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ANNEX BUILDING - ELECTRICAL SITE LIGHTING PLAN

MANATEE COUNTY BUILDING OPERATION FACILITY

4410 66TH STREET WEST, BRADENTON FLORIDA

REVISIONS

PROJECT NO: 2012-46
DATE: 11/12/13
DRAWN BY: CMD
CHK'D BY: JDC

PRELIMINARY NOT FOR CONSTRUCTION

JOHN D. CAMDEN
FL#53458

CAD DWG FILE: E202 Lighting.DWG

1/E202 LIGHTING PLAN
1/4" = 1'-0"

ATP ENGINEERING SOUTH, PL
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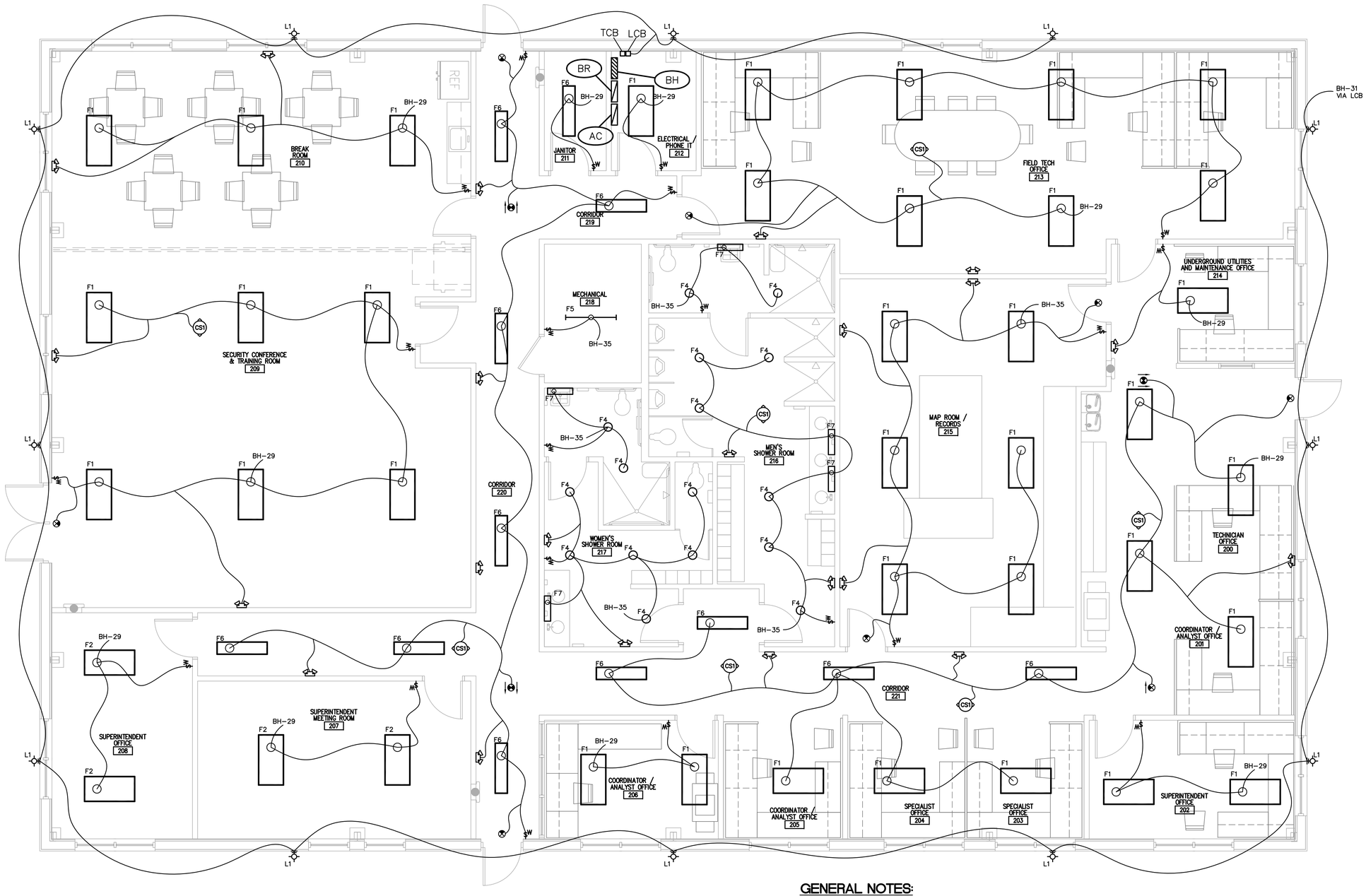
BRADENTON, FLORIDA 34203
ENGR. BUSINESS #8908
941-751-6485

SHEET
E204



1 E252 **LIGHTING PLAN**

1/4" = 1'-0"

GENERAL NOTES:

ALL EMERGENCY FIXTURES AND EXIT LIGHTS SHALL BE CONNECTED TO THE UN-SWITCHED PORTION OF THE CIRCUIT. (HOT ALL OF THE TIME).

WALL SWITCHES (^{SW}) TO BE LEVITON OCCUPANCY SENSORS OSS10-IDW, SINGLE-POLE, 180 DEGREE, 1200 SQ. FT. COVERAGE, PASSIVE INFRARED WALL SWITCH OCCUPANCY SENSOR, COMMERCIAL GRADE, OR APPROVED EQUAL. MATCH COLOR WITH EXISTING SWITCHES.

CEILING MOUNT (CS1) TO BE LEVITON OCCUPANCY SENSORS OSC10-M, MULTI-TECHNOLOGY, 360 DEGREE, 1000 SQ. FT.COVERAGE, SELF-ADJUSTING, CEILING MOUNT OCCUPANCY SENSOR, COMMERCIAL GRADE - WHITE OR APPROVED EQUAL. POWER PACKS SHALL MATCH SENSOR MANUFACTURER. ENSURE THAT THERE ARE NO BLIND SPOTS IN THE COVERAGE OF THE CEILING MOUNTED SENSORS,

DIMMER SWITCHES TO BE LEVITON 82000 SERIES 2000W, SLIDE TYPE WITH MANUAL ON/OFF, WHITE, OR APPROVED EQUAL.

PROVIDE VOLTAGE DROP CALCULATIONS FOR EXTERIOR LIGHTING CIRCUITS.

CSx — DIRECTION OF AIM

2 E252 **CEILING OCC. SENSOR**

NOT TO SCALE

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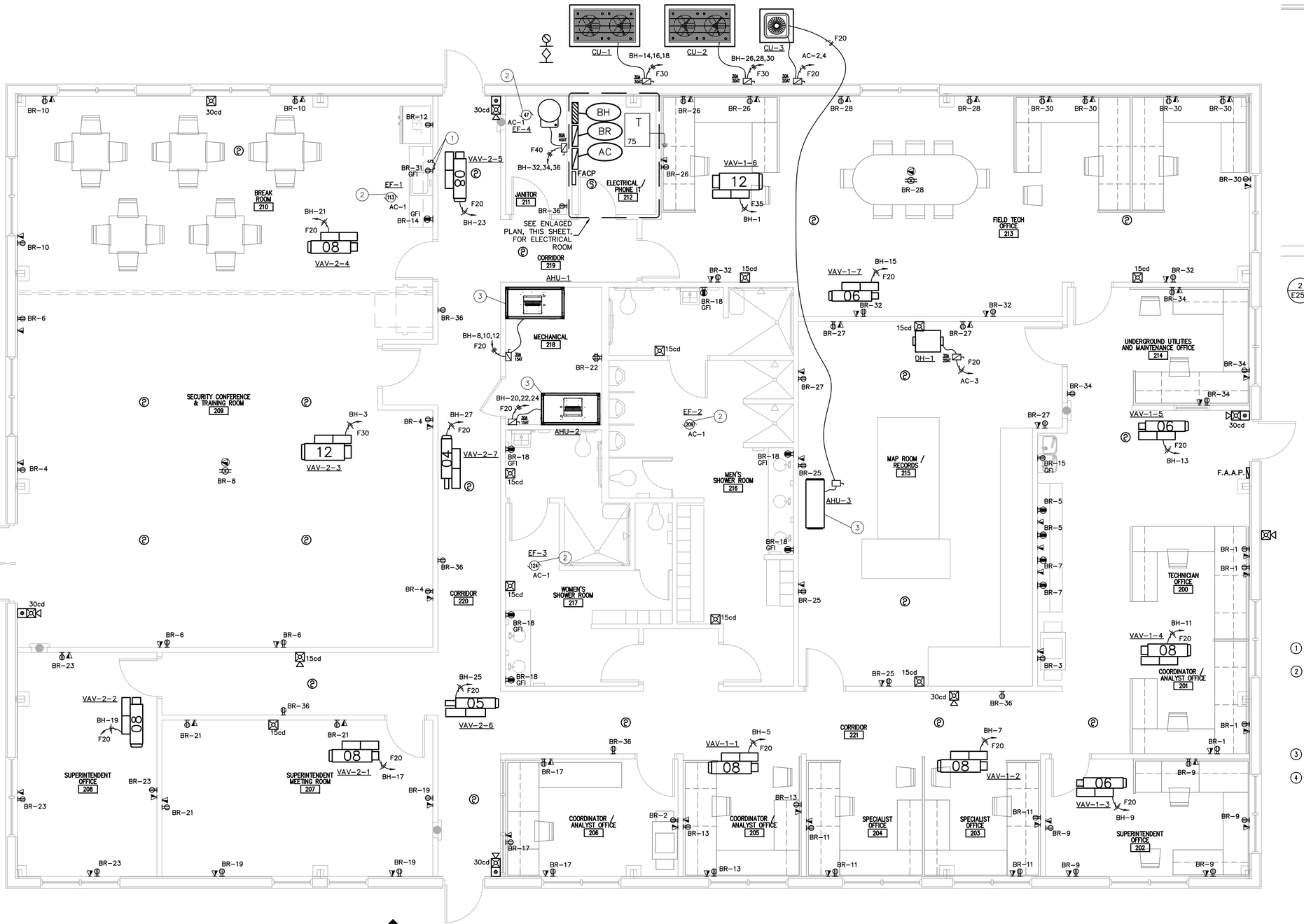

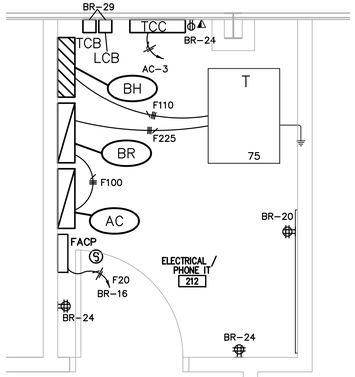

2 / E253 ENLARGED ELECTRICAL RM

1/2" = 1'-0"

PLAN NOTES:

1. LOCATE GFCI RECEPTACLE UNDER COUNTER FOR DISPOSAL, SWITCH SHALL BE ABOVE COUNTER.
2. EXHAUST FAN W/ DISCONNECT SWITCH AND WALL BOX SWITCH TO BE PROVIDED BY MC. PROVIDE CONDUITS, CONDUCTORS, BACKBOXES, ETC., AS REQUIRED TO MAKE ALL ELECTRICAL CONNECTIONS. CONNECT TO CIRCUIT SHOWN. COORDINATE WALL SWITCH LOCATION WITH LIGHTING WALL SWITCHES UNLESS OTHERWISE NOTED. VERIFY FINAL LOCATION OF FAN WITH MC.
3. PROVIDE (1) 1" C WITH PULLSTRING FOR CONTROLS FROM EACH AHU TO CORRESPONDING CU
4.

1 / E253 POWER AND SYSTEMS PLAN

1/4" = 1'-0"

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OPERATIONS BUILDING - ELECTRICAL POWER AND SYSTEMS PLAN

MANATEE COUNTY BUILDING OPERATION FACILITY

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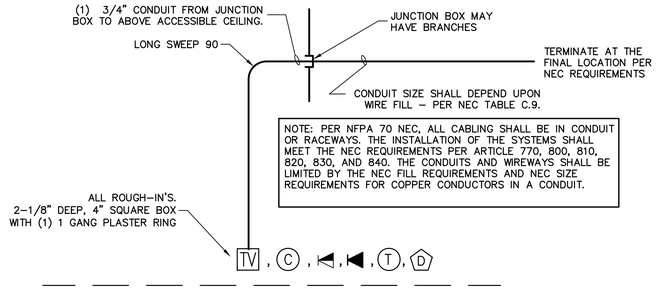
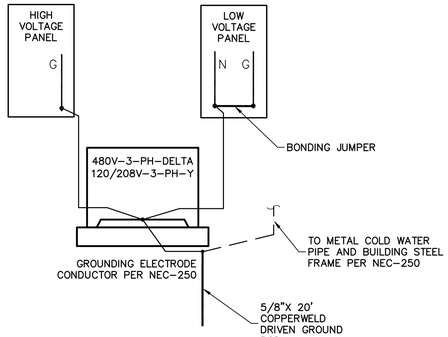


6 E254 **LOW VOLTAGE ROUGH-IN**
NOT TO SCALE



7 E254 **STEP-DOWN TRANSFORMER GROUNDING DETAIL**
NOT TO SCALE

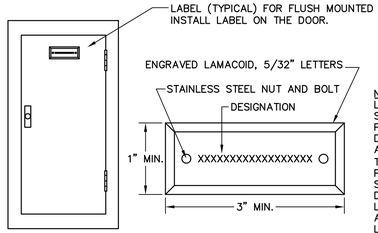
LIGHT FIXTURE SCHEDULE

TYPE	DESCRIPTION	VOLT	LAMP NUMBER AND TYPE	MOUNT	LENS	SERIES	ACCEPTABLE MANUFACTURERS	REMARKS
F1	NOMINALLY 2'X4'X4" DEEP TROFFER, SPECIFICATION GRADE, DIE-FORMED CODE GAUGE STEEL HOUSING, FLUSH STEEL HINGE AND LATCH DOOR, BAKED WHITE ENAMEL FINISH WITH MINIMUM 85% REFLECTANCE.	277	(2) 32W T8	CEILING RECESSED LAY-IN	PATTERN NO. 12, 0.125" NOMINAL PRISMATIC ACRYLIC	GC8 SP8 4PS EP	METALUX LITHONIA COLUMBIA H.E. WILLIAMS	ELECTRONIC BALLAST
F2	NOMINALLY 2'X4'X4" DEEP TROFFER, SPECIFICATION GRADE, DIE-FORMED CODE GAUGE STEEL HOUSING, FLUSH STEEL HINGE AND LATCH DOOR, BAKED WHITE ENAMEL FINISH WITH MINIMUM 85% REFLECTANCE.	277	(3) 32W T8	CEILING RECESSED LAY-IN	PATTERN NO. 12, 0.125" NOMINAL PRISMATIC ACRYLIC	GC8 SP8 4PS EP	METALUX LITHONIA COLUMBIA H.E. WILLIAMS	(2) ELECTRONIC BALLAST FOR DUAL LEVEL SWITCHING
F3	WALL BRACKET, NOMINAL 2' LONG X 8" DEEP. EXTRUDED ALUMINUM HOUSING W/ HIGH IMPACT INJECTION MOLDED END CAPS. HOUSING AND END CAPS TO HAVE BRUSHED ALUMINUM FINISH.	277	(2)17W T8	WALL	PATTERN NO. 12, 0.125" NOMINAL PRISMATIC ACRYLIC	BAU W PR WMA	METALUX LITHONIA COLUMBIA H.E. WILLIAMS	ELECTRONIC BALLAST
F4	NOMINAL 6" APERTURE, COMMERCIAL GRADE, LENSED DOWN LIGHT WITH CLEAR, LOW IRIDESCENT ALZAK REFLECTOR. SHOWER TRIM, LISTED FOR WET LOCATIONS.	277	(2) 26W DDT	CEILING RECESSED DRYWALL	CLEAR FRESNEL	CD6S LF6N LF6 IFHC6	PORTFOLIO LITHONIA PRESCOLITE INTENSE	ELECTRONIC BALLAST
F5	4' FLUORESCENT INDUSTRIAL STRIP, DIE FORMED STEEL CHANNELS WITH HIGH GLOSS BAKED ENAMEL FINISH, AND SOLID TOP SYMMETRICAL REFLECTOR AND WIRE GUARDS.	120	(2)32W T8	CEILING SURFACE	N/A	SNF C CS T	METALUX LITHONIA COLUMBIA DAY-BRITE	ELECTRONIC BALLAST SUPPLY WIRE GUARDS
F6	NOMINALLY 1'X4' TROFFER, SPECIFICATION GRADE, DIE-FORMED CODE GAUGE STEEL HOUSING, FLUSH STEEL HINGE AND LATCH DOOR, BAKED WHITE ENAMEL FINISH WITH MINIMUM 85% REFLECTANCE.	277	(1) 32W T8	CEILING RECESSED LAY-IN	PATTERN NO. 12, 0.125" NOMINAL PRISMATIC ACRYLIC	GC SP8 4PS EP	METALUX LITHONIA COLUMBIA H.E. WILLIAMS	ELECTRONIC BALLAST
F7	WALL BRACKET, NOMINAL 2' LONG X 4" DEEP. DIE-FORMED CODE GAUGE STEEL HOUSING, BAKED WHITE ENAMEL FINISH.	277	(2)17W T8	WALL	SMOOTH OPAL ACRYLIC	BC WC W SLF	METALUX LITHONIA COLUMBIA H.E. WILLIAMS	ELECTRONIC BALLAST
L1	LED TRAPEZOID WALLPACK, DIE-CAST ALUMINUM HOUSING, REMOVABLE HINGED DOOR, BRONZE FINISH. TYPE III DISTRIBUTION.	277	NOMINAL 2000 LUMENS, 80CRI/3000K LED	WALL	ACRYLIC	IST WST LED TRP LED	McGRAW EDISON LITHONIA SPAULDING PHILIPS	ELECTRONIC BALLAST
	EMERGENCY BATTERY PACK WITH THERMOPLASTIC HOUSING, SEALED LEAD-CALCIUM BATTERY AND TEST SWITCH FRONT MOUNTED HEADS. UL LISTED FOR DAMP LOCATIONS.	277	(2) 5.4W KRYPTON	WALL	N/A	CC ELM EZ VT	SURE-LITES LITHONIA DUALLITE CHLORIDE	UL LISTED FIVE YEAR WARRANTEE.
	EXIT LIGHT, THERMOPLASTIC HOUSING, SINGLE OR DOUBLE FACE AS INDICATED ON DRAWINGS. UNIVERSAL SURFACE MOUNTING, DIRECTIONAL ARROW PANEL, STROKE STENCIL FACE RED LETTERS "EXIT". BATTERY BACKUP W/ NICKEL-CADMIUM BATTERY. PUSH TO TEST FEATURE.	277	LED	SURFACE/ CEILING		LPX LQM LX CXX	SURE-LITES LITHONIA DUALITE CHLORIDE	UL LISTED FIVE YEAR WARRANTEE.

NOTES:
1. ALL LIGHT FIXTURES TO BE SUPPLIED WITH LAMPS. LAMPS SHALL BE GE, PHILLIPS, OR OSRAM/SLYVANIA, NO EXCEPTIONS.
2. FLUORESCENT LAMP COLOR SHALL BE 3500 DEGREES K.
3. ALL FLUORESCENT FIXTURES SHALL HAVE ELECTRONIC BALLASTS. A SINGLE BALLAST PER FIXTURE MAY BE USED IF NOT DUAL SWITCHED.
4. ALL BALLASTS SHALL BE DUAL (MULTI) VOLTAGE 120/277 CONNECTED TO THE 277V LEADS UNLESS OTHERWISE NOTED.
5. MASTER – SATELLITE BALLASTS SHALL NOT BE ALLOWED. ALL FIXTURES SHALL HAVE THE BALLAST INTEGRAL WITH THE FIXTURE.
6. TROFFER, 2X2, 2X4, 1X4 ETC. FIXTURES SHALL BE SUPPORTED BY TIE WIRES AT 4 CORNERS OF FIXTURE AND HUNG FROM BUILDING STEEL.
7. INSTALL A MINIMUM OF 2 HURRICANE CLIPS PER TROFFER FIXTURE CONNECTED TO T-GRID.

LIGHTING CONTACTOR / TIMECLOCK SCHEDULE

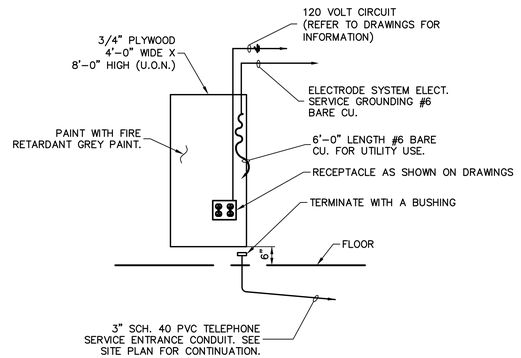
DESIG-NATION	LOCATION	POLES		CONTROL		CONTACT		ENCLOSURE	CIRCUITS CONTROLLED	CONTROL POWER CIRCUIT	REMARKS
		N.O.	N.C.	DEVICE	VOLTAGE	VOLTAGE	AMP RATING				
LCA	Rm 117	4	--	TCA	120	277	30	NEMA 1	AH-20	AR-29	Located in Annex Building Elect Room
TCA	RM 117	--	--	--	120	--	30	NEMA 1	LCA	AR-29	In Annex Building, Exterior Lighting
TIME CLOCK (TC) SHALL BE INTERMATIC T101.											



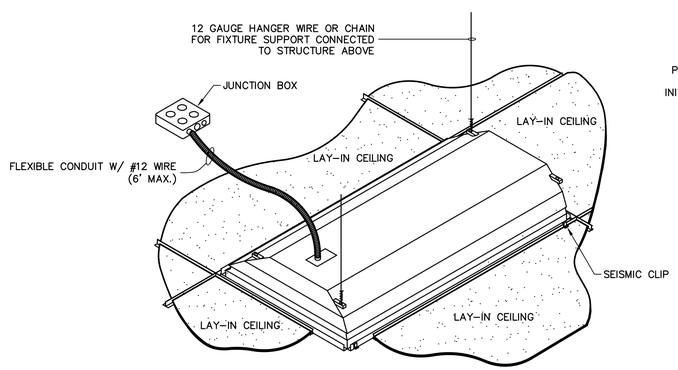
NOTE:
LABELS ARE REQUIRED ON ALL SWITCHBOARDS, DISTRIBUTION PANELS, PANEL BOARDS, STARTERS, DISCONNECT SWITCHES, RELAYS, AND JUNCTION BOXES GREATER THAN 4-11/16" SQUARE. ALSO PROVIDE LABELS ON BRANCH SWITCHES OF SWITCHBOARDS AND DISTRIBUTION PANELS. SIZE OF THE LABEL IS DEPENDENT UPON THE AMOUNT OF INFORMATION ON THE LABEL. MINIMUM DIMENSIONS ARE SHOWN.

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

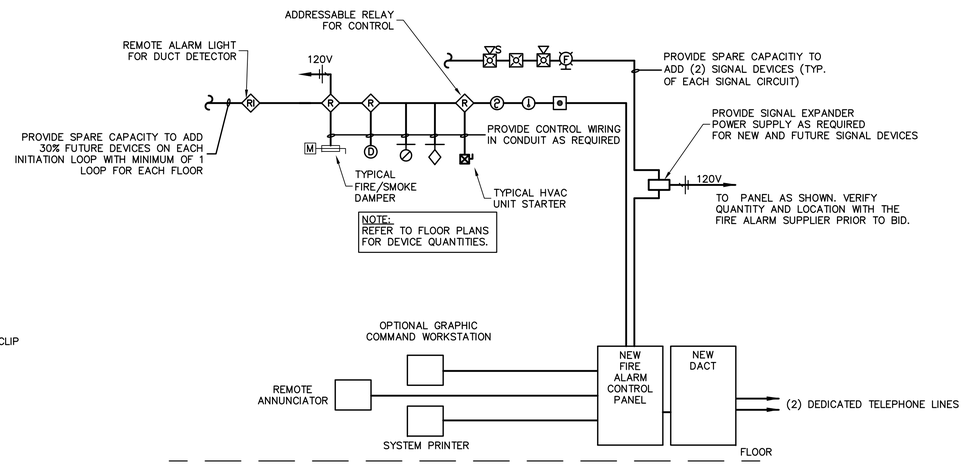
5 E254 **EQUIPMENT LABELING DETAIL**
NOT TO SCALE



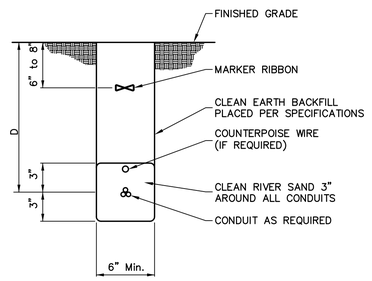
TELEPHONE EQUIPMENT BACKBOARD DETAIL
4 E254
NOT TO SCALE



1 E254 **LAY-IN FIXTURE DETAIL**
NOT TO SCALE



2 E254 **ADDRESSABLE FIRE ALARM SYSTEM SCHEMATIC**
NOT TO SCALE



BURIAL DEPTH	
SERVICE	"D"
CCTV cable	1'-6"
Telephone	2'-0"
Power under 600V	3'-0"
Medium voltage power	3'-0"

NOTE:

USE BURIAL DEPTHS SHOWN ON TABLE UNLESS NOTED OTHERWISE IN SPECIFICATIONS OR ON DRAWINGS. BURIAL DEPTHS FOR UTILITY COMPANY CABLES SHALL BE AS DIRECTED BY THE UTILITY COMPANY.

3 E254 **CONDUIT BURIAL DETAIL**
NOT TO SCALE

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OPERATIONS BUILDING - ELECTRICAL DETAILS

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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		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"
F800	300	1/0	3	(3) 2 1/2"	(3) 3"	(3) 3"	(3) 3 1/2"	(3) 3 1/2"	(3) 3 1/2"
F900	350	2/0	3	(3) 3"	(3) 3"	(3) 3 1/2"	(3) 3 1/2"	(3) 4"	(3) 3 1/2"
F1000	400	2/0	3	(3) 3"	(3) 3"	(3) 3 1/2"	(3) 3 1/2"	(3) 4"	(3) 4"
F1200	350	3/0	4	(4) 3"	(4) 3"	(4) 3 1/2"	(4) 3 1/2"	(4) 4"	(4) 4"
F1600	400	4/0	5	(5) 3"	(5) 3"	(5) 3 1/2"	(5) 3 1/2"	(5) 4"	(5) 4"
F2000	400	250	6	(6) 3"	(6) 3"	(6) 3 1/2"	(6) 3 1/2"	(6) 4"	(6) 4"
F2500	500	350	7	(7) 3"	(7) 3 1/2"	(7) 4"	(7) 4"	(7) 4"	(7) 4"
F3000	500	400	8	(8) 3"	(8) 3 1/2"	(8) 4"	(8) 4"	(8) 4"	(8) 4"
F3500	500	500	10	(10) 3"	(10) 3 1/2"	(10) 4"	(10) 4"	(10) 4"	(10) 4"

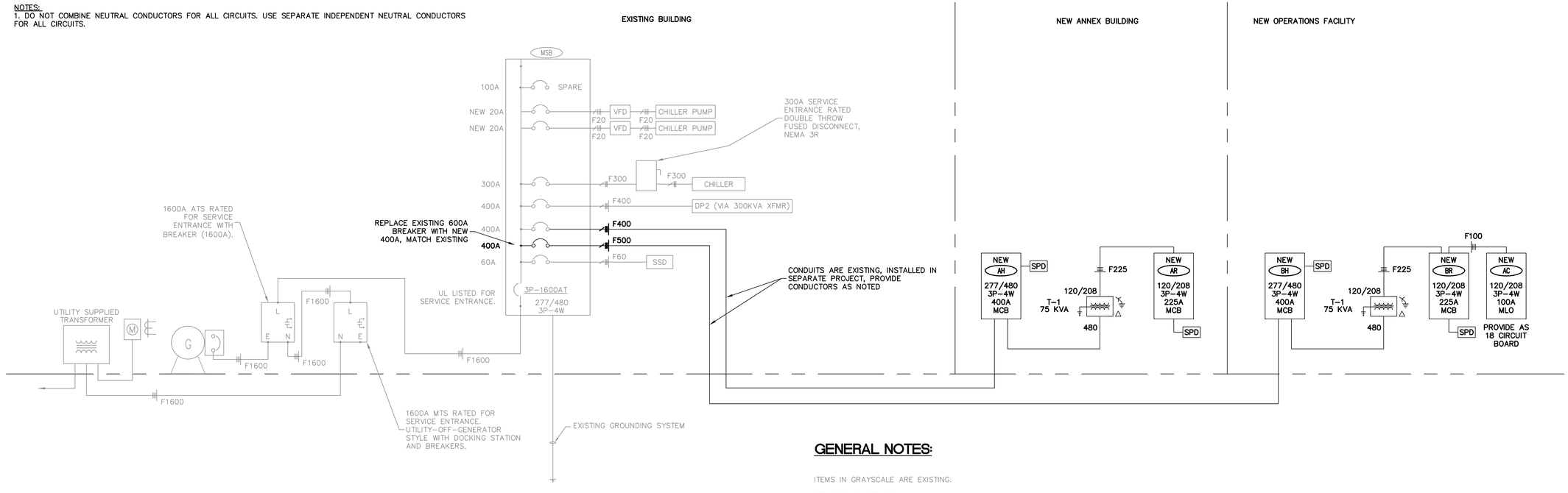
NOTES:
1. DO NOT COMBINE NEUTRAL CONDUCTORS FOR ALL CIRCUITS. USE SEPARATE INDEPENDENT NEUTRAL CONDUCTORS FOR ALL CIRCUITS.

VOLTAGE DROP FOR 1ϕ, 20A BRANCH CIRCUITS

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.



GENERAL NOTES:

ITEMS IN GRAYSCALE ARE EXISTING.

ITEMS BOLD ARE NEW.

CONDUITS FROM EXISTING MSB IN EXISTING BUILDING TO NEW ANNEX AND OPPERATIONS BUILDINGS ARE EXISTING FROM PRIOR PROJECT. PROVIDE CONDUCTORS AS SIZED TO NEW BUILDINGS. ALL GEAR SHOWN IN ANNEX BUILDING AND OPERATIONS BUILDING IS NEW AND SHALL BE PROVIDED AND INSTALL UNDER THIS CONTRACT.

1 E255 **ONE-LINE RISER DIAGRAM**
NTS

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ANNEX BUILDING - ELECTRICAL ONE-LINE RISER DIAGRAM

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OPERATIONS BUILDING - ELECTRICAL SCHEDULES

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CHK'D BY: JDC

PRELIMINARY
NOT FOR
CONSTRUCTION

JOHN D. CAMDEN
FL#53458

CAD DWG FILE: E256 Schedules.DWG

ATP ENGINEERING SOUTH, PL
5227 OFFICE PARK BLVD
BRADENTON, FLORIDA 34203
ENGR. BUSINESS #8908
941-751-6485

SHEET

E256

ABBREVIATIONS, LEGENDS AND GENERAL NOTES

ABBREVIATIONS

AD	ACCESS DOOR
AFF	ABOVE FINISHED FLOOR
AP	ACCESS PANEL
BFF	BELOW FINISHED FLOOR
BOT	BOTTOM CEILING
CLG	CLEANOUT
CO	COLD WATER
CW	DUCTILE IRON PIPE
DIP	ELEVATION
EL	EQUIPMENT
EQUIP	EXISTING
EXIST	FIRE SERVICE
F	FLOOR DRAIN
FD	FIRE DEPARTMENT
FDC	CONNECTIONS
FDV	FIRE DEPARTMENT VALVE
FH	FIRE HYDRANT
FL	FLOOR
FSP	FIRE STANDPIPE RISER
HB	HOSE BIBB
OS&Y	OUTSIDE SCREW & YOKE
SPK	SPRINKLER
TYP	TYPICAL
UG	UNDERGROUND
UON	UNLESS OTHERWISE NOTED
W/TS	WITH TAMPER SWITCH

FIRE PROTECTION SYSTEM SERVES BLDG A

TOTAL AREA – 900 S.F. PER HEAD
CLASSIFICATION – LIGHT HAZARD
WET PIPE SYSTEM QUICK RESPONSE
DENSITY – .1 GPM
COVERAGE PER SPRINKLER 225 SF MAX
NO. OF SPRINKLER HEADS CALCULATED – ---
SPRINKLER "K" FACTOR – 5.6
HMD MINIMUM RESIDUAL PRESSURE – 7.0 PSI
HOSE STREAM ALLOWANCE – 100 GPM
SCHEDULE 40 AND 10 STEEL PIPE –
SCREWED AND GROOVED CONNECTIONS

FIRE HAZARD – LIGHT
TEST STATIC PRESSURE – 62 PSI
929 GPM
RESIDUAL PRESSURE – 20 PSI
DEMAND FLOW –200 GPM SPRINKLERS +100 HOSE = 300 GPM
50 PSI REQUIRED AT HIGHEST ELEVATION
REQUIRED PRESSURE – 15 PSI
AVAILABLE PRESSURE – --- PSI
CEDAR HAMMOCK FIRE DEPT.
12/11/2013 2 1/2 NOZZLE 816 GPM FLOWING AT 29 PSI

FIRE PROTECTION SYSTEM SERVES BLDG B

TOTAL AREA – 900 S.F. PER HEAD
CLASSIFICATION – LIGHT HAZARD
WET PIPE SYSTEM QUICK RESPONSE
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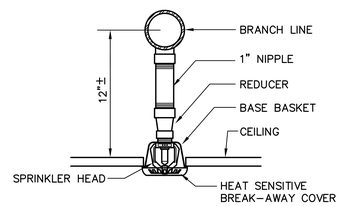
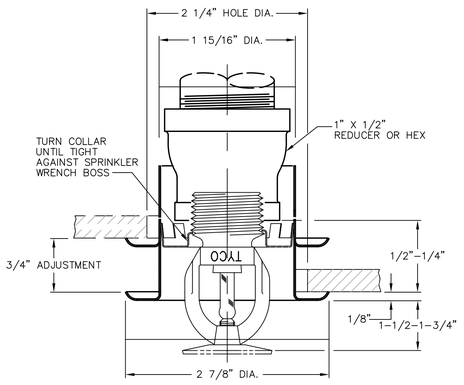


1 / FP201 **RECESSED PENDENT SPRINKLER HEAD**
NOT TO SCALE

FIRE PROTECTION

- SPRINKLER HEAD – UPRIGHT
- SPRINKLER HEAD – PENDENT
- SPRINKLER HEAD – SPECIAL
- SPRINKLER HEAD – SIDEWALL
- VALVE IN RISER
- FIRE DEPARTMENT CONNECTION
- DIRECTION OF PIPE PITCH (DOWN)
- 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
- ORIFICE UNION
- STRAINER
- PRESSURE GAGE
- EXISTING PIPE TO BE REMOVED
- GATE VALVE
- GLOBE VALVE
- CHECK VALVE
- BALL VALVE
- BUTTERFLY VALVE
- GATE VALVE W/ ADAPTER TO 3/4" HOSE THREAD
- ANGLE GLOBE VALVE
- OUTSIDE SCREW & YOKE (O S & Y)



RECESSED

2 / FP201 **SPRINKLER HEAD PENETRATION DETAIL**
NOT TO SCALE

TYCO TY–FRL 155 DEGREE F SPRINKLER, QUICK RESPONSE, 1/2 INCH, K=5.6
VERIFY PRIOR TO PURCHASE AND INSTALLATION, CENTRAL RECESSED UNITS.
WHITE SPRINKLER, AND ESCUTCHEON.

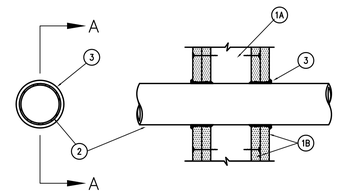
NOTE:

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.

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

SYSTEM NO. WL1001
(Formerly System No. 147)
F Ratings– 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:
   A. 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.
   B. 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:

MAX. PIPE OR CONDUIT DIAM. in.	ANNULAR SPACE	F RATING	T RATING
1 in.	0 to 3/16 in.	1 or 2	0+, 1 or 2
1 in.	1/4 to 1/2	3 or 4	3 or 4
4 in.	0 to 1 1/2	1 or 2	0
6 in.	1/4 to 1/2	3 or 4	0
12 in.	3/16 to 3/8	1 or 2	0

+WHEN COPPER PIPE IS USED, T RATING IS O H.

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

*BEARING THE UL CLASSIFICATION MARKING

3 / FP201 **UL PENETRATION DETAILS**
NOT TO SCALE

GENERAL NOTES

1. FIRE PROTECTION WORK SHALL BE DESIGNED, INSTALLED, AND TESTED IN ACCORDANCE WITH NFPA 13 NFPA 14 AND 25 LATEST EDITION OR AS ADOPTED BY THE AUTHORITY HAVING JURISDICTION.
2. INCLUDE ANY INCIDENTAL APPARATUS, APPLIANCES, MATERIAL LABOR AND SERVICES NECESSARY TO MAKE NEW WORK COMPLETE IN ALL RESPECTS AND FULLY READY FOR OPERATION.
3. MAKE SUCH OFFSETS AND DEVIATIONS FROM WORK SHOWN ON THE DRAWINGS, AS MAY BE NECESSARY TO FIT THE ACTUAL SPACE CONDITIONS.
4. THE INSTALLER SHALL VISIT THE JOB SITE, INSPECT ALL EXISTING CONDITIONS AFFECTING THE WORK. SUBMISSION OF HIS PROPOSAL SHALL BE CONSTRUED AS INDICATING SUCH KNOWLEDGE. NO ADDITIONAL PAYMENT WILL BE MADE ON CLAIMS THAT ARISE FROM THE CONTRACTOR'S FAILURE TO COMPLY WITH THIS REQUIREMENT.
5. INSTALLER SHALL COORDINATE AT SITE WITH ALL PLUMBING, HVAC, FIRE PROTECTION, AND ELECTRICAL WORK SO AS NOT TO CONFLICT IN LOCATION WITH OTHER WORK UNDER THIS CONTRACT OR THAT MAY BE EXISTING. CONTRACTOR SHALL ADJUST PIPE ROUTING AS NECESSARY TO AVOID CONFLICTS WITH EXISTING DUCTWORK, EQUIPMENT, LIGHTING, ETC.
6. INSTALLER SHALL NOT CUT ANY STRUCTURAL MEMBERS WITHOUT FIRST SECURING WRITTEN APPROVAL FROM THE ARCHITECT.
7. ALL FIRE DEPARTMENT CONNECTIONS SHALL HAVE AN AUTOMATIC BALL DRIP.
8. PROVIDE TAMPER SWITCHES ON ALL VALVES THAT CAN SHUT OFF FLOW IN MAINS OR BRANCHES. CHAINS AND LOCKS IN LIEU OF TAMPER SWITCHES MAY BE USED AT OUTDOOR BACKFLOW PREVENTERS ONLY IF APPROVED BY THE AUTHORITY HAVING JURISDICTION.
9. PIPE SIZED, GENERAL ROUTING, AND CONFIGURATION IN SYSTEMS REQUIRED TO BE HYDRAULICALLY CALCULATED SHALL BE INSTALLED PER THIS ENGINEER'S CONSTRUCTION DOCUMENTS. ANY DEVIATION SUBMITTED BY THE CONTRACTOR SHALL BE RE–DESIGNED BY THIS ENGINEER WITH RELATED RE–DESIGN FEES BORN BY THE CONTRACTOR.
10. CONTRACTOR SHALL ARRANGE FOR, OBTAIN AND BEAR THE COST OF NECESSARY PERMITS, BONDS, AND FEES.
11. ALL MATERIALS SHALL BE U.L. LISTED AND BEAR THE U.L. LABEL.
12. CONDITIONS SHOWN AS EXISTING (LOCATIONS, MATERIALS, ELEVATIONS, SIZED, ETC.) ARE BASED ON AVAILABLE EXISTING DATA AND SHOULD BE INTERPRETED TO BE APPROXIMATE. CONTRACTOR SHALL VERIFY CONDITIONS IN THE FIELD. EXISTING CONDITIONS FOUND TO DEVIATE FROM THOSE SHOWN SHALL BE REPORTED TO THE ENGINEER.
13. PENETRATIONS THROUGH FIRE RATED ASSEMBLIES. PENETRATIONS FOR PIPES, CONDUITS, OR OTHER PURPOSES THROUGH ASSEMBLIES (FLOORS, ROOF, WALLS, PARTITIONS, ETC.) WITH A REQUIRED FIRE STOP MATERIAL FIRE STOP MATERIAL SHALL BE U.L. LISTED AND INSTALLED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S REQUIREMENTS TO MEET OR EXCEED THE FIRE RATING OF THE PENETRATED ASSEMBLY.
14. BEFORE SHUTTING OFF ANY SECTION OF THE FIRE PROTECTION SYSTEM TO MAKE ADJUSTMENTS OR ADDITIONAL CONNECTIONS, COORDINATE WITH THE OWNER AND NOTIFY THE AUTHORITY HAVING JURISDICTION. PLAN THE WORK CAREFULLY AND ASSEMBLE ALL MATERIALS TO ENABLE COMPLETION IN THE SHORTEST POSSIBLE TIME. WORK SHALL BE USED TO COMPLETION WITHOUT INTERRUPTION, AND PROTECTION SHALL BE RESTORED AS PROMPTLY AS POSSIBLE.
15. WHERE ELECTRICAL PANELS EXIST, PROVIDE DEFLECTORS ON ELECTRICAL EQUIPMENT TO PREVENT WETTING PANELS. SPRINKLER PIPING SHALL NOT BE INSTALLED DIRECTLY ABOVE ELECTRIC PANELS.
16. PROVIDE FLUSHING CONNECTION AT END OF SPRINKLER SYSTEM WHERE LAY–IN OR HARD CEILING OCCURS. ALL SPRINKLER PIPING THAT REQUIRES CHANGE IN ELEVATION DUE TO COORDINATION ROUTING OF PIPING SHALL HAVE FLUSH CONNECTION AT ALL LOWER ELEVATION. THE SPRINKLER SYSTEM SHALL BE INSTALLED WITH COMPLETE DRAINABLE SYSTEM. ACCESS PANELS ARE TO BE PROVIDED BY FIRE PROTECTION CONTRACTOR AND APPROVED BY THE ARCHITECT.
17. VERIFY THE EXACT LOCATION OF EXISTING SITE FIRE PROTECTION PIPING, FROM THE ACTUAL JOB SITE. ALL NEW LINES ARE TO BE ROUTED TO AND/OR FROM VERIFIED LOCATIONS. TAPS, WHEN NOT PROVIDED BY PREVIOUS INSTALLER OR OTHERS SHALL BE PROVIDED BY THIS INSTALLER.
18. ALL WORK IS TO BE FREE OF DEFECTS IN WORKMANSHIP AND MATERIALS FOR A PERIOD OF ONE(1) YEAR 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.
19. 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.
20. WHEN CONFLICTS OCCUR IN SPECIFICATIONS OR IN THE DRAWINGS, OR BETWEEN EITHER, THE ITEMS OF GREATER QUANTITY OR HIGHER COST SHALL BE PROVIDED.
21. THE CONTRACTOR SHALL COORDINATE WORK WITH OTHER TRADES IN ORDER TO AVOID CONFLICTS.
22. MECHANICAL ROOM NOTE – SPRINKLER HEADS IN THE MECHANICAL ROOMS MUST BE COORDINATED WITH THE EQUIPMENT AND DUCTWORK. THE SPRINKLER CONTRACTOR SHALL COORDINATE HIS SHOP DRAWINGS WITH THOSE OF THE HVAC CONTRACTOR AND PROVIDE HEADS BETWEEN EQUIPMENT AND UNDER DUCTWORK AS REQUIRED. ADDITIONAL SPRINKLERS SHALL BE PROVIDED UNDER ALL DUCTS AND OBSTRUCTIONS GREATER THAN 4 FEET IN WIDTH AS REQUIRED BY NFPA 13, 8.10.7.3.2 (2010).
23. CONTRACTOR SHALL PROVIDE TO LOCAL AHJ OR PERMITTING AGENCY A COPY OF ALL MAJOR EQUIPMENT CUTS SHEETS AND CALCULATIONS AT TIME OF APPLICATION.

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ANNEX BUILDING -
FIRE PROTECTION LEGENDS AND GENERAL NOTES

MANATEE COUNTY BUILDING
OPERATION FACILITY
4410 66TH STREET WEST, BRADENTON FLORIDA

REVISIONS

PROJECT NO: 2012-46
DATE: 11/12/13
DRAWN BY: DC
CHK'D BY: JDC

PRELIMINARY NOT FOR CONSTRUCTION

JOHN D. CAMDEN
FL#53458

CAD DWG FILE: FP201 FIRE PROTECTION LEGEND AND GENERAL NOTES.DWG

ATP ENGINEERING SOUTH, PL
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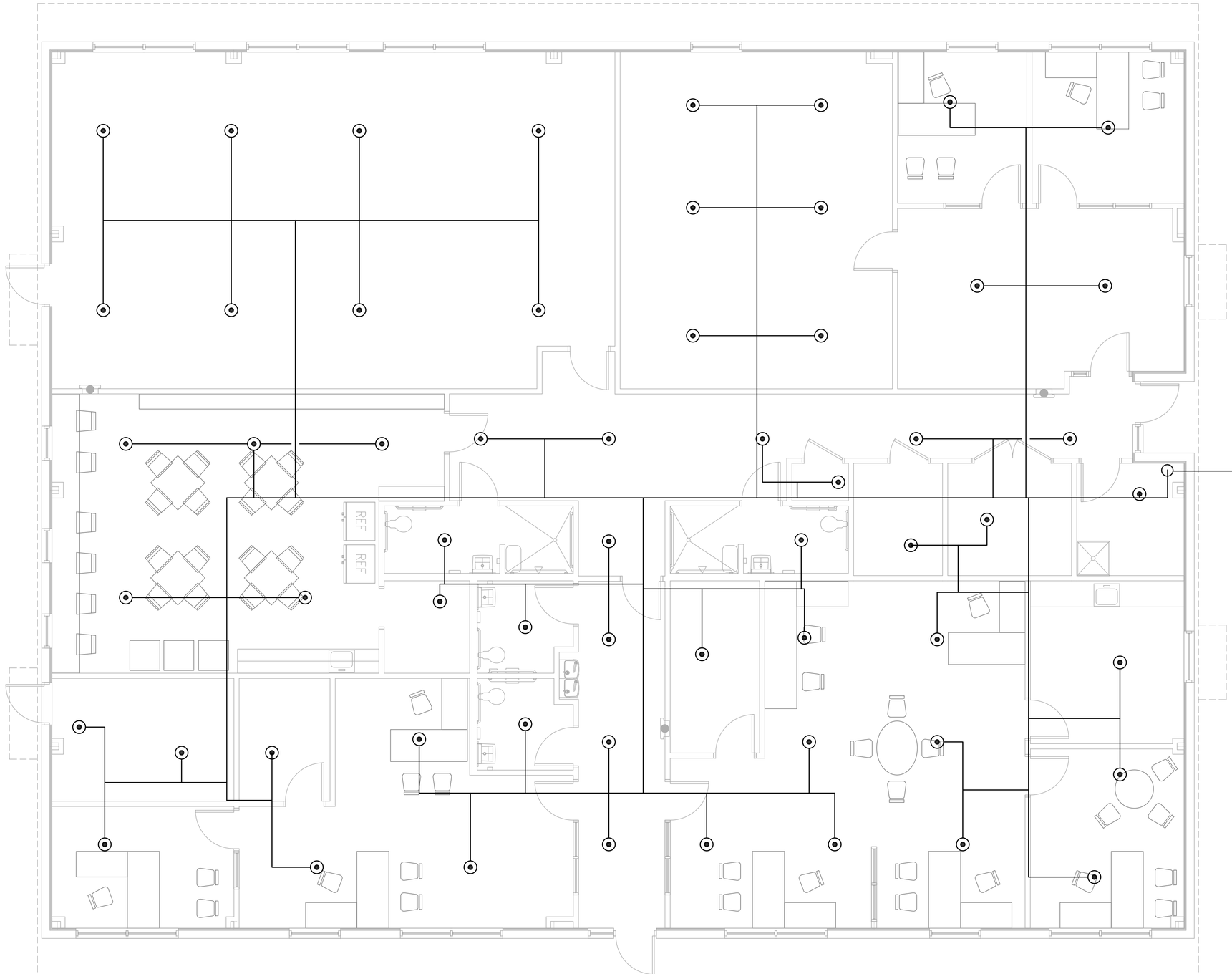
SHEET
FP201



NEW UPRIGHT SPRINKLER

NEW RECESSED SPRINKLER

SPRINKLER LINE

GENERAL NOTE:

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 ARCHITECT AND PROJECT MANAGER PRIOR TO START WORK.
3. REFER TO LEGEND SHEET FOR AREA HAZARD CLASSIFICATIONS. REFER TO ELECTRICAL PLAN FOR FIRE ALARM LOCATION.
4. REFER TO ARCHITECTURAL PLANS FOR AREAS OF EXPOSED CEILINGS, TILE CEILINGS, AND PLASTER CEILINGS. EXPOSED PIPING SHALL BE PAINTED COLOR AS SELECTED BY THE ARCHITECT.

