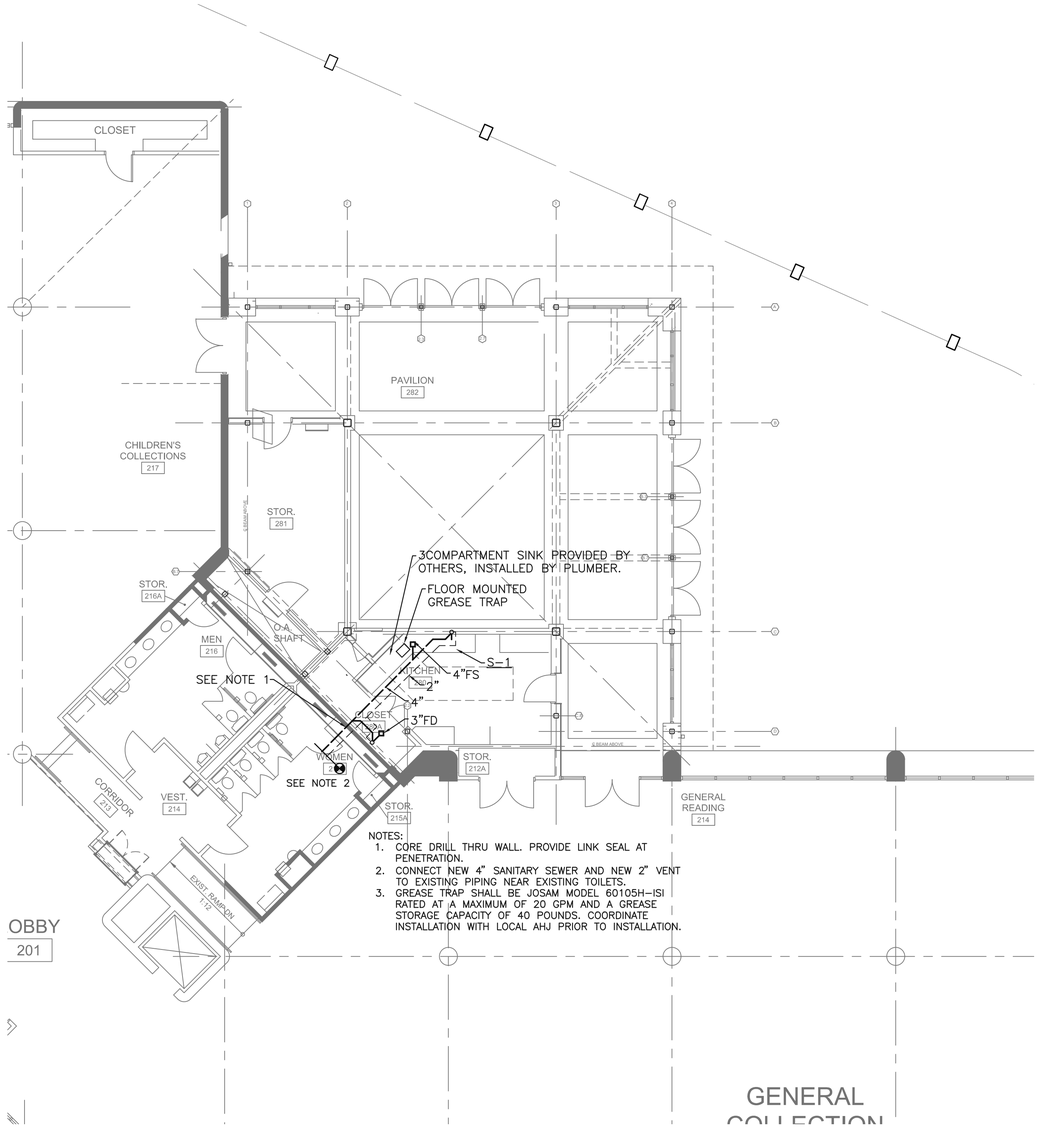
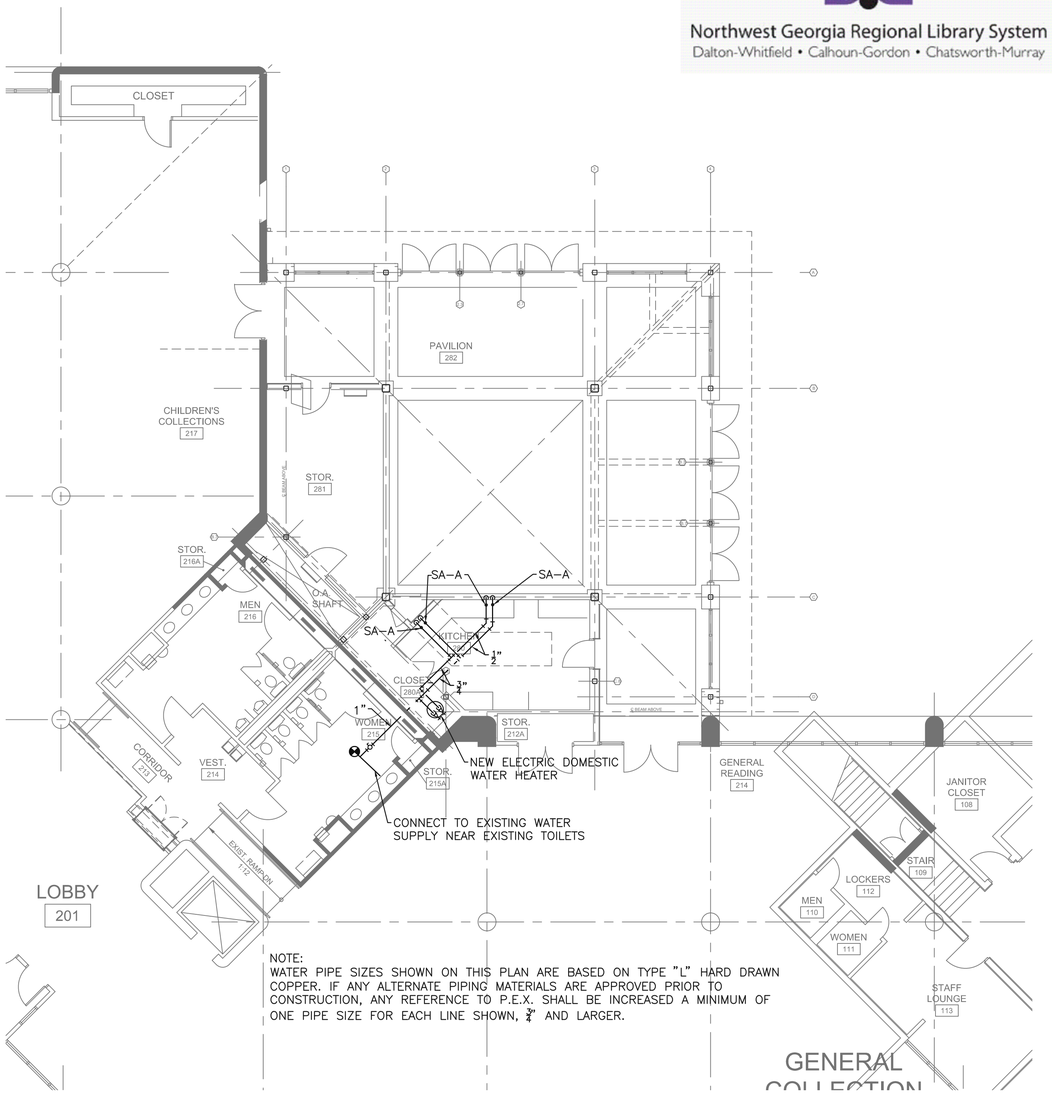


NOTES:
1. CORE DRILL THRU WALL. PROVIDE LINK SEAL AT PENETRATION.
2. CONNECT NEW 4" SANITARY SEWER AND NEW 2" VENT TO EXISTING PIPING NEAR EXISTING TOILETS.
3. GREASE TRAP SHALL BE JOSAM MODEL 60105H-ISI RATED AT A MAXIMUM OF 20 GPM AND A GREASE STORAGE CAPACITY OF 40 POUNDS. COORDINATE INSTALLATION WITH LOCAL AHJ PRIOR TO INSTALLATION.

WASTE AND VENT PIPING PLAN

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



NOTE:
WATER PIPE SIZES SHOWN ON THIS PLAN ARE BASED ON TYPE "L" HARD DRAWN COPPER. IF ANY ALTERNATE PIPING MATERIALS ARE APPROVED PRIOR TO CONSTRUCTION, ANY REFERENCE TO P.E.X. SHALL BE INCREASED A MINIMUM OF ONE PIPE SIZE FOR EACH LINE SHOWN, 3/4" AND LARGER.

WATER PIPING PLAN

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

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PLUMBING PLANS
WATER AND
SEWER PIPING

SHEET NO.

P1.0

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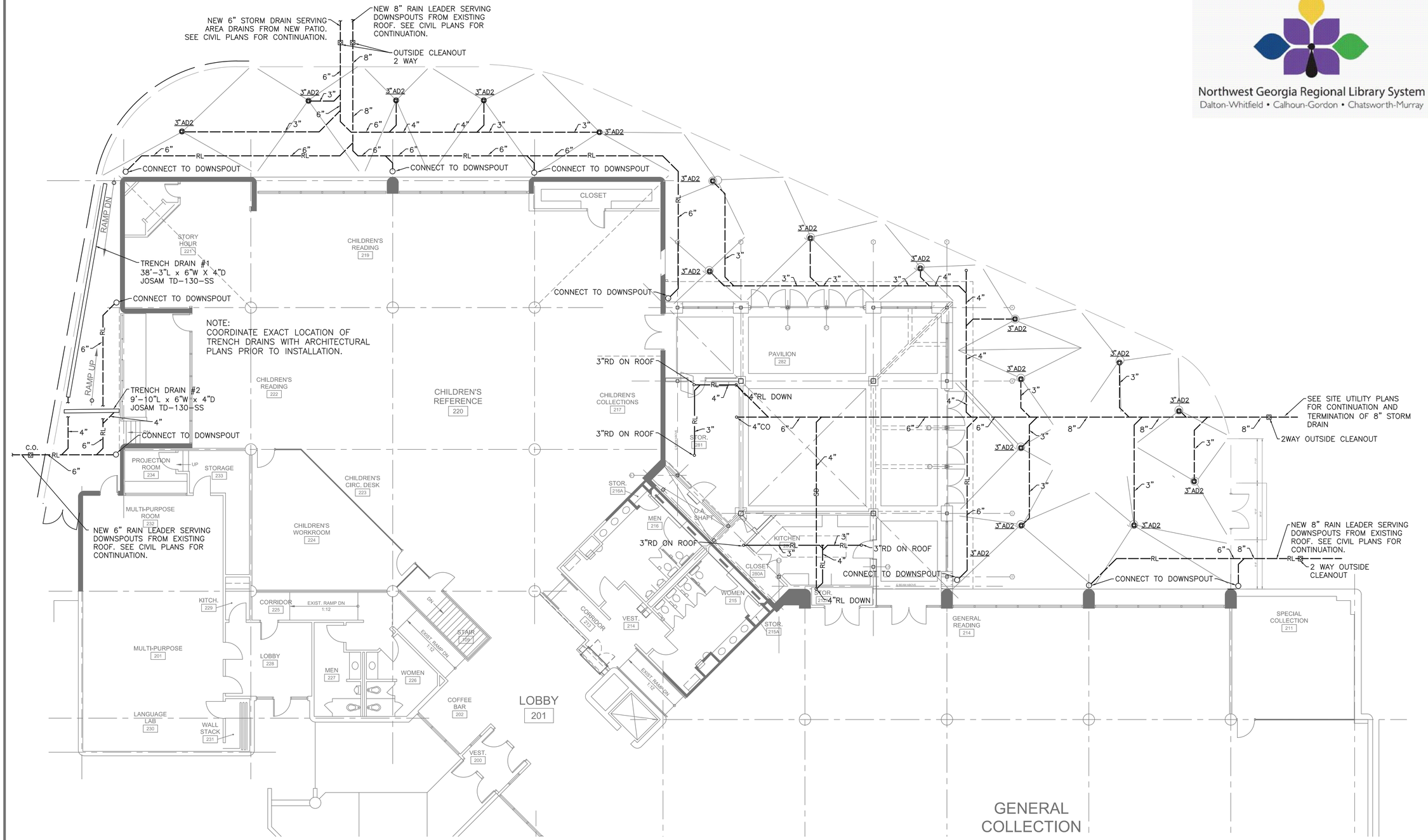

BUILDING RAINLEADER PIPING PLAN

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

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RAIN LEADERS

SHEET NO.

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PLUMBING LEGEND

SA	SHOCK ABSORBER (per P.D.I. manual)
	DOMESTIC COLD WATER SUPPLY
	DOMESTIC HOT WATER SUPPLY (110°F)
	DOMESTIC HOT WATER RETURN (110°F)
CD	CONDENSATE DRAIN
RL	RAINLEADER ABOVE FINISHED CEILING
SD	STORM DRAIN BELOW FINISHED GRADE
V	VENT
	SANITARY SEWER
	FLOOR CLEANOUT
CI	WALL CLEANOUT
FD HD	FLOOR DRAIN
	GATE VALVE IN HORIZONTAL LINE
	VALVE IN VERTICAL RISER
	BALL VALVE IN HORIZONTAL LINE
	APPROX. POINT OF CONNECTION, NEW TO EXISTING.

ABBREVIATIONS

VTR	VENT THRU ROOF
AFF	ABOVE FINISHED FLOOR
BFF	BELOW FINISHED FLOOR
AFC	ABOVE FINISHED CEILING
BFC	BELOW FINISHED CEILING
CW	COLD WATER
HW	HOT WATER
SS	SANITARY SEWER
FCO	FLOOR CLEANOUT
WCO	WALL CLEANOUT
HB	HOSE BIBB

PLUMBING SPECIFICATION NOTES:

1. ALL WORK TO BE DONE IN ACCORDANCE WITH CURRENT ACCEPTED INTERNATIONAL MECHANICAL CODE, INTERNATIONAL PLUMBING CODE, CHATTANOOGA CITY ORDINANCE, NATIONAL FIRE PROTECTION ASSOCIATION. SEISMIC RESTRAINTS TO BE INSTALLED ON ALL COMPONENTS PER INTERNATIONAL BUILDING CODE.
2. CONTRACTOR SHALL FURNISH TWO (2) COMPLETE CLEAN SETS OF MARKED REPRODUCIBLE DRAWINGS AND SPECIFICATIONS SHOWING CHANGES FROM CONTRACT DRAWINGS INCLUDE ADDENDUM AND CHANGE ORDER REVISIONS.
3. CUT AND PATCH ALL ITEMS INCIDENT TO THIS DIVISION.
4. SEE PLUMBING FIXTURE CONNECTION SCHEDULE FOR PLUMBING FIXTURE AND TRIM SPECIFICATIONS AND NOTES.
5. PIPING:
   A. WASTE AND VENTS: ABOVE AND BELOW GRADE PIPING SHALL BE SCHEDULE 40 PVC WITH DWV FITTINGS, EXCEPT IN RETURN AIR PLENUMS USE SERVICE WEIGHT CAST IRON WITH NO-HUB FITTINGS. "CELLULAR-CORE" PIPING IS NOT ACCEPTABLE.
   B. DOMESTIC WATER : HARD DRAWN COPPER TYPE "L" ASTM-B88, WITH WROUGHT COPPER FITTINGS.
6. VALVES:
   A. BALL VALVE- ALL BALL VALVES SHALL BE FULL-PORT TYPE.
7. PIPE INSULATION:
   A. GLASS FIBER:
      1). Domestic cold water – 1/2" thick; domestic hot water – 1-1/2" thick; hot water recirculating lines – 1-1/2" thick.

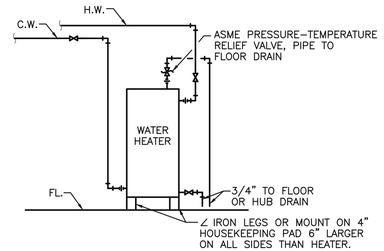
GENERAL SPECIFICATIONS:

INTENT: IT IS THE INTENT OF THE CONTRACT DOCUMENTS THAT THE CONTRACTOR FURNISH AND INSTALL ALL MATERIALS AND SYSTEMS, WITH NECESSARY AND INCIDENTAL APPURTENANCES, FOR A COMPLETE, FUNCTIONAL INSTALLATION, READY AND SUITABLE FOR THE OWNER'S USE.

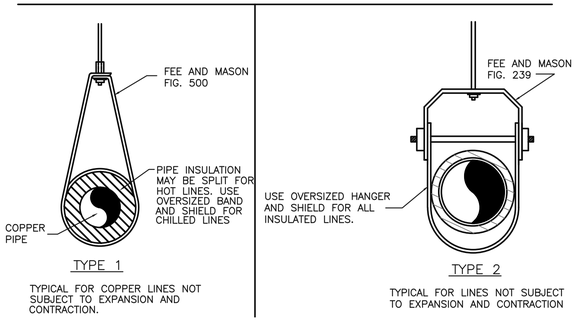
CODES: WORK UNDER THIS CONTRACT SHALL BE GOVERNED BY ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES. THE INTERNATIONAL MECHANICAL, ENERGY, AND PLUMBING CODES SHALL FORM THE BASIS FOR MINIMUM CONSTRUCTION STANDARDS FOR THIS PROJECT.

FEES, PERMITS, AND TAXES: CONTRACTOR SHALL MAKE ARRANGEMENTS FOR INSPECTIONS AND PAY ALL LAWFUL FEES AND PERMITS REQUIRED BY LOCAL AUTHORITIES. CONTRACTOR SHALL PAY TAXES LEVIED FOR LABOR AND MATERIALS ASSOCIATED WITH WORK ON THIS PROJECT.

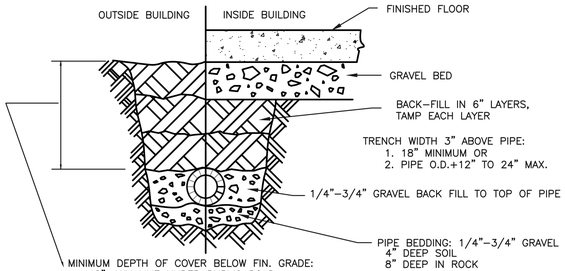
GUARANTEE: WORK AND MATERIALS TO BE GUARANTEED FOR ONE (1) YEAR AFTER PROJECT COMPLETION.



WATER HEATER HOOK-UP
15450-G
NO SCALE



PIPE SUPPORT DETAILS
15140-AA
NO SCALE



PIPE TRENCH-TYPICAL
15050-B
NO SCALE

FIXTURE SCHEDULE

SYM.	MANUFACTURE	FIXTURE NO.	SIZE	TRIM	SUPPLIES	WASTE	TRAP	ROUGHING IN CONNECTION C.W.	H.W.	WASTE	VENT	REMARKS
S1	MOEN	216006	33X22X9	T&S B-1142-04	HEAVY DUTY 1/4 TURN	SS BASKET	SEMI CAST "P"	1/2"	1/2"	1 1/2"	2"	DROP IN KITCHEN SINK

DRAIN SCHEDULE

DESIG.	MFGR.	CATALOG NUMBER
FD	JOSAM	30000-A 3" (SEE NOTE)
RD	JOSAM	21500-3-1-26-CR
AD2	JOSAM	42430
FS	JOSAM	49340A-LF-4-31-43

INCLUDE DEEP SEAL TRAP AND INLINE TRAP GUARD

WATER HEATER:

MFR. A.O. SMITH MODEL NO. DVE-52
STORAGE: 50 GAL. WORKING PRESS.: 150 PSI
RECOVERY 49 GPH AT 100°F RISE.
INPUT: 12 KW – 208 VOLT – 3 PHASE
NOTES:
PROVIDE FACTORY SUPPLIED T&P RELIEF VALVE AND PIPE DRAIN, FULL SIZE, TO DRAIN. DRAIN LINE SHALL BE HARD DRAWN COPPER.
COORDINATE ELECTRICAL REQUIREMENTS WITH EC PRIOR TO ORDERING HEATER AND/OR PUMP.

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HVAC LEGEND AND SYMBOLS

A.F.F.	ABOVE FINISHED FLOOR
AMB.	AMBIENT
B.F.C.	BELOW FINISHED CEILING
CFM	CUBIC FEET PER MINUTE
EA	EXHAUST AIR
E.A.D.B.	ENTERING AIR DRY BULB TEMPERATURE
E.A.W.B.	ENTERING AIR WET BULB TEMPERATURE
E.S.P.	EXTERNAL STATIC PRESSURE
FD–2	2–HOUR FIRE DAMPER
GPM	GALLONS PER MINUTE
MBH	THOUSAND BTU/HOUR
MCDB	MEAN COINCIDENT DRY BULB TEMP.
MCWB	MEAN COINCIDENT WET BULB TEMP.
MUA	MAKE–UP AIR
N.C.	NORMALLY CLOSED
N.O.	NORMALLY OPEN
N/A	NOT APPLICABLE
N.I.C.	NOT IN CONTRACT
N.T.S.	NOT TO SCALE
OA	OUTSIDE AIR
RA	RETURN AIR
RH	RELATIVE HUMIDITY
SA	SUPPLY AIR
—CHWS—	CHILLED WATER SUPPLY
—CHWR—	CHILLED WATER RETURN
—HWS—	LOW–TEMPERATURE HOT WATER SUPPLY
—HWR—	LOW–TEMPERATURE HOT WATER RETURN
—H/C S—	HOT/CHILLED WATER SUPPLY
—H/C R—	HOT/CHILLED WATER RETURN
—CWS—	CONDENSER WATER SUPPLY
—CWR—	CONDENSER WATER RETURN
—HPWS—	HEAT PUMP WATER SUPPLY
—HPWR—	HEAT PUMP WATER RETURN
—RL—	REFRIGERANT LIQUID
—RS—	REFRIGERANT SUCTION
—CD—	CONDENSATE DRAIN ABOVE FLOOR/GRADE
—CD—	CONDENSATE DRAIN BELOW FLOOR/GRADE
	BALL VALVE
	BUTTERFLY VALVE
	CHECK VALVE
	GATE OR GLOBE VALVE
	THREE–WAY VALVE

	VALVE ACTUATORS:
T	MANUAL, NON–RISING STEM
M	ELECTRIC MOTOR
S	ELECTRIC SOLENOID
	CAP
	ELBOW, FACING TOWARD VIEWER
	ELBOW, FACING AWAY FROM VIEWER
	REDUCER, CONCENTRIC
FOB	REDUCER, ECCENTRIC, FLAT ON BOTTOM
FOT	REDUCER, ECCENTRIC, FLAT ON TOP
	TEE, FACING TOWARD VIEWER
	TEE, FACING AWAY FROM VIEWER
	UNION, SCREWED
	UNION, FLANGED
	STRAINER
BO	STRAINER, BLOW OFF
	PETE'S PLUG
	PRESSURE GAGE AND COCK
	THERMOMETER
	PUMP
	DIRECTION OF FLOW
12x6	RECTANGULAR DUCTWORK; DIMENSIONS SHOWN ARE NET INTERNAL DIMENSIONS
12"ø	ROUND DUCTWORK; DIMENSION SHOWN IS NET INTERNAL DIMENSION
12x6 F.O.	FLAT OVAL DUCTWORK; DIMENSION SHOWN IS NET INTERNAL DIMENSION
	FLEXIBLE DUCTWORK (MAX. LENGTH = 4 FEET)
	EXISTING DUCTWORK TO BE REMOVED
	EXISTING DUCTWORK TO REMAIN IN PLACE
	NEW DUCTWORK
	INDICATES POINT OF CONNECTION BETWEEN NEW AND EXISTING WORK

	SUPPLY, OUTSIDE AIR, OR MAKE–UP AIR DUCTWORK CROSS–SECTION
	RETURN DUCTWORK CROSS–SECTION
	EXHAUST DUCTWORK CROSS–SECTION
	RADIUS ELBOW (45° SHOWN)
	MITERED ELBOW WITH DOUBLE THICK TURNING VANES (90° SHOWN)
	SUPPLY DUCTWORK SHOWN TURNING UP
	RETURN DUCTWORK SHOWN TURNING DOWN
FD–2	FIRE DAMPER WITH ACCESS DOOR IN DUCT
SD–2	SMOKE DAMPER WITH ACCESS DOOR IN DUCT
FD–2	FIRE/SMOKE DAMPER WITH ACCESS DOOR IN DUCT
	MANUAL VOLUME BALANCING DAMPER
	PROGRAMMABLE TEMPERATURE SENSOR
C	REMOTE WIRED WALL–MOUNTED CONTROLLER
SD	DUCT–MOUNTED SMOKE DETECTOR
P	MANUAL PULL STATION FOR KITCHEN EXHAUST HOOD FIRE SUPPRESSION SYSTEM
	DUCT CONNECTION TO THE NECK OF A DIFFUSER, REGISTER, OR GRILLE (DIFFUSER CONNECTION SHOWN)
	SIDEWALL GRILLE OR REGISTER; ARROW INDICATES FLOW DIRECTION
20x10 H 1200 CFM	SIZE OF DIFFUSER/GRILLE NECK; DIFFUSER/GRILLE TYPE (SEE SCHEDULE); AIR VOLUME OF DIFFUSER/GRILLE

NOTE: NOT ALL SYMBOLS SHOWN IN LEGEND MAY BE ON THE DRAWINGS.

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MECHANICAL GENERAL NOTES:

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CODES: WORK UNDER THIS CONTRACT SHALL BE GOVERNED BY ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES. THE INTERNATIONAL MECHANICAL, ENERGY CONSERVATION, AND PLUMBING CODES SHALL FORM THE BASIS FOR MINIMUM CONSTRUCTION STANDARDS FOR THIS PROJECT.

FEES, PERMITS, AND TAXES: CONTRACTOR SHALL MAKE ARRANGEMENTS FOR INSPECTIONS AND PAY ALL LAWFUL FEES AND PERMITS REQUIRED BY LOCAL AUTHORITIES. CONTRACTOR SHALL PAY TAXES LEVIED FOR LABOR AND MATERIALS ASSOCIATED WITH WORK ON THIS PROJECT.

INSPECTION OF SITE: THE DRAWINGS ARE PREPARED FROM THE BEST INFORMATION AVAILABLE AND REFLECT THE CONDITIONS COMMENSURATE WITH THIS INFORMATION. HOWEVER, THE CONTRACTOR SHALL VISIT THE SITE PRIOR TO SUBMITTING A PROPOSAL AND SHALL VERIFY THE LOCATIONS, SIZES, DEPTH, PRESSURE, ETC., OF ALL EXISTING UTILITIES; AND FAMILIARIZE HIMSELF WITH WORKING CONDITIONS, HAZARDS, EXISTING GRADES, SOIL CONDITIONS, OBSTRUCTIONS, ETC. IF IT BECOMES EVIDENT THAT EXISTING SITE CONDITIONS WILL IMPAIR THE PROPER OPERATION OF THE UTILITIES, OR THE CONSTRUCTION PROCESS, THE ARCHITECT SHALL BE NOTIFIED IN WRITING. ALL PROPOSALS AND BIDS SHALL TAKE THESE EXISTING CONDITIONS AND ANY REVISIONS REQUIRED INTO ACCOUNT, AND THE LACK OF SPECIFIC SITE INFORMATION ON THE DRAWINGS SHALL NOT RELIEVE THE CONTRACTOR OF HIS RESPONSIBILITY.

