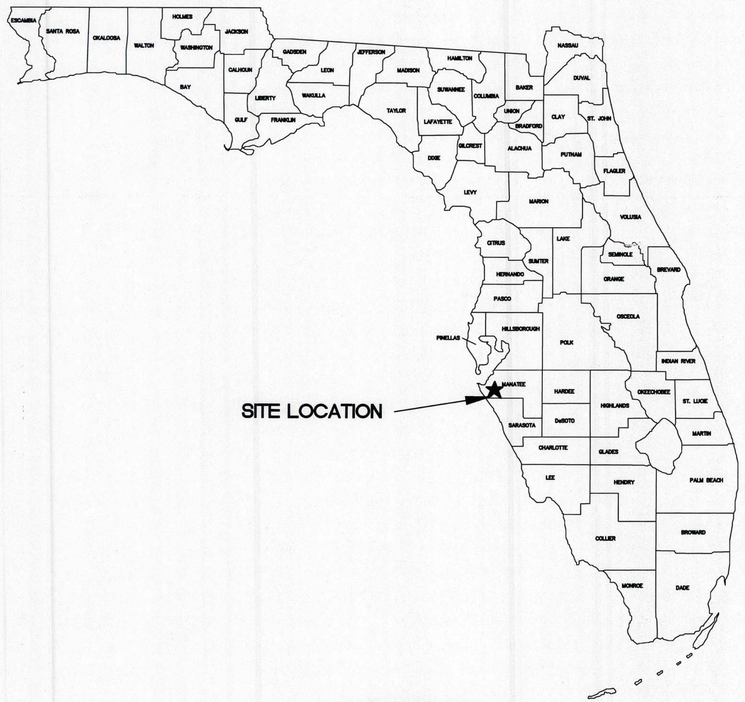
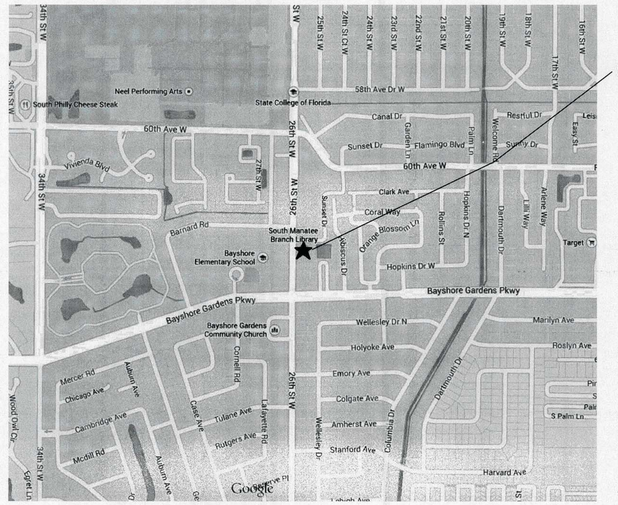
MANATEE COUNTY
SOUTH COUNTY LIBRARY HVAC REPLACEMENT
6081 26TH STREET WEST
BRADENTON, FL 34207
IFAS# W1400163, WA #30



LOCATION MAP
FLORIDA



SITE MAP

SHEET SCHEDULE

SHEET	DESCRIPTION
COVER	PROJECT NAME, LOCATION and SITE MAPS, SHEET SCHEDULE
E1.0	ELECTRICAL LEGEND AND GENERAL NOTES
E2.0	ELECTRICAL DEMOLITION PLAN
E3.0	ELECTRICAL POWER AND SYSTEMS PLAN
E4.0	ELECTRICAL DETAILS AND NOTES
E4.1	ELECTRICAL DETAILS AND NOTES
E5.0	ELECTRICAL ONE-LINE AND SCHEDULES
M1.0	MECHANICAL LEGEND AND GENERAL NOTES
M2.0	MECHANICAL DEMOLITION FLOOR PLAN
M2.1	MECHANICAL PROPOSED FLOOR PLAN
M3.0	MECHANICAL SCHEDULES
M4.0	MECHANICAL DETAILS

To the best of the engineer's knowledge, said plans and specifications comply with the applicable building codes and the applicable minimum fire safety standards as determined in accordance with Chapters 553 and 633, Florida Statutes.

ATP ENGINEERING SOUTH, PL
SARASOTA, FLORIDA
ENGR. BUSINESS #8908
941-360-2181

JEFF L. CAMDEN
LICENSE
No. 83458
STATE OF FLORIDA
PROFESSIONAL ENGINEER

ELECTRICAL SYMBOLS AND ABBREVIATIONS

NOTE:
THESE ARE STANDARD SYMBOLS AND MAY NOT ALL APPEAR ON THE PROJECT DRAWINGS; HOWEVER WHEREVER THE SYMBOL APPEARS ON THE PROJECT DRAWINGS, THE ITEM SHALL BE PROVIDED AND INSTALLED.

EQUIPMENT

SYMBOL	DESCRIPTION
	DISTRIBUTION PANELBOARD AND CABINET – RECESSED MOUNT
	DISTRIBUTION PANELBOARD AND CABINET – SURFACE MOUNT
	BRANCH PANELBOARD AND CABINET – RECESSED MOUNT
	BRANCH PANELBOARD AND CABINET – SURFACE MOUNT
	LOAD CENTER – SURFACE MOUNT
	LOAD CENTER – RECESSED MOUNT
A	DENOTES PANEL/PANELBOARD DESIGNATION
X Y	MOTOR "X" INDICATES HORSEPOWER "Y" INDICATES PHASE
X PF	CAPACITOR "X" INDICATES KVAR
	DISCONNECT SWITCH – FUSED "X"= RATING, "Y" = FUSE SIZE
	DISCONNECT SWITCH – NON–FUSED
	DISCONNECT SWITCH – CIRCUIT BREAKER
	MOTOR STARTER
	COMBINATION MOTOR STARTER
T XX	DRY TYPE TRANSFORMER – "XX" INDICATES KVA
M	METER SOCKET
M	CURRENT TRANSFORMER METER SOCKET
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSOR
G	GENERATOR
N E ATS/MTS L	TRANSFER SWITCH ATS = AUTOMATIC TRANSFER SWITCH MTS = MANUAL TRANSFER SWITCH N = NORMAL POWER E = EMERGENCY POWER L = LOAD
	WIREWAY
B B	BUSWAY
	GROUND CONNECTION
S_x	HORSEPOWER RATED MANUAL MOTOR STARTER TOGGLE SWITCH WITH THERMAL OVERLOAD PROTECTION "X" INDICATES AS FOLLOWS NONE – SINGLE POLE 2 – 2 POLE 3 – 3 POLE
S_xP_y	HORSEPOWER RATED MANUAL MOTOR STARTER TOGGLE SWITCH WITH THERMAL OVERLOAD PROTECTION WITH PILOT LIGHT "X" INDICATES AS FOLLOWS: NONE – SINGLE POLE; 2 – 2 POLE; 3 – 3 POLE "Y" INDICATES AS FOLLOWS: Y – YELLOW LENS; G – GREEN LENS; R – RED LENS; W – WHITE LENS; B – BLUE LENS; A – AMBER
A	LOW VOLTAGE DRAWOUT TYPE CIRCUIT BREAKER "X" INDICATES AS FOLLOWS A – AIR TYPE S – SF6 TYPE V – VACUUM TYPE
	MOLDED CASE CIRCUIT BREAKER
	FUSE
	DRAW OUT MOTOR STARTER ASSEMBLY

RACEWAY SYSTEM

SYMBOL	DESCRIPTION
	CONCEALED CONDUIT
[——]	4" CONDUIT SLEEVE WITH BUSHINGS THRU WALL ABOVE CEILING
——XX——	LETTER DESIGNATION REFERS TO SYSTEM (SEE ABBREVIATIONS)
A–XX F50	PHASE CONDUCTORS GROUND SWITCH LEG NEUTRAL QUANTITY OF CONDUCTORS OR CABLES IN CONDUIT "F50" DENOTES THE FEEDER SIZE "A–XX" DENOTES PANEL AND CIRCUIT #
	CONDUIT TURNED UP
	CONDUIT TURNED DOWN
	JUNCTION OR PULL BOX
	CABLE TRAY
	U/G CONDUIT TURNED UP
	U/G CONDUIT TURNED DOWN

LIGHTING

SYMBOL	DESCRIPTION
X–2–C	X = FIXTURE TYPE, 2 = CIRCUIT NUMBER, C = SWITCH LEG F – FLUORESCENT K – INCANDESCENT H – H.I.D.
	FLUORESCENT STRIP TYPE FIXTURE
	FLUORESCENT TYPE FIXTURE
	FLUORESCENT TYPE FIXTURE WITH EMERGENCY BATTERY BALLAST
	CEILING MOUNT LIGHT FIXTURE
	CEILING MOUNT RECESSED LIGHT FIXTURE (ROUND OR SQUARE, SEE SCHEDULE
	INTERIOR WALL MOUNT FIXTURE
	EXTERIOR WALL MOUNT FIXTURE
	LIGHT POLE WITH ONE FIXTURE (FIXTURE LOCATION AND SPACING AS SHOWN)
	2 HEAD POLE LIGHT. LOCATION AND SPACING AS SHOWN.
	3 HEAD POLE LIGHT. LOCATION AND SPACING AS SHOWN.
	EXIT LIGHT –CEILING MOUNTED ARROWS DENOTE EGRESS PATH
	EXIT LIGHT – WALL MOUNTED ARROWS DENOTE EGRESS PATH
	EMERGENCY WALL MOUNT W/ BATTERY UNIT
	EXIT / EMERGENCY WALL MOUNT W/ BATTERY UNIT ARROWS DENOTE EGRESS PATH
	EMERGENCY WALL MOUNT REMOTE HEAD

DEVICES

SYMBOL	DESCRIPTION
Φ_x	DUPLEX RECEPTACLE – NORMAL CIRCUIT "X" INDICATES AS FOLLOWS: NONE = 20 AMP, 125VAC GFI = 20 AMP, 125VAC, GROUND FAULT INTERRUPTER TYPE HM = 20 AMP, 125VAC, HORIZONTAL MOUNT TYPE IG = 20 AMP, 125VAC, ISOLATED GROUND TYPE S = 20 AMP, 125VAC, TVSS PROTECTION TYPE WP = 20 AMP, 125VAC, WEATHERPROOF TYPE
	DOUBLE DUPLEX RECEPTACLE
	DUPLEX RECEPTACLE – ABOVE COUNTER. 44" AFF
	DOUBLE DUPLEX RECEPTACLE – ABOVE COUNTER. 44" AFF
	SINGLE RECEPTACLE – SEE DRAWINGS AND SPECIFICATIONS.
A	SPECIAL RECEPTACLE – SEE DRAWINGS AND SPECIFICATIONS.
	SINGLE RECEPTACLE – FLOOR, SEE DRAWINGS AND SPECIFICATIONS.
	DUPLEX RECEPTACLE – FLOOR, SEE DRAWINGS AND SPECIFICATIONS.
C HEIGHT	CLOCK RECEPTACLE – 120VAC
S	TOGGLE SWITCH – SINGLE POLE
S_2	TOGGLE SWITCH – DOUBLE POLE
S_3	TOGGLE SWITCH – 3–WAY
S_4	TOGGLE SWITCH – 4–WAY
S_a	TOGGLE SWITCH – a– INDICATES TYPE T: TIMER, K: KEY OPERATED
S_D	SWITCH – DIMMER
S_F	SWITCH – FAN SPEED CONTROL
$ W	WALL MOUNTED OCCUPANCY SENSOR
CSx	CEILING MOUNTED OCCUPANCY SENSOR x = TYPE, SEE PLANS
JB	JUNCTION BOX
T	HVAC THERMOSTAT
H	HVAC HUMIDISTAT
PP	FURNITURE POWER POLE
CP	FURNITURE CABLE MANAGEMENT POLE.
	MUSHROOM HEAD RED PUSH BUTTON

FIRE ALARM SYSTEM

SYMBOL	DESCRIPTION
	HORN / STROBE ○= CEILING MOUNT □= WALL MOUNT
	HORN ○= CEILING MOUNT □= WALL MOUNT
	SPEAKER/STROBE ○= CEILING MOUNT □= WALL MOUNT
	STROBE ○= CEILING MOUNT □= WALL MOUNT
F F	BELL ○= CEILING MOUNT □= WALL MOUNT
P	SMOKE DETECTOR
	HEAT DETECTOR
	PULL STATION
E	ELEVATOR WARNING LIGHT
F	FIREFIGHTER PHONE JACK
	TAMPER SWITCH
	FLOW SWITCH
F.A.A.P.	REMOTE ANNUNCIATOR
FACP	FIRE ALARM CONTROL PANEL
	DOOR RELEASE DEVICE – FIRE ALARM ACTIVATED
S	SPEAKER – FIRE ALARM
D x	AUTOMATIC DUCT DETECTOR ("X" DENOTES AS FOLLOWS:) NONE = PHOTO ELECTRIC TYPE S= SUPPLY R= RETURN
R	EQUIPMENT SHUT DOWN RELAY
R x	REMOTE DUCT DETECTOR INDICATOR LIGHT X= AIR HANDLER / ROOF TOP UNIT
FSS	FIRE SUPPRESSION SYSTEM

TELEVISION SYSTEM

SYMBOL	DESCRIPTION
TV	TELEVISION ROUGH–IN

DOOR SECURITY SYSTEM

SYMBOL	DESCRIPTION
D	DOOR CONTACT ROUGH–IN
P	PROXIMITY CARD READER ROUGH–IN
E	ELECTRO–MAGNETIC DOOR LOCK
DB	DURESS / PANIC BUTTON

COMMUNICATION SYSTEMS

SYMBOL	DESCRIPTION
	WALL MOUNTED VOICE OUTLET
	WALL MOUNTED DATA OUTLET
	WALL MOUNTED COMBINATION VOICE / DATA OUTLET
	FLOOR MOUNTED VOICE OUTLET.
F	FLOOR MOUNTED DATA OUTLET.
	FLOOR MOUNTED COMBINATION VOICE / DATA OUTLET.
TTC	TELEPHONE CABINET
CC	COMMUNICATIONS CABINET

PAGING / AUDIO SYSTEM

SYMBOL	DESCRIPTION
S_1	LOUDSPEAKER – CEILING MOUNTED CONTROLLED BY VOLUME CONTROL "1"
V_1	VOLUME CONTROL – CONTROLS SPEAKERS "1"
S	PAGING ROUGH–IN
A	AUDIO JACK ROUGH–IN
M	MICROPHONE ROUGH–IN
P	PROJECTOR ROUGH–IN

DRAWING SYMBOLS

- 2 / E X — DETAIL NUMBER / DRAWING NUMBER WHERE DRAWN
- A / E X — SECTION LETTER / DRAWING NUMBER WHERE DRAWN
- (1) REFER TO LIKE NUMBER NOTES.
- (1) REFER TO LIKE NUMBER NOTES.

