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GAI PROJECT NO.	2019.08
DISTRIBUTION	
ISSUE DESCRIPTION	DATE
80% COORDINATION	2020 02 28
100% CONSTRUCTION	2020 03 16

M0.1

FOR CONSTRUCTION

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MECHANICAL NOTES:

GENERAL:

1. VERIFY" SHALL MEAN CHECK CONDITIONS ON SITE AGAINST DRAWINGS AND SPECIFICATION AND ADJUST WORK TO MATCH EXISTING. OBTAIN RULING FROM OWNER ON ANY ITEMS REQUIRING CLARIFICATION.
2. PROVIDE A COMPLETE FUNCTIONAL HVAC SYSTEM WITH ALL ACCESSORIES REQUIRED FOR PROPER OPERATION ALL IN ACCORDANCE WITH THE APPLICABLE STATE AND LOCAL AUTHORITY CODES, LAWS & ORDINANCES AND STATE AND LOCAL AUTHORITY ACCESSIBILITY LAWS AND ORDINANCES.
3. THE SYSTEMS SHALL BE FREE FROM ANY OBJECTIONABLE NOISES AND VIBRATIONS.
4. ALL MECHANICAL WORK & EQUIPMENT SHALL CONFORM TO THE CURRENT REQUIREMENTS OF ALL AUTHORITIES HAVING JURISDICTION. MECHANICAL WORK SHALL COMPLY WITH THE CURRENT EDITION OF THE INTERNATIONAL MECHANICAL CODE, STATE & LOCAL AMENDMENTS, NFPA-54, NFPA-90A, SMACNA & ASHRAE GUIDELINES.
5. CONTRACTOR SHALL SECURE ALL PERMITS, INSPECTION CERTIFICATES, AUTHORITY APPROVALS AND PAY ALL RELATED FEES AND CHARGES.
6. ALL NEW MECHANICAL EQUIPMENT AND SYSTEMS SHALL BE GUARANTEED FOR A PERIOD OF ONE YEAR AFTER ACCEPTANCE BY THE OWNER. COMPRESSORS SHALL HAVE AN EXTENDED 4 YEAR COMPRESSOR (ONLY) WARRANTY.
7. THE CONTRACTOR SHALL CONFIRM AND ENSURE THAT ALL MECHANICAL WORK CONFORMS TO THE CURRENT REQUIREMENTS OF THE LOCAL BUILDING INSPECTION DEPARTMENT.
8. ALL MECHANICAL EQUIPMENT AND MATERIALS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS AND RECOMMENDATIONS.
9. THE CONTRACTOR SHALL PREPARE DUCT CONSTRUCTION SHOP DRAWINGS, TO SCALE, (MIN. SCALE 1/4" = 1 FT). SUBMIT TO THE OWNER FOR REVIEW PRIOR TO FABRICATION AND INSTALLATION. DUCT SHOP DRAWINGS SHALL BE UPDATED, DURING CONSTRUCTION, TO SHOW ANY CHANGES MADE DURING CONSTRUCTION AND SUBMITTED TO THE OWNER AT THE END OF THE PROJECT FOR "AS-BUILT" RECORD.
10. THE MECHANICAL (SUB)CONTRACTOR SHALL COORDINATE THE SPACE REQUIREMENTS FOR ALL MECHANICAL EQUIPMENT AND DUCTWORK WITH THE GENERAL CONTRACTOR. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR ORDERING AND FABRICATION OF STRUCTURAL ELEMENTS, INCLUDING ROOF TRUSSES, TO SUIT THE PROPOSED ROUTING OF THE DUCTWORK AND LOCATION OF EQUIPMENT. PROVIDE ADEQUATE CLEARANCES AROUND, AND ACCESS TO, ALL EQUIPMENT FOR MAINTENANCE.
11. WALL, FLOOR OR CEILING SURFACES DISTURBED DURING THE COURSE OF THE MECHANICAL WORK SHALL BE REPAIRED TO MATCH NEW &/OR EXISTING SURROUNDING CONDITIONS.
12. REFER TO ARCHITECT'S REFLECTED CEILING PLANS FOR LOCATION OF LIGHTS AND OTHER CEILING MOUNTED DEVICES. COORDINATE AIR DISTRIBUTION DEVICES WITH THIS REFLECTED CEILING PLAN. IF A PARTICULAR ITEM CANNOT BE LOCATED APPROXIMATELY AS SHOWN ON THE HVAC LAYOUT THE CONTRACTOR SHALL PREPARE A DRAWING SHOWING A PROPOSED LOCATION AND SHALL SUBMIT IT TO THE OWNER FOR APPROVAL.
13. COORDINATE THE INSTALLATION OF THE DUCTWORK, EQUIPMENT, PIPING, ETC., TO FIT WITHIN THE SPACE ALLOWED BY THE ARCHITECTURAL & STRUCTURAL CONDITIONS. CUTTING OR ALTERING ANY STRUCTURAL MEMBER SHALL NOT BE PERMITTED.
14. DO NOT SCALE DRAWINGS. THE CONTRACTOR SHALL VERIFY ALL SIZES, MATERIALS, TEMPERATURES AND PRESSURES BEFORE ORDERING OR FABRICATION OF ANY MATERIALS.
15. WHERE DUCT OR PIPE SECTION SIZE IS NOT INDICATED, IT SHALL BE THE SAME SIZE AS THE LAST SIZED UPSTREAM SECTION.
16. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SAFETY OF OWN PERSONNEL EMPLOYED ON THIS PROJECT AND IN PARTICULAR WHEN WORKING IN CONFINED SPACES AND SHALL COMPLY WITH OSHA REQUIREMENTS.
17. PIPING, CONDUITS, CABLES, ETC. SHALL BE RUN NEATLY, PARALLEL TO NEW PIPING AND TO BUILDING (WALLS, FLOOR).
18. THE SCHEDULED 'BASIS OF DESIGN' IS INTENDED TO INDICATE THE PERFORMANCE REQUIRED FOR THE PARTICULAR ITEM OF EQUIPMENT. SUBSTITUTIONS WILL BE PERMITTED. SUBSTITUTIONS SHALL BE DEEMED TO INCLUDE ALL ASSOCIATED CHANGES TO BUILDING, STRUCTURE & OTHER SERVICES WITHOUT ANY ADDITIONAL COST TO THE OWNER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THAT SUBSTITUTIONS SHALL FIT INTO THE SPACE AVAILABLE WITH PROVISIONS FOR PROPER ACCESS, MAINTENANCE, PARTS REPLACEMENT, WEIGHT ALLOWANCE & FOR COORDINATION WITH OTHER TRADES (INCLUDING ELECTRICAL, PLUMBING, STRUCTURAL AND ARCHITECTURAL).
19. MANUFACTURER CATALOG SHOP DRAWINGS SUBMITTED SHALL BE MARKED TO INDICATE PROJECT SPECIFIC INFORMATION. FULL MODEL NUMBERS; IDENTIFY AND HIGHLIGHT SCHEDULED ITEM CAPACITIES; HIGHLIGHT INCLUDED OPTIONS AND EDIT OUT THOSE THAT ARE NOT PROVIDED; CLEARLY IDENTIFY DEVIATIONS FROM SPECIFIED AND SCHEDULED CAPACITIES.
20. THE FACTORY TRAINED AND CERTIFIED BY THE MANUFACTURER OF THE HVAC EQUIPMENT PROVIDED SHALL PERFORM PRE START-UP CHECKS AND SHALL SUBMIT A REPORT TO THE OWNER ON EACH AIR HANDLING UNIT, RTU AND SPLIT SYSTEM. THIS REPORT SHALL INCLUDE CERTIFICATION, IN WRITING, THAT EQUIPMENT IS CORRECTLY INSTALLED, INCLUDING PROPER DRAINAGE FROM DRAIN PANS AND SEALING OF ALL AIR LEAKS, ELECTRICAL CONNECTIONS AND TERMINALS TIGHTNESS, INDOOR FILTER ARE CLEAN, IN PLACE AND EASILY REPLACEABLE, FANS AND COMPRESSORS ROTATE CORRECTLY, ELECTRICAL AMP DRAWS SHALL BE RECORDED AND CERTIFIED WITHIN MANUFACTURERS RECOMMENDED LIMITS, REFRIGERANT SUCTION AND DISCHARGE PRESSURES FOR ALL CIRCUITS WITH STATEMENT THAT SYSTEMS ARE CORRECTLY CHARGED.

ELECTRICAL/CONTROLS:

21. THE CONTRACTOR SHALL VERIFY THE ELECTRICAL SUPPLY VOLTAGES AND PHASES ON THE ELECTRICAL PLANS AND ON SITE BEFORE ORDERING ANY ELECTRICALLY OPERATED EQUIPMENT. ALL MECHANICAL EQUIPMENT REQUIRING ELECTRICAL POWER SHALL BE PROVIDED & INSTALLED WITH SUITABLY PROTECTED AND RATED DISCONNECT SWITCHES.
22. MOUNT THERMOSTATS AS INDICATED ON PLANS 48" A.F.F. UNLESS OTHERWISE NOTED OR AS REQUIRED FOR ACCESSIBILITY CODE COMPLIANCE. COORDINATE LOCATION OF THERMOSTATS WITH CABINETY AND OTHER SERVICES. THE THERMOSTATS SHALL NOT BE INSTALLED ON OUTSIDE WALLS, IN THE DIRECT AIR STREAM FROM ANY DIFFUSER OR WHERE IT MAY BE INFLUENCED BY HEAT GIVEN OFF FROM EQUIPMENT.
23. ALL CONTROL WIRING & TRANSFORMERS SHALL BE SUPPLIED UNDER THE MECHANICAL CONTRACT. ALL MECHANICAL CONTROLS SHALL BE SUPPLIED BY THE MECHANICAL CONTRACTOR.
24. SMOKE DETECTORS SHALL BE SIMPLE, NOTIFIER, EDWARDS, FENWALL OR OTHER APPROVED BY THE LOCAL AUTHORITY. INSTALL IN THE SUPPLY AIR DUCTS AND WIRE TO AUTOMATICALLY SHUT DOWN THE AIR HANDLING EQUIPMENT UPON DETECTION OF SMOKE AS REQUIRED BY NFPA 90A. PROVIDE ACCESS FOR INSPECTION OF DUCT PROBES. PROVIDE AN AUXILIARY CONTACT FOR INTERLOCKING WITH A FIRE ALARM SYSTEM. REMOTE INTERLOCK WIRING SHALL BE DONE BY THE FIRE ALARM CONTRACTOR. IF THERE IS NO BUILDING FIRE ALARM SYSTEM PROVIDE AUDIBLE/VISIBLE INDICATION PER NFPA 90A.

DUCTWORK:

25. SUPPLY, RETURN, OUTDOOR AND EXHAUST AIR DUCTWORK SHALL BE GALVANIZED SHEET METAL, FABRICATED AND INSTALLED PER THE LATEST ISSUE OF THE SMACNA DUCT HVAC DUCT CONSTRUCTION STANDARDS, METAL AND FLEXIBLE, CURRENT EDITION, CONSTRUCTION MANUAL. SEAL ALL SUPPLY AIR DUCT JOINTS TO SMACNA SEAL CLASS "A". DUCT LEAKAGE SHALL NOT EXCEED 1 PERCENT OF THE SPECIFIED AIR FLOWS WHEN TESTED AT 1" WG.
26. SEAL ALL LONGITUDINAL & TRANSVERSE SEAMS ON ALL DUCTWORK WITH UL 181A OR 181B TAPES AND MASTICS.
27. ALL ROUND DUCTWORK SHALL COMPLY WITH THE STANDARD GAUGE AS LISTED BELOW:
- | DIAMETER | SPIRAL PIPE | LONG SEAM PIPE | FITTINGS |
|-----------|-------------|----------------|----------|
| 3" - 14" | 28 | 26 | 26 |
| 15" - 26" | 26 | 24 | 24 |
| 27" - 36" | 24 | 22 | 22 |

37. MANUAL VOLUME DAMPERS:
- DAMPERS WITH LOCKING AND INDICATING QUADRANTS TO BE INSTALLED IN EACH BRANCH OF DUCTS INDICATED ON THE DRAWINGS IN ADDITION TO VOLUME CONTROL AT OUTLETS.
 - AFTER FINAL ADJUSTMENT OF SYSTEM, LOCK QUADRANTS AND MARK CLEARLY SHOWING DAMPER POSITION, (OPEN AND SHUT POSITIONS).
 - DAMPERS IN ROUND DUCT SHALL BE SINGLE BLADE TYPE.
 - DAMPERS IN RECTANGULAR DUCTS: DUCTS EQUAL TO OR LESS THAN 11" SHALL BE SINGLE

BLADE; DUCTS 12" AND LARGER IN HEIGHT SHALL BE OPPOSED BLADE TYPE.

38. DUCT SIZES SHOWN ARE INSIDE CLEAR DIMENSIONS.
39. ALL DUCTWORK, AND EQUIPMENT SHALL BE SUPPORTED INDEPENDENTLY FROM STRUCTURAL MEMBERS. PROVIDE ADDITIONAL SUPPORT MEMBERS WHERE REQUIRED TO ACHIEVE SMACNA RECOMMENDED SUPPORT SPACING.
40. PROVIDE TURNING VANES AT ALL 90-DEGREE ELBOWS IN DUCTWORK EXCEEDING 20" WIDTH, 45 DEGREE SIDE TAKEOFF (STO) AT BRANCH DUCTS WITH VOLUME CONTROL (ONLY AS SHOWN ON DRAWINGS), SPLITTER DAMPERS, & ANY OTHER APPLICABLE DEVICES NECESSARY FOR MINIMUM DUCT RESISTANCE & PROPER AIR BALANCING. ALL DAMPERS OR SPLITTERS SHALL SUFFICIENTLY STIFFENED TO PREVENT NOISE OR VIBRATION & SHALL BE FITTED WITH ACCESSIBLY LOCATED ADJUSTER..
41. ALL DUCT TRANSITION FROM SQUARE TO ROUND SHALL BE SMOOTH SQUARE TO ROUND TRANSITIONS. SPIN-IN FITTINGS AT THE END OF CAPPED DUCTS ARE NOT ACCEPTABLE.
42. DUCTWORK SHALL BE RIGID SHEETMETAL EXCEPT FOR 8 FOOT MAXIMUM FLEXIBLE DUCTS AT AIR REGISTERS.
43. WHERE FLEXIBLE DUCT IS CONNECTED TO CEILING DIFFUSERS, THE CONTRACTOR SHALL USE ONE OF THESE THREE METHODS:
 - A. INSULATED FLEXIBLE DUCT WITH TITUS FLEXRIGHT FLEXIBLE DUCT SUPPORT, UL LISTED, TO FORM DUCT ELBOW.
 - B. A SHEET METAL ELBOW, EXTERNALLY INSULATED.
 - C. INSULATED FLEXIBLE METAL DUCT CONSISTING OF FLEXIBLE METAL CORE OF CORRUGATED ALUMINUM WITH EXTERNAL INSULATION. IN ALL CASES DUCT CONNECTION/ELBOW SHALL BE MADE WITH A BEND THAT HAS NOT LESS THAN ONE DUCT DIAMETER CENTERLINE REDIAL.
44. TRANSITION RECTANGULAR DUCTWORK ON THE BOTTOM AND THE SIDES. MAINTAIN DUCTWORK LEVEL AND AS HIGH AS POSSIBLE UNLESS NOTED OTHERWISE.
45. THE FINISH ON DIFFUSERS, REGISTERS, GRILLES, LOUVERS, ETC., SHALL BE APPROVED BY THE ARCHITECT.
46. PORTIONS OF DUCTWORK OR PIPING VISIBLE THROUGH GRILLES AND REGISTERS IN FINISHED AREAS SHALL BE PAINTED FLAT BLACK.
47. CHANGES IN ELEVATION, ACCESS DOORS AND TRANSITIONS IN DUCT SIZES ARE, OR MAY NOT, ALL BE SHOWN ON THE DRAWINGS. DUCT CROSS-OVERS IMPLY CHANGES IN ELEVATION IN ONE OR BOTH DUCTS; TRANSITIONS IN DUCT SIZE AND SHAPE ARE IMPLIED BY SIZES SHOWN ON DRAWINGS. BIDDERS SHALL MAKE ALLOWANCE FOR THESE IN THEIR PRICE.
48. TRANSFORM DUCT SIZE SHOWN TO SUIT EQUIPMENT CONNECTION SIZE AT CONNECTIONS TO EQUIPMENT.
49. ALL DUCTWORK CONNECTED TO FAN OR VIBRATING EQUIPMENT SHALL BE FITTED WITH FLEXIBLE CANVASS CONNECTION, WHICH WILL PROVIDE MINIMUM 1" SPACE BETWEEN THE EQUIPMENT & THE DUCTWORK. FLEXIBLE CANVASS CONNECTORS SHALL BE SECURED IN PLACE WITH IRON BANDS WITH ROLL LOCK SEAM, & SHALL BE AIR LEAK TIGHT.
50. ALL NEW THICK SHEETMETAL SUPPLY, RETURN AND OUTDOOR AIR DUCTWORK, SHALL BE INSULATED WITH 2" RIGID, 1 LB DENSITY DUCT INSULATION WITH FIRE RATED VAPOR BARRIER (INSTALLED R-6).
51. ALL INSULATION SHALL HAVE FLAME AND SMOKE RATING OF 25 AND 50 RESPECTIVELY. OVERLAP BUTTING EDGES, FOLD, SEAL AND TAPE AND PROVIDE A CONTINUOUS VAPOR BARRIER.
52. EXHAUST DUCT SHALL NOT BE INSULATED UNLESS OTHERWISE NOTED.
53. FLEXIBLE DUCT BE UL LISTED, CLASSIFIED AS A CLASS 1 AIR DUCT, TESTED UNDER UL STANDARD 181 AND MEET LOCAL CODE REQUIREMENTS. FLEXIBLE SUPPLY DUCTS SHALL HAVE FACTORY INSTALLED FIBER GLASS INSULATION AND A FIRE RETARDANT VAPOR BARRIER JACKET WITH A PERM RATING OF NOT OVER 0.1, A MINIMUM "R" VALUE OF 6, AND WHICH COMPLY WITH NFPA STANDARD 90A.
54. SPIN-IN COLLARS SHALL BE PROVIDED AT ALL ROUND TAPPIINGS FROM RECTANGULAR DUCTS; SHALL BE CONSTRUCTED OF GALVANIZED STEEL AND SHALL BE CONICAL TYPE EQUIPPED WITH A MANUAL BALANCING DAMPER. DO NOT PROVIDE AIR SCOOP.
55. DUCT BRANCH RUN-OUTS TO THE DIFFUSERS UNLESS OTHERWISE NOTED SHALL BE THE SAME AS THE DIFFUSER NECK SIZES.
56. THE CONTRACTOR SHALL PROVIDE ALL FRAMING REQUIRED FOR THE INSTALLATION OF CEILING, WALL AND FLOOR AIR REGISTERS TO SUIT THE CONSTRUCTION.
57. ROOF CURBS, RAILS AND PENETRATIONS: ALL ROOF PENETRATIONS SHALL BE WATERPROOF AND GUARANTEED FREE FROM LEAKS FOR ONE YEAR. USE CURBS AND RAILS MANUFACTURED BY THE MANUFACTURER OF THE EQUIPMENT PROVIDED OR BY PATE, CUSTOM CURBS OR APPROVED EQUAL. INSTALL ROOF MOUNTED AIR HOODS AND EQUIPMENT CURBS AND RAILS IN ACCORDANCE WITH THE EQUIPMENT MANUFACTURERS' INSTRUCTIONS AND THE "GUIDELINES FOR ROOF MOUNTED OUTDOOR AIR-CONDITIONER INSTALLATIONS" AS PREPARED BY ARI, SMACNA AND THE NATIONAL ROOFING CONTRACTORS ASSOCIATION, AUGUST 1985.
58. THE CURBS FOR THE ROOF MOUNTED EQUIPMENT SHALL BE SELECTED BY THE MANUFACTURER OF THE EQUIPMENT AND THE ROOF AND STRUCTURE AND SHALL BE FABRICATED TO MATCH THE FOOTPRINTS AND INSTALLATION REQUIREMENTS OF THE EQUIPMENT PROVIDED. ALL ROOFING WORK SHALL BE DONE IN ACCORDANCE WITH THE REQUIREMENTS, AND TO THE APPROVAL, OF THE MANUFACTURER OF THE BUILDING AND ROOFING SYSTEMS PROVIDED.
59. THE TOTAL CFMS AT DIFFUSERS MAY NOT ADD UP TO THE TOTAL CFM'S SCHEDULED FOR THE RTUS IN ALL CASES. WHERE THIS OCCURS ADJUST THE FAN DRIVES TO ACHIEVE THE DESIGN CFM'S AT THE REGISTERS.
60. PRIOR TO FINAL CONNECTION TO EQUIPMENT, BRANCH DUCTS, DIFFUSERS, ETC. ALL OPENINGS IN DUCTWORK SHALL BE SEALED TO PREVENT DIRT, DUST, DEBRIS FROM ENTERING THE AIR DISTRIBUTION SYSTEM.

PIPING:

60. REFRIGERANT PIPING SHALL BE HARD-DRAWN TYPE K SEAMLESS COPPER TUBING, ASTM B88-74. FITTINGS SHALL BE WROUGHT, ANSI B86-22-63, COPPER WITH A WORKING PRESSURE OF NOT LESS THAN 300 PSIG. REFRIGERANT PIPING SHALL BE SIZED AND INSTALLED IN ACCORDANCE WITH THE EQUIPMENT MANUFACTURERS' RECOMMENDATIONS. THE CONTRACTOR SHALL PROVIDE WRITTEN CERTIFICATION FOR COMPONENT MATERIALS AND THE CORRECT SIZING OF THE REFRIGERANT PIPING.
61. INSULATE ALL SUCTION LINES AND FITTINGS, WITH PRE-FORMED ARMAFLEX "F" INSULATION, 1/2" THICK. USE ARMAFLEX 520 ADHESIVE ON ALL JOINTS. ALL INSULATION MATERIALS SHALL HAVE A FLAME SPREAD RATING OF 25 OR LESS, SMOKE DEVELOPED RATING OF 50 OR LESS WHEN TESTED PER ASTM E 84 & THERMAL CONDUCTIVITY OF NO GREATER THAN 0.27 (BTU/IN/HR/FT² / °F) PER ASTM C 672. PROVIDE PIPE SLEEVES FOR REFRIGERANT AND CONDENSATE LINES PENETRATING EXTERIOR WALLS. SEAL VOIDS WATER-TIGHT AROUND PIPING WITH A WEATHER TIGHT PERMANENT NON-SHRINKING SEALANT.
63. REFRIGERANT LINE SETS TO BE RUN CONTINUOUSLY BETWEEN FLOORS AND EXIST OUT OF BUILDING THROUGH EXTERIOR WALL.
64. CONDENSATE DRAIN PIPING AND FITTINGS SHALL BE PVC. THE CONDENSATE DRAIN SHALL BE THE SAME SIZE AS THE UNIT DRAIN CONNECTION BUT SHALL NOT BE LESS THAN 3/4" DIAMETER PIPE. ENSURE PROPER CONDENSATE REMOVAL FROM ALL FAN COIL UNIT DRAINS. INSTANT WITHOUT ANY SAGGING TO ENSURE COMPLETE DRAINAGE. SLOPE CONDENSATE DRAIN PIPING MIN. 1/8" PER FOOT TOWARD DRAIN. (VERIFY WITH PLUMBING CONTRACTOR LOCATION OF DRAIN).
66. SUPPORT CONDENSATE PIPING WITH SUPPORT HEIGHTS GRADED TO PROVIDE A TOTAL PITCH OF 6" FROM TRAP TO ROOF DRAIN OR GUTTER. DO NOT DISCHARGE CONDENSATE ONTO THE ROOF.
67. PROVIDE MIN. 1-1/2" SECONDARY DRAIN PANS UNDER EACH AIR HANDLING UNIT. PROVIDE A FLOAT SWITCH THAT WILL SHUT-DOWN UNIT IF CONDENSATE REACHES MAXIMUM 1/2" IN PAN.

MISCELLANEOUS:

68. ELECTRIC HEATERS: ELECTRIC HEATERS SHALL HAVE THERMAL CUTOUPS FOR PRIMARY AND SECONDARY OVER-TEMPERATURE PROTECTION SHALL BE PROVIDED TO MEET UL AND NEC SAFETY REQUIREMENTS. INTEGRATED SAFETY CUTOUPS SHALL BE INSTALLED IN THE HEATER.
69. WALL OPENINGS: NOTED ON FLOORS PLANS SHALL BE LOCATED ABOVE THE CEILING.
70. CONTRACTOR SHALL WRITE OPENINGS IN WALLS ABOVE CEILING WHEREVER WALLS GO TO CEILING. REFER TO INTERIOR DESIGN DRAWINGS FOR PARTITION DESCRIPTION.
71. THE GENERAL CONTRACTOR SHALL ENSURE THAT THE BUILDING ENVELOPE AROUND THE AIR CONDITIONED SPACE IS SEALED. THE MECHANICAL CONTRACTOR SHALL ENSURE THAT RETURN AND EXHAUST AIR DUCTS LOCATED OUTSIDE THE AIR-CONDITIONED ENVELOPE, WHICH INCLUDES VERTICAL CHASES, CEILING SPACES, ATTICS, ETC., ARE SEALED.