DATA AND SHOP DRAWINGS: PRIOR TO ORDERING, SUBMIT CERTIFIED PRINTS AND/OR DESCRIPTIVE DATA FOR MAJOR PIECES OF EQUIPMENT, FIXTURES, VALVES, INSULATION, CONTROLS, ETC. STAMP, SIGN, AND CERTIFY TO BE CORRECT AND IN COMPLIANCE WITH THE CONTRACT DOCUMENTS, EACH DRAWING SUBMITTED FOR REVIEW. DRAWINGS SUBMITTED WITHOUT SIGNED CERTIFICATION WILL BE RETURNED WITHOUT REVIEW. ANY DEVIATION IN SUBMITTAL FROM CONTRACT DOCUMENTS OF MATERIALS, CAPACITIES, SPACE REQUIREMENTS IN ITEMS FURNISHED, ETC., SHALL BE LISTED IN A LETTER ACCOMPANYING SUBMITTAL STATING DEVIATION AND REASON REQUESTED FOR CONSIDERATION OF ACCEPTANCE. SUBMITTALS SHALL INCLUDE ONE PAPER COPY (IF REQUESTED) AND ONE ELECTRONIC COPY, CLEARLY MARKED, AND IN ORDER AS INDICATED IN DRAWINGS. ITEMS SUBMITTED PARTIALLY AND IN AN UNORGANIZED MANNER SHALL BE RETURNED WITHOUT REVIEW. SUBMITTAL SHALL SHOW: MANUFACTURER'S CATALOG NUMBER, PERFORMANCE DATA WITH INDICATED OPERATING POINTS, FINISHES, OPTIONAL FEATURES AND MODIFICATIONS. EACH SHEET OF PRINTED SUBMITTAL DATA SHALL BE CLEARLY MARKED (USING ARROWS, UNDERLINING, CIRCLING, OR HIGHLIGHTING) TO SHOW THE PARTICULAR SIZE, TYPE, MODEL NUMBER, RATINGS AND OPTIONS ACTUALLY PROPOSED. WHEN WORK IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATION IS SPECIFIED, A COPY OF THESE RECOMMENDATIONS SHALL BE KEPT IN THE JOB OFFICE. SHOP DRAWINGS SHALL SHOW SIZES AND DETAILS OF REQUIRED CONCRETE AND STEEL MACHINE FOUNDATION, LOCATION OF ANCHOR BOLTS, PHYSICAL DIMENSION OF EQUIPMENT, EQUIPMENT WEIGHT OR OTHER PERTINENT DATA REQUIRED FOR EQUIPMENT SUPPORT OR INSTALLATION. APPROVED SHOP DRAWINGS DO NOT MEAN THAT DRAWINGS HAVE BEEN CHECKED IN DETAIL; SAID APPROVAL DOES NOT IN ANY WAY RELIEVE THE CONTRACTOR FROM HIS RESPONSIBILITY OR NECESSITY OF FURNISHING MATERIAL OR PERFORMING WORK AS REQUIRED BY THE CONTRACT DRAWINGS OR SPECIFICATIONS.

GUARANTEE: WORK AND MATERIALS TO BE GUARANTEED FOR ONE (1) YEAR AFTER PROJECT COMPLETION. HVAC REFRIGERATION SYSTEM COMPONENTS SHALL HAVE AN ADDITIONAL 4-YEAR WARRANTY. EACH PIECE OF EQUIPMENT SHALL MEET PERFORMANCE SPECIFICATIONS AFTER ONE (1) YEAR'S ACTUAL OPERATION. THE CONTRACTOR SHALL REPLACE, OR MAKE GOOD, ANY DEFECT DUE TO FAULTY WORKMANSHIP OR MATERIAL, WHICH SHALL DEVELOP WITHIN ONE (1) YEAR FROM DATE OF ACCEPTANCE AT NO COST TO THE OWNER. THIS GUARANTEE SHALL COVER BOTH MATERIAL AND LABOR AND SHALL INCLUDE: (A) REFRIGERANT AND OIL REPLACEMENT, (B) ANY ADJUSTMENTS OR SERVICE REQUIRED, AND (C) ANY NECESSARY ADJUSTMENTS IN SYSTEM CONTROL SET POINTS WHEN REQUIRED, BUT NO FILTER MAINTENANCE. THE CONTRACTOR IS RESPONSIBLE TO REPLACE WORK FOUND NOT IN COMPLIANCE WITH THE CONTRACT AT ANY TIME DURING THE LIFE OF THE INSTALLATION; REPLACEMENT OF NON-CONFORMING WORK IS NOT SUBJECT TO THE ONE-YEAR WARRANTY LIMITATION.

WHERE THE WORK OF VARIOUS TRADES WILL BE INSTALLED IN CLOSE PROXIMITY TO ONE ANOTHER, OR WHERE THERE IS EVIDENCE THAT THE WORK OF ONE TRADE WILL INTERFERE WITH WORK OR REQUIRED ACCESS/CLEARANCE SPACE OF OTHER TRADES, COORDINATE ADJUSTMENTS PRIOR TO INSTALLATION TO PROVIDE SATISFACTORY CLEARANCE. FOR ANY WORK INSTALLED WITHOUT COORDINATION AND/OR CAUSING CONFLICTS, PROVIDE ALL NECESSARY CHANGES TO CORRECT THE CONDITIONS. THE CONSTRUCTION WORK SHALL BE PERFORMED IN A MANNER ACCEPTABLE TO ARCHITECT AND ENGINEER AND SHALL BEAR NO ADDITIONAL COSTS.

LOCATE ALL EQUIPMENT REQUIRING SERVICING, OPERATIONAL, OR MAINTENANCE CLEARANCES IN A FULLY ACCESSIBLE POSITION. EQUIPMENT REQUIRING THESE CLEARANCES SHALL INCLUDE, BUT NOT BE LIMITED TO: DAMPERS, VALVES, TRAPS, CLEANOUTS, MOTORS, CONTROLLERS, DISCONNECTS, DRAIN PANS, ETC. IF EQUIPMENT IS CONCEALED, PROVIDE ACCESS DOORS TO MAINTAIN ACCESSIBILITY. MINOR DEVIATIONS FROM THE CONTRACT DOCUMENTS MAY BE MADE TO ALLOW FOR BETTER ACCESSIBILITY. WHERE FIRE DAMPERS ARE REQUIRED, PROVIDE ACCESS PANELS TO ALLOW RE-LINKING OF DAMPER FUSIBLE LINKS. PANELS IN RATED CONSTRUCTION SHALL BEAR UL LABEL.

INSTALL ALL DUCTWORK AND HORIZONTAL PIPING AS HIGH AS POSSIBLE AND ABOVE THE FINISHED CEILING, UNLESS NOTED OTHERWISE. PROVIDE OFFSETS, AS REQUIRED, TO AVOID ALL OBSTRUCTIONS.

PIPING, CONDUITS, CABLES, ETC., SHALL BE RUN NEATLY, PARALLEL TO EXISTING AND NEW PIPING AND BUILDING WALLS AND FLOORS.

DO NOT SCALE DRAWINGS; USE GIVEN DIMENSIONS ONLY. IF NOT SHOWN, VERIFY AND DOCUMENT CORRECT DIMENSION WITH THE ARCHITECT OR ENGINEER. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS AT THE JOB SITE.

A TECHNICIAN, FACTORY TRAINED AND CERTIFIED BY THE MANUFACTURER OF THE HVAC EQUIPMENT PROVIDED, SHALL PERFORM PRE START-UP CHECK AND SHALL SUBMIT A REPORT TO THE OWNER ON EACH ROOFTOP UNIT AND SPLIT SYSTEM. THIS REPORT SHALL INCLUDE CERTIFICATION, IN WRITING, THAT THE EQUIPMENT IS CORRECTLY INSTALLED (INCLUDING PROPER DRAINAGE FROM DRAIN PANS AND SEALING OF AIR LEAKS); ELECTRICAL CONNECTIONS AND TERMINAL TIGHTNESS; INDOOR FILTERS ARE CLEAN, IN PLACE, AND EASILY REPLACEABLE; FANS AND COMPRESSORS ROTATE CORRECTLY; ELECTRICAL AMP DRAWS SHALL BE RECORDED AND CERTIFIED WITHIN MANUFACTURER'S RECOMMENDED LIMITS; REFRIGERANT SUCTION AND DISCHARGE PRESSURES FOR ALL CIRCUITS WITH STATEMENT THAT SYSTEMS ARE CORRECTLY CHARGED.

ALL DUCTWORK DIMENSIONS SHOWN ARE INSIDE CLEAR DIMENSIONS.

DUCTWORK SHALL BE SIZES SHOWN ON THE DRAWINGS, CROSS-BROKEN, RIGIDLY BRACED, ADEQUATELY SUPPORTED, AND SECURELY FASTENED IN PLACE. FABRICATE AND INSTALL DUCTS IN ACCORDANCE WITH THE LATEST EDITION OF THE SMACNA HVAC DUCT CONSTRUCTION STANDARDS METAL AND FLEXIBLE.

DUCTWORK: RIGID – DUCTWORK EXPOSED TO WEATHER OR TO BE PAINTED SHALL BE FABRICATED OF ARMCO ZINCGRIP-PAINTGRIP GALVANIZED STEEL. CONCEALED DUCTWORK SHALL BE FABRICATED FROM HOT DIPPED GALVANIZED STEEL, ASTM 3A-527, WITH GAUGE MARKING ON BOTTOM OUTSIDE OF DUCT. WHERE DUCTS ARE BARE, USE GROUP 1, 1.25 OZ. GALVANIZED; WHERE PAINTED, USE GROUP 4 1.25 OZ. GALVANIZED AND PHOSPHATIZED. ALL RIGID DUCTWORK SHALL BE CONSTRUCTED WITH A MINIMUM OF 26 GA. SHEET METAL. ALL METAL FASTENERS, SUPPORTS, ETC., SHALL BE GALVANIZED STEEL OR NON-CORROSIVE METAL. USE ROUND SNAP-LOCK DUCTWORK WHERE CLEARANCES PERMIT. RIGID DUCTWORK EXPOSED TO VIEW SHALL BE ROUND DOUBLE-WALL SPIRAL LOCKSEAM DUCTWORK WITH 2" THICK INSULATION BETWEEN THE INNER AND OUTER SHELL, ACOUSTI K-27 AS MANUFACTURED BY UNITED MCGILL OR EQUAL. SEAL ALL SUPPLY AIR DUCTWORK JOINTS TO SMACNA CLASS "A" OR TO DUCT SEAL SCHEDULE IF PRESENT ON DRAWINGS; DUCT LEAKAGE SHALL NOT EXCEED 1 PERCENT OF THE SPECIFIED AIRFLOWS WHEN TESTED AT 1" W.G.

DUCTWORK: FLEXIBLE – 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 FIBERGLASS INSULATION AND A FIRE RETARDANT VAPOR BARRIER JACKET WITH A PERM RATING OF NOT OVER 0.1, A "C" FACTOR OF NOT OVER 0.23 (OR A "U" FACTOR OF NOT OVER 0.22 WITH 1000 FPM VELOCITY IN THE DUCT), AND WHICH COMPLY WITH NFPA-90A. CONNECT FLEXIBLE DUCTS TO DIFFUSERS AND RIGID DUCT USING STAINLESS STEEL CLAMPS, FLEXMASTER QUICK RELEASE-LS SERIES OR EQUAL. FLEXIBLE DUCT SHALL BE CUT TO EXACT LENGTH REQUIRED. FLEXIBLE DUCTWORK SHALL BE SUPPORTED IN ACCORDANCE WITH FIGURES 3-10 AND 3-11 IN THE SMACNA HVAC DUCT CONSTRUCTION STANDARDS – METAL AND FLEXIBLE (3RD EDITION). FLEXIBLE DUCTWORK RUNNING THROUGH JOIST WEBBING SHALL NOT BE CRUSHED OR DEFORMED OUT OF ROUND.

DUCT BRANCH CONNECTIONS:

SUPPLY BRANCH – SEE SMACNA MANUAL FIGURE 4-6; USE 45° OR RADIUS ENTRY CINCH LOCK COLLAR AND MANUAL BALANCING DAMPER.

BRANCH RETURN – SEE SMACNA MANUAL FIGURE 4-6; USE 45° OR RADIUS ENTRY CINCH LOCK COLLAR AND MANUAL BALANCING DAMPER.

ROUND SUPPLY TAKE-OFFS – USE FACTORY FABRICATED BEADED STRAIGHT SPIN-IN TYPE GALVANIZED STEEL FITTINGS WITH 45° EXTRACTOR AND MANUAL BALANCING DAMPER.

ROUND RETURN/EXHAUST TAP-INS – USE FACTORY FABRICATED BEADED STRAIGHT SPIN-IN TYPE GALVANIZED STEEL FITTINGS AND MANUAL BALANCING DAMPER.

MANUAL DAMPERS – HAND OPERATED BUTTERFLY TYPE DAMPERS CONSTRUCTED FROM GALVANIZED STEEL, 18 GAGE OF HEAVIER. DAMPERS FOR DUCTS TO 12" DEPTH AND 12" DIAMETER TO BE SINGLE BLADE CARRIED ON A $\frac{3}{8}$" ROUND STEEL ROD MOUNTED INSIDE OF DUCT WITHOUT FRAME AND FITTED WITH LOCKING TYPE QUADRANT AND BRASS END BEARING PLATE ACCURATELY DRILLED AND SECURED TO DUCT; REFER TO FIGURES A, B, AND C, FIGURE 7-4, OF THE SMACNA MANUAL FOR CONSTRUCTION DETAILS. PROVIDE INSULATION STANDOFF FOR DAMPER OPERATOR. DAMPERS FOR DUCTS OF GREATER DEPTH TO BE MULTI-BLADE TYPE, 12" MAXIMUM BLADE WIDTH UP TO 30" BLADE LENGTH AND 10" MAXIMUM BLADE WIDTH OVER 30" BLADE LENGTH. BLADES TO BE MOUNTED ON FRAME WITH BRASS SLEEVE BEARINGS, INTERCONNECTED FOR OPERATION FROM ONE LOCKING TYPE HAND QUADRANT; ROUND PIVOT RODS TO HAVE SECTION FACED FLAT TO RECEIVE LOCKING SETSCREW IN LOCKING QUADRANT; NOTCHING OF BLADES TO FIT LINKAGE PERMITTED. REFER TO FIGURE A AND B, FIGURE 7-5, OF SMACNA MANUAL. PROVIDE INSULATION STANDOFF FOR DAMPER OPERATOR.

FLEXIBLE CONNECTORS: PROVIDE FLEXIBLE CONNECTORS BETWEEN EACH AIR UNIT OR FAN AND THE DISTRIBUTION DUCT, ON BOTH THE SUPPLY SIDE AND THE RETURN SIDE. CONNECTORS SHALL NOT EXCEED 10 INCHES IN LENGTH. CONNECTORS TO BE OF AN APPROVED FLAME RETARDANT FABRIC WITH A MAXIMUM FLAME SPREAD INDEX OF 25 AND A MAXIMUM SMOKE DEVELOPED INDEX OF 50.

MANUAL BALANCING DAMPERS:

MANUAL BALANCING DAMPERS IN RECTANGULAR DUCTS SHALL BE OPPOSED BLADE TYPE CONSTRUCTED OF 16 GA. GALVANIZED STEEL AND VINYL SEALS, AND A MAXIMUM LEAKAGE OF 5 CFM PER FT^2 AT 1" W.G. DIFFERENTIAL PRESSURE. ALL DAMPERS TO BE CAULKED WITH SILICONE BETWEEN DAMPER AND DUCT, AND HAVE EXTERNAL ADJUSTMENT MARKED OPEN-CLOSED. QUADRANTS FOR DAMPERS INSULATED DUCTS SHALL BE MOUNTED ON 1$\frac{1}{4}$" WHITE PINE BLOCKS. DAMPERS SHALL BE FURNISHED WITH CONTROLS WHERE INDICATED ON THE DRAWINGS.

MANUAL BALANCING DAMPERS IN ROUND DUCTS SHALL BE MINIMUM TWO BLADE OPPOSED BLADE TYPE CONSTRUCTED OF 16 GA. GALVANIZED STEEL WITH A MAXIMUM LEAKAGE OF 5 CFM PER FT^2 AT 1" W.G. DIFFERENTIAL PRESSURE. QUADRANTS FOR DAMPERS SHALL BE MOUNTED ON 1$\frac{1}{4}$" WHITE PINE BLOCKS.

MANUAL BALANCING DAMPERS IN DUCTS WITH PRESSURE OVER 2" W.G. SHALL HAVE MULTIPLE OPPOSED BLADE TYPE 18 GA. AIRFOIL BLADES WITH SEALS. LEAKAGE SHALL BE 5 CFM PER FT^2 AT 1" W.G. DIFFERENTIAL PRESSURE. QUADRANTS SHALL BE MOUNTED ON 1$\frac{1}{4}$" WHITE PINE BLOCKS.

AIR DISTRIBUTION DEVICES: AS SCHEDULED ON DRAWINGS.

REFRIGERANT PIPING: HARD-DRAWN TYPE "L" SEAMLESS COPPER TUBING, ASTM B88-74. FITTINGS SHALL BE WROUGHT COPPER, ANSI B16-22-63, WITH A WORKING PRESSURE OF NOT LESS THAN 300 PSIG. REFRIGERANT PIPING SHALL BE SIZED AND INSTALLED WITH THE EQUIPMENT MANUFACTURER'S WRITTEN RECOMMENDATIONS. CONTRACTOR SHALL PROVIDE WRITTEN CERTIFICATION FROM THE EQUIPMENT MANUFACTURER AS TO THE CORRECTNESS OF THE LINE SIZES PRIOR TO INSTALLATION.

CONDENSATE DRAIN PIPING: SCHEDULE 40 PVC WITH DWV FITTINGS, EXCEPT IN RETURN AIR PLENUMS, WHERE TYPE "L" COPPER SHALL BE USED. PIPING SHALL BE INSTALLED WITHOUT ANY SAGGING TO ENSURE COMPLETE DRAINAGE. THE CONDENSATE DRAIN SHALL BE THE SAME SIZE AS THE UNIT DRAIN CONNECTION BUT SHALL NOT BE LESS THAN $\frac{3}{4}$" DIAMETER PIPE. ALL CONDENSATE DRAIN PIPING SHALL SLOPE DOWN 1/8" IN 12" MINIMUM IN DIRECTION OF FLOW.

INSULATION: DUCTWORK; SUPPLY, RETURN, OUTSIDE AIR, OR MAKE-UP AIR (CONCEALED) – 2" THICK, 1 PCF DENSITY FIBERGLASS BLANKET WITH VAPOR BARRIER (INSTALLED R-VALUE SHALL BE 6.0 MINIMUM). OVERLAP BUTTING EDGES, FOLD, SEAL AND TAPE, AND PROVIDE A CONTINUOUS VAPOR BARRIER. USE OF STAPLES SHALL NOT BE PERMITTED. RETURN AIR DUCT INSIDE THE CONDITIONED SPACE NEED NOT BE EXTERNALLY INSULATED. ALL SHEET METAL SURFACES, INCLUDING THE TOPS OF SUPPLY AIR DIFFUSERS EXPOSED ABOVE THE CEILING, SHALL BE INSULATED.

INSULATION: ALL DUCTWORK EXPOSED TO EXTERIOR CONDITIONS – 2" THICK FIBERGLASS BOARD WITH VAPOR BARRIER HAVING A DENSITY OF 6 PCF MINIMUM, A THERMAL CONDUCTIVITY OF NO GREATER THAN 0.23 BTU-IN/HR-FT^2-°F AT 75° F AND A MINIMUM INSTALLED R-VALUE OF 8.0. SEAL ALL INSULATION SEAMS AND BUTTING EDGES VAPOR TIGHT TO ENSURE A CONTINUOUS VAPOR BARRIER. FOR DUCTWORK ON THE EXTERIOR OF THE BUILDING, SLOPE INSULATION ON TOP OF DUCTWORK FROM A HIGH POINT ON THE CENTERLINE OF THE DUCT TO THE SIDES, WITH A MINIMUM THICKNESS OF 2" AT THE SIDES, TO ENSURE NO WATER BUILDS UP ON TOP OF DUCT. INSTALL AN ALUMINUM JACKET OR VENTURECLAD PVC JACKET ON THE OUTSIDE OF THE INSULATION.

INSULATION: DUCTWORK; EXHAUST – NO INSULATION IS REQUIRED.

INSULATION: REFRIGERANT PIPING (EXTERIOR AND INTERIOR OF BUILDING) AND CONDENSATE DRAIN PIPING (INTERIOR OF BUILDING) – 1" THICK CLOSED CELL ELASTOMERIC FOAM INSULATION, ARMAFLEX AP OR EQUAL, WITH MANUFACTURER'S RECOMMENDED ADHESIVE AT ALL JOINTS. INSULATION EXPOSED TO EXTERIOR CONDITIONS SHALL BE COVERED IN A FLEXIBLE PVC JACKET AND SEALED WEATHERPROOF.

HVAC EQUIPMENT: AS SCHEDULED ON DRAWINGS. EQUIPMENT SUBMITTED, INCLUDING THE SPECIFIED EQUIPMENT, SHALL BE FACTORY DIRECT FROM THE MANUFACTURER'S COMMERCIAL SALES OFFICE, INCLUDING FACTORY DIRECT WARRANTY AND SUPPORT. EQUIPMENT SUBMITTED FOR APPROVAL DURING THE SUBMITTAL PROCESS SHALL BE SUBMITTED COMPLETE WITH MANUFACTURER PERFORMANCE DATA AT THE DESIGN CONDITIONS. SUBMITTAL DATA SHALL BE PROVIDED FROM FACTORY AUTHORIZED REPRESENTATIVES. MANUFACTURER CATALOG STANDARD CUT SHEETS ARE NOT ACCEPTABLE AS SUBMITTALS. MANUFACTURER'S DESIGNATED DEALERS AND/OR WHOLESALERS ARE NOT A SUBSTITUTE FOR FACTORY SERVICE AND SUPPORT. MECHANICAL CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR ANY CHANGES AND/OR COSTS ASSOCIATED WITH USING PRODUCTS OTHER THAN THOSE SPECIFIED AND/OR SCHEDULED. HVAC SUPPLIER SHALL HAVE AVAILABLE FACTORY SERVICE TECHNICIANS WITHIN A 100 MILE RADIUS OF JOBSITE AND OFFER 24 HOUR/7 DAY SERVICE, MAINTENANCE, AND REPAIRS.

MOUNT TEMPERATURE SENSORS, REMOTE CONTROL PANELS, ETC., AS INDICATED ON PLANS 48" A.F.F. TO CENTER OF DEVICE UNLESS OTHERWISE NOTED OR AS REQUIRED FOR ACCESSIBILITY CODE COMPLIANCE. COORDINATE LOCATION OF SENSORS WITH CABINETRY AND OTHER SERVICES. THE TEMPERATURE SENSORS 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.

ADJUSTING AND BALANCING: ALL EQUIPMENT AND SYSTEMS SHALL BE ADJUSTED AND BALANCED SO THAT THEY PERFORM TO THE SATISFACTION OF THE ARCHITECT. AIR DISTRIBUTION SYSTEM(S) SHALL BE ADJUSTED TO THE AIR QUANTITIES INDICATED AND TO ELIMINATE ANY TEMPERATURE GRADIENTS BETWEEN ROOMS OR WITHIN ROOMS GREATER THAN 3° F. CONTRACTOR SHALL ENGAGE THE SERVICES OF A TEST AND BALANCE AGENCY TO PERFORM THE ADJUSTING AND BALANCING OF THE MECHANICAL SYSTEM(S). ALL ADJUSTING AND BALANCING WORK SHALL BE PERFORMED BY THE PROCEDURAL STANDARDS AS SET FORTH BY THE NATIONAL ENVIRONMENTAL BALANCING BUREAU (NEBB), THE ASSOCIATED AIR BALANCE COUNCIL (AABC), OR THE SHEET METAL AND AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATION (SMACNA). THE CONTRACTOR SHALL SUBMIT TAB REPORTS TO THE ENGINEER FOR REVIEW; ALL TAB REPORTS SHALL BE SUBMITTED ON FORMS AS SET FORTH BY THE ORGANIZATIONS LISTED ABOVE. ALL AIR SYSTEMS WITH ECONOMIZERS SHALL BE CHECKED TO ENSURE PROPER OPERATION AND TO VERIFY THAT THE POWER EXHAUST IS RELIEVING A MINIMUM OF 90% OF UNIT TOTAL AIRFLOW AT THE E.S.P. REQUIRED FOR THAT AIRFLOW THROUGH THE RETURN AIR DUCTWORK.

ALL SAFETY DEVICES SHALL BE CHECKED FOR PROPER OPERATION.

PRIOR TO COMPLETION AND FINAL ACCEPTANCE OF THE FACILITY, FURNISH TO THE ENGINEER CERTIFICATION THAT THE MECHANICAL SYSTEMS HAVE BEEN TESTED AND THAT THE INSTALLATION AND PERFORMANCE OF THOSE SYSTEMS CONFORM TO THE CONTRACT DOCUMENTS.

RECORD AND AS-BUILT DRAWINGS: MAINTAIN AT THE JOB SITE A SET OF CONTRACT RECORD DRAWINGS KEPT CURRENT BY INDICATING THEREON ALL CHANGES, SUBSTITUTIONS, ETC., BETWEEN WORK AS SPECIFIED AND AS INSTALLED. FURNISH THE ENGINEER WITH ONE (1) COMPLETE SET OF ELECTRONIC DRAWING FILES SHOWING INSTALLED LOCATION, SIZE, ETC., OF ALL WORK AND MATERIAL IN .PDF AND .DWG FORMAT. SHOW ON RECORD DRAWINGS ACTUAL AIR QUANTITIES, WATER FLOW RATES, VALVE AND/OR DAMPER POSITIONS AFTER BALANCING, ETC.; ALSO SHOW, BY ACTUAL DIMENSION, LOCATION OF ALL UNDERGROUND WORK. FOR EACH PIECE OF EQUIPMENT, PROVIDE THE OWNER THREE (3) SETS OF: (A) MANUFACTURER'S PRINTED CATALOG PAGES, OPERATING AND MAINTENANCE INSTRUCTIONS, WIRING AND CONNECTION DIAGRAM, ETC.; (B) TEMPERATURE-HUMIDITY AND MOTOR INTERLOCK CONTROL AND WIRING DIAGRAMS SHOWING OPERATION INSTRUCTIONS FOR, AND NORMAL POSITION OF, EACH MOTOR AND CONTROLLER, CONTROL VALVE, THERMOSTAT, ETC.; AND (C) LUBRICATION CHART. BIND THIS INFORMATION INTO 8-1/2" x 11" BOOKLETS. ALL THREE (3) SETS SHALL BE ASSEMBLED IN HARDBACK BINDERS.

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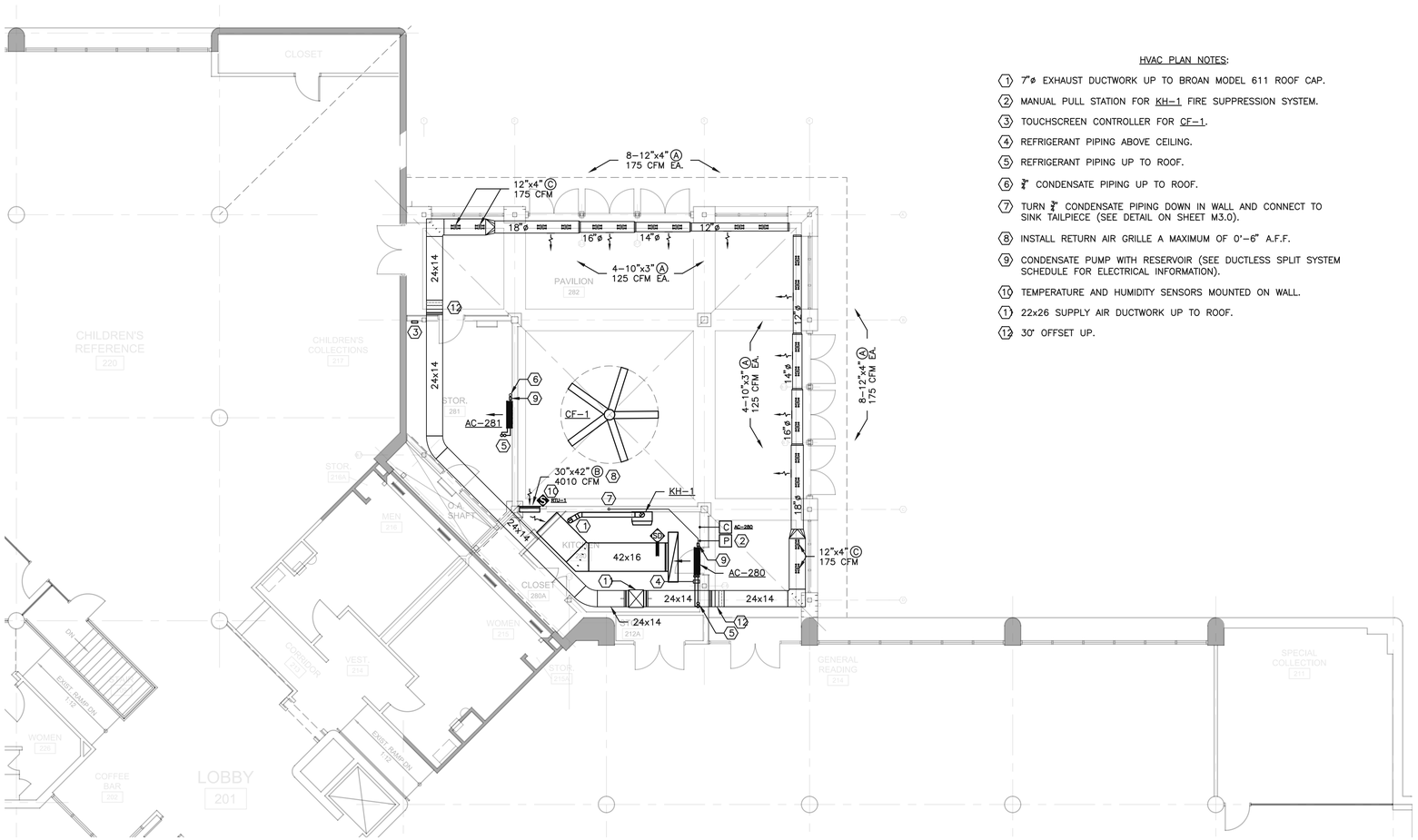
HVAC GENERAL NOTES

SHEET NO.

