flanged water outlet, installed along the longitudinal centerline.
.5 Water connections to the boiler will be 150# ANSI raised face flanged connections.
.6 Water and Fire side interior to be accessible for service and or inspection.
.7 Exhaust outlet connection discharges vertically upwards.
.8 ASME Heating surface: in m2. To be specified in Quotation.
.9 Water content: in liters to be specified in Quotation.
.10 Furnace heat release in kW/m2 to be specified in Quotation.
.11 The Manufacturer shall provide sufficient thickness of insulation to limit the jacket operating temperature to 35 ^{o}C at full boiler load and provide outer insulation jacket with baked enamel coated plates, easily removable and replaceable.
.12 Steel framing or structure shall be insulated to prevent hot spots from developing on the exterior shell of the boiler due to conduction from the interior to the exterior.

2.4 FLUE GAS ECONOMIZER – OPTIONAL

.1 Optional economizer is for the 300 BHP output boiler.
.2 Economizer is intended to increase boiler efficiency (at 100% load during winter operation) from 82% (HHV) to 86% (HHV) minimum.
.3 Nominal Heat Recovered at 100% load (Winter Condition): 4% of Boiler Thermal Output
.4 Provide performance data sheet with proposed economizer unit.
.5 ASME code stamped multipass water tube in box design, with single flue gas passes.
.6 Orientation: Vertical up gas flow.
.7 Water side Entering Condition: 55 °C.
.8 Water side Exiting Condition: 67°C
.9 Water side pressure drop: not to exceed 34.5 kPa.
.10 Water side design rating: 1100 kPag at 121 C.
.11 Economizer will be designed to accept full exhaust flowrate. Gas side flow condition: By boiler Manufacturer.
.12 Provide breeching transitions to allow installation into breeching that is the same diameter as the boiler gas outlet.
.13 Stainless steel internal components, to protect against intermittent exhaust gas condensation.
.14 Economizer gas side design shall be suitable for condensing operation at partload and or non winter boiler operation.
.15 Economizer to be designed with integrated gas side bypass valve, complete with 120 V powered Nema 4 rated electric driven bypass valve actuator.
.16 Stainless steel lined access doors.
.17 Economizer shall be designed to collect exhaust condensate and drain it through a dedicated drain connection. Exhaust condensate shall not be allowed to drain back down the exhaust breeching.
.18 Water side drain connection.
.19 Water side relief valve set at 1100 kPag.
.20 Unit will be supplied preinsulated from the factory.
.21 Documentation and services identified in Section 1 above are to be provided as applicable if the Owner proceeds with this option.

2.5 AUXILIARIES

.1 Provide for each boiler and to meet ANSI/ASME requirements.

.2 Hot water boilers:
  .1 Control Panel Remote communications/operation hardware and software.
  .2 Relief valves: ANSI/ASME rated, multiple relief valves set at vessel design pressure or maximum 1103 kPag, to release entire boiler capacity. Relief valves shall be steel or bronze body and self reseating in accordance with ASME Section IV Heating Boiler Requirements.
  .3 Pressure gauge (water side): 90 mm diameter complete with shut-off cock, Range 0 to 1,378 kPa.

.4 Water side outlet thermometer: 115 mm diameter range 10 to 150 °C.
.5 Low water level fuel cut-off: in accordance with BCSA requirements; complete with manual reset. Low water cut-off to be wired to fuel valve control to shut off fuel valve on a low water condition.
.6 A minimum of two low water level cutoff switches are required.
.7 Low water level cut-offs to be in accordance with CSA B-51; complete with, visual and audible alarms.
.8 Paddle style mechanical Low flow water switch. Switch to be wired to boiler control panel to shut down the boiler on a low flow condition.
.9 High Temperature Cut-out; (manual reset) wired to boiler controller to shut boiler down on a rise in boiler temperature above the setpoint of 121 °C.
.10 Redundant High Temperature Cut-out; (manual reset) wired to boiler controller to shut boiler down on a rise in boiler temperature above the setpoint of 121 °C.
.11 Boiler local controller shall be capable of providing start/stop requests for the control of associated hot water boiler circulation pump.
.12 Boiler drain connection and valve: NPS 2.
.13 Boiler top of vessel vent connection with isolating valve.
.14 Flue gas temperature connection and thermometer with ss thermowell: Range 65 to 400 °C.
.15 Provide one spare 25 mm NPT connection, (waterside top of boiler) for future instrumentation.

2.6 FUEL TRAIN AND BURNER – FULLY MODULATING

.1 General:
.1 Forced draft operation with FD fan to supply required combustion air complete with modulating air damper, motor, high voltage ignition transformer, flame observation port.
.2 Provide easy access to nozzle-electrode-pilot assembly.
.3 Gas train connection will be located on the left hand side when facing the burner.
.4 Provide variable speed forced draft fan.
.5 Modulating gas flow control valve, modulating air damper, and modulating FGR flow control valve (if required) to be individually actuated directly by direct drive servomotors.
.6 The Manufacturer is responsible for providing boiler fuel trains that meet the requirements of CSA and the provincial fuel safety regulator.
.7 Provide one natural gas connection at skid edge that supplies fuel to the main and pilot gas train.

.2 Main Burner:
- .1 Fully modulating and setup for natural gas as primary fuel.
- .2 Blast tube, combustion cone and diffuser to be constructed of high temperature stainless steel.
- .3 Forced draft fan complete with variable speed drive
- .4 Forced draft fan shall be sized to allow the burner to be fired to the required output rating.
- .5 Flue Gas Recirculation with direct servo actuated FGR flow control valve
- .6 Burner system Turn down Ratio for continuous operation; a minimum of 10:1 (natural gas firing).
- .7 Fan / burner noise level not to exceed 85 dBa, at 1.5 m.
- .8 Emissions Requirement: Refer to Section 2.10 below for emission limit requirements.
- .9 Flame viewing port

.3 Main gas train:
- .1 Natural Gas will be provided at a pressure between 69 kPag and 137 kPag at the entrance to the fuel gas train.
- .2 A gas pressure regulator will be provided that is adequately sized for the available gas pressure and will be capable of controlling gas pressure to the burner throughout the firing range.
- .3 High and low gas pressure interlocks will be provided, to prevent burner operation due to high or low natural gas pressure condition.
- .4 Two motorized direct driven gas shutdown valves with proof of closure switches and automatic vent solenoid valve will be provided to positively prevent gas from entering the burner in the event of the opening of any boiler or combustion system limit switch. Safety shut off valves will be interlocked with the flame safeguard control.
- .5 Manufacturer shall confirm with the local boiler authority if automatic reset of gas valves is allowed. If not, the gas valves shall be provided with operator manually operated reset latches.
- .6 Fuel flow control valve will be direct servo motor driven.
- .7 Gas trains will be supplied with BCSA and CSA approvals, with individual components CGA/UL approved as a minimum standard of acceptance. Manual shut off valves, leak test connections and pressure gauges are to be provided in accordance with code requirements.
- .8 All components including main shut-off cock, pressure regulator, motorized electric shut-off valve, downstream block/test cock with test connection and gas pressure gauge, used to construct the complete factory assembled gas train, shall bear CRN numbers for province of installation, and meet all boiler safety authority, local code, and provincial regulations. All electrical components shall be CSA approved and stickered.

.4 Gas pilot:
- .1 The pilot gas line will take its supply from the main gas supply line connected to the main fuel gas train.
- .2 A gas pressure regulator will be provided that is adequately sized for the available gas pressure and will be capable of controlling gas pressure to the burner for pilot gas.
- .3 Two solenoid operated gas shutdown valves will be provided to positively prevent gas from entering the burner in the event of the opening of any boiler or combustion system limit switch. Safety shut off valves will be interlocked with the flame safeguard control.
- .4 Pilot gas trains will be designed to comply with CSA requirements, with individual components CGA/UL approved as a minimum standard of acceptance. Manual shut off valves are to be provided in accordance with code requirements.
- .5 Components to meet all boiler and fuel safety authority, local code, and provincial regulations.
- .6 The supplier is responsible for obtaining all provincial fuel safety certifications/approvals required for the fuel train.
- .7 All relief's and vents shall be piped to skid edge as applicable for installation contractor to tie vent line(s) to.