OWNERS MANUAL:

72. FOUR COPIES OF AN OWNERS MANUAL SHALL BE FORWARDED TO THE OWNER WITHIN 90 DAYS AFTER THE DATE OF SYSTEM ACCEPTABLE. OWNERS MANUAL SHALL INCLUDE AS MINIMUM:



GAI PROJECT NO.	2019.08
DISTRIBUTION	
ISSUE DESCRIPTION	DATE
80% COORDINATION	2020.02.28
100% CONSTRUCTION	2020.03.16

SYMBOL	MECHANICAL LEGEND
	SIDE WALL SUPPLY REGISTER – SEE GRILLE & DIFFUSER SCHEDULE
	RETURN AIR GRILLE
	SUPPLY AIR DIFFUSER
	TRANSFER AIR GRILLE
	SIDE WALL RETURN GRILLE
	RIGID RECTANGULAR DUCTWORK (WIDTHxDEPTH)
	FLEXIBLE DUCT
	ELECTRONIC PROGRAMMABLE THERMOSTAT WITH CLEAR LOCKING COVER
	REMOTE TEMPERATURE SENSOR
	DUCT MOUNTED SMOKE DETECTOR
	CARBON DIOXIDE SENSOR
	MANUAL VOLUME CONTROL DAMPER (MVD)
	GRILLE AIRFLOW & NECK SIZE <div>AIRFLOW (CFM) NECK SIZE (FACE SIZE) (SEE SCHEDULE)</div>
	CEILING MOUNTED EXHAUST FAN
	WALL CAP
	ROOF HOOD
	GRAVITY DAMPER
	FLOOR MOUNTED SUPPLY REGISTER
	SIDEWALL MOUNTED EXHAUST/RETURN GRILLE
	DUCT TAP WITH MANUAL VOLUME DAMPER
	EXHAUST/INTAKE LOUVER
	EXHAUST FAN

ABBREVIATIONS:

ADJ = ADJUSTABLE
AFF = ABOVE FINISHED FLOOR
BFC = BELOW FINISHED CEILING
BTUH = BRITISH THERMAL UNITS PER HOUR
CFM = CUBIC FEET PER MINUTE
DB = DRY BULB
°F = DEGREES FAHRENHEIT
DIA = DIAMETER
EA = EXHAUST AIR
EER = ENERGY EFFICIENCY RATIO
EF = EXHAUST FAN
ESP = EXTERNAL STATIC PRESSURE
FLA = FULL LOAD AMPS
HP = HORSEPOWER
HZ = HERTZ
MAX = MAXIMUM
MBH = 1000 BTUH
MCA = MINIMUM CIRCUIT AMPS
MOCp = MAXIMUM OVERCURRENT PROTECTION
MVD = MANUAL VOLUME DAMPER
OA = OUTDOOR AIR
RA = RETURN AIR
RH = RELATIVE HUMIDITY
SA = SUPPLY AIR
SEER = SEASONAL ENERGY EFFICIENCY RATIO
TAB = TEST AND BALANCE
TYP = TYPICAL
WB = WET BULB
Ø = PHASE OR DIAMETER



COMcheck Software Version 4.1.2.1
Mechanical Compliance Certificate

Project Information

Energy Code: 2015 IECC
Project Title: Grace Presbyterian Church
Location: Blairsville, Georgia
Climate Zone: 4a
Project Type: New Construction

Construction Site: Highway 76, Blairsville, GA
Owner/Agent: MBE, Inc., 8681 Highway 92, Suite 400, Woodstock, GA 30189, 678-795-0333, MBE@MBEINC.NET
Designer/Contractor: Peter Basis, MBE, Inc., 8681 Highway 92, Suite 400, Woodstock, GA 30189, 678-795-0333, MBE@MBEINC.NET

Additional Efficiency Package(s)

Reduced interior lighting power. Requirements are implicitly enforced within interior lighting allowance calculations.

Mechanical Systems List

Quantity System Type & Description

1	HVAC System 1 (Single Zone): Split System Heat Pump Heating Mode: Capacity = 12 kBtu/h, Proposed Efficiency = 8.20 HSPF, Required Efficiency = 8.20 HSPF Cooling Mode: Capacity = 22 kBtu/h, No Economizer, Economizer exception: None Proposed Efficiency = 14.00 SEER, Required Efficiency: 14.00 SEER Fan System: FAN SYSTEM 1 – Compliance (Motor nameplate HP method) : Passes Fans: 2 T Supply, Constant Volume, 800 CFM, 0.3 motor nameplate hp, 0.0 fan efficiency grade SYSTEM COMPLIANCE FAILS: Economizer requirements have not been met. Total proposed cooling capacity without economizer (309.2 kBtu/h) must be <= Total allowable cooling capacity without economizer (300 kBtu/h)
3	HVAC System 2 (Single Zone): Split System Heat Pump Heating Mode: Capacity = 18 kBtu/h, Proposed Efficiency = 8.20 HSPF, Required Efficiency = 8.20 HSPF Cooling Mode: Capacity = 33 kBtu/h, No Economizer, Economizer exception: None Proposed Efficiency = 14.00 SEER, Required Efficiency: 14.00 SEER Fan System: FAN SYSTEM 2 – Compliance (Motor nameplate HP method) : Passes Fans: 3 T Supply, Constant Volume, 1200 CFM, 0.5 motor nameplate hp, 0.0 fan efficiency grade SYSTEM COMPLIANCE FAILS: Economizer requirements have not been met. Total proposed cooling capacity without economizer (309.2 kBtu/h) must be <= Total allowable cooling capacity without economizer (300 kBtu/h)
4	HVAC System 3 (Single Zone): Split System Heat Pump Heating Mode: Capacity = 24 kBtu/h, Proposed Efficiency = 8.20 HSPF, Required Efficiency = 8.20 HSPF Cooling Mode: Capacity = 47 kBtu/h, No Economizer, Economizer exception: None Proposed Efficiency = 14.00 SEER, Required Efficiency: 14.00 SEER Fan System: FAN SYSTEM 3 – Compliance (Motor nameplate HP method) : Passes

Project Title: Grace Presbyterian Church
Data filename: Y:\2019 Jobs\David Goodspeed\Grace_Church\ENERGY\GRACE_CHURCH_MECH.cck
Report date: 03/16/20
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Quantity System Type & Description

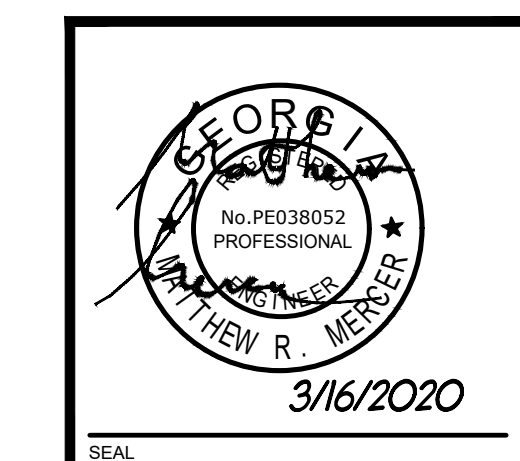
	Fans: 4T Supply, Constant Volume, 1600 CFM, 0.8 motor nameplate hp, 0.0 fan efficiency grade SYSTEM COMPLIANCE FAILS: Economizer requirements have not been met. Total proposed cooling capacity without economizer (309.2 kBtu/h) must be <= Total allowable cooling capacity without economizer (300 kBtu/h)
1	HVAC System 4 (Single Zone): Split System Heat Pump Heating Mode: Capacity = 35 kBtu/h, Proposed Efficiency = 3.30 COP, Required Efficiency = 3.30 COP Cooling Mode: Capacity = 72 kBtu/h, Air Economizer Proposed Efficiency = 11.00 EER, Required Efficiency: 11.00 EER + 12.0 IEER Fan System: FAN SYSTEM 4 – Compliance (Motor nameplate HP method) : Passes Fans: 6T Supply, Constant Volume, 2400 CFM, 1.0 motor nameplate hp, 0.0 fan efficiency grade
5	HVAC System 5 (Single Zone): Split System Heat Pump Heating Mode: Capacity = 57 kBtu/h, Proposed Efficiency = 3.30 COP, Required Efficiency = 3.30 COP Cooling Mode: Capacity = 119 kBtu/h, Air Economizer Proposed Efficiency = 11.00 EER, Required Efficiency: 11.00 EER + 12.0 IEER Fan System: FAN SYSTEM 4 – Compliance (Motor nameplate HP method) : Passes Fans: 6T Supply, Constant Volume, 2400 CFM, 1.0 motor nameplate hp, 0.0 fan efficiency grade
1	Water Heater 1: Electric Storage Water Heater, Capacity: 38 gallons w/ Circulation Pump Proposed Efficiency: 0.89 SL, %/h (if > 12 kW), Required Efficiency: 1.01 SL, %/h (if > 12 kW)
1	Water Heater 2: Electric Storage Water Heater, Capacity: 50 gallons w/ Circulation Pump Proposed Efficiency: 0.89 SL, %/h (if > 12 kW), Required Efficiency: 0.84 SL, %/h (if > 12 kW)
1	Water Heater 3: Electric Storage Water Heater, Capacity: 0 gallons Proposed Efficiency: 0.96 SL, %/h (if > 12 kW), Required Efficiency: 1.00 SL, %/h (if > 12 kW)

Mechanical Compliance Statement

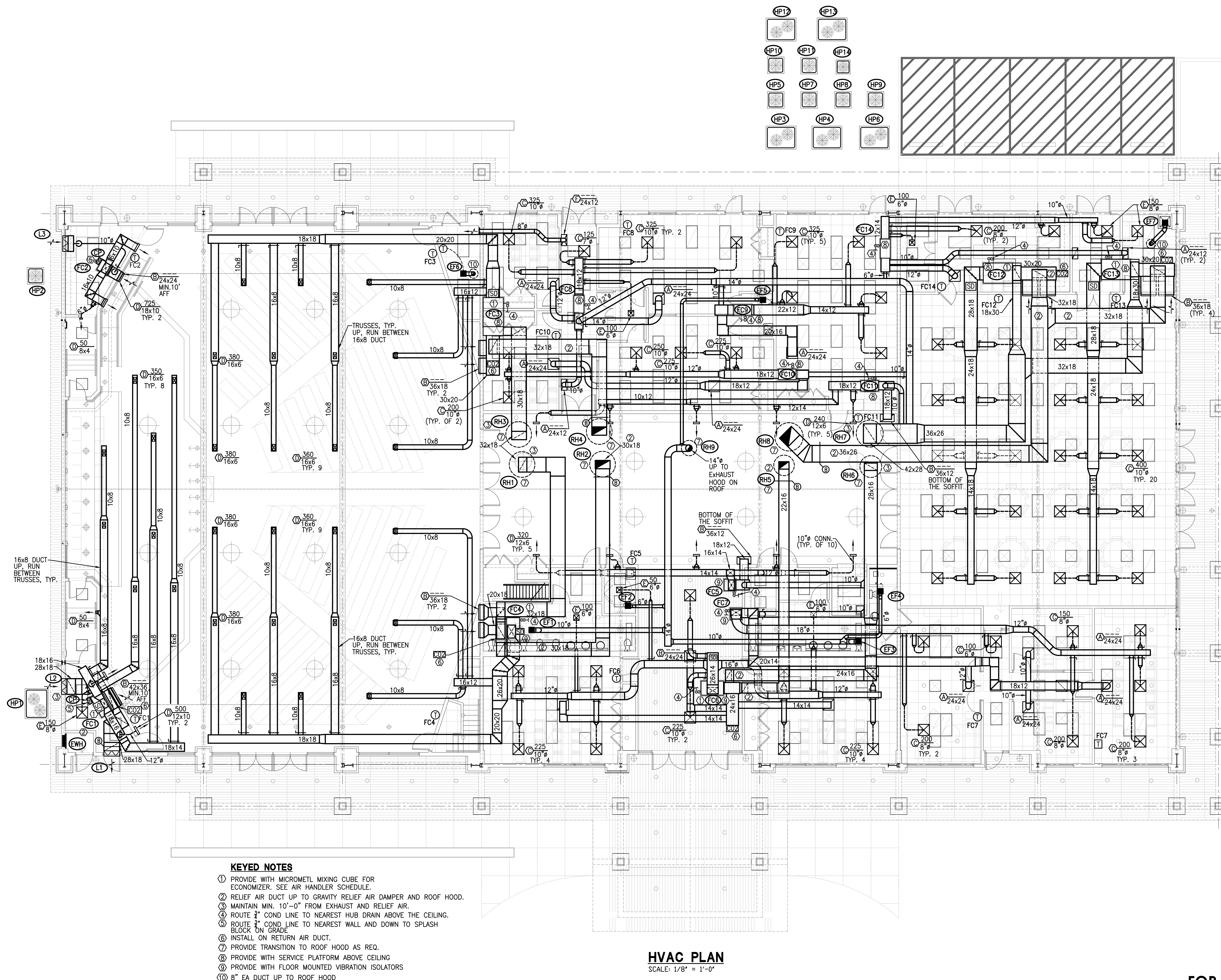
Compliance Statement: The proposed mechanical design represented in this document is consistent with the building plans, specifications, and other calculations submitted with this permit application. The proposed mechanical systems have been designed to meet the 2015 IECC requirements in COMcheck Version 4.1.2.1 and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

Matthew Mercer
Name - Title
Signature
Date
3/16/2020

Project Title: Grace Presbyterian Church
Data filename: Y:\2019 Jobs\David Goodspeed\Grace_Church\ENERGY\GRACE_CHURCH_MECH.cck
Report date: 03/16/20
Page 2 of 17



GAI PROJECT NO.	2019.08
DISTRIBUTION	
ISSUE DESCRIPTION	DATE
80% COORDINATION	2020.02.28
100% CONSTRUCTION	2020.03.16

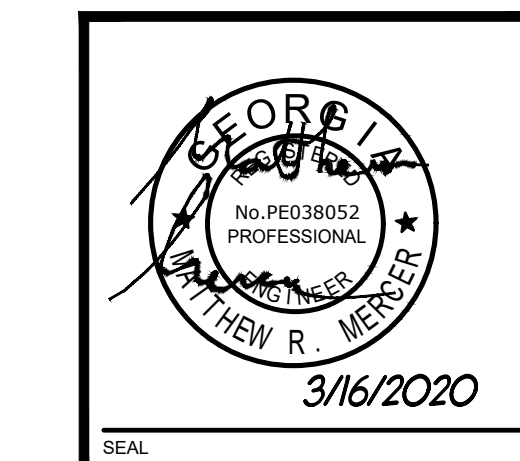


KEYED NOTES

- 1 PROVIDE WITH MICROMETL MIXING CUBE FOR ECONOMIZER. SEE AIR HANDLER SCHEDULE.
- 2 RELIEF AIR DUCT UP TO GRAVITY RELIEF AIR DAMPER AND ROOF HOOD.
- 3 MAINTAIN MIN. 10'-0" FROM EXHAUST AND RELIEF AIR.
- 4 ROUTE 3/4" COND LINE TO NEAREST HUB DRAIN ABOVE THE CEILING.
- 5 ROUTE 1/2" COND LINE TO NEAREST WALL AND DOWN TO SPLASH BLOCK ON GRADE.
- 6 INSTALL ON RETURN AIR DUCT.
- 7 PROVIDE TRANSITION TO ROOF HOOD AS REQ.
- 8 PROVIDE WITH SERVICE PLATFORM ABOVE CEILING
- 9 PROVIDE WITH FLOOR MOUNTED VIBRATION ISOLATORS
- 10 8" EA DUCT UP TO ROOF HOOD

HVAC PLAN

SCALE: 1/8" = 1'-0"



GAI PROJECT NO.	2019.08
DISTRIBUTION	
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OUTSIDE AIR REQUIREMENTS

ZONE	ROOM NAME	A FT²	CODE CLASS	B PPL RATE	C FT²/2PER	D PPL	E PPL	F OA/ PERSON	G OA (CFM)	H SPACE OA RATE	J B OA (CFM)	TOTAL OA (CFM)	OA PROVIDED (CFM)
				PPL/1000 FT²	= 1000 / B	= A / C	ROUND UP	= F x E	= F x E	= H x A	= J + G		
				CODE	CALC	CALC	CALC	CODE	CALC	CODE	CALC	CALC	
	CONFERENCE	424	CONFERENCE	50	20	21.20	22	5	110	0.06	25.44	135.44	135
	OFFICE 1	164	OFFICE	5	200	0.82	1	5.0	5	0.06	9.84	14.84	15
	OFFICE 2	171	OFFICE	5	200	0.86	1	5.0	5	0.06	10.26	15.26	15
	PASTOR	426	OFFICE	5	200	2.13	3		0	0.06	25.56	25.56	25
	OFFICE CORR.	215	CORRIDOR	0			0		0	0.06	12.9	12.9	13
	FELLOWSHIP HALL	2823	MULTIUSE ASSEMBLY	100	10	282.30	283	7.5	2122.5	0.06	169.38	2291.88	2295
	JAN. ROOM	145	STORAGE ROOMS							0.12	17.4	17.4	20
	STORAGE	144	STORAGE ROOMS							0.12	17.28	17.28	20
	KITCHEN	335	KITCHEN								0	0	0
	PANTRY	97	STORAGE ROOMS							0.12	11.64	11.64	15
	PK RR	51	RESTROOM								0	0	0
	PK 1	497	CLASSROOM (0-4)	25	40	12.43	13	10.0	130	0.18	89.46	219.46	220
	PK 2	494	CLASSROOM (0-4)	25	40	12.35	13	10.0	130	0.06	29.64	159.64	160
	CHECK IN	83	RECEPTION	30	33.33333333	2.49	3	5.0	15	0.06	4.98	19.98	20
	KID CORR	238	CORRIDOR	0			0		0	0.06	14.16	14.16	15
	YOUTH ROOM	791	CLASSROOM (9+)	25	40	19.78	20	10.0	200	0.12	94.92	294.92	295
	CHILD CLASS 1	212	CLASSROOM (5-8)	25	40	5.30	6	20.0	120	0.12	25.44	145.44	145
	CHILD CLASS 2	227	CLASSROOM (5-8)	25	40	5.68	6	20.0	120	0.12	27.24	147.24	150
	CLOSET	49	STORAGE ROOMS							0.12	5.88	5.88	5
	KID CORR	238	CORRIDOR	0			0		0	0.06	14.16	14.16	15
	LOBBY	2381	LOBBIES/REFUNCTION	30	33.33333333	62.43	63	7.5	472.5	0.06	124.86	597.36	600
	ADULT LOBBY	650	CORRIDOR	0			0		0	0.06	39	39	40
	ADULT CLASS 1	494	CLASSROOM (9+)	25	40	12.35	13	10.0	130	0.12	59.28	189.28	190
	ADULT CLASS 2	494	CLASSROOM (9+)	25	40	12.35	13	10.0	130	0.12	59.28	189.28	190
	A CLOSET 1	39	STORAGE ROOMS							0.12	4.68	4.68	5
	A CLOSET 2	39	STORAGE ROOMS							0.12	4.68	4.68	5
	SHR RM	62	RESTROOM								0	0	0
	COFFEE	80	COFFEE	20	50	1.20	2	5.0	10	0.06	3.6	13.6	15
	MEN RR	164	RESTROOM								0	0	0
	MEN RR CORR	72	CORRIDOR	0			0		0	0.06	4.32	4.32	5
	WM RR CORR	62	CORRIDOR	0			0		0	0.06	3.72	3.72	5
	WM RR	245	RESTROOM								0	0	85
	LOBBY CLOSET	54	STORAGE ROOMS							0.12	6.48	6.48	10
	FAMILY RR	52	RESTROOM								0	0	0
	STAIR ACCESS	81	CORRIDOR	0			0		0	0.06	4.86	4.86	5
	SOUND	118	COMPUTER	20	50	2.32	3	10.0	30	0.18	20.88	50.88	50
	SANCT. STORAGE	120	STORAGE ROOMS							0.12	14.4	14.4	15
	SANCTUARY	5064	RELIGIOUS WORSHIP	120	8.333333333	607.68	608	5.0	3040	0.06	303.84	3343.84	3345
	STAGE	1140	STAGE	70	14.28571429	79.80	80	5.0	400	0.06	68.4	468.4	470
	CHOIR	200	STAGE	70	14.28571429	14.00	14	5.0	70	0.06	12	82	85
	SANCT. STAIR R	93	CORRIDOR	0			0		0	0.06	5.58	5.58	5
	SANCT. STAIR L	93	CORRIDOR	0			0		0	0.06	5.58	5.58	5
	REAR SANT. STORE R	170	STORAGE ROOMS							0.12	20.4	20.4	20
	REAR SANT. STORE L	170	STORAGE ROOMS							0.12	20.4	20.4	20
	TOTAL	19635										8631.82	8750

* (NOTE ASHRAE STANDARD 62.1-2007 DOES NOT INCLUDE VENTILATION RATE FOR KITCHENS OR GARAGES.)
** - EXHAUST ONLY

DEFINITIONS:

CODE: RATE PROVIDED BY ASHRAE CODE STANDARD

CALC: NUMBER CALCULATED AS SHOWN IN COLUMN HEADINGS BASED ON SQUARE FOOTAGE, PEOPLE LOAD OR A COMBINATION THEREOF

PPL: NUMBER OF PEOPLE CALCULATED FOR A DESIGNATED AREA

PER: PERSON (USED IN CALCULATING OUTSIDE OA RATE IN CFM/PERSON)

OUTSIDE AIR PROVIDED PER UNIT:

FC1	870
FC2	270
FC3	1310
FC4	1310
FC5	320
FC6	855
FC7	235
FC8	330
FC9	395
FC10	320
F11	320
F12	1170
F13	1170
F14	75

TOTAL:	8750	CFM OUTSIDE AIR PROVIDED
	8631.82	CFM OUTSIDE AIR REQUIRED

HEAT PUMP UNIT SCHEDULE

MARK	TONS	TOTAL COOLING MBH	TOTAL HEATING MBH	SUCTION TEMP °F	SEER (EER)	HSPF (COP)	VOLTS/#/HZ	MCA	MOCP	CARRIER BASIS OF DESIGN	NOTES
HP1	10	119.0	57.0	45	(11)	(3.3)	208/3/60	47	60	38AUQ12	1,2,3,4
HP2	4	46.8	24.1	45	14	8.2	208/3/60	25.2	40	25HCE448	1,2,3,4
HP3	10	119.0	57.0	45	(11)	(3.3)	208/3/60	47	60	38AUQ12	1,2,3,4
HP4	10	119.0	57.0	45	(11)	(3.3)	208/3/60	47	60	38AUQ12	1,2,3,4
HP5	4	46.8	24.1	45	14	8.2	208/3/60	25.2	40	25HCE448	1,2,3,4,5
HP6	6	72.0	35.1	45	(11)	(3.3)	208/3/60	28	45	38AUQ07	1,2,3,4,5
HP7	4	46.8	24.1	45	14	8.2	208/3/60	25.2	40	25HCE448	1,2,3,4,5
HP8	3	33.0	18.4	45	14	8.2	208/1/60	20	30	25HCE436	1,2,3,4,5
HP9	4	46.8	24.1	45	14	8.2	208/3/60	25.2	40	25HCE448	1,2,3,4,5
HP10	3	33.0	18.4	45	14	8.2	208/1/60	20	30	25HCE436	1,2,3,4,5
HP11	3	33.0	18.4	45	14	8.2	208/1/60	20	30	25HCE436	1,2,3,4
HP12	10	119.0	57.0	45	(11)	(3.3)	208/3/60	47	60	38AUQ12	1,2,3,4
HP13	10	119.0	57.0	45	(11)	(3.3)	208/3/60	47	60	38AUQ12	1,2,3,4
HP14	2	22.2	11.8	45	14	8.2	208/1/60	11.8	20	25HCE424	1,2,3,4

NOTES:

- COOLING CAPACITY BASED ON 80°F DB/67°F WB INDOOR ENTERING AIR TEMPERATURE AND 95°F DB OUTDOOR TEMP.
- PROVIDE WITH CRANKCASE HEATER, CYCLE PROTECTOR, FILTER DRYER, HIGH PRESSURE SWITCH, ISOLATION RELAY, LOW AMBIENT PRESSURE SWITCH, OUTDOOR THERMOSTAT, SUPPORT FEET AND TIME DELAY RELAY.
- FOR TUBING LINE SETS BETWEEN 50' & 175' HORIZONTAL OR 20' VERTICAL DIFFERENTIAL SHALL BE SIZED & INSTALLED AS PER THE "RESIDENTIAL SPLIT-SYSTEM LONG-LINE APPLICATION GUIDELINE".
- VERIFY LINE SET SIZES WITH SPLIT SYSTEM MANUFACTURER PRIOR TO INSTALLATION.