1 / FP202 FIRE PROTECTION FIRST FLOOR

1/8"=1'-0"

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ANNEX BUILDING - FIRE PROTECTION FLOOR PLAN

MANATEE COUNTY BUILDING OPERATION FACILITY

4410 66TH STREET WEST, BRADENTON FLORIDA

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CAD DWG FILE: FP202 FIRE PROTECTION FLOOR PLAN.DWG

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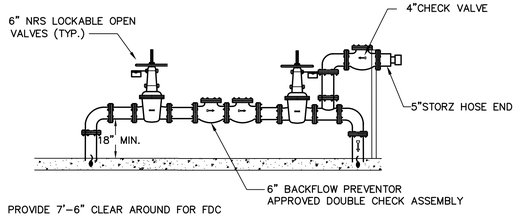
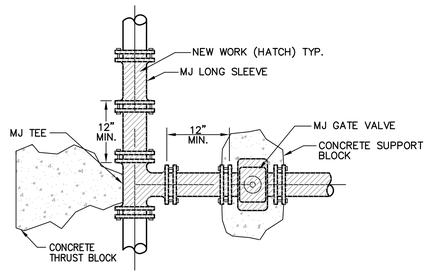
FP202



1 / FP203 **BACK FLOW PREVENTOR DETAIL FIRE SYSTEM**

NOT TO SCALE PROVIDE FDC SIGNAGE



NOTES:

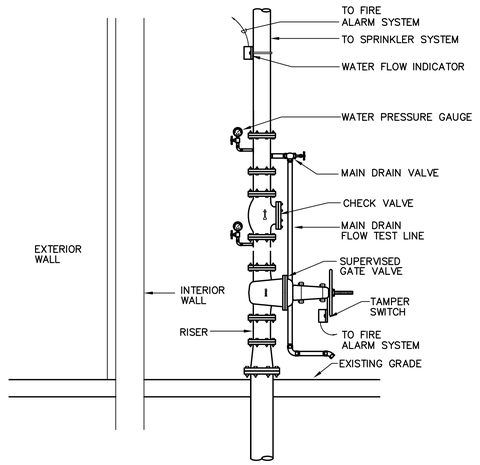
1. CONNECTION TO MAIN SHALL BE MADE AFTER ARCHITECT & FIRE MARSHAL AHJ, AND COUNTY WATER COMPANY. HAVE APPROVED ALL NEW WATER MAIN CONSTRUCTION. CONTRACTOR IS TO NOTIFY THE ARCHITECT 72 HRS PRIOR TO CUTTING IN TEE.
2. SEE COUNTY SPECIFICATIONS FOR FITTINGS, GATE VALVES, AND PIPE COUPLINGS. ANY SUBSTITUTIONS SHALL BE APPROVED BY THE ARCHITECT AND AHJ, AND COUNTY WATER COMPANY PRIOR TO CONSTRUCTION.
3. WRAP TEE AND VALVE WITH PLASTIC THEN POUR SUPPORT BLOCK AND THRUST BLOCK.

2 / FP203 **MAIN CONNECTION DETAIL**

NOT TO SCALE

HANGER DISTANCE		
PIPE	SPAN DISTANCE	ROD DIA SIZE
1"	7'-0"	3/8"
1 1/4"	7'-0"	3/8"
1 1/2"	9'-0"	3/8"
2"	10'-0"	3/8"
2 1/2"	10'-0"	1/2"
3"	12'-0"	1/2"
4"	14'-0"	5/8"
6"	15'-0"	3/4"

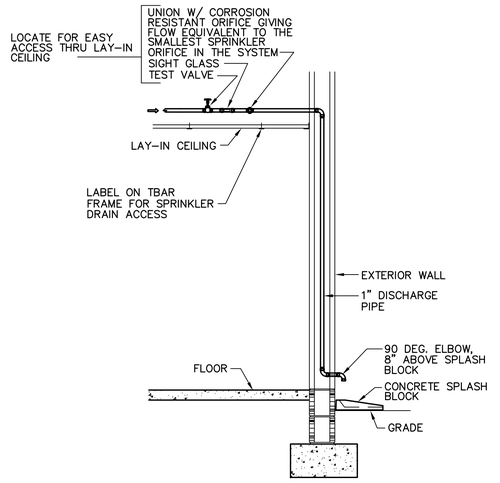
NOTES: REF. NFPA 9.2.3.2.2 FOR STARTER SPRINKLERS AND 9.2.3.4 FOR UNSUPPORTED LENGTHS, PROVIDE RISER CLAMPS AT EXTERIOR WALL INSTALLATIONS AND SLEEVE WALL PENETRATIONS



3 / FP203 **SYSTEM RISER WITHOUT A TEE DETAIL**

NOT TO SCALE

PROVIDE MIN CLEARANCE AROUND RISER. PLACE PIPE BOLLARDS IN FRONT OF RISER. PLACE SIGN FOR CLEARANCE/ NO PARKING .



4 / FP203 **INSPECTORS TEST AND DRAIN DETAIL**

NOT TO SCALE

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ANNEX BUILDING - FIRE PROTECTION DETAILS

MANATEE COUNTY BUILDING OPERATION FACILITY

4410 66TH STREET WEST, BRADENTON FLORIDA

REVISIONS

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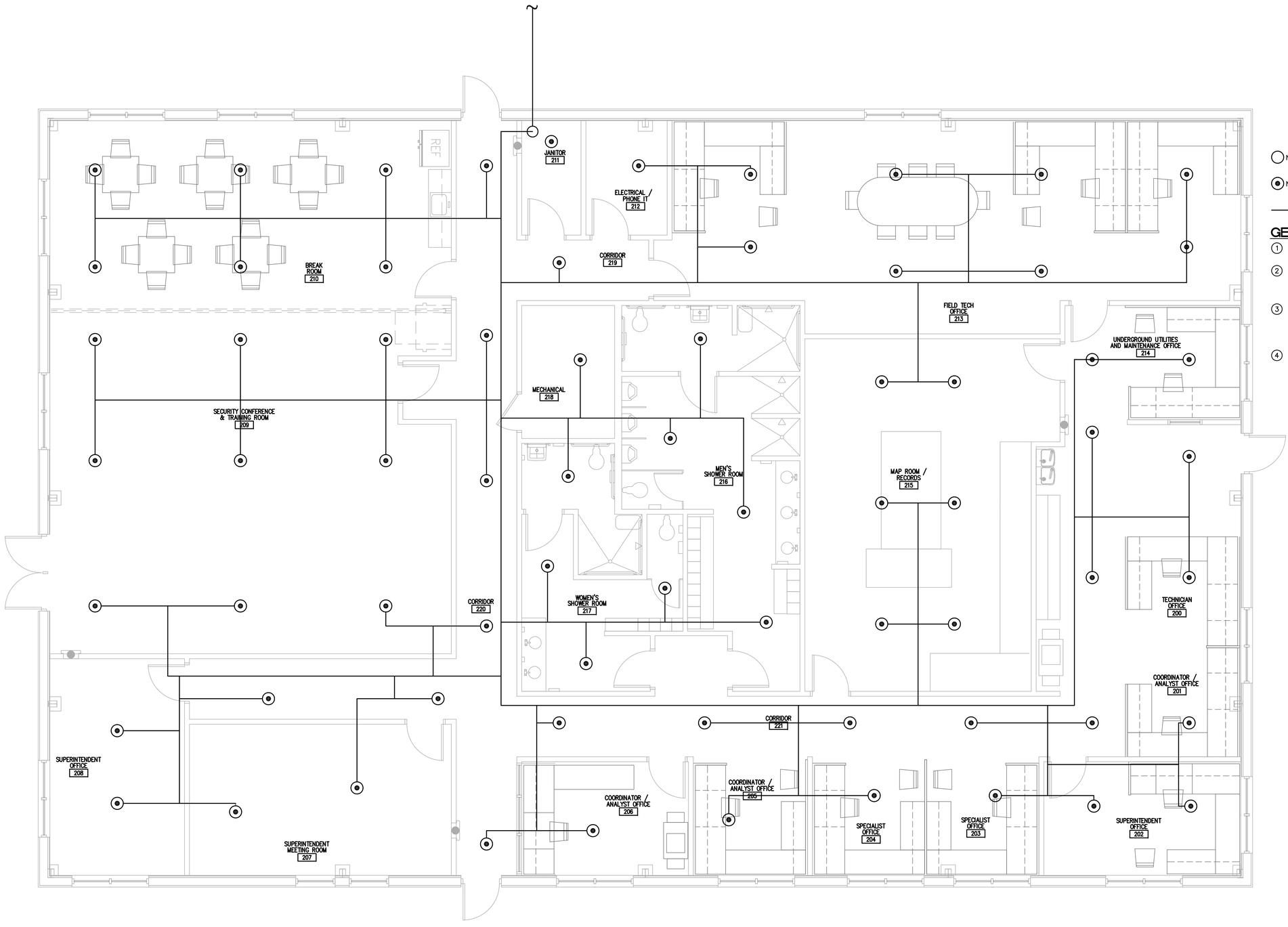

NEW UPRIGHT SPRINKLER

NEW RECEDED SPRINKLER

SPRINKLER LINE

GENERAL NOTE:

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 ARCHITECT AND PROJECT MANAGER PRIOR TO START WORK.
3. REFER TO LEGEND SHEET FOR AREA HAZARD CLASSIFICATIONS. REFER TO ELECTRICAL PLAN FOR FIRE ALARM LOCATION. KITCHEN HOOD HAS INTEGRAL FIRE PROTECTION SYSTEM. REFER TO FOOD EQUIPMENT PLANS FOR TIE IN TO MAIN FIRE ALARM PANEL.
4. REFER TO ARCHITECTURAL PLANS FOR AREAS OF EXPOSED CEILINGS, TILE CEILINGS, AND PLASTER CEILINGS. EXPOSED PIPING SHALL BE PAINTED COLOR AS SELECTED BY THE ARCHITECT.

1 / FP202 FIRE PROTECTION FIRST FLOOR

1/8"=1'-0"

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OPERATIONS BUILDING - FIRE PROTECTION FLOOR PLAN

MANATEE COUNTY BUILDING OPERATION FACILITY

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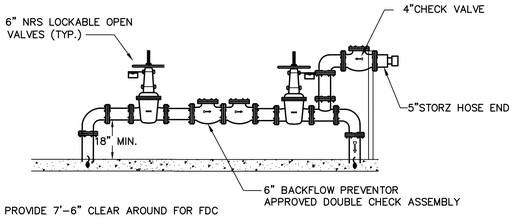
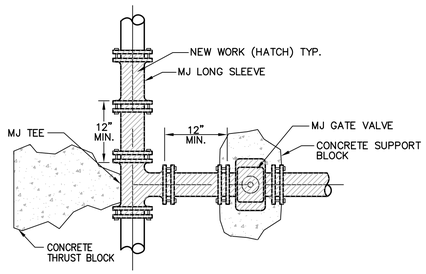


PROVIDE 7'-6" CLEAR AROUND FOR FDC

1 / FP253 **BACK FLOW PREVENTOR DETAIL FIRE SYSTEM**

NOT TO SCALE PROVIDE FDC SIGNAGE



NOTES:

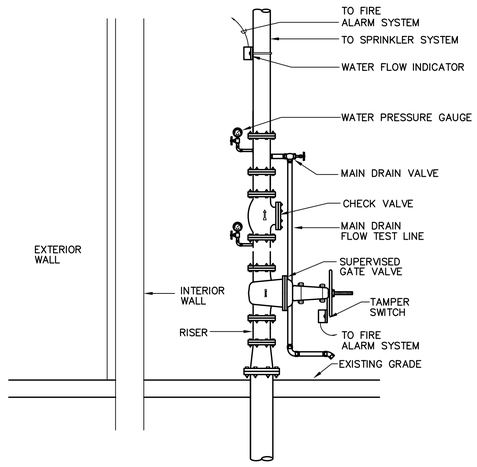
1. CONNECTION TO MAIN SHALL BE MADE AFTER ARCHITECT & FIRE MARSHAL AHJ, AND COUNTY WATER COMPANY. HAVE APPROVED ALL NEW WATER MAIN CONSTRUCTION. CONTRACTOR IS TO NOTIFY THE ARCHITECT 72 HRS PRIOR TO CUTTING IN TEE.
2. SEE COUNTY SPECIFICATIONS FOR FITTINGS, GATE VALVES, AND PIPE COUPLINGS. ANY SUBSTITUTIONS SHALL BE APPROVED BY THE ARCHITECT AND AHJ, AND COUNTY WATER COMPANY PRIOR TO CONSTRUCTION.
3. WRAP TEE AND VALVE WITH PLASTIC THEN POUR SUPPORT BLOCK AND THRUST BLOCK.

2 / FP253 **MAIN CONNECTION DETAIL**

NOT TO SCALE

HANGER DISTANCE		
PIPE	SPAN DISTANCE	ROD DIA SIZE
1"	7'-0"	3/8"
1 1/4"	7'-0"	3/8"
1 1/2"	9'-0"	3/8"
2"	10'-0"	3/8"
2 1/2"	10'-0"	1/2"
3"	12'-0"	1/2"
4"	14'-0"	5/8"
6"	15'-0"	3/4"

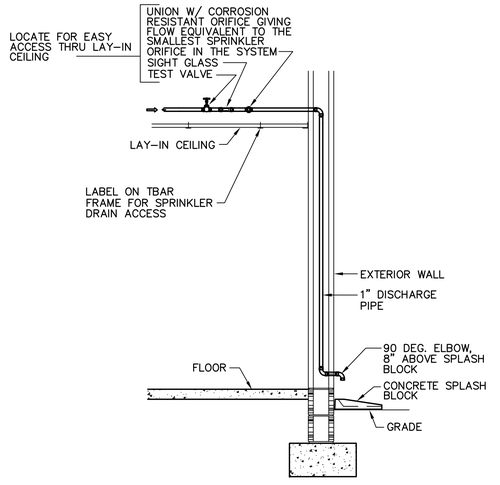
NOTES: REF. NFPA 9.2.3.2.2 FOR STARTER SPRINKLERS AND 9.2.3.4 FOR UNSUPPORTED LENGTHS, PROVIDE RISER CLAMPS AT EXTERIOR WALL INSTALLATIONS AND SLEEVE WALL PENETRATIONS



3 / FP253 **SYSTEM RISER WITHOUT A TEE DETAIL**

NOT TO SCALE

PROVIDE MIN CLEARANCE AROUND RISER, PLACE PIPE BOLLARDS IN FRONT OF RISER. PLACE SIGN FOR CLEARANCE/ NO PARKING .



4 / FP253 **INSPECTORS TEST AND DRAIN DETAIL**

NOT TO SCALE

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OPERATIONS BUILDING - FIRE PROTECTION DETAILS

MANATEE COUNTY BUILDING OPERATION FACILITY

4410 66TH STREET WEST, BRADENTON FLORIDA

REVISIONS

PROJECT NO: 2012-46
DATE: 11/12/13
DRAWN BY: DC
CHK'D BY: JDC

PRELIMINARY NOT FOR CONSTRUCTION

JOHN D. CAMDEN
FL#53458

ATP ENGINEERING SOUTH, PL
5227 OFFICE PARK BLVD
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ENGR. BUSINESS #8908
941-751-6485

SHEET

FP253

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
- 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

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 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.
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 THE 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. WHEN AIR HANDLING UNITS SHUT DOWN FOR FIRE ALARM OR MAINTENANCE, INTERLOCKED EXHAUST FANS SHALL ALSO SHUT DOWN.
17. SEE ARCHITECTURAL REFLECTED CEILING PLAN FOR EXACT LOCATION OF ALL AIR DEVICES LOCATED IN THE CEILING. ALL LOUVER LOCATIONS SHALL BE COORDINATED WITH THE ARCHITECT.
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. ALL WORK ON THE PROJECT SHALL MEET THE LATEST FLORIDA BUILDING AND MECHANCAL CODES AND STANDARDS ADOPTED BY THE LOCAL AHJ.

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.

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ANNEX BUILDING - MECHANICAL LEGENDS AND GENERAL NOTES

MANATEE COUNTY BUILDING OPERATION FACILITY
4410 66TH STREET WEST, BRADENTON FLORIDA

REVISIONS

PROJECT NO: 2012-46
DATE: 11/12/13
DRAWN BY: DC
CHK'D BY: JDC

PRELIMINARY NOT FOR CONSTRUCTION

JOHN D. CAMDEN
FL#53458

CAD DWG FILE: M201 MECHANICAL LEGEND AND GENERAL NOTES.DWG

ATP ENGINEERING SOUTH, PL
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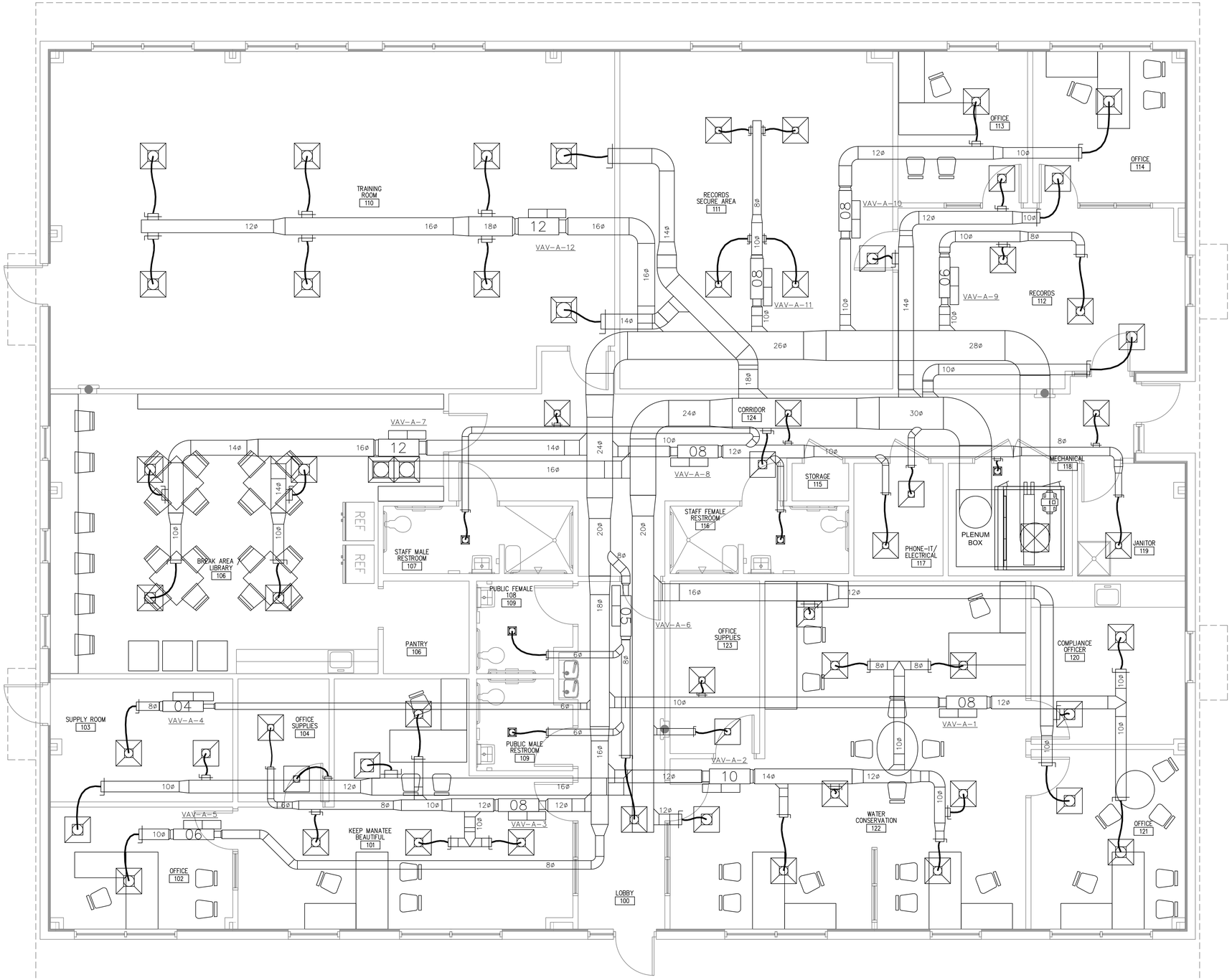
SHEET
M201



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 ENGINEER AND PROJECT MANAGER PRIOR TO START WORK.

1 / M202 MECHANICAL FLOOR PLAN

1/4"=1'=0"

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ANNEX BUILDING - MECHANICAL FLOOR PLAN

MANATEE COUNTY BUILDING OPERATION FACILITY

4410 66TH STREET WEST, BRADENTON FLORIDA

REVISIONS

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SHEET

M202

GRILLE, REGISTER AND DIFFUSER SCHEDULE

TAG NO.	PATTERN	NECK SIZE	MODULE SIZE	FRAME STYLE	MATERIAL	FINISH	CFM RANGE	ACCESSORIES	MANUFACTURER	MODEL NO.	REMARKS
S-1	PERF	6ø	24X24	1	ALUM	WHITE	0-110	2	PRICE	APDF	3
S-2	PERF	8ø	24X24	1	ALUM	WHITE	105-240	2	PRICE	APDF	3
S-3	PERF	10ø	24X24	1	ALUM	WHITE	165-420	2	PRICE	APDF	3
S-4	PERF	12ø	24X24	1	ALUM	WHITE	230-500	2	PRICE	APDF	3
S-5	PERF	14ø	24X24	1	ALUM	WHITE	325-730	2	PRICE	APDF	3
S-6	4 WAY	6X6	7 3/4X7 3/4	SURF	ALUM	WHITE	0-145	2	PRICE	620DAL	4
S-7	4 WAY	10X6	11 3/4X7 3/4	SURF	ALUM	WHITE	100-270	2	PRICE	620DAL	4
S-6	4 WAY	12X6	13 3/4X7 3/4	SURF	ALUM	WHITE	115-320	2	PRICE	620DAL	4
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R-1	PERF	8ø	24X24	1	ALUM	WHITE	0-240	2	PRICE	APDDR	3
R-2	PERF	10ø	24X24	1	ALUM	WHITE	110-420	2	PRICE	APDDR	3
R-3	PERF	12ø	24X24	1	ALUM	WHITE	157-700	2	PRICE	APDDR	3
R-4	PERF	14ø	24X24	1	ALUM	WHITE	207-1000	2	PRICE	APDDR	3
R-5	45	6X6	7 3/4X7 3/4	SURF	ALUM	WHITE	0-135	2	PRICE	630DAL	4
R-6	45	10X6	11 3/4X7 3/4	SURF	ALUM	WHITE	65-220	2	PRICE	630DAL	4
R-7	45	12X6	13 3/4X7 3/4	SURF	ALUM	WHITE	80-250	2	PRICE	630DAL	4
R-8	45	14X8	15 3/4X9 3/4	SURF	ALUM	WHITE	138-460	2	PRICE	630DAL	4
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E-1	45	6X6	7 3/4X7 3/4	SURF	ALUM	WHITE	0-135	2	PRICE	630DAL	4
E-2	45	10X6	11 3/4X7 3/4	SURF	ALUM	WHITE	65-220	2	PRICE	630DAL	4
E-3	45	12X6	13 3/4X7 3/4	SURF	ALUM	WHITE	80-250	2	PRICE	630DAL	4
E-4	45	14X8	15 3/4X9 3/4	SURF	ALUM	WHITE	138-460	2	PRICE	630DAL	4
---	---	---	---	---	---	---	---	---	---	---	---
T-1	45	14X8	15 3/4X9 3/4	SURF	ALUM	WHITE	0-460	2	PRICE	630DAL	4
---	---	---	---	---	---	---	---	---	---	---	---

NOTES:
1. COORDINATE GRILLE FRAMES WITH CEILING AND WALL TYPE ON ARCHITECTURAL PLANS UNLESS NOTED.
2. OPPOSED BLADE DAMPER, EQUALIZING GRID COMBINATION.
3. REFER TO PLANS FOR ROUND INLET SIZE.
4. INSULATED PLENUM BOX BY CONTRACTOR WITH ROUND INLET SIZE AS INDICATED ON PLANS
5. PAINT ALL PERFORATED RETURN AIR GRILLES INTERIOR DUCT COLOR AS SELECTED BY ARCHITECT.

HVAC LOAD CALCULATIONS SUMMARY

	ZONE 1- AHU A-1	
SIZING METHOD	CARRIER E20II	
AREA (SQ. FEET)	5559 SF	
TOTAL COOLING REQUIRED W/ OUTSIDE AIR (MBH)	277.2	
OUTDOOR DRY BULB USED	93	
OUTDOOR WET BULB USED	79	
RELATIVE HUMIDITY %	50	
INDOOR DRY BULB	75	
TOTAL HEATING REQUIRED W/ OUTSIDE AIR (MBH)	66.2	
TOTAL SENSIBLE GAIN (MBH)	191.7	
TOTAL LATENT GAIN (MBH)	85.5	
LB/LB SPECIFIC HUMIDITY ACROSS COIL	.001709	

Reference: 503.2 SIZING, 2010 FLORIDA BUILDING CODE – ENERGY

AIR HANDLING UNIT SCHEDULE

ITEM NO.	---	AHU A-1
LOCATION	---	MECH ROOM
TOTAL SUPPLY AIR	CFM	8240
RETURN AIR	CFM	7145
OUTSIDE AIR	CFM	1095
STATIC PRESS. EXT./TOTAL	IN. WTR.	1.5/2.93
MAX. FAN SPEED/TYPE/SIZE	RPM/--/IN.	1800/AF/20
MOTOR	BHP/HP	--/7.5
ELECTRICAL	V/PH/HZ	460/3/60
COOLING COIL	ROWS/FINS	6/12
TOTAL COOLING CAPACITY	MBH	307.5
SENSIBLE COOLING CAPACITY	MBH	212.8
CHILLED WATER FLOW	GPM	61
COIL WATER P.D. (MAX)	FT	6.8
CHILLED WATER TEMP. (ENT/LVG)	°F/°F	45/55
ENTERING AIR (DB/WB)	°F/°F	77.1/65.2
LEAVING AIR (DB/WB)	°F/°F	53.3/52.4
FACE VELOCITY	FPM	479
AIR PRESSURE DROP	IN.	.61
FILTERS	---	2" PLEATED MERV 8
WEIGHT	LBS	3207
MANUFACTURER		YORK
MODEL NO. VERTICAL CONFIG."L" SHAPE		SOLUTION 48X78

NOTES:
1. PROVIDE NEW MODULAR DOUBLE WALL AIR HANDLER WITH FLANGED SECTIONS.
2. PROVIDE UNIT WITH FILTER FRAME, OUTLET FLANGE, VFD DRIVEN FAN MOTOR L SHAPED FILTER SECTION, WITH FAN VIBRATION ISOLATED FRAME, COOLING COIL SECTION WITH DRAIN PAN AND CONDENSATE, CHWS/ CHWR PIPE CONNECTIONS, AND SMOKE DETECTION, FAN SECTION AND RETURN SECTION WITH FLEX CONNECTION OUTLET, BASE RAIL, AND DISCONNECT BY EC. PROVIDE OA DAMPER AND ACTUATOR BY TCC, MOUNTED BY MC.
3. PROVIDE & INSTALL 3 WAY CHW CONTROL VALVE WITH MANUAL BYPASS WITH BELIMO ACTUATOR. REFER TO DETAILS FOR PIPING FIT UP.
4. VFD DRIVE BY EC.

VARIABLE AIR VOLUME BOX SCHEDULE

ITEM NO.	---	VAV-A-1	VAV-A-2	VAV-A-3	VAV-A-4	VAV-A-5	VAV-A-6
BOX CAPACITY	CFM	630	975	650	140	350	220
CONTROL CFM VOLUME	MAX./MIN.	840 – 210	1355 – 295	840-210	250-75	435-105	350-105
MAX. STATIC PRESS. DROP	IN. WTR.	.11	.10	.11	.045	.25	.12
ELECTRIC HEATER SIZE	(KW)/STEPS	3/2	4/2	3/2	1/1	1.5/1	1.5/1
ELECTRICAL	V/PH/HZ	480/3/60	480/3/60	480/3/60	480/3/60	480/3/60	480/3/60
MANUFACTURER	---	ENVIROTEC	ENVIROTEC	ENVIROTEC	ENVIROTEC	ENVIROTEC	ENVIROTEC
MODEL NO.	---	SDR EH-08	SDR EH-010	SDR EH-08	SDR EH-04	SDH EH-06	SDR EH-05

NOTES
(1) VAV BOX MANUFACTURER TO FACTORY MOUNT CONTROLLER WHICH IS TO BE FURNISHED BY THE CONTROLS CONTRACTOR.
(2) ALL VAV BOXES HEAT SET AT MINIMUM CFM AND 72 DEGREE ROOM TEMP. (70 CFM MIN. PER KW). ALL SELECTIONS ARE MADE AT LESS THAN 20 NC. DISCHARGE AND RADIATED.
(3) FACTORY MOUNTED DISCONNECT SWITCH WITH INTEGRAL FUSING FOR THE ELECTRIC HEATER AND CONTROLS.

VARIABLE AIR VOLUME BOX SCHEDULE

ITEM NO.	---	VAV-A-7	VAV-A-8	VAV-A-9	VAV-A-10	VAV-A-11	VAV-A-12
BOX CAPACITY	CFM	1495	625	385	550	450	1770
CONTROL CFM VOLUME	MAX./MIN.	1975 – 210	840-210	435-140	840-210	840-210	1975-420
MAX. STATIC PRESS. DROP	IN. WTR.	.2	.2	.27	.11	.11	.15
ELECTRIC HEATER SIZE	(KW)/STEPS	3/2	3/2	2/1	3/2	3/2	6/2
ELECTRICAL	V/PH/HZ	480/3/60	480/3/60	480/3/60	480/3/60	480/3/60	480/3/60
MANUFACTURER	---	ENVIROTEC	ENVIROTEC	ENVIROTEC	ENVIROTEC	ENVIROTEC	ENVIROTEC
MODEL NO.	---	SDR EH-012	SDR EH-08	SDR EH-06	SDR EH-08	SDR EH-08	SDR EH-012

NOTES
(1) VAV BOX MANUFACTURER TO FACTORY MOUNT CONTROLLER WHICH IS TO BE FURNISHED BY THE CONTROLS CONTRACTOR.
(2) ALL VAV BOXES HEAT SET AT MINIMUM CFM AND 72 DEGREE ROOM TEMP. (70 CFM MIN. PER KW). ALL SELECTIONS ARE MADE AT LESS THAN 20 NC. DISCHARGE AND RADIATED.
(3) FACTORY MOUNTED DISCONNECT SWITCH WITH INTEGRAL FUSING FOR THE ELECTRIC HEATER AND CONTROLS.

FAN SCHEDULE

ITEM NO.	---	EF A-1	EF A-2	EF A-3	EF A-4	EF A-5	EF A-6
SERVICE	---	PANTRY/ BREAKROOM	STAFF MALE	PUBLIC MALE	PUBLIC FEMALE	JANITOR	STAFF FEMALE
AIR QUANTITY	CFM	200	100	75	75	75	100
EXT. STATIC PRESSURE	IN. WTR.	.375	.375	.375	.375	.375	.375
FAN TYPE	---	INLINE CABINET	INLINE CABINET	INLINE CABINET	INLINE CABINET	INLINE CABINET	INLINE CABINET
DRIVE	---	VS	VS	VS	VS	VS	VS
SONES	---	.9	1.7	1.2	1.2	1.2	1.7
MOTOR	HP/WATTS	133	78.1	78.1	78.1	78.1	78.1
FAN SPEED	RPM	982	978	845	845	845	978
ELECTRICAL	V/PH./HZ.	120/1/60	120/1/60	120/1/60	120/1/60	120/1/60	120/1/60
CONTROLS	---	3	2	2	2	3	2
LOCATION	---	ABOVE CEILING	ABOVE CEILING	ABOVE CEILING	ABOVE CEILING	ABOVE CEILING	ABOVE CEILING
MANUFACTURER	---	COOK	COOK	COOK	COOK	COOK	COOK
MODEL NO.	---	GN-420	GN-144	GN-144	GN-144	GN-144	GN-144

NOTES:
1. PROVIDE AND INSTALL VS CONTROL, BACK DRAFT DAMPER, DISCONNECT, FLEX CONNECTION ON INLET AND OUTLET, VIBRATION ISOLATION ON FAN SUPPORT. GALV. METAL FAN BLADES.
2. PROVIDE OCCUPANCY SENSOR FOR WALL BOX WITH MAX 30 MIN TIMER ADJUSTABLE TO BE WIRED BY THE ELECTRICIAN.
3. PROVIDE WALL SWITCH FOR WALL BOX TO BE WIRED BY THE ELECTRICIAN.

LOUVER SCHEDULE

TAG NO.	LOCATION	MAX CFM	S.P.	INTAKE RELIEF EXHAUST	OPENING		NO. OF PANELS	MANUFACTURER	MODEL NO.	REMARKS
					WIDTH IN.	HEIGHT IN.				
L-1	WALL	1100	.1	I	30	30	1	RUSKIN	EME520MD	1-5

NOTES:
1. COORDINATE LOUVER WITH ARCHITECT PRIOR TO ORDER .
2. LOUVER SHALL BE FLORIDA APPROVED FOR WIND/IMPACT AND WIND DRIVEN RAIN. FL#29846.1. PROVIDE BIRD SCREEN AND DAMPER.
3. UNIT SHALL BE INSTALLED WITH FLANGE IN ACCORDANCE WITH MANUFACTURER'S INSTALLATION INSTRUCTIONS IN METAL BUILDING.
4. COLOR TO BE SPECIFIED BY THE ARCHITECT
5. ACCEPTABLE MANUFACTURERS ARE SPECIFIED IN ARCHITECTURAL SECTION. VERIFY WITH ARCHITECT PRIOR TO ORDER.

OUTDOOR AIR LOAD CALCULATIONS

FMC TABLE 403.3 AND ASHRAE STD 62 2010

FACILITY
70 CFM/ WC RESTROOMS , .5 CFM/SF SHOWER ROOMS (82 SF EACH)
JANITOR 1 CFM/SF (72 SF)
STORAGE, ELECTRICAL, CORRIDOR, MECH SPACE .06 CFM/ SF
TRAINING SPACE SF X 7.5 X $\frac{\text{cfm}}{1000}$ +.06 CFM/ SF
OFFICE SPACE SF X 5 /1000 X 5 + .06 CFM /SF
BREAKROOM SF X 5 X $\frac{\text{cfm}}{1000}$ + .06 CFM / SF
OFFICE SPACE = 1326 SF
1326 X 5 / 1000SF X 5 + .06/SF = 112.7 CFM
TRAINING SPACE 1144 SF
1144 X 7.5 X $\frac{\text{cfm}}{1000}$ + .06 CFM/ SF = 626.3 CFM
STORAGE, ELECTRICAL, CORRIDOR, MECH SPACE = 865 SF
865 X .06 / SF = 51.9 CFM
BREAK ROOM = 612 SF
612 X 5 X $\frac{\text{cfm}}{1000}$ + .06/SF = 52.02 CFM
TOTAL REQUIRED OA =980.62 CFM
1095 CFM SCHEDULED
RESTROOMS, 2 WC., 72 SF JANITOR & 2 SHOWERS OR 2 WC = 352 CFM TOTAL MAX. EXHAUST REQUIRED
425 CFM SCHEDULED
PLUS 200 CFM FOR PANTRY(50) AND BREAK ROOM(150).

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ANNEX BUILDING - MECHANICAL SCHEDULES

MANATEE COUNTY BUILDING OPERATION FACILITY

4410 66TH STREET WEST, BRADENTON FLORIDA

REVISIONS

PROJECT NO: 2012-46
DATE: 11/12/13
DRAWN BY: DC
CHK'D BY: JDC

JOHN D. CAMDEN
FL#53458

CAD DWG FILE: M203 MECHANICAL SCHEDULES.DWG

ATP ENGINEERING SOUTH, PL
5227 OFFICE PARK BLVD
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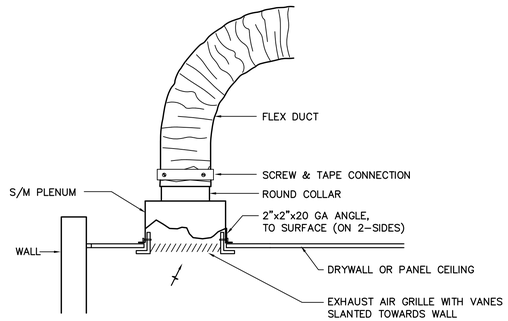
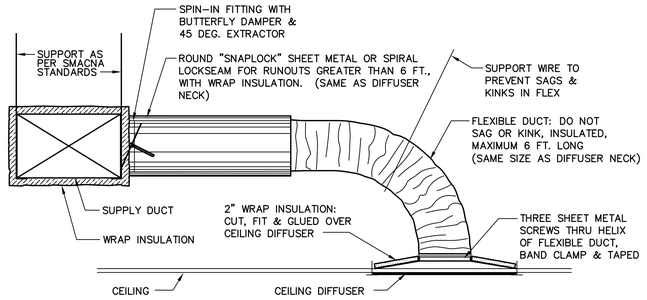
SHEET
M203



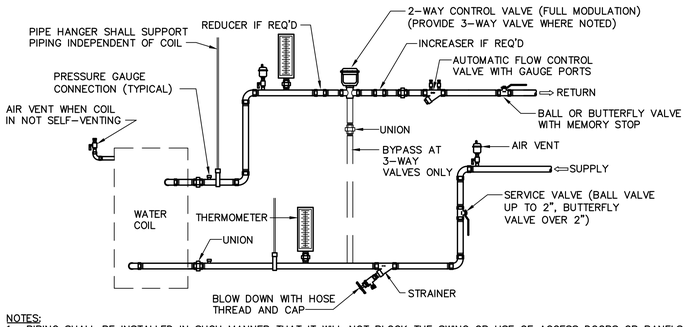
1/M204 FLEX-DUCTED EXHAUST GRILLE

NOT TO SCALE



4/M204 CEILING DIFFUSER RUNOUT DETAIL

NOT TO SCALE VERIFY CEILING TYPE PRIOR TO ORDER.

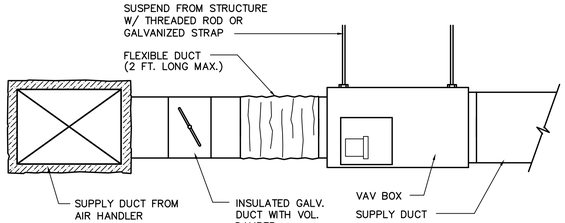


NOTES:

1. PIPING SHALL BE INSTALLED IN SUCH MANNER THAT IT WILL NOT BLOCK THE SWING OR USE OF ACCESS DOORS OR PANELS. NEITHER SHALL IT BLOCK THE SERVICING OF FILTERS, VALVES OR EQUIPMENT.
2. PROVIDE ALL VALVES WITH EXTENDED STEMS AND ALL GAUGE PORTS WITH EXTENSIONS TO PROTRUDE BEYOND INSULATION.

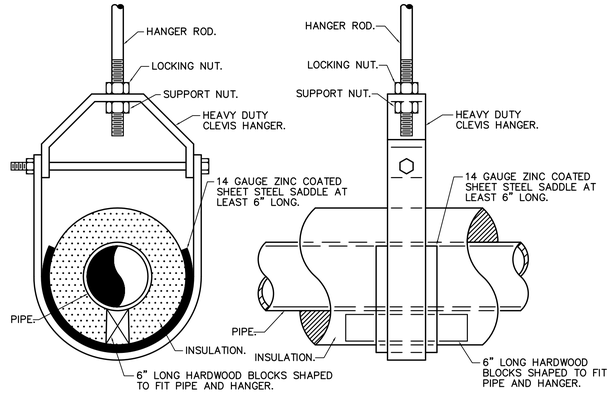
2/M204 AIR HANDLING UNIT COIL PIPING WITH AUTOMATIC FLOW CONTROL VALVE

NOT TO SCALE



5/M204 VAV BOX DETAIL

NOT TO SCALE



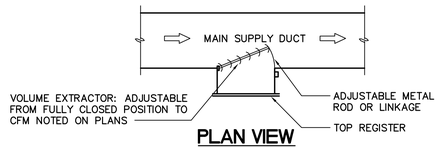
MAXIMUM SPACING FOR PIPE HANGERS (SCHEDULE 40 PIPING)										
NOM. PIPE SIZE (IN.)	3/4	1	1-1/4	1-1/2	2	2-1/2	3	4	5	6
SPACING (FT.)	7	7	7	9	10	10	13	14	16	17

NOTE: REFER TO SPECIFICATIONS FOR PIPING OTHER THAN SCHEDULE 40.

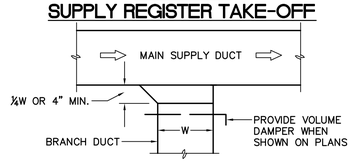
ALL PIPING SHALL BE PROVIDED WITH SEISMIC RESTRAINTS IN ACCORDANCE WITH SEISMIC REQUIREMENTS OF FEMA 412 & 414. RESTRAINT GUIDE: GUIDELINES FOR SEISMIC RESTRAINTS OF MECHANICAL SYSTEMS AND PIPING SYSTEMS" AS PUBLISHED BY FEMA AND IN ACCORDANCE WITH THE FLORIDA BUILDING AND MECHANICAL CODE.

5/M204 PIPE HANGER (6" AND SMALLER) DETAIL

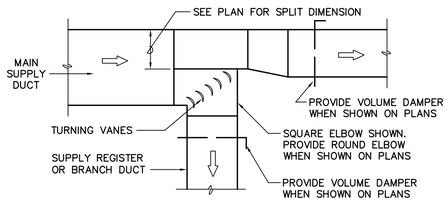
NOT TO SCALE



PLAN VIEW
SUPPLY REGISTER TAKE-OFF



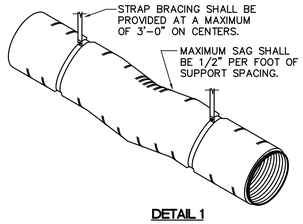
PLAN VIEW
BRANCH DUCT TAKE-OFF



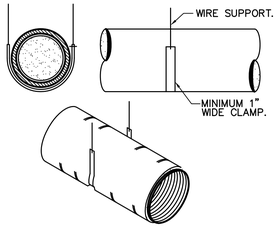
PLAN VIEW
AIR SPLIT TYPE DUCT TAKE-OFF

3/M204 SUPPLY DUCT TAKE-OFFS

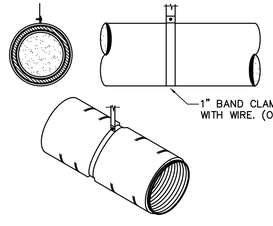
NOT TO SCALE



DETAIL 1



DETAIL 2



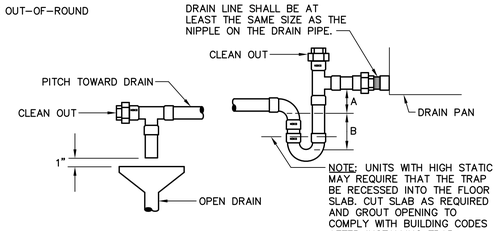
DETAIL 3

NOTES:

1. METALLIC FLEXIBLE DUCTWORK SHALL BE ATTACHED USING A MINIMUM OF THREE (3) #8 SHEET METAL SCREWS EQUALLY SPACED AROUND THE DUCTWORK CIRCUMFERENCE. DUCTWORK LARGER THAN 12" SHALL HAVE A MINIMUM OF FIVE (5) #8 SHEET METAL SCREWS. SCREWS SHALL BE LOCATED AT LEAST 1/2" FROM THE DUCTWORK END.
2. NONMETALLIC FLEXIBLE DUCTWORK SHALL BE SECURED TO THE SLEEVE OR COLLAR USING A DRAW BAND. IF THE DUCTWORK COLLAR EXCEEDS 12", THE DRAW BAND MUST BE POSITIONED BEHIND A BEAD ON THE METAL COLLAR.
3. INSULATION AND VAPOR BARRIERS PRESENT ON FACTORY-FABRICATED DUCTWORK SHALL BE FITTED OVER THE CORE CONNECTION AND SHALL BE SUPPLEMENTALLY SECURED WITH A DRAW BAND.
4. FLEXIBLE DUCTWORK SEALING SHALL BE A CLASS "B" SEAL FOR LOW PRESSURE DUCTWORK.
5. SUPPORT SYSTEM SHALL NOT DAMAGE OR CAUSE OUT-OF-ROUND SHAPE.

