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 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. A TECHNICIAN, 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 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 TIGHTINESS, 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 CABINETRY 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.

DUCTWORK:

24. 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.
25. SEAL ALL LONGITUDINAL & TRANSVERSE SEAMS ON ALL DUCTWORK WITH UL 181A OR 181B TAPES AND MASTICS.
26. DUCTING EXPOSED TO VIEW SHALL BE SPIRAL LOCK SEAM, ROUND DUCT INSTALLED NEATLY TO ARCHITECT'S APPROVAL; CLEAN AND FACTORY PRIME AND FIELD PAINT TO ARCHITECT SPECIFIED COLOR; THE SUPPORTS USED SHALL NOT DEFORM THE DUCT OUT-OF-ROUND. HANGERS SHALL BE APPROVED BY THE ARCHITECT. ROUND DUCT SHALL BE SINGLE/DOUBLE WALL DUCT SYSTEM, INCLUDING MANUFACTURER MADE DUCT FITTINGS, INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.
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

28. MANUAL VOLUME DAMPERS:

    A. 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.
    B. AFTER FINAL ADJUSTMENT OF SYSTEM, LOCK QUADRANTS AND MARK CLEARLY SHOWING DAMPER POSITION, (OPEN AND SHUT POSITIONS).
    C. DAMPERS IN ROUND DUCT SHALL BE SINGLE BLADE TYPE.
    D. 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.

29. DUCT SIZES SHOWN ARE INSIDE CLEAR DIMENSIONS.
30. ALL DUCTWORK, AND EQUIPMENT SHALL BE SUPPORTED INDEPENDENTLY FROM STRUCTURAL MEMBERS. PROVIDE ADDITIONAL SUPPORT MEMBERS WHERE REQUIRED TO ACHIEVE SMACNA RECOMMENDED SUPPORT SPACING.
31. 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.
32. DUCTWORK SHALL BE RIGID SHEETMETAL EXCEPT FOR 8 FOOT MAXIMUM FLEXIBLE DUCTS AT AIR REGISTERS.
33. 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.
34. TRANSITION RECTANGULAR DUCTWORK ON THE BOTTOM AND THE SIDES. MAINTAIN DUCTWORK LEVEL AND AS HIGH AS POSSIBLE UNLESS NOTED OTHERWISE.
35. THE FINISH ON DIFFUSERS, REGISTERS, GRILLES, LOUVERS, ETC., SHALL BE APPROVED BY THE ARCHITECT.
36. PORTIONS OF DUCTWORK OR PIPING VISIBLE THROUGH GRILLES AND REGISTERS IN FINISHED AREAS SHALL BE PAINTED FLAT BLACK.
37. 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.
38. TRANSFORM DUCT SIZE SHOWN TO SUIT EQUIPMENT CONNECTION SIZE AT CONNECTIONS TO EQUIPMENT.
39. 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.
40. ALL NEW RIGID SHEETMETAL SUPPLY, RETURN AND OUTDOOR AIR DUCTWORK, SHALL BE INSULATED WITH 2" THICK, 1 LB DENSITY DUCT INSULATION WITH FIRE RATED VAPOR BARRIER (INSTALLED R=6).
41. 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.
42. RETURN AIR DUCT INSIDE THE AIR CONDITIONED SPACE NEED NOT BE EXTERNALLY INSULATED. ALL SHEETMETAL SURFACES, INCLUDING THE TOPS OF SUPPLY AIR DIFFUSERS EXPOSED ABOVE THE CEILING SHALL BE INSULATED.
43. EXHAUST DUCT SHALL NOT BE INSULATED UNLESS OTHERWISE NOTED.
44. DUCT LINER IN RECTANGULAR DUCT SHALL BE 1.0" THICK FIBERGLASS WITH THE AIR SIDE COATED WITH A FIRE RETARDANT COMPOUND. THE DUCT LINER SHALL HAVE AN AVERAGE THERMAL CONDUCTIVITY OF 0.27 BTU-INCH PER SQUARE FOOT PER DEGREE F. PER HOUR OR LESS AT 75 DEGREES F. NRC SHALL BE 0.9 MINIMUM. DUCT LINER SHALL BE CUT TO PROVIDE OVERLAPPED AND COMPRESSED LONGITUDINAL CORNER JOINTS. DUCT LINER SHALL BE ADHERED TO THE DUCTWORK WITH A 100% COVERAGE OF THE SHEET METAL SURFACES USING A FIRE RETARDANT ADHESIVE. INSULATION SHALL CONTAIN EPA REGISTERED IMMOBILIZED ANTIMICROBIAL AGENT TO EFFECTIVELY RESIST THE GROWTH OF BACTERIA AND FUNGI AS PROVEN BY TESTS IN ACCORDANCE WITH ASTM (USA) STANDARDS G21 AND 22. COAT ALL EXPOSED LEADING AND TRAILING EDGES AND ALL TRANSVERSE JOINTS WITH FIRE RETARDANT ADHESIVE. THE LINER SHALL BE ADDITIONALLY SECURED USING METAL PINS WELDED TO THE DUCT AND SPEED WASHERS. SPACING OF METAL PINS SHALL BE IN ACCORDANCE WITH SMACNA DUCT CONSTRUCTION STANDARD FIG 2-22. PROVIDE A CHANNEL OR ZEE METAL NOSING SECTION PER SMACNA FIG 2-22 ON EVERY LEADING EDGE REGARDLESS OF THE AIR DUCT VELOCITY IN THE DUCT SECTION. DIMENSIONS SHOWN FOR LINED DUCT ARE CLEAR INTERNAL DIMENSIONS, INCLUDING THE LINER.
45. 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.
46. SPIN-IN COLLARS SHALL BE PROVIDED AT ALL ROUND TAPPINGS 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.
47. DUCT BRANCH RUN-OUTS TO THE DIFFUSERS UNLESS OTHERWISE NOTED SHALL BE THE SAME AS THE DIFFUSER NECK SIZES.
48. THE CONTRACTOR SHALL PROVIDE ALL FRAMING REQUIRED FOR THE INSTALLATION OF CEILING, WALL AND FLOOR AIR REGISTERS TO SUIT THE CONSTRUCTION.
49. 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.
50. 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.

MISCELLANEOUS:

51. ELECTRIC HEATERS: ELECTRIC HEATERS SHALL HAVE THERMAL CUTOUTS FOR PRIMARY AND SECONDARY OVER-TEMPERATURE PROTECTION SHALL BE PROVIDED TO MEET UL AND NEC SAFETY REQUIREMENTS. INTEGRAL SAFETY CONTROLS SHALL BE FURNISHED BY THE MANUFACTURER.
52. ALL WALL OPENINGS NOTED ON FLOOR PLANS SHALL BE LOCATED ABOVE THE CEILING.
53. CONTRACTOR SHALL PROVIDE OPENINGS IN WALLS ABOVE CEILING WHEREVER WALLS GO TO CEILING. REFER TO INTERIOR DESIGN DRAWINGS FOR PARTITION DESCRIPTION.
54. 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 DUCT LOCATED OUTSIDE THE AIR CONDITIONED ENVELOPE, WHICH INCLUDES VERTICAL CHASES, CEILING SPACES, ATTICS, ETC., ARE SEALED.

OWNERS MANUAL:

55. 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:

    a. DATA STATING EQUIPMENT SIZE AND ALL INSTALLED OPTIONS FOR EACH ITEM OF MECHANICAL EQUIPMENT PROVIDED.
    b. COPIES OF THE INSTALLATION & PERFORMANCE REPORT BY THE REPRESENTATIVE OF THE ROOF TOP UNITS PROVIDED.
    c. COPIES OF THE TEST & BALANCE REPORT. NOTATIONS OF CORRECTIVE ACTION SHALL BE INCLUDED.
    d. COPIES OF THE MECHANICAL SUBCONTRACTOR'S FIRST YEAR INSTALLATION AND EQUIPMENT WARRANTIES. NOTATION SHALL BE INCLUDED TO SHOW THE EXPIRATION OF THE FIRST YEAR PARTS & LABOR GUARANTEE, & OF THE EXTENDED 4-YEAR COMPRESSOR (ONLY) WARRANTY.
    e. OPERATION AND MAINTENANCE MANUALS FOR EACH ITEM OF EQUIPMENT REQUIRING MAINTENANCE, EXCEPT FOR EQUIPMENT NOT FURNISHED AS PART OF THE PROJECT. REQUIRED ROUTINE MAINTENANCE ACTIONS SHALL BE CLEARLY IDENTIFIED
    f. NAMES AND ADDRESS OF AT LEAST ONE SERVICE AGENCY.
    g. HVAC CONTROLS SYSTEMS MAINTENANCE AND CALIBRATION INFORMATION, INCLUDING WIRING DIAGRAMS, SCHEMATICS AND CONTROL SEQUENCE DIAGRAM. DESIRED OR FIELD DETERMINED SET POINTS SHALL BE PERMANENTLY RECORDED ON CONTROL DRAWINGS AT CONTROL DEVICES OR FOR DIGITAL CONTROL SYSTEMS, IN THE PROGRAMMING COMMENTS.

TEST AND BALANCE:

56. THE CONTRACTOR SHALL OBTAIN THE SERVICES OF AN INDEPENDENT TEST, ADJUSTMENT AND BALANCE (TAB) AND COMMISSIONING AGENCY TO TEST, ADJUST, BALANCE AND COMMISSION:

    A. EACH SUPPLY AIR AIR DISTRIBUTION SYSTEM,
    B. OVERALL BUILDING AIR BALANCE
    C. REPORT ON ALL OF THE ABOVE.

57. TESTING AND BALANCING OF AIR DISTRIBUTION SYSTEMS SHALL BE PERFORMED, AT MINIMUM, IN ACCORDANCE WITH AABC NATIONAL STANDARDS, CURRENT EDITION. TEST AND BALANCE SHALL INCLUDE ALL EQUIPMENT AND DISTRIBUTION SYSTEMS AND SHALL BE REPORTED, AS A MINIMUM, ON FORMS AS PUBLISHED BY THE AABC; NEBB EQUIVALENT OR OTHER APPROVED EQUAL.
58. THE AGENCY SHALL, UNLESS APPROVED OTHERWISE BY THE OWNER, BE AN AABC OR NEBB MEMBER AND THE TAB WORK SHALL BE DONE BY AN AABC OR NEBB CERTIFIED TEST AND BALANCE TECHNICIAN AND COMMISSIONING AGENT.
59. ATHE TAB AGENCY SHALL CHECK ALL THE SYSTEMS OPERATING TOGETHER TO ENSURE THAT THE AIR CONDITIONED SPACES ARE UNDER AN OVERALL POSITIVE PRESSURE; SHALL CHECK AND REPORT THAT THE BUILDING ENVELOPE IS PROPERLY SEALED AND UNCONTROLLED AIR LEAKAGE INTO THE BUILDING DOES NOT OCCUR; SHALL CHECK THAT RETURN AND EXHAUST DUCTS LOCATED OUTSIDE THE AIR CONDITIONED SPACE ARE SEALED; SHALL CHECK SUPPLY AIR DUCTS FOR LEAKS TO ENSURE THAT COLD AIR LEAKAGE DOES NOT CAUSE CONDENSATION ON DUCT, EQUIPMENT AND BUILDING SURFACES ABOVE THE CEILING (DURING SUMMER TAB); SHALL CHECK RETURN AND EXHAUST GRILLES FOR PROPER SEAL AT DUCT CONNECTIONS TO ENSURE THAT AIR DOES NOT ENTER THESE DUCTS THROUGH UNCONDITIONED WALLS, CHASES, ETC.
60. THE CONTRACTOR AND THE TAB AGENCY SHALL REVIEW THE PROPOSED SYSTEMS INSTALLATIONS AND DETERMINE ALL MEASURING AND BALANCING DEVICES REQUIRED FOR PROPER TEST AND BALANCE OF THE SYSTEMS. THESE SHALL INCLUDE, BUT SHALL NOT BE LIMITED TO, MANUAL AIR VOLUME BALANCING DAMPERS, ETC. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING THESE IN THE LOCATIONS RECOMMENDED BY THE TAB AGENCY, IN ADDITION TO ANY SHOWN ON THE DRAWINGS. THESE DEVICES SHALL BE PROVIDED UNDER THE CONTRACT.
61. THE TAB AGENCY SHALL CHECK ALL REFRIGERATION LINES FOR COMPLIANCE WITH THE EQUIPMENT MANUFACTURER'S INSTALLATION INSTRUCTIONS AND RECOMMENDATIONS, SHALL CHECK SUPERHEAT SETTINGS ON ALL SYSTEMS WITH LINES LONGER THAN 50 FEET.
62. INSTRUMENTS USED FOR TESTING AND BALANCING SHALL HAVE BEEN CALIBRATED WITHIN A PERIOD OF SIX MONTHS OF THE TIME OF THE TESTING AND BALANCING AND SUCH INSTRUMENTS SHALL BE CHECKED FOR ACCURACY PRIOR TO START OF WORK. SUBMIT VERIFICATION OF CERTIFICATION TO THE OWNER.
63. FOUR COPIES OF THE COMPLETE TEST REPORT SHALL BE SUBMITTED TO THE OWNER PRIOR TO FINAL INSPECTION OF THE PROJECT.
64. THE TAB REPORT SHALL INCLUDE A LIST OF ALL DEFICIENCIES FOUND DURING THE PRELIMINARY TESTING AND A CONTRACTOR RESPONSE INDICATING REMEDIAL ACTION TAKEN FOR EACH ITEM. THE TAB WORK SHALL NOT BE DEEMED DONE WITHOUT THIS REPORT.

SYMBOL	MECHANICAL LEGEND
⊠	SUPPLY DIFFUSER – SEE GRILLE & DIFFUSER SCHEDULE
⊘	RETURN GRILLE – SEE GRILLE & DIFFUSER SCHEDULE
⊢	SUPPLY REGISTER – SEE GRILLE & DIFFUSER SCHEDULE
⊢⊿	TRANSFER GRILLE
WxD	RIGID RECTANGULAR DUCTWORK (WIDTHxDEPTH)
12"ø	RIGID ROUND DUCTWORK
⊿▭	FULL SIZE RETURN PLENUM WITH 1/2" WIRE MESH SCREEN.
◁	DUCT TRANSITION
	FLEXIBLE DUCT
⊣	SPIN-IN FITTING WITHOUT AIR SCOOP
M	MOTOR OPERATED DAMPER WITH 24V ACTUATOR
T	ELECTRONIC PROGRAMMABLE THERMOSTAT WITH CLEAR LOCKING COVER
C	CARBON MONOXIDE DETECTOR
⌐	MANUAL VOLUME CONTROL DAMPER (MVD)
A 150 / 12x6	GRILLE AIRFLOW & NECK SIZE — TYPE (SEE SCHEDULE) — A AIRFLOW (CFM) / NECK SIZE (FACE SIZE)
■	CEILING MOUNTED EXHAUST FAN
— c —	CONDENSATE DRAIN
⊠⊿	OUTSIDE AIR LOUVER

ABBREVIATIONS:

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
EF	=	EXHAUST FAN
ESP	=	EXTERNAL STATIC PRESSURE
FLA	=	FULL LOAD AMPS
HP	=	HORSEPOWER
HSPF	=	HEATING SEASONAL PERFORMANCE FACTOR
HZ	=	HERTZ
MBH	=	1000 BTUH
MCA	=	MINIMUM CIRCUIT AMPS
MOCP	=	MAXIMUM OVERCURRENT PROTECTION
OA	=	OUTDOOR AIR
RA	=	RETURN AIR
SA	=	SUPPLY AIR
SEER	=	SEASONAL ENERGY EFFICIENCY RATIO
TAB	=	TEST AND BALANCE
V	=	VOLTS
W	=	WATTS
WB	=	WET BULB
ø	=	PHASE OR DIAMETER

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RELEASED FOR CONSTRUCTION

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PERMIT
10/01/18

GEORGIA
No.PE038052
PROFESSIONAL
ENGINEER
MATTHEW R. MERCIER
9-28-18

PROPOSED NEW BUILDING:
BROWARD NORTHSIDE CLIMATE CONTROLLED STORAGE
924 NORTHSIDE DRIVE NW
ATLANTA,G GA 30318

DRAWN	MRM
CHECKED	TB
DATE	09/2018
SCALE	AS NOTED
JOB NO.	0000
SHEET	M-0
OF	8 SHEETS

OUTSIDE AIR REQUIREMENTS:

THE HVAC SYSTEM OUTDOOR AIR QUANTITY IN THE BUILDING MEETS THE REQUIREMENTS FOR THE VENTILATION RATE 2012 NORTH CAROLINA MECHANICAL CODE, TABLE 403.3.

BASEMENT FLOOR:

SALES

AREA: 330 SF

OF PEOPLE = 314 SF * (15 PEOPLE/1000 SF) = 4.7 PEOPLE

OCCUPANCY OUTDOOR AIR RATE: 7.5 CFM/PERSON
OUTSIDE AIR REQUIRED FOR PEOPLE: 7.5 CFM/PERSON * 5 PEOPLE = 37.5 CFM
330 SF * 0.12 CFM/SF = 37.7 CFM

STORAGE: 0.12 CFM/SF
225 SF * 0.12 CFM/SF = 27 CFM

WAREHOUSE: 0.06 CFM/SF
14,667 SF * 0.06 CFM/SF = 880.0 CFM
OUTSIDE AIR TO BE PROVIDED BY AH1 - AH3 = 960 CFM

FIRST FLOOR:

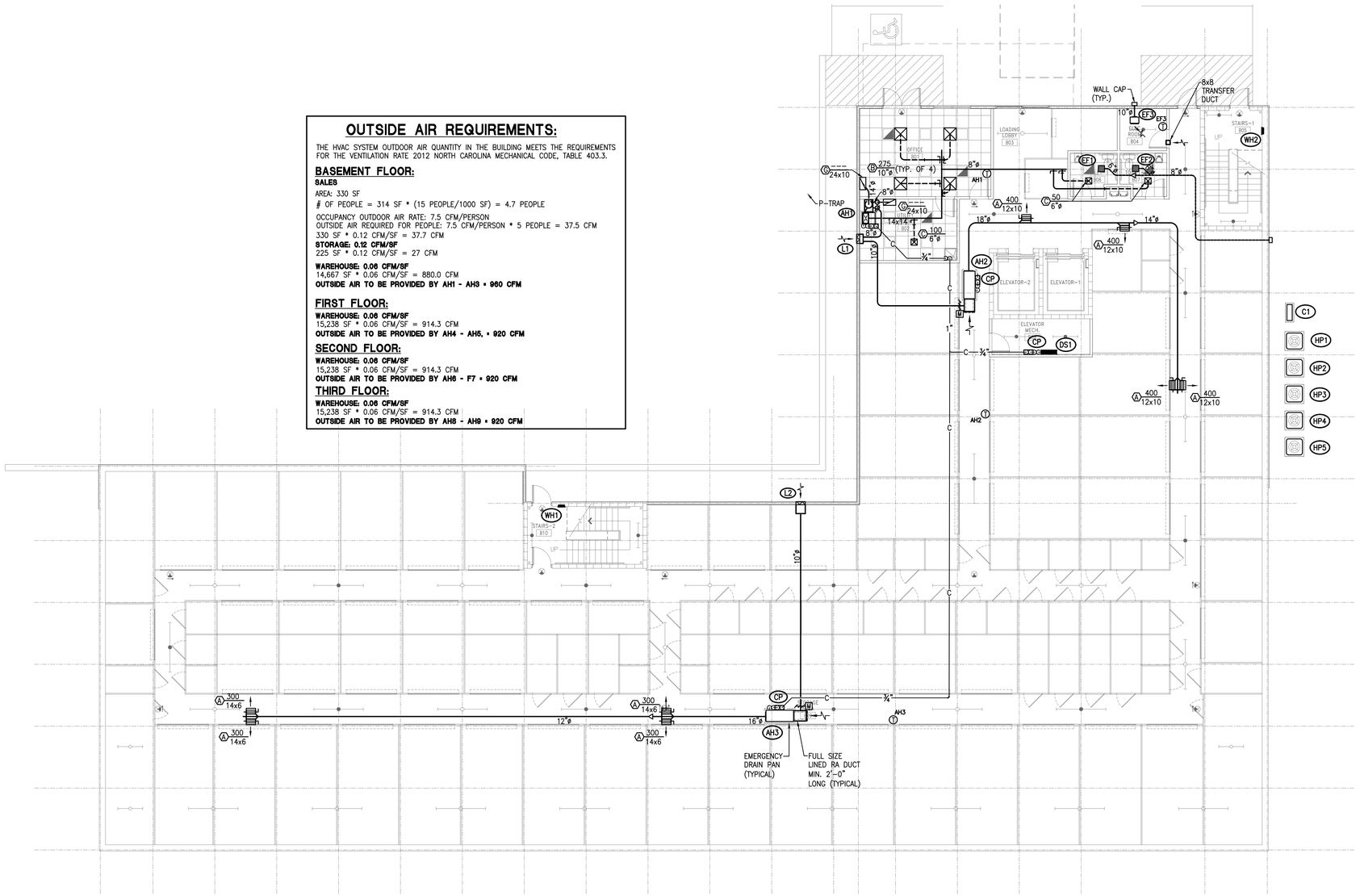
WAREHOUSE: 0.06 CFM/SF
15,238 SF * 0.06 CFM/SF = 914.3 CFM
OUTSIDE AIR TO BE PROVIDED BY AH4 - AH5, = 920 CFM

SECOND FLOOR:

WAREHOUSE: 0.06 CFM/SF
15,238 SF * 0.06 CFM/SF = 914.3 CFM
OUTSIDE AIR TO BE PROVIDED BY AH6 - F7 = 920 CFM

THIRD FLOOR:

WAREHOUSE: 0.06 CFM/SF
15,238 SF * 0.06 CFM/SF = 914.3 CFM
OUTSIDE AIR TO BE PROVIDED BY AH8 - AH9 = 920 CFM



LOWER LEVEL MECHANICAL PLAN

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

MOTORIZED OUTSIDE AIR DAMPER NOTE:
PROVIDE 24 VOLT MOTORIZED OUTSIDE AIR DAMPER ON OUTSIDE AIR DUCT. DAMPER TO BE INTERLOCKED WITH AIR HANDLING UNIT. DAMPER SHALL OPEN WHEN AIR HANDLING UNIT IS ENERGIZED.

DUCTWORK NOTE
ROUND DUCTWORK MAYBE USED IN LIEU OF THE RECTANGULAR DUCTWORK SHOWN AS LONG AS THE ROUND DUCTWORK IS EQUIVALENT SIZE OF THE RECTANGULAR DUCTAND DOES NOT EXCEED 12' MDEPTH. (TYPICAL ALL FLOORS)

THERMOSTAT NOTE:
COORDINATE LOCATION & MOUNTING HEIGHT OF THERMOSTATS IN STORAGE AREAS WITH OWNER PRIOR TO INSTALLATION.

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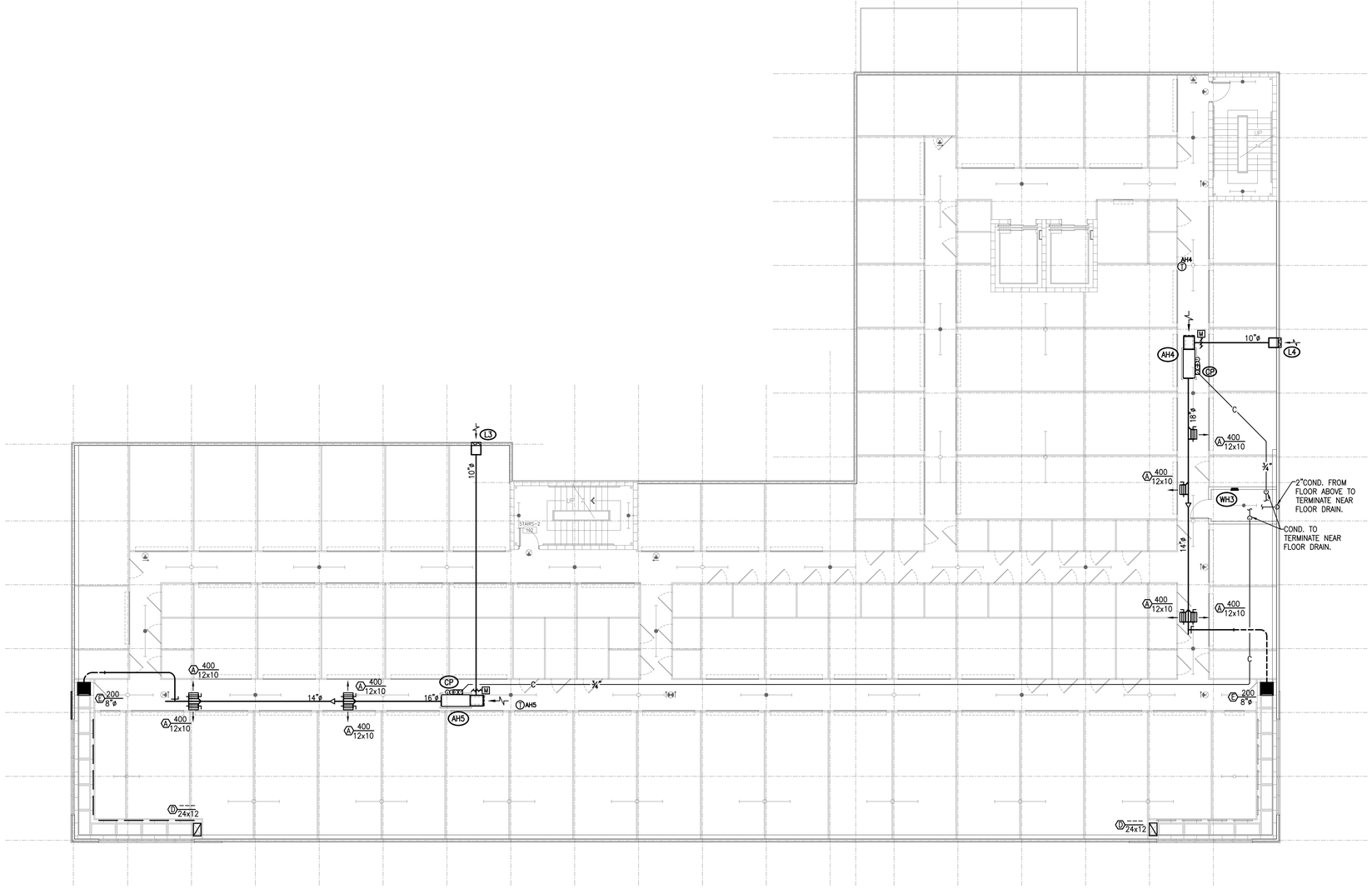
924 NORTHSIDE DRIVE NW
ATLANTA,G GA 30318

DRAWN: MRM
CHECKED: TB
DATE: 09/2018
SCALE: AS NOTED
JOB NO.: 0000
SHEET: M-1
OF 8 SHEETS



MOTORIZED OUTSIDE AIR DAMPER NOTE:
PROVIDE 24 VOLT MOTORIZED OUTSIDE AIR DAMPER ON OUTSIDE AIR DUCT. DAMPER TO BE INTERLOCKED WITH AIR HANDLING UNIT. DAMPER SHALL OPEN WHEN AIR HANDLING UNIT IS ENERGIZED.

DUCTWORK NOTE
ROUND DUCTWORK MAYBE USED IN LIEU OF THE RECTANGULAR DUCTWORK SHOWN AS LONG AS THE ROUND DUCTWORK IS EQUIVALENT SIZE OF THE RECTANGULAR DUCTAND DOES NOT EXCEED 12' MDEPTH. (TYPICAL ALL FLOORS)

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

THERMOSTAT NOTE:
COORDINATE LOCATION & MOUNTING HEIGHT OF THERMOSTATS IN STORAGE AREAS WITH OWNER PRIOR TO INSTALLATION.

MARSHALL & BOLLWERK ENGINEERING, INC.
8681 Highway 92, Suite 400
Woodstock, Ga. 30189
p: (678) 795-0333, f: (678) 325-4559
e: mbe@mbeinc.net

RELEASED FOR CONSTRUCTION

Colin Lichtenstein and Associates
1150 LAKE HEARN DR – SUITE 150
ATLANTA, GA 30342 (404)303-7008

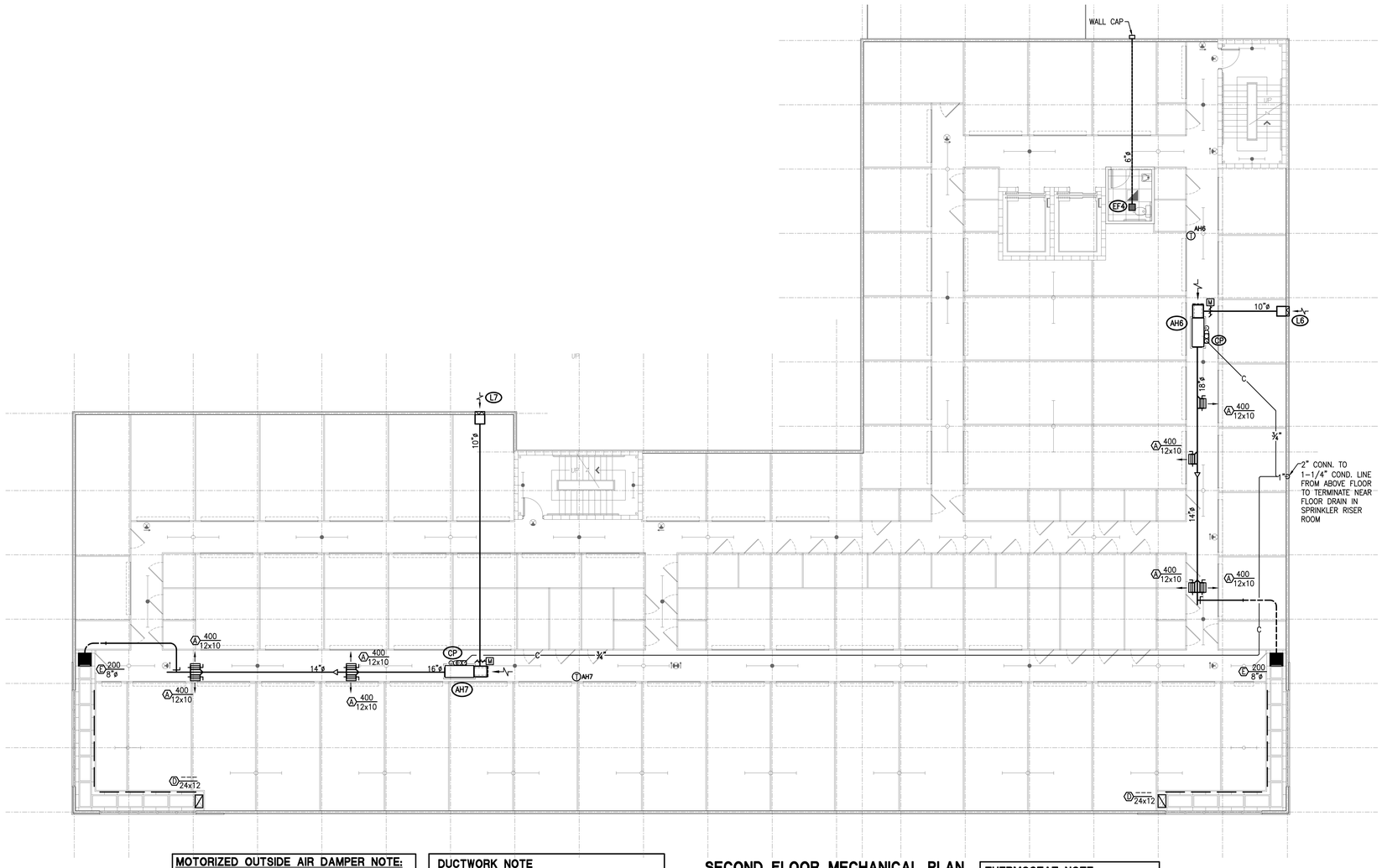
REVISIONS	BY
10/01/18	

PRINTED
PERMIT 10/01/18

GEORGIA No.PE038052 PROFESSIONAL MATTHEW R. MERKER 9-28-18

PROPOSED NEW BUILDING:
BROWARD NORTHSIDE CLIMATE CONTROLLED STORAGE
924 NORTHSIDE DRIVE NW
ATLANTA,G GA 30318

DRAWN MRM
CHECKED TB
DATE 09/2018
SCALE AS NOTED
JOB NO. 0000
SHEET M-2
OF 8 SHEETS



MOTORIZED OUTSIDE AIR DAMPER NOTE:
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DUCTWORK NOTE
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SECOND FLOOR MECHANICAL PLAN
SCALE: 1/8" = 1'-0"

THERMOSTAT NOTE:
COORDINATE LOCATION & MOUNTING HEIGHT OF THERMOSTATS IN STORAGE AREAS WITH OWNER PRIOR TO INSTALLATION.