GENERAL NOTES (APPLY TO ALL DRAWINGS):

1. THE WORK INDICATED ON THESE DRAWINGS IS DIAGRAMMATIC AND IS INTENDED TO CONVEY THE SCOPE OF WORK AND INDICATE THE GENERAL ARRANGEMENT OF EQUIPMENT AND DEVICES FOR A COMPLETE SYSTEM IN EVERY RESPECT AND DETAIL, TESTED AND LEFT READY IN PERFECT OPERATING CONDITION FOR THE OWNER'S USE. MATERIALS AND EQUIPMENT SHALL BE LISTED BY UNDERWRITERS' LABORATORIES AND SHALL BE INSTALLED IN ACCORDANCE WITH SUCH LISTINGS. INSTALLATIONS SHALL BE MADE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. WORK SHALL MEET THE REQUIREMENTS OF THE SPECIFICATIONS AND CONFORM TO THE NEC (NFPA 70 & 72) AND ALL APPLICABLE CODES, AND BE COMPLETED BY A QUALIFIED, EXPERIENCED, LICENSED ELECTRICAL CONTRACTOR.
2. THE ENGINEER HAS MADE AN EFFORT TO COORDINATE WORK WITH OTHER TRADES AND IDENTIFY ANY AND ALL CONFLICTS. THE CONTRACTOR IS RESPONSIBLE TO COORDINATE FIELD WORK BETWEEN TRADES AND TO IDENTIFY FIELD CONDITIONS PRIOR TO INSTALLATION AND REPORT ANY CONFLICTS TO THE ENGINEER.
3. FOR BIDDING PURPOSES, WHEN A CONFLICT OCCURS BETWEEN THE SPECIFICATIONS AND DRAWINGS, THE ITEMS OF GREATER QUANTITY AND/OR COST SHALL BE PROVIDED. ANY SUCH CONFLICTS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER FOR RESOLUTION.
4. CONTRACTOR SHALL VERIFY THE LOCATION AND ELECTRICAL REQUIREMENTS OF ALL EQUIPMENT FURNISHED BY OTHER TRADES PRIOR TO INSTALLATION. COORDINATE ROUGH–IN INSTALLATION WITH EQUIPMENT DETAILS.
5. ALL OPENINGS IN FIRE AND SMOKE PARTITIONS SHALL BE SEALED AS REQUIRED BY THE NEC/ FLORIDA BUILDING CODE. PROVIDE UL LISTED COMPOUND TO MATCH PARTITION RATING.
6. DO NOT SCALE DRAWINGS. VERIFY FIELD CONDITIONS PRIOR TO AND DURING CONSTRUCTION FOR EXACT DEVICE / EQUIPMENT LOCATION.
7. DEMOLITION WORK: PROVIDE DEMOLITION AND REMOVAL WORK AS INDICATED OR NEEDED. EQUIPMENT THAT IS TO BE REMOVED INCLUDES ALL ASSOCIATED WIRING, BOXES AND CONDUIT BACK TO SOURCE. CLOSE ALL UNUSED OPENINGS IN JUNCTION BOXES THAT REMAIN WITH SUITABLE PLUG OR COVER. WHEN REMOVING OR RELOCATING LIGHT FIXTURES OR OTHER DEVICES, FIELD VERIFY REMAINING DEVICES IN THE SAME CIRCUIT AND RECONNECT FOR CONTINUED SERVICE. EXISTING ELECTRICAL WORK INTERFERING WITH NEW CONSTRUCTION SHALL BE RELOCATED OR REROUTED TO SUIT FINAL INSTALLATION. CUTTING AND PATCHING REQUIRED SHALL BE DONE TO RESTORE AREAS TO ORIGINAL CONDITION.
8. CONTRACTOR SHALL PROVIDE TO LOCAL AHJ OR PERMITTING AGENCY A COPY OF ALL MAJOR EQUIPMENT CUT SHEETS AT TIME OF APPLICATION IF REQUESTED.

ABBREVIATIONS

A	AMPERE
AC	AIR CONDITIONING OR ALTERNATING CURRENT
ACC	ACCESS
AF	AMPERE FRAME
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AHJ	AUTHORITY HAVING JURISDICTION
AHU	AIR HANDLER UNIT
AM	AMMETER
ARCH	ARCHITECT
AT	AMPERE TRIP
ATC	AUTOMATIC TEMPERATURE CONTROL
ATS	AUTOMATIC TRANSFER SWITCH
AWG	AMERICAN WIRE GAUGE
C	CONDUIT
CAT	CATEGORY
CB	CIRCUIT BREAKER
CH	CHILLER
CKT	CIRCUIT
CL	CENTER LINE
CLF	CURRENT–LIMITING FUSE
CM	CEILING MOUNTED
CNTL	CONTROL
CU	COPPER
DWG(S)	DRAWING(S)
EC	ELECTRICAL CONTRACTOR
EF	EXHAUST FAN
EM	EMERGENCY
EMS	ENERGY MANAGEMENT SYSTEM
EMT	ELECTRICAL METALLIC TUBING
EPO	EMERGENCY POWER OFF
EWC	ELECTRIC WATER COOLER
EWH	ELECTRIC WATER HEATER
EX	EXISTING TO REMAIN
FA	FIRE ALARM
FACP	FIRE ALARM CONTROL PANEL
FACC	FIRE ALARM COMMAND CENTER
FATC	FIRE ALARM TERMINAL CABINET
FLR	FLOOR
FMC	FURNISHED BY MECHANICAL CONTRACTOR
FO	FIBER OPTIC
FOTC	FIBER OPTIC TERMINAL CABINET
FSS	FIRE SUPPRESSION SYSTEM
FWE	FURNISHED WITH EQUIPMENT
GFI	GROUND FAULT INTERRUPTER
GND,G	GROUND
GRS	GALVANIZED RIGID STEEL CONDUIT
HOA	HAND–OFF–AUTO
HACR	HEATING/AIR CONDITIONING–RATED
HID	HIGH INTENSITY DISCHARGE
HPF	HIGH POWER FACTOR
HPS	HIGH PRESSURE SODIUM
HZ	HERTZ
HP	HORSEPOWER
IG	ISOLATED GROUND
IMC	INTERMEDIATE METALLIC CONDUIT
JB	JUNCTION BOX
KAIC	KILO AMPERE INTERRUPTING CAPACITY
KCMIL	THOUSAND CIRCULAR MILS
KVA	KILOVOLT AMPERE
KW	KILOWATT
LC	LIGHTING CONTACTOR
MC	MECHANICAL CONTRACTOR
MCC	MOTOR CONTROL CENTER
M–G	MOTOR GENERATOR
MDP	MAIN DISTRIBUTION PANEL
MH	METAL HALIDE
MOD	MOTOR OPERATED DAMPER OR DOOR
MTD	MOUNTED
NC	NORMALLY CLOSED
NEC	NATIONAL ELECTRICAL CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
NF	NON–FUSED
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
NIC	NOT IN CONTRACT
NL	NIGHT LIGHT
NO	NORMALLY OPEN
NTS	NOT TO SCALE
OCPD	OVER CURRENT PROTECTIVE DEVICE
PNL	PANEL
ø	PHASE
PB	PUSHBUTTON
PE	PHOTOELECTRIC CONTROLLER
PC	PLUMBING CONTRACTOR
PVC	POLYVINYL CHLORIDE CONDUIT
R	RELOCATED
RTU	ROOF TOP UNIT
SCH	SCHEDULE
SEC	SECURITY
SW	SWITCH
SWGR	SWITCHGEAR
TEL,T	TELEPHONE
TBB	TELEPHONE BACKBOARD
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSOR
TC	TIME CLOCK
XFMR	TRANSFORMER
XFR	TRANSFER
TYP	TYPICAL
UG	UNDERGROUND
UH	UNIT HEATER
UL,U.L.	UNDERWRITERS LABORATORIES
UPS	UNINTERRUPTIBLE POWER SUPPLY
U.O.N.	UNLESS OTHERWISE NOTED
VT	VAPORTIGHT
VAV	VARIABLE AIR VOLUME
VFD	VARIABLE FREQUENCY DRIVE
VSD	VARIABLE SPEED DRIVE
V	VOLT
VM	VOLTMETER
W	WATT
WHM	WATTHOUR METER
WM	WATTMETER
WP	WEATHER PROOF

ATP ENGINEERING SOUTH, PL
BRADENTON, FLORIDA
ENGR. BUSINESS #8808
941-751-6485

REV # | DESCRIPTION | DATE

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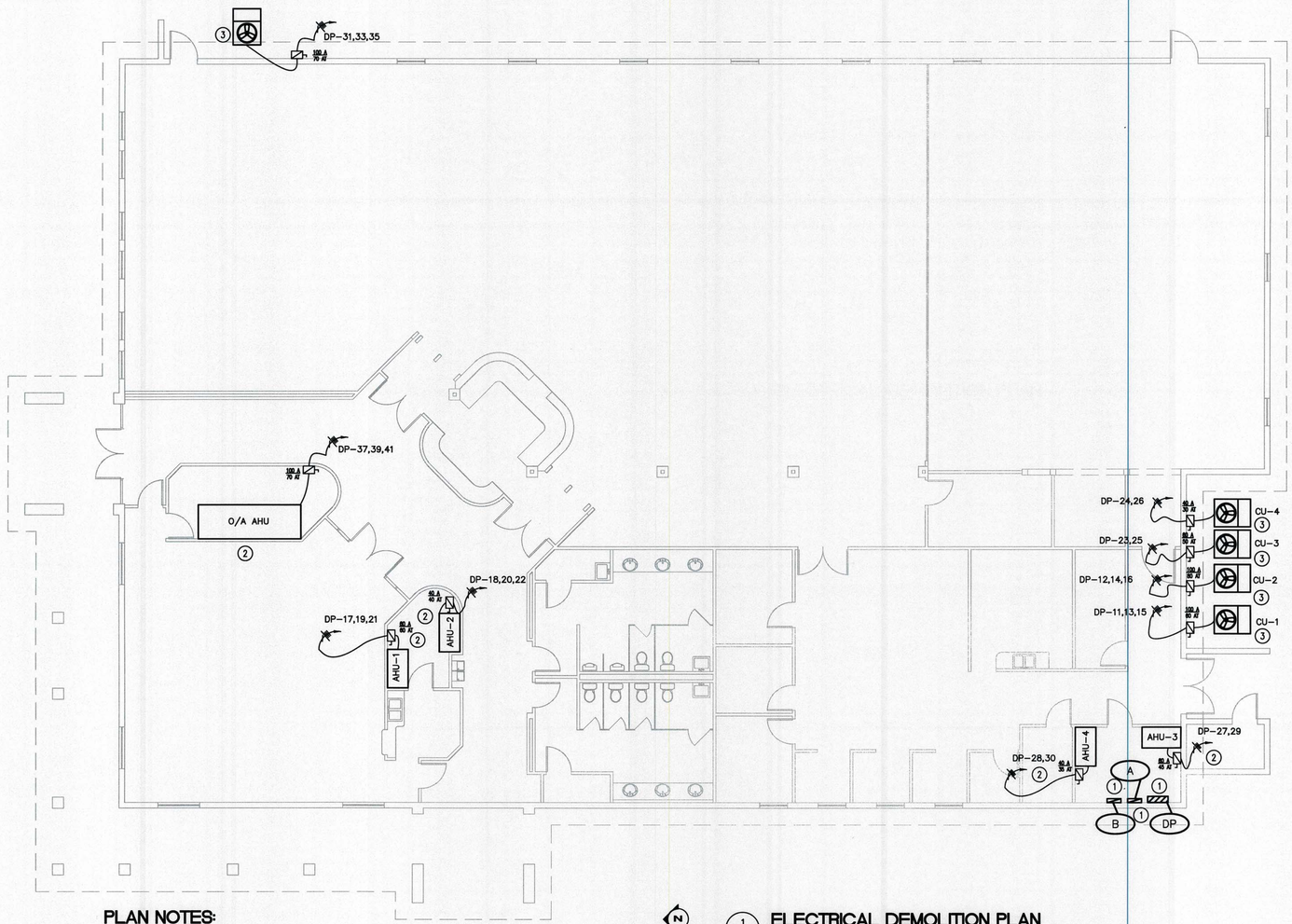
6081 26TH STREET WEST
BRADENTON, FL 34207
IFAS# W1400163, WA #30

DRAWING TITLE: ELECTRICAL LEGEND AND GENERAL NOTES

FILE:	SOUTH CO LIBRARY HVAC
JOB NO.:	2014.14
DATE :	06/17/2014
PLOT SIZE:	1:1
DRAWN BY:	MC
CHECKED BY:	JDC
SHEET No.:	E1.0



PLAN NOTES:

1. EXISTING PANELS TO REMAIN
2. EXISTING AIR HANDLER TO BE DEMOLISHED – CONDUITS MAY BE RE-USED IF WIRE FILL MEETS NEC REQUIREMENTS. REMOVE CONDUITS AND CONDUCTORS BACK TO DISTRIBUTION PANEL, IF NECESSARY. VERIFY FIELD CONDITIONS PRIOR TO START OF WORK AND BIDDING. CAP AND FIRE RATE ITEMS NOT BEING RE-USED OR REPLACED.
3. EXISTING CONDENSER TO BE DEMOLISHED – CONDUITS MAY BE RE-USED IF WIRE FILL MEETS NEC REQUIREMENTS. REMOVE CONDUITS AND CONDUCTORS BACK TO DISTRIBUTION PANEL, IF NECESSARY. VERIFY FIELD CONDITIONS PRIOR TO START OF WORK AND BIDDING. CAP AND FIRE RATE ITEMS ACCORDINGLY IF ITEMS ARE NOT BEING RE-USED OR REPLACED.

N

1/E2.0 **ELECTRICAL DEMOLITION PLAN**

1/8" = 1'-0"

BRIAN D. SNIDER LICENSE No. 53486 STATE OF FLORIDA PROFESSIONAL ENGINEER

REV #	DESCRIPTION	DATE

ATP ENGINEERING SOUTH, PL
BRADENTON, FLORIDA
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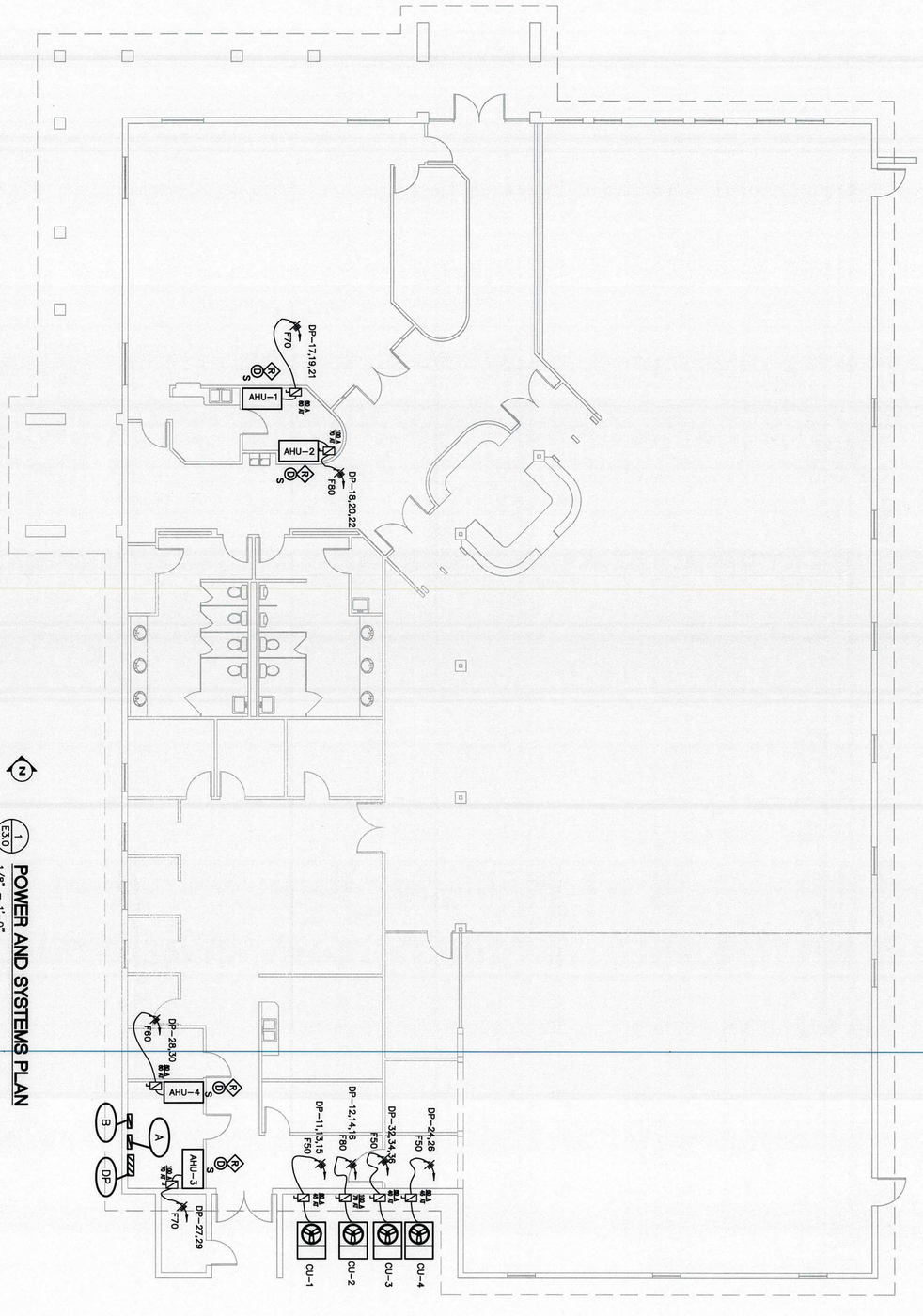
DRAWING TITLE:
ELECTRICAL DEMOLITION PLAN

