

GAP - EMS SCOPE AND RESPONSIBILITIES

CONVENTIONAL / HEAT PUMP - HVAC EQUIPMENT

MECHANICAL CONTRACTOR RESPONSIBILITIES

- THE FOLLOWING ARE RESPONSIBILITIES OF THE MECHANICAL CONTRACTOR DURING THE CONSTRUCTION PHASE:
- INSTALL TEMPORARY THERMOSTATS AS PART OF STANDARD SCOPE OF WORK. THESE THERMOSTATS SERVE AS A CONSTRUCTION STAT UNTIL NETWORK IS AVAILABLE AND EMS INSTALLER IS ON SITE.
- WHERE REQUIRED, VALVES WITH ACTUATORS TO BE PROVIDED BY THE MECHANICAL CONTRACTOR. ACTUATOR MUST ACCEPT A 2-10VDC OR 4-20mA CONTROL SIGNAL.
- MECHANICAL CONTRACTOR TO PROVIDE AND INSTALL CO2 SENSORS AS NEEDED. SEE MECHANICAL PLANS FOR LOCATIONS.

ELECTRICAL CONTRACTOR RESPONSIBILITIES

- THE FOLLOWING ARE RESPONSIBILITIES OF THE ELECTRICAL INSTALLER DURING THE CONSTRUCTION PHASE:
- ELECTRICAL INSTALLER SHALL PROVIDE AND INSTALL CONDUIT WHEN REQUIRED.
- PROVIDE ONE DUAL OUTLET IN CLOSE PROXIMITY OF NETWORK CONNECTION FOR CONNECTION OF QD2040.
- PROVIDE 15 AMP, 3-PHASE POWER TO SE1000 ENERGY METER.

EMS INSTALLER RESPONSIBILITIES

- THE FOLLOWING ARE RESPONSIBILITIES OF THE EMS INSTALLER DURING THE CONSTRUCTION PHASE:
- PROPER COMMISSIONING OF EMS CONTROLS REQUIRES THE ETHERNET PORT CONNECTION OR OPTIONAL CELL MODEM FOR QD2040 TO BE INSTALLED AND ACTIVATED PRIOR TO EMS INSTALLATION.
- EMS INSTALLER SHALL INSURE THAT SITE IS ON-LINE THROUGH THE UBIQUITY SERVER AND PERFORM ALL FINAL COMMISSIONING, SCHEDULING AND PROGRAMMING FUNCTIONS. INSTALLER MUST CONTACT ANDREW NORMINGTON (PH: 800-288-9383 EXT.9069) TO PERFORM COMMISSIONING DUTIES. ALLOW UP TO 2 HOURS PER UNIT FOR COMMISSIONING.
- MOUNT TS1002 DISCHARGE AIR SENSOR IN HVAC SUPPLY AIR DUCT LOCATION AS INDICATED ON MEPS. PULL 2-CONDUCTOR 18 GAUGE TWISTED/SHIELDED WIRE FROM TS1002 SENSOR TO WALL WHERE EACH SZ SERIES THERMOSTAT WILL BE MOUNTED.
- PULL 10-CONDUCTOR STANDARD THERMOSTAT WIRE FROM HVAC UNIT TO WALL WHERE EACH SZ SERIES THERMOSTAT WILL BE MOUNTED.
- MOUNT TS3001 IN OCCUPIED SPACE (IF APPLICABLE, SEE M FLOOR PLAN). PULL 2-CONDUCTOR 18 GAUGE TWISTED/SHIELDED WIRE FROM TS3001 REMOTE SENSOR TO WALL WHERE SZ SERIES THERMOSTAT WILL BE MOUNTED
- PULL 3-CONDUCTOR 22 GAUGE TWISTED/SHIELDED WIRE FROM SPACE WHERE EACH SZ STAT IS LOCATED, TO BE TERMINATED ON USB/RS485 COMMUNICATION CENTER QD2040.
- PULL 2-CONDUCTOR 18 GAUGE TWISTED/SHIELDED WIRE FROM PULSE ENERGY METER TO SE1000 PULSE TRANSDUCER AND PULL 3-CONDUCTOR 22 GAUGE TWISTED/SHIELDED WIRE FROM SE1000 TO BE TERMINATED ON USB/RS485 COMMUNICATION CONVERTER QD2040. CONNECT CURRENT TRANSDUCERS TO APPROPRIATE LINE VOLTAGE FOR MONITORING.
- MOUNT PQ1008 EMPLOYEE LIGHTING OVERRIDE SWITCH (IF APPLICABLE, SEE E FLOOR PLAN). PULL 2 CONDUCTOR 18 GAUGE WIRE FROM PQ1008 TO CORRESPONDING INPUT ON SL2105 LIGHTING CONTROLLER. PULL 3-CONDUCTOR 22 GAUGE TWISTED/SHIELDED WIRE FROM SL2105 TO BE TERMINATED ON USB/RS485 COMMUNICATION CENTER QD2040.
- CONNECT STORE LIGHTING SCENES (UP TO 5 SCENES) TO CORRESPONDING DIGITAL OUTPUT ON SL2105 LIGHTING CONTROLLER. IF CONTACTORS FOR LIGHTING SCENES ARE LINE VOLTAGE, EMS INSTALLER TO PROVIDE 24V PILOT RELAYS BETWEEN SL2105 AND LIGHTING CONTACTORS IF NEEDED.
- IF HVAC EQUIPMENT IS HEAT PUMP OR CONVENTIONAL, PROGRAMMING FOR OUTPUTS MUST BE DONE THROUGH KEYPAD. ON HEAT PUMPS, THERMOSTATS WITH HEAT PUMP OPTION, FACTORY DEFAULT IS A HEAT PUMP THERMOSTAT WITH CO2 TERMINALS USED FOR REVERSING VALVE. IF UNITS ARE CONVENTIONAL, KEYPAD PROGRAMMING MUST BE SET TO CONVENTIONAL.
- EMS INSTALLER SHALL MAKE ALL FINAL CONNECTIONS OF COMMUNICATIONS WIRING AND SENSING WIRING.

