

OUTSIDE AIR CALCULATIONS

THE FOLLOWING IS BASED ON ASHRAE STANDARD 62 FOR OUTSIDE AIR REQUIREMENTS:
OUTDOOR AIR REQUIREMENTS ARE BASED ON "ASSEMBLY" CATEGORY = 404 PEOPLE AS PER ARCHITECTURAL PLANS & 15 CFM PER PERSON

UNIT LABEL	AREA SERVED (SQ. FT.)	ESTIMATED MAX. OCCUPANCY	OUTSIDE AIR REQUIRED (CFM)
SANCTUARY	4,825	- / 1000 X - - -	404 X 15 = 6,060/2=3,030

THE OCCUPANCY OF THIS FACILITY DOES NOT EXCEED THREE HOURS AT ANY TIME, THEREFORE THE FACILITY QUALIFIES FOR REDUCTION OF OUTSIDE AIR IN ACCORDANCE WITH THE ASHRAE STANDARD 62 SECTION 6.1.3.4. THE AVERAGE OCCUPANCY IS LESS THAN 1/2 THE MAXIMUM CALCULATED OCCUPANCY, SO THE FRESH AIR PROVIDED WILL BE 1/2 THE CALCULATED IN ACCORDANCE WITH SECTION 6.1.3.4.

NOTE:
REFRIGERANT PIPING UP IN EXTERIOR WALL, OFFSET ACROSS CEILING TO AHU'S. CONTRACTOR SHALL SIZE ALL REFRIGERANT PIPING AS PER MANUFACTURERS RECOMMENDATIONS.

HVAC SYMBOLS LEGEND

Ⓢ	THERMOSTAT
Ⓜ	EXHAUST FAN
---A---A---	SECTION "A"- "A"
Ⓢ	REMOTE BULB SENSOR
Ⓢ	DUCT SMOKE DETECTOR
---	TRANSITION
---	TURNING VANE
---	45° BRANCH DUCT TAKE-OFF
---	FIRE DAMPER
---	VOLUME CONTROL DAMPER
---	RETURN REGISTER
---	SUPPLY DIFFUSER
---	RETURN AIR GRILLE
---	SUPPLY REGISTER
---	AIR FLOW DIRECTION
---	ROOF MTD. EXH. FAN
---	DUCT TURN DOWN
---	DUCT TURN UP
---	FLEXIBLE DUCT

SUPPLY DIFFUSER SCHEDULE

DESIGNATES LABEL FOR DIFFUSER TYPE
DESIGNATES CFM QUANTITY FOR DIFFUSER
ALL DIFFUSERS ARE TO BE PROVIDED WITH OPPOSED BLADE DAMPERS UNLESS OTHERWISE SPECIFIED ON PLANS.

LABEL	MANUFACTURER & MODEL NO.	NECK SIZE	CFM RANGE	REMARKS
A	TITUS 300RL	14X6	205 - 300	SIDEWALL REGISTER
B	TITUS 300RL	16X6	305 - 400	SIDEWALL REGISTER
C	TITUS 300RL	20X6	405 - 600	SIDEWALL REGISTER
D	TITUS TDC-AA	6"ø	0 - 125	12X12 LOUVERED FACE
E	TITUS TDC-AA	8"ø	130 - 200	24X24 LOUVERED FACE
F	TITUS TDC-AA	10"ø	205 - 325	24X24 LOUVERED FACE

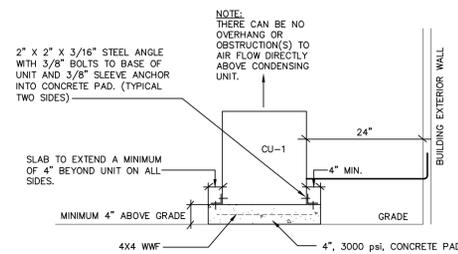
RETURN GRILLE SCHEDULE

DESIGNATES LABEL FOR GRILLE TYPE
DESIGNATES CFM QUANTITY FOR GRILLE
FILTER SHALL BE PROVIDED AT UNIT.

LABEL	MANUFACTURER & MODEL NO.	NECK SIZE	CFM RANGE	REMARKS
1	TITUS 355FL	10X10	0 - 400	
2	TITUS 355FL	24X48	900 - 2000	

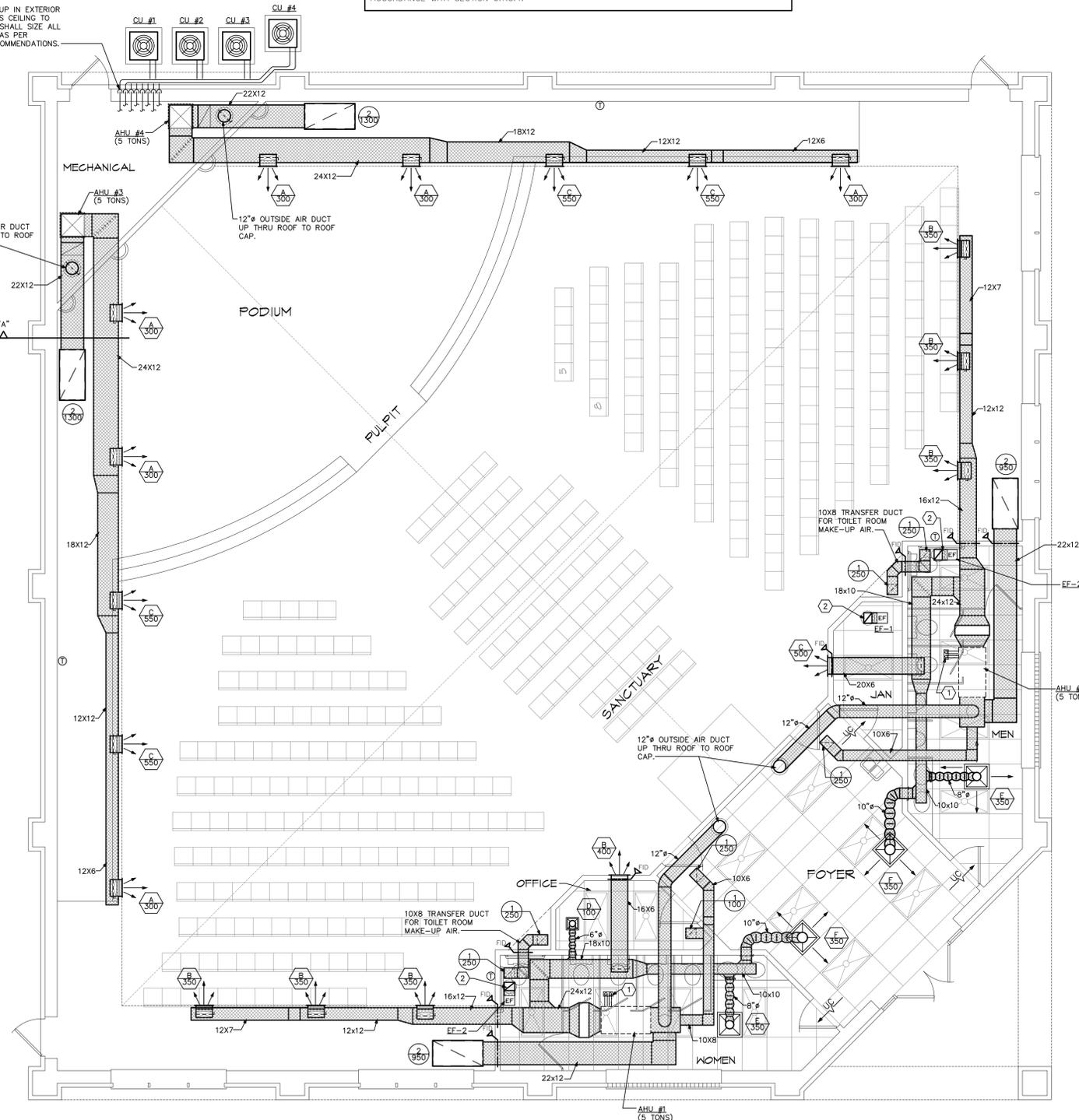
MECHANICAL SPECIFIC NOTES

- (1) 2" GAS EXHAUST PIPES UP TO A "LENNOX" CONCENTRIC VENT/INTAKE AIR ROOF TERMINATION KIT.
- (2) 10X8 EXHAUST DUCT UP THRU ROOF TO ROOF CAP.