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GEORGIA
No.PE038052
PROFESSIONAL
ENGINEER
MATTHEW R. MERKER
9-28-18

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924 NORTHSIDE DRIVE NW
ATLANTA,G GA 30318

DRAWN: MRM
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DATE: 09/2018
SCALE: AS NOTED
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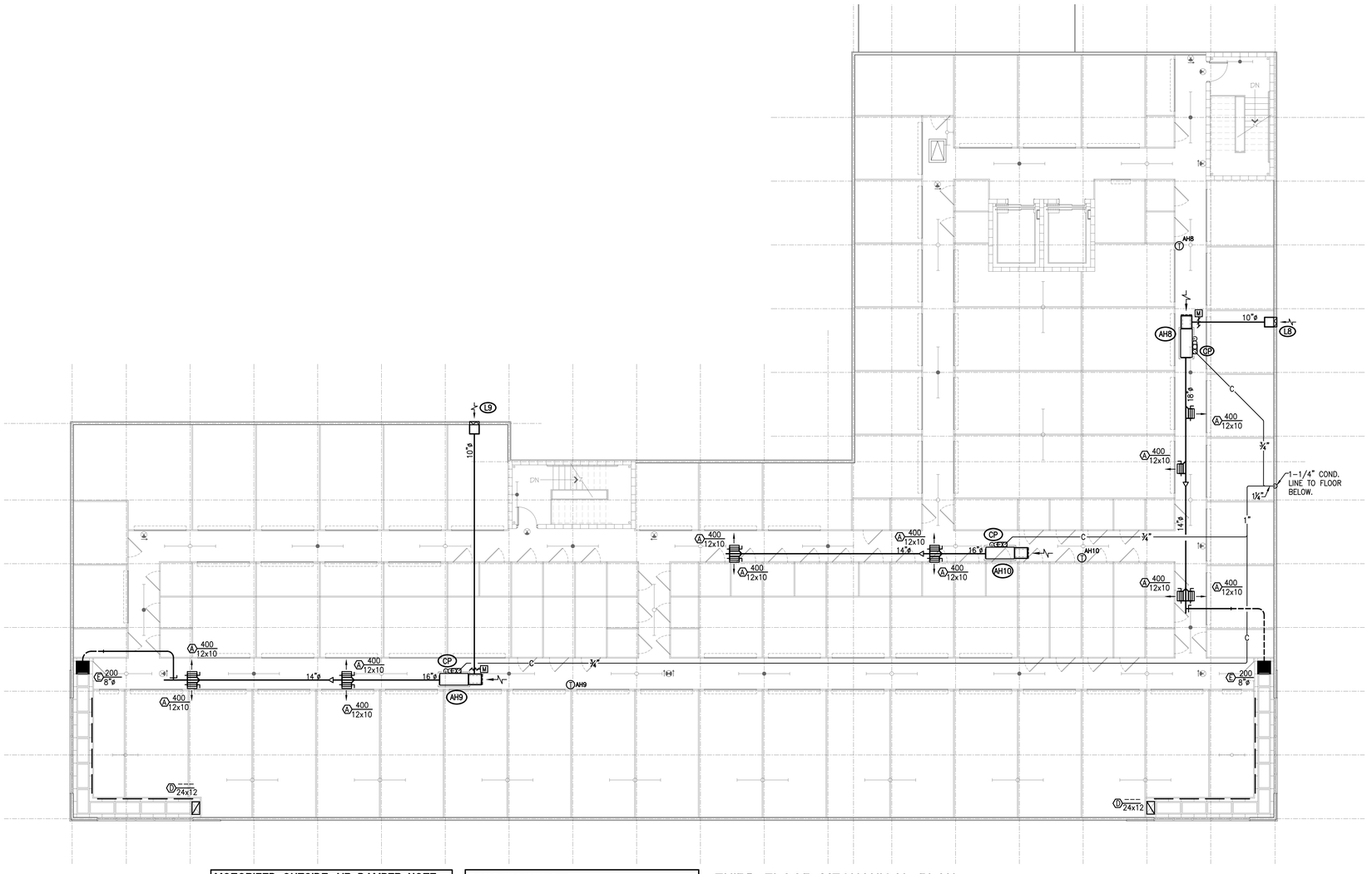
OF 8 SHEETS



MOTORIZED OUTSIDE AIR DAMPER NOTE:
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DUCTWORK NOTE
ROUND DUCTWORK MAYBE USED IN LIEU OF THE RECTANGULAR DUCTWORK SHOWN AS LONG AS THE ROUND DUCTWORK IS EQUIVALENT SIZE OF THE RECTANGULAR DUCTAND DOES NOT EXCEED 12' MDEPTH. (TYPICAL ALL FLOORS)

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

THERMOSTAT NOTE:
COORDINATE LOCATION & MOUNTING HEIGHT OF THERMOSTATS IN STORAGE AREAS WITH OWNER PRIOR TO INSTALLATION.

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BROWARD NORTHSIDE
CLIMATE CONTROLLED STORAGE
924 NORTHSIDE DRIVE NW
ATLANTA,G GA 30318

DRAWN: MRM
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DATE: 09/2018
SCALE: AS NOTED
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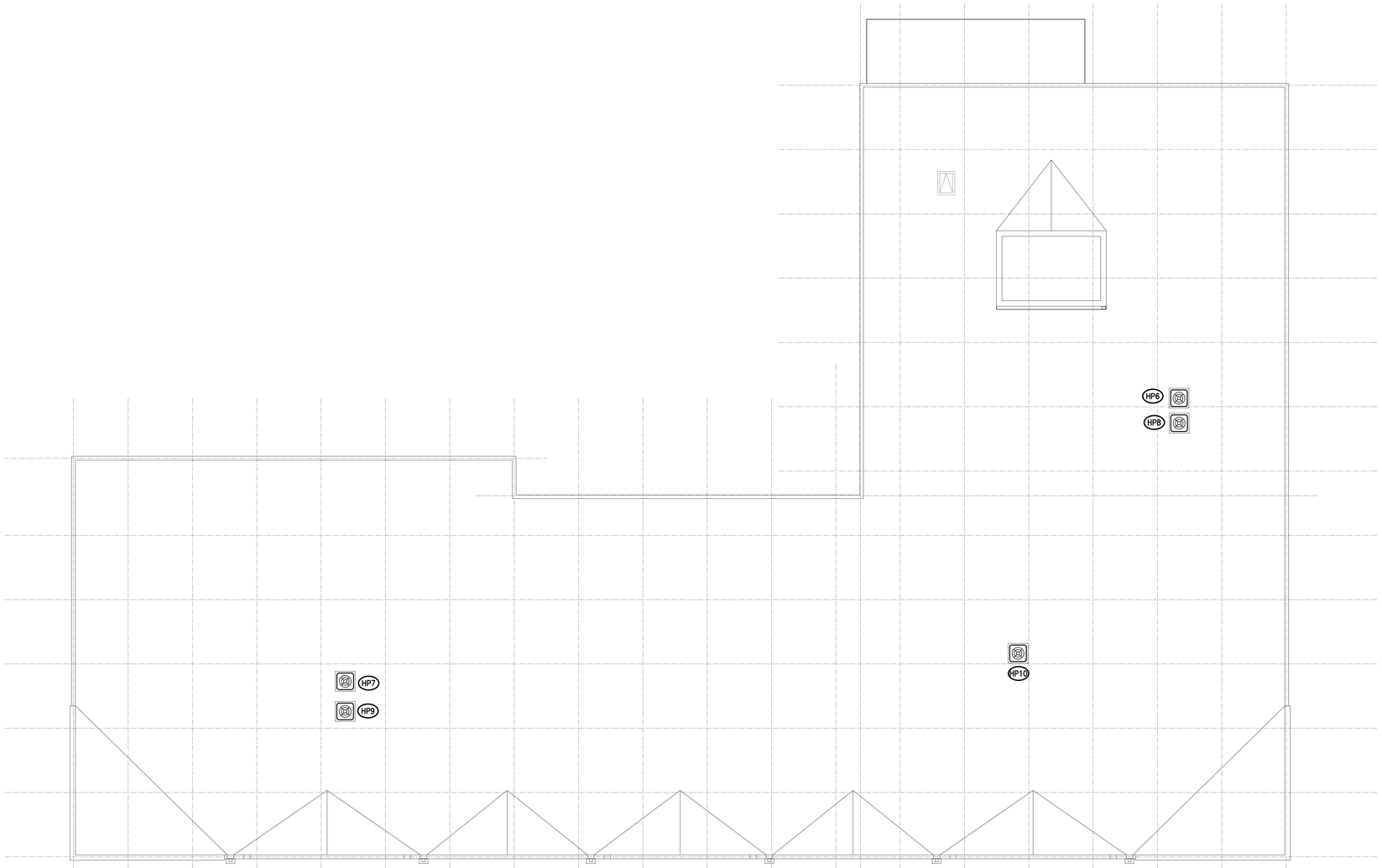
OF 8 SHEETS



ROOF MECHANICAL PLAN
SCALE: 1/8" = 1'-0"

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GEORGIA
No.PE038052
PROFESSIONAL
ENGINEER
MATTHEW R. MERKER
9-28-18

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BROWARD NORTHSIDE
CLIMATE CONTROLLED STORAGE
924 NORTHSIDE DRIVE NW
ATLANTA,G GA 30318

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DATE	09/2018
SCALE	AS NOTED
JOB NO.	0000
SHEET	M-5
OF	8 SHEETS

AIR HANDLING UNIT SCHEDULE

TAG		MODEL	TOTAL CFM	O.A. CFM	FAN HP	E.S.P.	TOT. COOL (MBH)	SEN. COOL (MBH)	AUX. HEAT (kW)	WEIGHT (LB)	ELECTRICAL V/PH/HZ	MCA	MOCP	NOTES
AH1	3	FV4CNF003	1200	200	½	0.5"	33.0	25.3	10.0	157	460/3/60	19.25	20	1,2,3,4,5,6
AH2	3	FV4CNF003	1200	300	½	0.5"	33.0	25.3	10.0	157	460/3/60	19.25	20	1,2,3,4,5,6
AH3	4	FV4CNF005	1400	460	½	0.5"	46.8	34.6	10.0	172	460/3/60	19.25	20	1,2,3,4,5,6
AH4	5	FV4CNF006	1800	460	¾	0.5"	53.6	42.6	10.0	201	460/3/60	19.25	20	1,2,3,4,5,6
AH5	5	FV4CNF006	1800	460	¾	0.5"	53.6	42.6	10.0	201	460/3/60	19.25	20	1,2,3,4,5,6
AH6	5	FV4CNF006	1800	460	¾	0.5"	53.6	42.6	10.0	201	460/3/60	19.25	20	1,2,3,4,5,6
AH7	5	FV4CNF006	1800	460	¾	0.5"	53.6	42.6	10.0	201	460/3/60	19.25	20	1,2,3,4,5,6
AH8	5	FV4CNF006	1800	460	¾	0.5"	53.6	42.6	10.0	201	460/3/60	19.25	20	1,2,3,4,5,6
AH9	5	FV4CNF006	1800	460	¾	0.5"	53.6	42.6	10.0	201	460/3/60	19.25	20	1,2,3,4,5,6
AH10	3	FV4CNF003	1200	---	½	0.5"	33.0	25.3	10.0	157	460/3/60	19.25	20	1,2,3,4,5,6

NOTES

1. COOLING CAPACITY BASED ON 80°F DB/67°F WB INDOOR ENTERING AIR TEMPERATURE AND 95°F DB OUTDOOR TEMP.
2. ESP DOES NOT INCLUDE COIL, CASING, OR FILTER LOSSES.
3. PROVIDE WITH SINGLE POINT WIRING KIT, FACTORY INSTALLED THERMOSTATIC EXPANSION VALVE, DISCONNECT KIT & CONDENSATE DRAIN TRAP KIT.
4. PROVIDE EASILY ACCESSIBLE FILTER IN COMMON RETURN & OUTDOOR AIR PATH.
5. THERMOSTAT – ELECTRONIC PROGRAMMABLE THERMOSTAT WITH CLEAR LOCKING COVER WITH HUMIDITY SYSTEM MANAGEMENT.
6. 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".

SELECTIONS ARE BASED ON PRODUCTS BY CARRIER.
EQUAL PRODUCTS: YORK, LENNOX, TRANE OR AS APPROVED BY OWNER.

HEAT PUMP SCHEDULE

TAG	TONS	TOTAL COOLING MBH	TOTAL HEATING MBHs17 F	SEER	HSPF	VOLTS/PH/HZ	MCA	MOCP	MODEL	NOTES
HP1	3	33.0	17.2	14.0	8.2	460/3/60	5.4	15	25HCE436	1,2,3,4
HP2	3	33.0	17.2	14.0	8.2	460/3/60	5.4	15	25HCE436	1,2,3,4
HP3	4	46.8	24.1	14.0	8.2	460/3/60	8.3	15	25HCE448	1,2,3,4
HP4	5	53.6	24.5	14.0	8.2	460/3/60	10.5	15	25HCE460	1,2,3,4
HP5	5	53.6	24.5	14.0	8.2	460/3/60	10.5	15	25HCE460	1,2,3,4
HP6	5	53.6	24.5	14.0	8.2	460/3/60	10.5	15	25HCE460	1,2,3,4
HP7	5	53.6	24.5	14.0	8.2	460/3/60	10.5	15	25HCE460	1,2,3,4
HP8	5	53.6	24.5	14.0	8.2	460/3/60	10.5	15	25HCE460	1,2,3,4
HP9	5	53.6	24.5	14.0	8.2	460/3/60	10.5	15	25HCE460	1,2,3,4
HP10	3	33.0	17.2	14.0	8.2	460/3/60	5.4	15	25HCE436	1,2,3,4

NOTES:

1. COOLING CAPACITY BASED ON 80°F DB/67°F WB INDOOR ENTERING AIR TEMPERATURE AND 95°F DB OUTDOOR TEMP.
2. 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.
3. 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".
4. VERIFY LINE SET SIZES WITH SPLIT SYSTEM MANUFACTURER PRIOR TO INSTALLATION.

SELECTIONS ARE BASED ON PRODUCTS BY CARRIER
EQUAL PRODUCTS: LENNOX, TRANE, YORK OR AS APPROVED BY OWNER.

ELECTRIC HEATER SCHEDULE

MARK	KW	VOLTS/PH/HZ	AMPS	MODEL	NOTES
WH1	3.0	277/1/60	10.6	3420 SERIES	1,2
WH2	3.0	277/1/60	10.6	3420 SERIES	1,2
WH3	2.0	277/1/60	8.7	3420 SERIES	1,2

NOTES:

1. PROVIDE WITH CIRCUIT BREAKER & BUILT-IN THERMOSTAT
2. PROVIDE WITH 2" SEMI-RECESSING MOUNTING SLEEVE.

SELECTIONS ARE BASED ON PRODUCTS BY: MARKEL
EQUAL MANUFACTURERS: QMARK, RAYWALL

LOUVER SCHEDULE

MARK	TYPE	FUNCTION	MODEL	SIZE	FREE AREA (SF)	NOTES
L1	STATIONARY	INTAKE	ELF6375DX	12x12	0.31	1
L2	STATIONARY	INTAKE	ELF6375DX	18x12	0.49	1
L3	STATIONARY	INTAKE	ELF6375DX	48x36	5.24	1
L4	STATIONARY	INTAKE	ELF6375DX	18x18	0.93	1
L5	STATIONARY	INTAKE	ELF6375DX	18x18	0.93	1
L6	STATIONARY	INTAKE	ELF6375DX	18x18	0.93	1
L7	STATIONARY	INTAKE	ELF6375DX	18x18	0.93	1
L8	STATIONARY	INTAKE	ELF6375DX	18x18	0.93	1
L9	STATIONARY	INTAKE	ELF6375DX	18x18	0.93	1

NOTES:

1. PROVIDE WITH INSECT SCREEN.

SELECTIONS ARE BASED ON PRODUCTS BY RUSKIN
EQUAL PRODUCTS BY: PENN VENTILATOR, NAILOR, ARROW UNITED.

DUCTLESS SPLIT SYSTEM (COOLING ONLY) SCHEDULE

MARK	REFRIGERANT	CFM	SEER	TOTAL COOLING BTUH	VOLTS/PH/HZ	MCA	MOCP	INDOOR UNIT	OUTDOOR UNIT	NOTES
DS1/C1 DS2/C2	R-410A	635	17.0	24,000	208/1/60	18	25	PKA-A24KA4	PUY-A24NHA4	1,2

NOTES:

1. PROVIDE WITH THERMOSTAT & LOW AMBIENT KIT.
2. MAXIMUM REFRIGERANT LINE LENGTH OF 98'.

SELECTIONS ARE BASED ON PRODUCTS BY MITSUBISHI
EQUAL PRODUCTS: CARRIER, FRIEDRICH & TRANE

EXHAUST FAN SCHEDULE

MARK	FAN CFM	ESP	POWER	VOLTS/PH/HZ	MODEL	NOTES
EF1	75	.250"	48 W	115/1/60	ZT	1,2,5,6
EF2	75	.250"	48 W	115/1/60	ZT	1,2,5,6
EF3	200	.375"	84 W	115/1/60	Z81S-TDA	1,3,4,6
EF4	75	.250"	48 W	115/1/60	ZT	1,2,5,6

NOTES

1. PROVIDE WITH BACKDRAFT DAMPER, SPEED CONTROLLER, VIBRATION HANGERS & SQUARE TO ROUND TRANSITION.
2. SHALL BE DUCTED TO COMBINED DUCT TO 8"ø AND WALL CAP "PENN" MODEL: SL20.
3. PROVIDE WITH WALL CAP "PENN" MODEL: SL20.
4. ON/OFF BY WALL MOUNTED THERMOSTAT. SET THERMOSTAT TO ENERGIZE FAN @ 85°F (ADJ).
5. INTERLOCK WITH TOILET ROOM LIGHTS
6. PROVIDE WITH 120V/277V TRANSFORMER.

~~SELECTIONS ARE BASED ON PRODUCTS BY: PENN VENTILATOR~~
EQUAL PRODUCTS: ACME, GREENHECK, LOREN COOK OR AS APPROVED BY OWNER.

GRILLE & DIFFUSER SCHEDULE

TAG	DUTY	FACE SIZE OR LENGTH	TYPE	MVD	MODEL	NOTES
A	SUPPLY	AS NOTED	SIDEWALL REGISTER	YES	272RS	C,E
B	SUPPLY	24x24	SQUARE PLAQUE	YES	TMS	A,B,C,D
C	SUPPLY	12x12	SQUARE PLAQUE	YES	TMS	A,B,C,D
D	RETURN	AS NOTED	CEILING GRILLE	NO	50F	B,C
E	SUPPLY	24x24	SQUARE PLAQUE	YES	TMS	A,B,C,D,G

NOTES:

A. SEE PLANS FOR NECK SIZES. SQUARE SUPPLY DIFFUSERS NECK SIZE SHALL BE SAME AS BRANCH DUCT.
B. VERIFY FRAME TYPE WITH ARCH REFLECTED CEILING PLAN.
C. COORDINATE FINISH WITH ARCHITECT.
D. PROVIDE WITH FACTORY APPLIED FOIL-FACED, R-6 INSULATION FORMED TO FIT CONTOUR OF DIFFUSER BACK. INSULATION SHALL BE CONTINUOUSLY GLUED & SEALED AROUND OUTER PERIMETER OF OUTER CONE TO FORM VAPOR SEAL.
E. ¾" BLADE SPACING, SINGLE DEFLECTION, BLADES PARALLEL TO SHORT DIMENSION.
F. ALUMINUM CONSTRUCTION
G. PROVIDE WITH SECTORING BAFFLES

SELECTIONS ARE BASED ON PRODUCTS BY TITUS
EQUAL PRODUCTS: METAL-AIRE, KRUEGER, PRICE

CONDENSATE PUMP SCHEDULE

MARK	GPH	TOTAL HEAD (FT)	HP	VOLTS/PH/HZ	FLA	MODEL	NOTES
CP	0.5	15'	19 WATTS	115/1/60	0.24	EC-400	1

NOTES:

1. PROVIDE WITH SUCTION, VENT & DRAIN TUBING, TUBING ADAPTOR & SAFETY SWITCH.

SELECTIONS ARE BASED ON PRODUCTS BY: LITTLE GIANT

COMcheck Software Version 4.0.8.2

Mechanical Compliance Certificate

Project Information

Energy Code: 90.1 (2007) Standard
Project Title: BROWARD NORTHSIDE STORAGE
Location: Atlanta, Georgia
Climate Zone: 3a
Project Type: New Construction

Construction Site:
924 NORTHSIDE DR, NW
ATLANTA, GA 30318

Owner/Agent:

Designer/Contractor:
MATTHEW MERCER
MBE INC.
8681 HWY. 92 SUITE 400
WOODSTOCK, GA 30189
678-795-0333
MBE@MBEINC.NET

Mechanical Systems List

Quantity System Type & Description

6 HVAC System 1 (Single Zone):
Split System Heat Pump
Heating Mode: Capacity = 17 kBtu/h,
Proposed Efficiency = 8.20 HSPF, Required Efficiency = 7.70 HSPF
Cooling Mode: Capacity = 33 kBtu/h,
Proposed Efficiency = 14.00 SEER, Required Efficiency: 13.00 SEER
Fan System: FAN SYSTEM 1 -- Compliance (Motor nameplate HP method) : Passes

Fans:
FAN 1 Supply, Constant Volume, 1200 CFM, 0.2 motor nameplate hp

3 HVAC System 2 (Single Zone):
Split System Heat Pump
Heating Mode: Capacity = 25 kBtu/h,
Proposed Efficiency = 8.20 HSPF, Required Efficiency = 7.70 HSPF
Cooling Mode: Capacity = 54 kBtu/h,
Proposed Efficiency = 14.00 SEER, Required Efficiency: 13.00 SEER
Fan System: FAN SYSTEM 2 -- Compliance (Motor nameplate HP method) : Passes

Fans:
FAN 2 Supply, Constant Volume, 1800 CFM, 0.3 motor nameplate hp

2 HVAC System 5 (Single Zone):
Cooling: 1 each - Split System, Capacity = 24 kBtu/h, Air-Cooled Condenser
Proposed Efficiency = 17.00 SEER, Required Efficiency: 13.00 SEER
Fan System: FAN SYSTEM 3 -- Compliance (Motor nameplate HP method) : Passes

Fans:
FAN 3 Supply, Constant Volume, 400 CFM, 0.4 motor nameplate hp

1 HVAC System 3 (Single Zone):
Split System Heat Pump
Heating Mode: Capacity = 24 kBtu/h,
Proposed Efficiency = 8.20 HSPF, Required Efficiency = 7.70 HSPF
Cooling Mode: Capacity = 47 kBtu/h,
Proposed Efficiency = 14.00 SEER, Required Efficiency: 13.00 SEER
Fan System: FAN SYSTEM 1 -- Compliance (Motor nameplate HP method) : Passes

Quantity System Type & Description

Fans:
FAN 1 Supply, Constant Volume, 1200 CFM, 0.2 motor nameplate hp

1 Water Heater 1:
Electric Instantaneous Water Heater, Capacity: 10 gallons
No minimum efficiency requirement applies

1 Water Heater 2:
Electric Instantaneous Water Heater, Capacity: 0 gallons
No minimum efficiency requirement applies

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 90.1 (2007) Standard requirements in COMcheck Version 4.0.8.2 and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

Matthew Mercer — Name - Title
Signature
9/26/2018 — Date

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GEORGIA
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MATTHEW R. MERCER
9-26-18

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924 NORTHSIDE DRIVE NW
ATLANTA,G GA 30318

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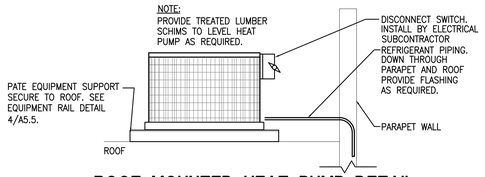
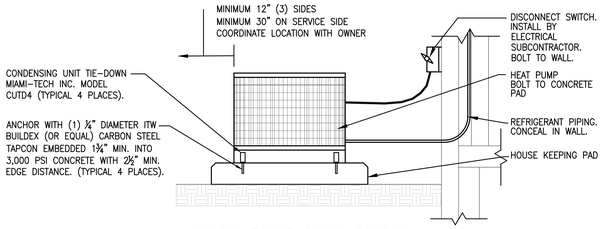


ROOF MOUNTED HEAT PUMP DETAIL:

NOT TO SCALE



HEAT PUMP UNIT DETAIL:

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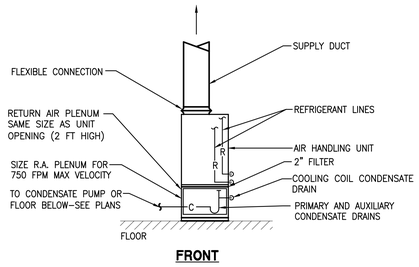
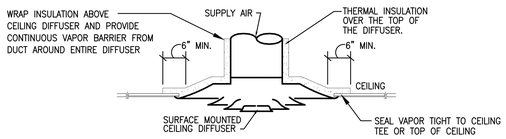


FRONT

VERTICAL FAN COIL UNIT:

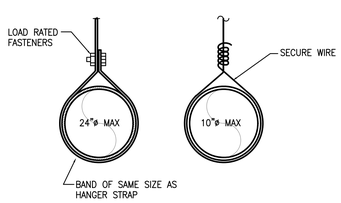
NOT TO SCALE



DIFFUSER DETAIL:

NOT TO SCALE

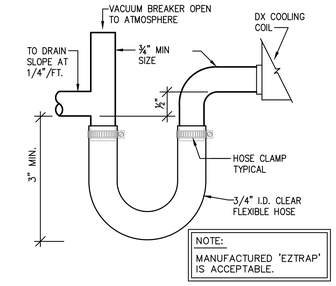
NOTE:
PROVIDE TREATED LUMBER SCHIMS TO LEVEL HEAT PUMP AS REQUIRED.



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"
NOT TO SCALE				

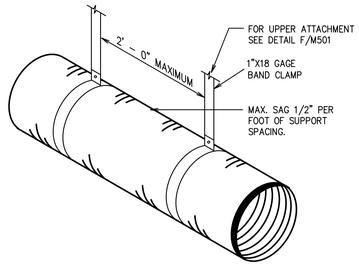
ROUND DUCT HANGERS:

NOT TO SCALE



COOLING COIL CONDENSATE DRAIN DETAIL

NOT TO SCALE



FLEXIBLE DUCT SUPPORT DETAIL

NOT TO SCALE

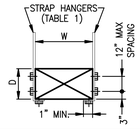
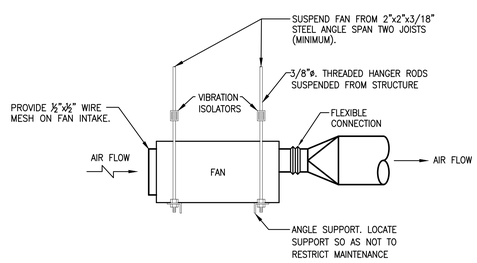


TABLE 1 STRAP HANGERS (PAIR) SPACED			
W+D MAX.	10"-0" MAX.	8'-0" MAX.	5'-0" OR LESS
72"	1"x 22 GA	1"x 22 GA	1"x 22 GA
96"		1"x 20 GA	1"x 22 GA
120"		1"x 18 GA	1"x 22 GA
168"			1"x 18 GA
192"			1"x 16 GA
192+"	SPECIAL ANALYSIS REQUIRED		

NOTES:
1. TABULATED DATA FROM SMACNA ALLOWS FOR DUCT REINFORCING AND INSULATION, BUT NO EXTERNAL LOAD.
2. PROVIDE HIGH DENSITY INSERT AT TRAPEZE FOR INSULATED DUCTS.