ENERGY MANAGEMENT SYSTEM NOTES

- HVAC SYSTEMS SHALL BE CONTROLLED AND MONITORED BY A LOCAL ENERGY MANAGEMENT SYSTEM UTILIZING TCS BASYS COMMUNICATING THERMOSTATS, CONTROLLERS, AND COMPONENTS AS DESCRIBED BELOW. THE SYSTEM SHALL INCLUDE COMMUNICATIONS INTERFACE, WHICH WILL CONNECT THE LOCAL BUILDING AUTOMATION SYSTEM TO GAP MULTI-SITE UBIQUITY BUILDING MANAGEMENT SYSTEM.
- CERTAIN MATERIALS AND SERVICES SHALL BE PROVIDED BY TCS BASYS UNDER SEPARATE CONTRACT WITH THE OWNER OR CONTRACTOR. IT IS THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE WORK OF THIS PROJECT WITH WORK TO BE PROVIDED BY EMS INSTALLER IN ORDER TO PROVIDE A COMPLETE AND OPERABLE ENERGY MANAGEMENT SYSTEM. THE NOTES AND THE BAS SYSTEM SCHEMATIC ON THIS SHEET ARE INTENDED TO CLARIFY THE CONTRACTOR'S RESPONSIBILITIES.
- CERTAIN WORK IS TO BE PROVIDED BY THE ELECTRICAL CONTRACTOR DURING THE CONSTRUCTION PHASE. SEE ELECTRICAL PLAN.
- THE FOLLOWING MATERIALS WILL BE PROVIDED BY TCS BASYS UNDER SEPARATE CONTRACT:
 - QD2040 COMMUNICATIONS CENTER
 - PI6100 CELLULAR MODEM
 - MULTI-STAGE PROGRAMMABLE THERMOSTATS WITH RS485 COMMUNICATIONS
 - DUCT TEMPERATURE SENSORS FOR RTU SUPPLY AIR TEMPERATURE
 - REMOTE ROOM TEMPERATURE SENSORS IF APPLICABLE (SEE M PLAN)
 - 5 CHANNEL LIGHTING CONTROLLER WITH REMOTE OVERRIDE SWITCH
 - LINE POWERED PULSE POWER METER
- INSTALLATION OF FIRE/SMOKE SYSTEMS OR CONNECTIONS TO LINE VOLTAGE ARE NOT INCLUDED IN THE TCS CONTROLS PACKAGE.

