PURCHASING SECTION
13450 – 104th Avenue, Surrey, B.C. V3T 1V8
Tel: 604-590-7274
E-mail: purchasing@surrey.ca

ADDENDUM NO. 1

REQUEST FOR QUOTATION NO.:	**1220-040-2017-037**
TITLE:	**DOMESTIC HOT WATER UPGRADE CLOVERDALE ARENA**
ADDENDUM ISSUE DATE:	**MARCH 2, 2017**
CLOSING DATE:	**PREFER TO RECEIVE QUOTATIONS ON OR BEFORE MARCH 8, 2017**

INFORMATION FOR CONTRACTORS

This Addendum is issued to provide additional information to the RFQ for the above named project, to the extent referenced and shall become a part thereof. No consideration will be allowed for extras due to the contractor not being familiar with this addendum. This Addendum No. 1 contains six (6) pages in total including attachments.

Refer to Schedule B – Appendix 2 Contract Drawings

Delete mechanical drawings in Schedule B - Appendix 2 in its entirety and substitute with mechanical drawings as attached to this Addendum.

DRAWING NUMBER SPECIFICATION	DRAWING	DATE	REVISION NO.	REVISION DATE
Mechanical Drawings as prepared by: Rocky Point Engineering Ltd.				
M-1	Cover Sheet	February 2017		17.02.10
M-2	Plumbing Plan – Main/Second Floor New/Demo	February 2017		17.02.10
M-3	Schematics Enlarged Plans	February 2017		17.02.10
M-4	Schematics Photos	February 2017		17.02.10
M-5	Specifications	February 2017		17.02.10

END OF ADDENDUM

All Addenda will become part of the RFQ Documents.

CLOVERDALE ARENA DOMESTIC HOT WATER UPGRADE

CONSULTANTS:

MECHANICAL: ROCKY POINT ENGINEERING LTD.
208-20171 92A AVENUE
LANGLEY BC, V1M-3A5
TEL: (604) 888-7779
FAX: (604) 888-7719

DRAWING INDEX:

MECHANICAL:

REV.	DATE	DESCRIPTION	BY
2	17.02.10	ISSUED FOR TENDER	TP
1	17.02.06	ISSUED FOR REVIEW	TP

REVISIONS

KEYPLAN

CLIENT

ROCKY POINT ENGINEERING LTD.
Vancouver • Langley • Victoria • Nanaimo • Kelowna • Kamloops • Nelson
Langley Office
208 - 20171 92A Avenue
Langley, BC V1M 3A5
www.rpeng.ca
Tel: (604) 888-7779
Fax: (604) 888-7719

SEAL

PROJECT

CLOVERDALE ARENA DOMESTIC HOT WATER UPGRADE

6090 176 St, Surrey, BC

SHEET TITLE

COVER SHEET

PROJECT	16616-M
SCALE	AS NOTED
DWG DATE	FEBRUARY, 2017
DESIGNED	TP
DRAWN	MM
CHECKED	TP
APPROVED	RC

DRAWING

M-1

OF 5

DRAWING NOTES

2-1 REMOVE EXISTING HOT WATER HEATER, STORAGE TANK, PUMP AND ASSOCIATED PIPING. REMOVE FLUE AND CAP ROOF OPENING COMPLETE WITH 50mm RIGID INSULATION. REMOVED AND CAP OFF GAS AND REMOVED REDUNDANT PIPING AS NOTED.

2-2 REMOVE EXISTING HOT WATER HEATER & GAS PIPING.

2-3 REMOVE ALL DCW AND DHW PIPING AS NOTED.

2-4 RE AND RE EXISTING BULKHEAD.

2-5 EXISTING THERMOSTATIC MIXING VALVE TO BE REPLACED. EXISTING HOSE BIB TO BE REMOVED.

2-6 INSULATE EXISTING DCW PIPING AS NOTED.

2-7 INSTALL NEW HOT WATER HEATERS AND STORAGE TANKS. REFER TO 3/M3 FOR ENLARGED PLAN AND 1/M3 FOR SCHEMATIC.

2-8 PROVIDE NEW THERMOSTATIC MIXING VALVE MX-1. ROTATE THREADED CONNECTION ON EXISTING EYEWASH STATION AND CONNECT TO 32ø LINE FROM THERMOSTATIC MIXING VALVE.

2-9 CONTRACTOR TO CONFIRM ROUTING OF EXISTING BELOW GRADE SANITARY AND TIE NEW FLOOR DRAIN INTO EXISTING.

2-10 40ø DHW TO HB-2 FOR ZAMBONI C/W RPBFP INSTALLED 1200mm A.F.F.

2-11 REMOVED EXISTING SINK AND ASSOCIATED MILLWORK

2-12 ABANDON INACCESSIBLE DCW AND DHW IN THE WALL

2-13 REPLACE EXISTING ZAMBONI FILL STATION.

GENERAL NOTES

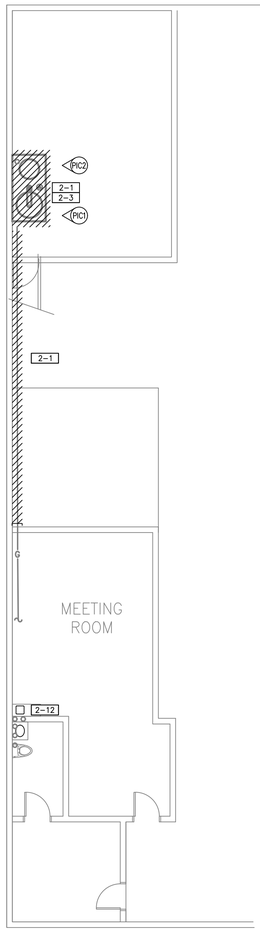
- EXISTING BELOW GRADE SANITARY BASED OF RECORD DRAWINGS. CONTRACTOR TO CONFIRM LOCATION.
- ALL NECESSARY DRY WALL ASBESTOS TESTING AND ABETMENT WILL BE UNDERTAKEN BY THE CITY.