2 COND. UNIT MOUNTING DETAIL

NO SACLE

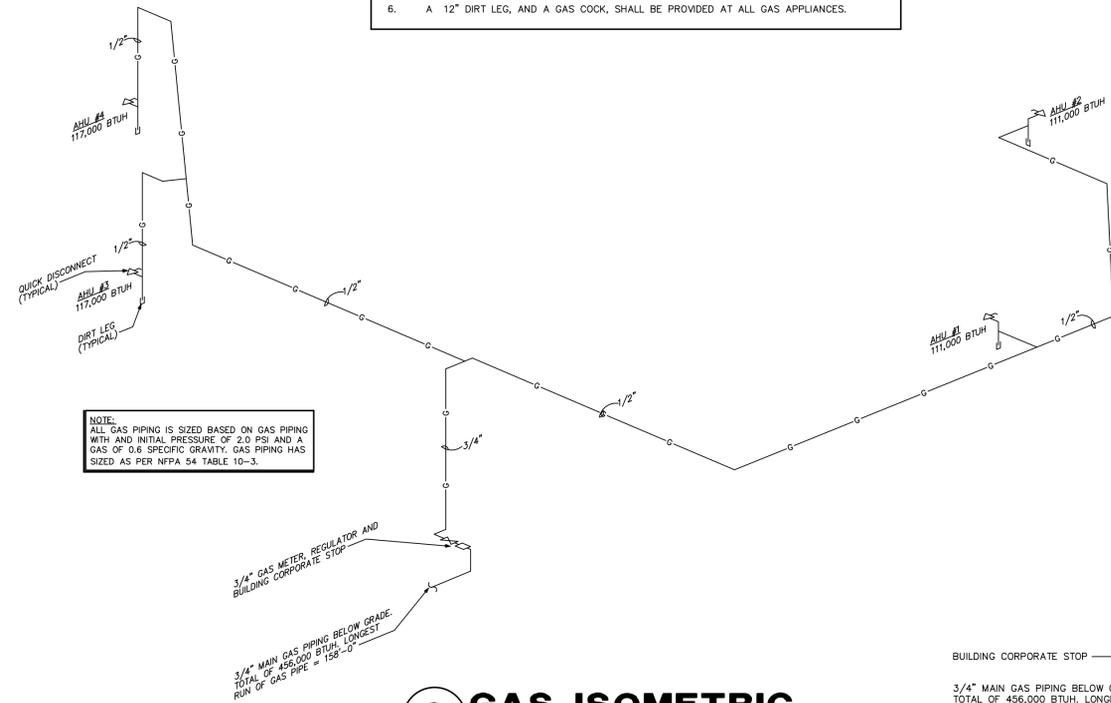


1 FLOOR PLAN - MECHANICAL

SCALE: 3/16"=1'-0"

GENERAL NOTES

1. GAS PIPING AND FITTINGS SHALL BE SEAMLESS BLACK STEEL WITH MALLEABLE IRON FITTINGS. DIELECTRIC COUPLINGS OR UNIONS SHALL BE UTILIZED WHEN PIPING OF DISSIMILAR METAL IS CONNECTED. GAS PIPING OUTSIDE THE BUILDING SHALL BE PAINTED WITH BLACK "RUSTOLEUM" PAINT.
2. GAS PIPING SYSTEM SHALL BE INSTALLED TO THE REQUIREMENTS OF THE AGA PAMPHLET "INSTALLATION OF GAS APPLIANCES AND GAS PIPING" AND THE NFPA STANDARD #54. THE CONTRACTOR SHALL MAKE ALL ARRANGEMENTS AND PAY ALL FEES WITH THE "LOCAL" GAS COMPANY FOR THE INSTALLATION OF THE GAS METER, GAS SERVICE, AND ITS ACCESSORIES NECESSARY FOR A COMPLETE SYSTEM.
3. GAS PIPING SHALL BE TESTED IN ACCORDANCE WITH THE PROCEDURES DESCRIBED IN NFPA #54, AND ANY OTHER TESTS REQUIRED BY THE LOCAL BUILDING DEPARTMENT AND/OR THE LOCAL GAS UTILITY COMPANY.
4. THE INSTALLING SUBCONTRACTOR SHALL BE LICENSED BY THE STATE FOR THE INSTALLATION OF GAS PIPING.
5. RUNOUT PIPING, FROM THE MAIN PIPING TO APPLIANCES, SHALL BE WITH AN INVERTED TRAP CONNECTION AT THE MAIN.
6. A 12" DIRT LEG, AND A GAS COCK, SHALL BE PROVIDED AT ALL GAS APPLIANCES.

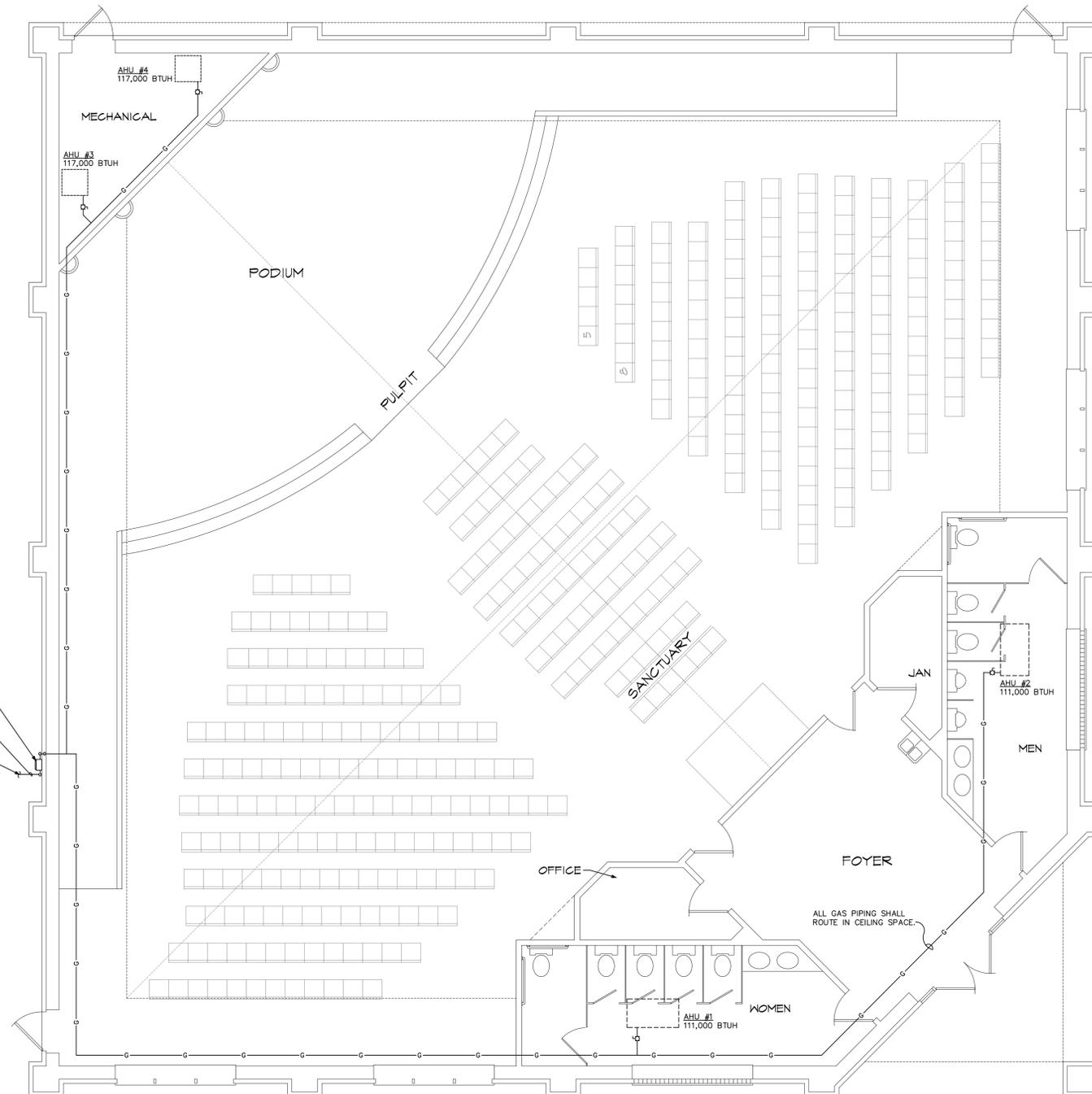


2 GAS ISOMETRIC
NO SCALE

BUILDING CORPORATE STOP

3/4" MAIN GAS PIPING BELOW GRADE. TOTAL OF 456,000 BTUH. LONGEST RUN OF GAS PIPE = 158'-0"

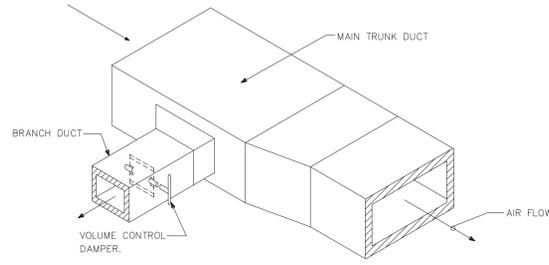
CONTINUE TO GAS SERVICE. CONTRACTOR TO VERIFY LOCATION WITH LOCAL GAS UTILITY.