M0.2



HVAC FLOOR PLAN

1/8" = 1' - 0"

HVAC PLAN NOTES:

1. 7"ø EXHAUST DUCTWORK UP TO BROAN MODEL 611 ROOF CAP.
2. MANUAL PULL STATION FOR KH–1 FIRE SUPPRESSION SYSTEM.
3. TOUCHSCREEN CONTROLLER FOR CF–1.
4. REFRIGERANT PIPING ABOVE CEILING.
5. REFRIGERANT PIPING UP TO ROOF.
6. ¾" CONDENSATE PIPING UP TO ROOF.
7. TURN ¾" CONDENSATE PIPING DOWN IN WALL AND CONNECT TO SINK TAILPIECE (SEE DETAIL ON SHEET M3.0).
8. INSTALL RETURN AIR GRILLE A MAXIMUM OF 0'–6" A.F.F.
9. CONDENSATE PUMP WITH RESERVOIR (SEE DUCTLESS SPLIT SYSTEM SCHEDULE FOR ELECTRICAL INFORMATION).
10. TEMPERATURE AND HUMIDITY SENSORS MOUNTED ON WALL.
11. 22x26 SUPPLY AIR DUCTWORK UP TO ROOF.
12. 30" OFFSET UP.

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HVAC FLOOR PLAN

SHEET NO.

M1.0

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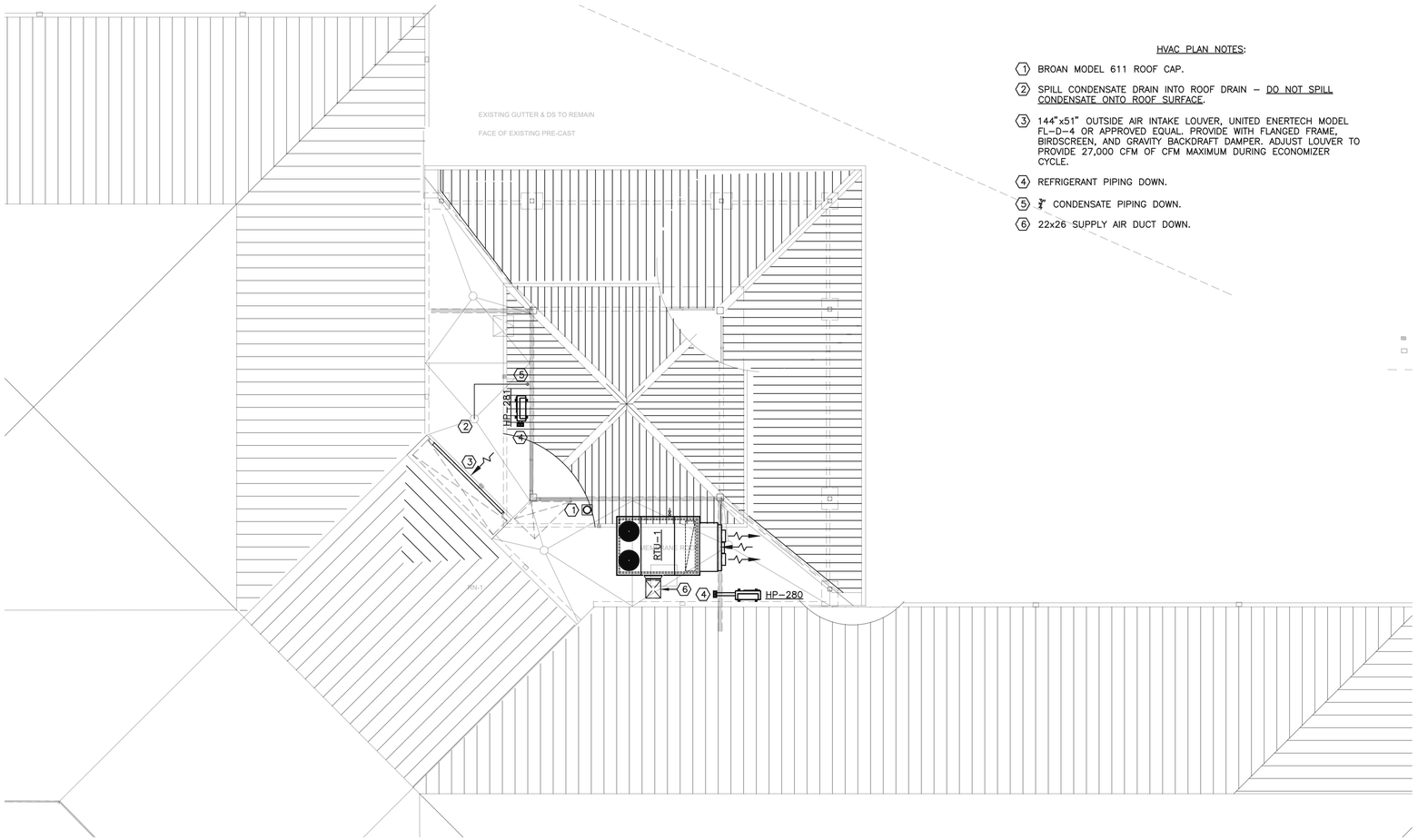

HVAC PLAN NOTES:

1. BROAN MODEL 611 ROOF CAP.
2. SPILL CONDENSATE DRAIN INTO ROOF DRAIN – DO NOT SPILL CONDENSATE ONTO ROOF SURFACE.
3. 144"x51" OUTSIDE AIR INTAKE LOUVER, UNITED ENERTECH MODEL FL-D-4 OR APPROVED EQUAL. PROVIDE WITH FLANGED FRAME, BIRDSCREEN, AND GRAVITY BACKDRAFT DAMPER. ADJUST LOUVER TO PROVIDE 27,000 CFM OF CFM MAXIMUM DURING ECONOMIZER CYCLE.
4. REFRIGERANT PIPING DOWN.
5. ¾" CONDENSATE PIPING DOWN.
6. 22x26 SUPPLY AIR DUCT DOWN.

N

HVAC ROOF PLAN

1/8" = 1' - 0"

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HVAC ROOF PLAN

SHEET NO.

M1.1

PACKAGE A/C UNIT SCHEDULE (HEAT PUMP)

MARK	INDOOR FAN			COOLING (MBH)					HOT GAS REHEAT (HGRH)							HEATING			AUX. HEAT (KW.)	ELECTRICAL			MANUFAC.	MODEL NUMBER	O.A. CFM	MINIMUM POWERED EXHAUST (CFM)	EER @ ARI	COP @ ARI	REFR.	WEIGHT LBS.	NOMINAL TONS	COMMENTS
	CFM–TOTAL	E.S.P. (IN. H2O)	HP–EA.	TOTAL	SENS.	E.A.D.B. (°F)	E.A.W.B. (°F)	AMB. (°F)	CAPACITY (MBH)	E.A.D.B. (°F)	E.A.W.B. (°F)	EVAP COIL E.A.D.B. (°F)	EVAP COIL E.A.W.B. (°F)	HGRH COIL L.A.D.B. (°F)	HGRH COIL L.A.W.B. (°F)	MBH	E.A.D.B. (°F)	AMB. (°F)		VOLTS/PH	MCA	MOCP									
RTU–1	4500	0.50	2.90	153.2	104.9	75.7	64.4	95.0	78.1	73.0	64.0	50.2	49.5	65.3	56.1	94.8	63.6	47.0	36.0	460/3	96.0	100.0	TRANE	WHK180A4S0N**0000A0A0A0	490	4050	11.7	3.6	R–454B	2306	15.00	SEE NOTES

NOTES:

1. PROVIDE PROGRAMMABLE THERMOSTATS FOR EACH. THERMOSTATS ARE TO HAVE NIGHT SETBACK MODE FOR BOTH SUMMER AND WINTER OPERATION, AUTO–CHANGEOVER, AND SCHEDULING FOR CONTROL DURING NON–USE DAYS. COORDINATE PROGRAMMING AND SETTINGS WITH OWNER. PROVIDE NECESSARY TRAINING AND MANUALS FOR THERMOSTAT OPERATION AND PROGRAMMING.
2. PROVIDE UNIT WITH MICRO–METL MODEL PCED–PR20DCA–DTOB–4V2 MODULATING ENTHALPY ECONOMIZER/POWERED EXHAUST COMBINATION; POWERED EXHAUST SHALL BE CAPABLE OF EXHAUSTING A MINIMUM OF 4050 CFM OF AIR @ 0.25" E.S.P. UNIT SHALL BE 2.0 HP, 460 VOLTS/3–PHASE, 4.8 MCA, 6.2 MOCP (THIS IS A SEPARATE POWER CONNECTION FROM THE RTU SINGLE–POINT POWER CONNECTION). SUBMIT POWERED EXHAUST FAN DATA FOR REVIEW.
3. PROVIDE UNIT WITH HOT GAS REHEAT (HGRH), LOUVERED HAIL GUARDS, LOW AMBIENT OPERATION DOWN TO 0° F, NON–HINGED ACCESS PANELS, AND WALL–MOUNTED HUMIDITY SENSOR.
4. PROVIDE ANTI–SHORT CYCLE TIMER FOR UNIT.
5. PROVIDE UNIT WITH 14" HIGH INSULATED ROOF CURB. ROOF CURB SHALL MATCH ROOF SLOPE AND CONSTRUCTION.
6. PROVIDE SMOKE DETECTORS IN THE RETURN DUCTWORK. SMOKE DETECTORS ARE TO BE PROVIDED AND WIRED BY THE ELECTRICAL CONTRACTOR, AND INSTALLED BY THE MECHANICAL CONTRACTOR. SMOKE DETECTORS SHALL SHUT DOWN THE UNIT UPON DETECTION OF PRODUCTS OF COMBUSTION IN THE AIRSTREAM.
7. PROVIDE UNIT WITH 4" THICK PLEATED MERV 8 FILTERS.
4. HEATING VALUES ARE INTEGRATED HEATING VALUES.
5. PROGRAMMABLE THERMOSTATS ARE TO PROVIDE AUXILIARY HEAT CONTROL SUCH THAT ELECTRIC AUXILIARY HEAT WILL NOT OPERATE IN CONJUNCTION WITH CONDENSER UNLESS REQUIRED FOR CONDENSER COIL DEFROST.

HIGH VOLUME LOW SPEED FAN SCHEDULE

MARK	MANUFAC.	TYPE	MODEL #	CFM	MAX. COVERAGE AREA (FT²)	FAN RPM	AVG. AIR SPEED (FPM)	INTEGRATED EFFICIENCY (CFM/W)	CFEI @ 40% SPEED	CFEI @ 100% SPEED	INPUT POWER (WATTS)	VOLTS/PH	TOTAL SOUND PRESSURE (dBA)	MOUNTING HEIGHT	WEIGHT (LBS.)	COMMENTS
CF–1	GREENHECK	HIGH VOLUME LOW SPEED	DC–5–12–13LV	50,000	12,000	103	261	–	3.85	1.65	283	115/1	48	21'–8"	105	SEE NOTES

NOTES:

1. HVLS FAN SHALL BE CONTROLLED VIA STANDARD TOUCHSCREEN CONTROLLER (LOCATE CONTROLLER IN STORAGE ROOM 280).
2. PROVIDE HVLS FAN IN MILL FINISH WITH NO COLOR – CUSTOM COLORS CAN BE PROVIDED BY MANUFACTURER AT OWNER'S REQUEST.
3. PROVIDE HVLS FAN WITH WOOD BEAM MOUNTING KIT, 3–FOOT DROP LENGTH, POWER WIRING PIGTAIL, PLUG–AND–PLAY NETWORK COMMUNICATION WIRING PIGTAIL, FIRE ALARM WIRING PIGTAIL, LOW VOLTAGE (24 VDC/VAC OR 115 VAC) NORMALLY CLOSED ELECTROMECHANICAL FIRE ALARM RELAY, BRAIDED GALVANIZED STEEL SAFETY CABLE, BRAIDED GALVANIZED STEEL GUY WIRES, EASY–INSTALL GRIPPLE HARDWARE FOR SAFETY CABLE AND GUY WIRES, NEMA–1 TOGGLE SWITCH (DISCONNECT), 100 FEET OF SHIELDED TWISTED PAIR (STP) CAT–5e CONTROL CABLE, AND ADVANCED TOUCHSCREEN CONTROL PANEL WITH RECESSED ENCLOSURE AND BACnet MS/TP INTEGRATION.

AIR PURIFICATION SCHEDULE

SERVING MARK	SERVING	CFM	PRESSURE DROP (IN. H20)	MANUFAC.	MODEL NUMBER	QUANTITY	TOTAL WATTS	VOLTAGE	COMMENTS
RTU–1	282 EAST PORCH	4,500	0.05	GLOBAL PLASMA SOLUTIONS	GPS–FC48–AC	1	10	24VAC	SEE NOTES

NOTES:

1. CONTRACTOR TO MOUNT UNITS WITHIN AC UNIT PER MANUFACTURER'S RECOMMENDATIONS. CONTRACTOR TO POWER GPS UNIT FROM RESPECTIVE UNIT'S CONTROLS TRANSFORMER (PROVIDE IF NOT A MFG'S OPTION) PROVIDE A VISUAL ALARM ADJACENT TO RA GRILL THAT WOULD INDICATE A FAILURE.
2. BI–POLAR IONIZATION SYSTEMS REQUIRING PERISHABLE GLASS TUBES ARE NOT ACCEPTABLE. CONTRACTOR IS TO ENSURE THAT ANY SUBSTITUTIONS ARE TO MEET INSTALLATION SIZE CONSTRAINTS AND THAT THE REQUIREMENTS OF ASHRAE 62.1–2007 IAQ METHOD ARE MET.
3. NOTE THAT THE AIR PURIFICATION UNITS AS SPECIFIED ARE REQUIRED, NOT OPTIONAL. IF THEY ARE NOT PROVIDED, OUTSIDE AIR QUANTITIES WILL NEED TO INCREASE ALONG WITH EQUIPMENT CAPACITIES AND SIZES.

DUCTLESS SPLIT SYSTEM A/C UNIT SCHEDULE

MARK	COOLING (MBH)			HEATING			SYSTEM ELECTRICAL			MANUFAC.	MODEL NUMBER		SEER2	HSPF2	REFR.	NOMINAL TONS	COMMENTS
	TOTAL	E.A.D.B. (°F)	AMB. (°F)	MBH	E.A.D.B. (°F)	AMB. (°F)	VOLTS/PH	MCA	MOCP		INDOOR UNIT	OUTDOOR UNIT					
AC–280 & HP–280	18.0	80.0	95.0	19.0	70.0	47.0	208–230/1	15.0	20.0	LG	KNSAC181A	KUSAC181A	21.0	15.8	R–32	1.50	SEE NOTES
AC–281 & HP–281	9.0	80.0	95.0	10.9	70.0	47.0	208–230/1	12.0	15.0	LG	KNUAB091A	KUSAB091A	23.8	10.9	R–32	0.75	SEE NOTES

NOTES:

1. PROVIDE EACH SYSTEM WITH SIMPLE WALL–MOUNTED REMOTE CONTROLLER AND BACnet AND MODBUS INTERFACE.
2. SIZE REFRIGERANT LINES PER MANUFACTURER'S RECOMMENDATIONS PRIOR TO CONSTRUCTION. ROUTE THE SHORTEST AND MOST DIRECT ROUTE POSSIBLE.
3. PROVIDE INDOOR UNITS WITH LITTLE GIANT MODEL VCMA–20ULS–PRO CONDENSATE DRAIN PUMP (115V, 1.50 A, 93.0 W) WITH RESERVOIR. ENABLE PUMP RESERVOIR HIGH LEVEL SWITCH TO SHUT DOWN CORRESPONDING INDOOR UNIT IN CASE OF HIGH CONDENSATE LEVEL IN RESERVOIR.

KITCHEN HOOD WITH INTERNAL FAN SCHEDULE

MARK	MANUFAC.	MODEL NUMBER	ELECTRICAL			EXHAUST FAN		COMMENTS
			VOLTS/PH	FLA	MOCP	CFM	S.P.	
KH–1	DENLAR	DS–30–D	115/1	1.2	15.0	40	0.10	SEE NOTES

NOTES:

1. HOOD TO BE PROVIDED WITH A PRE–ENGINEERED, PRE–INSTALLED FIRE SUPPRESSION SYSTEM WITH A LOW pH CHEMICAL AMEREX 600 SUPPRESSION AGENT.
2. HOOD TO BE PROVIDED WITH AN AUDIBLE BUZZER (90dB) AND BROAN MODEL 643 ROOF JACK.
3. HOOD TO BE PROVIDED WITH FAST RESPONSE 250° F MECHANICAL LINKS.
4. HOOD TO BE PROVIDED WITH A DUAL ELEMENT DISCONNECT (3/4" NPT NATURAL GAS AND ELECTRIC) AND MANUAL PULL STATION.
5. MOUNT WITH FACE OF HOOD AT A MINIMUM OF 18" ABOVE STOVE TO A MAXIMUM OF 26" ABOVE STOVE.

REGISTERS, GRILLES, & DIFFUSERS SCHEDULE

MARK	MANUFAC.	DESCRIPTION	MODEL/CAT#	AIR CONTROL	MATERIAL	FINISH	COMMENTS
A	TITUS	SPIRAL DUCT MOUNT SUPPLY	S300FS	ASD	ALUMINUM	#26 WHITE	SEE NOTES
B	TITUS	SIDEWALL RETURN/EXHAUST GRILLE	355RL	OBD	STEEL	#26 WHITE	SEE NOTES
C	TITUS	SIDEWALL SUPPLY GRILLE	272RS	OBD	STEEL	#26 WHITE	SEE NOTES

NOTES:

1. SIZE SHOWN ON THE DRAWINGS ARE NECK SIZES. MOUNTING TO BE SURFACE OR LAY IN AS REQUIRED.
2. SPIRAL DUCT MOUNT SUPPLY GRILLES TO BE DOUBLE DEFLECTION WITH ¾" BLADE SPACING.
3. PROVIDE SIDEWALL SUPPLY GRILLES WITH TITUS MODEL AG–35 DAMPERS. PROVIDE SIDEWALL RETURN/EXHAUST WITH TITUS MODEL AG–15 DAMPERS.
4. SIDEWALL SUPPLY GRILLES TO HAVE ¾" BLADE SPACING AND BE DOUBLE DEFLECTION.
5. SIDEWALL RETURN/EXHAUST GRILLES TO HAVE ½" BLADE SPACING AND BE SINGLE DEFLECTION.
5. REGISTERS, GRILLES, AND DIFFUSERS ARE PROVIDED WITH #26 WHITE FINISH FROM FACTORY; THEY MAY BE FIELD PAINTED IN ANY COLOR SELECTED BY ARCHITECT OR OWNER.

MINIMUM DUCT SEAL LEVEL

DUCT LOCATION	DUCT TYPE			
	SUPPLY (< OR = 2" W.G.)	SUPPLY (> OR = 2" W.G.)	EXHAUST	RETURN
OUTDOORS	SMACNA SEAL CLASS A	SMACNA SEAL CLASS A	SMACNA SEAL CLASS C	SMACNA SEAL CLASS A
UNCONDITIONED SPACE	SMACNA SEAL CLASS B	SMACNA SEAL CLASS A	SMACNA SEAL CLASS C	SMACNA SEAL CLASS B
CONDITIONED SPACES (INCLUDING RETURN AIR PLENUMS)	SMACNA SEAL CLASS C	SMACNA SEAL CLASS B	SMACNA SEAL CLASS B	SMACNA SEAL CLASS C

NOTES:

SMACNA SEAL CLASS A: ALL TRANSVERSE JOINTS, LONGITUDINAL SEAMS, AND DUCT WALL PENETRATIONS TO BE SEALED. NON UL–181A OR UL–181B (OR OTHER INDEPENDANT TESTING LABORATORY) CERTIFIED PRESSURE SENSITIVE TAPE SHALL NOT BE USED AS THE PRIMARY SEALANT.

SMACNA SEAL CLASS B: ALL TRANSVERSE JOINTS AND LONGITUDINAL SEAMS TO BE SEALED. NON UL–181A OR UL–181B (OR OTHER INDEPENDANT TESTING LABORATORY) CERTIFIED PRESSURE SENSITIVE TAPE SHALL NOT BE USED AS THE PRIMARY SEALANT.

SMACNA SEAL CLASS C: TRANSVERSE JOINTS ONLY

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HVAC SCHEDULES

SHEET NO.

M2.0

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CONSULTING ENGINEERS
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(423) 267-9718 Fax: (423) 265-7879
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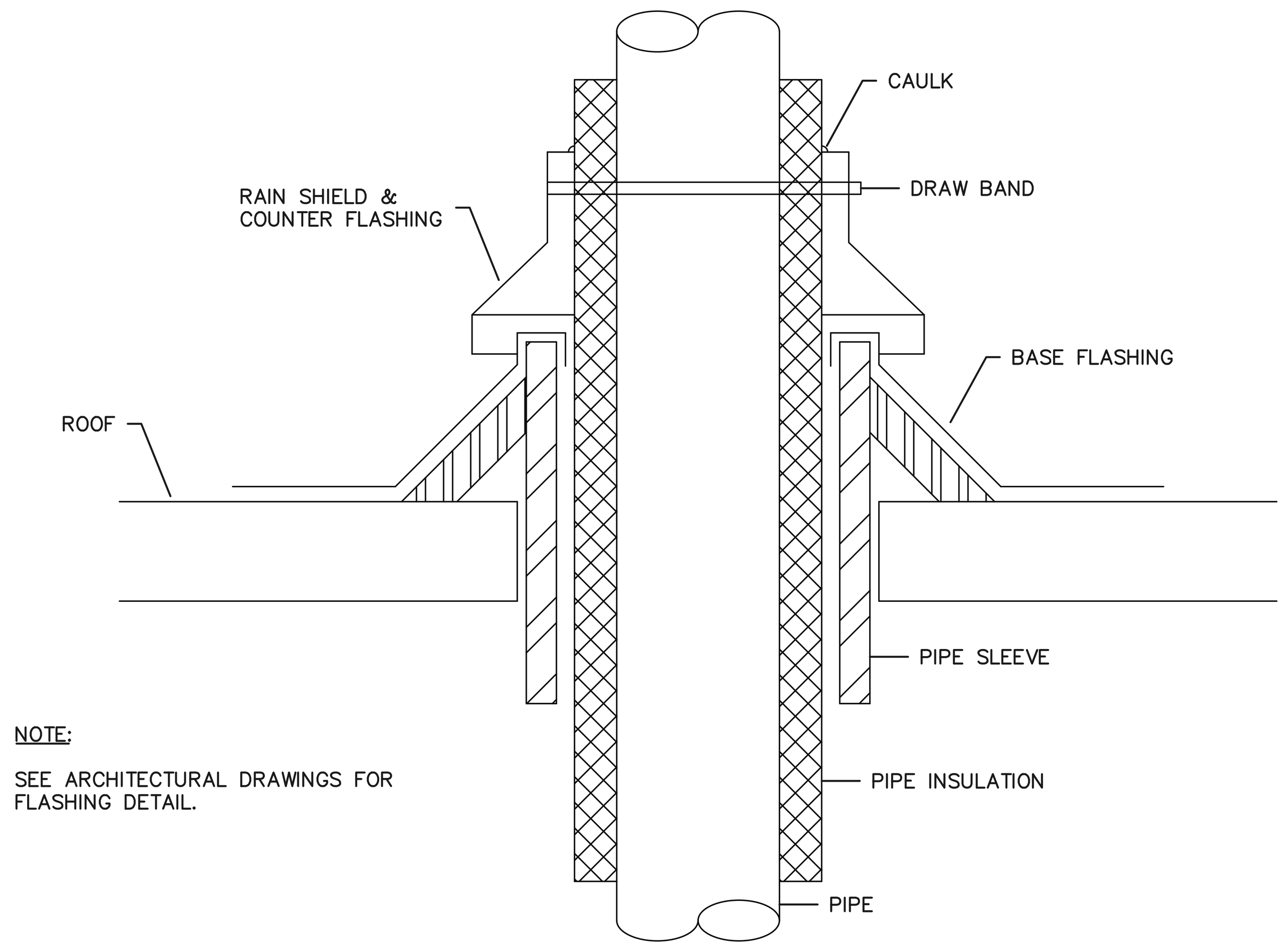
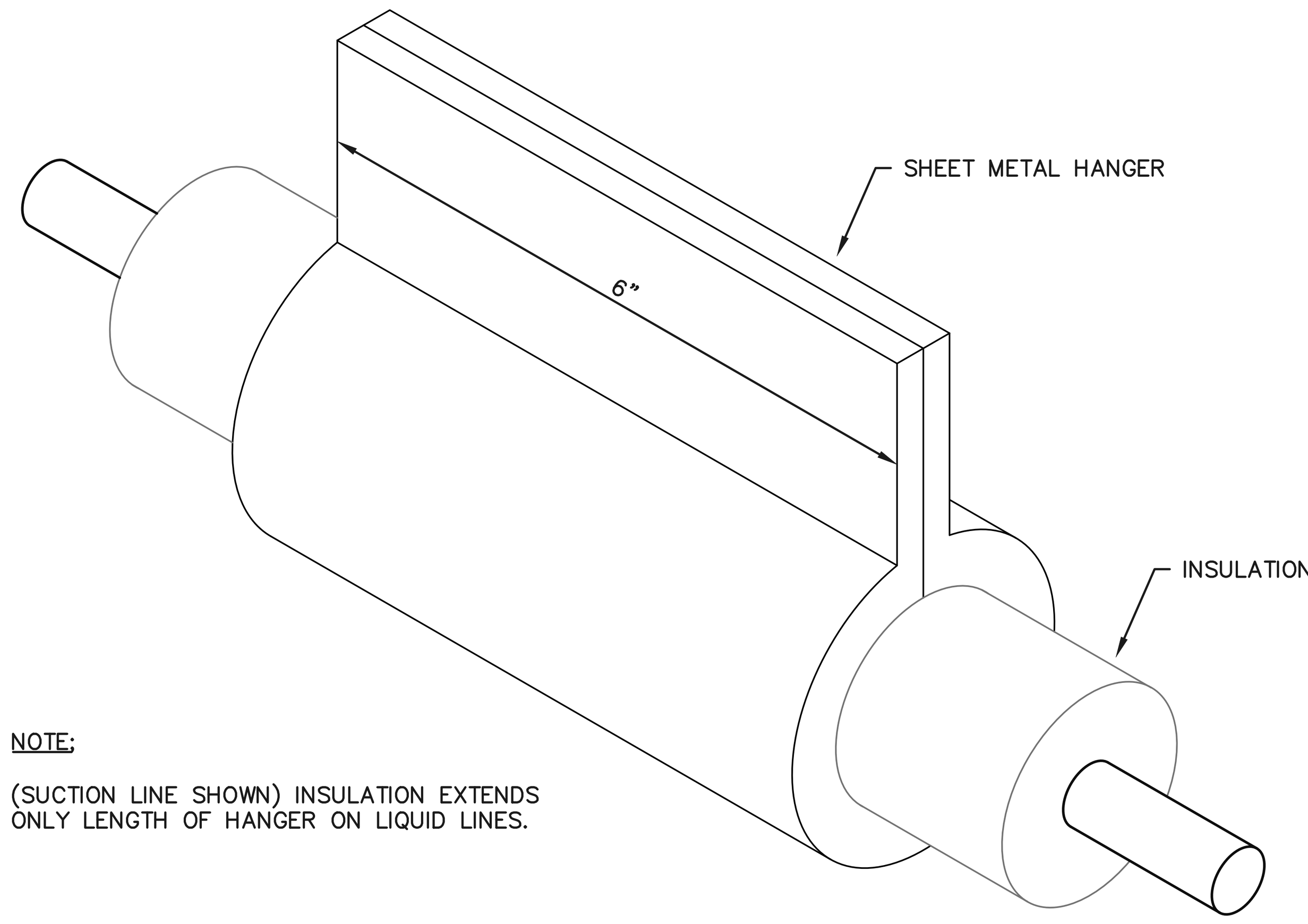