ELECTRICAL NOTES

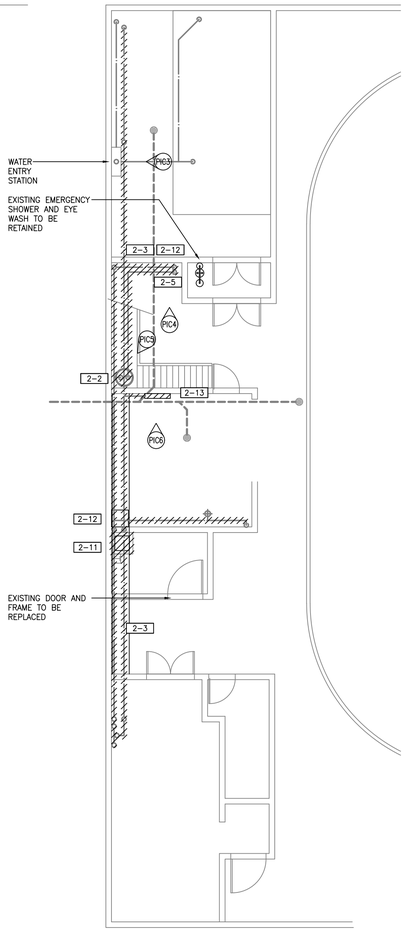
1. PROVIDE ELECTRICAL POWER WIRING FROM EXISTING ELECTRICAL PANEL TO NEW BOILERS, PUMP AND ELECTRIC BASEBOARD. WIRING TO BE #12 AWG IN PROTECTIVE TECK CABLE JACKETING.
2. PROVIDE NEW BREAKER IN EXISTING PANEL TO SERVICE EACH NEW BOILER AND ONE TO SERVE ELECTRIC BASEBOARD AND RECIRC PUMP.
3. PROVIDE A DISCONNECT SWITCH FOR EACH BOILER ON THE WALL BESIDE THE BOILER

SYMBOL SCHEDULE

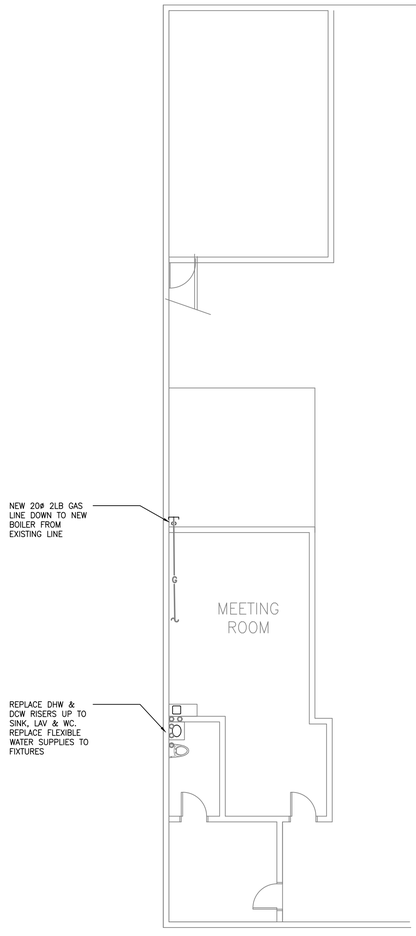
- COLD WATER (DCW) – NEW
- COLD WATER (DCW) – EXISTING
- HOT WATER (DHW) – NEW
- HOT WATER (DHW) – EXISTING
- HOT WATER RECIRC (DHWR) – NEW
- HOT WATER RECIRC (DHWR) – EXISTING
- NATURAL GAS – NEW
- NATURAL GAS – EXISTING
- DIRECTION OF FLOW
- SLOPE PIPE OR DUCT
- PIPE DROP
- PIPE RISE
- PIPE TEE DOWN
- PIPE TEE UP
- PIPE SLEEVE
- PIPE ANCHOR
- PIPE UNION
- FLEXIBLE CONNECTION
- CHECK VALVE
- BALL VALVE
- CIRCUIT BALANCING VALVE
- PRESSURE REDUCING VALVE
- STRAINER
- AQUASTAT WITH IMMERSION WELL
- TEMPERATURE SENSOR WITH IMMERSION WELL
- TRIDICATOR WITH IMMERSION WELL
- RELIEF VALVE
- A.A.V. AUTOMATIC AIR VENT
- PRESSURE GAUGE
- THERMOMETER WITH IMMERSION WELL
- PUMP
- SIGHT GLASS
- REDUCED PRESSURE PRINCIPAL BACKFLOW PREVENTOR
- OPEN DRAIN
- FLOOR DRAIN
- FUNNEL FLOOR DRAIN
- EQUIPMENT / FIXTURE TYPE
- DETAIL NUMBER / DRAWING NUMBER
- PIPING/EQUIPMENT DEMOLITION
- EXISTING PIPING TO BE INSULATED
- HEATING PIPE END FLANGE
- GAS PLUG VALVE
- AUTOMATIC AIR VENT PIPE TO FLOOR DRAIN
- CONDENSATE DRAIN
- PHOTO REFERENCE



