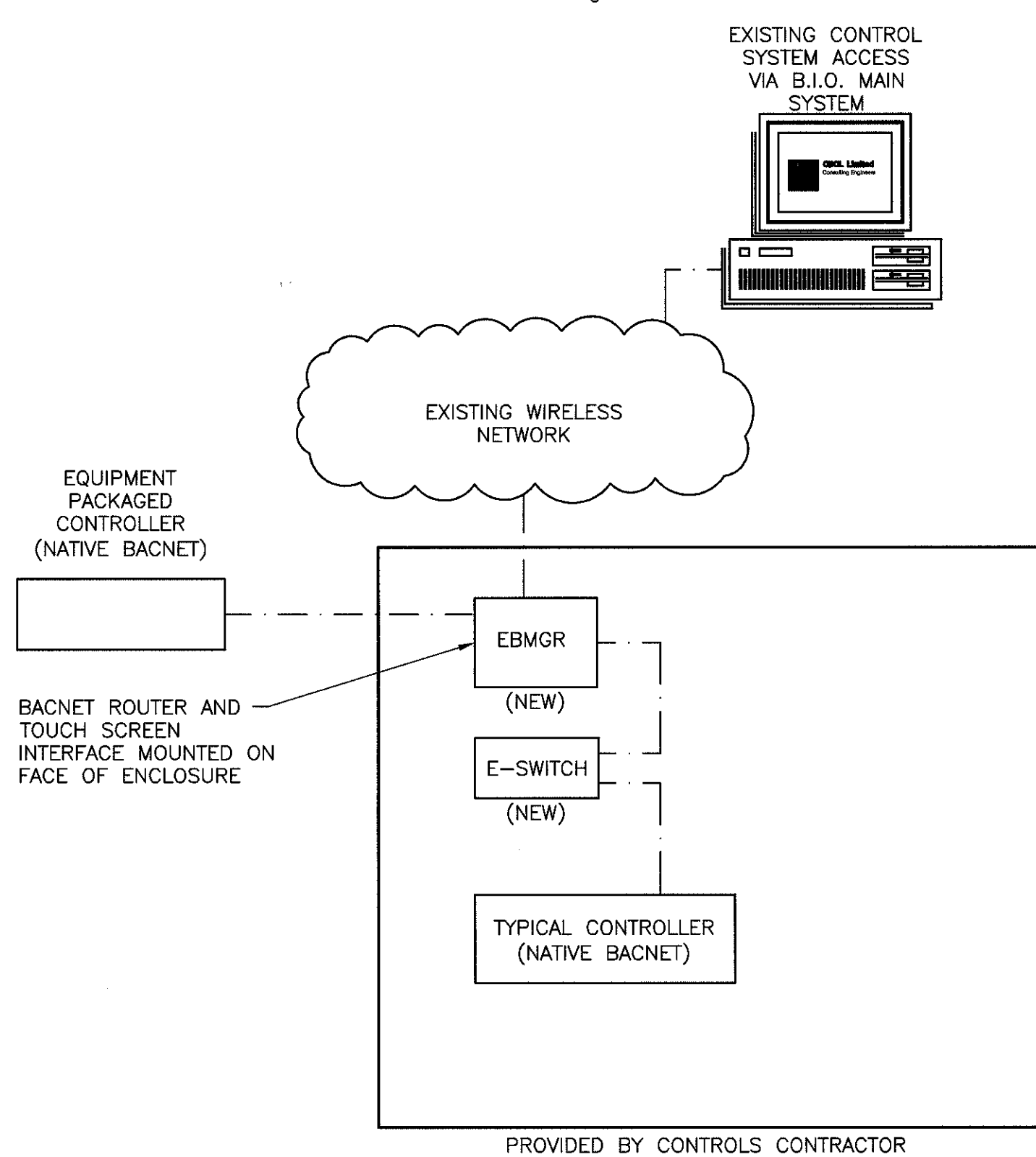