- PROVIDE WITH APR CONTROL. (www.Rawal.com)

SELECTIONS ARE BASED ON CARRIER
EQUAL PRODUCTS: LENNOX & TRANE

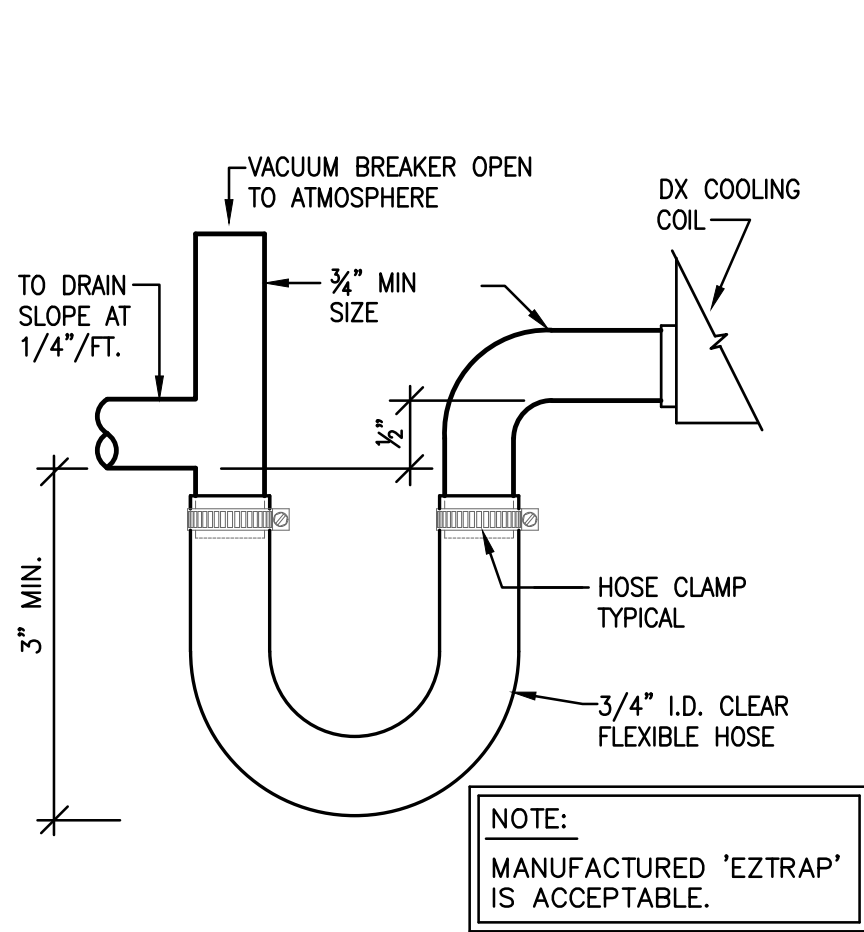
FAN COIL SCHEDULE

MARK	SUPPLY CFM	O.A. CFM	FAN DATA		HEATING DATA		COOLING DATA			ELECTRICAL DATA				NOTES
			ESP IN. WG	MOTOR HP	ELECTRIC HEAT (KW)		TOTAL CAPACITY MBH	SENSIBLE CAPACITY MBH	CARRIER BASIS OF DESIGN	V/PH/HZ	MCA	MOCP	WEIGHT LBS	
FC1	4000	870	1.00	2.5	15.0		119.0	90.3	40RUQA12	208/3/60	48.5	50	697	1,2,3,4,5,6,7,8,9
FC2	1600	270	0.70	3/4	10.0		48.0	33.6	FX4DNF049	208/1/60	57.5	60	172	1,2,3,4,5,6,7,8
FC3	4000	1310	1.50	2.5	15.0		119.0	90.3	40RUQA12	208/3/60	48.5	50	697	1,2,3,4,5,6,7,8,9
FC4	4000	1310	1.50	2.5	15.0		119.0	90.3	40RUQA12	208/3/60	48.5	50	697	1,2,3,4,5,6,7,8,9
FC5	1600	320	1.00	3/4	10.0		48.0	33.6	FX4DNF049	208/1/60	57.5	60	172	1,2,3,4,5,6,7,8
FC6	2400	655	1.00	1.0	15.0		72.0	56.1	40RUQA07	208/3/60	34.3	35	697	1,2,3,4,5,6,7,8,9
FC7	1600	255	1.00	3/4	10.0		48.0	33.6	FX4DNF049	208/1/60	57.5	60	172	1,2,3,4,5,6,7,8,10
FC8	1200	330	1.00	1/2	10.0		36.0	25.2	FX4DNF037	208/1/60	55.1	60	150	1,2,3,4,5,6,7,8
FC9	1600	395	1.00	3/4	10.0		48.0	33.6	FX4DNF049	208/1/60	57.5	60	172	1,2,3,4,5,6,7,8
FC10	1200	320	1.00	1/2	10.0		36.0	25.2	FX4DNF037	208/1/60	55.1	60	150	1,2,3,4,5,6,7,8
FC11	1200	320	1.00	1/2	10.0		36.0	25.2	FX4DNF037	208/1/60	55.1	60	150	1,2,3,4,5,6,7,8
FC12	4000	1170	1.00	2.0	15.0		119.0	90.3	40RUQA12	208/3/60	45.6	50	697	1,2,3,4,5,6,7,8,9
FC13	4000	1170	1.00	2.0	15.0		119.0	90.3	40RUQA12	208/3/60	45.6	50	697	1,2,3,4,5,6,7,8,9
FC14	800	75	1.00	1/3	5.0		24.0	19.2	FX4DNF025	208/1/60	28.5	30	135	1,2,3,4,5,6,7,8

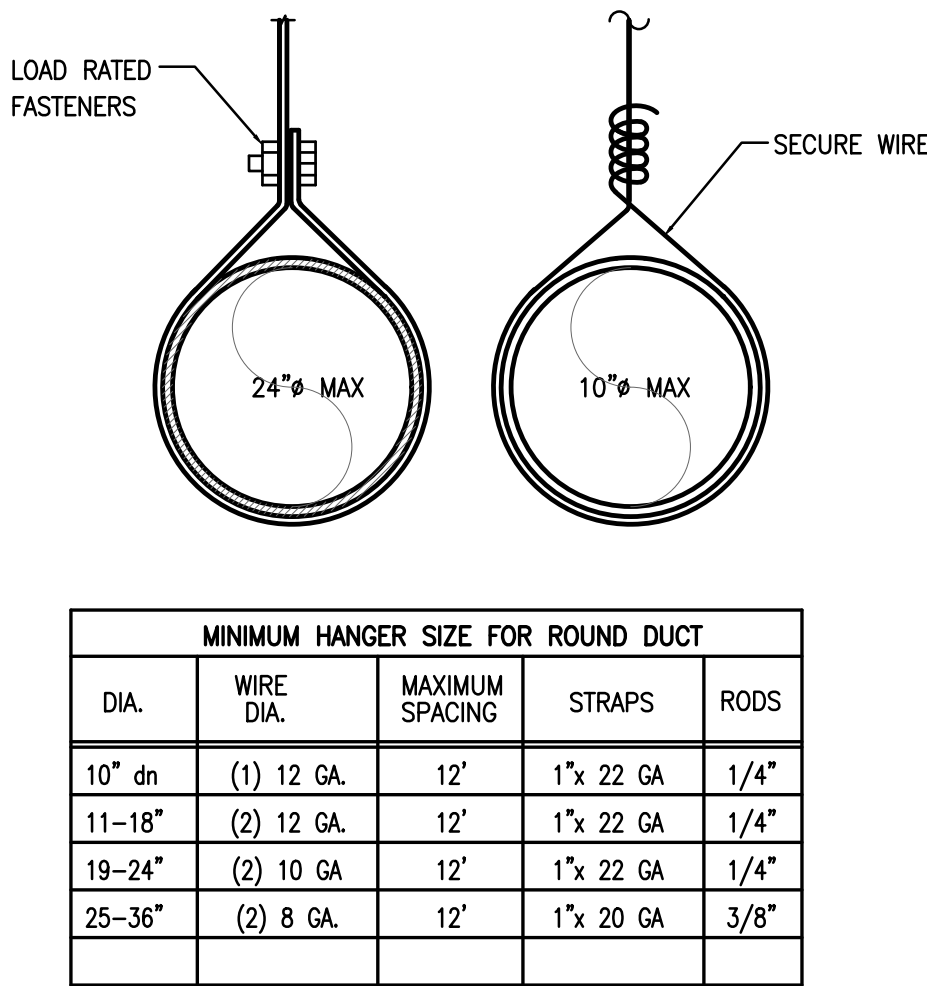
NOTES

- SPECIFIED CAPACITIES ARE BASED ON 80°F DB/67°F WB ENTERING AIR AND 95°F OUTDOOR AMBIENT TEMPERATURE.
- COMPLY WITH THE EQUIPMENT MANUFACTURERS "LONG LINE" INSTALLATION INSTRUCTIONS AND RECOMMENDATIONS. PROVIDE ALL ACCESSORIES RECOMMENDED
- STATIC PRESSURE (SP) SHOWN IS EXTERNAL TO FAN COILS, FOR SUPPLY & RETURN AIR DUCTING AND REGISTERS ONLY. COOLING COIL FILTER PRESSURE DROP TO BE INCLUDED IN THE TOTAL PRESSURE DROP FOR EQUIPMENT PROVIDED TO ACHIEVE THE CFM'S SPECIFIED (AS MINIMUM).
- PROVIDE INTERNALLY, ACOUSTICALLY, LINED RETURN AIR INTAKE PLENUMS FOR ALL UNITS. PLENUMS SHALL MATCH THE CROSS SECTIONAL SIZE OF THE UNITS AND SHALL BE 24" HIGH MINIMUM, OR AS REQUIRED TO SUIT THE RETURN AIR DUCT CONNECTIONS. MOUNT ENTIRE ASSEMBLY OVER A 2" DEEP DRIP TRAY.
- CONTRACTOR SHALL VERIFY SELECTION OF MODELS SELECTIONS FOR FAN COILS, COOLING COILS & CONDENSING UNITS WITH THE MANUFACTURERS REPRESENTATIVE TO ENSURE CORRECT MATCH. ADVISE OWNER OF ANY DISCREPANCY. PROVIDE DUCT ADAPTERS BETWEEN FAN COIL & COIL CASINGS AS REQUIRED & AS RECOMMENDED BY THE MANUFACTURER.
- PROVIDE WITH CONCENTRIC VENT & CONDENSATE TRAP.
- THERMOSTAT – ELECTRONIC PROGRAMMABLE THERMOSTAT WITH REMOTE TEMPERATURE SENSOR & CLEAR LOCKING COVER.
- SUPPLY FAN SHALL BE PROGRAMMED TO RUN BASED ON T-STAT DURING OPERATING HOURS AND DURING NON-OPERATING HOURS.
- PROVIDE WITH MICROMETL CUBE ECONOMIZER. PROVIDE WITH JADE ECONOMIZER SYSTEM INCLUDING W7220 ECONOMIZER MODULE WITH 20K MIXED AIR SENSOR, DAMPER ACTUATOR, CO2 SENSER, AND SYLK BUS SENSER POWERED BY AIR HANDLER CONTROL WIRING.
- WITH REMOTE TEMP. SENSOR AND T-STAT WITH SENSOR OVERRIDE AND AVERAGING SETTING.

SELECTIONS ARE BASED ON CARRIER

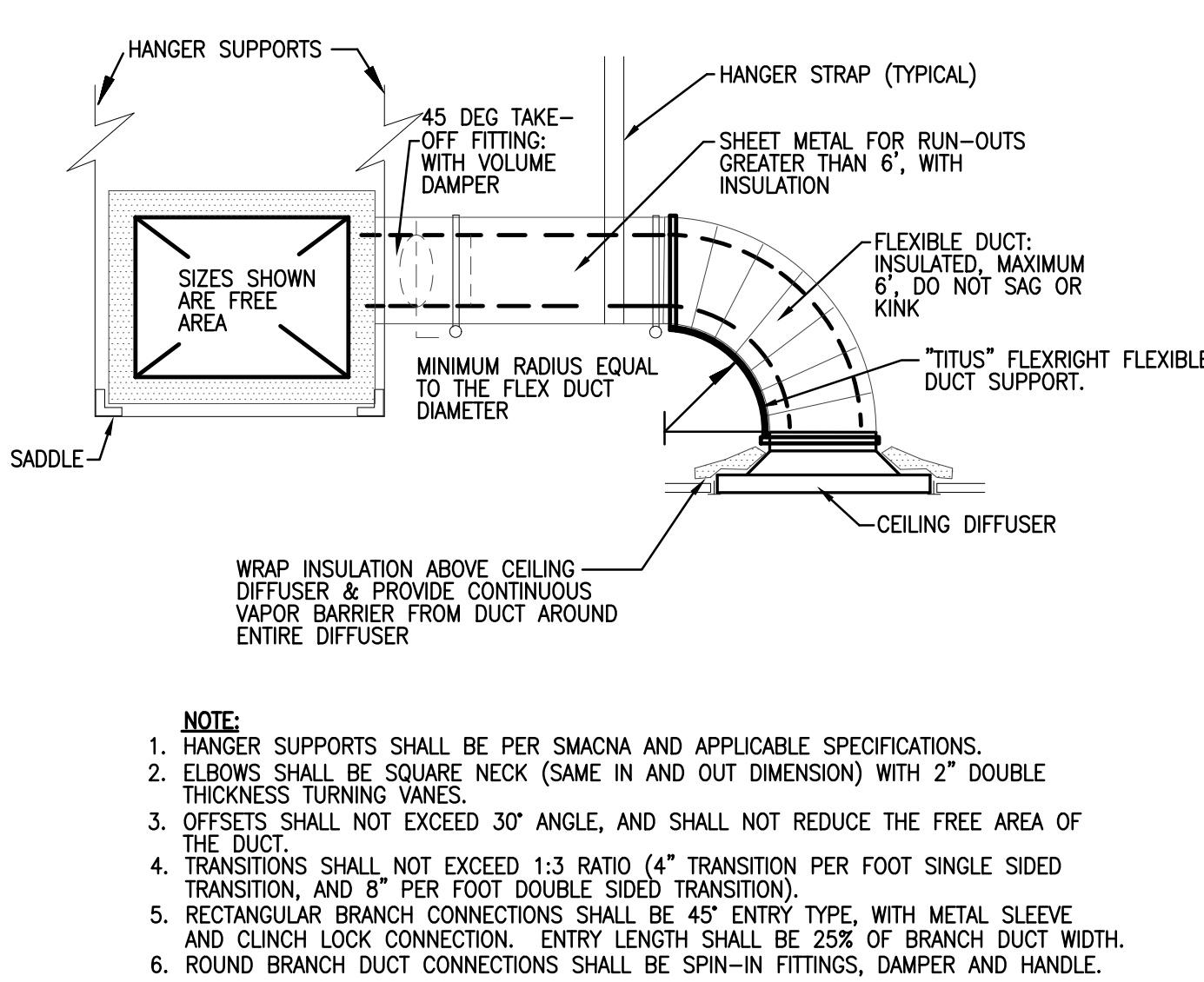


COOLING COIL CONDENSATE DRAIN DETAIL
NOT TO SCALE



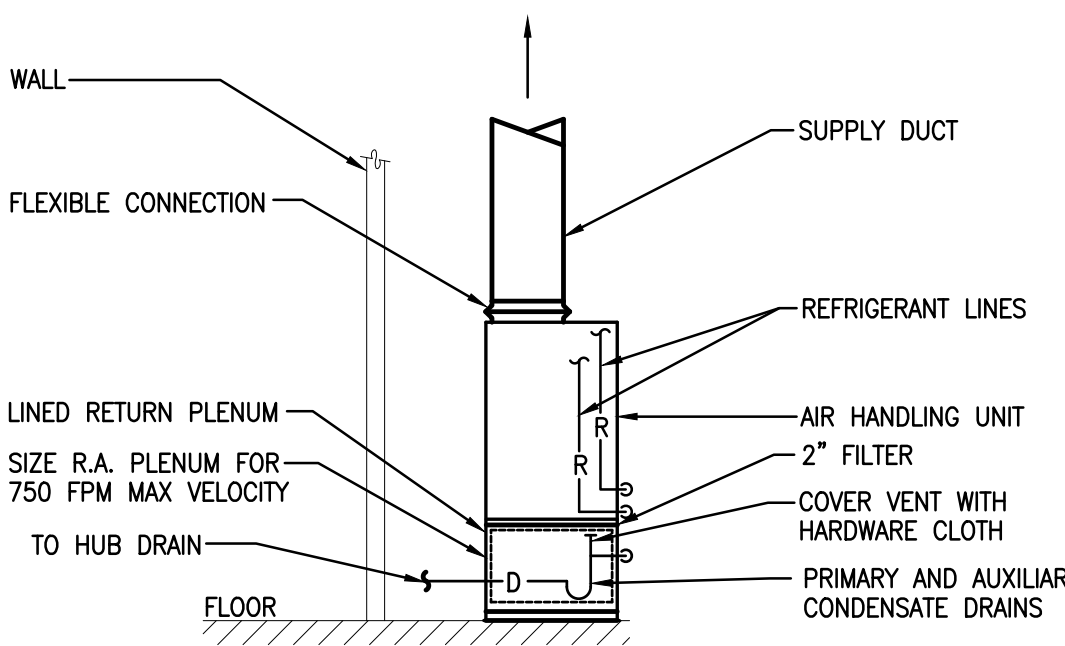
MINIMUM HANGER SIZE FOR ROUND DUCT				
DIA.	WIRE DIA.	MAXIMUM SPACING	STRAPS	RODS
10" dn	(1) 12 GA.	12'	1"x 22 GA	1/4"
11-18"	(2) 12 GA.	12'	1"x 22 GA	1/4"
19-24"	(2) 10 GA.	12'	1"x 22 GA	1/4"
25-36"	(2) 8 GA.	12'	1"x 20 GA	3/8"

ROUND DUCT HANGERS:
NOT TO SCALE

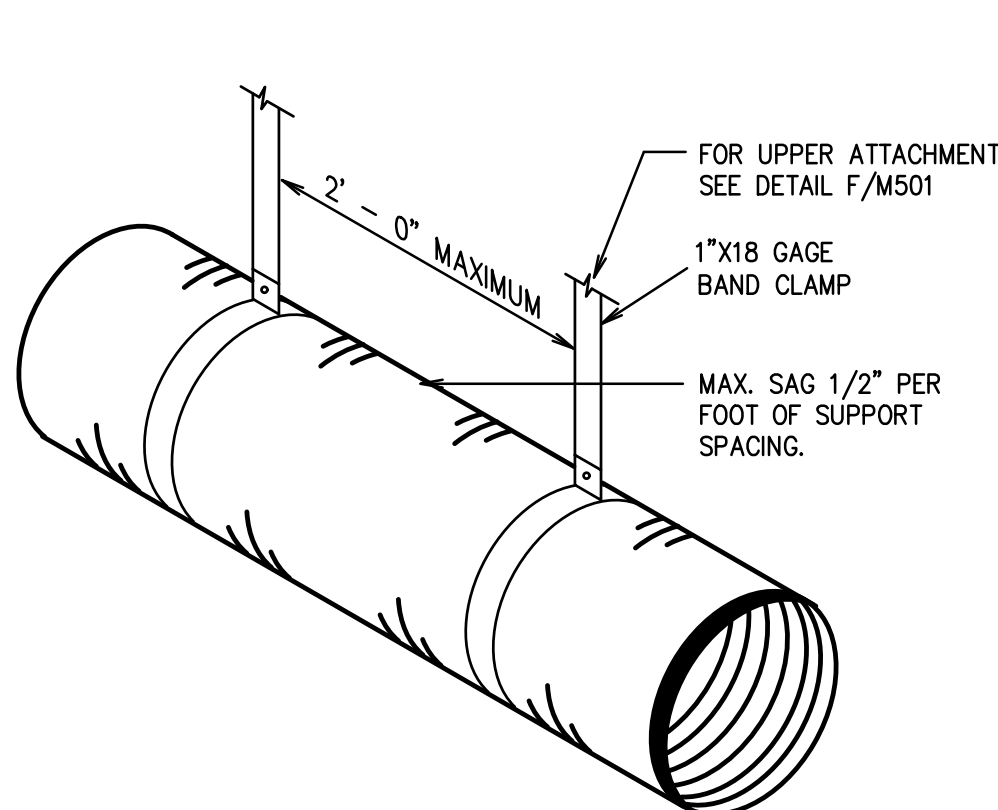


- NOTE:**
- HANGER SUPPORTS SHALL BE PER SMACNA AND APPLICABLE SPECIFICATIONS.
 - ELBOWS SHALL BE SQUARE NECK (SAME IN AND OUT DIMENSION) WITH 2" DOUBLE THICKNESS TURNING VANES.
 - OFFSETS SHALL NOT EXCEED 30° ANGLE, AND SHALL NOT REDUCE THE FREE AREA OF THE DUCT.
 - TRANSITIONS SHALL NOT EXCEED 1:3 RATIO (4" TRANSITION PER FOOT SINGLE SIDED TRANSITION, AND 8" PER FOOT DOUBLE SIDED TRANSITION).
 - RECTANGULAR BRANCH CONNECTIONS SHALL BE 45° ENTRY TYPE, WITH METAL SLEEVE AND CLINCH LOCK CONNECTION. ENTRY LENGTH SHALL BE 25% OF BRANCH DUCT WIDTH.
 - ROUND BRANCH DUCT CONNECTIONS SHALL BE SPIN-IN FITTINGS, DAMPER AND HANDLE.

