

# ORANGE COUNTY, FLORIDA

ORANGE COUNTY MAYOR

TERESA JACOBS

DISTRICT 1 COMMISSIONER

S. SCOTT BOYD

DISTRICT 2 COMMISSIONER

BRYAN NELSON



DISTRICT 3 COMMISSIONER

PETE CLARKE

DISTRICT 4 COMMISSIONER

JENNIFER THOMPSON

DISTRICT 5 COMMISSIONER

TED B. EDWARDS

DISTRICT 6 COMMISSIONER

VICTORIA P. SIPLIN

## WILLOW STREET COMMUNITY CENTER HVAC REPLACEMENT

01/30/2015  
BID DOCUMENTS



PRIME CONSULTANT  
MATERN PROFESSIONAL ENGINEERING, INC.  
MPE #2013-126

### ARCHITECTURAL

- A-1 ABBREVIATIONS SYMBOLS INDEX AND NOTES
- AD-1 FLOOR PLAN AND REFLECTED CEILING PLAN DEMOLITION
- AD-2 EXISTING CONDITIONS AND DEMOLITION
- AD-3 EXISTING CONDITIONS AND DEMOLITION
- A-2 FLOOR PLAN & REFLECTED CEILING PLAN
- A-3 SECTIONS & DETAILS

### STRUCTURAL

- S-0 STRUCTURAL NOTES
- S-1 PARTIAL FLOOR PLAN & SECTION DETAIL

### MECHANICAL

- PH-1 HVAC PHASING PLAN
- M-0 LEGEND, NOTES AND DETAILS HVAC
- MD-1 FLOOR PLAN - HVAC - DEMOLITION
- M-1 FLOOR PLAN - HVAC - RENOVATION
- M-2 HVAC CONTROLS
- M-3 HVAC SCHEDULES
- M-5 HVAC DETAILS
- M-6 HVAC DETAILS II

### PLUMBING

- P-1 FLOOR PLAN - PLUMBING - RENOVATION

### ELECTRICAL

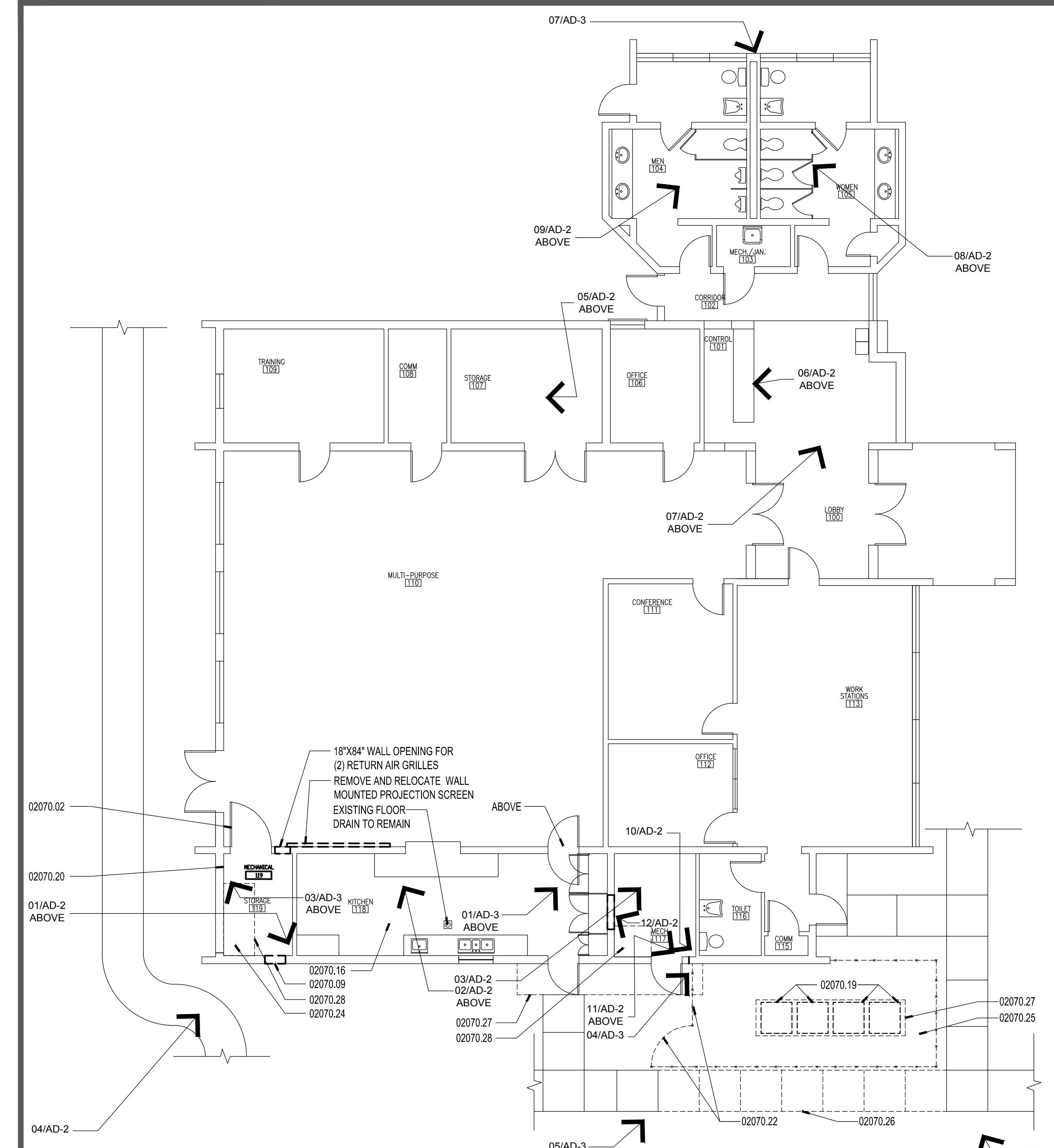
- ED-1 FLOOR PLAN - ELECTRICAL - DEMOLITION
- E-1 FLOOR PLAN - ELECTRICAL - RENOVATION
- E-2 ELECTRICAL RISER DIAGRAMS AND PANEL SCHEDULES



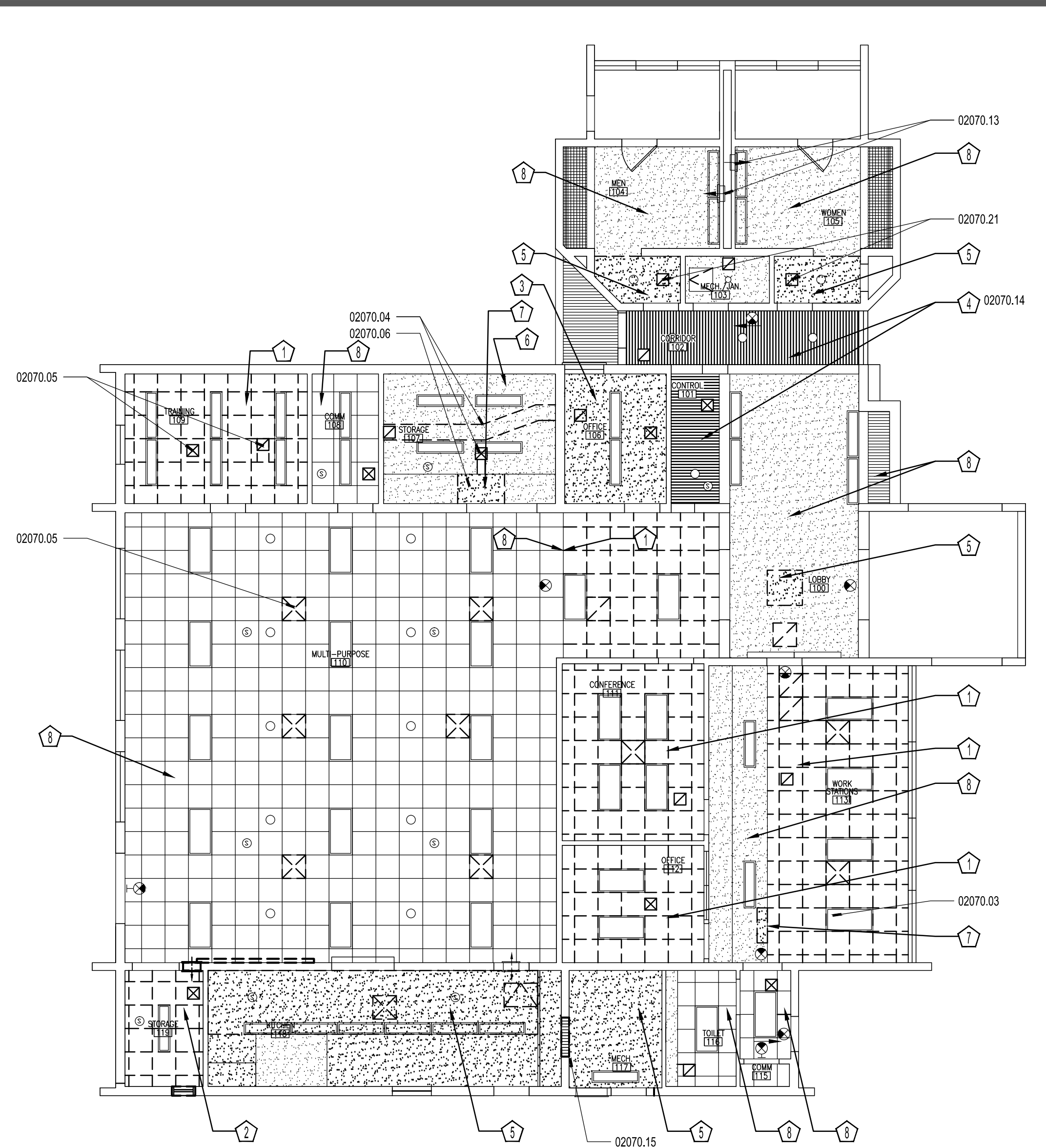




CREATE DATE: 6/7/2014 8:10:08 AM LAST SAVED BY: SBRONNE  
 FILENAME: P:\0559-12-OC Willow Street Community Center\400 2014-05-15 80% Documents\A - Architectural\AD-1.dwg  
 PLOT DATE: 2/2/2015 11:02:17 AM



**01 FLOOR PLAN - DEMOLITION**  
 SCALE: 1/8" = 1'-0"



**02 REFLECTED CEILING PLAN - DEMOLITION**  
 SCALE: 1/8" = 1'-0"

**LEGEND**

- XX/AD-X LOCATION OF PICTURE AT FLOOR PLAN LEVEL
- XX/AD-X ABOVE LOCATION OF PICTURE AT ABOVE FLOOR PLAN LEVEL
- 24"x48" LIGHT FIXTURE. EXISTING TO REMAIN
- 12"x48" PENDENT OR SURFACE MOUNTED LIGHT FIXTURE. EXISTING TO REMAIN
- RECESSED SPOTLIGHT. EXISTING TO REMAIN
- SURFACE MOUNTED. EXISTING TO REMAIN
- EXIT LIGHT.
- AIR SUPPLY DIFFUSER TO BE REMOVED
- RETURN SUPPLY GRILLE. TO BE REMOVED
- SPEAKERS. EXISTING TO REMAIN
- SMOKE DETECTOR.
- EMERGENCY LIGHTS.
- FIRE STROBE HORN.
- FIRE STROBE.
- 8'-0" TYPE B CEILING ELEVATIONS.