.5 Combustion air damper
- .1 Fully modulating and works with variable speed fan to obtain stable low turndown burner operation
- .2 Zero leakage when shut
- .3 To be directly actuated by servo motor.

2.7 CONTROLS

.1 General
- .1 Meet the requirements of CSA B-51 and provincial boiler safety authority's, operating engineers' regulation.
- .2 Electronic combustion control relay with self checking UV flame detection to control combustion and to supervise flame. Control function is to shut off fuel upon pilot flame or main flame failure or in response to a safety interlock signal within code requirements, and to ensure, in sequence:
  - .1 Pre-purge,
  - .2 Pilot ignition and supervision,
  - .3 Main gas valve opening,
  - .4 Pilot cut-off,
  - .5 Burner operation.
- .3 Provision of Standard Boiler Safeties with visual and audible alarms for;
  - .1 Burner shut-down due to flame failure
  - .2 Low combustion air pressure
  - .3 Low fuel pressure
  - .4 Low water level cutoff.

.4 Provision of unattended operation plant safeties with visual and audible alarms for;
- .1 High Temperature Cut-out; hard wired to boiler control circuit to shut down boiler on a rise in boiler temperature. Set point to be: 121 °C (250 F).
- .2 Combustion Air Interlock; shut-off burner on loss of status from combustion air fan.

.5 Boiler controller to provide operational logic required to start / stop the dedicated hot water boiler circulation pump. On a call for boiler start from the boiler controller the pump to be commanded to start. On boiler shut down the boiler controller will dictate when the circulation pump is to be shutdown. The start / stop command for the boiler circulation pump will be hardwired to the plant control system. The plant control systems will then start /stop the pump through the MCC.

.6 On startup the FGR damper (if provided), will remain closed to allow exhaust temperature to warmup before starting to modulate. This is to minimize condensation in the burner housing at startup.

.7 Boiler controller will be capable of staging and destaging the boiler based on lead lag designation received from the Multi Boiler Data Gateway (Refer Section 2.7.5 below).

.8 Boiler controller is capable of automatically keeping unit in standby condition when next in line for operation, in order to minimize wait time (<5 minutes) when the boiler is requested to start.

.9 Boiler controller will limit firing rate as required to ensure maximum warm up rate from a cold start or maximum heat up rate from a standby temperature is not exceeded in order to prevent damage to the boiler.

.10 Provision for hardwired boiler fail general alarm contact that will collectively include flame fail, combustion air fail, and low water cutoff events.

.11 Provision of contacts to allow the wiring of the boiler room combustion air inlet damper end switch as a safety interlock.

.12 Factory mount all boiler control panels on skid, and prewire to all sensors/control elements.

.2 Burner Control Cabinet

.1 Provide burner control cabinet for each burner. The cabinet will be designed and factory mounted on skid, adjacent to the burner to form an integral part of the boiler package. The control cabinet will house the burner management controller, operator interface display, fuses, relays, transformers, control switches and indicating lights as specified herein.

.2 The control cabinet will be complete with individual lights with nameplates to indicate "Power On", "Load Demand", "Flame Failure", and “General Fault”.

.3 The following control switches will be provided as a minimum. "On / Off", "Hand / Auto", "Low Fire Hold", "Reset", and "Manual Increase / Decrease Firing Rate Push Buttons".

.4 Cabinet Enclosure rating: Nema 12

.3 Combustion and Burner Management

.1 Provide a fully integrated controller that will be fully capable of fuel / air ratio control throughout the entire firing range of the burner, such that no mechanical linkages are required for operating the combustion air inlet damper, fuel flow control valves, and or auxiliary dampers. The control for the specified burner and selected fuel(s) will include all necessary interface wiring, software and hardware for a complete fuel / air metering and flame safeguard system. The system will be easily programmable with the flexibility of optimizing combustion quality and fuel efficiency throughout the load range.

.2 The controller will employ PID control loop(s) to maintain the boiler outlet temperature at set point.

.3 The combustion and burner management controller shall be housed in a control cabinet or panel that is mounted to the boiler skid. The control panel will also contain a minimum 10 inch display panel, power supply, and graphical operator interface with keypad, auxiliary relays, and other control devices as required.

.4 The control display screen will display process data and status indication. Individually selectable displays will also be available to provide the following continuously updated information:

.1 Status display – fuel fired, % firing rate, setpoint temperature, actual temperature, run hours.

.2 Control Inputs and Outputs - Servo motor position, Analogue inputs including O2 trim values.

.3 Real time values of measured O2, exhaust gas temperature, differential temperature and combustion efficiency.

.4 Sequencing Status - Boiler designation, lead boiler designation, reduced set point, lag boiler hot standby firing sequence and current status.

.5 Variable Speed –display of analogue input and output from VSD.

.6 Display of current burner safety / safeguard sequence logic, with indication of current status showing:

- Flame intensity signal strength for flame.
- Post purge time and actual position in cycle.
- Pre Purge time and actual position in cycle.
- Combustion air damper / VSD speed position.
- Current firing rate status.

- Main fuel valve status (open or closed).
- Pilot fuel valve status (open or closed).
- Spark ignition status.
- Combustion air fan (running or standby).
- Lockout or run status message.
- Lockout reset capability.

.7 Fuel Gas Valve Proving - Graphical display of main fuel shutdown valves and vent valve during each valve proving sequence will be provided.

.8 Combustion Air Sensor - Graphical display will indicate commissioned and on line combustion air pressures.

.9 UV Flame Scanner – Display and continuous monitoring of the minimum required flame signal strength.

.10 Lockout History - Display of the last first out annunciated 15 limit circuit lockouts, controller error history with a description of the lockout or error the time and date occurred and the reset time and date.

.11 The controller will provide a first out annunciation functionality that ouputs the first out fault to the plant control system.

.5 The boiler controller will allow the boiler outlet water temperature set point to be set remotely from the plant control system at any time or locally adjusted at the boiler control panel via increase/decrease setpoint buttons on the panel.

.6 Interlocks shall be provided to continuously monitor and prove air flow at all times during purge cycles and operation.

.7 Combustion air inlet damper shall close when boiler is off.

.8 Electronic safety control shall be interlocked with a self checking flame scanner signal providing continuously monitored and verified flame signal intensity by detection of ultraviolet radiation.

.9 The controller will be capable of setting commissioned options and parameters to suit the specific application including but not limited to the following:

.1 Designation of boiler operating range.

.2 Adjustable burner modulating ramp up speed.

.3 Boiler sequencing (lead lag).

.4 External modulation control.

.5 Automatic Cold Start routine to prevent thermal shock or excessive condensation.

.6 Flue gas recirculation (FGR) management.

.7 Alarm signal outputs.

.8 Outside temperature compensation.

.9 Adjustable purge time.

.10 Adjustable pilot and main flame proving time.

.11 Adjustable flame signal strength threshold.

.12 Selection for operation with a standard or self checking UV or IR scanner.
.13 Fuel valve and vent valve proving with adjustable high and low gas pressure limits.
.14 Adjustable wind box pressure limits.
.15 Password settings to prevent unauthorized access to commissioning routines.
.16 Independent adjustable Proportional Band, Integral Time and Derivative (PID) control loops.

.10 The controller setup and operating parameters shall be field adjustable.

.11 Password protection to be provided to prevent unauthorized access to settings and or commissioning routines.

.12 The controller provided must also be capable of performing the following functions or interfacing with the following Manufacturer supplied peripheral equipment:
.1 Multi boiler remote data gateway for Remote Monitoring and Control by plant control system.
.2 O2 trim system
.3 Flue gas recirculation system
.4 Gas valve proving sensor
.5 Combustion air sensor

.13 The controller housing or panel in which it is installed shall be rated NEMA 12 or Nema 4.

.4 Boiler Exhaust Gas Trim System

.1 Provide an O2 Trim System that shall be fully capable of fuel / air ratio control throughout the entire firing range of the burner, by controlling the operations of the combustion air input damper, FD fan speed, and fuel input valves. The trim system shall be furnished by the boiler supplier for the specified burner and selected fuel(s) and shall include all necessary interface wiring, software and hardware for a complete fuel / air metering and trim system.