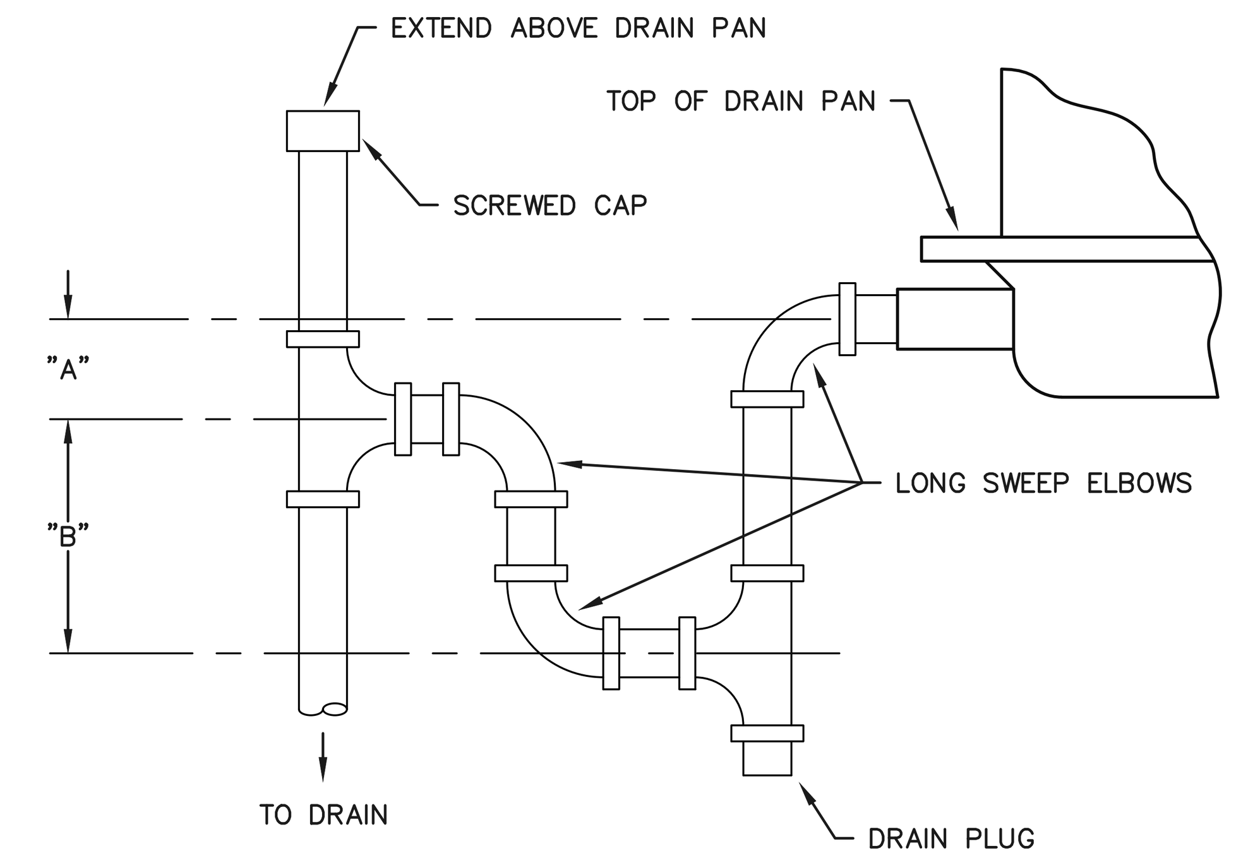
NOTE:
SEE ARCHITECTURAL DRAWINGS FOR FLASHING DETAIL.

WATERPROOFING DETAIL FOR REFRIGERANT PIPE PASSING THROUGH ROOF
NO SCALE



NOTE:
(SUCTION LINE SHOWN) INSULATION EXTENDS ONLY LENGTH OF HANGER ON LIQUID LINES.

DETAIL OF REFRIGERANT LINE HANGERS
NO SCALE



"A" DIMENSION TO BE A MINIMUM OF ½"

"B" DIMENSION TO BE ½" PLUS TOTAL STATIC PRESSURE

NOTES:
1. PROVIDE ⅜" VALVED PRIMING LINE FOR FLOOR DRAINS LOCATED IN PLENUMS.
2. CONDENSATE DRAIN LINE SHALL BE FULL UNIT CONDENSATE DRAIN CONNECTION SIZE (¾" MINIMUM).

DRAIN TRAP FOR A.C. UNITS
NO SCALE

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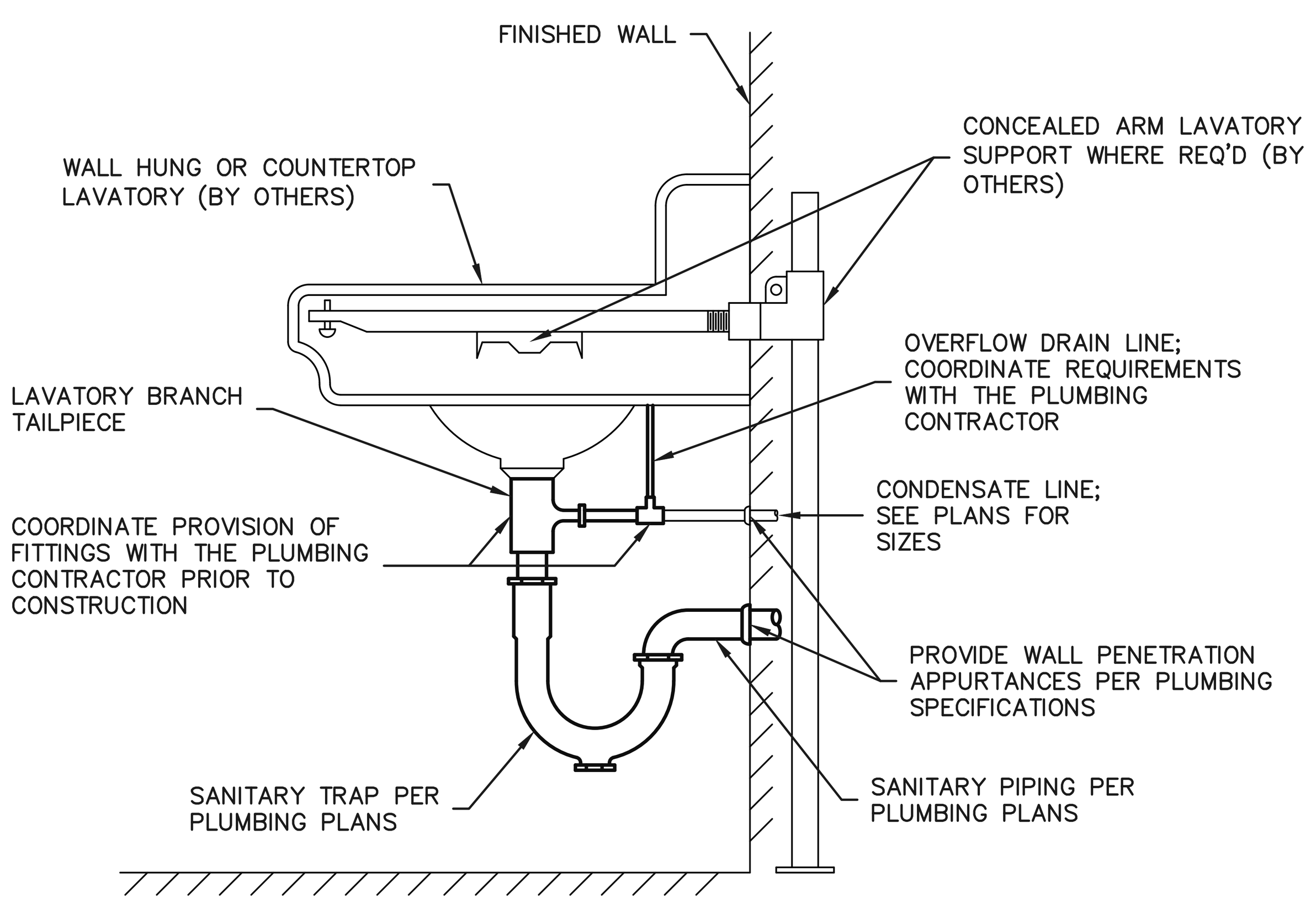
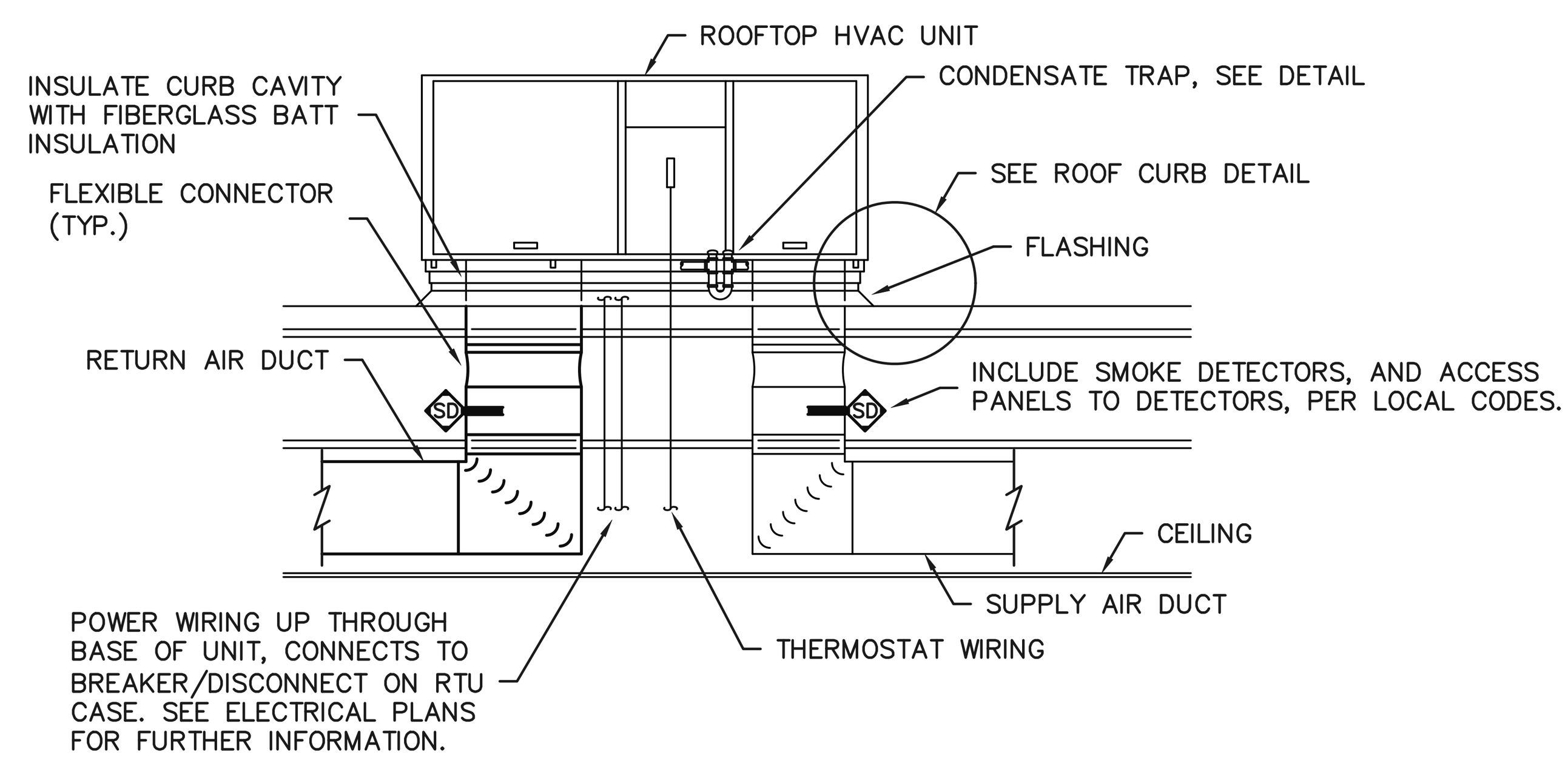
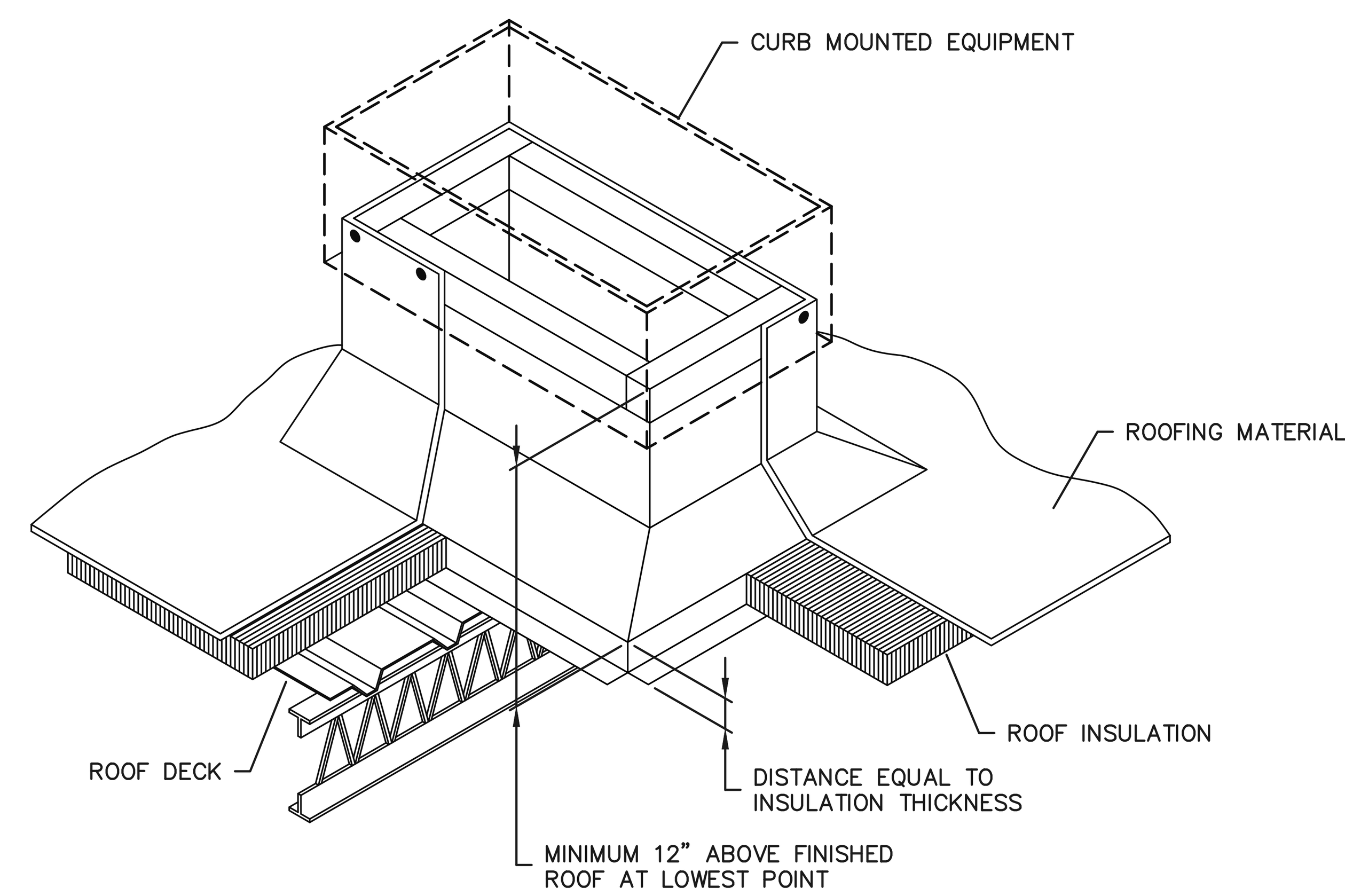


HVAC CONDENSATE TERMINATION DETAIL
NO SCALE

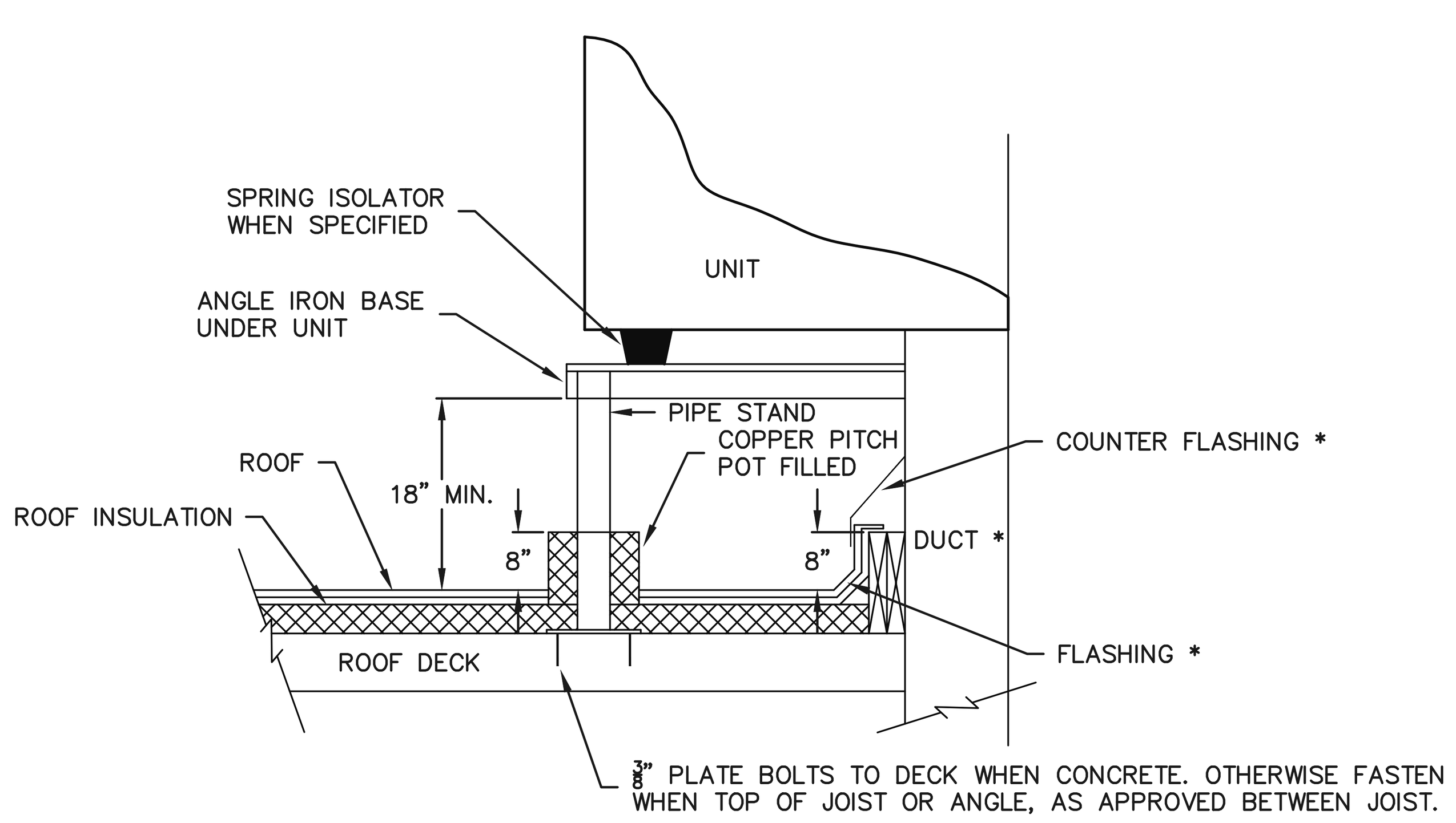


NOTES:
1. PROVIDE OPENING THROUGH ROOF AND ROOF DECK INSULATION NO LARGER THAN REQUIRED TO ALLOW DUCTS TO PASS THROUGH. REFER TO PLANS FOR DUCT SIZES. TRANSITION AS REQUIRED IN ROOF CURB TO RTU SUPPLY AND RETURN OPENINGS.
2. PROVIDE SLOPED ROOF CURB TO INSTALL ROOFTOP UNIT LEVEL TO ENSURE PROPER DRAINAGE. COORDINATE ROOF SLOPE WITH ARCHITECTURAL DRAWINGS. FLASH AND COUNTERFLASH ROOF PENETRATIONS, ETC., TO ENSURE WEATHER TIGHT INSTALLATION.

ROOFTOP UNIT WITH DUCTWORK DETAIL
NO SCALE



TYPICAL ROOF CURB DETAIL
NO SCALE



NOTE:
* ITEMS TO BE FURNISHED IF DUCTWORK REQUIRED FROM UNIT TO SPACE BELOW.

TYPICAL ROOF EQUIPMENT SUPPORT DETAIL
NO SCALE

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GEORGIA REGISTERED PROFESSIONAL ENGINEER No. PE009337 No. 031092 MATTHEW P. BREEMS

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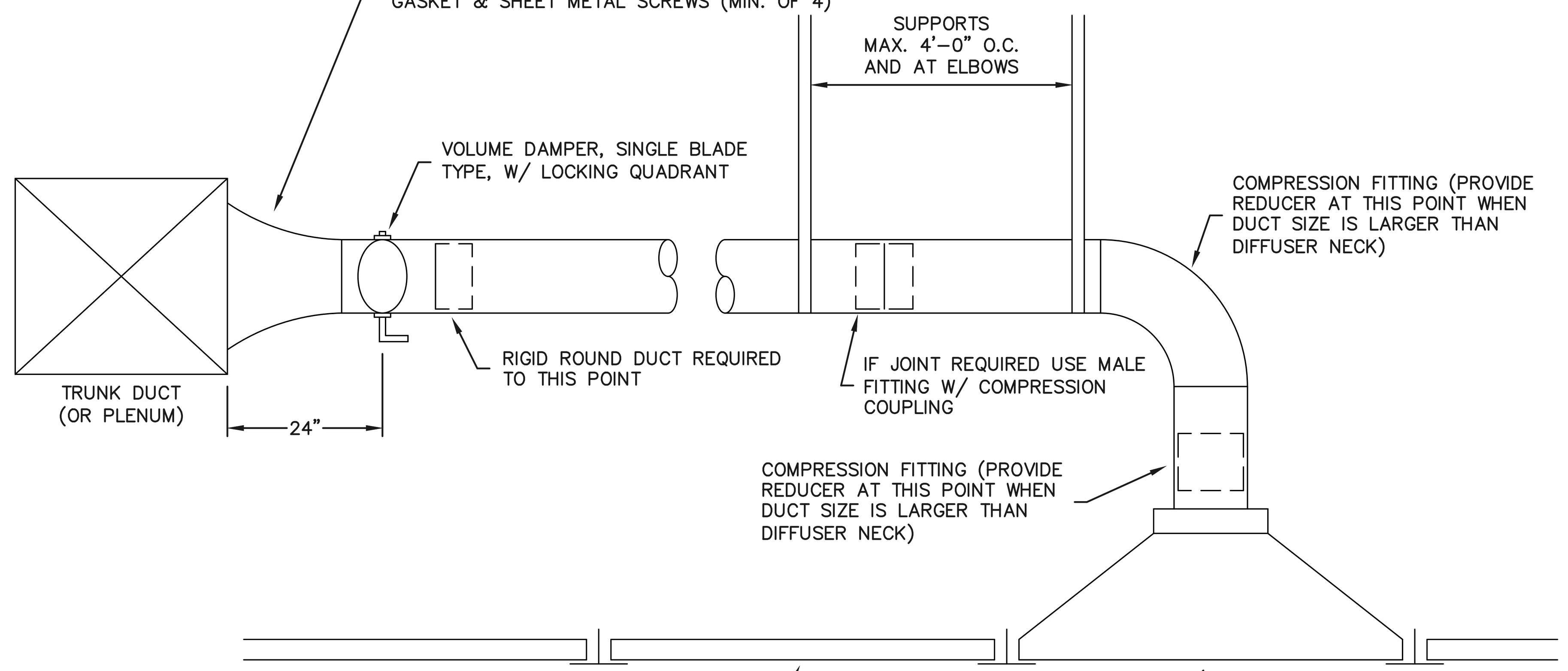
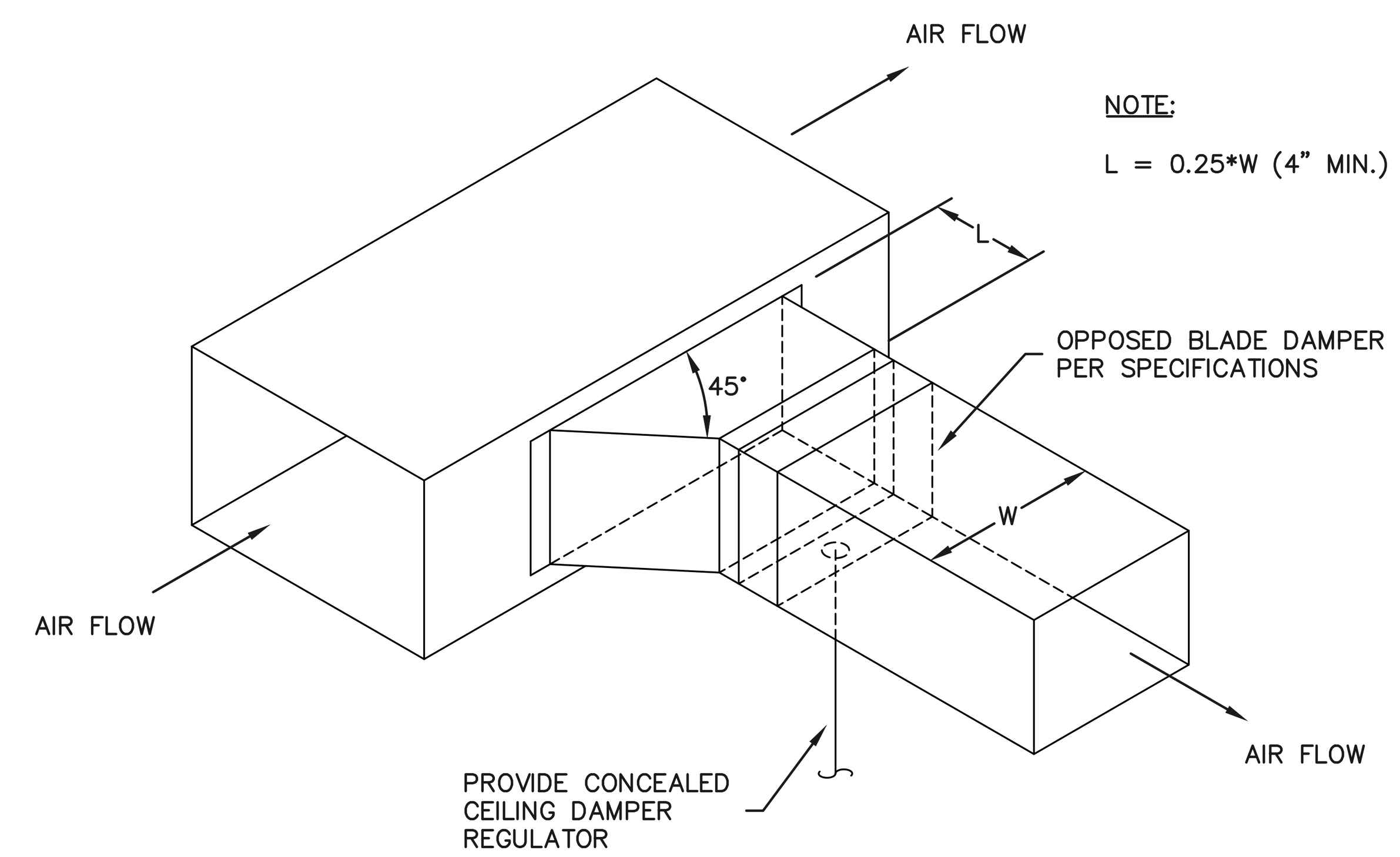


NOTE:

MAX. FLEXIBLE DUCT LENGTH 6'-0" (INCLUDING VERTICAL DROP)

DETAIL – ROUND DUCT BRANCH TAKE-OFF

NO SCALE

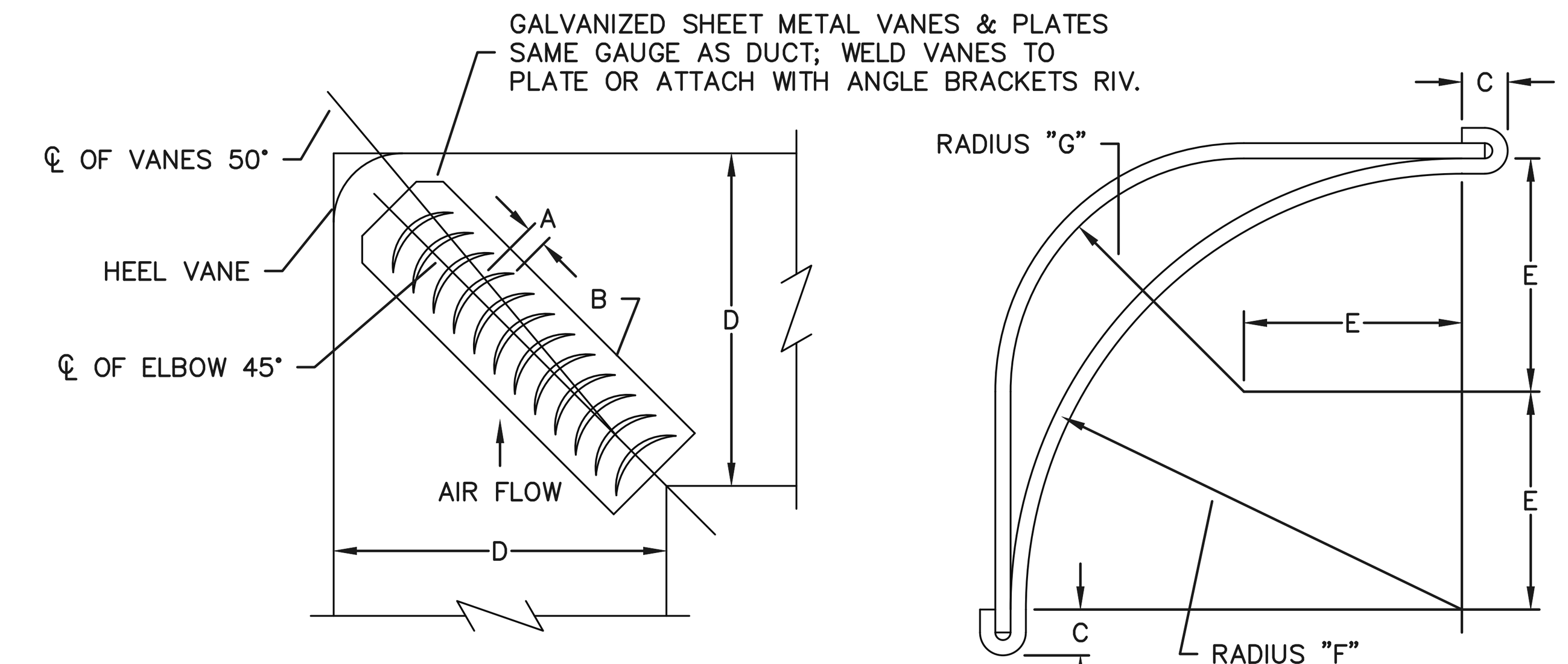


NOTE:

L = 0.25*W (4" MIN.)