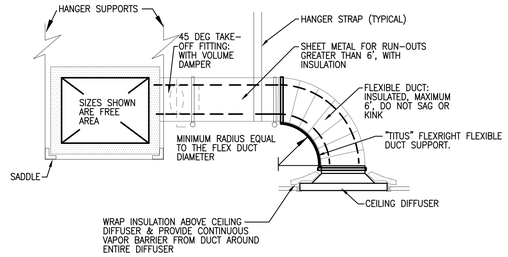
RECTANGULAR DUCT HANGERS:

NOT TO SCALE



INLINE EXHAUST FAN

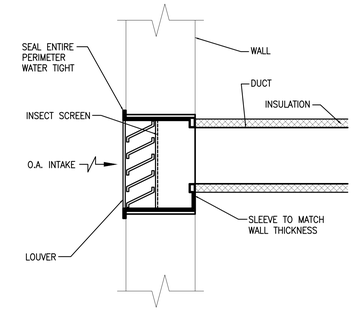
NOT TO SCALE



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

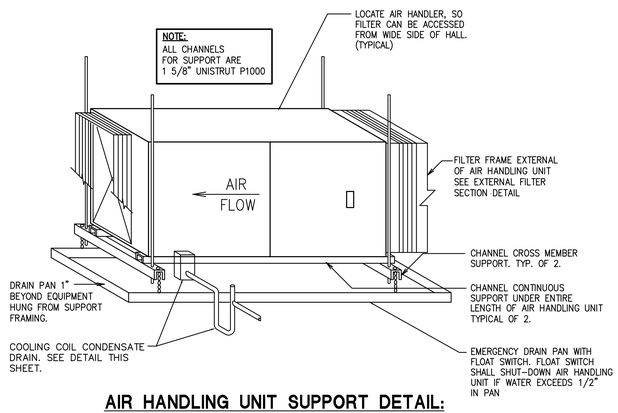
DUCT DETAIL

NOT TO SCALE



LOUVER INSTALLATION:

NO SCALE



AIR HANDLING UNIT SUPPORT DETAIL:

NOT TO SCALE

MARSHALL & BOLLWERK ENGINEERING, INC.
8681 Highway 92, Suite 400
Woodstock, Ga. 30189
p: (678) 795-0333, f: (678) 325-4559
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RELEASED FOR CONSTRUCTION

REVISIONS	BY
10/01/18	

PRINTED
PERMIT 10/01/18

GEORGIA
No.PE038052
PROFESSIONAL
ENGINEER
MATTHEW R. MERKER
9-28-18

PROPOSED NEW BUILDING:

BROWARD NORTHSIDE
CLIMATE CONTROLLED STORAGE
924 NORTHSIDE DRIVE NW
ATLANTA,G GA 30318

Colin Lichtenstein and Associates
1150 LAKE HEARN DR - SUITE 150
ATLANTA, GA 30342 (404)303-7008

DRAWN: MRM
CHECKED: TB
DATE: 09/2018
SCALE: AS NOTED
JOB NO.: 0000
SHEET: M-7
OF 8 SHEETS

ELECTRICAL SPECIFICATIONS AND NOTES:

1. 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 METERING 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 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. WORK REQUIRED BY THE CONTRACTOR, IF ANY, TO MEET THE NEEDS AND/OR REQUIREMENTS OF THE UTILITY COMPANY FOR THIS PROJECT.
   G. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING AND PAYING THE COST FOR ALL NECESSARY TEMPORARY ELECTRICAL POWER FOR CONSTRUCTION USE.
4. THE CONTRACTOR SHALL OBTAIN, PURCHASE, AND MAINTAIN ALL PERMITS, AND INSPECTIONS REQUIRED BY THE GOVERNING AUTHORITIES FOR THE DURATION OF THIS PROJECT.
5. THE CONTRACTOR SHALL COORDINATE 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.
6. 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 STRUCTURAL ENGINEER. FLOOR-MOUNTED EQUIPMENT SHALL BE INSTALLED ON A 4" HIGH CONCRETE PAD WITH CHAMFERED EDGES. VERIFY THE DEPTH OF RECESSED PANELS AND WALL CAVITIES, AND COORDINATE THE INSTALLATION WITH THE ARCHITECTURAL DRAWINGS, AND THE GENERAL CONTRACTOR. WORKING CLEARANCES SHALL BE 36" (FOR 208 VOLT SYSTEM) OR 42" (FOR 480 VOLT SYSTEM) MINIMUM, AND WIDTH OF EQUIPMENT OR 30" MINIMUM, WHICHEVER IS GREATER, WIDE, PER NEC ARTICLE 110.26. WHERE A PANELBOARD OR LOADCENTER IS LOCATED IN A STORAGE OR EQUIPMENT ROOM (NOT A CORRIDOR) THAT IS NOT PARTITIONED FROM OTHER USES, PAINT THE LIMITS OF THE WORKING CLEARANCES FROM NEC ARTICLE 110.26 ON THE FLOOR IN FRONT OF THE EQUIPMENT.
7. 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.
8. IDENTIFY PANELBOARDS, SAFETY SWITCHES, STARTERS, CONTROLS, AND OTHER ELECTRICAL EQUIPMENT WITH ENGRAVED PLASTIC NAMEPLATES HAVING CONTRASTING 1/4" HIGH (OR LARGER) LETTERS, WITH NAMES TO MATCH THE SCHEDULES OR OTHER DRAWING REFERENCES. TYPEWRITTEN 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 110.16, 110.24(A) AND 408.4(B).
9. 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). NON-METALLIC SHEATHED (TYPE NM) CABLE SHALL NOT BE PERMITTED ON THIS PROJECT. 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 FOLLOWING 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). TYPE 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.
10. 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 THEREON. RACEWAYS 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 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 WALLS, BELOW FINISHED GRADE AND NOT SLAB ON GRADE SHALL BE SEALED WITH UL LISTED WATERPROOF THRU-WALL SEALS, O.Z. GEDNEY TYPE FSK, THUNDERLINE, OR APPROVED EQUAL. ALL RACEWAY PENETRATIONS THROUGH EXTERIOR AND INTERIOR WALLS AND FLOORS SHALL BE PROPERLY SEALED.
11. THE CONTRACTOR SHALL COORDINATE THE INSTALLATION OF RACEWAY SYSTEMS AND ROUGHING-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 WIREWAYS, PULL BOXES, DEVICE BOXES, AND JUNCTION BOXES SHALL BE SIZED PER JIC, NEMA, AND THE NATIONAL ELECTRICAL CODE. ALL WIRING WITHIN BOXES AND WIREWAYS SHALL BE TAGGED WITH PANEL AND CIRCUIT NUMBERS.
12. TWENTY AMP BRANCH CIRCUITS MAY BE SHOWN WITH EITHER SINGLE CIRCUIT, OR THREE CIRCUIT (MULTIWIRE BRANCH CIRCUIT) HOME RUNS. THREE CIRCUIT HOME RUNS SHARE A COMMON NEUTRAL, UNLESS NOTED OTHERWISE AND GROUND IN A SINGLE CONDUIT. THE CONTRACTOR MAY ELECT TO COMBINE SINGLE CIRCUIT HOME RUNS TO MAKE THREE CIRCUIT HOME RUNS, OR TO CHANGE THREE 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).
13. PROVIDE SEPARATE GREEN, INSULATED GROUND WIRE IN ALL RACEWAYS.
14. 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 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.
15. 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 SOLID. PROVIDE AN EQUIPMENT GROUND WIRE IN ALL RACEWAYS, AND CABLE ASSEMBLIES. SIZE EQUIPMENT GROUNDS PER TABLE 250.122 OF THE NATIONAL ELECTRICAL CODE.
16. CONDUCTOR COLOR CODES SHALL BE AS FOLLOWS:

BROWN, ORANGE, YELLOW:	480/277 VOLT PHASE A,B,C
WHITE:	NEUTRAL
GREEN:	ALL EQUIPMENT GROUNDS
BLACK, RED, BLUE:	208/120 VOLT PHASE A,B,C
WHITE:	NEUTRAL
GREEN:	ALL EQUIPMENT GROUNDS
BARE:	ALL NON-ISOLATED GROUNDS
GREEN WITH YELLOW STRIPE:	ALL ISOLATED GROUNDS

USE CONDUCTORS #8 AND SMALLER WITH COLOR FACTORY-APPLIED THE ENTIRE LENGTH OF THE CONDUCTORS. COLOR CODING FOR THE LARGER SIZES MAY BE ACCOMPLISHED BY USING COLORED, 1 INCH WIDE, PRESSURE-SENSITIVE PLASTIC TAPE IN HALF-LAPPED TURN FOR A DISTANCE OF 6 INCHES FROM TERMINAL POINTS. APPLY THE LAST TWO LAPS OF TAPE WITH NO TENSION TO PREVENT POSSIBLE UNWINDING.

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

17. 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.
18. ALL DEVICE BOXES SHALL BE INSTALLED FLUSH, AND CONDUITS RUN CONCEALED IN FINISHED AREAS, EXCEPT AS SPECIFICALLY SHOWN OR NOTED OTHERWISE. VERIFY ALL DOOR 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. FLOOR BOXES SHALL BE ROUND CAST IRON BOX, WHERE INSTALLED ON OR BELOW GRADE. BOXES SHALL BE FULLY ADJUSTABLE WITH BRASS DUPLEX COVER WITH BRASS DUPLEX FLAP. HUBBELL B2500 SERIES BOX(MODEL DEPENDS ON POUR DEPTH) OR APPROVED EQUAL, CONTINGENT UPON FULL COMPLIANCE WITH ALL CRITERIA.
19. WIRING DEVICES: DUPLEX RECEPTACLES SHALL BE 20A., 125 VOLTS, COMMERCIAL SERIES, HEAVY DUTY, SPECIFICATION GRADE, BACK AND SIDE WIRED, WITH GROUNDING TERMINAL AND SHALL BE IVORY UNLESS NOTED OTHERWISE, HUBBELL 5362I OR APPROVED EQUAL, CONTINGENT UPON FULL COMPLIANCE WITH ALL CRITERIA. AC TOGGLE SWITCHES SHALL BE 20A., 120-277 VOLTS, COMMERCIAL SERIES, HEAVY DUTY, SPECIFICATION GRADE, BACK AND SIDE WIRED, WITH GROUNDING TERMINAL AND SHALL BE IVORY UNLESS NOTED OTHERWISE, HUBBELL CSB120I, TWO POLE, HUBBELL CSB220I, THREE WAY, HUBBELL CSB320I, OR APPROVED EQUAL, CONTINGENT UPON FULL COMPLIANCE WITH ALL CRITERIA. GROUND FAULT CIRCUIT INTERRUPTER DUPLEX RECEPTACLES SHALL BE 20A., 125 VOLTS, COMMERCIAL SPECIFICATION GRADE, HUBBELL GF20ILA OR APPROVED EQUAL, CONTINGENT UPON FULL COMPLIANCE WITH ALL CRITERIA. GROUND FAULT CIRCUIT INTERRUPTER DUPLEX RECEPTACLES SHALL NOT BE THE FEED THROUGH TYPE, BUT STAND ALONE GROUND FAULT CIRCUIT INTERRUPTER DUPLEX RECEPTACLES. NEW INTERIOR EXPOSED DEVICE PLATES, IN ALL LOCATIONS OTHER THAN THE FINISHED OFFICE / SALES AREAS SHALL BE TYPE 302/304 STAINLESS STEEL UNLESS NOTED TO BE LOCKING OR WEATHERPROOF COVERS. 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 RECEPTACLES SHALL BE WEATHER-RESISTANT LISTED, IN DAMP AREAS AND WET AREAS, THE OUTLET COVERS SHALL BE "WEATHERPROOF WHILE IN USE", HUBBELL WP26E OR APPROVED EQUAL, CONTINGENT UPON FULL COMPLIANCE WITH ALL CRITERIA.
20. ALL WALL OUTLETS THAT ARE SHOWN BACK TO BACK, IN FIRE RATED WALLS, SHALL BE INSTALLED WITH A MINIMUM OF 24" OF HORIZONTAL SEPARATION (TWO STUDS) PER NEC ARTICLE 300.21, AND UL REQUIREMENTS. IN WALL SPACES WHERE THE 24" 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.
21. OUTLETS 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 GF20ILA, OR APPROVED EQUAL, CONTINGENT UPON FULL COMPLIANCE WITH ALL CRITERIA.
21. 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.
22. 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 LOW VOLTAGE (I.E., THERMOSTAT) DEVICES FROM POWER DEVICES (I.E., SWITCHES). ALL EXTERIOR WIRING DEVICES SHALL BE BLACK, OR GRAY, OR BROWN, UNLESS NOTED OTHERWISE.
23. 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).
24. ALL NIGHT LIGHTING, EXIT LIGHTING AND 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.
25. LUMINAIRES INSTALLED IN INSULATED CEILINGS SHALL BE IC RATED, AND INSTALLED PER THE LUMINAIRE MANUFACTURER'S AND UL LISTING REQUIREMENTS.
26. LUMINAIRES RECESSED IN FIRE RATED CEILINGS SHALL HAVE AN UL LISTED ASSEMBLY AROUND THE FIXTURE HOUSING THAT MEETS OR EXCEEDS THE RATING OF THE CEILING. THE FIXTURE SHALL BE INSTALLED PER THE LUMINAIRE MANUFACTURER'S AND UL LISTING REQUIREMENTS. THE CONTRACTOR SHALL VERIFY WITH THE ARCHITECT PRIOR TO BID THE LOCATION OF ALL FIRE RATED ASSEMBLIES.
27. THIS PROJECT MAY UTILIZE BOTH ACCESSIBLE AND NON-ACCESSIBLE TYPE CEILINGS. REFER TO ARCHITECTURAL DRAWINGS 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.
28. 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 DUCTWORK, THE REFLECTED CEILING PLAN, HVAC PLAN, AND OTHER DRAWINGS TO AVOID CONFLICTS.
29. 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 LEG CONNECTION. 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.
30. ALL SAFETY SWITCHES SHALL BE FURNISHED BY THE CONTRACTOR, UNLESS NOTED OTHERWISE AND SHALL NOT BE MOUNTED ON ACCESS PANELS OF EQUIPMENT. SAFETY SWITCHES SHALL BE GENERAL ELECTRIC, 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, 600 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, L, RK-5, OR RK-1, WITH A 200,000 AMP AC RMS INTERRUPTING RATING, AND SHALL MEET UL STANDARD 198E.
31. ALL PANELBOARDS SHALL BE CIRCUIT BREAKER TYPE, AS MANUFACTURED BY SQUARE D, EATON CORP., GENERAL ELECTRIC, OR SIEMENS ENERGY & AUTOMATION.
   A. POWER DISTRIBUTION PANELBOARDS SHALL BE CUTLER-HAMMER POW-R-LINE 4B, SIEMENS TYPE S4 OR S5, 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 MAXIMUM OF 78" AFF. POWER PANELS SHALL BE UL LISTED, AND MEET UL 67, UL 50, AND FEDERAL SPECIFICATION W-P-115B AS TYPE 1, CLASS 1, WITH SERIES RATED, BOLT-ON CIRCUIT BREAKERS, COPPER OR TIN-PLATED ALUMINUM BUS BARS, NEUTRAL BUS, GROUND BUS, AND A HINGED LOCKABLE DOOR.
   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 W-P-115B AS TYPE 1, CLASS 1, WITH SERIES RATED, BOLT-ON CIRCUIT BREAKERS, COPPER OR TIN-PLATED ALUMINUM BUS BARS, NEUTRAL BUS, GROUND BUS, 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. THE BRANCH CIRCUITS SHALL BE PHASE ADJUSTED TO PROVIDE APPROXIMATE BALANCED LOADING ON EACH PANEL, AND THE SERVICE.
36. RECORDS AND SUBMITTALS: PROVIDE A MINIMUM OF THREE COPIES OF SHOP DRAWINGS WITH TECHNICAL DATA HIGH-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, SWITCHBOARD, RACEWAYS, CONDUCTORS, TRANSFORMERS, LIGHTING CONTROLS AND WIRING DEVICES.

   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 COMPLIES w/ THE LOCAL REQUIREMENTS. THE REVISED PHOTOMETRIC PLANS MAY BE REQUIRED TO BE APPROVED BY THE AHJ PRIOR TO INSTALLATION. IF THE WATTAGE OF THE SUBSTITUTED FIXTURES INCREASES FROM THE SPECIFIED FIXTURES THE CONTRACTOR MAY BE REQUIRED TO PROVIDE THE ENERGY CODE CALCULATIONS FOR THE LIGHTING AND SUBMIT TO THE AHJ FOR APPROVAL.

   CONTRACTOR SHALL VERIFY AVAILABLE FAULT CURRENT WITH UTILITY COMPANY FOR PROPER PANEL ASYMMETRICAL INTERRUPTING RATINGS. SUBMIT THIS INFORMATION WITH THE SHOP DRAWINGS ON PANELBOARDS, ALONG WITH LETTER FROM THE POWER COMPANY.

   SHOP DRAWINGS SHALL BE BOUND HARD COPIES, ELECTRONIC COPIES ARE NOT ACCEPTABLE.
37. SUBSTITUTIONS: ALL COSTS INCURRED BY THE ACCEPTANCE OF SUBSTITUTIONS SHALL BE BORNE BY THE CONTRACTOR. THE ONUS SHALL BE ON THE CONTRACTOR TO PROVE THAT THE SUBSTITUTIONS ARE EQUAL TO THE BASIS OF DESIGN SPECIFIED.
38. MAINTAIN AS-BUILT DRAWINGS, UPDATED DAILY DURING CONSTRUCTION, AND PRESENT THE OWNER, WITHIN 30 DAYS AFTER THE DATE OF SYSTEM ACCEPTANCE, WITH TWO SETS OF AS-BUILT DRAWINGS. PROVIDE THE OWNER'S PERSONNEL WITH ON-SITE INSTRUCTION IN THE OPERATION AND MAINTENANCE OF THE COMPLETED ELECTRICAL SYSTEM PRIOR TO SYSTEM ACCEPTANCE.
39. PROVIDE THE OWNER WITH TWO SETS OF OPERATIONS AND MAINTENANCE (O & M) MANUALS IN ACCORDANCE WITH ASHRAE/IESNA STANDARD 90.1-2001. THE MANUALS SHALL INCLUDE, AT A MINIMUM, THE FOLLOWING:
   A. SUBMITTAL DATA STATING EQUIPMENT RATING AND SELECTED OPTIONS FOR EACH PIECE OF EQUIPMENT REQUIRING MAINTENANCE.
   B. OPERATION MANUALS AND MAINTENANCE MANUALS FOR EACH PIECE OF EQUIPMENT REQUIRING MAINTENANCE. REQUIRED ROUTINE MAINTENANCE ACTIONS SHALL BE CLEARLY IDENTIFIED.
   C. NAMES AND ADDRESSES OF AT LEAST ONE QUALIFIED SERVICE AGENCY.
   D. A COMPLETE NARRATIVE OF HOW EACH SYSTEM IS INTENDED TO OPERATE.
   E. EQUIPMENT FOR CONSIDERATION, BUT NOT LIMITED TO, IS AS FOLLOWS: EMERGENCY LIGHTING EQUIPMENT, SWITCHBOARD, AND LIGHTING CONTROLS.
43. ALL COMMUNICATIONS CABLES SHALL BE ROUTED AND SECURED AT LEAST 12" FROM FLUORESCENT FIXTURES AND POWER CIRCUITS. CROSS OTHER CIRCUITS AT 90 DEGREE ANGLE.
44. MOUNT OUTLET BOXES, ABOVE ACCESSIBLE CEILINGS FOR RECESSED LUMINAIRES, ON THE BOTTOM OF BAR JOISTS, WOOD JOISTS, OR BEAMS, AND ROUTE FOUR TO SIX FOOT (4' TO 6'), TYPE MC CABLE WHIPS TO EACH FIXTURE, AS REQUIRED. COORDINATE THE LOCATIONS OF OUTLET/JUNCTION BOXES WITH THE HVAC CONTRACTOR AND OTHER TRADES TO AVOID INTERFERENCE WITH THE INSTALLATION OF DUCT WORK.
45. WHERE RECESSED, OUTLET BOXES ARE INDICATED LOCATED IN FIRE RATED CEILINGS, COORDINATE THE LOCATIONS OF OUTLETS WITH THE ARCHITECTURAL REFLECTED CEILING PLAN, CEILING FINISH PLAN, HVAC CONTRACTOR AND OTHER TRADES TO AVOID INTERFERENCE WITH THE INSTALLATION OF DUCT WORK. PROVIDE FIRE RATED ENCLOSURES LOCATED OVER THE OUTLET TO MAINTAIN THE SPECIFIED FIRE RATING OF THE CEILING.
46. VERIFY THE AMPACITY REQUIREMENTS (FLA, MCA, AND MOCP), POLES (1, 2, OR 3), AND VOLTAGE FOR ALL EQUIPMENT FURNISHED BY OTHERS WITH THE CONTRACTOR OR VENDOR SUPPLYING THE EQUIPMENT PRIOR TO THE PURCHASE AND INSTALLATION OF THE SAFETY SWITCHES, RACEWAYS, WIRING, AND BRANCH CIRCUIT BREAKERS.
47. PROVIDE A 4'x8'x3/4" EXTERIOR GRADE PLYWOOD COMMUNICATIONS BACKBOARD, PAINTED WITH TWO COATS, FIRE RESISTANT GRAY PAINT. PROVIDE A QUADRUPLEX OUTLET MOUNTED ON THE BOARD, AND A 4 AWG GROUND WIRE CONNECTED TO THE SERVICE GROUND FOR THE TELEPHONE SERVICE EQUIPMENT.
48. PRIOR TO THE START OF ANY CORING OPERATIONS, THE CONTRACTOR SHALL CONTACT THE ARCHITECT TO DETERMINE EXACT LOCATIONS OF STRUCTURAL CONCRETE INTERNAL COMPONENTS. THE CONTRACTOR SHALL ADJUST CONDUIT/CONDUCTOR LENGTH AS REQUIRED TO SATISFY CORED HOLE LOCATION(S). THE CONTRACTOR SHALL BE RESPONSIBLE FOR CUTTING ANY STRUCTURAL CONCRETE INTERNAL COMPONENT(S) WITHOUT OBTAINING AUTHORIZATION FROM THE ARCHITECT.
49. DURING TRENCH BACKFILLING, FOR ELECTRICAL EXTERIOR, UNDERGROUND DUCTS AND CONDUIT(S), INSTALL CONTINUOUS, STANDARD, 4-MIL, POLYETHYLENE, 3 INCH WIDE, DETECTABLE TYPE, BURIED CONDUIT MARKER, RED WITH BLACK LETTERS, AND IMPRINTED WITH "CAUTION BURIED ELECTRIC LINE BELOW". LOCATE DIRECTLY ABOVE DUCT AND CONDUITS AT 12 INCHES BELOW FINISHED GRADE.
50. FURNISH AND INSTALL WIRING AND RACEWAYS TO ALL SIGNS. VERIFY WITH SIGN PROVIDER THE REQUIRED NUMBER AND SIZE OF CONDUCTORS, I.E. DEDICATED GROUND CONDUCTOR, ETC.. SEE ARCHITECTURAL DRAWINGS FOR LOCATIONS.
51. TEST: UPON COMPLETION OF THE WORK, PERFORM A TEST OF THE INDIVIDUAL SYSTEMS INCLUDING FEEDERS, BRANCHES, OUTLETS, LIGHTING, MOTOR APPARATUS AND APPLIANCES, TO ASSURE COMPLIANCE WITH THESE SPECIFICATIONS AND DRAWINGS. A LETTER WITH ALL PERTINENT TEST DATA RESULTS SHALL BE SUBMITTED TO THE ARCHITECT AT LEAST FIVE (5) DAYS PRIOR TO THE COMPLETION OF THE PROJECT. THE ELECTRICAL CONTRACTOR SHALL PROVIDE ALL INSTRUMENTS, LABOR, AND MATERIALS FOR ANY ESSENTIAL INTERMEDIATE AND FINAL TESTS TO PROVIDE COMPLIANCE WITH THESE SPECIFICATIONS.

SHOP DRAWING SUBMITTAL NOTE:

THE SHOP DRAWING SUBMITTAL SHALL INCLUDE AS A MINIMUM THE FOLLOWING:

- A TABLE OF CONTENTS OF ALL ITEMS INCLUDED IN THE SUBMITTAL. THIS SHALL BE SUB-DIVIDED BY CATEGORY OF DEVICES / EQUIPMENT.
- A LETTER, ON THE CONTRACTORS LETTERHEAD, WITH STATEMENTS ANY OF DEVIATIONS FROM THE DESIGN DOCUMENTS WITH EXPLANATIONS & SKETCHES AS NEEDED.
- A LETTER FROM THE UTILITY ON THEIR LETTERHEAD STATING THE AVAILABLE FAULT CURRENT AT THE SECONDARY OF THE UTILITY TRANSFORMER.
- HIGH-LIGHTED SUPPORTING DATA TO INDICATE COMPLIANCE WITH THE DESIGN DOCUMENTS.

THE SUBMITTALS SHALL NOT INCLUDE "TERM & CONDITIONS", INSTALLATION INSTRUCTIONS, OR ANY EXTRANEOUS INFORMATION THAT DOES NOT SHOW COMPLIANCE WITH THE SPECIFICATIONS. (THIS INFORMATION MAY BE SUBMITTED AS A SEPARATE DOCUMENT.)

ALL ITEMS REQUIRING SUBMITTALS SHALL BE SUBMITTED IN ONE COMPLETE DOCUMENT PER DISCIPLINE.

NOTE:

IF THE CONTRACTOR ELECTS TO PROVIDE AND/OR INSTALL ELECTRICAL SYSTEMS, INCLUDING LOW VOLTAGE SYSTEMS, AND EQUIPMENT FOR THIS PROJECT, DIFFERENTLY FROM THESE CONTRACT DOCUMENTS, WHICH REQUIRES AN APPROVAL LETTER OR DRAWING REVISIONS FROM THE ENGINEER OF RECORD, TO THE AUTHORITY HAVING JURISDICTION, THERE WILL BE A MINIMUM FEE OF $1,000.00, MADE PAYABLE TO MARSHALL & BOLLWERK ENG., INC. IN ADVANCE BY THE CONTRACTOR. ACTUAL FEE WILL DEPEND ON THE COMPLEXITY OF THE DEVIATION. ALLOW MINIMUM OF TEN(10) WORKING DAYS FOR LETTER AND/OR REVISED DRAWINGS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ALL NECESSARY INFORMATION BEFORE ANY EVALUATION WILL BE STARTED.

GENERAL NOTES:

ELECTRICAL CONTRACTOR SHALL REFER TO ARCHITECTURAL, CIVIL, MECHANICAL AND PLUMBING DRAWINGS FOR ADDITIONAL INFORMATION AND WORK REQUIRED BY THIS CONTRACTOR.

LIGHTING FIXTURE SCHEDULE

SYMB.	TYPE	DESCRIPTION	MANUFACTURER/MODEL #	LAMP TYPE/WATTAGE	NOTES
	A	8' LED ROUND CHANNEL LIGHT FIXTURE	DECO LIGHTING DACH-LED-8-90-40-UNV-R-DM-O	(1) 88W (11,700 lm) LED LIGHT ENGINE 4,000K CCT	
	AE/NL	SAME AS TYPE "A" EXCEPT WITH BATTERY PACK	DECO LIGHTING DACH-LED-8-90-40-UNV-R-DM-O-EM	(1) 88W (11,700 lm) LED LIGHT ENGINE 4,000K CCT	TYPE "NL" FIXTURE, SHALL BE ON 24/7
or	B	4' LED ROUND CHANNEL LIGHT FIXTURE	DECO LIGHTING DACH-LED-4-35-40-UNV-R-DM-O	(1) 35W (4,550 lm) LED LIGHT ENGINE 4,000K CCT	
	BE	SAME AS TYPE "A" EXCEPT WITH BATTERY PACK	DECO LIGHTING DACH-LED-4-35-40-UNV-R-DM-O-EM	(1) 35W (4,550 lm) LED LIGHT ENGINE 4,000K CCT	
	C	8' LED ROUND CHANNEL LIGHT FIXTURE w/ INTEGRAL OCC SENSOR	DECO LIGHTING DACH-LED-8-90-40-UNV-R-DM-O-MS	(1) 88W (11,700 lm) LED LIGHT ENGINE 4,000K CCT	CONTROLLED BY BUILT-IN MOTION SENSOR, WALL MTD.
	C1	4' LED ROUND CHANNEL LIGHT FIXTURE w/ INTEGRAL OCC SENSOR	DECO LIGHTING DACH-LED-4-35-40-UNV-R-DM-O-MS	(1) 35W (4,550 lm) LED LIGHT ENGINE 4,000K CCT	CONTROLLED BY BUILT-IN MOTION SENSOR, WALL MTD.
	D	4' LED ROUND CHANNEL LIGHT FIXTURE w/ BATTERY PACK & OCC. SENSOR	DECO LIGHTING DACH-LED-4-35-40-UNV-R-DM-O-EM	(1) 35W (4,550 lm) LED LIGHT ENGINE 4,000K CCT	CONTROLLED BY BUILT-IN MOTION SENSOR, WALL MTD. w/ NIGHT LIGHT
	H	LED HALF CYLINDER WALL PACK	DECO LIGHTING D440-LED-30-40-UNV-D-T3-**-WSF	(1) 30W (2,030 lm) LED LIGHT ENGINE 4,000K COLOR TEMP	** = COORDINATE FINAL FINISH w/ ARCHITECT AND OWNER
	HE	SAME AS TYPE "H" EXCEPT w/ EMERGENCY BATTERY BACK-UP	DECO LIGHTING D440-LED-30-40-UNV-D-T3-**-WSF-EM	(1) 30W (2,030 lm) LED LIGHT ENGINE 4,000K COLOR TEMP	** = COORDINATE FINAL FINISH w/ ARCHITECT AND OWNER
	J	LED HALF CYLINDER WALL PACK w/ UP/DOWN DISTRIBUTION	DECO LIGHTING D440-LED-20-40-UNV-UD-T2-**-WSF	(1) 30W (2,030 lm) LED LIGHT ENGINE 4,000K COLOR TEMP	** = COORDINATE FINAL FINISH w/ ARCHITECT AND OWNER
	L	2'x2' LED PANEL TROFFER	EnVISION LED LIGHTING LED-PNL-2x2-45W-50K	(1) 45W (4,500 lm) LED LIGHT ENGINE 5,000K COLOR TEMP	
	LE	SAME AS TYPE "L" EXCEPT WITH BATTERY PACK	EnVISION LED LIGHTING LED-PNL-2x2-45W-50K/LED-EMB-12W-LV	(1) 45W (4,500 lm) LED LIGHT ENGINE 5,000K COLOR TEMP	
	M	2'x4' LED PANEL TROFFER	EnVISION LED LIGHTING LED-PNL-2x4-60W-50K	(1) 60W (6,000 lm) LED LIGHT ENGINE 5,000K COLOR TEMP	
or	X1	LED EXIT LIGHT	PROGRESS LIGHTING PETPE-UR-30	FURNISHED WITH FIXTURE	NO. SIDES AND CHEVRONS AS REQUIRED.