**DEMO RCP LEGEND**

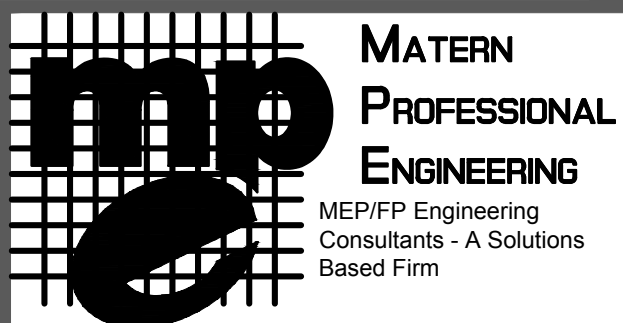
- TYPE A: GYPSUM BOARD CEILING.
- TYPE B: LAY-IN CEILING SYSTEM W/ 2'X2' CEILING PANELS
- TYPE C: EXISTING STUCCO CEILING TO REMAIN
- TYPE D: WOOD PLANKS
- 8'-0" TYPE B CEILING HEIGHT CEILING TYPE
- EXISTING LAY-IN CEILING TO BE REMOVED & REINSTALLED.
- EXISTING LAY-IN CEILING TO BE REMOVED & REPLACED WITH NEW GYP. CLG.
- EXISTING GYP. CLG. TO BE REMOVED & REPLACED WITH NEW LAY-IN CLG.
- EXISTING CLG. TO BE REMOVED & REPLACED WITH NEW GYP. CLG.
- EXISTING GYP. CLG. PARTIAL REMOVAL, PATCH AND REPAIR TO MATCH EXISTING. SEE MECHANICAL DRAWINGS FOR EXTENT OF WORK.
- EXISTING CLG. TO REMAIN
- SOFFIT TO BE PARTIALLY REMOVED, PATCHED AND REPAIRED TO MATCH EXISTING. SEE MECH. DRAWINGS FOR EXTENT OF WORK.
- EXISTING CEILING TO REMAIN

**NOTATION LIST**

XXXXX.XX DIVISION #  
 NUMERIC NOTE DESIGN  
**NOTATION**

- 01- GENERAL REQUIREMENTS**
- 01000.01 SEE ALL 1-XX ON SHEET A-1 THESE NOTES APPLY TO ALL DEMOLITION CONDITIONS WHETHER SPECIFICALLY NOTED IN DRAWINGS OR NOT.
  - 01000.02 DIMENSIONS & CONDITIONS MUST BE VERIFIED IN THE FIELD. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT OF RECORD BEFORE PROCEEDING WITH THE AFFECTED PART OF WORK.
  - 01000.03 THE CONTRACTOR SHALL INSURE THE SAFETY OF THE PUBLIC AND ALL EMPLOYEES WITHIN AND AROUND THE CONSTRUCTION AREAS. PROVIDE TEMPORARY FACILITIES AS NECESSARY. WHICH INCLUDE BUT NOT LIMITED TO: TEMPORARY WALLS, BARRICADES, WEATHER PROTECTION AND SCAFFLES.
  - 01000.04 DISPOSE OF ALL CONSTRUCTION DEBRIS ON A DAILY BASIS IN AN ENVIRONMENTALLY SAFE MANNER IN ACCORDANCE WITH FEDERAL, STATE AND LOCAL REQUIREMENTS.
  - 01000.05 PROTECT ALL EXISTING CONSTRUCTION ADJACENT TO AREA OF WORK FROM DAMAGE. ANY DAMAGE TO EXISTING AREAS TO REMAIN CAUSED BY NEW CONSTRUCTION, SHALL BE REPAIRED OR REPLACED IN A TIMELY MANNER.
  - 01000.06 THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ALL EXPOSED SURFACES TO REMAIN FROM CONSTRUCTION ACTIVITIES.
  - 01000.07 AT END OF EACH DAYS CONSTRUCTION ACTIVITY WITHIN OCCUPIED SPACES, THE CONTRACTOR SHALL REMOVE ALL CONSTRUCTION DEBRIS, DUST, CONSTRUCTION MATERIALS AND EQUIPMENT.
  - 01000.08 NO STRUCTURAL MEMBER SHALL BE CUT, NOTCHED, OR OTHERWISE ALTERED UNLESS APPROVED IN WRITING BY THE ARCHITECT AND ENGINEER OF RECORD.
  - 01000.09 THE OWNER WILL OCCUPY AND MAINTAIN OPERATIONS DURING THE PROJECT CONSTRUCTION. THE GENERAL CONTRACTOR WILL COORDINATE SCHEDULE AND PHASE CONSTRUCTION WITH ORANGE COUNTY PROJECT MANAGER TO MAINTAIN OPERATION OF THE FACILITY.
  - 01000.10 PROVIDE TEMPORARY HANGER SUPPORT OF ALL EXISTING CEILING ELEMENTS AS REQUIRED UNTIL CEILING HAS BEEN INSTALLED.
  - 01000.11 G.C. IS RESPONSIBLE FOR THE PROPER SEALING / FIRESTOPPING OF ALL EXISTING AND NEW PENETRATIONS AND HOLES FOR ELECTRICAL ROOM TO ENSURE COMPLETE SEALING OF ROOMS

- 02- DEMOLITION SITE WORK**
- 02070.01 TYPICAL, EXISTING 2'X2' LAY-IN ACOUSTICAL CEILING AND SUSPENSION SYSTEM TO BE DEMOLISHED
  - 02070.02 EXISTING 4'-0" DOOR & FRAME TO REMAIN. CHANGE DOOR HARDWARE.
  - 02070.03 TYPICAL, EXISTING LIGHT FIXTURE TO REMAIN. PROVIDE TEMPORARY SUPPORT AS NEEDED UNTIL NEW CEILING HAS BEEN INSTALLED. SEE ELECTRICAL DWGS.
  - 02070.04 TYPICAL, EXISTING MECHANICAL HVAC SYSTEM TO BE DEMOLISHED. SEE MECHANICAL DWGS.
  - 02070.05 TYPICAL, EXISTING HVAC DIFFUSERS AND RETURN GRILLES TO BE REMOVED. SEE MECHANICAL DRAWINGS.
  - 02070.06 TYPICAL, EXISTING HVAC SOFFIT TO BE PARTIALLY REMOVED.
  - 02070.07 EXISTING STRUCTURE TO REMAIN. CLEAN SURFACES TO ENSURE PROPER PREPARATION FOR NEW INSULATION WORK TO BE PERFORMED.
  - 02070.08 EXISTING ROOF TRUSS STRUCTURE. DO NOT DISTURB.
  - 02070.09 DEMOLISH WALL TO PROVIDE OPENING FOR NEW LOUVER AND LINTEL. DO NOT DISTURB EXISTING BOND BEAM.
  - 02070.10 TYPICAL, EXISTING 4" CONCRETE SLAB. DO NOT DISTURB.
  - 02070.11 EXISTING 8X8X16 CMU WALL. DO NOT DISTURB
  - 02070.12 EXISTING MTL STUD GWB WALL. DO NOT DISTURB
  - 02070.13 EXISTING WALL LOUVERS TO REMAIN
  - 02070.14 EXISTING FINISHED WOOD PLANKS TO BE REMOVED & REPLACED WITH GYP. CEILING
  - 02070.15 REMOVE PLYWOOD & GYPSUM BOARD FROM PREVIOUS WINDOW OPENING & INFILL WALL WITH CMU TO MATCH EXISTING WALL. SEE DETAIL 2/A-3.
  - 02070.16 TYPICAL FINISH FLOOR. DO NOT DISTURB. PROVIDE TEMPORARY PROTECTIVE COVERING DURING CONSTRUCTION.
  - 02070.17 TYPICAL REMOVE FOAM FOR PROPER SEALING
  - 02070.18 TYPICAL REMOVE EXISTING PATCH COMPLETE FOR PROPER SEALING OF PENETRATION
  - 02070.19 REMOVE EXISTING HVAC SYSTEM UNITS COMPLETE. SEE MECHANICAL DRAWINGS.
  - 02070.20 EXISTING ELECTRICAL EQUIPMENT. DO NOT DISTURB
  - 02070.21 REMOVE GWB. CLG. AS NEEDED BACK TO A CEILING SUPPORT STRUCT. FOR PROPER INSTALLATION OF NEW HVAC DIFFUSERS AND RETURN GRILLES.
  - 02070.22 EXISTING CHAIN LINK FENCE & GATE TO BE REMOVED INCLUDING FOUNDATIONS.
  - 02070.23 EXISTING GUTTER & DOWNSPOUT. DO NOT DISTURB.
  - 02070.24 EXISTING CLOSET TO BE TURNED INTO MECHANICAL ROOM. REMOVE INSIDE EXISTING SHELVING.
  - 02070.25 EXISTING EQUIPMENT YARD FENCE & GATE TO BE REMOVED & REPLACED. PROVIDE NEW 3'-0"X 8'-0" H GATE & 8'-0" CHAN LINK FENCE W/ CMU WALL.
  - 02070.26 PROVIDE 3' GRAVEL AROUND THE NEW CONC. SLAB.
  - 02070.27 PARTIALLY DEMOLISH SIDEWALK.
  - 02070.28 PARTIALLY DEMOLISH CONC. SLAB TO PROVIDE FOR NEW FLOOR DRAIN. SLOPE TO DRAIN.



ORLANDO | Fort Myers | Jacksonville | Tampa  
**Matern Professional Engineering, Inc**  
 130 Candace Drive  
 Maitland, FL 32751-3331  
 PHONE (407) 740-5020 FAX (407) 740-0365  
 THIS DRAWING IS THE PROPERTY OF MATERN PROFESSIONAL ENGINEERING, INC. UNLESS OTHERWISE PROVIDED BY THE CONTRACT, THE CONTENTS OF THIS DRAWING SHALL NOT BE TRANSMITTED TO ANY OTHER PARTY EXCEPT AS AGREED TO BY THE ENGINEER.  
 ENG. BUS. No. EB-0005096 CERT. OF AUTH. No. 5096

**WILLOW STREET COMMUNITY CENTER HVAC REPLACEMENT**

6565 WILLOW STREET  
 MT. DORA, FLORIDA

**MIGUEL LAZARO MARTIN**  
 AR NO. 8255

SEAL

**Revisions**

No.	Date	Description

MPE PROJ#: 2013-126

Designed By: --

Drawn By: MCH

Checked By: MLM

Issue Date: 01/30/2015

Drawing Scale: 1/8"=1'-0"

**FLOOR PLAN AND REFLECTED CEILING PLAN DEMOLITION**

BD DOCUMENTS

Drawing No.

AD-1

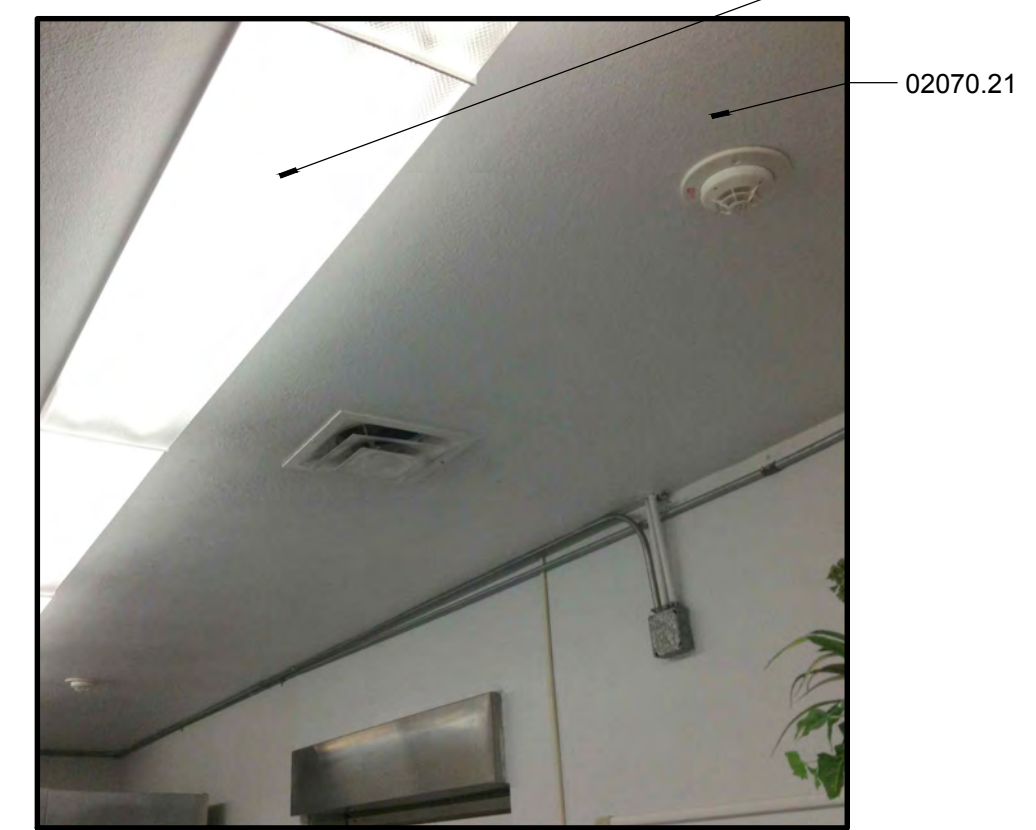




CREATE DATE: 6/7/2014 8:10:08 AM LAST SAVER: 2/2/2015 10:32:17 AM LAST SAVED BY: SBRONNE  
 FILENAME: P:\0559-12-OC Willow Street Community Center\400 2014-05-15 80% Documents\A - Architectural\AD-2.dwg  
 PLOT DATE: 2/2/2015 11:03:34 AM  
 MATERN PROFESSIONAL ENGINEERING



