

H.V.A.C. ABBREVIATION LEGEND			
A/C	AIR CONDITIONER	REV.	REVISION
DN.	DOWN	N.T.S.	NOT TO SCALE
EXH.	EXHAUST	MFG.	MANUFACTURER
EXT.	EXTERIOR	R/A	RETURN AIR
E.F.	EXHAUST FAN	GR.	GRILLE
A.F.F.	ABOVE FINISH FLOOR	C.D.	CEILING DIFFUSER
F.F.	FINISH FLOOR	REG.	REGISTER
TYP.	TYPICAL	C.U.	CONDENSING UNIT
		A.H.U.	AIR HANDLING UNIT
		D.G.	DOOR GRILLE
		F.I.D.	FIRE DAMPER
		DISP.	DISPOSABLE
		V.C.D.	VOLUME CONTROL DAMPER
		F/A	FRESH AIR
		S.P.	SAFE PAN
		CD.	CONDENSATE DRAIN

SUPPLY DIFFUSER SCHEDULE				
DESIGNATES LABEL FOR DIFFUSER TYPE		ALL DIFFUSERS ARE TO BE PROVIDED WITH OPPOSED BLADE DAMPERS UNLESS OTHERWISE SPECIFIED ON PLANS.		
DESIGNATES CFM QUANTITY FOR DIFFUSER				
LABEL	MANUFACTURER & MODEL NO.	NECK SIZE	CFM RANGE	REMARKS
A	TITUS PCS-AA	6"ø	0 - 100	12X12 PERFORATED FACE
B	TITUS PCS-AA	6"ø	0 - 125	24X24 PERFORATED FACE
C	TITUS PCS-AA	8"ø	130 - 200	24X24 PERFORATED FACE
D	TITUS PCS-AA	10"ø	205 - 325	24X24 PERFORATED FACE
E	TITUS PCS-AA	12"ø	330 - 450	24X24 PERFORATED FACE
F	TITUS PCS-AA	14"ø	455 - 650	24X24 PERFORATED FACE
G	TITUS PCS-AA	16"ø	655 - 800	24X24 PERFORATED FACE

NOTE:
ALL SUPPLY DIFFUSERS SHALL BE PROVIDED WITH 4-WAY INTERNAL DEFLECTORS AND SHALL BE INSTALLED WITH A SURFACE MOUNT BORDER TYPE 1. ALL INTERNAL DEFLECTORS SHALL BE 4-WAY UNLESS INDICATED OTHERWISE ON PLAN WITH DIRECTIONAL ARROWS.

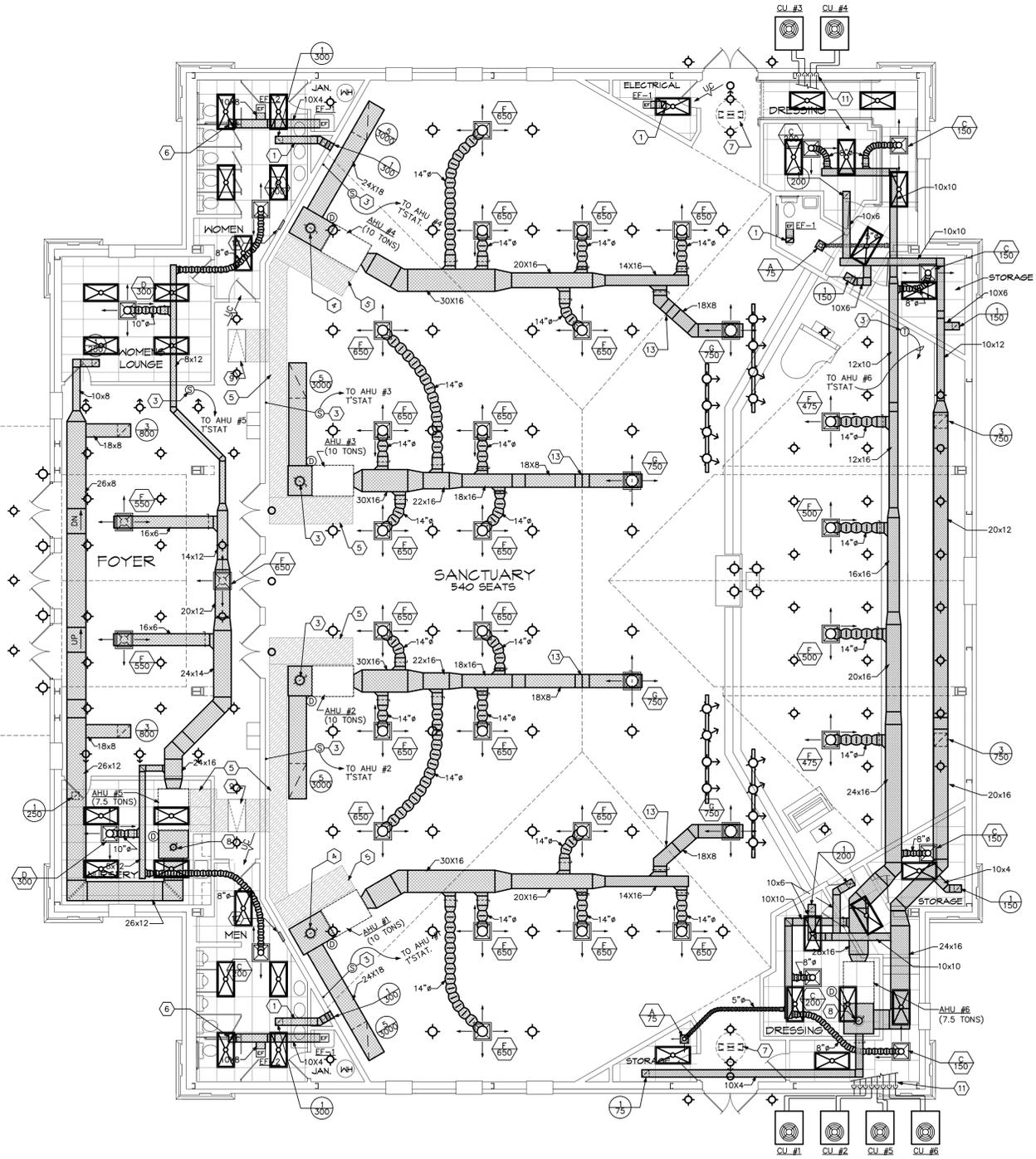
RETURN GRILLE SCHEDULE				
DESIGNATES LABEL FOR GRILLE TYPE		FILTER SHALL BE PROVIDED AT UNIT.		
DESIGNATES CFM QUANTITY FOR GRILLE				
LABEL	MANUFACTURER & MODEL NO.	NECK SIZE	CFM RANGE	REMARKS
1	TITUS BF	10X10	0 - 395	PERFORATED FACE
2	TITUS BF	12X12	400 - 600	PERFORATED FACE
3	TITUS BF	18X18	605 - 1000	PERFORATED FACE
4	TITUS BF	24X24	1005 - 1725	PERFORATED FACE
5	TITUS BF	24X48	1730 - 3000	PERFORATED FACE