SEQUENCE OF OPERATIONS FOR LIGHTING

- SCENE 1 - ALL STORE LIGHTS TIMECLOCK**
- LIGHTS ON (10AM- 9PM ADJUSTABLE); TIMECLOCK NORMALLY CLOSED CONTACT OPENS AND DE-ENERGIZES SCENE 1 CONTACTOR(S). CONTACTOR(S) NORMALLY CLOSED CONTACTS CLOSE AND ENERGIZE LIGHTS.
- LIGHTS OFF (9PM - 10AM ADJUSTABLE); TIMECLOCK NORMALLY CLOSED CONTACT CLOSSES AND ENERGIZES SCENE 1 CONTACTOR(S). CONTACTOR(S) NORMALLY CLOSED CONTACTS OPEN AND DE-ENERGIZE LIGHTS.
- SCENE 2 - EMPLOYEE LIGHTS TIMECLOCK**
- LIGHTS ON (8AM- 11PM ADJUSTABLE); TIMECLOCK NORMALLY CLOSED CONTACT OPENS AND DE-ENERGIZES SCENE 2 CONTACTOR(S). CONTACTOR(S) NORMALLY CLOSED CONTACTS CLOSE AND ENERGIZE LIGHTS.
- LIGHTS OFF (9PM - 10AM ADJUSTABLE); TIMECLOCK NORMALLY CLOSED CONTACT CLOSSES AND ENERGIZES SCENE 2 CONTACTOR(S). CONTACTOR(S) NORMALLY CLOSED CONTACTS OPEN AND DE-ENERGIZE LIGHTS.
- BYPASS BUTTON FOR SCENE 2**
- BYPASS BUTTON ENABLED; BYPASS BUTTON CLOSSES AND ENERGIZES BYPASS RELAY. RELAY NORMALLY CLOSED CONTACT OPENS AND DE-ENERGIZES SCENE 2 CONTACTOR(S) NORMALLY CLOSED CONTACTS CLOSSES AND ENERGIZES LIGHTS.
- SCENE 3 - SPECIALTY LIGHTS TIMECLOCK**
- LIGHTS ON (8AM- 11PM ADJUSTABLE); TIMECLOCK NORMALLY CLOSED CONTACT OPENS AND DE-ENERGIZES SCENE 3 CONTACTOR(S). CONTACTOR(S) NORMALLY CLOSED CONTACTS CLOSE AND ENERGIZE LIGHTS.
- LIGHTS OFF (11PM - 8AM ADJUSTABLE); TIMECLOCK NORMALLY CLOSED CONTACT CLOSSES AND ENERGIZES SCENE 3 CONTACTOR(S). CONTACTOR(S) NORMALLY CLOSED CONTACTS OPEN AND DE-ENERGIZE LIGHTS.
- SCENE 4 - OUTSIDE LIGHTS TIMECLOCK**
- LIGHTS ON OR OFF (6AM-MIDNIGHT ADJUSTABLE):
- LIGHTS OFF (HIGH AMBIENT LIGHT OUTSIDE); TIMECLOCK NORMALLY CLOSED CONTACT OPEN BASED ON ASTRONOMICAL TIME. SCENE 4 CONTACTOR(S) DE-ENERGIZED. CONTACTOR(S) NORMALLY CLOSED CONTACTS OPEN AND DE-ENERGIZE LIGHTS.
- LIGHTS ON (LOW AMBIENT LIGHT OUTSIDE); TIMECLOCK NORMALLY CLOSED CONTACT CLOSSES BASED ON ASTRONOMICAL TIME. SCENE 4 CONTACTOR(S) ENERGIZED. CONTACTOR(S) NORMALLY CLOSED CONTACTS CLOSSES AND ENERGIZE LIGHTS.
- LIGHTS OFF (MIDNIGHT-6AM ADJUSTABLE):
- TIMECLOCK NORMALLY CLOSED CONTACT OPEN. SCENE 4 CONTACTOR(S) DE-ENERGIZED. CONTACTOR(S) NORMALLY CLOSED CONTACTS OPEN AND DE-ENERGIZE LIGHTS.

RTU SEQUENCE OF OPERATIONS

SYSTEM DESCRIPTION

THE MECHANICAL SYSTEM CONSISTS OF A HEAT PUMP ROOFTOP UNIT (RTU) WITH SUPPLEMENTAL ELECTRICAL. THE SYSTEM IS CONTROLLED BY A STAGED PROGRAMMABLE THERMOSTAT.