01 EXISTING NTS



02 EXISTING NTS



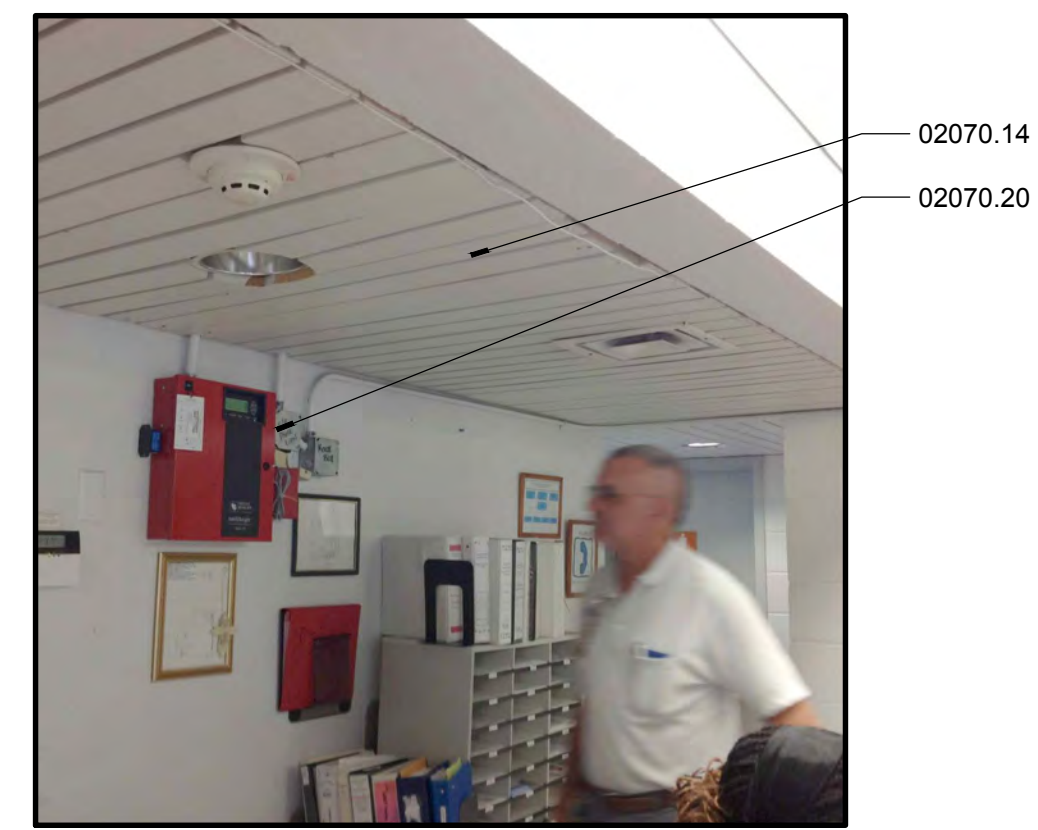
03 EXISTING NTS



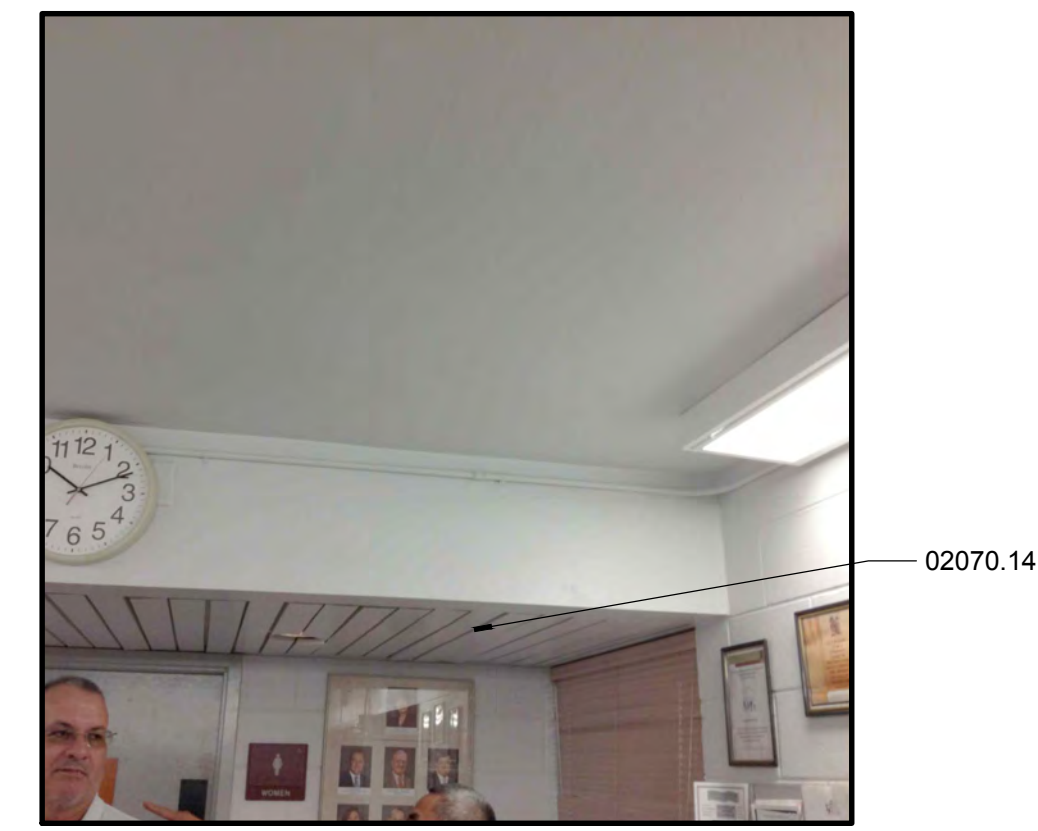
04 EXISTING NTS



05 EXISTING NTS



06 EXISTING NTS



07 EXISTING NTS



08 EXISTING NTS



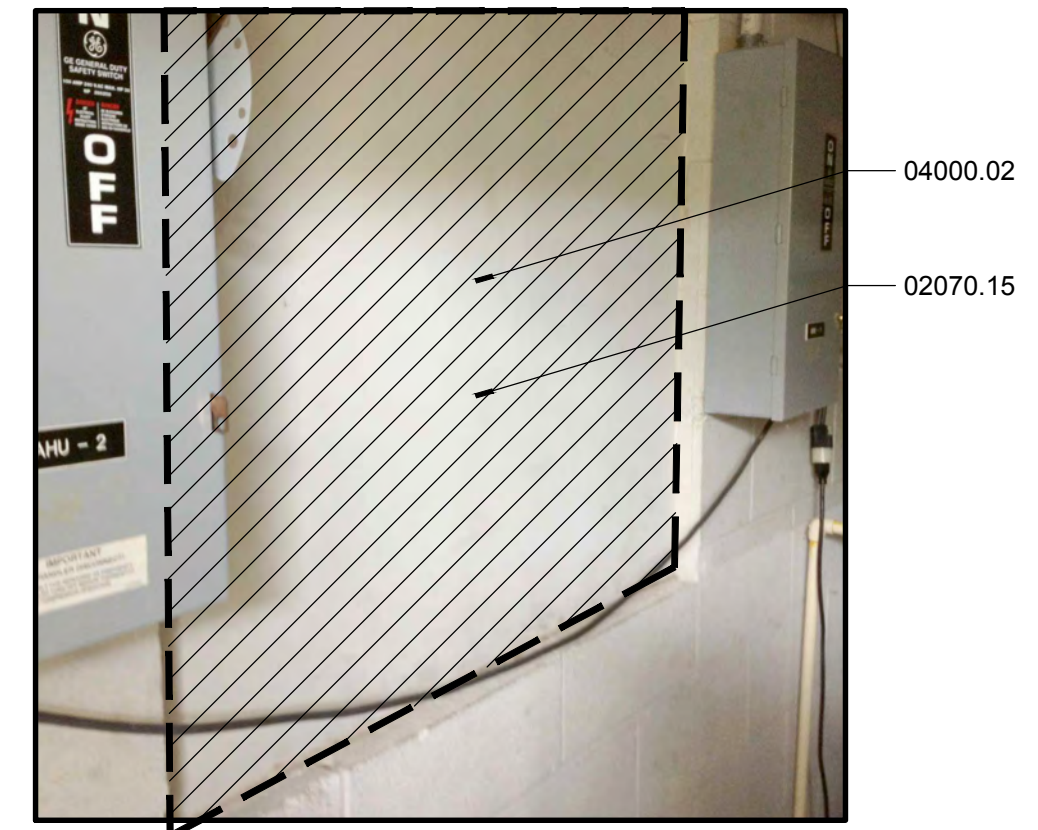
09 EXISTING NTS



10 EXISTING NTS



11 EXISTING NTS



12 EXISTING NTS

**NOTATION LIST**  
 DIVISION #  
 NUMERIC NOTE DESIGN  
 XXXXX.XX  
**NOTATION**

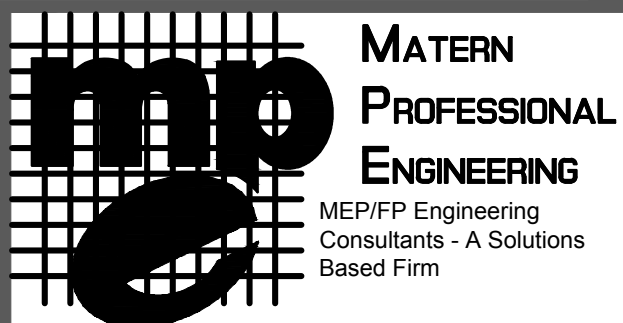
- 01- GENERAL REQUIREMENTS**
- 01000.01 SEE ALL 1-XX ON SHEET A-1 THESE NOTES APPLY TO ALL DEMOLITION CONDITIONS WHETHER SPECIFICALLY NOTED IN DRAWINGS OR NOT.
  - 01000.02 DIMENSIONS & CONDITIONS MUST BE VERIFIED IN THE FIELD. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT OF RECORD BEFORE PROCEEDING WITH THE AFFECTED PART OF WORK.
  - 01000.03 THE CONTRACTOR SHALL INSURE THE SAFETY OF THE PUBLIC AND ALL EMPLOYEES WITHIN AND AROUND THE CONSTRUCTION AREAS. PROVIDE TEMPORARY FACILITIES AS NECESSARY, WHICH INCLUDE BUT NOT LIMITED TO: TEMPORARY WALLS, BARRICADES, WEATHER PROTECTION AND SCAFFLES.
  - 01000.04 DISPOSE OF ALL CONSTRUCTION DEBRIS ON A DAILY BASIS IN AN ENVIRONMENTALLY SAFE MANNER IN ACCORDANCE WITH FEDERAL, STATE AND LOCAL REQUIREMENTS.
  - 01000.05 PROTECT ALL EXISTING CONSTRUCTION ADJACENT TO AREA OF WORK FROM DAMAGE. ANY DAMAGE TO EXISTING AREAS TO REMAIN CAUSED BY NEW CONSTRUCTION, SHALL BE REPAIRED OR REPLACED IN A TIMELY MANNER.
  - 01000.06 THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ALL EXPOSED SURFACES TO REMAIN FROM CONSTRUCTION ACTIVITIES.
  - 01000.07 AT END OF EACH DAYS CONSTRUCTION ACTIVITY WITHIN OCCUPIED SPACES, THE CONTRACTOR SHALL REMOVE ALL CONSTRUCTION DEBRIS, DUST, CONSTRUCTION MATERIALS AND EQUIPMENT.
  - 01000.08 NO STRUCTURAL MEMBER SHALL BE CUT, NOTCHED, OR OTHERWISE ALTERED UNLESS APPROVED IN WRITING BY THE ARCHITECT AND ENGINEER OF RECORD.
  - 01000.09 THE OWNER WILL OCCUPY AND MAINTAIN OPERATIONS DURING THE PROJECT CONSTRUCTION. THE GENERAL CONTRACTOR WILL COORDINATE SCHEDULE AND PHASE CONSTRUCTION WITH ORANGE COUNTY PROJECT MANAGER TO MAINTAIN OPERATION OF THE FACILITY.
  - 01000.10 PROVIDE TEMPORARY HANGER SUPPORT OF ALL EXISTING CEILING ELEMENTS AS REQUIRED UNTIL CEILING HAS BEEN INSTALLED.
  - 01000.11 G.C. IS RESPONSIBLE FOR THE PROPER SEALING / FIRESTOPPING OF ALL EXISTING AND NEW PENETRATIONS AND HOLES FOR ELECTRICAL ROOM TO ENSURE COMPLETE SEALING OF ROOMS

**02- DEMOLITION SITE WORK**

- 02070.01 TYPICAL, EXISTING 2'X2' LAY-IN ACOUSTICAL CEILING AND SUSPENSION SYSTEM TO BE DEMOLISHED.
- 02070.03 TYPICAL, EXISTING LIGHT FIXTURE TO REMAIN. PROVIDE TEMPORARY SUPPORT AS NEEDED UNTIL NEW CEILING. HAS BEEN INSTALLED. SEE ELECTRICAL DWGS.
- 02070.04 TYPICAL, EXISTING MECHANICAL HVAC SYSTEM TO BE DEMOLISHED. SEE MECHANICAL DWGS.
- 02070.05 TYPICAL, EXISTING HVAC DIFFUSERS AND RETURN GRILLES TO BE REMOVED. SEE MECHANICAL DRAWINGS.