LIGHTING FIXTURE SCHEDULE NOTES:

1. THE CONTRACTOR SHALL COORDINATE w/ THE OWNER AND LIGHTING VENDOR TO SUPPLY LIGHTING CONTROLS PER ZONES INDICATED ON THE PLANS. THE CONTRACTOR SHALL COORDINATE WITH EITHER ADAM RIXEY w/ SESCO LIGHTING (770) 449-7045 OR TONY LICATA w/ PRIORITY LIGHTING (800) 709-1119 x112 TO HAVE WATTSTOPPER PROVIDE THE INSTALLATION DESIGN PLANS AND TO COORDINATE A TECHNICIAN TO PERFORM THE START-UP OF THE LIGHTING CONTROL.
2. WHERE FIXTURES ARE INDICATED TO HAVE EMERGENCY BACK-UP BY A SOLID DOT ON THE FIXTURE ON THE PLAN PROVIDE w/ AN EMERGENCY BATTERY RATED FOR A MINIMUM OF 1,400 LUMEN OUTPUT FOR 90 MINUTES.
3. THE TIME DELAY FOR ALL OCCUPANCY SENSORS SHALL BE SET FOR 15 MINUTES, UNLESS INSTRUCTED OTHERWISE BY THE OWNER'S REPRESENTATIVE.
4. COORDINATE ALL LIGHTING FIXTURE FINISHES w/ THE ARCHITECT AND OWNER PRIOR TO ORDERING.
5. SEE ELECTRICAL SPECIFICATION NOTE 36 IF ALTERNATE LIGHTING FIXTURES ARE BEING SUBMITTED. ALTERNATES SHALL BE SUBMITTED FOR APPROVAL PRIOR TO BID. ALTERNATES WILL NOT BE REVIEWED WITHOUT DOCUMENTATION TO SHOW THEY MEET THE SPECIFICATIONS.

LEGEND

SYMBOL	DESCRIPTION
	2'x2' LAY-IN FIXTURE
	2'x2' LAY-IN FIXTURE WITH EMERGENCY BATTERY PACK
	2'x4' LAY-IN FIXTURE
	4' STRIP LIGHTING FIXTURE
	4' STRIP LIGHTING FIXTURE WITH EMERG. BATTERY PACK
	8' STRIP LIGHTING FIXTURE
	8' STRIP LIGHTING FIXTURE WITH EMERG. BATTERY PACK
	4' WALL MOUNTED FIXTURE WITH EMERG. BATTERY PACK
	WALL MOUNTED OR WALL PACK LIGHT FIXTURE
	WALL MOUNTED OR WALL PACK LIGHT FIXTURE WITH EMERGENCY BATTERY PACK
OR	EXIT LIGHT FIXTURE; SINGLE OR DOUBLE SIDED
	EXIT LIGHT FIXTURE WITH TWO EMERGENCY HEADS
$	SPST LIGHT SWITCH; TOGGLE. MOUNT 48" A.F.F., UNO.
$_3	THREE-WAY LIGHT SWITCH; TOGGLE. MOUNT 48" A.F.F., UNO.
$_oc	WALL MOUNTED OCCUPANCY SENSOR SWITCH; MOUNT 48" A.F.F., UNO.
$_M	SWITCH, MANUAL, MOTOR RATED
	OCCUPANCY SENSOR - SEE DRAWING E0.02 FOR SPECS. LOWER CASE LETTER INDICATES ZONE
	TELEPHONE/DATA WALL OUTLET, PROVIDE SINGLE GANG BOX WITH 1" CONDUIT WITH PULL WIRE TO ABOVE CEILING. MOUNTING HEIGHT AS DIRECTED BY OWNER.
	TELEPHONE BACKBOARD, SEE SPECIFICATION NOTE 47 THIS SHEET.
	GROUND FAULT CIRCUIT INTERRUPTER RECEPTACLE, MOUNTED ABOVE COUNTER/BACKSPLASH REFER TO ARCHITECTURAL DRAWINGS FOR EXACT HEIGHTS U.N.O.
	DUPLEX RECEPTACLE, MOUNT 18" A.F.F. U.N.O.
	JUNCTION BOX (SMALL). SIZED PER NEC REQUIREMENTS. NEMA TYPE 1. STAMPED METAL, WITH KNOCK OUTS.
	480 VOLT PANELBOARD
	208/120 VOLT LIGHTING AND APPLIANCE TYPE PANELBOARD
	MOTOR
30 / 20	FUSIBLE DISCONNECT SWITCH; NF IS NONFUSED
A-	CIRCUIT HOME RUN (TO THE PANEL INDICATED).
	RACEWAY CONCEALED IN WALL OR CEILING
	RACEWAY EXPOSED RACEWAY
	CONCEALED UNDER FLOOR OR UNDERGROUND

ALL MOUNTING HEIGHTS ARE TO CENTER OF BOX, UNO.

ABBREVIATIONS

AH	AIR HANDLING UNIT
HP	HEAT PUMP
EF	EXHAUST FAN
WH	WALL HEATER
EWH	ELECTRIC WATER HEATER
FWE	FURNISHED WITH EQUIPMENT
U.N.O.	UNLESS NOTED OTHERWISE
A.F.F.	ABOVE FINISHED FLOOR
WP	WEATHERPROOF
GFI	GROUND FAULT CIRCUIT INTERRUPTER
NL	NIGHT LIGHT

LOW VOLTAGE NOTE:

ALL LOW VOLTAGE SYSTEMS FOR THIS PROJECT SHALL BE PROVIDED BY THE GENERAL CONTRACTOR (GC) AS "DESIGN BUILD" UNDER SEPARATE CONTRACT(S) FROM THE ELECTRICAL DESIGN. THESE INCLUDE BUT ARE NOT LIMITED TO THE FOLLOWING SYSTEMS:

-- FIRE ALARM SYSTEM
-- ACCESS CONTROL SYSTEM
-- VIDEO SURVEILLANCE
-- SECURITY ALARM
-- TELEPHONE
-- INTERCOM
-- SOUND SYSTEMS

THE ELECTRICAL CONTRACTOR SHALL COORDINATE WITH THE GC TO DETERMINE SERVICES TO BE PROVIDED IN ACCORDANCE w/ ELECTRICAL SPECIFICATION NOTE 11. THIS SHEET TO ASSURE BIDS INCLUDE ALL COST FOR COMPLETE FUNCTIONING SYSTEMS.

WIRING SIZE CHART

CONTRACTOR SHALL PROVIDE WIRING FOR 120 V., 15 & 20 A. CIRCUITS (LINE TO NEUTRAL) OF SIZES BELOW DEPENDING UPON CIRCUIT LENGTH BELOW:

< 100 FT	#12 AWG (CU)
100-160 FT	#10 AWG (CU)
160-250 FT	#8 AWG (CU)

WHERE #8 AWG CONDUCTORS ARE REQUIRED USE #8 FOR ALL TRAVELERS AND SPLICE w/ #10 IN A CODE SIZED JUNCTION BOX WITHIN 10' OF DEVICE &/OR BREAKER FOR FINAL CONNECTIONS.

OTHER THAN AS NOTED ABOVE THE ENTIRE LENGTH OF FEEDER SHALL BE THE SAME CONDUCTOR SIZE.

MARSHALL & BOLLWERK ENGINEERING, INC.
8681 Highway 92, Suite 400
Woodstock, Ga. 30189
p: (678) 795-0333, f: (678) 325-4559
e: mbe@mbeinc.net

RELEASED FOR CONSTRUCTION

Colin Lichtenstein and Associates
1150 LAKE HEARN DR - SUITE 150
ATLANTA, GA 30342 (404)303-7008

GEORGIA REGISTERED NO. 20016 PROFESSIONAL ENGINEER J. MICHAEL JONES 9/28/18

REVISIONS	BY
10/01/18	

PRINTED	
PERMIT 10/01/18	

PROPOSED NEW BUILDING:

BROWARD NORTHSIDE CLIMATE CONTROLLED STORAGE
924 NORTHSIDE DRIVE NW
ATLANTA,G GA 30318

DRAWN	EFJ
CHECKED	JMJ
DATE	09/2018
SCALE	AS NOTED
JOB NO.	0000
SHEET	E-01

OF SHEETS

OCCUPANCY SENSORS

PART 1. GENERAL

1.01 WORK INCLUDED.

A. CONTRACTOR'S WORK TO INCLUDE ALL LABOR, MATERIALS, TOOLS, APPLIANCES, CONTROL HARDWARE, SENSOR, WIRE, JUNCTION BOXES AND EQUIPMENT NECESSARY FOR AND INCIDENTAL TO THE DELIVERY, INSTALLATION AND FURBISHING OF A COMPLETELY OPERATIONAL OCCUPANCY SENSOR LIGHTING CONTROL SYSTEM, AS DESIGNED BY THE MANUFACTURER.

B. CONTRACTOR/SUPPLIER SHALL EXAMINE ALL GENERAL SPECIFICATION PROVISIONS AND DRAWINGS FOR RELATED ELECTRICAL WORK AS REQUIRED UNDER THESE DOCUMENTS.

C. CONTRACTOR SHALL COORDINATE ALL WORK DESCRIBED IN THIS SECTION WITH ALL OTHER APPLICABLE PLANS AND SPECIFICATIONS, INCLUDING BUT NOT LIMITED TO WIRING, CONDUIT, FIXTURES, HVAC SYSTEMS AND BUILDING MANAGEMENT SYSTEMS.

1.02 EQUIPMENT QUALIFICATION

A. PRODUCTS SUPPLIED SHALL BE FROM A SINGLE MANUFACTURER THAT HAS BEEN CONTINUOUSLY INVOLVED IN THE MANUFACTURING OF OCCUPANCY SENSORS FOR A MINIMUM OF FIVE (5) YEARS. MIXING OF MANUFACTURERS SHALL NOT BE ALLOWED.

B. ALL COMPONENTS SHALL BE U.L. LISTED, OFFER A FIVE (5) YEAR WARRANTY AND MEET ALL STATE AND LOCAL APPLICABLE CODE REQUIREMENTS.

C. WALL SWITCH PRODUCTS MUST BE CAPABLE OF WITHSTANDING THE EFFECTS OF INRUSH CURRENT. SUBMITTALS SHALL CLEARLY INDICATE THE METHOD USED.

1.03 SYSTEM DESCRIPTION

A. THE OBJECTIVE OF THIS SECTION IS TO ENSURE THE PROPER INSTALLATION OF THE OCCUPANCY SENSOR BASED LIGHTING CONTROL SYSTEM SO THAT LIGHTING IS TURNED OFF AUTOMATICALLY AFTER REASONABLE TIME DELAY WHEN A ROOM OR AREA IS VACATED BY THE LAST PERSON TO OCCUPY SAID ROOM OR AREA.

1.04 SUBMITTALS

A. MANUFACTURER SHALL SUBSTANTIATE CONFORMANCE TO THIS SPECIFICATION BY SUPPLYING THE NECESSARY DOCUMENTS, PERFORMANCE DATA AND WIRING DIAGRAMS. ANY DEVIATIONS TO THIS SPECIFICATION MUST BE CLEARLY STATED BY LETTER AND SUBMITTED.

B. SUBMIT A LIGHTING PLAN CLEARLY MARKED BY MANUFACTURER SHOWING PROPER PRODUCT, LOCATION AND ORIENTATION OF EACH SENSOR.

C. SUBMIT INTERCONNECTION DIAGRAMS PER MAJOR SUBSYSTEM SHOWING PROPER WIRING.

D. SUBMIT STANDARD CATALOG LITERATURE WHICH INCLUDES PERFORMANCE SPECIFICATIONS INDICATING COMPLIANCE TO THE SPECIFICATION.

E. CATALOG SHEETS MUST CLEARLY STATE ANY LOAD RESTRICTIONS WHEN USED WITH ELECTRONIC BALLASTS.

1.05 SYSTEM OPERATION

A. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO MAKE ALL PROPER ADJUSTMENTS TO ASSURE OWNER'S SATISFACTION WITH THE OCCUPANCY SYSTEM.

PART 2. SPECIFIC REQUIREMENTS

2.01 ACCEPTABLE MANUFACTURER:

A. WATT STOPPER, ANY PROPOSED ALTERNATE MANUFACTURE SHALL BE SUBMITTED FOR APPROVAL PRIOR TO BID.

2.02 PRODUCTS

A. CEILING MOUNTED SENSORS SHALL BE CAPABLE OF DETECTING OCCUPANCY WITHIN THE FULL RANGE OF ZONE TO BE CONTROLLED, I.E. CORRIDORS SHALL USE A NARROW LONG RANGE SENSOR AND ROOM'S SHALL USE 360° COVERAGE.

B. WALL SWITCH SENSORS SHALL BE CAPABLE OF DETECTION OF OCCUPANCY AT DESKTOP LEVEL UP TO 300 SQUARE FEET, AND GROSS MOTION UP TO 1000 SQUARE FEET.

C. WALL SWITCH SENSORS SHALL ACCOMMODATE LOADS FROM 0 TO 1,000 WATTS FLUORESCENT AT 120 VOLTS; 0 TO 1,800 WATTS FLUORESCENT AT 277 VOLTS AND SHALL HAVE 180° COVERAGE CAPABILITY.

D. SYSTEM SHALL UTILIZE PASSIVE INFRARED, ULTRASONIC, AND DUAL TECHNOLOGY DEVICES FOR BEST COVERAGE.

E. ALL SENSORS SHALL BE CAPABLE OF OPERATING NORMALLY WITH ELECTRONIC BALLASTS, PL LAMP SYSTEMS AND RATED MOTOR LOADS.

F. COVERAGE OF SENSORS SHALL REMAIN CONSTANT AFTER SENSITIVITY CONTROL HAS BEEN SET. NO AUTOMATIC REDUCTION SHALL OCCUR IN COVERAGE DUE TO THE CYCLING OF AIR CONDITIONER OR HEATING FANS.

G. ALL SENSORS SHALL HAVE READILY ACCESSIBLE, USER ADJUSTABLE SETTINGS FOR TIME DELAY AND SENSITIVITY. SETTINGS SHALL BE LOCATED ON THE SENSOR (NOT THE CONTROL UNIT) AND SHALL RE RECESSED TO LIMIT TAMPERING.

H. IN THE EVENT OF FAILURE, A BYPASS MANUAL OVERRIDE SHALL BE PROVIDED ON EACH SENSOR. WHEN BYPASS IS UTILIZED, LIGHTING SHALL REMAIN ON CONSTANTLY OR CONTROL SHALL DIVERT TO A WALL SWITCH UNTIL SENSOR IS REPLACED. THIS CONTROL SHALL BE RECESSED TO PREVENT TAMPERING.

I. ALL SENSORS SHALL PROVIDE AN LED AS A VISUAL MEANS OF INDICATION AT ALL TIMES TO VERIFY THAT MOTION IS BEING DETECTED DURING BOTH TESTING AND NORMAL OPERATION.

J. ALL SENSORS SHALL HAVE UL RATE, 94V-0 PLASTIC ENCLOSURES.

2.03 CIRCUIT CONTROL HARDWARE – CU

A. CONTROL UNITS – FOR EASE OF MOUNTING, INSTALLATION AND FUTURE SERVICE, CONTROL UNIT(S) SHALL BE ABLE TO EXTERNALLY MOUNT THROUGH A " KNOCK-OUT ON A STANDARD ELECTRICAL ENCLOSURE AND BE AN INTEGRATED, SELF-CONTAINED UNIT CONSISTING INTERNALLY OF AN ISOLATED LOAD SWITCHING CONTROL RELAY AND A TRANSFORMER TO PROVIDE LOW-VOLTAGE POWER. CONTROL UNIT SHALL PROVIDE POWER TO A MINIMUM OF TWO (2) SENSORS.

B. RELAY CONTACTS SHALL HAVE RATINGS OF:

13A – 120 VAC TUNGSTEN
20A – 120 VAC BALLAST

C. CONTROL WIRING BETWEEN SENSORS AND CONTROLS UNITS SHALL BE CLASS II, 18 – 24 AWG, STRANDED U.L. CLASSIFIED, PVC INSULATED OR TEFLON JACKETED CABLE SUITABLE FOR USE IN PLENUMS, WHERE APPLICABLE.

D. MINIMUM ACCEPTABLE WIRE GAUGE FROM THE CIRCUIT CONTROL HARDWARE RELAYS SHALL BE #14 AWG.

PART 3. EXECUTION

3.01 INSTALLATION

A. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO LOCATE AND AIM SENSORY IN THE CORRECT LOCATION REQUIRED FOR COMPLETE AND PROPER VOLUMETRIC COVERAGE WITHIN THE RANGE OF COVERAGE(S) OF CONTROLLED AREAS PER THE MANUFACTURER'S DESIGN. THE LOCATIONS AND QUANTITIES OF SENSORS SHOWN ON THE DRAWINGS ARE DIAGRAMMATIC AND INDICATE ONLY THE AREAS WHICH ARE TO BE PROVIDED WITH SENSORS. THE CONTRACTOR SHALL PROVIDE ADDITIONAL SENSORS IF REQUIRED TO PROPERLY AND COMPLETELY COVER THE RESPECTIVE AREA.

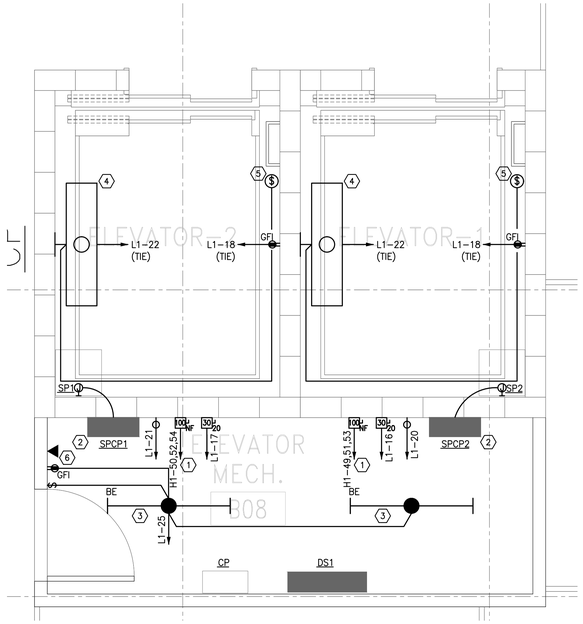
B. IT IS THE CONTRACTORS RESPONSIBILITY TO ARRANGE A PRE-INSTALLATION MEETING WITH THE MANUFACTURER'S FACTORY AUTHORIZED REPRESENTATIVE, AT THE OWNER'S FACILITY, TO VERIFY PLACEMENT OF SENSORS AND INSTALLATION CRITERIA.

3.02 QUALITY ASSURANCE

A. THE CONTRACTOR SHALL COORDINATE WITH THE MANUFACTURER TO PROVIDE A LIST OF AUTHORIZED TECHNICIANS TO PERFORM THE LIGHTING CONTROLS START-UP. THE CONTRACTOR SHALL HAVE ONE OF THESE AUTHORIZED TECHNICIANS PERFORM THE START-UP AND HAVE THE OWNER SIGN-OFF ACCEPTING THE INSTALLATION PRIOR TO THE PROJECT BEING TURNED OVER TO THE OWNER.

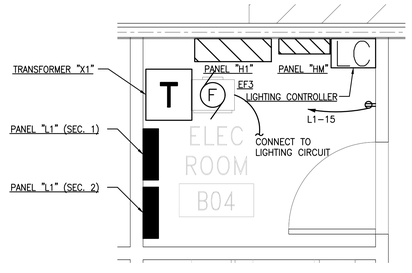
B. THE CONTRACTOR SHALL WARRANT ALL EQUIPMENT FURNISHED IN ACCORDANCE TO THIS SPECIFICATION TO BE UNDAMAGED, FREE OF DEFECTS IN MATERIALS AND WORKMANSHIP, AND IN CONFORMANCE WITH THE SPECIFICATIONS. THE SUPPLIERS OBLIGATION SHALL INCLUDE REPAIR OR REPLACEMENT, AND TESTING WITHOUT CHARGE TO THE OWNER, ALL OR ANY PARTS OF EQUIPMENT WHICH ARE FOUND TO BE DAMAGED, DEFECTIVE OR NON-CONFORMING AND RETURNED TO THE SUPPLIER. THE WARRANTY SHALL COMMENCE UPON THE OWNER'S ACCEPTANCE OF THE PROJECT. WARRANTY ON LABOR SHALL BE FOR A MINIMUM PERIOD OF ONE (1) YEAR.

NOTE THE PLANS PROVIDE A GENERIC SENSOR LAYOUT TO INDICATE ZONES TO BE COVERED. THE SYSTEM VENDOR SHALL DESIGN THE FINAL SYSTEM TO BE INSTALLED. PROVIDE ALL SUBMITTALS PER PARAGRAPH 1.04 THIS SHEET.



PARTIAL PLAN - ELEVATORS & EQUIPMENT ROOM

SCALE: 1/2" = 1'-0"



PARTIAL PLAN - ELECTRICAL ROOM

SCALE: 1/2" = 1'-0"

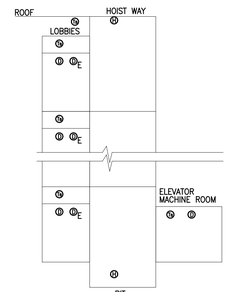
KEYED NOTES: (ELEVATORS & EQUIP. ROOM PLAN ONLY)

1. PROVIDE A 200A/600V/3P/NF DISCONNECT SWITCH, COORDINATE, WITH ELEVATOR VENDOR FOR PROPER RATING FOR ELEVATOR PURCHASED. (BASIS OF DESIGN 50HP.)
2. SUMP PUMP CONTROL PANEL AND 16' CABLE FURNISHED w/ SUMP PUMP. COORDINATE INSTALLATION REQUIREMENTS w/ MFG'S INSTALLATION INSTRUCTIONS & VENDOR PRIOR TO ROUGH-IN. PROVIDE SUPPORT FOR CABLE AT NO MORE THAN 4'-0" APART.
3. CONNECT ELEVATOR EQUIPMENT ROOM LIGHTS TO RECEPTACLE CIRCUIT AHEAD OF GFI PROTECTION AND IN ACCORDANCE w/ NEC 620.23.
4. COORDINATE FINAL LOCATION OF PIT LIGHT FIXTURE(S) w/ ELEVATOR VENDOR PRIOR TO ROUGH-IN, PROVIDE ADDITIONAL FIXTURES IF REQUIRED.
5. MOUNT ELEVATOR PIT LIGHT SWITCHES 18" AFF (1st FLOOR). COORDINATE EXACT LOCATION w/ ELEVATOR VENDOR PRIOR TO ROUGH-IN.
6. ELEVATOR CALL BOX. COORDINATE QUANTITY & LOCATION WITH ELEVATOR VENDOR AND ARCHITECTURAL PLANS.

ELEVATOR COORDINATION NOTE:

THE GENERAL CONTRACTOR SHALL COORDINATE AS REQUIRED TO VERIFY IF THE FOLLOWING ITEMS APPLY TO THE ACTUAL ELEVATOR PACKAGE SUPPLIED TO THE JOB SITE PRIOR TO THE ORDERING OR ROUGH-IN OF ELECTRICAL:

1. SHUNT TRIP BREAKER FOR ELEVATOR SHUT-DOWN, WITH ONE NORMALLY OPEN AUXILIARY CONTACT, FOR A BATTERY- LOWERING DEVICE, IF SPECIFIED WITH THE ELEVATOR. THIS SHALL BE DONE IN A MANNER THAT IS ACCEPTABLE TO LOCAL JURISDICTIONS. THIS SHALL BE REQUIRED IF FIRE SPRINKLERS ARE LOCATED IN ELEVATOR SHAFT OR EQUIPMENT ROOM.
2. A BATTERY LOWERING UNIT. IF SO PROVIDE AUXILIARY CONTACTS IN THE MAIN DISCONNECT AS REQUIRED BY THE VENDOR.
3. THE CIRCUIT BREAKER RATING REQUIRED FOR THE ELEVATOR DRIVE/MOTOR CONTROL.
4. COORDINATE w/ LOW VOLTAGE CONTRACTOR(S) TO PROVIDE ALL REQUIRED ALARMS, REMOTE ANNUNCIATION, INTERLOCKS, AND RECALL SYSTEM CONDUIT & CABLING.



(H) HEAT DETECTOR IN HOISTWAY AS REQUIRED PER NFPA FOR ELEVATORS PROTECTED WITH SPRINKLER SYSTEM (AT TOP OF HOISTWAY ("T") AND IN PIT ("P") ADJACENT TO SPRINKLER HEADS).

(D) SMOKE DETECTORS IN ELEVATOR LOBBIES AND MACHINE ROOMS (SEE MACHINE ROOM PLANS).

$(D)_E$ ELEVATOR RECALL SMOKE DETECTOR IN ELEVATOR LOBBIES.

(S) ELEVATOR SPRINKLER SHUT-OFF VALVE (WHERE REQUIRED) LOCATED ABOVE CEILING AND OUTSIDE OF HOISTWAY.

MARSHALL & BOLLWERK ENGINEERING, INC.
8681 Highway 92, Suite 400
Woodstock, Ga. 30189
p: (678) 795-0333, f: (678) 325-4559
e: mbe@mbeinc.net

RELEASED FOR CONSTRUCTION

Colin Lichtenstein and Associates
1150 LAKE HEARN DR – SUITE 150
ATLANTA, GA 30342 (404)303-7008

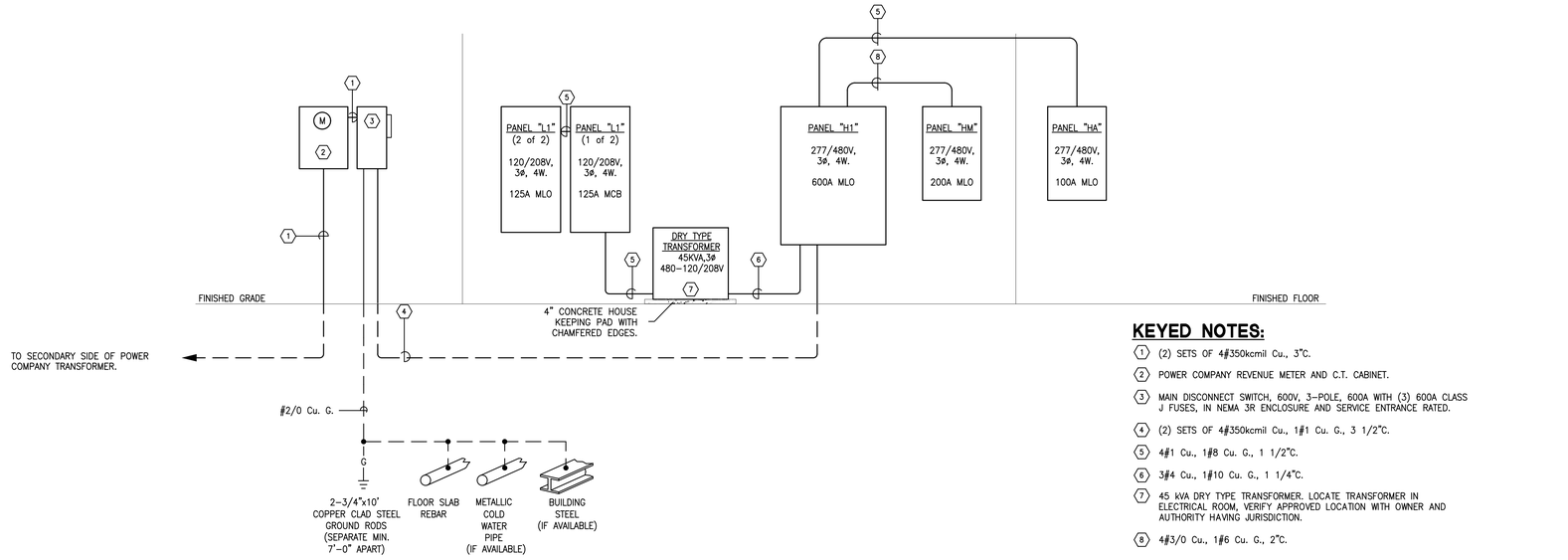
REVISIONS	BY
10/01/18	

PRINTED
PERMIT
10/01/18

GEORGIA REGISTERED NO. 30016 PROFESSIONAL ENGINEER MICHAEL JONES 9/28/18

PROPOSED NEW BUILDING:
BROWARD NORTHSIDE CLIMATE CONTROLLED STORAGE
924 NORTHSIDE DRIVE NW
ATLANTA,G GA 30318

DRAWN: EFJ
CHECKED: JMJ
DATE: 09/2018
SCALE: AS NOTED
JOB NO.: 0000
SHEET: E-02
OF SHEETS



SEE SPEC NOTE 14 ON SHEET E-01.

SINGLE LINE DIAGRAM

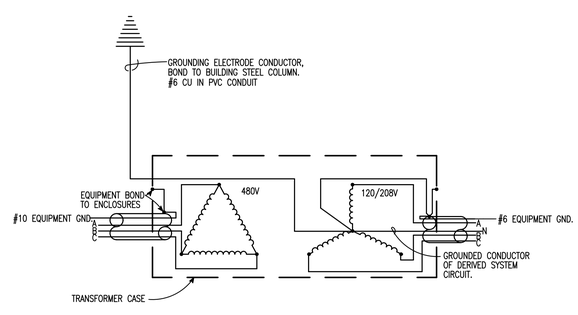
SCALE: NONE

ELECTRICAL CONTRACTOR SHALL CONTACT THE LOCAL POWER COMPANY TO DETERMINE THE AIC RATING REQUIREMENTS FOR ALL ELECTRICAL PANELS AND EQUIPMENT. ELECTRICAL PANEL AIC RATING'S SHALL BE SIZED PER LOCAL POWER COMPANY'S AIC RATING AT SECONDARY SIDE OF POWER COMPANY TRANSFORMER.

POWER COMPANY: GEORGIA POWER CO.
CONTACT: LIMA MORALES (404) 276-1376
AVAILABLE FAULT CURRENT: PER POWER CO.

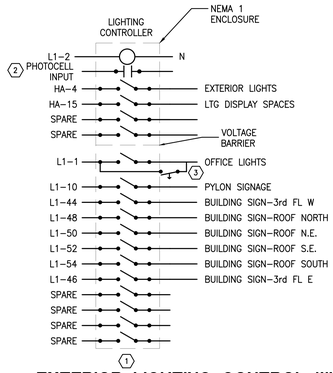
KEYED NOTES:

1. (2) SETS OF 4#350kcmil Cu., 3"C.
2. POWER COMPANY REVENUE METER AND C.T. CABINET.
3. MAIN DISCONNECT SWITCH, 600V, 3-POLE, 600A WITH (3) 600A CLASS J FUSES, IN NEMA 3R ENCLOSURE AND SERVICE ENTRANCE RATED.
4. (2) SETS OF 4#350kcmil Cu., 1#1 Cu. G., 3 1/2"C.
5. 4#1 Cu., 1#8 Cu. G., 1 1/2"C.
6. 3#4 Cu., 1#10 Cu. G., 1 1/4"C.
7. 45 kVA DRY TYPE TRANSFORMER. LOCATE TRANSFORMER IN ELECTRICAL ROOM, VERIFY APPROVED LOCATION WITH OWNER AND AUTHORITY HAVING JURISDICTION.
8. 4#3/0 Cu., 1#6 Cu. G., 2"C.