6/M204 INSULATION FLEXIBLE DUCTWORK DETAIL

NOT TO SCALE

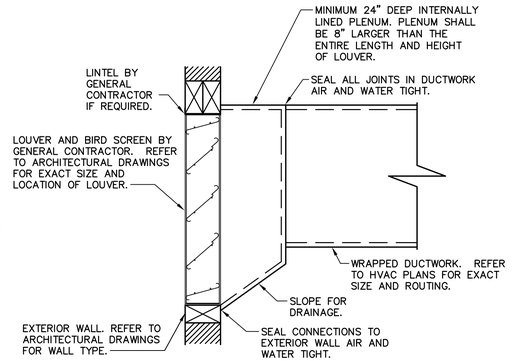


UNIT TYPE	A	B
DRAW THRU	X + 1"	2"
BLOW THRU	1" MIN.	2.0 X

WHERE X = STATIC PRESSURE IN PAN

6/M204 AIR HANDLING UNIT CONDENSATE TRAP DETAIL

NOT TO SCALE



7/M204 LOUVER CONNECTION DETAIL

NOT TO SCALE

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ANNEX BUILDING - MECHANICAL DETAILS

MANATEE COUNTY BUILDING OPERATION FACILITY

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JOHN D. CAMDEN
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CAD DWG FILE: M204 M205 MECHANICAL DETAILS.DWG

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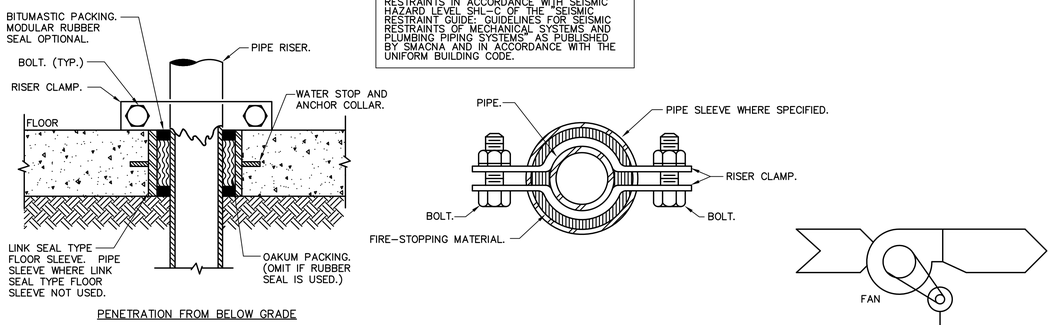
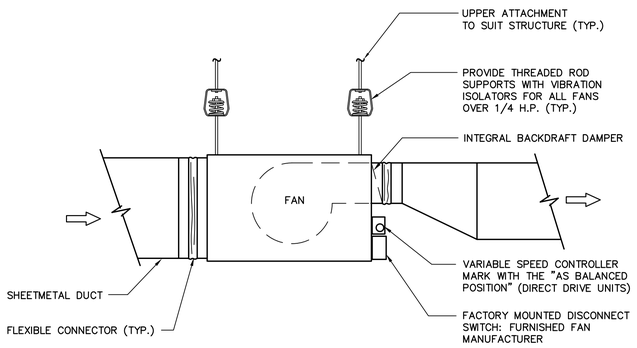
SHEET

M204

ALL PIPING SHALL BE PROVIDED WITH SEISMIC RESTRAINTS IN ACCORDANCE WITH SEISMIC HAZARD LEVEL SHL-C OF THE "SEISMIC RESTRAINT GUIDE: GUIDELINES FOR SEISMIC RESTRAINTS OF MECHANICAL SYSTEMS AND PLUMBING PIPING SYSTEMS" AS PUBLISHED BY SMACNA AND IN ACCORDANCE WITH THE UNIFORM BUILDING CODE.

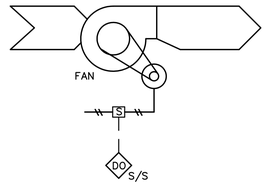


1 M205 **PIPE FLOOR PENETRATION DETAIL**
NOT TO SCALE



NOTE:
1. DISCONNECT SHALL BE PROVIDED BY ELECTRICALCONTRACTOR IF NOT AVAILABLE AS FACTORY MOUNTED.
2. FLEXIBLE CONNECTORS SHALL NOT BE BUNCHED AND SHALL BE STRETCHED TAUT.

2 M205 **INLINE FAN DETAIL**
NOT TO SCALE



4 M205 **TYPICAL EXHAUST FAN**
NOT TO SCALE

SEQUENCE OF OPERATION

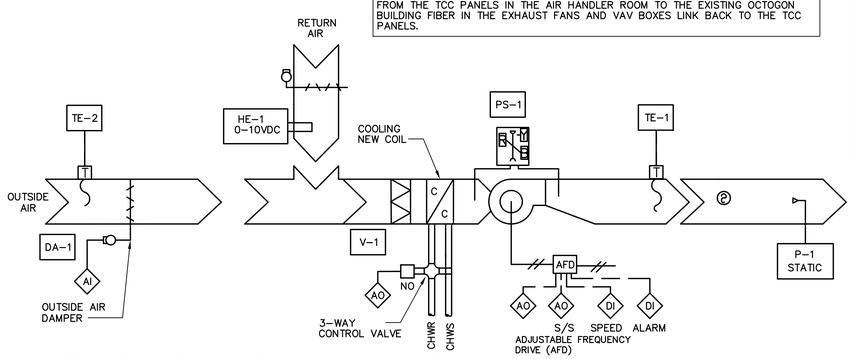
SEE FAN SCHEDULE FOR SEQUENCE OF OPERATION.

FANS CONTROLLED BY THE DDC SYSTEM SHALL OPERATE AS PER THE FAN SCHEDULE.

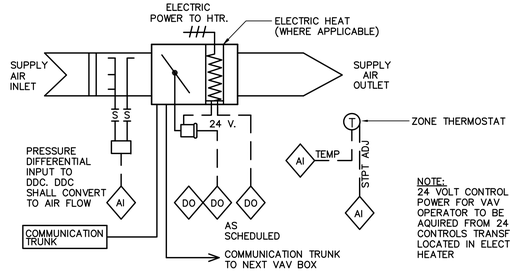
OTHER FANS SHALL BE CONTROLLED BY THERMOSTATS, WALL MOUNTED SWITCHES, EQUIPMENT INTERLOCKS, ETC. AS INDICATED ON THE FAN SCHEDULE.

EXISTING MASTER TCC SYSTEM

PROVIDE A COMPLETE TIE INTO THE EXISTING ALC SYSTEM FROM EACH TCC PANEL. PROVIDE AND INSTALL A COMPLETE LINK THROUGH THE MASTER SYSTEM FROM THE TCC PANELS IN THE AIR HANDLER ROOM TO THE EXISTING OCTOGON BUILDING FIBER IN THE EXHAUST FANS AND VAV BOXES LINK BACK TO THE TCC PANELS.



3 M205 **AIR HANDLING UNIT CONTROL DIAGRAM (VAV UNIT)**
NOT TO SCALE



NOTE:
24 VOLT CONTROL POWER FOR VAV OPERATOR TO BE AQUIRED FROM 24 VOLT CONTROLS TRANSFORMER LOCATED IN ELECTRIC HEATER

5 M205 **VARIABLE AIR VOLUME DETAIL**
NOT TO SCALE

SEQUENCE OF OPERATIONS

THE VAV TERMINALS SHALL BE CONTROLLED DIRECTLY FROM THE DDC. CONNECT TO THE TERMINAL MANUFACTURER'S AIR FLOW PORTS TO SENSE PRESSURE DIFFERENTIAL. CALIBRATE PRESSURE DIFFERENTIAL TO VOLUMETRIC AIR FLOW. AIR FLOW SENSORS SHALL HAVE A RANGE OF 0.00 TO 0.75 INCH W.G. AND OFFER A RESOLUTION OF 0.02 INCHES OF WATER AND AN ACCURACY OF + 0.05 INCHES OF W.G. OR BETTER. PROVIDE TRI-STATE MOTOR.

IN THE COOLING MODE, THE VAV TERMINAL DAMPER SHALL MODULATE TO MAINTAIN ROOM SETPOINT TEMPERATURE, 75 DEGREES F ± 1 DEGREE F (ADJUSTABLE). IN THE HEATING MODE, THE VAV BOX WILL HAVE OBTAINED MINIMUM POSITION AND THEN THE ELECTRIC HEAT SHALL BE STAGED TO MAINTAIN MINIMUM SPACE SETPOINT TEMPERATURE 70 DEGREES F±1°F (ADJUSTABLE). PROVIDE A MINIMUM DEAD BAND BETWEEN THE HEATING AND COOLING MODE OF 4 DEGREES F WHERE NO CONTROL ACTION OCCURS. THE SOFTWARE ROUTINE SHALL PROVIDE PRESSURE INDEPENDENT CONTROL WITH SOFTWARE ADJUSTABLE MINIMUM AND MAXIMUM AIR FLOW SETPOINTS AS SCHEDULED FOR THE VAV TERMINAL UNITS SCHEDULE.

POINTS TO BE MONITORED AND CONTROLLED AT THE "FRONT END" ARE AS FOLLOWS:
- SPACE TEMPERATURE (F)
- AIRFLOW (CFM)
- ELECTRIC HEAT OUTPUTS
- DAMPER OUTPUT
- HEATING SETPOINT
- COOLING SETPOINT

WHEN THE SYSTEM IS IN THE "UNOCCUPIED" MODE AND THE HUMIDITY OVERIDE SEQUENCE, THE ELECTRIC REHEAT SHALL NOT ENERGIZE UNTIL THE SPACE TEMPERATURE DROPS TO 10 DEGS. BELOW THE THERMOSTAT SETPOINT.

AHU SEQUENCE OF OPERATION

THE VOLUME OF THE SUPPLY AIR FAN SHALL BE MODULATED VIA THE VFD TO MAINTAIN A SET POINT STATIC PRESSURE (INDIVIDUALLY ADJUSTABLE) LOCATED TWO THIRDS OF THE DISTANCE DOWN THE LONGEST MAIN DUCT TRUNK.

AIR HANDLING UNIT (AHU), THE THREE-WAY N.O. CHILLED WATER (CW) VALVE SHALL BE MODULATED TO MAINTAIN THE LEAVING AIR TEMPERATURE (LAT) SET POINT AT 53° F (ADJUSTABLE).

THE LAT SHALL BE RESET UP ONE DEGREE F WHEN ANY SPACE IS BELOW ITS COOLING SET POINT (I.E. WHEN SPACE IS BEING OVER COOLED) AND ITS VAV BOX IS AT ITS MINIMUM POSITION FOR OVER 5 MINUTES. REPEAT THIS RESET ROUTINE UNTIL THE SPACE HAS ACHIEVED ITS SET POINT AND IS NO LONGER BEING OVER COOLED. IF ANY SPACE IS BEING UNDER COOLED WITH ITS VAV BOX IN THE FULL OPEN POSITION FOR OVER 5 MINUTES, RESET DOWN THE COOLING COIL LAT. IF BOTH OVER COOLING AND UNDER COOLING ARE OCCURRING SIMULTANEOUSLY THEN THE UNDER COOLING SEQUENCE SHALL TAKE PRECEDENCE (I.E. RESET DOWN).

A FAN STATUS SENSOR SHALL BE PROVIDED TO ALERT THE DDC SYSTEM THAT THE THE FAN IS NOT OPERATING. ANY TIME THE FAN IS NOT OPERATING, THE INLET GUIDE VANES SHALL GO TO THE FULL CLOSED POSITION.

A STATIC PRESSURE HIGH LIMIT SWITCH SHALL DISABLE THE AHU FAN WHEN STATIC PRESSURE EXCEEDS 4 INCHES W.G. (ADJUSTABLE). DISPLAY ALARM AT FRONT END COMPUTER INDICATING HIGH STATIC PRESSURE SHUT DOWN.

HUMIDITY OVERRIDE SEQUENCE SHALL BE INITIATED WHEN RETURN AIR HUMIDITY EXCEEDS 60 PERCENT. FOR THIS SEQUENCE, THE LAT SHALL BE RESET TO 55° F (ADJUSTABLE) AND THE FRONT END COMPUTER SHALL DISPLAY "HUMIDITY OVERRIDE" FOR EACH APPLICABLE UNIT. WHEN RETURN AIR HUMIDITY REACHES SET POINT OF 55% RETURN TO NORMAL OPERATION AND RESET LAT TO 53°F.

RETURN AND OUTSIDE AIR MOTORIZED DAMPERS SHALL MODULATE TO MAINTAIN A CONSTANT OUTSIDE AIR SUPPLY AS SCHEDULED. DAMPERS SHALL BE INTERLOCKED THRU SOFTWARE SUCH THAT ONE DAMPER IS ALWAYS AT ITS OPEN POSITION.

THE UNIT'S FAN SHALL OPERATE AS PER THE USER PROGRAMMABLE SCHEDULE. THE NORMALLY OPENED CHILLED WATER VALVE SHALL CLOSE WHEN THE FAN IS NOT OPERATING.

TEMPERATURE CONTROLS POINT SCHEDULE

SYSTEM	HARDWARE OUTPUT DIGITAL: CONTROL RELAY	START/STOP	CONTACTOR (AS REQ'D.)	VALVE POSITIONS	DAMPER POSITIONS	VALVE POSITIONS	HARDWARE OUTPUT ANALOG	HARDWARE INPUT DIGITAL: PRESSURE SWITCH STATUS	FLOW SWITCH	SWITCH CLOSURE	AUXILIARY CONTACT	KW	FAN STATUS	HARDWARE INPUT ANALOG: TEMPERATURE	RELATIVE HUMIDITY	PRESSURE SENSOR	POSITION	FLOW	CURRENT	EQUIPMENT STATUS	MAINTENANCE	SOFTWARE ALARMS DIGITAL: HIGH LIMIT	LOW LIMIT	RUN TIME	SOFTWARE ALARMS ANALOG	EMCS FUNCTIONS: SCHEDULED START/STOP	VENTILATION/RECIRCULATION	TEMPERATURE CONTROL	HUMIDITY CONTROL	VAV CONTROL	NOTES
AIR HANDLING UNIT AHU-1:																															
AIR HANDLING UNIT AHU 1 (ON/OFF) (MS-1)		X																								X	X	X	X	X	
AIR HANDLING UNIT AHU-1 (STATUS) (PS-1)								X										X				X									
AIR HANDLING UNIT AHU-1 (VFD) (A-1)	X							X				X																		X	
AIR HANDLING UNIT AHU-1 (SA TEMP) (TE-1)													X																		
AIR HANDLING UNIT AHU-4-1 (DUCT STATIC PRESSURE) (P-1)																X						X									
AIR HANDLING UNIT AHU-4-1 (CHW VALVE) (V-1)				X																							X				
AIR HANDLING UNIT AHU-4-1 (REL. HUMIDITY) (HE-1)															X												X				
AIR HANDLING UNIT AHU-4-1 (OA TEMP) (TE-2)														X																	

NOTES:
1. PROVIDE STARTING RELAY AND CONTACTOR IN CONTROL PANEL RATED FOR MOTOR LOAD.
2. THE OUTSIDE AIR DAMPER SHALL CLOSE WHEN ATS1 INDICATES A TEMPERATURE OF 35°F OR LOWER.
3. VFD ON AHU-1 SHALL HAVE AUXILIARY CONTROLS FOR INPUT/OUTPUT FOR FAN SPEED CONTROL.
4. AIR HANDLING UNIT SHALL SHUT DOWN IN SMOKE DETECTION AND FIRE ALARM. FAN SHALL BE DISABLED.

CONTROL POINT ABBREVIATION LEGEND

DI	DIGITAL INPUT
DO	DIGITAL OUTPUT
AI	ANALOG INPUT
AO	ANALOG OUTPUT
S/S	START/STOP
VFD	VARIABLE FREQUENCY DRIVE
CHWS	CHILLED WATER SUPPLY
CHWR	CHILLED WATER RETURN
T	TEMPERATURE
H	HUMIDITY
C	CO_2
SP	STATIC PRESSURE
FS	FLOW SWITCH
LAT	LEAVING AIR TEMPERATURE
S	STARTER
FM	FLOW METER
HWR	HOT WATER RETURN
HWS	HOT WATER SUPPLY

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ANNEX BUILDING - MECHANICAL DETAILS

MANATEE COUNTY BUILDING OPERATION FACILITY
4410 66TH STREET WEST, BRADENTON FLORIDA

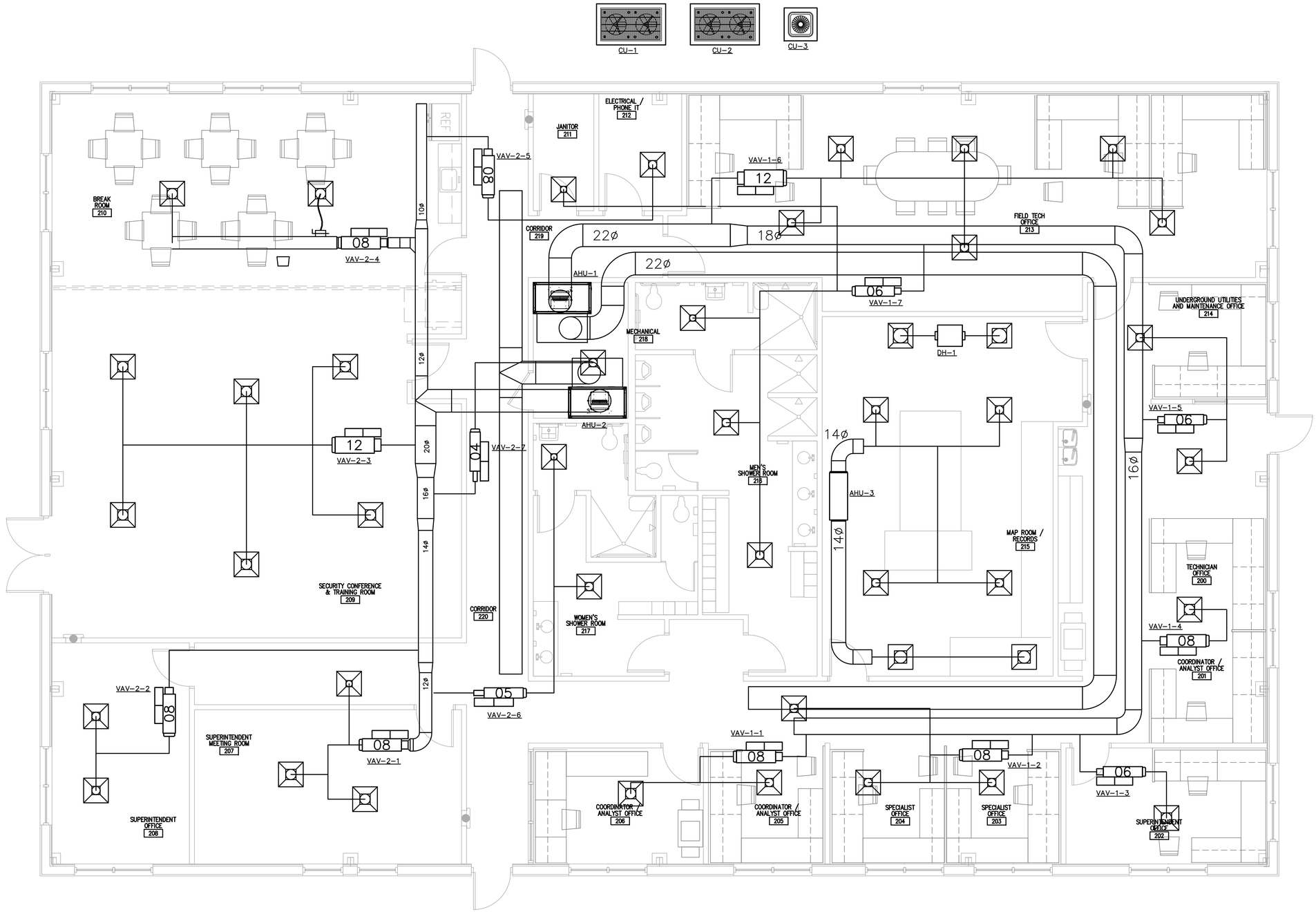
REVISIONS

PROJECT NO: 2012-46
DATE: 11/12/13
DRAWN BY: DC
CHK'D BY: JDC

CAD DWG FILE: M204 M205 MECHANICAL DETAILS.DWG

ATP ENGINEERING SOUTH, PL
5227 OFFICE PARK BLVD
BRADENTON, FLORIDA 34203
ENGR. BUSINESS #8908
941-751-6485

SHEET
M205



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 ENGINEER AND PROJECT MANAGER PRIOR TO START WORK.

1 M252 **MECHANICAL FLOOR PLAN**
1/4"=1'-0"

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OPERATIONS BUILDING - MECHANICAL FLOOR PLAN

MANATEE COUNTY BUILDING OPERATION FACILITY

4410 66TH STREET WEST, BRADENTON FLORIDA

CAD DWG FILE: M252 MECHANICAL FLOOR PLAN.DWG

REVISIONS

PROJECT NO: 2012-46
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PRELIMINARY NOT FOR CONSTRUCTION

JOHN D. CAMDEN
FL#53458

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SHEET
M252

GRILLE, REGISTER AND DIFFUSER SCHEDULE

TAG NO.	PATTERN	NECK SIZE	MODULE SIZE	FRAME STYLE	MATERIAL	FINISH	CFM RANGE	ACCESSORIES	MANUFACTURER	MODEL NO.	REMARKS
S-1	PERF	6ø	24X24	1	ALUM	WHITE	0-110	2	PRICE	APDF	3
S-2	PERF	8ø	24X24	1	ALUM	WHITE	105-240	2	PRICE	APDF	3
S-3	PERF	10ø	24X24	1	ALUM	WHITE	165-420	2	PRICE	APDF	3
S-4	PERF	12ø	24X24	1	ALUM	WHITE	230-500	2	PRICE	APDF	3
S-5	PERF	14ø	24X24	1	ALUM	WHITE	325-730	2	PRICE	APDF	3
S-6	4 WAY	6X6	7 3/4X7 3/4	SURF	ALUM	WHITE	0-145	2	PRICE	620DAL	4
S-7	4 WAY	10X6	11 3/4X7 3/4	SURF	ALUM	WHITE	100-270	2	PRICE	620DAL	4
S-6	4 WAY	12X6	13 3/4X7 3/4	SURF	ALUM	WHITE	115-320	2	PRICE	620DAL	4
---	---	---	---	---	---	---	---	---	---	---	---
R-1	PERF	8ø	24X24	1	ALUM	WHITE	0-240	2	PRICE	APDDR	3
R-2	PERF	10ø	24X24	1	ALUM	WHITE	110-420	2	PRICE	APDDR	3
R-3	PERF	12ø	24X24	1	ALUM	WHITE	157-700	2	PRICE	APDDR	3
R-4	PERF	14ø	24X24	1	ALUM	WHITE	207-1000	2	PRICE	APDDR	3
R-5	45	6X6	7 3/4X7 3/4	SURF	ALUM	WHITE	0-135	2	PRICE	630DAL	4
R-6	45	10X6	11 3/4X7 3/4	SURF	ALUM	WHITE	65-220	2	PRICE	630DAL	4
R-7	45	12X6	13 3/4X7 3/4	SURF	ALUM	WHITE	80-250	2	PRICE	630DAL	4
R-8	45	14X8	15 3/4X9 3/4	SURF	ALUM	WHITE	138-460	2	PRICE	630DAL	4
---	---	---	---	---	---	---	---	---	---	---	---
E-1	45	6X6	7 3/4X7 3/4	SURF	ALUM	WHITE	0-135	2	PRICE	630DAL	4
E-2	45	10X6	11 3/4X7 3/4	SURF	ALUM	WHITE	65-220	2	PRICE	630DAL	4
E-3	45	12X6	13 3/4X7 3/4	SURF	ALUM	WHITE	80-250	2	PRICE	630DAL	4
E-4	45	14X8	15 3/4X9 3/4	SURF	ALUM	WHITE	138-460	2	PRICE	630DAL	4
---	---	---	---	---	---	---	---	---	---	---	---
T-1	45	14X8	15 3/4X9 3/4	SURF	ALUM	WHITE	0-460	2	PRICE	630DAL	4
---	---	---	---	---	---	---	---	---	---	---	---

NOTES:
1. COORDINATE GRILLE FRAMES WITH CEILING AND WALL TYPE ON ARCHITECTURAL PLANS UNLESS NOTED.
2. OPPOSED BLADE DAMPER, EQUALIZING GRID COMBINATION.
3. REFER TO PLANS FOR ROUND INLET SIZE.
4. INSULATED PLENUM BOX BY CONTRACTOR WITH ROUND INLET SIZE AS INDICATED ON PLANS
5. PAINT ALL PERFORATED RETURN AIR GRILLES INTERIOR DUCT COLOR AS SELECTED BY ARCHITECT.

HVAC LOAD CALCULATIONS SUMMARY

	ZONE 1- AHU -1 EAST	ZONE 2- AHU -2 WEST	ZONE 3- AHU -3 MAPRM
SIZING METHOD	CARRIER E20II	CARRIER E20II	CARRIER E20II
AREA (SQ. FEET)	2535 SF	2719 SF	574 SF
TOTAL COOLING REQUIRED W/ OUTSIDE AIR (MBH)	115.5	117.7	16.6
OUTDOOR DRY BULB USED	93	93	93
OUTDOOR WET BULB USED	79	79	79
RELATIVE HUMIDITY %	54	56	55
INDOOR DRY BULB	75	75	75
TOTAL HEATING REQUIRED W/ OUTSIDE AIR (MBH)	39.7	34.8	7.7
TOTAL SENSIBLE GAIN (MBH)	79.6	80.1	14.2
TOTAL LATENT GAIN (MBH)	35.9	36.6	2.4
LB/LB SPECIFIC HUMIDITY ACROSS COIL	.00212	.00218	.00063

Reference: 503.2 SIZING, 2010 FLORIDA BUILDING CODE – ENERGY

LOUVER SCHEDULE

TAG NO.	LOCATION	MAX CFM	S.P.	INTAKE RELIEF EXHAUST	OPENING		NO. OF PANELS	MANUFACTURER	MODEL NO.	REMARKS
					WIDTH IN.	HEIGHT IN.				
L-1	WALL	1180	.1	I	30	30	1	RUSKIN	EME520MD	1-5

NOTES:
1. COORDINATE LOUVER WITH ARCHITECT PRIOR TO ORDER .
2. LOUVER SHALL BE FLORIDA APPROVED FOR WIND/IMPACT AND WIND DRIVEN RAIN. FL#29846.1. PROVIDE BIRD SCREEN AND DAMPER.
3. UNIT SHALL BE INSTALLED WITH FLANGE IN ACCORDANCE WITH MANUFACTURER'S INSTALLATION INSTRUCTIONS IN METAL BUILDING.
4. COLOR TO BE SPECIFIED BY THE ARCHITECT
5. ACCEPTABLE MANUFACTURERS ARE SPECIFIED IN ARCHITECTURAL SECTION. VERIFY WITH ARCHITECT PRIOR TO ORDER.

SPLIT SYSTEM A/C SCHEDULE

		CU-1	CU-2	CU-3
CONDENSING UNIT	---			
CAPACITY	TONS	10	10	1.5
NO. OF COMPRESSORS	---	2	2	1
COMPRESSOR RLA/LRA	AMPS	7.85/25	7.85/25	X
NO. OF CONDENSER FANS	---	2	2	1
CONDENSER FAN MOTOR	HP	3/4	3/4	115 W
ELECTRICAL	V/PH/HZ	460/3/60	460/3/60	208/3/60
MCA/MOCP	AMPS	23.5/30	23.5/30	17.3/20
E.E.R./I.E.E.R.	---	11.4/12.5	11.4/12.5	19.7 SEER
WEIGHT	LBS.	499	499	93
MANUFACTURER	---	YORK	YORK	FUJITSU
MODEL NO.	---	YC120C00D6	YC120C00D6	18RLFCD
AIR HANDLING UNIT	---	AHU-1	AHU-2	AHU-3
COOLING CAPACITY	MBH	128.4	127.6	18
SENSIBLE CAPACITY	MBH	88.3	85.5	X
SUPPLY AIR	CFM	4290	4200	550
OUTSIDE AIR	CFM	620	510	45
ENTERING AIR (DB/WB)	°F/°F	77.4/66.4	77/66.4	73/62
LEAVING AIR (DB/WB)	°F/°F	56.7/55.7	58.3/56.8	56/55
FAN MOTOR	HP	3.00	3.00	96 W
STATIC PRESS. (EXTERNAL/TOTAL)	---	1.0/1.3	1.0/1.3	.12
ELECTRICAL	V/PH/HZ	460/3/60	460/3/60	208/1/60
MCA/MOCP	AMPS	5.9/15	5.9/15	.46/15
ELECTRIC HEAT	KW	---	---	HP -20 MBH
FILTER TYPE	---	MERV 8	MERV 8	MERV 8
WEIGHT	LBS.	573	573	63
MANUFACTURER	---	YORK	YORK	FUJITSU
MODEL NO.	---	NC120C00D6	NC120C00D6	18RLFCD COMBINED

NOTES:
1. UNIT SUPPLIED HORIZONTAL WITH VIBRATION ISOLATORS, MOTORIZED 24 V OA DAMPER OPEN WHEN UNIT IS ON, MFR CONTROL PACKAGE, REVIEW PIPING CONNECTIONS W/ MFR., SMOKE DETECTOR SHUT DOWN ON SUPPLY, CONDENSATE OVERFLOW SWITCH SHUT DOWN, AND DRAIN PAN. CONDENSER TIE DOWN AND VIBRATION ISOLATION, LINE SET, AND FILTER. R410A REFRIGERANT
2. DISCONNECT BY DIV 16, CONVENIENCE OUTLET BY DIV 16 NEXT TO CONDENSER. TIE DOWNS AND CONCRETE PAD BY MC. REFR TO PLANS FOR CONTROLS,
3. 1⅛"S, ⅞" L 4. ½"S, ¼" L

VARIABLE AIR VOLUME BOX SCHEDULE

ITEM NO.	---	VAV-2-1	VAV-2-2	VAV-2-3	VAV-2-4	VAV-2-5	VAV-2-6	VAV-2-7
BOX CAPACITY	CFM	735	490	1700	550	395	210	120
CONTROL CFM VOLUME	MAX./MIN.	840-250	840-210	1975-640	840-280	435-180	350-125	250-120
MAX. STATIC PRESS. DROP	IN. WTR.	.22	.14	.27	.15	.22	.09	.04
ELECTRIC HEATER SIZE	(KW)/STEPS	3.5/2	3/2	6.5/3	4/2	2/2	1/1	1/1
ELECTRICAL	V/PH/HZ	480/3/60	480/3/60	480/3/60	480/3/60	480/3/60	480/3/60	480/3/60
MANUFACTURER	---	ENVIROTEC	ENVIROTEC	ENVIROTEC	ENVIROTEC	ENVIROTEC	ENVIROTEC	ENVIROTEC
MODEL NO.	---	SDR EH-08	SDR EH-08	SDR EH-12	SDR EH-08	SDR EH-08	SDR EH-05	SDR EH-04

NOTES
(1) VAV BOX MANUFACTURER TO FACTORY MOUNT CONTROLLER WHICH IS TO BE FURNISHED BY THE CONTROLS CONTRACTOR.
(2) ALL VAV BOXES HEAT SET AT MINIMUM CFM AND 72 DEGREE ROOM TEMP. (70 CFM MIN. PER KW). ALL SELECTIONS ARE MADE AT LESS THAN 20 NC. DISCHARGE AND RADIATED.
(3) FACTORY MOUNTED DISCONNECT SWITCH WITH INTEGRAL FUSING FOR THE ELECTRIC HEATER AND CONTROLS.

VARIABLE AIR VOLUME BOX SCHEDULE

ITEM NO.	---	VAV-1-1	VAV-1-2	VAV-1-3	VAV-1-4	VAV-1-5	VAV-1-6	VAV-1-7
BOX CAPACITY	CFM	500	530	400	335	430	1450	395
CONTROL CFM VOLUME	MAX./MIN.	840 – 210	840-210	435-150	435-150	435-175	1975-520	435-140
MAX. STATIC PRESS. DROP	IN. WTR.	.1	.15	.27	.25	.25	.1	.27
ELECTRIC HEATER SIZE	(KW)/STEPS	3/2	3/2	2/1	2/1	2.5/1	7.0/4	2/1
ELECTRICAL	V/PH/HZ	480/3/60	480/3/60	480/3/60	480/3/60	480/3/60	480/3/60	480/3/60
MANUFACTURER	---	ENVIROTEC	ENVIROTEC	ENVIROTEC	ENVIROTEC	ENVIROTEC	ENVIROTEC	ENVIROTEC
MODEL NO.	---	SDR EH-08	SDR EH-08	SDR EH-06	SDR EH-06	SDH EH-06	SDR EH-12	SDR EH-06

NOTES
(1) VAV BOX MANUFACTURER TO FACTORY MOUNT CONTROLLER WHICH IS TO BE FURNISHED BY THE CONTROLS CONTRACTOR.
(2) ALL VAV BOXES HEAT SET AT MINIMUM CFM AND 72 DEGREE ROOM TEMP. (70 CFM MIN. PER KW). ALL SELECTIONS ARE MADE AT LESS THAN 20 NC. DISCHARGE AND RADIATED.
(3) FACTORY MOUNTED DISCONNECT SWITCH WITH INTEGRAL FUSING FOR THE ELECTRIC HEATER AND CONTROLS.

FAN SCHEDULE

ITEM NO.	---	EF-1	EF -2	EF -3	EF -4
SERVICE	---	BREAKROOM	MEN	WOMEN	JANITOR
AIR QUANTITY	CFM	150	380	165	50
EXT. STATIC PRESSURE	IN. WTR.	.375	.375	.375	.375
FAN TYPE	---	INLINE CABINET	INLINE CABINET	INLINE CABINET	INLINE CABINET
DRIVE	---	VS	VS	VS	VS
SONES	---	2.0	1.1	3.1	1.4
MOTOR	HP/WATTS	113	207	124	46.8
FAN SPEED	RPM	1189	929	1276	735
ELECTRICAL	V/PH./HZ.	120/1/60	120/1/60	120/1/60	120/1/60
CONTROLS	---	3	2	2	2
LOCATION	---	ABOVE CEILING	ABOVE CEILING	ABOVE CEILING	ABOVE CEILING
MANUFACTURER	---	COOK	COOK	COOK	COOK
MODEL NO.	---	GN-164	GN-620	GN-164	GN-124

NOTES:
1. PROVIDE AND INSTALL VS CONTROL, BACK DRAFT DAMPER, DISCONNECT, FLEX CONNECTION ON INLET AND OUTLET, VIBRATION ISOLATION ON FAN SUPPORT. GALV. METAL FAN BLADES.
2. PROVIDE OCCUPANCY SENSOR FOR WALL BOX WITH MAX 30 MIN TIMER ADJUSTABLE TO BE WIRED BY THE ELECTRICIAN.
3. PROVIDE WALL SWITCH FOR WALL BOX TO BE WIRED BY THE ELECTRICIAN.

OUTDOOR AIR LOAD CALCULATIONS

FMC TABLE 403.3 AND ASHRAE STD 62 2010
FACILITY
70 CFM/ WC RESTROOMS , .5 CFM/SF SHOWER ROOMS (80 SF EACH)
JANITOR 1 CFM/SF (60 SF)
STORAGE, ELECTRICAL, CORRIDOR, MECH SPACE .06 CFM/ SF
TRAINING SPACE SF X 7.5 X 5/1000 +.06 CFM/ SF
OFFICE SPACE SF X 5 /1000 X 5 + .06 CFM /SF
BREAKROOM SF X 5 X 30/1000 + .06 CFM / SF
OFFICE SPACE = 2457 SF
2457 X 5 / 1000SF X 5 + .06/SF = 209.4 CFM
TRAINING SPACE 931 SF
931 X 7.5 X 5/1000 + .06 CFM/ SF = 509.72 CFM
STORAGE, ELECTRICAL, CORRIDOR, MECH SPACE = 779 SF
779 X .06 / SF = 46.7 CFM
BREAK ROOM = 510 SF
510 X 5 X 30/1000 + .06/SF = 158.1 CFM
TOTAL REQUIRED OA =923.9 CFM
1180 CFM SCHEDULED
RESTROOMS, 7 WC./UR, 46 SF JANITOR AND 4 SHOWERS = 575 CFM TOTAL MAX. EXHAUST REQUIRED
595 CFM SCHEDULED
PLUS 150 CFM FOR BREAK ROOM INTERMITTENT.

DEHUMIDIFIER UNIT SCHEDULE

ITEM	---	DH-1
TOTAL SUPPLY AIR	CFM	500
ESP		.8
MOTOR, UNIT MCA– NO ELECT HT.	FLAMPS	14.0
ELECTRICAL	V/PH/HZ	120/1/60
DEHUMIDIFIER		16 PINTS/HR REMOVAL
TOTAL COOLING CAPACITY	MBH	12.0
TOTAL REHEATING CAPACITY	MBH	15.5
MANUFACTURER	---	JCI/YORK
MODEL NO.	---	S1-CD065T01

NOTES:
1. UNIT SUPPLIED WITH VIBRATION ISOLATION, MERV 11 FILTER, DRAIN PAN, WALL HUMIDISTAT AND TIMER, ¾" CONDENSATE LINE, OUTLET FLANGE, AND 120 VOLT PLUG , AND PIG TAIL. 100 LBS.
2. COOLING CAPACITY RATED AT COIL ENTERING 80°F DB/63°FWB, REFRIGERANT R410A. ROOM TEMP DESIGN 80° F.
3. ALL UNITS SHALL BE HAVE FILTER ACCESS, AND CONDENSATE DRAIN. CONDENSATE PUMPS SHALL BE INTEGRAL WITH UNITS.
4. PROVIDE DRAIN PAN CUT OUT SWITCH WIRED IN SERIES WITH INLINE FLOAT SWITCH AT DH PRIOR TO CONDENSATE LINE TRAP.
5. THE AUXILIARY DRAIN PAN IS NOT TIED TO CONDENSATE LINE.

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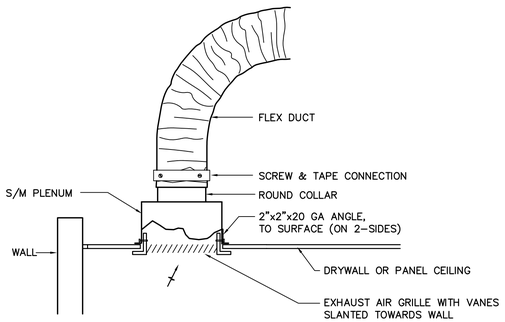
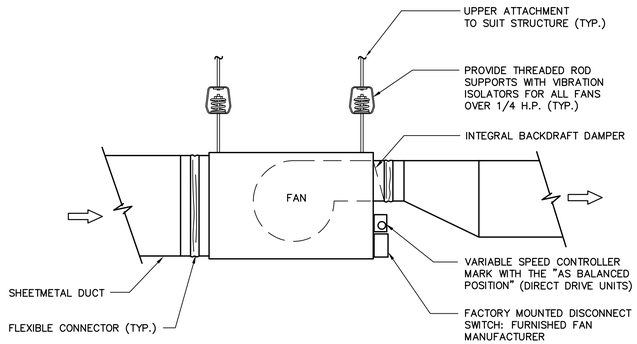
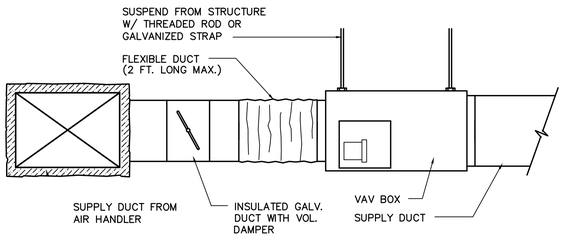


1/M254 FLEX-DUCTED EXHAUST GRILLE

NOT TO SCALE

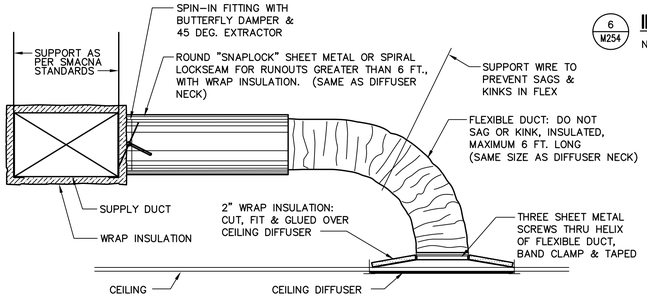


NOTE:
1. DISCONNECT SHALL BE PROVIDED BY ELECTRICALCONTRACTOR IF NOT AVAILABLE AS FACTORY MOUNTED.
2. FLEXIBLE CONNECTORS SHALL NOT BE BUNCHED AND SHALL BE STRETCHED TAUT.



2/M254 VAV BOX DETAIL

NOT TO SCALE

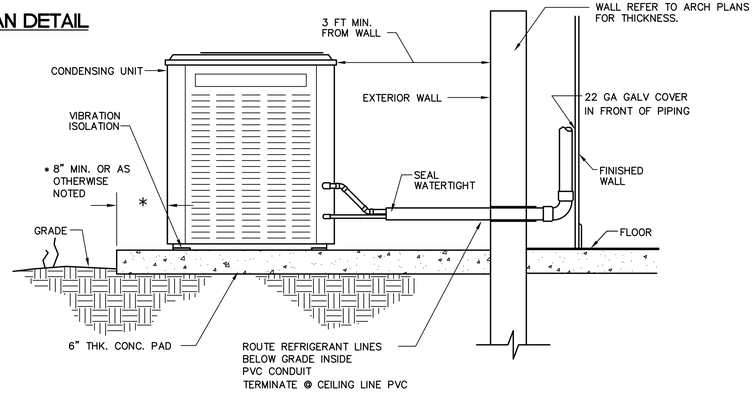


4/M254 CEILING DIFFUSER RUNOUT DETAIL

NOT TO SCALE VERIFY CEILING TYPE PRIOR TO ORDER.

6/M254 INLINE FAN DETAIL

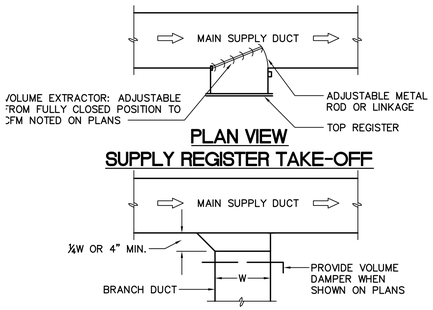
NOT TO SCALE



REFER TO THE SCHEDULE FOR TIE DOWN REQUIREMENTS.

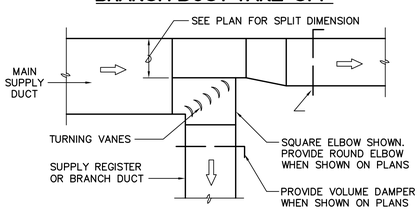
7/M254 CONDENSING UNIT DETAIL

NOT TO SCALE



PLAN VIEW
SUPPLY REGISTER TAKE-OFF

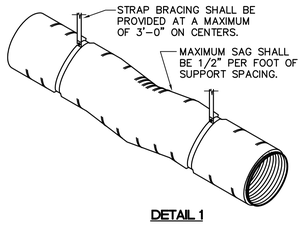
PLAN VIEW
BRANCH DUCT TAKE-OFF



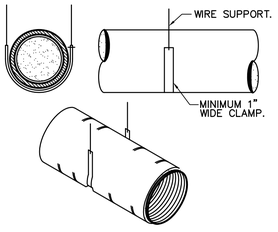
PLAN VIEW
AIR SPLIT TYPE DUCT TAKE-OFF

3/M254 SUPPLY DUCT TAKE-OFFS

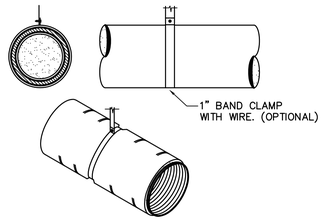
NOT TO SCALE



DETAIL 1



DETAIL 2

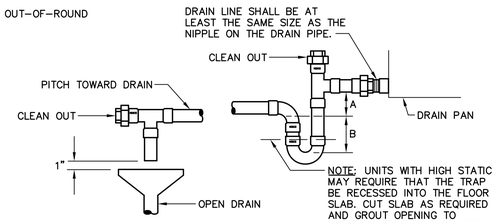


DETAIL 3

NOTES:
1. METALLIC FLEXIBLE DUCTWORK SHALL BE ATTACHED USING A MINIMUM OF THREE (3) #8 SHEET METAL SCREWS EQUALLY SPACED AROUND THE DUCTWORK CIRCUMFERENCE. DUCTWORK LARGER THAN 12" SHALL HAVE A MINIMUM OF FIVE (5) #8 SHEET METAL SCREWS. SCREWS SHALL BE LOCATED AT LEAST 1/2" FROM THE DUCTWORK END.
2. NONMETALLIC FLEXIBLE DUCTWORK SHALL BE SECURED TO THE SLEEVE OR COLLAR USING A DRAW BAND. IF THE DUCTWORK COLLAR EXCEEDS 12", THE DRAW BAND MUST BE POSITIONED BEHIND A BEAD ON THE METAL COLLAR.
3. INSULATION AND VAPOR BARRIERS PRESENT ON FACTORY-FABRICATED DUCTWORK SHALL BE FITTED OVER THE CORE CONNECTION AND SHALL BE SUPPLEMENTALLY SECURED WITH A DRAW BAND.
4. FLEXIBLE DUCTWORK SEALING SHALL BE A CLASS "B" SEAL FOR LOW PRESSURE DUCTWORK.
5. SUPPORT SYSTEM SHALL NOT DAMAGE OR CAUSE OUT-OF-ROUND SHAPE.

5/M254 INSULATION FLEXIBLE DUCTWORK DETAIL

NOT TO SCALE

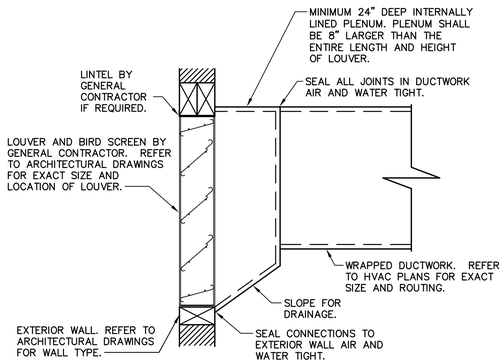


UNIT TYPE	A	B
DRAW THRU	X + 1"	2"
BLOW THRU	1" MIN.	2.0 X

WHERE X = STATIC PRESSURE IN PAN

8/M254 AIR HANDLING UNIT CONDENSATE TRAP DETAIL

NOT TO SCALE



9/M254 LOUVER CONNECTION DETAIL

NOT TO SCALE

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OPERATIONS BUILDING - MECHANICAL DETAILS

MANATEE COUNTY BUILDING OPERATION FACILITY

4410 66TH STREET WEST, BRADENTON FLORIDA

REVISIONS

PROJECT NO: 2012-46
DATE: 11/12/13
DRAWN BY: DC
CHK'D BY: JDC

PRELIMINARY NOT FOR CONSTRUCTION

JOHN D. CAMDEN
FL#53458

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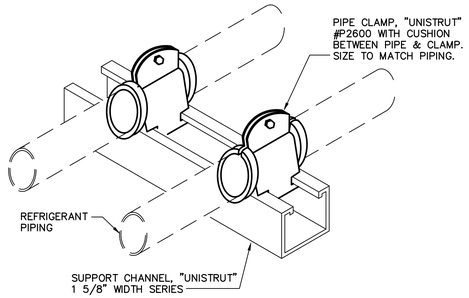
M254



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 ⅝" ARMAFLEX INSULATION FULL LENGTH. DO NOT SPLIT DURING INSULATION BUTT JOINTS WITH ARMAFLEX SEALANT, AND APPLY ARMAFLEX PRESERVATIVE ON ALL LINES.
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. PROVIDE LOW VOL SEALANT IN ACCORDANCE WITH LEED REQUIREMENTS.
10. COORDINATE HG, DISCH, S, AND L LINE LENGTHS FOR INDIVIDUAL UNITS WITH MFG.