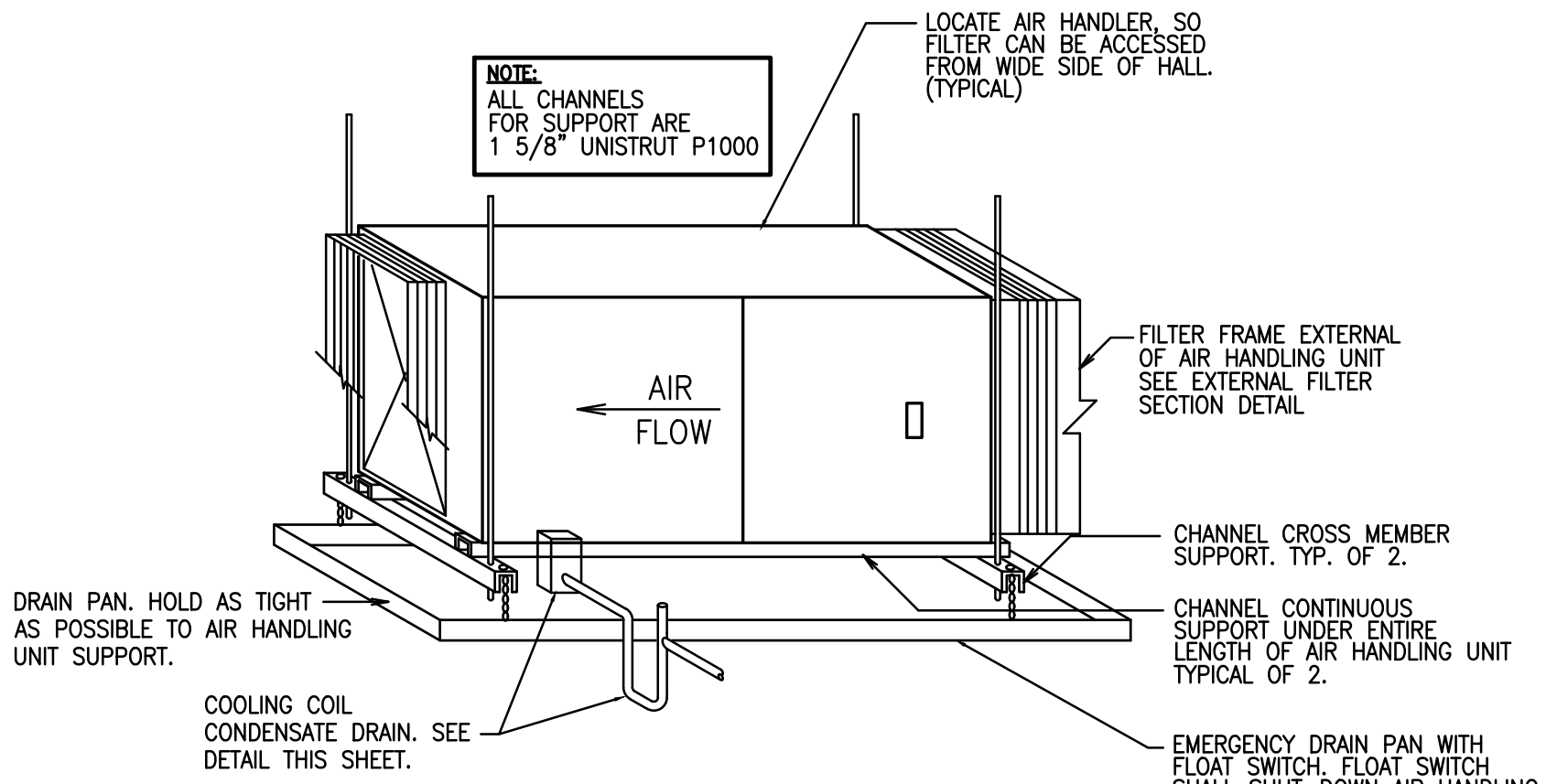
DUCT DETAIL
NOT TO SCALE



VERTICAL FAN COIL UNIT DETAIL:
NOT TO SCALE

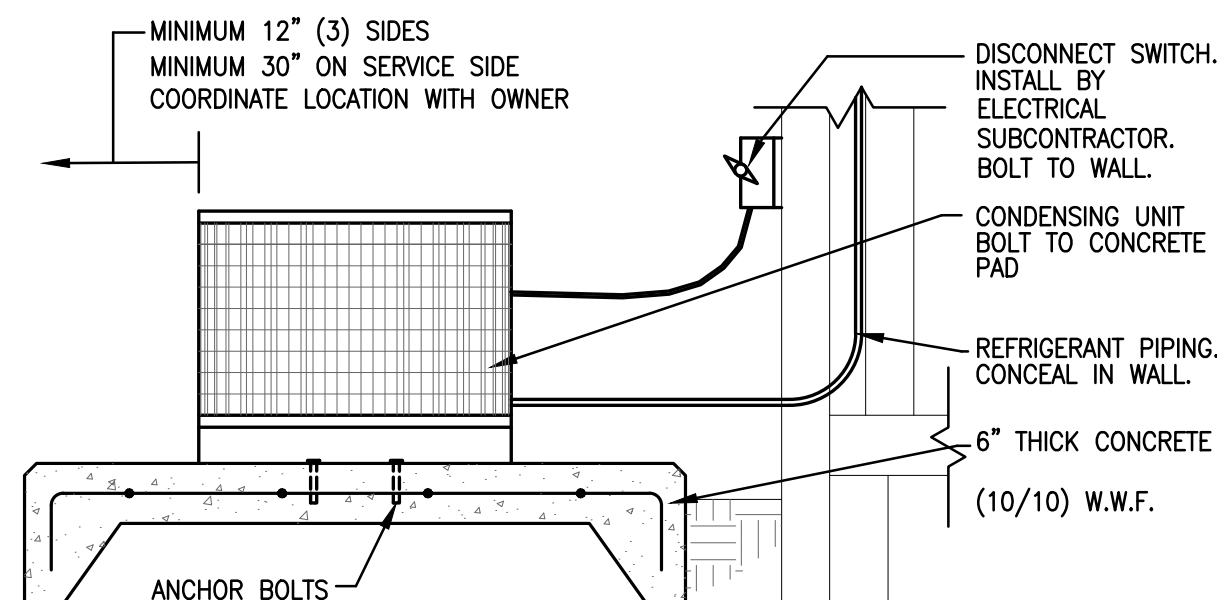


FLEXIBLE DUCT SUPPORT DETAIL
NOT TO SCALE

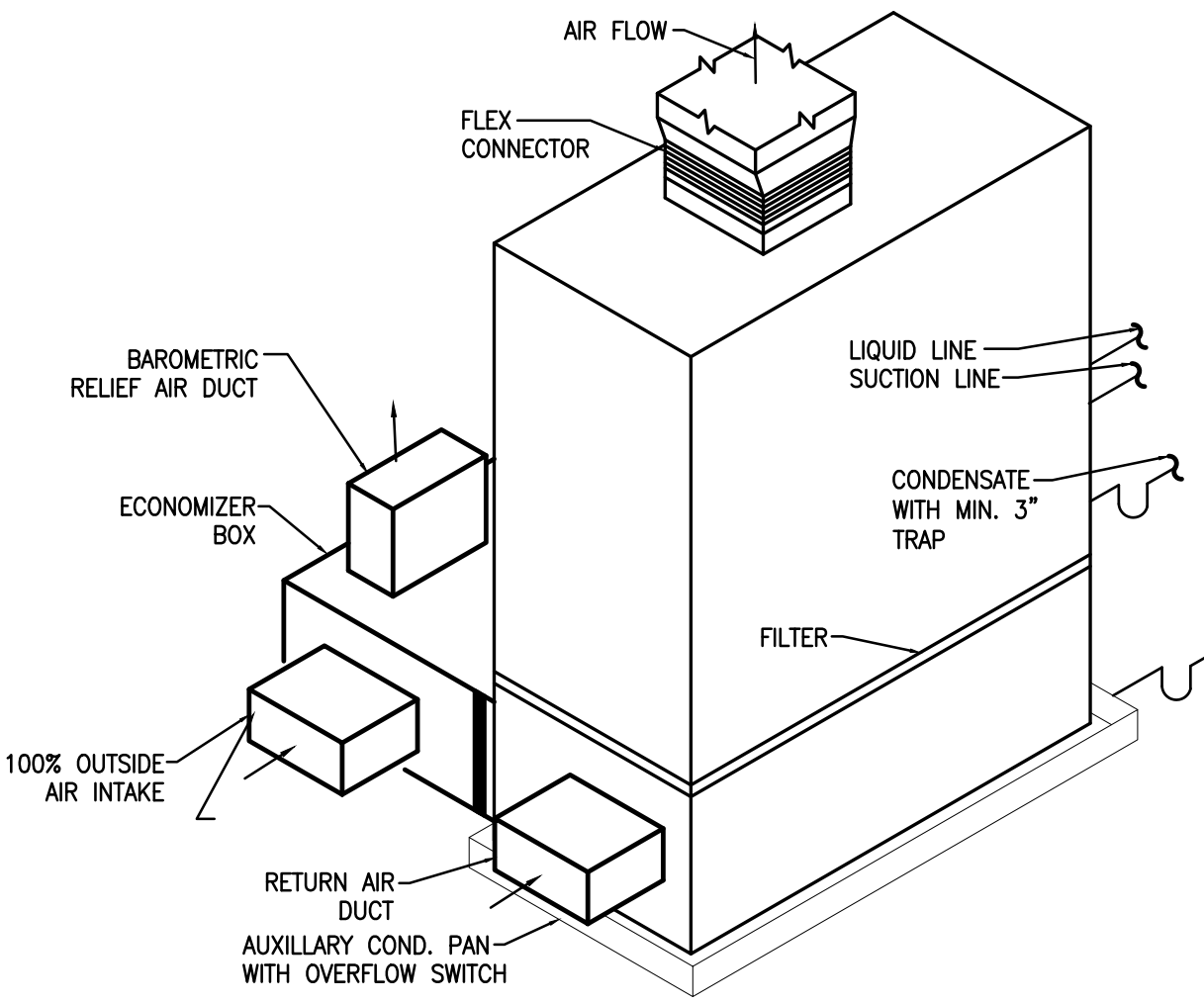


AIR HANDLING UNIT SUPPORT DETAIL:
NOT TO SCALE

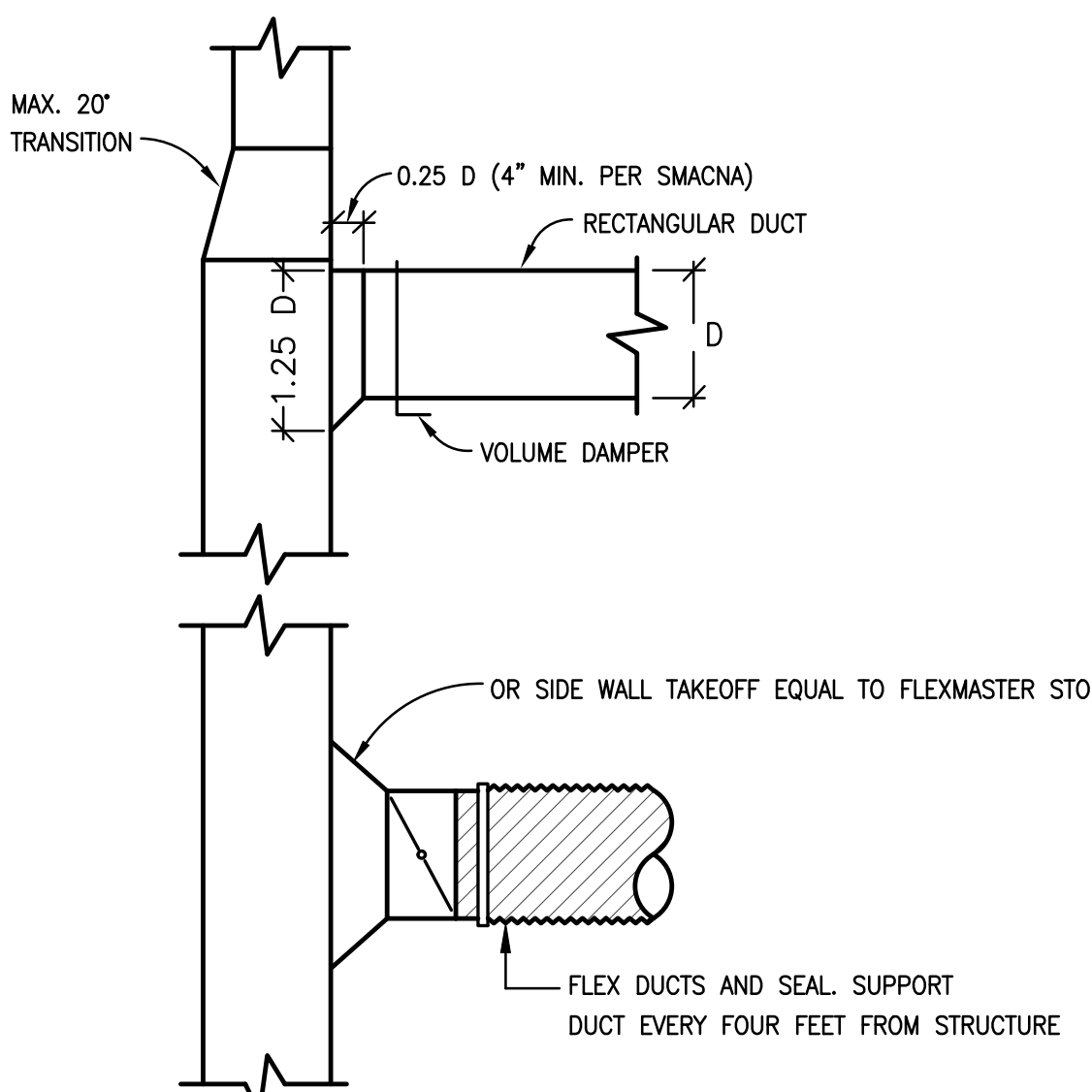
AIR HANDLING UNIT NOTE
AIR HANDLING UNITS SHALL BE INSTALLED AS CLOSE TO METAL DECK AS POSSIBLE. NO WIRES, BOLTS, SUPPORTS, ETC. TO BE EXPOSED TO INTERFERE WITH MOVING FURNITURE, BOXES, ETC.



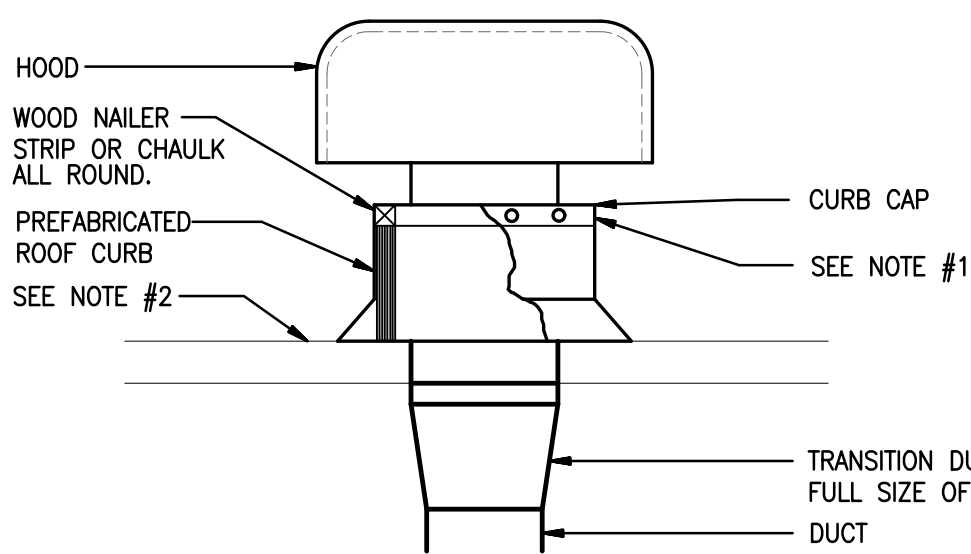
HEAT PUMP UNIT DETAIL:
NOT TO SCALE



10 TON VERTICALLY INSTALLED FAN COIL UNIT DETAIL:
NOT TO SCALE

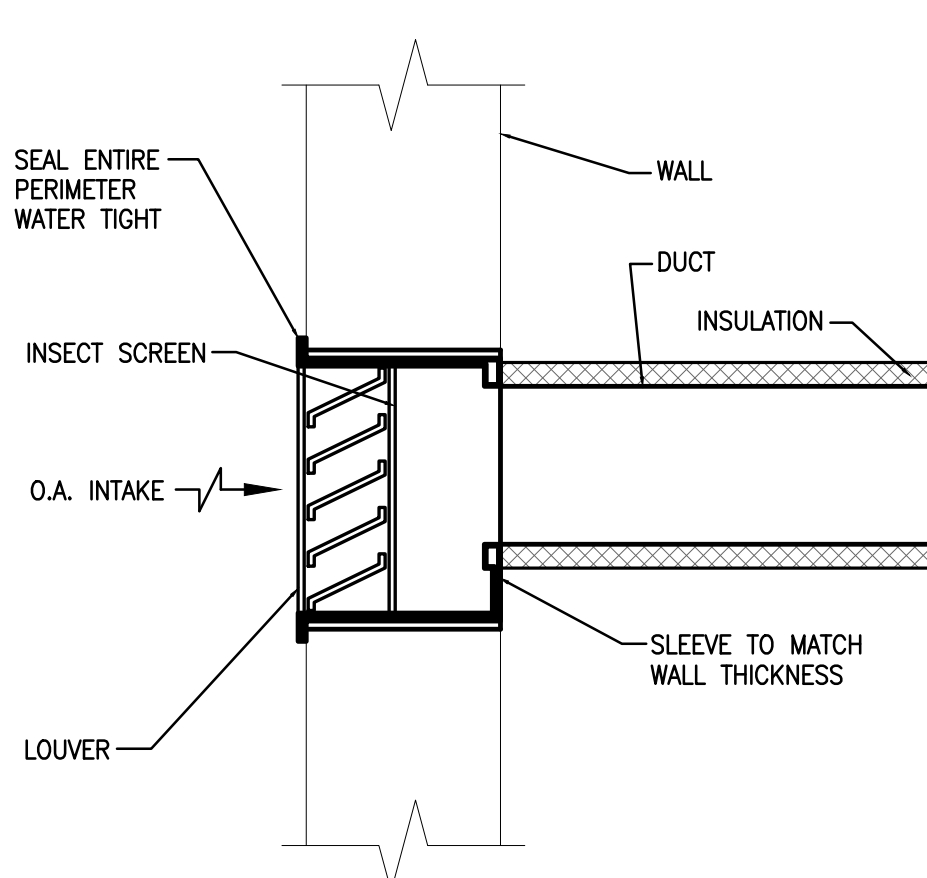


BRANCH DUCT DETAILS
NOT TO SCALE

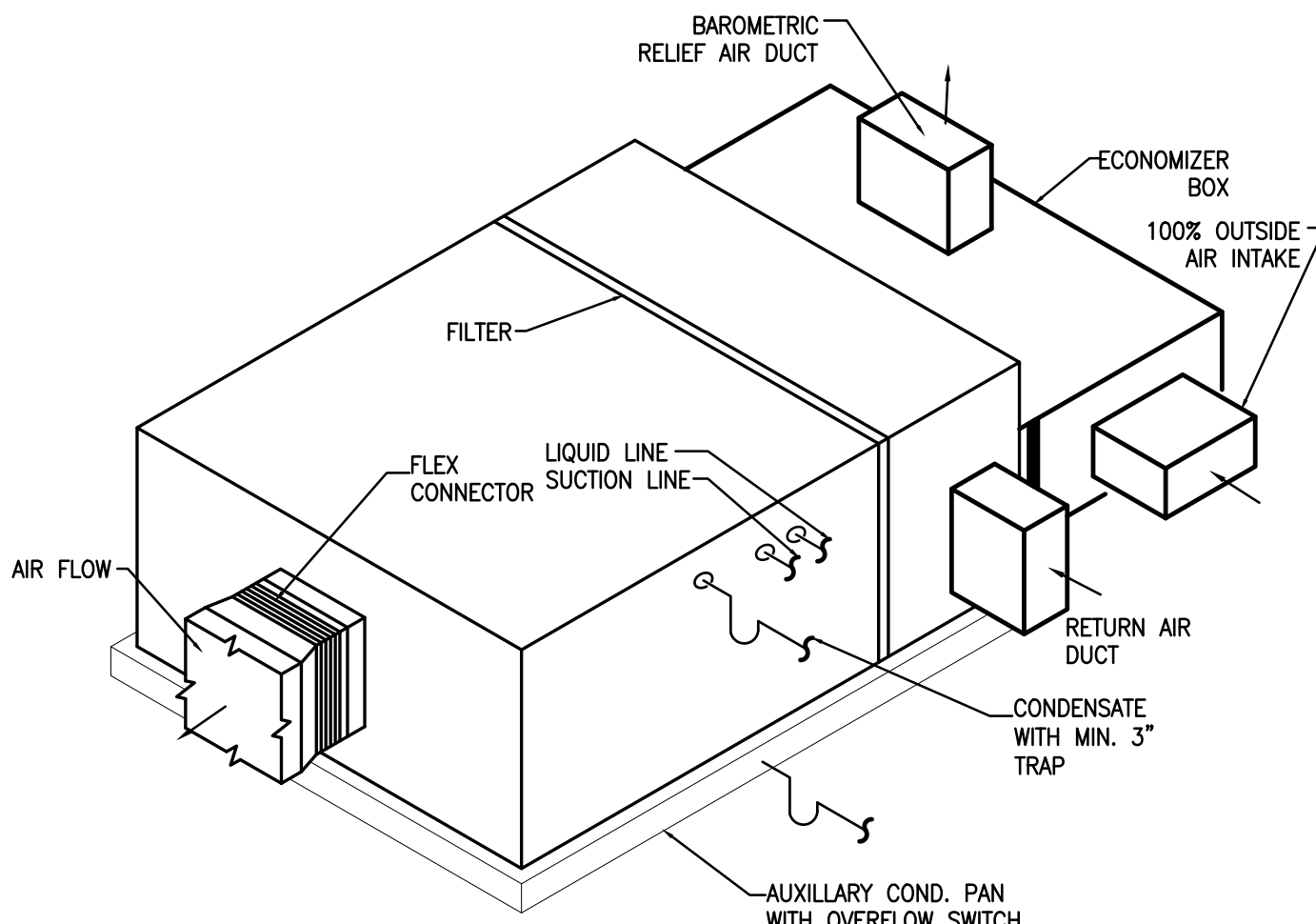


- NOTES:**
- SECURE HOOD TO WOOD NAILING STRIP PER MANUFACTURER'S DETAILS
 - SECURE ROOF CURB, DUCTWORK AND DAMPER TO ROOF TO ARCHITECT'S APPROVAL. SEE MECHANICAL NOTES. PROVIDE ROOF CURB TO SUIT PITCH

INTAKE/EXHAUST WEATHER HOOD DETAIL:
NOT TO SCALE



LOUVER INSTALLATION:
NO SCALE



10 TON HORIZONTALLY INSTALLED FAN COIL UNIT DETAIL:
NOT TO SCALE

GAI

GOODSPEED ARCHITECTS INC.

ARCHITECT OF RECORD
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GA LICENSED CONSULTING ENGINEERS

GRACE PCA PRESBYTERIAN CHURCH

HIGHWAY 76
BLAIRSVILLE, GEORGIA



GAI PROJECT NO.	2019.08
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80% COORDINATION	2020.02.28
100% CONSTRUCTION	2020.03.16

M3.0

FOR CONSTRUCTION

WATER HEATER SIZING CALCULATION:

CALCULATION OF HOT WATER DEMAND

ITEM	GPH PER ITEM	# ON PLANS	TOTAL GPH
LAVATORY/HAND SINKS	2	8	16
SHOWER	3	1	3
SINK TOTAL			19
SINK TOTAL GPH/2 = 10			10
PEAK HOUR DEMAND REQUIRED: 10 GPH @ 100 F RISE			HOT WATER DEMAND
MANUFACTURER: A.O. SMITH MODEL: DRE-52			
STORAGE CAPACITY: 50 GALLONS			
RECOVERY RATE @ 100 F RISE: 25 GPH			
#KWs = 6			#BTUs/HR = 24600

WATER HEATER SIZING CALCULATION:

CALCULATION OF HOT WATER DEMAND

ITEM	GPH PER ITEM	# ON PLANS	TOTAL GPH
		--	--
2-COMPARTMENT PREP SINK	4	1	4
MOP/CAN WASH	20	1	20
SINK TOTAL			24
SINK TOTAL GPH/2 = 12 + 3			15
PEAK HOUR DEMAND REQUIRED: 15 GPH @ 100 F RISE			DW FLOW RATE (GPH) HOT WATER DEMAND
MANUFACTURER: A.O. SMITH MODEL: ENL-40			
STORAGE CAPACITY: 38 GALLONS			
RECOVERY RATE @ 100 F RISE: 21 GPH			
#KWs = 6			#BTUs/HR = 24600
NOTES: 1. DISH WASHER CAPACITY = ESTIMATED AT 25.0 SPEC SHEET TO BE PROVIDED BY OWNER WASHER MANUFACTURER.			

ELECTRIC WATER HEATER SCHEDULE

TAG	MANUFACTURER	MODEL	CAPACITY (GAL)	ELEMENT WATTAGE	RECOVERY RATE (@ 100°F RISE)	UEF	ELECTRICAL	NOTES:	WEIGHT (LBS)
							V/PH/HZ		
EW1	A.O. SMITH	ENL-40	38	6000	21 GPH	0.89	208/1/60	1	118
EW2	A.O. SMITH	DRE-52	50	6000	25 GPH	0.90	208/1/60	1	265
NOTES: 1. PROVIDE EXPANSION TANK & T & P VALVE.									

PLUMBING FIXTURE SCHEDULE

TAG	BASIS OF DESIGN	MODEL	DESCRIPTION	ACCESSORIES
HWC	AMERICAN STANDARD	3461-001	"MADERA" FLOOR MOUNTED (1.28 GPF) FLUSH VALVE HANDICAPPED TOILET WITH 1½" TOP SPUD & ELONGATED BOWL. WATER CLOSET RIM TO BE 16½" AFF.	PROVIDE WITH ELONGATED OPEN FRONT SEAT WITHOUT LID. SLOAN "REGAL" FLUSH VALVE MODEL: 111-1.28 FLUSH HANDLES SHALL BE ON WIDE SIDE OF WATER CLOSET COMPARTMENT
WC1	AMERICAN STANDARD	2234.511	"MADERA" FLOOR MOUNTED (1.28 GPF) FLUSH VALVE TOILET WITH 1½" TOP SPUD & ELONGATED BOWL. WATER CLOSET RIM TO BE 15" AFF.	PROVIDE WITH ELONGATED OPEN FRONT SEAT WITHOUT LID. SLOAN "REGAL" FLUSH VALVE MODEL: 111-1.28 FLUSH HANDLES SHALL BE ON WIDE SIDE OF WATER CLOSET COMPARTMENT
WC2	AMERICAN STANDARD	215CB	"CADET PRO" FLOOR MOUNTED (1.28 GPF) FLUSH TANK WATER CLOSET WITH ELONGATED BOWL. WATER CLOSET RIM TO BE 15" AFF.	PROVIDE WITH ELONGATED OPEN FRONT SEAT WITHOUT LID.
UR	AMERICAN STANDARD	6590.505	"WASHBROOK" WALL MOUNTED (0.5 GPF) URINAL WITH ¾" TOP SPUD, VITREOUS CHINA & ELONGATED RIM .	PROVIDE WITH SELECTRONIC HANDS FREE FLUSH VALVE MODEL: 6063.051.
L1	AMERICAN STANDARD	9024	"DECORUM" ADA COMPLIANT, WALL HUNG LAVATORY. CONCEALED FRONT OVERFLOW, VITREOUS CHINA, WITH FAUCET HOLES ON 4" CENTERS.	PROVIDE WITH AMERICAN STANDARD MODEL: 1480.150 "SEVA" LAVATORY FAUCET WITH SINGLE LEVER HANDLE, 0.5 GPM AERATOR, McGUIRE 1-1/4" P-TRAP, SUPPLIES & STOPS.
L2	AMERICAN STANDARD	0476.028	"AQUALYN" ADA COMPLIANT, COUNTER MOUNTED LAVATORY. VITREOUS CHINA, WITH FRONT OVERFLOW & FAUCET HOLES ON 4" CENTERS.	PROVIDE WITH AMERICAN STANDARD MODEL: 7075.054 LAVATORY FAUCET WITH SINGLE LEVER HANDLE, 0.5 GPM AERATOR, McGUIRE 1-1/4" P-TRAP, SUPPLIES & STOPS.
SHR	BY ARCHITECT	---	SHOWER (SEE ARCHITECTURAL PLANS)	HANDICAPPED SHOWER FAUCET AND HEAD: SYMONS S-96-300-B30-L-V TEMPTROL PRESSURE BALANCING MIXING VALVE, POLISHED CHROME FINISH, WALL/HAND SHOWER WITH 60" METAL HOSE, 30" SLIDE BAR, SET OUTPUT WATER TEMPERATURE AT 110°F, FLOOR DRAIN & SHOWER PAN.
SCS	ELKAY	PSRADQ1919	SINGLE COMPARTMENT SINK, 20 GAUGE STAINLESS STEEL, SELF RIMMING. OVERALL DIMENSIONS 19½"x 19"x 5½" DEEP. PROVIDE WITH 2 FAUCET HOLES ON 4" CENTERS.	
BS	ELKAY	CR172113	SINGLE COMPARTMENT SINK, 20 GAUGE STAINLESS STEEL, SELF RIMMING. OVERALL DIMENSIONS 17"x 21 1/4"x 6½" DEEP. PROVIDE WITH 3 FAUCET HOLES ON 4" CENTERS.	PROVIDE WITH ELKAY FAUCET MODEL: LK2477CR WITH LEVER HANDLE, GOOSENECK SPOUT WITH (1.5 GPM) AERATOR. PROVIDE WITH LK18 PERF. GRID DRAINS, McGUIRE 1-1/2" P-TRAP & SUPPLIES AND STOPS.
DCS	ELKAY	CR33211	DOUBLE COMPARTMENT SINK, 20 GAUGE STAINLESS STEEL, SELF RIMMING. OVERALL DIMENSIONS 33"x 21¼"x 6½" DEEP. PROVIDE WITH 4 FAUCET HOLES ON 4" CENTERS.	PROVIDE WITH DELTA FAUCET MODEL: 4353-AR-DST WITH LEVER HANDLE, GOOSENECK SPOUT/PULL-OUT SPRAYER WITH (1.5 GPM) AERATOR. PROVIDE WITH LK18 PERFORATED GRID DRAINS, McGUIRE 1-1/2" P-TRAP & SUPPLIES AND STOPS.
MS	FIAT	MSB 2424	24x24 MOLDED STONE MOP SERVICE BASING. OVERALL DIMENSIONS 24"x24"x10".	PROVIDE WITH FIAT MODEL: 830-AA FAUCET WITH VACUUM BREAKER, HOSE & HOSE BRACKET, STAINLESS STEEL BUMPER GUARD & STAINLESS STEEL WALL GUARD.
MV	LAWLER	TMM-1000	UNDER-THE-COUNTER THERMOSTATIC MIXING VALVE WITH A THERMOSTATIC HIGH TEMPERATURE LIMIT STOP @ 110°F.	3/8" INLETS & 3/8" OUTLET INTEGRAL RUBBER DUCK-BILL CHECKS SET TO DELIVER MAX. 105°F TEMPERED WATER
FD	ZURN	Z-415	FLOOR DRAIN, DURACOATED CAST IRON BODY WITH BOTTOM OUTLET, COMBINATION INVERTIBLE MEMBRANE CLAMP & ADJUSTIBLE COLLAR WITH TYPE "B" POLISHED, NICKEL BRONZE STRAINER.	6" DIAMETER NICKEL-BRONZE FINISH WITH STRAINER, TRAP PRIMER CONNECTION & VANDAL PROOF SECURED TOP.
TG	MIFAB	MI-GARD	FLOOR DRAIN TRAP SEAL WITH UV RESISTANT ABS PLASTIC FRAME, SILICON RUBBER SEALING FLAPPER & FOUR SEALING RIBS. TESTED & CERTIFIED TO ASSE 1072 STANDARD.	
HD	ZURN	Z-415	HUB DRAIN, DURACOATED CAST IRON BODY WITH BOTTOM OUTLET, COMBINATION INVERTIBLE MEMBRANE CLAMP & ADJUSTIBLE COLLAR.	6" DIAMETER NICKEL-BRONZE FINISH WITH TYPE "I" STRAINER WITH RAISED LIP. 3" PIPE SIZE WITH TRAP PRIMER CONNECTION.
FCO	ZURN	Z-1400	ADJUSTABLE FLOOR CLEANOUT, DURA-COATED CAST IRON BODY, WITH GAS & WATER TIGHT ABS TAPERED THREAD PLUG & ROUND SCORIATED TOP ADJUSTABLE TO FINISHED FLOOR.	PROVIDE WITH CARPET MARKER TOP OR RECESSED SQUARE TOP FOR TILE AS REQUIRED.
GCO	ZURN	Z-1403	NON-ADJUSTABLE FLOOR CLEANOUT, DURA-COATED CAST IRON BODY, WITH GAS & WATER TIGHT ABS TAPERED THREAD COUNTERSUNK PLUG.	
WCO	ZURN	Z-1446	CLEANOUT TEE, CAST IRON BODY, GAS & WATER TIGHT ABS TAPERED THREAD PLUG, & ROUND, SMOOTH STAINLESS STEEL WALL ACCESS COVER WITH SECURING SCREW.	
NFWH	WOODFORD	65 SERIES	AUTOMATIC DRAINING, FREEZELESS HOSE BIBB WITH ANTI-SIPHON VACUUM BREAKER.	PROVIDE WITH TWO ADDITIONAL LOOSE KEY. VERIFY FINISH WITH OWNER & ARCHITECT.
CP	TACO	009	HOT WATER CIRCULATION PUMP. IN-LINE, LEAD-FREE BRONZE, WET ROTOR CIRCULATOR. DUTY: 3 GPM @ 25 FT OF HEAD. ELECTRICAL: 115 VOLT, SINGLE PHASE, 1/8 HP.	PROVIDE WITH AQUASTAT.