SPECIFIC MECHANICAL NOTES

- 10x6 TOILET ROOM EXHAUST AIR MAKE-UP TRANSFER DUCT.
- MAIN BANK OF THERMOSTATS SHALL BE LOCATED IN THIS AREA. CONTRACTOR SHALL PROVIDE WALL MOUNTED LABEL BENEATH EACH THERMOSTAT WHICH INDICATE THE FOLLOWING:
AHU #1 THERMOSTAT: "SANCTUARY - BACK LEFT"
AHU #2 THERMOSTAT: "SANCTUARY - BACK MIDDLE LEFT"
AHU #3 THERMOSTAT: "SANCTUARY BACK MIDDLE RIGHT"
AHU #4 THERMOSTAT: "SANCTUARY BACK RIGHT"
AHU #5 THERMOSTAT: "FRONT LOBBY/TOILET ROOMS"
AHU #6 THERMOSTAT: "STAGE/DRESSING AREAS"
* CONTRACTOR SHALL FULLY INSTRUCT OWNER ON HOW TO PROPERLY PROGRAM INSTALLED THERMOSTATS. COORDINATE FINAL LOCATION OF ALL THERMOSTATS WITH OWNER PRIOR TO CONSTRUCTION. THERMOSTAT SHALL BE SET TO "FAN ON" DURING OCCUPIED TIMES. THERMOSTAT SHALL BE A "LEWIS" INNOVATOR PROGRAMMABLE THERMOSTAT MODEL T8621D, 2 HEAT/2 COOL 7 DAY OR APPROVED EQUAL. REMOTE TEMPERATURE SENSOR SHALL BE AS PER MANUFACTURERS RECOMMENDATIONS.
- SURFACE WALL MOUNTED REMOTE TEMPERATURE SENSOR WIRED TO CORRESPONDING AHU THERMOSTAT. MOUNT 5'-0" ABOVE FINISHED FLOOR.
- 12"ø OUTSIDE AIR DUCT UP THRU ROOF TO ROOF CAP.
- CATWALK ABOVE CEILING FOR AHO SERVICE ACCESS.
- 22X10 POSITIVE PRESSURE RELIEF DAMPER SHALL BE A TITS MODEL 55FL PROVIDE PRESSURE RELIEF REGISTER WITH A BACK DRAFT DAMPER WITH AIR FLOW TOWARDS CEILING SPACE. 22X10 PRESSURE RELIEF DUCT SHALL ROUT FROM REGISTER THROUGH CEILING SPACE TO ROOF CAP.
- 10"ø OUTSIDE AIR DUCT UP THROUGH ROOF TO ROOF CAP.
- PULL DOWN STAIR FOR CEILING ACCESS TO AHU'S. REFER TO ARCHITECTURAL PLANS FOR DETAILS.
- SUPPLY DIFFUSER SHALL BE MOUNTED SO AS TO PRODUCE AIR FLOW INTO SPACE BELOW STAIR/BAPTISTRY PLATFORM.
- REFRIGERANT PIPING SHALL ROUTE UP IN EXTERIOR WALL TO ATTIC SPACE. OFFSET IN ATTIC TO CORRESPONDING AHU. ALL REFRIGERANT PIPING SHALL BE SIZED AS PER MANUFACTURERS RECOMMENDATIONS BASED ON THE FINAL LENGTH OF REFRIGERANT RUNS. CONTRACTOR SHALL ROUTE ALL REFRIGERANT PIPING SO AS TO MAINTAIN THE SHORTEST POSSIBLE RUN OF PIPE.
- WALL MOUNTED ELECTRIC HEATER SHALL BE A "QMARK" GRANGER STOCK NO. 3UG14, 2.0 KW, 8.3 AMPS, 240V/1ø.
- CONTRACTOR SHALL PROVIDE AN ELBOW ABOVE CEILING PEEK TO TURN DUCT DOWN OTHER SIDE OF PEEK IN CEILING SPACE.

