



**SEQUENCE OF OPERATION:**

1. THE BUILDINGS HOT WATER HEATING SYSTEM CONSISTS OF THREE HOT WATER BOILERS, VARIABLE AND CONSTANT SPEED PUMPS, CONTROL VALVES AND SENSORS. THE BOILERS PROVIDE HOT WATER FOR HEATING AND DOMESTIC HOT WATER. THE BOILERS SHALL BE PROVIDED COMPLETE WITH A CONTROL SYSTEM FOR THE PRIMARY PUMPS AND DOMESTIC HOT WATER PUMP. COORDINATE WITH THE BOILER SUPPLIER TO UNDERSTAND REQUIRED FIELD WIRING AND THE INTENT OF THE PACKAGE UNIT CONTROL SYSTEM. THE BUILDING CONTROL SYSTEM WILL INTERFACE WITH THE BOILER CONTROL SYSTEM AS NECESSARY TO ENSURE A COMPLETE AND OPERATION HEATING SYSTEM. BOILER STAGING, PRIMARY PUMP CONTROL AND DOMESTIC HOT WATER HEATING CONTROL IS BY THE BOILER PACKAGE UNIT SYSTEM. THE BUILDING CONTROL SYSTEM WILL PROVIDE AN ENABLE SIGNAL TO THE BOILER SYSTEM WHENEVER THERE IS A DEMAND FOR HEATING IN THE BUILDING.

2. PART OF THE BUILDING HAS AN AIR SOURCE HEAT PUMP SYSTEM FOR AIR CONDITIONING AND AS THE PRIMARY SOURCE OF HEAT. EACH EVAPORATOR (FAN COIL UNIT) IN THE BUILDING AS A RELAY ON ITS CONTROL PANEL WHICH WILL BE USED BY THE BUILDING CONTROL SYSTEM AS AN INDICATION OF A "DEMAND FOR HEATING" SIGNAL TO BE TRANSFERRED TO THE BOILERS AND TO ENABLE CONTROL OF THE BASEBOARD HEATERS IN THE ZONE ASSOCIATED WITH THAT EVAPORATOR. THIS AUXILIARY CONTACT FROM ANY EVAPORATOR SHALL SIGNAL A DEMAND FOR HEAT AND WILL BE USED TO ENABLE THE BOILER SYSTEM. IN ZONES WITHOUT FAN COILS, DEMAND FOR HEAT WILL BE DRIVEN BY BASEBOARD AND COIL HEATING VALVES OPENING. ONCE ENABLED THE BOILERS PRIMARY PUMPS AND FIRING OF EACH BOILER WILL BE CONTROLLED BY THE PACKAGED UNIT CONTROL SYSTEM. THE BOILERS SHALL ALSO BE ENABLED INTERNALLY BY THE BOILER CONTROL SYSTEM IN ORDER TO MAINTAIN THE SUPPLY OF DOMESTIC HOT WATER.

3. BOILER FIRING AND STAGING, ONCE THE BOILER SYSTEM IS ENABLED, WILL BE CONTROLLED BY THE BOILERS PACKAGED UNIT CONTROLLER IN ORDER TO MAINTAIN THE SUPPLY HEATING HOT WATER TEMPERATURE. SUPPLY TEMPERATURE WILL BE RESET BY OUTDOOR AIR TEMPERATURE.

4. THE PERIMETER HEATING CIRCULATING PUMPS SHALL BE STARTED AND STOPPED IN UNISON WITH THE DEMAND FOR HEATING SIGNAL. ONCE STARTED THE PUMP SPEED WILL BE CONTROLLED BY A CONTROL LOOP TO MAINTAIN A CONSTANT SYSTEM DIFFERENTIAL PRESSURE. THE PRESSURE SET POINT SHALL BE ESTABLISHED AT THE TIME OF BALANCING. COORDINATE WITH THE BALANCING CONTRACTOR TO ASSIGN A SUITABLE PRESSURE SETPOINT. ESTABLISH THE SET POINT AS THE MINIMUM PRESSURE NECESSARY TO DISTRIBUTE THE REQUIRED QUANTITY OF HOT WATER TO ALL THE PERIMETER HEATERS.

5. ALARMS: IN THE EVENT THAT ANY PUMP FAILS, AS DETECTED BY A MISMATCH BETWEEN THE STATUS INPUT AND THE COMMAND TO RUN AN ALARM SHALL BE RAISED AT THE BUILDING OPERATORS TERMINAL. IF ANY PART OF THE BOILER PACKAGED SYSTEM FAILS AN ALARM SHALL BE TRANSFERRED TO THE BUILDING CONTROL SYSTEM. IF THE BUILDING RETURN WATER TEMPERATURE DROPS TO 110-DEGF OR BELOW THEN A "LOW WATER TEMPERATURE" ALARM SHALL BE TRANSFERRED TO THE BUILDING OPERATORS TERMINAL.

**7** **CONTROLS SCHEMATIC — HEATING**

SCALE : N.T.S.

NOTE: CONTROLS WIRING BETWEEN BOILERS, PUMPS & DEVICES BY DDC CONTRACTOR.

revisions	date
project	project
HALIFAX — DARTMOUTH COMMUNITY CORRECTIONAL CENTRE DARTMOUTH, N.S.	
drawing	dessin
MECHANICAL CONTROLS	
designed CST	conçu
date NOV. 13 2015	
drawn KRG	dessiné
date NOV. 13 2015	
approved TEW	approuvé
date NOV. 13 2015	
Tender	Soumission
PWGSC Project Manager Administrateur de projets TPSGC	
project number	no. du projet
R.035143.001	
drawing no.	no. du dessin
V505	