INSTANTANEOUS WATER HEATER SCHEDULE

TAG	MANUFACTURER	MODEL	ELEMENT WATTAGE	TEMP. RISE (°F) @ 0.5 GPM	ELECTRICAL	NOTES:
					V/PH/HZ	
IWH1	CHRONOMITE	CM-20L	2400	33	120/1/60	1
IWH2	CHRONOMITE	CM-20L	2400	33	120/1/60	1
NOTES: 1. WATER HEATER WITH FACTORY PRESET SETTING TO DELIVER MAX. 104°F HOT WATER.						

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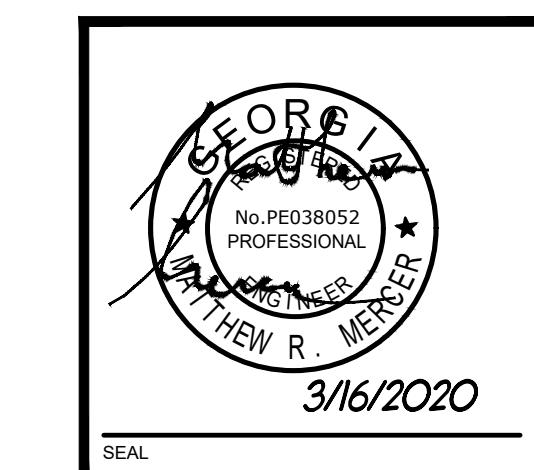
HIGHWAY 76
BLAIRSVILLE, GEORGIA



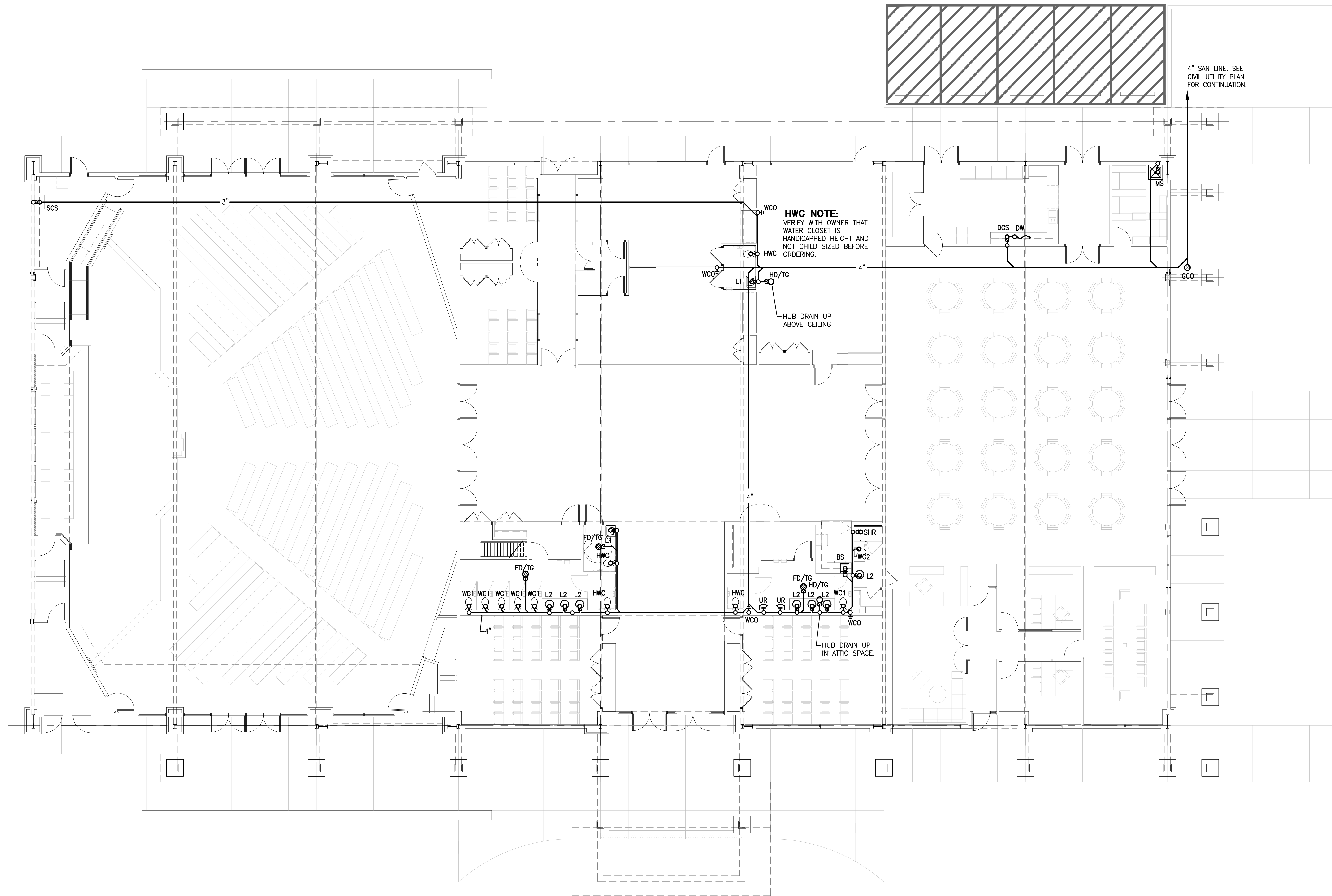
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DISTRIBUTION	
ISSUE DESCRIPTION	DATE
80% COORDINATION	2020.02.28
100% CONSTRUCTION	2020.03.16

P0.2

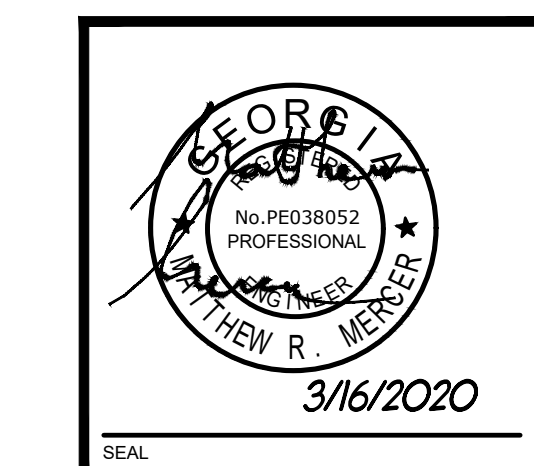
FOR CONSTRUCTION



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DISTRIBUTION	
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100% CONSTRUCTION	2020.03.16



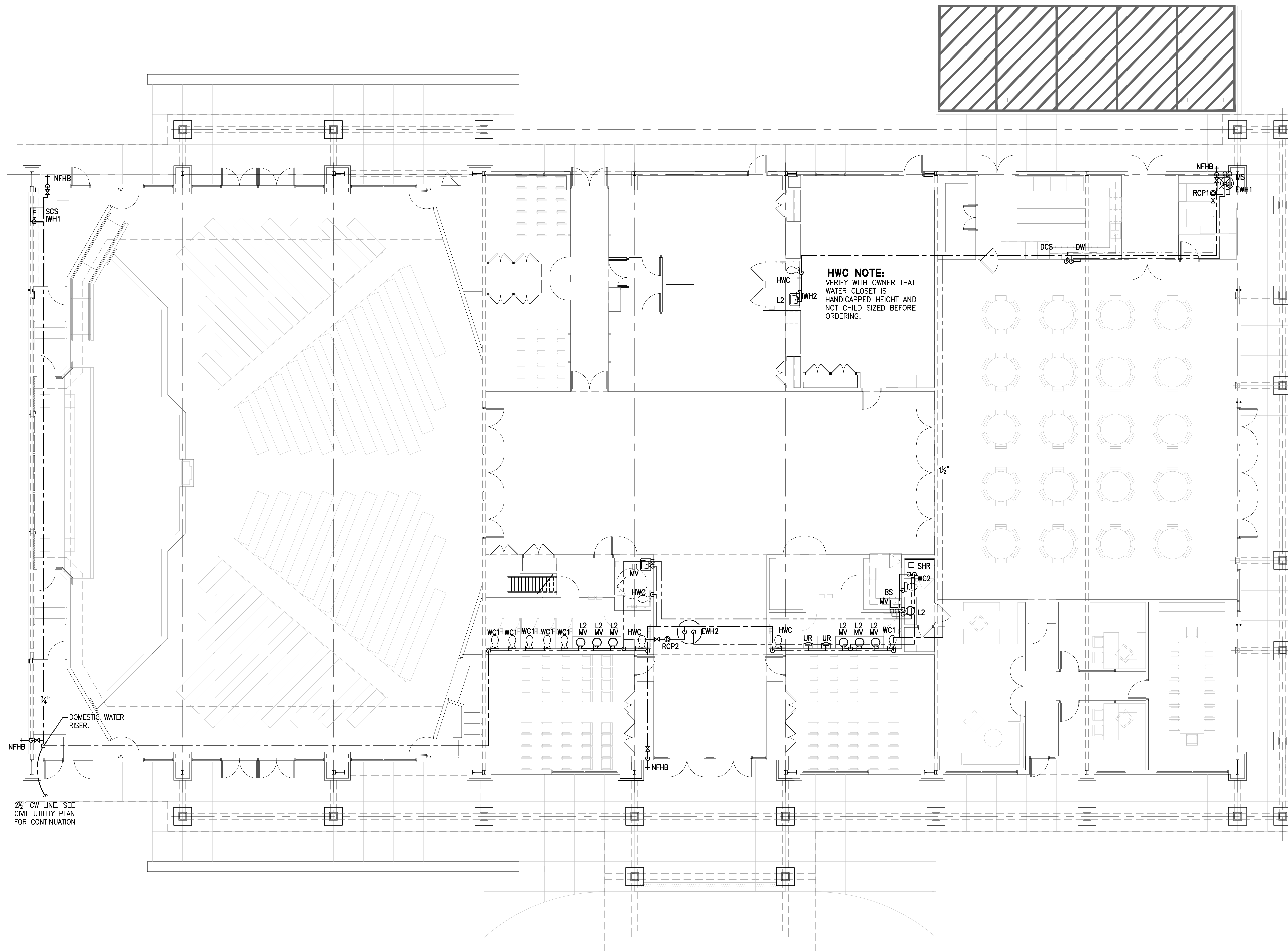
PLUMBING- SANITARY PLAN
SCALE: 1/8" = 1'-0"



GAI PROJECT NO.	2019.08
DISTRIBUTION	
ISSUE DESCRIPTION	DATE
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100% CONSTRUCTION	2020.03.16

PLUMBING-DOMESTIC WATER PLAN

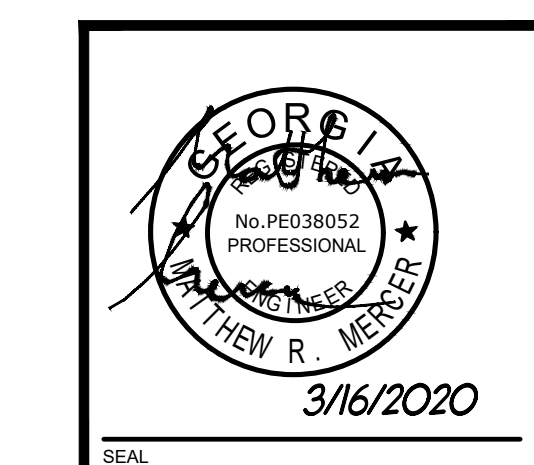
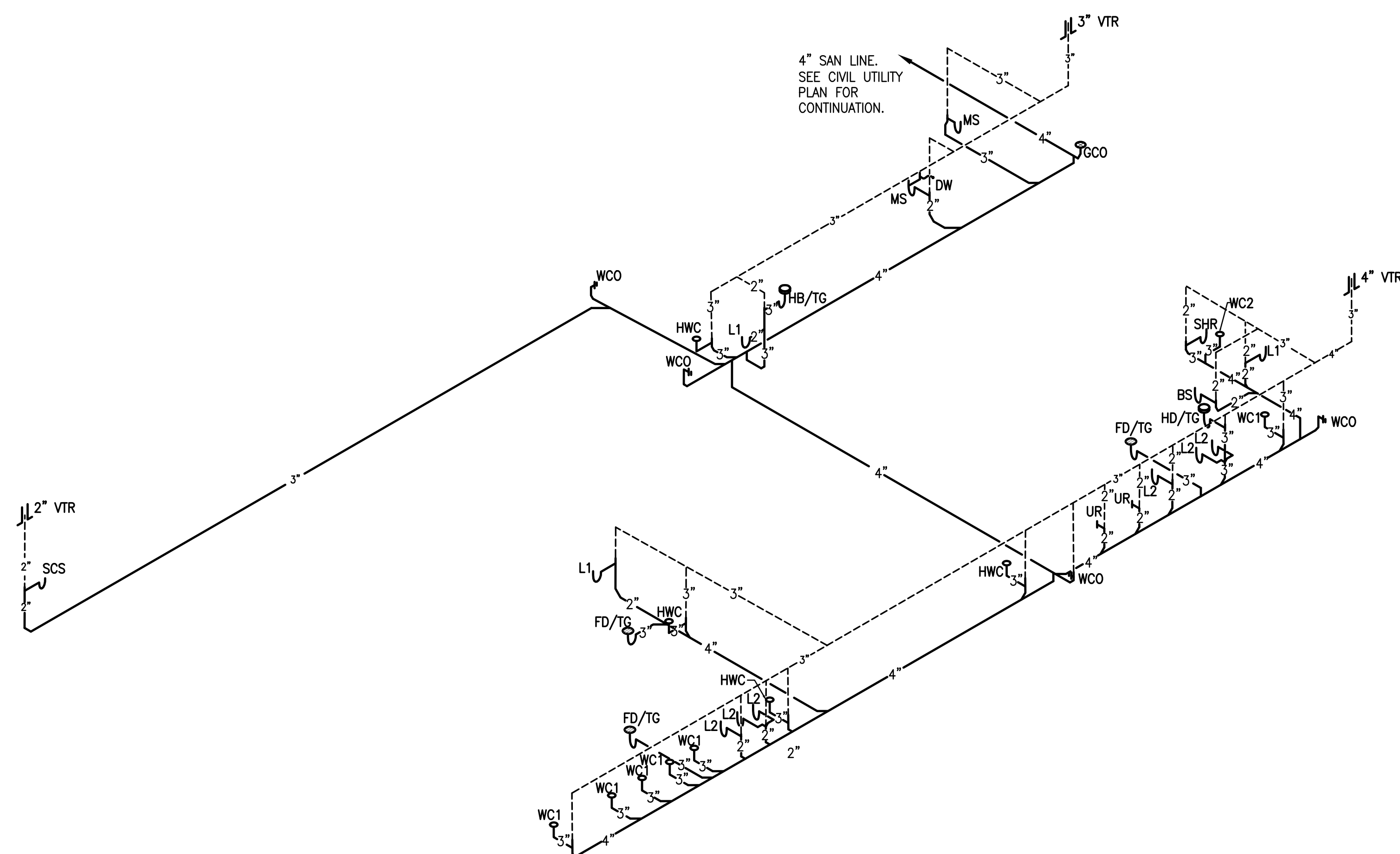
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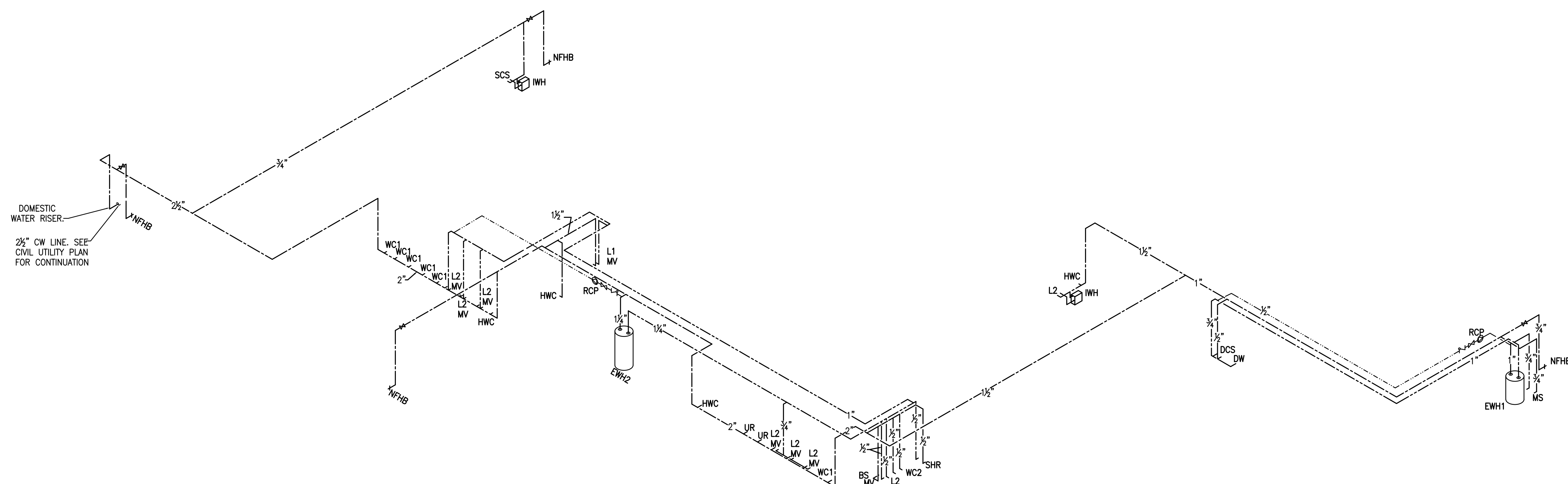
2 1/2" CW LINE. SEE
CIVIL UTILITY PLAN
FOR CONTINUATION

DOMESTIC WATER
RISER.

HWC NOTE:
VERIFY WITH OWNER THAT
WATER CLOSET IS
HANDICAPPED HEIGHT AND
NOT CHILD SIZED BEFORE
ORDERING.

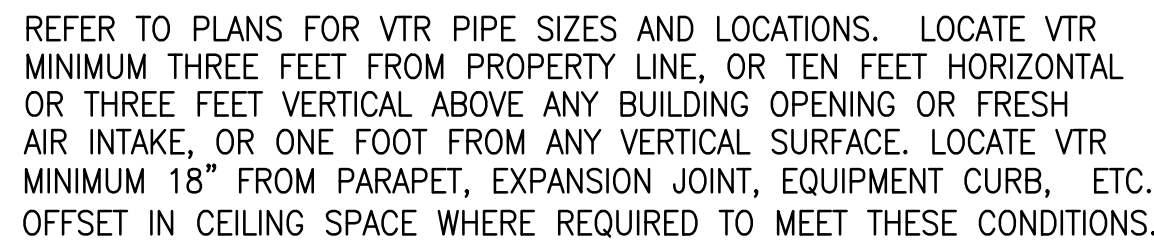
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WASTE & VENT RISER DIAGRAM
NOT TO SCALE

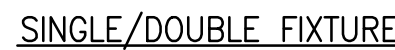


DOMESTIC WATER RISER DIAGRAM
NOT TO SCALE

FOR CONSTRUCTION



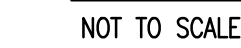
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MULTIPLE FIXTURES

FOR BATTERIES OF FIXTURES, PROVIDE WATER HAMMER ARRESTERS BY SIOUX CHIEF, PRECISION PLUMBING PRODUCTS, WATTS OR APPROVED EQUIVALENT WITH PISTON AND O-RING CONSTRUCTION, HAVING PDI # WH- 201, ASSE # 1010 AND ANSI # A112.26.1M CERTIFICATION. INSTALL IN HORIZONTAL OR VERTICAL POSITION, BUT NEVER UPSIDE DOWN. INSTALL IN LINE WITH WATER FLOW DIRECTION IF POSSIBLE. SIZE THE UNITS AS SHOWN ON THE DRAWINGS AND/OR PER THE TABLES SHOWN ABOVE. PROVIDE ACCESSIBILITY TO "WHA" WHERE REQUIRED BY LOCAL CODE.

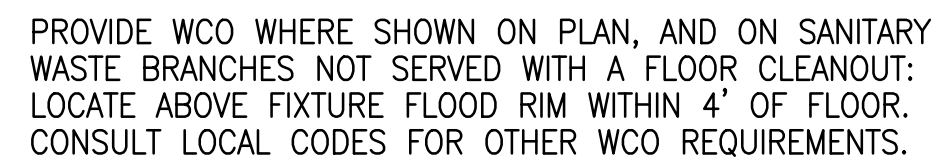
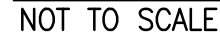
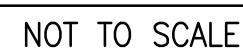
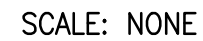
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P4.0

ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE 2017 NATIONAL ELECTRICAL CODE (NFPA 70), AS MODIFIED BY THE STATE, COUNTY, CITY AND/OR OTHER LOCAL CODES. THE SERVICE AND MAINTENANCE SHALL COMPLY WITH THE REQUIREMENTS OF THE ELECTRICAL UTILITY. PRIOR TO DISTURBING THE SOIL, CONTACT THE UNDERGROUND UTILITY LOCATION SERVICE TO LOCATE AND FLAG ALL EXISTING UNDERGROUND PIPING, COMMUNICATION AND ELECTRICAL DISTRIBUTION CABLES/CONDUIT.

2. THE CONTRACTOR SHALL PROVIDE ALL MATERIAL, LABOR, AND EQUIPMENT NECESSARY TO FURNISH A COMPLETE AND OPERABLE ELECTRICAL SYSTEM. ALL WORK SHALL BE PERFORMED IN A NEAT AND PROFESSIONAL MANNER.

3. THE CONTRACTOR SHALL VERIFY THE FOLLOWING ITEMS WITH THE ELECTRICAL UTILITY AND THE OWNER AND REPORT ANY DISCREPANCY TO THE ARCHITECT PRIOR TO THE START OF WORK:

- A. LOCATION, SIZE, NUMBER AND TYPE OF SERVICE TRANSFORMERS AND SERVICE LATERALS
- B. AVAILABLE VOLTAGE, PHASE, AND SERVICE CAPACITY
- C. AVAILABLE FAULT CURRENT AT RATED VOLTAGE, SUBMIT THIS INFORMATION WITH THE SHOP DRAWINGS ON PANELBOARDS, ALONG WITH LETTER FROM THE POWER COMPANY. THIS INFORMATION SHALL BE USED FOR LABELING OF PANELBOARDS PER NEC 110.24(A).
- D. METERING EQUIPMENT
- E. THAT THE REQUIRED NUMBER OF SERVICE CONDUCTORS SHOWN CAN BE CONNECTED TO THE TRANSFORMER LUGS
- F. THE OWNER REQUIREMENTS OF THE CONTRACTOR, IF ANY, TO MEET THE NEEDS AND/OR REQUIREMENTS OF THE UTILITY COMPANY FOR THIS PROJECT.