- 02070.06 TYPICAL, EXISTING HVAC SOFFIT TO BE PARTIALLY REMOVED.
- 02070.13 EXISTING WALL LOUVERS TO REMAIN
- 02070.14 EXISTING FINISHED WOOD PLANKS TO BE REMOVED & REPLACED WITH GYP. CEILING
- 02070.15 REMOVE PLYWOOD & GYPSUM BOARD FROM PREVIOUS WINDOW OPENING & INFILL WALL WITH CMU TO MATCH EXISTING WALL. SEE DETAIL 2/A-3.
- 02070.20 EXISTING ELECTRICAL EQUIPMENT. DO NOT DISTURB
- 02070.21 REMOVE GWB. CLG. AS NEEDED BACK TO A CEILING SUPPORT STRUCT. FOR PROPER INSTALLATION OF NEW HVAC DIFFUSERS AND RETURN GRILLES.
- 02070.23 EXISTING GUTTER & DOWNSPOUT. DO NOT DISTURB.
- 02070.24 EXISTING CLOSET TO BE TURNED INTO MECHANICAL ROOM. REMOVE INSIDE EXISTING SHELVING.
- 02070.28 PARTIALLY DEMOLISH CONC. SLAB TO PROVIDE FOR NEW FLOOR DRAIN. SLOPE TO DRAIN.

**NOTATION LIST**  
 DIVISION #  
 NUMERIC NOTE DESIGN  
 XXXXX.XX  
**NOTATION**

- 04- MASONRY**
- 04000.02 INFILL CMU WALL OPENING TO MATCH EXISTING WALL. SEE DETAIL 2/A-3.04000.038'-0" CMU WALL FOR EXPANDED EQUIPMENT YARD.
- 07- THERMAL & MOISTURE PROTECTION**
- 07210.03 TYPICAL, ENSURE THAT ALL SPACES AND GAPS ARE SEALED COMPLETE WITH INSULATION
  - 07921.01 TYPICAL, SEAL ALL AROUND EXISTING AND NEW PENETRATIONS
  - 07921.03 TYPICAL FILL ALL EDGE GAPS WITH CAULKING COMPLETE.



ORLANDO | Fort Myers | Jacksonville | Tampa  
**Matern Professional Engineering, Inc**  
 130 Candace Drive  
 Maitland, FL 32751-3331  
 PHONE (407) 740-5020 FAX (407) 740-0365  
THIS DRAWING IS THE PROPERTY OF MATERN PROFESSIONAL ENGINEERING, INC. UNLESS OTHERWISE PROVIDED BY THE CONTRACT, THE CONTENTS OF THIS DRAWING SHALL NOT BE TRANSMITTED TO ANY OTHER PARTY EXCEPT AS AGREED TO BY THE ENGINEER.  
 ENG. BUS. No. E9-0005096 CERT. OF AUTH. No. 5096

**WILLOW STREET  
 COMMUNITY  
 CENTER HVAC  
 REPLACEMENT**

6565 WILLOW STREET  
 MT. DORA, FLORIDA

**MIGUEL LAZARO MARTIN**  
 AR NO. 8255

SEAL

**Revisions**

No.	Date	Description

MPE PROJ#: 2013-126

Designed By: --

Drawn By: MCH

Checked By: MLM

Issue Date: 01/30/2015

Drawing Scale: N.T.S.

Drawing Title:

**EXISTING  
 CONDITIONS  
 AND DEMOLITION**

BID DOCUMENTS

Drawing No.

**AD-2**



668 N. ORLANDO AVE.  
 SUITE 107  
 MAITLAND, FL 32751  
 407.897.6764 (VOICE)  
 407.894.1338 (FAX)  
 WWW.MLM-MARTIN.COM  
 AA-C002208  
 MLM JOB # 10599-12















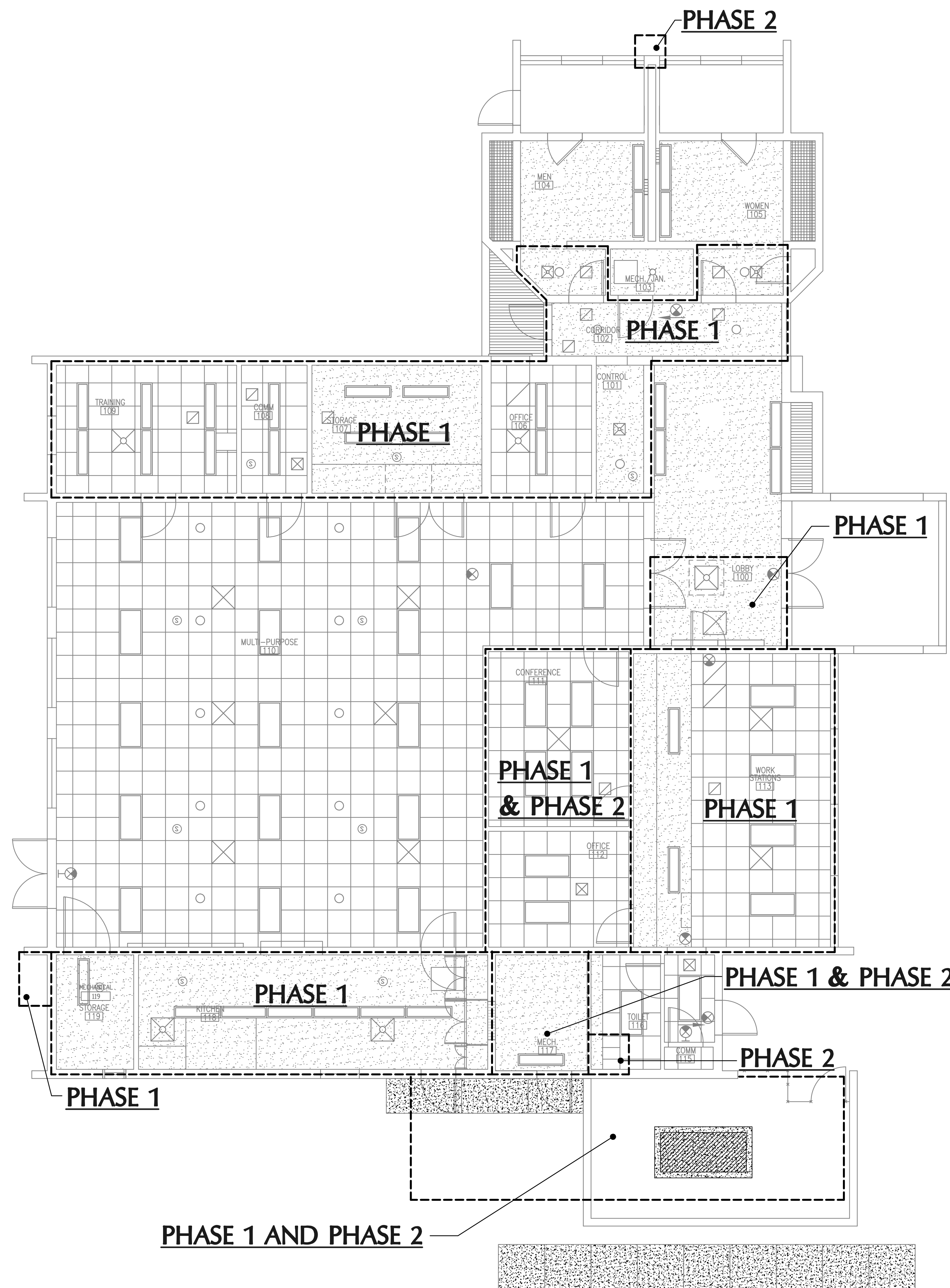








CREATE DATE: 4/8/2013 9:16:08 AM LAST SAVER: 12/12/2014 4:47:59 PM LAST SAVED BY: MBOUWER  
 FILENAME: Y:\AutoCAD Files\Architect\Matern\Willow Street Community Center\PH-1.dwg  
 PLOT DATE: 1/30/2015 3:36:50 PM  
 MATERN PROFESSIONAL ENGINEERING



**PHASE 1 AND PHASE 2**

**PHASING PLAN**  
 SCALE: 3/16"=1'-0"

**PHASING NOTES**

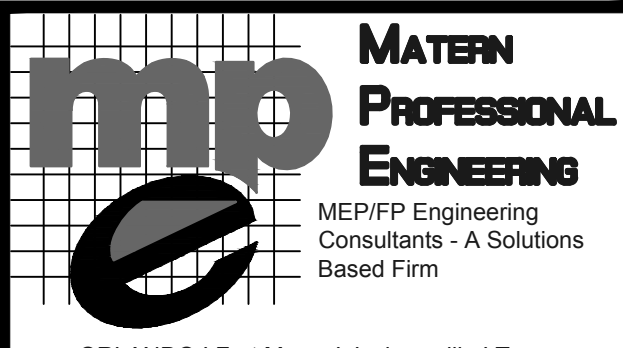
THE CONTRACTOR SHALL PERFORM WORK ON DAYS, NIGHTS AND WEEKENDS SO AS TO MINIMIZE THE IMPACT AND DOWNTIME OF THE FACILITY. THE FACILITY SHALL REMAIN FULLY OPERATIONAL THROUGHOUT CONSTRUCTION. THE PROJECT WILL BE BROKEN UP INTO PHASES AS FOLLOWS:

