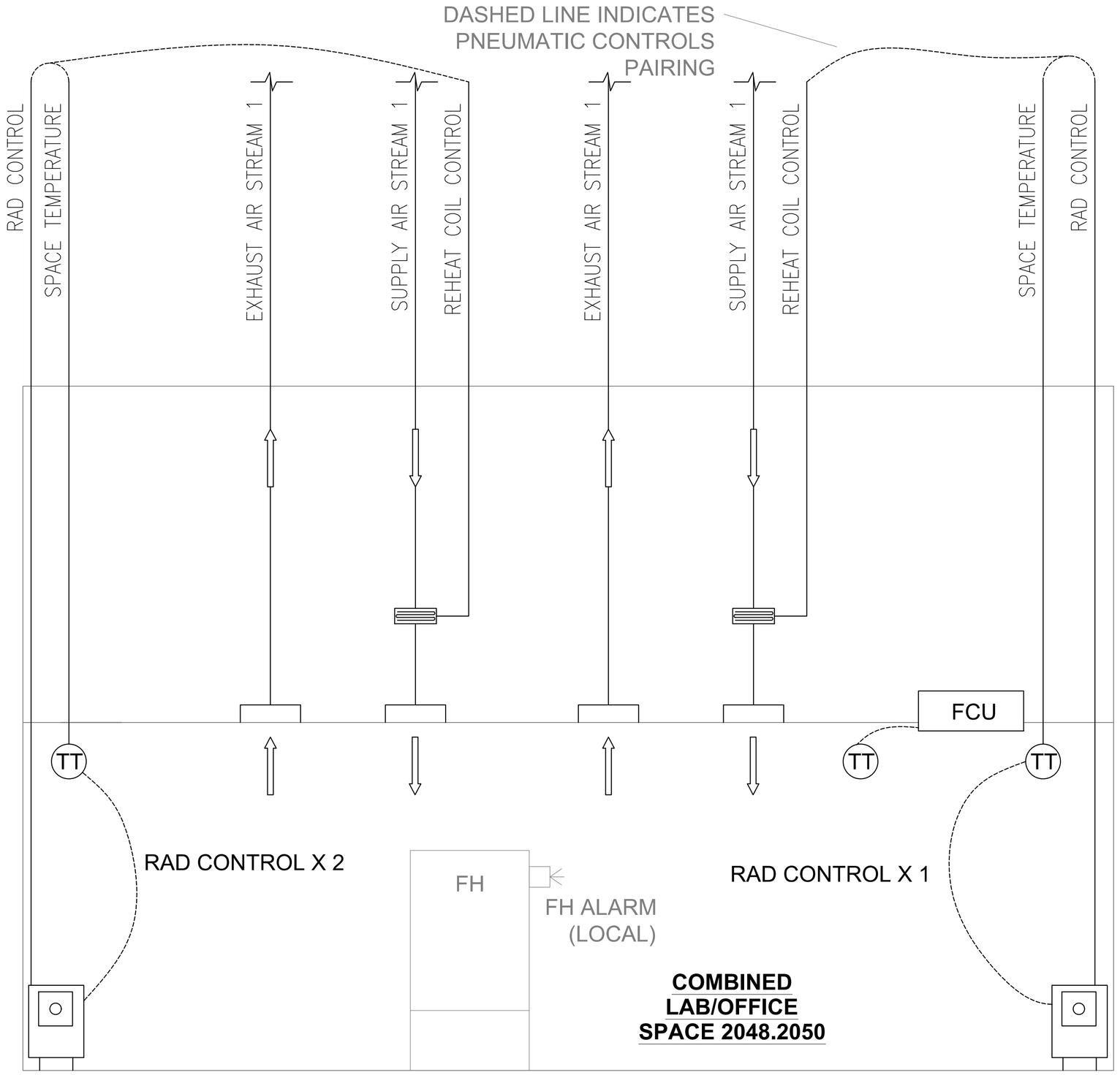


2 M-301 CONTROLS SCHEMATIC

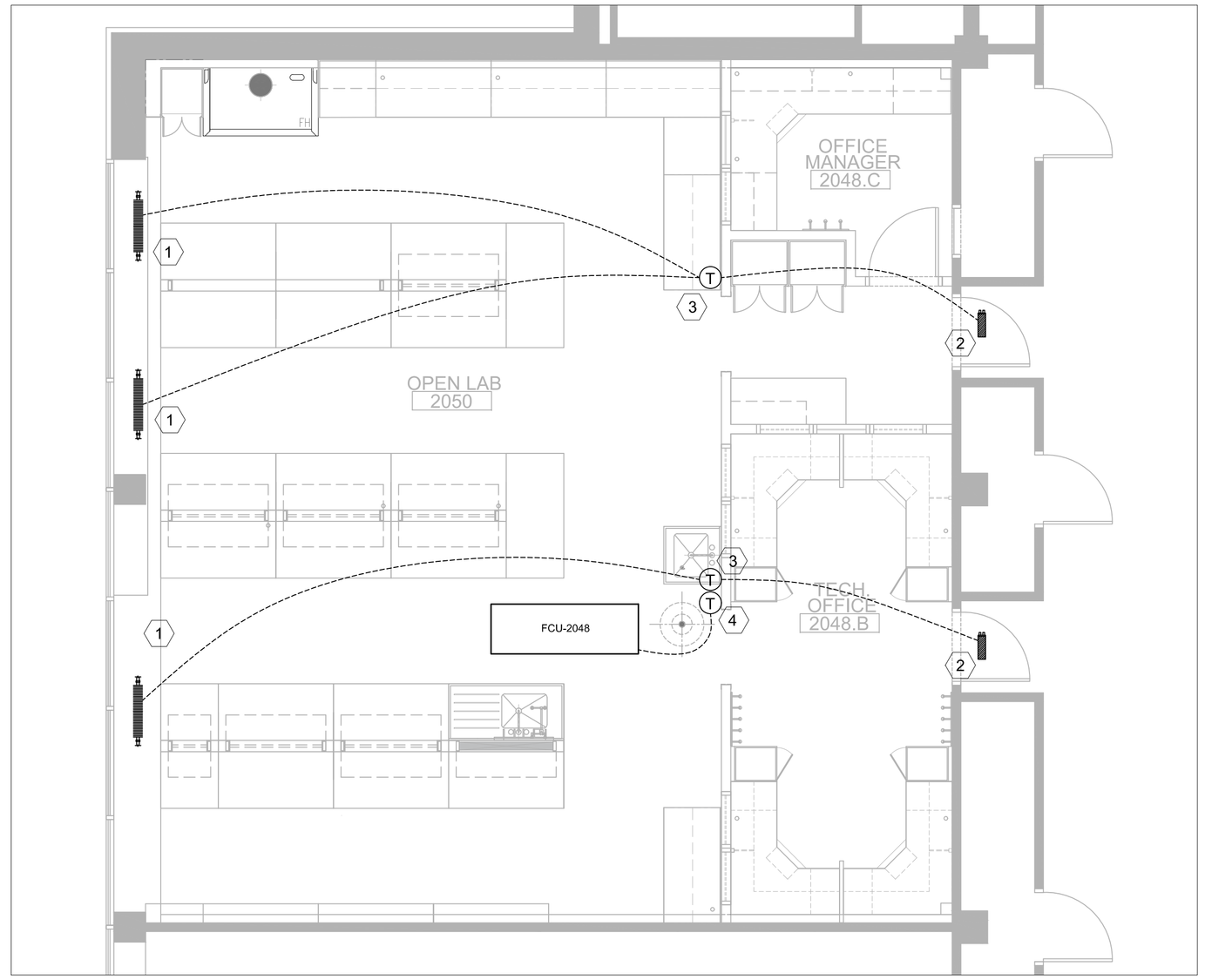
CONTROLS GENERAL NOTES:

1. ALL ACTUATION IS PNEUMATIC TO ENSURE COMPATIBILITY WITH EXISTING SYSTEM, WITH THE EXCEPTION OF THE DEDICATED FAN COIL UNIT SYSTEM.
2. CONTROL CONTRACTOR TO VERIFY SUITABILITY OF ALL SENSOR LOCATIONS.
3. AIRFLOWS IN THE LABORATORY SHALL BE HARD BALANCED PER FLOWS SHOWN ON M-101 IN ORDER TO MAINTAIN REQUIRED VOLUMETRIC OFFSET.
4. FUMEHOOD IS CONSTANT VOLUME WITH BYPASS, EXTRACTED BY CONSTANT VOLUME EXHAUST FAN LOCATED IN PENTHOUSE. BALANCE TO ACHIEVE APPROPRIATE FACE VELOCITY FOR CERTIFICATION PER MD15128 STANDARD.
5. REHEAT COILS TO REMAIN AS EXISTING, AND UTILIZE EXISTING HHW CONTROL VALVE. IF EITHER DEVICES ARE NOT SUITABLE FOR REUSE, THEN NEW DEVICES SHOULD BE PROVIDED. WIRING AND PROGRAMMING OF NEW DEVICES IF NEEDED SHALL BE INCLUDED AS PART OF THIS CONTRACT.
6. TEMPERATURE SENSORS AND ASSOCIATED DEVICE CONTROL PAIRINGS ARE INDICATED ON THIS PAGE ON 1/M-301.
7. ALL SENSORS TO BE PERMANENTLY TAGGED USING METHODOLOGY AND IDENTIFICATION NUMBERS APPROVED BY THE DEPARTMENTAL REPRESENTATIVE.

