## **MECHANICAL SPECIFICATIONS:**

- 1. SCOPE PROVIDE A FULLY FUNCTIONAL NEW BOILER, PIPING AND CONTROLS TO TIE INTO THE EXISTING SYSTEM AS SHOWN. THE WORK INCLUDES, BUT NOT LIMITED TO:
- 1.1. PIPING CHANGES AND ADDITIONS TO FACILITATE THE INSTALLATION OF TWO NEW BOILERS. THIS INCLUDES ITEMS SUCH AS HOT WATER SUPPLY AND RETURN PIPING, NATURAL GAS PIPING, ASSOCIATED VALVES, CONTROLS, GAUGES, ETC.
- 1.2. PROVISION OF TWO NEW BOILERS, ASSOCIATED CONTROL SYSTEM.
- 1.3. TESTING, ADJUSTING AND BALANCING FOR A FULLY FUNCTIONAL SYSTEM.
- 1.4. REMOVE EXISTING BOILER AND PIPING AS NOTED ON THE DESIGN DRAWINGS. FULLY DECOMMISSION THE OLD BOILER AND ASSOCIATED UTILITIES AND REMOVE FROM SITE.
- 1.5. ALL COMPONENTS ARE TO BE SUITABLE FOR INSTALLATION IN A SWIMMING POOL ENVIRONMENT, HIGH HUMIDITY AND FREE CHLORINE.
- 1.6. COORDINATE THE REMOVAL OF THE EXISTING BOILERS AND INSTALLATION ON THE NEW BOILERS, PUMPS AND PIPING WITH THE CONTRACT ADMINISTRATOR. MINIMIZE THE DOWNTIME FOR THE BUILDING'S HEATING SYSTEM. DO NOT SHUT DOWN THE EXISTING BOILER UNTIL THE NEW BOILER AND PUMPS HAVE BEEN INSTALLED AND READY TO BE COMMISSIONED. ALL WORK ASSOCIATED WITH THE BOILER SWITCHOVER IS TO BE COMPLETED WHEN AMBIENT TEMPERATURES ARE AT OR ABOVE +20°C.
- 2. SHOP DRAWINGS SUBMIT THREE PAPER COPIES AND ONE ELECTRONIC COPY FOR ALL COMPONENTS SUPPLIED IN THIS PROJECT. ALL SHOP DRAWINGS TO BE REVIEWED BY THE CONTRACTOR PRIOR TO

#### 3. GENERAL REQUIREMENTS

- 3.1. APPLICABLE CODES AND STANDARDS
- A. MANITOBA BUILDING CODE B. MANITOBA PLUMBING CODE
- C. CSA B149.1 "NATURAL GAS AND PROPANE INSTALLATION CODE".
- 3.2. INSTALL ALL COMPONENTS PARALLEL AND PERPENDICULAR TO BUILDING LINES.

PLUG ON THE END OF THE VALVE; DO NOT LEAVE AN OPEN VALVE END.

- 3.3. PROTECT ALL COMPONENTS PRIOR TO INSTALLATION. SEAL ALL OPEN ENDS OF PIPING AND ACCESSORIES TO PREVENT DIRT AND FOREIGN MATERIAL FROM ENTERING SYSTEM.
- 3.4. COMPLY WITH ALL CITY OF WINNIPEG SAFETY STANDARDS. COMPLETE WORK IN ACCORDANCE WITH GOVERNMENT OF MANITOBA WORKPLACE SAFETY LEGISLATION.
- 3.5. AIR VENTS PROVIDE AT ALL HIGH POINTS IN THE SYSTEM. DRAIN VALVES PROVIDE AT ALL LOW POINTS. USE 1" DIA. SCHEDULE 40 CARBON STEEL PIPE C/W THREADED BALL VALVES. PROVIDE
- 4. THERMOMETERS AND PRESSURE GAUGES PROVIDE GAUGES AS SHOWN ON THE DESIGN DRAWINGS. USE MINIMUM 6" DIAMETER PRESSURE GAUGES AND TEMPERATURE GAUGES. GAUGES TO OPERATE NEAR THE MIDPOINT OF SPAN. CALIBRATE ALL GAUGES PRIOR TO INSTALLATION. WETTED MATERIAL - TYPE 316 STAINLESS STEEL. USE LIQUID FILLED BOURDON STYLE PRESSURE GAUGES AND BI-METAL TEMPERATURE GAUGES. ACCURACY TO WITHIN ONE SCALE DIVISION. IN ADDITION TO THOSE SHOWN, PROVIDE PRESSURE GAUGES ACROSS EACH OF THE TWO PUMPS.