FILE:	SOUTH CO LIBRARY HVAC
JOB NO.:	2014.14
DATE :	06/17/2014
PLOT SIZE:	1:1
DRAWN BY:	MC
CHECKED BY:	JDC
SHEET No.:	E2.0



1/8" = 1'-0"

POWER AND SYSTEMS PLAN

DRAWING TITLE:
ELECTRICAL POWER AND SYSTEMS PLAN

FILE: SOUTH CO LIBRARY HVAC
JOB NO.: 2014.14
DATE: 06/17/2014
PLOT SIZE: 1:1
DRAWN BY: MC
CHECKED BY: JDC
SHEET No.: E3.0

MANATEE COUNTY
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REV.#	DESCRIPTION	DATE

ATP ENGINEERING SOUTH, FL
BRADENTON, FLORIDA
ENGR. BUSINESS #8908
941-751-6485

JOSE D. CAMPOS
LICENSE
No. 83486
STATE OF
FLORIDA
PROFESSIONAL ENGINEER

GENERAL PLAN SPECIFICATIONS:

(APPLY TO ALL ELECTRICAL SHEETS)

1. PROVIDE AND INSTALL NEW GREEN INSULATED COPPER GROUNDING CONDUCTORS AS THE EQUIPMENT GROUNDING MEANS FOR ALL ELECTRICAL DEVICES AND EQUIPMENT.
2. ALL PANELBOARDS AND SWITCHBOARDS SHALL HAVE COPPER BUS, COPPER GROUND BAR, AND RATINGS AS SPECIFIED. REFERENCE STANDARDS SHALL BE GENERAL ELECTRIC "A" SERIES "PRO-STOCK" BRANCH PANELS AND SPECTRA SERIES DISTRIBUTION PANELS WITH BOLT IN TYPE CIRCUIT BREAKERS.
3. PROVIDE LABELING FOR ALL PANELBOARDS, SWITCHBOARDS, AND DISCONNECT SWITCHES TO INCLUDE AN ENGRAVED PLASTIC LABEL IDENTIFYING THE EQUIPMENT AND WHERE IT IS FED FROM.
   - 3.1. ALL BRANCH DEVICES IN THE MAIN SWITCHBOARD SHALL HAVE AN ENGRAVED PLASTIC LABEL.
   - 3.2. ALL PANELBOARDS SHALL INCLUDE A TYPEWRITTEN DIRECTORY. ALL RECEPTACLES SHALL HAVE CIRCUIT NUMBERS WRITTEN ON THE INSIDE OF THE COVERPLATE.
   - 3.3. ALL JUNCTION BOX COVERS SHALL BE IDENTIFIED TO INDICATE CIRCUITS CONTAINED.
   - 3.4. WHERE MULTIPLE SWITCHES ARE GANGED TOGETHER THE SWITCHES SHALL BE IDENTIFIED.
   - 3.5. PROVIDE (1) 3/4" SPARE CONDUIT FOR EACH 3 SPACES OR SPARES IN EACH FLUSH MOUNTED PANEL FROM PANEL TO ABOVE ACCESSIBLE CEILING FOR FUTURE USE.
   - 3.6. ALL RECEPTACLES SHALL HAVE CIRCUIT NUMBERS WRITTEN ON THE INSIDE OF THE COVERPLATE.
   - 3.7. ALL JUNCTION BOXES ON EMERGENCY POWER SHALL BE RED IN COLOR.
3. ALL CONDUIT INSIDE THE BUILDING SHALL BE A ELECTRICAL METALLIC TUBING (EMT) AND SHALL BE A MINIMUM 1/2" UNLESS OTHERWISE NOTED. ALL CONDUIT INSTALLED UNDERGROUND SHALL BE SCHEDULE 40 PVC UNLESS OTHERWISE NOTED. ALL CONDUIT INSTALLED ABOVE GRADE OUTSIDE THE BUILDING SHALL BE GALVANIZED RIGID STEEL. NO PVC CONDUIT SHALL BE USED ABOVE THE FLOOR SLAB.
4. ALL ELECTRICAL CONNECTORS, LUGS, BREAKERS, EQUIPMENT, ETC. SHALL BE RATED AT A MINIMUM OF 75 DEG. C.
5. WIRING METHODS:

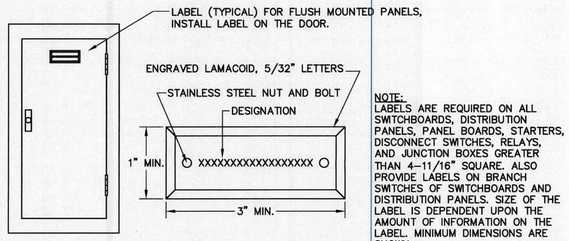
   ALL WIRING SHALL BE COPPER. NO ALUMINUM WIRING WILL BE ALLOWED.

   MC TYPE CABLE SHALL NOT BE USED.
6. SWITCHES SHALL BE 20 AMPERE RATED, 120/277 VOLT, LEVITON 1221-2I SERIES OR APPROVED EQUIVALENT, UNLESS OTHERWISE NOTED.
   - 6.1. SWITCHES CONTROLLING LIGHTING SHALL HAVE NEUTRAL CONDUCTOR.
7. COMMON AREA/PUBLIC USE AREA RECEPTACLES SHALL BE 20A, 120V GROUNDING TYPE LIKE LEVITON T5820 SERIES, UNLESS OTHERWISE NOTED.
   - 7.1. RESIDENTIAL, TAMPER RESISTANT AS PER NEC 406.12
   - 7.2. WHITE IN COLOR
   - 7.1. PROVIDE GROUND FAULT CIRCUIT-INTERRUPTER (GFI) TYPE RECEPTACLE IF SHOWN OR AS REQUIRED BY NEC.
8. ARC-FAULT CIRCUIT-INTERRUPTER RECEPTACLES SHALL BE 20A, 120V GROUNDING TYPE LIKE LEVITON AFTR2-W.
   - 8.1. WHITE IN COLOR.
9. ALL COVERPLATES FOR INTERIOR WIRING DEVICES SHALL BE WHITE NYLON TYPE. DEVICES SHALL BE WHITE IN COLOR.
10. ALL EXTERIOR RECEPTACLES SHALL BE GFCI (GFI) TYPE AND HAVE IN-USE TYPE WEATHERPROOF COVERPLATES.

GENERAL NOTES:

(APPLY TO ALL ELECTRICAL SHEETS)

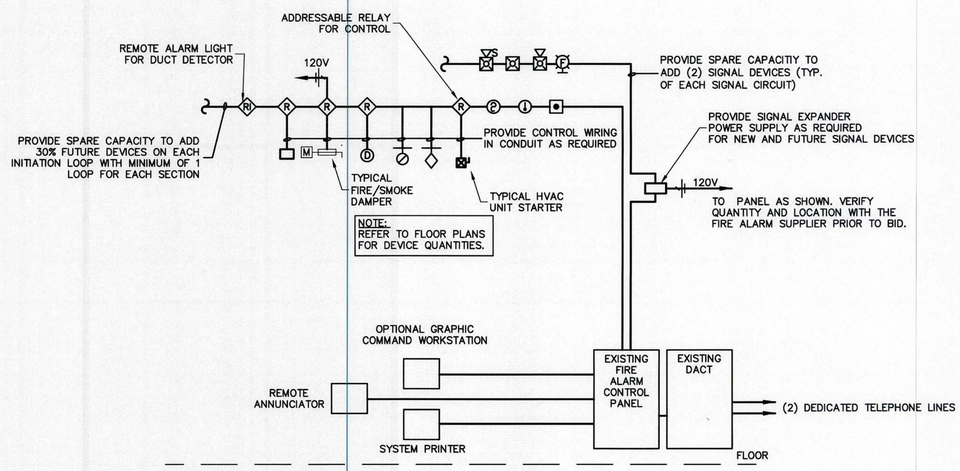
1. PROVIDE COMPLETE AND OPERATIONAL ELECTRICAL SYSTEM.
2. ALL WORK SHALL CONFORM TO OR EXCEED THE MINIMUM REQUIREMENTS OF THE CURRENT ANSI/NFPA 70 WITH STATE OF FLORIDA AMENDMENTS, ANSI/IEEE C2 AND ALL FEDERAL, STATE, LOCAL, AND MUNICIPAL CODES AND ORDINANCES. THE ELECTRICAL SUBCONTRACTOR SHALL COMPLY WITH THE DIRECTIONS OF ALL AUTHORITIES HAVING JURISDICTION.
3. INSTALL WORK USING PROCEDURES DEFINED IN NECA STANDARDS OF INSTALLATION. ALL WORK SHALL PRESENT A NEAT MECHANICAL APPEARANCE WHEN COMPLETED.
4. REFER TO THE ARCHITECTURAL DRAWINGS FOR CEILING AND MILLWORK WORK BY THE SEPARATE GENERAL CONTRACT. COORDINATE ALL ELECTRICAL WORK.
5. THE ELECTRICAL SUBCONTRACTOR SHALL PROVIDE ALL FLOOR, WALL, AND CEILING PENETRATIONS TO COMPLETE HIS WORK. PROVIDE PROPER FIRE SAFEING FOR ALL PENETRATIONS MADE.
6. COORDINATE ALL ELECTRICAL WORK WITH ALL OTHER TRADES TO ENSURE EFFECTIVE AND EFFICIENT OVERALL INSTALLATION.
7. COORDINATE ALL ELECTRICAL SYSTEM DOWNTIME WITH THE OWNER, PERFORMANCE SERVICES, AND OTHER TRADES. DOWNTIME OF THE SYSTEM SHALL BE MINIMIZED. WEEKEND AND AFTER HOUR WORK SHALL BE REQUIRED TO PREVENT OR MINIMIZE INTERFERENCE WITH THE OWNER'S OPERATION.
8. THE LOCATIONS OF RECEPTACLES, PHONE/DATA JACKS, AND ROOM EQUIPMENT SHOWN ON THESE DRAWINGS ARE APPROXIMATE. FINAL LOCATIONS WILL BE DETERMINED DURING THE CONSTRUCTION PHASE- COORDINATE AND REFER TO ARCHITECTURAL DRAWINGS.
9. ALL NEW EQUIPMENT SHALL BE SUBMITTED FOR APPROVAL PRIOR TO ORDERING. PROVIDE COPIES OF ALL LIGHTING EQUIPMENT AND CONTROLS DATA SHEETS FOR THE LEED CONSULTANT AND COMMISSIONING CONSULTANT. ALL LIGHTING SYSTEMS SHALL MEET OR EXCEED ASHRAE 90.1 IN ENERGY USAGE PER SQUARE FOOT.
10. PHYSICAL SIZES AND LOCATIONS OF ALL MECHANICAL EQUIPMENT SHOWN ON THESE DRAWINGS ARE APPROXIMATE. COORDINATE ELECTRICAL WORK FOR THIS EQUIPMENT WITH THE OTHER TRADES.
11. PROVIDE APPROPRIATE SEALANT (I.E. FIRESAFEING) TO MAINTAIN CONSTRUCTION INTEGRITY FOR ANY PENETRATIONS THROUGH FLOORS, STRUCTURAL CEILINGS, AND FIRE WALLS.
12. ALL BRANCH CIRCUITS SHALL UTILIZE SEPARATE INDEPENDENT NEUTRAL CONDUCTOR, AND INSULATED GROUNDING CONDUCTOR. DO NOT COMBINE NEUTRAL CONDUCTORS.
13. ALL FEEDER NEUTRAL/GROUNDED CONDUCTORS SHALL BE CONSIDERED CURRENT CARRYING. DERATE MULTIPLE CONDUCTORS IN A RACEWAY ACCORDINGLY WITH NEC TABLES.
14. INSTALL ALL CONDUITS, RACEWAYS, AND CABLE TRAY FOR MAXIMUM HEAD CLEARANCE IN MECHANICAL AREAS, AND ATTIC. COORDINATE CLEARANCES WITH PERFORMANCE SERVICES AND THE OWNER.
15. ALL ELECTRICAL SERVICE WORK SHALL COMPLY WITH THE LOCAL UTILITY. COORDINATE ALL REQUIREMENTS AND MAXIMUM AVAILABLE FAULT CURRENT PRIOR TO BID AND INCLUDE ALL NECESSARY MATERIAL AND LABOR REQUIRED FOR THE ADDITION TO THE ELECTRICAL SERVICE. PROVIDE PRICING FOR ANY UTILITY FEES.
16. TEST GROUNDING SYSTEM AFTER COMPLETION OF JOB TO INSURE PROPER GROUND CONDUCTIVITY.
17. RECORD DRAWINGS: PROVIDE AMPERE READINGS ON ALL PANELBOARDS TO PROVE PANELS ARE BALANCED. PROVIDE PHASE ROTATION READINGS ON ALL PANELBOARDS. PROVIDE ALL RECORD DRAWINGS TO THE OWNER'S REPRESENTATIVE.



STANDARD COLORS:
1. NORMAL POWER- BLACK BACKGROUND, WHITE LETTERS
2. EMERGENCY POWER- RED BACKGROUND, WHITE LETTERING
3. IN ADDITION TO THE FUNCTION LABELS, PROVIDE LABELS IDENTIFYING ALL "MAIN SERVICE LABEL DISCONNECTS"- RED BACKGROUND, WHITE LETTERING

1 / E4.0 EQUIPMENT LABELING DETAIL

NOT TO SCALE



2 / E4.0 ADDRESSABLE FIRE ALARM SYSTEM SCHEMATIC

NOT TO SCALE

ATP ENGINEERING SOUTH, FL
BRADENTON, FLORIDA
ENGR. BUSINESS #8908
941-751-6485

REV.#	DESCRIPTION	DATE

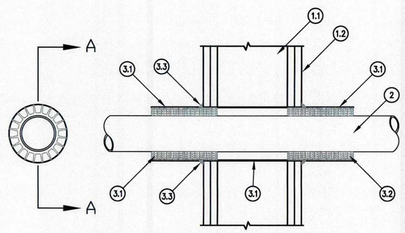
MANATEE COUNTY
SOUTH COUNTY LIBRARY HVAC REPLACEMENT
6081 26TH STREET WEST
BRADENTON, FL 34207
IFAS# W1400163, WA #30

DRAWING TITLE: ELECTRICAL DETAILS AND NOTES

FILE:	SOUTH CO LIBRARY HVAC
JOB NO.:	2014.14
DATE :	06/17/2014
PLOT SIZE:	1:1
DRAWN BY:	MC
CHECKED BY:	JDC
SHEET No.:	E4.0

SYSTEM NO. WL2154

F Ratings – 1 or 2 HR (See Item 1)
T Ratings – 1 or 2 HR (See Item 1)



SECTION A-A

1. WALL ASSEMBLY – THE 1 OR 2 HR FIRE RATED GYPSUM WALLBOARD / STUD WALL ASSEMBLY SHALL BE CONSTRUCTED OF THE MATERIALS AND IN THE MANNER SPECIFIED IN THE INDIVIDUAL U300 OR U400 SERIES WALL AND PARTITION DESIGN IN THE UL FIRE RESISTANCE DIRECTORY AND SHALL INCLUDE THE FOLLOWING CONSTRUCTION FEATURES:

   1.1. STUDS – WALL FRAMING MAY CONSIST OF EITHER WOOD STUDS OR STEEL CHANNEL STUDS. WOOD STUDS TO CONSIST OF NOM 2 BY 4 IN. LUMBER SPACED 16 IN. OC. STEEL STUDS TO BE MIN 3–1/2 IN. WIDE AND SPACED MAXIMUM 24 IN. OC.

   1.2. WALLBOARD, GYPSUM BOARD* – THICKNESS, TYPE, NUMBER OF LAYERS AND FASTENERS AS REQUIRED IN THE INDIVIDUAL WALL AND PARTITION DESIGN. MAXIMUM DIAMETER OF OPENING IS 7–3/4 IN. THE HOURLY F AND T RATINGS OF THE FIRESTOP SYSTEM IS EQUAL TO THE HOURLY FIRE RATING OF THE WALL ASSEMBLY IN WHICH IT IS INSTALLED.