CONTROLS SEQUENCE OF OPERATION

A. STEADY STATE OPERATING MODE

1. STEADY STATE OPERATION IS ESTABLISHED BY HARD BALANCE OF THE SUPPLY AND GENERAL EXHAUST FLOWS TO EACH SPACE PER FLOWS SHOWN ON M-101 IN ORDER TO MAINTAIN REQUIRED VOLUMETRIC OFFSETS.
2. FUME HOOD EXHAUST OPERATES A CONSTANT FLOW TO MAINTAIN REQUIRED SASH VELOCITY WITH A BASELINE EXHAUST RATE OF 800 CFM [TBC AS NEEDED TO ACHIEVE CERTIFICATION PER MD 15128] AND WILL BYPASS TO THE FACE OF THE HOOD IF THE SASH IS CLOSED.
3. A RISE IN ZONE TEMPERATURE AS MEASURED BY THE SPACE THERMOSTAT ABOVE SETPOINT WILL CAUSE FIRST THE REHEAT COIL VALVE TO MODULATE SHUT FOLLOWED BY THE FIN TUBE RADIATOR HEATING CONTROL VALVE. A DECREASE IN ZONE TEMPERATURE AS MEASURED IN THE ROOM THERMOSTAT BELOW SETPOINT WILL CAUSE THE FIN TUBE CONTROL VALVE TO MODULATE OPEN, FOLLOWED BY THE REHEAT COIL VALVE.
4. FAN COIL UNIT WILL BE CONTROLLED BY THE DEDICATED T-STAT, SUPPLIED AS PART OF THE FAN COIL UNIT PACKAGE. SHOULD THE TEMPERATURE OF THE ROOM EXCEED SETPOINT BY 3°C (ADJ) OR MORE, THE FAN COIL UNIT SHALL COMMAND THE FAN ON. THE FCU FAN WILL SWITCH OFF WHEN THE TEMPERATURE IN THE ROOM IS 1°C (ADJ) UNDER SETPOINT. CHW FLOW THROUGH COIL IS CONSTANT. FCU CONTROL PACKAGE VARIES FAN SPEED TO MEET TEMPERATURE.
5. TEMPERATURE SHALL BE CONTROLLED TO +/- 2°C



1 M-301 CONTROLS LAYOUT

SCALE 1:50

KEY NOTES:

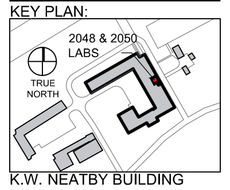
1. LOW PRESSURE STEAM SUPPLY PIPING, CONTROL VALVES, AND STEAM TRAPS SERVING EXTERNAL EXISTING FIN TUBE RADIATORS TO REMAIN AS IS. RE-PIPE CONTROLS TUBING SERVING THE RADIATOR CONTOL VALVES TO THE NEW THERMOSTAT LOCATIONS. PROTECT RADIATORS AND PIPING DURING CONSTRUCTION TO ENSURE THEY WILL BE SUITABLE FOR REUSE, INCLUDING PERFORMING ANY REPAIRS AS NEEDED.
   ENSURE ACCESS DOORS ARE PROVIDED AS NEEDED TO REACH ALL DEVICES REQUIRED.
2. EXISTING REHEAT COIL TO REMAIN, ALONG WITH ASSOCIATED PIPING, VALVES AND SENSORS.
3. CONTROL AIR PIPING TO PNEUMATIC THERMOSTATS AND DEVICES PROVIDED BY CONTRACTOR ALONG WITH BACKBOX AND WIRING TO CONTROL DEVICES. THERMOSTAT TO BE PROVIDED BY DEPARTMENTAL REPRESENTATIVE, INSTALLATION AND TESTING TO BE COMPLETED BY CONTRACTOR.
   COORDINATE EXACT THERMOSTAT LOCATION WITH OTHER DEVICES AND ARCHITECTURAL ELEVATIONS.
   PROVIDE COVER OR PROTECTION FROM EMERGENCY SHOWER DISCHARGE.
4. THERMOSTAT DEDICATED TO FAN COIL UNIT AND PROVIDED WITH FCU PACKAGE. COORDINATE EXACT THERMOSTAT LOCATIONS WITH OTHER DEVICES AND ARCHITECTURAL ELEVATIONS.

Agriculture and Agri-Food Canada
Agriculture et Agroalimentaire Canada (AAFC)

MERRICK & COMPANY
Prom. 580 Terry Fox Drive, Suite 201
Kanata, Ontario, K2L 4B9
CANADA
Phone: (613)-592-5289
Fax: (613)-592-2181
www.merrick.com

LICENSED PROFESSIONAL ENGINEER
Nov 18 2018
R. J. A. GREGORY
100120657
PROVINCE OF ONTARIO

KEY PLAN:



K.W. NEATBY BUILDING

TRUE NORTH

ISSUE	DESCRIPTION	DATE
0	ISSUE FOR CONSTRUCTION	05/17/2018

Agriculture and Agri-Food Canada | Agriculture et Agroalimentaire Canada

K.W. NEATBY BUILDING- BUILDING 20
RENOVATION OF LABS 2048 & 2050

960 Carling Avenue
Ottawa, ON K1A 0C6

SHEET TITLE:
CONTROLS PLAN AND SCHEMATICS

SCALE:	AS INDICATED
DATE:	11-24-2017
DRAWN:	DO
CHECKED:	RG
PROJECT:	74019668
SHEET NO:	M-301