5.1. SCOPE - PROVIDE ALL NECESSARY PIPING, VALVES, FITTINGS, FLANGES, GASKETS, ETC. TO CONNECT THE NEW BOILERS TO THE EXISTING HEATING SYSTEM, AND MAKE THE NEW BOILERS FULLY A. THE CONTRACTOR IS RESPONSIBLE FOR CONFIRMING ALL DIMENSIONS FOR PIPING SPOOL

PIECES WITH SITE DIMENSIONS PRIOR TO ORDERING AND FABRICATION OF ALL COMPONENTS.

- 5.2. HEATING SYSTEM PIPING A. FOR SIZES GREATER THAN 2" - USE SCHEDULE 40 PLAIN END CARBON STEEL PIPE TO ASTM A53-GR. B PIPE AND FITTINGS TO ASTM. BUTT WELD ALL JOINTS, USE SLIP ON FLANGES AT
- VALVES AND CONNECTION TO EQUIPMENT. B FLANGES - ANSI 150 DRILL PATTERNS. C. GASKETS - AS NOTED ON THE DESIGN DRAWINGS
- D. FASTENERS FOR FLANGES USE TYPE 316 STAINLESS STEEL FASTENERS, SIZE AND QUANTITY BASED ON FLANGE DIMENSIONS. FASTENERS TO ANSI B16.2.1 AND B16.2.2. E. VALVES - TYPE, SIZE AND QUANTITY AS SHOWN ON THE DESIGN DRAWINGS.
- a. VALVES 2" DIAMETER AND LARGER ALL BUTTERFLY VALVES ARE TO BE HEAVY DUTY INDUSTRIAL TYPE, CAST IRON BODY WITH TYPE 316 STAINLESS STEEL DISC, SUITABLE LINE CONSTRUCTION. ALL VALVES PROVIDED ARE TO BE LUG BODY DESIGN. STANDARD OF ACCEPTANCE IS KEYSTONE FIG 222.
- b. VALVES SMALLER THAN 2" USE ONE-PIECE BRONZE BODY BALL VALVES WITH STAINLESS STEEL BALL, AND TEFLON SEATS AND SEALS. NPT ENDS. F. TRIPLE DUTY VALVES AT PUMP DISCHARGE - USE SA ARMSTRONG OR BELL AND GOSSETT VALVES. ALTERNATES WILL NOT BE ACCEPTED.
- 5.3. DOMESTIC WATER PIPING A. USE TYPE L COPPER WITH WROUGHT COPPER FITTINGS, CSA APPROVED.
- B. SOLDER USE 95/5 TIN-ANTIMONY SOLDER FOR ALL FITTINGS. C. PROVIDE NEW BRONZE BODY BALL VALVES FOR ISOLATION. TYPE 316 STAINLESS STEEL BALL, ONE PIECE VALVE, WITH TEFLON SEATS AND SEALS. USE APPROVED BACKFLOW PREVENTER.
- 5.4. DRAIN, WASTE AND VENT
- A. PIPING USE PVC PIPE WITH SOLVENT WELD JOINTS, TYPE DWV. B. FLOOR DRAINS - USE CAST IRON BODY C/W NICKEL BRONZE STRAINER. HUB CONNECTIONS. C. INSTALLATION - FULLY INSPECT INSTALLATION PRIOR TO BIDDING AND CONSTRUCTION. THE SPACE BELOW THE FLOOR APPEARS TO BE FULLY PACKED WITH MUD AND GRAVEL. IT IS NOT ACCESSIBLE FROM BELOW. ALL PIPING MUST BE INSTALLED FROM ABOVE THE FLOOR ELEVATION, EXCEPT FOR THE TIE-IN TO EXISTING 2".