4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING AND PAYING THE COST FOR ALL NECESSARY TEMPORARY ELECTRICAL POWER FOR CONSTRUCTION USE.

5. THE CONTRACTOR SHALL OBTAIN, PURCHASE, AND MAINTAIN ALL PERMITS, AND INSPECTIONS REQUIRED BY THE GOVERNING AUTHORITIES FOR THE DURATION OF THIS PROJECT.

6. THE CONTRACTOR SHALL VERIFY ALL ELECTRICAL REQUIREMENTS, AND MAKE ALL FINAL CONNECTIONS, TO EQUIPMENT FURNISHED BY OTHER TRADES. THE CONTRACTOR SHALL GUARANTEE ALL MATERIALS, EQUIPMENT, AND WORKMANSHIP FOR A PERIOD OF ONE YEAR AFTER FINAL ACCEPTANCE OF THE COMPLETED PROJECT.

7. PANELBOARDS AND OTHER ELECTRICAL EQUIPMENT SHALL BE INSTALLED AS SHOWN ON THE PLANS, UNLESS NOTED OTHERWISE. MOUNT ALL WALL-MOUNTED, SURFACE TYPE, GROUPED ELECTRICAL EQUIPMENT ON 3/4" THICK EXTERIOR GRADE PLYWOOD, PAINTED GRAY, OR CONCRETE BLOCK WALLS, WHERE APPROVED BY THE UNDERGROUND UTILITY LOCATION SERVICE. THE RECESSED PANELS AND WALLS, CAVITIES, AND COORDINATE THE INSTALLATION WITH THE ARCHITECTURAL DRAWINGS, AND THE GENERAL CONTRACTOR. WORKING CLEARANCES SHALL BE 36" (FOR 240 VOLT SYSTEM) MINIMUM, AND WIDTH OF EQUIPMENT OR 30" MINIMUM, WHICHEVER IS GREATER, WIDE, PER NEC ARTICLE 110.26. WHERE A PANELBOARD IS LOCATED IN A STORAGE OR EQUIPMENT ROOM (NOT A CORRIDOR) THAT IS NOT PARTITIONED FROM OTHER USES, PLAN THE LIMITS OF THE WORKING CLEARANCES FROM NEC ARTICLE 110.26 ON THE FLOOR IN FRONT OF THE EQUIPMENT.

8. THE CONTRACTOR SHALL VERIFY AND COORDINATE WITH OTHER TRADES THE INSTALLATION OF ALL OVERCURRENT DEVICES PER ARTICLE 240.22(4). THE CONTRACTOR SHALL TAKE THE PROPER ACTION AS REQUIRED TO COMPLY WITH THIS REQUIREMENT.

9. THE CONTRACTOR SHALL COORDINATE THE WIDTH, DEPTH, HEIGHT, DOOR SWINGS, AND NEC ARTICLE 110.26 CLEARANCES FOR ALL PANELS, TRANSFORMERS, STARTERS, AND SAFETY SWITCHES TO INSURE THAT ALL EQUIPMENT FITS WITHIN THE SPACE ALLOWED.

10. IDENTIFY PANELBOARDS, SAFETY SWITCHES, STARTERS, CONTROLS, AND OTHER ELECTRICAL EQUIPMENT WITH ENGRAVED OR PLASTIC LETTERS. THE LETTERS SHALL BE 1/4" HIGH PER LARGED LETTERS, WITH NAMES TO MATCH THE SCHEDULES OR OTHER DRAWING REFERENCES. TYPE-RTITRAN PANEL DIRECTORIES SHALL BE PROVIDED IN ALL PANELBOARDS IN ACCORDANCE W/ NEC 408.4(A), AND SHALL REFLECT AS-BUILT CONDITIONS. ALSO, LABEL ALL PANELBOARDS IN ACCORDANCE W/ NEC 110.24(A) AND 408.4(B).

11. ALL WIRING, CONSISTING OF INDIVIDUAL CONDUCTORS, SHALL BE INSTALLED IN CONDUIT, EXCEPT WHERE SPECIFICALLY SHOWN ON THE DRAWINGS. ALL EXTERIOR CONDUITS AND EXPOSED CONDUITS SHALL BE RIGID GALVANIZED STEEL, OR INTERMEDIATE METAL CONDUIT, BUT THEY SHALL NOT BE MIXED ON THIS PROJECT. WHERE USED INDOORS MAY BE EMT. CONCEALED CIRCUITS MAY BE RUN IN EMT OR BE TYPE MC CABLE (BX). FOR NON-FLEXIBLE SHEATHED (TYPE NM) CABLE IS PERMITTED AS APPROVED BY AUTHORITY HAVING JURISDICTION. THE OWNER, WHERE NON-METALLIC SHEATHED (TYPE NM) CABLE IS PERMITTED AND CONSTRUCTION CONSISTS OF METAL STUDS, LISTED BUSHINGS AND LISTED GROMMETS SHALL BE INSTALLED IN THE OPENINGS WHERE THE CABLE PASSES THROUGH. IN FINISHED AREAS WITH CAVITY TYPE WALL CONSTRUCTION, ALL CONDUIT SHALL BE CONCEALED, UNLESS NOTED OTHERWISE. IN FINISHED AREAS WITH NON-CAVITY TYPE WALL CONSTRUCTION, SURFACE MOUNTED GRS, IMC, OR EMT SHALL BE USED. ALL EMPTY CONDUITS SHALL BE PROVIDED WITH A NYLON PULL CORD RATED FOR 200 POUND TENSION. ANY OF THE ABOVE TYPES OF RACEWAYS MAY BE USED, SUBJECT TO THE NEC AND THE ADDITIONAL RESTRICTIONS LISTED, IF ANY:

- A. CONCEALED:
 - 1). GRS, OR IMC.
 - 2). EMT. COMPRESSION, OR SET SCREW FITTINGS, BUT NOT BOTH TYPES.
 - 3). PVC. SCHEDULE 40. SCHEDULE 80. WHERE INDICATED ON THE DRAWINGS. UNDERGROUND ONLY.
 - 4). PLY MC CABLE. ONLY ABOVE ACCESSIBLE CEILINGS, IN WALL CAVITIES, AND ADDITIONAL USAGES AS APPROVED BY AUTHORITY HAVING JURISDICTION, AND OWNER.
- B. EXPOSED:
 - 1). GRS, OR IMC.
 - 2). EMT. COMPRESSION, OR SET SCREW FITTINGS. ONLY WHERE USED INDOORS AND NOT SUBJECT TO PHYSICAL DAMAGE.
 - 3). FLEXIBLE METAL CONDUIT.
 - 4). LIQUIDTIGHT FLEXIBLE METAL CONDUIT. OUTSIDE AND WHERE MOISTURE IS PRESENT.

12. PROVIDE EXPANSION FITTINGS IN ALL RIGID RACEWAYS CROSSING STRUCTURAL EXPANSION JOINTS. FURNISH AND INSTALL ALL SUPPORTS REQUIRED FOR CONDUIT, MATERIALS, DEVICES, EQUIPMENT AND THE LIKE, WHERE THE BUILDING STRUCTURE IS NOT ADAPTED OR SUITABLE FOR MOUNTING SAME. DIRECTLY UNDER RACEWAYS, BRACKETS SHALL NOT BE USED AS SUPPORTS FOR BOXES OR OTHER ELECTRICAL EQUIPMENT. PLENUM CABLE SUPPORT BRACKETS SHALL BE OPEN ON ONE SIDE, AND CABLES SHALL BE ATTACHED WITH PLASTIC CABLE TIES. ALL RACEWAY PENETRATIONS, THROUGH FIREWALLS, SHALL BE SEALED WITH UL LISTED SEALING COMPOUNDS TO MAINTAIN THE FIRE RATING OF THE WALL. ALL RACEWAYS/SLEEVES PASSING THROUGH AREAS OF DIFFERENT TEMPERATURES, I.E. FROM INSIDE TO OUTSIDE OF BUILDINGS AND CONNECTIONS TO REFRIGERATED EQUIPMENT, SHALL BE SEALED WITH AN APPROVED PUTTY OR DUCT-SEAL TO PREVENT THE CIRCULATION OF WARM AIR TO A COLDER SECTION OF THE RACEWAY OR SLEEVE. ALL RACEWAY PENETRATIONS THROUGH EXTERIOR AND INTERIOR WALLS AND FLOORS SHALL BE PROPERLY SEALED.

13. THE CONTRACTOR SHALL COORDINATE THE INSTALLATION OF RACEWAY SYSTEMS AND ROUGH-IN FOR ALL LOW VOLTAGE (LV) EQUIPMENT [COMPUTER, DATA, SECURITY, POINT-OF-SALE (POS), MUSIC, PAGING, INTERCOM, FIRE DETECTION, TV, AND TELEPHONE] WITH THE OWNER AND EQUIPMENT SUPPLIER(S) PRIOR TO THE INSTALLATION OF CONDUITS, JUNCTION BOXES, WIRING DEVICES, AND WIRING. ALL EMPTY CONDUITS SHALL BE PROVIDED WITH A NYLON PULL CORD. ALL PULL BOXES, DEVICE BOXES, AND JUNCTION BOXES SHALL BE SIZED PER IEC, NEMA, AND THE NATIONAL ELECTRICAL CODE. ALL WIRING WITHIN BOXES SHALL BE TAGGED WITH PANEL AND CIRCUIT NUMBERS.

14. TWENTY AMP BRANCH CIRCUITS MAY BE SHOWN WITH EITHER SINGLE CIRCUIT OR TWO CIRCUIT (MULTIWIRE BRANCH CIRCUIT) HOME RUNS. MULTIWIRE BRANCH CIRCUIT HOME RUNS SHARE A COMMON NEUTRAL, UNLESS NOTED OTHERWISE AND GROUND IN A SINGLE CONDUIT. THE CONTRACTOR MAY EJECT TO COMBINE SINGLE CIRCUIT HOME RUNS TO MAKE MULTIWIRE BRANCH CIRCUIT HOME RUNS, OR TO CHANGE MULTIWIRE BRANCH CIRCUIT HOME RUNS TO SINGLE CIRCUIT HOME RUNS. ALL MULTIWIRE BRANCH CIRCUITS SHALL HAVE A MEANS TO SIMULTANEOUSLY DISCONNECT ALL UNGROUNDED CONDUCTORS AT THE PANEL TO COMPLY W/ NEC 210.4(B).

15. PROVIDE SEPARATE GREEN, INSULATED GROUND WIRE IN ALL RACEWAYS.

16. REFER TO SINGLE LINE DIAGRAM, GROUND THE FULL SIZE SERVICE GROUNDING ELECTRODE CONDUCTOR TO THE BUILDING STEEL (IF AVAILABLE), A METALLIC COLD WATER PIPE (IF AVAILABLE) AHEAD OF THE WATER METER AND WITHIN 5' OF ITS ENTRANCE INTO THE BUILDING, THE BURIED GROUND RING (IF ONE IS TO BE PROVIDED), THEN CONNECT TO A 6 AWG (MIN.) CONNECTED TO TWO, 3/4" BY 4 TEN FOOT COPPERCLAD STEEL GROUND RODS SEPARATED BY 7" MINIMUM, AND THEN CONNECT TO A 4 AWG (MIN.) CONNECTED TO A 1/2" DIAMETER (MIN.) BY 20' REBAR IN THE FLOOR SLAB OR FOUNDATION (IF AVAILABLE/ACCESSIBLE), ALL PER NEC ARTICLE 250.66, UNLESS NOTED OTHERWISE.

17. BONDING OF METAL PIPING SYSTEMS AND EXPOSED STRUCTURAL METAL SHALL COMPLY WITH NEC 250.104(A) THRU (D).

18. ALL WIRING SHALL BE 600 VOLT, COPPER, STRANDED, WITH TYPE XHHW OR THHN/THWN INSULATION. MINIMUM SIZE FOR POWER AND LIGHTING CIRCUITS BE 12 AWG. SIZES 10 AWG AND SMALLER SHALL BE SOLD. PROVIDE AN EQUIPMENT GROUND WIRE IN ALL RACEWAYS, AND CABLE ASSEMBLIES. SIZE EQUIPMENT GROUNDS PER TABLE 250.122 OF THE NATIONAL ELECTRICAL CODE.

19. VOLTAGE DROP: THE CONTRACTOR SHALL VERIFY ACTUAL CONDUCTOR LENGTHS FOR FEEDERS AND BRANCH CIRCUITS AND ADJUST THE WIRE GAGE SUCH THAT THE VOLTAGE DROP ON FEEDERS DOES NOT EXCEED 2% AND THE VOLTAGE DROP ON BRANCH CIRCUITS DOES NOT EXCEED 3%.

20. CONDUCTOR COLOR CODES SHALL BE AS FOLLOWS:

POST IDENTIFICATION MEANS IN ACCORDANCE WITH NEC 210.5 (C).

20. ALL ELECTRICAL EQUIPMENT SHALL BE LISTED BY UNDERWRITERS LABORATORIES (OR OTHER INDEPENDENT NATIONALLY RECOGNIZED TESTING AGENCY, WHERE APPLICABLE), AND SHALL BE RATED FOR THE MAXIMUM AVAILABLE VOLTAGE AND AVAILABLE FAULT CURRENT FOR THIS PROJECT.

21. ALL REELECTRIFICATION BOXES, AND ALL ELECTRICAL BOXES, CONCEALED IN FINISHED AREAS, EXCEPT AS SPECIFICALLY SHOWN OR NOTED OTHERWISE, VERIFY ALL DOWR SWINGS BEFORE INSTALLING SWITCH BOXES. SEE ARCHITECTURAL DRAWINGS FOR CABINET WORK, WALL SECTIONS, ELEVATIONS, AND OTHER DETAILS AFFECTING THE MOUNTING HEIGHT AND LOCATION OF OUTLET BOXES.

22. WIRING DEVICES: DUPLEX RECEPTABLES SHALL BE 20A, 125 VOLTS, CONSTRUCTION SERIES, HEAVY DUTY, SPECIFICATION GRADE, BACK AND SIDE WIRED, WITH GROUNDING TERMINAL AND SHALL BE IVORY UNLESS OTHERWISE NOTED OTHERWISE, HUBBELL CS1221, THREE POLE, HUBBELL CS1221, TWO POLE, HUBBELL CS1221, THREE WAY, HUBBELL CS1223, FOUR WAY, HUBBELL CS1224 OR APPROVED EQUAL, CONTINGENT UPON FULL COMPLIANCE WITH ALL CRITERIA. AC TOGGLE SWITCHES SHALL BE 20A, 120-277 VOLTS, CONSTRUCTION SERIES, HEAVY DUTY, SPECIFICATION GRADE, BACK AND SIDE WIRED, WITH GROUNDING TERMINAL AND SHALL BE IVORY UNLESS NOTED OTHERWISE, HUBBELL CS1221, TWO POLE, HUBBELL CS1221, THREE WAY, HUBBELL CS1223, FOUR WAY, HUBBELL CS1224 OR APPROVED EQUAL, CONTINGENT UPON FULL COMPLIANCE WITH ALL CRITERIA. GROUND FAULT CIRCUIT INTERRUPTER DUPLEX RECEPTABLES SHALL BE 20A, 125 VOLTS, COMMERCIAL SPECIFICATION GRADE, HUBBELL GF5352 OR APPROVED EQUAL, CONTINGENT UPON FULL COMPLIANCE WITH ALL CRITERIA. GROUND FAULT CIRCUIT INTERRUPTER DUPLEX RECEPTABLES SHALL NOT BE THE FEED THROUGH TYPE, BUT STAND ALONE GROUND FAULT CIRCUIT INTERRUPTER DUPLEX RECEPTABLES. NEW INTERIOR EXPOSED DEVICE PLATES, IN ALL BOARDING, TREATMENT, STORAGE, GROOMING, AND EXAM LOCATIONS AND/OR WHERE SPECIFIED SHALL BE TYPE 302/304 STAINLESS STEEL. ALL OTHER INTERIOR PLATES SHALL BE NYLON, STANDARD SIZE, AND GANGED FOR MULTIPLE DEVICES AT A SINGLE LOCATION. VERIFY THE DECOR THEME WITH THE ARCHITECT AND COORDINATE COLOR AS REQUIRED. WHERE USED OUTDOORS OR IN WET LOCATIONS ALL 15 OR 20A 125 OR 250V NON-LOCKING RECEPTABLES SHALL BE WEATHER-RESISTANT LISTED, IN DAMP AREAS, THE OUTLET COVERS FOR 15 OR 20A, 125 OR 250V DEVICES SHALL BE "WEATHERPROOF WHILE IN USE", HUBBELL WP26MH OR APPROVED EQUAL, CONTINGENT UPON FULL COMPLIANCE WITH ALL CRITERIA.

23. ALL WALL OUTLETS THAT ARE SHOWN BACK TO BACK, IN FIRE RATED WALLS, SHALL BE INSTALLED WITH A MINIMUM OF 2" OF HORIZONTAL SEPARATION (TWO STUDS) PER NEC ARTICLE 300.21, AND ALL REQUIREMENTS IN WALL STUDS. THE 4" SEPARATION IS NOT POSSIBLE, BLOCKING AND GYPSUM BOARD PROVISIONS, TO MAINTAIN THE FIRE RATING OF THE WALL, SHALL BE PROVIDED BY OTHERS, NOT BY THIS CONTRACTOR.

24. ALL 125 VOLT, 15 OR 20 AMP NON-LOCKING RECEPTABLES WITHIN 6'-0" OF ANY PLUMBING FIXTURE, AND/OR WHERE INDICATED, SHALL BE 20A, 125 VOLTS, COMMERCIAL SERIES, HEAVY DUTY, SPECIFICATION GRADE, BACK AND SIDE WIRED, WITH GROUNDING TERMINAL GROUND FAULT INTERRUPTER OUTLETS, HUBBELL GF201A, OR APPROVED EQUAL, CONTINGENT UPON FULL COMPLIANCE WITH ALL CRITERIA.

25. APPLIANCE-PLUGS SHALL BE RATED 150 VOLTS TO GROUND OR LESS, 10 AMP, 150 AMP, 150 AMP, OR THREE POLE RECEPTABLES, RATED 150 VOLTS TO GROUND OR LESS, 100 AMP, 150 AMP, OR LESS, INSTALLED IN NON-DWELLING UNIT KITCHENS SHALL BE GROUND FAULT PROTECTED AS REQUIRED BY NEC 210.8(B).

26. ALL 125 VOLT, 15 OR 20 AMP CIRCUITS SERVING A DISHWASHER, VENDING MACHINE, OR ELECTRIC DRINKING FOUNTAIN SHALL BE PROTECTED WITH A GROUND FAULT TYPE BRANCH CIRCUIT BREAKER.

27. ALIGN ALL SIMILAR WIRING DEVICES IN THE SAME ROOM AT THE SAME HEIGHTS AND DISTANCES FROM ARCHITECTURAL FEATURES, UNLESS NOTED OTHERWISE. GANG ALL DEVICE BOXES AT THE SAME LOCATION, WHERE ALLOWED BY CODE. PROVIDE DIVIDERS TO SEPARATE WIRING DEVICES (I.E., THERMOSTAT) DEVICES FROM (POWER DIVER DIVIDES), ALL EXTERIOR WIRING DEVICES SHALL BE BLACK, GRAY, OR BROWN, UNLESS NOTED OTHERWISE.

28. ALL UNIT EQUIPMENT FOR EMERGENCY LIGHTING SHALL BE CONNECTED TO BRANCH CIRCUITS FOR NORMAL LIGHTING IN THE SAME AREA, UNLESS NOTED OTHERWISE, AHEAD OF ANY LOCAL SWITCHES OR CONTACTORS PER NEC ARTICLE 700.12(F).

29. LUMINAIRE INSTALLED IN INSULATED CEILINGS SHALL BE IC RATED, AND INSTALLED PER THE LUMINAIRE MANUFACTURER'S AND UL LISTING REQUIREMENTS.

30. THIS PROJECT MAY UTILIZE BOTH ACCESSIBLE AND NON-ACCESSIBLE TYPE CEILINGS. REFER TO ARCHITECTURAL DRAWING FOR ACTUAL CEILING TYPES IN EACH AREA. LIGHTING CIRCUITS IN NON-ACCESSIBLE CEILINGS MUST UTILIZE FIXTURE-MOUNTED JUNCTION BOXES WHICH ARE USUALLY LIMITED TO EIGHT (8) WIRES IN THEIR CAPACITY. CIRCUITING FOR THE LIGHTING IS SCHEMATIC, BUT GENERALLY ATTEMPTS TO SHOW THESE CONSIDERATIONS. HOWEVER, CONTRACTOR MAY WANT TO PROVIDE SUPPLEMENTARY JUNCTION BOXES IN ACCESSIBLE AREAS, OR OVERSIZE FIXTURE BOXES TO OPTIMIZE THE WIRING.

31. ELECTRICAL DRAWINGS ARE IN PART DIAGRAMMATIC. LOCATE LIGHTING FIXTURES SYMMETRICALLY OR IN PROPER RELATION TO FINISHED AREAS UNLESS OTHERWISE DIMENSIONED OR DETAILED. THE CONTRACTOR SHALL COORDINATE ALL LUMINAIRE LOCATIONS AND CLEARANCES WITH THE DWTCWORK, THE REFLECTED CEILING PLAN, HVAC PLAN, AND OTHER DRAWINGS TO AVOID CONFLICTS.

32. A NUMERAL BESIDE BRANCH CIRCUIT OUTLET INDICATES PANELBOARD CIRCUIT CONNECTION. UPPER-CASE LETTER OR LETTER-GROUP BESIDE LIGHTING FIXTURE INDICATES FIXTURE TYPE. LOWER-CASE LETTER BESIDE LIGHTING FIXTURE OUTLET INDICATES LOCAL SWITCH TYPE. ELECTRICAL SYMBOLS USED ARE APPLICABLE GENERALLY; FOR EXACT REQUIREMENTS REFER TO APPLICABLE SCHEDULES AND DETAILS AND TO THE SPECIFICATIONS. HOWEVER, COMBINING OF CIRCUITS IN RACEWAYS, OTHER THAN DETAILED, WILL NOT BE PERMITTED. RUNNING OF BRANCH CIRCUITS, OTHER THAN THE ONE SERVING THE FIXTURE, THROUGH LIGHTING FIXTURE CHANNELS OR HOUSINGS WILL NOT BE PERMITTED.

33. ALL SAFETY SWITCHES SHALL BE FURNISHED BY THE CONTRACTOR, UNLESS NOTED OTHERWISE AND SHALL NOT BE RELOCATED. SAFETY SWITCHES SHALL BE GENERAL PURPOSE, TYPE 1, CLASS 1, 150 AMP, 150 AMP, SQUARE D, CUTLER-HAMMER, SIEMENS ENERGY & AUTOMATION, OR APPROVED EQUAL, CONTINGENT UPON FULL COMPLIANCE WITH ALL CRITERIA, AND SHALL BE FUSED AND/OR NOT FUSED AS INDICATED, 240 VOLT, THREE POLE, HEAVY DUTY, IN A NEMA 3R ENCLOSURE FOR OUTDOOR USE OR WHERE MOISTURE IS PRESENT, AND NEMA 1 ENCLOSURE FOR INDOOR USE. UNLESS NOTED OTHERWISE, ALL FUSES SHALL BE NON-RENEWABLE, DUAL ELEMENT, TIME DELAY, CURRENT LIMITING, CLASS J, 1, RK-5, OR RK-1, WITH A 200,000 AMP AC RMS INTERRUPTING RATING, AND SHALL MEET UL STANDARD 198E.

34. ALL REELECTRIFICATION BOXES, AND ALL ELECTRICAL BOXES, CONCEALED IN FINISHED AREAS, EXCEPT AS SPECIFICALLY SHOWN OR NOTED OTHERWISE, VERIFY ALL DOWR SWINGS BEFORE INSTALLING SWITCH BOXES. SEE ARCHITECTURAL DRAWINGS FOR CABINET WORK, WALL SECTIONS, ELEVATIONS, AND OTHER DETAILS AFFECTING THE MOUNTING HEIGHT AND LOCATION OF OUTLET BOXES.

A. POWER DISTRIBUTION PANELBOARDS SHALL BE CUTLER-HAMMER POW-R-LINE 4B, SIEMENS TYPE 54 OR 55, ABB-GENERAL ELECTRIC TYPE SCP PLUS OR SPECTRA, SQUARE D I-LINE, OR APPROVED EQUAL, CONTINGENT UPON FULL COMPLIANCE WITH ALL CRITERIA. THE HIGHEST OPERATING HANDLE SHALL BE A 100,000 AMP AC RMS INTERRUPTING RATING, AND SHALL MEET UL STANDARD 198E.

B. LIGHTING AND APPLIANCE PANELBOARDS SHALL BE OF PANELBOARD CONSTRUCTION, 20 INCHES WIDE (MINIMUM), 5-3/4" TO 6-1/2" DEEP, UL LISTED, AND MEET UL 67, UL 50, UL CLASS CTL, AND FEDERAL SPECIFICATION 302-11 PL-TYPED ALUMINUM BUS BARS, NEUTRAL BUS, GROUND BUS, OR ISOLATED GROUND BUS (WHERE REQUIRED) AND A HINGED LOCKABLE DOOR.