BRANCH DUCT TAKE-OFF @ SUPPLY MAIN RECTANGULAR BRANCH DUCT

NO SCALE



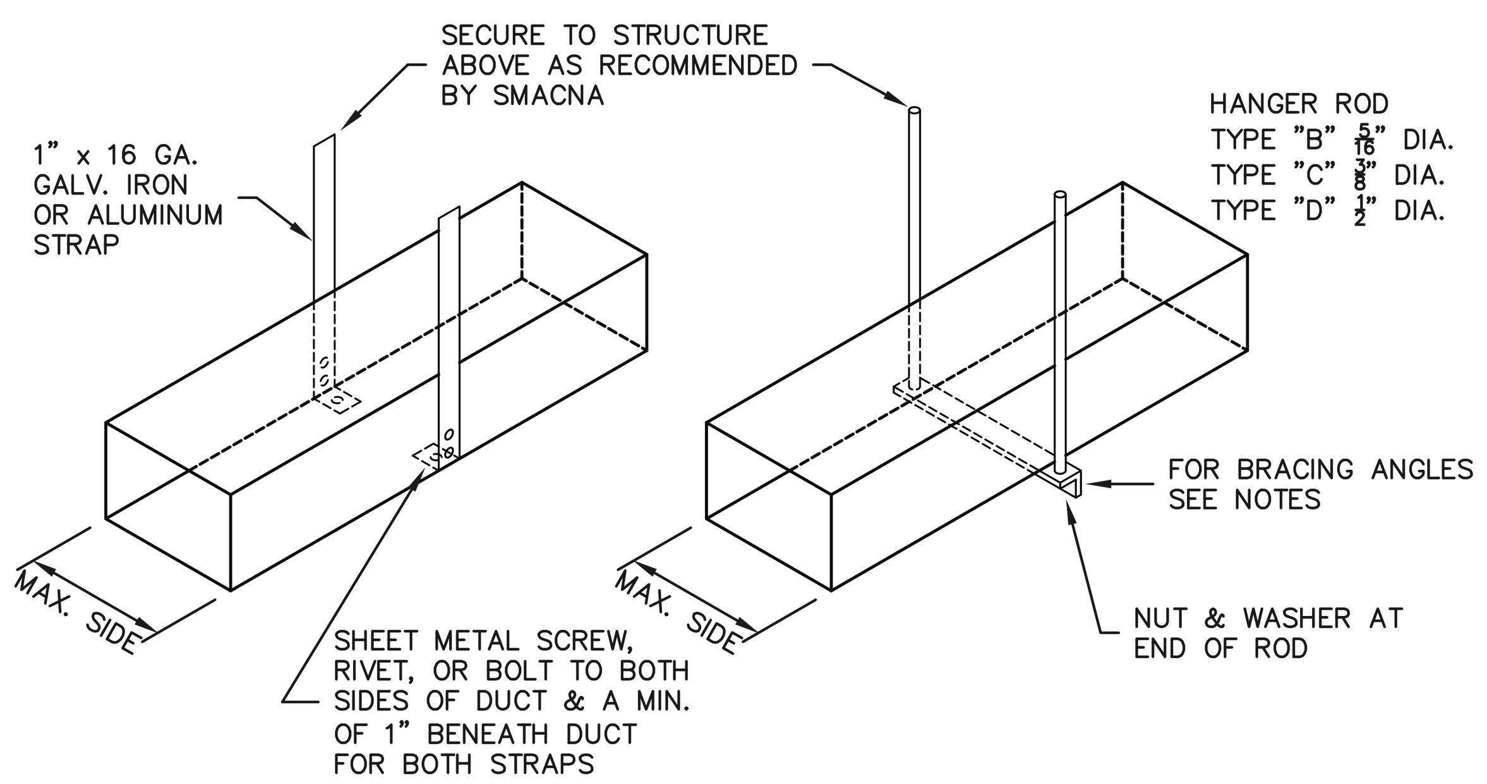
VANES PRE-ASSEMBLED ON RUNNERS IN ALL CASES

PROVIDE 1 STAY FOR DUCTS 12" TO 120" WIDE & 2 STAYS AT ⅓ POINTS FOR 120" & ABOVE

D & D UP TO 24"	A=1½"	B=5"	TYPE "B" VANES
D & D OVER 24"	A=3¼"	B=9"	TYPE "A" VANES
TYPE "A"	C=½"	E=2¼"	RADIUS "F"=4½", RADIUS "G"=2¼"
TYPE "B"	C=¼"	E=1"	RADIUS "F"=2", RADIUS "G"=1"

SQUARE ELBOW DETAIL

NO SCALE



TYPE "A"

(8 FT. MAX. HANGER SPACING. ALSO PROVIDE 3 HANGERS AT EACH TAKE-OFF OR BRANCH.)

TYPE "B", "C", & "D"

(8 FT. MAX. HANGER SPACING)

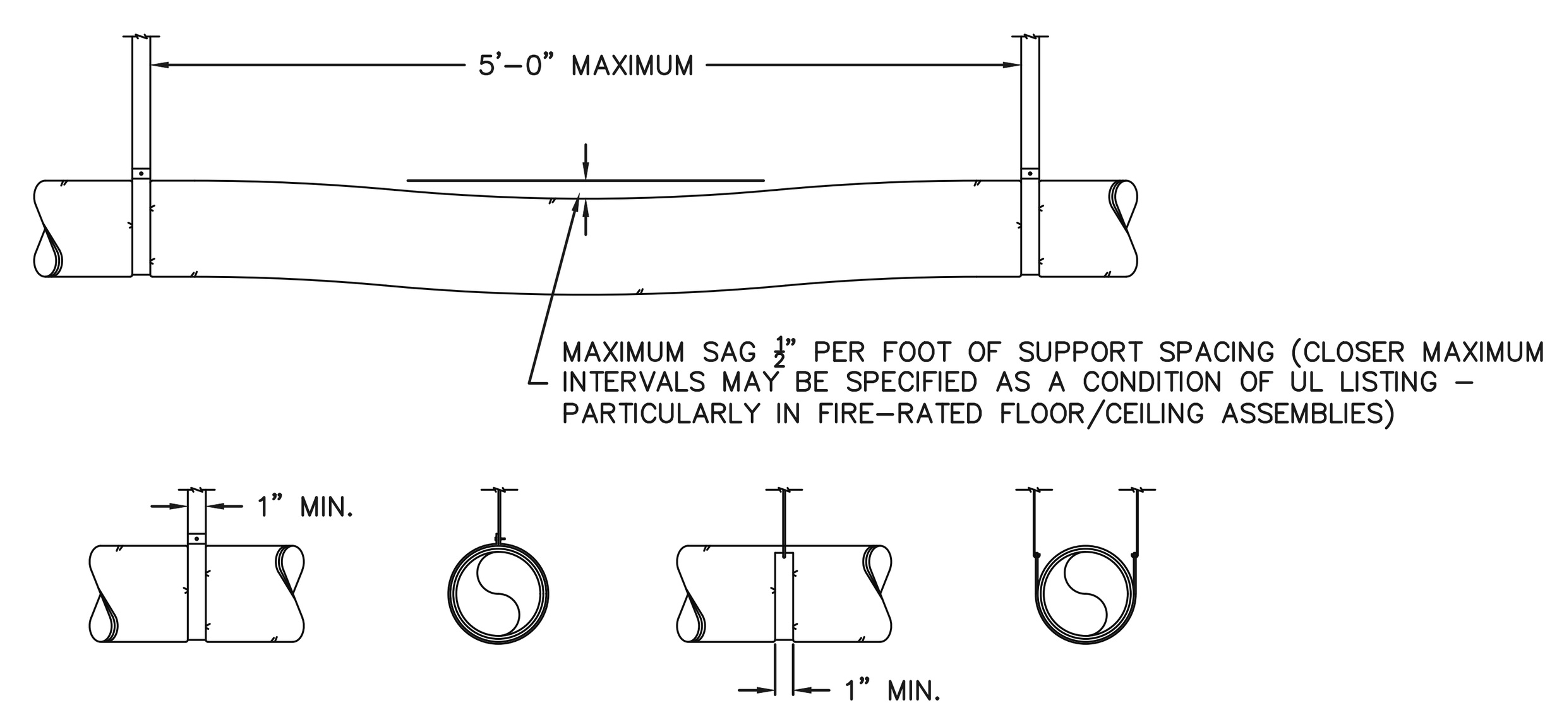
DUCT HANGER SCHEDULE	
DUCT DIMENSIONS (INCHES)	TYPE HANGER
UP THRU 12	A
13 THRU 18	A
19 THRU 30	A/B
31 THRU 42	B
43 THRU 54	B
55 THRU 60	B
61 THRU 84	C
85 THRU 96	C
OVER 96	D

NOTES:

1. FOR SEVERAL DUCTS ON ONE HANGER, TYPE "B", "C", OR "D" MAY BE USED. SIZE OF HANGER WILL BE SELECTED ON SUM OF DUCT WIDTHS EQUAL TO MAXIMUM WIDTH OF DUCT HANGER SCHEDULE.
2. SCHEDULES FOR ANGLES FOR BRACING: TYPE "B" – 1½" x 1½" x ⅛" ANGLE, MAX. SPACING 8'-0" CENTERS; TYPE "C" – 1½" x 1½" x 3/16" ANGLE, MAX. SPACING 8'-0" CENTERS; TYPE "D" – 2" x 2" x ¼" ANGLE, MAX. SPACING 4'-0" CENTERS.

DUCT HANGERS

NO SCALE



BAND CLAMP SUPPORT

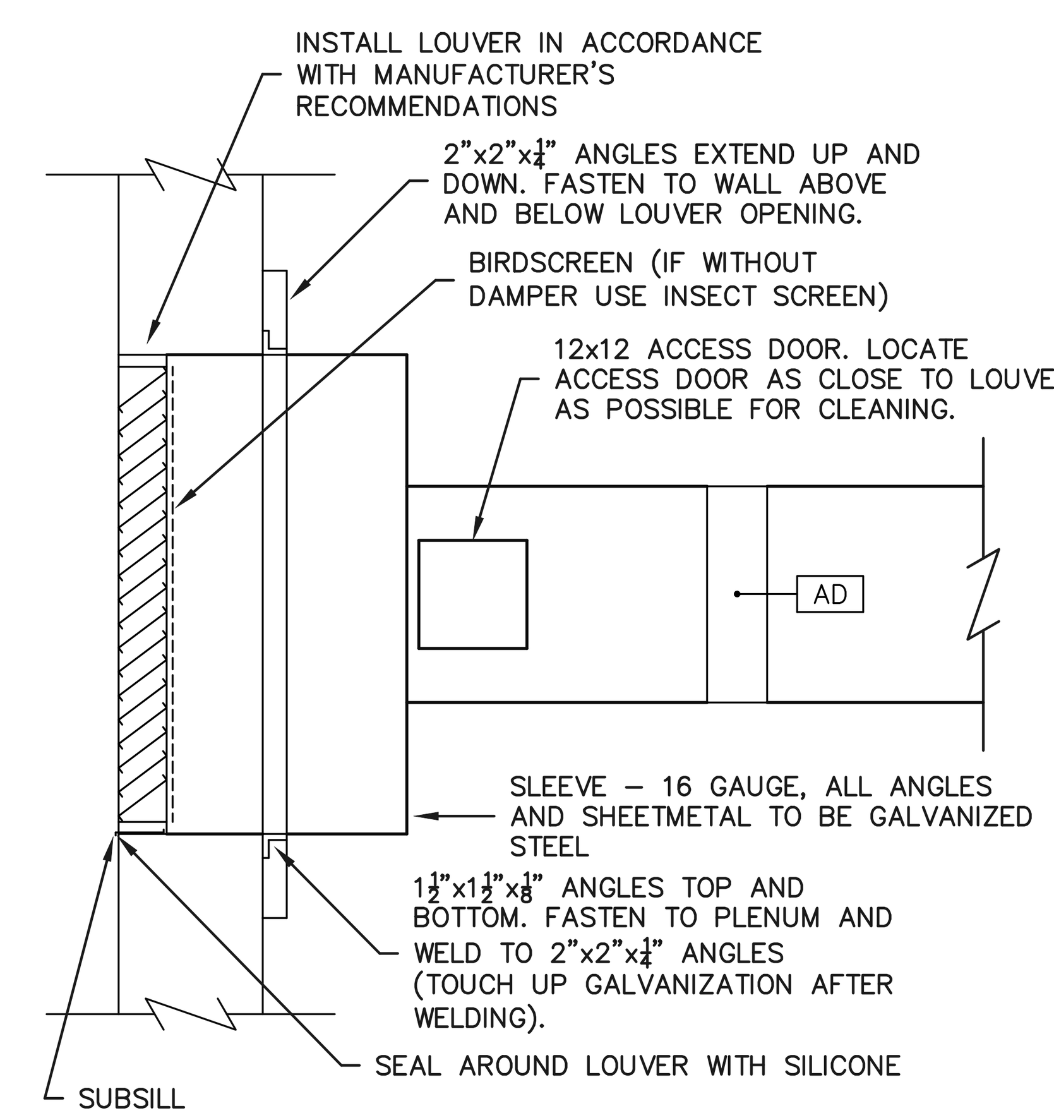
BAND CLAMP SUPPORT WITH WIRE (OPTIONAL)

NOTES:

1. SUPPORT SYSTEM SHALL NOT DAMAGE DUCT OR CAUSE OUT OF ROUND SHAPE.
2. BENDS SHALL BE MADE WITH NOT LESS THAN 1 DUCT DIAMETER CENTERLINE RADIUS. DUCTS SHOULD EXTEND A FEW INCHES BEYOND THE END OF A SHEET METAL CONNECTION BEFORE BENDING. DUCTS SHALL NOT BE COMPRESSED.
3. THE MINIMUM LENGTH OF FLEXIBLE DUCT SHALL BE USED. "MAXIMUM LENGTH" REFERS TO THE PRACTICAL ROUTE BETWEEN CONNECTION POINTS BUT NOT TO THE DEGREE THAT THE MATERIAL IS OVERSTRESSED OR TO THE DEGREE THAT ALL AVAILABLE STRETCH IS REMOVED.
4. DO NOT PROVIDE EXCESS LENGTH OF FLEXIBLE DUCT IN CASE OF FUTURE BUILDING MODIFICATIONS.
5. REFER TO PAGES 3.33-3.39 OF THE SMACNA HVAC DUCT CONSTRUCTION STANDARDS METAL AND FLEXIBLE,THIRD EDITION, FOR FURTHER DETAILS.

FLEXIBLE DUCTWORK SUPPORT DETAILS

NO SCALE



NOTE:

LOUVER WITHOUT DUCTWORK TO HAVE PLENUM EXTEND 2" BEYOND INSIDE FACE OF WALL. ANGLES ARE NOT REQUIRED, AUTOMATIC DAMPER TO BE FULL SIZE OF LOUVER.

LOUVER INSTALLATION DETAIL

NO SCALE

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LIGHTING CONTROL LEGEND

SYMBOL	DESCRIPTION	MTG.HT.
LIGHTING SWITCHES		
$	SINGLE POLE SINGLE THROW TOGGLE SWITCH – HUBBELL #1221	48" UON
$3	THREE-WAY TOGGLE SWITCH – HUBBELL #1223	48" UON
$D1	DIMMER SWITCH – WATTSTOPPER LMSW-101 WITH SINGLE RELAY DIMMING CONTROLLER "LMRC-101" OR EQUAL	48" UON
$T	TIME SWITCH – 120/277V, WATT STOPPER TS-400W OR EQUAL BY HUBBELL, NOVITAS, SENSOR SWITCH	48" UON
$D3	THREE-WAY DIMMER SWITCH-WATTSTOPPER LMDM-101 WITH SINGLE RELAY ROOM CONTROLLER "LMRC-211" OR EQUAL	48" UON
$01	LIGHTING CONTROL, AUTOMATIC WALL SWITCH, 180 DEGREE COVERAGE, 900 SQ. FT. COVERAGE, DUAL TECHNOLOGY, 0-10V DIMMING, DUAL VOLTAGE 120/277V; WATT STOPPER DW-311-W OR EQUAL BY HUBBELL, NOVITAS, SENSOR SWITCH	48" UON
$02	LIGHTING CONTROL, AUTOMATIC WALL SWITCH, 180 DEGREE COVERAGE, 900 SQ. FT. COVERAGE, DUAL TECHNOLOGY, DUAL VOLTAGE 120/277V; WATT STOPPER DSW-302-W OR EQUAL BY HUBBELL, NOVITAS, SENSOR SWITCH	48" UON

LIGHTING CONTROLS NOTE:

A. COORDINATE EXACT LOCATION OF ROOM CONTROLLERS IN FIELD WITH OWNER/ARCHITECT.
B. COORDINATE ALL CONTROLLERS/DEVICES REQUIRED FOR A SUCCESSFUL INSTALLATION WITH LIGHTING CONTROLS MANUFACTURER.

ELECTRICAL SYMBOL LEGEND

SYMBOL	DESCRIPTION	MTG.HT.
DISTRIBUTION		
X-1,3,5	HOMERUN TO PANEL. ARROWHEADS INDICATE CIRCUITS. EXAMPLE GIVEN SHOWS HOME RUN TO PANEL "X" WITH CIRCUITS 1,3, AND 5.	
	RACEWAY INSTALLED CONCEALED IN WALL AND/OR ABOVE CEILING	
	RACEWAY INSTALLED CONCEALED IN SLAB OR BELOW GRADE	
	RACEWAY INSTALLED EXPOSED	
	FLEXIBLE METAL CONDUIT (6'-0" MAX LENGTH)	
	CONDUIT UP / CONDUIT DOWN	
	CONDUIT TERMINATION (STUB-OUT)	
	GROUND PER NEC ARTICLE 250	
	120/208V-3PH-4W PANELBOARD. FLUSH / SURFACE MOUNTED	
1	RANGE – 50A-120/208V-3PH-4W GROUNDED OUTLET	
2	DRYER – 30A-120/208V-3PH-4W GROUNDED OUTLET	
J / J	JUNCTION BOX, WALL / CEILING / FLOOR	
XF	UTILITY TRANSFORMER, COORDINATE W/ LOCAL ELECTRICAL UTILITY COMPANY	
M	UTILITY METER, COORDINATE W/ LOCAL ELECTRICAL UTILITY COMPANY	
ATS	AUTOMATIC TRANSFER SWITCH FOR GENERATOR. PROVIDED AND INSTALLED BY ELECTRICAL CONTRACTOR.	
XXXX	FEEDER IDENTIFICATION; SEE FEEDER SCHEDULE, SHEET E5.0	
RECEPTACLES		MTG.HT.
	DUPLEX RECEPTACLE OUTLET – HUBBELL #5362	18"/6"ABS/FLOOR
C	QUADRUPLEX RECEPTACLE OUTLET – (2)-5362	18"/6"ABS/FLOOR
C	G.F.C.I. DUPLEX RECEPTACLE OUTLET – HUBBELL #GF5362	18"/6"ABS
	TAMPER-RESISTANT DUPLEX RECEPTACLE	18"
J	OUTLET TO BE DUPLEX OR MATCHING RECEPTACLE IF EQUIPMENT IS FURNISHED W/ CORD AND PLUG, OR JUNCTION BOX AND/OR SAFETY SWITCH WITH SEALTITE CONNECTION IF EQUIPMENT IS TO BE WIRED DIRECT. IT SHALL BE THE ELECTRICAL CONTRACTOR'S RESPONSIBILITY TO VERIFY THE REQUIRED OUTLET AND TO WIRE ALL EQUIPMENT COMPLETE.	
TV	TELEVISION ONLY OUTLET – 3/4"C. TO ABV CEILING OR BACKBOARD	18"/ CLG/ UON
	GFCI TYPE WEATHERPROOF SOFFIT MOUNTED RECEPTACLE. ALL SOFFIT RECEPTACLES SHALL BE TIED INTO SWITCH FOR MANUAL OVERRIDE CAPABILITY, LOCATE SWITCH IN STORAGE OR LOCATION AS DIRECTED BY ARCHITECT/OWNER.	
POWER SWITCHES		
$M	MANUAL MOTOR STARTER WITH PILOT LIGHT	
	HEAVY DUTY DISCONNECT SWITCH -NON-FUSED	
	HEAVY DUTY DISCONNECT SWITCH – FUSED	
	ELECTRIC MOTOR	
MISCELLANEOUS		MTG.HT.
◄	COMMUNICATION OUTLET, 4-11/16" SQ. 2-1/8" DEEP BOX WITH SINGLE GANG PLASTER RING, 1-1/4"C STUBBED UP ABOVE ACCESSIBLE CEILING	18" UNO
◄SH	LOW VOLTAGE MOTORIZED SHADES OUTLET, 4-11/16" SQ. 2-1/8" DEEP BOX W/ SINGLE GANG PLASTER RING, 1-1/4"C STUBBED UP ABOVE ACCESSIBLE CEILING	48" UNO
F	CONNECTION TO FAN	ABOVE CEILING
	DASHED DEVICES INDICATE EXISTING TO REMAIN. CONFIRM DEVICES PRESENT AND IN PROPER WORKING CONDITION.	
WP	NOTATION INDICATES DEVICE SHALL BE WEATHER RESISTANT.	
C	INDICATES DEVICE SHALL BE ABOVE COUNTER. REFER TO ARCHITECTURAL ELEVATIONS AND AND FINAL APPROVED CASEWORK SHOP DRAWINGS FOR EXACT DEVICE MOUNTING HEIGHT	
*	NOTATION INDICATES DASHED DEVICE SHALL BE DEMOLISHED.	

LUMINAIRE SCHEDULE

SYMBOL	DESCRIPTION	CATALOG NUMBER	MANUFACTURER
A/AE	LED DOWNLIGHT RECESSED IN SOFFIT. REFLECTOR AND FLANGE FINISH TO BE BY OWNER/ARCHITECT. "AE" TO BE WITH EMERGENCY BATTERY PACK "EM6I", 39.1 watts	M6R DL 40 PCS M CL * * Z10 U	LIGHTOLIER LTG OR ENGINEER APPROVED EQUAL
B	RGBW LED TAPE LIGHT, 24V, 3000K, FINISH TO BE BY OWNER/ARCHITECT. REFER TO PLANS FOR LENGTHS. MOUNT AT +/- 16'- 3 3/4"AFF OR AS DIRECTED BY ARCHITECT. COORDINATE WITH ARCHITECTURAL ELEVATION PLANS.	DI 24 VL RGBW 016 S1 * O/O	DIODELED OR ENGINEER APPROVED EQUAL
C	8 FOOT TRACK SYSTEM ON WALL MOUNT BRACKET WITH 29 WATT TRACK HEADS. MOUNT AT 10'-6" AFF OR AS DIRECTED BY THE ARCHITECT. PROVIDE ALL NECESSARY HARDWARE FOR A SUCCESSFUL INSTALLATION.	LT-8 * CTL9059 M 3C D * LA2409	CONTECH LTG. OR ENGINEER APPROVED EQUAL
D	LED TOP POST, 52 WATTS, 4759 LUMENS	LSO-M T3L 5L 4K UNV PTD * LDL	VISIONAIRE LTG OR ENGINEER APPROVED EQUAL
E	2X4 LED RECESSED FLAT PANEL, 29 WATTS,	2FPZ 38B 835 2 DS UNV DIM	DAY BRITE LTG OR ENGINEER APPROVED EQUAL
F/FE	2X4 SURFACE MOUNTED LED, 40 WATTS FE – WITH EMERGENCY BATTERY PACK BSL10LST	2FPZ 42B 835 4 DS UNV DIM FSK24	DAY-BRITE LTG OR ENGINEER APPROVED EQUAL
G	22' LINEAR LED SURFACE MOUNTED FIXTURE MOUNTED AT THE BOTTOM OF TRUSS, FIELD COORDINATE WITH ARCHITECT.	KXL 264" HE48MO 35K C FC *	LUMINII LTG OR ENGINEER APPROVED EQUAL
H	WALL MOUNT UP LIGHT LED FIXTURE, 11,500 LUMENS, 100 WATTS, 3500K. FIELD COORDINATE MOUNTING HEIGHT WITH ARCHITECT PRIOR TO INSTALLATION.	RI 110L 358 UNV STV ASY * WLM	METEOR LTG OR ENGINEER APPROVED EQUAL
HP	WALL MOUNT UP LIGHT LED FIXTURE, 11,500 LUMENS, 100 WATTS, 3500K. FIELD COORDINATE MOUNTING HEIGHT WITH ARCHITECT PRIOR TO INSTALLATION.	RI 110L 358 UNV STV ASY * ST4	METEOR LTG OR ENGINEER APPROVED EQUAL
J	LINEAR PENDANT LED UP/DOWN TO BE CONTROLLED SEPARATELY, WITH TWO POWER CORDS AND SEPARATE LIGHTING CONTROLS. MOUNT SO AS TO BE AT 10'-0" AFF. 10.5 WATTS, 1209 LUMENS PER FOOT.	HP-4-ID-4-S-H-835-TG-F-96LG-277-DC-FC-10%-FA50-FE-SW	FINELITE LTG OR ENGINEER APPROVED EQUAL

LUMINAIRE SCHEDULE NOTES:

1. VERIFY COLORS/FINISHES OF ALL FIXTURES WITH OWNER/ARCHITECT.
2. VERIFY CEILING TYPES PROVIDE INSTALLATION HARDWARE AND/OR SUSPENSION HARDWARE AS REQUIRED.
3. ALTERNATE LUMINAIRE FIXTURES SHALL BE APPROVED BY OWNER.
4. PROVIDE FIRE RATED COVERS FOR LIGHT FIXTURES LOCATED IN FIRE RATED CEILINGS.