- 5.5. NATURAL GAS PIPING TO CSA B149.1
- A. PIPING USE SCHEDULE 40 CARBON STEEL PIPE WITH THREADED JOINTS (PIPE SIZES 2" AND UNDER) OR BUTT WELD JOINTS FOR GREATER THAN 2", B. USE TÉFLON TAPE AND LEAD PASTE PIPE DOPE AT ALL THREADED CONNECTIONS. C. PAINT ALL PIPING SAFETY YELLOW AFTER CONSTRUCTION. LABEL ALL NATURAL GAS PIPING.
- D. VALVES USE BALL OR PLUG STYLE VALVES, APPROVED FOR USE WITH NATURAL GAS. a. 2" AND SMALLER — THREADED, BRONZE BODY AND STAINLESS STEEL BALL WITH TEFLON SEATS AND SEALS.
- b. GREATER THAN 2" FLANGED ANSI 150, STEEL BODY WITH TEFLON SEAT AND SEALS. E. TIE-IN IMMEDIATELY DOWNSTREAM OF THE EXISTING GAS METER. PROVIDE ISOLATION VALVE AT THE TIE-IN. F. CONNECT TO NEW BOILERS IN ACCORDANCE WITH B149.1 AND MANUFACTURER'S REQUIREMENTS.
- G. PROVIDE DIRT POCKET AT THE BOTTOM OF RISER IMMEDIATELY UPSTREAM OF THE BOILERS. H. COORDINATE TIE-IN TO THE SYSTEM WITH THE OWNER AND THE GAS UTILITY. CONFIRM METER CAPACITY IS ADEQUATE PRIOR TO TIE-IN. I. DEMOLITION - REMOVE EXISTING GAS LINE FROM OLD BOILER BACK TO MAIN. CAP ALL OPEN
- FNDS AND MAKE SAFE J. PRESSURE REDUCING AND RELIEF VALVE - PROVIDE A NEW PRESSURE REDUCING VALVE AT EACH GAS APPLIANCE. RETROFIT PRESSURE REDUCING VALVES C/W INTERNAL RELIEF VALVES ONTO EXISTING APPLIANCES. COORDINATE THE SIZING OF THE RÉGULATOR WITH THE SUPPLY GAS PRESSURE. SIZE THE RELIEF VALVE BASED ON SUPPLY GAS PRESSURE AND SIZE OF PRESSURE REGULATOR. PIPE RELIEF VALVE VENT TO OUTSIDE, IN ACCORDANCE WITH CSA B149.1 STANDARD OF ACCEPTANCE - FISHER CONTROLS. SUBMIT SHOP DRAWINGS FOR ALL COMPONENTS SUPPLIED. INSTALL IN ACCORDANCE WITH MANUFACTURER'S REQUIREMENTS AND
- CSA B149. K. PRESSURE TESTING EXISTING GAS LINES - PRIOR TO INCREASING THE PRESSURE OF THE NATURAL GAS SERVICE, COMPLETE A THOROUGH INSPECTION OF THE EXISTING NATURAL GAS PIPING. CONFIRM THAT THE EXISTING PIPING AND ATTACHED FITTINGS ARE ACCEPTABLE FOR THE HIGHER PRESSURE. COORDINATE PRESSURE TESTING EXISTING PIPING WITH CITY AND UTILITY.
- A. USE FIBERGLASS PIPE INSULATION, THICKNESS AS NOTED ON DESIGN DRAWINGS. STANDARD OF ACCEPTANCE - FIBERGLASS CANADA SSL II OR APPROVED EQUAL. B. JACKET - USE ALL SERVICE JACKET