SCHEDULE

THE UNIT SHALL OPERATE IN THE OCCUPIED MODE PER THE SCHEDULE AND WHEN THE THERMOSTAT OVERRIDE BUTTON HAS BEEN PRESSED. THE OCCUPANCY SCHEDULE, WHICH IS BASED ON EMPLOYEE ARRIVAL AND DEPARTURE TIMES, SHALL BE PROVIDED BY THE GAP, INC. PROJECT MANAGER. MODIFY THE SCHEDULE BELOW TO REFLECT THE GIVEN SCHEDULE. IF SPECIFIC TIMES ARE NOT PROVIDED, USE THE FOLLOWING SCHEDULE FOR OCCUPIED MODE.

MON - SUNDAY: 8AM TO 10PM

OCCUPIED MODE

THE OUTSIDE AIR (OA) DAMPER SHALL STAY TO THE MINIMUM OA SETPOINT, THE SUPPLY FAN SHALL START TO MAINTAIN THE SPACE TEMPERATURE SETPOINT.

OCCUPIED MODE COOLING

THE COMPRESSOR(S) SHALL START AND STAGE ON AND OFF AS REQUIRED TO MAINTAIN TEMPERATURE SETPOINT OF 74 DEGREES FAHRENHEIT, ADJUSTABLE UP OR DOWN BY 2 DEGREES AT THE THERMOSTAT.

OCCUPIED MODE HEATING

THE HEAT SHALL STAGE ON AND OFF AS REQUIRED TO MAINTAIN TEMPERATURE SETPOINT OF 68 DEGREES FAHRENHEIT, ADJUSTABLE UP OR DOWN BY 2 DEGREES AT THE THERMOSTAT. HEAT PUMP SHALL BE THE PRIMARY STAGES OF HEATING, ELECTRIC HEAT SHALL BE THE FINAL STAGE OF HEAT. THE OA DAMPER SHALL REMAIN OPEN TO THE MINIMUM OA SETPOINT.

UNOCCUPIED MODE

THE OUTSIDE AIR DAMPER SHALL CLOSE AND REMAIN CLOSED DURING THE UNOCCUPIED MODE. THE SUPPLY FAN SHALL START TO MAINTAIN THE SPACE TEMPERATURE SETPOINT.

UNOCCUPIED MODE COOLING

THE COMPRESSOR(S) SHALL START AND STAGE ON AND OFF AS REQUIRED TO MAINTAIN TEMPERATURE SETPOINT OF 80 DEGREES FAHRENHEIT.

UNOCCUPIED MODE HEATING

THE HEAT PUMP SHALL STAGE ON AND OFF AS REQUIRED TO MAINTAIN TEMPERATURE SETPOINT OF 60 DEGREES FAHRENHEIT. SUPPLEMENTAL ELECTRIC HEAT SHALL NOT BE ENABLED.

UNOCCUPIED MODE HEATING RECOVERY

DURING UNOCCUPIED MODE PRIOR TO ENTERING THE OCCUPIED MODE, IF THE SPACE TEMPERATURE IS LOWER THAN THE SPACE TEMPERATURE SET POINT, RAMP THE SPACE TEMPERATURE SET POINT AT A RATE OF 4 DEGREES FAHRENHEIT PER HOUR PRIOR TO ENTERING THE OCCUPIED MODE. ON MILD NIGHTS, THIS WILL ALLOW THE SPACE TEMPERATURE TO REACH SET POINT WITHOUT USING STAGE TWO HEATING.