2. THROUGH PENETRANTS – ONE NONMETALLIC PIPE OR CONDUIT TO BE CENTERED WITHIN OPENING WITH A NOM. 1/4 IN. ANNULAR SPACE BETWEEN PIPE OR CONDUIT AND PERIPHERY OF OPENING. PIPE OR CONDUIT TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF THE WALL ASSEMBLY. THE FOLLOWING TYPES AND SIZES OF NONMETALLIC PIPES OR CONDUITS MAY BE USED:

   2.1. POLYVINYL CHLORIDE (PVC) PIPE – NOM. 6 IN. DIAMETER (OR SMALLER) SCHEDULE 40 SOLID CORE PVC PIPE FOR USE IN CLOSED (PROCESS OR SUPPLY) OR VENTED (DRAIN, WASTE OR VENT) PIPING SYSTEM.

   2.2. RIGID NONMETALLIC CONDUIT ++ – NOM. 6 IN. DIAMETER (OR SMALLER) SCHEDULE 40 PVC CONDUIT INSTALLED IN ACCORDANCE WITH ARTICLE 347 OF THE NATIONAL ELECTRICAL CODE (NFPA NO. 70).

   2.3. CHLORINATED POLYVINYL CHLORIDE (CPVC) PIPE – NOM 6 IN. DIAMETER (OR SMALLER) SDR17 CPVC PIPE FOR USE IN CLOSED (PROCESS OR SUPPLY) OR VENTED (DRAIN, WASTE OR VENT) PIPING SYSTEMS.

3. FIRESTOP SYSTEM – THE DETAILS OF THE FIRESTOP SYSTEM SHALL BE AS FOLLOWS:

   3.1. STEEL SLEEVE – MINIMUM 26 GAUGE GALVANIZED STEEL CUT 6 IN. LONGER THAN OVERALL WIDTH OF WALL WITH THE OUTSIDE DIAMETER EQUAL TO DIAMETER OF OPENING IN WALL WITH A MINIMUM 1 IN. OVERLAP ALONG LONGITUDINAL SEAM. SLEEVE PLACED IN WALL OPENING SUCH THAT 3 IN. EXTENDS BEYOND BOTH SIDES OF WALL. EDGES OF SLEEVE TO BE PROVIDED WITH 1/2 IN. LONG SLITS TO FORM RETAINING TABS.

   3.2. FILL, VOID OR CAVITY MATERIALS* – WRAP STRIP – NOM. 1/8 IN. THICK INTUMESCENT MATERIAL SUPPLIED IN 2 IN. WIDE STRIPS. MINIMUM FOUR CONTINUOUS LAYERS OF WRAP STRIP TIGHTLY WRAPPED AROUND NONMETALLIC PIPE ON BOTH SIDES OF WALL, AND RECESSED WITHIN STEEL SLEEVE 2–1/2 IN. FROM THE END OF SLEEVE ON BOTH SIDE OF WALL. AN ADDITIONAL STACK OF FOUR CONTINUOUS LAYERS OF WRAP STRIP TIGHTLY WRAPPED AROUND NONMETALLIC PIPE ON BOTH SIDES OF THE WALL AND BUTTED TIGHTLY AGAINST SLEEVE. THE SLIT EDGES OF SLEEVE TO BE BENT 90 DEGREES TOWARD PIPE. TWO MINIMUM 1/2 IN. WIDE BY 0.028 IN. THICK STAINLESS STEEL BAND CLAMPS SHALL BE TIGHTLY FASTENED AROUND SLEEVE ON BOTH SIDES OF WALL, APPROXIMATELY 1/2 IN. FROM THE WALL SURFACES AND 3/4 IN. FROM EACH END OF SLEEVE. MINNESOTA MINING & MFG. CO. – ULTRA GS

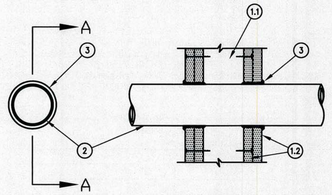
   3.3. FILL, VOID OR CAVITY MATERIALS* – CAULK – MINIMUM 1/2 IN. DIAMETER BEAD OF CAULK SHALL BE APPLIED TO OUTER PERIMETER OF SLEEVE ON BOTH SIDES OF WALL AT SLEEVE / WALL INTERFACE. MINNESOTA MINING & MFG. CO. – CP 25WB+ CAULK

* BEARING THE UL CLASSIFICATION MARKING
++ BEARING THE UL LISTED MARK

1 / E4.1 **U.L. PENETRATION DETAIL**
NOT TO SCALE

SYSTEM NO. WL1001

(FORMERLY SYSTEM NO. 147)
F RATING – 1, 2, 3 AND 4HR. (SEE ITEM 2 AND 3)
T RATINGS– 0, 1, 2, 3, AND 4 HR. (SEE ITEM 3)



SECTION A-A

1. WALL ASSEMBLY – THE 1, 2, 3 OR 4 HOUR FIRE–RATED GYPSUM WALLBOARD / STUD WALL ASSEMBLY SHALL BE CONSTRUCTED OF THE MATERIALS AND IN THE MANNER DESCRIBED IN THE INDIVIDUAL U300 OR U400 SERIES WALL OR PARTITION DESIGN IN THE UL FIRE RESISTANCE DIRECTORY AND SHALL INCLUDE THE FOLLOWING CONSTRUCTION FEATURES:

   1.1. STUDS – WALL FRAMING MAY CONSIST OF EITHER WOOD STUDS OR STEEL CHANNEL STUDS. WOOD STUDS CONSIST OF NOMINAL 2 BY 4 IN. LUMBER SPACED 16 INCHES OC WITH NOMINAL 2 BY 4 IN. LUMBER END PLATES AND CROSS BRACES. STEEL STUDS TO BE MIN. 3–5/8 IN. WIDE BY 1–3/8 IN. DEEP CHANNELS SPACED MAX 24 IN. OC.

   1.2. WALL BOARD GYPSUM* – 1/2 IN. OR 5/8 IN. THICK 4 FOOT WIDE WITH SQUARE OR TAPERED EDGES. THE GYPSUM WALLBOARD TYPE, THICKNESS, NUMBER OF LAYERS, FASTENER TYPE AND SHEET ORIENTATION SHALL BE AS SPECIFIED IN THE INDIVIDUAL U300 OR U400 SERIES DESIGN IN THE UL FIRE RESISTANCE DIRECTORY. MAX DIAM OF OPENING IS 13–1/2 IN.

2. PIPE OR CONDUIT – NOMINAL 12 IN. DIAM. (OR SMALLER) SCHEDULE 10 (OR HEAVIER STEEL CONDUIT, NOM. 4 IN. DIAM (OR SMALLER) STEEL ELECTRICAL CONDUIT MECHANICAL OR TYPE L OR (HEAVIER) COPPER TUBING OR MON. 1 IN. DIAM (OR SMALLER) FLEXIBLE STEEL CONDUIT.

3. FILL, VOID OR CAVITY MATERIAL* – CAULK – CAULK FILL MATERIAL INSTALLED TO COMPLETELY FILL ANNULAR SPACE BETWEEN PIPE OR CONDUIT AND GYPSUM WALLBOARD AND W/ A MIN. 1/4 IN. DIAM BEAD OF CAULK APPLIED TO PERIMETER OF PIPE OR CONDUIT AT ITS EGRESS FROM THE WALL. CAULK INSTALLED SYMMETRICALLY ON BOTH SIDES OF WALL ASSEMBLY. THE HOURLY F RATING OF THE FIRESTOP SYSTEM IS DEPENDENT UPON THE HOURLY FIRE RATING OF THE WALL ASSEMBLY IN WHICH IT IS INSTALLED, AS SHOWN IN THE FOLLOWING TABLE. THE HOURLY T RATING OF THE FIRESTOP SYSTEM IS DEPENDENT UPON THE TYPE OR SIZE OF THE PIPE OR CONDUIT AND THE HOURLY FIRE RATING OF THE WALL ASSEMBLY IN WHICH IT IS INSTALLED, AS TABULATED BELOW:

MAXIMUM PIPE OR CONDUIT DIAMETER (IN INCHES)	ANNULAR SPACE (IN INCHES)	F RATING HR	T RATING HR
1	0 TO 3/16	1 OR 2	0+, 1 OR 2
1	1/4 TO 1/2	3 OR 4	3 OR 4
4	0 TO 1 1/2	1 OR 2	0
6	1/4 TO 1/2	3 OR 4	0
12	3/16 TO 3/8	1 OR 2	0
+WHEN COPPER PIPE IS USED, T RATING IS 0 H.			

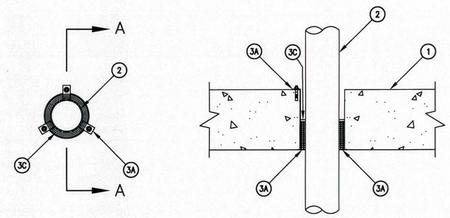
MINNESOTA MINING & MANUFACTURING CO. – TYPES CP–25 S/L, N/S, CP–25 WB, CP–25 WB+ CP–25

* BEARING THE UL CLASSIFICATION MARKING

2 / E4.1 **U.L. PENETRATION DETAIL**
NOT TO SCALE

SYSTEM NO. C-AJ-2002

May 18, 2005
F Rating – 2 Hr
T Ratings – 0 and 2 Hr
L Rating at Ambient – 7 CFM/sq ft
L Rating at 400 F – less than 1 CFM/sq ft (See Item 3C)
W Rating – Class I (See Item 3)



SECTION A-A

1. FLOOR OR WALL ASSEMBLY – MIN 2–1/2 IN. (64 MM) THICK LIGHTWEIGHT OR NORMAL WEIGHT (100–150 PCF OR 1600–2400 KG/M3) CONCRETE. WALL MAY ALSO BE CONSTRUCTED OF ANY UL CLASSIFIED CONCRETE BLOCKS*. MAX DIAM OF CIRCULAR OPENING IS 6–1/2 IN. (165 MM).

SEE CONCRETE BLOCKS (CAZT) CATEGORY IN THE FIRE RESISTANCE DIRECTORY FOR NAMES OF MANUFACTURERS.

2. NONMETALLIC PIPE OR CONDUIT – NOM 4 IN. (102 MM) DIAM (OR SMALLER) SCHEDULE 40 SOLID CORE OR CELLULAR CORE, POLYVINYL CHLORIDE (PVC) PIPE FOR USE IN CLOSED (PROCESS OR SUPPLY) OR VENTED (DRAIN, WASTE OR VENT) PIPING SYSTEMS OR RIGID NONMETALLIC CONDUIT++ OR SDR 13.5 CHLORINATED POLYVINYL CHLORIDE (CPVC) PIPE FOR USE IN CLOSED (PROCESS OR SUPPLY) PIPING SYSTEMS. A MAX OF ONE PIPE OR CONDUIT IS PERMITTED IN THE FIRESTOP SYSTEM. EXCEPT AS NOTED IN ITEM B, THE PIPE OR CONDUIT SHALL BE CENTERED IN THE THROUGH OPENING. PIPE OR CONDUIT TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF FLOOR OR WALL ASSEMBLY.

SEE RIGID NONMETALLIC CONDUIT (DZKT) CATEGORY IN THE UL ELECTRICAL CONSTRUCTION MATERIALS DIRECTORY FOR NAMES OF MANUFACTURERS.

3. FIRESTOP SYSTEM – THE HOURLY T RATINGS FOR THE FIRESTOP SYSTEM ARE DEPENDENT UPON THE FIRESTOP ORIENTATION (WALL OR FLOOR), THE SIZE OF THE NONMETALLIC PIPE OR CONDUIT, AND THE FLOOR THICKNESS, AS TABULATED BELOW:

ORIENTATION (a)	NOMINAL PIPE DIAMETER In. (mm)	ANNULAR SPACE In. (mm)	F RATING HR	T RATING HR
F(b)	1/2–2 (13–51 mm)	1/4–1 (6–25 mm)	2	0
F(b)	2–1/2, 3 (64, 76 mm)	1/2–1 (13–25 mm)	2	0
W,F	1/2–2 (13–51 mm)	1/4–1 (6–25 mm)	2	2
W,F	2–1/2, 3 (64, 76 mm)	1/2–1 (13–25 mm)	2	2
W,F	3–1/2, 4 (89, 102 mm)	3/4–1 (19–25 mm)	2	2

(a) W = WALL, F = FLOOR
(b) MIN CONCRETE FLOOR THICKNESS IS 2–1/2 IN. (64 MM).
THE DETAILS OF THE FIRESTOP SYSTEM SHALL BE AS FOLLOWS:

A. STEEL SUPPORT CLIPS – NOM 1 IN. (25 MM) WIDE BY NOM 0.019 IN. (0.5 MM) THICK (28 GAUGE) GALV STEEL STRIPS FIELD–FORMED INTO "Z"–SHAPE WITH HEIGHT OF Z–SHAPE EQUAL TO THE FLOOR THICKNESS AND WITH WIDTH OF BOTTOM (AS INSTALLED) LEG OF SUFFICIENT LENGTH TO SPAN ANNULAR SPACE. TOP (AS INSTALLED) LEG OF Z–SHAPE TO BE MIN 2 IN. (51 MM) LONG AND MAY OR MAY NOT BE SECURED TO TOP SURFACE OF FLOOR WITH MASONRY ANCHORS. AS AN ALTERNATE TO THE Z–SHAPE CLIPS, THE GALV STEEL STRIPS MAY BE FORMED INTO "L"–SHAPE WITH HEIGHT EQUAL TO 2 IN. (51 MM) AND WITH BOTTOM (AS INSTALLED) LEG OF SUFFICIENT LENGTH TO SPAN ANNULAR SPACE. CLIPS SECURED TO OUTERMOST WRAP STRIP LAYER WITH STEEL WIRE TIE PRIOR TO INSERTION IN THROUGH OPENING. MIN OF THREE STEEL SUPPORT CLIPS TO BE USED, SYMMETRICALLY LOCATED, WITH BOTTOM LEG OF CLIPS FLUSH WITH BOTTOM PLANE OF FLOOR. WHEN ANNULAR SPACE AROUND NOM 1/2 IN. TO 2 IN. (13 MM TO 51 MM) DIAM PIPE IN FLOOR ASSEMBLY IS 1/4 IN. TO 3/8 IN. (6 MM TO 10 MM) , STEEL SUPPORT CLIPS ARE NOT REQUIRED.