EMERGENCY LIGHTING SCHEDULE

SYMBOL	TYPE	DESCRIPTION
	'EMH'	HIGH BAY LED EMERGENCY LIGHT SIGNTEX #MHE BB 30 S * (VERIFY FINISH WITH ARCHITECT)
	'EMX'	EXIT/EMERGENCY LIGHT COMBO, DUAL-VOLTAGE BEGHELLI #PCH R SA AT – RED LETTERING
	'X'	LED EMERGENCY LIGHT W/ ADJUSTABLE HEADS BEGHELLI #PX R SA AT – RED LETTERING
	'EM'	LED EMERGENCY LIGHT W/ ADJUSTABLE HEADS BEGHELLI #BBX SE WHT AT

EMEGENCY LIGHTING SCHEDULE NOTES:

a. ALL EXIT AND EMERGENCY DEVICES SHALL MAINTAIN A MINIMUM 90 MINUTE BATTERY BACK-UP, SHALL BE SELF-DIAGNOSTIC CAPABLE AND CONNECTED HOT TO LOCAL LIGHTING CIRCUIT AHEAD OF CONTROLS.

b. ALL EMERGENCY FIXTURES SHALL MONITOR NORMAL POWER. IN THE EVENT OF NORMAL POWER LOSS, EMERGENCY FIXTURES SHALL UTILIZE INTEGRAL BACKUP BATTERY POWER FOR ILLUMINATION.

c. ALL EMERGENCY FIXTURES AND EXIT SIGNS TO BE WIRED TO LOCAL LIGHTING CIRCUIT "HOT" AHEAD OF ANY SWITCHING

FIRE ALARM LEGEND

F	FIRE ALARM PULL STATION, MOUNT 48" AFF U.O.N. (DOUBLE-ACTION)
F	FIRE ALARM HORN/STROBE LIGHT COMBINATION, CEILING OR WALL MOUNT 7'-6" AFF, 15/75cd U.O.N. – "S" INDICATES SYNCHRONIZED
SD	DUCT SMOKE DETECTOR – SPECIFIED IN DIV. 16, FURNISHED & INSTALLED BY MECH., WIRED BY ELEC.
FS	FLOW SWITCH – SPECIFIED IN DIV. 16, FURNISHED & INSTALLED BY FIRE PROTECTION, WIRED BY ELEC.
TS	TAMPER SWITCH – SPECIFIED IN DIV. 16, FURNISHED & INSTALLED BY FIRE PROTECTION, WIRED BY ELEC.
L	FIRE ALARM STROBE LIGHT, WALL-MOUNTED AT 80" A.F.F. PER ADA-AG & NFPA. NOTATION IS AS NOTED ABOVE.
D	FIRE ALARM SMOKE DETECTOR, CEILING-MOUNTED INTELLIGENT ADDRESSABLE w/AUTOMATIC TRACKING & DIRTY DETECTOR PRE-ALARM REPORTING, AS SCHEDULED IN FIRE ALARM SPECIFICATIONS.
H	FIRE ALARM HEAT DETECTOR, CEILING-MOUNTED DUAL FIXED TEMPERATURE & RATE-OF-RISE INTELLIGENT ADDRESSABLE, AS SCHEDULED IN FIRE ALARM SPECIFICATIONS.

A.F.F. ABOVE FINISHED FLOOR
U.O.N. UNLESS OTHERWISE NOTED

FIRE ALARM NOTES:

ALL FIRE ALARM INSTALLATIONS AND TESTING ARE TO BE DONE UNDER THE SUPERVISION OF A TECHNICIAN CERTIFIED FOR FIRE ALARM WORK IN THE STATE OF TENNESSEE.

ALL REQUIRED DOCUMENTATION REGARDING THE DESIGN OF FIRE DETECTION, ALARM, AND COMMUNICATIONS SYSTEMS AND THE PROCEDURES FOR MAINTENANCE, INSPECTION, AND TESTING OF FIRE DETECTION, ALARM, AND COMMUNICATIONS SYSTEMS SHALL BE MAINTAINED AT AN APPROVED, SECURED LOCATION FOR THE LIFE OF THE SYSTEM.

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kcp architects 706.937.2900

GEORGIA REGISTERED PROFESSIONAL ENGINEER No. PE0... JOHN F. GERMS

ELECTRICAL GENERAL NOTES:

1. IT IS STRONGLY RECOMMENDED THAT ALL BIDDERS VISIT AND EXAMINE THE SITE. NO ADDITIONAL COMPENSATION WILL BE AWARDED FOR ANY DEVIATIONS OR DISCREPANCIES TO THESE PLANS. THE CONTRACTOR SHALL FAMILIARIZE HIMSELF WITH ALL CONDITIONS UNDER WHICH WORK MUST BE PERFORMED AND CHECK ALL PRESENT ELEVATIONS. THE CONTRACTOR SHALL REPORT ANY MAJOR DISCREPANCIES TO THE ARCHITECT. FAILURE TO DO SO SHALL BE DEEMED AS ACCEPTANCE OF EXISTING CONDITIONS.
2. ANY OTHER RELOCATIONS, ALTERATIONS AND/OR EXTENSIONS OF ELECTRICAL ITEMS DUE TO REMODELING (THOUGH NOT SPECIFICALLY SHOWN) SHALL BE INCLUDED TO PROVIDE A COMPLETE AND WORKING INSTALLATION.
3. THE DRAWINGS INDICATE MAJOR ITEMS TO BE REMOVED SUCH AS PANELS, COMMUNICATIONS SYSTEM TERMINAL BOXES, MAJOR FEEDERS, ETC. THE DRAWINGS DO NOT DETAIL REMOVALS FOR MINOR DEVICES, LIGHTING FIXTURES, BRANCH CIRCUITS, ETC., UNLESS SPECIFICALLY INDICATED FOR REUSE ELSEWHERE. IT IS INTENDED THAT ALL ITEMS NOT SHOWN TO BE REUSED ON THE NEW FLOOR PLANS BE REMOVED BACK TO SOURCE AND CONTINUITY OF CIRCUITRY TO ADJACENT AREAS BE PROVIDED FOR.
4. ALL REMOVED ITEMS SHALL REMAIN THE PROPERTY OF THE OWNER UNLESS DIRECTED OTHERWISE BY THE OWNER.
5. ALL WORK REQUIRING A POWER OUTAGE SHALL BE COORDINATED WITH THE OWNER AND SCHEDULED AT SUCH A TIME AS TO MINIMIZE DISRUPTION. THE CONTRACTOR SHALL SCHEDULE FULL WORK CREWS FOR AS LONG AS REQUIRED TO MINIMIZE THE SHUTDOWN PERIOD. ALL SHUTDOWNS SHALL OCCUR BETWEEN 8:00 P.M. AND 4:00 A.M.
6. ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR ALL CUTTING AND PATCHING FOR INSTALLATION OF ALL ELECTRICAL WORK. ALL CONDUIT SHALL BE RUN CONCEALED IN WALLS AND CEILINGS, WIREMOLD OR EXPOSED CONDUITS ARE NOT ACCEPTABLE UNLESS SPECIFICALLY NOTED ON THE DRAWINGS. ELECTRICAL CONTRACTOR TO PROVIDE ACCESS PANELS IN WALLS AND CEILINGS AS REQUIRED. MATCH ALL EXISTING CONDITIONS.
7. OPENINGS AROUND CONDUITS OR IN SLEEVES FOR CONDUITS PENETRATING FIRE-RATED FLOOR SLABS, WALLS, PARTITIONS, CEILINGS OR SMOKE PARTITIONS, SHALL BE SEALED AT BOTH SIDES OF THE PENETRATION. INSULATION SHALL NOT EXTEND THROUGH SLEEVES. PACK OPENINGS WITH CALCIUM SILICATE BLOCK, DOW CORNING 3-6548 RTV SILICON FOAM, 3M CP25 CAULK, OR 303 PUTTY FIRE BARRIER SYSTEM, OR MATERIAL HAVING THE SAME FIRE-RATING AS THE FLOOR OR WALL PENETRATED. FIBERGLASS IS NOT ACCEPTABLE.
8. ELECTRICAL CONTRACTOR TO PROVIDE AN INSTALLATION SCHEDULE DETAILING MAJOR DATES OF INSTALLATION FOR ITEMS SUCH AS TRANSFORMERS, MAIN DISTRIBUTION PANELS, SHUT DOWN TIMES, SERVICE SWITCHOVER, ETC. THE SCHEDULE SHALL BE APPROVED BY THE OWNER PRIOR TO ANY SHUT DOWN TIMES.
9. ALL EXTERIOR TRENCHING SHALL BE BACKFILLED AND COMPACTED WITH GRANULAR FILL, GRADED WITH A MINIMUM OF 6" OF TOP SOIL AND SEEDED TO MATCH EXISTING.
10. ALL WORK SHALL BE COORDINATED WITH THE WORK OF OTHER TRADES TO AVOID INTERFERENCES AND CONFLICTS. REFER TO THE DRAWINGS OF THE RESPECTIVE SYSTEMS PRIOR TO SUBMISSION OF BIDS FOR ADDITIONAL WORK WHICH MAY BE REQUIRED AS PART OF THIS WORK. NO ALLOWANCES WILL BE MADE FOR THE LACK OF COORDINATION BETWEEN DISCIPLINES OR SYSTEMS AND EQUIPMENT.
11. THE WORK SHALL BE COORDINATED WITH THE ARCHITECT FOR THE EXACT LOCATION OF LIGHT FIXTURES, EQUIPMENT, DEVICES, ETC. TO ASSURE PROPER PLACEMENT OF SAID DEVICES AND EQUIPMENT. WHERE A CONFLICT EXISTS BETWEEN ANY TWO DOCUMENTS, NOTIFY THE ENGINEER FOR RESOLUTION PRIOR TO ANY ROUGH-IN OR INSTALLATION.
12. THE CONTRACTOR SHALL VERIFY ALL EQUIPMENT BEING INSTALLED PRIOR TO INSTALLATION TO ASSURE THAT THE FEEDER, DISCONNECT, STARTER, OVERCURRENT PROTECTION, ETC. MATCHES THE ACTUAL NAMEPLATE DATA AS SUPPLIED BY THE MANUFACTURER.
13. SPECIFIC REQUIREMENTS REGARDING MATERIALS, WORKMANSHIP AND THE WORK TO BE DONE ARE COVERED BY THE SPECIFICATIONS WHICH COMPLEMENT THE PLANS. WORK CALLED FOR BY THE SPECIFICATIONS OR THE PLANS IS REQUIRED THE SAME AS IF REQUIRED BY BOTH. WHERE A CONFLICT EXISTS BETWEEN THE PLANS AND SPECIFICATIONS, THE MORE STRINGENT REQUIREMENTS OF THE TWO SHALL APPLY UNLESS SPECIFICALLY APPROVED IN WRITING BY THE ENGINEER.
14. REFER TO EQUIPMENT CUT SHEETS AND MANUFACTURER'S DATA FOR ROUGH IN LOCATIONS OF ELECTRICAL CONNECTIONS AND INTERCONNECTIONS OF ALL EQUIPMENT.
15. INSTALL OVER CURRENT PROTECTION AND BRANCH CIRCUIT WIRING PER U.L. LISTING REQUIREMENTS FOR EQUIPMENT SERVED – REFER TO NAMEPLATE DATA.
16. PROVIDE START-UP ASSISTANCE TO OWNER PERSONNEL AND EQUIPMENT TECHNICIANS TO CONFIRM CORRECT PHASE ROTATION, PROPER OPERATION AND SEQUENCE, AND CONTROLS.
17. CONTRACTOR SHALL COORDINATE ELEVATIONS AND PIPING SYSTEM SLOPES SUCH THAT DUCTWORK, PIPING, RACEWAY, CABLE TRAY, AND ASSOCIATED EQUIPMENT IS INSTALLED AT UNIFORM ELEVATIONS WITH MINIMAL OFFSET. PROVIDE COORDINATION DRAWING TO ENGINEER FOR REVIEW PRIOR TO EQUIPMENT ORDERS AND ROUGH-IN.
18. ALL WORK SHALL COMPLY TO THE LATEST APPLICABLE NATIONAL ELECTRIC CODE (N.E.C.).

F E E D E R   S C H E D U L E

MARK	1PH – 2 WIRE W/ GROUND	MARK	1PH OR 3PH – 3 WIRE W/ GROUND	MARK	3PH – 4 WIRE W/ GROUND
20SG	2#12, 1#12G – 1/2"C	20G	3#12, 1#12G – 1/2"C	20NG	4#12, 1#12G – 1/2"C
30SG	2#10, 1#10G – 1/2"C	30G	3#10, 1#10G – 1/2"C	30NG	4#10, 1#10G – 3/4"C
50SG	2#8, 1#10G – 1"C	50G	3#8, 1#10G – 1"C	50NG	4#8, 1#10G – 1"C
60SG	2#6, 1#10G – 1"C	60G	3#6, 1#10G – 1"C	60NG	4#6, 1#10G – 1-1/4"C
80SG	2#4, 1#8G – 1"C	80G	3#4, 1#8G – 1"C	80NG	4#4, 1#8G – 1-1/4"C
100SG	2#2, 1#8G – 1-1/4"C	100G	3#2, 1#8G – 1-1/4"C	100NG	4#2, 1#8G – 1-1/4"C
		125G	3#1, 1#6G – 1-1/4"C	125NG	4#1, 1#6G – 1-1/2"C
		150G	3#1/0, 1#6G – 1-1/2"C	150NG	4#1/0, 1#6G – 1-1/2"C
		175G	3#2/0, 1#6G – 1-1/2"C	175NG	4#2/0, 1#6G – 2"C
		200G	3#3/0, 1#6G – 2"C	200NG	4#3/0, 1#6G – 2"C
		225G	3#4/0, 1#2G – 2"C	225NG	4#4/0, 1#2G – 2-1/2"C
		250G	3#250kcmil, 1#2G – 2-1/2"C	250NG	4#250kcmil, 1#2G – 2-1/2"C
		300G	3#350kcmil, 1#2G – 2-1/2"C	300NG	4#350kcmil, 1#2G – 3"C
		400G	3#500kcmil, 1#2G – 3"C	400NG	4#500kcmil, 1#2G – 3-1/2"C

C&A No. 24-035

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DRAWING TITLE
ELECTRICAL LEGEND, SCHEDULES, AND NOTES

SHEET NO.
E0.1

ELECTRICAL SPECIFICATIONS

1. ALL WORK SHALL CONFORM TO THE LATEST APPROVED VERSION OF THE N.E.C., NATIONAL, STATE AND LOCAL CODES WHICH APPLY.

2. ALL MATERIAL AND EQUIPMENT SHALL CONFORM TO U.L. AND NEMA STANDARDS WHICH APPLY.

3. THIS CONTRACTOR SHALL PAY ALL FEES AND OBTAIN ALL PERMITS REQUIRED FOR THE EXECUTION OF HIS WORK. HE SHALL ALSO PROVIDE PROOF OF FINAL APPROVAL BY THE AUTHORITY HAVING JURISDICTION BEFORE FINAL PAYMENT IS MADE.

4. THIS CONTRACTOR SHALL PROVIDE A WRITTEN GUARANTEE OF HIS ENTIRE ELECTRICAL INSTALLATION AGAINST DEFECTS IN WORKMANSHIP AND MATERIALS FOR A PERIOD OF ONE YEAR AFTER ACCEPTANCE BY OWNER.

5. SUBMIT EIGHT COPIES OF DETAILED SHOP DRAWINGS OF ALL ITEMS OF EQUIPMENT FURNISHED UNDER THIS CONTRACT IN A TIMELY MANNER FOR APPROVAL, BEFORE MANUFACTURE OF THE EQUIPMENT OR ITS INCORPORATION IN THE WORK.

6. CONDUCTORS:

   MINIMUM WIRE SIZE SHALL BE #12 UNLESS NOTED OTHERWISE.

   CONDUCTORS SMALLER THAN #2 AWG SHALL BE "THHN/THWN". CONDUCTORS #2 AWG AND LARGER SHALL BE "XHHW".

   ALL CONDUCTORS SHALL BE COPPER.

   CONDUCTORS SHALL BE AS MANUFACTURED BY AETNA, AMERICAN INSULATED, ENCORE, ESSEX, PARANITE, PIRELLI OR SOUTHWIRE.

7. CONDUITS:

   INTERIOR CONDUIT SHALL BE ELECTRICAL METALLIC TUBING (EMT) UNLESS NOTED OTHERWISE.

   EXTERIOR CONDUIT BURIED BELOW GRADE SHALL BE PVC SCHEDULE 40.

   EXPOSED EXTERIOR CONDUIT SHALL BE FULL WEIGHT RIGID GALVANIZED STEEL (RGS) OR INTERMEDIATE METAL CONDUIT (IMC) GALVANIZED OR SHERADERIZED INSIDE AND OUT.

   FLEXIBLE METAL CONDUIT SHALL BE USED FOR "MAKE UP" CONNECTIONS TO ROTATING MACHINERY (24" MAXIMUM LENGTH), EQUIPMENT OR FLUSH LIGHT FIXTURES.

   CONDUIT CONNECTORS SHALL BE COMPRESSION. FLEXIBLE METALLIC COUPLINGS AND CONNECTORS SHALL BE MALLEABLE IRON OR STAMPED STEEL FITTINGS.

   EXTERIOR BURIED CONDUITS SHALL BE INSTALLED 36" BELOW GRADE WITH METALLIC WARNING/SENSOR TAPE 12" ABOVE THE CONDUIT.

   MINIMUM CONDUIT SIZE IS 3/4" UNLESS NOTED OTHERWISE. MINIMUM CONDUIT SIZE SHALL BE 1" FOR CONDUITS CONCEALED UNDER FLOOR SLABS OR EXTERIOR BELOW GRADE.

8. DISCONNECT SWITCHES SHALL BE SQUARE D "HD" OR EQUAL BY GENERAL ELECTRIC, SIEMENS.

9. FUSES SHALL BE CLASS "R" MANUFACTURED BY BUSSMANN AS FOLLOWS: 0-99A FUSETRON, 100-600A LOW PEAK, ABOVE 600A HI-CAP, OR EQUAL BY FERRAZ-SHAWMUT OR LITTELFUSE.

10. WIRING DEVICES:

    SWITCHES SHALL BE HEAVY DUTY INDUSTRIAL SPECIFICATION GRADE WITH SOLID BRASS CONSTRUCTION, 120/277V-20A RATING; HUBBELL HBL1221GRY, LEVITON 1221-2GY OR PASS & SEYMOUR PS20AC1-GRY (SINGLE POLE DEVICES INDICATED).

    RECEPTACLES SHALL BE HEAVY DUTY INDUSTRIAL SPECIFICATION GRADE WITH SOLID BRASS CONSTRUCTION, 120V-20A RATING; HUBBELL HBL5362GY, LEVITON 5362GY OR PASS & SEYMOUR 5362-AGY.

    GFI DUPLEX RECEPTACLES SHALL BE HEAVY DUTY INDUSTRIAL GRADE, 20A; HUBBELL GF5362GYA OR APPROVED EQUAL BY LEVITON OR PASS & SEYMOUR.

    PLATES SHALL BE SATIN STAINLESS STEEL; HUBBELL S1 SERIES OR APPROVED EQUAL BY LISTED MANUFACTURERS.

    WEATHERPROOF COVER PLATES SHALL BE CLEAR THERMOPLASTIC, IN-USE RATED; RED DOT CKNM OR APPROVED EQUAL BY HUBBELL OR TAYMAC.

    DEVICE COLOR AND PLATE COLOR SHALL BE SELECTED BY THE ARCHITECT/OWNER.

11. MOTOR STARTERS FOR MOTORS SMALLER THAN 1/2 HORSEPOWER SHALL BE MANUAL STARTERS WITH OVERLOAD AND PILOT LIGHT; SQUARE D CLASS 2510 OR EQUAL BY GENERAL ELECTRIC, SIEMENS. MANUAL ON-OFF SWITCHES SHALL BE SQUARE D 2510-KG-1 OR KG-2 OR EQUAL BY GENERAL ELECTRIC, SIEMENS.

12. PANELBOARDS:

    PANELBOARDS SHALL UTILIZE FULLY RATED COPPER BUS OF AMPACITY NOTED ON THE DRAWINGS.

    CIRCUIT BREAKERS SHALL BE BOLT TYPE, COMMON TRIP AND RATED FOR THE LOAD CONTROLLED (HACR, HID, SWITCH DUTY, HIGH MAGNETIC IN RUSH).

    PANELBOARDS AND CIRCUIT BREAKERS SHALL HAVE AN INTERRUPTING CAPACITY OF 14,000 (277/480V) AND 10,000 (120/208V) MINIMUM, UNLESS NOTED OTHERWISE ON THE DRAWINGS.

    PANELS NOTED FOR SERIES RATING WITH UPSTREAM DEVICES SHALL INCLUDE LABELING WITHIN THE PANEL.

    PANELBOARDS SHALL BE SQUARE D "NQOD" SERIES (120/208V)/SQUARE D "NF" SERIES (277/480V), OR APPROVED EQUALS BY GENERAL ELECTRIC OR SIEMENS.

    BALANCE LOAD ON FEEDERS AND MAIN SWITCH TO WITHIN 10% UNDER MAXIMUM LOAD CONDITIONS.

13. MOTOR CONTROL CENTERS SHALL BE MODEL 5, CLASS 8998 AS MANUFACTURED BY SQUARE D OR EQUAL BY GENERAL ELECTRIC, SIEMENS. PROVIDE ALL STARTERS WITH HAND-OFF-AUTO SELECTED SWITCHES, PILOT LIGHT AND CONTROL TRANSFORMER, UNLESS OTHERWISE NOTED.

14. NAMEPLATES SHALL BE INSTALLED ON ALL OF THE FOLLOWING EQUIPMENT TYPES: PANELBOARDS, MOTOR STARTERS, CONTROL PANELS, CONTROL DEVICES, TELEPHONE CABINETS, EMERGENCY SYSTEM EQUIPMENT, TRANSFORMERS, ETC. NAMEPLATES SHALL BE LAMINATED PHENOLIC, WHITE WITH BLACK CORE.

15. PROVIDE TYPED PANEL SCHEDULES FOR ALL PANELBOARDS DESCRIBING LOCATION OF DEVICE SERVED. PROVIDE PHENOLIC NAMEPLATES FOR EACH SWITCHBOARD DISCONNECT SWITCH OR CIRCUIT BREAKER.

16. SWITCHES SHALL BE MOUNTED 48" A.F.F. TO CENTER LINE UNLESS NOTED OTHERWISE. RECEPTACLES SHALL BE MOUNTED 18" A.F.F. TO BOTTOM OF DEVICE UNLESS NOTED OTHERWISE. PANELS SHALL BE MOUNTED 48" A.F.F. TO CENTER LINE OR LOWER, WITH TOP OF CABINET A MAXIMUM OF 6'-0" A.F.F.

17. FLUORESCENT LAMPS SHALL BE TRIMLINE T8-SP35, RAPID START, ENERGY SAVING. FLUORESCENT LAMPS TO BE MANUFACTURED BY PHILIPS, SYLVANIA OR GENERAL ELECTRIC. METAL HALIDE LAMPS SHALL BE COLOR CORRECTED TYPE, SIZE AS NOTED. HIGH PRESSURE SODIUM LAMPS SHALL BE AS RECOMMENDED BY FIXTURE MANUFACTURER UNLESS OTHERWISE NOTED. INCANDESCENT LAMPS SHALL BE 130 VOLT, INSIDE FROSTED. ALL FLUORESCENT LAMPS SHALL BE OF THE SAME MANUFACTURER.

18. ELECTRONIC BALLAST SHALL BE PROGRAM START UL LISTED, HIGH POWER FACTOR, E.T.O. AND C.B.M. APPROVED, SOUND RATED "A", CLASS "P". THE BALLAST SHALL LIMIT E.M.I. AND R.F.I. EMISSIONS TO WITHIN F.C.C. GUIDELINES, AND PRODUCE FULL LIGHT OUTPUT AND LAMP LIFE PER LAMP MANUFACTURER'S SPECIFICATIONS. TOTAL HARMONIC DISTORTION SHALL BE 10% OR LESS, LAMP CURRENT CREST FACTOR SHALL BE LESS THAN 1.7, MINIMUM POWER FACTOR SHALL BE 0.90 AND THE MINIMUM BALLAST FACTOR SHALL BE 0.85. ELECTRONIC BALLAST SHALL BE MANUFACTURED BY UNIVERSAL, MAGNETEK, ADVANCE, OR OSRAM SYLVANIA.

19. PROVIDE AN ARC FLASH HAZARD LABEL FOR ALL ELECTRICAL DISTRIBUTION EQUIPMENT, INCLUDING BUT NOT LIMITED TO SWITCHBOARDS, PANELBOARDS, INDUSTRIAL CONTROL PANELS, METER SOCKETS, ENCLOSURES, DISCONNECTS, AND MOTOR CONTROL CENTERS. LABELING SHALL MEET FLASH PROTECTION REQUIREMENTS OF NFPA AND NEC (110.16). ARC FLASH HAZARD LABELS SHALL BE PERMANENTLY ADHERED. THE LABELS SHALL BE 3.50" X 5.00 SELF-ADHESIVE PLASTIC; BRADY CAT #99452. THE HAZARD LABEL SHALL BE LOCATED SO AS TO BE CLEARLY VISIBLE TO QUALIFIED PERSONS BEFORE EXAMINATION, ADJUSTMENT, SERVICING OR MAINTENANCE OF EQUIPMENT. THE ELECTRICAL CONTRACTOR SHALL INSTALL THE LABEL ON A 1/8 CLEAR PLASTIC BACK PLATE WHERE PERMANENT ADHESION CAN NOT BE MAINTAINED. THIS PLASTIC BACK PLATE TAG ASSEMBLY SHALL BE SECURED TO THE ELECTRICAL EQUIPMENT WITH POP RIVETS.

20. DUE TO ARC FLASH HAZARDS, ANY WORK REQUIRED ON ELECTRICAL EQUIPMENT THAT IS ENERGIZED SHALL BE WITH WRITTEN PERMISSION FROM THE OWNER. THE ELECTRICAL CONTRACTOR SHALL REQUIRE EMPLOYEES TO WEAR THE PROPER PERSONAL PROTECTION (PPE) EQUIPMENT REQUIRED IN NFPA-70E, 130.7(c)(9).

21. SURGE PROTECTIVE DEVICES:

    A. DESCRIPTION OF WORK:

    EXTENT OF SURGE PROTECTIVE DEVICES IS INDICATED ON THE DRAWINGS.