1 FLOOR PLAN - GAS PIPING
SCALE: 3/16"=1'-0"

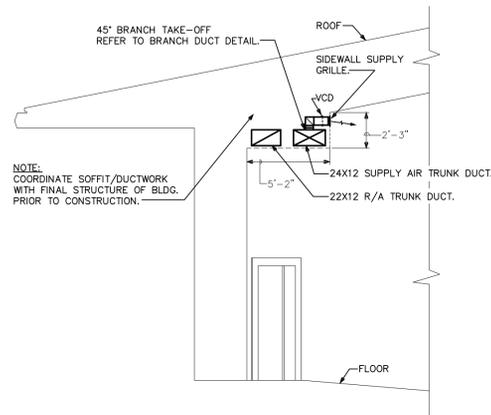
GENERAL MECHANICAL NOTES

- THE CONTRACTOR SHALL FURNISH ALL LABOR, MATERIALS, AND EQUIPMENT NECESSARY FOR THE INSTALLATION OF A COMPLETE SYSTEM IN ACCORDANCE WITH THESE DRAWINGS, THE APPLICABLE BUILDING CODE AND ALL OTHER APPLICABLE STATE, COUNTY AND LOCAL ORDINANCES AND THE LATEST EDITION OF THE FOLLOWING PUBLICATIONS: SMACNA, ASHRAE, NFPA 90A, 90B, 91 & ANSI B-9.1 MECHANICAL REFRIGERATION. ALL DUCTWORK SHALL BE FABRICATED, INSTALLED AND SUPPORTED AS PER SMACNA STANDARDS.
- THE CONTRACTOR SHALL PAY ALL COSTS OF PERMIT, INSPECTIONS AND ALL OTHER COSTS INCIDENTAL TO THE COMPLETION AND TESTING OF THIS WORK.
- THE CONTRACTOR SHALL VISIT THE SITE AND COORDINATE WORK WITH OTHER TRADES. TO INSURE AN ORDERLY PROGRESS OF THIS WORK.
- THE CONTRACTOR SHALL SUPPLY THE ARCHITECT WITH "AS-BUILT" DRAWINGS UPON COMPLETION OF THIS PROJECT.
- CONTRACTOR SHALL SUBMIT, FOR APPROVAL FIVE (5) COPIES OF MANUFACTURER'S DRAWINGS FOR EACH PIECE OF EQUIPMENT AND CONTROLS INCLUDED IN CONTRACT.
- ALL MATERIAL SHALL BE NEW OF GOOD QUALITY. ALL WORK SHALL BE PERFORMED IN A WORKMANLIKE MANNER BY SKILLED WORKMAN.
- ALL NON-EXPOSED SUPPLY AND RETURN AIR DUCTWORK SHALL BE GALVANIZED SHEET STEEL EXTERNALLY WRAPPED WITH 1" INSULATION WITH A 4.2 R VALUE OR HIGHER. ALL EXPOSED ROUND SUPPLY AND RETURN DUCTWORK SHALL BE "SPIROSAF" SINGLE WALL SPIRAL DUCTWORK AS MANUFACTURED BY LINDBLAD, INC. (800)797-7476 OR APPROVED EQUAL. THE ROUND DUCT SYSTEM SHALL CONSIST OF FITTINGS THAT ARE FITTED WITH A SEALING GASKET AND SPIRAL DUCT WHICH, WHEN INSTALLED ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS, WILL SEAL THE DUCT JOINTS WITHOUT THE USE OF DUCT SEALER.
- ALL EXHAUST DUCTS AND OUTSIDE AIR DUCTS SHALL BE GALVANIZED SHEET METAL WITH SEALED SEAMS AND JOINTS.
- DUCT SIZES SHOWN ARE INSIDE DIMENSIONS.
- ALL AIR DEVICES (DIFFUSERS, REGISTERS AND GRILLES) SHALL BE ALL ALUMINUM CONSTRUCTION WITH EXPOSED SURFACE OFF WHITE BAKED ENAMEL FINISH OR AS SPECIFIED BY ARCHITECT. DEVICES SHALL BE TITANIUM METALURE ANODIZING. PROVIDE OPPOSED BLADE DAMPERS AT ALL DIFFUSERS AND REGISTERS.
- THERMOSTAT SHALL BE COMBINATION COOLING/HEATING, WITH SYSTEM "COOL-AUTO-HEAT-OFF" AND FAN "ON-AUTO" SELECTOR SWITCHES. PROVIDE PROGRAMMABLE TYPE THERMOSTAT. ** THERMOSTAT SHALL BE EQUIPPED WITH A DIRTY FILTER INDICATOR. * CONTRACTOR SHALL FULLY INSTRUCT OWNER ON HOW TO PROPERLY PROGRAM INSTALLED THERMOSTATS. COORDINATE FINAL LOCATION OF ALL THERMOSTATS WITH OWNER PRIOR TO CONSTRUCTION. * PROGRAMMABLE THERMOSTAT SHALL BE BY MANUFACTURER OF INSTALLED AIR HANDLING UNIT/ROOF TOP UNIT.
- REFRIGERANT LINES SHALL BE COPPER, TYPE "L" HARD DRAWN WITH WROUGHT COPPER SOLDER-JOINT TYPE FITTINGS, USE 95/5 SOLDER. REFRIGERANT LINES SHALL SIZED AS PER MANUFACTURER RECOMMENDATIONS.
- ARMAFLEX 3/4" INSULATION SHALL BE USED FOR SUCTION LINES, FILTER/DRYER AND SIGHT GLASS SHALL BE PROVIDED AT LIQUID LINES.
- ALL BRANCH TAKE-OFFS TO BE PROVIDED W/MANUAL VOLUME DAMPERS. ALL ELBOWS AND TEES MUST BE FURNISHED W/TURNING VANES. PROVIDE 45° BRANCH TAKE-OFF AS PER BRANCH DUCT TAKE-OFF DETAIL.
- PROVIDE NEW FILTERS FOR ALL AIR CONDITIONING EQUIPMENT BEFORE STARTING THEM. REPLACE THEM PRIOR TO FINAL ACCEPTANCE BY OWNER.
- PROVIDE SMOKE DETECTORS WITH ACCESS DOORS IN ALL SUPPLY AIR DUCTS FOR FANS AND AHU'S SERVING A COMMON PLENUM OF 2000 CFM OR ABOVE. ALL SMOKE DETECTORS SHALL BE BY ONE MANUFACTURER, COORDINATE VOLTAGE ETC. WITH ELECTRICAL CONTRACTOR AND FIRE ALARM SYSTEM BEFORE ORDERING. UPON DETECTION, SMOKE DETECTORS SHUT DOWN ASSOCIATED AIR MOVING EQUIPMENT AND ALL AIR MOVING EQUIPMENT SERVING THAT COMMON PLENUM.
- HVAC CONTRACTOR SHALL PROVIDE A TEST AND BALANCE REPORT FOR ALL MECHANICAL EQUIPMENT, AIR DEVICES, DAMPERS, AHU'S AND FANS. THE T & B SHALL BE IN ACCORDANCE WITH THE AIR BALANCE COUNCIL STANDARDS, AND SHALL INCLUDE AIR QUANTITIES FOR ALL SUPPLY GRILLES, RETURN GRILLES, AND EXHAUST GRILLES, AND THE LEAVING AND ENTERING AIR TEMPERATURE (°F) FROM SUPPLY GRILLES AND EVAPORATORS.
- THERMOSTAT LOCATION SHALL BE APPROVED BY OWNER AND ENGINEERS BEFORE INSTALLATION.
- ALL INSULATION WILL HAVE FIRE/SMOKE RATING LESS THAN 25/50.
- MECHANICAL PLANS IN GENERAL, ARE DIAGRAMMATIC IN NATURE, AND ARE TO BE READ IN CONJUNCTION WITH ARCH. PLUMBING, ELECTRICAL AND STRUCTURAL PLANS AND SHALL BE CONSIDERED AS ONE SET OF DOCUMENTS. DUCT AND PIPING OFFSETS, BENDS AND TRANSITIONS WILL BE REQUIRED TO PROVIDE AND INSTALL A COMPLETE FUNCTIONAL SYSTEM AND SHALL BE PROVIDED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
- CONTRACTOR SHALL INSTALL ALL OUTDOOR EQUIPMENT TO WITHSTAND WIND LOADING FORCES AS REQUIRED BY LOCAL CODES. REFER TO STRUCTURAL PLANS BY OTHERS FOR STRUCTURAL DETAILS.
- PROVIDE ALL NECESSARY CONTACTORS, RELAYS, ETC., FOR A COMPLETE OPERATING A/C UNIT.
- THROUGHOUT THE COURSE OF THE WORK, MINOR CHANGES AND ADJUSTMENTS TO THE PLANS AND SPECIFICATIONS MAY BE REQUESTED BY THE TENANT. THE CONTRACTOR SHALL MAKE SUCH ADJUSTMENTS WITHOUT ADDITIONAL COST TO THE TENANT, WHERE SUCH ADJUSTMENTS ARE NECESSARY FOR PROPER INSTALLATION AND OPERATION OF THE SYSTEMS, AND WITHIN THE INTENT OF THE CONTRACT DOCUMENTS.
- NOTWITHSTANDING ANY OTHER PROVISIONS OF THE CONTRACT DOCUMENTS, THE CONTRACTOR BEARS ULTIMATE RESPONSIBILITY FOR COMPLIANCE OF THE INSTALLATION WITH THE REQUIREMENTS OF THE LANDLORD AND OF THE LOCAL AUTHORITY HAVING JURISDICTION.
- IF ANY ERRORS, DISCREPANCIES OR OMISSIONS APPEAR IN THE DRAWINGS, SPECIFICATIONS OR OTHER CONTRACT DOCUMENTS, THE CONTRACTOR SHALL NOTIFY THE ENGINEER IN WRITING OF SUCH ERROR OR OMISSION. IN THE EVENT OF THE CONTRACTOR FAILING TO GIVE SUCH NOTICE BEFORE CONSTRUCTION AND/OR FABRICATION OF THE WORK, HE WILL BE HELD RESPONSIBLE FOR THE RESULTS OF ANY SUCH ERRORS, DISCREPANCIES OR OMISSIONS AND THE COST OF RECTIFYING SAME.