.2 Provide monitoring devices for continuously sensing exhaust gases for O_2, and stack temperature.

.3 The system shall measure and display O_2, exhaust gas temperature and boiler combustion efficiency. Concurrently, the system shall provide the necessary control signals to automatically adjust the air damper position and or FD fan speed to ensure that the originally entered commissioning values are maintained, regardless of variations in stack pressure, fuel pressure, or barometric conditions.

.4 A visual display will be provided that graphically displays operating components and current value data labels.

.5 The trim system component housings or enclosures shall be rated for NEMA 12 service.

.5 Multi Boiler Data Gateway/Master Controller

.1 Able to send and receive data from up to six boilers.

.2 In addition to the direct hardwired control points for each boiler identified in section 2.2.4 above, provide a boiler management system that can:

.3 Receive the following inputs from the plant control system and transfer them to the individual boilers control system:

.1 Lead boiler and lag boiler designations

.2 Outlet water setpoint temperature

.3 Enable or disable individual or all boilers

.4 Adjustment to the parameter setpoint used to initiate staging or destaging.

.4 Manage the boilers in the following manner:

.1 Perform logic to control staging on and off of the lead and lag boilers if function not provided with each boilers control system

.2 Transfer system data required by the boilers to determine when to stage or destage

.3 Transfer alarm and shutdown/fault notification from the individual boiler controllers to the plant control system

.4 Transfer measured and logged system operating data from the boilers to the plant control system

.5 The management panel/gateway will be capable of updating or refreshing all communicated information simultaneously between the boilers and plant control system at a minimum rate of 1 refresh or update per second.

.6 The communication interface between the master controller and plant control system will utilize the following connection type.

.1 Modbus TCP/IP interface over Ethernet connection.

.7 Provide the communication data reference addresses that are associated with the Data Gateway/Master Controller, for the monitoring of the following minimum process parameters on each boiler:

.1 Boiler startup sequence of events including fan start, pump start, prepurge start, prepurge finish, gas on, ignition, flame confirmed, load % ramp up, normal operation.

.2 Boiler shutdown sequence of events including fan stop, pump stop, post run purge start, post run purge finish, gas off, flame off confirmed, load % ramp down, boiler off.

.3 Burner firing status

.4 Percent Firing Rate.

.5 Required outlet temperature

.6 Actual outlet water temperature.

.7 Fuel selected natural gas or oil

.8 Low water level alarm.

.9 Flame Failure alarm.
.10 Combustion air failure alarm
.11 High Water temperature shutdown alarm
.12 Low waterside flow alarm
.13 Controller fault
.14 Low gas pressure alarm
.15 High gas pressure alarm

.8 The Multi boiler gateway shall be provided with a Nema 12 or Nema 4 enclosure so that it can be mounted in the boiler room.

.9 The Manufacturer will provide communication/control cable and appropriate plug in end connector specification required to link the boiler control panels to the boiler management/gateway panel.

.10 Upon re-establishment of electric power to the gateway following power outtage, the gateway shall automatically restart.

.6 First Out Indication (Remote Output)

.1 Provide "First Out Indication" for all alarms, shutdown devices, and or controller errors, as remote outputs to the plant control system.

2.8 COMBUSTION AIR FAN CONTROL – VARIABLE FREQUENCY (SPEED) DRIVE

.1 The combustion air fan shall be operated with a Variable Frequency Drive (VFD). Each fan will be equipped with a separate, dedicated VFD rated for 115% of the full load amperage rating of the fan motor.

.2 The VFD shall be suitable for use with Premium efficiency Design B, 575V motors.

.3 The VFD shall be fully digital pulse width modulated type (PWM).

.4 Approvals:

.1 ULC or CSA approved.

.2 CUL Listed

.5 Enclosure:

.1 NEMA 12 or IP55

.2 Suitable for mounting on equipment skid.

.6 Interface:

.1 Input fused disconnect switch with fast acting fuses

.2 Control panel c/w backlit display

.3 Input keypad for manual operation.

.4 Analog speed reference output

.5 0-10VDC isolated control input and output signals.

.6 Dry-contact for VFD fault and VFD run status.

.7 Hand/Off/Auto buttons/switches

.8 RS 485 Communication port c/w software to allow remote drive control and monitoring

.7 Harmonic Filter

.1 Harmonic filter designed to meet the current distortion limit guidelines identified in IEEE Standard 519-1992.

.8 Performance:
- .1 97% or greater efficiency at full load
- .2 Power factor greater than 0.95 at all loads
- .3 +/-10% voltage tolerance with no change in output
- .4 Input power filter to limit harmonic distortion to less than 5% at the point of VFD connection to plant 600 V power supply.
- .5 No single harmonic to be greater than 3%.

.9 Protection:
- .1 Electronic Motor overload protection
- .2 Transient voltage surge suppression.
- .3 Phase to phase short circuit
- .4 Phase to ground short circuit
- .5 Over temperature sensor
- .6 Rotating motor start
- .7 Overload current versus time function

.10 Service Conditions:
- .1 Ambient temperature: -10 to 40 C
- .2 Relative Humidity: 0 to 95%, non-condensing

.11 Display: Over Voltage, Under voltage, Overcurrent, Overload, Overload Temperature, Ground Fault, Output Speed, Motor Amps, Output Motor Volts, GPM, Inverter fault, kWh, Elapsed Time.

.12 The VFD and all components shall be located at the boiler control panel and interlocked with the combustion control system. Factory test and pre-commission the VFD system prior to shipping to project site.

2.9 MOTORS

.1 575V motors shall be suitable for across-the-line starting and operation on the following system:
- Nominal System Voltage: 575V ± 10%
- Phases: 3
- Frequency: 60 Hz ± 1 Hz
- System Neutral: Solidly grounded
- Ambient Temperature Operating Range: Max. 40°C; Min. -45°C

.2 Motor Ratings: Motors shall be Premium Efficiency, EEMAC Class F insulation with Class B rise, 1.15 service factors, TEFC and shall be selected as follows:
- .1 Motor 2 HP up to and including 200 HP shall be rated 575V, 3-Phase, 60 Hz.
- .2 Motor less than 2.0 HP shall be rated 230V, 1-Phase, 60 Hz.
- .3 Motors for use with variable frequency drives shall be certified as Inverter Duty and meet the requirements for inverter duty motors, in accordance with NEMA MG-1 Part 31.

.3 Enclosures: Motors shall be NEMA T-frame unless otherwise noted. Motor frames shall be of cast iron and end shields shall be cast iron or pressed steel. External hardware, external and internal surfaces shall have corrosion resistance treatment. Frames shall have a

tapped and plugged drain hole to allow drainage of moisture from low spots of motors.

.4 Starting Requirements, Torque Classification and Running Conditions
- .1 Motors shall be suitable for across-the-line starting and shall be capable of making the number of starts stated in NEMA MG 1-20.50.
- .2 Motors shall be capable of accelerating the load in accordance with NEMA MG 1-12.39 design 'B' (80°C).
- .3 The locked rotor torque of EEMAC design 'B' motors shall be in accordance with NEMA MG 1-12.37.
- .4 Motors shall operate successfully under running conditions at rated load with a variation in the voltage or the frequency in accordance with NEMA MG 1-12.45.
- .5 Motor starting current shall not exceed 6.5 times rated full load current. Motors shall be capable of withstanding the number of starts imposed by the driven equipment without appreciable loss of service life.
- .6 Motors shall be capable of producing satisfactory operation of the driven equipment during short duration (up to one minute) dips to 75% of rated voltage.

.5 Windings:
- .1 The end windings and terminal leads shall be suitably braced to prevent movement under heavy starting conditions.
- .2 All windings shall be insulated with a non-hygroscopic Class F (155°C) varnish and suitably vacuum impregnated and dipped to provide full protection against humid conditions.

.6 Bearings and Balancing:
- .1 Bearings shall be provided with seals so that direct moisture or lubricant leakage around the seals will not enter the motor.
- .2 20 Hp & Less: Double shielded permanently lubricated ball bearings.
- .3 25 Hp & More: Bearings shall be provided with lubricant fittings and removable drain plugs which are made completely accessible to allow Owner's Plant maintenance crew to lubricate them while in service.
- .4 Bearings on motors provided with variable frequency drives shall be insulated for inverter duty
- .5 Bearings shall meet the requirements of the referenced standards and shall be chosen to have a minimum rated life of 100,000 hours.
- .6 1800 and 3600 RPM motors of 100 HP and over shall not exceed the dynamic balance limit of 1 mil (amplitude).