HVAC SYMBOLS LEGEND

- ⊙ REMOTE TEMPERATURE SENSOR
- ⊙ THERMOSTAT
- ⊙ EXHAUST FAN
- 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



1 FLOOR PLAN - MECHANICAL
SCALE: 1/8"=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 ADDITION 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 SUPPLY AND RETURN AIR DUCTWORK SHALL BE GALVANIZED SHEET STEEL EXTERNALLY WRAPPED WITH 1" INSULATION WITH A 4.2 R VALUE OR HIGHER.
- 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 TITUS, METALAIR, AIRGUIDE. PROVIDE OPPOSED BLADE DAMPERS AT ALL DIFFUSERS AND REGISTERS.
- REFER TO SPECIFIC MECHANICAL NOTES ON SHEET M-1 FOR THERMOSTAT SPECIFICATIONS AND LOCATIONS.
- 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 TEE'S 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.
- PROVIDE TYPE "B" FIRE DAMPERS IN ALL DUCTS OR OPENINGS PENETRATING FIRE RATED WALLS, MECHANICAL AND ELECTRICAL EQUIPMENT ROOMS, TENANT SEPARATION, PARTITIONS, FLOOR OR ROOF SLABS AND AT O/A INTAKES. PROVIDE RADIATION RADIATION DAMPERS IN RATED CEILINGS FOR ALL CEILING OPENINGS, CEILING FANS, DIFFUSERS OR GRILLES RATED FOR USE IN THE CEILING ASSEMBLY.
- 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.
- NO COMBUSTIBLE MATERIALS ARE ALLOWED IN RETURN AIR PLENUMS OR ABOVE CEILING USED AS RETURN AIR PLENUM. IF SPACE WITH RETURN AIR PLENUM HAS ANY DECK TO DECK PARTITIONS, AIR TRANSFER DUCTS MUST BE INSTALLED.
- REFER TO PLUMBING PLANS FOR ALL CONDENSATE PIPING.
- IF PROJECT IS A REMODEL OF AN EXISTING BUILDING, THE CONTRACTOR SHALL VISIT JOB SITE PRIOR TO CONSTRUCTION AND COORDINATE ALL EXISTING FIELD CONDITIONS. ARCHITECT AND/OR ENGINEER SHALL BE NOTIFIED OF ANY DISCREPANCIES.
- CONTRACTOR SHALL INSTALL ALL OUTDOOR EQUIPMENT TO WITHSTAND A SUSTAINED 120 MPH WIND WITH A GUST FACTOR OF 30%. PROVIDE A LISTED PRE-ENGINEERED ASSEMBLY, OR THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE CERTIFICATION OF ROOF MOUNTING.
- PROVIDE ALL NECESSARY CONTRACTORS, 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 THE PROPER INSTALLATION AND OPERATION OF THE SYSTEMS, AND WITHIN THE INTENT OF THE CONTRACT DOCUMENTS.
- IT IS THE INTENT OF THE PLANS AND SPECIFICATIONS TO FORM A GUIDE FOR A COMPLETE INSTALLATION NECESSARY FOR THE COMPLETION AND SUCCESSFUL OPERATION OF THE WORK, WHETHER OR NOT HEREBY SPECIFIED OR INDICATED ON THE DRAWINGS SHALL BE FURNISHED AND INSTALLED AS WELL AND AS FAITHFULLY AS IF SO SPECIFIED OR INDICATED WITHOUT ADDITIONAL COST TO THE TENANT. THE MECHANICAL CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND LENGTHS PRIOR TO INSTALLATION.
- 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 OR AFTER CONSTRUCTION AND 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.

OUTSIDE AIR CALCULATIONS

THE FOLLOWING IS BASED ON ASHRAE STANDARD 62 FOR OUTSIDE AIR REQUIREMENTS. OUTDOOR AIR REQUIREMENTS ARE BASED ON "LOBBY" CATEGORY = 30 PEOPLE PER 1,000 SQ. FT. & 15 CFM PER PERSON

FOYER	AREA SERVED (SQ. FT.)	ESTIMATED MAX. OCCUPANCY	OUTSIDE AIR REQUIRED (CFM)
FOYER	1,130	1,130 / 1000 X 30 = 34	34 X 15 = 510/2=255

OUTSIDE AIR CALCULATIONS

THE FOLLOWING IS BASED ON ASHRAE STANDARD 62 FOR OUTSIDE AIR REQUIREMENTS. OUTDOOR AIR REQUIREMENTS ARE BASED ON "TOILET ROOM" CATEGORY = 50 CFM PER PERSON SANCTUARY OCCUPANCY AS PER ARCHITECTURAL PLANS 488 PEOPLE.

AREA	AREA SERVED (SQ. FT.)	ESTIMATED MAX. OCCUPANCY	OUTSIDE AIR REQUIRED (CFM)
SANCTUARY	5,476	5,476 / 1000 X - = -	50 X 15 = 8,100/2=4,050

OUTSIDE AIR CALCULATIONS

THE FOLLOWING IS BASED ON ASHRAE STANDARD 62 FOR OUTSIDE AIR REQUIREMENTS. OUTDOOR AIR REQUIREMENTS ARE BASED ON "TOILET ROOM" CATEGORY = 50 CFM PER TOILET/URNAL.

AREA	AREA SERVED (SQ. FT.)	ESTIMATED MAX. OCCUPANCY	OUTSIDE AIR REQUIRED (CFM)
TOILETS	302	- / 1000 X - = -	10 X 50 = 500/2=250

OUTSIDE AIR CALCULATIONS

THE FOLLOWING IS BASED ON ASHRAE STANDARD 62 FOR OUTSIDE AIR REQUIREMENTS. OUTDOOR AIR REQUIREMENTS ARE BASED ON "STAGE" CATEGORY = 70 PEOPLE PER 1,000 SQ. FT. 15 CFM PER PERSON

AREA	AREA SERVED (SQ. FT.)	ESTIMATED MAX. OCCUPANCY	OUTSIDE AIR REQUIRED (CFM)
STAGE	1,550	1,550 / 1000 X 50 = 77	77 X 15 = 1,155/2=577

* 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.

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 Z6	90	.125"	CEILING MOUNTED	50 WATTS	OPEN DRIP PROOF	1055	115V/1Ø	1
EF-2	CABINET FAN - REFER TO PLANS	PENN ZEPHYR Z10S	450	.125"	CEILING MOUNTED	243 WATTS	OPEN DRIP PROOF	1050	115V/1Ø	1