1 M255 REFRIGERANT PIPING DETAIL

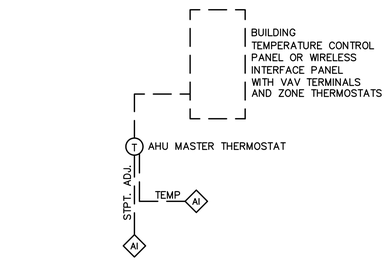
NOT TO SCALE

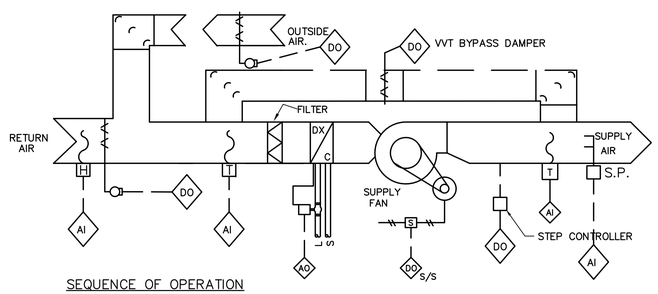
CONTROL POINT ABBREVIATION LEGEND

DI	DIGITAL INPUT
DO	DIGITAL OUTPUT
AI	ANALOG INPUT
AO	ANALOG OUTPUT
S/S	START/STOP
VFD	VARIABLE FREQUENCY DRIVE
S	REFRIGERATION SUCTION LINE
L	REFRIGERATION LIQUID LINE
T	TEMPERATURE
H	HUMIDITY
C	CO_2
SP	STATIC PRESSURE
FS	FLOW SWITCH
LAT	LEAVING AIR TEMPERATURE
S	STARTER
T W	WIRELESS THERMOSTAT

EXISTING MASTER TCC SYSTEM

PROVIDE A COMPLETE TIE INTO THE EXISTING ALC SYSTEM FROM EACH TCC PANEL. PROVIDE AND INSTALL A COMPLETE LINK THROUGH THE MASTER SYSTEM FROM THE TCC PANELS IN THE AIR HANDLER ROOM TO THE EXISTING UTILITY BUILDING FIBER IN THE EXHAUST FANS AND VAV BOXES LINK BACK TO THE TCC PANELS.





SEQUENCE OF OPERATION

FOR EACH SYSTEM, THE REFRIG. EXPANSION VALVE SHALL BE MODULATED TO MAINTAIN THE COOLING ROOM TEMPERATURE SETPOINT. PROVIDE A SPACE TEMPERATURE INPUT TO THE TCC PANEL. MAINTAIN THE SPACE COOLING COOLING TEMPERATURE SETPOINT (75'F ± .5'F – SOFTWARE ADJUSTABLE).

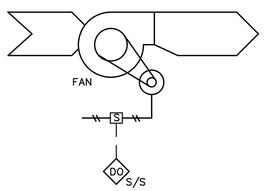
HUMIDITY OVERRIDE SEQUENCE SHALL BE INITIATED WHEN RETURN AIR HUMIDITY EXCEEDS 60% ADJUST, FOR THIS SEQUENCE, THE LAT SHALL BE RESET TO 60' F (ADJUSTABLE). THE REFRIG VALVE SHALL OPEN AND THE ELECTRIC HEAT SHALL BE STAGED TO MAINTAIN THE ROOM SET POINT AND THE FRONT END CONTROL SHALL DISPLAY "HUMIDITY OVERRIDE" FOR EACH APPLICABLE UNIT. WHEN RETURN AIR HUMIDITY REACHES SETPOINT OF 55% RETURN TO NORMAL OPERATION.

THE UNIT'S FAN SHALL OPERATE AS PER THE USER PROGRAMMABLE MASTER THERMOSTAT SCHEDULE. THE OUTSIDE AIR DAMPER SHALL BE CLOSED WHEN THE BUILDING IS NOT SCHEDULED FOR OCCUPANCY PER THE PROGRAMMABLE THERMOSTAT. THE RETURN AIR DAMPER SHALL CLOSE WHEN THE UNIT IS OFF.

THE UNIT'S VVT BYPASS DAMPER SHALL OPERATE ALL TIMES THE FAN IS ON. THE DISCHARGE STATIC SENSOR SHALL OPERATE THE BYPASS DAMPER. MIN 20% AIRFLOW SETPOINT FOR ALL ZONES, BYPASS MAXIMUM 80%.

2 M255 TYPICAL VAV AIR HANDLING UNIT DETAIL

NOT TO SCALE



3 M255 TYPICAL EXHAUST FAN

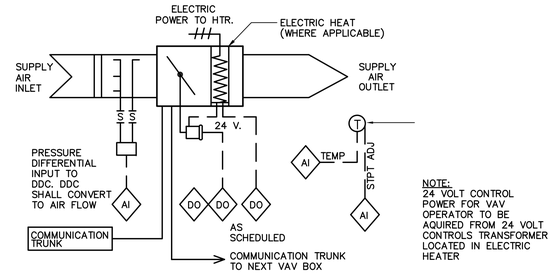
NOT TO SCALE

SEQUENCE OF OPERATION

SEE FAN SCHEDULE FOR SEQUENCE OF OPERATION.

FANS CONTROLLED BY THE DDC SYSTEM SHALL OPERATE AS PER THE FAN SCHEDULE.

OTHER FANS SHALL BE CONTROLLED BY THERMOSTATS, WALL MOUNTED SWITCHES, EQUIPMENT INTERLOCKS, ETC. AS INDICATED ON THE FAN SCHEDULE.



NOTE:
24 VOLT CONTROL POWER FOR VAV OPERATOR TO BE AQUIRED FROM 24 VOLT CONTROLS TRANSFORMER LOCATED IN ELECTRIC HEATER

4 M255 VARIABLE AIR VOLUME DETAIL

NOT TO SCALE

SEQUENCE OF OPERATIONS

THE VAV TERMINALS SHALL BE CONTROLLED DIRECTLY FROM THE DDC. CONNECT TO THE TERMINAL MANUFACTURER'S AIR FLOW PORTS TO SENSE PRESSURE DIFFERENTIAL. CALIBRATE PRESSURE DIFFERENTIAL TO VOLUMETRIC AIR FLOW. AIR FLOW SENSORS SHALL HAVE A RANGE OF 0.00 TO 0.75 INCH W.G. AND OFFER A RESOLUTION OF 0.02 INCHES OF WATER AND AN ACCURACY OF + 0.05 INCHES OF W.G. OR BETTER. PROVIDE TRI–STATE MOTOR.

IN THE COOLING MODE, THE VAV TERMINAL DAMPER SHALL MODULATE TO MAINTAIN ROOM SETPOINT TEMPERATURE, 75 DEGREES F ± 1 DEGREE F (ADJUSTABLE). IN THE HEATING MODE, THE VAV BOX WILL HAVE OBTAINED MINIMUM POSITION AND THEN THE ELECTRIC HEAT SHALL BE STAGED TO MAINTAIN MINIMUM SPACE SETPOINT TEMPERATURE 70 DEGREES F±1'F (ADJUSTABLE). PROVIDE A MINIMUM DEAD BAND BETWEEN THE HEATING AND COOLING MODE OF 4 DEGREES F WHERE NO CONTROL ACTION OCCURS. THE SOFTWARE ROUTINE SHALL PROVIDE PRESSURE INDEPENDENT CONTROL WITH SOFTWARE ADJUSTABLE MINIMUM AND MAXIMUM AIR FLOW SETPOINTS AS SCHEDULED FOR THE VAV TERMINAL UNITS SCHEDULE.

POINTS TO BE MONITORED AND CONTROLLED AT THE "FRONT END" ARE AS FOLLOWS:
- SPACE TEMPERATURE (F)
- AIRFLOW (CFM)
- ELECTRIC HEAT OUTPUTS
- DAMPER OUTPUT
- HEATING SETPOINT
- COOLING SETPOINT

WHEN THE SYSTEM IS IN THE "UNOCCUPIED" MODE AND THE HUMIDITY OVERRIDE SEQUENCE, THE ELECTRIC REHEAT SHALL NOT ENERGIZE UNTIL THE SPACE TEMPERATURE DROPS TO 10 DEGS. BELOW THE THERMOSTAT SETPOINT.

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SHEET

M255

ABBREVIATIONS, LEGENDS AND GENERAL NOTES

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
BTUH	BRITISH THERMAL UNIT PER HOUR
BOT	BOTTOM
CC	COOLING COIL
CFM	CUBIC FEET PER MINUTE
CH	CHILLER
CHWS	CHILLED WATER RETURN
CHWR	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
DN	DIGITAL OUTPUT
DO	DOWN
DP	DEW POINT
DX	DIRECT EXPANSION
EA	EXHAUST AIR
EAT	ENTERING AIR TEMPERATURE
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
F DPR	FIRE DAMPER
FCU	FAN COIL UNIT
FD	FLOOR DRAIN
FL	FLOOR
FIPI	FINS PER INCH
FPF	FINS PER FOOT
FPM	FEET PER MINUTE
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
MD	MOTORIZED DAMPER
MAX	MAXIMUM
MIN	MINIMUM
NC	NORMALLY CLOSED
NO	NORMALLY OPENED
OA	OUTSIDE AIR
OS&Y	OUTSIDE SCREW & YOKE
PD	PRESSURE DROP
PRESS	PRESSURE
RA	RETURN AIR
RD	ROOF DRAIN
RL	RAIN LEADER
RTU	ROOF TOP UNIT
S	SANITARY
SEER	SEASONAL ENGINEERING EFFICIENCY RATIO
SD	SMOKE DAMPER
SA	SUPPLY AIR
SP	STATIC PRESSURE
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

SYMBOLS

- VALVE – SEE SPECIFICATIONS FOR TYPE, GATE VALVE WHEN NOT SPECIFIED.
- GATE VALVE
- GLOBE VALVE
- PRESSURE REDUCING VALVE
- OS&Y VALVE
- CHECK VALVE
- BACK WATER VALVE
- BACK FLOW PREVENTER
- UNION
- BUTTERFLY VALVE
- BALL VALVE
- GAS COCK
- STRAINER
- EXPANSION JOINT
- GRADE CLEANOUT IN–LINE
- CONCENTRIC REDUCER
- ECENTRIC REDUCER
- PIPE ANCHOR
- FLOW DIRECTION
- PRESSURE GAUGE
- HAMMER ARRESTOR (PDI SIZE INDICATED) (A)
- TEMPERATURE GAUGE
- SAFETY OR PRESSURE RELIEF VALVE
- ANGLE GLOBE VALVE
- MANUAL AIR VENT
- CLEANOUT EXPOSED
- FLOOR CLEANOUT
- GRADE CLEANOUT END–LINE
- CAPPED OUTLET
- VALVE IN RISER
- GATE VALVE W/ ADAPTER TO 3/4" HOSE THREAD
- P–TRAP
- HOSE BIBB W/ VACUUM BREAKER
- WALL HYDRANT W/ VACUUM BREAKER
- FLOOR DRAIN
- ROOF DRAIN

PIPING AND CONNECTIONS

- NEW SOIL OR WASTE PIPING
- EXISTING PIPING TO REMAIN
- EXISTING PIPING TO BE REMOVED
- VENT PIPING
- COLD WATER PIPING
- HOT WATER PIPING
- HOT WATER RETURN PIPING
- CRP — CHEMICAL RESISTANT PIPING
- FP — FIRE PROTECTION PIPING
- G — GAS PIPING
- O — OXYGEN PIPING
- A — AIR PIPING
- N — NITROGEN PIPING
- V — VACUUM PIPING
- NO — NITROUS OXIDE PIPING
- IN–LINE UP CONNECTION
- END–LINE UP
- IN–LINE DOWN/UP CONNECTION
- END–LINE DOWN CONNECTION
- BOTTOM CONNECTION, 45 OR 90 DEG.
- TOP CONNECTION, 45 OR 90 DEG.
- CROSSING BOTTOM CONNECTION
- SIDE CONNECTION
- Y–1/8 BEND

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

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.

GENERAL NOTES

1. CONTRACTOR SHALL PROVIDE COMPLETE PLUMBING SYSTEMS AS DETAILED ON THESE DRAWINGS. WORK CONSISTS OF FURNISHING ALL MATERIALS, EQUIPMENT, AND SERVICES REQUIRED FOR COMPLETE SYSTEMS. INCLUDE ANY INCIDENTAL APPARATUS, APPLIANCES, MATERIAL LABOR AND SERVICES NECESSARY TO MAKE NEW WORK COMPLETE IN ALL RESPECTS AND FULLY READY FOR OPERATION.
2. ALL PLUMBING WORK SHALL BE DESIGNED, INSTALLED, TESTED, AND CLEANED IN ACCORDANCE WITH FLORIDA PLUMBING CODE REQUIREMENTS.
3. VERIFY THE EXACT LOCATION OF EXISTING SOIL AND COLD WATER PIPING MAINS FROM THE ACTUAL JOB SITE AND CIVIL EXTENSIONS. ALL NEW LINES ARE TO BE ROUTED TO AND/OR FROM VERIFIED LOCATIONS. TAPS, WHEN NOT PROVIDED BY PREVIOUS INSTALLER, ARE TO BE PROVIDED BY THIS INSTALLER.
4. MAKE SUCH OFFSETS AND DEVIATIONS FROM WORK SHOWN ON THE DRAWINGS, AS MAY BE NECESSARY TO FIT THE ACTUAL SPACE CONDITIONS.
5. WHERE VALVES OCCUR ABOVE DRYWALL OR PLASTER OR ARE CONCEALED BEHIND WALLS, THIS CONTRACTOR SHALL FURNISH AND INSTALL ACCESS PANELS. PANELS SHALL MATCH AS APPROVED BY ARCHTIECT.
6. THE INSTALLER SHALL VISIT THE JOB SITE AND INSPECT ALL EXISTING CONDITIONS AFFECTING THE WORK. SUBMISSION OF HIS PROPOSAL SHALL BE CONSTRUED AS INDICATING SUCH KNOWLEDGE. NO ADDITIONAL PAYMENT WILL BE MADE ON CLAIMS THAT ARISE FROM THE CONTRACTOR'S FAILURE TO COMPLY WITH THIS REQUIREMENT.
7. THE PLANS AND DIAGRAMS OF PLUMBING PIPING ARE SCHEMATIC ONLY AND SHOULD NOT BE SCALED. INSTALLER SHALL COORDINATE AT SITE WITH ALL PLUMBING, HVAC, FIRE PROTECTION, AND ELECTRICAL WORK SO AS NOT TO CONFLICT IN LOCATION WITH OTHER WORK UNDER THIS CONTRACT OR THAT MAY BE EXISTING.
8. PROVIDE AND MAINTAIN TEMPORARY CONNECTIONS TO KEEP EXISTING UTILITIES IN SERVICE. ANY SHUT DOWNS ARE TO BE APPROVED BY OWNER'S REPRESENTATIVE.
9. EXACT LOCATION NUMBER AND TYPE OF PLUMBING FIXTURES SHALL BE DETERMINED FROM ARCHITECTURAL DRAWINGS. VERIFY SUCH LOCATIONS BEFORE PROCEEDING ROUGH–IN.
10. INSTALLER SHALL NOT CUT ANY STRUCTURAL MEMBERS WITHOUT FIRST SECURING WRITTEN APPROVAL FROM THE ARCHITECT.
11. PROVIDE DIELECTRIC UNIONS AT ALL CONNECTIONS BETWEEN DISSIMILAR PIPING METALS.
12. FIELD VERIFY ALL EXISTING PIPE SIZES PRIOR TO INSTALLATION.
13. NO VENT THRU ROOF SHALL TERMINATE CLOSER THAN 10 FT. TO ANY OUTSIDE AIR INTAKE.
14. ALL SANITARY AND WATER PIPING UNDERGROUND SHALL BE A MINIMUM OF 18" BELOW GRADE OR FINISHED FLOOR UNLESS NOTED OTHERWISE.
15. PIPING IN CONCRETE BLOCK WALLS SHALL BE INSTALLED AS BLOCK IS BEING LAID. DO NOT CUT BLOCK WALL.
16. PROVIDE ALL SINKS AND LAVATORIES WITH SLIP JOINT TRAP FITTINGS FOR CLEANOUT.
17. PROVIDE ALL REFRIGERATORS WITH A 3/8" COLD WATER SUPPLY FOR AN ICE MAKER. TERMINATE SUPPLY BEHIND REFRIGERATOR AT APPROXIMATELY 12" AFF WITH A CHROME PLATED STOP. SEE ARCHITECTURAL DRAWINGS FOR LOCATIONS OF REFRIGERATORS.
18. ALL WORK IS TO BE FREE OF DEFECTS IN WORKMANSHIP AND MATERIALS FOR A PERIOD OF THREE (3) 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.
19. 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.
20. WHEN CONFLICTS OCCUR IN SPECIFICATIONS OR IN THE DRAWINGS, OR BETWEEN EITHER, THE ITEMS OF GREATER QUANTITY OR HIGHER COST SHALL BE PROVIDED.
21. THE CONTRACTOR SHALL COORDINATE WORK WITH OTHER TRADES IN ORDER TO AVOID CONFLICTS.
22. CONTRACTOR SHALL PROVIDE TO LOCAL AHJ OR PERMITTING AGENCY A COPY OF ALL MAJOR EQUIPMENT CUTS SHEETS AT TIME OF APPLICATION.

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ANNEX BUILDING - PLUMBING LEGENDS AND GENERAL NOTES

MANATEE COUNTY BUILDING OPERATION FACILITY

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CAD DWG FILE: P201 PLUMBING LEGEND AND GENERAL NOTES.DWG

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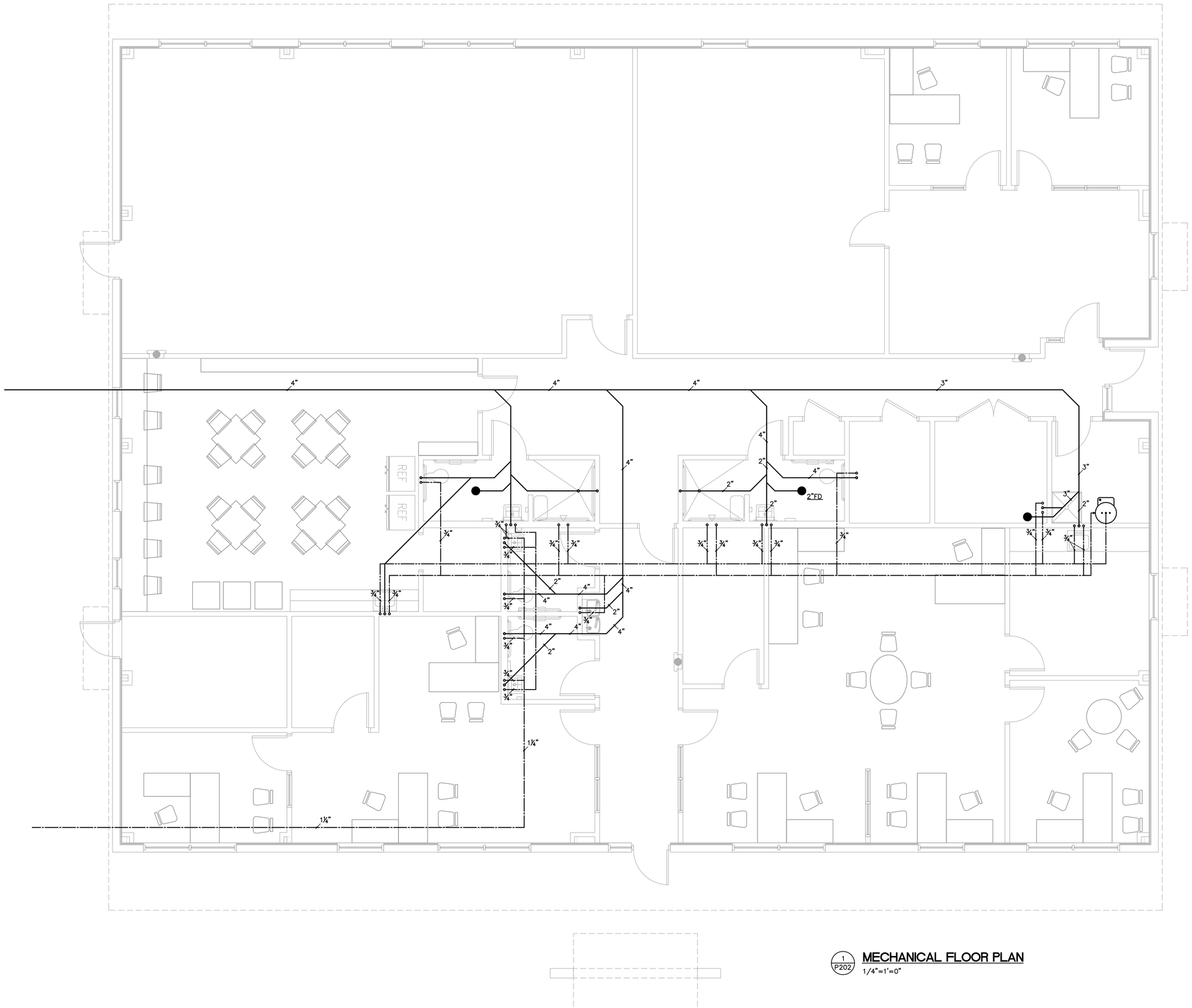
P201



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 ENGINEER AND PROJECT MANAGER PRIOR TO START WORK.

1 / P202 **MECHANICAL FLOOR PLAN**
1/4"=1'=0"

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ANNEX BUILDING - PLUMBING FLOOR PLAN

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SHEET
P202

PLUMBING FIXTURE SCHEDULE

MARK	DESCRIPTION	COMPONENTS PROVIDED BY P.C.	FIXTURE		FIXTURE RUNOUT SIZE					REMARKS
			BASIC FIXTURE	TRIM AND ACCESSORIES	DRAIN WASTE	VENT	C.W.	H.W.	OTHER	
WC	VITREOUS CHINA FL. MTD. WATER CLOSET, WHITE 15" HIGH, ELONGATED BOWL, FLUSH WATER CLOSET	COMPLETE UNIT WITH ALL TRIM & ACCESSORIES	AMERICAN STANDARD"MADERA" MODEL # 3451.128 WITH SLOAN 111-1.28 FLUSH VALVE	SEAT: AMERICAN STD. #5905.100 SOLID PLASTIC, ELONGATED WHITE OPEN FRONT SEAT W/CHECK HINGE.1⅛" INLET SPUD, WAX RING, 1" ANGLE STOP, VAC BRKR, ESCUTCHEONS	3"	2"	1"	---	---	1.28 GALLON PER FLUSH, CAULK AT FL. CONTACT WITH WHITE SILICONE SEALANT. VERIFY RIGHT HAND OR LEFT HAND.
WC	VITREOUS CHINA FL. MTD. WATER CLOSET, WHITE 17½" HIGH, ELONGATED BOWL, FLUSH WATER CLOSET	COMPLETE UNIT WITH ALL TRIM & ACCESSORIES	AMERICAN STANDARD"MADERA" MODEL #3461.128 WITH SLOAN 111-1.28 FLUSH VALVE	SEAT: AMERICAN STD. #5905.100 SOLID PLASTIC, ELONGATED WHITE OPEN FRONT SEAT W/CHECK HINGE.1⅛" INLET SPUD, WAX RING, 1" ANGLE STOP, VAC BRKR, ESCUTCHEONS	3"	2"	1"	---	---	1.28 GALLON PER FLUSH, CAULK AT FL. CONTACT WITH WHITE SILICONE SEALANT. COMPLIES WITH ADA REQ. VEIRFY RIGHT HAND OR LEFT HAND.
LAV	VITREOUS CHINA WALL HUNG LAVATORY, WHITE, 21"X18", 4" CENTER SETS WITH CENTER HOLE	COMPLETE UNIT WITH ALL TRIM & ACCESSORIES	AMERICAN STANDARD 'LUCENRE' MODEL # 0355.012 , WALL SUPPORT	FAUCET: SYMMONS 4" CTR. S-20-2-G SINGLE HANDLE FAUCET WITH ROSE SPRAY OUTLET, GRID STRAINER DRN. ASSEMBLY ADA , .5GPM TRAP COVER: PROFLO #PF202WH SUPPORT: CONCEALED FL. MTD. SUPPORT SMITH FIG. 0700, CW & HW SHUTOFF VALVES @ WALL.	1¼"	1½"	½"	½"	---	CAULK AT WALL CONTACT WITH WHITE SILICONE SEALANT. SEE ARCHITECTURAL PLANS FOR MOUNTING HEIGHT TO COMPLY WITH ADA REQUIREMENTS. PROVIDE INSULATION ON DRN. AND WATER PIPING.
UR	URINAL, 14" ELONGATED RIM, VITREOUS CHINA WALL HANGARS, OUTLET FLG., RUBBER GASKET.	COMPLETE UNIT WITH ALL TRIM & ACCESSORIES	AMERICAN STANDARD "WASHBROOK" MODEL# 6590.501 ADA APPROVED 1.0 GPF	SLOAN 186-1.0 FLUSHOMETER, VERIFY RH OR LH., SMITH/ WATTS HANGAR OR EQUAL.	2"	1½"	¾"	---	---	1.0 GALLON PER FLUSH, CAULK AT WALL. CONTACT WITH WHITE SILICONE SEALANT. COMPLIES WITH ADA REQUIREMENTS.
SS	MOLDED STONE SERVICE SINK, 24"W X 24"X 10" DEEP.	COMPLETE UNIT WITH ALL TRIM & ACCESSORIES	FIAT MODEL#MSB 2424 WITH 2 PANEL STAINLESS STEEL WALL GUARD (MSG2828), MOP HANGAR, VINYL BUMPER GUARD(E-77-AA HOSE BRACKET	3 INCH JOINT/TRAP & STRAINER T&S BRASS B-0665-BSTR ROUGH CHROME FAUCET CW & HW SHUTOFF VALVES @ WALL. COLOR: WHITE	3"	2"	½"	½"	---	CAULK AT FLOOR WITH SILICONE SEALANT. COLOR AS SELCETED BY ARCHITECT. ADA FAUCET
ECO	EXTERIOR CLEANOUT	COMPLETE UNIT WITH ALL TRIM & ACCESSORIES	ZURN MODEL# Z-1454 WATTS MODEL# CO-260	ACCESSORIES: VANDAL PROOF SCREWS, COUNTER SUNK BRASS PLUG.	---	---	---	---	---	VERIFY SIZE REQUIRED AT POINT OF APPLICATION. SET IN CONCRETE PAD PER DRAWINGS.
FCO	INTERIOR CLEANOUT	COMPLETE UNIT WITH ALL TRIM	ZURN MODEL# Z-1400-14-CF WATTS MODEL# CO-200-R/RC/T	ACCESSORIES: ADJUSTABLE TOP, CARPET RETAINER.	---	---	---	---	---	VERIFY SIZE REQUIRED AT POINT OF APPLICATION.
WCO	WALL CLEANOUT	COMPLETE UNIT WITH ALL TRIM & ACCESSORIES	ZURN MODEL# 1446-4-Z-VP WATTS MODEL# CO-460-RD	ACCESSORIES: FLUSH OVER WALL FRAME, NICKEL BRONZE WALL ACCESS COVER, COUNTERSUNK BRASS PLUG.	---	---	---	---	---	VERIFY SIZE REQUIRED AT POINT OF APPLICATION.
BRKRM OFFICE	STAINLESS STEEL SINGLE COMPARTMENT SINK, SELF-RIMMING, 14" X 18" X10.5" BASIN DEPTH, 3-HOLE	COMPLETE UNIT WITH ALL TRIM & ACCESSORIES	JUST 3 HOLE 4" CENTER SET UNIT UNDERCOATED #SLX1921AGR ELKAY #LKD2445BH FAUCET 4 INCH ADA HANDLES	SS P-TRAP LK / JUST DRAIN TAILPIECE AND REMOVABLE STRNR. CW & HW SHUTOFF VALVES @ WALL.	2"	1-1/2"	1/2"	1/2"	--	COORDINATE INSTALLATION WITH G.C. PRIOR TO CABINET PLACEMENT, 18" DEEP CABINETS.
GBD	GARBAGE DISPOSER	COMPLETE UNIT WITH ALL TRIM & ACCESSORIES	INSINKERATOR BADGER 5, 1½" DRAIN, ROUGH IN BY PC	½" DISHWASHER CONNECTION	1½"	1¼"	---	---	½"	COORDINATE WITH GC/EC FOR ROUGH IN 120V/1PH/6.9A WALL SWITCH BY EC, KEY PROVIDED.
DSH-1	DISHWASHER CABINET MOUNT UNDER COUNTER, RESIDENTIAL UNIT BY OTHERS	COMPLETE UNIT WITH ALL TRIM & ACCESSORIES	UNIT SUPPLIED BY GC ROUGH IN BY PC	ACCESSORIES: WITH HW SHUTOFF VALVE @ WALL. NEAR SINK FLEXIBLE DRAIN HOSE WITH CLAMPS WALL ESCUTCHEON, BRAIDED HOT WATER HOSE	2"	1½"	---	⅜"	---	UNIT PROVIDED WITH BUILT IN HEATER COORDINATE INSTALLATION WITH G.C. PRIOR TO CONCRETE FLOOR AND CABINET PLACEMENT.
EWC	PACKAGED WATER COOLER BARRIER-FREE, SPLIT LEVEL WALL HUNG	COMPLETE UNIT WITH ALL TRIM & ACCESSORIES	ELKAY MODEL# EZSTL8C	COLOR: STANDARD TWO TONE GRAY ACCESSORIES: STAINLESS STEEL BASINS, STAINLESS STEEL BUBBLERS, WITH CW SHUTOFF VALVE @ WALL.	1½"	1½"	½"	---	---	COORDINATE WITH EC FOR POWER REQUIREMENTS. PROVIDE WITH R-134A REFRIGERANT, PROVIDE WITH 5 YEAR WARRANTY FOR COMPRESSOR. 120 VOLT, 1PHASE, 3.7A ADA COMPLIANT
WH-1	WALL HYDRANT VACUUM BREAKER, ¾" MALE HOSE CONNECTION.	COMPLETE UNIT WITH ALL TRIM & ACCESSORIES	WOODFORD B75 WITH TEE KEY UP ¾" INLET, POLISHED BRASS WALL COVER, RECESSED IN WALL	COLOR: ROUGH BRONZE.	---	---	¾"	---	---	COORDINATE WITH GC FOR ROUGH IN.
FD	FLOOR DRAIN	COMPLETE UNIT WITH ALL TRIM & ACCESSORIES	ZURN MODEL# Z-415 ROUND TOP WATTS FD-100 COORDINATE COVER WITH ARCHITECT.	ZURN #Z-1022 TRAP PRIMER TO L-1	2"	---	---	---	½"	COORDINATE INSTALLATION WITH G.C. PRIOR TO CONCRETE FLOOR PLACEMENT.
TP-1	TRAP PRIMER	COMPLETE UNIT WITH ALL TRIM & ACCESSORIES	ZURN MODEL# Z-1022 WITH AIR GAP	PROVIDE ON LAVATORY LINE, PROVIDE ACCESS PANEL AND WALL BOX WITH UNIT	---	---	½"	---	---	COORDINATE INSTALLATION WITH G.C. PRIOR TO WALL PLACEMENT.
SH	SHOWER, MIXING VALVE SPRAY HEAD AND FLOOR DRAIN. ADA .	COMPLETE UNIT WITH ALL TRIM & ACCESSORIES	TILE SHOWER, SEAT, AND BAR BY G.C.COORDINATE ROUGH IN OF DRAIN AND SHOWER UNIT	FLOOR DRAIN: WATTS# FD-100/BRONZE STRAINER. PRESSURE BALANCE VALVE: AMERICAN STD. MODEL# R120SS WITH SCREWDRIVER STOPS. MODEL#T385.507 LEVER HANDLE, FACEPLATE, SHOWER HEAD, ARM AND FLANGE, POLISHED CHROME FINISH. #1662.604 3 WAY HAND SHOWER, CHECK VALVE AND SLIDE BAR.-1.5 GPM	2"	1½"	½"	½"	---	COORDINATE PLACEMENT OF FLOOR DRAIN WITH G.C. PRIOR TO POURING FLOOR. COMPLIES WITH ADA REQUIREMENTS, TILE BASIN BY G.C. REFER TO ARCHITECTURAL PLANS FOR DETAILS AND ELEVATION
WHA	WATER HAMMER ARRESTER	COMPLETE UNIT WITH ALL TRIM & ACCESSORIES	J.R. SMITH "HYDROTROL" MODEL# 5005-5020. JOSAM SERIES-75000. ZURN "SHOKSTOP" MODEL# Z-1700.	SEE P.D.I SIZES. P.D.I SIZE / PIPE SIZE / FIXTURE UNIT / ZURN / JOSAM / J.R. SMITH: A ¾" 1-11 100 75001 5005; B 1" 12-32 200 75002 5010; C 1" 33-60 300 75003 5020						SIZES TO MATCH MAINS. INSTALL PER MANUFATURER'S RECOMMENDATIONS. SEE WATER DISTRIBUTION DIAGRAM FOR LOCATION.

SCHEDULES NOTES:
1. ALL FIXTURES SHALL BE SUPPLIED WITH MCGUIRE SUPPLY KITS WITH BRASS STEMS, AND CHROME PLATED BRASS STOPS. PROVIDE AND INSTALL BRAIDED FLEXIBLE CONNECTION LINES, AND ESCUTCHEONS.
2. ALL ADA FIXTURES (LAVS) SHALL HAVE PROVIDED PLUMBEREX PTRAP COVERS AND VALVE SUPPLY COVERS.

ELECTRIC WATER HEATER SCHEDULE

TAG NO.	LOCATION	STORAGE CAPACITY GALLONS	RECOVERY GPH	TEMP. RISE °F	KW	ELECTRICAL CHARACTERISTICS			MANUFACTURER	MODEL NO.	WEIGHT	REMARKS
						VOLTS	PH	HZ				
EWH-1	JANITOR	52	102	55	9	480	3	60	AO SMITH	DRE-52-9	260	1

NOTES:
1. NEW EWH, PROVIDE AND INSTALL NEW T & P RELIEF VALVE, DRAIN PAN, THERMOMETER ON DISCHARGE LINE, ISOLATION VALVES , AND DIELECTRIC COUPLINGS. UNIT SET AT 120 DEGREES F. UNIT CAPACITY 102 GPH FIRST HOUR AT 55 DEGREE RISE. UNIT WEIGHT EXCLUDES WATER. 6" CONCRETE PAD BY GC

BACKFLOW PREVENTER SCHEDULE 3/4" TO 2"

ITEM NO.		BFP-1	
TOTAL CAPACITY	GPM	52	
PRESSURE DROP	PSI	11	
QTR. TURN BALL SHUT OFFS		X	
BRONZE STRAINER		X	
STAINLESS STEEL CHECK VALVE		X	
NON RISING STEM GATE VALVE SHUTOFF		----	
INTEGRAL BODY UNIONS		----	
OPERATING WEIGHT	LBS.	40	
FLANGED ADAPTOR ENDS		-----	
LOCATION	---	MECH. EQUIP. RM.	
MANUFACTURER	---	WATTS	
MODEL NO.	---	009M2QT-2"	

NOTES
(1) DRAIN FUNNEL AND FULL SIZE LINE TO NEAREST FD.
(2) PRESSURE GAUGE ON INCOMING AND LEAVING WITH PETCOCK SHUTOFF

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ANNEX BUILDING - PLUMBING SCHEDULES

MANATEE COUNTY BUILDING OPERATION FACILITY
4410 66TH STREET WEST, BRADENTON FLORIDA

REVISIONS

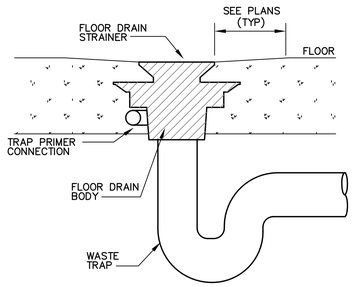
PROJECT NO: 2012-46
DATE: 11/12/13
DRAWN BY: DC
CHK'D BY: JDC

JOHN D. CAMDEN
FL#53458

CAD DWG FILE: P203 PLUMBING SCHEDULES.DWG

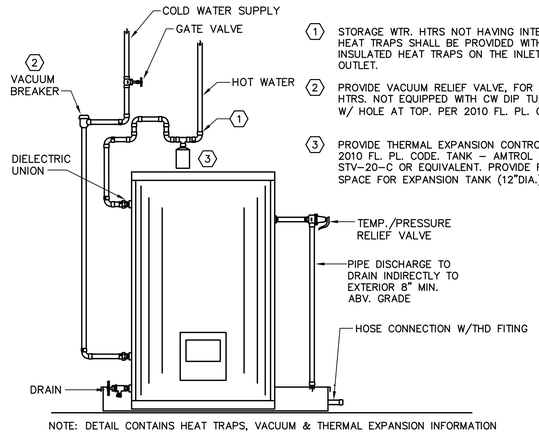
ATP ENGINEERING SOUTH, PL
5227 OFFICE PARK BLVD
BRADENTON, FLORIDA 34203
ENGR. BUSINESS #8908
941-751-6485

SHEET
P203



1 / P204 **FLOOR DRAIN INSTALLATION DETAIL**

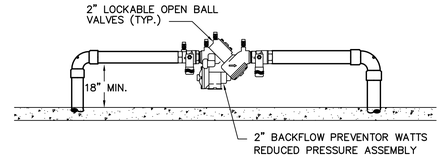
NOT TO SCALE



NOTE: DETAIL CONTAINS HEAT TRAPS, VACUUM & THERMAL EXPANSION INFORMATION

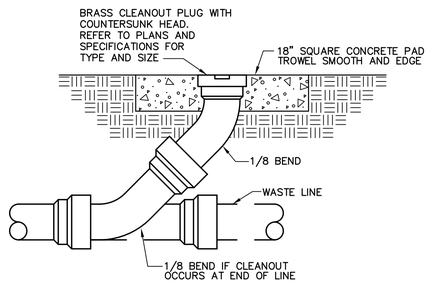
3 / P204 **ELECTRIC WATER HEATER PIPING DETAIL**

NOT TO SCALE



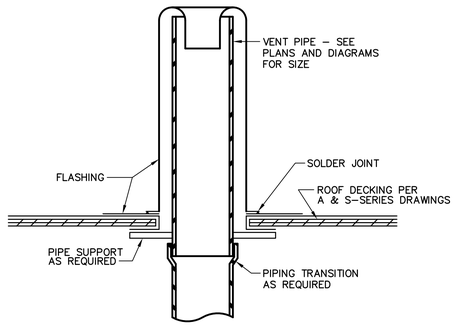
5 / P204 **BACKFLOW PREVENTOR DETAIL- REDUCED PRESSURE**

NOT TO SCALE



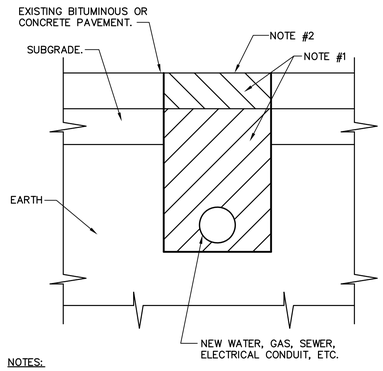
2 / P204 **EXTERIOR CLEANOUT DETAIL**

NOT TO SCALE



4 / P204 **VENT THROUGH ROOF (VTR)**

NOT TO SCALE



NOTES:

1. THE CONTRACTOR INSTALLING THE NEW UTILITY SERVICE SHALL MAKE THE CUT, EXCAVATE, INSTALL NEW SERVICE, INSTALL AN APPROVED BANK RUN GRAVEL BACKFILL TO TOP OF SUBGRADE, AND HAUL AWAY EXCESS MATERIALS. ALL ENGINEERED MATERIALS SHALL BE COMPACTED TO 95% COMPACTION MIN.
2. THE CONTRACTOR SHALL FURNISH AND INSTALL THE FINAL PAVING AT ALL LOCATIONS NOTED ON THE SITE PLANS. FINAL PAVING FOR CUTS MADE IN LOCATIONS NOT NOTED ON THE SITE PLANS WILL BE THE RESPONSIBILITY OF THE CONTRACTOR MAKING THE CUT.

6 / P204 **CUTS OF EXISTING PAVED SURFACES**

NOT TO SCALE

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ANNEX BUILDING - PLUMBING DETAILS

MANATEE COUNTY BUILDING OPERATION FACILITY

4410 66TH STREET WEST, BRADENTON FLORIDA

REVISIONS

PROJECT NO: 2012-46
DATE: 11/12/13
DRAWN BY: DC
CHK'D BY: JDC

PRELIMINARY
NOT FOR
CONSTRUCTION

JOHN D. CAMDEN
FL#53458

CAD DWG FILE: P204 PLUMBING DETAILS.DWG

ATP ENGINEERING SOUTH, PL
5227 OFFICE PARK BLVD
BRADENTON, FLORIDA 34203
ENGR. BUSINESS #8908
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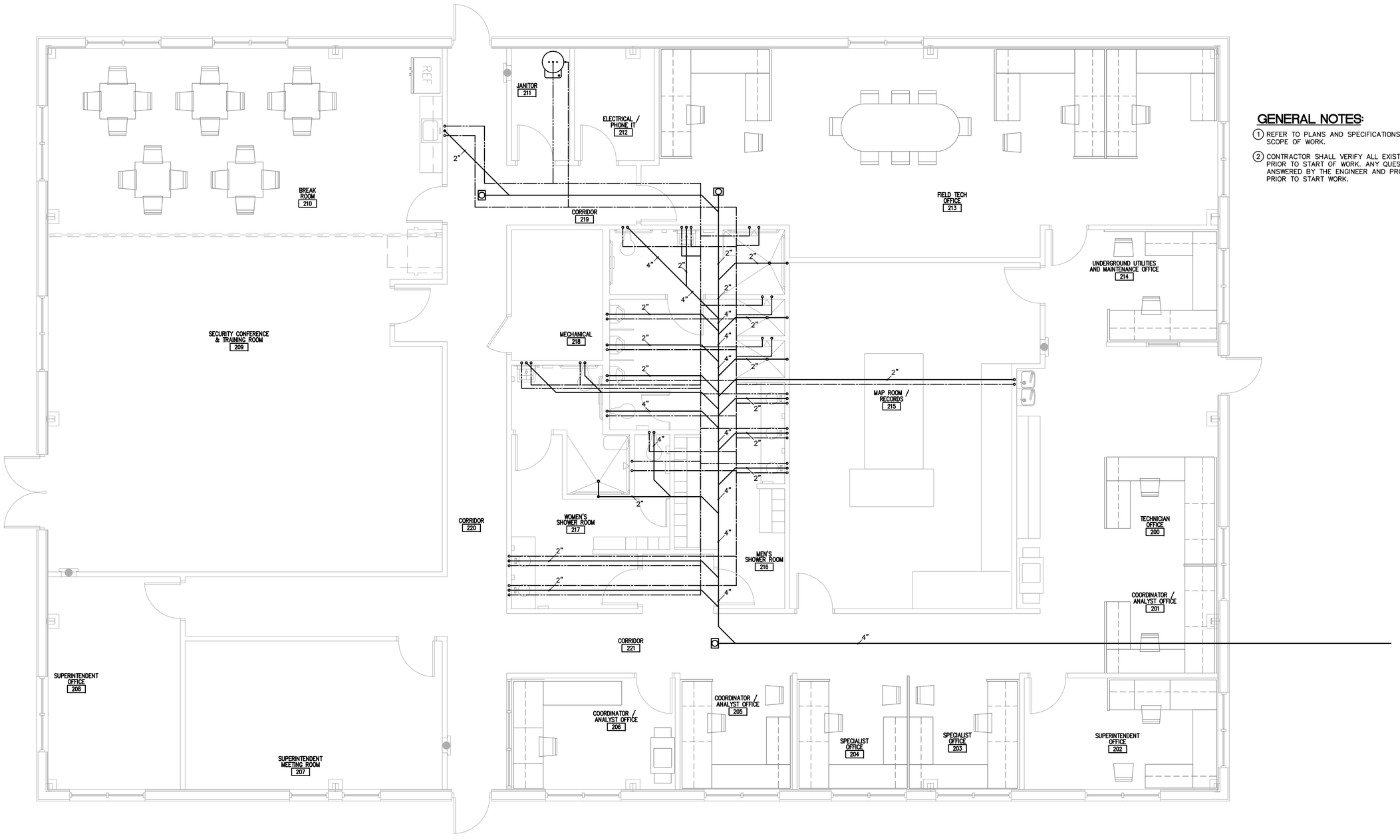
SHEET

P204



1 P252 **PLUMBING FLOOR PLAN**
1/4"=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 ENGINEER AND PROJECT MANAGER PRIOR TO START WORK.