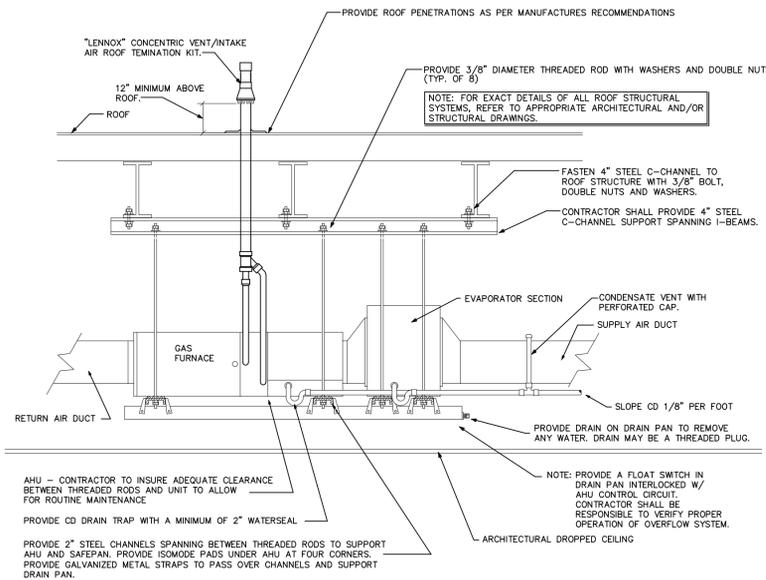


1 BRANCH DUCT DETAIL NO SCALE

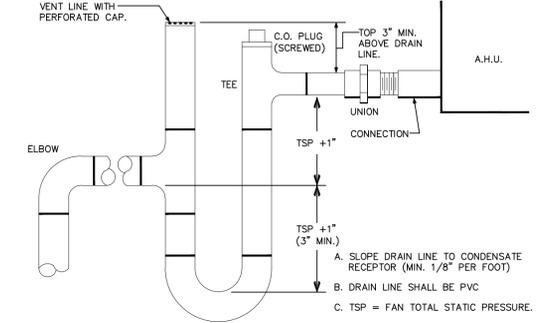
MECHANICAL SYSTEMS, SERVICE SYSTEMS, AND EQUIPMENT	
Prescriptive [X]	METHOD OF COMPLIANCE:
	Performance []
Thermal Zone	Zone V
Exterior Design Conditions	
winter dry bulb	18° F
summer dry bulb	93° F
Interior Design Conditions	
winter dry bulb	68° F
summer dry bulb	74° F
relative humidity	52.9%
Building Heating Load	456,000 BTU
Building Cooling Load	232,000 BTU
Mechanical Spacing Conditioning System	
Unitary	
Description of unit	REFER TO EQUIPMENT SCHEDULES ON THIS SHEET.
heating efficiency	REFER TO EQUIPMENT SCHEDULES ON THIS SHEET.
cooling efficiency	REFER TO EQUIPMENT SCHEDULES ON THIS SHEET.
heat output of unit	REFER TO EQUIPMENT SCHEDULES ON THIS SHEET.
cooling output of unit	REFER TO EQUIPMENT SCHEDULES ON THIS SHEET.
Boiler	N/A
total boiler output. If oversized, state reason.	
Chiller	N/A
total chiller capacity. If oversized, state reason.	
List equipment efficiencies	
Equipment schedules with motors (mechanical systems)	
motor horsepower	REFER TO EQUIPMENT SCHEDULES ON THIS SHEET.
number of phases	REFER TO EQUIPMENT SCHEDULES ON THIS SHEET.
minimum efficiency	REFER TO EQUIPMENT SCHEDULES ON THIS SHEET.
motor type	REFER TO EQUIPMENT SCHEDULES ON THIS SHEET.
# of poles	REFER TO EQUIPMENT SCHEDULES ON THIS SHEET.
DESIGNER STATEMENT: 1	
To the best of my knowledge and belief, the design of this building complies with the mechanical systems, service systems and equipment requirements of the North Carolina State Building Code, Volume X-Energy.	
SIGNED:	
NAME:	
TITLE:	



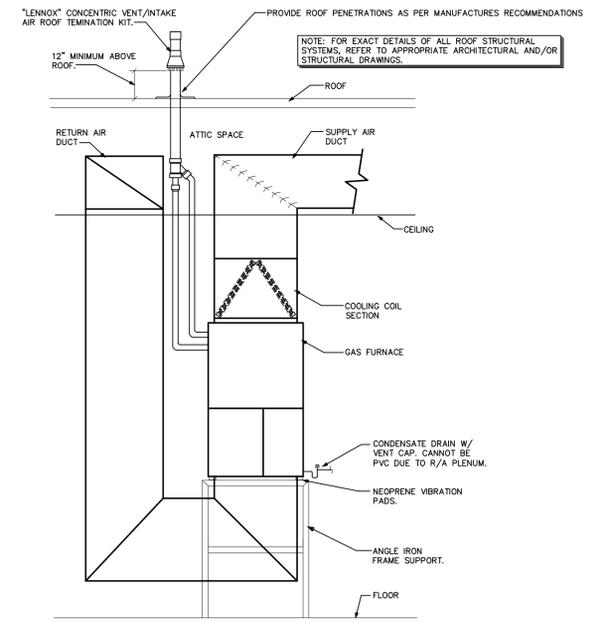
2 SECTION 'A' NO SCALE



4 GAS FURNACE/AHU MOUNTING DETAIL NO SCALE



3 CONDENSATE P-TRAP DETAIL NOT TO SCALE



5 GAS FURNACE/AHU MOUNTING DETAIL NO SCALE

FAN SCHEDULE										
LABEL	TYPE OF UNIT - AREA SERVED	MANUFACTURER & MODEL NO.	CFM	SP	MOUNTING ARRANGEMENT	MOTOR H.P.	ENCLOSURE TYPE	RPM	VOLTAGE	NOTES
EF-1	CABINET FAN - REFER TO PLANS	PENN ZEPHYR Z7	190	.125"	CEILING MOUNTED	68 WATTS	OPEN DRIP PROOF	1640	115V/1φ	1
EF-2	CABINET FAN - REFER TO PLANS	PENN ZEPHYR Z81	300	.125"	CEILING MOUNTED	124 WATTS	OPEN DRIP PROOF	1115	115V/1φ	1

NOTES: 1.) REFER TO ELECTRICAL PLANS FOR CONTROL.

HORIZONTAL-FLOW GAS FURNACE W/SPLIT SYSTEM AIR CONDITIONING SYSTEM SCHEDULE																				
CONDENSING UNIT							EVAPORATOR COIL UNIT													
CU LABEL(S)	MANUFACTURER & MODEL NO.	TOTAL CAPACITY	SENSIBLE CAPACITY	COMP. RLA	FAN FLA	VOLTAGE	MOCF	EER/SEER	MANUFACTURER & MODEL NO.	AHU LABEL(S)	MANUFACTURER & MODEL NO.	TOTAL CFM	E.S.P.	BLOWER SPEED	FAN HP	VOLTAGE	INPUT BTUH	OUTPUT BTUH	FLUE SIZE	NOTES
CU #1 & 2	LENNOX HS29-060	58,000	39,300	17.3	1.9	208V/3φ	40	10.0	LENNOX CH23-65	AHU #1 & 2	LENNOX GHR2604/5-120	2,000	.30"	MEDIUM	3/4	120V/1φ	120,000	111,000	2"	1 THRU 4

GENERAL NOTES:
 * ALL RATINGS ARE AT ARI ENTERING CONDITIONS UNLESS OTHERWISE NOTED.
 * PROVIDE VIBRATION ISOLATION FOR UNITS.
 * EXTERNAL STATIC PRESSURE DOES NOT INCLUDE COIL OR FILTER PRESSURE DROP.
 * CONTRACTOR MAY SUBSTITUTE MANUFACTURER FOR APPROVED EQUAL. IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO VERIFY THAT ANY CLEARANCE REQUIREMENTS ARE MET FOR ANY SUBSTITUTIONS.

ABBREVIATION LEGEND:
 O/A - OUTSIDE AIR
 HP - HORSE POWER
 RLA - RUNNING LOAD AMPS
 FLA - FULL LOAD AMPS
 MOCF - MAX. OVERCURRENT PROTECTION (DUAL ELEMENT TYPE FUSE)
 E.S.P. - EXTERNAL STATIC PRESSURE
 EER - ENERGY EFFICIENCY RATIO
 SEER - SEASONAL ENERGY EFF. RATIO

SPECIFIC NOTES:
 1) SIZE AND RUN REFRIGERANT PIPING AS PER MANUFACTURERS PUBLISHED RECOMMENDATIONS.
 2) INSULATE REFRIGERANT SUCTION LINE WITH 2/4" ARMAFLEX OR APPROVED EQUAL.
 3) PROVIDE 5 YEAR WARRANTY ON COMPRESSOR AND 1 YEAR WARRANTY ON ALL PARTS AND LABOR.
 4) FURNACE SHALL BE PROVIDED WITH CONCENTRIC VENT/INTAKE AIR ROOF TERMINATION KIT.