.7 Shaft Grounding Rings:
- .1 Provide Aegis shaft grounding ring for electric motors driven by VFD controller.

.8 Terminal Boxes and Terminals:
- .1 Terminal boxes shall be located on the right hand side of the motor when viewed from the driving end (F-2 mounting),

located approximately on the horizontal centre line of the motor, unless otherwise stated.

.2 Terminal boxes shall be oversized and equipped with a gland plate, which shall be of adequate thickness to accommodate mechanical type compression glands.

.3 Terminal box covers shall be designed to permit the terminal box assembly to be rotated in any one of four directions at 90 deg. displacements to facilitate easy cable/ conduit access.

.4 Each terminal box shall have the facility to accommodate an incoming 4 conductor copper cable (3 power and 1 ground), and shall be complete with connections and through a neoprene or butyl rubber seal plug of watertight design.

.5 The leads shall be identified by means of sleeves marked as follows: T1, T2, and T3.

.9 Other Motors:

.1 Single-phase motors shall be totally enclosed capacitor type 230V, 1-Phase, 60 Hz, with integral thermal overload protection.

.2 Direct current motors shall be rated 120V DC and shall be capable of operation from 105V DC to 140V DC.

.10 Space Heaters: Space heaters shall be provided for motors located outdoors, in accordance with the motor data sheets.

.11 Grounding Termination: The grounding lug shall be located on the main terminal box side of the motor and preferably in the web of the support frame. Each conduit box shall be provided with a ground connection point.

.12 Nameplates:

.1 Nameplates shall be of stainless steel construction and stamped in accordance with NEMA MG 1-10.38.

.2 The equipment tag number and purchase order number shall be stamped on the nameplate or on a separate plate firmly fixed to the motor frame.

.13 Painting: Metal surfaces that are to be painted shall be cleaned to the equal of a commercial finish as defined in the Steel Structures Painting Council Manual (SSPC-SP6) and shop painted with the manufacturer's standard finish.

.14 Noise Level: The motor no-load overall sound level when measured at a distance of 1.0 meter shall not exceed:

.1 Up to and including 30 HP: 75 dBa

.2 Larger than 30 HP up to and including 150 HP: 80 dBa

.3 Larger than 150 HP: 85 dBa

.15 Factory Tests:

.1 Each motor shall be subject to routine tests in accordance with NEMA Standard MG 1-12.51 and IEEE Standard 112A.

.2 For motors greater than 100 HP, the Seller shall provide the test reports to the Owner prior to shipment.

.3 The Seller shall guarantee the motor losses quoted in the motor data sheet. Motors that fail to meet the guaranteed losses shall be replaced with motors that meet or exceed the efficiency, at no cost to the Owner.

.16 Standard of Acceptance:
- .1 For Motors powered by VFD's: Premium Efficiency Inverter Duty
- .2 For Motors 3 HP and greater: Manufacturer's Premium Efficiency.
- .3 For Low Voltage Motors: Manufacturer's Premium Efficiency.

2.10 EMISSION LIMITS REQUIRED

.1 Maximum rate of discharge of air contaminants from each boiler as follows:

For boilers operating on natural gas.
- 30 ppm or less of NOx corrected to 3% O2
- 50 ppm or less of CO corrected to 3% O2

2.11 CONDENSING HOT WATER BOILER - OPTIONAL

.1 Packaged boiler designed and constructed to ASME Section IV for hot water service, and approved for use in British Columbia.
.2 Boiler Output Capacity: As indicated at 50 C entering water temperature.
.3 Boiler Outlet water temperature: resettable from 50C up to 95C.
.4 Vessel design pressure: 1100 kPag at 121 C.
.5 Linkageless burner controls.
.6 Emission limits as per specification requirements.
.7 Manufacturers standard offering for standalone digital package controls with remote control/monitoring interface capability.
.8 Engineering, training, documentation and site services as described in this specification.

3 PART 3 - EXECUTION

3.1 GENERAL

.1 The boilers will be installed by the Owners Installation Contractor in accordance with ANSI/ASME Boiler and Pressure Vessels Code Section IV, regulations of the Province having jurisdiction, except where specified otherwise, and manufacturer's recommendations. This will include the following devices which will be provided by the manufacturer and shipped loose or installed on the boiler skid;
  .1 Water temperature transmitters
  .2 Water level and flow switches
  .3 Gas line vent valves – Owners installation contractor to provide all pipe and fittings for vent lines leading from vent valves
  .4 Pilot Gas train - Owners installation contractor to provide all pipe and fittings to connect natural gas supply to gas train.
  .5 Relief valves

.2 The boiler will be set and secured to a concrete housekeeping pad.

.3 Natural gas fired installations - in accordance with CAN/CGA-B149.1, and B149.3.

.4 Fuel oil fired installations (if applicable) - in accordance with CAN/CGA-B139.

3.2 CONTROL INTEGRATION WITH BALANCE OF PLANT

.1 Terminate interconnecting communication cable between boilers and communication gateway when on site for startup or during construction site visit.

.2 Successful boiler supplier shall provide technical support to the controls contractor or automation engineer during the design of the control interface between the boiler controls and the plant control system.

.3 Technical support from the Manufacturer shall be provided by a controls technician with factory training and proven experience in the specific burner management/boiler controls system supplied.

.4 The owner shall reserve the right to review and accept the proposed control technician based on their qualifications.

3.3 ELECTRICAL INSTALLATION

.1 Installation shall be done in accordance with:
  .1 CSA C22.1-02 – Canadian Electrical Code, Latest edition.
  .2 Provincial Electrical Safety Code and Bulletins, latest edition.
  .3 Regulations and requirements of the local inspection authority.
  .4 Original equipment or device manufacturer's instructions.
  .5 Standard practice.

.2 Do not install electrical and control equipment at locations where other equipment is to be installed, obstruct walkway, or makes inaccessible or hard maintenance access.

.3 Do not install electrical power, control wiring, instrumentation or data cables in the same conduit. Use dedicated conduits. Control

wiring into and out of control panels having more than three devices, must go through rail mounted terminal strips. Keep up adequate clearance between electrical raceways and piping or mechanical equipment.

.4 Provide equipment grounding and bonding to meet regulatory requirements. Bond together individual boiler structural elements, metallic piping, tanks and other metal object. Ground electrical systems and control circuits.

3.4 PAINTING

.1 All fabricated components shall be supplied with a minimum of primer and two coats of finish paint. High temperature rated primer and paint shall be used throughout.

3.5 INSTALLATION AND COMMISSIONING

.1 The Owner's Commissioning Authority or designated representative shall coordinate the commissioning of the complete facility.

.2 Manufacturer to:

- .1 Provide commissioning services as part of a coordinated effort for the total facility.
- .2 Review installation using factory trained service personnel.
- .3 Start up and commission each boiler with a factory trained technology center engineer or technician, and burner management system factory trained technology center engineer or technician.
- .4 Carry out on-site operating and performance verification tests.
- .5 Confirm correct interface and remote operation with plant digital control system.
- .6 Demonstrate operation and maintenance.
- .7 Operate boiler to demonstrate that each is capable of attaining full load output at the minimum efficiency identified in the submitted datasheets.
- .8 Extended continuous operational testing to be accomplished when the heat demand from the district heating system is large enough. This may require a return trip to site by the boiler supplier for final full load setup, within the first 5 years of operation.

.3 Manufacturer Inspection reports shall be provided to the Owner, after each visit during installation, commissioning, startup, and post startup.

.4 The Manufacturer shall indicate in their quotation the amount allocated for start-up and commissioning (minimum of seven working days). Field time allocated for field installation assistance and rates for additional field time.

.5 The Manufacturer shall properly flush, clean, and dry all boiler piping and or control air tubing internal surfaces in factory prior to delivery.