- C. JOINTS SEAL ALL JOINTS USING FOIL TAPE. A. INSTALL ALL PIPING PERPENDICULAR AND PARALLEL TO BUILDING LINES.
- B. INSTALL ALL PIPING IN ACCORDANCE WITH GOVERNING CODES AND STANDARDS, WHERE C. PROVIDE ALL NECESSARY PIPE HANGERS, IN ACCORDANCE PIPE MANUFACTURER'S REQUIREMENTS
- FOR PIPE SIZE AND CONTENTS. CONSIDER PUMP/PIPING SYSTEM START-UP WITH HANGER D. INSTALL PIPING IN ACCORDANCE WITH PIPING MANUFACTURER'S RECOMMENDATIONS AND CODE
- E. PRESSURE TEST ALL PIPING FOR MINIMUM TWO HOURS AT 1.5 TIMES OPERATING PRESSURE
- WITH WATER PRIOR TO ENERGIZING. CONTRACT ADMINISTRATOR ARE TO WITNESS THE PRESSURE F. WHERE PIPES PASS THROUGH FIRE RATED SEPARATION, SLEEVE OPENING WITH SCHEDULE 40

CARBON STEEL PIPE, AND FILL VOID BETWEEN SLEEVE AND PIPE WITH FIRE RATED CAULKING. THE EXISTING BOILER ROOM AND NEW BOILER ROOM ARE BOTH FIRE RATED ROOMS.

#### BOILERS

- 6.1. SCOPE PROVIDE TWO NEW BOILERS TO REPLACE THE ONE EXISTING BOILERS. PROVIDE A BOILER CONTROL SYSTEM FULLY COMPATIBLE, BY THE BOILER MANUFACTURER TO CONTROL THE NEW BOILERS. THE BOILERS PROVIDE FULL REDUNDANCY FOR EACH OTHER.
- 6.2. EQUIPMENT SELECTION USE AERCO HIGH EFFICIENCY BOILERS, OR APPROVED EQUAL. THE BOILERS MUST FIT INTO THE SPACE SHOWN AND PROVIDE FOR FULL ACCESS AND SERVICE CLEARANCE AROUND THE UNITS.
- A. FUEL TYPE NATURAL GAS. B. HEAT INPUT - 1.5-MILLION BTU/HR. HEAT OUTPUT MINIMUM 1.2-MILLION BTU/HR. TYPICAL FOR EACH OF TWO BOILERS. C. BURNER - POWER BURNER STYLE. MINIMUM 20:1 TURNDOWN RATIO. HIGH EFFICIENCY TYPE
- CONDENSING BOILER. D. INCOMING POWER - 208/230 VOLTS, SINGLE OR 3-PHASE, 60-HZ. E. STANDARD OF ACCEPTANCE - AERCO MODEL BMK1.5-LN OR APPROVED EQUAL IN ACCORDANCE

- A. CODE -ALL COMPONENTS TO BE CSA APPROVED AND SUITABLE FOR INSTALLATION IN A SWIMMING POOL MECHANICAL ROOM. B. WARRANTY - MANUFACTURER TO WARRANTY BOILERS FOR A PERIOD OF 5 YEARS.
- 6.4. BOILER CONTROL PROVIDE A COMPUTER CONTROLLED BOILER CONTROL SYSTEM MANUFACTURED BY THE BOILER COMPANY (HARDWARE AND SOFTWARE), FULLY COMPATIBLE WITH THE BOILERS SUPPLIED. PROVIDE A STAND-ALONE COMPUTER OR MONITORING SCREEN, TO VIEW STATUS, SETPOINTS AND OVERALL BOILER OPERATION. PROVIDE NO AND NC DRY CONTACTS FOR CONNECTION TO CITY OF WINNIPEG METASYS MONITORING SYSTEM.
- A. CONTROL STRATEGY THE FIRST BOILER COMES ONLINE AND GRADUALLY INCREASES OUTPUT UNTIL REACHING 50%. THE SECOND UNIT IS CALLED INTO SERVICE. RAMP CAPACITY TO SUIT LOAD. SHED LOAD IN REVERSE ORDER. FLOW THROUGH EACH BOILER WILL BE CONSTANT. PROVIDE OUTDOOR RESET CONTROL.
- B. BOILER CONTROL STRATEGY IS AS NOTED ON THE DESIGN DRAWINGS. C. STANDARD OF ACCEPTANCE - AERCO CONTROL SYSTEM (ACS).