UP-FLOW GAS FURNACE W/SPLIT SYSTEM AIR CONDITIONING SYSTEM SCHEDULE																				
CONDENSING UNIT							EVAPORATOR COIL UNIT													
CU LABEL(S)	MANUFACTURER & MODEL NO.	TOTAL CAPACITY	SENSIBLE CAPACITY	COMP. RLA	FAN FLA	VOLTAGE	MOCF	EER/SEER	MANUFACTURER & MODEL NO.	AHU LABEL(S)	MANUFACTURER & MODEL NO.	TOTAL CFM	E.S.P.	BLOWER SPEED	FAN HP	VOLTAGE	INPUT BTUH	OUTPUT BTUH	FLUE SIZE	NOTES
CU #3 & 4	LENNOX HS29-060	58,000	39,300	17.3	1.9	208V/3φ	40	10.0	LENNOX CH23-65	AHU #3 & 4	LENNOX G2604/5-120	2,000	.30"	MEDIUM	3/4	120V/1φ	120,000	117,000	2"	1 THRU 4

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 SEER - SEASONAL ENERGY EFF. RATIO

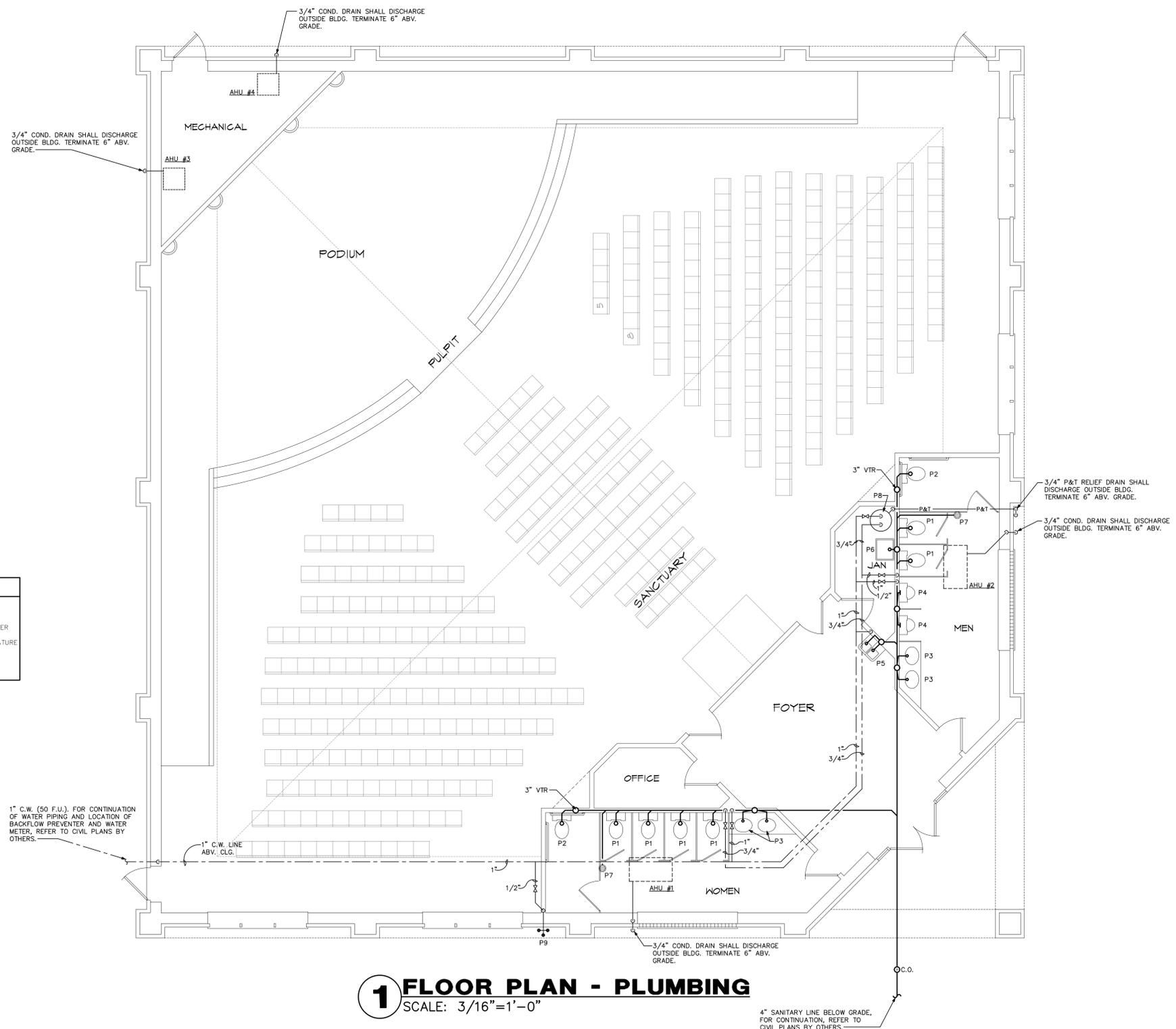
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 3) PROVIDE 5 YEAR WARRANTY ON COMPRESSOR AND 1 YEAR WARRANTY ON ALL PARTS AND LABOR.
 4) FURNACE SHALL BE PROVIDED WITH CONCENTRIC VENT/INTAKE AIR ROOF TERMINATION KIT.

PLUMBING SYMBOLS LEGEND

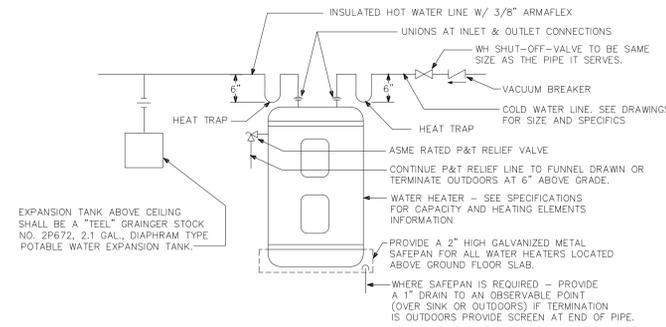
	FLOOR DRAIN
	HOSE BIBB
	CLEANOUT
	RELIEF VALVE
	AIR CHAMBER
	UNION
	SOIL OR WASTE LINE
	SANITARY VENT LINE
	DOMESTIC COLD WATER
	DOMESTIC HOT WATER
	DOMESTIC WATER RECIRCULATION
	PRESSURE & TEMP. RELIEF LINE
	CONDENSATE DRAIN LINE
	RAIN WATER LEADER
	GAS LINE
	SAFEWASTE LINE
	FIRE PROTECTION
	SHUT OFF VALVE
	SAFEPLAN LINE
	FIRE SPRINKLER HEAD
	PIPE TURN UP
	PIPE TURN DOWN
	P-TRAP

PLUMBING ABBREVIATION LEGEND

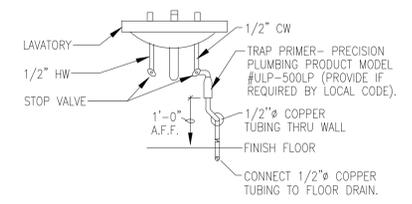
DN.	DOWN	C.C.	CENTER TO CENTER	F.U.	FIXTURE UNITS
EXT.	EXTERIOR	N.T.S.	NOT TO SCALE	H.B.	HOSE BIBBS
F.D.	FLOOR DRAIN	MFGR.	MANUFACTURER	C.O.	CLEANOUT
F.F.	FINISH FLOOR	S.O.V.	SHUT OFF VALVE	E.W.H.	ELECTRIC WATER HEATER
A.F.F.	ABOVE FINISH FLOOR	W.C.	WATER CLOSET	JAN.SK.	JANITOR SINK
V.T.R.	VENT THRU ROOF	LAV.	LABORATORY	P & T	PRESSURE & TEMPERATURE
TYP.	TYPICAL	SK.	SINK	RWL.	RAIN WATER LEADER
R.D.	ROOF DRAIN	D.W.	DISH WASHER		
REV.	REVISION	E.D.F.	ELECTRIC DRINKING FOUNTAIN		
O.C.	ON CENTER	UR.	URINAL		



1 FLOOR PLAN - PLUMBING
SCALE: 3/16"=1'-0"



2 WATER HEATER DETAIL
SCALE: 3/16"=1'-0"



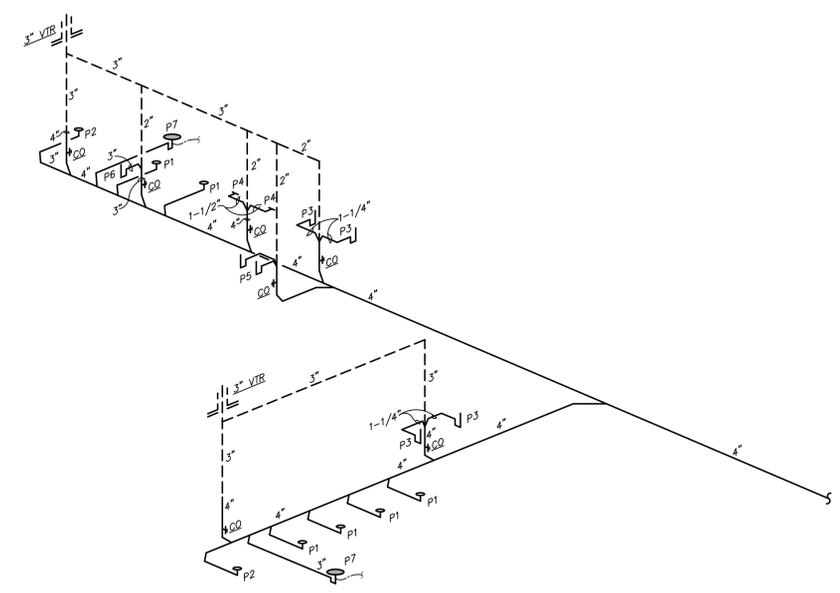
3 TRAP PRIMER DETAIL
SCALE: 3/16"=1'-0"