.6 The Manufacturer or designated representative will directly review the boiler water side chemical cleaning proposed procedures and approve the type of cleaning agent proposed. The Manufacturer or designated representative will be witness to the cleaning. Cleaning will be complete upon approval of the results by the Manufacturer or designated representative.

.7 Provide Engineer at least 48 hours notice prior to inspections, tests, and demonstrations. Submit written report of inspections and test results.

3.6 TESTING, TRIAL OPERATIONS AND ADJUSTMENTS

.1 The Manufacturer shall test controls, all moving parts and their electric motors and/or pneumatic operations before trial operation. Coordinate expected impact due to boiler testing with other suppliers of equipment installed in the plant, prior to the beginning of any test. Specifically, ensure that no instruments can be damaged due, for example, to abnormal input conditions, and that no motors can cause damage due to reverse rotation, etc. In case tests are not satisfactory to the Manufacturer or the Commissioning Authority, the Manufacturer shall immediately proceed to correct the Work, then another test shall be applied and this will continue until the Commissioning Authority is satisfied. The Contractor would remain in charge of the facilities during all tests. The manufacturer is required to conform to all contractor safety protocols while onsite, and to coordinate with the contractor as it relates to safety.

.2 After the testing is satisfactorily carried out the Manufacturer shall undertake trial operations and performance tests with the burning of natural gas of a **quality listed in the Manufacturers Quotation.**

.3 The Owner will have an energy meter installed as part of the hot water plant piping system. The energy meter will consist of an energy integrator, flow meter, and two temperature sensors.

.4 The Manufacturer shall carry out the trial operation and the performance verification tests in the presence of the Commissioning Authority and/or any person and authority the Owner nominates to be in attendance.

.5 The performance and capacity verification at 100% output is expected to take place during the first winter of operation when there is sufficient heating load on the system. If the trial operation or the performance tests reveals any shortcomings of the boiler system, the Manufacturer must rectify the deficiency immediately, adjust the boiler system and carry out new trial operations in the presence of same persons as the first trial operations.

.6 Demonstrate that the equipment and devices, power and control systems actually meet the design intentions and specified requirements. Verify and test operation of remote control system.

3.7 FINAL INSPECTION

.1 After testing, trial operation(s), adjustments and the Manufacturer's own final inspection, he (the Manufacturer) shall request a final inspection.

.2 The final inspection by the Owner and other personnel authorized by the Owner shall begin within eight working days of the Manufacturer's request.

.3 Final deficiencies list will be issued after the inspection by the Engineer.

3.8 PERFORMANCE VERIFICATION

.1 Following the completion of testing, trial operations, and adjustment, the Owner or designated representative shall operate each boiler such that the following can be confirmed, when firing on natural gas:

.1 Full load output is achieved and maintained continuously for a minimum half hour by each boiler.

.2 NOx levels remain at or below 30 ppm during full load operation.

.3 Minimum turndown is confirmed and the boiler operated continuously at minimum output for 1 hours.

3.9 ACCESS AND SERVICES BY OTHERS

.1 The Owners Installation Contractor and Owners representative to provide a visual inspection of the boilers when they arrive at the site. Any deficiencies will be forward to the manufacturer.

.2 Crane and forklift services for the unloading and hoisting into place of equipment and materials will be provided by the Owners Installation Contractor.

.3 The owner will provide the heating load from the closed hot water heating system for use during boiler testing.

.4 The owner will provide qualified operating engineer who will be responsible for the operation of the boiler systems but the boiler supplier will provide a boiler package that can meet the requirements for unattended operation.

.5 The water treatment for the closed hot water heating system will consist of fabric filters, softened water, and the addition of caustic soda to control the pH in the system between 8.5 and 10.5. The owner will provide corrosion coupons to monitor the rate of corrosion in the system.

End of Section

SCHEDULE B - QUOTATION

RFQ Title: **West Village Energy Centre – Hot Water Boilers**

RFQ No: **1220-040-2016-043**

CONTRACTOR

Legal Name: _____

Address: _____

Phone: _____

Fax: _____

Email: _____

CITY OF SURREY

City Representative: Richard D. Oppelt, Purchasing Manager

Address: Surrey City Hall
Finance & Technology Department – Purchasing Section
Reception Counter – 5th Floor West
13450 - 104 Avenue, Surrey, B.C., Canada, V3T 1V8

E-mail for PDF Files: purchasing@surrey.ca

1. If this Quotation is accepted by the City, a contract will be created as described in:
   (a) the Agreement;
   (b) the RFQ; and
   (c) other terms, if any, that are agreed to by the parties in writing.

2. Capitalized terms used and not defined in this Quotation will have the meanings given to them in the Agreement and RFQ. Except as specifically modified by this Quotation, all terms, conditions, representations, warranties and covenants as set out in the Agreement and RFQ will remain in full force and effect.

3. I/We have reviewed the RFQ Attachment 1 – Draft Agreement. If requested by the City, I/we would be prepared to enter into that Agreement, amended by the following departures (list, if any):

Section	Requested Departure(s) / Alternative(s)

4. The City requires that the successful Contractor have the following in place **before providing the Goods and Services**:
   (a) Workers' Compensation Board coverage in good standing and further, if an "Owner Operator" is involved, personal operator protection (P.O.P.) will be provided,
   Workers' Compensation Registration Number _____;
   (b) Prime Contractor qualified coordinator is Name: _____
   and Contact Number: _____;
   (c) Insurance coverage for the amounts required in the proposed Agreement as a minimum, naming the City as additional insured and generally in compliance with the City's sample insurance certificate form available on the City's Website Standard Certificate of Insurance;
   (d) City of Surrey or Intermunicipal Business License: Number _____;
   (e) If the Contractor's Goods and Services are subject to GST, the Contractor's GST Number is _____; and
   (f) If the Contractor is a company, the company name indicated above is registered with the Registrar of Companies in the Province of British Columbia, Canada, Incorporation Number _____.

   As of the date of this Quotation, we advise that we have the ability to meet all of the above requirements **except as follows** (list, if any):

Requested Departure(s) / Alternative(s)

5. The Contractor acknowledges that the departures it has requested in Sections 3 and 4 of this Quotation will not form part of the Agreement unless and until the City agrees to them in writing by initialing or otherwise specifically consenting in writing to be bound by any of them.

SECTION B-1

Changes and Additions to Specifications:

6. In addition to the warranties provided in the Agreement, this Quotation includes the following warranties:

7. I/We have reviewed the RFQ Attachment 1, Schedule A – Specifications of Goods and Scope of Services, to Attachment 1. If requested by the City, I/we would be prepared to meet those requirements, amended by the following departures and additions (list, if any):

Requested Departure(s) / Alternative(s) / Addition(s)

_____

_____

SECTION B-2

Fees and Payments

8. The Contractor offers to supply to the City of Surrey the Goods and Services for the prices plus applicable taxes as follows:

Base Bid:

Item	Description	Qty	Total Price
A	1000 BHP Hot Water Boiler Package	1	
B	1000 BHP Hot Water Boiler Package	1	
C	300 BHP Hot Water Boiler Package	1	
D	Master Boiler Communication Gateway/Controller	1	
E	Engineering Submittals	1 Lot	
F	Site Services, Training, and Final Documentation	1 Lot	
G	Delivery FOB Site	1 Lot	
	Subtotal:		
	GST 5%:		
	Total Quotation Price:		

Optional pricing:

The following is a list of Optional Prices to the Work and forms part of this RFQ, upon the acceptance of any of the Optional Prices. Do not include GST and do not state a revised Total Quotation Price.