GROUNDING FOR 45KVA, 480V DELTA-208/120V WYE, TRANSFORMER

SCALE: NONE



KEYED NOTES:

1. 16 POLE PROGRAMMABLE LIGHTING CONTROL PANEL, BASIS OF DESIGN DOUGLAS MODEL WPAK16-3351-S. SET CONTROLS PER OWNER'S REPRESENTATIVE'S INSTRUCTIONS.
2. FIELD LOCATE PHOTOCELL ON ROOF FACING NORTHEAST FOR BEST CONTROL.
3. PROVIDE A MAXIMUM OF 2 HOUR "AFTER HOURS" OVERRIDE SWITCH FOR OFFICE. COORDINATE FINAL LOCATION OF SWITCH w/ OWNER PRIOR TO ROUGH-IN.

EXTERIOR LIGHTING CONTROL WIRING DIAGRAM

SCALE: NONE

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REVISIONS	BY
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PERMIT
10/01/18

GEORGIA REGISTERED NO. 30016 PROFESSIONAL ENGINEER MICHAEL JONES
9/20/18

PROPOSED NEW BUILDING:
BROWARD NORTHSIDE CLIMATE CONTROLLED STORAGE
924 NORTHSIDE DRIVE NW
ATLANTA,G GA 30318

DRAWN	EFJ
CHECKED	JMJ
DATE	09/2018
SCALE	AS NOTED
JOB NO.	0000
SHEET	E-03

OF SHEETS

PANEL: "HM"
MAINS: 200 AMP
MLO/MCB: MLO
VOLTAGE: 480/277 VAC
PHASE: 3
WIRE: 4
MOUNTING: SURFACE

BRKR	TRIP/ POLES	DESCRIPTION	LOAD(VA)	PHASE	LOAD(VA)	DESCRIPTION	TRIP/ POLES	BRKR
1			5,125	A	5,125			2
3	20/3	AIR HANDLING UNIT - "AH1"	5,125	B	5,125	AIR HANDLING UNIT - "AH2"	20/3	4
5			5,125	C	5,125			6
7			5,125	A	5,125			8
9	20/3	AIR HANDLING UNIT - "AH3"	5,125	B	5,125	AIR HANDLING UNIT - "AH4"	20/3	10
11			5,125	C	5,125			12
13			5,125	A	5,125			14
15	20/3	AIR HANDLING UNIT - "AH5"	5,125	B	5,125	AIR HANDLING UNIT - "AH6"	20/3	16
17			5,125	C	5,125			18
19			5,125	A	5,125			20
21	20/3	AIR HANDLING UNIT - "AH7"	5,125	B	5,125	AIR HANDLING UNIT - "AH8"	20/3	22
23			5,125	C	5,125			24
25			5,125	A	5,125	AIR HANDLING UNIT - "AH10"	20/3	26
27	20/3	AIR HANDLING UNIT - "AH9"	5,125	B	5,125			28
29			5,125	C	5,125			30
31				A				32
33	3P	SPACE		B		SPACE	3P	34
35				C				36
37				A				38
39	3P	SPACE		B		SPACE	3P	40
41				C				42

TOTAL PHASE A:	51,245		
TOTAL PHASE B:	51,245	TOTAL CONNECTED:	153,735
TOTAL PHASE C:	51,245	TOTAL DEMAND:	66,294

AIC: 14,000 AMPS (MIN)

NOTES: PROVIDE EQUIPMENT GROUND BUS.

PANEL "HA"
MAINS: 100 AMP
MLO/MCB: MLO
VOLTAGE: 480/277 VAC
PHASE: 3
WIRE: 4
ENCLOSURE: NEMA 3R
MOUNTING: SURFACE

BRKR	TRIP/ POLES	DESCRIPTION	LOAD(VA)	PHASE	LOAD(VA)	DESCRIPTION	TRIP/ POLES	BRKR
1			1,197	A	1,197			2
3	15/3	HEAT PUMP 1 - "HP1"	1,197	B	1,197	HEAT PUMP 2 - "HP2"	15/3	4
5			1,197	C	1,197			6
7			1,839	A	2,327			8
9	15/3	HEAT PUMP 3 - "HP3"	1,839	B	2,327	HEAT PUMP 4 - "HP4"	15/3	10
11			1,839	C	2,327			12
13			2,327	A		SPACE	1P	14
15	15/3	HEAT PUMP 5 - "HP5"	2,327	B		SPACE	1P	16
17			2,327	C		SPACE	1P	18

TOTAL PHASE A:	8,886		
TOTAL PHASE B:	8,886	TOTAL CONNECTED:	26,658
TOTAL PHASE C:	8,886	TOTAL DEMAND:	21,327

AIC: 14,000 AMPS (MIN)

NOTES: PROVIDE WITH SOLID EQUIPMENT GROUND BUS.

PANEL "L1" **(2 SECTION PANEL w/ MCB PROTECTED FEED-THRU LUGS.)**
MAINS: 125 AMPS
MLO/MCB: 125 A MCB
VOLTAGE: 208/120 VAC
PHASE: 3
WIRE: 4
MOUNTING: SURFACE

BRKR	TRIP/ POLES	DESCRIPTION	LOAD(VA)	PHASE	LOAD(VA)	DESCRIPTION	TRIP/ POLES	BRKR	
1	20/1	LTG - B01,B02,B06,B07	540	A	500	LIGHTING CONTROLS	20/1	2	
3	20/1	REC - OFFICE	540	B	0	SPARE	20/1	4	
5	20/1	REC - WINDOW	360	C	0	SPARE	20/1	6	
7	20/1	REC - OFFICE	720	A	0	SPARE	20/1	8	
9	20/1	REC - UTILITY RM	540	B	1,000	PYLON SIGN	20/1	10	#
11	20/1	REC - ROOF	720	C	2,400	INST WATER HTR - "IWH1"	20/1	12	
13	20/1	REC - OFFICE	900	A	0	SPARE	20/1	14	
15	20/1	REC - ELECT RM	180	B	400	ELEV. #2 LIGHTS	20/1	16	
17	20/1	ELEV. #1 LIGHTS	400	C	360	REC. - ELEV. PITS	20/1	18	
19	20/1	SPARE	0	A	1,440	SUMP PUMP - "SP2"	20/1	20	
21	20/1	SUMP PUMP - "SP1"	1,440	B	200	LIGHTS - ELEV. PITS	20/1	22	
23	20/1	SPARE	0	C	252	ELEV. M/C RM. #2 LIGHT	20/1	24	
25	20/1	ELEV M/C RM #1 LIGHT	252	A	500	TELEPHONE BACK BD	20/1	26	
27	20/1	REC AT "AH's" LOWER LVL	720	B	500	TELEPHONE BACK BD	20/1	28	
29	20/1	REC AT "AH's" 1st FL	720	C	500	FIRE ALARM PANEL	20/1	30	
31	20/1	REC AT "AH's" 2nd FL	720	A	500	DRINKING - FOUNTAIN	20/1	32	##
33	20/1	REC AT "AH's" 3rd FL	1,080	B	900	RECEPT. AT HEAT PUMPS	20/1	34	
35	25/2	DUCTLESS SPLIT SYSTEM. - "DS1/C1"	1,872	C	1,000	DOOR OPERATOR	20/1	36	
37			1,872	A	1,000	DOOR OPERATOR	20/1	38	
39	25/2	DUCTLESS SPLIT SYSTEM. - "DS2/C2"	1,872	B	1,500	WATER HEATER - "EWH"	20/2	40	
41			1,872	C	1,500			42	
43	1P	SPACE		A	1,000	BLDG SIGN - 3rd FL WEST	20/1	44	#
45	1P	SPACE		B	1,000	BLDG SIGN - 3rd FL EAST	20/1	46	#
47	1P	SPACE		C	1,000	BLDG SIGN - ROOF NORTH	20/1	48	#
49	1P	SPACE		A	1,000	BLDG SIGN - ROOF N.E.	20/1	50	#
51	1P	SPACE		B	1,000	BLDG SIGN - ROOF S.E.	20/1	52	#
53	1P	SPACE		C	1,000	BLDG SIGN - ROOF SOUTH	20/1	54	#
55	1P	SPACE		A		SPACE	1P	56	
57	1P	SPACE		B		SPACE	1P	58	
59	1P	SPACE		C		SPACE	1P	60	

TOTAL PHASE A:	10,944		
TOTAL PHASE B:	12,872	TOTAL CONNECTED:	37,772
TOTAL PHASE C:	13,956	TOTAL DEMAND:	30,218

AIC: 10,000 AMPS

NOTES: PROVIDE WITH SOLID EQUIPMENT GROUND BUS.
ROUTE THRU LIGHTING CONTROLS.
PROVIDE GFI TYPE BREAKER.

HVAC EQUIPMENT SCHEDULE

NOTE: VERIFY ELECTRICAL REQUIREMENTS FOR EQUIPMENT FURNISHED w/ MECHANICAL PLANS & CONTRACTOR PRIOR TO ROUGH-IN.

SYM	DESCRIPTION	CIRCUIT	FEEDER	VOLTS/ø	DISCONNECT	STARTER	HP/VA	MCA
AH1	AIR HANDLER UNIT	HM-1,3,5	3 #12, 1 #12G., 3/4"C.	480V/3ø	30A/600V/3P NON-FUSED DISCONNECT	FWE	–	19.25 AMPS
AH2	AIR HANDLER UNIT	HM-2,4,6	3 #12, 1 #12G., 3/4"C.	480V/3ø	30A/600V/3P NON-FUSED DISCONNECT	FWE	–	19.25 AMPS
AH3	AIR HANDLER UNIT	HM-7,9,11	3 #12, 1 #12G., 3/4"C.	480V/3ø	30A/600V/3P NON-FUSED DISCONNECT	FWE	–	19.25 AMPS
AH4	AIR HANDLER UNIT	HM-8,10,12	3 #12, 1 #12G., 3/4"C.	480V/3ø	30A/600V/3P NON-FUSED DISCONNECT	FWE	–	19.25 AMPS
AH5	AIR HANDLER UNIT	HM-13,15,17	3 #12, 1 #12G., 3/4"C.	480V/3ø	30A/600V/3P NON-FUSED DISCONNECT	FWE	–	19.25 AMPS
AH6	AIR HANDLER UNIT	HM-14,16,18	3 #12, 1 #12G., 3/4"C.	480V/3ø	30A/600V/3P NON-FUSED DISCONNECT	FWE	–	19.25 AMPS
AH7	AIR HANDLER UNIT	HM-19,21,23	3 #12, 1 #12G., 3/4"C.	480V/3ø	30A/600V/3P NON-FUSED DISCONNECT	FWE	–	19.25 AMPS
AH8	AIR HANDLER UNIT	HM-20,22,24	3 #12, 1 #12G., 3/4"C.	480V/3ø	30A/600V/3P NON-FUSED DISCONNECT	FWE	–	19.25 AMPS
AH9	AIR HANDLER UNIT	HM-25,27,29	3 #12, 1 #12G., 3/4"C.	480V/3ø	30A/600V/3P NON-FUSED DISCONNECT	FWE	–	19.25 AMPS
AH10	AIR HANDLER UNIT	HM-26,28,30	3 #12, 1 #12G., 3/4"C.	480V/3ø	30A/600V/3P NON-FUSED DISCONNECT	FWE	–	19.25 AMPS
SP1	SUMP PUMP	L1-21	2 #12, 1 #12G., 3/4"C.	120V/1ø	CORD & PLUG	–	1.0 HP	12.0 AMPS
SP2	SUMP PUMP	L1-20	2 #10, 1 #10G., 3/4"C.	120V/1ø	CORD & PLUG	–	1.0 HP	12.0 AMPS
IWH1	INSTANTANEOUS WATER HEATER	L1-12	2 #10, 1 #10G., 3/4"C.	120V/1ø	BREAKER IN PANEL w/ LOCK-OUT DEVICE	–	2,400 VA	20.0 AMPS
EWH	ELECTRIC WATER HEATER	L1-40,42	2 #12, 1 #12G., 3/4"C.	208V/1ø	30A NON-FUSED DISCONNECT SWITCH	–	3,000 VA	14.4 AMPS
CP	CONDENSATE PUMP	VARIOUS	2 #12, 1 #12G., 3/4"C.	120V/1ø	CORD & PLUG	–	–	0.24 AMPS

PANEL "H1"
MAINS: 600 AMP
MLO/MCB: MLO
VOLTAGE: 480/277 VAC
PHASE: 3
WIRE: 4
MOUNTING: SURFACE

BRKR	TRIP/ POLES	DESCRIPTION	LOAD(VA)	PHASE	LOAD(VA)	DESCRIPTION	TRIP/ POLES	BRKR	
1	20/1	LTG - LOWER LEVEL	3,396	A	490	LIGHTS - STAIRS	20/1	2	
3	20/1	LIGHTING - 1st FLOOR	3,537	B	1,230	LIGHTS - EXTERIOR	20/1	4	#
5	20/1	LIGHTING - 2nd FLOOR	3,630	C	0	SPARE	20/1	6	
7	20/1	LIGHTING -3rdt FLOOR	3,572	A		SPACE	1P	8	
9	20/1	SPARE	0	B		SPACE	1P	10	
11	20/1	SPARE	0	C		SPACE	1P	12	
13	20/1	SPARE	0	A		SPACE	1P	14	
15	20/1	LIGHTING - DISPLAY AREAS	3,510	B		SPACE	1P	16	
17	1P	SPACE		C		SPACE	1P	18	
19			2,327	A	2,327			20	
21	15/3	HEAT PUMP - "HP7"	2,327	B	2,327	HEAT PUMP - "HP6"	15/3	22	
23			2,327	C	2,327			24	
25			2,327	A	2,327			26	
27	15/3	HEAT PUMP - "HP9"	2,327	B	2,327	HEAT PUMP - "HP8"	15/3	28	
29			2,327	C	2,327			30	
31			1,197	A	8,886			32	
33	15/3	HEAT PUMP - "HP10"	1,197	B	8,886	PANEL "HA"	100/3	34	
35			1,197	C	8,886			36	
37	20/1	WALL HEATER 1 - "WH1"	2,936	A	51,245			38	
39	20/1	WALL HEATER 2 - "WH2"	2,936	B	51,245	PANEL "HM"	200/3	40	
41	20/1	WALL HEATER 3 - "WH3"	2,410	C	51,245			42	
43	3P	SPACE		A	15,000			44	
45				B	15,000	PANEL "L1" - THRU TRANSFORMER "X1"	70/3	46	
47				C	15,000			48	
49	150/3	ELEVATOR #1	18,005	A	18,005			50	
51			18,005	B	18,005	ELEVATOR #2	150/3	52	
53			18,005	C	18,005			54	
55	1P	SPACE		A		SPACE	1P	56	
57	1P	SPACE		B		SPACE	1P	58	
59	1P	SPACE		C		SPACE	1P	60	

TOTAL PHASE A:	132,039		
TOTAL PHASE B:	132,858	TOTAL CONNECTED:	392,582
TOTAL PHASE C:	127,685	TOTAL DEMAND:	301,651

AIC: VERIFY WITH UTILITY

NOTES: PROVIDE WITH EQUIPMENT GROUND BUS.
ROUTE THRU LIGHTING CONTROLS.

CONNECTED LOAD CALCULATIONS

BASED ON NEC 220 PART III

LIGHTING LOADS -
26 **kVA** x 100% = **26.41 kVA**

RECEPTACLE LOADS -
Total kVA 17 **kVA**
1st 10kVA 10 **kVA** x 100% = **10.00 kVA**
> 10kVA 7 **kVA** x 50% = **3.42 kVA**

HVAC LOADS - (Heat Pumps & AHU's)
HP's - 74 **kVA** x 100% = **73.94 kVA**
Heating - 1st 8 **kVA** x 100% = **8.00 kVA**
Heating - 146 **kVA** x 40% = **58.29 kVA**

MOTOR LOADS -
All 108 **kVA** x 100% = **108.08 kVA**
Largest 54 **kVA** x 25% = **13.51 kVA**

TOTAL **301.65 kVA**

DEMAND ON 480 VOLT SYSTEM = **362.83 AMPS**

HVAC EQUIPMENT SCHEDULE

NOTE: VERIFY ELECTRICAL REQUIREMENTS FOR EQUIPMENT FURNISHED w/ MECHANICAL PLANS & CONTRACTOR PRIOR TO ROUGH-IN.

SYM	DESCRIPTION	CIRCUIT	FEEDER	VOLTS/ø	DISCONNECT	STARTER	HP/VA	MCA
HP1	HEAT PUMP	HA-1,3,5	3 #12, 1 #12G., 3/4"C.	480V/3ø	CIRCUIT BREAKER IN PANEL	FWE	–	5.4 AMPS
HP2	HEAT PUMP	HA-2,4,6	3 #12, 1 #12G., 3/4"C.	480V/3ø	CIRCUIT BREAKER IN PANEL	FWE	–	5.4 AMPS
HP3	HEAT PUMP	HA-7,9,11	3 #12, 1 #12G., 3/4"C.	480V/3ø	CIRCUIT BREAKER IN PANEL	FWE	–	8.3 AMPS
HP4	HEAT PUMP	HA-8,10,12	3 #12, 1 #12G., 3/4"C.	480V/3ø	30A/600V/3P/3R FUSED @ 15A	FWE	–	10.5 AMPS
HP5	HEAT PUMP	HA-13,15,17	3 #12, 1 #12G., 3/4"C.	480V/3ø	CIRCUIT BREAKER IN PANEL	FWE	–	10.5 AMPS
HP6	HEAT PUMP	H1-20,22,24	3 #12, 1 #12G., 3/4"C.	480V/3ø	CIRCUIT BREAKER IN PANEL	FWE	–	10.5 AMPS
HP7	HEAT PUMP	H1-19,21,23	3 #12, 1 #12G., 3/4"C.	480V/3ø	CIRCUIT BREAKER IN PANEL	FWE	–	10.5 AMPS
HP8	HEAT PUMP	H1-26,28,30	3 #12, 1 #12G., 3/4"C.	480V/3ø	30A/600V/3P/3R FUSED @ 15A	FWE	–	10.5 AMPS
HP9	HEAT PUMP	H1-25,27,29	3 #12, 1 #12G., 3/4"C.	480V/3ø	CIRCUIT BREAKER IN PANEL	FWE	–	10.5 AMPS
HP10	HEAT PUMP	H1-31,33,35	3 #12, 1 #12G., 3/4"C.	480V/3ø	CIRCUIT BREAKER IN PANEL	FWE	–	5.4 AMPS
DS1/ C1	DUCTLESS SPLIT SYSTEM UNIT	L1-35,37	2 #10, 1 #10G., 3/4"C.	208V/1ø	30A MOTOR RATED SWITCH	FWE	–	18.0 AMPS
DS2/ C2	DUCTLESS SPLIT SYSTEM UNIT	L1-39,41	2 #10, 1 #10G., 3/4"C.	208V/1ø	30A MOTOR RATED SWITCH	FWE	–	18.0 AMPS
WH1	WALL HEATER	H1-37	2 #12, 1 #12G., 3/4"C.	277V/1ø	BREAKER FURNISED IN UNIT	–	3,000 VA	10.6 AMPS
WH2	WALL HEATER	H1-39	2 #10, 1 #10G., 3/4"C.	277V/1ø	BREAKER FURNISED IN UNIT	–	3,000 VA	10.6 AMPS
WH3	WALL HEATER	H1-41	2 #12, 1 #12G., 3/4"C.	277V/1ø	BREAKER FURNISED IN UNIT	–	2,000 VA	8.7 AMPS
EF1	EXHAUST FAN	L1-1	2 #12, 1 #12G., 3/4"C.	120V/1ø	MOTOR RATED SWITCH	–	–	48 WATTS
EF2	EXHAUST FAN	L1-1	2 #12, 1 #12G., 3/4"C.	120V/1ø	MOTOR RATED SWITCH	–	–	48 WATTS
EF3	EXHAUST FAN	H1-1	2 #12, 1 #12G., 3/4"C.	120V/1ø THRU XFMER	MOTOR RATED SWITCH	–	–	84 WATTS
EF4	EXHAUST FAN	H1-5	2 #12, 1 #12G., 3/4"C.	120V/1ø THRU XFMER	30A MOTOR RATED SWITCH	–	–	48 WATTS

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GEORGIA REGISTERED NO. 30016 PROFESSIONAL ENGINEER MICHAEL JONES 9/28/18

PROPOSED NEW BUILDING:
BROWARD NORTHSIDE CLIMATE CONTROLLED STORAGE
924 NORTHSIDE DRIVE NW
ATLANTA,G GA 30318

DRAWN: JMJ
CHECKED: JMJ
DATE: 09/2018
SCALE: AS NOTED
JOB NO.: 0000
SHEET: E-04
OF SHEETS

COMcheck Software Version 4.0.8.2

Interior Lighting Compliance Certificate

Project Information

Energy Code: 90.1 (2007) Standard
Project Title: BROWARD NORTHSIDE CLIMATE CONTROLLED STORAGE
Project Type: New Construction

Construction Site:
924 NORTHSIDE DRIVE NW
ATLANTA, GA 30318

Owner/Agent:

Designer/Contractor:
E F JACKSON
MARSHALL & BOLLWERK ENGINEERING, INC
8681 HIGHWAY 92
SUITE 400
WOODSTOCK, GA 30189
678-795-0333

Allowed Interior Lighting Power

A Area Category	B Floor Area (ft2)	C Allowed Watts / ft2	D Allowed Watts (B X C)
1-STORAGE WHSE (Warehouse)	61953	0.80	49562
		Total Allowed Watts =	49562

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-STORAGE WHSE (Warehouse)				
LED 1: A/AENL/C: 8' LED RD CHANNEL: LED Other Fixture Unit 90W:	1	112	88	9856
LED 2: B/BE/C1/D: 4' LED RD CHANNEL: LED Other Fixture Unit 36W:	1	10	81	810
LED 5: L/LE: 2 X 2: LED Panel 44W:	1	12	45	540
LED 6: M: 2 X 4: LED Panel 60W:	1	54	60	3240
			Total Proposed Watts =	14446

Interior Lighting PASSES: Design 71% 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 90.1 (2007) Standard requirements in COM*check* Version 4.0.8.2 and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

E F Jackson - Electrical Designer (Name - Title) — E F Jackson (Signature) — 26 SEPT 2018 (Date)

COMcheck Software Version 4.0.8.2

Exterior Lighting Compliance Certificate

Project Information

Energy Code: 90.1 (2007) Standard
Project Title: BROWARD NORTHSIDE CLIMATE CONTROLLED STORAGE
Project Type: New Construction

Construction Site:
924 NORTHSIDE DRIVE NW
ATLANTA, GA 30318

Owner/Agent:

Designer/Contractor:
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Allowed Exterior Lighting Power

A Area/Surface Category	B Quantity	C Allowed Watts / Unit	D Tradable Wattage	E Allowed Watts (B X C)
OFFICE B01 (Main entry/exit)	6 ft of door	30	Yes	180
LOADING B07 (Other entry/exit)	9 ft of door	20	Yes	180
STAIR 1 EXIT B05 (Illuminated area of wall or surface)	4 ft2	0.2	No	1
STAIR 2 EXIT B10 (Illuminated area of wall or surface)	4 ft2	0.2	No	1
SOUTH ELEV (Illuminated length of wall or surface)	166 ft	5	No	830
WEST ELEV (Illuminated length of wall or surface)	199 ft	5	No	995
NORTH ELEV (Illuminated length of wall or surface)	166 ft	5	No	830
EAST ELEV (Illuminated length of wall or surface)	199 ft	5	No	995
			Total Tradable Watts (a) =	360
			Total Allowed Watts =	4012
			Total Allowed Supplemental Watts (b) =	201

(a) Wattage tradeoffs are only allowed between tradable areas/surfaces.
(b) A supplemental allowance equal to 201 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)
OFFICE B01 (Main entry/exit 6 ft of door width): Tradable Wattage				
LED 3: H/HE: WALL PACK: LED Other Fixture Unit 28W:	1	1	28	28
LOADING B07 (Other entry/exit 9 ft of door width): Tradable Wattage				
LED 3: H/HE: WALL PACK: LED Other Fixture Unit 28W: Exemption:Material handling (incl. storage)	1	1	28	Exempt
STAIR 1 EXIT B05 (Illuminated area of wall or surface 4 ft2): Non-tradable Wattage				
LED 3: H/HE: WALL PACK: LED Other Fixture Unit 28W:	1	1	28	28
STAIR 2 EXIT B10 (Illuminated area of wall or surface 4 ft2): Non-tradable Wattage				
LED 3: H/HE: WALL PACK: LED Other Fixture Unit 28W:	1	1	28	28
SOUTH ELEV (Illuminated length of wall or surface 166 ft): Non-tradable Wattage				
LED 4: J: WALL SCONCE: LED Other Fixture Unit 36W:	1	7	30	210
WEST ELEV (Illuminatec length of wall or surface 199 ft): Non-tradable Wattage				
LED 4: J: WALL SCONCE: LED Other Fixture Unit 36W:	1	10	30	300
NORTH ELEV (Illuminated length of wall or surface 166 ft): Non-tradable Wattage				
LED 4: J: WALL SCONCE: LED Other Fixture Unit 36W:	1	7	30	210
EAST ELEV (Illuminated length of wall or surface 199 ft): Non-tradable Wattage				
LED 4: J: WALL SCONCE: LED Other Fixture Unit 36W:	1	7	30	210
			Total Tradable Proposed Watts =	28

Exterior Lighting PASSES: Design 94% 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 90.1 (2007) Standard requirements in COM*check* Version 4.0.8.2 and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

E F Jackson - Electrical Designer (Name - Title) — E F Jackson (Signature) — 26 SEPT 2018 (Date)

COMcheck Software Version 4.0.8.2

Inspection Checklist

Energy Code: 90.1 (2007) Standard

Requirements: 7.0% were addressed directly in the COM*check* 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
4.2.2 [PR4][1]	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the 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.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
8.4.1.1, 8.4.1.2 [PR6][2]	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the electrical systems and equipment and document where exceptions are claimed. Feeder connectors sized in accordance with approved plans and branch circuits sized for maximum drop of 3%.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	

Additional Comments/Assumptions:

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

Section # & Req.ID	Rough-In Electrical Inspection	Complies?	Comments/Assumptions
9.4.1.1 [EL1][3]	Automatic controls to shut off all building lighting installed in buildings >5,000 ft2.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
9.4.1.2 [EL2][3]	Independent lighting controls installed per approved lighting plans and all manual controls readily accessible and visible to occupants.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
9.4.1.3 [EL3][3]	Automatic lighting controls for exterior lighting installed.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Covered vehicle entrance/exit areas requiring lighting for safety, security and eye adaptation.
9.4.1.4 [EL4][3]	Separate lighting control devices for specific uses installed per approved lighting plans.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
9.4.2 [EL5][3]	Ballasted one and three lamp fixtures with >30 W/lamp have two lamp tandem wired ballasts when >=2 fixtures in same space on same control.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
9.4.3 [EL6][3]	Exit signs do not exceed 5 watts per face.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
9.4.4 [EL7][3]	Exterior grounds lighting over 100 W provides >60 lm/W unless on motion sensor or fixture is exempt from scope of code or from external LPD.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
9.6.2 [EL8][3]	Additional interior lighting power allowed for special functions per the approved lighting plans and is automatically controlled and separated from general lighting.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	

Additional Comments/Assumptions:

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

Section # & Req.ID	Rough-In Electrical Inspection	Complies?	Comments/Assumptions
C405.6 [EL24][3]	Exterior grounds lighting over 100 W provides >60 lm/W unless on motion sensor or fixture is exempt from scope of code or from external LPD.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C405.2.3 [EL8][3]	Additional interior lighting power allowed for special functions per the approved lighting plans and is automatically controlled and separated from general lighting.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	

Additional Comments/Assumptions:

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

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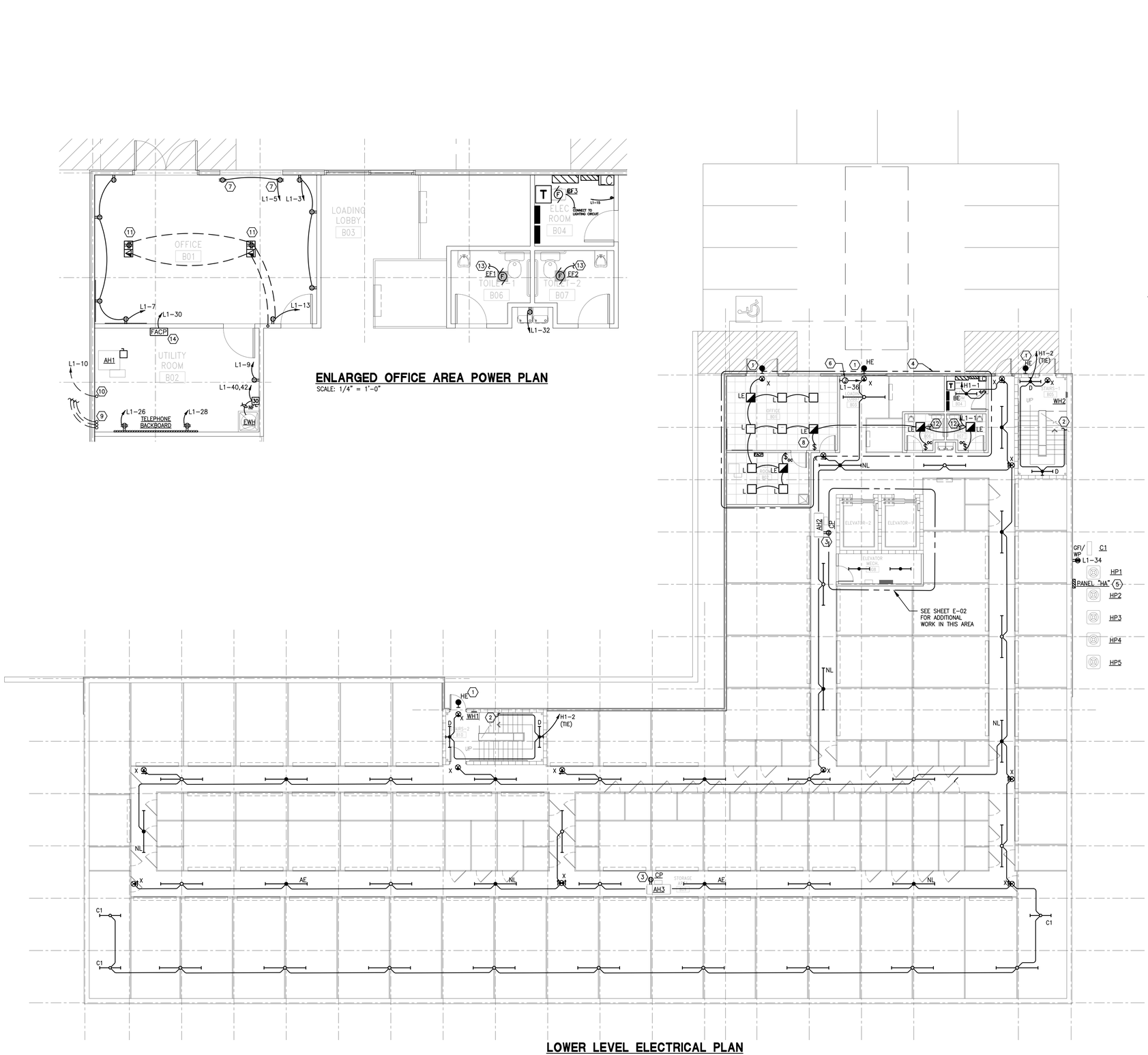
DRAWN: EFJ
CHECKED: JMJ
DATE: 09/2018
SCALE: AS NOTED
JOB NO.: 0000
SHEET: E-05
OF SHEETS

ENLARGED OFFICE AREA POWER PLAN

SCALE: 1/4" = 1'-0"



LOWER LEVEL ELECTRICAL PLAN

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

GENERAL NOTES:

1. CONNECT ALL EXIT AND EMERGENCY BATTERIES AHEAD OF ANY SWITCHES OR CONTROLS.
2. COORDINATE THE LOCATIONS OF OCCUPANCY SENSORS FOR LIGHTING CONTROL w/ THE VENDOR PRIOR TO ROUGH-IN. ALSO, SEE THE VENDOR DESIGN. THE CONTRACTOR SHALL HAVE A MANUFACTURER AUTHORIZED TECHNICIAN START-UP AND TEST THE LIGHTING CONTROLS FOR PROPER OPERATION. THE CONTRACTOR IS RESPONSIBLE FOR PROPER OPERATION OF OS SYSTEM PRIOR TO APPROVAL BY THE OWNER.
3. ALL 20 AMP, 120 VOLT DUPLEX RECEPTACLES LOCATED OUTSIDE OF OFFICE AREA SHALL BE GFIC TYPE, UNLESS SPECIFICALLY NOTED OTHERWISE.
4. ALL LIGHT FIXTURES IN THE CORRIDORS SHALL BE TYPE "A" UNO.
5. ALL LIGHT FIXTURES IN STORAGE UNITS SHALL BE TYPE "C" OR "C1", UNO. TYPE "C" FIXTURE w/ INTEGRAL OCCUPANCY SENSOR – TYPICAL FOR ALL STORAGE UNITS w/ LIGHTS. MOUNT SO SENSOR DETECTS MOVEMENT IN EITHER UNIT.
6. SEE MECHANICAL EQUIPMENT SCHEDULE ON SHEET E04 FOR CIRCUIT NUMBERS, FEEDER SIZES, AND SERVICE DISCONNECT INFORMATION FOR HVAC EQUIPMENT.