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OPERATIONS BUILDING - PLUMBING FLOOR PLAN

MANATEE COUNTY BUILDING OPERATION FACILITY
4410 66TH STREET WEST, BRADENTON FLORIDA

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SHEET
P252

PLUMBING FIXTURE SCHEDULE

MARK	DESCRIPTION	COMPONENTS PROVIDED BY P.C.	FIXTURE		FIXTURE RUNOUT SIZE					REMARKS
			BASIC FIXTURE	TRIM AND ACCESSORIES	DRAIN WASTE	VENT	C.W.	H.W.	OTHER	
WC	VITREOUS CHINA FL. MTD. WATER CLOSET, WHITE 15" HIGH, ELONGATED BOWL, FLUSH WATER CLOSET	COMPLETE UNIT WITH ALL TRIM & ACCESSORIES	AMERICAN STANDARD"MADERA" MODEL # 3451.128 WITH SLOAN 111-1.28 FLUSH VALVE	SEAT: AMERICAN STD. #5905.100 SOLID PLASTIC, ELONGATED WHITE OPEN FRONT SEAT W/CHECK HINGE.1½" INLET SPUD, WAX RING, 1" ANGLE STOP, VAC BRKR, ESCUTCHEONS	3"	2"	1"	---	---	1.28 GALLON PER FLUSH, CAULK AT FL. CONTACT WITH WHITE SILICONE SEALANT. VERIFY RIGHT HAND OR LEFT HAND.
WC	VITREOUS CHINA FL. MTD. WATER CLOSET, WHITE 17½" HIGH, ELONGATED BOWL, FLUSH WATER CLOSET	COMPLETE UNIT WITH ALL TRIM & ACCESSORIES	AMERICAN STANDARD"MADERA" MODEL #3461.128 WITH SLOAN 111-1.28 FLUSH VALVE	SEAT: AMERICAN STD. #5905.100 SOLID PLASTIC, ELONGATED WHITE OPEN FRONT SEAT W/CHECK HINGE.1½" INLET SPUD, WAX RING, 1" ANGLE STOP, VAC BRKR, ESCUTCHEONS	3"	2"	1"	---	---	1.28 GALLON PER FLUSH, CAULK AT FL. CONTACT WITH WHITE SILICONE SEALANT. COMPLIES WITH ADA REQ. VEIRFY RIGHT HAND OR LEFT HAND.
LAV	VITREOUS CHINA WALL HUNG LAVATORY, WHITE, 21"X18", 4" CENTER SETS WITH CENTER HOLE	COMPLETE UNIT WITH ALL TRIM & ACCESSORIES	AMERICAN STANDARD 'LUCENRE' MODEL # 0355.012 , WALL SUPPORT	FAUCET: SYMMONS 4" CTR. S-20-2-G SINGLE HANDLE FAUCET WITH ROSE SPRAY OUTLET, GRID STRAINER DRN. ASSEMBLY ADA , .5GPM TRAP COVER: PROFLO #PF202WH SUPPORT: CONCEALED FL. MTD. SUPPORT SMITH FIG. 0700, CW & HW SHUTOFF VALVES @ WALL.	1¼"	1½"	½"	½"	---	CAULK AT WALL CONTACT WITH WHITE SILICONE SEALANT. SEE ARCHITECTURAL PLANS FOR MOUNTING HEIGHT TO COMPLY WITH ADA REQUIREMENTS. PROVIDE INSULATION ON DRN. AND WATER PIPING.
UR	URINAL, 14" ELONGATED RIM, VITREOUS CHINA WALL HANGARS, OUTLET FLG., RUBBER GASKET.	COMPLETE UNIT WITH ALL TRIM & ACCESSORIES	AMERICAN STANDARD "WASHBROOK" MODEL# 6590.501 ADA APPROVED 1.0 GPF	SLOAN 186-1.0 FLUSHOMETER, VERIFY RH OR LH., SMITH/ WATTS HANGAR OR EQUAL.	2"	1½"	¾"	---	---	1.0 GALLON PER FLUSH, CAULK AT WALL. CONTACT WITH WHITE SILICONE SEALANT. COMPLIES WITH ADA REQUIREMENTS.
SS	MOLDED STONE SERVICE SINK, 24"W X 24"X 10" DEEP.	COMPLETE UNIT WITH ALL TRIM & ACCESSORIES	FIAT MODEL#MSB 2424 WITH 2 PANEL STAINLESS STEEL WALL GUARD (MSG2828), MOP HANGAR, VINYL BUMPER GUARD(E-77-AA HOSE BRACKET	3 INCH JOINT/TRAP & STRAINER T&S BRASS B-0665-BSTR ROUGH CHROME FAUCET CW & HW SHUTOFF VALVES @ WALL. COLOR: WHITE	3"	2"	½"	½"	---	CAULK AT FLOOR WITH SILICONE SEALANT. COLOR AS SELCETED BY ARCHITECT. ADA FAUCET
ECO	EXTERIOR CLEANOUT	COMPLETE UNIT WITH ALL TRIM & ACCESSORIES	ZURN MODEL# Z-1454 WATTS MODEL# CO-260	ACCESSORIES: VANDAL PROOF SCREWS, COUNTER SUNK BRASS PLUG.	---	---	---	---	---	VERIFY SIZE REQUIRED AT POINT OF APPLICATION. SET IN CONCRETE PAD PER DRAWINGS.
FCO	INTERIOR CLEANOUT	COMPLETE UNIT WITH ALL TRIM	ZURN MODEL# Z-1400-14-CF WATTS MODEL# CO-200-R/RC/T	ACCESSORIES: ADJUSTABLE TOP, CARPET RETAINER.	---	---	---	---	---	VERIFY SIZE REQUIRED AT POINT OF APPLICATION.
WCO	WALL CLEANOUT	COMPLETE UNIT WITH ALL TRIM & ACCESSORIES	ZURN MODEL# 1446-4-Z-VP WATTS MODEL# CO-460-RD	ACCESSORIES: FLUSH OVER WALL FRAME, NICKEL BRONZE WALL ACCESS COVER, COUNTERSUNK BRASS PLUG.	---	---	---	---	---	VERIFY SIZE REQUIRED AT POINT OF APPLICATION.
BRKRM OFFICE	STAINLESS STEEL SINGLE COMPARTMENT SINK, SELF-RIMMING, 14" X 18" X10.5" BASIN DEPTH, 3-HOLE	COMPLETE UNIT WITH ALL TRIM & ACCESSORIES	JUST 3 HOLE 4" CENTER SET UNIT UNDERCOATED #SLX1921AGR ELKAY #LKD2445BH FAUCET 4 INCH ADA HANDLES	SS P-TRAP LK / JUST DRAIN TAILPIECE AND REMOVABLE STRNR. CW & HW SHUTOFF VALVES @ WALL.	2"	1-1/2"	1/2"	1/2"	--	COORDINATE INSTALLATION WITH G.C. PRIOR TO CABINET PLACEMENT, 18" DEEP CABINETS.
GBD	GARBAGE DISPOSER	COMPLETE UNIT WITH ALL TRIM & ACCESSORIES	INSINKERATOR BADGER 5, 1½" DRAIN, ROUGH IN BY PC	½" DISHWASHER CONNECTION	1½"	1¼"	---	---	½"	COORDINATE WITH GC/EC FOR ROUGH IN 120V/1PH/6.9A WALL SWITCH BY EC, KEY PROVIDED.
DSH-1	DISHWASHER CABINET MOUNT UNDER COUNTER, RESIDENTIAL UNIT BY OTHERS	COMPLETE UNIT WITH ALL TRIM & ACCESSORIES	UNIT SUPPLIED BY GC ROUGH IN BY PC	ACCESSORIES: WITH HW SHUTOFF VALVE @ WALL. NEAR SINK FLEXIBLE DRAIN HOSE WITH CLAMPS WALL ESCUTCHEON, BRAIDED HOT WATER HOSE	2"	1½"	---	⅜"	---	UNIT PROVIDED WITH BUILT IN HEATER COORDINATE INSTALLATION WITH G.C. PRIOR TO CONCRETE FLOOR AND CABINET PLACEMENT.
EWC	PACKAGED WATER COOLER BARRIER-FREE, SPLIT LEVEL WALL HUNG	COMPLETE UNIT WITH ALL TRIM & ACCESSORIES	ELKAY MODEL# EZSTL8C	COLOR: STANDARD TWO TONE GRAY ACCESSORIES: STAINLESS STEEL BASINS, STAINLESS STEEL BUBBLERS, WITH CW SHUTOFF VALVE @ WALL.	1½"	1½"	½"	---	---	COORDINATE WITH EC FOR POWER REQUIREMENTS. PROVIDE WITH R-134A REFRIGERANT, PROVIDE WITH 5 YEAR WARRANTY FOR COMPRESSOR. 120 VOLT, 1PHASE, 3.7A ADA COMPLIANT
WH-1	WALL HYDRANT VACUUM BREAKER, ¾" MALE HOSE CONNECTION.	COMPLETE UNIT WITH ALL TRIM & ACCESSORIES	WOODFORD B75 WITH TEE KEY UP ¾" INLET, POLISHED BRASS WALL COVER, RECESSED IN WALL	COLOR: ROUGH BRONZE.	---	---	¾"	---	---	COORDINATE WITH GC FOR ROUGH IN.
FD	FLOOR DRAIN	COMPLETE UNIT WITH ALL TRIM & ACCESSORIES	ZURN MODEL# Z-415 ROUND TOP WATTS FD-100 COORDINATE COVER WITH ARCHITECT.	ZURN #Z-1022 TRAP PRIMER TO L-1	2"	---	---	---	½"	COORDINATE INSTALLATION WITH G.C. PRIOR TO CONCRETE FLOOR PLACEMENT.
TP-1	TRAP PRIMER	COMPLETE UNIT WITH ALL TRIM & ACCESSORIES	ZURN MODEL# Z-1022 WITH AIR GAP	PROVIDE ON LAVATORY LINE, PROVIDE ACCESS PANEL AND WALL BOX WITH UNIT	---	---	½"	---	---	COORDINATE INSTALLATION WITH G.C. PRIOR TO WALL PLACEMENT.
SH ADA	SHOWER, MIXING VALVE SPRAY HEAD AND FLOOR DRAIN. ADA .	COMPLETE UNIT WITH ALL TRIM & ACCESSORIES	TILE SHOWER, SEAT, AND BAR BY G.C.COORDINATE ROUGH IN OF DRAIN AND SHOWER UNIT	FLOOR DRAIN: WATTS# FD-100/BRONZE STRAINER. PRESSURE BALANCE VALVE: AMERICAN STD. MODEL# R120SS WITH SCREWDRIVER STOPS. MODEL#T385.507 LEVER HANDLE, FACEPLATE, SHOWER HEAD, ARM AND FLANGE, POLISHED CHROME FINISH. #1662.604 3 WAY HAND SHOWER, CHECK VALVE AND SLIDE BAR.-1.5 GPM	2"	1½"	½"	½"	---	COORDINATE PLACEMENT OF FLOOR DRAIN WITH G.C. PRIOR TO POURING FLOOR. COMPLIES WITH ADA REQUIREMENTS, TILE BASIN BY G.C. REFER TO ARCHITECTURAL PLANS FOR DETAILS AND ELEVATION
CS-1	VITREOUS CHINA ABOVE COUNTER HUNG LAVATORY, WHITE, 20¾"X17½", 4" CENTER SETS	COMPLETE UNIT WITH ALL TRIM & ACCESSORIES	AMERICAN STANDARD 'AQUALYN' MODEL #0476.028	FAUCET: SYMMONS S-20-2-G TRAP COVER: MCGUIRE #FW2125WC SUPPORT: CONCEALED FL. MTD. SUPPORT CHICAGO FAUCETS MODEL#1017 CW & HW SHUTOFF VALVES @ WALL.	1¼"	1½"	½"	½"	---	CAULK AT COUNTER CONTACT WITH WHITE SILICONE SEALANT. SEE ARCHITECTURAL PLANS FOR MOUNTING HEIGHT TO COMPLY WITH ADA REQUIREMENTS. PROVIDE INSULATION ON DRN. AND WATER PIPING. COORDINATE HOLE CUT WITH G.C. AND ARCHITECT
SH STD.	SHOWER, MIXING VALVE SPRAY HEAD AND FLOOR DRAIN.	COMPLETE UNIT WITH ALL TRIM & ACCESSORIES	TILE SHOWER BY G.C.COORDINATE ROUGH IN OF DRAIN AND SHOWER UNIT	FLOOR DRAIN: WATTS# FD-100/BRONZE STRAINER. PRESSURE BALANCE VALVE: AMERICAN STD. MODEL# R110SS WITH SCREWDRIVER STOPS. MODEL#T372.248 LEVER HANDLE, FACEPLATE, SHOWER HEAD, ARM POLISHED CHROME FINISH.- 1.5 GPM	2"	1½"	½"	½"	---	COORDINATE PLACEMENT OF FLOOR DRAIN WITH G.C. PRIOR TO POURING FLOOR. TILE BASIN BY G.C. REFER TO ARCHITECTURAL PLANS FOR DETAILS AND ELEVATION
WHA	WATER HAMMER ARRESTER	COMPLETE UNIT WITH ALL TRIM & ACCESSORIES	J.R. SMITH "HYDROTROL" MODEL# 5005-5020. JOSAM SERIES-75000. ZURN "SHOKSTOP" MODEL# Z-1700.	SEE P.D.I SIZES. P.D.I SIZE / PIPE SIZE / FIXTURE UNIT / ZURN / JOSAM / J.R. SMITH: A ¾" 1-11 100 75001 5005; B 1" 12-32 200 75002 5010; C 1" 33-60 300 75003 5020					SIZES TO MATCH MAINS. INSTALL PER MANUFATURER'S RECOMMENDATIONS. SEE WATER DISTRIBUTION DIAGRAM FOR LOCATION.

SCHEDULES NOTES:
1. ALL FIXTURES SHALL BE SUPPLIED WITH MCGUIRE SUPPLY KITS WITH BRASS STEMS, AND CHROME PLATED BRASS STOPS. PROVIDE AND INSTALL BRAIDED FLEXIBLE CONNECTION LINES, AND ESCUTCHEONS.
2. ALL ADA FIXTURES (LAVS) SHALL HAVE PROVIDED PLUMBEREX PTRAP COVERS AND VALVE SUPPLY COVERS.

ELECTRIC WATER HEATER SCHEDULE

TAG NO.	LOCATION	STORAGE CAPACITY GALLONS	RECOVERY GPH	TEMP. RISE °F	KW	ELECTRICAL CHARACTERISTICS			MANUFACTURER	MODEL NO.	WEIGHT	REMARKS
						VOLTS	PH	HZ				
EWH-1	JANITOR	52	82	55	12	480	3	60	AO SMITH	DRE-52-12	260	1

NOTES:
1. NEW EWH, PROVIDE AND INSTALL NEW T & P RELIEF VALVE, DRAIN PAN, THERMOMETER ON DISCHARGE LINE, ISOLATION VALVES , AND DIELECTRIC COUPLINGS. UNIT SET AT 120 DEGREES F. UNIT CAPACITY 122 GPH FIRST HOUR AT 55 DEGREE RISE . UNIT WEIGHT EXCLUDES WATER. 6" CONCRETE PAD BY GC

BACKFLOW PREVENTER SCHEDULE 3/4" TO 2"

ITEM NO.		BFP-1	
TOTAL CAPACITY	GPM	62	
PRESSURE DROP	PSI	11	
QTR. TURN BALL SHUT OFFS		X	
BRONZE STRAINER		X	
STAINLESS STEEL CHECK VALVE		X	
NON RISING STEM GATE VALVE SHUTOFF		----	
INTEGRAL BODY UNIONS		----	
OPERATING WEIGHT	LBS.	40	
FLANGED ADAPTOR ENDS		-----	
LOCATION	---	MECH. EQUIP. RM.	
MANUFACTURER	---	WATTS	
MODEL NO.	---	009M2QT-2"	

NOTES
(1) DRAIN FUNNEL AND FULL SIZE LINE TO NEAREST FD.
(2) PRESSURE GAUGE ON INCOMING AND LEAVING WITH PETCOCK SHUTOFF

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— AA-C001654 —

OPERATIONS BUILDING - PLUMBING SCHEDULES

MANATEE COUNTY BUILDING OPERATION FACILITY
4410 66TH STREET WEST, BRADENTON FLORIDA

REVISIONS

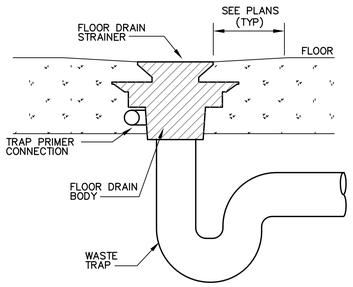
PROJECT NO: 2012-46
DATE: 11/12/13
DRAWN BY: DC
CHK'D BY: JDC

PRELIMINARY NOT FOR CONSTRUCTION

JOHN D. CAMDEN
FL#53458

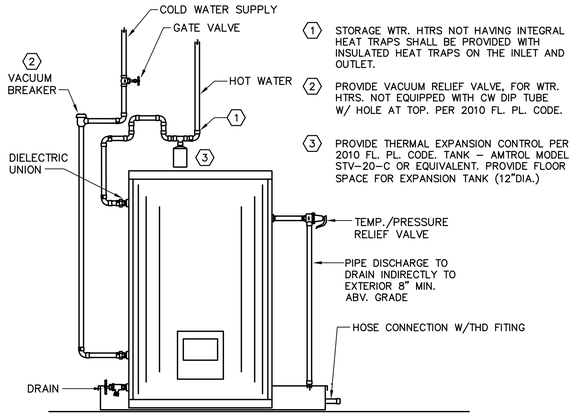
ATP ENGINEERING SOUTH, PL
5227 OFFICE PARK BLVD
BRADENTON, FLORIDA 34203
ENGR. BUSINESS #8908
941-751-6485

SHEET
P253



1 / P254 **FLOOR DRAIN INSTALLATION DETAIL**

NOT TO SCALE

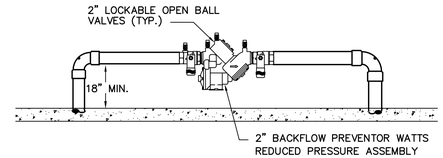


1. STORAGE WTR. HTRS NOT HAVING INTEGRAL HEAT TRAPS SHALL BE PROVIDED WITH INSULATED HEAT TRAPS ON THE INLET AND OUTLET.
2. PROVIDE VACUUM RELIEF VALVE, FOR WTR. HTRS. NOT EQUIPPED WITH CW DIP TUBE W/ HOLE AT TOP. PER 2010 FL. PL. CODE.
3. PROVIDE THERMAL EXPANSION CONTROL PER 2010 FL. PL. CODE. TANK – AMTROL MODEL STV–20–C OR EQUIVALENT. PROVIDE FLOOR SPACE FOR EXPANSION TANK (12"DIA.)

NOTE: DETAIL CONTAINS HEAT TRAPS, VACUUM & THERMAL EXPANSION INFORMATION

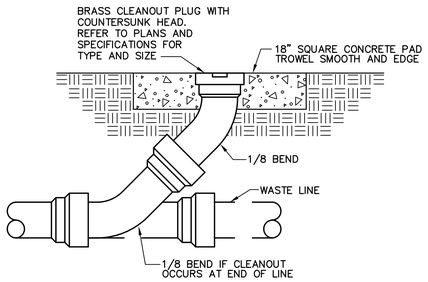
3 / P254 **ELECTRIC WATER HEATER PIPING DETAIL**

NOT TO SCALE



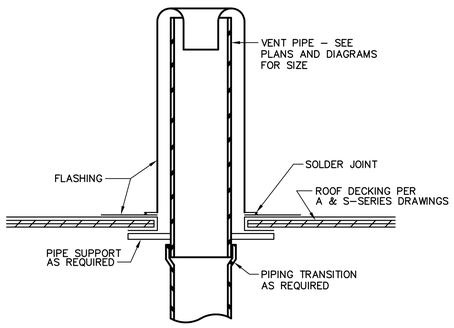
5 / P254 **BACKFLOW PREVENTOR DETAIL- REDUCED PRESSURE**

NOT TO SCALE



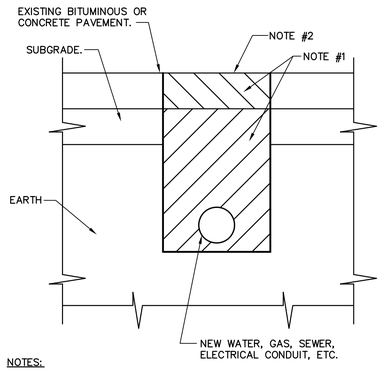
2 / P254 **EXTERIOR CLEANOUT DETAIL**

NOT TO SCALE



4 / P254 **VENT THROUGH ROOF (VTR)**

NOT TO SCALE



NOTES:

1. THE CONTRACTOR INSTALLING THE NEW UTILITY SERVICE SHALL MAKE THE CUT, EXCAVATE, INSTALL NEW SERVICE, INSTALL AN APPROVED BANK RUN GRAVEL BACKFILL TO TOP OF SUBGRADE, AND HAUL AWAY EXCESS MATERIALS. ALL ENGINEERED MATERIALS SHALL BE COMPACTED TO 95% COMPACTION MIN.
2. THE CONTRACTOR SHALL FURNISH AND INSTALL THE FINAL PAVING AT ALL LOCATIONS NOTED ON THE SITE PLANS. FINAL PAVING FOR CUTS MADE IN LOCATIONS NOT NOTED ON THE SITE PLANS WILL BE THE RESPONSIBILITY OF THE CONTRACTOR MAKING THE CUT.

6 / P254 **CUTS OF EXISTING PAVED SURFACES**

NOT TO SCALE

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OPERATIONS BUILDING - PLUMBING DETAILS

MANATEE COUNTY BUILDING OPERATION FACILITY

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REVISIONS

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CAD DWG FILE: P254 PLUMBING DETAILS.DWG

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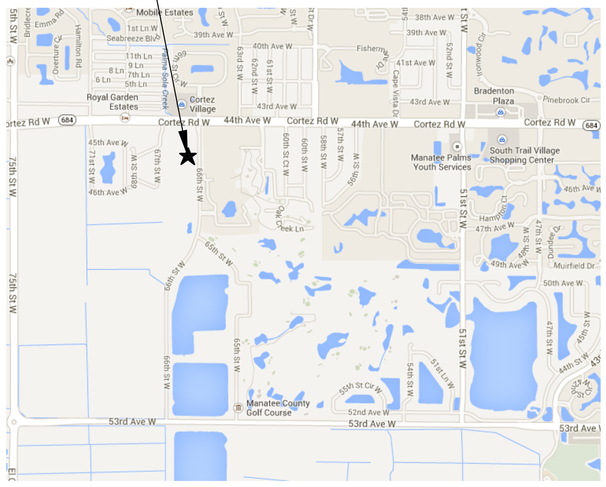
SHEET

P254

MANATEE COUNTY UTILITIES DEPARTMENT
ADMIN. BUILDING ELECTRICAL REVISIONS
4410 66TH ST. W.,
BRADENTON, FL 34210
IFAS#W1300254

LOCATION MAP
FLORIDA

SITE LOCATION



SITE MAP

SHEET SCHEDULE

SHEET	DESCRIPTION
COVER	PROJECT NAME, LOCATION and SITE MAPS, SHEET SCHEDULE
E1.0	ELECTRICAL SYMBOLS, LEGENDS AND GENERAL NOTES.
E2.0	ELECTRICAL SITE PLAN
E3.0	ELECTRICAL DEMOLITION POWER PLAN
E3.1	ELECTRICAL DEMOLITION LIGHTING PLAN
E4.0	ELECTRICAL NEW POWER PLAN
E4.1	ELECTRICAL NEW LIGHTING PLAN
E4.2	ELECTRICAL NEW WALL DETAILS
E5.0	ELECTRICAL ONE-LINE RISER AND SCHEDULES
E5.1	ELECTRICAL DEMOLITION ONE-LINE RISER
E5.2	ELECTRICAL PANELBOARD SCHEDULES
E6.0	ELECTRICAL SPECIFICATIONS
E6.1	ELECTRICAL DETAILS

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01/20/14

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.

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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
X/Y	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

DRAWING SYMBOLS

2 / E X	DETAIL NUMBER DRAWING NUMBER WHERE DRAWN
A / E X	SECTION LETTER DRAWING NUMBER WHERE DRAWN

FIRE ALARM SYSTEM

SYMBOL	DESCRIPTION
	HORN / STROBE ○= CEILING MOUNT □= WALL MOUNT
	HORN ○= CEILING MOUNT □= WALL MOUNT
S	SPEAKER/STROBE ○= CEILING MOUNT □= WALL MOUNT
	STROBE ○= CEILING MOUNT □= WALL MOUNT
F	BELL ○= CEILING MOUNT □= WALL MOUNT
P	SMOKE DETECTOR
I	HEAT DETECTOR
	PULL STATION
	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

INTERCOMMUNICATION SYSTEM

SYMBOL	DESCRIPTION
IC	INTERCOM SYSTEM ROUGH–IN – SINGLE GANG BACKBOX MOUNTED AT +46"

DOOR SECURITY SYSTEM

SYMBOL	DESCRIPTION
D	DOOR CONTACT ROUGH–IN
C	PROXIMITY CARD READER ROUGH–IN
EL	ELECTRO–MAGNETIC DOOR LOCK

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

TELEVISION SYSTEM

SYMBOL	DESCRIPTION
TV	TELEVISION ROUGH–IN

CCTV SYSTEM

SYMBOL	DESCRIPTION
C	CCTV ROUGH–IN
	CAMERA ROUGH–IN

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. WHEN A CONFLICT OCCURS BETWEEN THE SPECIFICATIONS AND DRAWINGS, THE ITEMS OF GREATER QUANTITY AND/OR COST SHALL BE PROVIDED.
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

PRELIMINARY
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01/20/14

SEAL
FL#53458

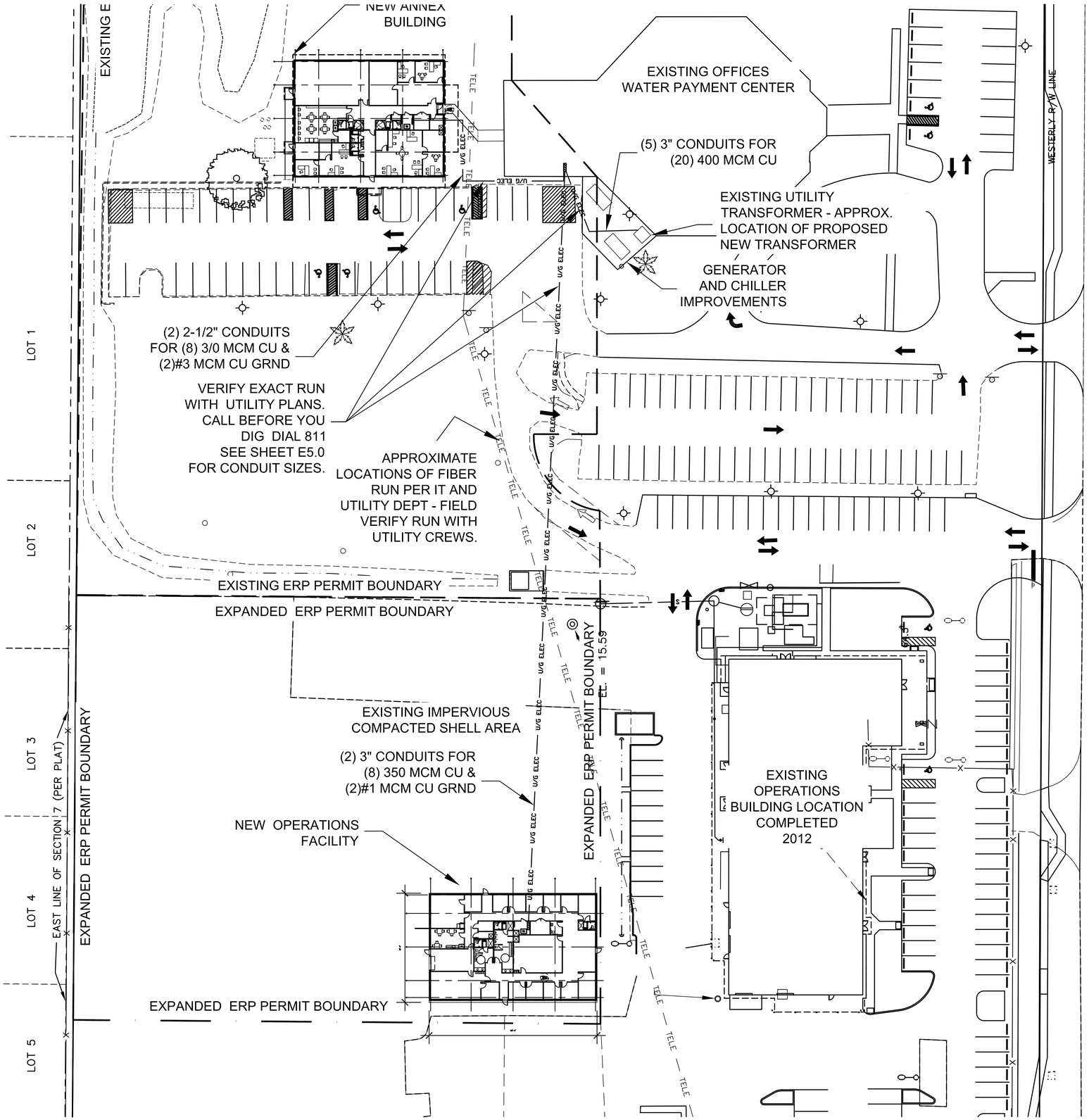
ATP
ATP ENGINEERING SOUTH, PL
BRADENTON, FLORIDA
ENGR. BUSINESS #8908
941-751-6485

REV.#	DESCRIPTION	DATE

MANATEE COUNTY UTILITIES DEPARTMENT
ADMIN. BUILDING ELECTRICAL REVISIONS
4410 66TH ST. W.,
BRADENTON, FL 34210
IFAS#W1300254

DRAWING TITLE:
ELECTRICAL SYMBOLS, LEGENDS AND GENERAL NOTES

FILE:	MC Octagon Distribution
JOB NO.:	2013.72
DATE :	07/10/2013
PLOT SIZE:	1:1
DRAWN BY:	CMD/MC
CHECKED BY:	JDC
SHEET No.:	E1.0



sunshine state ONE CALL of florida

811 Know what's below. Call before you dig.

CALL BEFORE YOU DIG

EXISTING UTILITIES AND FACILITIES ARE IN PLACE. CALL BEFORE YOU DIG! CALL SUNSHINE STATE ONE-CALL OF FLORIDA AT "811" TWO FULL BUSINESS DAYS BEFORE ANY EXCAVATION TO LOCATE ALL UNDER GROUND UTILITIES. (IN FLORIDA, THE LAW REQUIRING EXCAVATORS TO CALL 811 BEFORE DIGGING IS *THE UNDERGROUND FACILITY DAMAGE PREVENTION AND SAFETY ACT*, CHAPTER 556, FLORIDA STATUTES.) CONTRACTOR SHALL BE RESPONSIBLE TO HAVE ALL EXISTING UTILITIES LOCATED PRIOR TO THE START OF ANY WORK, AND SHALL REPAIR/ REPLACE ANY SYSTEMS HE/SHE DAMAGES DURING CONSTRUCTION AT HIS/HER OWN EXPENSE.

1 / E2.0 **SITE PLAN**
1" = 30'-0"

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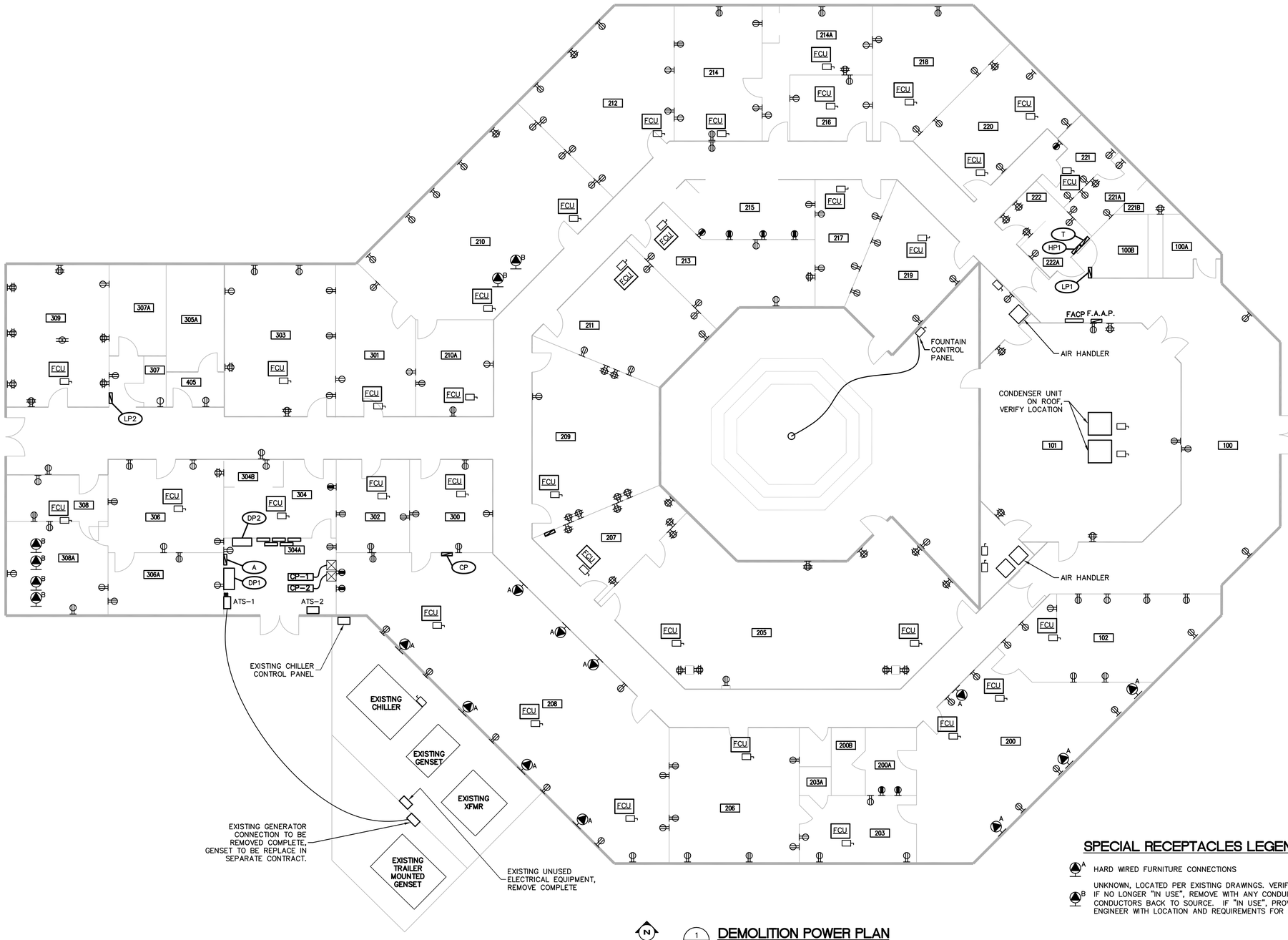
BRADENTON, FLORIDA
ENGR. BUSINESS #6908
941-751-6485

REV.#	DESCRIPTION	DATE

MANATEE COUNTY UTILITIES DEPARTMENT
ADMIN. BUILDING ELECTRICAL REVISIONS
4410 66TH ST. W.,
BRADENTON, FL 34210
IFAS#W1300254

DRAWING TITLE:
ELECTRICAL SITE PLAN

FILE:	MC Octagon Distribution
JOB NO.:	2013.72
DATE :	07/10/2013
PLOT SIZE:	1:1
DRAWN BY:	CMD/MC
CHECKED BY:	JDC
SHEET No.:	E2.0



1 E3.0 **DEMOLITION POWER PLAN**
1/8" = 1'-0"

PLAN NOTES:

ALL ITEMS ON THIS PLAN ARE EXISTING. ALL LOCATIONS ARE DIAGRAMMATIC, VERIFY PRIOR TO START OF WORK.

REMOVE OR PRESERVE SWITCHGEAR AND PANELS AS SHOWN ON ONE-LINE RISER DIAGRAM, SHEET E5.0.

REMOVE ALL ABANDONED CONDUITS, CONDUCTORS, SWITCHES, ETC. COMPLETE.

VERIFY ALL CIRCUITS ON PANEL "A". THE LOAD SIDE OF PANEL "A" IS TO REMAIN COMPLETE. PRESERVE ALL CIRCUITS AND CONNECTIONS TO PANEL "A" EXCEPT AS DETAILED FOR SITE LIGHTING ON SHEET E3.1. PROVIDE THIS ENGINEER WITH DETAILED SCHEDULE.

VERIFY ALL CIRCUITS ON PANEL "T". BOTH THE LOAD AND LINE SIDES OF PANEL "T" ARE TO REMAIN COMPLETE. PRESERVE ALL CIRCUITS AND CONNECTIONS TO PANEL "T". PROVIDE THIS ENGINEER WITH DETAILED SCHEDULE AND SKETCH LOCATING ITEMS ON PANEL.

ALL HVAC EQUIPMENT (FAN COIL UNITS (FCU), OUTSIDE AIR UNITS (OAU), CONDENSERS, ETC.) ARE PRESUMED TO BE ON PANELS "A" AND "HP1", VERIFY CIRCUITS. ALL HVAC EQUIPMENT AND ASSOCIATED SERVICE DISCONNECT SWITCHES SHALL REMAIN. FOR UNITS NOT ON PANEL "A", DISCONNECT AND REMOVE CONDUITS AND CONDUCTORS FROM DISCONNECT SWITCH BACK TO SOURCE, PRESERVE DISCONNECT AND FINAL CONNECTION.

ALL RECEPTACLES AND FURNITURE CONNECTIONS ARE TO REMAIN IN WALLS, TO INCLUDE ANY NOT SHOWN. RECEPTACLES AND FURNITURE CONNECTIONS SHOWN ARE BASE UPON EXISTING PLANS AND SITE VISITS. LOCATIONS SHOWN ARE DIAGRAMMATIC. INFORM THIS ENGINEER OF ANY ADDITIONAL RECEPTACLES OR FURNITURE CONNECTIONS. PRESERVE CONDUITS AND CONDUCTORS IN WALLS FROM DEVICE TO ABOVE CEILING JUNCTION BOX. REMOVE REMAINDER OF CIRCUIT BACK TO PANELBOARD, TO INCLUDE CONDUITS AND CONDUCTORS.

ALL CHILLER AND CHILLER PUMPS AND ASSOCIATED SERVICE DISCONNECT SWITCHES AND CONTROL PANELS SHALL REMAIN. REMOVE CONDUITS AND CONDUCTORS FROM DISCONNECT SWITCH OR CONTROL PANEL BACK TO SOURCE, PRESERVE DISCONNECT, CONTROL PANEL AND FINAL CONNECTION.

FOUNTAIN PUMP AND ASSOCIATED SERVICE DISCONNECT SWITCH AND CONTROL PANEL SHALL REMAIN. DISCONNECT AND REMOVE CONDUITS AND CONDUCTORS FROM DISCONNECT SWITCH OR CONTROL PANEL BACK TO SOURCE, PRESERVE DISCONNECT AND FINAL CONNECTION.

FIRE ALARM SYSTEM SHALL REMAIN, PRESERVE CONDUITS AND CONDUCTORS IN WALLS FROM FIRE ALARM CONTROL PANEL TO ABOVE CEILING JUNCTION BOX. REMOVE REMAINDER OF CIRCUIT BACK TO SOURCE, TO INCLUDE CONDUITS AND CONDUCTORS.

PROVIDE THIS ENGINEER WITH A LIST OF ANY OTHER EQUIPMENT OR DEVICES THAT ARE NOT IDENTIFIED ON THIS PLAN.

TURN OVER ANY SERVICEABLE EQUIPMENT THAT IS REMOVED TO OWNERS REPRESENTATIVE.

COORDINATE ALL DOWNTIME WITH OWNER.

SPECIAL RECEPTACLES LEGEND:

A HARD WIRED FURNITURE CONNECTIONS

B UNKNOWN, LOCATED PER EXISTING DRAWINGS. VERIFY LOCATION. IF NO LONGER "IN USE", REMOVE WITH ANY CONDUITS AND CONDUCTORS BACK TO SOURCE. IF "IN USE", PROVIDE THIS ENGINEER WITH LOCATION AND REQUIREMENTS FOR NEW CIRCUITING.

PRELIMINARY
NOT-FOR-CONSTRUCTION
01/20/14

SEAL FL#53458

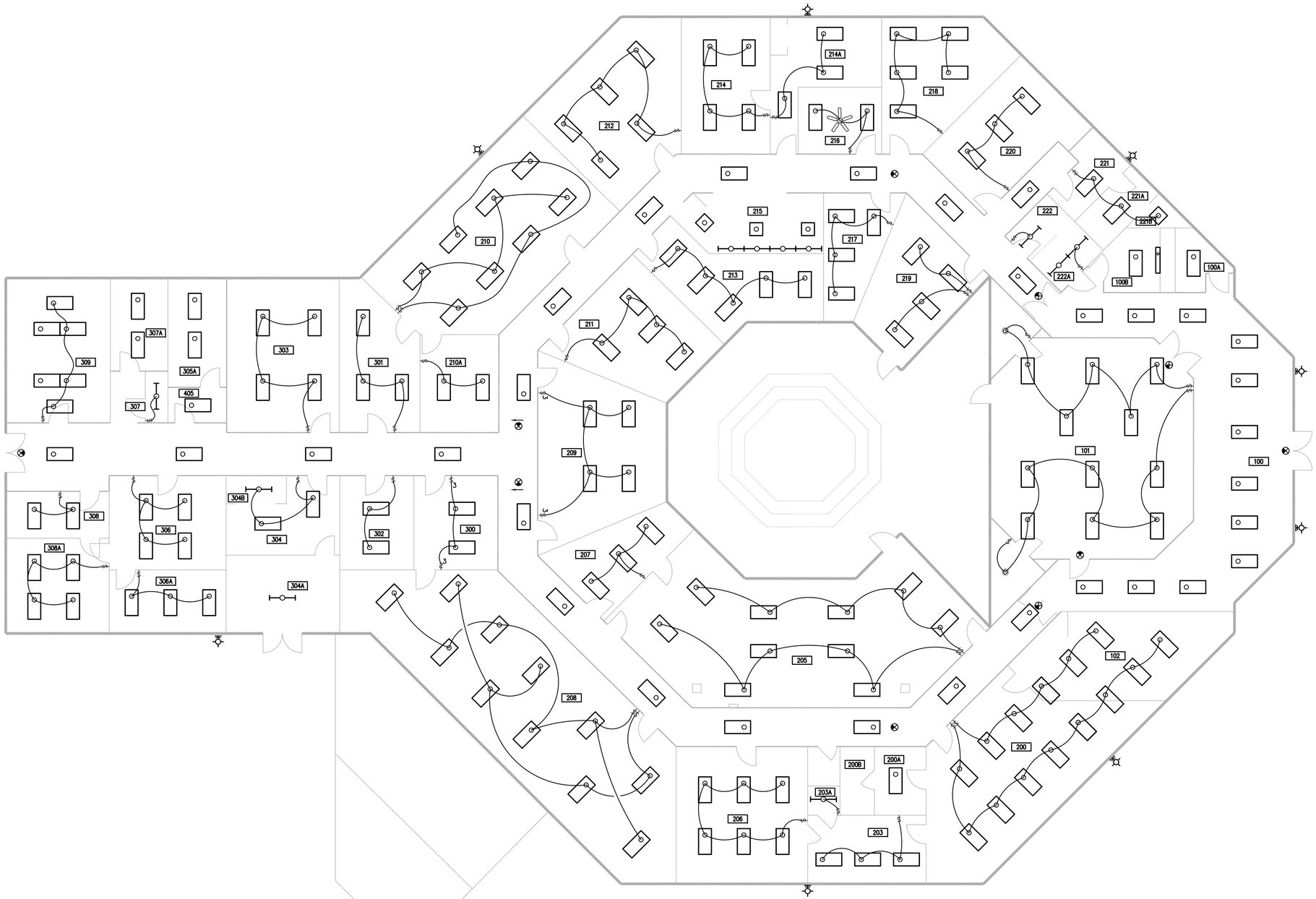
ATP ENGINEERING SOUTH, PL
BRADENTON, FLORIDA
ENGR. BUSINESS #6908
941-751-6485

REV.#	DESCRIPTION	DATE

MANATEE COUNTY UTILITIES DEPARTMENT
ADMIN. BUILDING ELECTRICAL REVISIONS
4410 66TH ST. W.,
BRADENTON, FL 34210
IFAS#W1300254

DRAWING TITLE: ELECTRICAL DEMOLITION POWER PLAN

FILE:	MC Octagon Distribution
JOB NO.:	2013.72
DATE :	07/10/2013
PLOT SIZE:	1:1
DRAWN BY:	CMD/MC
CHECKED BY:	JDC
SHEET No.:	E3.0



PLAN NOTES:

ALL LIGHTING FIXTURES SHOWN ARE EXISTING AND SHALL REMAIN AS CURRENTLY LOCATED. LOCATIONS SHOWN ARE DIAGRAMMATIC AND REPRESENT QUANTITIES OF FIXTURES IN EACH ROOM.

VERIFY ALL CIRCUITS ON PANEL "A". THE LOAD SIDE OF PANEL "A" IS TO REMAIN COMPLETE. PRESERVE ALL CIRCUITS AND CONNECTIONS TO PANEL "A" EXCEPT AS DETAILED FOR SITE LIGHTING ON THIS SHEET. PROVIDE THIS ENGINEER WITH DETAILED SCHEDULE.

VERIFY ALL CIRCUITS ON PANEL "T". BOTH THE LOAD AND LINE SIDES OF PANEL "T" ARE TO REMAIN COMPLETE. PRESERVE ALL CIRCUITS AND CONNECTIONS TO PANEL "T". PROVIDE THIS ENGINEER WITH DETAILED SCHEDULE AND SKETCH LOCATING ITEMS ON PANEL.

FIXTURES NOT SHOWN CONNECTED TO A LOCAL SWITCH ARE CONTROLLED BY CIRCUIT BREAKERS. THESE FIXTURES SHALL BE SWITCHED VIA NEW TIME CLOCK/LIGHTING CONTACTOR, SEE NEW PLANS FOR INFORMATION.

FOR ROOMS WITH MULTIPLE SWITCHES, VERIFY WHICH FIXTURES ARE CONTROLLED BY EACH SWITCH.

FOR ALL FIXTURES, PRESERVE ALL CONDUITS AND CONDUCTORS AND SWITCH LEGS FROM NEAREST ABOVE CEILING JUNCTION BOX TO FIXTURES. REMOVE ALL CONDUITS AND CONDUCTORS FROM JUNCTION BOX BACK TO SOURCE.

VERIFY CIRCUITS FOR EXTERIOR WALLPACKS AND SITE POLE LIGHTING. (SITE POLES NOT SHOWN) THESE SHOULD BE CONTROLED VIA LIGHTING CONTACTORS IN MAIN ELECTRICAL ROOM. CONTACTORS APPEAR TO BE FEED VIA PANEL "A". PREPARE THIS CONNECTION AS EXISTING (2) CONTACTORS SHALL BE REPLACED WITH (2) NEW CONTACTORS, VERIFY SIZE AND EXISTING LOAD ON CONTACTORS. IF THIS IS NOT CORRECT, CONTACT THIS ENGINEER. VERIFY CONTROLS FOR THESE CONTACTORS, PRESERVE.

PROVIDE THIS ENGINEER WITH A LIST OF ANY OTHER FIXTURES THAT ARE NOT IDENTIFIED ON THIS PLAN.

COORDINATE ALL DOWNTIME WITH OWNER.