Item	Description	Qty	Total Price
A.1	1500 BHP Hot Water Boiler Package (option in place of one 1000 BHP boiler)	1	
A.2	Site Services, Training, and Final Documentation	1 Lot	
A.3	Delivery FOB Site	1 Lot	
	A. Total		
B.1	300 BHP Hot Water Boiler Package (option to add a fourth boiler)	1	
B.2	Site Services, Training, and Final Documentation	1 Lot	
B.3	Delivery FOB Site	1 Lot	
	B. Total		
C.1	100 BHP Condensing Hot Water Boiler Package (option to add a fourth boiler)	1	
C.2	Site Services, Training, and Final Documentation	1 Lot	
C.3	Delivery FOB Site	1 Lot	
	C. Total		
D.1	300 BHP Condensing Hot Water Boiler Package (option to add a fourth boiler)	1	
D.2	Site Services, Training, and Final Documentation	1 Lot	
D.3	Delivery FOB Site	1 Lot	
	D. Total		
E.1	Economizer for 300 BHP Hot Water Boiler Package	1	
E.2	Site Services, Training, and Final Documentation	1 Lot	
E.3	Delivery FOB Site	1 Lot	
	E. Total		

Separate pricing:

The following is a list of Separate Prices to the Work and forms part of this RFQ, upon the acceptance of any of the Separate Prices. The Separate Prices are an addition or a deduction to the Total Quotation Price and do not include GST. DO NOT state a revised Total Quotation Price.

1. One (1) year scheduled maintenance contract. $_____
2. Two (2) year scheduled maintenance contract. $_____
3. Five (5) year scheduled maintenance contract. $_____
4. Recommended Spare Parts – Priced List

Delivery and Submittals:

Documentation Submittals will be provided _____ weeks after notice to proceed.

Delivery of Equipment, FOB Site, will occur _____ weeks after receipt of submittal drawings with comments.

Delivery delays due to rejected or unacceptable submittals will not be cause for the extension of the delivery period indicated above.

Variations from Base Bid

We submit herein a list of alternates (that will increase or reduce the base cost) including price revisions to our Quotation Price for the alternatives and variations we propose to the Specifications. The deductions may be applied singly or collectively to the Quotation Proce. We understand that should an alternative or variation be accepted by the City, it will be included in the contract documents as an addendum to the drawings and specifications, and not issued as a change order.

None of the following variation sums have been included in the base Quotation Price. (Attach additional page(s) as required).

Substitution/Alternates/Variations	Add/Deduct
_____	$_____
_____	$_____
_____	$_____
_____	$_____
_____	$_____

Surrey West Village Energy Centre – Hot Water Boiler Performance Datasheet

Boiler Model:_____; Output: 1000 BHP thermal

SEASON: WINTER

Fuel: Natural gas; 38.2 MJ/M3 (HHV)
Ambient Air for Combustion: 10 C at 40% Relative Humidity
Site Elevation: 110 meters Above Sea Level

FIRING RATE	%	10	25	50	75	100
BOILER OUTPUT MWt		0.981	2.45	4.91	7.36	9.81
OUTLET OPERATING PRESSURE	kPag	275	275	275	275	275
FLOWRATE	L/S	120	120	120	120	120
ENTERING WATER TEMPERATURE	°C					75
LEAVING WATER TEMPERATURE	°C	95	95	95	95	95
WATER SIDE PRESSURE DROP	kPa					
FLUE GAS TEMP. LVG. BOILER	°C					
STACK TEMPERATURE	°C					
NOx @ 3% O2 dry	ppm					
CO	ppm					
FUEL RATE	Kg/Hr					
EXCESS AIR	%					
COMBUSTION AIR RATE	Kg/Hr					
COMBUSTION AIR TEMPERATURE	°C					
FLUE GAS RATE	Kg/Hr					
RELEASE RATE	kW / M^2					
LIBERATION RATE	kW / M^3					
LOSSES						
Dry gas loss	%					
H2O+H2 in fuel	%					
H2O in air	%					
Radiation	%					
Manufacturer's margin	%					
Unaccounted for losses	%					
TOTAL LOSSES	%					
BOILER EFFICIENCY; Fuel to Water (HHV)	%					

ASME Boiler Heating Surface area (total), M^2	
Furnace Volume; M^3	
Minimum Flowrate (L/s)	

Vendor_____

Boiler Model:_____; Output: 1000 BHP thermal

SEASON: SUMMER

Fuel: Natural gas; 38.8 MJ/M3 (HHV)
Ambient Air for Combustion: 20 C at 40% Relative Humidity
Site Elevation: 110 meters ASL

FIRING RATE	%	10	25	50	75	100
BOILER OUTPUT MWt		0.981	2.45	4.91	7.36	9.81
OUTLET OPERATING PRESSURE	kPag	275	275	275	275	275
FLOWRATE	L/S	120	120	120	120	120
ENTERING WATER TEMPERATURE	°C					60
LEAVING WATER TEMPERATURE	°C	80	80	80	80	80
WATER SIDE PRESSURE DROP	kPa					
FLUE GAS TEMP. LVG. BOILER	°C					
STACK TEMPERATURE	°C					
NOx @ 3% O2 dry	ppm					
CO	ppm					
FUEL RATE	Kg/Hr					
EXCESS AIR	%					
COMBUSTION AIR RATE	Kg/Hr					
COMBUSTION AIR TEMPERATURE	°C					
FLUE GAS RATE	Kg/Hr					
RELEASE RATE	kW / M^2					
LIBERATION RATE	kW / M^3					
LOSSES						
Dry gas loss	%					
H2O+H2 in fuel	%					
H2O in air	%					
Radiation	%					
Manufacturer's margin	%					
Unaccounted for losses	%					
TOTAL LOSSES	%					
BOILER EFFICIENCY; Fuel to Water (HHV)	%					

Vendor_____

Surrey West Village Energy Centre – Hot Water Boiler Performance Datasheet

Boiler Model:_____; Output: 300 BHP thermal

SEASON: WINTER

Fuel: Natural gas; 38.2 MJ/M3 (HHV)
Ambient Air for Combustion: 10 C at 40% Relative Humidity
Site Elevation: 110 meters Above Sea Level

FIRING RATE	%	10	25	50	75	100
BOILER OUTPUT MWt		0.29	0.74	1.47	2.21	2.943
OUTLET OPERATING PRESSURE	kPag	275	275	275	275	275
FLOWRATE	L/S	36	36	36	36	36
ENTERING WATER TEMPERATURE	°C					75
LEAVING WATER TEMPERATURE	°C	95	95	95	95	95
WATER SIDE PRESSURE DROP	kPa					
FLUE GAS TEMP. LVG. BOILER	°C					
STACK TEMPERATURE	°C					
NOx @ 3% O2 dry	ppm					
CO	ppm					
FUEL RATE	Kg/Hr					
EXCESS AIR	%					
COMBUSTION AIR RATE	Kg/Hr					
COMBUSTION AIR TEMPERATURE	°C					
FLUE GAS RATE	Kg/Hr					
RELEASE RATE	kW / M^2					
LIBERATION RATE	kW / M^3					
LOSSES						
Dry gas loss	%					
H2O+H2 in fuel	%					
H2O in air	%					
Radiation	%					
Manufacturer's margin	%					
Unaccounted for losses	%					
TOTAL LOSSES	%					
BOILER EFFICIENCY; Fuel to Water (HHV)	%					

ASME Boiler Heating Surface area (total), M^2	
Furnace Volume; M^3	
Minimum Flowrate (L/s)	

Vendor_____

Boiler Model:_____; Output: 300 BHP thermal

SEASON: SUMMER

Fuel: Natural gas; 38.8 MJ/M3 (HHV)
Ambient Air for Combustion: 20 C at 40% Relative Humidity
Site Elevation: 110 meters ASL

FIRING RATE	%	10	25	50	75	100
BOILER OUTPUT MWt		0.29	0.74	1.47	2.21	2.943
OUTLET OPERATING PRESSURE	kPag	275	275	275	275	275
FLOWRATE	L/S	36	36	36	36	36
ENTERING WATER TEMPERATURE	°C					60
LEAVING WATER TEMPERATURE	°C	80	80	80	80	80
WATER SIDE PRESSURE DROP	kPa					
FLUE GAS TEMP. LVG. BOILER	°C					
STACK TEMPERATURE	°C					
NOx @ 3% O2 dry	ppm					
CO	ppm					
FUEL RATE	Kg/Hr					
EXCESS AIR	%					
COMBUSTION AIR RATE	Kg/Hr					
COMBUSTION AIR TEMPERATURE	°C					
FLUE GAS RATE	Kg/Hr					
RELEASE RATE	kW / M^2					
LIBERATION RATE	kW / M^3					
LOSSES						
Dry gas loss	%					
H2O+H2 in fuel	%					
H2O in air	%					
Radiation	%					
Manufacturer's margin	%					
Unaccounted for losses	%					
TOTAL LOSSES	%					
BOILER EFFICIENCY; Fuel to Water (HHV)	%					