UNLESS OTHERWISE STATED THE AMP INTERRUPTING CAPACITY (AIC) RATING OF THE PANELS SHALL BE 65KAIC. WHEN PANEL SHOP DRAWING ARE SUBMITTED WITH A FAULT CURRENT LETTER FROM THE UTILITY THE RATING MAY BE REDUCED TO THE NEXT AIC RATING ABOVE THE AVAILABLE FAULT CURRENT.

PROVIDE THE NUMBER OF SPACES AND SPARE CIRCUIT BREAKERS AS SHOWN IN THE PANELBOARD SCHEDULES.

35. ALL CIRCUIT BREAKERS w/ A TRIP RATING OF 1,200 AMPS OR GREATER THAT IS FIXED OR ADJUSTABLE SHALL COMPLY WITH NEC 240.87.

36. THE BRANCH CIRCUITS SHALL BE PHASE ADJUSTED TO PROVIDE APPROXIMATE BALANCED LOADING ON EACH PANEL, AND THE SERVICE.

37. PROVIDE THE SUBMITTALS. PROVIDE THE OWNER A MINIMUM OF THREE COPIES OF SHOP DRAWINGS WITH TECHNICAL DATA HINGE-LIGHTED, INDICATING THAT IT MEETS THE REQUIREMENTS FOR ELECTRICAL EQUIPMENT INSTALLED ON THIS PROJECT. SHOP DRAWINGS ARE REQUIRED FOR: PANELBOARDS, SAFETY SWITCHES, LUMINAIRES, EMERGENCY LIGHTING EQUIPMENT, RACEWAYS, CONDUCTORS, ISOLATED GROUND RECEPTABLES, LIGHTING CONTROLS AND WIRING DEVICES. CONTRACTOR SHALL VERIFY AVAILABLE FAULT CURRENT WITH UTILITY COMPANY FOR PROPER PANEL ASYMMETRICAL INTERRUPTING RATINGS. SUBMIT THIS INFORMATION WITH THE SHOP DRAWINGS. PANELBOARDS, ALONG WITH LETTER FROM THE POWER COMPANY. SHOP DRAWINGS SHALL BE BOUND HARD COPIES, ELECTRONIC COPIES ARE NOT ACCEPTABLE.

SUBSTITUTIONS FOR LIGHTING FIXTURES SHALL BE PRE-APPROVED PRIOR TO BID. THE CONTRACTOR SHALL PROVIDE THE PHOTOMETRIC CALCULATIONS FOR THE EXTERIOR LIGHTING TO INDICATED THE LIGHTING

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3. PROVIDE A MANUALLY/AUTOMATICALLY INITIATED FIRE ALARM SYSTEM THAT COMPLIES WITH THE REQUIREMENTS OF NFPA ARTICLE 72; NFPA ARTICLE 90A; NFPA ARTICLE 101 AND THE AMERICANS WITH DISABILITIES ACT (ADA).

2. SEE THE ARCHITECTURAL PROJECT SUMMARY SHEET FOR THE PROJECT CLASSIFICATION.

3. INITIATION OF AN ALARM CONDITION SHALL BE IN ACCORDANCE WITH NFPA CODES AS STATED ABOVE, AND SHALL BE IN THE FORM OF MANUALLY OPERATED PULL STATIONS, SMOKE/HEAT DETECTORS AND AUTOMATIC SPRINKLER OPERATION AS REQUIRED.

4. THE FIRE ALARM SYSTEM SHALL COMPLY WITH THE REQUIREMENTS STATED IN PARAGRAPH 3. ABOVE AND, THE REQUIREMENTS OF STATE AND LOCAL AUTHORITIES HAVING JURISDICTION (AHJ). THIS MAY BE THE CITY FIRE MARSHAL. COVERAGE OF PROTECTION AFFORDED SHALL BE 100%.

5. ALARM INITIATION DEVICES SHALL CONSIST OF (BUT NOT LIMITED TO) MANUAL PULL STATIONS LOCATED AT EACH BUILDING ENTRANCE/EXIT, SPRINKLER MAIN FLOW SWITCH, HVAC DUCT SMOKE DETECTORS AND PHOTOELECTRIC/ULTRAVIOLET SMOKE DETECTORS AND HEAT DETECTORS. ALARM INITIATION DEVICES SHALL BE SUPERVISED FOR ALARM CONDITIONS AS WELL AS FOR MALFUNCTIONING CONDITIONS. THE ALARM INITIATION DEVICES SHALL BE FULLY ADDRESSABLE FOR SIMPLIFICATION OF MONITORING AND ALARM INITIATION. THE SPRINKLER MAIN PRIMARY SHUT-OFF VALVE AND PIV SHALL ALSO BE MONITORED AND SUPERVISED FOR EVIDENCE OF TAMPERING. ALL ALARM INITIATION DEVICES SHALL BE FROM THE SAME MANUFACTURER AND COMPATIBLE WITH THE FIRE ALARM CONTROL PANEL. ALL ALARM INITIATING DEVICES SHALL BE UL LISTED FOR THE INTENDED PURPOSE.

6. OCCUPANT NOTIFICATION DEVICES SHALL CONSIST OF (BUT NOT LIMITED TO) AUDIBLE SIGNALING DEVICES, VISUAL SIGNALING DEVICES AND COMBINATION AUDIBLE/VISUAL SIGNALING DEVICES. THESE DEVICES SHALL COMPLY WITH THE REQUIREMENTS OF NFPA AND ADA FOR OPERATION, AUDIBLE INTENSITY AS WELL AS VISUAL INTENSITY. ALL OCCUPANT NOTIFICATION DEVICES SHALL BE FULLY ADDRESSABLE FOR SIMPLIFICATION OF SUPERVISION FOR MALFUNCTIONING CONDITIONS. ALARM NOTIFICATION DEVICES SHALL BE FROM THE SAME MANUFACTURER AND COMPATIBLE WITH THE FIRE ALARM CONTROL PANEL. ALL OCCUPANT NOTIFICATION DEVICES SHALL BE UL LISTED FOR THE INTENDED PURPOSE.

7. PROVIDE A COMPLETE FIRE ALARM CONTROL PANEL WHICH SHALL PROVIDE FOR SUPERVISION OF ALL ZONED ALARM INITIATION DEVICES, DETECTION OF ALARM CONDITIONS, DETECTOR OPERATION OF FIRE SPRINKLER TAMPER AND FLOW SWITCHES AND DRIVE ALL OCCUPANT NOTIFICATION DEVICES. THE FIRE ALARM CONTROL PANEL SHALL BE PROVIDED WITH AUTOMATIC BATTERY BACK-UP. THE FIRE ALARM CONTROL PANEL SHALL BE PROVIDED WITH AN AUTOMATIC TELEPHONE DIALER THAT SHALL NOTIFY THE DESIGNATED INDIVIDUAL(S) UPON DETECTION OF AN ALARM CONDITION.

8. THE ZONES FOR THE FIRE ALARM SYSTEM SHALL BE DIVIDED TO COINCIDE WITH THE BUILDING FUNCTIONAL AREAS. MANUAL INITIATION DEVICES SHALL BE LOCATED AT EACH ENTRANCE/EXIT. AS A MINIMUM, THERE SHALL BE PROVIDED ONE (1) MANUAL ALARM INITIATION DEVICES FOR EACH BUILDING ENTRANCE/EXIT DOOR. THE HVAC DUCT SMOKE DETECTORS SHALL BE TREATED AS A SEPARATE ZONE AND SUPERVISED ACCORDINGLY BY THE FIRE ALARM CONTROL PANEL. THE AUTOMATIC SPRINKLER SYSTEM SHUT-OFF VALVE TAMPER SWITCHES AND THE AUTOMATIC SPRINKLER FIRE MAIN FLOW SWITCH SHALL BE PROVIDED WITH SEPARATE SUPERVISED INPUTS TO THE FIRE ALARM CONTROL PANEL. THE TAMPER SWITCHES SHALL INITIATE A MALFUNCTION ALARM UPON ACTUATION, OR MALFUNCTION. THE FLOW SWITCHES SHALL INITIATE AN ALARM SIGNAL UPON ACTUATION. ALL INPUT DEVICES SHALL BE NORMALLY OPEN WITH NO DETECTION OF FIRE, SMOKE OR FLOW. ALARM CONDITIONS SHALL BE INITIATED BY CONTACT CLOSURE. ABNORMAL MALFUNCTION CONDITIONS SHALL BE INITIATED BY LOW SUPERVISORY CURRENT FLOW, OR OPEN CIRCUIT CONDITIONS. THE FIRE ALARM SYSTEM PROVIDER SHALL COORDINATE WITH THE FIRE SPRINKLER DESIGN AND SUPPLY CONTRACTOR TO DETERMINE THE NUMBER AND LOCATION OF DEVICES.

9. THE FIRE ALARM SYSTEM SHALL BE A DESIGN AND SUPPLY SUBCONTRACT TO THE GENERAL CONTRACTOR. THE INSTALLATION SHALL BE DONE BY A FIRM SPECIALIZING IN THIS TYPE OF WORK. THE WORK SHALL INCLUDE PREPARATION OF COMPLETE LAYOUT DRAWINGS AND SHALL BE APPROVED BY THE AUTHORITY HAVING JURISDICTION. ALL FEES INCLUDING PERMITTING AND INSPECTIONS SHALL BE PAID BY THE CONTRACTOR. COORDINATE SYSTEM REQUIREMENTS WITH THE AHJ PRIOR TO DESIGN.

10. THE FIRE ALARM CONTRACTOR SHALL SUBMIT TO THE AUTHORITY HAVING JURISDICTION DRAWINGS FOR APPROVAL AND PERMITTING. THE SUBMITTAL PACKAGE SHALL CONTAIN THE FOLLOWING:

- A. POINT TO POINT DIAGRAM
- B. RISER DIAGRAM
- C. SEQUENCE OF OPERATION
- D. BATTERY LOCATIONS
- E. A POINT LEDGER
- F. MANUFACTURERS CUT SHEETS
- G. COPY OF CONTRACTOR LICENSE(S)
- H. COPY OF FM PLACARD OR UL LISTING FOR MONITORING STATION

11. APPROVED MANUFACTURERS:

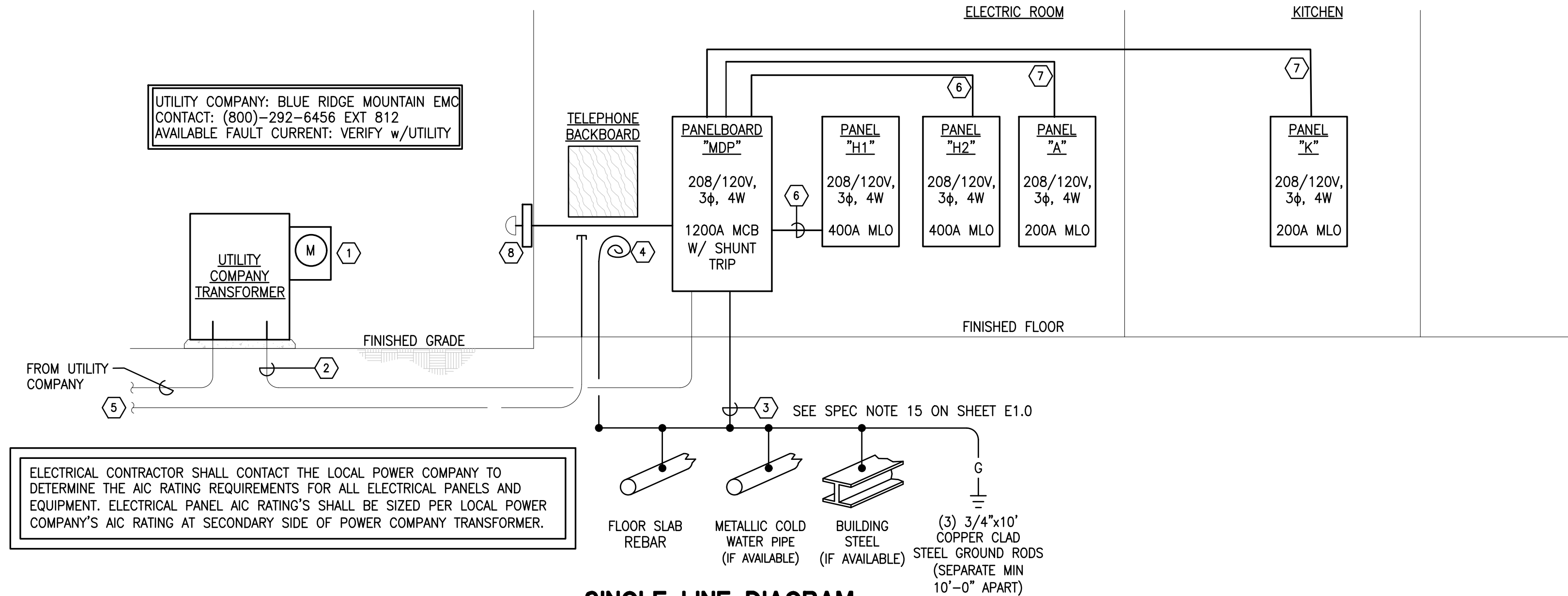
- A. SILENT KNIGHT
- B. SIEMENS
- C. CERBERUS PYROTRONICS

COORDINATE WITH THE GENERAL CONTRACTOR THE INSTALLATION OF A KNOX BOX KEY LOCK AT LOCATION DESIGNATED BY THE FIRE MARSHAL. RECEIVE FROM FIRE PREVENTION DIVISION.

12. SYSTEM SHALL BE FOR THE ENTIRE BUILDING AS APPROVED BY THE AUTHORITY HAVING JURISDICTION.

PROVIDE FIRE ALARM MANUAL PULL STATIONS (48" AFF), COMBINATION HORN/STROBES (80" AFF) & RTU SMOKE DETECTOR CONNECTIONS THROUGHOUT THE BUILDING AS REQUIRED BY THE AHJ APPROVED SHOP DRAWINGS. REFER TO SPECIFICATIONS ON E1.1.

PANEL: MDP		MAIN DISTRIBUTION PANEL				
MAINS: 1200A		VOLTAGE: 120/208		VAC		
MLO/MCB: MCB		PHASE: 3				
W/ SHUNT TRIP		WIRE: 4		MOUNTING: SURFACE		
POLE	FRAME	TRIP	FEEDER	CONDUIT	SERVICES	CONNECTED LOAD (VA)
3	400	400	SEE RISER	4"	PANEL "H1"	163,790
3	400	400	SEE RISER	4"	PANEL "H2"	167,822
3	225	200	SEE RISER	2-1/2"	PANEL "A"	40,112
3	225	200	SEE RISER	2-1/2"	PANEL "K"	54,955
3	100	60	4#4, 1#10G	1-1/4"	SPD	0
NOTES:					TOTAL CONNECTED LOAD 426,679	
AIC: 65,000						



SCALE: NONE

BASIS OF DESIGN ABB-GENERAL ELECTRIC.
ALL CONDUCTORS COPPER.

1. POWER COMPANY REVENUE METER & METERING CABINET MOUNTED ON TRANSFORMER.
2. 4-SETS 4-350KCM IN 4°C.
3. PROVIDE A #3/0 STRANDED BARE COPPER GROUNDING ELECTRODE CONDUCTOR IN A 1" PVC CONDUIT TO 6" BELOW FINISHED GRADE. BOND TO THE GROUNDING ELECTRODE SYSTEM PER NEC 250.
4. 1#4 CU GREEN INSULATED CONDUCTOR IN 1" PVC CONDUIT. COIL 10' FOR CONNECTION TO TELEPHONE BACKBOARD. BOND TO GROUNDING ELECTRODE SYSTEM.
5. MINIMUM 2" PVC CONDUIT w/ PULL CORD TO TELEPHONE PEDESTAL, COORDINATE CONDUIT SIZES w/ OWNER & TELEPHONE CO. PRIOR TO INSTALLATION. COORDINATE LOCATION OF TELEPHONE PEDESTAL w/ CIVIL PLANS & UTILITY.
6. 4-600KCM, 1-#3G, 4°C.
7. 4-3/0, 1#6G, 2-1/2°C.
8. "FIRE DEPARTMENT MAIN DISCONNECT". PROVIDE A SHUNT-TRIP PUSH BUTTON IN A FIRE MARSHAL APPROVED LOCKABLE ENCLOSURE. LOCATE AND LABEL AS DIRECTED BY THE FIRE MARSHAL.

[illegible]

PANEL H02			VOLTAGE: 208/120 VAC					
MAINS: 400A			PHASE: 3					
MLO/MCB: MLO			WIRE: 4			MOUNTING: SURFACE		
BRKR	TRIP POLES	DESCRIPTION	LOAD(VA)	PHASE	LOAD(VA)	DESCRIPTION	TRIP POLES	BRKR
1			5,820	A	5,980			2
3	50/3	FC1	5,820	B	5,980	FC9	60/2	4
5			5,820	C	5,730			6
7				A	5,730	FC10	60/2	8
9	3P	SPACE		B	5,730			10
11				C	5,730	FC11	60/2	12
13			5,820	A	5,472			14
15	50/3	FC3	5,820	B	5,472	FC12	50/3	16
17			5,820	C	5,472			18
19			5,820	A	5,472			20
21	50/3	FC4	5,820	B	5,472	FC13	50/3	22
23			5,820	C	5,472			24
25			5,980	A		SPACE	1P	26
27	60/2	FC5	5,980	B		SPACE	1P	28
29			4,116	C		SPACE	1P	30
31	35/3	FC6	4,116	A		SPACE	1P	32
33			4,116	B		SPACE	1P	34
35			5,980	C		SPACE	1P	36
37	60/2	FC7	5,980	A		SPACE	1P	38
39			5,730	B		SPACE	1P	40
41	60/2	FC8	5,730	C		SPACE	1P	42
TOTAL PHASE A:			56,190					
TOTAL PHASE B:			55,941			TOTAL CONNECTED: 167,822		
TOTAL PHASE C:			55,691			TOTAL DEMAND: 134,258		
AIC: 65,000								
NOTES: PROVIDE WITH EQUIPMENT GROUND BUS.								

PANEL "A" TWO SECTIONS				VOLTAGE: 208/120 VAC					
MAINS: 200A				PHASE: 3					
MLO/MCB: MLO				WIRE: 4					
				MOUNTING: SURFACE					
BRKR	TRIP POLES	DESCRIPTION	LOAD(VA)	PHASE	LOAD(VA)	DESCRIPTION	TRIP/ POLES	BRKR	
1	20/1	LTS- CHILD /BABY /TODDLER	1,719	A	540	REC-TODDLER RM	20/1	2	
3	20/1	LTS-BACK OF SANCTUARY	361	B	540	REC-BABY RM	20/1	4	
5	20/1	LTS-BATH/ADULT WO. _EF,2	1,049	C	540	REC- CORRIDOR	20/1	6	
#	7	20/1	LTS-SANCTUARY	1,192	A	540	REC-CHILDREN 1	20/1	8
9	20/1	LTS-SANCTUARY	1,032	B	540	REC-CHILDREN 2	20/1	10	
#	11	20/1	LTS-SANCTUARY	1,032	C	540	REC-ENTRY HALL	20/1	12
#	13	20/1	LTS-SANCTUARY	352	A	540	REC-ENTRY HALL	20/1	14
#	15	20/1	LTS GRAND HALL	1,020	B	360	REC-GRAND HALL	20/1	16
17	20/1	LTS GRAND HALL	1,296	C	540	REC-ADULT WOMEN	20/1	18	
19	20/1	UC REFRIGERATOR	500	A	360	REC-ADULT WOMEN	20/1	20	
21	20/1	UC REFRIGERATOR	500	B	360	REC-SANCTUARY	20/1	22	
23	20/1	REC-TODDLER RM	180	C	540	REC-SANCTUARY	20/1	24	
25	20/1	REC-BABY RM	180	A	540	REC-SANCTUARY	20/1	26	
27	20/1	LTS- CANOPY	862	B	360	REC-STORAGE	20/1	28	
29	20/1	LTS- CANOPY	901	C	540	REC-SANCTUARY	20/1	30	
31	20/1	LTS- CANOPY / WALLPACKS	269	A	360	REC-SANCTUARY	20/1	32	
33	20/1	LTS-MECHANICAL RM	235	B	720	REC-SANCTUARY	20/1	34	
37	20/1	REC-MECHANICAL RM	360	A	2,400	IWH1	25/1	36	
39	20/1	ELECTRIC HOIST	924	B	360	REC-EXTERIOR	20/1	38	
41	20/1	LTS-PARKING LOT	670	C	360	REC-EXTERIOR	20/1	42	
43	20/1	LTS-PARKING LOT	670	A	360	REC-TELE BOARD	20/1	44	
45	20/1	LTS-PARKING LOT	670	B	500	FIRE ALARM	20/1	46	
47	20/1	LIGHTING CONTROLS	500	C	3,000			48	
49	20/1	SIGN	1,200	A	3,000	EW2	30/2	50	
51	20/1	LIGHTING CONTROLS	500	B	360	RECEPTACLES	20/1	52	
53	15/2	EW1	998	C		SPARE	20/1	54	
55			998	A-53.55		SPARE	20/1	56	
57	20/1	SPARE		B		SPARE	20/1	58	
59	20/1	SPARE		C		SPARE	20/1	60	
TOTAL PHASE A:			13,861						
TOTAL PHASE B:			10,625	TOTAL CONNECTED: 40,112					
TOTAL PHASE C:			15,626	TOTAL DEMAND: 32,089					
A/C: 65,000									
NOTES: PROVIDE WITH EQUIPMENT GROUND BUS.									
# PROVIDE LOCK-ON BREAKER									
## VIA LIGHTING CONTROL SYSTEM.									

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GRACE PCA
PRESBYTERIAN
CHURCH

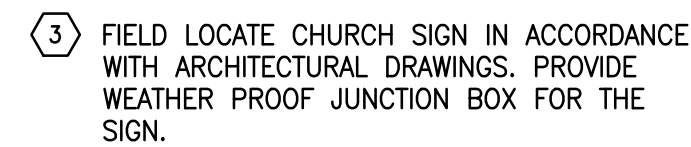
HIGHWAY 76
BLAIRSVILLE, GEORGIA



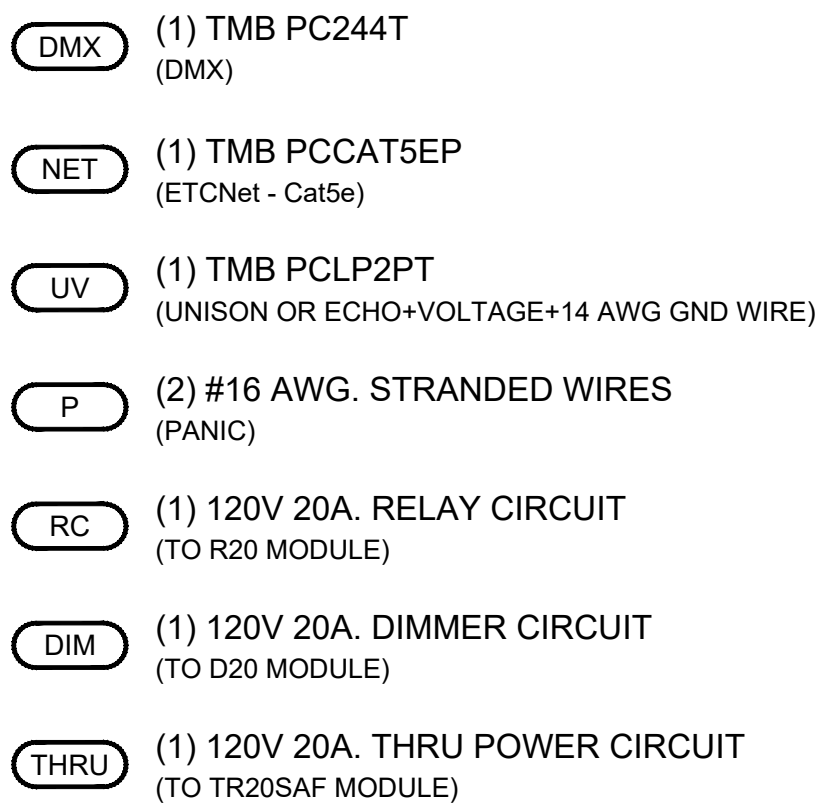
GAI PROJECT NO.	2019.08
DISTRIBUTION	
ISSUE DESCRIPTION	DATE
80% COORDINATION	2020 02 28
100% CONSTRUCTION	2020 03 16

E1.1

FOR CONSTRUCTION



SCALE: NONE

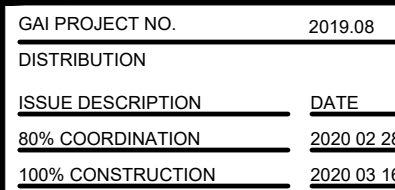


BASIS OF DESIGN IS ETC (ELECTRONIC
THEATRE CONTROLS). REP. IS "ARDD &
WINTER" MONIQUE NORMAN, TEL:
770-368-2740

SCALE: NONE

SCALE: NONE

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E1.3



SEAL

GAI PROJECT NO.	2019.08
DISTRIBUTION	
ISSUE DESCRIPTION	DATE
80% COORDINATION	2020.02.28
100% CONSTRUCTION	2020.03.16

COMcheck Software Version 4.1.2.1
Interior Lighting Compliance Certificate**Project Information**

Energy Code: 2015 IECC
Project Title: Grace Presbyterian Church
Project Type: New Construction

Construction Site: Highway 76, Blairsville, GA
Owner/Agent: Peter Basis, MBE, Inc., 8681 Highway 92, Suite 400, Woodstock, GA 30189, 678-795-0333, MBE@MBEINC.NET

Additional Efficiency Package(s)

Reduced interior lighting power. Requirements are implicitly enforced within interior lighting allowance calculations.