N

1/E3.1 **DEMOLITION LIGHTING PLAN**

1/8" = 1'-0"

PRELIMINARY

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01/20/14

SEAL

FL#53458

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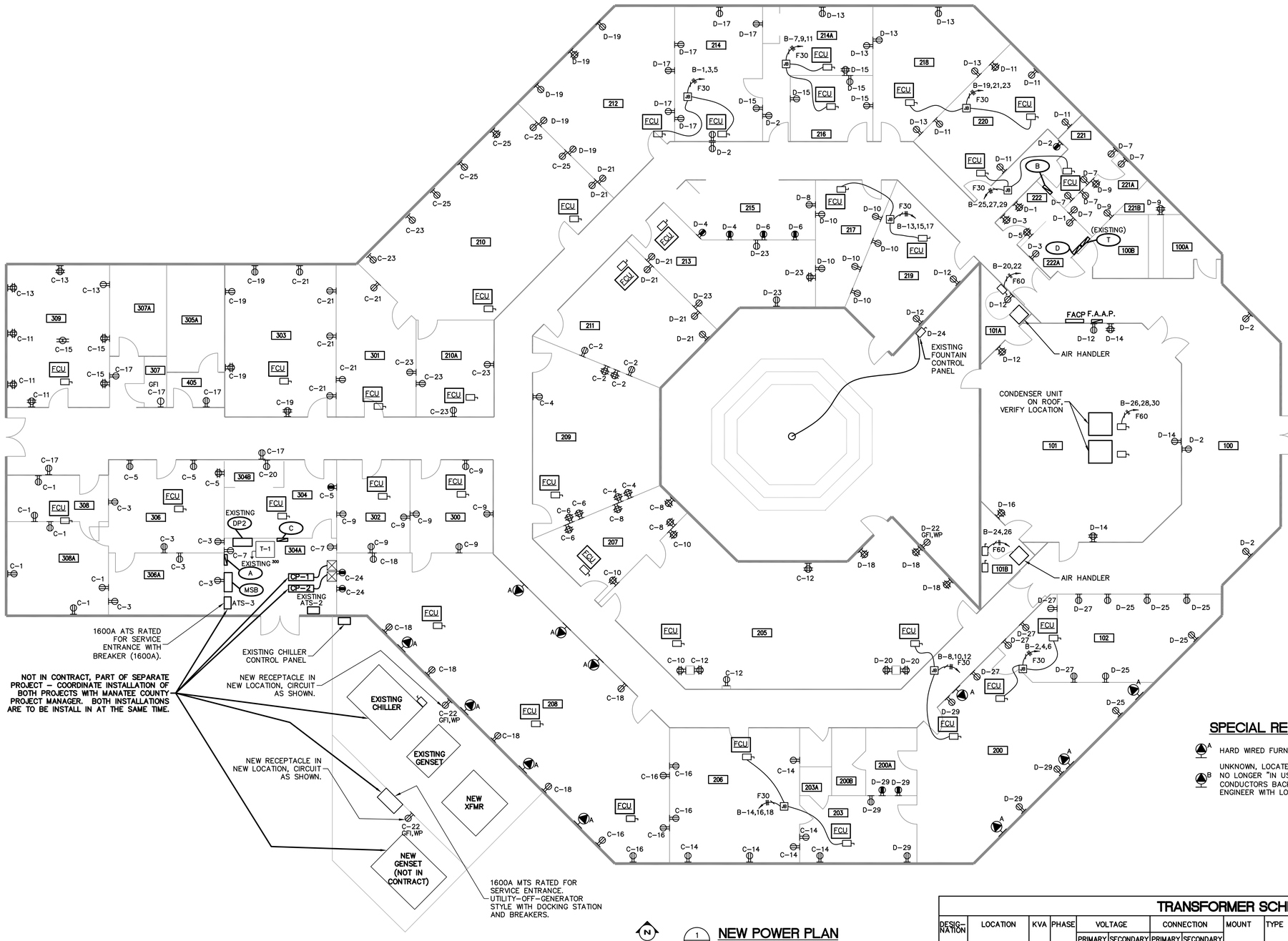
ATP ENGINEERING SOUTH, PL
BRADENTON, FLORIDA
ENGR. BUSINESS #6908
941-751-6485

REV.#	DESCRIPTION	DATE

MANATEE COUNTY UTILITIES DEPARTMENT
ADMIN. BUILDING ELECTRICAL REVISIONS
4410 66TH ST. W.,
BRADENTON, FL 34210
IFAS#WI300254

DRAWING TITLE:
ELECTRICAL
DEMOLITION LIGHTING
PLAN

FILE:	MC Octagon Distribution
JOB NO.:	2013.72
DATE :	07/10/2013
PLOT SIZE:	1:1
DRAWN BY:	CMD/MC
CHECKED BY:	JDC
SHEET No.:	E3.1



1 E4.0 **NEW POWER PLAN**

1/8" = 1'-0"

PLAN NOTES:

ALL RECEPTACLES AND MECHANICAL EQUIPMENT SHOWN ON THIS PLAN ARE EXISTING UNLESS OTHERWISE NOTED. ALL LOCATIONS ARE DIAGRAMMATIC, VERIFY PRIOR TO START OF WORK. PROVIDE CONDUITS AND CONDUCTORS ON CIRCUITS SHOWN, RE-USE EXISTING CONDUITS AND CONDUCTORS AS POSSIBLE.

PROVIDE AND INSTALL NEW SWITCHGEAR AND PANELS AS SHOWN ON ONE-LINE RISER DIAGRAM, SHEET E5.0.

ANY CONNECTIONS FOUND TO BE FED FROM PANELS "A" & "T" SHALL REMAIN "AS FED" REGARDLESS OF CIRCUITING ON THIS SHEET.

RECONNECTED RECEPTACLES AND FURNITURE CONNECTIONS TO CIRCUITS SHOWN. RECEPTACLES AND FURNITURE CONNECTIONS SHOWN ARE BASE UPON EXISTING PLANS AND SITE VISITS. LOCATIONS SHOWN ARE DIAGRAMMATIC. INFORM THIS ENGINEER OF ANY ADDITIONAL RECEPTACLES OR FURNITURE CONNECTIONS. RE-USE CONDUITS AND CONDUCTORS IN WALLS TO DEVICES AS POSSIBLE. NO NEW RECEPTACLES ARE TO BE INSTALLED IN INTERIOR WALLS. ANY DAMAGE TO DRYWALL SHALL BE PATCHED AND REPAINTED TO MATCH EXISTING WALLS.

ALL HVAC EQUIPMENT (FAN COIL UNITS (FCU), OUTSIDE AIR UNITS (OAU), CONDENSERS, ETC.) ARE TO BE ON PANELS "A" AND "B", UNLESS OTHERWISE NOTED. FOR ALL HVAC EQUIPMENT NOT ON PANEL "A", PROVIDE AND INSTALL CONDUITS AND CONDUCTORS FROM PANEL "B" TO EXISTING SERVICE DISCONNECT, RE-USE DISCONNECT AND FINAL CONNECTION.

RECONNECT CHILLER AND CHILLER PUMPS, RE-USE EXISTING SERVICE DISCONNECT SWITCHES AND CONTROL PANELS.

RECONNECT COURTYARD FOUNTAIN PUMP TO CIRCUIT SHOWN, RE-USE EXISTING DISCONNECT AND FINAL CONNECTION.

RECONNECT FIRE ALARM SYSTEM ON CIRCUIT SHOWN, RE-USE CONDUITS AND CONDUCTORS IN WALLS FROM FIRE ALARM CONTROL PANEL TO ABOVE CEILING JUNCTION BOX.

COORDINATE ALL DOWNTIME WITH OWNER.

SPECIAL RECEPTACLES LEGEND:

A HARD WIRED FURNITURE CONNECTIONS

B UNKNOWN, LOCATED PER EXISTING DRAWINGS. VERIFY LOCATION. IF NO LONGER "IN USE", REMOVE ANY ABANDONED CONDUITS AND CONDUCTORS BACK TO SOURCE. IF "IN USE", PROVIDE THIS ENGINEER WITH LOCATION AND REQUIREMENTS FOR NEW CIRCUITING.

TRANSFORMER SCHEDULE

DESIGNATION	LOCATION	KVA	PHASE	VOLTAGE		CONNECTION		MOUNT	TYPE	LOAD SERVED	REMARKS
				PRIMARY	SECONDARY	PRIMARY	SECONDARY				
T-1	ROOM 304A	300	3ø	480	120/208	DELTA	WYE	FLOOR	DRY	DP2	COPPER WINDINGS, 150° RISE, NEMA1 VENTED

PRELIMINARY

NOT-FOR-CONSTRUCTION

01/20/14

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

SEAL

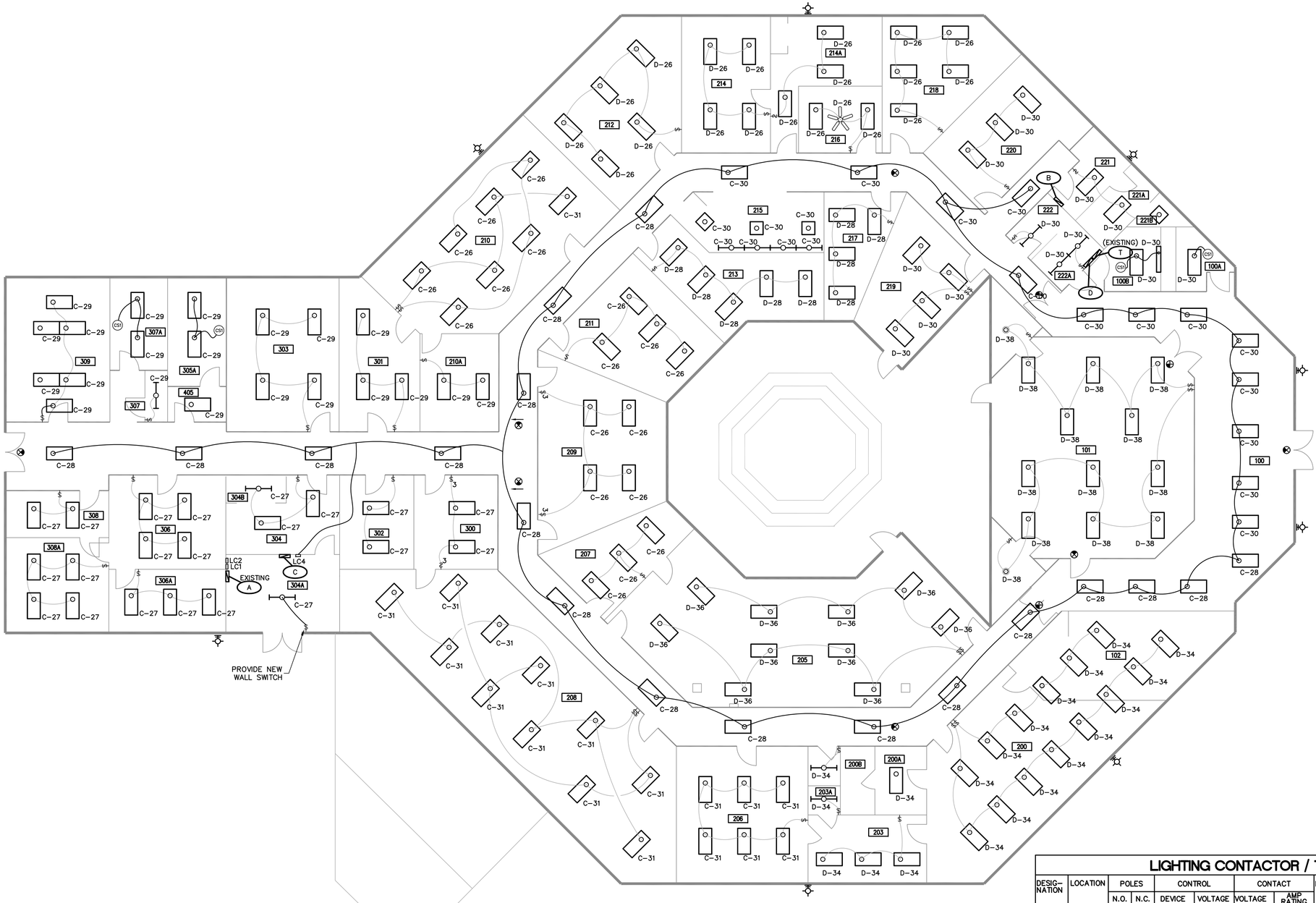
FL#53458

REV.#	DESCRIPTION	DATE

MANATEE COUNTY UTILITIES DEPARTMENT
ADMIN. BUILDING ELECTRICAL REVISIONS
4410 66TH ST. W.,
BRADENTON, FL 34210
IFAS#W1300254

DRAWING TITLE:
ELECTRICAL POWER PLAN

FILE:	MC Octagon Distribution
JOB NO.:	2013.72
DATE :	07/10/2013
PLOT SIZE:	1:1
DRAWN BY:	CMD/MC
CHECKED BY:	JDC
SHEET No.:	E4.0



PLAN NOTES:

ALL LIGHTING FIXTURES SHOWN ARE EXISTING AND SHALL REMAIN AS CURRENTLY LOCATED. LOCATIONS SHOWN ARE DIAGRAMMATIC AND REPRESENT QUANTITIES OF FIXTURES IN EACH ROOM.

ANY LIGHTING FIXTURES FOUND TO BE FED FROM PANELS "A" & "T" SHALL REMAIN "AS FED" REGARDLESS OF CIRCUITING ON THIS SHEET.

ALL WALL SWITCH ($) LOCATIONS ARE EXISTING AND SHALL REMAIN, UNLESS OTHERWISE NOTED. FOR ROOMS WITH MULTIPLE SWITCHES, VERIFY WHICH FIXTURES ARE CONTROLLED BY EACH SWITCH. SWITCH LEGS SHOWN IN GREYSCALE ARE EXISTING, SWITCH LEGS SHOWN BOLD ARE NEW.

PROVIDE AND INSTALL NEW TIMECLOCK AND LIGHTING CONTACTOR AS SHOWN TO CONTROL PUBLIC AREAS.

PROVIDE AND INSTALL NEW MOTION SENSOR FOR RESTROOM FIXTURES, CEILING MOUNT MOTION SENSOR (OS) TO BE LEVITON OCCUPANCY SENSORS OSC05-M. MULTI-TECHNOLOGY, 180 DEGREE, 500 SQ. FT.COVERAGE, SELF-ADJUSTING, CEILING MOUNT OCCUPANCY SENSOR, COMMERCIAL GRADE - WHITE OR APPROVED EQUAL. POWER PACKS SHALL MATCH SENSOR MANUFACTURER. COORDINATE LOCATIONS WITH EXISTING PARTITIONS.

VERIFY CIRCUITS FOR EXTERIOR WALLPACKS AND SITE POLE LIGHTING. (SITE POLES NOT SHOWN) THESE SHOULD BE CONTROLED VIA LIGHTING CONTACTORS IN MAIN ELECTRICAL ROOM. CONTACTORS APPEAR TO BE FEED VIA PANEL "A". REPLACE EXISTING (2) CONTACTORS WITH (2) NEW 40A CONTACTORS. RE-USE EXISTING CONTROLS FOR CONTACTORS.

COORDINATE ALL DOWNTIME WITH OWNER.

LIGHTING CONTACTOR / TIMECLOCK SCHEDULE

DESIG-NATION	LOCATION	POLES		CONTROL		CONTACT		ENCLOSURE	CIRCUITS CONTROLLED	REMARKS
		N.O.	N.C.	DEVICE	VOLTAGE	VOLTAGE	AMP RATING			
LC1	23A	4	--	EXISTING	120	120	40	NEMA 1	EXISTING	----
LC2	23A	4	--	EXISTING	120	120	40	NEMA 1	EXISTING	----
LC3	23A	4	--	TC-1	120	120	30	NEMA 1	C-28,C-30	LABEL "HALLWAY LIGHTS"
TC1	23A	--	--	--	120	--	30	NEMA 1	LC3	LABEL "HALLWAY LIGHTS"

1 E4.1 **NEW LIGHTING PLAN**
1/8" = 1'-0"

PRELIMINARY
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01/20/14

SEAL
FL#53458

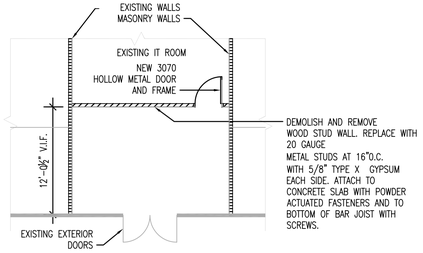
ATP ENGINEERING SOUTH, PL
BRADENTON, FLORIDA
ENGR. BUSINESS #6908
941-751-6485

REV.#	DESCRIPTION	DATE

MANATEE COUNTY UTILITIES DEPARTMENT
ADMIN. BUILDING ELECTRICAL REVISIONS
4410 66TH ST. W.,
BRADENTON, FL 34210
IFAS#WI300254

DRAWING TITLE:
ELECTRICAL LIGHTING PLAN

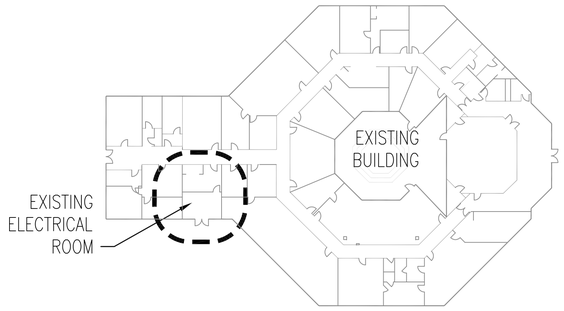
FILE:	MC Octagon Distribution
JOB NO.:	2013.72
DATE :	07/10/2013
PLOT SIZE:	1:1
DRAWN BY:	CMD/MC
CHECKED BY:	JDC
SHEET No.:	E4.1



2 / E4.2 **NEW WALL DETAIL**

1/8" = 1'-0"

ELECTRICAL WALL DETAILS PROVIDED BY MR. DAVID BISHOP OF UGARTE AND ASSOCIATES ARCHITECTURE.



1 / E4.2 **LOCATION OF ELECTRICAL ROOM**

1/32" = 1'-0"

ELECTRICAL WALL DETAILS PROVIDED BY MR. DAVID BISHOP OF UGARTE AND ASSOCIATES ARCHITECTURE.

PRELIMINARY

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01/20/14

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

SEAL

FL#53458

REV.#	DESCRIPTION	DATE

MANATEE COUNTY UTILITIES DEPARTMENT
ADMIN. BUILDING ELECTRICAL REVISIONS
4410 66TH ST. W.,
BRADENTON, FL 34210
IFAS#WR300254

DRAWING TITLE:
ELECTRICAL NEW
WALL DETAILS

FILE:	MC Octagon Distribution
JOB NO.:	2013.72
DATE :	07/10/2013
PLOT SIZE:	1:1
DRAWN BY:	CMD/MC
CHECKED BY:	JDC
SHEET No.:	E4.2

FEEDER AND BRANCH CIRCUIT SCHEDULE

FEEDER/BRANCH CIRCUIT DESIGNATION	COPPER CONDUCTOR THHN, THWN, &THWN-2		CONDUIT SIZE AND QUANTITY [QUANTITY 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	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"
F30	10	10	3/4"	3/4"	3/4"	1"	1"	1"
F40–50	8	10	3/4"	1"	1"	1 1/4"	1 1/4"	1 1/4"
F60	6	10	1"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"
F70–F80	4	8	1"	1 1/4"	1 1/4"	1 1/2"	1 1/2"	1 1/2"
F90–F100	3	8	1 1/4"	1 1/4"	1 1/2"	1 1/2"	2"	1 1/2"
F110	2	6	1 1/4"	1 1/2"	1 1/2"	2"	2"	2"
F125	1	6	1 1/2"	2"	2"	2"	2 1/2"	2"
F150	1/0	6	1 1/2"	2"	2"	2 1/2"	2 1/2"	2 1/2"
F175	2/0	6	2"	2"	2 1/2"	2 1/2"	3"	2 1/2"
F200	3/0	6	2"	2 1/2"	2 1/2"	3"	3"	3"
F225	4/0	4	2"	2 1/2"	3"	3"	3"	3"
F250	250	4	2 1/2"	3"	3"	3 1/2"	3 1/2"	3–1/2"
F300	350	4	3"	3"	3 1/2"	3 1/2"	4"	3 1/2"
F350	2/0	3	(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 1/2"	(2) 2 1/2"	(2) 3"	(2) 3"	(2) 2 1/2"
F450	4/0	2	(2) 2"	(2) 2 1/2"	(2) 2 1/2"	(2) 3"	(2) 3"	(2) 3"
F500	250	2	(2) 2 1/2"	(2) 3"	(2) 3"	(2) 3"	(2) 3 1/2"	(2) 3 1/2"
F600	350	1	(2) 2 1/2"	(2) 3"	(2) 3"	(2) 3"	(2) 3 1/2"	(2) 3"
F800	300	1/0	(3) 2 1/2"	(3) 3"	(3) 3"	(3) 3 1/2"	(3) 3 1/2"	(3) 3 1/2"
F900	350	2/0	(3) 3"	(3) 3"	(3) 3 1/2"	(3) 3 1/2"	(3) 4"	(3) 3 1/2"
F1000	400	2/0	(3) 3"	(3) 3"	(3) 3 1/2"	(3) 3 1/2"	(3) 4"	(3) 4"
F1200	350	3/0	(4) 3"	(4) 3"	(4) 3 1/2"	(4) 3 1/2"	(4) 4"	(4) 4"
F1600	400	4/0	(5) 3"	(5) 3"	(5) 3 1/2"	(5) 3 1/2"	(5) 4"	(5) 4"
F2000	400	250	(6) 3"	(6) 3"	(6) 3 1/2"	(6) 3 1/2"	(6) 4"	(6) 4"
F2500	500	350	(7) 3"	(7) 3 1/2"	(7) 4"	(7) 4"	(7) 4"	(7) 4"
F3000	500	400	(8) 3"	(8) 3 1/2"	(8) 4"	(8) 4"	(8) 4"	(8) 4"
F3500	500	500	(10) 3"	(10) 3 1/2"	(10) 4"	(10) 4"	(10) 4"	(10) 4"

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

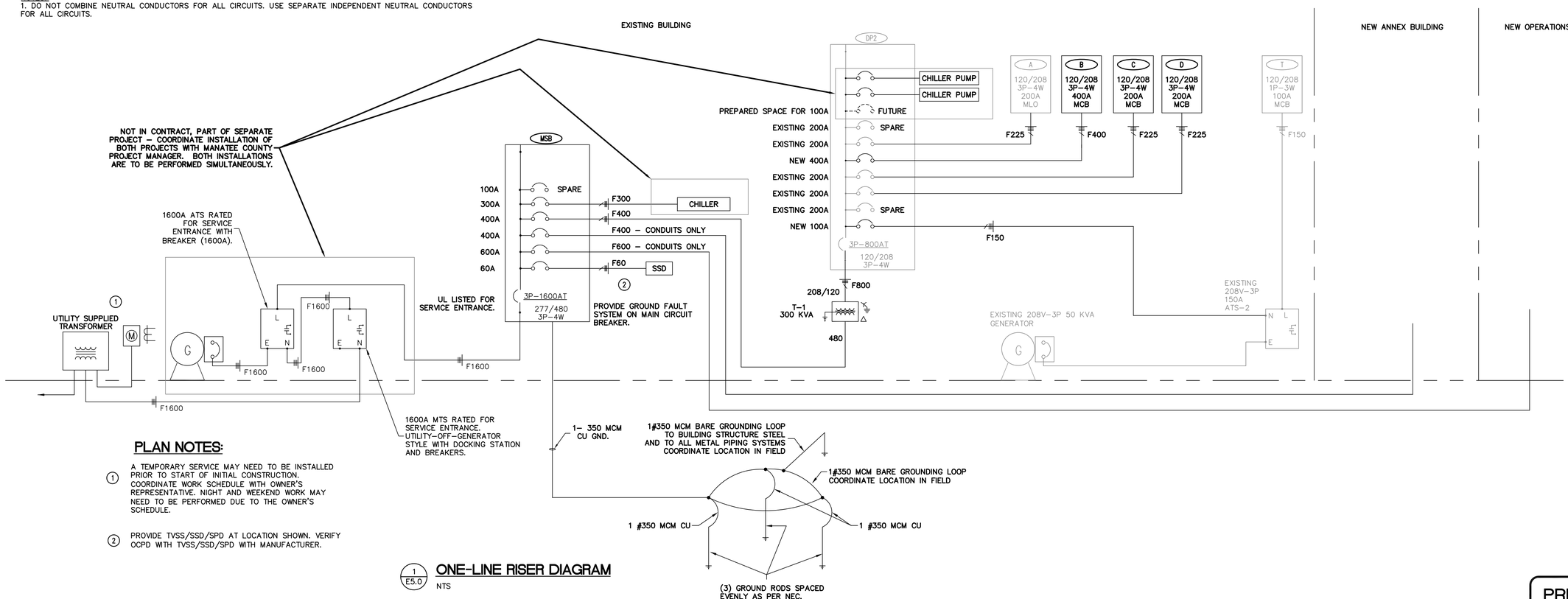
VOLTAGE DROP FOR 1ϕ, 20A BRANCH CIRCUITS

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.

AWAITING SHORT CIRCUIT VALUE FROM UTILITY COMPANY (FP&L) TO CALCULATE THE SHORT CIRCUIT VALUE. LOCAL UTILITY (FP&L) PROJECT MANAGER: MR. MICHAEL BERNARD, PHONE: 941–723–4421.



PLAN NOTES:

(1) A TEMPORARY SERVICE MAY NEED TO BE INSTALLED PRIOR TO START OF INITIAL CONSTRUCTION. COORDINATE WORK SCHEDULE WITH OWNER'S REPRESENTATIVE. NIGHT AND WEEKEND WORK MAY NEED TO BE PERFORMED DUE TO THE OWNER'S SCHEDULE.

(2) PROVIDE TVSS/SSD/SPD AT LOCATION SHOWN. VERIFY OCPD WITH TVSS/SSD/SPD WITH MANUFACTURER.

(1 / E5.0) ONE-LINE RISER DIAGRAM
NTS

PRELIMINARY
NOT–FOR–CONSTRUCTION
01/20/14

SEAL FL#53458

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

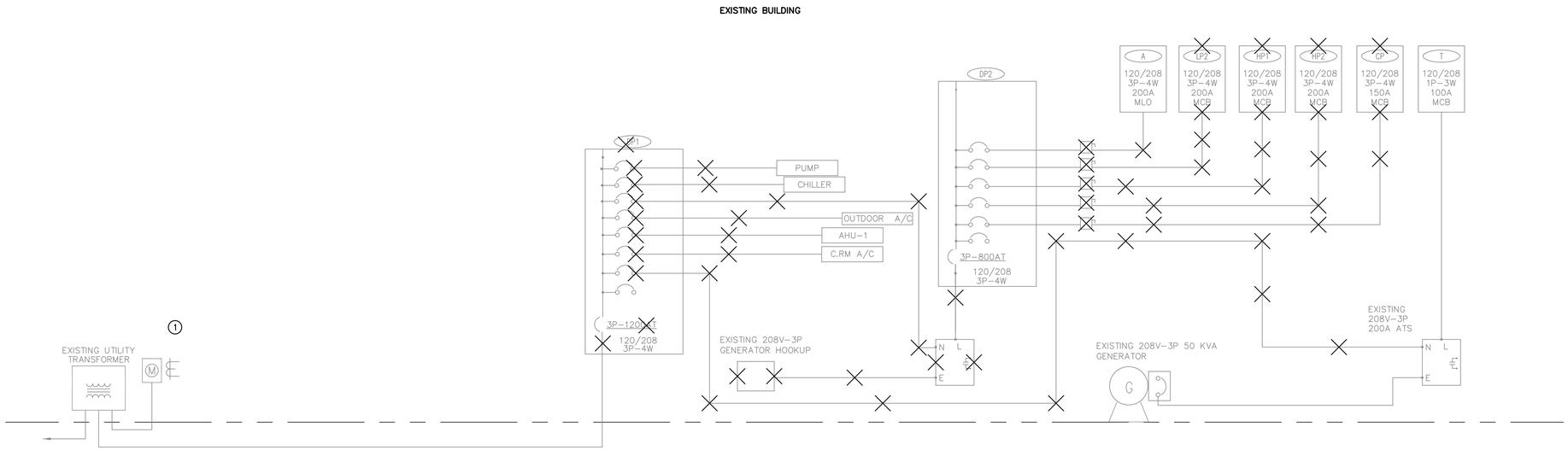
REV.#	DESCRIPTION	DATE

MANATEE COUNTY UTILITIES DEPARTMENT
ADMIN. BUILDING ELECTRICAL REVISIONS
4410 66TH ST. W.,
BRADENTON, FL 34210
IFAS#WI300254

DRAWING TITLE: ELECTRICAL ONE-LINE RISER

FILE:	MC Octagon Distribution
JOB NO.:	2013.72
DATE :	07/10/2013
PLOT SIZE:	1:1
DRAWN BY:	CMD/MC
CHECKED BY:	JDC
SHEET No.:	E5.0

EXISTING BUILDING



PLAN NOTES:

(1) A TEMPORARY SERVICE MAY NEED TO BE INSTALLED PRIOR TO START OF INITIAL CONSTRUCTION. COORDINATE WORK SCHEDULE WITH OWNER'S REPRESENTATIVE. NIGHT AND WEEKEND WORK MAY NEED TO BE PERFORMED DUE TO THE OWNER'S SCHEDULE. COORDINATE REPLACEMENT OF THE TRANSFORMER WITH THE UTILITY COMPANY.

FIELD VERIFY CONDITIONS PRIOR TO BIDDING AND STARTING CONSTRUCTION.

GENERAL NOTES:

X DENOTES ITEMS TO BE REMOVED.

ITEMS IN GRAYSCALE ARE EXISTING.

ITEMS BOLD ARE NEW.

(1) E5.1 ONE-LINE RISER DEMOLITION DIAGRAM

NTS

PRELIMINARY

NOT-FOR-CONSTRUCTION
01/20/14

REV.#	DESCRIPTION	DATE

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

SEAL

FL#53458

MANATEE COUNTY UTILITIES DEPARTMENT
ADMIN. BUILDING ELECTRICAL REVISIONS
4410 66TH ST. W.,
BRADENTON, FL 34210
IFAS#WR300254

DRAWING TITLE:
ELECTRICAL ONE-LINE RISER

FILE:	MC Octagon Distribution
JOB NO.:	2013.72
DATE :	07/10/2013
PLOT SIZE:	1:1
DRAWN BY:	CMD/MC
CHECKED BY:	JDC
SHEET No.:	E5.1

NEW SWITCHBOARD SCHEDULE

DESIGNATION: MSB
LOCATION: RM 304A, Electrical Room
VOLTAGE: 480Y/277
PHASE: 3 PHASE, 4 WIRE

MAINS: 1600 A MCB
BUS SIZE: 1600 A
PANEL MOUNTING: SURFACE
ALL BREAKERS: *VERIFY WITH UTILITY AIC

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	DP2	P	56.73	400	3	139.83			300	3	83.10	P	CHILLER	2
	*	P	54.55				137.65				83.10	P	*	
	*	P	43.86					126.96			83.10	P	*	
3	Annex Building	P	83.14	400	3	183.14			600	3	100.00	P	Operations Building	4
	(Future load)	P	83.14				183.14				100.00	P	(Future load)	
		P	83.14					183.14			100.00	P		
5	Space			X	3	0.00								6
							0.00							
								0.00						
7				X	3	0.00								8
							0.00							
								0.00						
9				X	3	0.00								10
							0.00							
								0.00						
11				X	3	0.00								12
							0.00							
								0.00						
13				X	3	0.00								14
							0.00							
								0.00						
15				X	3	0.00								16
							0.00							
								0.00						
17				X	3	0.00			60	3		P	TVSS	18
							0.00					P	*	
								0.00				P	*	
						322.97	320.79	310.10	KVA					
	TOTAL CONNECTED AMPS:		1165.95 AMPS			1165.95	1158.08	1119.51	AMPS					
	TOTAL CONNECTED LOAD:		953.86 KVA											
	TOTAL DEMAND AMPS:		1165.95 AMPS											
	TOTAL DEMAND LOAD:		953.86 KVA											

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

*AWAITING UTILITY INFORMATION FOR SHORT CIRCUIT VALUES.

NEW PANEL MSB

EXISTING PANELBOARD SCHEDULE

DESIGNATION: DP2 (EXISTING)
LOCATION: RM 304A, Electrical Room
VOLTAGE: 208Y/120
PHASE: 3 PHASE, 4 WIRE

MAINS: 800 A MCB
BUS SIZE: 800 A
PANEL MOUNTING: SURFACE
ALL BREAKERS: 65,000 AIC

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	12.44	200	3	35.80			400	3	23.36	P	PANEL B	2
	*	P	11.59				34.32				22.74	P	*	
	*	P	9.72					32.45			22.74	P	*	
3	PANEL C	P	6.39	200	3	12.73			200	3	6.34	P	PANEL D	4
	*	P	6.11				12.02				5.91	P	*	
	*	P	6.05					11.41			5.36	P	*	
5	PANEL T	P	8.20	100	2	8.20			-	3			SPACE	6
	(Via existing ATS-2)	P	8.20				8.20						*	
								0.00					*	
7	SPARE			200	3	0.00			-	3			Chiller pump	8
	*						0.00							
	*							0.00						
9	SPARE			200	3	0.00			-	3			Chiller Pump	10
	*						0.00							
	*							0.00						
11						0.00								12
							0.00							
								0.00						
13						0.00								14
							0.00							
								0.00						
15						0.00								16
							0.00							
								0.00						
17						0.00								18
							0.00							
								0.00						
						56.73	54.55	43.86	KVA					
	TOTAL CONNECTED AMPS:		651.71 AMPS			472.74	454.57	365.53	AMPS					
	TOTAL CONNECTED LOAD:		216.46 KVA											
	TOTAL DEMAND AMPS:		472.74 AMPS											
	TOTAL DEMAND LOAD:		155.14 KVA											

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

Space #6 and Chiller Pumps, #8 &# 10 are part of a separate contract, see One-line Riser, Sheet E5.0.

EXISTING PANEL DP2

EXISTING DISTRIBUTION PANELBOARD SCHEDULE

DESIGNATION: A (EXISTING)
LOCATION: RM 304A, Electrical Room
VOLTAGE: 208Y/120
PHASE: 3 PHASE, 4 WIRE

MAINS: 200 A MLO
BUS SIZE: 225 AMP
PANEL MOUNTING: SURFACE
ALL BREAKERS: EXISTING AIC

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		M	2.50	60	2	4.17			40	2	1.67	M		2
3		M	2.50				4.17				1.67	M		4
5		M	1.44	30	3			2.88	30	3	1.44	M		6
7		M	1.44			2.88					1.44	M		8
9		M	1.44				2.88				1.44	M		10
11		M	1.44	30	3			2.88	30	3	1.44	M		12
13		M	1.44			2.88					1.44	M		14
15		M	1.44				2.88				1.44	M		16
17		M	1.44	30	3			2.88	30	3	1.44	M		18
19		M	1.44			2.88					1.44	M		20
21		M	1.44				2.88				1.44	M		22
23		M	1.44	30	3			1.80	20	1	0.36	R		24
25		M	1.44			1.80			20	1	0.36	R		26
27		M	1.44				1.80		20	1	0.36	R		28
29		M	1.25	30	2			1.61	20	1	0.36	R		30
31		M	1.25			1.61			20	1	0.36	R		32
33		R	0.36	20	1		0.72		20	1	0.36	R		34
35		R	0.36	20	1			1.00	20	1	0.64	R		36
37	Water Heater	M	0.36	20	1	0.72			20	1	0.36	R		38
39		R	0.36	20	1		0.72		20	1	0.36	R		40
41		R	0.36	20	1			0.72	20	1	0.36	R		42
						16.94	16.05	13.77	KVA					
	TOTAL CONNECTED AMPS:		141.18 AMPS			141.18	133.75	114.72	AMPS					
	TOTAL CONNECTED LOAD:		46.76 KVA											
	TOTAL DEMAND AMPS:		103.63 AMPS											
	TOTAL DEMAND LOAD:		33.74 KVA											

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

LOCATE AND IDENTIFY ALL CIRCUITS LOCATED ON PANEL "A". PLACE INFORMATION ON THE NEW PANEL BOARD SCHEDULE.

EXISTING PANEL A

NEW DISTRIBUTION PANELBOARD SCHEDULE

DESIGNATION: B
LOCATION: RM 221
VOLTAGE: 208Y/120
PHASE: 3 PHASE, 4 WIRE

MAINS: 400 A MCB
BUS SIZE: 400AMP
PANEL MOUNTING: SURFACE
ALL BREAKERS: 10,000 AIC

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	FCU's Rm 212 &214	M	2.49	30	3	4.98			30	3	2.49	M	FCU's RM102 & 200	2
3	*	M	2.49				4.98				2.49	M	*	4
5	*	M	2.49					4.98			2.49	M	*	6
7	FCU's Rm 214A & 216	M	2.49	30	3	4.98			30	3	2.49	M	FCU's RM200 & 205	8
9	*	M	2.49				4.98				2.49	M	*	10
11	*	M	2.49					4.98			2.49	M	*	12
13	FCU's Rm 217 & 219	M	2.49	30	3	4.98			30	3	2.49	M	FCU's Rm 203 & 206	14
15	*	M	2.49				4.98				2.49	M	*	16
17	*	M	2.49					4.98			2.49	M	*	18
19	FCU's Rm 218 & 220	M	2.49	30	3	8.11			60	2	5.62	M	AHU Rm101A	20
21	*	M	2.49				8.11				5.62	M	(10 Kw Heat)	22
23	*	M	2.49					8.11	60	2	5.62	M	AHU Rm101b	24
25	FCU's Rm 220 & 221	M	2.49	30	3	8.11					5.62	M	(10 Kw Heat)	26
27	*	M	2.49				4.88		40	2	2.39	M	CU on roof	28
29		M	2.49					4.88			2.39	M	*	30
31		M		30	3	0.00								32
33		M					2.39		40	2	2.39	M	CU on roof	34
35		M						2.39			2.39	M	*	36
37		M				0.00								38
39		M					0.00							40
41		M						0.00						42
						31.15	30.32	30.32	KVA					
	TOTAL CONNECTED AMPS:		259.60 AMPS			259.60	252.63	252.63	AMPS					
	TOTAL CONNECTED LOAD:		91.78 KVA											
	TOTAL DEMAND AMPS:		194.70 AMPS											
	TOTAL DEMAND LOAD:		68.84 KVA											

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

VERIFY REQUIREMENTS OF ALL MECHANICAL EQUIPMENT

NEW PANEL B

NEW PANELBOARD SCHEDULE

DESIGNATION: C
LOCATION: RM 304A, Electrical Room
VOLTAGE: 208Y/120
PHASE: 3 PHASE, 4 WIRE

MAINS: 200A MLO
BUS SIZE: 200 AMP
PANEL MOUNTING: SURFACE
ALL BREAKERS: 10,000 AIC

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	Receptn Rm 308,308A	R	1.08	20	1	2.16			20	1	1.08	R	Receptn Rm 209,211	2
3	Receptn Rm 306,306A	R	1.08	20	1		1.98		20	1	0.90	R	Receptn Rm 209	4
5	Receptn Rm 306,304	R	0.90	20	1			1.98	20	1	1.08	R	Receptn Rm 209,207	6
7	Receptn Rm 304A	R	0.36	20	1	1.44			20	1	1.08	R	Receptn Rm 207	8
9	Receptn Rm 300,302	R	1.26	20	1		2.34		20	1	1.08	R	Receptn Rm 205,207	10
11	Receptn Rm 309	R	1.08	20	1			1.98	20	1	0.90	R	Receptn Rm 205,207	12
13	Receptn Rm 309	R	0.90	20	1	1.98			20	1	1.08	R	Receptn Rm 203,206	14
15	Receptn Rm 309	R	0.90	20	1		1.98		20	1	1.08	R	Receptn Rm 206,208	16
17	West Hallway Receptn	R	0.90	20	1			1.98	20	1	1.08	R	Receptn Rm 208	18
19	Receptn Rm 303	R	1.08	20	1	2.08			20	1	1.00	R	Receptn Rm 304B	20
21	Receptn Rm 303,301	R	1.08	20	1		1.44		20	1	0.36	R	Chiller Yard Receptn	22
23	Rcpts Rm 210,210A,301	R	1.08	20	1			1.44	20	1	0.36	R	Countertop Rcpt Rm 208	24
25	Receptn Rm 210	R	1.08	20	1	2.23			20	1	1.15	L	LTG Rm 207, 209-211	26
27	LTG West Wing South Side	L	1.34	20	1		2.49		20	1	1.15	L	LTG Hallways	28
29	LTG West Wing North Side	L	1.34	20	1			2.62	20	1	1.28	L	LTG Hallways & 215	30
31	LTG Rm 206,208	L	1.09	20	1	1.09			20	1				32
33				20	1		0.00		20	1				34
35				20	1			0.00	20	1				36
37						0.00								38
39							0.00							40
41								0.00						42
						10.98	10.23	10.00	KVA					
	TOTAL CONNECTED AMPS:		91.50 AMPS			91.60	85.27	83.37	AMPS					
	TOTAL CONNECTED LOAD:		31.22 KVA											
	TOTAL DEMAND AMPS:		53.22 AMPS											
	TOTAL DEMAND LOAD:		18.55 KVA											

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

NEW PANEL C

NEW PANELBOARD SCHEDULE

DESIGNATION: D
LOCATION: RM 222A (Telephone Room)
VOLTAGE: 208Y/120
PHASE: 3 PHASE, 4 WIRE

MAINS: 200 A MLO
BUS SIZE: 200 AMP
PANEL MOUNTING: SURFACE
ALL BREAKERS: 10,000 AIC

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	Telephone BB Receptn	R	0.54	20	1	1.62			20	1	1.08	R	Hallway Receptn	2
3	Telephone BB Receptn	R	0.54	20	1		0.90		20	1	0.36	R	Receptn Rm 215	4
5	Telephone BB Receptn	R	0.50	20	1			0.86	20	1	0.36	R	Receptn Rm 215	6
7	Receptn Rm 221, 221A	R	1.08	20	1	2.08			20	1	1.00	R	Copier RM 215	8
9	Receptn Rm 221A & B	R	0.90	20	1		1.98		20	1	1.08	R	Receptn Rm 217,219	10
11	Receptn Rm 220	R	1.08	20	1			2.16	20	1	1.08	R	Receptn Rm 219,101	12
13	Receptn Rm 218,214A	R	1.08	20	1	2.16			20	1	1.08	R	Receptn Rm 101	14
15	Receptn Rm 214, 214A,216	R	1.08	20	1		2.16		20	1	1.08	R	Receptn Rm 101	16
17	Receptn Rm 214,212	R	1.08	20	1			2.16	20	1	1.08	R	Receptn Rm 205	18
19	Receptn Rm2 12	R	1.08	20	1	1.80			20	1	0.72	R	Receptn Rm 205	20
21	Rcpt Rm 210,211-13	R	1.08	20	1		1.44		20	1	0.36	R	Courtyard Receptn	22
23	Receptn Rm 213	R	0.90	20	1			1.40	20	1	0.50	R	Courtyard Fountain	24
25	Receptn Rm 102, 200	R	1.08	20	1	2.44			20	1	1.36	L	LTG 212,214,214A,216, 218	26
27	Receptn Rm 102, 200	R	1.08	20	1		2.17		20	1	1.09	L	LTG 213,215,217,219	28
29	Receptn Rm 200,200a,203	R	1.26	20	1			2.22	20	1	0.96	L	LTG 100A,100B,219-222A	30
31	Spare			20	1	0.00			20	1			Spare	32
33	Spare			20	1		1.28		20	1	1.28	L	LTG 102,200,200A & B,203 ,203A	34
35	Spare			20	1			0.64	20	1	0.64	L	LTG Rm 205	36
37						0.83			20	1	0.83	L	LTG Rm 101	38
39							0.00							40
41								0.00						42
						10.93	9.93	9.44	KVA					
	TOTAL CONNECTED AMPS:		91.10 AMPS			91.10	82.73	78.67	AMPS					
	TOTAL CONNECTED LOAD:		30.30 KVA											
	TOTAL DEMAND AMPS:		52.86 AMPS											
	TOTAL DEMAND LOAD:		17.61 KVA											

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

NEW PANEL D

EXISTING PANELBOARD SCHEDULE

DESIGNATION: T (Existing)
LOCATION: RM222A
VOLTAGE: 208Y/120
PHASE: 1 PHASE, 3 WIRE

MAINS: 100 A MCB
BUS SIZE: 100 AMP
PANEL MOUNTING: SURFACE
ALL BREAKERS: 10,000 AIC

CKT NO.	LOAD DESCRIPTION	LOAD CODE	CONN. KVA	BREAKER AMPS	BREAKER POLE	CONN. LOAD A	CONN. LOAD C	BREAKER AMPS	BREAKER POLE	CONN. KVA	LOAD CODE	LOAD DESCRIPTION	CKT NO.
1				20	1	8.20		100	2	8.20	P	MAIN BREAKER	2
3				20	1		8.20			8.20	P	*	4
5				20	2	0.00		20	2				6
7							0.00						8
9				20	2	0.00		20/20	1				10
11							0.00	20/20	1				12
13				20/20	1	0.00		20/20	1				14
15				20/20	1		0.00	20/20	1				16
17						0.00							18
19							0.00						20
21						0.00							22
23							0.00						24
25						0.00							26
27							0.00						28
29						0.00							30
31							0.00						32
33						0.00							34
35							0.00						36
37						0.00							38
39							0.00						40
41							0.00						42
						8.20	8.20	KVA					
	TOTAL CONNECTED AMPS:		68.33 AMPS			68.33	68.33	AMPS					
	TOTAL CONNECTED LOAD:		16.40 KVA										
	TOTAL DEMAND AMPS:		68.33 AMPS										
	TOTAL DEMAND LOAD:		16.40 KVA										

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

LOCATE AND IDENTIFY ALL CIRCUITS LOCATED ON PANEL "T". PLACE INFORMATION ON THE NEW PANEL BOARD SCHEDULE.

EXISTING PANEL T

PRELIMINARY
NOT-FOR-CONSTRUCTION
01/20/14

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

SEAL
FL#53458

REV.#	DESCRIPTION	DATE

MANATEE COUNTY UTILITIES DEPARTMENT
ADMIN. BUILDING ELECTRICAL REVISIONS
4410 66TH ST. W.,
BRADENTON, FL 34210
IFAS#W1300254

DRAWING TITLE:
ELECTRICAL
PANELBOARD
SCHEDULES

FILE:	MC Octagon Distribution
JOB NO.:	2013.72
DATE :	07/10/2013
PLOT SIZE:	1:1
DRAWN BY:	CMD/MC
CHECKED BY:	JDC
SHEET No.:	E5.2

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 NEW 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.

   2.1. ALL ELECTRICAL CONNECTORS, LUGS, BREAKERS, EQUIPMENT, ETC. SHALL BE RATED AT A MINIMUM OF 75 DEG. C.

3. PROVIDE LABELING FOR ALL NEW AND EXISTING 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.

   3.3. ALL JUNCTION BOX COVERS SHALL BE IDENTIFIED TO INDICATE CIRCUITS CONTAINED. WHERE MULTIPLE SWITCHES ARE GANGED TOGETHER THE SWITCHES SHALL BE IDENTIFIED.

   3.4. 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.

   3.5. ALL NEW BRANCH DEVICES IN THE MAIN SWITCHBOARD SHALL HAVE AN ENGRAVED PLASTIC LABEL.

   3.6. ALL NEW AND EXISTING PANELBOARDS SHALL HAVE NEW TYPEWRITTEN DIRECTORY.

   3.7. ALL RECEPTACLES SHALL HAVE CIRCUIT NUMBERS WRITTEN ON THE INSIDE OF THE COVERPLATE.

   3.8. ALL JUNCTION BOX COVERS SHALL BE IDENTIFIED TO INDICATE CIRCUITS CONTAINED.

   3.9. WHERE MULTIPLE SWITCHES ARE GANGED TOGETHER THE SWITCHES SHALL BE IDENTIFIED.

4. CONDUITS:

   4.1. ALL NEW CONDUIT INSIDE THE BUILDING SHALL BE A ELECTRICAL METALLIC TUBING (EMT) AND SHALL BE A MINIMUM 1/2" UNLESS OTHERWISE NOTED.

   4.2. ALL NEW CONDUIT INSTALLED UNDERGROUND SHALL BE SCHEDULE 40 PVC UNLESS OTHERWISE NOTED.

   4.3. ALL NEW CONDUIT INSTALLED ABOVE GRADE OUTSIDE THE BUILDING SHALL BE GALVANIZED RIGID STEEL.

   4.4. NO PVC CONDUIT SHALL BE USED ABOVE THE FLOOR SLAB.

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 1221-21 SERIES OR APPROVED EQUIVALENT, UNLESS OTHERWISE NOTED.