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

AIR COOLED HEAT PUMP SCHEDULE

HEAT PUMP						AIR HANDLING UNIT						INTEGRATED ELECTRIC HEATING										
CU LABEL(S)	MANUFACTURER & MODEL NO.	TOTAL CAPACITY COOLING	SENSIBLE CAPACITY COOLING	TOTAL CAPACITY HEATING	COMP. RLA	FAN FLA	VOLTAGE	MOCP	EER/SEER	WEIGHT	AHU LABEL(S)	MANUFACTURER & MODEL NO.	TOTAL CFM	O/A CFM	E.S.P. BLOWER SPEED	FAN HP	VOLTAGE	WEIGHT	HEATER KW	VOLTAGE	NOTES	
CU #1	CARRIER 38AQS-012--501	113,000	87,000	111,000	43.6	(2) @ 4.3	208V/3Ø	100A	8.9	750 lbs.	AHU #1	CARRIER 40RMO-012-B501	4,000	1,000	0.4"	766	2 HP	208V/3Ø	427 lbs.	24.8 KW	208V/3Ø	1 THRU 6
CU #2	CARRIER 38AQS-012--501	113,000	87,000	111,000	43.6	(2) @ 4.3	208V/3Ø	100A	8.9	750 lbs.	AHU #2	CARRIER 40RMO-012-B501	4,000	1,000	0.4"	766	2 HP	208V/3Ø	427 lbs.	24.8 KW	208V/3Ø	1 THRU 6
CU #3	CARRIER 38AQS-012--501	113,000	87,000	111,000	43.6	(2) @ 4.3	208V/3Ø	100A	8.9	750 lbs.	AHU #3	CARRIER 40RMO-012-B501	4,000	1,000	0.4"	766	2 HP	208V/3Ø	427 lbs.	24.8 KW	208V/3Ø	1 THRU 6
CU #4	CARRIER 38AQS-012--501	113,000	87,000	111,000	43.6	(2) @ 4.3	208V/3Ø	100A	8.9	750 lbs.	AHU #4	CARRIER 40RMO-012-B501	4,000	1,000	0.4"	766	2 HP	208V/3Ø	427 lbs.	24.8 KW	208V/3Ø	1 THRU 6
CU #5	CARRIER 38AQS-008--501	89,000	67,400	83,000	31.5	3.1	208V/3Ø	50A	9.8	540 lbs.	AHU #5	CARRIER 40RMO-008-B501	2,600	500	0.4"	645	1 HP	208V/3Ø	385 lbs.	18.7 KW	208V/3Ø	1 THRU 6
CU #6	CARRIER 38AQS-008--501	89,000	67,400	83,000	31.5	3.1	208V/3Ø	50A	9.8	540 lbs.	AHU #6	CARRIER 40RMO-008-B501	3,050	575	0.4"	645	1 HP	208V/3Ø	385 lbs.	18.7 KW	208V/3Ø	1 THRU 6

- 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

MOCP - MAX. OVERCURRENT PROTECTION (DUAL ELEMENT TYPE FUSE)
 E.S.P. - EXTERNAL STATIC PRESSURE
 EER - ENERGY EFFICIENCY RATIO
 SEER - SEASONAL ENERGY EFF. RATIO

- SPECIFIC NOTES:
- SIZE AND RUN REFRIGERANT PIPING AS PER MANUFACTURERS PUBLISHED RECOMMENDATIONS.
 - INSULATE REFRIGERANT SUCTION LINE WITH 3/4" ARMAFLEX OR APPROVED EQUAL.
 - INSTALL FILTER DRYER AND STRAINER IN REFRIGERANT LIQUID LINE.
 - PROVIDE FIELD INSTALLED ACCESSORIES, AND 5 MINUTE TIME DELAY SWITCH.
 - PROVIDE 5 YEAR WARRANTY ON COMPRESSOR AND 1 YEAR WARRANTY ON ALL PARTS AND LABOR.
 - PROVIDE SINGLE POINT POWER CONNECTION WITH INTEGRAL OVERCURRENT PROTECTION DEVICE.

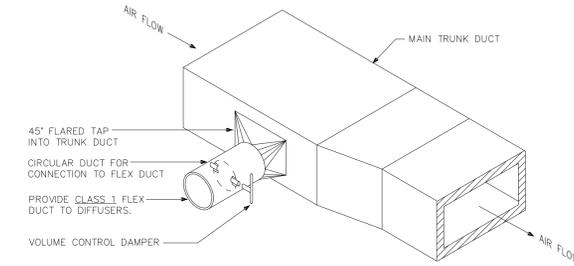
SEQUENCE OF OPERATION FOR HEATING

FIRST STAGE
 WHEN THE THERMOSTAT CALLS FOR HEATING, THE INDOOR FAN MOTOR, OUTDOOR FAN MOTORS AND THE COMPRESSOR (FULLY LOADED) ARE ENERGIZED. THE REVERSING VALVE SOLENOID IS ENERGIZED IN THE HEATING MODE.

SECOND STAGE
 IF ADDITIONAL HEAT IS REQUIRED, THE ELECTRIC HEAT SHALL BE ENERGIZED.

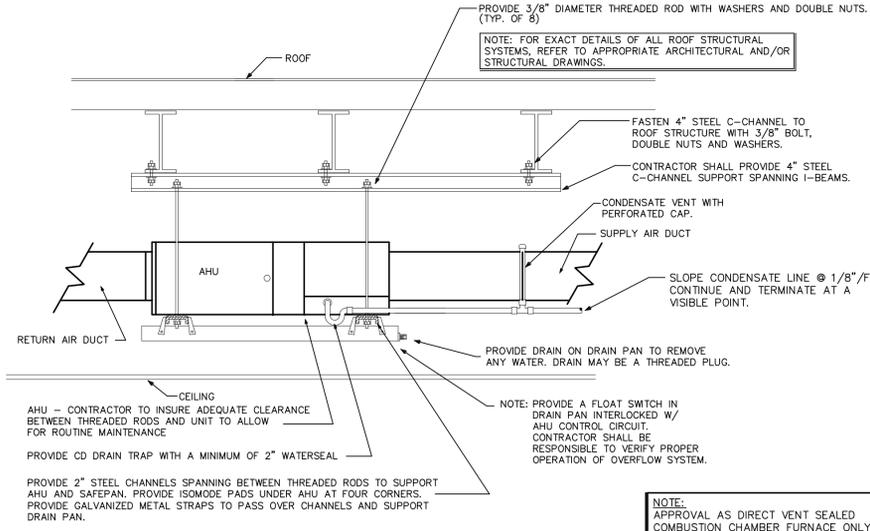
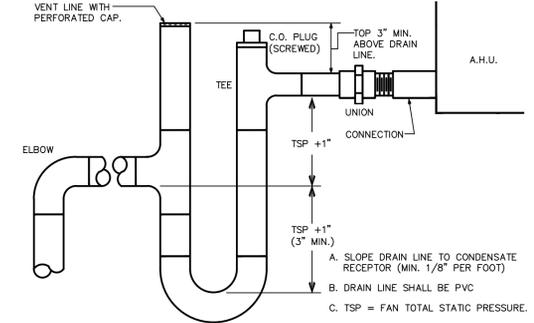
1 BRANCH DUCT DETAIL

NO SCALE



2 CONDENSATE P-TRAP DETAIL

NOT TO SCALE



3 AIR HANDLING UNIT MOUNTING DETAIL

NO SCALE

MECHANICAL SYSTEMS, SERVICE SYSTEMS, AND EQUIPMENT METHOD OF COMPLIANCE:

Prescriptive [] Performance [X] Energy Cost Budget []

Exterior Design Conditions

- winter dry bulb 20° F
- summer dry bulb 97° F

Interior Design Conditions

- winter dry bulb 68° F
- summer dry bulb 74° F
- relative humidity 52.9%

Building Heating Load 466,215 BTU

Building Cooling Load 831,000 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)

- unitary REFER TO EQUIPMENT SCHEDULES ON THIS SHEET.
- 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 ASHRAE Standard 90.1-1989.