Vendor_____

Surrey West Village Energy Centre – Hot Water Boiler Performance Datasheet

Boiler Model:_____; Output: 300 BHP thermal - Optional

SEASON: WINTER

Fuel: Natural gas; 38.2 MJ/M3 (HHV)
Ambient Air for Combustion: 10 C at 40% Relative Humidity
Site Elevation: 110 meters Above Sea Level

FIRING RATE	%	10	25	50	75	100
BOILER OUTPUT MWt		0.29	0.74	1.47	2.21	2.943
OUTLET OPERATING PRESSURE	kPag	275	275	275	275	275
FLOWRATE	L/S	36	36	36	36	36
ENTERING WATER TEMPERATURE	°C					75
LEAVING WATER TEMPERATURE	°C	95	95	95	95	95
WATER SIDE PRESSURE DROP	kPa					
FLUE GAS TEMP. LVG. BOILER	°C					
STACK TEMPERATURE	°C					
NOx @ 3% O2 dry	ppm					
CO	ppm					
FUEL RATE	Kg/Hr					
EXCESS AIR	%					
COMBUSTION AIR RATE	Kg/Hr					
COMBUSTION AIR TEMPERATURE	°C					
FLUE GAS RATE	Kg/Hr					
RELEASE RATE	kW / M^2					
LIBERATION RATE	kW / M^3					
LOSSES						
Dry gas loss	%					
H2O+H2 in fuel	%					
H2O in air	%					
Radiation	%					
Manufacturer's margin	%					
Unaccounted for losses	%					
TOTAL LOSSES	%					
BOILER EFFICIENCY; Fuel to Water (HHV)	%					

ASME Boiler Heating Surface area (total), M^2	
Furnace Volume; M^3	
Minimum Flowrate (L/s)	

Vendor_____

Surrey West Village Energy Centre – Hot Water Boiler Performance Datasheet

Boiler Model:_____; Output: 1500 BHP thermal - Optional

SEASON: WINTER

Fuel: Natural gas; 38.2 MJ/M3 (HHV)
Ambient Air for Combustion: 10 C at 40% Relative Humidity
Site Elevation: 110 meters Above Sea Level

FIRING RATE	%	10	25	50	75	100
BOILER OUTPUT MWt		1.47	3.68	7.36	11.04	14.72
OUTLET OPERATING PRESSURE	kPag	275	275	275	275	275
FLOWRATE	L/S	180	180	180	180	180
ENTERING WATER TEMPERATURE	°C					75
LEAVING WATER TEMPERATURE	°C	95	95	95	95	95
WATER SIDE PRESSURE DROP	kPa					
FLUE GAS TEMP. LVG. BOILER	°C					
STACK TEMPERATURE	°C					
NOx @ 3% O2 dry	ppm					
CO	ppm					
FUEL RATE	Kg/Hr					
EXCESS AIR	%					
COMBUSTION AIR RATE	Kg/Hr					
COMBUSTION AIR TEMPERATURE	°C					
FLUE GAS RATE	Kg/Hr					
RELEASE RATE	kW / M^2					
LIBERATION RATE	kW / M^3					
LOSSES						
Dry gas loss	%					
H2O+H2 in fuel	%					
H2O in air	%					
Radiation	%					
Manufacturer's margin	%					
Unaccounted for losses	%					
TOTAL LOSSES	%					
BOILER EFFICIENCY; Fuel to Water (HHV)	%					

ASME Boiler Heating Surface area (total), M^2	
Furnace Volume; M^3	
Minimum Flowrate (L/s)	

Vendor_____

Boiler Model:_____; Output: 1500 BHP thermal - Optional

SEASON: SUMMER

Fuel: Natural gas; 38.8 MJ/M3 (HHV)
Ambient Air for Combustion: 20 C at 40% Relative Humidity
Site Elevation: 110 meters ASL

FIRING RATE	%	10	25	50	75	100
BOILER OUTPUT MWt		1.47	3.68	7.36	11.04	14.72
OUTLET OPERATING PRESSURE	kPag	275	275	275	275	275
FLOWRATE	L/S	180	180	180	180	180
ENTERING WATER TEMPERATURE	°C					60
LEAVING WATER TEMPERATURE	°C	80	80	80	80	80
WATER SIDE PRESSURE DROP	kPa					
FLUE GAS TEMP. LVG. BOILER	°C					
STACK TEMPERATURE	°C					
NOx @ 3% O2 dry	ppm					
CO	ppm					
FUEL RATE	Kg/Hr					
EXCESS AIR	%					
COMBUSTION AIR RATE	Kg/Hr					
COMBUSTION AIR TEMPERATURE	°C					
FLUE GAS RATE	Kg/Hr					
RELEASE RATE	kW / M^2					
LIBERATION RATE	kW / M^3					
LOSSES						
Dry gas loss	%					
H2O+H2 in fuel	%					
H2O in air	%					
Radiation	%					
Manufacturer's margin	%					
Unaccounted for losses	%					
TOTAL LOSSES	%					
BOILER EFFICIENCY; Fuel to Water (HHV)	%					

Vendor_____

Boiler Model:_____; Output: 300 BHP thermal - Optional

SEASON: SUMMER

Fuel: Natural gas; 38.8 MJ/M3 (HHV)
Ambient Air for Combustion: 20 C at 40% Relative Humidity
Site Elevation: 110 meters ASL

FIRING RATE	%	10	25	50	75	100
BOILER OUTPUT MWt		0.29	0.74	1.47	2.21	2.943
OUTLET OPERATING PRESSURE	kPag	275	275	275	275	275
FLOWRATE	L/S	36	36	36	36	36
ENTERING WATER TEMPERATURE	°C					60
LEAVING WATER TEMPERATURE	°C	80	80	80	80	80
WATER SIDE PRESSURE DROP	kPa					
FLUE GAS TEMP. LVG. BOILER	°C					
STACK TEMPERATURE	°C					
NOx @ 3% O2 dry	ppm					
CO	ppm					
FUEL RATE	Kg/Hr					
EXCESS AIR	%					
COMBUSTION AIR RATE	Kg/Hr					
COMBUSTION AIR TEMPERATURE	°C					
FLUE GAS RATE	Kg/Hr					
RELEASE RATE	kW / M^2					
LIBERATION RATE	kW / M^3					
LOSSES						
Dry gas loss	%					
H2O+H2 in fuel	%					
H2O in air	%					
Radiation	%					
Manufacturer's margin	%					
Unaccounted for losses	%					
TOTAL LOSSES	%					
BOILER EFFICIENCY; Fuel to Water (HHV)	%					

Vendor_____

Surrey West Village Energy Centre – Hot Water Boiler Performance Datasheet

Condensing Boiler Model:_____; Output: 300 BHP thermal - Optional

SEASON: WINTER

Fuel: Natural gas; 38.2 MJ/M3 (HHV)
Ambient Air for Combustion: 10 C at 40% Relative Humidity
Site Elevation: 110 meters Above Sea Level

FIRING RATE	%	10	25	50	75	100
BOILER OUTPUT MWt		0.294	0.736	1.47	2.21	2.94
OUTLET OPERATING PRESSURE	kPag	275	275	275	275	275
FLOWRATE	L/S					
ENTERING WATER TEMPERATURE	°C	50	50	50	50	50
LEAVING WATER TEMPERATURE	°C	95	95	95	95	95
WATER SIDE PRESSURE DROP	kPa					
FLUE GAS TEMP. LVG. BOILER	°C					
STACK TEMPERATURE	°C					
NOx @ 3% O2 dry	ppm					
CO	ppm					
FUEL RATE	Kg/Hr					
EXCESS AIR	%					
COMBUSTION AIR RATE	Kg/Hr					
COMBUSTION AIR TEMPERATURE	°C					
FLUE GAS RATE	Kg/Hr					
RELEASE RATE	kW / M^2					
LIBERATION RATE	kW / M^3					
LOSSES						
Dry gas loss	%					
H2O+H2 in fuel	%					
H2O in air	%					
Radiation	%					
Manufacturer's margin	%					
Unaccounted for losses	%					
TOTAL LOSSES	%					
BOILER EFFICIENCY; Fuel to Water (HHV)	%					