### 6.5. INSTALLATION AND COMMISSIONING

- A. INSTALL IN ACCORDANCE WITH CONTRACT DOCUMENTS AND MANUFACTURER'S INSTRUCTIONS. SUBMIT FULL COMMISSIONING PLAN FOR REVIEW PRIOR TO EXECUTION.
- B. BOILERS a. BOILERS SHALL BE FULLY COMMISSIONED BY A QUALIFIED FACTORY TRAINED TECHNICIAN. b. SUBMIT A FULL COMMISSIONING REPORT SUBSEQUENT TO THE COMMISSIONING ACTIVITIES. c. DAILY OPERATION AND SIMPLE MAINTENANCE INSTRUCTIONS SHALL BE PROVIDED DURING THE
- COMMISSIONING PROCESS. C. COMMISSION THE COMPLETE HEATING SYSTEM, BOILER SIDE. COORDINATE THE COMMISSIONING WITH THE CONTRACT ADMINISTRATOR.
- D. TEST THE FUNCTIONALITY OF ALL COMPONENTS. DOCUMENT ALL TESTING AND PROVIDE ALL TESTING DOCUMENTS TO THE CITY PRIOR TO TURNOVER. THROTTLE ALL CONTROL VALVES OVER THEIR RANGE OF OPERATION. RECORD SETTINGS, TEST PROCEDURES, FINAL "AS-LEFT" CONDITIONS AND FINDINGS.
- E. COMPLETE PERFORMANCE TESTING OF THE NEW BOILERS. SUBMIT TESTING REPORT SUBSEQUENT TO THE INSTALLATION. TEST THE SYSTEM WITH ALL SWIMMING POOL PUMPS OPERATING. SUBMIT REPORT TO THE OWNER UPON COMPLETION OF TESTING AND COMMISSIONING.
- F. TEST THE OPERATION OF THE BOILERS UNDER ALL SCENARIOS, SIMULATING FAILURES AND LOAD SHARING. CONFIRM OPERATION OF ALL FEATURES PRIOR TO LEAVING SITE.

### DUCTWORK

- 7.1. SCOPE PROVIDE NEW DUCTWORK AS SHOWN ON THE DESIGN DRAWINGS.
- 7.2. GENERAL MANUFACTURE TO SMACNA HVAC DUCT CONSTRUCTION STANDARDS SUITABLE FOR THE INTENDED SERVICE. SEAL ALL JOINTS WITH COMBINATION TAPE AND SEALANT. USE LOCK SEAM GRADE G-90 GALVANIZED STEEL.

### 8. TESTING ADJUSTING AND BALANCING (TAB)

- 8.1. SCOPE PROVIDE TAB SERVICES FOR THE HEATING SYSTEM.
- 8.2. PRE-DEMOLITION MEASUREMENTS MEASURE THE BOILER WATER FLOW TO EACH OF THE HEAT
- 8.3. POST CONSTRUCTION TAB BALANCE THE FLOW TO EACH OF THE HEAT EXCHANGERS AFTER
- CONSTRUCTION OF THE NEW SYSTEM TO MATCH THE PRE-DEMOLITION MEASUREMENTS.
- 8.4. ACCURACY COMPLETE ALL MEASUREMENTS TO WITHIN  $\pm -10\%$ .
- 8.5. REPORT SUBMIT A REPORT OF THE FINDINGS OF PRE-DEMOLITION IMMEDIATELY AFTER THE MEASUREMENTS ARE RECORDED. SUBMIT A COMPLETE REPORT AFTER CONSTRUCTION IS ESSENTIALLY COMPLETE.
- 8.6. STANDARDS TAB FIRM ENGAGED TO BE AABC QUALIFIED. USE THE AABC STANDARDS FOR REPORTING.