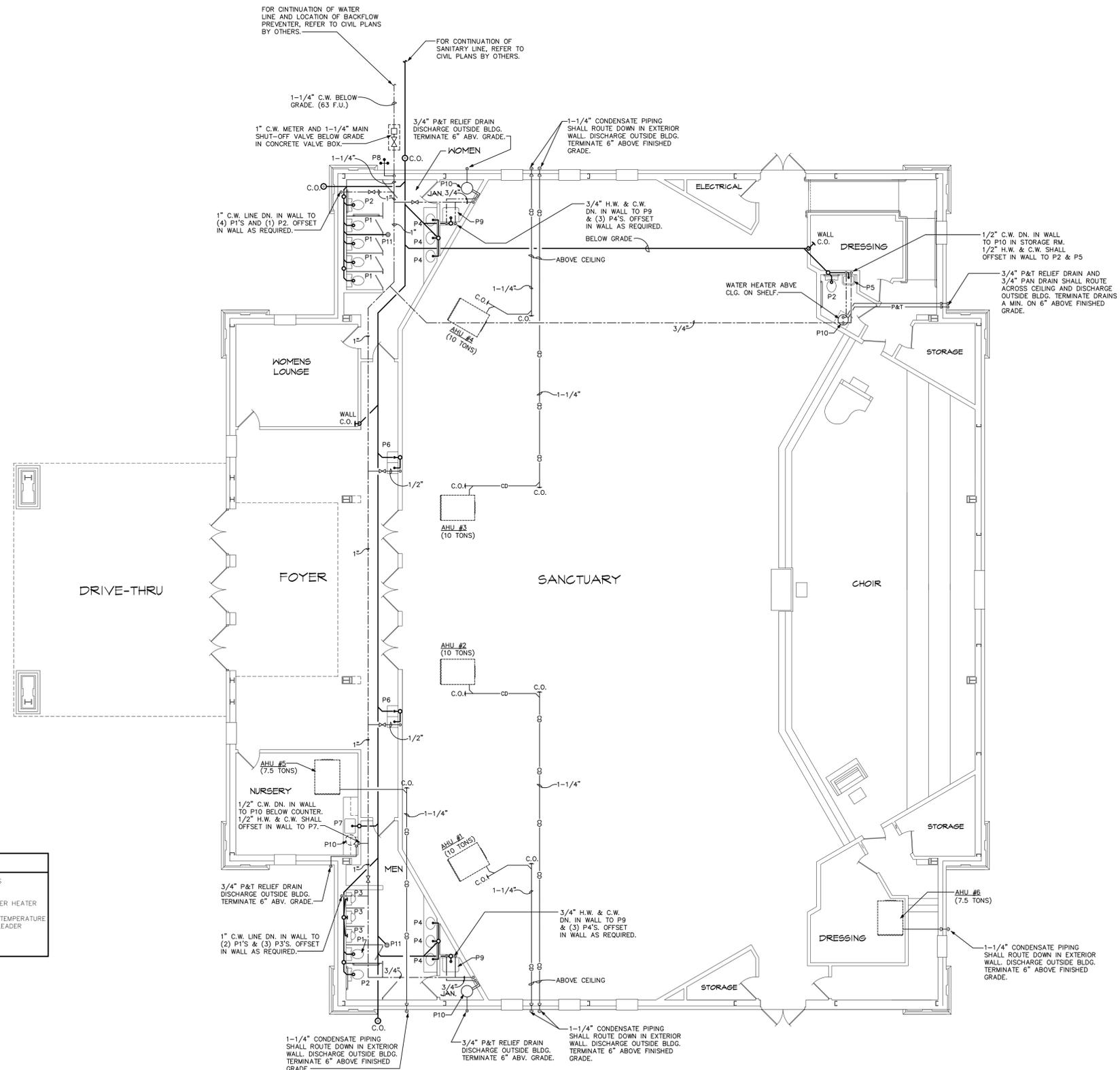
SIGNED: _____

NAME: TODD W. CAREY

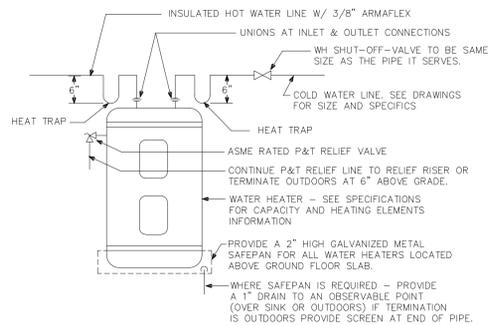
TITLE: ENGINEER

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
	SAFEPAN LINE
	FIRE SPRINKLER HEAD
	PIPE TURN UP
	PIPE TURN DOWN
	P-TRAP

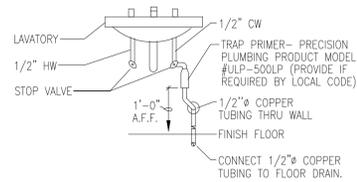
PLUMBING ABBREVIATION LEGEND			
DN.	DOWN	C.C.	CENTER TO CENTER
EXT.	EXTERIOR	N.T.S.	NOT TO SCALE
F.D.	FLOOR DRAIN	MFR.	MANUFACTURER
F.F.	FINISH FLOOR	S.O.V.	SHUT OFF VALVE
A.F.F.	ABOVE FINISH FLOOR	W.C.	WATER CLOSET
V.T.R.	VENT THRU ROOF	LAV.	LABORATORY
TYP.	TYPICAL	SK.	SINK
R.D.	ROOF DRAIN	D.W.	DISH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