- PHASE 1**
- a. INSTALL NEW CHILLED WATER AIR HANDLING UNIT AHU-1.2, DUCTWORK AND PIPING IN NEW MECHANICAL ROOM 11. INSTALL NEW CHILLED WATER PIPING AND CONDENSATE DRAIN PIPING IN MECHANICAL ROOM. RUN NEW DUCTWORK AND CHILLED WATER PIPING ABOVE THE CEILING IN THE EXISTING KITCHEN INTO EXISTING MECHANICAL ROOM. INSTALL NEW FLOOR DRAIN IN MECHANICAL ROOM.
  - b. SHUT-DOWN EXISTING AIR HANDLING UNIT AHU-1 AND ASSOCIATED CONDENSING UNITS CU-1A & CU-1B. REMOVE ALL SUPPLY AIR, RETURN AIR AND OUTDOOR AIR DUCTWORK IN THE EXISTING MECHANICAL ROOM ASSOCIATED WITH AHU-1. REMOVE CONDENSING UNITS CU-1A & CU-1B AND ASSOCIATED REFRIGERANT AND CONDENSATE PIPING.
  - c. REMOVE ALL EXISTING ZONE DAMPERS AND DUCTWORK ABOVE THE CEILING ASSOCIATED WITH EXISTING AHU-1. INSTALL NEW VAV BOXES AND ASSOCIATED DUCTWORK ABOVE THE CEILING.
  - d. REMOVE SECTION OF EXISTING CONCRETE PAD FROM REMOVED CONDENSING UNITS AND INSTALL NEW CHILLER AND CHILLED WATER STORAGE TANK. INSTALL ALL NEW CHILLED WATER PIPING OUTSIDE THE BUILDING AND RUN CHILLED WATER PIPING INTO EXISTING MECHANICAL ROOM.
  - e. PROVIDE NEW ELECTRICAL SERVICE (240 VOLT, 3 PHASE) TO THE BUILDING AND CONNECT TO EXISTING POWER PANEL (240 VOLT 1 PHASE) AND TO NEW CHILLER.
- PHASE 2**
- a. SHUT-DOWN EXISTING AIR HANDLING UNIT AHU-2 AND ASSOCIATED CONDENSING UNITS CU-2A & CU-2B. REMOVE ALL SUPPLY AIR, RETURN AIR AND OUTDOOR AIR DUCTWORK IN THE EXISTING MECHANICAL ROOM ASSOCIATED WITH AHU-2 AND REMOVE AHU-2. RETURN AIR DUCTWORK RUN ABOVE THE CEILING OVER OFFICE SPACES. REMOVE EXISTING AIR HANDLING UNIT AHU-1 AND AHU-2. REMOVE CONDENSING UNITS CU-1A & CU-1B AND ASSOCIATED REFRIGERANT AND CONDENSATE PIPING.
  - b. INSTALL NEW AIR HANDLING UNIT AHU-1.1. INSTALL ALL NEW CHILLED WATER PIPING, VALVES AND ACCESSORIES FOR AHU-1.1 AND AHU-1.2 IN THE MECHANICAL ROOM. INSTALL ALL NEW SUPPLY AIR, RETURN AIR AND OUTDOOR AIR DUCTWORK IN THE MECHANICAL ROOM FOR AHU-1.1 AND AHU-1.2 AND CONNECT TO EXISTING DUCTWORK. INSTALL CONDENSATE DRAIN PIPING AND DRYWELL FOR AHU-1.1. INSTALL NEW FLOOR DRAIN IN MECHANICAL ROOM.
  - c. REMOVE EXISTING BUILDING TEMPERATURE CONTROLS AND INSTALL NEW DDC CONTROLS FOR THE BUILDING INCLUDING ALL TEMPERATURE SENSOR AND CONTROLLERS.
  - d. REMOVE EXISTING RESTROOM EXHAUST FANS AND REPLACE WITH NEW FANS.
  - e. TEST AND BALANCE (AIR & WATER) ALL HVAC SYSTEMS.

**SCOPE OF WORK**

THE SCOPE OF WORK FOR THIS PROJECT INCLUDES BUT IS NOT LIMITED TO ALL LABOR AND MATERIALS NECESSARY FOR THE FOLLOWING ITEMS:

1. CONTRACTOR SHALL REPLACE THE (2) EXISTING DX SPLIT SYSTEMS IN THE BUILDING WITH (2) NEW CHILLED WATER AIR HANDLING UNITS AND (1) NEW AIR COOLED CHILLER. SEE PLANS AND SCHEDULES FOR MORE INFORMATION. ALL EXISTING EXHAUST FANS SERVING THE RESTROOMS SHALL BE REMOVED AND REPLACED WITH NEW FANS. EXISTING KITCHEN HOOD AND ASSOCIATED EXHAUST AND SUPPLY FANS TO REMAIN.
2. PROVIDE NEW AIR COOLED PACKAGED CHILLER WITH DUAL PUMPS AND CHILLED WATER STORAGE TANK. INSTALL INSULATED CHILLED WATER PIPING TO ALL NEW AIR HANDLING UNITS.
3. CONTRACTOR SHALL REPLACE ALL EXISTING SUPPLY AIR, RETURN AIR, OUTSIDE AIR DUCTWORK IN EXISTING MECHANICAL ROOM AND CONNECT TO EXISTING DUCTWORK SERVING THE BUILDING.
4. CONTRACTOR SHALL REPLACE ALL EXISTING VAV ZONE DAMPERS WITH NEW VARIABLE AIR VOLUME BOXES AND SHALL INSTALL ADDITIONAL VAV BOXES AND DUCTWORK AS REQUIRED.
5. CONTRACTOR SHALL FURNISH AND INSTALL NEW ELECTRICAL PROVISIONS AS REQUIRED FOR ALL NEW AND REPLACED HVAC EQUIPMENT.
6. CONTRACTOR SHALL REMOVE AND REPLACE ALL HARD CEILING IN THE BUILDING AS NECESSARY TO ACCOMPLISH THE HVAC WORK. ALL HARD CEILING REPLACED SHALL BE PREPPED, PRIMED AND PAINTED.
7. EXISTING LAY-IN CEILING TILES AND GRID SHALL BE REMOVED AND REINSTALLED AS NECESSARY TO ACCOMPLISH THE HVAC WORK. THE CONTRACTOR SHALL REPLACE ALL DAMAGED CEILING TILES AND CEILING GRID DURING CONSTRUCTION AT NO ADDITIONAL COST TO THE OWNER.
8. CONTRACTOR SHALL DISCONNECT, REMOVE, STORE AND REINSTALL ALL ELECTRICAL EQUIPMENT MOUNTED IN THE CEILING OR ON WALLS FOR AREAS TO BE RENOVATED AS NECESSARY TO ACCOMPLISH THE WORK. THIS INCLUDES LIGHTING FIXTURES, SPEAKERS, SMOKE DETECTORS, ETC. TEMPORARILY TERMINATE WIRES AND SUPPORT ALL CONDUIT FROM STRUCTURE THAT MAY BE RESTING ON THE CEILING. ELECTRICAL EQUIPMENT AND LIGHT FIXTURES DAMAGED DURING CONSTRUCTION SHALL BE REPLACED AT NO ADDITIONAL COST TO THE OWNER.
9. CONTRACTOR SHALL PROTECT OR TEMPORARILY RELOCATE ALL FIXTURES, EQUIPMENT AND FURNITURE IN THE BUILDING THROUGHOUT CONSTRUCTION AS NECESSARY TO ACCOMMODATE THE WORK.
10. CONTRACTOR SHALL TEST AND BALANCE ALL OF THE NEW HVAC SYSTEMS AND AIR DISTRIBUTION SYSTEMS. THIS WORK ALSO INCLUDES THE TEST AND BALANCE OF THE NEW EXHAUST SYSTEMS. TEST & BALANCE HVAC SYSTEMS AFTER EACH PHASE IS COMPLETED AND PERFORM A FINAL TEST & BALANCE ON THE ENTIRE BUILDING INCLUDING HVAC AND EXHAUST SYSTEMS AFTER LAST PHASE IS COMPLETED.
11. THE FACILITY SHALL REMAIN FULLY OCCUPIED AND FUNCTIONAL THROUGHOUT THE PROJECT CONSTRUCTION. CONTRACTOR SHALL WORK DURING OCCUPIED AND NON-OCCUPIED HOURS, EVENINGS, WEEKENDS AND HOLIDAYS TO PERFORM THE WORK.
12. CONTRACTOR SHALL REPLACE/REPAIR SECTIONS OF THE EXISTING DRYWALL/PLASTER CEILING OR WALL AS NECESSARY TO ACCOMPLISH THE WORK. THIS IS DIRECTED TO THE CEILING AND WALLS SURROUNDING EXHAUST FANS TO BE REPLACED.
13. CONTRACTOR SHALL REPLACE THE EXISTING TRANE CONTROLS SYSTEM AND ALL THERMOSTATS AND TEMPERATURE SENSORS WITH A NEW DDC CONTROLS SYSTEM.
14. CONTRACTOR SHALL PROVIDE TEMPORARY COOLING AND HEATING THROUGHOUT THE CONSTRUCTION OF THE PROJECT, AS NECESSARY TO ACCOMMODATE THE WORK AND AS DIRECTED BY THE OWNER OR THEIR REPRESENTATIVE.
15. CONTRACTOR SHALL REPAIR OR REPLACE ANY EXISTING INTERIOR OR EXTERIOR FINISHES DAMAGED DURING CONSTRUCTION, AS DIRECTED BY THE OWNER, AT THE CONTRACTORS COST.



ORLANDO | Fort Myers | Jacksonville | Tampa  
 Matern Professional Engineering, Inc  
 130 Candace Drive  
 Maitland, FL 32751-3331  
 PHONE (407) 740-5020 FAX (407) 740-0365  
 THIS DRAWING IS THE PROPERTY OF MATERN PROFESSIONAL ENGINEERING, INC. UNLESS OTHERWISE PROVIDED BY THE CONTRACT. THE CONTENTS OF THIS DRAWING SHALL NOT BE TRANSMITTED TO ANY OTHER PARTY EXCEPT AS AGREED TO BY THE ENGINEER.  
 ENG. BUS. No. EB-0005096 CERT. OF AUTH. No. 5096

**WILLOW STREET  
 COMMUNITY  
 CENTER HVAC  
 REPLACEMENT**

6565 WILLOW STREET  
 MT. DORA, FLORIDA

**Revisions**

No.	Date	Description

Key Plan

MPE PROJ#: 2013-126  
 Designed By: ABJR  
 Drawn By: MB  
 Checked By: ABJR  
 Issue Date: 01/30/2015  
 Drawing Scale: 3/16"=1'-0"

**HVAC PHASING  
 PLAN**

**AUGUSTO E. BOBES JR. P.E.**  
**FLORIDA P.E. # 39410**  
**BOBES ASSOCIATES  
 CONSULTING ENGINEERS**  
 150 CIRCLE DRIVE, MAITLAND, FL 32751  
 TELEPHONE: 407.828.0882  
 E-MAIL: INFO@BOBESENG.COM  
 FLORIDA STATE P.E. NUMBER: 5131

BID DOCUMENTS  
 Drawing No.  
**PH-1**















**WILLOW STREET COMMUNITY CENTER HVAC REPLACEMENT**

6565 WILLOW STREET  
 MT. DORA, FLORIDA

**Revisions**

No.	Date	Description

Key Plan

MPE PROJ#: 2013-126  
 Designed By: ABJR  
 Drawn By: MB  
 Checked By: ABJR  
 Issue Date: 01/30/2015  
 Drawing Scale: NO SCALE  
 Drawing Title:

**HVAC CONTROLS**

**BID DOCUMENTS**

Drawing No.