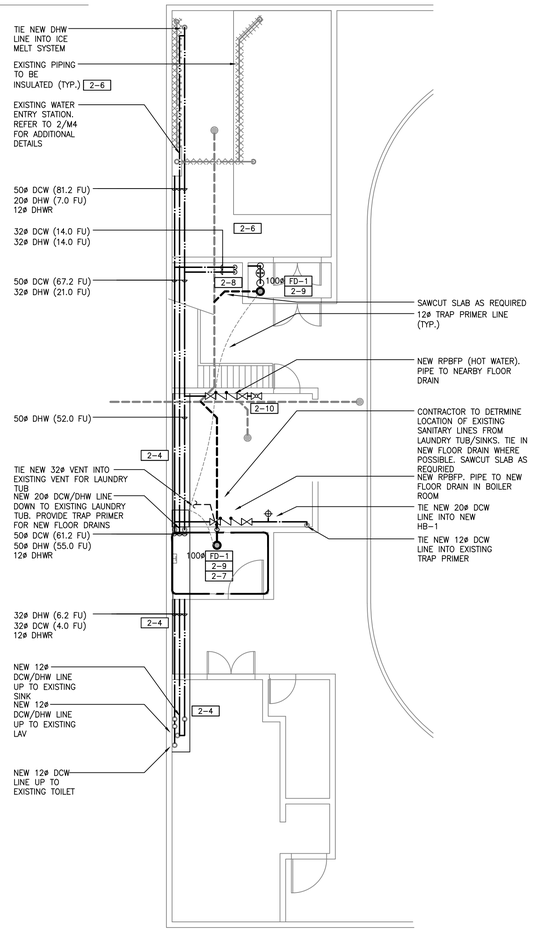
1 SECOND FLOOR DEMO
M-2 Scale: 1:100



2 MAIN FLOOR DEMO
M-2 Scale: 1:100



3 SECOND FLOOR NEW
M-2 Scale: 1:100



4 MAIN FLOOR NEW
M-2 Scale: 1:100

REV.	DATE	DESCRIPTION	BY
2	17.02.10	ISSUED FOR TENDER	TP
1	17.02.06	ISSUED FOR REVIEW	TP

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Vancouver • Langley • Victoria • Nanaimo • Kelowna • Kamloops • Nelson
Langley Office
208 - 20171 92A Avenue
Langley, BC V1M 3A5
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SEAL

PROJECT

CLOVERDALE ARENA DOMESTIC HOT WATER UPGRADE

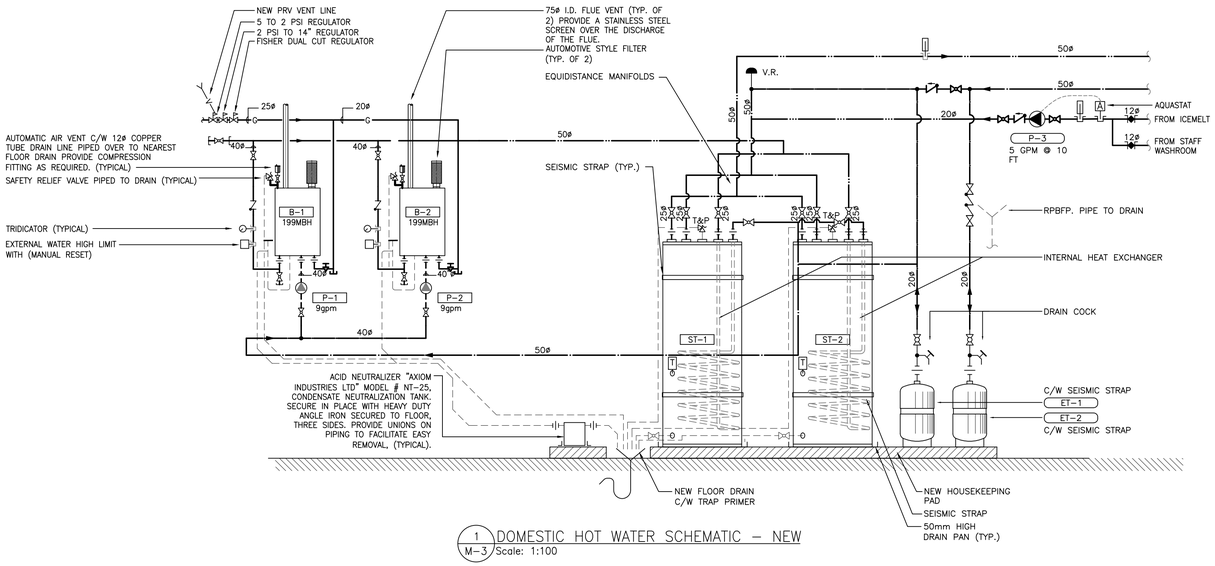
6090 176 St, Surrey, BC

SHEET TITLE

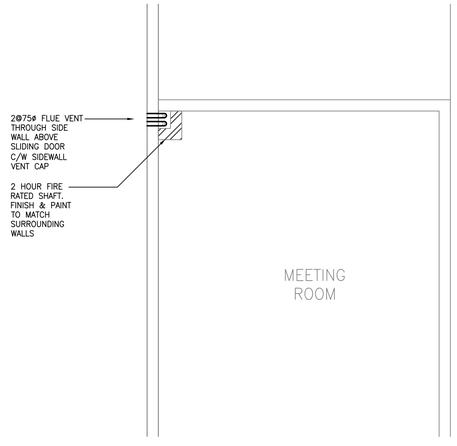
PLUMBING PLAN MAIN/SECOND FLOOR NEW/DEMO