   6.1. RE-USE EXISTING LIGHTING WALL SWITCHES. REPLACE WITH MATCHING SWITCH AS NEEDED.

   6.2. SWITCHES CONTROLLING LIGHTING SHALL HAVE NEUTRAL CONDUCTOR.

7. RECEPTACLES SHALL BE 20A, 120V GROUNDING TYPE LIKE LEVITON 5340 SERIES, UNLESS OTHERWISE NOTED.

   7.1. RE-USE EXISTING RECEPTACLES. REPLACE WITH MATCHING AS NEEDED.

   7.2. MATCH EXISTING COLOR IF REPLACEMENT RECEPTACLE IS REQUIRED.

   7.3. PROVIDE GROUND FAULT CIRCUIT-INTERRUPTER (GFI) TYPE RECEPTACLE IF SHOWN OR AS REQUIRED BY NEC.

8. REPLACE EXISTING COVERPLATES FOR INTERIOR WIRING DEVICES ONLY AS REQUIRED, RE-USE EXISTING.

   8.1. REPLACEMENTS SHALL BE NYLON TYPE, MATCH EXISTING COLOR.

9. ALL EXTERIOR RECEPTACLES SHALL BE GFCI (GFI) TYPE AND HAVE IN-USE TYPE WEATHERPROOF COVERPLATES.

FIRE ALARM SPECIFICATIONS:

1. FIRE ALARM SYSTEM IS AN EXISTING SYSTEM AND SHALL NOT BE TOUCHED OTHER THAN THE SOURCE OF POWER, AS SHOWN ON DRAWINGS. ALL DEVICES SHALL REMAIN AS CURRENTLY INSTALLED.

10. TIME CLOCK, THE TIME SWITCH SHALL BE OF THE 24-HOUR ELECTRONIC TYPE, CAPABLE OF PERMITTING UP TO 28 SETPOINTS OR EVENTS. THE TIME SWITCH SHALL PROVIDE A MINIMUM ON OR OFF TIME OF 1 MINUTE. THE TIME SWITCH TO BE POWERED BY 120VAC POWER SUPPLY. THE TIME SWITCH MECHANISM SHALL BE A SNAP-IN DESIGN TO PROVIDE EASE OF MECHANISM REMOVAL FOR MOUNTING THE ENCLOSURE. THE TIME SWITCH ENCLOSURE SHALL BE A TYPE 1 STEEL LOCKABLE ENCLOSURE, WHICH SHALL BE PAINTED WITH AN ELECTROSTATIC PROCESS TO ELIMINATE THE POTENTIAL FOR CORROSION. THE TIME SWITCH SHALL PROVIDE CLEAR TERMINAL IDENTIFICATION ON A NON-CURLING TERMINAL INSULATOR. TERMINAL CONNECTIONS SHALL BE MADE USING TEETER-TYPE TERMINAL SCREWS TO PROVIDE SECURE CONNECTIONS FOR WIRE SIZES UP TO #10 AWG. SWITCH CONFIGURATION SHALL BE SPST WITH A UL OR CSA LISTED SWITCH RATING OF:

- RESISTIVE: 30 AMPS @ 120/240 VAC
- RESISTIVE: 20 AMPS @ 28 VDC
- INDUCTIVE: 30 AMPS @ 120/240 VAC
- TUNGSTEN: 5 AMPS @ 120/240 VAC
- BALLAST: 20 AMPS @ 120-277 VAC
- MOTOR: 1 HP @ 120 VAC
- MOTOR: 2 HP @ 240 VAC

THE TIME SWITCH SHALL BE UL OR CSA LISTED UNDER UL CATEGORY 916 ENERGY MANAGEMENT EQUIPMENT AND SHALL BE INTERMATIC MODEL ET1105C, OR PRE-APPROVED EQUAL.

11. PANEL BOARD HEIGHT AND LOCATIONS

11.1. PANEL BOARDS SHALL BE ABOVE THE FLOOD PLANE.

12. DISCONNECT SWITCHES:

12.1. VERIFY SIZES OF ALL DISCONNECT SWITCHES WITH EQUIPMENT MANUFACTURER'S SPECIFICATION.

12.2. PROVIDE FUSES AS SHOWN ON DRAWINGS, VERIFY SIZES WITH MFG'S SPECIFICATIONS.

12.3. FOR FUSED SWITCHES, PROVIDE (2) SPARE FUSES.

12.4. DISCONNECTS SHALL NOT BE MOUNTED ON THE PIECE OF EQUIPMENT. THE EXCEPTION SHALL BE DISCONNECTS THAT ARE FACTORY INSTALLED ON THE EQUIPMENT.

12.5. ALL DISCONNECTS SHALL BE LOCATED NEAR THE PIECE OF EQUIPMENT THAT IT SERVES ON A SUPPORT STRUCTURE.

13. TRANSFORMERS:

13.1. BUILT TO AT LEAST 1986 ANSI AND NEMA STANDARDS FOR SOUND LEVELS.

13.2. 100% FACTORY TESTED FOR SHORTS, COIL INTEGRITY, CURRENT LOSS, VOLTAGE, IMPEDANCE, AND NOISE.

13.3. KVA SIZE AS SPECIFIED.

13.4. PRIMARY VOLTAGE - 480 VOLTS DELTA CONNECTED, 95 KV BIL.

13.5. SECONDARY VOLTAGE - 120/208 Y VOLTS, 30 KV BIL. THE LOW VOLTAGE NEUTRAL SHALL BE BROUGHT OUT THROUGH A FULLY INSULATED BUSHING IN THE SECONDARY COMPARTMENT AND GROUNDED EXTERNALLY.

13.6. THREE PHASE, 60 HERTZ FREQUENCY

13.7. TEMPERATURE RISE 150 C

13.8. 98% CONDUCTIVITY COPPER COIL.

13.9. TWO WINDING TRANSFORMER

13.10. EXTERNAL PANELS FOR DE-ENERGIZED OPERATION.

13.11. IMPEDANCE - NOT LESS THAN 4% AND NOT MORE THAN 7%

13.12. NOISE LEVEL - NOT TO EXCEED NEMA STANDARD LEVELS.

SURGE PROTECTION DEVICE (TVSS/SPD/SSD):

PROVIDE AND INSTALL AT ALL SWITCHBOARD, DISTRIBUTION PANELBOARDS AND PANELBOARD LOCATIONS AS SHOWN WITH THE FOLLOWING REQUIREMENTS: RATED AND TESTED FOR CATEGORY B & C3 AS DEFINED BY ANSI/IEEE C62.41 AND C62.45.

WITH SYSTEM VOLTAGE RATING: 120/208V AND 277/480V THREE PHASE, 4 WIRE GROUNDED, 60HZ; PROTECTION MODES: EACH LINE TO NEUTRAL, EACH LINE TO GROUND, NEUTRAL TO GROUND,

MAXIMUM SURGE CURRENT CAPACITY PER CATEGORY B & C3 FOR MULTIPLE OCCURRENCES: MINIMUM CAPACITY ALLOWED IS 100,000 AMPS PER PHASE FOR BRANCH PANELBOARDS AND 320,000 AMPS FOR DISTRIBUTION PANELBOARDS.

VOLTAGE SUPPRESSION RATING: L-N, 600, L-G = 600, N-G = 900, AND L-L = 1000V FOR 120/208 AND 277/480 VOLT SYSTEMS.

A 60 AMP 3 POLE BREAKER SHALL BE UTILIZED ON SERVICE ENTRANCE EQUIPMENT AND A 30 AMP 3 POLE BREAKER SHALL BE UTILIZED ON ALL OTHER PANELS.

SYSTEMS WILL BE PROVIDED WITH:

UNIT STATUS INDICATOR LIGHTS: AUDIBLE ALARM AND SILENCE SWITCH- IF APPLICABLE, AND TRANSIENT COUNTER, AND SHALL COMPLY WITH UL 1449 2ND EDITION, ANSI/IEEE C62.41 AND C62.45 - CATEGORY B AND C3 STANDARDS, AND MUST BE UL LISTED. ACCEPTABLE MANUFACTURES: GE TRANQUELL, LEA, JOSLYN, INNOVATIVE TECHNOLOGY, AND SQUARE D SURGELOGIC, DITEK. INTEGRATED OR EXTERNAL MOUNTED. A 10 YEAR LIMITED WARRANTY ON THE PRODUCT SHOULD BE STANDARD, 3 YEAR FULL COMPREHENSIVE WARRANTY SHALL BE INCLUDED.

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 DRAWINGS.

9. ALL NEW EQUIPMENT SHALL BE SUBMITTED FOR APPROVAL PRIOR TO INSTALLATION. ALL WORK AND EQUIPMENT SHALL HAVE A FULLY COMPREHENSIVE WARRANTY INCLUDING PARTS AND LABOR FOR AT LEAST 3 YEARS ON ALL MATERIALS, EQUIPMENT, AND WORK PERFORMED.

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. DE-RATE 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. A TEMPORARY SERVICE MAY BE REQUIRED FOR THIS PROJECT- ALL FEES ASSOCIATED SHALL BE INCLUDED IN THE BID. PROVIDE PRICING FOR ANY AND ALL UTILITY FEES.

16. TEST GROUNDING SYSTEM AFTER COMPLETION OF JOB TO INSURE PROPER GROUND CONDUCTIVITY.

17. TEST ALL RECEPTACLES, LIGHTING, FIRE ALARM, AND HVAC CIRCUITS AFTER RECONNECTION TO INSURE PROPER OPERATIONS OF ALL SYSTEMS.

18. 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.

19. WEEKEND AND NIGHT WORK WILL BE REQUIRED TO BE PERFORMED DUE TO THE OWNER'S REPRESENTATIVES REQUIREMENTS. HOURS OF NIGHT WORK SHALL COMMENCE AT 6:30PM (EST) AND END PRIOR TO 6:30AM (EST). ALL MATERIALS, EQUIPMENT, AND TRASH SHALL BE CLEANED UP PRIOR TO ENDING WORK FOR THE DAY. THE FACILITY SHALL ALSO BE COMPLETELY FUNCTIONING AT THE END OF THE WORKING DAY.

20. WORK DURING THE DAY MAY BE PERFORMED AS LONG AS IT DOES NOT INTERFERE WITH THE DAILY OPERATIONS OF THE FACILITY AND IF THE FACILITY IS UNDER EMERGENCY OPERATIONS. COORDINATE ALL SHUTDOWNS IN THE FACILITY WITH THE OWNER'S REPRESENTATIVE PRIOR TO PERFORMING THE SHUT DOWN.

21. COORDINATE ALL CONSTRUCTION WORK FOR THIS PROJECT. THERE ARE OTHER PROJECTS THAT ARE BEING PERFORMED DURING THIS CONSTRUCTION PROCESS. THIS PROJECT SHALL BE COORDINATED WITH THE OTHER PROJECTS AS WELL. THE MAJOR PROJECT COORDINATION SHALL OCCUR WITH THE GENERATOR/CHILLER PLANT PROJECT FOR THE FACILITY.

PROPOSED ORDER OF WORK:

1. PRIOR TO STARTING ANY WORK DISCUSS PROCESS WITH THE ENGINEER AND THE PROJECT MANAGER. ALL DOWNTIME OF ELECTRICAL SERVICE SHALL BE SCHEDULED AND APPROVED BY THE PROJECT MANAGER.

2. PRIOR TO STARTING ANY WORK, THE CONTRACTOR SHALL COORDINATE LOCATIONS OF UNDERGROUND FIBER LINES WITH MANATEE COUNTY UTILITY DEPARTMENT.

3. THE CONTRACTOR SHALL PROVIDE A FLOOR PLAN WITH A SCHEDULE OF AREAS OF WORK AT THE KICK OFF MEETING.

4. THE DEMOLITION AND INSTALLATION/REPLACEMENT WITH NEW EQUIPMENT SHALL PROCEED SIMULTANEOUSLY IN THIS PROJECT.

5. WORK WILL NEED TO BE COMPLETED OVER NIGHTS AND WEEKENDS PER THE PROJECT MANAGER'S SCHEDULE. DAY WORK MAY BE PERMITTED IF THERE ARE NO OUTAGES DURING THE PERIOD.

6. DO ALL REQUIRED PREPARATION WORK FOR THE PROJECT: A TEMPORARY SERVICE AND TEMPORARY PANELS PLACEMENT IF NECESSARY, LARGE CONDUIT RUNS, ETC.

7. VERIFY ALL CIRCUITS PRIOR TO STARTING DEMOLITION. THIS SHOULD IDENTIFY THE CIRCUITS THAT ARE ABLE TO BE RE-USED/REPLACED DURING THE NORMAL WORKING HOURS AND REDUCE THE AMOUNT OF TIME DURING THE CONSTRUCTION PROCESS.

8. THE SPECIFIED EMERGENCY EQUIPMENT SHALL BE DEMO'D INITIALLY TO PROVIDE ROOM FOR THE NEW INCOMING EQUIPMENT.

9. THE DEMOLITION MAY BEGIN WITH THE PANEL BOARDS AND DISCONNECTS --THE REPLACEMENT OF THE EXISTING PANELS WITH THE NEW PANELS SHALL BE PERFORMED. REPLACE PANELS IN A ORDERLY MANNER AND RE-WIRE TO THE EXISTING DISTRIBUTION PANEL (DP2) AND THE BRANCH CIRCUITS.

10. INSTALL THE NEW 277/480 V SERVICE FOR THE FACILITY AND THEN:

11. REMOVAL OF OLD SWITCHGEAR AND INSTALL THE NEW SWITCHGEAR AND A TRANSFORMER OVER A WEEKEND.

PRELIMINARY

NOT-FOR-CONSTRUCTION

01/20/14

SEAL FL#53458

ATP

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

REV.#	DESCRIPTION	DATE

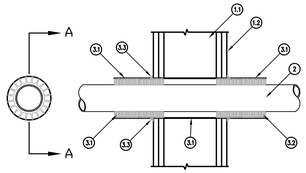
MANATEE COUNTY UTILITIES DEPARTMENT
ADMIN. BUILDING ELECTRICAL REVISIONS
4410 66TH ST. W,
BRADENTON, FL 34210
IFAS#W1300254

DRAWING TITLE: ELECTRICAL SPECIFICATIONS

FILE:	MC Octagon Distribution
JOB NO.:	2013.72
DATE :	07/10/2013
PLOT SIZE:	1:1
DRAWN BY:	CMD/MC
CHECKED BY:	JDC
SHEET No.:	E6.0

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

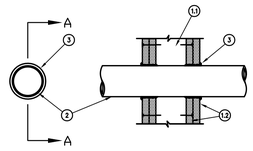
   3.3. FILL, VOID OR CAVITY MATERIALS* – CAULK – MINIMUM 1/2 IN. DIAMETER BEAD OF CAULK SHALL BE APPLIED TO OUTER PERIMETER OF SLEEVE ON BOTH SIDES OF WALL AT SLEEVE / WALL INTERFACE. MINNESOTA MINING & MFG. CO. – CP 25WB+ CAULK

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

(1 / E6.1) **UL. 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.			

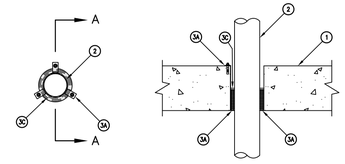
MINNESOTA MINING & MANUFACTURING CO. – TYPES CP-25 S/L, CP-25 N/S, CP-25 WB, CP-25 WB+

* BEARING THE UL CLASSIFICATION MARKING

(2 / E6.1) **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 / E6.1) **CONCRETE WALL OR FLOOR PENETRATION DETAIL**
NOT TO SCALE

PRELIMINARY
NOT-FOR-CONSTRUCTION
01/20/14

SEAL
FL#53458

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

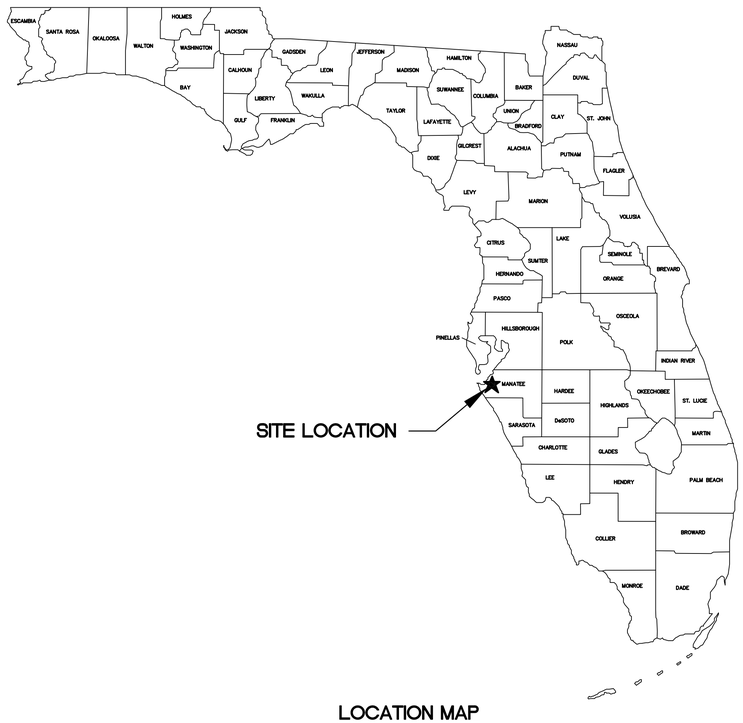
REV.#	DESCRIPTION	DATE

MANATEE COUNTY UTILITIES DEPARTMENT
ADMIN. BUILDING ELECTRICAL REVISIONS
4410 66TH ST. W.,
BRADENTON, FL 34210
IFAS#W1300254

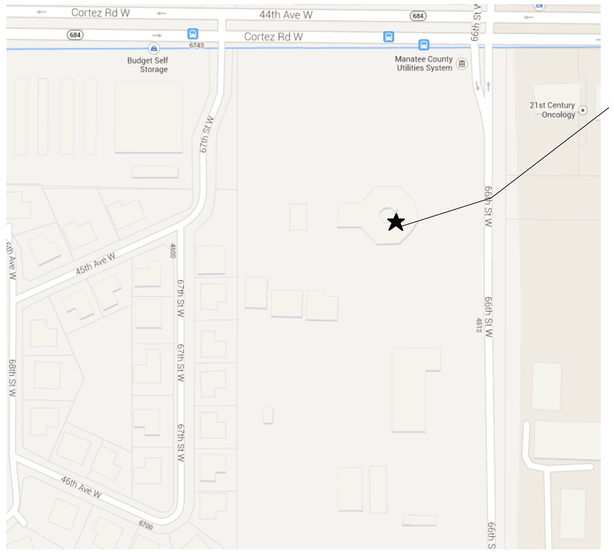
DRAWING TITLE: ELECTRICAL DETAILS

FILE:	MC Octagon Distribution
JOB NO.:	2013.72
DATE :	07/10/2013
PLOT SIZE:	1:1
DRAWN BY:	CMD/MC
CHECKED BY:	JDC
SHEET No.:	E6.1

MANATEE COUNTY UTILITY DEPARTMENT ADMINISTRATION
BUILDING CHILLER AND GENERATOR PROJECT WA#7
4410 66TH ST. W.
BRADENTON, FLORIDA 34210



LOCATION MAP
FLORIDA



SITE MAP

SHEET SCHEDULE

SHEET	DESCRIPTION
COVER	PROJECT NAME, LOCATION and SITE MAPS, SHEET SCHEDULE
E1.0	ELECTRICAL SYMBOLS, LEGEND, & GENERAL NOTES
E3.0	POWER DEMOLITION PLAN
E4.0	POWER NEW PLAN
E5.0	ELECTRICAL ONE-LINE
E5.1	ELECTRICAL PANEL SCHEDULES
M1.0	MECHANICAL LEGEND AND GENERAL NOTES
M2.0	MECHANICAL DEMOLITION FLOOR PLAN
M2.1	MECHANICAL PROPOSED FLOOR PLAN
M2.2	MECHANICAL CONTROLS PLAN
M3.0	MECHANICAL SCHEDULES
M4.0	MECHANICAL DETAILS
M4.1	MECHANICAL DETAILS
S1	FOUNDATION PLAN, NOTES, AND SECTIONS

PRELIMINARY
NOT-FOR-CONSTRUCTION
01/20/14

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

SEAL

FL#53458

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
	DENOTES PANEL/PANELBOARD DESIGNATION
X Y	MOTOR "X" INDICATES HORSEPOWER "Y" INDICATES PHASE
X PF	CAPACITOR "X" INDICATES KVAR
X Y	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
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
S2	TOGGLE SWITCH – DOUBLE POLE
S3	TOGGLE SWITCH – 3–WAY
S4	TOGGLE SWITCH – 4–WAY
Sa	TOGGLE SWITCH – a– INDICATES TYPE T: TIMER, K: KEY OPERATED
SD	SWITCH – DIMMER
SF	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

DRAWING SYMBOLS

2 / E X	DETAIL NUMBER DRAWING NUMBER WHERE DRAWN
A / E X	SECTION LETTER DRAWING NUMBER WHERE DRAWN

FIRE ALARM SYSTEM

SYMBOL	DESCRIPTION
	HORN / STROBE ○= CEILING MOUNT □= WALL MOUNT
	HORN ○= CEILING MOUNT □= WALL MOUNT
S	SPEAKER/STROBE ○= CEILING MOUNT □= WALL MOUNT
	STROBE ○= CEILING MOUNT □= WALL MOUNT
F	BELL ○= CEILING MOUNT □= WALL MOUNT
P	SMOKE DETECTOR
I	HEAT DETECTOR
	PULL STATION
	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

INTERCOMMUNICATION SYSTEM

SYMBOL	DESCRIPTION
IC	INTERCOM SYSTEM ROUGH–IN – SINGLE GANG BACKBOX MOUNTED AT +46"

DOOR SECURITY SYSTEM

SYMBOL	DESCRIPTION
D	DOOR CONTACT ROUGH–IN
C	PROXIMITY CARD READER ROUGH–IN
EL	ELECTRO–MAGNETIC DOOR LOCK

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
S1	LOUDSPEAKER – CEILING MOUNTED CONTROLLED BY VOLUME CONTROL "1"
V1	VOLUME CONTROL – CONTROLS SPEAKERS "1"
S	PAGING ROUGH–IN
A	AUDIO JACK ROUGH–IN
M	MICROPHONE ROUGH–IN
P	PROJECTOR ROUGH–IN

TELEVISION SYSTEM

SYMBOL	DESCRIPTION
TV	TELEVISION ROUGH–IN

CCTV SYSTEM

SYMBOL	DESCRIPTION
C	CCTV ROUGH–IN
	CAMERA ROUGH–IN

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. WHEN A CONFLICT OCCURS BETWEEN THE SPECIFICATIONS AND DRAWINGS, THE ITEMS OF GREATER QUANTITY AND/OR COST SHALL BE PROVIDED.
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

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01/20/14

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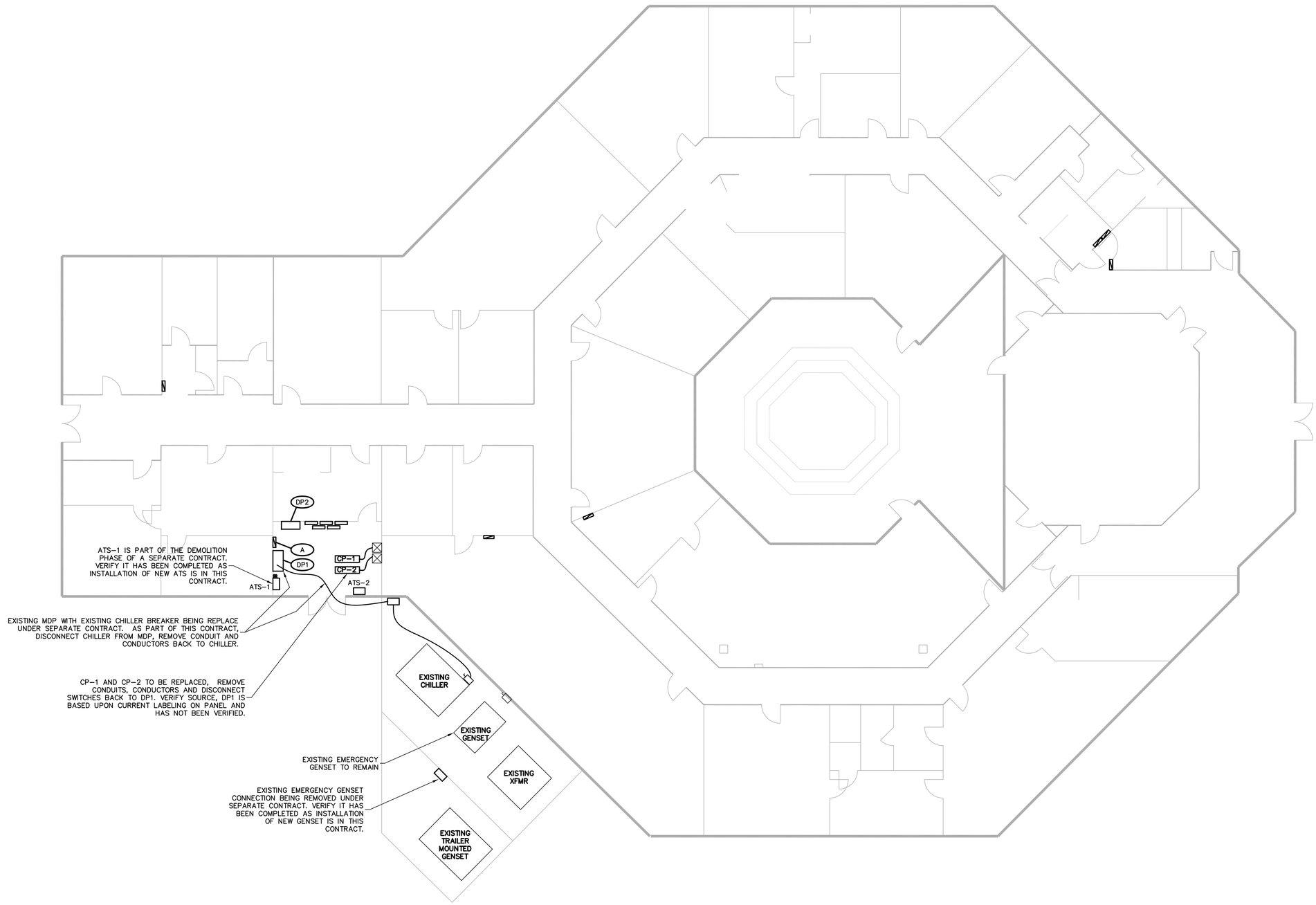
ATP ENGINEERING SOUTH, PL
BRADENTON, FLORIDA
ENGR. BUSINESS #8908
941-751-6485

REV.# | DESCRIPTION | DATE

MANATEE COUNTY UTILITIES DEPARTMENT
CHILLER AND GENERATOR REPLACEMENT
4410 66TH ST. W.,
BRADENTON, FL 34210

DRAWING TITLE:
ELECTRICAL
SYMBOLS, LEGENDS
AND GENERAL NOTES

FILE:	MCUD Chiller & Generator
JOB NO.:	2013.11
DATE :	10/21/2013
PLOT SIZE:	1:1
DRAWN BY:	CMD/MC
CHECKED BY:	JDC
SHEET No.:	E1.0



N

1/E3.0 **POWER DEMOLITION PLAN**

1/8" = 1'-0"

PRELIMINARY

NOT-FOR-CONSTRUCTION
01/20/14

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

SEAL

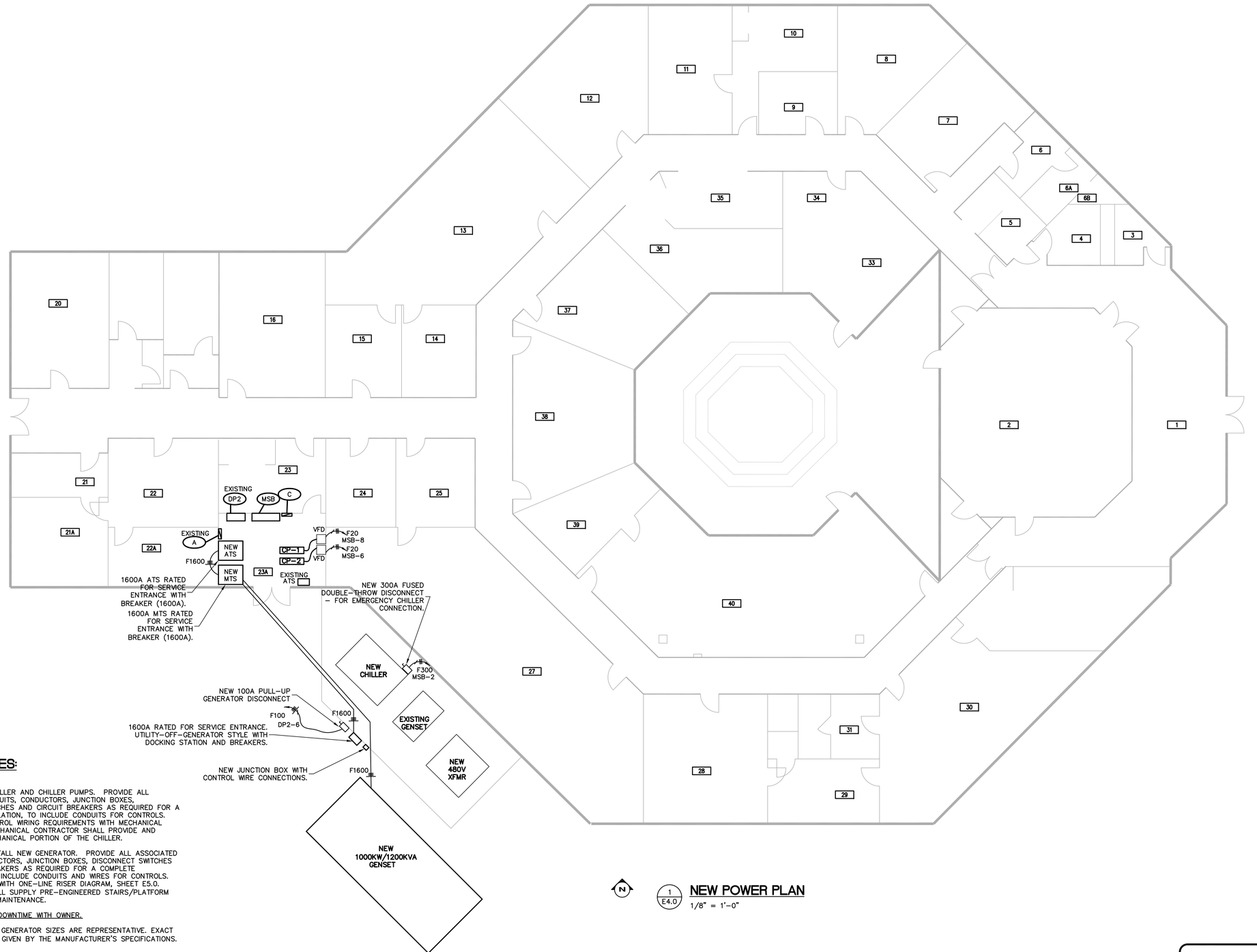
FL#53458

REV.#	DESCRIPTION	DATE

MANATEE COUNTY UTILITIES DEPARTMENT
CHILLER AND GENERATOR REPLACEMENT
4410 66TH ST. W.,
BRADENTON, FL 34210

DRAWING TITLE:
ELECTRICAL POWER
DEMOLITION PLAN

FILE:	MCUD Chiller & Generator
JOB NO.:	2013.11
DATE :	10/21/2013
PLOT SIZE:	1:1
DRAWN BY:	CMD/MC
CHECKED BY:	JDC
SHEET No.:	E3.0



PLAN NOTES:

CONNECT NEW CHILLER AND CHILLER PUMPS. PROVIDE ALL ASSOCIATED CONDUITS, CONDUCTORS, JUNCTION BOXES, DISCONNECT SWITCHES AND CIRCUIT BREAKERS AS REQUIRED FOR A COMPLETE INSTALLATION, TO INCLUDE CONDUITS FOR CONTROLS. COORDINATE CONTROL WIRING REQUIREMENTS WITH MECHANICAL CONTRACTOR. MECHANICAL CONTRACTOR SHALL PROVIDE AND INSTALL THE MECHANICAL PORTION OF THE CHILLER.

PROVIDE AND INSTALL NEW GENERATOR. PROVIDE ALL ASSOCIATED CONDUITS, CONDUCTORS, JUNCTION BOXES, DISCONNECT SWITCHES AND CIRCUIT BREAKERS AS REQUIRED FOR A COMPLETE INSTALLATION, TO INCLUDE CONDUITS AND WIRES FOR CONTROLS. WORK THIS PLAN WITH ONE-LINE RISER DIAGRAM, SHEET E5.0. CONTRACTOR SHALL SUPPLY PRE-ENGINEERED STAIRS/PLATFORM FOR GENERATOR MAINTENANCE.

COORDINATE ALL DOWNTIME WITH OWNER.

THE CHILLER AND GENERATOR SIZES ARE REPRESENTATIVE. EXACT SIZES SHOULD BE GIVEN BY THE MANUFACTURER'S SPECIFICATIONS.

NEW POWER PLAN

1/8" = 1'-0"

PRELIMINARY
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MANATEE COUNTY UTILITIES DEPARTMENT
CHILLER AND GENERATOR REPLACEMENT
4410 66TH ST. W.,
BRADENTON, FL 34210

DRAWING TITLE:
ELECTRICAL POWER PLAN

FILE:	MCUD Chiller & Generator
JOB NO.:	2013.11
DATE :	10/21/2013
PLOT SIZE:	1:1
DRAWN BY:	CMD/MC
CHECKED BY:	JDC
SHEET No.:	E4.0

FEEDER AND BRANCH CIRCUIT SCHEDULE

FEEDER/BRANCH CIRCUIT DESIGNATION	COPPER CONDUCTOR THHN,THWN,&THWN-2		CONDUIT SIZE AND QUANTITY [QUANTITY 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	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"
F30	10	10	3/4"	3/4"	3/4"	1"	1"	1"
F40-50	8	10	3/4"	1"	1"	1 1/4"	1 1/4"	1 1/4"
F60	6	10	1"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/4"
F70-F80	4	8	1"	1 1/4"	1 1/4"	1 1/2"	1 1/2"	1 1/2"
F90-F100	3	8	1 1/4"	1 1/4"	1 1/2"	1 1/2"	2"	1 1/2"
F110	2	6	1 1/4"	1 1/2"	1 1/2"	2"	2"	2"
F125	1	6	1 1/2"	2"	2"	2"	2 1/2"	2"
F150	1/0	6	1 1/2"	2"	2"	2 1/2"	2 1/2"	2 1/2"
F175	2/0	6	2"	2"	2 1/2"	2 1/2"	3"	2 1/2"
F200	3/0	6	2"	2 1/2"	2 1/2"	3"	3"	3"
F225	4/0	4	2"	2 1/2"	3"	3"	3"	3"
F250	250	4	2 1/2"	3"	3"	3 1/2"	3 1/2"	3-1/2"
F300	350	4	3"	3"	3 1/2"	3 1/2"	4"	3 1/2"
F350	2/0	3	(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 1/2"	(2) 2 1/2"	(2) 3"	(2) 3"	(2) 2 1/2"
F450	4/0	2	(2) 2"	(2) 2 1/2"	(2) 2 1/2"	(2) 3"	(2) 3"	(2) 3"
F500	250	2	(2) 2 1/2"	(2) 3"	(2) 3"	(2) 3"	(2) 3 1/2"	(2) 3 1/2"
F600	350	1	(2) 2 1/2"	(2) 3"	(2) 3"	(2) 3"	(2) 3 1/2"	(2) 3"
F800	300	1/0	(3) 2 1/2"	(3) 3"	(3) 3"	(3) 3 1/2"	(3) 3 1/2"	(3) 3 1/2"
F900	350	2/0	(3) 3"	(3) 3"	(3) 3 1/2"	(3) 3 1/2"	(3) 4"	(3) 3 1/2"
F1000	400	2/0	(3) 3"	(3) 3"	(3) 3 1/2"	(3) 3 1/2"	(3) 4"	(3) 4"
F1200	350	3/0	(4) 3"	(4) 3"	(4) 3 1/2"	(4) 3 1/2"	(4) 4"	(4) 4"
F1600	400	4/0	(5) 3"	(5) 3"	(5) 3 1/2"	(5) 3 1/2"	(5) 4"	(5) 4"
F2000	400	250	(6) 3"	(6) 3"	(6) 3 1/2"	(6) 3 1/2"	(6) 4"	(6) 4"
F2500	500	350	(7) 3"	(7) 3 1/2"	(7) 4"	(7) 4"	(7) 4"	(7) 4"
F3000	500	400	(8) 3"	(8) 3 1/2"	(8) 4"	(8) 4"	(8) 4"	(8) 4"
F3500	500	500	(10) 3"	(10) 3 1/2"	(10) 4"	(10) 4"	(10) 4"	(10) 4"

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

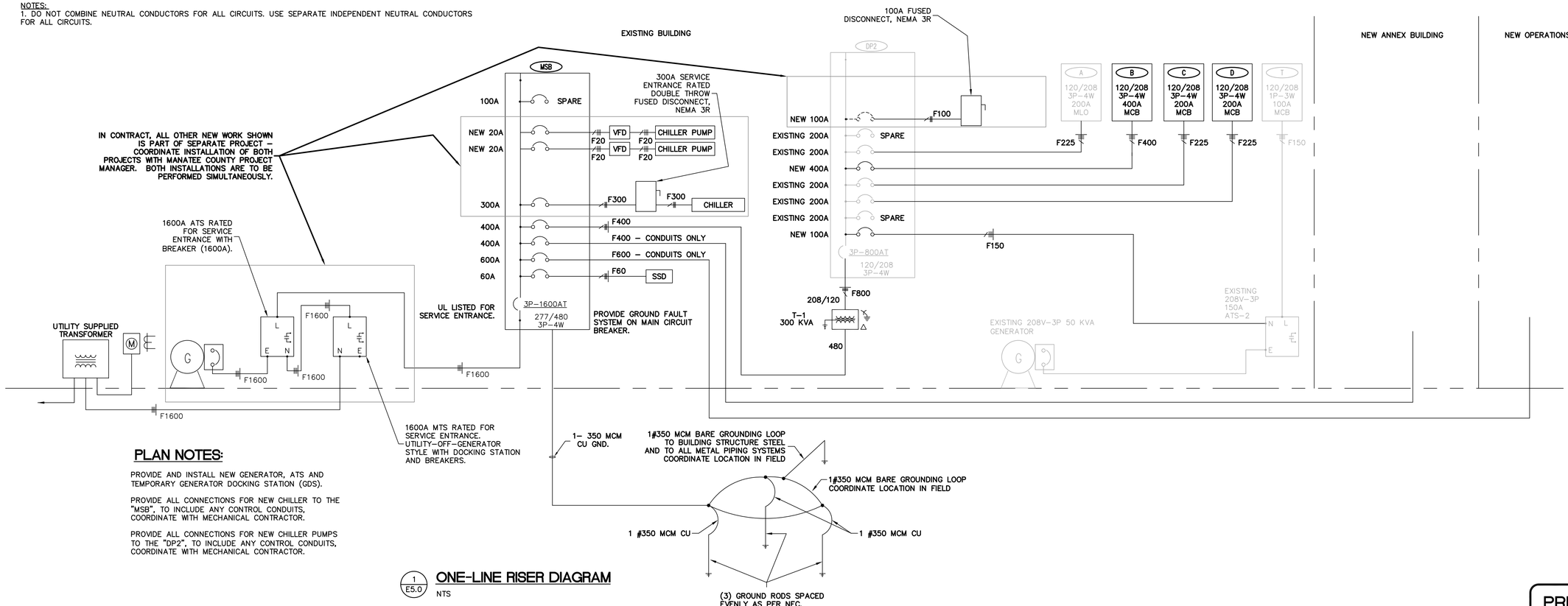
VOLTAGE DROP FOR 1ϕ, 20A BRANCH CIRCUITS

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.

AWAITING SHORT CIRCUIT VALUE FROM UTILITY COMPANY (FP&L) TO CALCULATE THE SHORT CIRCUIT VALUE. LOCAL UTILITY (FP&L) PROJECT MANAGER: MR. MICHAEL BERNARD, PHONE: 941-723-4421.



PLAN NOTES:

PROVIDE AND INSTALL NEW GENERATOR, ATS AND TEMPORARY GENERATOR DOCKING STATION (GDS).

PROVIDE ALL CONNECTIONS FOR NEW CHILLER TO THE "MSB", TO INCLUDE ANY CONTROL CONDUITS, COORDINATE WITH MECHANICAL CONTRACTOR.

PROVIDE ALL CONNECTIONS FOR NEW CHILLER PUMPS TO THE "DP2", TO INCLUDE ANY CONTROL CONDUITS, COORDINATE WITH MECHANICAL CONTRACTOR.

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

PRELIMINARY
NOT-FOR-CONSTRUCTION
01/20/14

SEAL FL#53458

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

REV.#	DESCRIPTION	DATE

MANATEE COUNTY UTILITIES DEPARTMENT
CHILLER AND GENERATOR REPLACEMENT
4410 66TH ST. W.,
BRADENTON, FL 34210

DRAWING TITLE: ELECTRICAL ONE-LINE RISER

FILE:	MCUD Chiller & Generator
JOB NO.:	2013.11
DATE :	10/21/2013
PLOT SIZE:	1:1
DRAWN BY:	CMD/MC
CHECKED BY:	JDC
SHEET No.:	E5.0

SWITCHBOARD SCHEDULE		DESIGNATION:		MSB					MAINS:		1600 A MCB				
		LOCATION:		RM 304A, Electrical Room					BUS SIZE:		1600 A				
		VOLTAGE:		480Y/277					PANEL MOUNTING:		SURFACE				
		PHASE:		3 PHASE, 4 WIRE					ALL BREAKERS:		*VERIFY WITH UTILITY AIC				

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	DP2	P	56.73	400	3	130.16			300	3	73.43	P	CHILLER	2
	"	P	54.55				127.98				73.43	P	"	
	"	P	43.86					117.29			73.43	P	"	
3	Annex Building	P	83.14	400	3	183.14			600	3	100.00	P	Operations Building	4
	(Future load)	P	83.14				183.14				100.00	P	(Future load)	
		P	83.14					183.14			100.00	P		
5	Space			X	3	7.40			40	3	7.40	M	Chiller pump	6
							7.40				7.40	M	(10HP)	
								7.40			7.40	M	"	
7				X	3	7.40			40	3	7.40	M	Chiller Pump	8
							7.40				7.40	M	(10HP)	
								7.40			7.40	M	"	
9				X	3	0.00								10
							0.00							
								0.00						
11				X	3	0.00								12
							0.00							
								0.00						
13				X	3	0.00								14
							0.00							
								0.00						
15				X	3	0.00								16
							0.00							
								0.00						
17				X	3	0.00			60	3		P	TVSS	18
							0.00					P	"	
								0.00				P	"	
						328.09	325.91	315.23	KVA					
	TOTAL CONNECTED AMPS:		1184.45 AMPS			1184.45	1176.58	1138.01	AMPS					
	TOTAL CONNECTED LOAD:		969.23 KVA											
	TOTAL DEMAND AMPS:		1171.10 AMPS											
	TOTAL DEMAND LOAD:		958.14 KVA											

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

*AWAITING UTILITY INFORMATION FOR SHORT CIRCUIT VALUES.

EXISTING PANELBOARD SCHEDULE		DESIGNATION:		DP2 (EXISTING)					MAINS:		800 A MCB				
		LOCATION:		RM 304A, Electrical Room					BUS SIZE:		800 A				
		VOLTAGE:		208Y/120					PANEL MOUNTING:		SURFACE				
		PHASE:		3 PHASE, 4 WIRE					ALL BREAKERS:		65,000 AIC				

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	12.44	200	3	35.80			400	3	23.36	P	PANEL B	2
	"	P	11.59				34.32				22.74	P	"	
	"	P	9.72					32.45			22.74	P	"	
3	PANEL C	P	6.39	200	3	12.73			200	3	6.34	P	PANEL D	4
	"	P	6.11				12.02				5.91	P	"	
	"	P	6.05					11.41			5.36	P	"	
5	PANEL T	P	8.20	100	2	8.20			100	3		P	Temp. Gen. Cnt Pwr	6
	(Via existing ATS-2)	P	8.20				8.20					P	"	
								0.00				P	"	
7	SPARE			200	3	0.00								8
	"						0.00							
	"							0.00						
9	SPARE			200	3	0.00								10
	"						0.00							
	"							0.00						
11						0.00								12
							0.00							
								0.00						
13						0.00								14
							0.00							
								0.00						
15						0.00								16
							0.00							
								0.00						
17						0.00								18
							0.00							
								0.00						
						56.73	54.55	43.86	KVA					
	TOTAL CONNECTED AMPS:		651.71 AMPS			472.74	454.57	365.53	AMPS					
	TOTAL CONNECTED LOAD:		216.46 KVA											
	TOTAL DEMAND AMPS:		472.74 AMPS											
	TOTAL DEMAND LOAD:		155.14 KVA											

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

Space #6 and Chiller Pumps, #8 &# 10 are part of a separate contract, see One-line Riser, Sheet E5.0.