    TYPES OF SURGE PROTECTIVE DEVICES SPECIFIED IN THIS SECTION INCLUDE THE FOLLOWING:

    - SERVICE ENTRANCE SURGE PROTECTIVE DEVICES
    - DISTRIBUTION PANEL SURGE PROTECTIVE DEVICES
    - BRANCH PANEL SURGE PROTECTIVE DEVICES

    WARRANTY:

    THE MANUFACTURER SHALL WARRANTY THE SURGE PROTECTIVE DEVICE AGAINST FAILURE FOR A PERIOD OF FIVE YEARS FROM DATE OF ACCEPTANCE BY THE OWNER. UPON NOTICE FROM THE OWNER, THE MANUFACTURER SHALL REMEDY ALL SUCH DEFECTS AT HIS OWN EXPENSE AT A TIME CONVENIENT TO THE OWNER.

    THE ELECTRICAL CONTRACTOR SHALL WARRANTY THE INSTALLATION OF THE SURGE PROTECTIVE DEVICES FOR A PERIOD OF ONE YEAR FROM DATE OF ACCEPTANCE BY THE OWNER. UPON NOTICE FROM THE OWNER, THE ELECTRICAL CONTRACTOR SHALL REMEDY ALL SUCH DEFECTS AT HIS OWN EXPENSE AT A TIME CONVENIENT TO THE OWNER.

    TEST REPORTS:

    EACH SPECIFIED SURGE PROTECTIVE DEVICE (SPD) SHALL BE INDEPENDENTLY TESTED FROM AN NVLAP OR NRTL ACCREDITED TEST FACILITY.

    TEST SHALL BE PERFORMED IN ACCORDANCE WITH UL 1449, 3RD EDITION.

    TEST REPORTS SHALL INCLUDE ALL DOCUMENTATION PRODUCED BY TESTING LABORATORY AND A SUMMARY SHEET INDICATING ALL ITEMS OUTLINED:

    - SPD MODEL
    - SPD CIRCUIT DESCRIPTION
    - NOMINAL LINE VOLTAGE
    - MAXIMUM CONTINUOUS OPERATING VOLTAGE
    - CONNECTION MEANS
    - SPD PROTECTION MODES
    - CLAMPING VOLTAGE FOR B3 RINGWAVE, 6 KV 3000A COMBINATION WAVE, B3/C1 COMBINATION WAVE. C3 COMBINATION WAVE AND DURING MAXIMUM SURGE CURRENT FOR LINE-NEUTRAL, LINE-GROUND, NEUTRAL-GROUND AND LINE-LINE.
    - MINIMUM REPETITIVE SURGE CURRENT CAPACITY: UNIT SUBJECT TO AN INITIAL TEST CONFORMING TO UL 1449 GUIDE LINES (BENCH MARK TEST) FOLLOWED BY A REPETITIVE NUMBER OF ANSI/IEEE C62.41.2-2002 (CAT C3) SURGES IN ONE MINUTE INTERVALS (MINIMUM OF 3,500 IMPULSES). UPON COMPLETION THE UNIT SHALL RETESTED TO THE UL 1449 GUIDELINES TO VERIFY SURVIVABILITY. UNITS SHALL NOT DEVIATE MORE THAN 10% FROM FIRST TO FINAL TEST TO BE CONSIDERED TO HAVE ACHIEVED SURVIVAL.

    SPD UNITS SHALL BE TESTED WITH ALL SPECIFIED OPTIONS ASSEMBLED AND FULLY OPERATIONAL. TEST SHALL SIMULATE REAL FIELD CONDITIONS.

    SUBMITTALS:

    PRODUCT DATA: SUBMIT MANUFACTURER'S DATA ON THE SURGE PROTECTIVE DEVICE INCLUDING, BUT NOT LIMITED TO, LIFE CYCLE RATING, OVERCURRENT PROTECTION, UL 1449 COMPLIANCE, AND SURGE CURRENT CAPACITY. MANUFACTURER'S CURRENT CAPACITY SHALL BE BACKED UP BY AN INDEPENDENT TEST FROM AN NVLAP OR NRTL ACCREDITED TEST LABORATORY. THE INDEPENDENT TEST REPORT AS OUTLINED ABOVE SHALL BE INCLUDED WITH THE SUBMITTAL. FAILURE TO INCLUDE THE INDEPENDENT TEST REPORT WILL RESULT IN PRODUCT DISAPPROVAL.

    SHOP DRAWING: SUBMIT LAYOUT DRAWINGS OF THE SURGE PROTECTIVE DEVICES SHOWING ACCURATELY SCALED COMPONENTS, UNIT DIMENSIONS, WEIGHTS, MOUNTING PROVISIONS, CONNECTION DETAILS, AND WIRING DIAGRAMS.

    EQUIPMENT MANUALS: SUBMIT A MANUFACTURER'S INSTALLATION MANUAL WITH INSTALLATION, START-UP, SPARE PARTS LIST, AND OPERATING INSTRUCTIONS.

    B. PRODUCTS:

    SERVICE ENTRANCE SURGE PROTECTIVE DEVICES:

    SURGE PROTECTIVE DEVICES (SPD) INSTALLED ON THE SERVICE ENTRANCE SHALL BE DESIGNED FOR A 277/480V-3PH-4W OR 120/208V-3PH-4W, SIXTY-CYCLE SERVICE. THE SPD SHALL HAVE AN INTEGRAL DISCONNECT MOUNTED IN THE ENTRY DOOR.

    THE SPD SHALL USE SINGLE OR MULTIPLE METAL OXIDE VARISTORS (MOVS) AND POLYPROPYLENE CAPACITORS FOR THE SURGE PROTECTION. EACH MOV SHALL BE FUSED FOR REDUNDANT PROTECTION AND ONGOING PERFORMANCE.

    THE SPD SHALL BE CONSTRUCTED USING A SOLID COPPER BUS CONSTRUCTION. THE COPPER BUS BARS SHALL CARRY THE CUMULATIVE SURGE CURRENT.

    THE SPD SHALL BE RATED FOR A MAXIMUM CONTINUOUS OPERATING VOLTAGE EQUAL TO NO LESS THAN 115% OF THE NOMINAL PHASE VOLTAGE.

    THE SPD SHALL PROVIDE ALL MODES OF PROTECTION (L-N, L-G, L-L, N-G). THE SPD SHALL PROTECT TO THE FOLLOWING CLAMPING VOLTAGES:

    - 277/480V RATED:

	B3 RINGWAVE	6 KV-3 KA UL VPR	C3 COMB WAVE
L-N	600	1300	1300
L-G	875	1300	1300
N-G	675	1300	1300
L-L	750	2000	2000

    - 120/208V RATED:

	B3 RINGWAVE	6 KV-3 KA UL VPR	C3 COMB WAVE
L-N	350	900	900
L-G	425	900	900
N-G	375	900	900
L-L	450	1300	1300

    THE SPD SHALL BE CAPABLE OF PROTECTING AGAINST A SINGLE PULSE SURGE CURRENT OF 200KA ON ALL MODES (L-N, L-G, N-G, L-L). THE SPD SHALL BE CAPABLE OF PROTECTING AGAINST REPETITIVE C3 (C HIGH) SURGE CURRENTS OF 3,500 IMPULSES ON ALL MODES (L-N, L-G, N-G, L-L). THE REPETITIVE SURGE CURRENT TEST SHALL BE CONDUCTED ACCORDING TO ANSI/IEEE C62.41 AND C62.45 STANDARDS.

    THE SPD SHALL INCLUDE A SYSTEM MONITOR. THERE SHALL BE A DISPLAY EVENT COUNTER, AUDIBLE ALARM, PHASE STATUS INDICATORS AND DUAL FORM "C" DRY CONTACTS.

    THE SPD SHALL HAVE A FAULT CURRENT PROTECTION RATING OF 100 KAIC.

    THE SPD SHALL BE RATED AS A UL-1449 3RD EDITION TYPE 1 OR TYPE 2 DEVICE WITH A NOMINAL DISCHARGE (IN) RATING OF 20 KA.

    THE SPD SHALL BE AS MANUFACTURED BY CURRENT TECHNOLOGY TG 200 SERIES, GENERAL ELECTRIC TRY-Y200 SERIES, LEA INTERNATIONAL PV400, SQUARE D EMA24 SERIES OR ENGINEER APPROVED EQUAL BY LIEBERT.

    DISTRIBUTION PANEL SURGE PROTECTIVE DEVICES:

    SURGE PROTECTIVE DEVICES (SPDS) SHALL BE INSTALLED ON ALL DISTRIBUTION PANELS AS NOTED ON THE DRAWINGS. THE SPD SHALL BE DESIGNED FOR 277/480V-3PH-4W OR 120/208V-3PH-4W, SIXTY-CYCLE ELECTRICAL SYSTEM AS INDICATED ON THE DRAWINGS.

    THE SPD SHALL USE SINGLE OR MULTIPLE METAL OXIDE VARISTORS (MOVS) AND POLYPROPYLENE CAPACITORS FOR THE SURGE PROTECTION. EACH MOV SHALL BE FUSED FOR REDUNDANT PROTECTION AND ONGOING PERFORMANCE.

    THE SPD SHALL BE CONSTRUCTED USING A SOLID COPPER BUS CONSTRUCTION. THE COPPER BUS BARS SHALL CARRY THE CUMULATIVE SURGE CURRENT.

    THE SPD SHALL BE RATED FOR A MAXIMUM CONTINUOUS OPERATING VOLTAGE OF EQUAL TO NO LESS THAN 115% OF NOMINAL PHASE VOLTAGE.

    THE SPD SHALL PROVIDE ALL MODES OF PROTECTION (L-N, L-G, L-L, N-G). THE SPD SHALL PROTECT TO THE FOLLOWING CLAMPING VOLTAGES:

    - 277/480V RATED:

	B3 RINGWAVE	6 KV-3 KA UL VPR	C3 COMB WAVE
L-N	600	1300	1300
L-G	875	1300	1300
N-G	675	1300	1300
L-L	750	2000	2000

    - 120/208V RATED:

	B3 RINGWAVE	6 KV-3 KA UL VPR	C3 COMB WAVE
L-N	350	900	900
L-G	425	900	900
N-G	375	900	900
L-L	450	1300	1300

    THE SPD SHALL BE CAPABLE OF PROTECTING AGAINST A SINGLE PULSE SURGE CURRENT OF 100KA ON ALL MODES (L-N, L-G, N-G, L-L). THE SPD SHALL BE CAPABLE OF PROTECTING AGAINST REPETITIVE C3 (C HIGH) SURGE CURRENT OF 3,500 IMPULSES ON ALL MODES (L-N, L-G, N-G, L-L). THE REPETITIVE SURGE CURRENT TEST SHALL BE CONDUCTED ACCORDING TO ANSI/IEEE C62.41 AND C62.45 STANDARDS.

    THE SPD SHALL HAVE A FAULT CURRENT PROTECTION RATING OF 100 KAIC.

    THE SPD SHALL BE RATED AS A UL-1449 3RD EDITION TYPE 2 DEVICE WITH A NOMINAL DISCHARGE (IN) RATING OF 20 KA MINIMUM.

    THE SPD SHALL BE AS MANUFACTURED BY CURRENT TECHNOLOGY TG 100 SERIES, GENERAL ELECTRIC TR7-Y100 SERIES, LEA INTERNATIONAL LS200P, SQUARE D EMA16 SERIES OR ENGINEER APPROVED EQUAL BY LIEBERT.

    BRANCH PANEL SURGE PROTECTIVE DEVICES:

    SURGE PROTECTIVE DEVICES (SPDS) SHALL BE INSTALLED ON ALL BRANCH PANELS AS NOTED ON THE DRAWINGS. THE SPD SHALL BE DESIGNED FOR A 277/480V-3PH-4W OR 120/208V-3PH-4W, SIXTY-CYCLE ELECTRICAL SYSTEM AS INDICATED ON THE DRAWINGS.

    THE SPD SHALL USE SINGLE OR MULTIPLE METAL OXIDE VARISTORS (MOVS) AND POLYPROPYLENE CAPACITORS FOR THE SURGE PROTECTION. EACH MOV SHALL BE FUSED FOR REDUNDANT PROTECTION AND ONGOING PERFORMANCE.

    THE SPD SHALL BE CONSTRUCTED USING A SOLID COPPER BUS CONSTRUCTION. THE COPPER BUS BARS SHALL CARRY THE CUMULATIVE SURGE CURRENT.

    THE SPD SHALL BE RATED FOR A MAXIMUM CONTINUOUS OPERATING VOLTAGE EQUAL TO NO LESS THAN 115% OF THE NOMINAL PHASE.

    THE SPD SHALL PROVIDE ALL MODES OF PROTECTION (L-N, L-G, L-L, N-G). THE SPD SHALL PROTECT TO THE FOLLOWING CLAMPING VOLTAGES:

    - 277/480V RATED:

	B3 RINGWAVE	6 KV-3 KA UL VPR	C3 COMB WAVE
L-N	300	1300	1300
L-G	400	1300	1300
N-G	325	1300	1300
L-L	400	2000	2000

    - 120/208V RATED:

	B3 RINGWAVE	6 KV-3 KA UL VPR	C3 COMB WAVE
L-N	350	900	900
L-G	425	900	900
N-G	375	900	900
L-L	450	1300	1300

    THE SPD SHALL BE CAPABLE OF PROTECTING AGAINST A SINGLE PULSE SURGE CURRENT OF 50,000A ON ALL MODES (L-N, L-G, N-G, L-L). THE SPD SHALL BE CAPABLE OF PROTECTING AGAINST REPETITIVE SURGE CURRENT OF 3,500 IMPULSES ON ALL MODES (L-N, L-G, N-G, L-L). THE REPETITIVE SURGE CURRENT TEST SHALL BE CONDUCTED ACCORDING TO ANSI/IEEE C62.41 AND C62.45 STANDARDS.

    THE SPD SHALL BE RATED AS A UL-1449 3RD EDITION TYPE 2 DEVICE WITH A NOMINAL DISCHARGE (IN) RATING OF 20 KA MINIMUM.

    THE SPD SHALL BE AS MANUFACTURED BY CURRENT TECHNOLOGY TG60 SERIES, GENERAL ELECTRIC TR5-Y065 SERIES, LEA INTERNATIONAL SP100, SQUARE D EMA12 SERIES OR ENGINEER APPROVED EQUAL BY LIEBERT.

    B. EXECUTION:

    INSTALLATION:

    THE SERVICE ENTRANCE SPD SHALL BE INSTALLED ON THE LOAD SIDE OF THE MAIN SERVICE DISCONNECT. THE SPD SHALL BE WIRED IN PARALLEL WITH THE MAIN DISTRIBUTION PANEL. THE SPD SHALL BE DIRECTLY CONNECTED TO BUS IN OR FED BY A 100A3P SWITCH/BREAKER IN THE MDP WITH #2 AWG COPPER CONDUCTORS. THE SPD SHALL BE CLOSE NIPPLED TO THE MDP AND TERMINATE ON THE NEAREST BREAKER/SWITCH AT PANEL ENTRY POINT.

    THE DISTRIBUTION PANEL SPD SHALL BE WIRED IN PARALLEL WITH THE DISTRIBUTION PANEL. THE SPD SHALL BE FED BY A 60A3P SWITCH OR CIRCUIT BREAKER IN THE SDP WITH #6

    AWG COPPER CONDUCTORS. THE SPD SHALL BE CLOSE NIPPLED TO THE DISTRIBUTION PANEL AND TERMINATE ON THE NEAREST BREAKER AT PANEL ENTRY POINT.

    THE RECEPTACLE PANEL SPD SHALL BE WIRED IN PARALLEL WITH THE RECEPTACLE PANEL. THE SPD SHALL BE FED BY A 30A3P CIRCUIT BREAKER MOUNTED IN THE RECEPTACLE PANEL. THE SPD SHALL BE CONNECTED TO THE RECEPTACLE PANEL USING #10 AWG COPPER CONDUCTORS. THE SPD SHALL BE CLOSE NIPPLED TO THE RECEPTACLE PANEL AND TERMINATE ON THE NEAREST BREAKER AT PANEL ENTRY POINT.

    SPD FEED CONDUCTORS SHALL BE KEPT AS SHORT AS POSSIBLE. THE CONTRACTOR SHALL TWIST THE FEED CONDUCTORS TOGETHER TO REDUCE CONDUCTOR IMPEDANCE.

    SPD CONDUCTOR LUGS SHALL BE TORQUED TO THE VALUES RECOMMENDED BY THE EQUIPMENT MANUFACTURER.

    TESTING:

    PRIOR TO TURNOVER TO THE OWNER, SURGE PROTECTIVE DEVICES SHALL BE TESTED FOR OPERATION BY THE CONTRACTOR.

    TRAINING:

    THE CONTRACTOR SHALL INCLUDE A TRAINING COURSE FOR THE OWNER'S PERSONNEL ON THE OPERATION AND MAINTENANCE OF THE SURGE PROTECTIVE DEVICES.

    THE TRAINING COURSE SHALL BE TAUGHT BY A MANUFACTURER'S REPRESENTATIVE AT THE OWNER'S LOCATION.

    THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL TRAINING MATERIALS. THE OWNER IS RESPONSIBLE FOR PROVIDING THE TRAINING ROOM FACILITIES AT THE OWNER'S LOCATION.

ELECTRICAL GENERAL NOTES:

1. IT IS STRONGLY RECOMMENDED THAT ALL BIDDERS VISIT AND EXAMINE THE SITE. NO ADDITIONAL COMPENSATION WILL BE AWARDED FOR ANY DEVIATIONS OR DISCREPANCIES TO THESE PLANS. THE CONTRACTOR SHALL FAMILIARIZE HIMSELF WITH ALL CONDITIONS UNDER WHICH WORK MUST BE PERFORMED AND CHECK ALL PRESENT ELEVATIONS. THE CONTRACTOR SHALL REPORT ANY MAJOR DISCREPANCIES TO THE ARCHITECT. FAILURE TO DO SO SHALL BE DEEMED AS ACCEPTANCE OF EXISTING CONDITIONS.

2. ANY OTHER RELOCATIONS, ALTERATIONS AND/OR EXTENSIONS OF ELECTRICAL ITEMS DUE TO REMODELING (THOUGH NOT SPECIFICALLY SHOWN) SHALL BE INCLUDED TO PROVIDE A COMPLETE AND WORKING INSTALLATION.

3. THE DRAWINGS INDICATE MAJOR ITEMS TO BE REMOVED SUCH AS PANELS, COMMUNICATIONS SYSTEM TERMINAL BOXES, MAJOR FEEDERS, ETC. THE DRAWINGS DO NOT DETAIL REMOVALS FOR MINOR DEVICES, LIGHTING FIXTURES, BRANCH CIRCUITS, ETC., UNLESS SPECIFICALLY INDICATED FOR REUSE ELSEWHERE. IT IS INTENDED THAT ALL ITEMS NOT SHOWN TO BE REUSED ON THE NEW FLOOR PLANS BE REMOVED BACK TO SOURCE AND CONTINUITY OF CIRCUITRY TO ADJACENT AREAS BE PROVIDED FOR.

4. ALL REMOVED ITEMS SHALL REMAIN THE PROPERTY OF THE OWNER UNLESS DIRECTED OTHERWISE BY THE OWNER.

5. ALL WORK REQUIRING A POWER OUTAGE SHALL BE COORDINATED WITH THE OWNER AND SCHEDULED AT SUCH A TIME AS TO MINIMIZE DISRUPTION. THE CONTRACTOR SHALL SCHEDULE FULL WORK CREWS FOR AS LONG AS REQUIRED TO MINIMIZE THE SHUTDOWN PERIOD. ALL SHUTDOWNS SHALL OCCUR BETWEEN 8:00 P.M. AND 4:00 A.M.

6. ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR ALL CUTTING AND PATCHING FOR INSTALLATION OF ALL ELECTRICAL WORK. ALL CONDUIT SHALL BE RUN CONCEALED IN WALLS AND CEILINGS, WIREMOLD OR EXPOSED CONDUITS ARE NOT ACCEPTABLE UNLESS SPECIFICALLY NOTED ON THE DRAWINGS. ELECTRICAL CONTRACTOR TO PROVIDE ACCESS PANELS IN WALLS AND CEILINGS AS REQUIRED. MATCH ALL EXISTING CONDITIONS.

7. OPENINGS AROUND CONDUITS OR IN SLEEVES FOR CONDUITS PENETRATING FIRE-RATED FLOOR SLABS, WALLS, PARTITIONS, CEILINGS OR SMOKE PARTITIONS, SHALL BE SEALED AT BOTH SIDES OF THE PENETRATION. INSULATION SHALL NOT EXTEND THROUGH SLEEVES. PACK OPENINGS WITH CALCIUM SILICATE BLOCK, DOW CORNING 3-6548 RTV SILICON FOAM, 3M CP25 CAULK, OR 303 PUTTY FIRE BARRIER SYSTEM, OR MATERIAL HAVING THE SAME FIRE-RATING AS THE FLOOR OR WALL PENETRATED. FIBERGLASS IS NOT ACCEPTABLE.

8. ELECTRICAL CONTRACTOR TO PROVIDE AN INSTALLATION SCHEDULE DETAILING MAJOR DATES OF INSTALLATION FOR ITEMS SUCH AS TRANSFORMERS, MAIN DISTRIBUTION PANELS, SHUT DOWN TIMES, SERVICE SWITCHOVER, ETC. THE SCHEDULE SHALL BE APPROVED BY THE OWNER PRIOR TO ANY SHUT DOWN TIMES.

9. ALL EXTERIOR TRENCHING SHALL BE BACKFILLED AND COMPACTED WITH GRANULAR FILL, GRADED WITH A MINIMUM OF 6" OF TOP SOIL AND SEEDED TO MATCH EXISTING.

10. ALL WORK SHALL BE COORDINATED WITH THE WORK OF OTHER TRADES TO AVOID INTERFERENCES AND CONFLICTS. REFER TO THE DRAWINGS OF THE RESPECTIVE SYSTEMS PRIOR TO SUBMISSION OF BIDS FOR ADDITIONAL WORK WHICH MAY BE REQUIRED AS PART OF THIS WORK. NO ALLOWANCES WILL BE MADE FOR THE LACK OF COORDINATION BETWEEN DISCIPLINES OR SYSTEMS AND EQUIPMENT.

11. THE WORK SHALL BE COORDINATED WITH THE ARCHITECT FOR THE EXACT LOCATION OF LIGHT FIXTURES, EQUIPMENT, DEVICES, ETC. TO ASSURE PROPER PLACEMENT OF SAID DEVICES AND EQUIPMENT. WHERE A CONFLICT EXISTS BETWEEN ANY TWO DOCUMENTS, NOTIFY THE ENGINEER FOR RESOLUTION PRIOR TO ANY ROUGH-IN OR INSTALLATION.

12. THE CONTRACTOR SHALL VERIFY ALL EQUIPMENT BEING INSTALLED PRIOR TO INSTALLATION TO ASSURE THAT THE FEEDER, DISCONNECT, STARTER, OVERCURRENT PROTECTION, ETC. MATCHES THE ACTUAL NAMEPLATE DATA AS SUPPLIED BY THE MANUFACTURER.

13. SPECIFIC REQUIREMENTS REGARDING MATERIALS, WORKMANSHIP AND THE WORK TO BE DONE ARE COVERED BY THE SPECIFICATIONS WHICH COMPLEMENT THE PLANS. WORK CALLED FOR BY THE SPECIFICATIONS OR THE PLANS IS REQUIRED THE SAME AS IF REQUIRED BY BOTH. WHERE A CONFLICT EXISTS BETWEEN THE PLANS AND SPECIFICATIONS, THE MORE STRINGENT REQUIREMENTS OF THE TWO SHALL APPLY UNLESS SPECIFICALLY APPROVED IN WRITING BY THE ENGINEER.

14. REFER TO EQUIPMENT CUT SHEETS AND MANUFACTURER'S DATA FOR ROUGH IN LOCATIONS OF ELECTRICAL CONNECTIONS AND INTERCONNECTIONS OF ALL EQUIPMENT.

15. INSTALL OVER CURRENT PROTECTION AND BRANCH CIRCUIT WIRING PER U.L. LISTING REQUIREMENTS FOR EQUIPMENT SERVED - REFER TO NAMEPLATE DATA.

16. PROVIDE START-UP ASSISTANCE TO OWNER PERSONNEL AND EQUIPMENT TECHNICIANS TO CONFIRM CORRECT PHASE ROTATION, PROPER OPERATION AND SEQUENCE, AND CONTROLS.

17. CONTRACTOR SHALL COORDINATE ELEVATIONS AND PIPING SYSTEM SLOPES SUCH THAT DUCTWORK, PIPING, RACEWAY, CABLE TRAY, AND ASSOCIATED EQUIPMENT IS INSTALLED AT UNIFORM ELEVATIONS WITH MINIMAL OFFSET. PROVIDE COORDINATION DRAWING TO ENGINEER FOR REVIEW PRIOR TO EQUIPMENT ORDERS AND ROUGH-IN.

FIRE ALARM NOTES:

1. THERE IS AN EXISTING FIRE ALARM SYSTEM IN THIS PROJECT BUILDING. ALL NEW FIRE ALARM DEVICES SHOWN ON THIS PLAN ARE TO BE PROVIDED AND CONNECTED INTO THE EXISTING SYSTEM. THE ELECTRICAL CONTRACTOR SHALL COORDINATE WITH THE TECHNICIAN OF THE CURRENT SYSTEM'S MANUFACTURER TO INSURE THAT ANY MODULES, SOFTWARE, OR HARDWARE IS AVAILABLE AND IN PLACE TO ACCOMMODATE THE NEW DEVICES. ALL FIRE ALARM INSTALLATIONS AND TESTING ARE TO BE DONE UNDER THE SUPERVISION OF A TECHNICIAN CERTIFIED FOR FIRE ALARM WORK IN THE STATE OF GEORGIA.

2. FIRE ALARM CONDUIT AND WIRE SIZES SHALL BE AS RECOMMENDED BY EQUIPMENT SUPPLIER'S SHOP DRAWINGS AND RECOMMENDATIONS.

3. THE ELECTRICAL CONTRACTOR IS SOLELY RESPONSIBLE FOR THE PROVISION AND OPERATING OF ALL THE FIRE ALARM EQUIPMENT, INCLUDING DUCT SMOKE DETECTORS. THE MECHANICAL CONTRACTOR SHALL INSTALL THE DUCT SMOKE DETECTORS.

4. STROBES THAT ARE WITHIN SIGHT OF EACH OTHER SHALL BE IN SYNC.

5. INSTALLATION OF FIRE ALARM COMPONENTS SHALL BE AS RECOMMENDED BY THE MANUFACTURER.

6. EXISTING FIRE ALARM COMPONENTS (FACP, FAA, DETECTORS, PULL STATIONS, ETC) MAY BE REUSED PROVIDED THE EXISTING EQUIPMENT MEETS THE CRITERIA SET FORTH IN THE DRAWINGS AND ALL REUSED EQUIPMENT SHALL BE CERTIFIED BY THE MANUFACTURER AS FUNCTIONING PROPERLY. ANY NEW EQUIPMENT REQUIRED SHALL MATCH EXISTING.

7. PROVIDE SERVICES OF A FACTORY AUTHORIZED SERVICE REPRESENTATIVE TO SUPERVISE THE FIELD ASSEMBLY AND CONNECTION OF COMPONENTS AND THE PRE-TESTING, TESTING, AND ADJUSTMENT OF THE SYSTEM. SERVICE PERSONNEL SHALL BE QUALIFIED AND EXPERIENCED IN THE INSPECTION, TESTING AND MAINTENANCE OF FIRE ALARM SYSTEM. A FACTORY TRAINED REPRESENTATIVE OF THE MANUFACTURER SHALL SUPERVISE THE FINAL TESTING OF THE SYSTEM. ON COMPLETATION OF THE ACCEPTANCE TEST, THE OWNER'S REPRESENTATIVE SHALL BE INSTRUCTED IN THE OPERATION AND TESTING OF THE SYSTEM.

8. ELECTRICAL CONTRACTOR IS TO PROVIDE A COMPLETE CONDUIT SYSTEM FOR THE FIRE ALARM SYSTEM. CONDUIT SIZE & ROUTING, BACKBOX SIZE & DEPTH, REQUIRED JUNCTION BOX SIZES & LOCATIONS, & OTHER DETAILS OF THE FIRE ALARM CONDUIT SYSTEM ARE TO BE AS DETAILED ON THE FIRE ALARM SHOP DRAWINGS PROVIDED BY THE FIRE ALARM SYSTEM SUPPLIER. MINIMUM CONDUIT SIZE FOR LOW VOLTAGE SYSTEMS SHALL BE 3/4".