1 FLOOR PLAN - PLUMBING
 SCALE: 1/8"=1'-0"
 NORTH



2 WATER HEATER DETAIL
NO SCALE



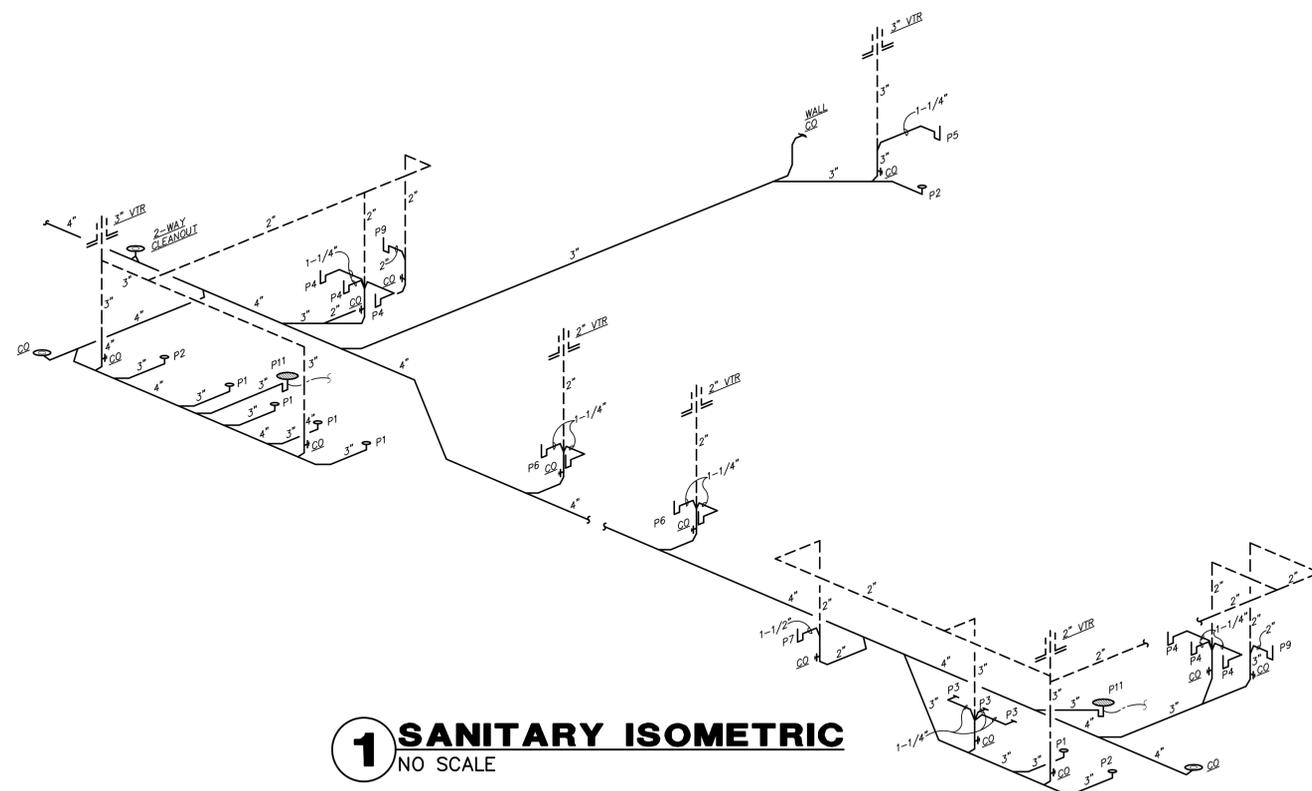
3 TRAP PRIMER DETAIL
NO SCALE

PLUMBING FIXTURE SCHEDULE

- P-1 (WATER CLOSET)
SHALL BE AN AMERICAN STANDARD MODEL NEW CADET MODEL 2798.012 ELONGATED 1.6 GPF, VITREOUS CHINA, SIPHON ACTION BOWL, COUPLER-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 ADA MODEL 2998.012 16-1/2" HIGH, 1.6 GPF, VITREOUS CHINA, SIPHON ACTION BOWL, COUPLER-TANK, SPEED CONNECT TANK/BOWL COUPLING SYSTEM TOILET AND AN OLSONITE # 95 OPEN FRONT SEAT LESS COVER.
 - P-3 (URINAL)
SHALL BE AN AMERICAN STANDARD ALLBROOK MODEL 6541.132. FLUSH VALVE SHALL BE SLOAN ROYAL MODEL 180-YB.
 - P-4 (HANDICAPPED COUNTER TOP LAVATORY)
SHALL BE AN AMERICAN STANDARD MODEL RONALYN MODEL 0490.011 VITREOUS CHINA SELF-RIMMING, FAUCET SHALL BE A MONTTERRY 5502.170 W/4" WRIST BLADE HANDLES. PROVIDE 0.5 GPM FLOW RESTRICTOR.
 - P-5 (HANDICAPPED WALL HUNG TOP LAVATORY)
SHALL BE AN AMERICAN STANDARD MODEL COMRADE MODEL 0124.131 VITREOUS CHINA SELF-RIMMING STYLE CLASSIC ROUND SHAPE. FAUCET SHALL BE A MONTTERRY MODEL 5502.170 W/4" WRIST BLAD HANDLES. PROVIDE 0.5 GPM FLOW RESTRICTOR.
 - P-6 (HANDICAPPED ELECTRIC WATER COOLER COMBINATION H/L/O)
SHAL BE AN OASIS SPLIT LEVEL MODEL P8AMSL, 7.8 GPM, 5.0 FLA AT 120 VOLT WITH A 1/8 HP COMPRESSOR.
 - P-7 (SINGLE BOWL SINK)
SHALL BE AN ELKAY LUSTERTONE MODEL DLH-2222-10-C SINGLE BOWL STAINLESS STEEL SELF-RIMMING SINK WITH LK2432 HI-ARC FAUCET TO INCLUDE AN OMNI PRESSURE COMPENSATING 2.0 GPM FLOW RESTRICTOR.
 - P-8 (HOSE BIBB, NON-FREEZE)
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 BREAKERM BACKFLOW PREVENTER AND PRESSURE RELIEF VALVE.
 - P-9 (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-10 - (JUNIOR WATER HEATER)
WATER HEATER SHALL BE A LOCHINVAR MODEL JRC006E, 6 GALLON GLASSLINED STORAGE TANK, JUNIOR TYPE WATER HEATER WITH (1) - 1.5 KW ELECTRIC ELEMENT AT 115 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-11 (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, WEAPHOLES, BOTTOM OUTLET, INSIDE CAULK CONNECTION AND ADJUSTABLE SATIN NIKALOY ROUND SUPER-FLO STRAINER.
- 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.
 - 4.) ALL PLUMBING FIXTURES SHALL COMPLY WITH SFBC TABLE 46-R2.