### 9.1. REPLACE THE EXISTING PUMPS WITH NEW MOTOR MOUNTED PUMPS. CAPACITY REQUIRED IS 165-USGPM AT 55' HEAD. FLUID IS WATER AT 200°F. USE A CAST IRON BODY PUMPS, BRONZE

- 9.2. MOTOR HIGH EFFICIENCY, 5-HP, 1800-RPM, 208/230/3/60.
- 9.3. PICK THE PUMP TO OPERATE AT THE MOST EFFICIENT POINT OF THE CURVE. USE EITHER SA ARMSTRONG 4280 SERIES SIZE 3X2.5X8 OR EQUAL IN ACCORDANCE WITH B7.
- 9.4. INSTALL ON NEW 4" HIGH CONCRETE HOUSEKEEPING PAD. INSTALL IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
- A. PUMP SUCTION CONNECTION PROVIDE A FLANGED SUCTION GUIDE DIFFUSER AND LUG-BODY FLANGED BUTTERFLY VALVE AT THE PUMP SUCTION.
- B. PUMP DISCHARGE CONNECTION PROVIDE A TRIPLE DUTY VALVE (OPERATES AS A CHECK VALVE, BALANCING VALVE AND ISOLATION VALVE) AT THE DISCHARGE OF THE PUMP. MAXIMUM PRESSURE DROP AT DESIGN FLOW IS 3-FT W.C. PROVIDE ISOLATION BUTTERFLY VALVE ON COMMON DISCHARGE LINE AS SHOWN.
- 10. FILL AND VENT AFTER CONSTRUCTION IS COMPLETE, FILL AND VENT THE SYSTEM TO GET RID OF ANY AIR BUBBLES. PROVIDE NEW AUTOMATIC AIR VENTS C/W ISOLATION BALL VALVES UPSTREAM OF THE NEW BOILERS AND AT THE HIGH POINTS.

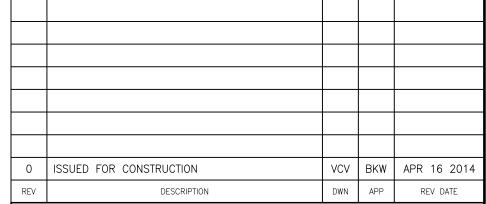
- 11.1. HEATING SYSTEM PROVIDE TRAINING ON OPERATION OF THE HEATING SYSTEM FOR THE CITY OF WINNIPEG BUILDING STAFF. THE TRAINING IS TO INCLUDE:
  - A. CITY STAFF WILL ATTEND THE BOILER STARTUP COMPLETED BY THE BOILER FACTORY
  - REPRESENTATIVE. A PRELIMINARY TRAINING SESSION IS TO BE COMPLETED DURING THE STARTUP AND AFTER THE STARTUP AND ADJUSTMENT HAS BEEN COMPLETED. B. UPON COMPLETION AND TURN-OVER OF THE PROJECT - THE CONTRATORS STAFF, AND ANY SPECIALISTS REQUIRED, ARE TO PROVIDE ONE TRAINING SESSION. A FOLLOW-UP TRAINING SESSION IS TO BE CONDUCTED IMMEDIATELY PRIOR TO HEATING SEASON AND WITHIN ONE
  - MONTH OF THE FND OF WARRANTY. C. COORDINATE ALL TRAINING SESSION TIMES AND ATTENDEES WITH THE CONTRACT ADMINISTRATOR. D. PROVIDE A SIGN-IN SHEET FOR ALL ATTENDING, AND PRESENTING AT EACH SESSION. PROVIDE INSTRUCTION MATERIAL AND HANDOUTS TO EACH PERSON ATTENDING, PROVIDE ONE COPY FOR LEAVING ON SITE.
- 11.2. CONTROL SYSTEM PROVIDE TRAINING ON OPERATION OF THE HEATING SYSTEM CONTROLS FOR THE CITY OF WINNIPEG BUILDING STAFF. THE TRAINING IS TO INCLUDE:
- A. CITY STAFF WILL OBSERVE THE COMMISSIONING OF THE CONTROL SYSTEM. A PRELIMINARY TRAINING SESSION IS TO BE COMPLETED AFTER THE COMMISSIONING AND ADJUSTMENT HAS BEEN COMPLETED. ALL SETPOINTS ARE TO BE IDENTIFIED ON CHECKLISTS. ALL CHECKLISTS ARE
- TO BE SIGNED AND DATED BY THE CONTRACTOR DOING THE WORK. B. UPON COMPLETION AND TURN-OVER OF THE PROJECT - THE CONTRATORS STAFF, AND ANY SPECIALISTS REQUIRED, ARE TO PROVIDE ONE TRAINING SESSION. A FOLLOW-UP TRAINING SESSION IS TO BE CONDUCTED IMMEDIATELY PRIOR TO HEATING SEASON AND WITHIN ONE
- MONTH OF THE FND OF WARRANTY. C. COORDINATE ALL TRAINING SESSION TIMES AND ATTENDEES WITH THE CONTRACT ADMINISTRATOR. D. PROVIDE A SIGN-IN SHEET FOR ALL ATTENDING, AND PRESENTING AT EACH SESSION. PROVIDE INSTRUCTION MATERIAL AND HANDOUTS TO EACH PERSON ATTENDING. PROVIDE ONE COPY FOR