PROJECT	16616-M
SCALE	AS NOTED
DWG DATE	FEBRUARY, 2017
DESIGNED	TP
DRAWN	MM
CHECKED	TP
APPROVED	RC
DRAWING	

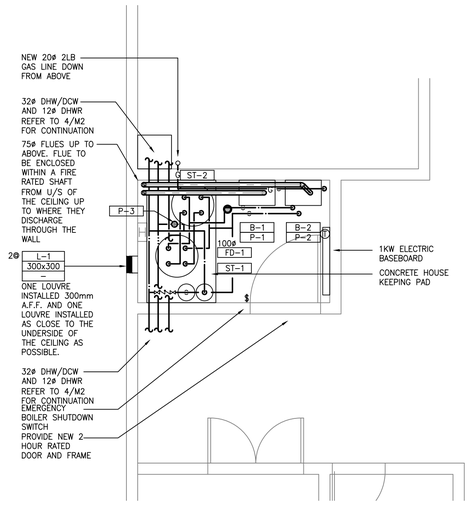
M-2



1 M-3 DOMESTIC HOT WATER SCHEMATIC – NEW
Scale: 1:100



2 M-3 SECOND FLOOR NEW – ENLARGED
Scale: 1:100



3 M-2 MAIN FLOOR NEW – ENLARGED
Scale: 1:100

REV.	DATE	DESCRIPTION	BY
2	17.02.10	ISSUED FOR TENDER	TP
1	17.02.06	ISSUED FOR REVIEW	TP

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SEAL

PROJECT

CLOVERDALE ARENA DOMESTIC HOT WATER UPGRADE

6090 176 St, Surrey, BC

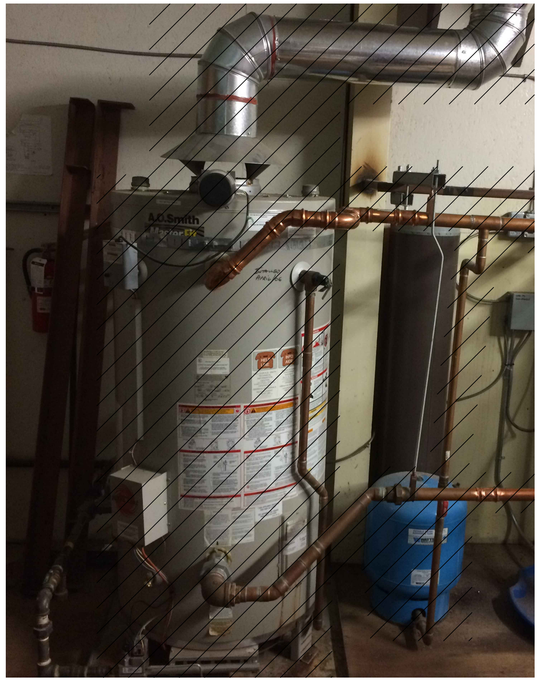
SHEET TITLE

SCHEMATICS ENLARGED PLANS

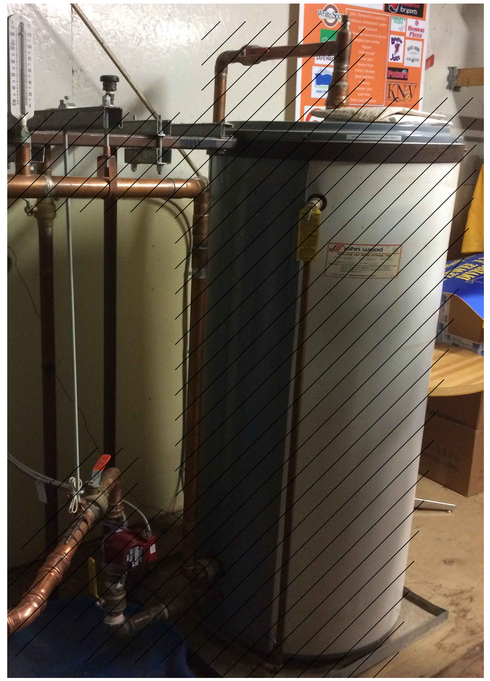
PROJECT	16616-M
SCALE	AS NOTED
DWG DATE	FEBRUARY, 2017
DESIGNED	TP
DRAWN	MM
CHECKED	TP
APPROVED	RC

DRAWING

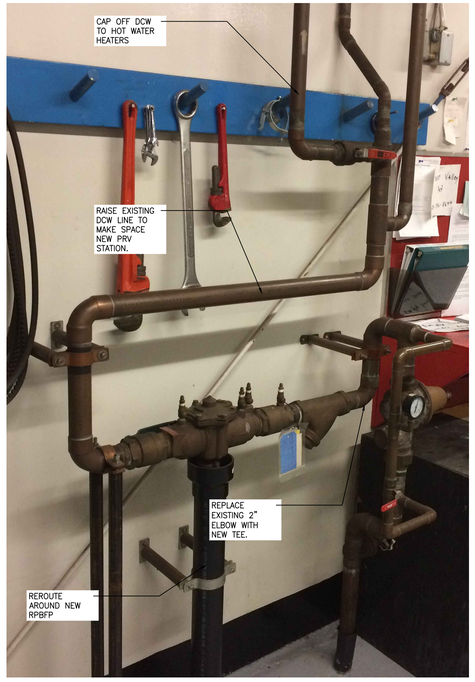
M-3



PIC1 EXISTING HOT WATER HEATER AND EXPANSION TANK TO BE REMOVED
Scale: NTS

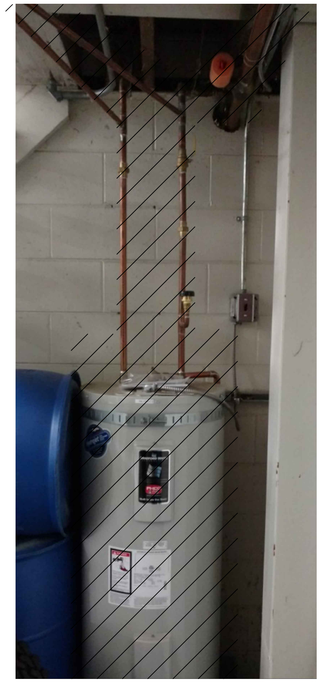


PIC2 EXISTING HOT WATER STORAGE TANK TO BE REMOVED
Scale: NTS



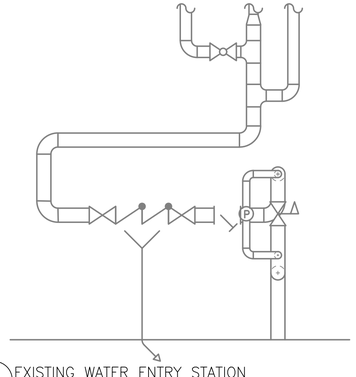
PIC3 EXISTING WATER ENTRY STATION TO BE MODIFIED
Scale: NTS

PIC4 EXISTING EMERGENCY SHOWER THERMOSTATIC MIXING VALVE TO BE R
Scale: NTS

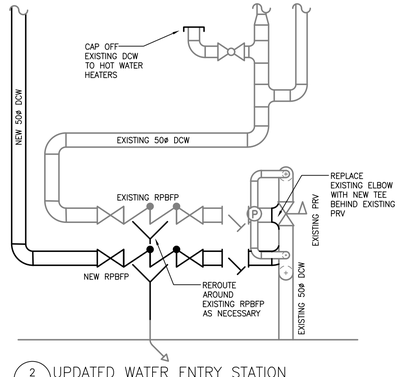


PIC5 EXISTING DHWT TO BE REMOVED
Scale: NTS

PIC6 EXISTING ZAMBONI RPBFP TO BE REMOVED
Scale: NTS



1 M-4 EXISTING WATER ENTRY STATION
Scale: NTS



2 M-4 UPDATED WATER ENTRY STATION
Scale: NTS

REV.	DATE	DESCRIPTION	BY
2	17.02.10	ISSUED FOR TENDER	TP
1	17.02.06	ISSUED FOR REVIEW	TP

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Vancouver • Langley • Victoria • Nanaimo • Kelowna • Kamloops • Nelson
Langley Office
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SEAL