GENERAL PLUMBING NOTES

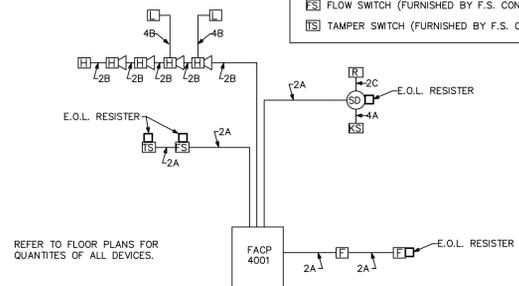
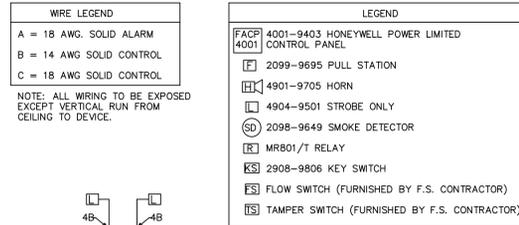
- Drawings are diagrammatic and shall not be scaled. Refer to architectural plans and elevations for exact location of all plumbing fixtures, equipment, etc.. Plumbing contractor shall furnish and install all items required for a complete and acceptable working installation.
- All work and materials shall comply with the latest edition of the National, State, and all local codes and Ordinances having jurisdiction.
- The plumbing contractor shall visit the site and thoroughly familiarize himself with all existing conditions. All execution and backfill as required for this phase of construction shall be a part of this contract.
- All material shall be new.
- All work shall be performed by a licensed plumbing contractor in a first class workmanlike manner. The completed system shall be fully operative and accepted by engineer/architect.
- All required insurance shall be provided for protection against public liability or property damage for the duration of the work.
- The plumbing contractor shall secure and pay all permit fees, inspections, and tests.
- All work shall be coordinated with other trades to avoid interference with the progress of construction.
- The plumbing contractor shall guarantee all materials and workmanship free from defects for a period of not less than (1) one year from date of acceptance. Correction of any defects shall be completed without additional charge and shall include replacement or repair of any other phase of the installation which may have been damaged thereby.
- Verify location, size and inverts of all existing utilities prior to start of construction. Advise architect/engineer of any discrepancies.
- All fixtures shall be provided with readily accessible stops.
- Water piping shall be type "L" copper for up to and including 2" and shall be type "K" for 2 1/2" and larger.
- Soil, wastes and vent piping shall be PVC #40 DMV. Waste and vent piping above slab shall be PVC, if approved by local authorities having jurisdiction, otherwise cast iron. PVC shall not be installed in A/C return air plenum or penetrate fire rated walls or floors.
- Air conditioning condensate drain piping shall be PVC #40 or copper drain waste and bent pipe and fittings. Insulate all condensate piping except exterior piping. Install all condensate piping for air conditioning units as required per local codes.
- Furnish and install approved air chambers at each plumbing fixture and PDI approved shock arresters on main lines and risers.
- Provide chrome plated combination covered plate and cleantout plug for all wall cleanouts, Josam 58890.
- Insulate lines as follows:
a) Hot and Cold water supply and return: 1" thick fiberglass.
b) Condensate piping: 1/2" thick armafex preformed.

PLUMBING FIXTURE SCHEDULE

- P-1 (WATER CLOSET)
SHALL BE AN AMERICAN STANDARD MODEL CADET 2898.014 ELONGATED 1.6 GPF, VITREOUS CHINA, SIPHON ACTION BOWL, CLOSE-COUPLED TANK, SPEED CONNECT TANK/BOWL COUPLING SYSTEM TOILET AND AN OLSONITE # 95 OPEN FRONT SEAT LESS COVER.
- P-2 (HANDICAPPED WATER CLOSET)
SHALL BE AN AMERICAN STANDARD MODEL CADET 2998.012 ELONGATED 18" HIGH, 1.6 GPF, VITREOUS CHINA, SIPHON ACTION BOWL, CLOSE-COUPLED TANK, SPEED CONNECT TANK/BOWL COUPLING SYSTEM TOILET AND AN OLSONITE # 95 OPEN FRONT SEAT LESS COVER.
- P-3 (HANDICAPPED COUNTER TOP LAVATORY)
SHALL BE AN AMERICAN STANDARD MODEL RONALYN MODEL 0490.011 VITREOUS CHINA SELF-RIMMING FAUCET SHALL BE A MONTREY 5502.170 W/4" WRIST BLADE HANDLES. PROVIDE 0.5 GPM FLOW RESTRICTOR.
- P-4 (URINAL)
SHALL BE AN AMERICAN STANDARD ALLBROOK MODEL 6541.132. FLUSH VALVE SHALL BE SLOAN ROYAL MODEL 180-YB.
- P-5 (HANDICAPPED ELECTRIC WATER COOLER COMBINATION HI/LO)
SHALL BE AN OASIS SPLIT LEVEL MODEL PBAMSL, 7.8 GPM, 5.0 FLA AT 120 VOLT WITH A 1/5 HP COMPRESSOR.
- P-6 (SERVICE SINK)
SHALL BE A KOHLER HOLLISTER MODEL K-12794 UTILITY SINK IN WHITE WITH FINESSE FAUCET MODEL K-13328 IN POLISHED CHROME ACRYLON-COATED BRACKETS. SERVICE SINK IS 28" x 22".
- P-7 (FLOOR DRAIN WITH TRAP PRIMER)
SHALL BE A JOSAM 30000-A-50 SERIES COATED CAST IRON FLOOR DRAIN. TWO PIECE BODY WITH DOUBLE DRAINAGE FLANGE, WEALOC INVERTIBLE NON-PUNCTURING FLASHING COLLAR, WEEPHOLES, BOTTOM OUTLET, INSIDE CAULK CONNECTION AND ADJUSTABLE SATIN NIKALOY ROUND SUPER-FLO STRAINER.
- P-8 (WATER HEATER)
SHALL BE A LOCHINVAR MODEL ESA 030 KK, 30 GALLON GLASSINED STORAGE TANK, STUBBY TYPE WATER HEATER WITH (2) - 4.5 KW ELECTRIC ELEMENTS WIRED FOR NON-CONCURRENT INDEPENDENT OPERATION AT 208 VOLTS, SINGLE PHASE INCOMING POWER. 5 YEAR LIMITED WARRANTY ON STORAGE TANK AGAINST TANK FAILURE. WATER HEATER SHALL MEET OR EXCEED ALL APPLICABLE SECTIONS OF ASHRAE STANDARD 90-80A AND NAECA REQUIREMENTS FOR ENERGY CONSERVATION.
- P-9 (NON-FREEZE HOSE BIBB IN RECESSED LOCKED BOX)
SHALL BE A JOSAM SERIES 71050 CAST BRONZE NON-FREEZE WALL HYDRANT WITH A SATIN FINISH NIKALOY FACE, 3/4" H.P.T. OUTLET, INTEGRAL VACUUM BREAKER/BACKFLOW PREVENTER AND PRESSURE RELIEF VALVE.
- NOTES:
1.) ALL PLUMBING FIXTURES SHALL BE AS SPECIFIED OR APPROVED EQUAL.
2.) PROVIDE ANGLE STOPS ON ALL WATER SERVICE LINES TO FIXTURES FOR INDIVIDUAL SHUT-OFF.
3.) ALL HANDICAP PLUMBING FIXTURES SHALL BE INSTALLED AS PER LATEST A.D.A. REQUIREMENTS.