- 11.3. OPERATION AND MAINTENANCE MANUALS PROVIDE OPERATION AND MAINTENANCE MANUALS FOR ALL INSTALLED COMPONENTS.
- A. OPERATION DATA TO INCLUDE AS A MINIMUM:
- a. FINAL REVIEWED SHOP DRAWINGS AS SUBMITTED b. CONTROL SCHEMATICS FOR SYSTEMS

AFTER COMMISSIONING IS COMPLETE.

- c. DESCRIPTION OF SYSTEMS AND THEIR CONTROLS d. DESCRIPTION OF OPERATION OF SYSTEM AT VARIOUS LOADS TOGETHER WITH RESET SCHEDULES
- AND SEASONAL VARIANCES. e. OPERATION INSTRUCTIONS FOR SYSTEMS AND COMPONENTS.
- f. DESCRIPTOIN OF ACTIONS TO BE TAKEN IN EVENT OF EQUIPMENT FAILURE. a. VALVE SCHEDULE AND FLOW DIAGRAM
- B. MAINTENANCE DATA TO INCLUDE AS A MINIMUM a. SERVICING, MAINTENANCE, OPERATION AND TROUBLE-SHOOTING INSTRUCTION FOR EACH ITEM OF
- b. DATA TO INCLUDE SCHEDULE OF TASKS, FREQUENCY, TOOLS REQUIRED AND TASK TIME.
- C. PERFORMANCE DATA TO INCLUDE a. EQUIPMENT MANUFACTURER'S PERFORMANCE DATASHEETS WITH POINT OF OPERATION AS-LEFT
- b. EQUPMENT PERFORMANCE VERIFICATION TEST RESULTS. c. SPECIAL PERFORMANCE DATA AS SPECIFIED d. TESTING, ADJUSTING AND BALANCING REPORTS AS SPECIFIED.
- e. A REVIEWED COPY OF THE COMMISSIONING DOCUMENT AS SPECIFIED. D. APPROVALS - SUBMIT 2 COPIES OF DRAFT MANUAL TO ENGINEER FOR REVIEW. MAKE CHANGES AS
- REQUIRED AND RE-SUBMIT. E. ADDITIONAL DATA - PREPARE AND INSERT ADDITIONAL DATA WHEN NEED FOR IT BECOMES APPARENT
- DURING TRAINING. INCLUDE ALL TRAINING DOCUMENTS PROVIDED.
- RECORD DRAWINGS INCLUDE ONE FINAL SET OF RECORD DRAWINGS IN FINAL MANUAL. G. FINAL COPIES - AFTER MANUALS HAVE BEEN REVIEWED, SUBMIT THREE FINAL COPIES TO THE CITY OF WINNIPEG. IN ADDITION TO PAPER/HARD COPIES, PROVIDE ELECTRONIC COPIES WITH FILES IN PDF



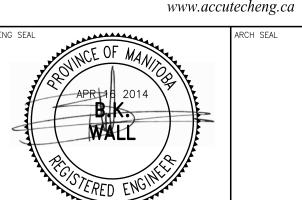




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# CITY OF WINNIPEG MARGARET GRANT POOL BOILER REPLACEMENT

MECHANICAL SPECIFICATIONS

DRAWN BY	CHECKED BY	DATE	SHEET NO
VCV	BKW	APR 16 2014	M100
DESIGNED BY	JOB NUMBER	SCALE	REVISION NO
BKW	18553	AS NOTED	0