Allowed Interior Lighting Power

A Area Category	B Floor Area (ft ²)	C Allowed Watts / ft ²	D Allowed Watts (B X C)
1-Church (Religious Building)	19635	0.90	17672
Total Allowed Watts = 17672			

Proposed Interior Lighting Power

A Fixture ID - Description / Lamp / Wattage Per Lamp / Ballast	B Lamps/ Fixture	C # of Fixtures	D Fixture Watt.	E (C X D)
1-Church (Religious Building)				
LED 1: A: 2X4: Other:	1	33	44	1436
LED 2: A1: 2X4: Other:	1	25	39	965
LED 3: A2: 2X4: Other:	1	33	35	1165
LED 4: A3: 2X4: Other:	1	12	49	587
LED 5: A4: 2X2: Other:	1	15	42	627
LED 6: B: DOWN LIGHT: Other:	1	51	14	724
LED 7: C: LED STRIP: Other:	1	14	25	350
LED 8: F: DOWN LIGHT: Other:	1	26	11	286
LED 9: G: CHURCH PENDANT: Other:	2	8	258	2064
LED 9 copy 1: G1: CHURCH PENDANT: Other:	2	8	149	1192
LED 9 copy 2: G2: CHURCH PENDANT: Other:	2	8	211	1688
LED 12: J: PENDANT: Other:	1	6	11	66
LED 13: V: VANITY LIGHT: Other:	1	4	23	92
LED 13 copy 1: V1: VANITY LIGHT: Other:	1	1	15	15
Total Proposed Watts =				11259

Project Title: Grace Presbyterian Church
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Interior Lighting PASSES: Design 36% better than code**Interior Lighting Compliance Statement**

Compliance Statement: The proposed interior lighting design represented in this document is consistent with the building plans, specifications, and other calculations submitted with this permit application. The proposed interior lighting systems have been designed to meet the 2015 IECC requirements in COMcheck version 4.1.2.1 and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

PETER BASIS, P.E.

Name - Title: Peter Basis, P.E.
Signature: [Signature]
Date: 03-16-2020

Project Title: Grace Presbyterian Church
Data filename: Y:\2019 Jobs\David Goodspeed\Grace_Church\ENERGY\GRACE_CHURCH_BLAIRSVILLE.cck
Report date: 03/12/20
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COMcheck Software Version 4.1.2.1
Exterior Lighting Compliance Certificate**Project Information**

Energy Code: 2015 IECC
Project Title: Grace Presbyterian Church
Project Type: New Construction
Exterior Lighting Zone: 1 (Developed area in national or state park)

Construction Site: Highway 76, Blairsville, GA
Owner/Agent: Peter Basis, MBE, Inc., 8681 Highway 92, Suite 400, Woodstock, GA 30189, 678-795-0333, MBE@MBEINC.NET

Allowed Exterior Lighting Power

A Area/Surface Category	B Quantity	C Allowed Watts / Unit	D Tradable Wattage	E Allowed Watts (B X C)
Church Parking (Parking area)	60445 ft ²	0.04	Yes	2418
Main Entrance (Main entry)	12 ft of door	20	Yes	240
Other Door (Other door (not main entry))	57 ft of door	20	Yes	1140
Canopy (Entry canopy)	5003 ft ²	0.25	Yes	1251
Total Tradable Watts (a) =				5049
Total Allowed Watts =				5049
Total Allowed Supplemental Watts (b) =				500

(a) Wattage tradeoffs are only allowed between tradable areas/surfaces.
(b) A supplemental allowance equal to 500 watts may be applied toward compliance of both non-tradable and tradable areas/surfaces.

Proposed Exterior Lighting Power

A Fixture ID - Description / Lamp / Wattage Per Lamp / Ballast	B Lamps/ Fixture	C # of Fixtures	D Fixture Watt.	E (C X D)
Church Parking (Parking area 60445 ft ²): Tradable Wattage				
LED 1: SA: POLE MTD: Other:	1	4	134	536
LED 1 copy 1: SB: POLE MTD: Other:	1	4	134	536
Main Entrance (Main entry 12 ft of door width): Tradable Wattage				
LED 3: H: WALL MTD: Other:	1	2	13	26
Other Door (Other door (not main entry) 57 ft of door width): Tradable Wattage				
LED 4: D: CANOPY LIGHT: Other:	1	8	15	118
LED 5: H: WALL MTD: Other:	1	12	13	156
Canopy (Entry canopy 5003 ft ²): Tradable Wattage				
LED 6: D: CANOPY LIGHT: Other:	1	45	15	686
Total Tradable Proposed Watts =				2038

Project Title: Grace Presbyterian Church
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Exterior Lighting PASSES: Design 63% better than code**Exterior Lighting Compliance Statement**

Compliance Statement: The proposed exterior lighting design represented in this document is consistent with the building plans, specifications, and other calculations submitted with this permit application. The proposed exterior lighting systems have been designed to meet the 2015 IECC requirements in COMcheck version 4.1.2.1 and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

PETER BASIS, P.E.

Name - Title: Peter Basis, P.E.
Signature: [Signature]
Date: 03-16-2020

Project Title: Grace Presbyterian Church
Data filename: Y:\2019 Jobs\David Goodspeed\Grace_Church\ENERGY\GRACE_CHURCH_BLAIRSVILLE.cck
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COMcheck Software Version 4.1.2.1
Inspection Checklist

Energy Code: 2015 IECC

Requirements: 0.0% were addressed directly in the COMcheck software

Text in the "Comments/Assumptions" column is provided by the user in the COMcheck Requirements screen. For each requirement, the user certifies that a code requirement will be met and how that is documented, or that an exception is being claimed. Where compliance is itemized in a separate table, a reference to that table is provided.

Section # & Req. ID	Plan Review	Complies?	Comments/Assumptions
C103.2 [PR4] ¹	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the interior lighting and electrical systems and equipment and document where exceptions to the standard are claimed. Information provided should include interior lighting power calculations, wattage of bulbs and ballasts, transformers and control devices.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C103.2 [PR8] ¹	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the exterior lighting and electrical systems and equipment and document where exceptions to the standard are claimed. Information provided should include exterior lighting power calculations, wattage of bulbs and ballasts, transformers and control devices.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C406 [PR9] ¹	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the additional energy efficiency package options.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	

Additional Comments/Assumptions:

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

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Section # & Req. ID	Rough-In Electrical Inspection	Complies?	Comments/Assumptions
C405.2.1 [EL1] ¹	Lighting controls installed to uniformly reduce the lighting load by at least 50%.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C405.2.1 [EL8] ¹	Occupancy sensors installed in required spaces.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C405.2.1 [EL23] ¹	Independent lighting controls installed per approved lighting plans and all manual controls readily accessible and visible to occupants.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C405.2.2 [EL22] ¹	Automatic controls to shut off all building lighting installed in all buildings.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C405.2.3 [EL16] ¹	Daylight zones provided with individual controls that control the lights independent of general area lighting.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C405.2.3 [EL20] ¹	Primary sidelighted areas are equipped with required lighting controls.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C405.2.3 [EL21] ¹	Enclosed spaces with daylight area under skylights and rooftop monitors are equipped with required lighting controls.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C405.2.4 [EL4] ¹	Separate lighting control devices for specific uses installed per approved lighting plans.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C405.2.4 [EL8] ¹	Additional interior lighting power allowed for special functions per the approved lighting plans and is automatically controlled and separated from general lighting.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C405.2.5 [EL23] ¹	Automatic lighting controls for exterior lighting installed. Controls will be daylight controlled, set based on business operation time-of-day, or reduce connected lighting > 30%.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C405.3 [EL6] ¹	Exit signs do not exceed 5 watts per face.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	

Additional Comments/Assumptions:

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

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Section # & Req. ID	Final Inspection	Complies?	Comments/Assumptions
C303.2.1 [F17] ¹	Furnished O&M instructions for systems and equipment to the building owner or designated representative.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C405.4.1 [F18] ¹	Interior installed lamp and fixture lighting power is consistent with what is shown on the approved lighting plans, demonstrating proposed watts are less than or equal to allowed watts.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Interior Lighting fixture schedule for values.
C405.5.1 [F19] ¹	Exterior lighting power is consistent with what is shown on the approved lighting plans, demonstrating proposed watts are less than or equal to allowed watts.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	See the Exterior Lighting fixture schedule for values.
C408.2.5 [F16] ¹	Furnished as-built drawings for electric power systems within 90 days of system acceptance.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	
C408.3 [F13] ¹	Lighting systems have been tested to ensure proper calibration, adjustment, programming, and operation.	<input type="checkbox"/> Complies <input type="checkbox"/> Does Not <input type="checkbox"/> Not Observable <input type="checkbox"/> Not Applicable	

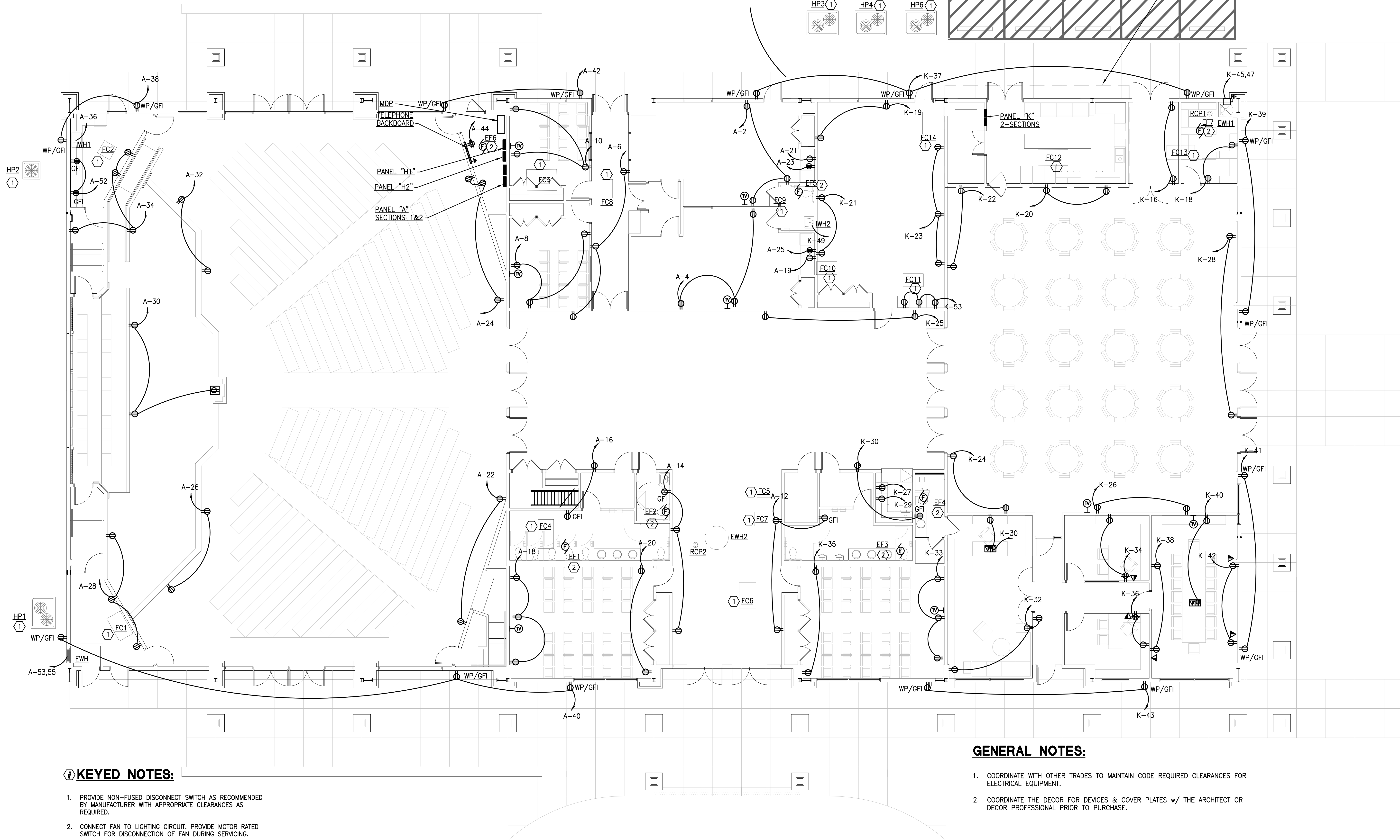
Additional Comments/Assumptions:

1 High Impact (Tier 1) 2 Medium Impact (Tier 2) 3 Low Impact (Tier 3)

Project Title: Grace Presbyterian Church
Data filename: Y:\2019 Jobs\David Goodspeed\Grace_Church\ENERGY\GRACE_CHURCH_BLAIRSVILLE.cck
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GENERAL LOW VOLTAGE SYSTEMS NOTES:

1. THIS PLAN IS ONLY INTENDED TO BE A GENERAL LAYOUT OF DEVICES. THE FINAL DESIGN OF SYSTEMS ON THIS SHEET SHALL BE PER THE LOW VOLTAGE CONTRACTOR PROVIDING THE SYSTEM(S). ALSO, SEE FIRE ALARM SPECIFICATIONS THIS SHEET.
2. THE ELECTRICAL CONTRACTOR SHALL COORDINATE WITH ALL OTHER LOW-VOLTAGE CONTRACTORS (R.E.; SECURITY, TELEPHONE, DATA, ETC.) AND PROVIDE POWER AND CONDUIT FOR THEIR SYSTEMS AS REQUIRED IN ACCORDANCE WITH ELECTRICAL SPECIFICATIONS NOTE 11 ON SHEET E1.0. THE CONTRACTOR SHALL NOTIFY THE OWNER IF ADDITIONAL POWER CIRCUITS ARE REQUIRED FOR LOW-VOLTAGE SYSTEMS PRIOR TO ROUGH-IN. THE GENERAL CONTRACTOR SHALL VERIFY ALL SYSTEMS HAVE THE REQUIRED POWER AND CONDUITS COORDINATED PRIOR TO BID & NO ADDITIVE CHANGE ORDERS WILL BE ACCEPTED FOR LOW VOLTAGE SYSTEMS CHANGES OTHER THAN OWNER REQUESTED CHANGES AFTER THE BID.



GAI

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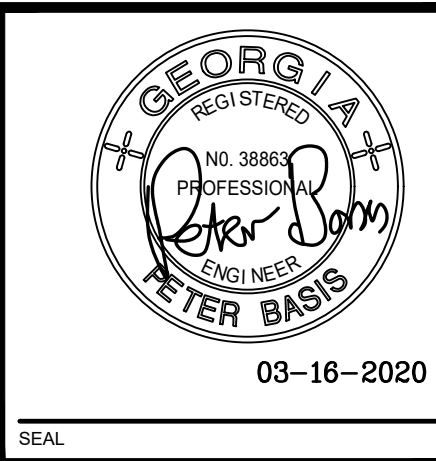
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PRESBYTERIAN
CHURCH

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BLAIRSVILLE, GEORGIA



GAI PROJECT NO.	2019.08
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100% CONSTRUCTION	2020.03.16

E2.0

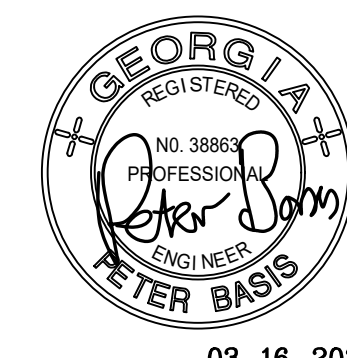
FOR CONSTRUCTION

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GENERAL NOTES:

1. COORDINATE WITH OTHER TRADES TO MAINTAIN CODE REQUIRED CLEARANCES FOR ELECTRICAL EQUIPMENT.
2. COORDINATE THE DECOR FOR DEVICES & COVER PLATES w/ THE ARCHITECT OR DECOR PROFESSIONAL PRIOR TO PURCHASE.

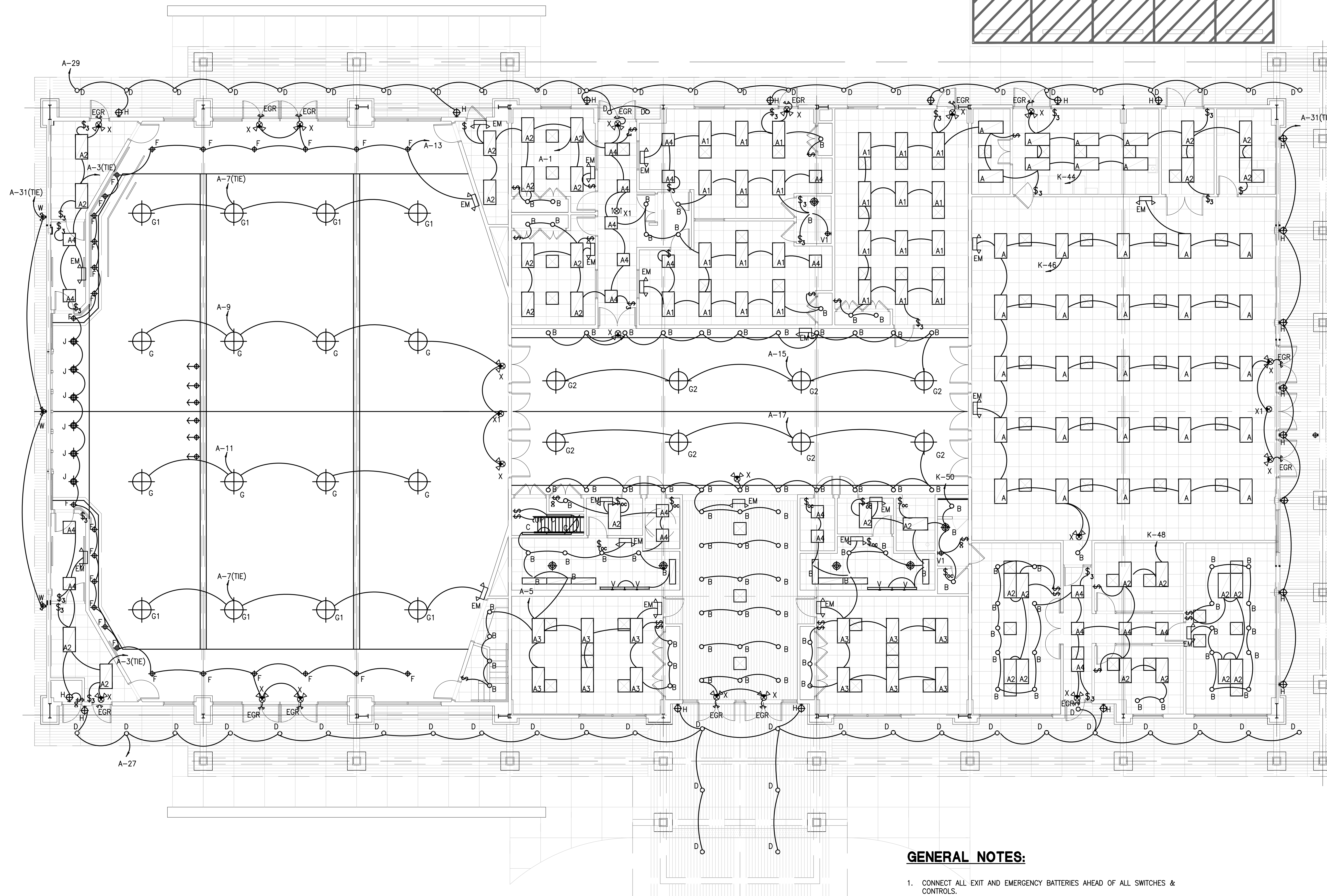
POWER PLAN
SCALE: 1/8" = 1'-0"



SEAL

GAI PROJECT NO.	2019.08
DISTRIBUTION	
ISSUE DESCRIPTION	DATE
80% COORDINATION	2020.02.28
100% CONSTRUCTION	2020.03.16

E3.0



LIGHTING PLAN

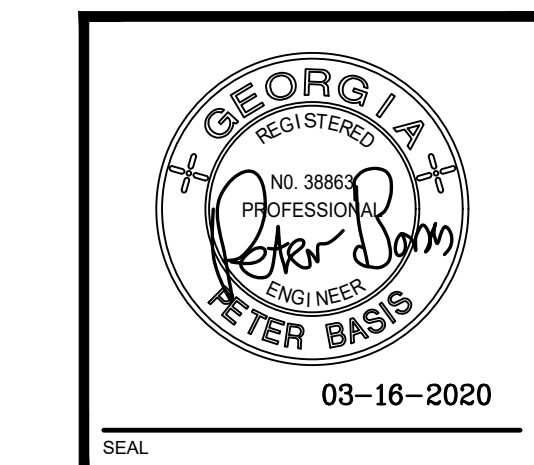
SCALE: 1/8" = 1'-0"

GENERAL NOTES:

- CONNECT ALL EXIT AND EMERGENCY BATTERIES AHEAD OF ALL SWITCHES & CONTROLS.
- FIELD VERIFY EMERGENCY EGRESS LIGHTING LEVELS PROVIDED COMPLY W/ NFPA 101 7.9.2.1, 1.0 FOOT-CANDLE AVERAGE & 0.1 FOOT-CANDLE MINIMUM. PROVIDE ADDITIONAL FIXTURES AS REQUIRED TO MEET THIS REQUIREMENT OR AS DIRECTED BY THE AHJ.
- COORDINATE WITH OTHER TRADES TO MAINTAIN CODE REQUIRED CLEARANCES FOR ELECTRICAL EQUIPMENT.
- COORDINATE THE DECOR FOR DEVICES & COVER PLATES W/ THE ARCHITECT OR DECOR PROFESSIONAL PRIOR TO PURCHASE.

FOR CONSTRUCTION

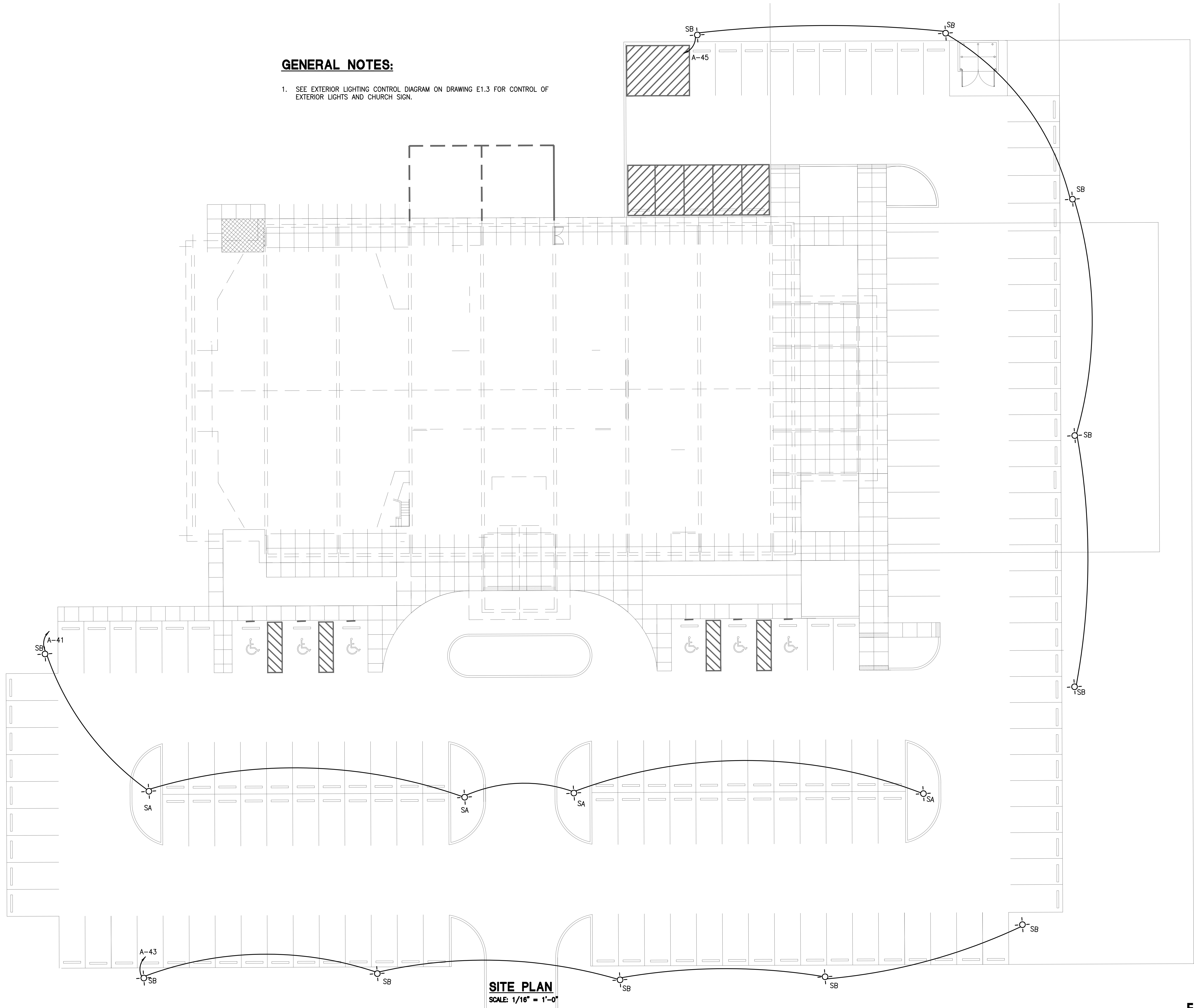
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GENERAL NOTES:

- SEE EXTERIOR LIGHTING CONTROL DIAGRAM ON DRAWING E1.3 FOR CONTROL OF EXTERIOR LIGHTS AND CHURCH SIGN.



SITE PLAN
SCALE: 1/16" = 1'-0"

FOR CONSTRUCTION