PRELIMINARY
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ENGR. BUSINESS #8908
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REV.# | DESCRIPTION | DATE

MANATEE COUNTY UTILITIES DEPARTMENT
CHILLER AND GENERATOR REPLACEMENT
4410 66TH ST. W.,
BRADENTON, FL 34210

DRAWING TITLE:
ELECTRICAL PANELBOARD SCHEDULES

FILE: MCUD Chiller & Generator
JOB NO.: 2013.11
DATE : 10/21/2013
PLOT SIZE: 1:1
DRAWN BY: CMD/MC
CHECKED BY: JDC
SHEET No.: E5.1

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

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

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 A CHILLER REPLACEMENT AND PUMP 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. ALL CHILLERS SHALL BE SCROLL COMPRESSOR TYPE TO ALLOW FOR LOW AND PARTIAL COOLING LOAD CONDITIONS FOR THE PHASED SITE PROJECTS.
2. A RENTAL CHILLER WITH PUMP IS REQUIRED FOR THIS WORK PROCESS AND SUPPLIED BY THE CONTRACTOR.
3. TEST AND BALANCE SHALL BE PROVIDED BY A COMPANY SPECIALIZING IN THE TESTING AND BALANCING OF HVAC SYSTEMS AS SUBCONTRACTOR TO THE HVAC CONTRACTOR OR GENERAL CONTRACTOR. THE TEST AND BALANCE CONTRACTOR SHALL BE A MEMBER OF EITHER AABC OR NEBB.
4. 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.
5. PROVIDE IDENTIFICATION OF THE LOCATION OF ALL VALVES. IDENTIFICATION TAGS SHALL BE AFFIXED TO THE WALLS OR CEILINGS AND SHALL BE VISIBLE FROM THE OCCUPIED SPACE.
6. ALL PIPING SHALL BE SUPPORTED WITH COMMERCIAL MANUFACTURED CLAMPS. PROVIDE ISOLATION SLEEVES TO PREVENT CONTACT OF DISSIMILAR METALS.
7. INSTALL ALL EQUIPMENT IN STRICT ACCORDANCE WITH THE MANUFACTURERS' INSTRUCTIONS AND RECOMMENDATIONS.
8. CONTRACTOR TO PROVIDE ALL SUPPLEMENTARY STEEL REQUIRED TO SUSPEND MECHANICAL EQUIPMENT AND MATERIALS.
9. 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.
10. 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.
11. SEE ELECTRICAL DRAWINGS FOR ELECTRICAL CHARACTERISTICS OF MECHANICAL EQUIPMENT.
12. THE ENGINEER HAS MADE AN EXTENSIVE EFFORT TO IDENTIFY ABOVE CEILING CONFLICTS. THE CONTRACTOR IS RESPONSIBLE TO ALSO CHECKING FIELD CONDITIONS PRIOR TO BIDDING AND REPORT ANY PROBLEMS/CONFLICTS TO THE ENGINEER WITHIN 2 DAYS OF DISCOVERY. ANY CHANGES RESULTING FROM CONDITIONS ARISING IN THE FIELD WHICH WERE NOT BROUGHT TO THE ENGINEER'S ATTENTION ARE TO BE MADE BY THIS CONTRACTOR WITH NO ADDITIONAL COST TO THE OWNER.
13. 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.
14. ALL WORK IS TO BE FREE OF DEFECTS IN WORKMANSHIP AND MATERIALS FOR A PERIOD OF THREE(3) YEARS FROM DATE OF FINAL ACCEPTANCE. REFER TO THE CHILLER SPECIFICATIONS FOR THE SPECIFIC CHILLER WARRANTY REQURIED. 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.
15. 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.
16. WHEN CONFLICTS OCCUR IN SPECIFICATIONS OR IN THE DRAWINGS, OR BETWEEN EITHER, THE ITEMS OF GREATER QUANTITY OR HIGHER COST SHALL BE PROVIDED.
17. THE CONTRACTOR SHALL COORDINATE WORK WITH OTHER TRADES IN ORDER TO AVOID CONFLICTS.
18. 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.
19. CONTRACTOR SHALL PROVIDE TO LOCAL AHJ OR PERMITTING AGENCY A COPY OF ALL MAJOR EQUIPMENT CUTS SHEETS AT TIME OF APPLICATION.
20. ALL CHILLER AND MOTOR EQUIPMENT MEETS OR EXCEEDS THE ASHRAE 90.1 2013 EFFICIENCY REQUIREMENTS . NO ENERGY CALCULATIONS ARE BEING PROVIDED FOR THIS PROJECT.
21. THE WORK PROCESS WILL START AT THE INSTALLATION OF A RENTAL CHILLER AND PIPING HOOK UP FOR FOUR INCH CHILLED WATER PIPING. WEEKEND AND HOLIDAY WORK IS REQUIRED FOR CUT OVERS. THE EXISTING PIPING SHALL BE REPLACED WITH A PARALLEL SET OF LINES AND A RENTAL CHILLER HOOK UP WITH RENTAL PUMP INTO THE BUILDING. THE EXISTING SYSTEM PIPING TO THE NEW 4 INCH MAIN REPLACED IN 2013 SHALL DEMOLISHED WITH THE EXISTING PUMPS. TEMPORARY PIPING OR THE NEW PARALLEL SYSTEM SHALL BE INSTALLED TO ALLOW THE BUILDING TO OPERATE. THE NEW PUMPS, AIR SEPARATOR, EXPANSION TANK AND PIPING TO THE EXISITNG 4 INCH HEADER SHALL BE COMPLETED. OCNE ALL PIPING AND PUMP SYSTEMS ARE COMPLETED, THE NEW CHILLER CAN BE SET AND FINALIZED. INSULATION TO MINIMIZE CONDENSATION WILL BE REQURIED FOR EACH PIPING CHANGE AND TEMPORARY WORK. EACH SHUTODOWN AND CHANGE OUT SHALL BE SCHEDULED 7 DAYS IN ADVANCE WITH THE PROJECT MANAGER.

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.

PRELIMINARY
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01/20/14

SEAL
FL#53458

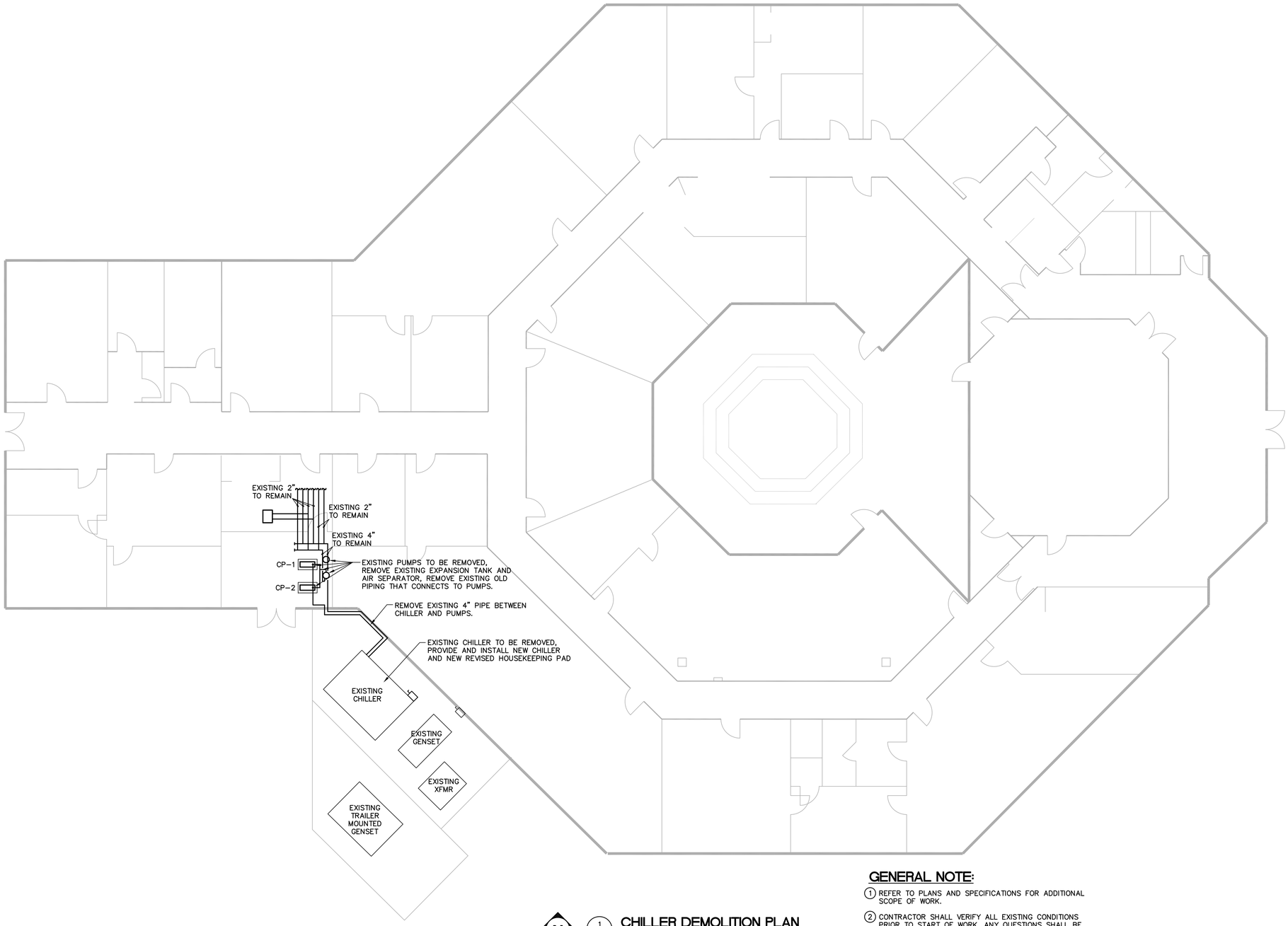
ATP ENGINEERING SOUTH, PL
BRADENTON, FLORIDA
ENGR. BUSINESS #8908
941-751-6485

REV.#	DESCRIPTION	DATE

MANATEE COUNTY UTILITIES DEPARTMENT
CHILLER AND GENERATOR REPLACEMENT
4410 66TH ST. W.,
BRADENTON, FL 34210

DRAWING TITLE:
MECHANICAL
LEGEND AND
GENERAL NOTES

FILE:	MCUD Chiller & Generator
JOB NO.:	2013.11
DATE :	10/21/2013
PLOT SIZE:	1:1
DRAWN BY:	DC/JC
CHECKED BY:	JDC
SHEET No.:	M1.0



1 M2.0 **CHILLER DEMOLITION PLAN**
1/8"=1'-0"

GENERAL NOTE:

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 ENGINEER AND PROJECT MANAGER PRIOR TO START WORK.
3. ITEMS IN GRAYSCALE ARE EXISTING AND TO REMAIN. FOR DUCTWORK AND DIFFUSERS THAT ARE "TO REMAIN" PRESERVE EXISTING LOCATION.

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01/20/14

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FL#53458

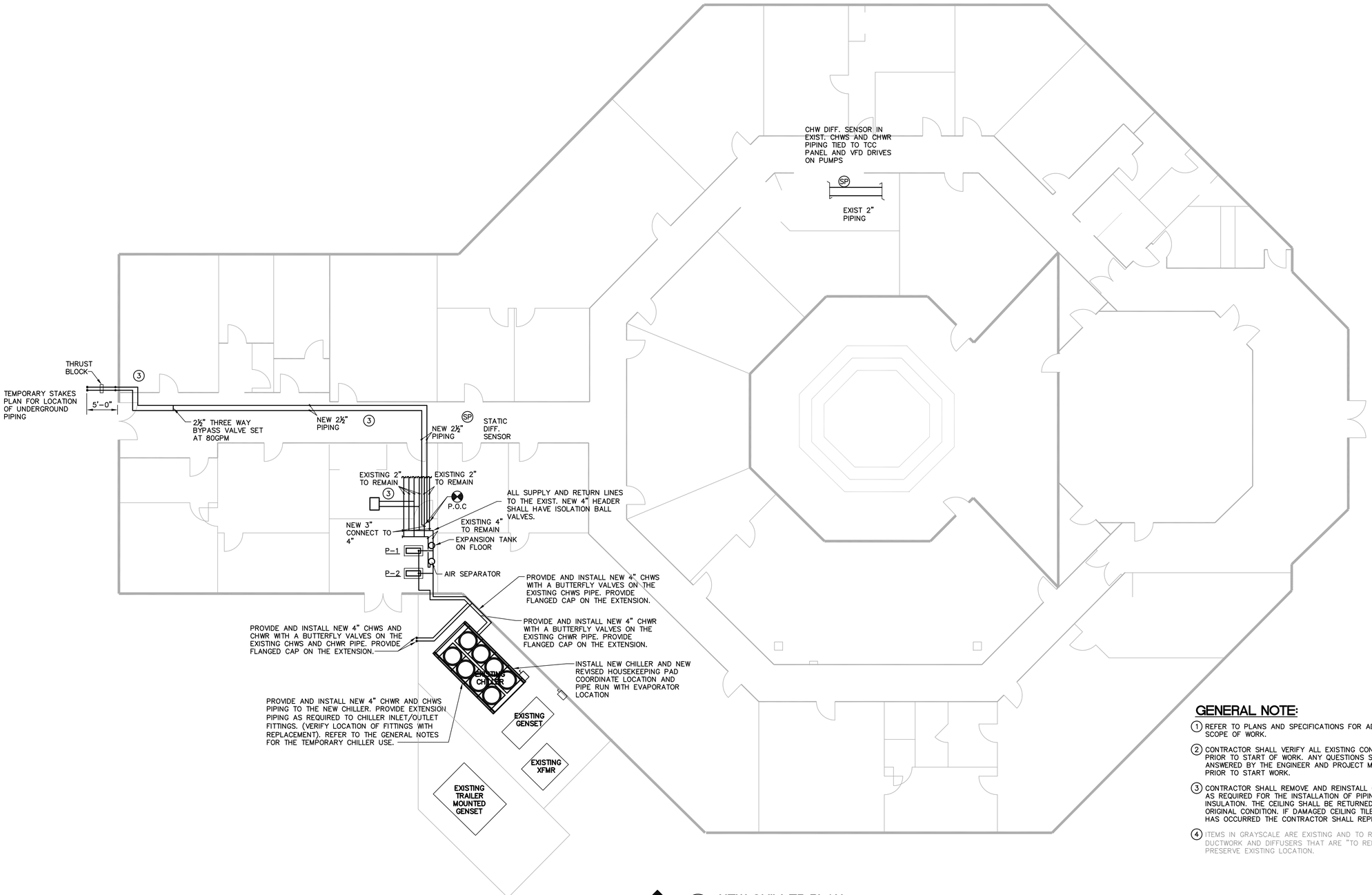
ATP ENGINEERING SOUTH, PL
BRADENTON, FLORIDA
ENGR. BUSINESS #6908
941-751-6485

REV.#	DESCRIPTION	DATE

MANATEE COUNTY UTILITIES DEPARTMENT
CHILLER AND GENERATOR REPLACEMENT
4410 66TH ST. W.,
BRADENTON, FL 34210

DRAWING TITLE:
MECHANICAL DEMOLITION FLOOR PLAN

FILE:	MCUD Chiller & Generator
JOB NO.:	2013.11
DATE :	10/21/2013
PLOT SIZE:	1:1
DRAWN BY:	DC/JC
CHECKED BY:	JDC
SHEET No.:	M2.0



1 M2.1 **NEW CHILLER PLAN**

1/8"=1'-0"

GENERAL NOTE:

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 ENGINEER AND PROJECT MANAGER PRIOR TO START WORK.
3. CONTRACTOR SHALL REMOVE AND REINSTALL CEILING TILES AS REQUIRED FOR THE INSTALLATION OF PIPING AND INSULATION. THE CEILING SHALL BE RETURNED TO THE ORIGINAL CONDITION. IF DAMAGED CEILING TILE OR FRAME HAS OCCURRED THE CONTRACTOR SHALL REPLACE IN KIND.
4. ITEMS IN GRAYSCALE ARE EXISTING AND TO REMAIN. FOR DUCTWORK AND DIFFUSERS THAT ARE "TO REMAIN" PRESERVE EXISTING LOCATION.

PRELIMINARY

NOT-FOR-CONSTRUCTION

01/20/14

ATP ENGINEERING SOUTH, PL
BRADENTON, FLORIDA
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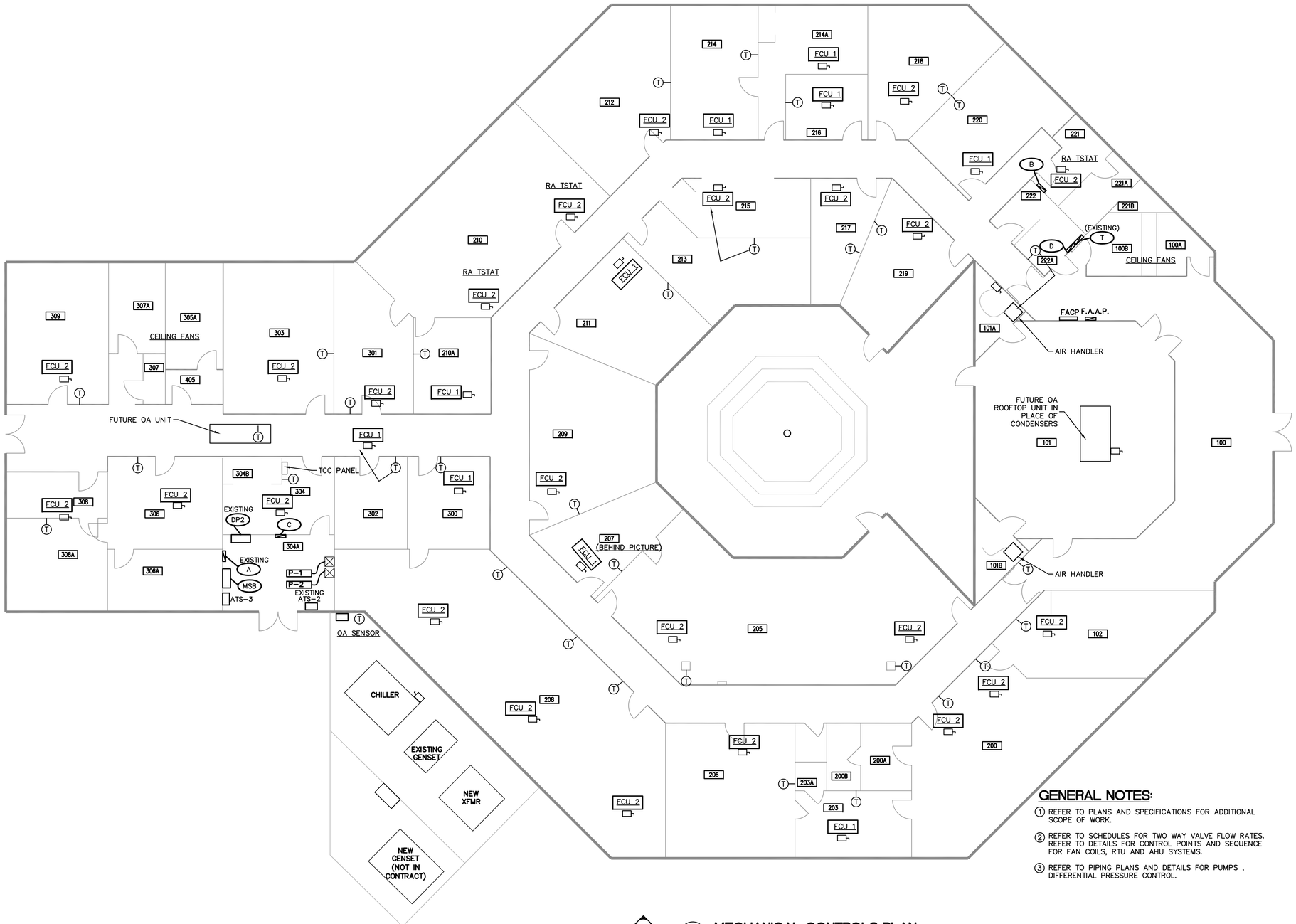
FL#53458

REV.#	DESCRIPTION	DATE

MANATEE COUNTY UTILITIES DEPARTMENT
CHILLER AND GENERATOR REPLACEMENT
4410 66TH ST. W.,
BRADENTON, FL 34210

DRAWING TITLE:
MECHANICAL
PROPOSED
FLOOR PLAN

FILE:	MCUD Chiller & Generator
JOB NO.:	2013.11
DATE :	10/21/2013
PLOT SIZE:	1:1
DRAWN BY:	DC/JC
CHECKED BY:	JDC
SHEET No.:	M2.1



GENERAL NOTES:

1. REFER TO PLANS AND SPECIFICATIONS FOR ADDITIONAL SCOPE OF WORK.
2. REFER TO SCHEDULES FOR TWO WAY VALVE FLOW RATES. REFER TO DETAILS FOR CONTROL POINTS AND SEQUENCE FOR FAN COILS, RTU AND AHU SYSTEMS.
3. REFER TO PIPING PLANS AND DETAILS FOR PUMPS , DIFFERENTIAL PRESSURE CONTROL.

1 / M2.2 MECHANICAL CONTROLS PLAN

1/8" = 1'-0"

PRELIMINARY

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01/20/14

SEAL

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

REV.#	DESCRIPTION	DATE

MANATEE COUNTY UTILITIES DEPARTMENT
CHILLER AND GENERATOR REPLACEMENT
4410 66TH ST. W.,
BRADENTON, FL 34210

DRAWING TITLE:
MECHANICAL CONTROLS PLAN

FILE:	MCUD Chiller & Generator
JOB NO.:	2013.11
DATE :	10/21/2013
PLOT SIZE:	1:1
DRAWN BY:	JC
CHECKED BY:	JDC
SHEET No.:	M2.2

FAN COIL UNIT SCHEDULE (EXISTING)

AFCU

Tag No.	Equipment Location	Area Served	CFM	Ext. Static Pressure in. wg.	Chilled Water Coil Data									Electric Data			Manufacturer	Model No.	Weight	Remarks
					E.D.B. ^F	E.W.B. ^F	E.W.T. ^F	L.W.T. ^F	Coil face Area sqft	GPM	Max. PD Water	Sensible MBH	Total MBH	Volts Phase	HP/ Watts	Speeds				
1	CEILING	AREA-NOTED	400	.15	80	67	45	55	---	2.0	9.7	9.9	14.7	208/3	1/50	2	FIRST-CO	4HHS-3	EXIST	1,2
2	CEILING	AREA-NOTED	600	.15	80	67	45	55	---	4.0	6.5	14.4	20.1	208/3	1/8	2	FIRST-CO	6HH-3	EXIST	1,2

NOTES:

1. DATA IS PROVIDED FOR REPLACEMENT TWO WAY VALVES TO BE INSTALLED.
2. CONTROL VALVES, OUTDOOR AIR DAMPER CONTROL, AND THERMOSTAT SENSOR BY TCC.

AIR COOLED CHILLER SCHEDULE- 2 MANUFACTURERS LISTED ON SCROLL CHILLER

ITEM NO.	---	CH-1	CH-1		
CAPACITY	TONS	120/118.9	125/ 118.9		
WATER FLOW	GPM	284.5	285.4		
MAX. WATER PRESSURE DROP	FT. WTR.	11.7	13.6		
WATER TEMP., ENT./LVG.	'F/'F	45/55	45/55		
CONDENSING TEMPERATURE	'F	95	95		
REFRIGERANT	---	R410A	R410A		
TOTAL POWER	KW	151	143.3		
ELECTRICAL	V/PH/HZ	460/3/60	460/3/60		
EFFICIENCY	EER/ IPLV	10/--	9.9/15.4		
WEIGHT	LBS.	7119	7265		
LOCATION	---	OCTOGON BUILDING	OCTOGON BUILDING		
AUXILIARY CONNECTIONS	---	FLOW SWITCHES	FLOW SWITCHES		
MANUFACTURER	---	CARRIER	DAIKIN		
MODEL NO.	---	30RB120	AGZ125D		

NOTES:

1. ALL CHILLERS ARE 460 VOLT , 3 PHASE , 60 HERTZ. CARRIER MCA 256A. MOCP 300 A. DAIKIN MCA 266 A, MOCP 300A.
2. SPRING/NEOPRENE ISOLATORS, SS RUBBER FLEXIBLE CONNECTIONS, FLEXIBLE EVAPORATOR BARREL INSULATION, AND COMPRESSOR BLANKETS BY MFR.
3. CHILLED WATER RESET BY MFR. TIED TO MASTER CONTROL- ALC CONTROLS
4. UNIT SUPPLIED WITH 115 AUXILIARY PLUG IN CONVENIENCE OUTLET FOR SERVICE BY MFR.
5. CHILLER UNIT MOUNTED CONTROLS, FLOW SWITCH BY MFR.TIED TO MASTER CONTROLS BY TEMPERATURE CONTROL CONTRACTOR.
6. STANDARD COLOR BY MFR.
7. MOUNT UNIT WITH VIBRATION ISOLATERS PROVIDED BY MFR. ON NEW CONCRETE PAD PROVIDED AND INSTALLED BY MC.
8. FUSED DISCONNECT WITH BY DIV. 16. DISCONNECT SHALL BE SERVICE RATED.
9. PROVIDE PIPING IN ACCORDANCE WITH DETAILS.
10. CONTROL COMMUNICATION INTERFACE - BACNET - ALC.
11. UNIT PROVIDED WITH COATED CONDENSER COILS.
12. EXTEND PIPING TO CONNECTIONS , VERIFY WITH CHILLER SUPPLIED.
13. PROVIDE 5 YEAR COMPRESSOR WARRANTY, AND 3 YEAR PARTS, LABOR, TRAVEL, COMPLETE AS PER COUNTY REQUIREMENTS.
14. PROVIDE COOLER HEATER, SUCTION SERVICE VALVES, MICRO CHANNEL SYSTEM, AND LUVATA COATED COILS FOR USE IN WASTEWATER PLANT ENVIRONMENT.
15. PROVIDE AND INSTALL THREE BYPASS VALVE FOR BUILDING STAGED LOADS FOR EXPANSION AND WATER PRESSURE CONTROL.
16. CHILLERS OPERATE DOWN TO 15%.

PUMP SCHEDULE - NEW CHW PUMPS

P

Tag No.	Equipment Location	Type	Fluid Data						% Efficient	Variable or Constant Speed	Electrical Data					Manufacturer	Model No.	Combined Pump & Motor Weight only	Remarks
			System	Fluid	GPM	Head Feet	Temp. 'F	Specific Gravity			Volts	Phase	Hertz	Horsepower	RPM				
P-1,2	MECH RM	END SUCT	CHW	WATER	287/200	73/35	45	1	76/72	VS	208	3	60	10	1750	B&G	1510 -2 1/2bb	380	1-5

NOTES
1. PUMPS SHALL BE MOUNTED ON STEEL SKIDS AND GROUTED TO HOUSEKEEPING PAD.
2. PROVIDE AUXILIARY CONTACTS ON DISCONNECT SWITCH TO SIGNAL VFD WHEN DISCONNECT SWITCH IS IN "OFF" POSITION. TCC SHALL PROVIDE INTERLOCKING WIRING AS REQUIRED.
3. ALL PUMPS SHALL BE BRONZE FITTED WITH COUPLING, COUPLING GUARD, BASE PLATE SET UP FOR GOUTING INTO PAD, IMPELLER BALANCE, MECHANICAL SEAL, 125 PSI FLANGES.
4. ALL DISCONNECTS, AND VFD DRIVES BY DIV 16.
5. THREE WAY BYPASS VALVE SET AT 80 GPM, AFTER BLDG ADDED ADJUST TO 0 GPM. PUMPS WILL HAVE TO BE RESET TO LOWER LEVEL FOR FIRST SET UP, 200 GPM AT 35 FT HD.

AIR SEPARATOR SCHEDULE

ITEM NO.	---	AS-1
SERVICE	---	CHW
FLOW RATE (MAX.)	GALLONS	300
MAX. PRESS. DROP	FT. WTR.	4
SIZE (IN.)	PIPE SIZE	4
LOCATION	---	MECH RM
MANUFACTURER	---	B&G
MODEL NO.	---	R-4

NOTES:
1. UNIT PROVIDED WITH INTEGRAL STRAINER, AND DIAPHRAGM COMPRESSION TANK MODEL D15V, 8 GALLON CAPACITY, 2.4 ACCEPTANCE . REUSE EXISTING BACKFLOW PREVENTOR FOR FILL.

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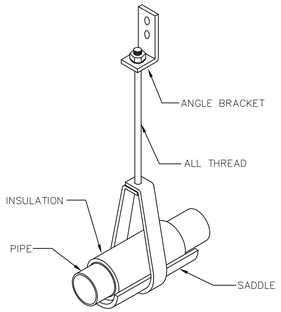
ATP ENGINEERING SOUTH, PL
BRADENTON, FLORIDA
ENGR. BUSINESS #6908
941-751-6485

REV.#	DESCRIPTION	DATE

MANATEE COUNTY UTILITIES DEPARTMENT
CHILLER AND GENERATOR REPLACEMENT
4410 66TH ST. W.,
BRADENTON, FL 34210

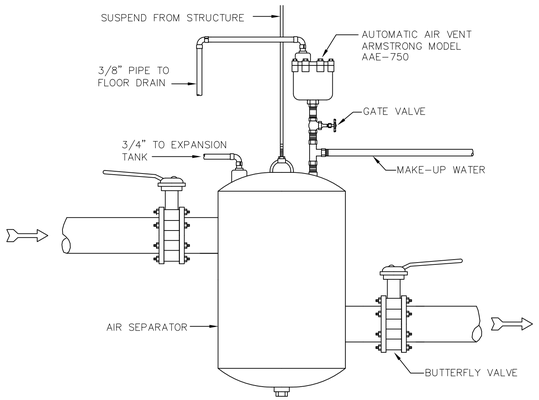
DRAWING TITLE: MECHANICAL SCHEDULES

FILE:	MCUD Chiller & Generator
JOB NO.:	2013.11
DATE :	10/21/2013
PLOT SIZE:	1:1
DRAWN BY:	DC/JC
CHECKED BY:	JDC
SHEET No.:	M3.0



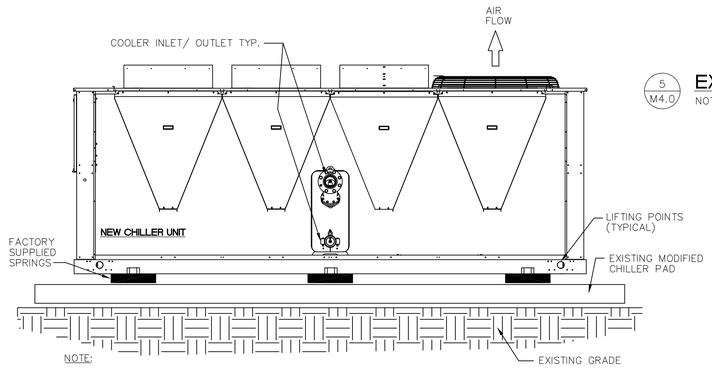
1 / M4.0 HANGER DETAIL

NOT TO SCALE



2 / M4.0 AIR SEPERATOR DETAIL

NOT TO SCALE

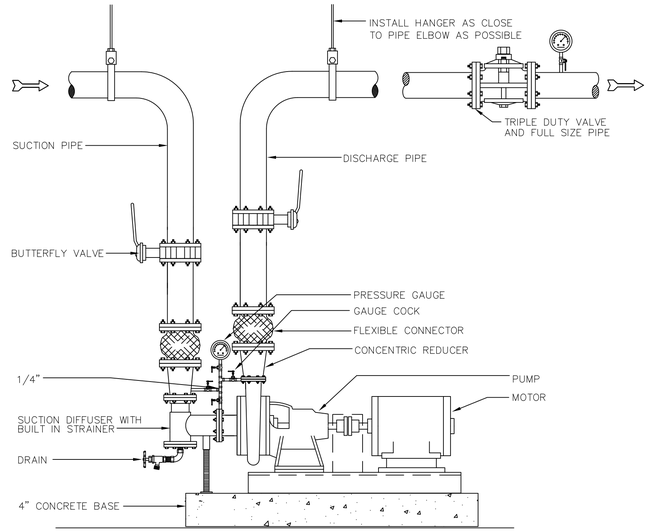


NOTE:

1. PROPER ANCHORING OF EQUIPMENT IS TO BE PROVIDED TO WITHSTAND 140 M.P.H. HURRICANE WINDS. REFER TO MFR. REQUIREMENTS. REFER TO STRUCTURAL PLANS FOR CONCRETE PAD WORK.

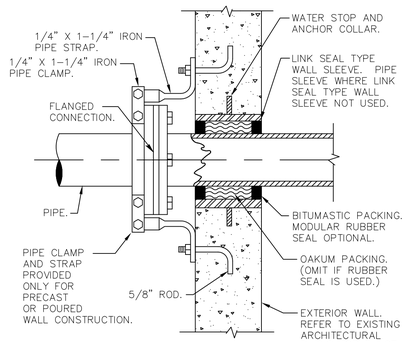
3 / M4.0 CHILLER DETAIL

NOT TO SCALE



4 / M4.0 CHILLED WATER END SUCTION PUMP DETAIL

NOT TO SCALE

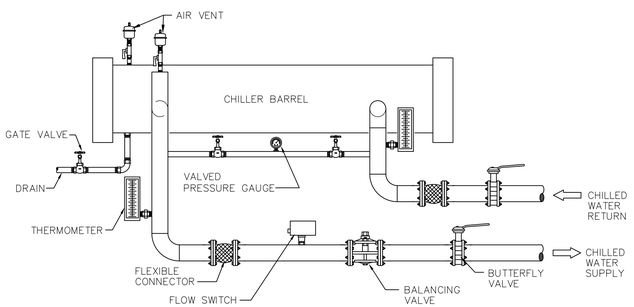


NOTE: APPLICABLE TO ABOVE AND BELOW GRADE APPLICATIONS.

ALL PIPING SHALL BE PROVIDED WITH SEISMIC RESTRAINTS IN ACCORDANCE WITH FEMA OF THE "SEISMIC RESTRAINT GUIDE

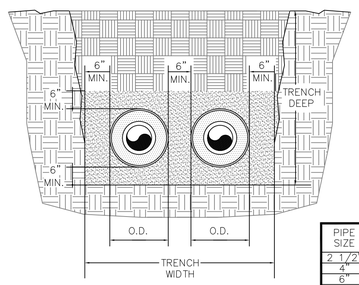
5 / M4.0 EXTERIOR WALL PIPE PENETRATION DETAIL

NOT TO SCALE



6 / M4.0 CHILLER BARREL PIPING DETAIL

NOT TO SCALE



PIPE SIZE	PIPE O.D.	TRENCH DEEP	TRENCH WIDTH
2 1/2"	6.7"	54.7"	31.4"
4"	8.7"	56.7"	35.4"
6"	10.9"	58.9"	39.8"
8"	12.9"	60.9"	43.8"
10"	14.1"	62.1"	46.2"
12"	16.1"	64.1"	50.2"
16"	20.3"	68.3"	58.6"
18"	22.3"	70.3"	62.6"
20"	23.4"	71.4"	64.8"
24"	28.3"	76.3"	74.6"

NOTE: COVER DEPTH MAY VARY FROM MINIMUM TO DEPTH NECESSARY FOR COORDINATION WITH SITE UTILITIES. MECHANICAL DRAWINGS DO NOT INDICATE VARYING DEPTHS REQUIRED. ALL CHILLED WATER PIPING SHALL BE COORDINATED WITH EXISTING INSTALLED UTILITIES AND UTILITIES YET TO BE INSTALLED. COORDINATION WITH ALL UNDERGROUND UTILITIES IS THE RESPONSIBILITY OF THE CONTRACTOR. ALL UNDERGROUND CHWS AND CHWR SHALL BE REVIEWED AND INSEPCTED BY THE MANUFACTURER'S FLORIDA PE AND INSPECTION REPORTS FILED.

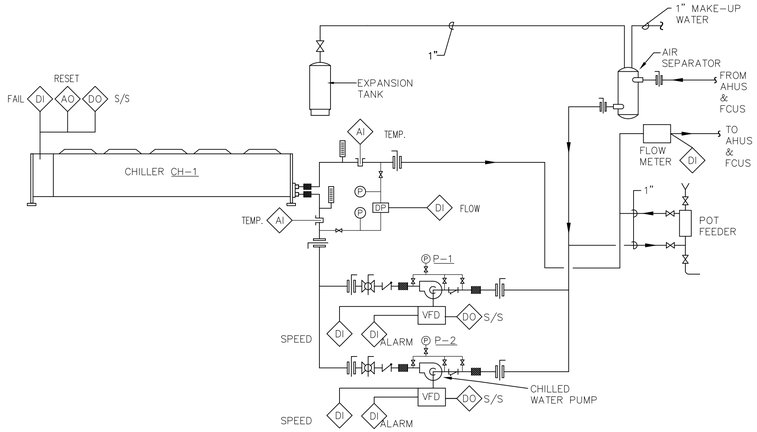
3 FEET MIN. COVERAGE DEPTH

SLEEVE ALL ROAD CROSSINGS PER MANUFACTURER'S REQUIREMENTS

UNDERGROUND PIPING

7 / M4.0 TYPICAL PIPE TRENCH SECTION

NOT TO SCALE



SEQUENCE OF OPERATION

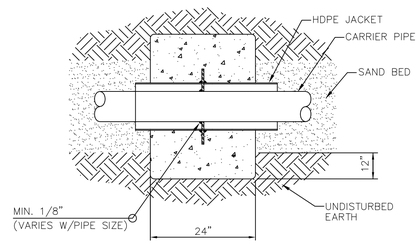
THE CHILLED WATER PUMP SHALL START AS PER THE OWNER'S PROGRAMMABLE SCHEDULE. THIRTY SECONDS LATER AND AFTER THE CHILLED WATER DIFFERENTIAL SWITCH PROVES FLOW THROUGH THE CHILLER , A SEPERATE OUTPUT WILL ACTIVATE THE STARTING CIRCUIT OF CHILLER. THE CHILLER SHALL OPERATE UNDER ITS OWN CONTROLS TO MAINTAIN A LEAVING WATER TEMPERATURE OF 45 DEGREES (ADJUSTABLE). INSTALL A SEPARATE CHILLED WATER FLOW SWITCH AT THE CHILLER WIRED BACK TO THE CHILLER'S INTERNAL SAFETY CONTROLS. THE CHILLED WATER PUMP SHALL CONTINUE TO RUN FOR TWO MINUTES AFTER THE CHILLERS IS SHUT DOWN BY THE PROGRAMMED SCHEDULE.

SAFETY ALARMS / SHUTDOWNS:
THE DDC CONTROL SYSTEM SHALL MONITOR CHILLER SHUT DOWN SAFETY CONTROLS TO ANNOUNCE SPECIFIC DESCRIPTION ALARM AND MODIFY CHILLER PLANT OPERATION UPON ANY CHILLER FAILURE. PROVIDE ALARMS FOR THE FOLLOWING CONDITIONS:
PUMP FAILURE
CHILLER FAILURE
FAILURE TO MAINTAIN CHILLER WATER SETPOINT WITHIN 4 DEGREES.

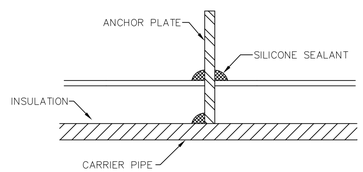
EACH CHILLED WATER PUMP (P-1,2) IS A BACKUP TO THE OTHER. ONLY ONE PUMP SHALL OPERATE AT ONCE. THE DDC CONTROL SYSTEM SHALL ALTERNATE PUMP RUN ON A DAILY BASIS TO MAINTAIN EVEN WEAR. IF THE ASSIGNED PUMPS SHOULD FAIL, THE DDC CONTROL SYSTEM SHALL ACTIVATE THE BACKUP PUMP AND INDICATE AN ALARM.
THE PUMPS SHALL BE INSTALLED WITH VFD DRVIES FOR PHASED CONSTRUCTION GPM AND STATIC PRESSURE SETTINGS . A THREE WAY BYPASS SHALL BE INSTALLED ON THE PIPING SYSTEM FOR USE TO ALLOW FOR MINIMUM FLOWS ON THE CHILLER . AN ONICON FLOW METER SHALL BE USED ON THE PLANT DISCHARGE FOR PROOF OF FLOW.

8 / M4.0 CENTRAL PLANT - PIPING SCHEMATIC

NOT TO SCALE

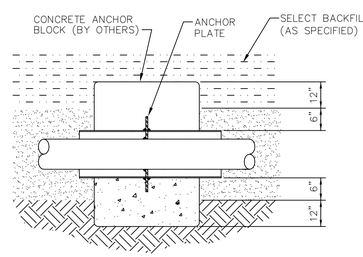


TOP VIEW



STEEL PIPE ANCHOR SPECIFICATIONS

1. STEEL ANCHOR PLATE FURNISHED BY ENERGY TASK FORCE ANCHOR PLATE SHALL MEET ASTM A36 AND ON ALL SIZES SHALL BE ⅜" THICK. ANCHOR PLATE SHALL EXTEND 2½" BEYOND THE CASING DIAMETER ON ALL SIDES.
2. ANCHOR ASSEMBLY SHALL BE POURED IN A CONCRETE BLOCK BY THE CONTRACTOR IN THE FIELD. (MINIMUM 3000 psi) GENERALLY, THE ANCHOR BLOCK EXTENDS A MINIMUM OF 12" IN ALL DIRECTIONS BEYOND THE ANCHOR O.D. AND HAS A OVERALL LENGTH OF 24". THE JOB SITE CONDITIONS SHALL BE THE FINAL DETERMINING FACTOR FOR ANCHOR BLOCK SIZING.
3. DEPENDING ON ANCHOR BLOCK SIZE, STEEL REINFORCEMENT BARS MAY BE REQUIRED.



SIDE VIEW

9 / M4.0 ANCHOR DETAIL

NOT TO SCALE

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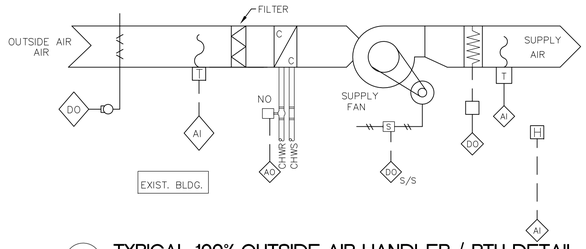
REV.#	DESCRIPTION	DATE

MANATEE COUNTY UTILITIES DEPARTMENT
CHILLER AND GENERATOR REPLACEMENT
4410 66TH ST. W.,
BRADENTON, FL 34210

DRAWING TITLE: MECHANICAL DETAILS

FILE:	MCUD Chiller & Generator
JOB NO.:	2013.11
DATE :	10/21/2013
PLOT SIZE:	1:1
DRAWN BY:	DC/JC
CHECKED BY:	JDC
SHEET No.:	M4.0



1 / M4.1 **TYPICAL 100% OUTSIDE AIR HANDLER / RTU DETAIL**

NOT TO SCALE

SEQUENCE OF OPERATION

FOR EACH SYSTEM, THE TWO WAY N.O. CHILLED WATER VALVE SHALL BE MODULATED TO MAINTAIN THE COOLING COIL LAT SET POINT. COOLING COIL LAT SETPOINT (53°F – SOFTWARE ADJUSTABLE).

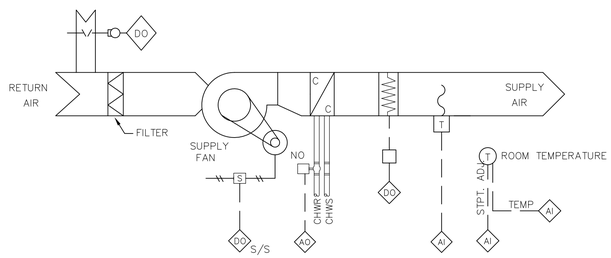
THE COOLING COIL LAT SHALL BE RESET LINEARLY BY OUTSIDE AIR TEMPERATURE, RAISING THE LAT 1/2 °F FOR EACH 1 °F DROP IN OUTSIDE AIR TEMPERATURE BELOW 65 °F. WHEN THE OA TEMPERATURE DROPS TO BELOW 35 °F AND THE UNIT IS OPERATING, THE CHILLED WATER CONTROL VALVE SHALL MODULATE TO THE OPEN POSITION TO PREVENT COIL FREEZE–UP.

HUMIDITY OVERRIDE SEQUENCE SHALL BE INITIATED WHEN BUILDING AIR HUMIDITY EXCEEDS 60 % FOR THIS SEQUENCE. THE LAT SHALL BE RESET TO 53 DF AND THE FRONT END COMPUTER SHALL DISPLAY "HUMIDITY OVERRIDE" FOR EACH APPLICABLE UNIT. WHEN OUTSIDE AIR HUMIDITY REACHES SETPOINT OF 55% RETURN TO NORMAL OPERATION.

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 SETPOINT ± .5° F.

THE UNIT'S FAN SHALL OPERATE AS PER THE USER PROGRAMMABLE SCHEDULE. THE OA DAMPER SHALL BE CLOSED WHEN THE UNIT IS NOT OPERATING.

PROVIDE AVAILABLE POINTS FOR FUTURE SYSTEMS FOR THE RTU UNITS



3 / M4.1 **TYPICAL FAN COIL UNIT DETAIL**

NOT TO SCALE

EXIST. BLDG.

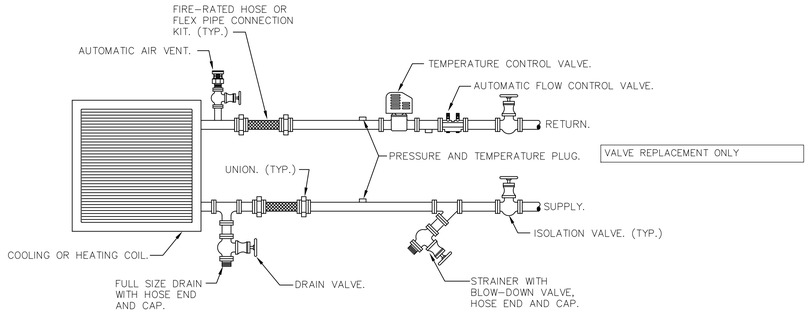
SEQUENCE OF OPERATION

FOR EACH FAN COIL, THE NEW TWO WAY N.O. CHILLED WATER VALVE SHALL BE MODULATED TO MAINTAIN THE COOLING ROOM TEMPERATURE SETPOINT. PLROVIDE A SPACE TEMPERATURE INPUT TO THE DDC. MAINTAIN THE SPACE COOLING TEMPERATURE SETPOINT (75 °F ±0.5 °F – SOFTWARE ADJUSTABLE).

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 SETPOINT ± .5° F.

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

EXISTING FAN COILS HAVE MANUAL DAMPERS. PROVIDE AND INSTALL NEW MOTORIZED DAMPERS FOR OA.



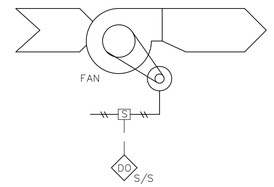
NOTES:

1. LOCATE AIR VENT AT HIGH POINT IN BRANCH PIPING TO COIL.
2. LOCATE DRAIN AT LOW POINT IN BRANCH PIPING TO COIL.
3. FIRE–RATED HOSE OR FLEX PIPE CONNECTIONS SHALL APPLY ONLY TO EQUIPMENT WITH EXTERNAL VIBRATION ISOLATION DEVICES.
4. THIS DETAIL APPLIES TO ALL EQUIPMENT COIL CONNECTIONS, INCLUDING AIR HANDLING UNITS, FAN COIL UNITS, TERMINAL UNITS, ETC. THAT ARE DESIGNATED FOR TWO–WAY CONTROL.
5. REFER TO "MULTIPLE AIR HANDLING UNIT COIL PIPING DETAIL" FOR ADDITIONAL ACCESSORIES REQUIRED FOR AIR HANDLING UNIT COIL CONNECTIONS.
6. REFER TO SPECIFICATIONS FOR OPTIONS INVOLVING ACCESSORY COMBINATIONS.

2 / M4.1 **TWO–WAY COIL PIPING DETAIL**

NOT TO SCALE

TIE TCC PANEL TO DATA JACK LOCATED IN THE CHILLER PUMP ROOM. PROVIDE LGR ROUTER FOR FIBRE SUPPORT . COORDINATE IP ADDRESS AND DATA CONNECTION WITH MANATEE COUNTY IT DEPARTMENT.



4 / M4.1 **TYPICAL EXHAUST FAN**

NOT TO SCALE

EXIST. BLDG. 4 CEILING FANS NO POINTS

SEQUENCE OF OPERATION

SEE FAN SCHEDULE FOR SEQUENCE OF OPERATION.

FANS CONTROLLED BY THE DDC SYSTEM SHALL OPERATE AS PER THE FAN SCHEDULE.

OTHER FANS SHALL BE CONTROLLED BY THERMOSTATS, WALL MOUNTED SWITCHES, EQUIPMENT INTERLOCKS, ETC. AS INDICATED ON THE FAN SCHEDULE.

PROVIDE CURRENT TWO DX AIR HANDLERS IN CONFERENCE ROOM AND MAIN ENTRY A MINIMUM STATUS OF TEMPERATURE , SETPOINT , UNIT ON/OFF, AND ELECTRIC HEAT ON/OFF

PRELIMINARY

NOT–FOR–CONSTRUCTION
01/20/14

SEAL

FL#53458

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

REV.#	DESCRIPTION	DATE

MANATEE COUNTY UTILITIES DEPARTMENT
CHILLER AND GENERATOR REPLACEMENT
4410 66TH ST. W.,
BRADENTON, FL 34210

DRAWING TITLE:
MECHANICAL
DETAILS

FILE:	MCUD Chiller & Generator
JOB NO.:	2013.11
DATE :	10/21/2013
PLOT SIZE:	1:1
DRAWN BY:	DC/JC
CHECKED BY:	JDC
SHEET No.:	M4.1