OVERRIDE

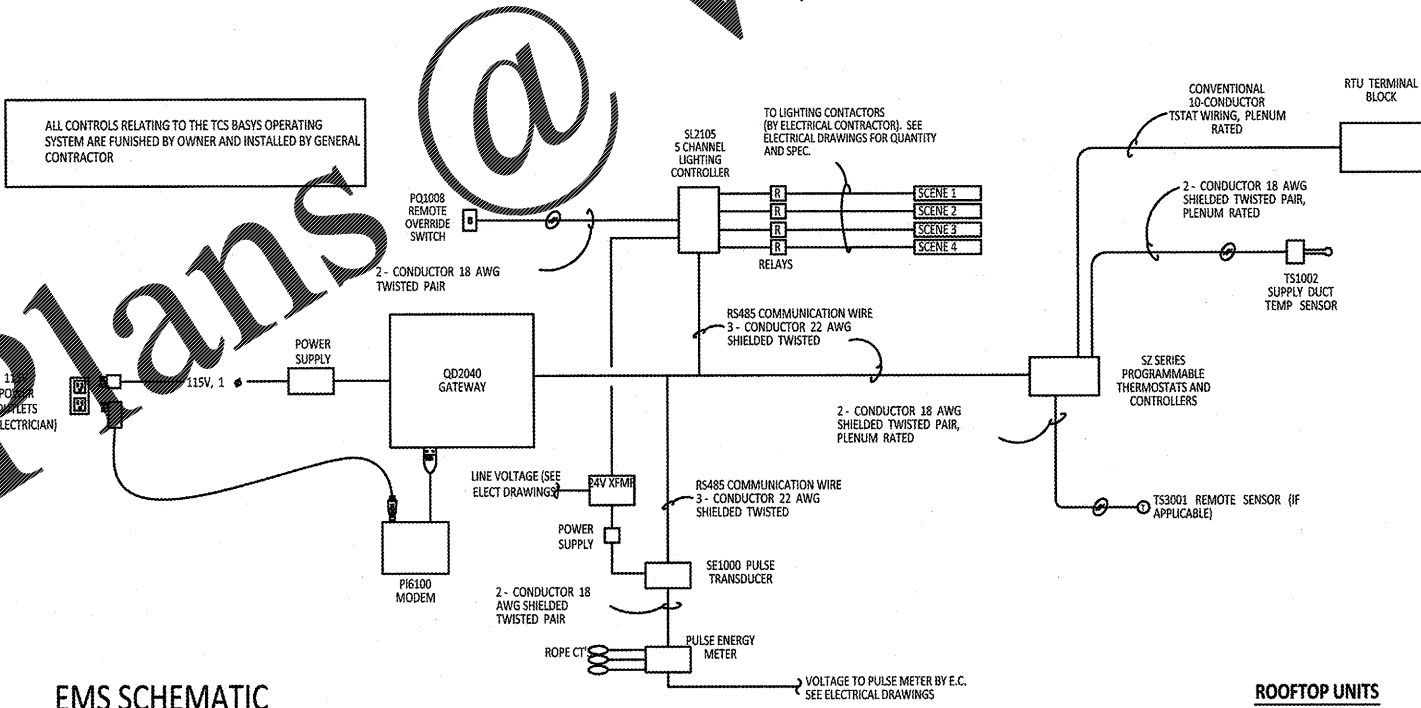
THE UNIT SHALL OPERATE IN THE OCCUPIED MODE FOR A PERIOD OF 120 MINUTES.

SMOKE DETECTOR SAFETY

SHOULD THE SMOKE DETECTOR TRIP, THE SHUTDOWN SEQUENCE WILL COMMENCE.

SHUTDOWN SEQUENCE

THE SUPPLY FAN, COMPRESSOR(S), AND HEATING SHALL SHUTDOWN. THE OUTSIDE AIR DAMPER ACTUATOR SHALL CLOSE.



EMS SCHEMATIC

SCALE: N.T.S.

TCS BASYS CONTROLS CONTACT
 CONTRACTOR IS NOT REQUIRED TO HIRE TCS BASYS TO INSTALL THE EQUIPMENT. IF CONTRACTOR WOULD LIKE TO GET A QUOTE FROM TCS BASYS, THEY MAY CONTACT:
 ANDREW NORMINGTON, PROJECT MANAGER - PH: 800-288-9383 EXT. 9069
 EMAIL: anormington@tcsbasys.com
 TCS TECHNICAL SUPPORT: 800-288-9383 EXT. 8010

NEW STORE

OLD NAVY

GAP, INC.
 CORPORATE ARCHITECTURE
 HARRIS STREET
 SAN FRANCISCO, CA 94105

REPS. I.D.: 000054156

STORE NUMBER: 4458

DESIGN TYPE: P3
 GENERATION: 17Q12
 PROTOTYPE DATE: 07/18/16
 OPENING: 2017

CONSULTANT INFO:

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 CONTROLS SCHEMATIC

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