B. FILL, VOID OR CAVITY MATERIALS* – WRAP STRIP – NOM 1/4 IN. (6 MM) THICK INTUMESCENT ELASTOMERIC MATERIAL FACED ON ONE SIDE WITH ALUMINUM FOIL, SUPPLIED IN 2 IN. (51 MM) WIDE STRIPS. NOM 2 IN. (51 MM) WIDE STRIPS TIGHTLY WRAPPED AROUND NONMETALLIC PIPE (FOIL SIDE EXPOSED) TO FILL ANNULAR SPACE AROUND PIPE. A MIN OF ONE LAYER OF WRAP STRIP IS REQUIRED FOR NOM 1/2 IN. TO 2 IN. (13 MM TO 51 MM) DIAM PIPES. A MIN OF TWO LAYERS OF WRAP STRIP IS REQUIRED FOR NOM 2–1/2 IN. AND 3 IN. (64 MM AND 76 MM) DIAM PIPES. A MIN OF THREE LAYERS OF WRAP STRIP IS REQUIRED FOR NOM 3–1/2 IN. AND 4 IN. (89 MM AND102 MM) DIAM PIPES. EACH LAYER OF WRAP STRIP TO BE INSTALLED WITH BUTTED SEAM WITH BUTTED SEAMS IN SUCCESSIVE LAYERS STAGGERED. WRAP STRIP LAYERS SECURELY BOUND WITH STEEL WIRE OR ALUMINUM FOIL TAPE AND SLID INTO THROUGH OPENING SUCH THAT THE BOTTOM EDGES ARE FLUSH WITH THE BOTTOM PLANE OF THE FLOOR AND ARE RESTING ON THE STEEL SUPPORT CLIP LEGS. WHEN NOM 2 IN. TO 4 IN. (51 MM TO 102 MM) DIAM PVC PIPE IS USED IN MIN 4–1/2 IN. (114 MM) THICK CONCRETE FLOOR, THE PIPE MAY BE INSTALLED ECCENTRICALLY IN THE THROUGH OPENING (MIN ZERO CLEARANCE AT POINT CONTACT LOCATION) PROVIDED THAT (1) THE INSIDE DIAM OF THE THROUGH OPENING IS 1.3 TO 1.5 TIMES LARGER THAN THE OUTSIDE DIAM OF THE PIPE, (2) THE ANNULAR SPACE BETWEEN THE PIPE AND THE SIDES OF THE OPENING AT THE BOTTOM 2 IN. (51 MM) OF THE THROUGH OPENING IS COMPLETELY FILLED WITH WRAP STRIP LAYERS INSTALLED FOLLOWING THE CONTOUR OF THE PIPE AND (3) THE BOTTOM EDGES OF THE WRAP STRIP LAYERS ARE RELIABLY SUPPORTED BY "Z"–SHAPED STEEL SUPPORT CLIPS ANCHORED TO THE TOP SURFACE OF THE CONCRETE FLOOR. IN WALL ASSEMBLIES, THE WRAP STRIP LAYERS ON THE NONMETALLIC PIPE ARE TO BE INSTALLED IN THE SAME MANNER USED FOR FLOOR ASSEMBLIES, BUT SHALL BE INSTALLED SYMMETRICALLY ON BOTH SIDES OF THE WALL WITH THE EXPOSED EDGES OF THE WRAP STRIP LAYERS FLUSH WITH THE WALL SURFACES.

C. FILL, VOID OR CAVITY MATERIALS* – CAULK OR SEALANT – MIN 1/4 IN. (6 MM) DIAM CONTINUOUS BEAD APPLIED TO INSIDE WALLS OF THROUGH OPENING PRIOR TO INSTALLATION OF STEEL SUPPORT CLIPS AND/OR WRAP STRIP. CAULK BEAD TO BE RECESSED 1 IN. (25 MM) FROM THE BOTTOM PLANE OR FLOOR. IN WALL ASSEMBLIES, CAULK BEAD TO BE RECESSED 1 IN. (25 MM) FROM WALL SURFACE ON BOTH SIDES OF WALL. IN FLOOR ASSEMBLIES, A NOM 1/2 IN. (13 MM) THICK COATING OF CAULK IS TO BE APPLIED TO THE TOP EDGES OF THE WRAP STRIP LAYERS AND TO FILL ALL GAPS AT THE WRAP STRIP/ CONCRETE INTERFACE. IN WALL ASSEMBLIES, THE EXPOSED EDGES OF THE WRAP STRIP LAYERS AND ALL GAPS AT THE WRAP STRIP/CONCRETE INTERFACE ON BOTH SIDES OF THE WALL TO BE COATED WITH THIN LAYER OF CAULK.
(NOTE: W RATING APPLIES ONLY WHEN FB–3000 WT SEALANT IS USED. CP 25WB+ NOT SUITABLE FOR USE WITH CPVC PIPES.)
*BEARING THE UL CLASSIFICATION MARKING
++BEARING UL LISTING MARK

3 / E4.1 **CONCRETE WALL OR FLOOR PENETRATION DETAIL**
NOT TO SCALE

ATP ENGINEERING SOUTH, PL
BRADENTON, FLORIDA
ENGR. BUSINESS #8806
941-751-6485

REV #	DESCRIPTION	DATE

MANATEE COUNTY
SOUTH COUNTY LIBRARY HVAC REPLACEMENT
6081 26TH STREET WEST
BRADENTON, FL 34207
IFAS# W1400163, WA #30

DRAWING TITLE:
ELECTRICAL DETAILS AND NOTES

FILE: SOUTH CO LIBRARY HVAC	
JOB NO.:	2014.14
DATE :	06/17/2014
PLOT SIZE:	1:1
DRAWN BY:	MC
CHECKED BY:	JDC
SHEET No.:	E4.1

FEEDER AND BRANCH CIRCUIT SCHEDULE

FEEDER/BRANCH DESIGNATION	COPPER CONDUCTOR THHN,THWN,&THWN-2		SETS OF CONDUCTORS	CONDUIT SIZE AND QUANTITY [QUANTITY OF CONDUIT IS 1, UNLESS NOTED IN ( )]					
	PHASE & NEUTRAL	EQUIPMENT GROUND		1P, 1N, 1G, 2P, 1G	2P, 1N, 1G, 3P, 1G	3P, 1N, 1G	3P, 2N, 1G	3P, 3N, 1G	3P, 1N, 2G
F20	12	12	1	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"
F30	10	10	1	3/4"	3/4"	3/4"	1"	1"	1"
F40-50	8	10	1	3/4"	1"	1"	1 1/4"	1 1/4"	1 1/4"
F60	6	10	1	1"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"
F70-F80	4	8	1	1"	1 1/4"	1 1/4"	1 1/2"	1 1/2"	1 1/2"
F90-F100	3	8	1	1 1/4"	1 1/4"	1 1/2"	1 1/2"	2"	1 1/2"
F110	2	6	1	1 1/4"	1 1/2"	1 1/2"	2"	2"	2"
F125	1	6	1	1 1/2"	2"	2"	2"	2 1/2"	2"
F150	1/0	6	1	1 1/2"	2"	2"	2 1/2"	2 1/2"	2 1/2"
F175	2/0	6	1	2"	2"	2 1/2"	2 1/2"	3"	2 1/2"
F200	3/0	6	1	2"	2 1/2"	2 1/2"	3"	3"	3"
F225	4/0	4	1	2"	2 1/2"	3"	3"	3"	3"
F250	250	4	1	2 1/2"	3"	3"	3 1/2"	3 1/2"	3-1/2"
F300	350	4	1	3"	3"	3 1/2"	3 1/2"	4"	3 1/2"
F350	2/0	3	2	(2) 2"	(2) 2 1/2"	(2) 2 1/2"	(2) 2 1/2"	(2) 3"	(2) 2 1/2"
F400	3/0	3	2	(2) 2"	(2) 2 1/2"	(2) 2 1/2"	(2) 3"	(2) 3"	(2) 2 1/2"
F450	4/0	2	2	(2) 2"	(2) 2 1/2"	(2) 2 1/2"	(2) 3"	(2) 3"	(2) 3"
F500	250	2	2	(2) 2 1/2"	(2) 3"	(2) 3"	(2) 3"	(2) 3 1/2"	(2) 3 1/2"
F600	350	1	2	(2) 2 1/2"	(2) 3"	(2) 3"	(2) 3"	(2) 3 1/2"	(2) 3"

NOTES:
1. DO NOT COMBINE NEUTRAL CONDUCTORS FOR ALL CIRCUITS. USE SEPARATE INDEPENDENT NEUTRAL CONDUCTORS FOR ALL CIRCUITS.

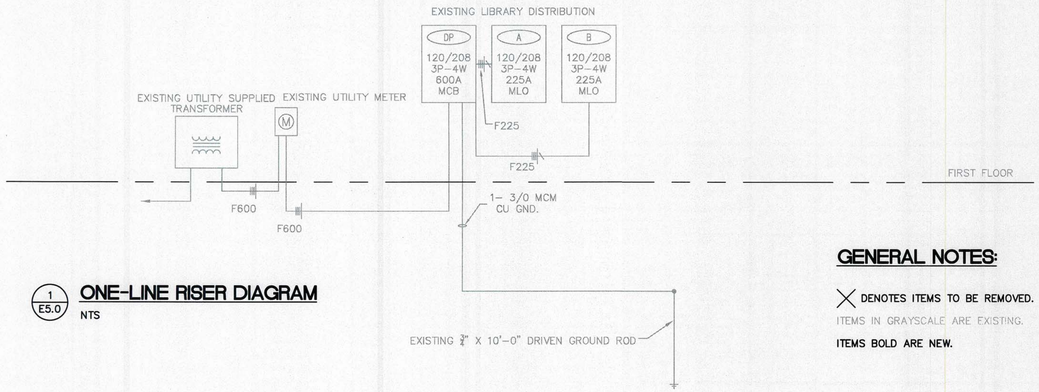
VOLTAGE DROP FOR 1ϕ, 20A BRANCH CIRCUITS

SIZED TO PREVENT VOLTAGE DROP EXCEEDING 3 PERCENT PER NEC 210.19A NOTE 4.

FEEDER SIZE TO USE	DISTANCE ALLOWED			
	120V	208V	277V	480V
F20	0 - 45 FEET	0 - 79 FEET	0 - 105 FEET	0 - 182 FEET
F30	45 - 72 FEET	79 - 126 FEET	105 - 168 FEET	182 - 290 FEET
F40-50	72 - 115 FEET	126 - 201 FEET	168 - 267 FEET	290 - 463 FEET
F60	115 - 183 FEET	201 - 318 FEET	267 - 423 FEET	463 - 733 FEET
F70-80	183 - 292 FEET	318 - 506 FEET	423 - 675 FEET	733 - 1169 FEET
F90-100	292 - 367 FEET	506 - 637 FEET	675 - 848 FEET	1169 - 1469 FEET
F110	367 - 464 FEET	637 - 804 FEET	848 - 1071 FEET	1469 - 1856 FEET
F125	464 - 584 FEET	804 - 1013 FEET	1071 - 1349 FEET	1856 - 2338 FEET
F150	584 - 738 FEET	1013 - 1279 FEET	1349 - 1703 FEET	2338 - 2951 FEET

NOTES:

1. 20 A BRANCH CIRCUITS SHALL BE SIZED FOR VOLTAGE DROP. WIRE SIZES ARE NOT INDICATED ON THE DRAWINGS TO COMPENSATE FOR VOLTAGE DROP FOR THESE CIRCUITS. CONTRACTOR SHALL UTILIZE WIRE SIZE SHOWN ABOVE FOR DISTANCES LISTED ABOVE.
2. VOLTAGE DROP WIRE SIZES WILL BE STRICTLY ENFORCED. CONTRACTOR SHALL SUBMIT A LIST OF CIRCUITS THAT WILL EXCEED THE DISTANCES ALLOWED AND INDICATE WIRE SIZE TO BE USED PRIOR TO ANY WIRE BEING INSTALLED.



1 E5.0 **ONE-LINE RISER DIAGRAM**
NTS

GENERAL NOTES:

X DENOTES ITEMS TO BE REMOVED.

ITEMS IN GRAYSCALE ARE EXISTING.

ITEMS BOLD ARE NEW.

SWITCHBOARD PANELBOARD SCHEDULE	DESIGNATION:	PANEL DP	MAINS:	600A MCB
	LOCATION:	S.W. MECHANICAL EQUIP RM	BUS SIZE:	600A
	VOLTAGE:	208Y/120	PANEL MOUNTING:	SURFACE
	PHASE:	3 PHASE, 4 WIRE	ALL BREAKERS:	65,000KAIC

CKT NO.	LOAD DESCRIPTION	LOAD CODE	CONN. KVA	BREAKER AMPS	BREAKER POLE	CONNECTED LOAD A	CONNECTED LOAD B	CONNECTED LOAD C	BREAKER AMPS	BREAKER POLE	CONN. KVA	LOAD CODE	LOAD DESCRIPTION	CKT NO.
1	Panel A	P	12.33	175	3	19.67	X	X	125	3	7.33	P	Panel B	2
3		P	12.33			X	19.67	X			7.33	P		4
5		P	12.33			X	X	19.67			7.33	P		6
7	Water Heater	M	2.45	25	2	3.65	X	X	20	2	1.20	M	Copier	8
9		M	2.45			X	3.65	X			1.20	M		10
11	CU-1	M	4.92	45*	3	X	X	11.57	70*	3	6.65	M	CU-2	12
13		M	4.92			11.57	X	X			6.65	M		14
15		M	4.92			X	11.57	X			6.65	M		16
17	AHU-1 w/heat	M	6.36	60*	3	X	X	14.40	70*	3	8.04	M	AHU-2 w/heat	18
19		M	6.36			14.40	X	X			8.04	M		20
21		M	6.36			X	14.40	X			8.04	M		22
23	AHU-3 w/heat	M	6.97	70*	3	X	X	9.88	45*	2	2.91	M	CU-4	24
25		M	6.97			9.88	X	X			2.91	M		26
27		M	6.97			X	12.27	X	60*	2	5.30	M	AHU-4 w/heat	28
29						X	X	5.30			5.30	M		30
31						3.73	X	X	40*	3	3.73	M	CU-3	32
33						X	3.73	X			3.73	M		34
35						X	X	3.73			3.73	M		36
37						0.00	X	X					Space	38
39						X	0.00	X					Space	40
41						X	X	0.00					Space	42
						62.90	65.29	64.55	KVA					
	TOTAL CONNECTED AMPS:		544.05 AMPS			524.13	544.05	537.88	AMPS					
	TOTAL CONNECTED LOAD:		192.73 KVA											
	TOTAL DEMAND AMPS:		449.01 AMPS											
	TOTAL DEMAND LOAD:		159.30 KVA											

LOAD CODES:
L= LIGHTING
R= RECEPTACLE
M= MECHANICAL
C= COMPUTER
K= KITCHEN
P= PANELBOARD

*New breakers rated per manufacturer's requirements (MOCP).
Provide old breakers for panel to Owner's representative for possible spares.

2 E5.0 **MAIN DISTRIBUTION PANEL SCHEDULE**
NTS

ATP ENGINEERING SOUTH, PL
BRADENTON, FLORIDA
ENGR. BUSINESS #8908
941-751-6485

REV # | DESCRIPTION | DATE

MANATEE COUNTY
SOUTH COUNTY LIBRARY HVAC REPLACEMENT
6081 26TH STREET WEST
BRADENTON, FL 34207
IFAS# W1400163, WA #30

DRAWING TITLE: ELECTRICAL ONE-LINE RISER DIAGRAM AND SCHEDULES

FILE:	SOUTH CO LIBRARY HVAC
JOB NO.:	2014.14
DATE :	06/17/2014
PLOT SIZE:	1:1
DRAWN BY:	MC
CHECKED BY:	JDC
SHEET No.:	E5.0

LEGENDS, GENERAL NOTES AND ABBREVIATIONS

ABBREVIATIONS

AC	AIR CONDITIONING
AD	ACCESS DOOR
AFF	ABOVE FINISHED FLOOR
AHU	AIR HANDLING UNIT
AI	ANALOG INPUT
AO	ANALOG OUTPUT
AP	ACCESS PANEL
BFF	BELOW FINISHED FLOOR
BHP	BRAKE HORSE POWER
BOT	BOTTOM
CC	COOLING COIL
CD	CONDENSATE DRAIN
CFM	CUBIC FEET PER MINUTE
CH	CHILLER
CHWR	CHILLED WATER RETURN
CHWS	CHILLED WATER SUPPLY
CLG	CEILING
CO	CLEANOUT
CT	COOLING TOWER
CU	CONDENSING UNIT
CW	COLD WATER
CWR	CONDENSER WATER RETURN
CWS	CONDENSER WATER SUPPLY
DB	DRY BULB
DCC	DIRECT DIGITAL CONTROL
DG	DOOR GRILLE
DI	DIGITAL INPUT
DO	DIGITAL OUTPUT
DP	DEW POINT
DX	DIRECT EXPANSION
EA	EXHAUST AIR
EAT	ENTERING AIR TEMPERATURE
EC	ELECTRICAL CONTRACTOR
ECC	ENERGY CONTROL CENTER
EER	ENERGY EFFICIENCY RATIO
EF	EXHAUST FAN
ET	EXPANSION TANK
EL	ELEVATION
EQUIP	EQUIPMENT
EWC	ELECTRIC WATER COOLER
EWT	ENTERING WATER TEMPERATURE
EXIST	EXISTING
FDPR	FIRE DAMPER
FCU	FAN COIL UNIT
FD	FLOOR DRAIN
FL	FLOOR
FPI	FINS PER INCH
FPF	FINS PER FOOT
FPM	FEET PER MINUTE
G	GUARD
GC	GENERAL CONTRACTOR
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
H	HUMIDITY
HB	HOSE BIBB
HC	HEATING COIL
HE	HEAT EXCHANGER
HP	HORSE POWER
HW	HOT WATER
HWR	HOT WATER RETURN
HWS	HOT WATER SUPPLY
KW	KILOWATT
LAT	LEAVING AIR TEMPERATURE
LWT	LEAVING WATER TEMPERATURE
MC	MECHANICAL CONTRACTOR
MD	MOTORIZED DAMPER
MAX	MAXIMUM
MIN	MINIMUM
NC	NORMALLY CLOSED
NO	NORMALLY OPENED
OA	OUTSIDE AIR
OS&Y	OUTSIDE SCREW & YOKE
PC	PLUMBING CONTRACTOR
PD	PRESSURE DROP
PRESS	PRESSURE
RA	RETURN AIR
RD	ROOF DRAIN
RL	RAIN LEADER
RTU	ROOF TOP UNIT
S	SANITARY
SDPR	SMOKE DAMPER
SA	SUPPLY AIR
SP	STATIC PRESSURE
TCC	TEMPERATURE CONTROL CONTRACTOR
T	TEMPERATURE
TYP	TYPICAL
UC	UNDERCUT
UG	UNDERGROUND
UON	UNLESS OTHERWISE NOTED
UV	UNIT VENTILATOR
V	VENT
VAC	VACUUM
VAV	VARIABLE AIR VOLUME
VD	VOLUME DAMPER
VFD	VARIABLE FREQUENCY DRIVE
VSD	VARIABLE SPEED DRIVE
VTR	VENT THRU ROOF
W	WASTE
WB	WET BULB
WCO	WALL CLEANOUT