M-2

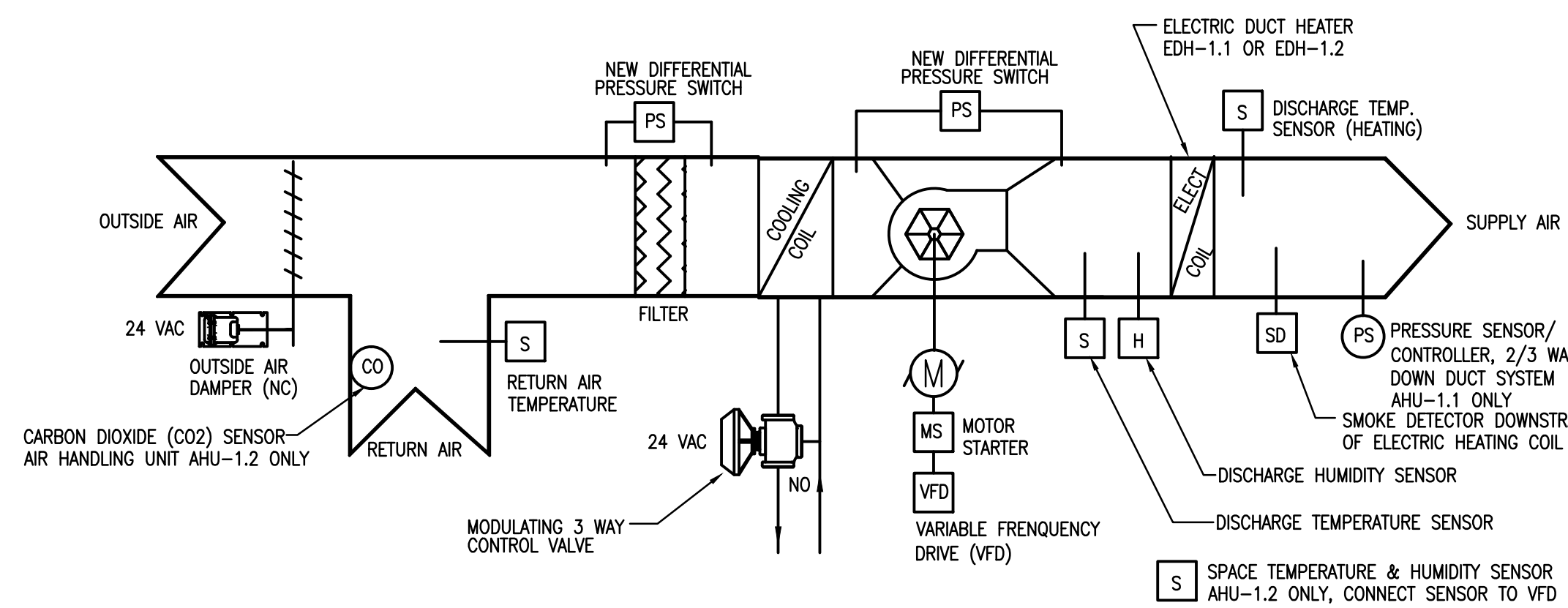
- H. EXHAUST FANS:**
1. THE RESTROOM EXHAUST FAN EF-1.2 SHALL BE ENABLED BY THE BUILDING AUTOMATION CONTROL SYSTEM (BAS) TO RUN DURING OCCUPIED HOURS. THE CURRENT SENSOR SHALL SIGNAL THE BAS SHOULD THE FAN FAIL TO RUN WHEN COMMANDED TO START. THE BAS SHALL ACTIVATE AN ALARM AT A REMOTE LOCATION. THE EXHAUST FAN EF-1.1 SHALL BE OPERATED BY EITHER LIGHT SWITCH IN THE MENS OR WOMENS RESTROOM SERVED. WHEN THE LIGHT SWITCH IS ON THE EXHAUST FAN SHALL BE ON AND WHEN THE LIGHT SWITCH IS OFF THE EXHAUST FAN SHALL CONTINUE TO FOR 10 MINUTES AND THEN SHUT-OFF.
  2. THE BUILDING AUTOMATION CONTROL SYSTEM (BAS) SHALL PREVENT EXHAUST FAN EF-1.2 FROM RUNNING DURING UNOCCUPIED HOURS.
  2. THE EXHAUST FANS EF-1.1 SHALL BE ENABLED BY THE BUILDING AUTOMATION CONTROL SYSTEM (BAS) TO RUN DURING OCCUPIED HOURS. THE CURRENT SENSOR SHALL SIGNAL THE FAN FAIL TO RUN WHEN COMMANDED TO START. THE LIGHT SWITCH IN RESTROOM SERVED SHALL ACTIVE THE FAN WHEN THE LIGHT IS ON AND DE-ACTIVATE THE FAN WHEN THE LIGHT SWITCH IS OFF. PROVIDE A TIME DELAY OF 10 MINUTES TO KEEP FAN RUNNING AFTER LIGHT SWITCH IS TURNED OFF.
  2. THE BUILDING AUTOMATION CONTROL SYSTEM (BAS) SHALL PREVENT EXHAUST FAN EF-1.1 FROM RUNNING DURING UNOCCUPIED HOURS.
  3. THE EXISTING KITCHEN HOOD EXHAUST FAN AND ASSOCIATED SUPPLY FAN SHALL BE ENABLED BY THE MANUAL SWITCH AT THE EXISTING KITCHEN EXHAUST HOOD. BOTH EXHAUST FAN AND SUPPLY FAN SHALL RUN SIMULTANEOUSLY. PROVIDE A CURRENT SENSOR FOR EACH FAN. THE CURRENT SENSOR SHALL SIGNAL THE BAS SHOULD EITHER FAN FAIL TO RUN WHEN COMMANDED TO START. THE BAS SHALL ISSUE AN "OFF NORMAL OPERATION" ADVISORY TO A REMOTE LOCATION.
  3. PROVIDE A HEAT SENSOR AND RELAYS IN THE EXHAUST HOOD THAT WILL AUTOMATICALLY ACTIVATE HOOD EXHAUST FAN AND SUPPLY FAN SHOULD ANY COOKING APPLIANCE UNDER THE HOOD BE ON. AFTER 15 MINUTES OF THIS OPERATION THE HOOD SHALL SIGNAL AND ALARM AT A REMOTE LOCATION. THE HEAT SENSOR OPERATION SHALL BE ENABLED BY THE MANUAL SWITCH AT THE EXHAUST HOOD WHEN THE SWITCH IS TURNED OFF.
- I. EMERGENCY:**
1. THE SMOKE DETECTOR IN THE SUPPLY AIR DUCTWORK FOR AHU-1.1 & AHU-1.2 SHALL SIGNAL THE EXISTING BUILDING FIRE ALARM CONTROL PANEL (FACP) UPON SMOKE DETECTOR ACTIVATION. THE FACP SHALL DETERMINE IF THE FIRE ALARM SYSTEM SHOULD BE ACTIVATED. SHOULD THE FACP ACTIVATE AN ALARM CONDITION ALL AIR HANDLING UNIT FANS AHU-1.1 AND AHU-1.2 SHALL BE SHUT-OFF. THE CHILLED WATER SYSTEM SHALL BE DE-ACTIVATED.
  2. THE EXISTING KITCHEN FIRE SUPPRESSION SYSTEM UPON ACTIVATION SHALL SIGNAL THE EXISTING FACP TO ACTIVATE AN ALARM CONDITION. KITCHEN HOOD EXHAUST FAN EF-1 AND SF-1 SHALL TURN OFF UPON HOOD FIRE SUPPRESSION SYSTEM ACTIVATION. PROVIDE OVERRIDE SWITCH NEAR THE EXISTING FACP TO ACTIVATE HOOD EXHAUST FAN MANUALLY BY FIRE DEPARTMENT PERSONNEL SHOULD KITCHEN HOOD FIRE SUPPRESSION SYSTEM BE ACTIVATED. THE FACP SHALL SHUT DOWN ALL AIR HANDLING UNITS AND THE CHILLED WATER SYSTEM.

- D. VAV CONTROL**
1. A STATIC PRESSURE SENSOR MOUNTED 2/3 WAY DOWN THE SUPPLY AIR DUCT FROM AIR HANDLING UNITS AHU-1.1 SHALL MODULATE THE AIR HANDLING UNITS VARIABLE FREQUENCY DRIVE (VFD) TO MAINTAIN A CONSTANT STATIC PRESSURE (ADJUSTABLE) IN THE SUPPLY AIR DUCT. PROVIDE FEEDBACK SIGNAL TO THE BAS TO INDICATE THE HERTZ OUTPUT AT THE VARIABLE FREQUENCY DRIVE.
  2. THE SPACE TEMPERATURE SENSOR FOR AIR HANDLING UNIT AHU-1.2 SHALL SIGNAL ITS VARIABLE FREQUENCY DRIVE (VFD) TO MODULATE SUPPLY AIR VOLUME TO MAINTAIN SET-POINT TEMPERATURE. FOR COOLING AS SPACE TEMPERATURE RISES ABOVE SET-POINT (75°F ADJUSTABLE) THE VFD SHALL INCREASE SUPPLY AIR VOLUME FROM MINIMUM TO MAXIMUM TO MAINTAIN SPACE TEMPERATURE. FOR HEATING AS SPACE TEMPERATURE DROPS BELOW SET-POINT (70°F ADJUSTABLE) THE VFD SHALL INCREASE AIR VOLUME FROM 50% MINIMUM TO MAXIMUM TO MAINTAIN SPACE TEMPERATURE. PROVIDE FEEDBACK SIGNAL TO THE BAS TO INDICATE THE HERTZ OUTPUT AT THE VARIABLE FREQUENCY DRIVE.
- E. UN-OCCUPIED MODE**
1. THE BUILDING AUTOMATION SYSTEM SHALL SHUT-OFF THE CHILLER AND ALL AIR HANDLING UNITS AT A PRESET TIME (ADJUSTABLE). THE CHILLER WILL SHUT-DOWN AND ASSOCIATED CHILLED WATER PUMP SHALL CONTINUE TO RUN FOR 10 MINUTES AFTER CHILLER SHUTDOWN. AIR HANDLING UNIT FANS SHALL SHUT-OFF AND IT ASSOCIATED MOTORIZED OUTDOOR AIR DAMPER SHALL CLOSE.
  2. THE BUILDING AUTOMATION SYSTEM SHALL SHUT-OFF ALL BUILDING EXHAUST FANS. THE EXHAUST FANS SHALL REMAIN OFF DURING THE ENTIRE UN-OCCUPIED MODE.
  3. ALL SPACE TEMPERATURE SENSORS SHALL BE RESET FOR NIGHT SET BACK MODE.
- F. NIGHT SET-BACK MODE**
1. THE BUILDING AUTOMATION SYSTEM (BAS) SHALL RESET SPACE TEMPERATURE SENSORS TO 85°F FOR COOLING AND 65°F FOR HEATING.
  2. SHOULD SPACE TEMPERATURE RISE 5°F ABOVE COOLING SET-BACK SET-POINT AT ANY TEMPERATURE SENSOR THE BAS SHALL ENABLE THE CHILLER AND THE AIR HANDLING UNIT ASSOCIATED WITH THAT SPACE SENSOR. THE CHILLER AND PUMPS SHALL START AND THE ASSOCIATED AIR HANDLING UNIT FAN SHALL START. THE AIR HANDLING UNIT OUTDOOR AIR DAMPER SHALL REMAIN CLOSED. WHEN SPACE TEMPERATURE IS AT COOLING RESET SET-POINT THE CHILLER AND AIR HANDLING UNIT SHALL SHUT-OFF. THE HVAC SYSTEM SHALL CYCLE ITS OPERATION TO MAINTAIN NIGHT SET-BACK SPACE TEMPERATURE.
  3. SHOULD SPACE TEMPERATURE DROP 5°F BELOW HEATING SET-BACK SET-POINT AT ANY TEMPERATURE SENSOR THE BAS SHALL ENABLE THE AIR HANDLING UNIT AND ASSOCIATED ELECTRIC DUCT HEATER ASSOCIATED WITH THAT SPACE SENSOR. THE AIR HANDLING UNIT FAN SHALL START. THE ELECTRIC DUCT HEATER SHALL BE ENABLED. THE AIR HANDLING UNIT OUTDOOR AIR DAMPER SHALL REMAIN CLOSED. WHEN SPACE TEMPERATURE IS AT HEATING RE-SET SET-POINT THE AIR HANDLING UNIT AND ASSOCIATED ELECTRIC DUCT HEATER SHALL SHUT-OFF. THE HVAC SYSTEM SHALL CYCLE ITS OPERATION TO MAINTAIN NIGHT SET-BACK SPACE TEMPERATURE.
  4. ALL EXHAUST FAN SHALL REMAIN OFF DURING NIGHT SET-BACK MODE.
- G. MORNING START UP**
1. THE MORNING START-UP CYCLE IS ACTIVATED BY THE BUILDING SYSTEM ON A PREDETERMINED TIME (ADJUSTABLE), 1 HOUR PRIOR TO BUILDING OCCUPANCY. THE BAS SYSTEM SHALL RESET ALL SPACE TEMPERATURE SENSORS TO THEIR OCCUPIED SET-POINTS. THE BAS SHALL LOOK AT ALL TEMPERATURE SENSORS AND DETERMINE IF THE SYSTEM SHOULD GO INTO A MORNING WARM UP CYCLE OR A MORNING COOL DOWN CYCLE SCHEDULE FOR HVAC SYSTEMS INVOLVED.
  - a. MORNING WARM UP CYCLE**
    1. UPON START UP, THE HVAC AIR HANDLING UNITS AND ASSOCIATED ELECTRIC DUCT HEATERS SHALL BE ENERGIZED. THE AIR HANDLING UNITS SHALL HAVE THEIR MOTORIZED OUTDOOR AIR DAMPERS CLOSED DURING THE WARM-UP CYCLE. THE AIR HANDLING UNIT FAN & ELECTRIC DUCT HEATER SHALL BE CYCLED TO MAINTAIN OCCUPIED SET-POINT TEMPERATURE.
    2. ALL EXHAUST FANS SHALL BE IN THE OFF POSITION DURING THE ENTIRE MORNING WARM UP CYCLE.
    3. AFTER THE MORNING START UP PERIOD HAS ELAPSED, THE SYSTEM SHALL RETURN TO NORMAL OCCUPIED OPERATION.
  - b. MORNING COOL DOWN CYCLE**
    1. UPON START UP, THE HVAC AIR HANDLING UNITS AND CHILLED WATER SYSTEM SHALL BE ENERGIZED. THE AIR HANDLING UNITS MOTORIZED OUTDOOR AIR DAMPERS SHALL BE CLOSED DURING THE COOL-DOWN CYCLE. AIR HANDLING UNIT FAN CHILLED WATER SYSTEM SHALL CYCLE TO MAINTAIN OCCUPIED SET-POINT TEMPERATURE.
    2. ALL EXHAUST FANS SHALL REMAIN IN THE OFF POSITION DURING THE ENTIRE MORNING COOL DOWN CYCLE.
    3. AFTER THE MORNING START UP PERIOD HAS ELAPSED, THE SYSTEM SHALL RETURN TO NORMAL OCCUPIED OPERATION.