KEYED NOTES:

1. ROUTE THRU LIGHTING CONTROLS, SEE WIRING DIAGRAM ON SHEET E-03. CONNECT ALL TYPE "HE" FIXTURES TO CIRCUIT H1-4.
2. UP TO 1st FLOOR, SEE E-2 FOR CONTINUATION.
3. PROVIDE GFI RECEPTACLE MOUNTED ADJACENT TO AIR HANDLING UNIT FOR MAINTENANCE AND CONDENSATE PUMP. CONNECT TO CIRCUIT L1-27.
4. SEE LARGE SCALE PLAN THIS SHEET FOR ADDITIONAL WORK IN THIS AREA.
5. COORDINATE WITH MECHANICAL CONTRACTOR TO PROVIDE CODE MINIMUM WORKING CLEARANCE ABOUT PANEL "HA" AND NO HEAT PUMP IS MORE AHD 25" FROM PANEL.
6. PROVIDE POWER TO JUNCTION BOX FOR DOOR OPERATOR w/ 2#10, 1#10 G., 3/4"C.
7. PROVIDE CEILING MOUNTED RECEPTACLES IN ACCORDANCE w/ NEC 210.62.
8. MANUAL OVER RIDE SWITCH FOR OFFICE LIGHTS, SEE LIGHTING CONTROL DIAGRAM ON SHEET E-03 FOR ADDITIONAL INFORMATION.
9. PROVIDE THREE (3) EMPTY 3"PVC CONDUITS w/ PULL CORDS FOR LOW VOLTAGE SERVICES (TELEPHONE, CABLE, AND SPARE.) ROUTE TO THEIR RESPECTIVE DEMARCATION LOCATIONS AT THE PROPERTY LINE. COORDINATE w/ CIVIL UTILITY PLANS, UTILITIES, & THE OWNER PRIOR TO INSTALLATION.
10. PROVIDE POWER TO REMOTE SIGNAGE w/ 1"C. EXPOSED CONDUIT SHALL BE THREADED STEEL CONDUIT AND SHALL TURN DOWN THRU SLAB AND UP AT SIGN w/ GALVANIZED RIGID STEEL. UNDER GROUND RUNS SHALL BE SCH 80 PVC. ALL STEEL CONDUIT IN CONTACT w/ THE EARTH OR CONCRETE SHALL BE COATED w/ A CORROSION RESISTANT COATING. SIZE FEEDERS BASED ON "WIRE SIZE CHART" ON E-01. COORDINATE SIGN QUANTITY, LOCATION, & BREAKER REQUIREMENTS w/ SIGN PACKAGE VENDOR.
11. PROVIDE FLOOR OUTLET w/ DATA AND DUPLEX RECEPTACLE. COORDINATE FINAL LOCATION w/ THE OWNER PRIOR TO ROUGH-IN. PROVIDE 1" PVC CONDUIT BETWEEN FLOOR BOXES, ONE FOR POWER & ONE FOR DATA. ROUTE DATA CONDUIT TO WALL AND STUB-UP INSIDE WALL TO ACCESSIBLE LOCATION ABOVE CEILING w/ STEEL CONDUIT. ROUTE POWER TO WALL RECEPTACLE.
12. CONNECT TO EHAUST FAN, SEE ENLARGED PLAN THIS SHEET.
13. CONNECT TO LIGHTING CIRCUIT, SEE FLOOR PLAN THIS SHEET.
14. FIRE ALARM CONTROL PANEL BY FIRE ALARM CONTRACTOR.

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9/28/18

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DRAWN	EFJ
CHECKED	JMJ
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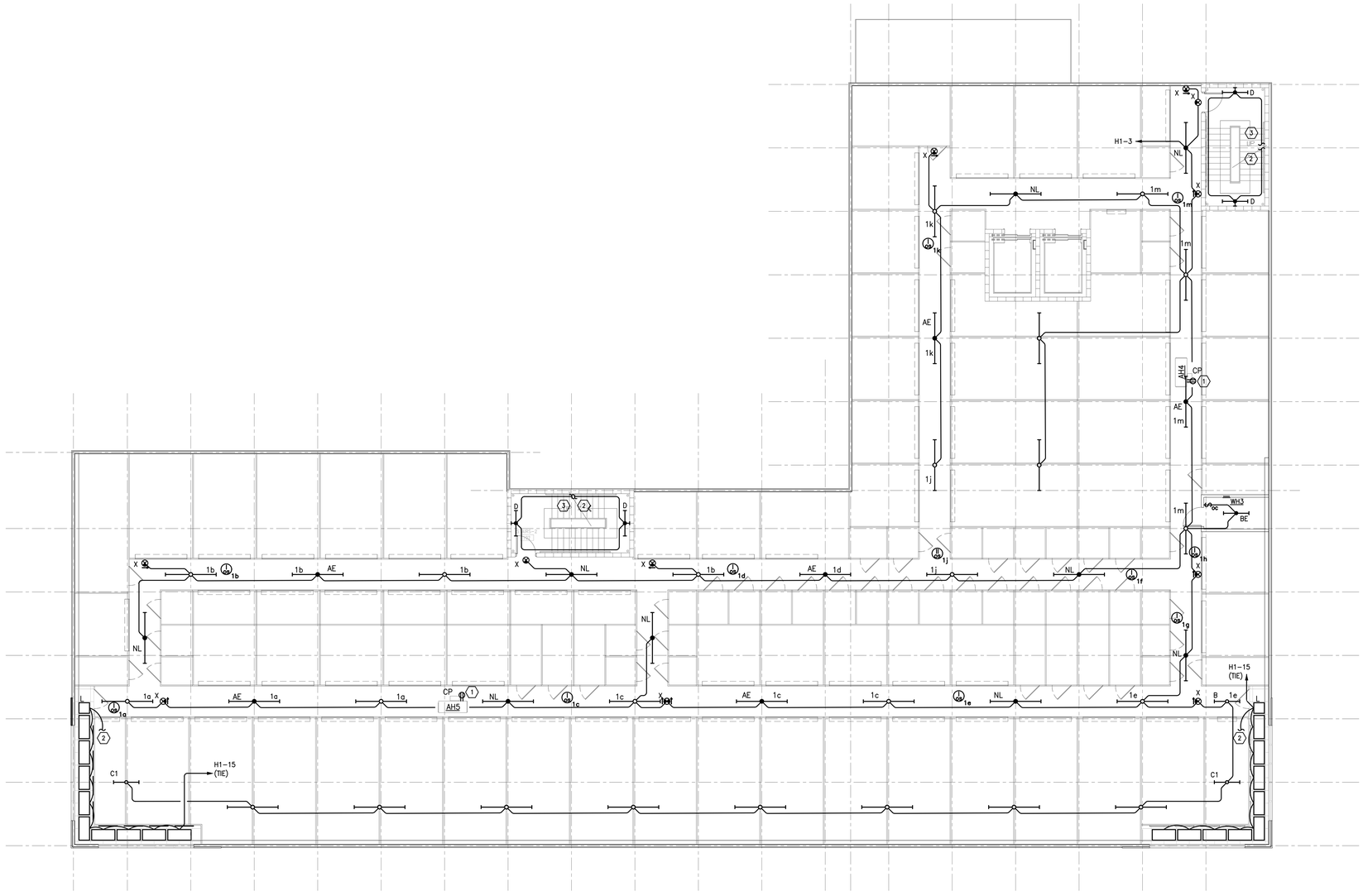
JOB NO.	0000
SHEET	E-1
OF	SHEETS



GENERAL NOTES:

1. CONNECT ALL EXIT AND EMERGENCY BATTERIES AHEAD OF ANY SWITCHES OR CONTROLS.
2. COORDINATE THE LOCATIONS OF OCCUPANCY SENSORS FOR LIGHTING CONTROL w/ THE VENDOR PRIOR TO ROUGH-IN. ALSO, SEE THE VENDOR DESIGN. THE CONTRACTOR SHALL HAVE A MANUFACTURER AUTHORIZED TECHNICIAN START-UP AND TEST THE LIGHTING CONTROLS FOR PROPER OPERATION. THE CONTRACTOR IS RESPONSIBLE FOR PROPER OPERATION OF OS SYSTEM PRIOR TO APPROVAL BY THE OWNER.
3. ALL 20 AMP, 120 VOLT DUPLEX RECEPTACLES LOCATED OUTSIDE OF OFFICE AREA SHALL BE GFIC TYPE, UNLESS SPECIFICALLY NOTED OTHERWISE.
4. ALL LIGHT FIXTURES IN THE CORRIDORS SHALL BE TYPE "A", UNO.
5. ALL LIGHT FIXTURES IN STORAGE UNITS SHALL BE TYPE "C", UNO. TYPE "C" & "C1" FIXTURES w/ INTEGRAL OCCUPANCY SENSOR – TYPICAL FOR ALL STORAGE UNITS w/ LIGHTS. MOUNT SO SENSOR DETECTS MOVEMENT IN EITHER UNIT.
6. SEE MECHANICAL EQUIPMENT SCHEDULE ON SHEET E04 FOR CIRCUIT NUMBERS, FEEDER SIZES, AND SERVICE DISCONNECT INFORMATION FOR HVAC EQUIPMENT.
7. ALL LIGHT FIXTURES IN THE DISPLAY AREA SHALL BE TYPE "M".

(#) KEYED NOTES:

1. PROVIDE GFI RECEPTACLE MOUNTED ADJACENT TO AIR HANDLING UNIT FOR MAINTENANCE AND CONDENSATE PUMP. CONNECT TO CIRCUIT L1-29.
2. UP TO 2nd FLOOR, SEE E-3 FOR CONTINUATION.
3. DOWN TO LOWER LEVEL, SEE E-1 FOR CONTINUATION.

1st FLOOR ELECTRICAL PLAN

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

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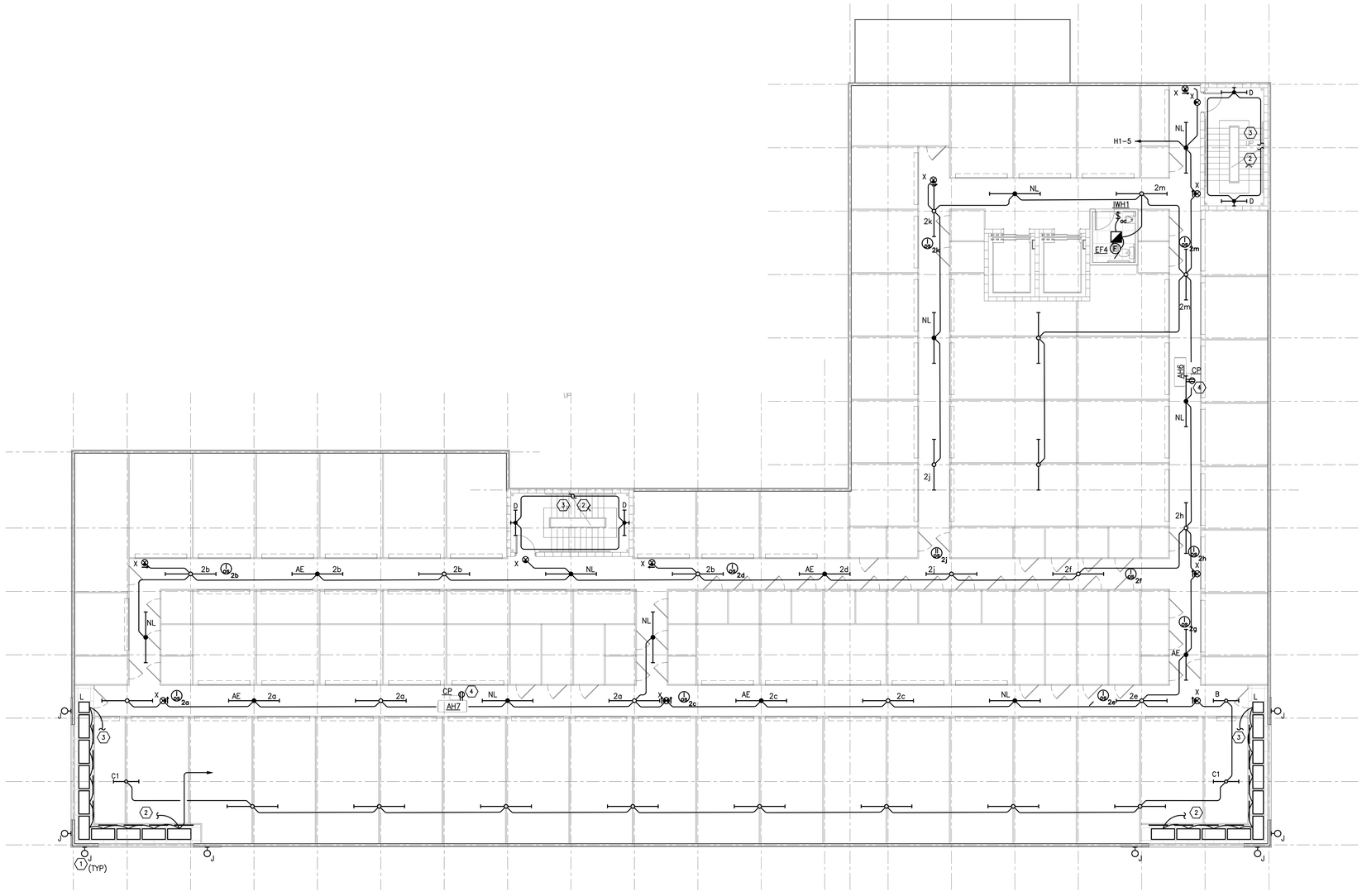

GENERAL NOTES:

1. CONNECT ALL EXIT AND EMERGENCY BATTERIES AHEAD OF ANY SWITCHES OR CONTROLS.
2. COORDINATE THE LOCATIONS OF OCCUPANCY SENSORS FOR LIGHTING CONTROL w/ THE VENDOR PRIOR TO ROUGH-IN. ALSO, SEE THE VENDOR DESIGN. THE CONTRACTOR SHALL HAVE A MANUFACTURER AUTHORIZED TECHNICIAN START-UP AND TEST THE LIGHTING CONTROLS FOR PROPER OPERATION. THE CONTRACTOR IS RESPONSIBLE FOR PROPER OPERATION OF OS SYSTEM PRIOR TO APPROVAL BY THE OWNER.
3. ALL 20 AMP, 120 VOLT DUPLEX RECEPTACLES LOCATED OUTSIDE OF OFFICE AREA SHALL BE GFIC TYPE, UNLESS SPECIFICALLY NOTED OTHERWISE.
4. ALL LIGHT FIXTURES IN THE CORRIDORS SHALL BE TYPE "A" OR TYPE "NL" WHERE INDICATED TO HAVE EMERGENCY BACK-UP BY A SOLID DOT IN SYMBOL, UNO.
5. ALL LIGHT FIXTURES IN STORAGE UNITS SHALL BE TYPE TYPE "C" & "C1" FIXTURES w/ INTEGRAL OCCUPANCY SENSOR, UNO. MOUNT SO SENSOR DETECTS MOVEMENT IN EITHER UNIT.
6. SEE MECHANICAL EQUIPMENT SCHEDULE ON SHEET E04 FOR CIRCUIT NUMBERS, FEEDER SIZES, AND SERVICE DISCONNECT INFORMATION FOR HVAC EQUIPMENT.
7. ALL LIGHT FIXTURES IN THE DISPLAY AREA SHALL BE TYPE "M".

(1) KEYED NOTES:

1. ROUTE THRU LIGHTING CONTROLS, SEE WIRING DIAGRAM ON SHEET E0.3. CONNECT ALL TYPE "J" FIXTURES TO CIRCUIT H1-4.
2. UP TO 3rd FLOOR, SEE E-4 FOR CONTINUATION.
3. DOWN TO 1st FLOOR, SEE E-2 FOR CONTINUATION.
4. PROVIDE GFI RECEPTACLE MOUNTED ADJACENT TO AIR HANDLING UNIT FOR MAINTENANCE AND CONDENSATE PUMP. CONNECT TO CIRCUIT L1-31.

2nd FLOOR ELECTRICAL PLAN

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

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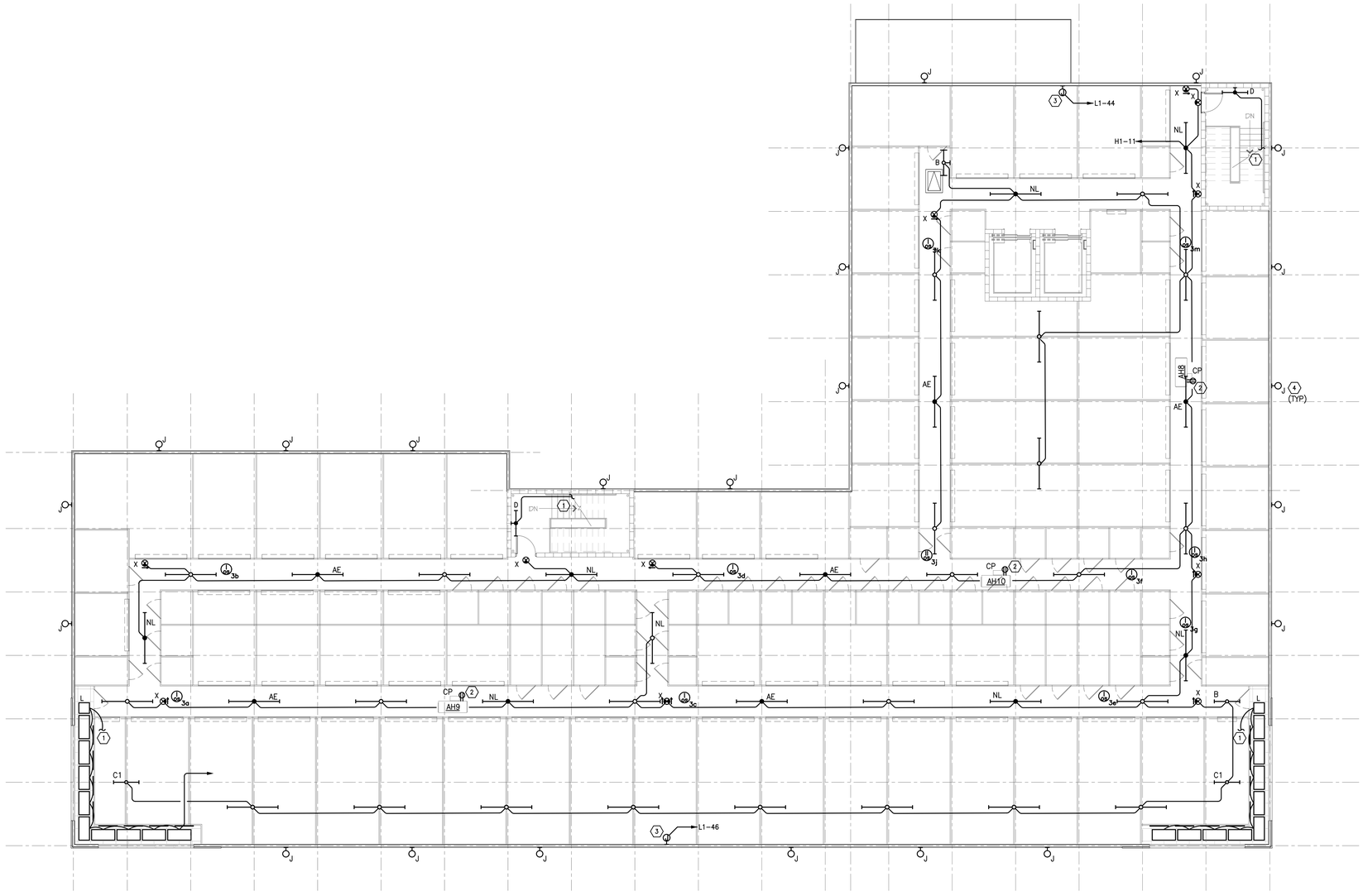
SHEET	E-3

OF SHEETS



GENERAL NOTES:

1. CONNECT ALL EXIT AND EMERGENCY BATTERIES AHEAD OF ANY SWITCHES OR CONTROLS.
2. COORDINATE THE LOCATIONS OF OCCUPANCY SENSORS FOR LIGHTING CONTROL w/ THE VENDOR PRIOR TO ROUGH-IN. ALSO, SEE THE VENDOR DESIGN. THE CONTRACTOR SHALL HAVE A MANUFACTURER AUTHORIZED TECHNICIAN START-UP AND TEST THE LIGHTING CONTROLS FOR PROPER OPERATION. THE CONTRACTOR IS RESPONSIBLE FOR PROPER OPERATION OF OS SYSTEM PRIOR TO APPROVAL BY THE OWNER.
3. ALL 20 AMP, 120 VOLT DUPLEX RECEPTACLES LOCATED OUTSIDE OF OFFICE AREA SHALL BE GFIC TYPE, UNLESS SPECIFICALLY NOTED OTHERWISE.
4. ALL LIGHT FIXTURES IN THE CORRIDORS SHALL BE TYPE "A", UNO.
5. TYPE "C" & "C1" FIXTURES w/ INTEGRAL OCCUPANCY SENSOR – TYPICAL FOR ALL STORAGE UNITS w/ LIGHTS, UNO. MOUNT SO SENSOR DETECTS MOVEMENT IN EITHER UNIT.
6. SEE MECHANICAL EQUIPMENT SCHEDULE ON SHEET E04 FOR CIRCUIT NUMBERS, FEEDER SIZES, AND SERVICE DISCONNECT INFORMATION FOR HVAC EQUIPMENT.
7. ALL LIGHT FIXTURES IN THE DISPLAY AREA SHALL BE TYPE "M".

(#) KEYED NOTES:

1. DOWN TO 2nd FLOOR, SEE E-3 FOR CONTINUATION.
2. PROVIDE GFI RECEPTACLE MOUNTED ADJACENT TO AIR HANDLING UNIT FOR MAINTENANCE AND CONDENSATE PUMP. CONNECT TO CIRCUIT L1-33.
3. PROVIDE A WALL MOUNTED JUNCTION BOX w/ COVER AND 3/4" NIPPLE STUBBED THRU WALL AND CAPPED FOR SIGN. COORDINATE FINAL LOCATION OF JUNCTION BOX w/ SIGN VENDOR PRIOR TO ROUGH-IN.
4. ROUTE THRU LIGHTING CONTROLS, SEE WIRING DIAGRAM ON SHEET E0.3. CONNECT ALL TYPE "J" FIXTURES TO CIRCUIT H1-4.

3rd FLOOR ELECTRICAL PLAN

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

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Colin Lichtenstein and Associates
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REVISIONS	BY
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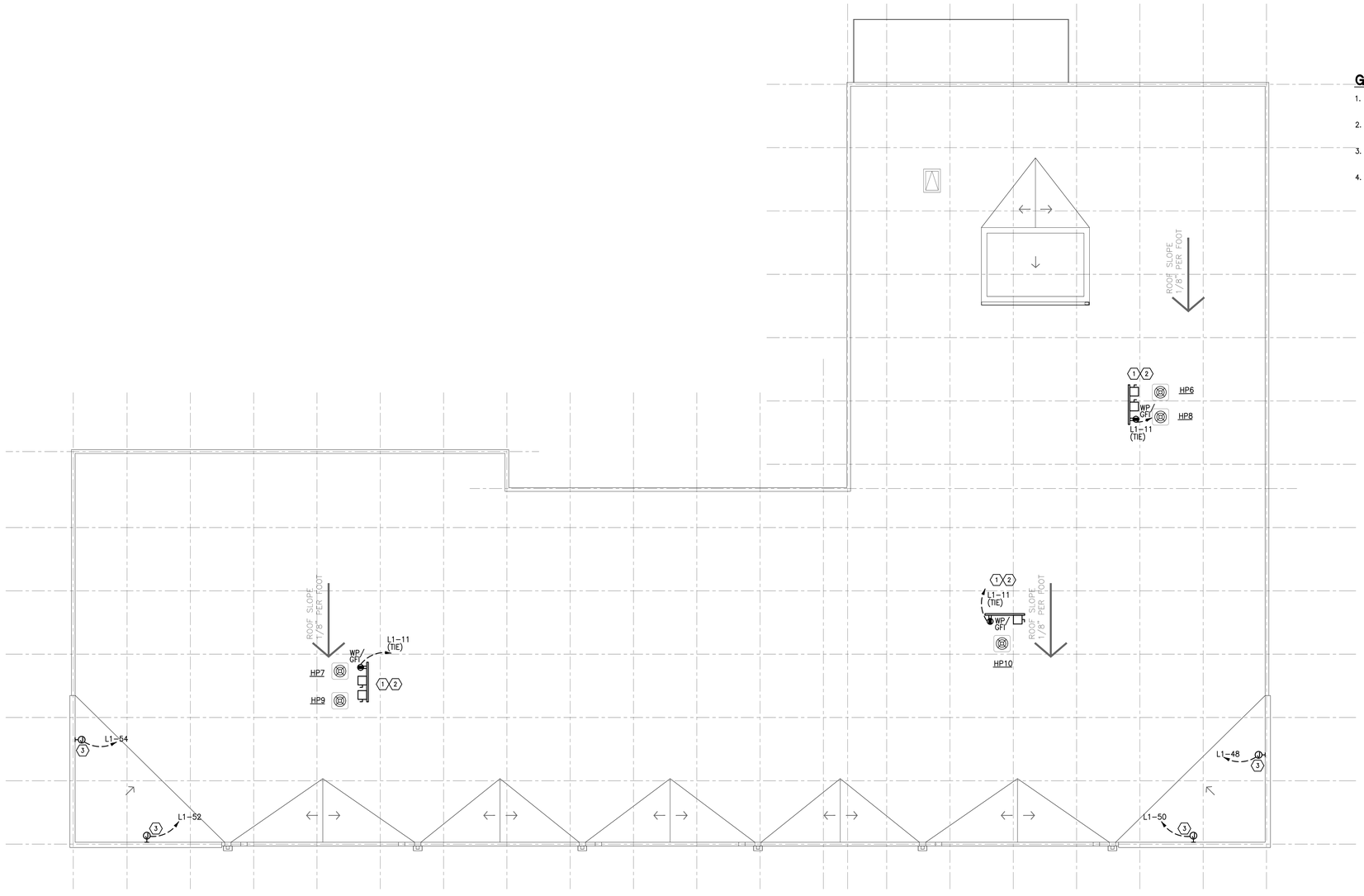
GEORGIA REGISTERED No. 30016 PROFESSIONAL ENGINEER MICHAEL JONES 9/28/18

PROPOSED NEW BUILDING:
BROWARD NORTHSIDE
CLIMATE CONTROLLED STORAGE
924 NORTHSIDE DRIVE NW
ATLANTA,G GA 30318

DRAWN	EFJ
CHECKED	JMJ
DATE	09/2018
SCALE	AS NOTED
JOB NO.	0000
SHEET	E-4

OF SHEETS



GENERAL NOTES:

1. SEE MECHANICAL EQUIPMENT SCHEDULE ON SHEET E-04 FOR CIRCUIT NUMBERS, FEEDER SIZES, AND SERVICE DISCONNECT INFORMATION FOR HVAC EQUIPMENT.
2. COORDINATE THE LOCATION OF ALL ROOF PENETRATIONS w/ THE MECHANICAL AND ROOFING CONTRACTOR PRIOR TO ROUGH-IN.
3. COORDINATE w/ THE ROOFING CONTRACTOR TO PROVIDE WEATHERPROOF ROOF PENETRATIONS FOR CONDUIT AND SUPPORTS ANCHORED TO THE STRUCTURE.
4. SEE "WIRE SIZE CHART" ON SHEET E-01 TO DETERMINE BRANCH FEEDER ADJUSTMENT FOR RECEPTACLE CIRCUIT SERVING THE ROOF.

(#) KEYED NOTES:

1. ROUTE LOAD SIDE CONDUIT FROM DISCONNECT TO UNIT ON SLEEPERS, COORDINATE INSTALLATION w/ MECHANICAL & ROOFING CONTRACTORS.
2. PROVIDE A STRUT RACK FOR MOUNTING THE UNIT DISCONNECT SWITCH AND MAINTENANCE RECEPTACLE. COORDINATE THE INSTALLATION w/ THE ROOFING CONTRACTOR TO MAINTAIN THE INTEGRITY OF THE ROOFING SYSTEM & WARRANTY. MOUNT TO PARAPET IF POSSIBLE.
3. PROVIDE A WALL MOUNTED JUNCTION BOX w/ WEATHER PROOF COVER AND 3/4" NIPPLE STUBBED THRU WALL AND CAPPED FOR SIGN. COORDINATE FINAL LOCATION OF JUNCTION BOX w/ SIGN VENDOR PRIOR TO ROUGH-IN.