DUCTWORK

- UP / DN — SUPPLY DUCT (UP & DOWN)
- UP / DN — EXHAUST DUCT (UP & DOWN)
- UP / DN — RETURN AIR DUCT (UP & DOWN)
- CEILING DIFFUSERS
- SIDE WALL REGISTER OR GRILLE
- RETURN OR EXHAUST CEILING GRILLE
- EXHAUST OR RETURN WALL MTD GRILLE
- 10x8 — NEW DUCT – WIDTH X DEPTH
- (SINGLE LINE)
- EXISTING DUCT TO REMAIN
- (SINGLE LINE)
- EXISTING DUCT TO BE REMOVED
- (SINGLE LINE)
- FLEXIBLE DUCTWORK (INSULATED)
- (SINGLE LINE)
- SPIN–IN FITTING
- (SINGLE LINE)
- DUCT SIZE TRANSITION (CONCENTRIC)
- (SINGLE LINE)
- DUCT SIZE TRANSITION (ECCENTRIC)
- (SINGLE LINE)
- DUCT TRANSITION (RECTANGULAR TO ROUND)
- (SINGLE LINE)
- ACOUSTICALLY LINED DUCT
- R — INCLINED RISE, IN DIRECTION OF AIR FLOW
- D — INCLINED DROP, IN DIRECTION OF AIR FLOW
- FLEXIBLE CONNECTION
- LOUVER
- MANUAL VOLUME DAMPER
- FIRE DAMPER
- SMOKE DAMPER
- FIRE / SMOKE DAMPER
- S — SMOKE DETECTOR
- DUCT HEATER
- VANED ELBOW (PROVIDE ALL SQUARE OR RECTANGULAR ELBOWS WITH VANES EVEN IF SYMBOL IS MISSING)
- VANED ELBOW (SHORT RADIUS)
- STANDARD RADIUS ELBOW
- VANE TURN ELBOW & AIR SPLIT TYPE DUCT TAKE–OFF
- T — THERMOSTAT / TEMPERATURE SENSOR
- H — HUMIDISTAT / HUMIDITY SENSOR
- UC — UNDERCUT (1" U.O.N.)
- DG — DOOR GRILLE (18"X12" U.O.N.)
- A / 100 / 6"ø — AIR DEVICE TYPE, AIR FLOW CFM, NECK SIZE
- 4–WAY AIR FLOW
- 3–WAY AIR FLOW
- 2–WAY AIR FLOW
- 1–WAY AIR FLOW

PIPING

- CWS — CONDENSER WATER SUPPLY
- CWR — CONDENSER WATER RETURN
- CHWS — CHILLED WATER SUPPLY
- CHWR — CHILLED WATER RETURN
- CD — CONDENSATE LINE
- RL — REFRIGERANT LIQUID
- RS — REFRIGERANT SUCTION
- RHG — REFRIGERANT HOT GAS
- HWS — HOT WATER SUPPLY
- HWR — HOT WATER RETURN
- DOMESTIC WATER
- GATE VALVE
- GLOBE VALVE
- CHECK VALVE
- BALL VALVE
- PLUG VALVE
- PRESSURE REDUCING VALVE
- 2–WAY CONTROL VALVE
- 3–WAY MODULATING CONTROL VALVE
- SAFETY OR PRESSURE RELIEF VALVE
- MANUAL AIR VENT
- BUTTERFLY VALVE
- HOSE BIBB
- ANGLE GLOBE VALVE
- MOTOR OPERATED GATE VALVE
- MOTOR OPERATED GLOBE VALVE
- TEST PLUG (PRESSURE / TEMPERATURE)
- OUTSIDE SCREW & YOKE (O S & Y)
- DIRECTION OF FLOW
- ANCHOR
- REDUCER OR INCREASER
- ECCENTRIC REDUCER
- TOP CONNECTION, 45 OR 90 DEG.
- BOTTOM CONNECTION, 45 OR 90 DEG.
- SIDE CONNECTION
- CAPPED OUTLET
- RISE OR DROP IN PIPE
- UNION
- STRAINER
- THERMOMETER
- PRESSURE GAGE
- WATER FLOW MEASURING DEVICE
- EXISTING PIPE TO BE REMOVED
- D / S — DUCT DETECTOR BY EC. INSTALLED BY MC.

DRAWING SYMBOLS

- 2 / FP5 — DETAIL NUMBER / DRAWING NUMBER WHERE DRAWN
- A / FP5 — SECTION LETTER / DRAWING NUMBER WHERE DRAWN
- P.O.C — POINT OF INTERFACE BETWEEN NEW & EXISTING P.O.C.
- P.O.D — POINT OF DEMOLITION P.O.D.
- POINT OF INTERFACE BETWEEN CONTRACTORS

GENERAL NOTES

1. HVAC WORK CONSISTS OF PROVIDING AND INSTALLING REPLACEMENT AIR CONDITIONING SYSTEMS FOR A COMPLETE OPERATING SYSTEM AND AS INDICATED ON THE DRAWINGS. ALL WORK SHALL COMPLY WITH APPLICABLE CODES IN SPECIFICATIONS. IT IS THE INTENTION OF THE CONTRACT DRAWINGS AND SPECIFICATIONS TO CALL FOR COMPLETE, FINISHED WORK, TESTED, AND READY FOR OPERATION.
2. TEST AND BALANCE SHALL BE PROVIDED BY A COMPANY SPECIALIZING IN THE TESTING AND BALANCING OF HVAC SYSTEMS AS SUBCONTRACTOR TO THE HVAC CONTRACTOR, GENERAL CONTRACTOR. THE TEST AND BALANCE CONTRACTOR SHALL BE A MEMBER OF EITHER AABC OR NEBB.
3. DUCT DIMENSIONS SHOWN ON THE DRAWINGS ARE CLEAR INSIDE AIR PASSAGE DIMENSIONS.
4. PROVIDE SPIN–IN FITTINGS AT ALL FLEXIBLE DUCT RUNOUTS TO DIFFUSERS WITH AIR EXTRACTOR AND DAMPER.
5. MAXIMUM LENGTH OF FLEXIBLE DUCT SHALL BE 6'–0".
6. ALL PIPING SUBJECT TO THERMAL EXPANSION AND/OR CONTRACTION THAT PENETRATES A SMOKE, FIRE, OR FIRE/SMOKE WALL, PARTITION, OR FLOOR SLAB SHALL BE SUITABLY SLEEVED AND FIRE SAFED.
7. METAL DUCTS WHICH PENETRATE 1 HOUR RATED FIRE WALLS AND ARE LESS THAN 100 SQUARE INCHES SHALL EXTEND A MINIMUM OF 5 FEET ON BOTH SIDES OF THE WALL WITHOUT AN OPENING (TO PRECLUDE THE REQUIREMENT OF A FIRE DAMPER). DUCTWORK SHALL IN NO CASE BE LIGHTER (TO PRECLUDE THE REQUIREMENT OF A FIRE DAMPER). DUCTWORK SHALL IN NO CASE BE LIGHTER THAN 24 GAUGE STEEL.
8. PROVIDE IDENTIFICATION OF THE LOCATION OF ALL FIRE AND BALANCING DAMPERS. IDENTIFICATION TAGS SHALL BE AFFIXED TO THE WALLS OR CEILINGS AND SHALL BE VISIBLE FROM THE OCCUPIED SPACE.
9. ALL PIPING SHALL BE SUPPORTED WITH COMMERCIAL MANUFACTURED CLAMPS. PROVIDE ISOLATION SLEEVES TO PREVENT CONTACT OF DISSIMILAR METALS.
10. INSTALL ALL EQUIPMENT IN STRICT ACCORDANCE WITH THE MANUFACTURERS' INSTRUCTIONS AND RECOMMENDATIONS.
11. CONTRACTOR TO PROVIDE ALL SUPPLEMENTARY STEEL REQUIRED TO SUSPEND MECHANICAL EQUIPMENT AND MATERIALS.
12. PENETRATIONS THROUGH FIRE RATED ASSEMBLIES, PENETRATIONS FOR PIPES, CONDUITS, OR OTHER PURPOSES THROUGH ASSEMBLIES (FLOORS, ROOF, WALLS, PARTITIONS, ETC.) WITH A REQUIRED FIRE RESISTANCE RATING FIRE STOP MATERIAL. FIRE STOP SEALANTS SHALL BE UL LISTED. APPLY FIRE STOP AS RECOMMENDED BY THE MANUFACTURER AND IN ACCORDANCE WITH ITS LISTING TO MEET OR EXCEED THE FIRE RATING OF THE ASSEMBLY IN WHICH IT IS INSTALLED.
13. ALL INSULATION SHALL BE FIRE RATED IN ACCORDANCE WITH ASHRAE 90A 50/25 SMOKE DEVELOPMENT AND FLAME SPREAD REQUIREMENTS. INSULATION "R" VALUES SHALL COMPLY WITH THE FLORIDA ENERGY CODE. "R"MINIMUM 6.0.
14. MOUNT ALL SPACE THERMOSTATS AND/OR SENSORS 4 FEET ABOVE THE FLOOR, UNLESS OTHERWISE NOTED.
15. INSTALL DUCT MOUNTED SMOKE DETECTORS (FURNISHED BY DIVISION 16) IN SUPPLY AIR DUCTWORK CONNECTED TO EACH A/C UNIT. WIRE DUCT MOUNTED SMOKE DETECTORS SUCH THAT ACTIVATION WILL DE–ENERGIZE AIR HANDLING UNIT FAN. LOCATE DUCT MOUNTED SMOKE DETECTORS THE REQUIRED DISTANCE DOWNSTREAM FROM BENDS OR INLETS AS RECOMMENDED BY THE MANUFACTURER.
16. AIR HANDLING UNITS SHALL BE SHUT DOWN BY THE FIRE ALARM SYSTEM. WIRE THROUGH FIRE ALARM RELAY CONTACT (PROVIDED BY THE FIRE ALARM CONTRACTOR) TO SHUT DOWN AIR HANDLING UNITS UPON FIRE ALARM ACTIVATION. COORDINATE WITH FIRE ALARM CONTRACTOR ACCORDINGLY.
17. SEE PLANS FOR EXACT LOCATION OF ALL AIR DEVICES LOCATED IN THE CEILING.
18. SEE ELECTRICAL DRAWINGS FOR ELECTRICAL CHARACTERISTICS OF MECHANICAL EQUIPMENT.
19. UNLESS OTHERWISE NOTED, INSTALL ALL DUCTWORK AS HIGH AS POSSIBLE, TIGHT TO THE BOTTOM OF THE STRUCTURE. COORDINATE ELEVATION AND LOCATION WITH RAIN LEADERS, WATER PIPING, PLUMBING VENTS, AND MAJOR ELECTRICAL CONDUITS OR CABLE TRAY.
20. PROVIDE MOTORIZED DAMPERS IN ALL OUTSIDE AIR DUCTS.
21. PROVIDE DRAIN P–TRAPS IN THE CONDENSATE LINES AT ALL AIR HANDLING UNITS.
22. ROUTE FULL SIZE (MIN. 1") COPPER DRAIN PIPE FROM EACH AHU DRAIN PAN TO RESPECTIVE FLOOR DRAIN. INSULATE WITH 3/4" ARMSTRONG "ARMAFLEX" INSULATION.
23. THE WORK INDICATED ON THESE DRAWINGS IS GENERALLY DIAGRAMMATIC AND IS INTENDED TO CONVEY THE SCOPE OF WORK AND INDICATE THE GENERAL ARRANGEMENT OF DUCTWORK AND EQUIPMENT, ETC.
24. ALL WORK IS TO BE FREE OF DEFECTS IN WORKMANSHIP AND MATERIALS FOR A PERIOD OF THREE YEARS FROM DATE OF FINAL ACCEPTANCE. ALL DEFECTS WHICH DEVELOP OR ARE DISCOVERED WITHIN THIS PERIOD SHALL BE REPAIRED BY THE CONTRACTOR TO THE SATISFACTION OF THE OWNER AT NO ADDITIONAL COST TO THE OWNER.
25. UPON COMPLETION OF THE WORK UNDER THIS CONTRACT, THE CONTRACTOR SHALL REMOVE ALL TOOLS, APPLIANCES, SURPLUS MATERIALS, AND SCRAP. ALL IDENTIFIED EXISTING EQUIPMENT TO BE REMOVED SHALL BE TURNED OVER TO THE OWNER.
26. WHEN CONFLICTS OCCUR IN SPECIFICATIONS OR IN THE DRAWINGS, OR BETWEEN EITHER, THE ITEMS OF GREATER QUANTITY OR HIGHER COST SHALL BE PROVIDED.
27. THE CONTRACTOR SHALL COORDINATE WORK WITH OTHER TRADES IN ORDER TO AVOID CONFLICTS.
28. PROVIDE BALANCING DAMPER IN EACH BRANCH CONNECTION.
29. ALL DUCTWORK INSTALLED ON THIS PROJECT SHALL BE OF SHEET METAL CONSTRUCTION. DUCTWORK SHALL BE FABRICATED AND CONSTRUCTED IN ACCORDANCE WITH SMACNA REQUIREMENTS.
30. ALL GROUND ATTACHED EQUIPMENT AND APPURTENANCES INCLUDED IN THE SCOPE OF THIS PROJECT ARE REQUIRED TO BE SECURED TO THE UNDERLYING BUILDING STRUCTURE. THE FASTENING SYSTEMS SHALL BE DESIGNED TO WITHSTAND A 140 MPH WIND LOAD.
31. CONTRACTOR SHALL PROVIDE TO LOCAL AHJ OR PERMITTING AGENCY A COPY OF ALL MAJOR EQUIPMENT CUTS SHEETS AT TIME OF APPLICATION.
32. NO ENERGY CALCULATIONS ARE BEING PROVIDED FOR THE REPLACEMENT SYSTEMS. ALL SYSTEMS MEET CURRENT FL ENERGY CODE STANDARDS.

NOTE:

THESE ARE STANDARD SYMBOLS AND MAY NOT ALL APPEAR ON THE PROJECT DRAWINGS; HOWEVER WHEREVER THE SYMBOL APPEARS ON THE PROJECT DRAWINGS, THE ITEM SHALL BE PROVIDED AND INSTALLED.