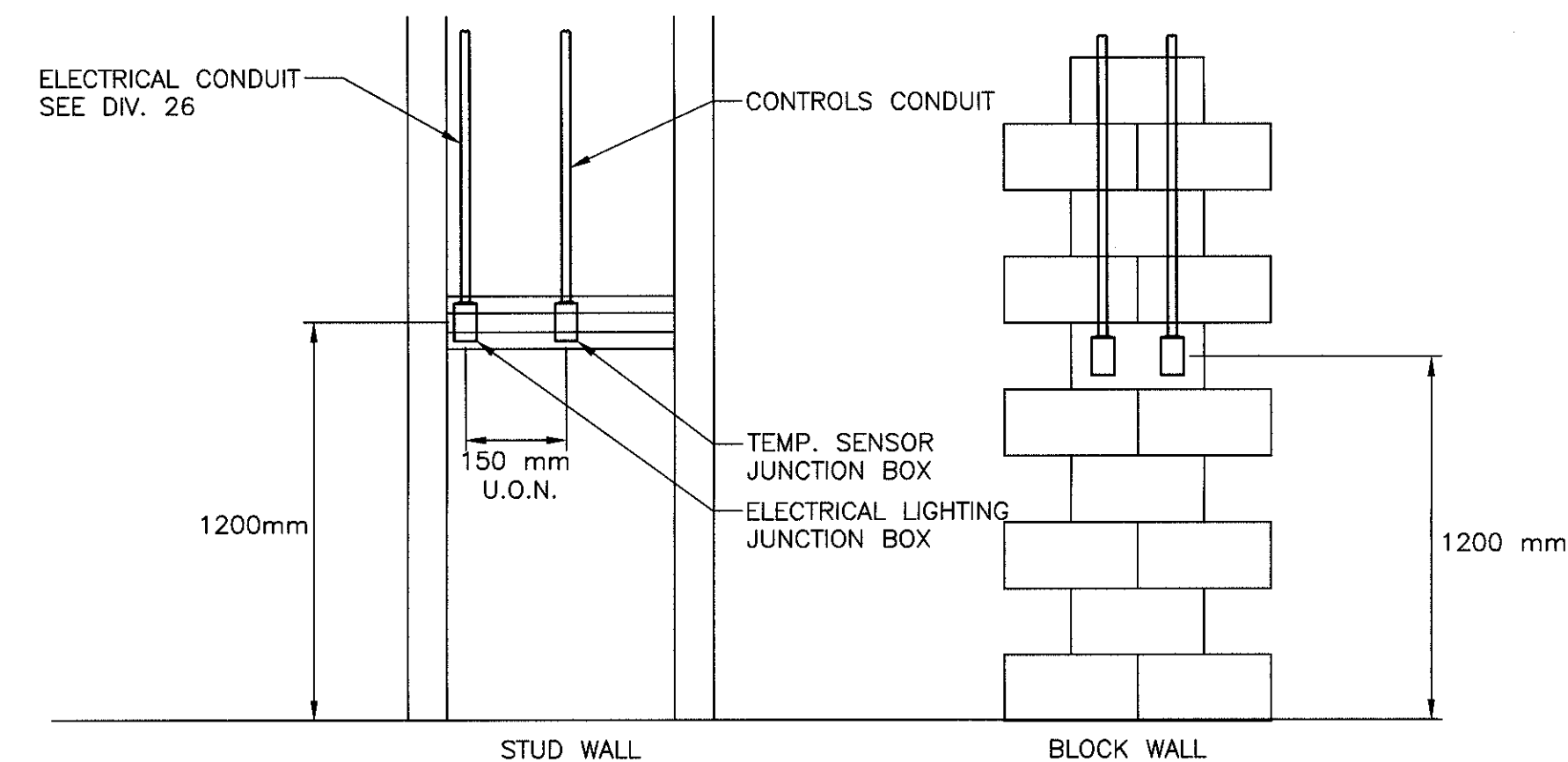
SEQUENCE OF OPERATION:

- OCCUPIED MODE: THE OCCUPANCY SCHEDULE SHALL BE ESTABLISHED BASED ON A PROGRAMMABLE TIME PROGRAM. THE INITIAL PROGRAM SCHEDULE SHOULD BE DETERMINED WITH INPUT FROM BUILDING STAFF. THE AHU SHALL BE STARTED PRIOR TO OCCUPANCY SUCH THAT EACH SPACE IS AT ITS OCCUPIED SET POINT WHEN OCCUPANCY BEGINS.
- UNOCCUPIED MODE: THE UNIT SHALL BE OFF DURING UNOCCUPIED MODE UNLESS THERE IS AN OUT OF NORMAL OCCUPANCY DEMAND FROM ONE OR MORE OF THE BUILDING THERMOSTATS. IF THE AHU RUNS DURING UNOCCUPIED MODE, THE MINIMUM OUTDOOR AIR VOLUME SHOULD BE SET TO ZERO.
- SUPPLY FAN CONTROL:
  - THE VARIABLE SPEED SUPPLY FAN WILL BE STARTED BASED ON OCCUPANCY MODE. WHEN THE FAN STATUS INDICATES THE FAN IS RUNNING, THE CONTROL SEQUENCE WILL BE ENABLED. THE FAN WILL MODULATE WITH A P+I CONTROL ALGORITHM TO MAINTAIN THE DISCHARGE STATIC PRESSURE AT SET POINT. UPON A LOSS OF AIRFLOW THE SYSTEM WILL AUTOMATICALLY RESTART. IF THE RETURN FAN FAILS (STOPS DUE TO VFD FAULT, SMOKE DETECTED, OVER PRESSURE, ETC.) THEN THE SUPPLY FAN SHALL SHUT DOWN AND AN ALARM GENERATED AT OWS.
  - THE DISCHARGE STATIC PRESSURE SET POINT WILL BE ESTABLISHED WITH THE BALANCING CONTRACTOR AND AT THE MINIMUM VALUE REQUIRED TO ACHIEVE DESIGN AIRFLOW AT EACH VAV BOX.
- RETURN FAN CONTROL: AFTER THE SUPPLY FAN HAS BEEN STARTED THE VARIABLE SPEED RETURN FAN WILL BE STARTED. THE RETURN FAN WILL MODULATE WITH A P+I CONTROL ALGORITHM TO MAINTAIN THE REQUIRED RETURN FAN AIRFLOW. RETURN FAN AIRFLOW SHALL EQUAL SUPPLY FAN AIRFLOW MINUS EF-1 AIRFLOW.
- OUTSIDE AIR CONTROL: AHU OUTSIDE AIR VOLUME, AS MEASURED BY THE AIRFLOW MONITORING STATION WILL BE MAINTAINED AS A CONSTANT MINIMUM VALUE REGARDLESS OF OVERALL AHU AIRFLOW. SEE AHU SCHEDULE FOR SETTINGS.
- TEMPERATURE CONTROL:
  - COOLING AND HEATING SHALL BE MODULATED AS REQUIRED TO MAINTAIN SUPPLY AIR TEMPERATURE SET POINT. ECONOMIZER COOLING SHALL BE ENABLED BASED ON APPROPRIATE OUTSIDE AIR ENTHALPY.
  - SUPPLY AIR TEMPERATURE SET POINT SHALL BE 55F (12.7C) WHEN OUTDOOR DB TEMP IS 65F (18.3C) AND ABOVE. SUPPLY AIR TEMP SET POINT SHALL BE RESET UPWARDS TO A MAXIMUM 60F (15.5C) WHEN THE OUTDOOR DB TEMP IS 55F(12.7C) AND BELOW.
  - AHU SHALL SHUT DOWN IF DISCHARGE TEMPERATURE DROPS BELOW 45F (7.2C).
- DEHUMIDIFICATION: IF THE RETURN AIR HUMIDITY RISES TO 65% OR MORE THE COOLING COIL IS TO BE ENABLED TO FULL CAPACITY. HEATING IS TO BE MODULATED AS REQUIRED TO ACHIEVE SUPPLY AIR TEMP SET POINT.
- POWER FAIL RESTART: UPON POWER RESTORATION, AHU RESTART WILL BE DELAYED.
- TREND LOGS: TREND LOGS SHALL AUTOMATICALLY BE SAVED IN SEPARATE FILES FOR EACH DAY, WEEK, MONTH IN A FOLDER ON OWS. SF AND RF FAN RUN TIME AND SPEED SHALL BE TREND LOGGED IN REAL TIME AND TOTALIZED FOR EACH DAY, WEEK, AND MONTH. OUTSIDE AIR TEMPERATURE, SUPPLY AIR TEMPERATURE, RETURN AIR RH, HEATING AND COOLING STATUS SHALL EACH BE LOGGED IN REAL TIME AND TOTALIZED FOR EACH DAY, WEEK, AND MONTH.

1 DETAIL — AHU CONTROLS  
SCALE : N.T.S.



2 DETAIL — NETWORK ARCHITECTURE  
SCALE : N.T.S.



NOTES:

- WITH THE EXCEPTION OF MECHANICAL AND ELECTRICAL ROOMS JUNCTION BOXES AND CONDUIT FOR ALL WALL MOUNTED CONTROL DEVICES SHALL BE HIDDEN WITHIN THE WALL, NO SURFACE MOUNTED EQUIPMENT.
- USE PLASTER RINGS WHERE REQUIRED.
- COORDINATE WITH OTHER TRADES.
- REFER TO ELECTRICAL DRAWINGS FOR LIGHT SWITCH LOCATIONS.
- REFER TO ELECTRICAL SPECIFICATIONS FOR CONDUIT AND WIRING REQUIREMENTS.

3 DETAIL — TYPICAL CONTROLS SENSOR  
SCALE : N.T.S. MOUNTING HEIGHT

1	ISSUED FOR TENDER	JUN. 4 2015
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revisions		date
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project		project
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ARGO BUILDING  
BEDFORD INSTITUTE  
OF OCEANOGRAPHY  
  
DARTMOUTH, NS

drawing design

MECHANICAL  
CONTROLS  
SHEET 2

designed CR conçu

date FEBRUARY 2015

drawn MEH dessiné

date FEBRUARY 2015

approved approuvé

date

Tender NS Soumission

PWGSC Project Manager Administrateur de projets TPSGC

project number no. du projet

R.069793.001

drawing no. no. du dessin

H402