ROOF ELECTRICAL PLAN

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

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PLUMBING 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. THE PLUMBING SYSTEMS (DOMESTIC COLD & HOT WATER, SANITARY WASTE & VENT) SHALL BE INSTALLED COMPLETE AND IN ACCORDANCE WITH ALL APPLICABLE CODES, LAWS AND REGULATIONS, LOCAL HEALTH DEPARTMENT STANDARDS AND THE OWNER'S REQUIREMENTS.
3. THE SYSTEMS SHALL BE FREE OF ANY NOISE AND VIBRATIONS.
4. THE PLUMBING WORK SHALL COMPLY WITH THE CURRENT EDITION OF THE FLORIDA PLUMBING CODES, LOCAL AMENDMENTS, THE FLORIDA STATE ACCESSIBILITY CODE & ALL APPLICABLE SECTIONS OF NFPA AND ANSI AND THE GUIDELINES OF ASPE.
5. THE CONTRACTOR SHALL CONFIRM AND ENSURE THAT ALL PLUMBING WORK CONFORMS TO THE CURRENT REQUIREMENTS OF THE LOCAL BUILDING INSPECTION DEPARTMENT.
6. ALL PLUMBING EQUIPMENT AND MATERIALS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS AND RECOMMENDATIONS.
7. ALL FIXTURES AND EQUIPMENT SHALL BE INSTALLED LEVEL, PLUMB AND RUN PARALLEL OR PERPENDICULAR TO THE BUILDING WALLS UNLESS INDICATED OTHERWISE.
8. CONTRACTOR SHALL SECURE ALL PERMITS, INSPECTION CERTIFICATES, AUTHORITY APPROVALS AND PAY ALL RELATED FEES AND CHARGES.
9. ALL NEW PLUMBING EQUIPMENT AND SYSTEMS SHALL BE GUARANTEED FOR A PERIOD OF ONE YEAR AFTER ACCEPTANCE BY THE OWNER.
10. IT IS THE INTENT OF THESE SPECIFICATIONS TO PROVIDE FINISHED WORK, TESTED AND READY FOR OPERATION. ANY APPARATUS, APPLIANCE OR MATERIAL WHICH MAY BE NECESSARY TO MAKE THE WORK COMPLETE AND FULLY OPERATIONAL, EVEN IF NOT EXPLICITLY STATED, SHALL BE PROVIDED FOR BY THE CONTRACTOR.
11. ALL PLUMBING WORK SHALL BE INSTALLED SO AS TO AVOID INTERFERENCE WITH ALL ELECTRICAL AND MECHANICAL WORK AND STRUCTURAL MEMBERS.
12. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PATCHING AND REPAIRING ALL AREAS WHICH WERE DAMAGED BY HIS OPERATION.
13. EXACT LOCATIONS & ROUGH-IN REQUIREMENTS FOR ALL FIXTURES & EQUIPMENT SHALL BE DETERMINED FORM ARCHITECTURAL DRAWINGS. LARGE SCALE ARCHITECTURAL DETAILS & APPROVED MANUFACTURER'S SHOP DRAWINGS. PARTICULAR ATTENTION SHALL BE DIRECTED TO FIXTURES OR EQUIPMENT FURNISHED BY OTHER TRADES.
14. PIPING IS SHOWN IN ITS GENERAL LOCATION (UNLESS DIMENSIONED). EXACT LOCATIONS SHALL BE DETERMINED BY JOB CONDITIONS. CONTRACTOR SHALL COORDINATE THE INSTALLATION OF HIS WORK WITH THAT OF OTHER TRADES & ARRANGE PIPING TO CLEAR STRUCTURAL MEMBERS & DUCTWORK. DO NOT RESTRICT ACCESS TO ANY EQUIPMENT.

SANITARY WASTE & VENT PIPING:

15. ALL SANITARY WASTE & VENT PIPING & FITTINGS INSIDE THE BUILDING, ABOVE & BELOW GRADE, SHALL BE SOLID WALL SCHEDULE 40 PVC DWV AS MANUFACTURED BY CHARLOTTE PIPE & MEET ASTM D-1784, D-1785 & D-2665.
16. FOAM CORE &/OR CELLULAR CORE PVC PIPING SHALL NOT BE ALLOWED.
17. PVC PIPING OUTSIDE THE BUILDING, BELOW GRADE, SHALL BE TYPE PVC SDR-35 MEETING ASTM-D3034.
18. PVC-DWV FITTINGS FOR PIPING SHALL BE SOLVENT WELD TYPE INSIDE & UNDERSLAB MEETING ASTM D-1784, D-2665 & D-3311. CEMENTS SHALL MEET ASTM D-2565 & PRIMER MEETING ASTM F-656. CURE TIME MUST COMPLY WITH MANUFACTURER'S RECOMMENDATIONS. EXTERIOR PIPING JOINTS SHALL BE NEOPRENE PUSH-ON TYPE.
19. PROVIDE MINIMUM COVER OF 30" FOR ALL LINES OR AS OTHERWISE NOTED ON THE DRAWINGS.
20. COORDINATE WITH THE MECHANICAL CONTRACTOR TO ENSURE THAT SANITARY VENTS THROUGH ROOF MAINTAIN A MINIMUM OF 12" FROM ANY VERTICAL SURFACE AND 10'-0" FROM ANY FRESH AIR INTAKE TO THE BUILDING.
21. INVERT ELEVATIONS OF THE SANITARY PIPING SHOWN ON THE CIVIL UTILITY PLANS SHALL BE VERIFIED ON THE JOB BEFORE INSTALLING ANY PIPE.
22. REFER TO ARCHITECTURAL FINISH SCHEDULE & ELEVATIONS FOR DETAILS OF FLOORS WHERE FLOOR DRAINS & CLEAN-OUTS ARE LOCATED.
23. ALL CLEAN-OUTS SHALL BE INSTALLED WHERE READILY ACCESSIBLE. THE CONTRACTOR SHALL COORDINATE ALL CLEAN-OUT LOCATIONS WITH EQUIPMENT, CABINETS, ETC. AND ARCHITECT PRIOR TO INSTALLATION.

DOMESTIC WATER PIPING:

24. DOMESTIC WATER PIPING BELOW GRADE SHALL BE TYPE "K" COPPER TUBING, WITH NO PIPE JOINTS BELOW GRADE. UNDERGROUND PIPES SHALL BE INSIDE A PVC PIPE LINER AND INSTALL A UNION ABOVE GRADE AT EACH END OF THE BURIED PIPE. UNDERGROUND PIPE SHALL BE DRAWN EXCEPT ANNEALED (SOFT) PIPE MAY BE USED WHERE INDICATED.
25. DOMESTIC (HOT & COLD) WATER PIPING ABOVE GRADE SHALL BE TYPE "L" COPPER TUBING. FITTINGS SHALL BE WROUGHT COPPER WITH LEAD FREE SOLDER. PIPING SHALL NOT TOUCH FERROUS MATERIALS. FIRMLY SUPPORT PIPING USING NON FERROUS PIPE SUPPORTS.
26. IF APPROVED BY OWNER DOMESTIC WATER PIPING ABOVE GRADE MAY BE CPVC PER ASTM D2846; ASTM F 441; ASTM F442; CSA B137.6. FITTINGS SHALL BE CPVC PER ASSE 1061; ASTM D2846; ASTM F 437 ASTM F 438, ASTM F 439; CSA B137.6.
27. SHUT-OFF VALVES SHALL BE FULL PORT, THREADED OR SOLDER-END TYPE, RATED AT NOT LESS THAN 200 LB. NON-SHOCK COLD WATER WORKING PRESSURE. PROVIDE VALVES IN EACH BRANCH LINE WHETHER SHOWN ON THE DRAWINGS OR NOT.
28. PROVIDE A BALL-COCK STOP ON WATER SUPPLY IN BRANCH PIPE TO EACH PLUMBING FIXTURE WHETHER SHOWN ON THE DRAWINGS OR NOT.
29. UNIONS SHALL BE PROVIDED AFTER EACH SCREW TYPE VALVE AND AT EQUIPMENT CONNECTIONS. PROVIDE ISOLATION UNIONS ON ALL CONNECTIONS BETWEEN DISSIMILAR METALS.
30. COLD & HOT WATER RISERS FOR FIXTURES, UNLESS NOTED OTHERWISE SHALL BE CONCEALED IN WALLS OR PIPE CHASES.
31. EXPOSED PIPING IN FINISHED AREAS SHALL BE CHROME PLATED WITH CHROME PLATED ESCUTCHEON AT PIPE ENTRY TO FINISHED AREA.
32. ALL DOMESTIC WATER PIPING (HOT, COLD) SHALL BE LOCATED WITHIN THE BUILDING ENVELOPE. PIPING LOCATED ABOVE CEILING SHALL BE LOCATED BETWEEN THE CEILING & ROOF/CEILING INSULATION. PIPING LOCATED IN EXTERIOR WALL SHALL BE LOCATED BETWEEN THE WALL INSULATION & INTERIOR SHEATHING

INSULATION:

33. INSULATE ALL ABOVE GROUND HOT AND COLD WATER PIPING AND FITTINGS WITH ONE OF THE FOLLOWING:
    A. PRE-FORMED ARMAFLEX AP INSULATION, 1" THICK. USE ARMAFLEX 520 ADHESIVE ON ALL JOINTS. INSULATION CONDUCTIVITY SHALL BE MAXIMUM 0.27 (BTU*IN)/(HR*FT2*?F) PER ASTM C 177.
    B. PRE-FORMED NOMALOCK EPFI INSULATION INSULATION, 1" THICK. WITH A PRE-GLUED PRESSURE SENSITIVE ADHESIVE CLOSURE SYSTEM. INSULATION CONDUCTIVITY SHALL BE MAXIMUM 0.27 (BTU*IN)/(HR*FT2*?F) PER ASTM C 177.
    C. PRE-FORMED MICRO-LOK FIBER GLASS INSULATION, 1" THICK. WITH FACTORY APPLIED LONGITUDINAL ACRYLIC CLOSURE SYSTEM & FACTORY SUPPIED BUTT STRIPS. INSULATION CONDUCTIVITY SHALL BE MAXIMUM 0.24 (BTU*IN)/(HR*FT2*?F) PER ASTM C 177.
35. THE DRAINAGE, HOT AND COLD PIPEWORK BELOW ALL LAVATORIES IN THE TOILETS WILL BE INSULATED WITH "HANDI-LAV" GUARD" INSULATING KITS AS MANUFACTURED BY TRUEBRO, INC (203) 875-2868 OR EQUAL.

SUPPORT SPACING:

36. SPACING OF HANGERS AND SUPPORTS FOR ABOVEGROUND HORIZONTAL PIPING AND TUBING SHALL NOT EXCEED THE FOLLOWING:
    A. COPPER TUBING

PIPE SIZE	MAX. SPACING (FT)
3/4 " & SMALLER	5
1 IN. THRU 3 IN	6

    B. PVC PIPE 4
    C. SEE 2012 INTERNATIONAL PLUMBING CODE, TABLE 308.5, FOR PIPE HANGER SPACING FOR OTHER MATERIALS
37. SUPPORT PIPES FROM STRUCTURE. WHERE SPACING OF STRUCTURAL MEMBERS EXCEEDS THE MAXIMUM SPACING NOTED ABOVE PROVIDE ADDITIONAL SUPPORTS OF SUFFICIENT SIZE TO SUPPORT PIPES WITHOUT EXCESSIVE DEFLECTION.
38. ADJUST HANGERS AND SUPPORTS TO SLOPE PIPE TO CODE OR AS OTHERWISE REQUIRED FOR PROPER OPERATION OF THE SYSTEM(S).
39. UNDERGROUND PIPING SHALL BE LAID ON A FIRM BED FOR ITS ENTIRE LENGTH.

MISCELLANEOUS:

40. 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, MECHANICAL, STRUCTURAL AND ARCHITECTURAL).
41. NON-FREEZE HOSE BIBBS SHALL BE MOUNTED 18" ABOVE FINISHED FLOOR OR AS OTHERWISE NOTED ON THE DRAWINGS. VERIFY PRIOR TO INSTALLATIONS.
42. PROVIDE SLEEVES FOR PIPES THRU FLOORS, MASONRY WALLS & FIRE OR SMOKE PARTITIONS. PENETRATIONS THROUGH FIRE RATED FLOORS, WALLS AND PARTITIONS SHALL BE FIRE STOPPED TO COMPLY WITH THE APPLICABLE EDITION, INCLUDING REVISIONS, OF THE STANDARD BUILDING CODE, STANDARD MECHANICAL CODE AND LOCAL FIRE MARSHALL REQUIREMENTS. FIRE STOP SYSTEM USED SHALL BE UL LISTED AND SHALL BE SUITABLE FOR THE PENETRATING AND PENETRATED MATERIALS. THE WORK SHALL BE INSPECTED AND CERTIFIED BY THE MANUFACTURER'S AUTHORIZED REPRESENTATIVE. PENETRATIONS THROUGH WALLS AND FLOORS BELOW GRADE AND OUTSIDE WALLS SHALL BE SEALED AND CAULKED WATER, MOISTURE AND AIR TIGHT TO ARCHITECT APPROVAL.
43. THE PRV PROVIDED SHALL BE SUITABLE FOR THE APPLICATION. THE PLUMBER SHALL CHECK THE PREVAILING MAINS WATER PRESSURE AND SHALL CONSULT THE MANUFACTURER'S ENGINEERING DEPARTMENT TO VERIFY THE CORRECT SELECTION OF THE PRV PROVIDED IRRESPECTIVE OF ANY MODEL SPECIFIED ON THE DRAWINGS.
44. BACK FLOW PREVENTORS SHALL BE PROVIDED ON ALL BEVERAGE MACHINES AND ICE MAKERS WHETHER SHOWN ON THE DRAWINGS OR NOT.

SLOPE OF HORIZONTAL DRAINAGE PIPE (TABLE 704.1, 2012 IPC)	
SIZE (INCHES)	MINIMUM SLOPE (INCH PER FOOT)
2-1/2 OR LESS	1/4
3 TO 6	1/8
8 OR LARGER	1/16

FIRE PROTECTION NOTES:

1. THE CONTRACTOR SHALL DESIGN AND INSTALL COMPLETE HYDRAULICALLY CALCULATED AND DESIGNED AUTOMATIC FIRE PROTECTION SPRINKLER SYSTEMS IN FULL COMPLIANCE WITH NFPA 13, NFPA 24 AND NFPA 20 AS APPLICABLE. REFER TO ARCHITECTURAL DRAWINGS FOR NAMES OF ALL AREAS, FIRE RATINGS, FIXTURE LAYOUTS, ETC.
2. DESIGN CRITERIA: THE CONTRACTOR SHALL DETERMINE THE SPECIFIC REQUIREMENTS OF THE OWNER'S INSURERS AND THE AUTHORITY HAVING JURISDICTION, INCLUDING DESIGN DENSITIES, AREA OF OPERATION AND REQUIRED HAZARD CLASSIFICATION AND OTHER ADDITIONAL SPECIAL REQUIREMENTS AND PROVIDE A SYSTEM TO SUIT. A 10 PSIG CUSHION SHALL BE HYDRAULICALLY DESIGNED INTO EACH SYSTEM. THE CONTRACTOR SHALL PROVIDE THE ARCHITECT WITH DOCUMENTED VERIFICATION OF ALL REQUIREMENTS.
3. THE INSTALLATION SHALL BE DESIGNED IN ACCORDANCE WITH APPLICABLE NFPA STANDARDS UNLESS MODIFIED BY THE OWNER'S FIRE INSURANCE CARRIERS INTERPRETATION GUIDE. ALL PLANS AND FINAL INSTALLATIONS ARE SUBJECT TO ACCEPTANCE BY THE FIRE INSURANCE CARRIER AND THE AUTHORITY HAVING JURISDICTION.
4. THE CONTRACTOR SHALL PREPARE AND SUBMIT SHOP DRAWINGS AND HYDRAULIC CALCULATIONS THAT COMPLY WITH AND PROVIDE ALL THE INFORMATION ITEMIZED UNDER NFPA 13, "WORKING PLANS", "HYDRAULIC CALCULATION FORMS", "WATER SUPPLIES". DRAWINGS SHALL BE PREPARED BY A REGISTERED FIRE PROTECTION PROFESSIONAL ENGINEER OR BY A FIRE PROTECTION CONTRACTOR CERTIFIED IN THE STATE AND COUNTY TO DO SUCH WORK.
5. SHOP DRAWINGS AND HYDRAULIC CALCULATIONS SHALL BE SUBMITTED FOR PERMITTING AND APPROVALS BY THE OWNER'S INSURANCE UNDERWRITERS AND THE AUTHORITY HAVING JURISDICTION. SPRINKLER SHOP DRAWINGS AND HYDRAULIC CALCULATIONS MUST BE APPROVED PRIOR TO DOING ANY WORK.
6. SPRINKLER CONTRACTOR'S CERTIFICATION NUMBER AND DATE OF EXPIRY SHALL BE IDENTIFIED ON THE DRAWINGS AND CALCULATIONS. CONFIRMATION OF REGISTRATION/CERTIFICATION SHALL BE SUBMITTED TO THE GENERAL CONTRACTOR AND OWNER PRIOR TO COMMENCING WORK. THE SYSTEM INSTALLER SHALL BE CERTIFIED BY THE COUNTY LOCAL AUTHORITY AND THE AUTHORITY HAVING JURISDICTION TO DO FIRE SPRINKLER PROTECTION WORK IN THE COUNTY.
7. THE CONTRACTOR SHALL PAY ALL FEES REQUIRED. THE CONTRACTOR SHALL ARRANGE FOR ALL INSPECTIONS REQUIRED BY THE LOCAL AUTHORITY HAVING JURISDICTION PRIOR TO ACCEPTANCE.
8. THE PIPING LAYOUT SHALL BE COORDINATED WITH THE BUILDING AND OTHER SERVICES. HVAC DUCTS, RAIN AND SANITARY LINES SHALL HAVE PRIORITY OVER SPRINKLER LINE ROUTING. SPRINKLER LINES SHALL NOT RESTRICT ACCESS TO ANY EQUIPMENT. SPRINKLER HEAD LOCATIONS ARE SHOWN FOR REFERENCE ONLY. DO NOT INSTALL PIPING UNDER LIGHT FIXTURES.
9. ALL SPRINKLER PIPING ABOVE GRADE SHALL BE SUPPORTED FROM THE BUILDING STRUCTURE AND SHALL NOT REST ON CEILINGS TEES AND TILES, DUCTS, LIGHT FIXTURES, ETC. AND SHALL BE IN CORRECT ALIGNMENT AND PITCH, TO PREVENT VIBRATION, AND TO EFFECTIVELY PROVIDE FOR EXPANSION AND CONTRACTION PER NFPA 13. THE CONTRACTOR SHALL SUPPORT THE SPRINKLER SYSTEM COMPONENTS TO MEET THE SEISMIC BRACING REQUIREMENT FOR MECHANICAL COMPONENTS AND SYSTEMS AS DEFINED IN THE INTERNATIONAL BUILDING CODE.
10. SPRINKLER PIPING SHALL BE ROUTED TO MAINTAIN CLEAR HEIGHTS IMPLIED ON ARCHITECTURAL DRAWINGS (CEILING, DOOR, WINDOW, ETC., HEIGHTS).
11. SPRINKLER SYSTEMS SHALL HAVE ALL APPURTENANCES REQUIRED BY NFPA 13 AND LOCAL AUTHORITIES HAVING JURISDICTION.
12. RECOMMENDATIONS IN THE NFPA STANDARDS ("SHOULD") SHALL BE DEEMED MANDATORY ("SHALL") FOR PURPOSES OF THIS WORK.

PLUMBING FIXTURE SCHEDULE

TAG	MANUFACTURER	MODEL	DESCRIPTION	ACCESSORIES
HWC	BRIGGS	4048	FLOOR MOUNTED (1.28 GPF) FLUSH TANK HANDICAPPED TOILET WITH ELONGATED BOWL: WATER CLOSET RIM TO BE 17" AFF.	PROVIDE WITH CHURCH SOLID PLASTIC ELONGATED OPEN FRONT SEAT WITHOUT LID.
L1	BRIGGS	6620	"MILTON" ADA COMPLIANT, WALL MOUNTED LAVATORY. 20"x18", VITREOUS CHINA, WITH FAUCET HOLES ON 4" CENTERS.	PROVIDE WITH DELTA FAUCET MODEL: 501 W/ SINGLE LEVER HANDLE W/ 0.5 GPM AERATOR, ½" MALE THREADED CONNECTIONS. DRAIN: CHROME FINISH GRID DRAIN W/ OVERFLOW HOLES, DELTA MODEL 33T260. BRASSCRAFT OR EQUAL STOPS, FLEXIBLE STAINLESS STEEL CONNECTORS & ADA COMPLIANT TRAP
MS	STERN-WILLIAMS	HL-1800	24"x24"x12" MOP SINK. 12" CORNER TYPE W/ DROP FRONT	T-10-VB SINK FAUCET. POLISHED CHROME FINISH, LEVER HANDLES & SPRING CHECKS, SPOUT W/ BUCKET HOOK, ¾" HOSE THREAD & VACUUM BREAKER.
FD	ZURN	Z415	3" FLOOR DRAIN WITH NICKEL BRONZE STRAINER & TRAP PRIMER	PROVIDE TP CONNECTION
FCO/ GCO	ZURN	Z-1400	ADJUSTABLE FLOOR CLEANOUT WITH GAS & WATER TIGHT ABS, MEDIUM TRAFFIC W/ NICKEL-BRONZE COVER	
WCO	ZURN	Z-1446	WALL CLEANOUT WITH SMOOTH ROUND STAINLESS STEEL ACCESS COVER. WITH SECURING SCREW.	
TP	MIFAB	M-500	PRESSURE DROP ACTIVATED BRASS TRAP SEAL PRIMER. COMPLETE WITH FOUR VIEW HOLES & REMOVABLE FILTER SCREEN.	1/2" INLETS & OUTLETS, REMOVABLE FILTER SCREEN PROVIDE WITH DISTRIBUTION UNIT MI-DU TO SERVE UP TO FOUR FLOOR DRAIN TRAPS.
NFWH	ZURN	Z1322XL-EZ	ENCASED, ANTI-SIPHON, NON-FREEZE, AUTOMATIC DRAINING WALL HYDRANT W/ VACUUM BREAKER WITH STAINLESS STEEL HOUSING WITH LARGE FLANGE & LOCKING HINGED COVER.	PROVIDE WITH OPERATING KEY.
GATE	MILWAUKEE	FIG. 149	GATE VALVE	
GLOBE	MILWAUKEE	FIG. 502	GLOBE VALVE	
CHECK	MILWAUKEE	FIG. 509	CHECK VALVE	
SLDF	ELKAY	LZSTL8C	ADA COMPLIANT, BI-LEVEL, WALL MOUNTED WATER COOLER WITH FRONT & SIDE TOUCH CONTROLS WITH GLASS FILLER. ELECTRICAL: 120 VOLT, 3.7 AMPS.	PROVIDE WITH GLASS FILLER, McGUIRE 1-1/4" P-TAP & SUPPLIES AND STOPS.
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

INSTANTANEOUS WATER HEATER SCHEDULE

TAG	MANUFACTURER	MODEL	ELEMENT WATTAGE	TEMP. RISE (°F) @ 0.5 GPM	ELECTRICAL V/PH/HZ	NOTES:
IWH1	CHRONOMITE	M-20L	2400	33	120/1/60	1

NOTES:
1. WATER HEATER WITH FACTORY PRESET SETTING TO DELIVER MAX. 104°F HOT WATER.

WATER HEATER SCHEDULE

TAG	MANUFACTURER	MODEL	CAPACITY (GAL)	ELEMENT WATTAGE (UPPER/LOWER)	RECOVERY RATE (@ 100°F RISE)	ELECTRICAL V/PH/HZ	ELECTRICAL FLA	NOTES:
EWH	A.O. SMITH	DEL-30	30	3,000/3,000	12 GPH	208/1/60	14.4	1

NOTES:
1. PROVIDE EXPANSION TANK & T & P VALVE.

SUMP PUMP SCHEDULE

TAG	MANUFACTURER	MODEL	DESCRIPTION	ACCESSORIES
SP1 SP2	STANCOR	SE-100	SUBMERSIBLE UTILITY PUMP AND OIL-MINDER (OIL MONITOR) CONTROL SYSTEM. NEMA 4x WEATHERTIGHT CORROSION RESISTANT FIBERGLASS ENCLOSURE, STAINLESS STEEL SENSOR PROBE, ALARM, LIGHT & REMOTE MONITORING CIRCUIT, LIGHTS FOR OIL SPILL, POWER & HIGH LEVEL OVERLOAD & PUMP RUN. DUTY: 50 GPM @ 28 FEET OF HEAD. ELECTRICAL: 1 HP, 115V/1Ø, 12 FLA.	STANCOR OIL-MINDER CONTROL SYSTEM WITH BUILT-IN AUDIBLE AND VISUAL ALARM WHEN PUMP DOES NOT RUN DUE TO OIL IN PIT OR HIGH LIQUID OR HIGH AMPERAGE CONDITION. PROVIDE SILENCING BUTTON FOR AUDIBLE ALARM BUILT INTO PANEL. PANEL SHALL HAVE TWO CONTACTS FOR A REMOTE ALARM LOCATION (ONE EACH FOR OIL AND HIGH WATER OR AMPERAGE ALERT).

SYMBOL	PLUMBING LEGEND
	DOMESTIC (COLD) WATER PIPING
	HOT WATER PIPING
	SANITARY PIPING
	VENT PIPING
	BELOW FLOOR DOMESTIC WATER PIPING
	PIPING TURNING DOWN
	P-TRAP
	VENT THROUGH ROOF
	FLOOR/GRADE CLEAN OUT
	FLOOR DRAIN
	WALL CLEANOUT
	SHUT-OFF VALVE
	CHECK VALVE
	BELOW GRADE SPRINKLR PIPING

ABBREVIATIONS:

AAV	=	AIR ADMITANCE VALVE
AFF	=	ABOVE FINISHED FLOOR
BFP	=	BACK FLOW PREVENTER
CO	=	CLEANOUT
CW	=	COLD WATER
°F	=	DEGREES FAHRENHEIT
DIA	=	DIAMETER
FD	=	FLOOR DRAIN
PRV	=	PRESSURE REDUCING VALVE
RD	=	ROOF DRAIN
SAN	=	SANITARY
TYP	=	TYPICAL
VTR	=	VENT THROUGH ROOF
WCO	=	WALL CLEANOUT
HP	=	HORSEPOWER

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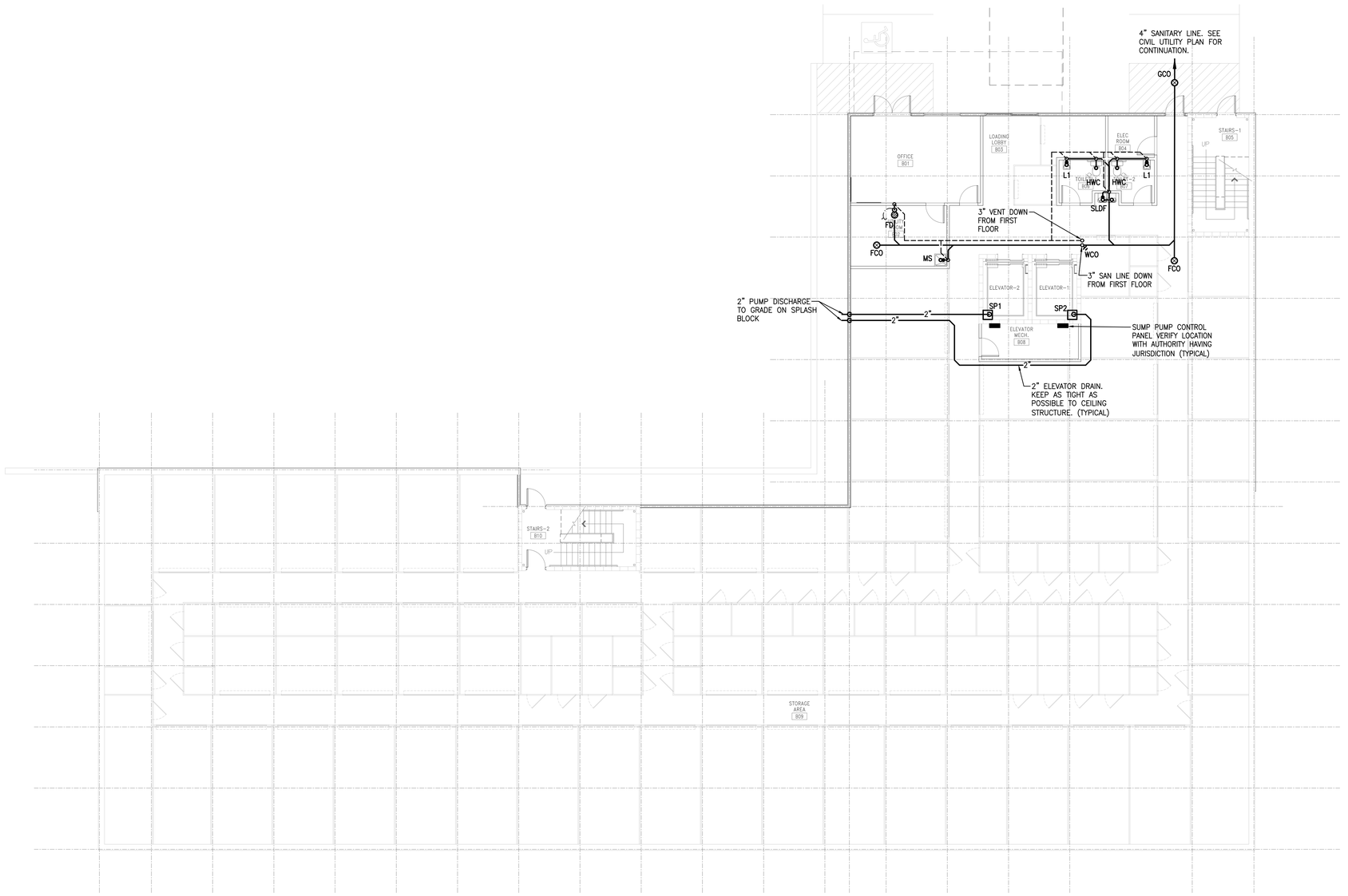

LOWER LEVEL FLOOR WASTE & VENT PLAN
SCALE: 1/8" = 1'-0"