GENERAL PLUMBING NOTES

1. 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.
2. All work and materials shall comply with the latest edition of the National, State, and all local codes and Ordinances having jurisdiction.
3. 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.
4. All material shall be new.
5. 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.
6. All required insurance shall be provided for protection against public liability or property damage for the duration of the work.
7. The plumbing contractor shall secure and pay all permit fees, inspections, and tests.
8. All work shall be coordinated with other trades to avoid interference with the progress of construction.
9. 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.
10. Verify location, size and inverts of all existing utilities prior to start of construction. Advise architect/engineer of any discrepancies.
11. All fixtures shall be provided with readily accessible stops.
12. Water piping shall be type "L" copper for up to and including 2" and shall be type "K" for 2 1/2" and larger.
13. 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.
14. 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.
15. Furnish and install approved air chambers at each plumbing fixture and PDI approved shock arresters on main lines and risers.
16. Provide chrome plated combination covered plate and cleanout plug for all wall cleanouts, Josam 58890.
17. Insulate lines as follows:
a) Hot & Cold water supply and return: 1" thick fiberglass.
b) Condensate piping: 1/2" thick armaflec preformed.



1 SANITARY ISOMETRIC
NO SCALE

ELECTRICAL SYMBOLS LEGEND		NOTE - NOT ALL SYMBOLS MAY BE USED ON PROJECT	
SYMBOLS	DESCRIPTION	SYMBOLS	DESCRIPTION
	DUPLEX RECEPTACLE, MTD. +18" AFF		TRANSFORMER - SIZE AS NOTED
	240 VOLT RECEPTACLE (HT. AS REQ.)		PANEL - SIZE AS NOTED
	QUADRUPLUX 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		CKT. HOMERUN (B INDICATES PANEL, "2" DESIGNATES CIRCUIT NUMBER)
	MANUAL STARTER SWITCH		EXIT SIGN: ONE SIDED, OR TWO SIDED
	DIMMER SWITCH		EMERGENCY LIGHTING
	SWITCH W/ ILLUMINATION WHEN ON		RECESSED MOUNTED LIGHTING FIXTURE
	JUNCTION BOX		HIGHBAY HID LIGHTING FIXTURE
	TELEPHONE JACK		FLUORESCENT LIGHTING FIXTURE
	COMPUTER DATA TERMINAL OUTLET		FLUORESCENT LIGHTING NIGHT LIGHT
	DISCONNECT SWITCH W/ STARTER		FLUORESCENT STRIP LIGHTING FIXTURE
	DISCONNECT SWITCH		ISOLATED GROUND
	FLR. MTD. FLUSH DUPLEX RECEPTACLE		WEATHER-PROOF
	FLR. MTD. FLUSH QUAD. RECEPTACLE		BELOW COUNTER
	FLR. MTD. FLUSH TELEPHONE JACK		BELOW FINISH GRADE
	FLR. MTD. FLUSH COMPUTER TERMINAL		GROUND FAULT INTERRUPTER
	SMOKE DETECTOR		ABOVE FINISHED FLOOR
	HEAT DETECTOR		ELECTRIC WATER COOLER
	DUCT SMOKE DETECTOR		ABOVE SHOW WINDOW
	MANUAL PULL STATION		BELOW SHOW WINDOW
	HORN WITH STROBE LIGHT, MTD. +80"		FIRE ALARM CONTROL PANEL
	STROBE LIGHT ONLY, MTD. +80"		FIRE ALARM ANNUNCIATOR PANEL

ELECTRICAL SYSTEM AND EQUIPMENT

METHOD OF COMPLIANCE

PRESCRIPTIVE PERFORMANCE ENERGY COST BUDGET

PROVIDE A STANDARD RISK DIAGRAM WHICH INDICATES DESIGNATED POINTS FOR CHECK METERS. PROVIDE A STANDARD PANEL SCHEDULE DESCRIPTION WHICH IDENTIFIES DIFFERENT ENDOUSE 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 L-1 VS. L-2
 TOTAL EXTERIOR WATTAGE SPECIFIED VS. ALLOWED N/A

EQUIPMENT SCHEDULES WITH MOTORS (NOT USED FOR MECHANICAL SYSTEMS)