**SEQUENCE OF OPERATION**

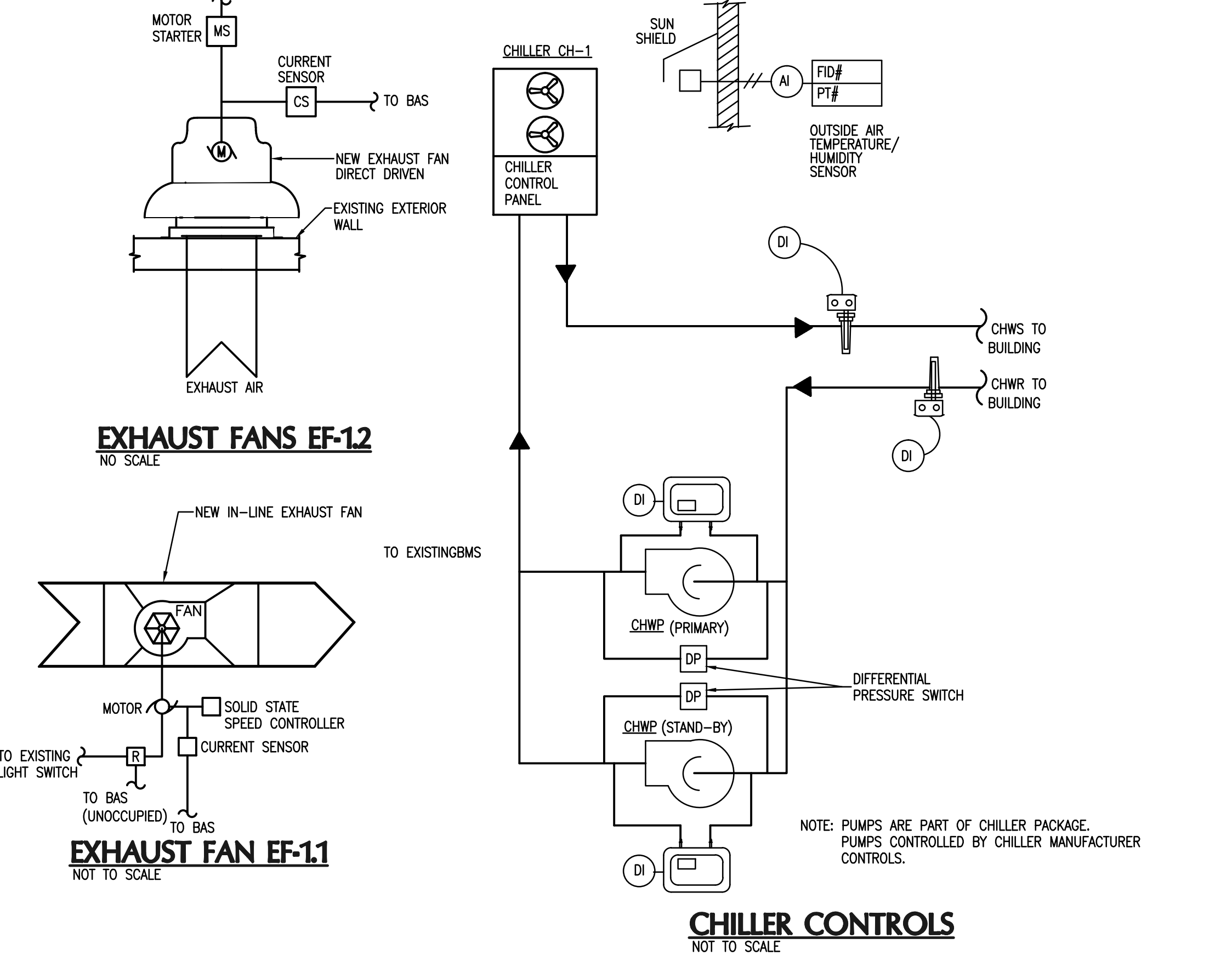
- A. GENERAL:**
1. THE BUILDING AUTOMATION SYSTEM (BAS) SHALL HAVE ALL SYSTEM CONTROLLERS, RELAYS, TIME CLOCK AND CONTROL POWER TRANSFORMER (120V/24V) IN AN NEMA 1 ENCLOSURE WITH DOOR LOCK. CONTRACTOR SHALL PROVIDE ALL LOW VOLTAGE WIRING TO REMOTE CONTROLLERS, ZONE DAMPERS, EXHAUST FANS, CHILLER CONTROL PANEL INTERLOCK AND SPACE SENSORS FOR A COMPLETE AND WORKING HVAC CONTROL SYSTEM.
  2. THE BAS SYSTEM SHALL BE A STAND ALONE SYSTEM SERVING ONLY THIS BUILDING. HOWEVER THE BAS SYSTEM SHALL HAVE A WEB BASE USER INTERFACE BASED ON MICROSOFT INTERNET EXPLORER. PROPRIETARY SOFTWARE IS NOT ALLOWED ON THIS PROJECT. COORDINATE WITH ORANGE COUNTY ISS DEPARTMENT FOR REMOTE ACCESS COMMUNICATION PORT.
  3. ALL TEMPERATURE SENSORS SHALL HAVE TEMPERATURE AND HUMIDITY READOUT AND CONTROL AS INDICATED IN THE SEQUENCE OF OPERATION.
  4. THE BUILDING MANAGEMENT SYSTEM (BAS) SHALL DETERMINE IF THE BUILDING SHOULD BE IN THE COOLING MODE OR HEATING MODE BASED ON OUTDOOR AIR TEMPERATURE. WHEN OUTDOOR AIR TEMPERATURE IS 55°F OR ABOVE THE HVAC SYSTEMS SHALL BE IN THE COOLING MODE. WHEN OUTDOOR AIR TEMPERATURE IS 50°F OR BELOW THE HVAC SYSTEM SHALL BE IN THE HEATING MODE.
- B. CHILLER SEQUENCING**
- NORMAL OPERATION**
1. THE BAS SHALL ENABLE THE CHILLER AT PRESET TIME (ADJUSTABLE). THE CHILLER CONTROL PANEL SEQUENCING SOFTWARE WILL START AND STOP CHILLED WATER PUMPS AND CHILLER. WHEN THE CHILLED WATER SYSTEM IS ENABLED THE CHILLER SYSTEM WILL:
    - a. START THE CHILLED WATER PUMP AND PROVE FLOW THROUGH THE EVAPORATOR.
    - b. START THE CHILLER AFTER CHILLED WATER FLOW IS PROVEN.
    - c. THE CHILLER CONTROL PANEL SHALL INITIATE a, b.
    - d. THE BAS SHALL INDEX THE CHILLER ON AND OFF BASED ON A SCHEDULE. CHILLER SHALL CYCLE ITS OPERATION TO MAINTAIN A 44°F (ADJUSTABLE) CHIL WATER SUPPLY TEMPERATURE.
- C. CHILLED WATER PUMP CONTROL**
1. THE CHILLED PUMPS SHALL RUN WHEN THE CHILLER IS INDEXED TO RUN.
  2. THE DIFFERENTIAL PRESSURE SWITCH SHALL AUTOMATICALLY SWITCH DUAL PUMP OPERATION TO THE STAND-BY PUMP SHOULD THE PRIMARY PUMP FAIL TO OPERATE. PROVIDE AN ALARM TO REMOTE LOCATION SHOULD THE PRIMARY PUMP FAIL TO OPERATE.
  3. THE CHILLER CONTROL PANEL SHALL CHANGE WHICH DUAL PUMP SHOULD BE THE PRIMARY PUMP EVERY 14 DAYS.
- C. AIR HANDLING UNITS AHU-1.1 AND AHU-1.2 (VARIABLE VOLUME)**
- 1. OCCUPIED:**
    - a. THE BUILDING AUTOMATION SYSTEM (BAS) SHALL ENABLE THE AIR HANDLING UNITS AHU-1.1 AND AHU-1.2 AT A PRE-SET TIME (ADJUSTABLE). THE AIR HANDLING UNIT SUPPLY FAN AHU-1.1 AND AHU-1.2 SHALL START AND RUN CONTINUOUSLY. THE DIFFERENTIAL PRESSURE SWITCH AT THE SUPPLY FAN SHALL SIGNAL THE BAS TO ACTIVATE AN ALARM SHOULD ITS SUPPLY FAN FAIL TO RUN WHEN COMMANDED TO START. THE BAS SHALL PROVIDE AN "OFF NORMAL OPERATION" ADVISORY SIGNAL TO A REMOTE LOCATION.
    - b. THE AIR HANDLING UNIT MOTORIZED OUTDOOR AIR DAMPER SHALL OPEN WHEN ITS AHU SUPPLY FAN IS ENABLED. AIR HANDLING UNIT AHU-1.2 OUTSIDE AIR DAMPER SHALL OPEN TO IT MINIMUM POSITION UNLESS CO2 SENSOR CONTROLLING VENTILATION INDICATE CO2 LEVEL ABOVE SET-POINT (900 PPM) AND THE OUTSIDE AIR DAMPER SHALL OPEN TO ITS MAXIMUM POSITION. AIR HANDLING UNIT AHU-1.2 OUTDOOR AIR DAMPER SHALL BE INTERLOCKED WITH THE KITCHEN HOOD EXHAUST FAN TO OPEN ITS OUTDOOR AIR DAMPER TO ITS MAXIMUM POSITION WHEN THE KITCHEN HOOD EXHAUST FAN IS ON.
    - c. THE AIR HANDLING UNITS SHALL HAVE A DISCHARGE TEMPERATURE OF 53°F (ADJUSTABLE) IN COOLING MODE AND IN HEATING MODE COOLING COIL DISCHARGE TEMPERATURE WILL VARY WITH OUTDOOR AIR TEMPERATURE, NO DIRECT HEATING AT THE AIR HANDLING UNIT.
  - 2. COOLING MODE:**
    - a. THE BAS SHALL ENABLE THE 3-WAY CHILLED WATER VALVE (NO) TO MODULATE CLOSED TO MAINTAIN AIR HANDLING UNIT DISCHARGE TEMPERATURE OF 55°F (ADJUSTABLE).
    - b. THE BAS SHALL LOCK-OUT THE ELECTRIC DUCT HEATERS WHEN IN THE NORMAL COOLING MODE.
  - 3. DE-HUMIDIFICATION MODE:**
    - a. SHOULD ANY SPACE TEMPERATURE/HUMIDITY SENSOR FOR AHU-1.1 OR THE SPACE TEMPERATURE/HUMIDITY SENSOR FOR AHU-1.2 INDICATE A SPACE RELATIVE HUMIDITY 5% RH ABOVE THE 55% RH (ADJUSTABLE) SET-POINT, THE BAS SHALL LOWER THE AHU'S DISCHARGE AIR TEMPERATURE TO 53°F (ADJUSTABLE) AND SET ALL AHU-1.1 VAV BOXES AT 50% OPEN AND AHU-1.2 TO ITS 50% AIR VOLUME UNTIL SPACE HUMIDITY DROPS BELOW SET-POINT.
    - b. THE BAS SHALL ENABLE EACH AHU ELECTRIC DUCT HEATER AT ITS MINIMUM OUTPUT SETTING SHOULD SPACE TEMPERATURE FALL BELOW 70°F DURING THE DEHUMIDIFICATION CYCLE ONLY. THE ELECTRIC DUCT HEATER SHALL CYCLE ITS OPERATION UNTIL SPACE HUMIDITY IS AT OR BELOW SET-POINT HUMIDITY, THEN ELECTRIC HEATER SHALL TURN OFF.
  - 4. HEATING MODE:**
    - a. THE BAS SHALL SET ALL AHU-1.1 VAV BOXES TO 50% OPEN AND SET AIR HANDLING UNIT AHU-1.2 AIR VOLUME TO 50% OF MAXIMUM AIR FLOW. THE BAS SHALL ENABLE THE ELECTRIC DUCT HEATER ASSOCIATED WITH ITS RESPECTIVE AIR HANDLING UNIT TO MAINTAIN A 90°F (ADJUSTABLE) LEAVING AIR TEMPERATURE. THE ELECTRIC DUCT HEATER SHALL CYCLE ITS OPERATION TO MAINTAIN THE LEAVING AIR TEMPERATURE. AIR HANDLING UNIT VFD SHALL MODULATE THE SUPPLY AIR FLOW FROM 50% TO MAXIMUM TO MAINTAIN SPACE TEMPERATURE.
    - b. THE BAS SHALL LOCK-OUT THE CHILLER WHEN IN THE HEATING MODE.
- D. VAV ZONE DAMPERS**
- 1. GENERAL:**
- a. THE VAV ZONE DAMPERS SHALL BE ACTIVATED BY THE BUILDING AUTOMATION SYSTEM (BAS) WHENEVER THE BUILDING IS IN THE OCCUPIED MODE. THE ZONE VAV DAMPER (NO) SHALL BE OPEN TO ITS FULL OPEN POSITION WHEN ACTIVATED.
- 2. COOLING MODE:**
- a. THE SPACE TEMPERATURE SENSOR SHALL MODULATE THE VAV ZONE DAMPER TOWARDS ITS MINIMUM POSITION TO MAINTAIN SPACE TEMPERATURE COOLING SET-POINT OF 75°F (ADJUSTABLE)
- 3. HEATING MODE:**
- a. THE SPACE TEMPERATURE SENSOR SHALL MODULATE THE VAV ZONE DAMPER FROM ITS 50% OPEN POSITION TO MAXIMUM POSITION TO MAINTAIN SPACE TEMPERATURE HEATING SET-POINT OF 70°F (ADJUSTABLE). THE 50% MINIMUM AIR FLOW IS TO MAINTAIN ELECTRIC DUCT HEATER MINIMUM AIR FLOW REQUIREMENTS.