JOHN D. CANDER — No. 34468 — STATE OF FLORIDA — REGISTERED PROFESSIONAL ENGINEER

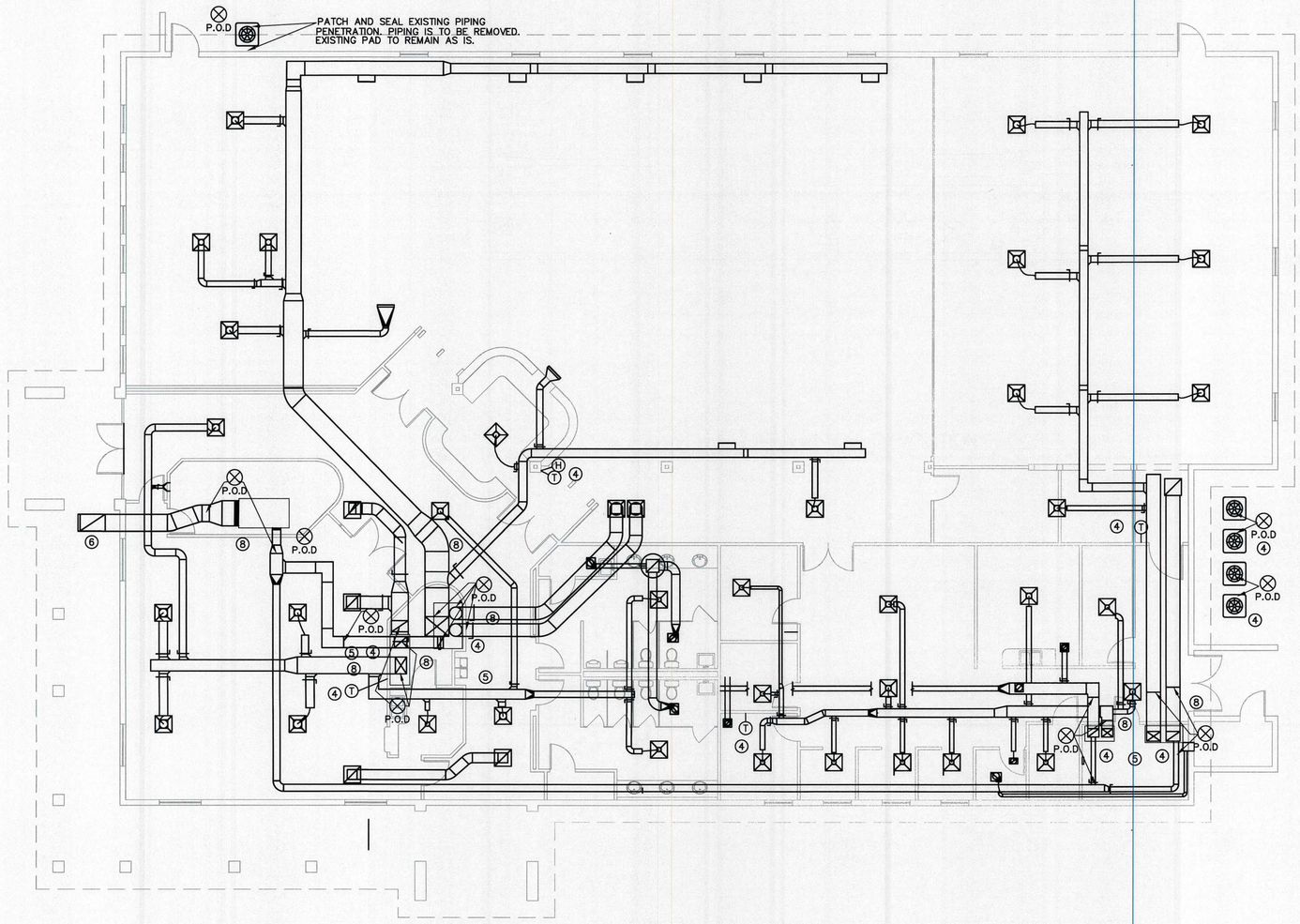
ATP ENGINEERING SOUTH, PE
BRADENTON, FLORIDA
ENGR. BUSINESS #8908
941-751-6485

REV #	DESCRIPTION	DATE

MANATEE COUNTY
SOUTH COUNTY LIBRARY HVAC REPLACEMENT
6081 26TH STREET WEST
BRADENTON, FL 34207
IFAS# W1400163, WA #30

DRAWING TITLE: MECHANICAL LEGEND AND GENERAL NOTES

FILE: SOUTH CO LIBRARY HVAC	
JOB NO.:	2014.14
DATE :	06/17/2014
PLOT SIZE:	1:1
DRAWN BY:	DC
CHECKED BY:	JDC
SHEET No.:	M1.0



GENERAL NOTES:

1. REFER TO PLANS AND SPECIFICATIONS FOR ADDITIONAL SCOPE OF WORK.
2. CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS PRIOR TO START OF WORK. ANY QUESTIONS SHALL BE ANSWERED BY THE PROJECT MANAGER PRIOR TO START WORK.
3. ITEMS NOTED AS EXISTING ARE TO REMAIN.
4. DISCONNECT EXISTING AHU, AND CONDENSER COMPLETE, REMOVE OR REUSE REFRIGERANT LINE SETS IF IT THEY CORRECT SIZE. CAREFULLY RECYCLE ALL REFRIGERANT TO TANKS AND TURN OVER TO OWNER IF REQUESTED. DISCONNECT ALL CONDENSATE PIPING AND CLEAN. RECYCLE ALL REFRIGERANT LINE SETS NOT USED. REMOVE THERMOSTATS AND REUSE LOCATIONS WHERE SHOWN.
5. VERIFY DUCT SIZES ON ALL CONNECTIONS PRIOR TO RECONNECTION.
6. CLEAN EXISTING LOUVER AND REUSE.
7. REMOVE UNIT COMPLETE. PREPARE DUCT FOR NEW TRANSITION CONNECTIONS.
8. CAREFULLY REMOVE AND REINSTALL CEILING IN AREA. IF DAMAGED, REPLACE IN KIND CEILING TO MATCH ORIGINAL.

N

1 / M2.0 **MECHANICAL DEMOLITION FLOOR PLAN**

1/8"=1'-0"

ATP ENGINEERING SOUTH, PL
BRADENTON, FLORIDA
ENGR. BUSINESS #8808
941-751-6485

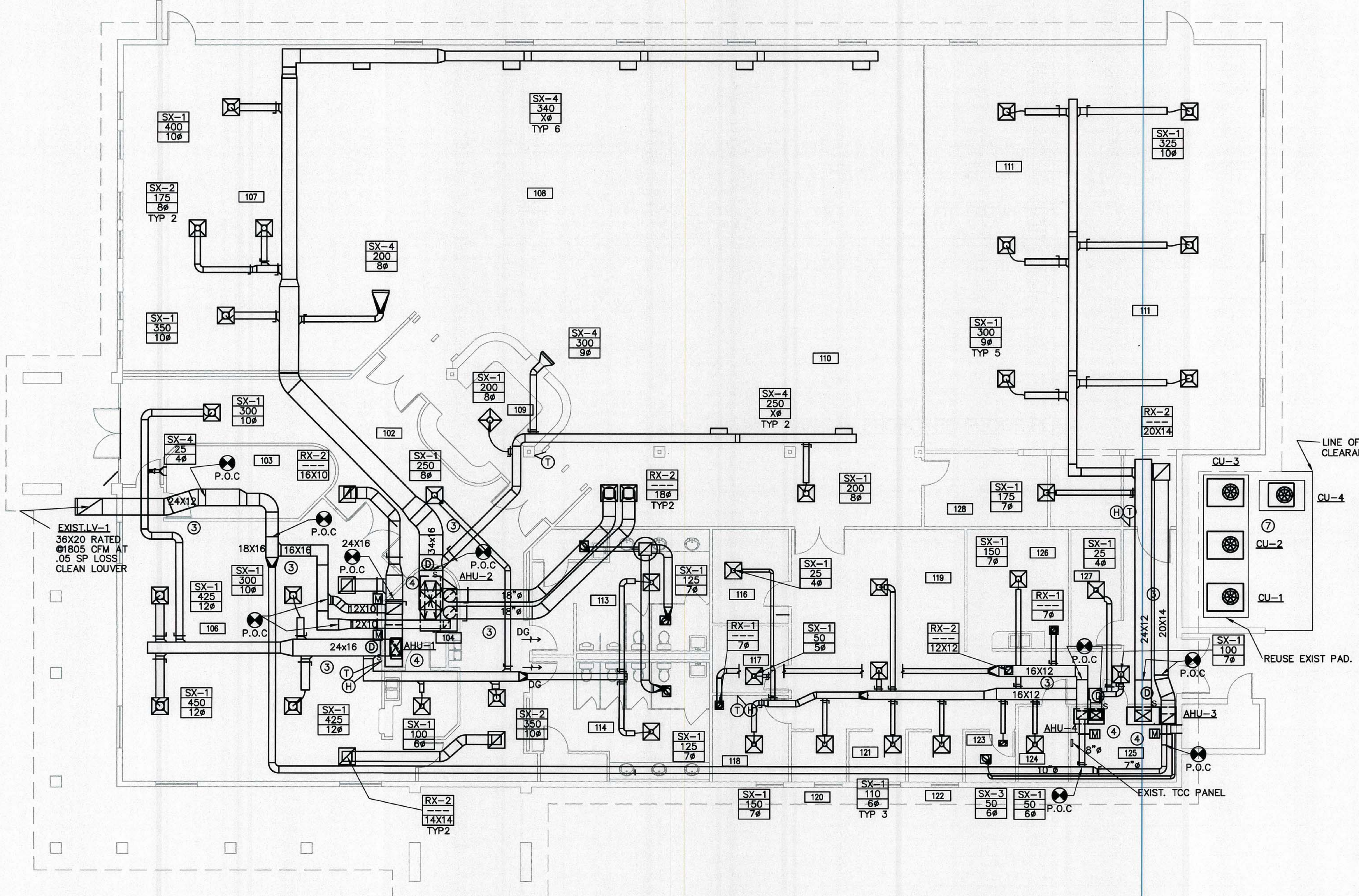
REV.#	DESCRIPTION	DATE

MANATEE COUNTY
SOUTH COUNTY LIBRARY HVAC REPLACEMENT
6081 26TH STREET WEST
BRADENTON, FL 34207
IFAS# W1400163, WA #30

DRAWING TITLE:
MECHANICAL
DEMOLITION PLAN

FILE: SOUTH CO LIBRARY HVAC	
JOB NO.:	2014.14
DATE :	06/17/2014
PLOT SIZE:	1:1
DRAWN BY:	JC
CHECKED BY:	JDC

SHEET No.:
M2.0



N

1 M2.1 **MECHANICAL PROPOSED FLOOR PLAN**
1/8"=1'-0"

GENERAL NOTES:

1. REFER TO PLANS AND SPECIFICATIONS FOR ADDITIONAL SCOPE OF WORK.
2. CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS PRIOR TO START OF WORK. ANY QUESTIONS SHALL BE ANSWERED BY THE PROJECT MANAGER PRIOR TO START WORK.
3. ITEMS NOTED AS EXISTING ARE TO REMAIN.
4. PROVIDE AND INSTALL BOTTOM PLENUM, "L SHAPE" ON AHU, 25X90X18 TALL MAX. PLENUM. FOR AHU 1. RUN RETURN TO TOP OF PLENUM ON SIDE OF UNIT. TIE OA TO RETURN DUCT.

   PROVIDE AND INSTALL BOTTOM PLENUM, 79X 53X18 TALL MAX FOR AHU 2. MODIFY ONE CORNER TO FIT ROOM. RUN RETURNS TO BACK SIDE OF UNIT, TIE OA INTO PLENUM.

   PROVIDE AND INSTALL BOTTOM PLENUM, 72X25X18 TALL MAX FOR AHU 3. RUN RETURN DOWN SIDE OF UNIT. TIE OA DUCT INTO RETURN.

   PROVIDE AND INSTALL BOTTOM PLENUM, 44X24X18 TALL MAX FOR AHU 4. TIE OA INTO RETURN.

   VERIFY DUCT SIZES ON ALL CONNECTIONS PRIOR TO NEW CONNCETION. PROVIDE FLEXIBLE CONNECTIONS TO PLENUMS AND UNIT DISCHARGE.
5. CAREFULLY REMOVE AND REINSTALL CEILING IN AREA. IF DAMAGED, REPLACE IN KIND CEILING TO MATCH ORIGINAL.
6. VERIFY SUPPLY & RETURN DUCT OUTLET CONNECTIONS ON ALL UNITS PRIOR TO FIT UP.
7. FIELD LOCATE UNIT AND POUR NEW 6" CONCRETE PAD FOR UNIT. REMOVE CHAINLINK FENCE. PROVIDE NEW FENCE AND LOCKALBLE GATE FOR THIS UNIT.

SEAL: JOHN D. CAMDEN, LICENSE No. 53458, STATE OF FLORIDA, PROFESSIONAL ENGINEER

ATP ENGINEERING SOUTH, PL
BRADENTON, FLORIDA
ENGR. BUSINESS #6908
941-751-6485

REV.#	DESCRIPTION	DATE

MANATEE COUNTY
SOUTH COUNTY LIBRARY HVAC REPLACEMENT
6081 26TH STREET WEST
BRADENTON, FL 34207
IFAS# W1400163, WA #30

DRAWING TITLE:
MECHANICAL PROPOSED PLAN

FILE:	SOUTH CO LIBRARY HVAC
JOB NO.:	2014.14
DATE :	06/17/2014
PLOT SIZE:	1:1
DRAWN BY:	JC
CHECKED BY:	JDC
SHEET No.:	M2.1

SPLIT SYSTEM A/C SCHEDULE

CONDENSING UNIT	---	CU-1 MEETING	CU-2 STACKS	CU-3 TALKING BLKS	CU-4 ADMIN.
CAPACITY	TONS	10	12.5	6	3.5
NO. OF COMPRESSORS	---	2	2	1	1
COMPRESSOR RLA/LRA	AMPS	16.0/110	22.4/149	22.4/149	19.9/109
NO. OF CONDENSER FANS	---	1	1	1	1
CONDENSER FAN MOTOR	HP	5.0 AMP	5.0 AMP	5.0 AMP	1.0 AMP
ELECTRICAL	V/PH/HZ	208/3/60	208/3/60	208/3/60	208/1/60
MCA/MOCP	AMPS	41/45	55.4/70	31.1/40	26/45
E.E.R.	---	11.2	11.0	11.2	14.5 SEER
WEIGHT	LBS.	510	543	365	176
MANUFACTURER	---	TRANE	TRANE	TRANE	TRANE
MODEL NO.	---	TTA120E3	TTA150E3	TTA073D3	4TTR3042D1000
AIR HANDLING UNIT	---	AHU-1	AHU-2	AHU-3	AHU-4
COOLING CAPACITY	MBH	117.16	144.9	70.19	43.4
SENSIBLE CAPACITY	MBHJ	77.4	100.8	50.39	30.3
SUPPLY AIR	CFM	3200	4000	2000	1225
OUTSIDE AIR	CFM	755	625	160	212
ENTERING AIR (DB/WB)	°F/°F	78.4/67.7	77/65.8	75.2/63.8	80/67
LEAVING AIR (DB/WB)	°F/°F	57/56	55/54	54/52	56/55
FAN MOTOR	HP	2.0	3	1	.75
STATIC PRESS. (EXTERNAL/TOTAL)	---	.5 ESP	.5 ESP	.5 ESP	.4 ESP
ELECTRICAL	V/PH/HZ	208/3/60	208/3/60	208/3/60	208/1/60
MCA/MOCP	AMPS	53/60	67/70	59/70	51/60
ELECTRIC HEAT	KW	11.25	14.96	8.65	7.2
FILTER TYPE	---	2"TA MERV 8	2"TA MERV 8	2"TA MERV 8	2"TA MERV 8
WEIGHT	LBS.	429	730	360	X
MANUFACTURER	---	TRANE	TRANE	TRANE	TRANE
MODEL NO.	---	TWE120	TWE150	TWE090	GAM5B0C48M

NOTES:
1. ALL ELECTRIC HEAT IS APPLIED HEAT FOR VOLTAGE OF SYSTEM ON SCHEDULE. ALL REFRIGERATION CIRCUITS ARE TO BE CHECKED BY MFR- R410A.(2) ⅞"L, (2)1 ⅜"S, 1"CD AHU-1 ,(2) ⅞"L,(2) 1 ⅜"S, 1"CD AHU-2, (1) ⅞"L, 1 ⅜"s, ⅞" CD AHU-3, ⅜ " L , ⅞" S, ⅞"CD AHU-4.
2. AIR HANDLER WITH ELECTRIC HEAT, CONTRACTOR, PROGRAMMABLE TEMPERATURE/HUMIDITY CONTROL MASTER THERMOSTAT/HUMIDSTAT SENSOR TIED TO COUNTY ALC SYSTEM, REFRIGERANT VALVES, FILTER DRIER, LINE SETS, PLENUM BOX , FLEXIBLE CONNECTIONS, SMOKE DETECTOR BY EC, RELAY PROVIDED BY MC., VIBRATION ISOLATION ON CONDENSING UNIT, BY MANUFACTURER, DISCONNECT BY EC. MOTORIZED DAMPER ON OUTSIDE AIR. CONCRETE PAD , PIPE & UNIT SUPPORTS FOR UNIT BY M.C., DRAIN PAN UNDER UNIT BY M.C., CONDENSATE CUT OFF SWITCH BY MC.
3. PROVIDE TIME DELAY IN RESTART OF SYSTEM ON POWER OUTAGES OF MIN. 5 MINUTES.
4. THE NEW UNITS ARE TO BE CONTROLLED BY ROOM HUMIDITSTAT AND THERMOSTAT CONTROL .PROVIDE AND INSTALL RETURN AIR TEMPERATURE SENSOR IN RETURN AIR DUCT, NOT MIXING BOX.
5. PROVIDE AND INSTALL RAWAL VALVES FOR PARTIAL LOAD CONDITIONS WITH SET POINT AT 55.5 DEGREES DISCHARGE AND TO OPERATE OFF OF HUMIDITY READINGS ON WALL THERMOSTAT/HUMIDISTAT FOR SPACE HUMIDITY.