1 SANITARY ISOMETRIC
SCALE: 3/16"=1'-0"



2 FIRE ALARM RISER DIAGRAM

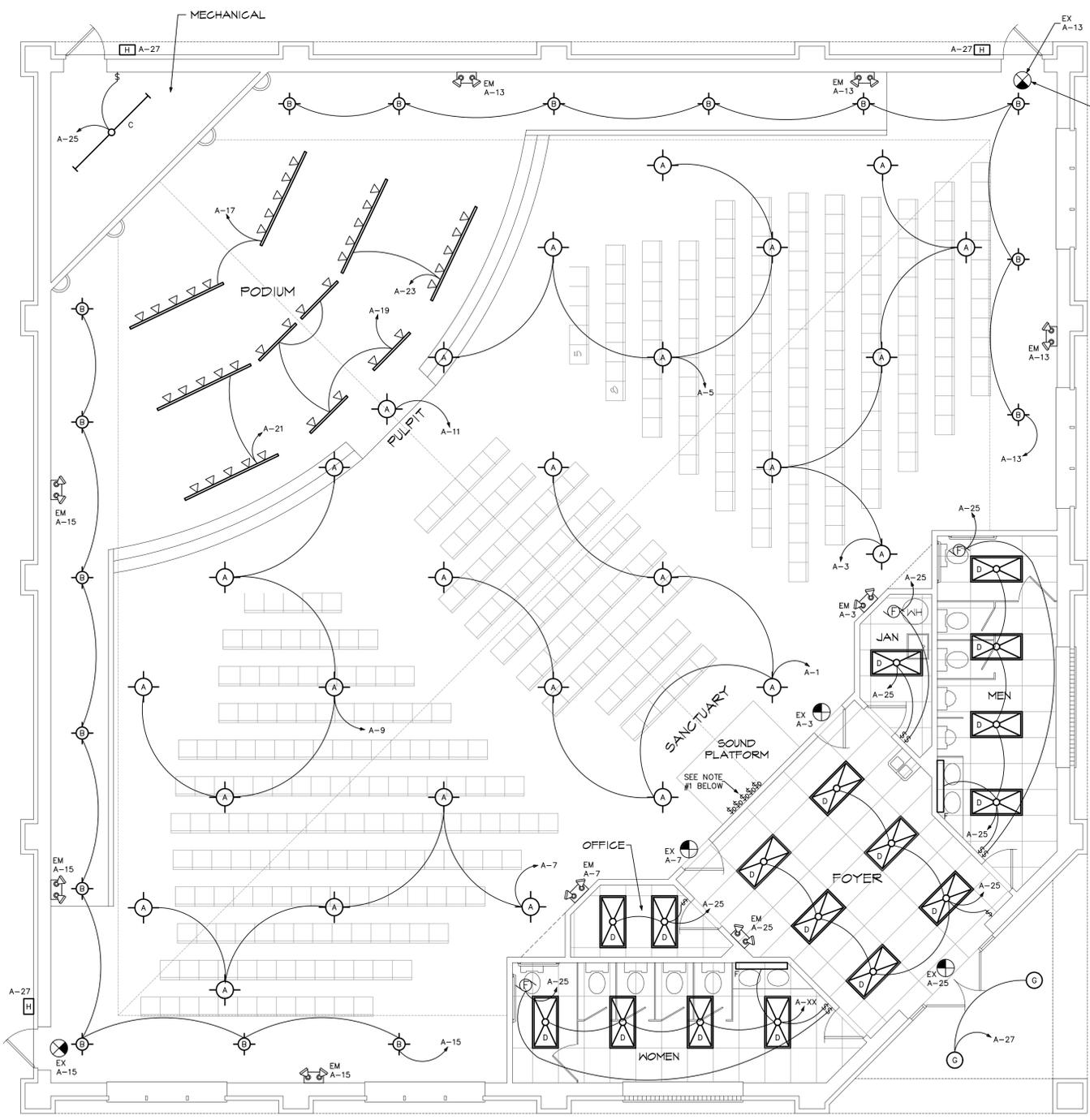
NO SCALE

ELECTRICAL SYMBOLS LEGEND			
SYMBOLS	DESCRIPTION	SYMBOLS	DESCRIPTION
⊕	DUPLEX RECEPTACLE, MTD. +18" AFF	⊕	TRANSFORMER - SIZE AS NOTED
⊕	240 VOLT RECEPTACLE (HT. AS REQ.)	⊕	PANEL - SIZE AS NOTED
⊕	QUADRUPLX RECEPTACLE, MTD. +18"	⊕	MOMENTARY CONTACT PUSH BUTTON
⊕	COUNTERTOP HT. RECEPTACLE +42"	⊕	F-FAN; M-MOTOR; P-PUMP
⊕	SINGLE POLE SWITCH	⊕	SPECIAL OUTLET - AS REQUIRED
⊕	THREE-WAY SWITCH	⊕	CXT. HOMERUN (B INDICATES PANEL)
⊕	MANUAL STARTER SWITCH	⊕	2" DESIGNATES CIRCUIT NUMBER
⊕	DIMMER SWITCH	⊕	EXIT SIGN; ONE SIDED, OR TWO SIDED
⊕	SWITCH W/ ILLUMINATION WHEN ON	⊕	EMERGENCY LIGHTING
⊕	JUNCTION BOX	⊕	RECESSED MOUNTED LIGHTING FIXTURE
⊕	TELEPHONE JACK	⊕	B DESIGNATES FIXTURE TYPE
⊕	COMPUTER DATA TERMINAL OUTLET	⊕	HIGHWAY HID LIGHTING FIXTURE
⊕	DISCONNECT SWITCH W/ STARTER	⊕	B DESIGNATES FIXTURE TYPE
⊕	DISCONNECT SWITCH	⊕	B DESIGNATES FIXTURE TYPE
⊕	FLR. MTD. FLUSH DUPLEX RECEPTACLE	⊕	B DESIGNATES FIXTURE TYPE
⊕	FLR. MTD. FLUSH QUAD. RECEPTACLE	⊕	B DESIGNATES FIXTURE TYPE
⊕	FLR. MTD. FLUSH TELEPHONE JACK	⊕	B DESIGNATES FIXTURE TYPE
⊕	FLR. MTD. FLUSH COMPUTER TERMINAL	⊕	B DESIGNATES FIXTURE TYPE
⊕	SMOKE DETECTOR	⊕	B DESIGNATES FIXTURE TYPE
⊕	HEAT DETECTOR	⊕	B DESIGNATES FIXTURE TYPE
⊕	DUCT SMOKE DETECTOR	⊕	B DESIGNATES FIXTURE TYPE
⊕	MANUAL PULL STATION	⊕	B DESIGNATES FIXTURE TYPE
⊕	HORN WITH STROBE LIGHT, MTD. +80"	⊕	B DESIGNATES FIXTURE TYPE
⊕	STROBE LIGHT ONLY, MTD. +80"	⊕	B DESIGNATES FIXTURE TYPE
⊕		⊕	B DESIGNATES FIXTURE TYPE