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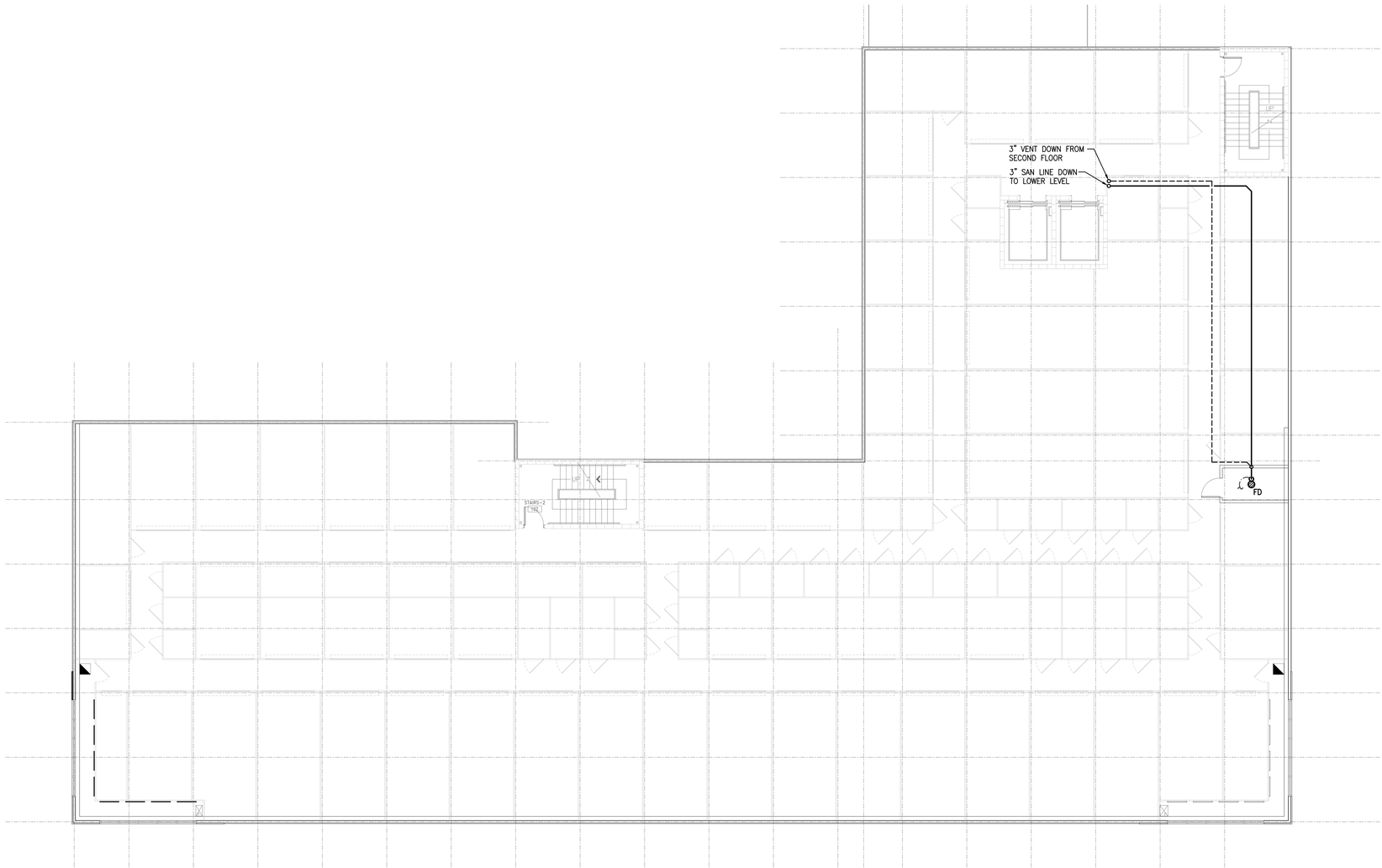
SCALE	AS NOTED
JOB NO.	0000
SHEET	P-2

OF 9 SHEETS



FIRST FLOOR WASTE & VENT PLAN
SCALE: 1/8" = 1'-0"

MARSHALL & BOLLWERK ENGINEERING, INC.
8681 Highway 92, Suite 400
Woodstock, Ga. 30189
p: (678) 795-0333, f: (678) 325-4559
e: mbe@mbeinc.net

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Colin Lichtenstein and Associates
1150 LAKE HEARN DR – SUITE 150
ATLANTA, GA 30342 (404)303-7008

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GEORGIA REGISTERED No.029551 PROFESSIONAL ENGINEER
9/28/18

PROPOSED NEW BUILDING:
BROWARD NORTHSIDE
CLIMATE CONTROLLED STORAGE
924 NORTHSIDE DRIVE NW
ATLANTA,G GA 30318

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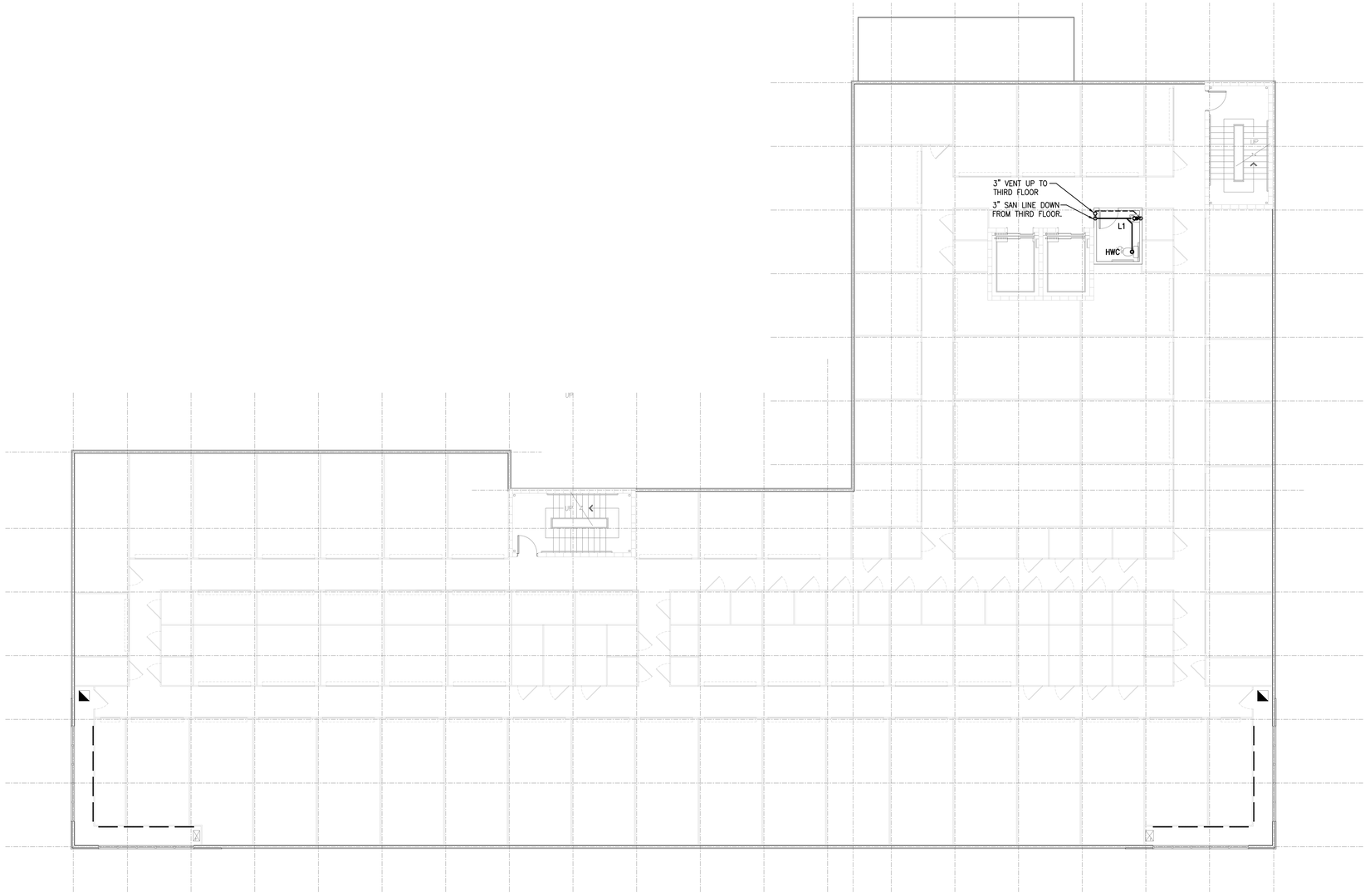
CHECKED: TB
DATE: 09/2018
SCALE: AS NOTED
JOB NO.: 0000
SHEET: P-3
OF 9 SHEETS



SECOND FLOOR WASTE & VENT PLAN
SCALE: 1/8" = 1'-0"

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GEORGIA REGISTERED No.029551 PROFESSIONAL TROY M. BOLLWERK ENGINEER
9/28/18

PROPOSED NEW BUILDING:
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CLIMATE CONTROLLED STORAGE
924 NORTHSIDE DRIVE NW
ATLANTA,G GA 30318

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ATLANTA, GA 30342 (404)303-7008

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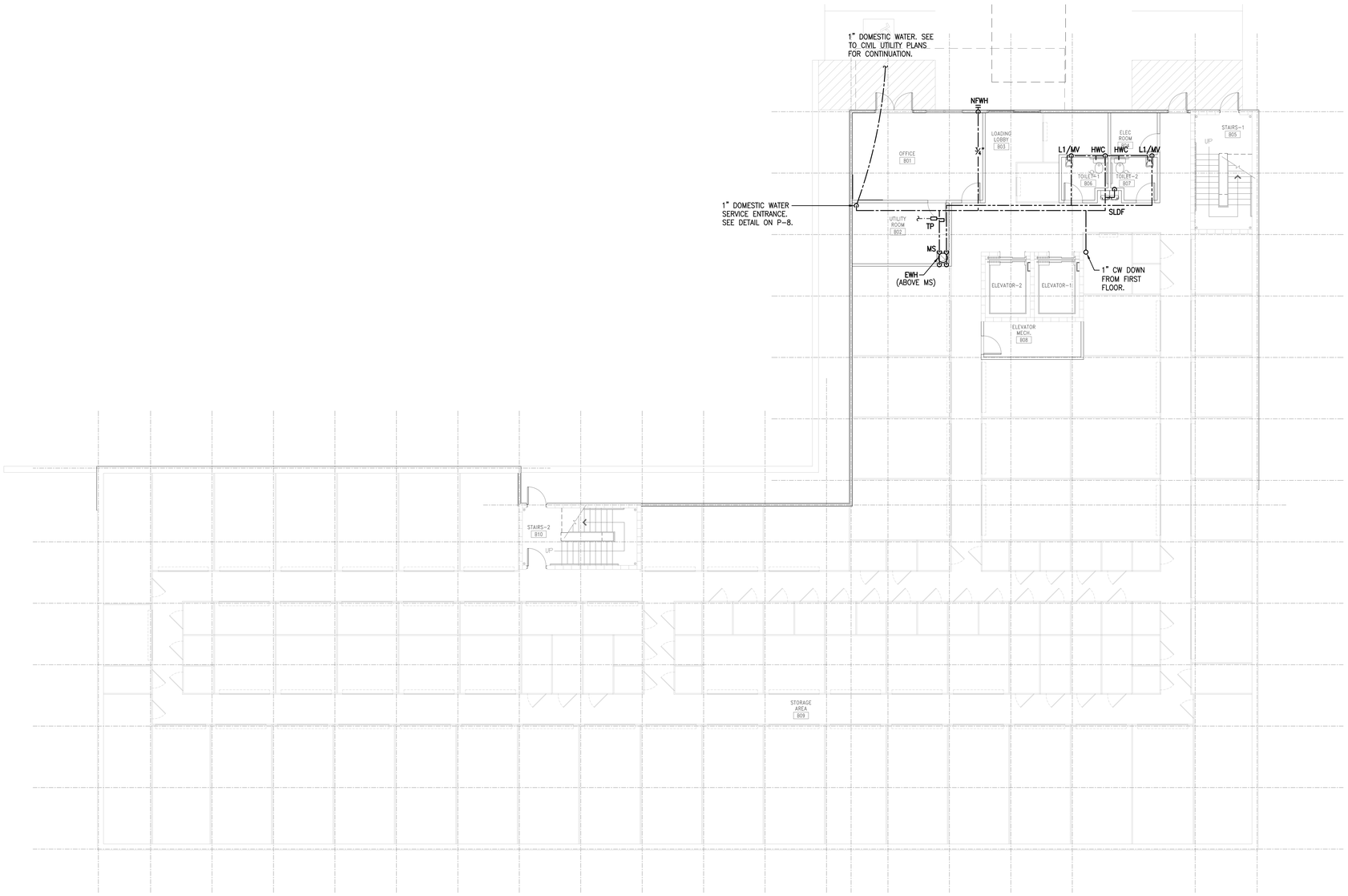
OF	9 SHEETS



LOWER LEVEL DOMESTIC WATER PLAN
SCALE: 1/8" = 1'-0"

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GEORGIA REGISTERED No.029533 PROFESSIONAL ENGINEER TIMOTHY W. BOLLWERK
9/28/18

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924 NORTHSIDE DRIVE NW
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DATE: 09/2018
SCALE: AS NOTED
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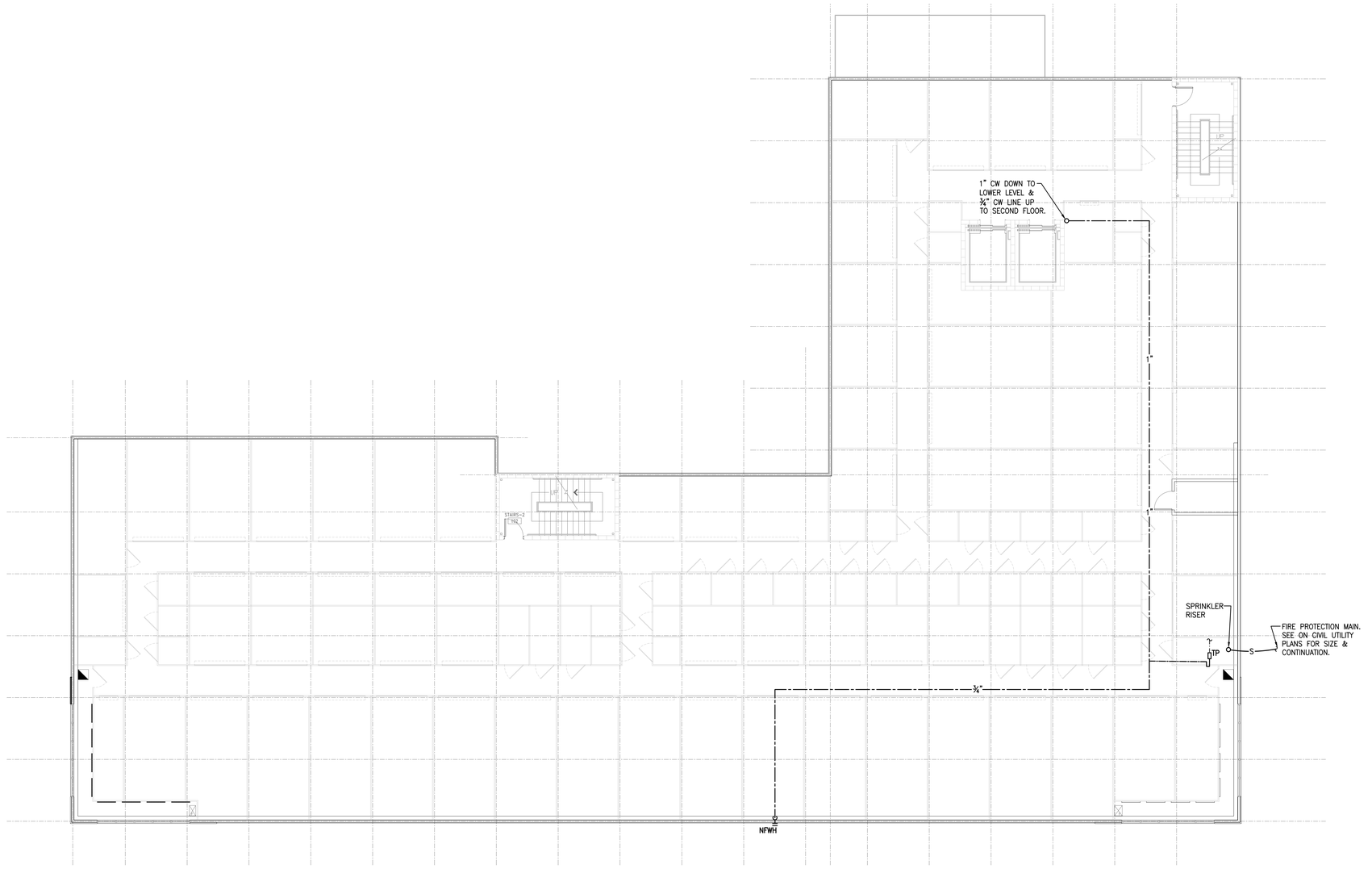
SHEET: P-5
OF 9 SHEETS



FIRST FLOOR DOMESTIC WATER PLAN
SCALE: 1/8" = 1'-0"

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GEORGIA REGISTERED No.029531 PROFESSIONAL ENGINEER
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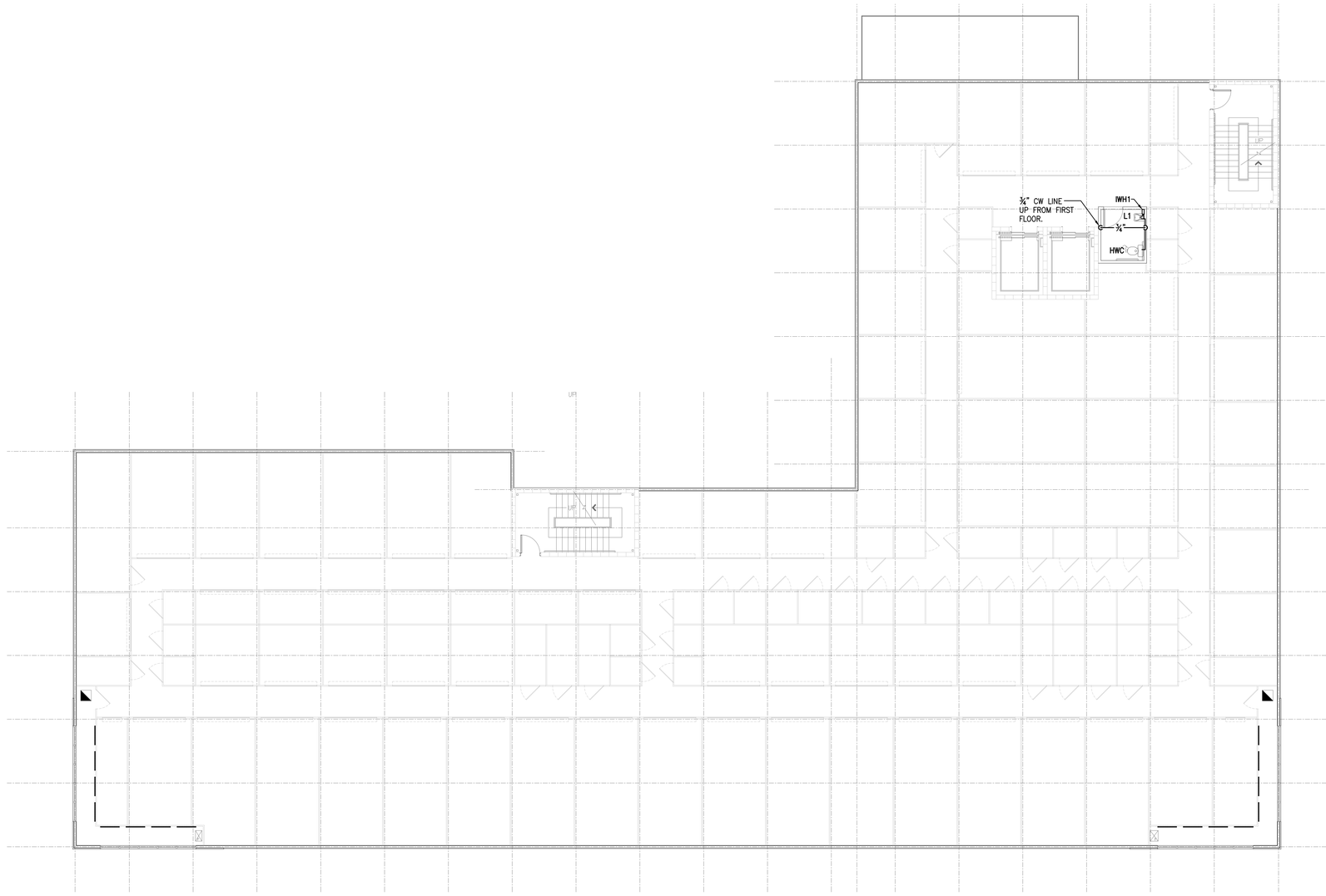
DATE	09/2018
SCALE	AS NOTED
JOB NO.	0000
SHEET	P-6
OF	9 SHEETS



SECOND FLOOR DOMESTIC WATER PLAN
SCALE: 1/8" = 1'-0"

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GEORGIA REGISTERED No. 029503 PROFESSIONAL ENGINEER ANTHONY M. BOLLWERK
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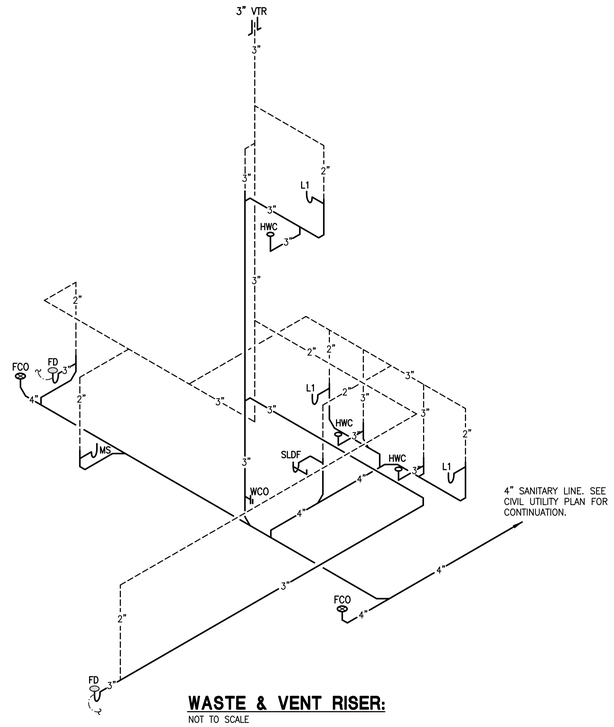
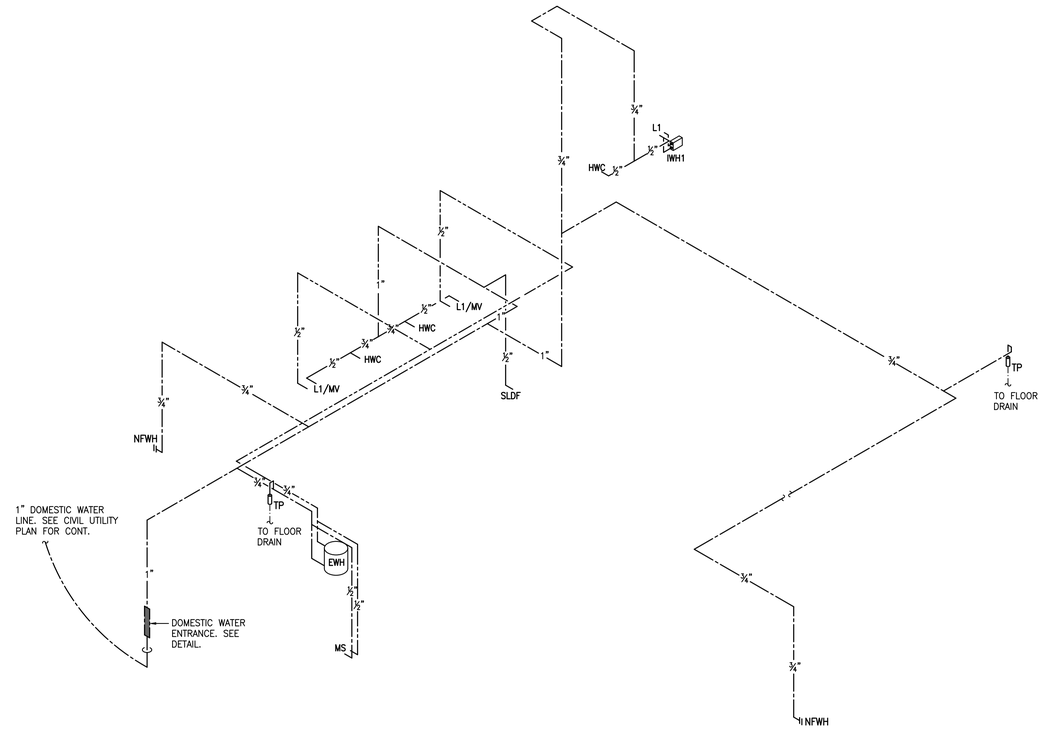
DATE	09/2018
SCALE	AS NOTED
JOB NO.	0000
SHEET	P–7
OF	9 SHEETS



WASTE & VENT RISER:
NOT TO SCALE



DOMESTIC WATER RISER DIAGRAM
NO SCALE

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GEORGIA REGISTERED No.029553 PROFESSIONAL ENGINEER
9/28/18

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ATLANTA,G GA 30318

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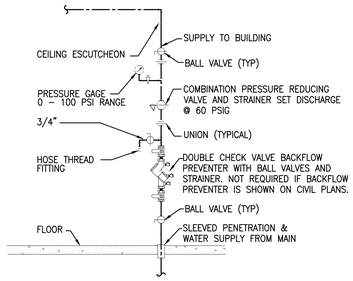
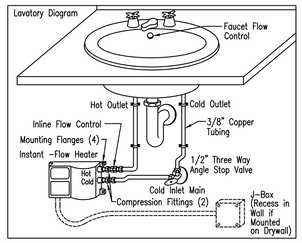
JOB NO.: 0000
SHEET: P-8
OF 9 SHEETS



DOMESTIC WATER SERVICE ENTRANCE

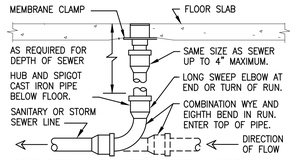
NOT TO SCALE



INSTANTANEOUS WATER HEATER DETAIL

NOT TO SCALE

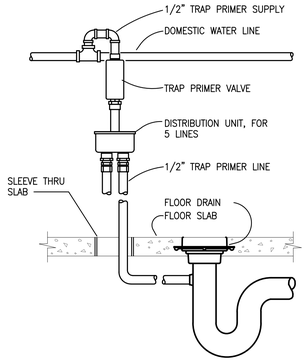
ROUND SECURED GASKETED NICKEL BRONZE ADJUSTABLE TOP WITH "CO" CAST IN COVER. PROVIDE CLEANOUT TOP WITH VARIATIONS SUITABLE FOR FLOOR COVERING (CARPET MARKER, RECESSED FOR TILE, SCORIATED FOR UNFINISHED FLOORS). PROVIDE GASKETED PLASTIC PLUG IN CAST IRON BODY. USE TEFLON JOINT COMPOUND ON PLUG THREADS. CLEAN THE TOP OF EXPOSED FCO AFTER INSTALLATION.



LOCATE AT BUILDING EXIT, AT ENDS OF RUNS, AT TURNS OF PIPE GREATER THAN 45 DEGREES, AT 50' INTERVALS ON STRAIGHT RUNS, AND/OR WHERE SHOWN ON PLANS. PROVIDE BACKFILL PER ARCHITECTURAL SPECIFICATIONS. LOCATE CLEANOUTS WHERE THERE IS 18" CLEAR AROUND. CONSULT LOCAL CODES FOR OTHER FCO REQUIREMENTS.

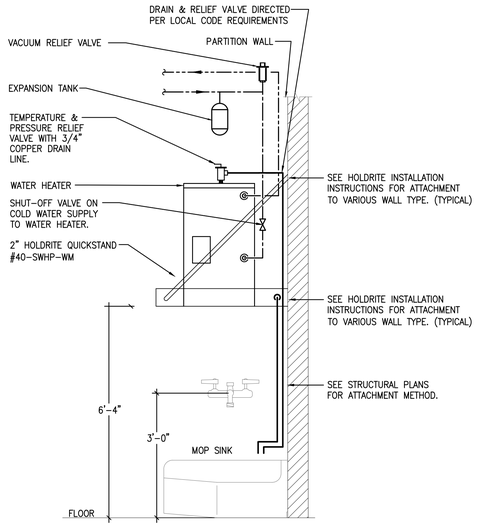
FLOOR CLEAN OUT:

NOT TO SCALE



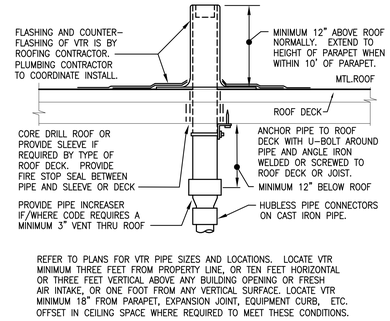
TRAP SEAL PRIMER DETAIL:

NOT TO SCALE



WATER HEATER ON SHELF DETAIL

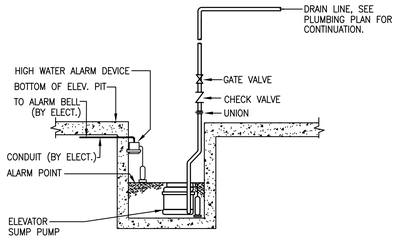
SCALE: NONE



REFER TO PLANS FOR VTR PIPE SIZES AND LOCATIONS. LOCATE VTR MINIMUM THREE FEET FROM PROPERTY LINE, OR TEN FEET HORIZONTAL OR THREE FEET VERTICAL ABOVE ANY BUILDING OPENING OR FRESH AIR INTAKE, OR ONE FOOT FROM ANY VERTICAL SURFACE. LOCATE VTR MINIMUM 18" FROM PARAPET, EXPANSION JOINT, EQUIPMENT CURB, ETC. OFFSET IN CEILING SPACE WHERE REQUIRED TO MEET THESE CONDITIONS.

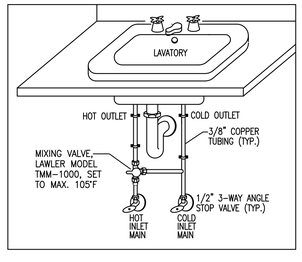
VENT THRU ROOF (VTR):

NOT TO SCALE



SUMP PUMP AT ELEVATOR DETAIL

NOT TO SCALE



UNDER-THE-COUNTER MIXING VALVE DETAIL

NOT TO SCALE

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GEORGIA REGISTERED No.029551 PROFESSIONAL ENGINEER TIMOTHY W. BOLLWERK
9/28/18

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