ASME Boiler Heating Surface area (total), M^2	
Furnace Volume; M^3	
Minimum Flowrate (L/s)	

Vendor_____

Condensing Boiler Model:_____; Output: 300 BHP thermal - Optional

SEASON: SUMMER

Fuel: Natural gas; 38.8 MJ/M3 (HHV)
Ambient Air for Combustion: 20 C at 40% Relative Humidity
Site Elevation: 110 meters ASL

FIRING RATE	%	10	25	50	75	100
BOILER OUTPUT MWt		0.294	0.736	1.47	2.21	2.94
OUTLET OPERATING PRESSURE	kPag	275	275	275	275	275
FLOWRATE	L/S					
ENTERING WATER TEMPERATURE	°C	40	40	40	40	40
LEAVING WATER TEMPERATURE	°C	70	70	70	70	70
WATER SIDE PRESSURE DROP	kPa					
FLUE GAS TEMP. LVG. BOILER	°C					
STACK TEMPERATURE	°C					
NOx @ 3% O2 dry	ppm					
CO	ppm					
FUEL RATE	Kg/Hr					
EXCESS AIR	%					
COMBUSTION AIR RATE	Kg/Hr					
COMBUSTION AIR TEMPERATURE	°C					
FLUE GAS RATE	Kg/Hr					
RELEASE RATE	kW / M^2					
LIBERATION RATE	kW / M^3					
LOSSES						
Dry gas loss	%					
H2O+H2 in fuel	%					
H2O in air	%					
Radiation	%					
Manufacturer's margin	%					
Unaccounted for losses	%					
TOTAL LOSSES	%					
BOILER EFFICIENCY; Fuel to Water (HHV)	%					

Vendor_____

Surrey West Village Energy Centre – Hot Water Boiler Performance Datasheet

Condensing Boiler Model:_____; Output: 100 BHP thermal - Optional

SEASON: WINTER

Fuel: Natural gas; 38.2 MJ/M3 (HHV)
Ambient Air for Combustion: 10 C at 40% Relative Humidity
Site Elevation: 110 meters Above Sea Level

FIRING RATE	%	10	25	50	75	100
BOILER OUTPUT MWt		0.098	0.245	0.491	0.736	0.981
OUTLET OPERATING PRESSURE	kPag	275	275	275	275	275
FLOWRATE	L/S					
ENTERING WATER TEMPERATURE	°C	50	50	50	50	50
LEAVING WATER TEMPERATURE	°C	95	95	95	95	95
WATER SIDE PRESSURE DROP	kPa					
FLUE GAS TEMP. LVG. BOILER	°C					
STACK TEMPERATURE	°C					
NOx @ 3% O2 dry	ppm					
CO	ppm					
FUEL RATE	Kg/Hr					
EXCESS AIR	%					
COMBUSTION AIR RATE	Kg/Hr					
COMBUSTION AIR TEMPERATURE	°C					
FLUE GAS RATE	Kg/Hr					
RELEASE RATE	kW / M^2					
LIBERATION RATE	kW / M^3					
LOSSES						
Dry gas loss	%					
H2O+H2 in fuel	%					
H2O in air	%					
Radiation	%					
Manufacturer's margin	%					
Unaccounted for losses	%					
TOTAL LOSSES	%					
BOILER EFFICIENCY; Fuel to Water (HHV)	%					

ASME Boiler Heating Surface area (total), M^2	
Furnace Volume; M^3	
Minimum Flowrate (L/s)	

Vendor_____

Condensing Boiler Model:_____; Output: 100 BHP thermal - Optional

SEASON: SUMMER

Fuel: Natural gas; 38.8 MJ/M3 (HHV)
Ambient Air for Combustion: 20 C at 40% Relative Humidity
Site Elevation: 110 meters ASL

FIRING RATE	%	10	25	50	75	100
BOILER OUTPUT MWt		0.098	0.245	0.491	0.736	0.981
OUTLET OPERATING PRESSURE	kPag	275	275	275	275	275
FLOWRATE	L/S					
ENTERING WATER TEMPERATURE	°C	40	40	40	40	40
LEAVING WATER TEMPERATURE	°C	70	70	70	70	70
WATER SIDE PRESSURE DROP	kPa					
FLUE GAS TEMP. LVG. BOILER	°C					
STACK TEMPERATURE	°C					
NOx @ 3% O2 dry	ppm					
CO	ppm					
FUEL RATE	Kg/Hr					
EXCESS AIR	%					
COMBUSTION AIR RATE	Kg/Hr					
COMBUSTION AIR TEMPERATURE	°C					
FLUE GAS RATE	Kg/Hr					
RELEASE RATE	kW / M^2					
LIBERATION RATE	kW / M^3					
LOSSES						
Dry gas loss	%					
H2O+H2 in fuel	%					
H2O in air	%					
Radiation	%					
Manufacturer's margin	%					
Unaccounted for losses	%					
TOTAL LOSSES	%					
BOILER EFFICIENCY; Fuel to Water (HHV)	%					

Vendor_____

SECTION B-3

Time Schedule:

9. Contractors should provide an estimated schedule, with major item descriptions and times indicating a commitment to provide the Goods and perform the Services within the time specified (use the spaces provided and/or attach additional pages, if necessary).

MILESTONE DATES _____

ACTIVITY	SCHEDULE									
	1	2	3	4	5	6	7	8	9	10

SECTION B-4

Key Personnel & Sub-Contractors:

10. Contractor should provide information on the background and experience of all key personnel proposed to provide the Goods and Services (use the spaces provided and/or attach additional pages, if necessary):

Key Personnel

Name: _____
Experience: _____
Dates: _____
Project Name: _____
Responsibility: _____

11. Contractor should provide the following information on the background and experience of all sub-contractors and material suppliers proposed to undertake a portion of the Goods and Services (use the spaces provided and/or attach additional pages, if necessary):

Description Of Goods & Services	*Sub-Contractors & Material Suppliers Names*	*Years Of Working With Contractor*	*Telephone Number And Email*

SECTION B-5

Experience and References:

12. Contractor's relevant experience and qualifications in delivering Goods and Services similar to those required by the Agreement (use the spaces provided and/or attach additional pages, if necessary):

13. Contractor's relevant references (name and telephone number) (use the spaces provided and/or attach additional pages, if necessary). The City's preference is to have a minimum of three references. Previous clients of the Contractor may be contacted at the City's discretion.

14. Contractor to describe their sustainability initiatives relating to the environmental impacts. The environmental attributes (green) of their Goods and Services. Anticipated objectives (e.g. carbon neutral by 2015). Information pertaining to their environmental policies, programs and practices. Confirm that the Contractor complies with any applicable objective.

Metro Vancouver's Non-Road Diesel Engine Emissions Regulation By-law:

15. Contractor should confirm they are in compliance with By-law (if applicable):

❒ Applicable as follows ❒ Not applicable to this project

No.	Equipment Description	Engine Tier Designation	Engine Registration Number as Issued by Metro Vancouver
1		❒ Tier 0 or ❒ Tier 1	
2		❒ Tier 0 or ❒ Tier 1	
3		❒ Tier 0 or ❒ Tier 1	
4		❒ Tier 0 or ❒ Tier 1	
5		❒ Tier 0 or ❒ Tier 1	

16. I/We the undersigned duly authorized representatives of the Contractor, having received and carefully reviewed the RFQ and the Agreement, submit this Quotation in response to the RFQ.

This Quotation is offered by the Contractor this _____ day of _____, 201_.

CONTRACTOR

I/We have the authority to bind the Contractor

_____
(Legal Name of Contractor)

_____
(Signature of Authorized Signatory)

_____
(Print Name and Position of Authorized Signatory)

_____
(Signature of Authorized Signatory)

_____
(Print Name and Position of Authorized Signatory)

This Quotation is accepted by the City this _____ day of _____, 201_.

CITY OF SURREY

_____
(Signature of Authorized Signatory)

_____
(Print Name and Position of Authorized Signatory)

_____
(Signature of Purchasing Representative

_____
(Print Name of Purchasing Representative)