- ### ELECTRICAL NOTES:
- GENERAL: ALL WORK SHALL CONFORM TO THE LATEST APPROVED EDITION OF THE NATIONAL ELECTRICAL CODE (NEC) AND ALL LOCAL JURISDICTIONAL CODES. THE CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE DRAWINGS AND ANY APPLICABLE SPECIFICATIONS. IF A PROBLEM IS ENCOUNTERED IN COMPLYING WITH THIS REQUIREMENT, THE CONTRACTOR SHALL NOTIFY THE OWNER OR HIS REPRESENTATIVE AS SOON AS POSSIBLE AFTER DISCOVERY OF THE PROBLEM, AND SHALL NOT PROCEED WITH THAT PORTION OF THE WORK UNTIL THE OWNER HAS DIRECTED THE CORRECTIVE ACTION TO BE TAKEN. THE CONTRACTOR SHALL COORDINATE THE PROPOSED LOCATIONS OF ALL ELECTRICAL MATERIALS AND EQUIPMENT WITH THE REPRESENTATIVES OF THE OTHER TRADES INVOLVED BEFORE STARTING INSTALLATION OF THOSE ITEMS. COORDINATE THE INSTALLATION OF REQUIRED SUPPORTING DEVICES, CONDUIT, AND SLEEVES TO BE SET IN CAST-IN-PLACE CONCRETE AND OTHER STRUCTURAL COMPONENTS, AS THEY ARE CONSTRUCTED. UNLESS OTHERWISE SPECIFIED ON THE PLANS, ALL SPECS ARE NOT INTENDED TO BE PROPRIETARY. SUBSTITUTIONS WILL BE ACCEPTABLE FOR EQUAL RATED AND LISTED UNITS.
 - SCOPE: EXCEPT WHERE OTHERWISE SPECIFICALLY INDICATED ON THE DRAWINGS BY "FUTURE", "BY OTHERS", OR BY A SIMILAR NOTATION, IT IS THE INTENT THAT THE CONTRACTOR FURNISH ALL LABOR, MATERIALS, EQUIPMENT AND TOOLS NECESSARY TO PROVIDE ALL SYSTEMS IN COMPLETE AND OPERATING CONDITION.
 - EXCAVATE AS NECESSARY FOR THE INSTALLATION OF ELECTRICAL MATERIALS AND EQUIPMENT. VERIFY THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES OR STRUCTURES BEFORE EXCAVATING AND EXERCISE CARE TO AVOID DAMAGE TO SUCH ITEMS DURING EXCAVATION. BACKFILL WITH EARTH FREE OF LARGE CLODS, LARGE STONES AND FOREIGN DEBRIS, DEPOSITED IN 6" LAYERS AND COMPACTED TO A DENSITY OF NOT LESS THAN THAT OF THE SURROUNDING UNDISTURBED MATERIAL.
 - MATERIALS: THE MATERIALS AND EQUIPMENT FURNISHED SHALL BE AS INDICATED ON THE DRAWINGS; SUBSTITUTIONS SHALL NOT BE MADE EXCEPT WHERE EXPRESSLY APPROVED BY THE OWNER OR HIS REPRESENTATIVE PRIOR TO STARTING INSTALLATION OF THE ITEMS. THE ELECTRICAL MATERIALS AND EQUIPMENT FURNISHED SHALL BE LISTED OR LABELED BY UNDERWRITERS LABORATORIES OR OTHER RECOGNIZED TESTING ORGANIZATION, AND SHALL BE ACCEPTABLE TO THE LOCAL BUILDING AUTHORITY.
 - GROUNDING: GROUNDING SHALL BE IN ACCORDANCE WITH ARTICLE 250, NEC.
 - CONDUITS: PROVIDE CONDUITS WHERE CALLED FOR ON PANEL SCHEDULES; ELECTRICAL METALLIC TUBING (EMT) SHALL BE INSTALLED ONLY IN DRY LOCATIONS, IN CONCRETE ABOVE GRADE, AND WHERE NOT SUBJECT TO PHYSICAL DAMAGE. CONDUITS INSTALLED UNDERGROUND SHALL BE POLYVINYLCHLORIDE (PVC) AND SHALL NOT BE SMALLER THAN 3/4" TRADE SIZE. WHERE PVC CONDUIT IS INSTALLED UNDERGROUND, ELBOWS TURNING UP AND CONDUIT EMERGING ABOVE GRADE SHALL BE RSC. THE TOPS OF CONDUITS SHALL NOT BE LESS THAN 24" BELOW FINISHED GRADE. PVC CONDUIT INSTALLED ABOVE GRADE OR DIRECT-BURIED IN EARTH SHALL BE NEMA 122 TYPE EPC-40-PVC (SCHEDULE 40) EXCEPT THAT WHERE UNDER AREAS SUBJECT TO HEAVY VEHICULAR TRAFFIC, IT SHALL BE NEMA 122 TYPE EPC-80-PVC (SCHEDULE 80). ALL ARMOR CLAD CABLE (AC CABLE) WIRING SHALL MEET OR EXCEED ALL NEC, OSHA AND HUD STANDARDS.
 - CONDUCTORS: CONDUCTORS SHALL BE AS SCHEDULED ON PANEL SCHEDULES; ALL POWER CONDUCTORS SHALL NOT BE SMALLER THAN #14 AWG (CU), OR #12 AWG (AL), CONTROL CIRCUIT CONDUCTORS SHALL NOT BE SMALLER THAN #18 AWG CU. CONDUCTORS SHALL BE CONTINUOUS FROM OUTLET TO OUTLET WITHOUT SPLICES EXCEPT WITHIN WIREWAY OR JUNCTION BOXES. MARK CONDUCTORS IN PANELS, PULL BOXES OR WIREWAYS AND TERMINAL STRIP TERMINALS FOR IDENTIFICATION OF CIRCUITS. CONDUCTORS SHALL BE JOINED USING COMPRESSION SPLICES, EXCEPT THAT CONDUCTORS #10 AND SMALLER MAY BE JOINED USING WIRE NUT TYPE CONNECTORS. CONDUCTORS SHALL BE TERMINATED USING COMPRESSION OR PRESSURE TYPE TERMINAL LUGS, OR IN PRESSURE TERMINALS. COMPRESSION SPLICES USED ON CONDUCTORS #10 AWG AND SMALLER, SHALL BE THE SELF-INSULATED TYPE; OTHER SPLICES SHALL BE INSULATED USING 3M #35+ OR #85 PLASTIC TAPE. SPLICES IN WET LOCATIONS SHALL BE INSULATED WITH ELECTRICAL TAPE AND ENCAPSULATED WITH SCOTCHCAST OR EQUAL POTTING COMPOUND.
 - PROVIDE AND INSTALL JUNCTION AND PULL BOXES WHERE INDICATED AND WHERE NECESSARY TO TERMINATE, TAP OFF, OR REDIRECT MULTIPLE CONDUIT RUNS, OF SIZE INDICATED OR AS REQUIRED BY NEC. WHERE FEEDER SPLICES ARE TO BE MADE, INSTALL BOXES LARGE ENOUGH TO PROVIDE AMPLE WORK SPACE.
 - LIGHTING FIXTURES: LIGHTING FIXTURES SHALL BE AS INDICATED ON THE DRAWINGS, AND SHALL BE INSTALLED COMPLETE WITH LAMPS. FIXTURES WITH ADJUSTMENTS AFFECTING LIGHT DISTRIBUTION SHALL BE SET TO PROVIDE THE REQUIRED LIGHT PATTERNS PRIOR TO THE FINAL DEMONSTRATION TEST.
 - TESTS: AFTER EACH SYSTEM HAS BEEN COMPLETED, A FUNCTIONAL TEST SHALL BE PERFORMED TO DEMONSTRATE THAT THE SYSTEM OPERATES IN ACCORDANCE WITH THE REQUIREMENTS OF THE DRAWINGS. THE TEST SHALL BE PERFORMED BY THE CONTRACTOR IN THE PRESENCE OF THE OWNER OR HIS REPRESENTATIVE.
 - TERMINALS: ALL ELECTRICAL EQUIPMENT FURNISHED ON THIS PROJECT IS TO HAVE TERMINALS RATED FOR 75° C. OPERATION.

LIGHTING FIXTURE SCHEDULE

LABEL	TYPE OF FIXTURE	FINISH	LENS TYPE	VOLTAGE	LAMP	MANUFACTURER & MODEL NO.	REMARKS
A	PENDENT MTD DNLIGHT	BRONZE		120	(1) 250W HALOGEN	HUBBEL C145-6CM	STEM MOUNTED AT +15' TO BOTTOM OF FIXTURE.
B	RECESSED INCANDESCENT	WHITE		120	(1) 95W HALOGEN	LITHONIA R-6MB	w/ DEEP SET BLACK BAFFLE
C	8' FLUORESCENT STRIP	WHITE		120	(1) 75W T8	LITHONIA C-196-120	CHAIN HUNG AT +12'
D	RECESSED 2'x4' TROFFER	WHITE	PRISMATIC	120	(2) 32W T8	LITHONIA 2SPG-232-FWA12-120	
EM	EMERGENCY EGRESS	WHITE		120	INCLUDED	LITHONIA ELM2	
EX	EXIT SIGN	WHITE	RED	120	INCLUDED	LITHONIA LE-SW2R-120/277-ELN	
F	FLUORESCENT WALL LIGHT	WHITE	PRISMATIC	120	(2) 32W T8	LITHONIA WC-232-A12-120	
G	RECESSED HID DOWNLIGHT	WHITE	FLAT FRESNEL	120	(1) 175W MH	LITHONIA LGH-175M-12RW-FFL-120	
H	HID WALL PACK	BRONZE	POLYCARBONATE	120	(1) 100W MH	LITHONIA TWP-100M-120	



NOTE: ALL EXIT SIGNS AND EMERGENCY EGRESS LIGHTS ARE TO BE WIRED TO BE NON-SWITCHED OR DIMMED ON THE CIRCUITS INDICATED.

ELECTRICAL SYSTEM AND EQUIPMENT

METHOD OF COMPLIANCE

PRESCRIPTIVE PERFORMANCE ENERGY COST BUDGET

PROVIDE A STANDARD RISER DIAGRAM WHICH INDICATES DESIGNATED POINTS FOR CHECK METERING. PROVIDE A STANDARD PANEL SCHEDULE DESCRIPTION WHICH IDENTIFIES DIFFERENT ENDUSE LOADS.

LIGHTING SCHEDULE

LAMP TYPE REQUIRED IN FIXTURE	SEE SCHEDULE ON DRAWINGS
NUMBER OF LAMPS IN FIXTURE	SEE SCHEDULE ON DRAWINGS
BALLAST TYPE USED IN FIXTURE	SEE SCHEDULE ON DRAWINGS
NUMBER OF BALLASTS IN FIXTURE	SEE SCHEDULE ON DRAWINGS
TOTAL WATTAGE PER FIXTURE	SEE SCHEDULE ON DRAWINGS
TOTAL INTERIOR WATTAGE SPECIFIED VS ALLOWED	2.48 VS 2.50
TOTAL EXTERIOR WATTAGE SPECIFIED VS ALLOWED	N/A

EQUIPMENT SCHEDULES WITH MOTORS (NOT USED FOR MECHANICAL SYSTEMS)

MOTOR HORSEPOWER	N/A
NUMBER OF PHASES	N/A
MINIMUM EFFICIENCY	N/A
MOTOR TYPE	N/A
NUMBER OF POLES	N/A

DESIGNER STATEMENT:

TO THE BEST OF MY KNOWLEDGE AND BELIEF, THE DESIGN OF THIS BUILDING COMPLIES WITH THE ELECTRICAL SYSTEM AND EQUIPMENT REQUIREMENTS OF THE NORTH CAROLINA STATE BUILDING CODE, VOLUME X-ENERGY.

SIGNED: _____

NAME: _____

TITLE: _____

- ### LIGHTING PLAN NOTES
- PROVIDE DIMMERS FOR ALL SANCTUARY LIGHTS. WATTAGE OF DIMMERS TO BE MATCHED TO LOADS.
 - EXTERIOR SECURITY LIGHTS TO BE TIMELOCK CONTROLLED.

1 FLOOR PLAN - LIGHTING

SCALE: 3/16"=1'-0"