OUTDOOR AIR LOAD CALCULATIONS

(FMC TABLE 403.3)
431 SF ENTRY X .06 CFM/SF = 25.86 CFM
372 SF LOBBY X $^{19}/_{1000}$ X 5 + .06 CFM/SF= 40.92 CFM
600 SF CLOSET & MECH & MAINT X .06 CFM/SF = 36 CFM
998 SF MEETING X $^{59}/_{1000}$ X 5 +06 CFM/SF = 309.8 CFM
72 SF KITCHENETTE X$^{59}/_{1000}$ X5 + .12CFM/SF= 26.6 CFM
677.5 SF LIBRARY CHILDRENS, ADULT, REFERENCE X$^{19}/_{1000}$ X 5 +.12 CFM /SF = 881 CFM
255 SF RECEPTION DESK X $^{39}/_{1000}$ X 5 +.06 CFM/SF=53.5 CFM
144 SF WORKROOM X$^{29}/_{1000}$ X 10 +.12 CFM/SF = 53.3 CFM
342 SF OFFICES X $^{1}/_{1000}$ X 5 + .06 CFM/SF = 29.07 CFM
168 SF LOUNGE X 5 X $^{59}/_{1000}$ + .12 CFM/SF = 62.1 CFM
RESTROOM EXHAUST M&W 50 CFM / WC OR UR
8 X 50 = 400 CFM REQUIRED
OA CFM REQUIRED = 1518.1 CFM
OA SUPPLIED = 1752 CFM
SPACE OA CFM = 1752 CFM (Voz = Vbz/ 1.0)
EXHAUST INSTALLED = 650 CFM EXIST.

HVAC LOAD CALCULATIONS SUMMARY

	ZONE 1	ZONE 2	ZONE 3	ZONE 4
SIZING METHOD	CARRIER E20II	CARRIER E20II	CARRIER E20II	CARRIER E20II
AREA (SQ. FEET)	2920	4909.5	2267	846
TOTAL COOLING REQUIRED W/ OUTSIDE AIR (MBH)	117.2	131.8	70.1	43
OUTDOOR DRY BULB USED	93	93	93	93
OUTDOOR WET BULB USED	79	79	79	79
RELATIVE HUMIDITY %	55%	52%	52%	55%
INDOOR DRY BULB	74	74	74	74
TOTAL HEATING REQUIRED W/ OUTSIDE AIR (MBH)	36.5	40.4	16.9	14.5
TOTAL SENSIBLE GAIN (MBH)	77.4	92.7	50.4	29.6
TOTAL LATENT GAIN (MBH)	39.8	39.1	19.7	13.4
LB/LB SPECIFIC HUMIDITY ACROSS COIL	.00308	.00205	.00106	.000257

Reference: 503.2 SIZING, 2010 FLORIDA BUILDING CODE – ENERGY

AIR DEVICE SCHEDULE - EXIST. REUSED

NOTE 1

ITEM NO.	S-X1	S-X2	S-X3	S-X4	R-X1	R-X2
TYPE	4 WAY	4 WAY	4 WAY	4 WAY SIDE WALL	EGGCRATE	EGCRATE
MATERIAL	ALUM	ALUM	ALUM	ALUM	ALUM	ALUM
FINISH	WHITE	WHITE	WHITE	WHITE	WHITE	WHITE
ACCESSORIES	OBD	OBD	OBD	OBD	OBD	OBD
MANUFACTURER	AIR GUIDE	AIR GUIDE	AIR GUIDE	AIR GUIDE	AIR GUIDE	AIR GUIDE
MODEL NO.	AVPTOBSR(2)	AVPSOBSR(3)	CBOB(4)	VHOB(5)	RAAGS (6)	RAAGT(7)

NOTES:
1. CLEAN AND REUSE EXISTING GRILLES AND DIFFUSERS. REFER TO PLAN FOR OPENING SIZE.
2. 0-125 CFM 6"ø. 125-300 7"ø, 300-600CFM, 9"-12"ø 24X24 DIFFUSERS.
3. 0-125 CFM 6"ø. 125-300 8-9"ø, 300-600CFM, 10"-12"ø 9X9, 12X12, 15X15 DIFFUSERS.
4. 0-75 CFM 6"ø . 8X4 GRILLE
5. 0-150 CFM 12X4, 14X6 , 150 -300 CFM 14X6,16X8, 300-450 CFM 18X6, 20X8
6. 10X10
7. 22X22

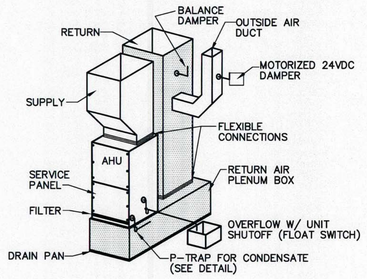
ATP ENGINEERING SOUTH, PL
BRADENTON, FLORIDA
ENGR. BUSINESS #8808
941-751-6485

REV #	DESCRIPTION	DATE

MANATEE COUNTY
SOUTH COUNTY LIBRARY HVAC REPLACEMENT
6081 26TH STREET WEST
BRADENTON, FL 34207
IFAS# W1400163, WA #30

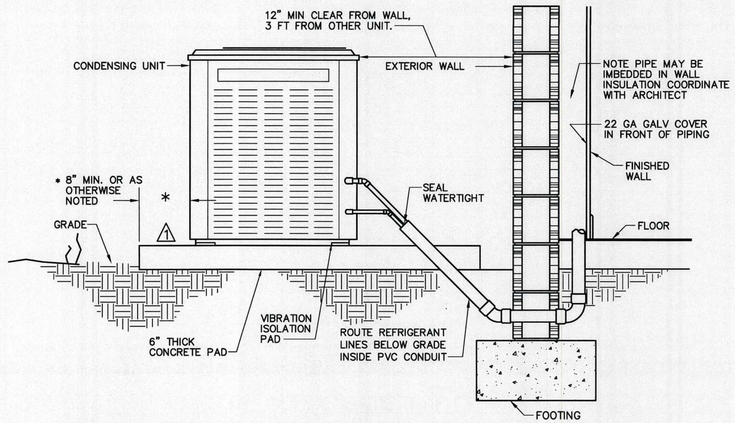
DRAWING TITLE: MECHANICAL SCHEDULES

FILE:	SOUTH CO LIBRARY HVAC
JOB NO.:	2014.14
DATE :	06/17/2014
PLOT SIZE:	1:1
DRAWN BY:	DC
CHECKED BY:	JDC
SHEET No.:	M3.0



1 M4.0 **AIR HANDLING UNIT DETAIL**

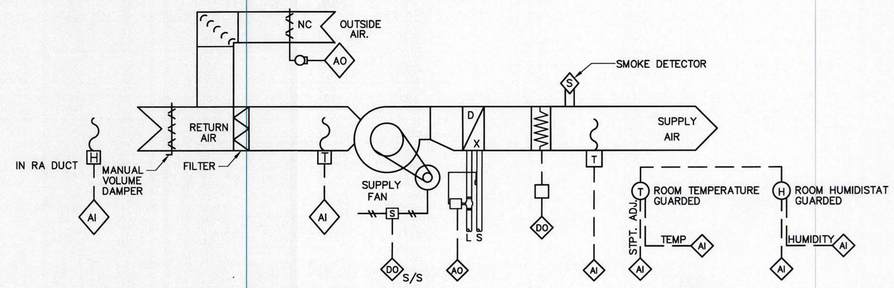
NOT TO SCALE



MFR ISOLATION AT EACH CORNER, TAPCON WITH #12 SCREWS INTO CONCRETE MIN 1", RUN 18 GA STRAP OVER UNIT, TAPCON INTO CONCRETE SAME. COORDINATE LOCATIONS WITH PROJECT MANAGER. USE "RM ENETRPRISES" TIE DOWNSTRAPS. POUR NEW CONCRETE PADS AS NEEDED .

2 M4.0 **CONDENSING UNIT DETAIL**

NOT TO SCALE



SEQUENCE OF OPERATION

FOR EACH CONSTANT AIR HANDLER, DX EXPANSION VALVE SHALL OPERATE TO MAINTAIN THE COOLING ROOM TEMPERATURE SETPOINT. PROVIDE A SPACE TEMPERATURE INPUT TO THE DDC. MAINTAIN THE SPACE COOLING TEMPERATURE SET POINT (75 °F ±0.5 °F – SOFTWARE ADJUSTABLE). PROVIDE A HUMIDISTAT WITH THE SYSTEM.

UPON A DROP IN THE ROOM SPACE TEMPERATURE BELOW THE HEATING SET POINT (71 °F – SOFTWARE ADJUSTABLE) THE ELECTRIC HEATING SHALL BE ENERGIZED AND STAGED TO MAINTAIN THE ROOM HEATING SET POINT ± .5° F. THE HUMIDISTAT SHALL OPERATE THE RAWAL VALVE TO CONTROL SPACE HUMIDITY AT BELOW 50% RH ± 5% FOR PART LOAD CONDITIONS.

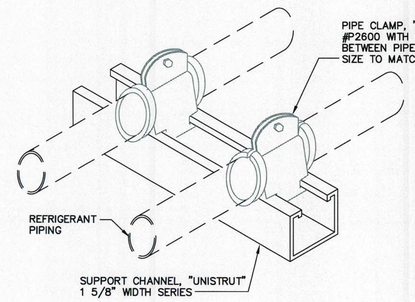
THE UNIT'S FAN SHALL OPERATE AS PER THE USER PROGRAMMABLE SCHEDULE.

THE UNIT OUTSIDE AIR DAMPER SHALL OPEN WHEN THE UNIT IS ON TO A PRESET VOLUME, THE DAMPER SHALL CLOSE WHEN THE UNIT IS OFF.

MOTORIZED OUTSIDE AIR DAMPER IS OPEN WHEN UNIT IS OPERATING MOTORIZED OUTSIDE AIR DAMPER IS CLOSED WHEN UNIT IS OFF. DAMPER IS 24VDC, .6 AMP, BY MC. DUCT DETECTOR TIED TO FAN RELAY BY MC. DRAIN PAN MOISTURE SENSOR BY MC.

3 M4.0 **TYPICAL CONSTANT VOLUME AIR HANDLING UNIT**

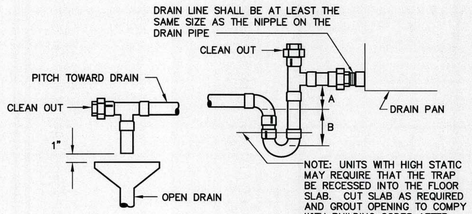
NOT TO SCALE



1. ALL REFRIGERANT PIPING SHALL BE HARD COPPER, TYPE "L" WITH LONG RADIUS ELBOWS.
2. TRAPS SHALL BE SINGLE PIECE, WROUGHT COPPER.
3. INSULATE SUCTION LINE WITH 5/8" ARMAFLEX INSULATION FULL LENGTH. DO NOT SPLIT DURING INSULATION BUTT JOINTS WITH ARMAFLEX SEALANT, AND APPLY ARMAFLEX PRESERVATIVE ON ALL INSULATION EXTERIOR. WHERE REFRIGERANT OR CONDENSATE PIPING RUNS THROUGH RETURN AIR PLENUMS, INSULATION SHALL BE FIRE-RATED ARMAFLEX "AP" 25/50.
4. ROUTING OF ALL REFRIGERANT PIPING SHALL BE PLUMB AND SHALL RUN TRUE WITH THE BUILDING LINES. HORIZONTAL RUNS OF SUCTION LINES OVER 25' SHALL BE PITCHED "ONE-HALF" BUBBLE TOWARD THE COMPRESSOR, FOR OIL RETURN.
5. SUPPORT OF ALL PIPING AT COMPRESSORS, CONDENSERS, AND AIR HANDLING UNITS SHALL BE AS SHOWN ABOVE. SUPPORT OF PIPING IN BETWEEN THE UNITS SHALL BE WITH STRAP MATERIAL, USING ARMAFLEX INSULATION AS SADDLES. NO METAL-TO-METAL CONTACT.
6. BRAZE REFRIGERANT PIPING WITH FLOW OF DRY NITROGEN DURING BRAZING.
7. SOLDER SHALL BE 15% SILVER "SIL-FOS" OR EQUAL.
8. CHANGE FILTER-DRIER CORES AFTER 30 DAYS OF OPERATION.
9. VERIFY ALL LINE SIZES AND LENGTHS PRIOR TO BID WITH THE MANUFACTURER.

4 M4.0 **REFRIGERANT DETAIL**

NOT TO SCALE

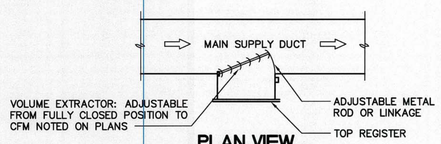


UNIT TYPE	A	B
DRAW THRU	X + 1"	2"
BLOW THRU	1" MIN.	2.0 X

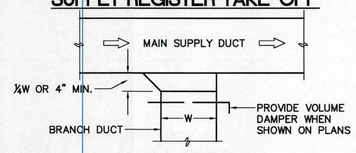
WHERE X = STATIC PRESSURE IN PAN

5 M4.0 **AIR HANDLING UNIT CONDENSATE TRAP DETAIL**

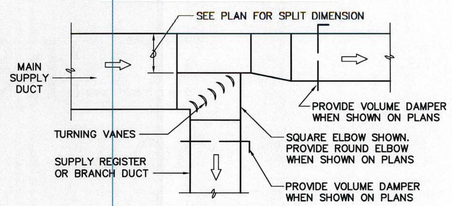
NOT TO SCALE



PLAN VIEW
SUPPLY REGISTER TAKE-OFF



PLAN VIEW
BRANCH DUCT TAKE-OFF



PLAN VIEW
AIR SPLIT TYPE DUCT TAKE-OFF

6 M4.0 **SUPPLY DUCT TAKE-OFFS**

NOT TO SCALE

ATP ENGINEERING SOUTH, PL
BRADENTON, FLORIDA
ENGR. BUSINESS #8908
941-751-6485

REV#	DESCRIPTION	DATE

MANATEE COUNTY
SOUTH COUNTY LIBRARY HVAC REPLACEMENT
6081 26TH STREET WEST
BRADENTON, FL 34207
IFAS# W1400163, WA #30

DRAWING TITLE: MECHANICAL DETAILS

FILE:	SOUTH CO LIBRARY HVAC
JOB NO.:	2014.14
DATE :	06/17/2014
PLOT SIZE:	1:1
DRAWN BY:	DC
CHECKED BY:	JDC
SHEET No.:	M4.0