PROJECT

CLOVERDALE ARENA DOMESTIC HOT WATER UPGRADE

6090 176 St, Surrey, BC

SHEET TITLE

SCHEMATICS PHOTOS

PROJECT	16616-M
SCALE	AS NOTED
DWG DATE	FEBRUARY, 2017
DESIGNED	TP
DRAWN	MM
CHECKED	TP
APPROVED	RC
DRAWING	

M-4

1.0 BASIC MECHANICAL REQUIREMENTS

1.1 DRAWINGS AND SPECIFICATIONS

.1 Work of this Division shown on the drawings includes the provision of complete, operational, tested domestic water heaters and distribution systems.

.2 Provide all labour, materials and products as specified herein and shown on the drawings as required to accomplish this work. Drawings are diagrammatic and indicate general arrangement of systems and work included.

1.2 PERMITS AND INSPECTIONS OF THE WORK

.1 Install to the requirements of the 2012 BC Building Code, Authorities Having Jurisdiction, SMACNA Guidelines and as per the written instructions of the equipment manufacturers and suppliers.

.2 Obtain and pay for all necessary permits required to carry out the work specified. Furnish certificates and inspection certificates received from Authorities Having Jurisdiction, verifying that work installed conforms to necessary codes and standards.

.3 Do not conceal any installation prior to review by the consultant or the appropriate inspection authority. Ensure 72 hours written notice is provided to each of these parties prior to requirement for an inspection of the work. This includes pressure tests of piping, drainage systems, ductwork, safety devices etc.

1.3 QUALITY ASSURANCE

.1 At completion of the work provide written declaration that all systems are installed and operating as per the requirements of the contract documents, and that the Contractor warranties the work, including all required parts and labour for a period of one full year from the date of Substantial Performance.

.2 Installation of the plumbing systems must be carried out by skilled tradesman holding a valid TQ licence, or apprentices working under the supervision of a licenced tradesman. When apprentices are working, the licenced tradesman for each discipline must be on the site.

1.4 COORDINATION AND EXAMINATION

.1 Before submitting a bid, visit and examine all drawings on which the work is in any way dependent. No claims for an increase in Contract Price or Contract Time arising from observable or reasonably inferable conditions will be accepted by the Consultant. Report to the consultant any conditions which might prevent installing the equipment in the manner intended.

.2 Coordinate all mechanical work with the work of other sections to avoid conflict.

.3 Locate distribution systems, equipment and materials to eliminate interference, conserve headroom and leave maximum usable space.

.4 Route piping and ductwork in an orderly manner, as indicated on the drawings. Generally follow routes parallel and perpendicular to building structure.

.5 If interference should occur, the Consultant will review relocation of equipment and materials regardless of installation order. No installation shall proceed without complete coordination between all trades.

.6 Alter location of ducts or pipes at the direction of the Consultant without charge to the Owner, so long as the change is made before installation and does not necessitate additional materials.

1.5 SHOP DRAWINGS, MAINTENANCE MANUALS AND AS-BUILTS

.1 Provide six copies of shop drawings for the equipment listed below, in accordance with MCA-BC standards. Shop drawings shall indicate all aspects of the construction and operating performance of the product proposed for supply. All shop drawings must be submitted within 30 days after of award of contract. Provide for:
.1 Boilers
.2 Pumps
.3 Electric Heaters
.4 Plumbing Fixtures
.6 Storage Tanks

.2 Maintain a set of record drawings at the site. Record drawings shall be neatly maintained on a set of prints provided to the Contractor. Drawings are to be maintained in an up to date condition at all times, recording all changes and deviations to the installation from those indicated on the construction issue drawings. The Contractor is to sign and seal all drawings certifying that they are as-built then provide the consultant with the as-built mark-ups.

.3 Supply three copies of the operating and maintenance data published by the equipment manufacturers with reviewed shop drawings.

1.6 ACCESSIBILITY

.1 Locate all equipment which must be serviced, operated or maintained in fully accessible positions, with minimum interference and maximum usable space.

.2 Supply and install all access panels in the ceiling, wall, partitions, etc. where openings are necessary or the proper servicing or removal of equipment is required. Construct panels of metal with hinged door and screwdriver cam lock.

1.7 CLEANING

.1 Any dirt, rubbish or grease on walls, floors or fixtures for which this Division is responsible must be removed and the premises left in first class condition in every respect.

1.8 STANDARD OF ACCEPTANCE

.1 Base Bid means an item is specified by manufacturer and model number meets the specifications in all respects regarding performance, quality of material and workmanship and is acceptable to the Consultant without qualification. Base Bid equipment is as listed in the Specification and Mechanical Equipment Schedules and on the Drawings.

.2 Request for review from manufacturers of materials, fixtures and equipment who are not listed as equal and wish to be accorded "equal" status, shall be made at least seven (7) days prior to close of tender. Such material, fixtures, and equipment shall meet the requirements for an equal as described in the Standard of Acceptance.

.3 Approved Equal Manufacturers
Backflow Prevention
Watts, Clayton, Wilkins, Conbraco
Boilers
IBC
Drains – Floor
Jay R. Smith, Ancon, Zurn
Electric Heaters
Ouellette, Qmark
Firestopping and Smoke Seals
3M, Tremco, Hilti
Flexible Gas Piping
Gastite
Gas Pressure Regulating Valves
Fisher, Rockwell
Insulation – Piping and Duct
Fiberglas, Knauf, Johns Manville, Atlas, PPG, Manson, Certainteed.
Insulation Jacketing
Childers, Fiberglas, Johns Manville
Hose Bib
Woodford, Watts, Zurn
Louvres
E. H. Price, Ventex
Valves (Ball)
Red and White, Grinnell, Watts, Kitz
Valves (Gate)
Red and White, Grinnell, Watts, Kitz
Water Hammer Arrestors
Jay R. Smith, Ancon, Zurn

1.9 ELECTRICAL WIRING AND MOTORS

.1 All electrical equipment supplied by the Mechanical contractor shall bear CSA label. Obtain special inspection labels required by Provincial Authority having jurisdiction for equipment that does not have a CSA label and/or a ULC label. Conform to requirements of Canadian Electrical Code and the Provincial Electrical Inspector.