	CONTROL POINTS SCHEDULE																									
	INPUTS					OUTPUTS					SOFTWARE															
	ANALOG					DIGITAL					APPLICATIONS															
	O.A. TEMPERATURE (°F)	O.A. HUMIDITY (RH)	ROOM TEMPERATURE (°F)	ROOM HUMIDITY (RH)	SUPPLY AIR TEMPERATURE (°F)	R.A. TEMPERATURE (°F)	STATIC PRESSURE (W/C)	FILTER STATUS	CO2 LEVEL (900 PPM)	FAN STATUS, DIFF. PRESSURE	MOTOR CURRENT SENSOR	ZONE DAMPER POSITION	ELEC. HEAT STAGING	OUTSIDE AIR DAMPER POSITION	FAN MOTOR START/STOP	O.A. DAMPER (OPEN/CLOSE)	ELECTRIC HEAT LOCK-OUT (BY STAGES)	AIR COOLED CHILLER (START/STOP)	NIGHT SETBACK	OCCUP/UNOCCUP	OPTIMAL START/STOP	DEMAND LIMITING	DYNAMIC COLOR GRAPHIC	SOFTWARE INTERLOCK		
AIR HANDLING UNIT AHU-1.1			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
AIR HANDLING UNIT AHU-1.2	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
CHILLER CH-1										X																
CHILLER PUMPS										X																
ELECTRIC DUCT HEATERS EDH-1.1 & EDH-1.2													X													
EXHAUST FAN EF-1.2																		X								
EXHAUST FAN EF-1.3																					X					
EXISTING KITCHEN HOOD EXHAUST FAN EF-1																										
EXISTING KITCHEN HOOD SUPPLY FAN SF-1																										
VAV ZONE DAMPERS (VAV-1.1.1 TO VAV-1.1.8)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
BUILDING POINTS	▲	▲																								
ALL CONTROL POINTS SHALL BE MONITORED. PROVIDE ALARM FOR POINTS AS INDICATED IN SEQUENCE OF OPERATION.																										
▲ ONE PER BUILDING																										



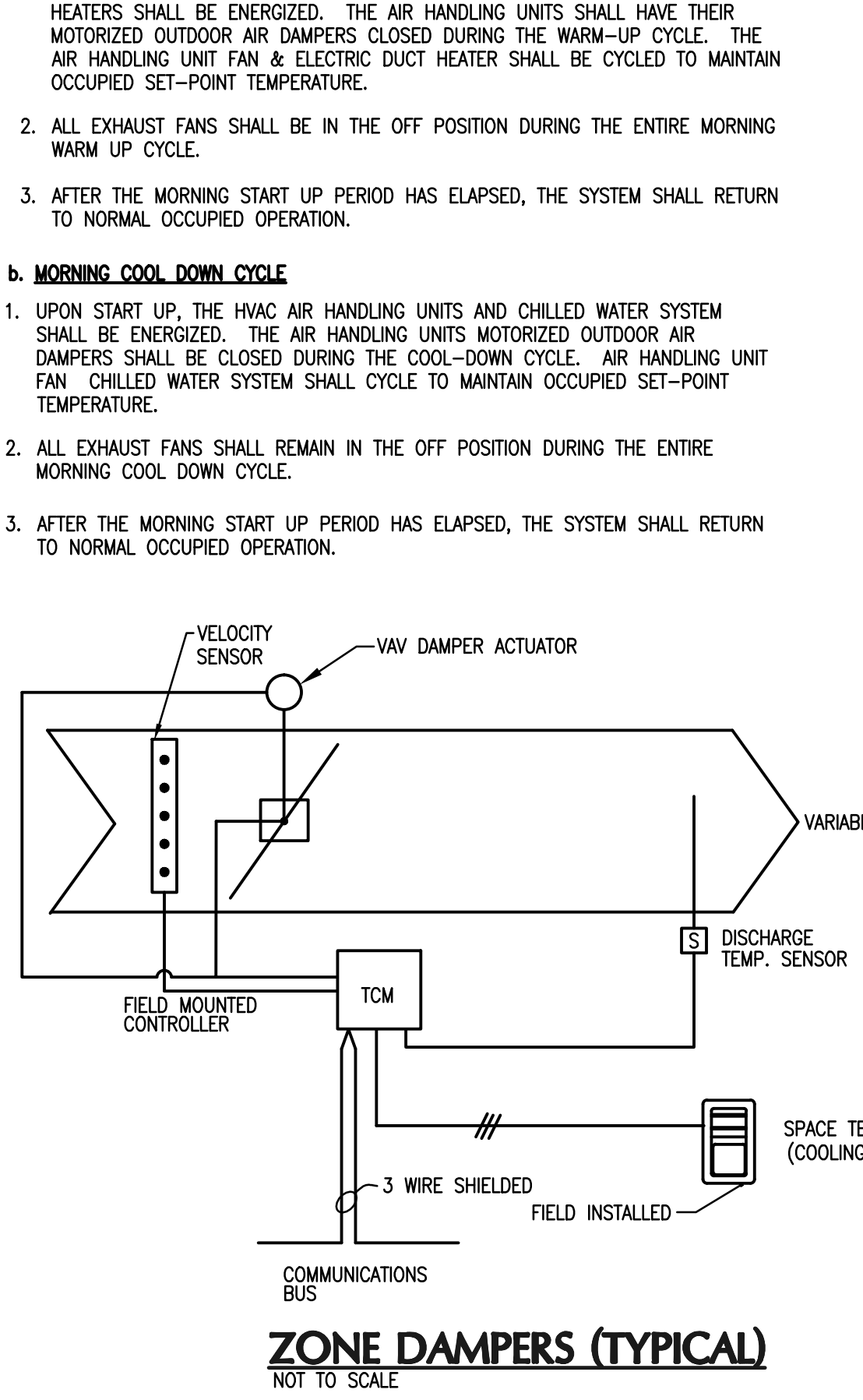
**AIR HANDLING UNIT AHU-1.1 & AHU-1.2 CONTROL DIAGRAM**

NOT TO SCALE



**CHILLER CONTROLS**

NOT TO SCALE



**EXISTING KITCHEN HOOD EXHAUST FAN**

NOT TO SCALE

**ZONE DAMPERS (TYPICAL)**

NOT TO SCALE

**EXISTING HOOD SUPPLY FAN**

NOT TO SCALE

AUGUSTO E. BOBES JR., P.E.  
 FLORIDA P.E. # 39410

**BOBES ASSOCIATES CONSULTING ENGINEERS**  
 150 CIRCLE DRIVE, MAITLAND, FL 32751  
 TELEPHONE: 407.828.0882  
 E-MAIL: INFO@BOBESENG.COM  
 FLORIDA STATE P.E. NUMBER: 5131



