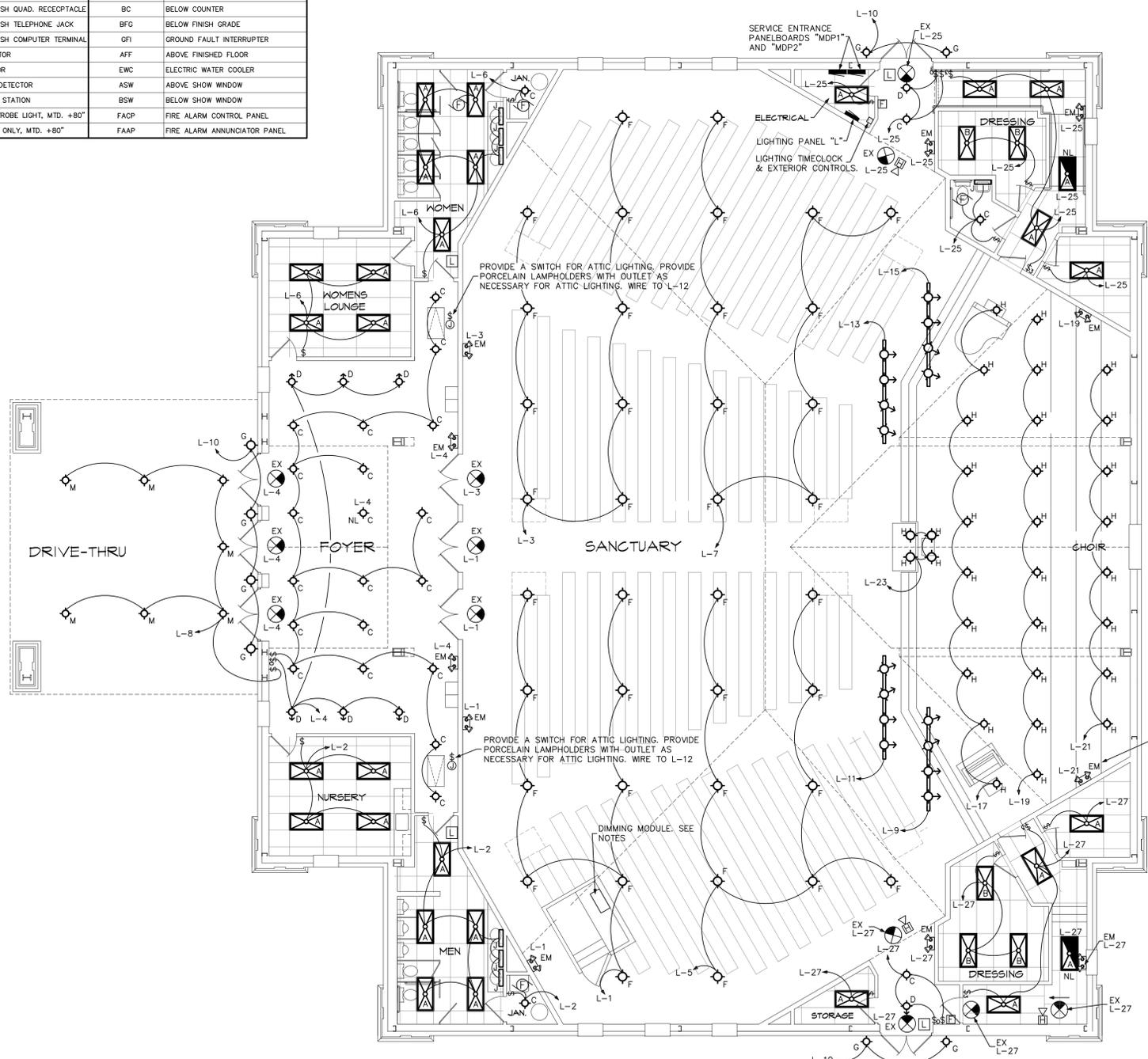
MOTOR HORSEPOWER N/A
 NUMBER OF PHASES N/A
 MINIMUM EFFICIENCY N/A
 MOTOR TYPE N/A
 NUMBER OF POLES N/A

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.

OWNER: _____
 NAME: TODD W. CAREY, P.E.
 TITLE: NORTH CAROLINA PROFESSIONAL ENGINEER #0079

LIGHTING FIXTURE SCHEDULE							
LABEL	TYPE OF FIXTURE	FINISH	LENS TYPE	VOLTAGE	LAMP	MANUFACTURER & MODEL NO.	REMARKS
A	RECESSED 2'X4' TROFFER	WHITE	PRISMATIC	120	(2) 32W T8	LITHONIA 2SP-G-232-FW-A12-120	W/ ELECTRONIC BALLAST OPTION
B	RECESSED 2'X4' TROFFER	WHITE	PRISMATIC	120	(4) 32W T8	LITHONIA 2SP-G-432-FW-A12-120	W/ ELECTRONIC BALLAST OPTION
C	RECESSED FLUOR DN LT	WHITE		120	(2) 26WDTT	LITHONIA LF6-2/26DIT-120-GE10	W/ BLACK BAFFLE #F6B3
D	W.W. RECESSED INCANDESCENT	WHITE		120	(1) 90W PAR38	LIGHTOLIER 1100IC/1123	
EM	WALL MTD EMERG EGRESS	WHITE		120	INCLUDED	LITHONIA ELM2	W/ NICAD BATTER BACKUP
EMR	RECESSED EMERG. EGRESS	WHITE		120	INCLUDED	LITHONIA ELR2 DS N	W/ NICAD BATTERY BACKUP
EX	EXIT SIGN	WHITE	RED	120	INCLUDED	LITHONIA F2RE S W 2 R 120 ELN	W/ NICAD BATTERY BACKUP
F	PENDENT INCANDESCENT	BRASS		120	(1) 150W PAR38	OWNER SELECTED	COORDINATE WITH OWNER
G	EXTERIOR SECURITY LIGHT	BRONZE	POLYCARBONATE	120	(1) 100W MH	LITHONIA TWP100M-120	VANDAL RESISTANT LENS
H	INCANDESCENT DOWNLIGHT	WHITE		120	(1) 75W PAR38FL	LIGHTOLIER 1100IC/1131CL	
J	FLUORESCENT WALL LIGHT	WHITE	PRISMATIC	120	(2) 17W T8	LITHONIA WC-217-A12-120	
K	8' FLUORESCENT STRIP	WHITE		120	(2) 75W T8	LITHONIA C296-120-GE8	W/ ELECTRONIC BALLAST
L	8' TRACK LIGHTING	WHITE		120	(4) 150W PAR 38	OWNER SELECTED	COORDINATE WITH OWNER
M	RECESSED HID	WHITE	FLAT FRESNEL	120	(1) 100W MH	LITHONIA LGH-100M-75B-FFL-120	WET LOCATION LISTED



NOTE PROVIDE A DIMMING MODULE IN SOUND CONTROL BOOTH TO CONTROL ALL LIGHTING IN SANCTUARY AND STAGE. EACH CIRCUIT SHALL WIRE WIRED THRU AND APPROPRIATELY SIZED DIMMING MODULE FOR LIGHTING CONTROL.

1 FLOOR PLAN - LIGHTING
 SCALE: 1/8"=1'-0"