.2 Division 16 will provide all power wiring, connections and other electrical items required for operation of mechanical systems except for factory installed wiring and equipment on package units provided by Division 15 and control wiring as specified.

.3 Division 16 provides and installs motor starters for electric motors except where equipment is furnished with integral starters.

.4 It shall be the responsibility of Division 15 to supply motors with proper voltage characteristics to suit electrical distribution systems and suitable construction such as explosion-proof, dust-proof, part wind starting, etc., as required to suit operating conditions. Division 15 is responsible of complete working installation and must coordinate all electrical and control work.

1.10 CUTTING AND PATCHING

.1 The Mechanical Contractor shall coordinate with the General Contractor locations of pipe trenches, roof and wall openings to accommodate ducts and pipes.

.2 Also coordinate with the General Contractor all cutting and patching of beams, walls, floor slabs and masonry work necessary for hanger rods, brackets and sleeves.

1.11 SHUT DOWN OF SERVICES

.1 Coordinate with the Owner any requirement to shut down mechanical systems or utility services to accommodate service connections. Do not shut down any such services without written consent from the Owner.

1.12 LIABILITY

.1 The Mechanical Contractor shall assume full responsibility for laying out the work of Division 15 and for any damage caused by improper location or performance of the work.

.2 Protect work and building surfaces from damage due to the contractor's performance of the work. Pay particular attention to the protection of building vapour barriers and waterproof membranes. Cover floors and other finished surfaces to avoid damage. During periods of freezing weather, ensure all piping is protected from potential freeze-up and any mechanical openings in the building envelope are weather and temperature protected.

.3 Maintain the site in a clean and orderly condition at all times.

.4 At the completion of the work remove tools, waste and surplus equipment and materials from the site.

.5 Maintain $1,000,000 insurance that will fully protect the Owner, the General Contractor, the Mechanical Contractor and the Mechanical Contractor's sub-trades, from all claims which may arise from the Mechanical Contractor's performance of the work.

1.13 FIRE STOPPING

.1 Contractor to provide ULC listed fire stopping assemblies where pipes and ducts pass through building assemblies that are fire rated. Contractor to install as per manufacturers written instructions. Contractor to provide Consultant with ULC listing upon request.

.2 Fire stopping to be tested in accordance with CAN-4-S115-M "Standard Method of Fire Testing of Fire Stop Systems" and the requirements of BCBC section 3.1.9.

.3 Firestopping and Smoke Seal Systems: Asbestos-free materials and systems capable of maintaining an effective barrier against flame, smoke and gases in compliance with requirements of CAN/ULC-S115-M or ULI 1479 and ASTM 814, and not to exceed opening sizes for which they are intended.

.4 Fire resistance rating of installed firestopping assembly shall not be less than the fire resistance rating of surrounding floor and wall assembly as indicated.

.5 Install firestopping and smoke seal material and components that have been tested by certified testing agencies, ULC, CUL, or Intertek, and manufacturer's instructions to provide a flame rated seal not less than the fire resistance rating of the surrounding wall or floor assembly. Temperature ratings may be required in certain instances and should be specified by the engineering or architectural authority.

.6 Fire stopping of firewall penetrations must provide a 2hr FT rating in accordance with BCBC 3.1.9.1(2). All penetrations of fire separations and fire rated assemblies must be sealed with a fire stop system conforming to ULC-S115 in accordance with BCBC 3.1.9.1(1).

1.14 IDENTIFICATION

.1 Piping
.1 Identify fluids in piping with markers showing name, pipe size and service, including temperature and pressure where relevant, and with arrows to indicate flow direction.
.2 Use CGSB 23-GP-3a and CSA B53 color codings and identification systems, using CGSB 1-GP-12c Color Coding System Schedule.
.3 Standard of Acceptance: WH Brady identification tapes, bands, and markers.

1.15 INSTRUCTION TO OPERATING STAFF

.1 Provide training and instruction to facility operating and maintenance personnel. Training time to be a minimum of four hours and include instruction on complete start-up sequence of all systems and equipment and review of all modes of operation, as indicated in the control sequence of operations.

2.0 SEISMIC CONTROL

.1 Provide a signed and sealed letter from a Registered Professional Engineering indicating that all mechanical equipment is seimically restrained in accordance with the 2012 British Columbia Building Code and SMACNA "Guidelines for Seismic Restraints of Mechanical Systems and Plumbing Piping Systems."

3.0 PIPE INSULATION

.1 Provide mineral fibre thermal insulation on all domestic hot and cold water. All insulation to be type A-2 as defined by the BCICA Quality Standards Specification 1501-H and 1501-C.

.2 Provide sheet metal insulation shields between insulation and pipe supports.

.3 Provide 12mm (1/2" thick) mineral fiber insulation on cold water. Provide 25mm (1" thick) mineral fiber insulation on all hot water piping.

.4 All exposed water and storm piping to be wrapped with PVC jacketing.

4.0 PLUMBING

.1 Sanitary & Storm Piping Above Grade
Material: Type DWV Copper/Cast Iron
Code Ref: BCBC
Conform to: ASTM B306/CAN/CSA B70-M
Fittings: Wrought Copper with 50-50 Solder/MJ with SS bands and clamps

Cleanouts to be Round Nickel Bronze Top Model: Jay R. Smith 4100S, cast iron extended ferrule, tapered gasket seal, ABS plug and adjustable round secure nickel bronze top.

.2 Sanitary & Storm Piping Below Grade
Material: Type ABS DWV & PVC DWV
Code Ref: BCBC
Conform to: CAN/CSA B181.2
Fittings: ABS DWV & PVC DWV solvent cement

Cleanouts to be Round Nickel Bronze Top Model: Jay R. Smith 4100S, cast iron extended ferrule, tapered gasket seal, ABS plug and adjustable round secure nickel bronze top.

.3 Domestic Water Piping
Material: Type L Copper
Code Ref: BCBC
Conform to: ASTM B88
Fittings: Wrought copper with Silvabrite Solder 95.5% Sn, 4% Cu, 0.5% Ag. T-Drill fittings are not approved.
.1 Provide eccentric pipe reducers for domestic waterlines to prevent collection of air pockets.
.2 Provide water hammer arrestors at the top of all domestic cold water risers, on each domestic hot water system and at any quick closing valves.
.3 Provide shut-off valves for all fixtures, located in accessible locations.
.4 Copper pipe, direct connections: UL approval; brazing in accordance with Copper Development Association Copper Tube Handbook.
.5 Ensure no joints of dissimilar metals are provided. Install dielectrically isolated fittings where dissimilar metallic materials meet.
.6 All connections to fixtures shall be with unions.
.7 Use only strap wrenches on chromium plated piping and fittings. Replace any surface damage by wrench mark ups. Joints to be threaded or slip union type.

.4 Gas Piping
.1 Schedule 40 seamless steel to ASTM A120-82. Install gas piping in accordance with CAN/CGA-B149.1 M00. Make connections to equipment with unions and mechanical couplings. Provide code approved lubricated plug valve and drip leg for each equipment connection.
.2 Paint all exposed gas piping yellow.

.5 Backflow Prevention Stations
.1 Supply and install approved backflow prevention devices where indicated on the drawings.
.2 All backflow prevention stations to be installed in accordance with the "cross connection control" manual, latest edition, as published by the BC Chapter of the American Water Works.
.3 Pipe all vent connections and differential relief outlets full size to drain.

5.0 CHIMNEYS & STACKS

.1 Supply and install a complete prefabricated venting system for the new hot water tank.

.2 Installation to be in accordance with CAN/CGA B149, BC Gas Code, local and provincial codes and authority having jurisdiction.

.3 The factory built modular connector, manifold and stack system shall be laboratory tested and listed by Underwriters Laboratories Canada, for use with gas fireplace and shall be designed and installed to be gas tight.

.4 Provided vent sections, elbows, connectors, support assembly, wall guide assembly, and draft hood connector as required to install the system.

.5 Install the chimney system according to the manufacturer's installation instructions.

.6 Wall penetrations shall be suitable for combustible wall and shall be according to the manufacturer's detail drawing and installation instructions.

.7 Submit shop drawings for review showing all details of flue, support systems/brackets and fixings to support flue without distortion or deflection, rigidly fixed to concrete structure, with sealant and flashing's as required to fully waterproof all penetrations. Submit also seismic data to verify seismic capacity of all attachments.

6.0 CONTROLS

.1 Work included:
.1 Provide wiring between Boilers B-1 & B-2 and aquastats on ST-1 and ST-2.
.2 Provide wiring, piping, raceways and conduit as required.
.3 Instructions for owners.
.4 Provide interlock between boilers and emergency shutdown switch.

.2 General Notes:
.1 The location of all devices shall be reviewed with the consultant prior to installation.
.2 Permanently identify each wire, cable, and conduit pipe.
.3 Provide all control components, wiring devices, and labour necessary to assemble a complete control system in accordance with the control manufacturer's recommendation.

.3 Products:
Conduits, wiring and cabling
.1 All work shall be installed in accordance with the Canadian Electrical Code and the British Columbia Building Code.

.2 The contractor is responsible for all new control wiring and connections (120 volts and less) including those between line voltage temperature controls, safety, limiting and other devices directly related to starters, holding coils, auxiliary contractors,interlocks, relays, etc., as required for the performance of the control system and sequence of operation as specified.

.3 All wiring is to be run in conduit. Do not use exposed conduit or wiring in public areas of the building. Any conduit installed exposed in service areas shall be painted to match the surroundings. Exposed conduit in mechanical rooms need not be painted.

.4 110 volt circuits shall be, at a minimum, of #14 AWG RX 90 copper. For runs over 150 feet in length, use #12 AWG RX 90 copper.

7.0 SEQUENCE OF OPERATION

BOILER CONTROL AND OPERATION REQUIREMENT

The boiler controls shall be be built-in to each boiler, and come complete with full outdoor reset, multiple load capability with relays for four pumps, serial port for software upgrades, 0-10VDC alarm output, and clear constantly bright LCI display providing plain English information. Altitude compensation shall be available via keypad adjustment, for adjustment of full rating plate out up to 8,000 ft. without requirement for orifice changes. The boilers shall offer multiple boiler staging/rotation control, for management of up to 24 boilers using the standard-build, on-board controls. External boiler staging controls will NOT be allowed. Any one of the boiler controls in a multiple array shall be configured as a "Master" control, with the other controls in the array then being configured as "Subordinate" boilers. The Master boiler control shall be able to operate the system independently with user keypad programming (using information from the supplied outdoor sensor, secondary loop sensor, enable and disable dry contact closure signal). Boiler controls shall be easily interconnected using 2-wire twisted, shielded-pair wiring. All control functions shall be easily programmed in the field using only the Master Boiler's 5 button control keypad. The control software shall contain the logic to modify boiler staging operation with keypad configurable supply water temperature differential. (5°F to 60°F), Ramp Speed (Automatic, or 10 manual steps), and staging delay hh:mm (00:00 23:59). Add Boiler levels shall be adjustable from 40% firing rate to 60% firing rate, and Drop Boiler levels shall be adjustable 30% firing rate to 20% firing rate. The Master Boiler control shall have the ability to accept a 0 to 10 Vdc or 4 – 20 mA input signal from a DDC system should such a system be added subsequent to the original installation.

8.0 CLOSEOUT DOCUMENTATION

.1 Contractor to submit the required testing & inspection reports as part of the Closeout Documents:
• As-Built.
• Operation & Maintenance Manuals.

9.0 EQUIPMENT SCHEDULES

PUMPS P-1,2
BOILER HEATING WATER CIRCULATION PUMP

.1 Boiler heating water circulation pumps to be Grundfos UPS32-40F, 9 GPM @ 10 ft., circulating pump complete with cast iron body, self lubricated radial and axial bearings, and 85 watt motor suitable for 120/1/60 electrical service.

.2 Install pump complete with all necessary isolating valves and check valves.

Domestic Recirc Pump, P-3
Grundfos UP 15-18 BUC7 canned rotor type pump, 5 GPM @ 10 ft., circulating pump complete with bronze body, self lubricated radial and axial bearings, and 60 watt motor suitable for 120/1/60 electrical service.

BOILERS B-1 & B-2
IBC Model SL 35-199
Gas input 199 MBH; Gas output 181.3 MBH;
Water flow: 9 GPM;
Water pressure drop: 5.0 Feet
Entering water temperature: 100°F
Leaving water temperature: 150°F
Burner Type: forced draft
Firing Sequence: fully modulating
Electrical Service: 120/1/60
Operating Pressure: 25 PSIG; Relief Pressure: 30 PSIG
Notes:
1) Refer to pump schedule for associated pumps
2) Provide one Axiom NT-25 acid neutralizer for the two boilers
3) Provide seismic brackets for mounting
4) Provide 2 @ 2PSI to inches WC Pietro Fiorentini Gas PRV, Model # 30052, ¾" pipe connections

INDIRECT FIRED WATER HEATERS ST-1 & ST-2
IBC Model IBC-115 indirect fired water heater 115 gallon storage. 25# domestic water in/out, 25# boiler water in/out

EXPANSION TANKS
ET-1 Amtrol ST-12C ASME rated expansion tank. 8.0 gallon tank volume, 3.4 gallon acceptance volume.

ET-2 Amtrol AX-15V ASME rated expansion tank. 8.0 gallon tank volume, 2.4 gallon acceptance volume.

Thermostatic Mixing Valve
Lawler #911, emergency drench shower , lead-free brass and stainless steel design, vandal-resistant temperature adjustment, stainless steel sliding piston control device allow cold flow through both the fixed and variable bypass, 32 mm (1-1/4") N.P.T. Outlet, positive hot water shut-off, temperature gauge, liquid-filled thermostatic motor control mechanism, 29 °C (84.2 °F) factory set temperature, standard 69.8 °F (21 °C) – 89.6 °F (32 °C) temperature range, Provide shut-offs at emergency mixing valve. Provide wall mounted stainless steel lock box to conceal valve.

PLUMBING FIXTURE SCHEDULE

Supply, install, set-up and test all plumbing pipe, fixtures, and trim as specified herein. all fixtures and equipment for handicapped use shall be in accordance with all applicable codes and regulations. fixtures indicated for handicapped use shall be in accordance with section 3.7 of the 2012 British Columbia Building Code.

HB-1 Woodford Model 19 Anti-Siphon wall faucet, 19mm with integral backflow.

HB-2 40mm ball valve c/w threaded hose end to match existing hose.

FD-1 Smith Series DX2010 Floor Drain, all duco coated cast iron body, reversible flashing clamp with seepage openings and adjustable 150mm round nickel bronze strainer, secured with S.S. screws, 100mm throat on strainer. Provide "P" trap and trap primer connection.

DISINFECTION OF POTABLE WATER PIPING

.1 All domestic water piping shall be thoroughly flushed so that it is free from scale, sediment, construction debris etc.

.2 Retain independent inspection firm to supervise and inspect the chlorination and flushing procedures and perform chemical tests as required.

.3 On completion of installation and testing of the potable water systems, pre-flush, chlorinate with Sodium Hypochlorite to AWWA C-601 specifications and let stand for 24 hours. Thoroughly flush again until flush water meets AWWA standards.

.4 Remove two samples of water 24 hours after chlorinating and provide test lab results of samples.

.5 Both sample tests must indicate less than 10 PPM residual chlorine and less than 1 PPM total coliform. If not, repeat the chlorination and testing procedure until satisfactory results are obtained.

.6 Include documentation from the testing laboratory in the Operation and Maintenance Manual, indicating water test results obtained.

.7 Acceptable Firms: PACE Chemicals Ltd., GE Betz Dearborn.

PLUMBING INSTALLATION

.1 General
.1 Copper pipe shall not be buried except where specifically noted on drawings.
.2 All connections to fixtures shall be with unions.

.2 Tests and Inspections
.1 Tests on plumbing systems shall consist of the following. All leaks shall be corrected by remaking the joints and the systems retested until no leaks are observed.
.1 Sanitary waste and vent system, Storm drainage system
.1 3 metre (10 foot) standing water test for 8 hours.
.2 Domestic water system
.1 1030 kPa (150 PSIG) hydraulic test for 8 hours.
.2 All plumbing fixtures shall be tested for soundness, stability of support and correct operation.

.3 Piping Expansion
.1 All piping systems, including all take-offs shall be so installed within the building that the piping and connected equipment will in no way be distorted by expansion, contraction or settling.

2	17.02.10	ISSUED FOR TENDER	TP
1	17.02.06	ISSUED FOR REVIEW	TP
REV.	DATE	DESCRIPTION	BY

REVISIONS

KEYPLAN

CLIENT

ROCKY POINT
ENGINEERING LTD.
Vancouver • Langley • Victoria • Nanaimo • Kelowna • Kamloops • Nelson
Langley Office
208 - 20171 92A Avenue
Langley, BC V1M 3A5
www.rpeng.ca
Tel: (604) 888-7779
Fax: (604) 888-7719

SEAL

PROJECT

CLOVERDALE ARENA DOMESTIC HOT WATER UPGRADE

6090 176 St, Surrey, BC

SHEET TITLE

SPECIFICATIONS

PROJECT	16616-M
SCALE	AS NOTED
DWG DATE	FEBRUARY, 2017
DESIGNED	TP
DRAWN	MM
CHECKED	TP
APPROVED	RC
DRAWING	

M-5