Northwest Georgia Regional Library System
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kcp architects
706.937.2900

GEORGIA REGISTERED PROFESSIONAL ENGINEER
No. PE0093[illegible]
JOHN F. GERMS
7/21/2025

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ELECTRICAL
SPECIFICATIONS
AND NOTES

SHEET NO.

E0.2

C&A No. 24-035

CAMPBELL & ASSOCIATES, INC.
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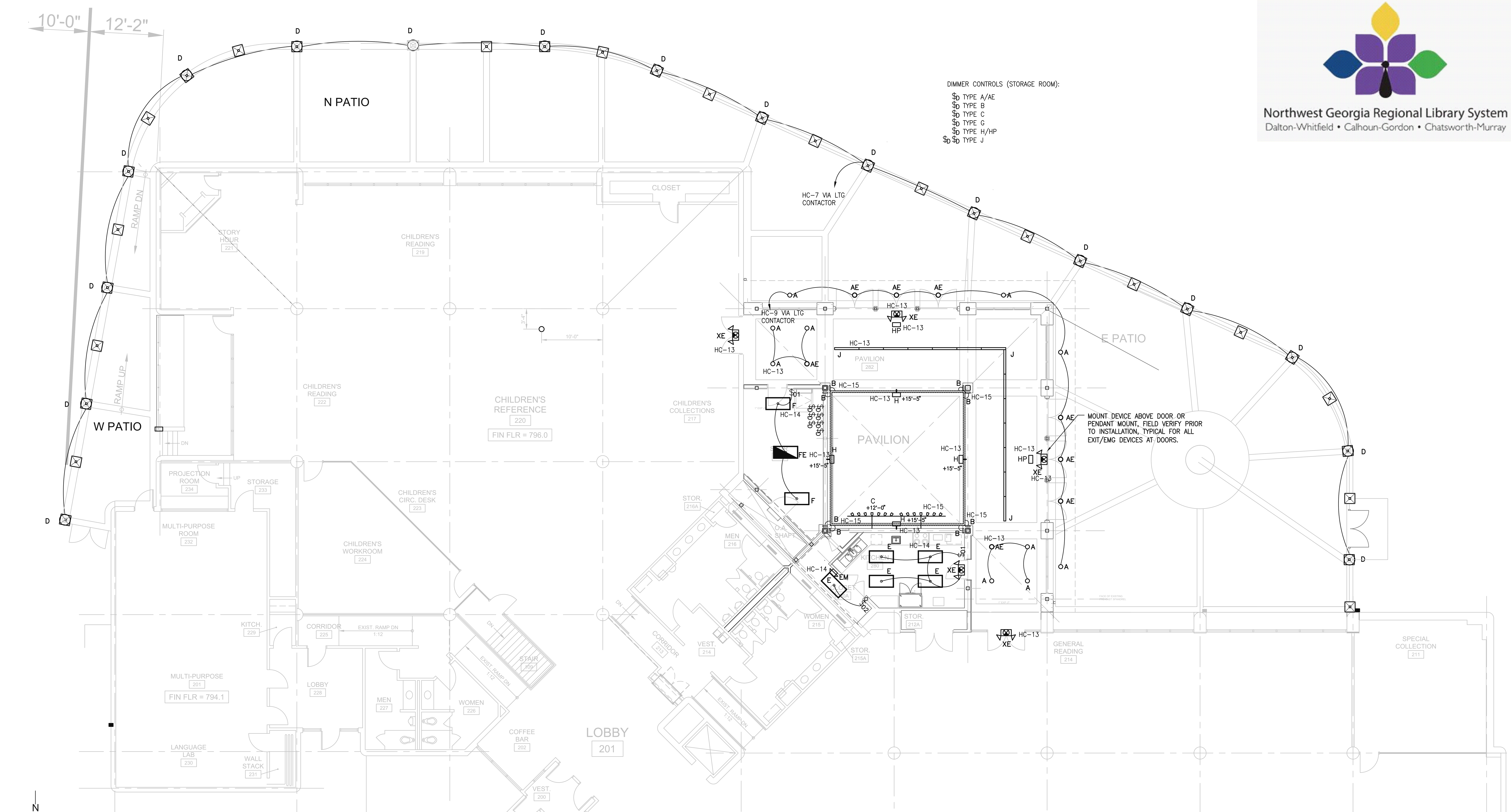

LIGHTING PLAN

1/8" = 1' - 0"

kcp architects 706.937.2900

GEORGIA REGISTERED PROFESSIONAL ENGINEER No. PE0 JOHN F. GERM

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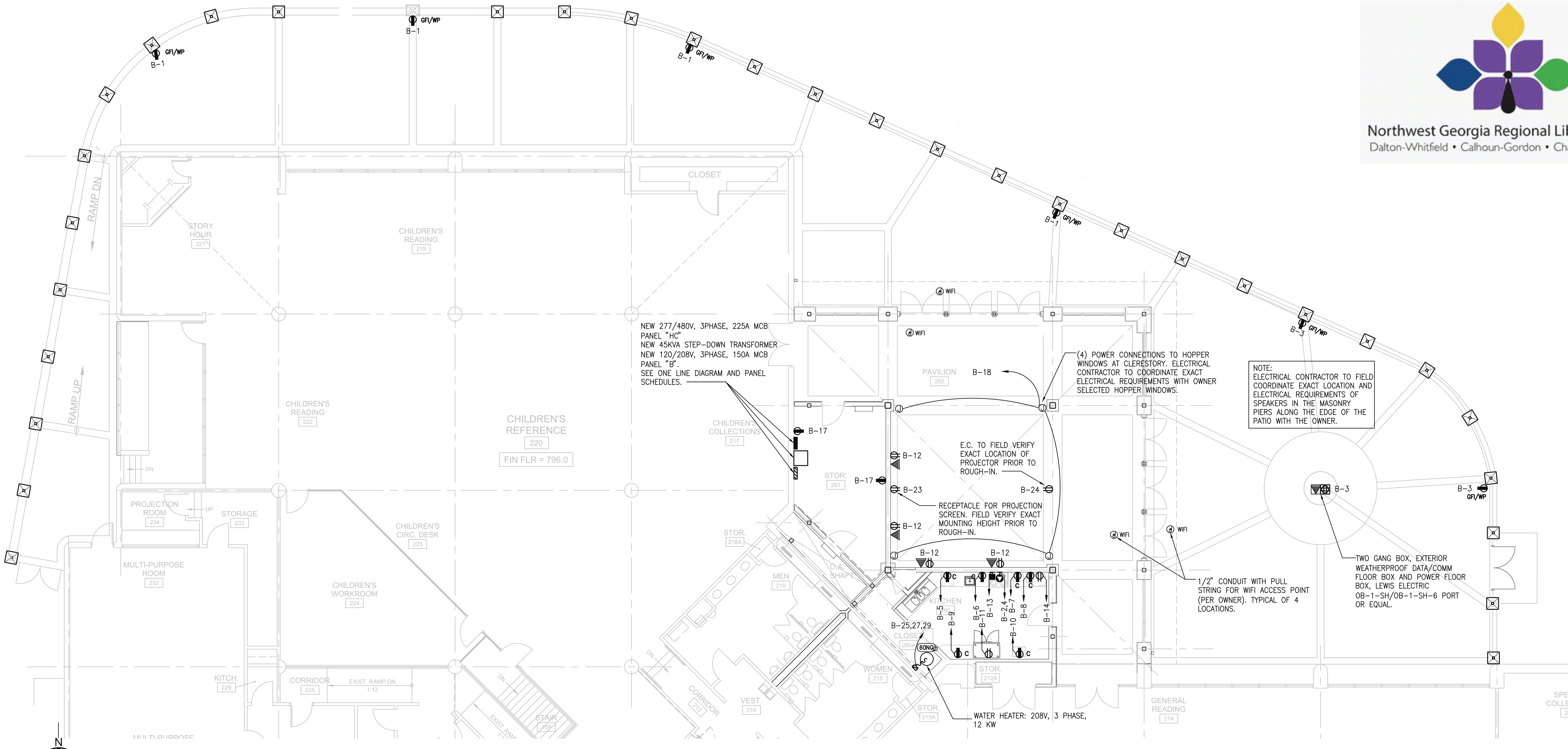
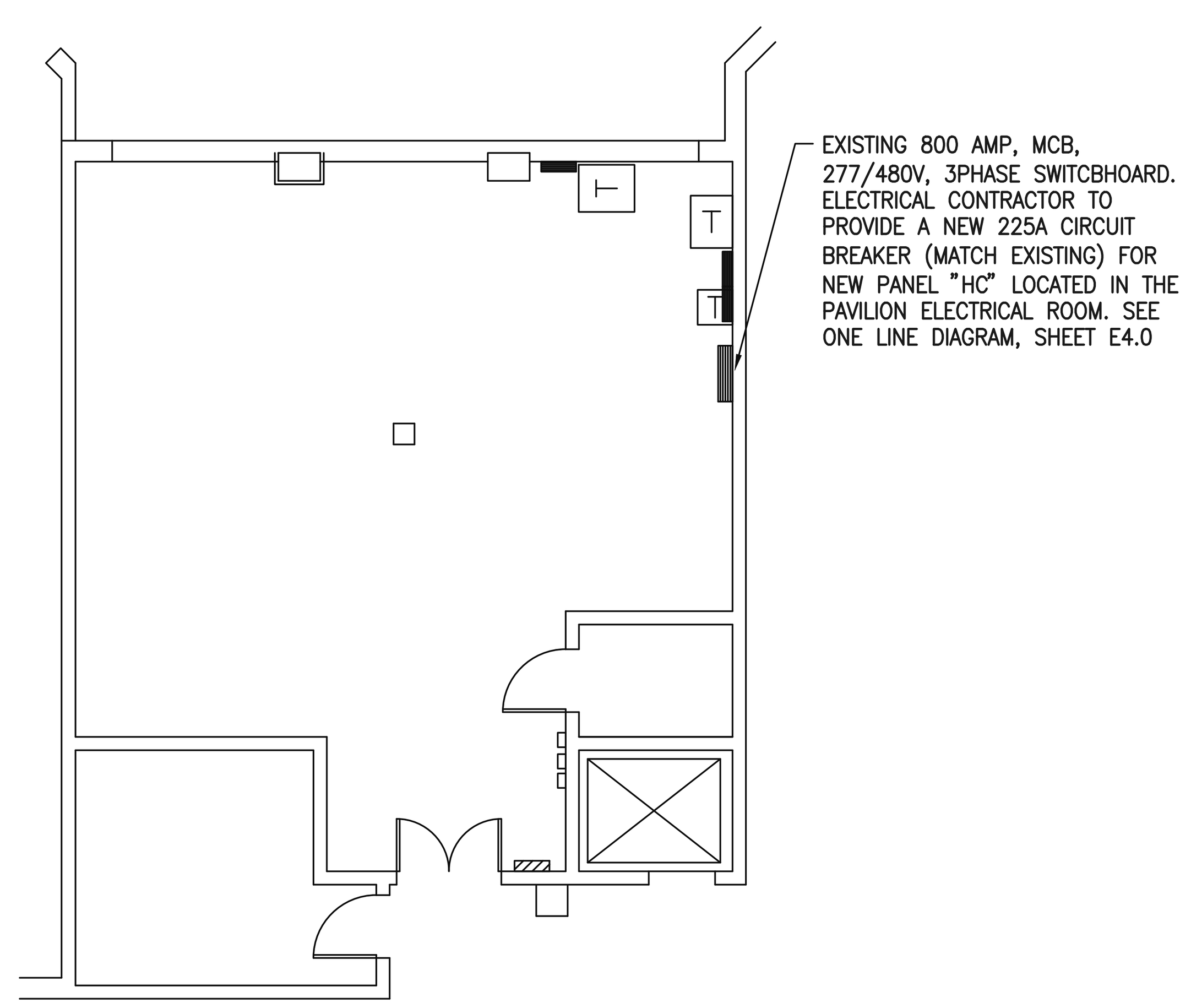
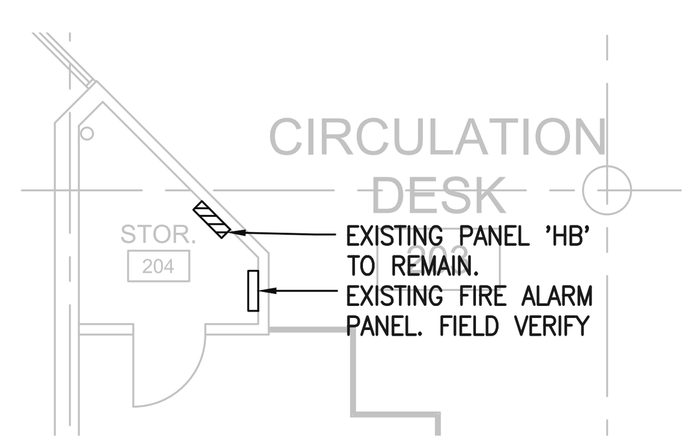
E1.0



POWER FLOOR PLAN

1/8" = 1' - 0"





LOWER LEVEL MECHANICAL/ELECTRICAL ROOM

1/8" = 1' - 0"

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POWER FLOOR PLAN

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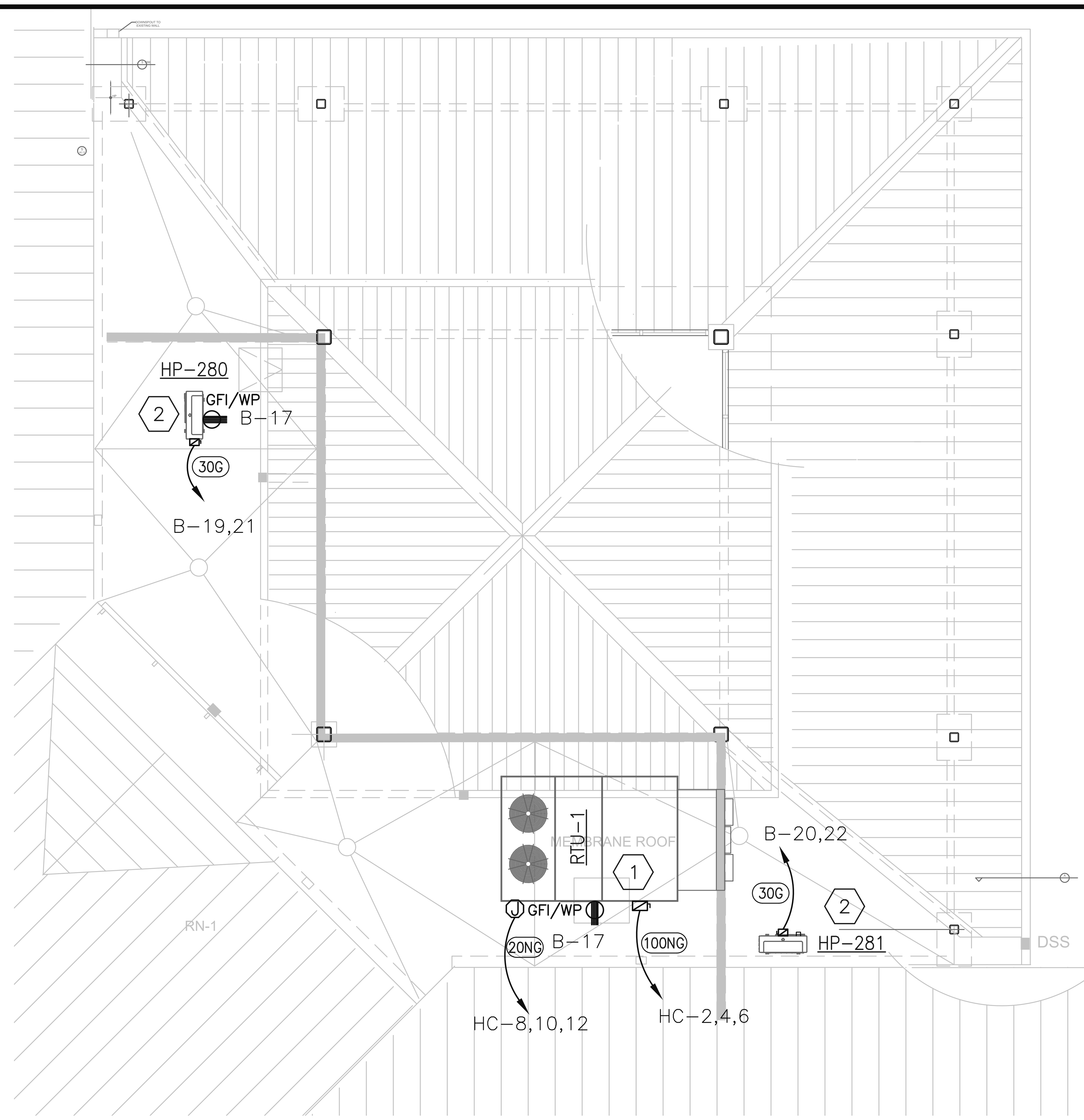
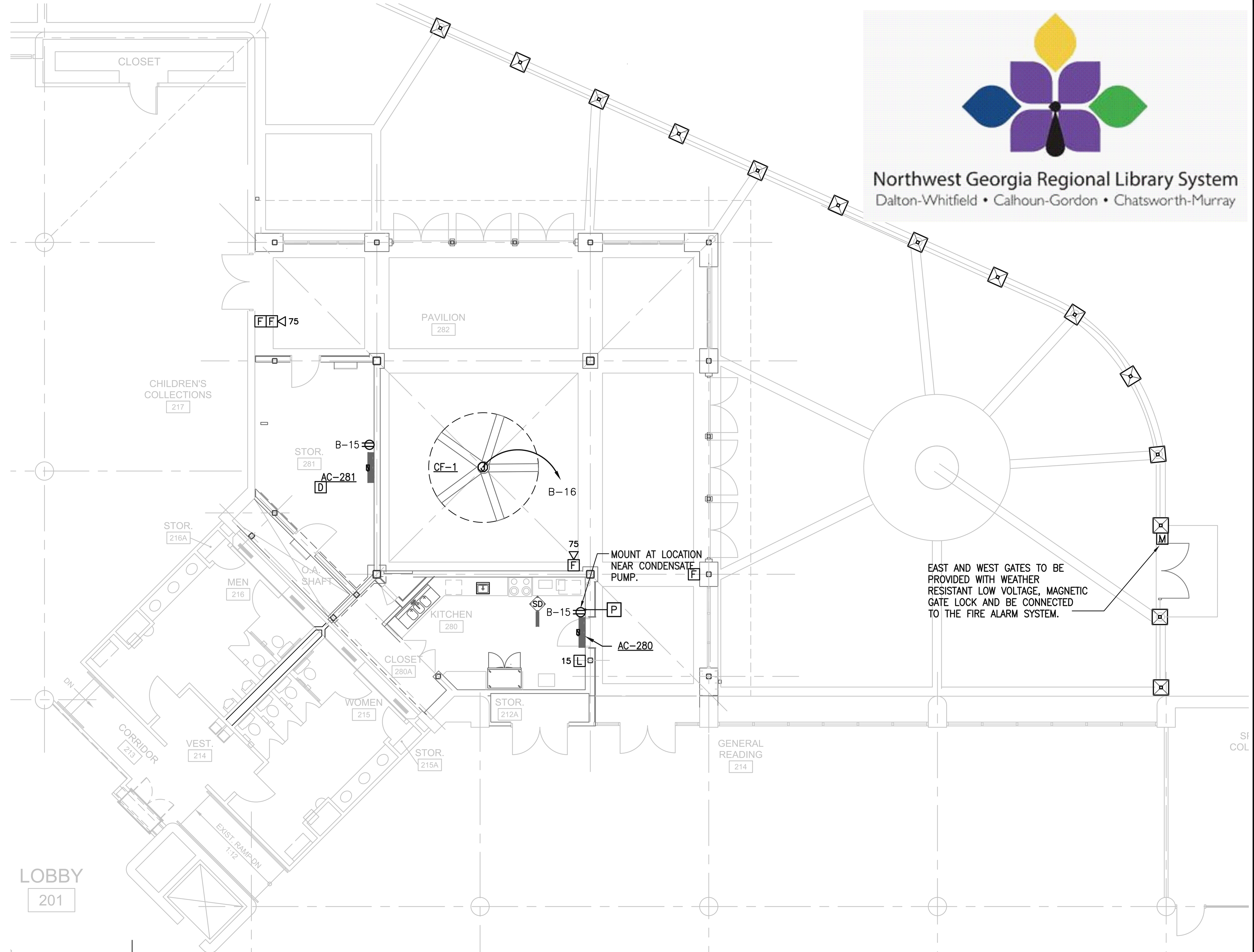


HVAC ROOF PLAN

1/8" = 1' - 0"



FIRE ALARM & HVAC POWER FLOOR PLAN

1/8" = 1' - 0"

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KITCHEN HOOD WITH INTERNAL FAN SCHEDULE

MARK	ELECTRICAL			COMMENTS
	VOLTS/PH	FLA	MOCP	
KH-1	115/1	1.2	15.0	SEE NOTES

NOTES:

1. HOOD TO BE PROVIDED WITH A PRE-ENGINEERED, PRE-INSTALLED FIRE SUPPRESSION SYSTEM WITH A LOW pH CHEMICAL AMEREX 600 SUPPRESSION AGENT.

2. HOOD TO BE PROVIDED WITH AN AUDIBLE BUZZER (90dB) AND BROAN MODEL 643 ROOF JACK.

4. HOOD TO BE PROVIDED WITH A DUAL ELEMENT DISCONNECT (3/4" NPT NATURAL GAS AND ELECTRIC) AND MANUAL PULL STATION.

DUCTLESS SPLIT SYSTEM A/C UNIT SCHEDULE

MARK	SYSTEM ELECTRICAL			COMMENTS
	VOLTS/PH	MCA	MOCP	
AC-280 & HP-280	208-230/1	15.0	20.0	SEE NOTES
AC-281 & HP-281	208-230/1	12.0	15.0	SEE NOTES

NOTES:

1. PROVIDE EACH SYSTEM WITH MODEL PREMTC00U WALL-MOUNTED WIRED SIMPLE REMOTE CONTROLLER.

3. PROVIDE AC-280/HP-280 WITH LITTLE GIANT MODEL EC-1K-DE CONDENSATE DRAIN PUMP (100-240V, 0.18 A), RESERVOIR, AND LINE SET KIT.

HIGH VOLUME LOW SPEED FAN SCHEDULE

MARK	INPUT POWER (WATTS)	VOLTS/PH	COMMENTS
CF-1	283	115/1	SEE NOTES

NOTES:

1. HVLS FAN SHALL BE CONTROLLED VIA STANDARD TOUCHSCREEN CONTROLLER (LOCATE CONTROLLER IN STORAGE ROOM 280).

3. PROVIDE HVLS FAN WITH WOOD BEAM MOUNTING KIT, 3-FOOT DROP LENGTH, POWER WIRING PIGTAIL, PLUG-AND-PLAY NETWORK COMMUNICATION WIRING PIGTAIL, FIRE ALARM WIRING PIGTAIL, LOW VOLTAGE (24 VDC/VAC OR 115 VAC) NORMALLY CLOSED ELECTROMECHANICAL FIRE ALARM RELAY, BRAIDED GALVANIZED STEEL SAFETY CABLE, BRAIDED GALVANIZED STEEL GUY WIRES, EASY-INSTALL GRIPPLE HARDWARE FOR SAFETY CABLE AND GUY WIRES, NEMA-1 TOGGLE SWITCH (DISCONNECT), AND 100 FEET OF SHIELDED TWISTED PAIR (STP) CAT-5e CONTROL CABLE.

PACKAGE A/C UNIT SCHEDULE (HEAT PUMP)

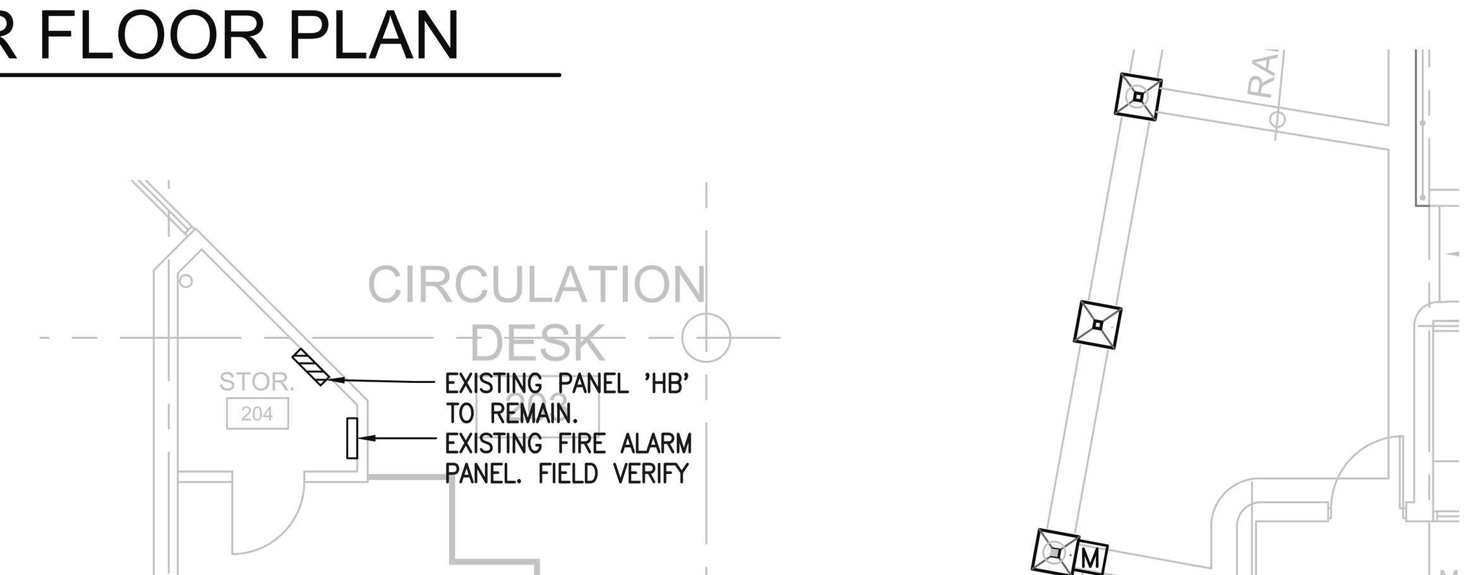
MARK	AUX. HEAT (KW.)	ELECTRICAL			NOMINAL TONS	COMMENTS
		VOLTS/PH	MCA	MOCP		
RTU-1	36.0	460/3	96.0	100	15.00	SEE NOTES

NOTES:

2. PROVIDE UNIT WITH MICRO-METL MODEL PCED-PR20DCA-4L2 MODULATING ENTHALPY ECONOMIZER/POWERED EXHAUST COMBINATION; POWERED EXHAUST SHALL BE CAPABLE OF EXHAUSTING A MINIMUM OF 4356 CFM OF AIR @ 0.25" E.S.P. UNIT SHALL BE 2.0 HP, 460 VOLTS/3-PHASE, 4.8 MCA, 6.2 MOCP (THIS IS A SEPARATE POER CONNECTION FROM THE RTU SINGLE-POINT POWER CONNECTION). SUBMIT POWERED EXHAUST FAN DATA FOR REVIEW.

6. PROVIDE SMOKE DETECTORS IN THE RETURN DUCTWORK. SMOKE DETECTORS ARE TO BE PROVIDED AND WIRED BY THE ELECTRICAL CONTRACTOR, AND INSTALLED BY THE MECHANICAL CONTRACTOR. SMOKE DETECTORS SHALL SHUT DOWN THE UNIT UPON DETECTION OF PRODUCTS OF COMBUSTION IN THE AIRSTREAM.

5. PROGRAMMABLE THERMOSTATS ARE TO PROVIDE AUXILIARY HEAT CONTROL SUCH THAT ELECTRIC AUXILIARY HEAT WILL NOT OPERATE IN CONJUNCTION W/ CONDENSER UNLESS REQUIRED FOR CONDENSER COIL DEFROST.



PARTIAL WEST GATE FIRE ALARM FLOOR PLAN

1/8" = 1' - 0"

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FIRE ALARM, HVAC POWER, & ROOF PLAN

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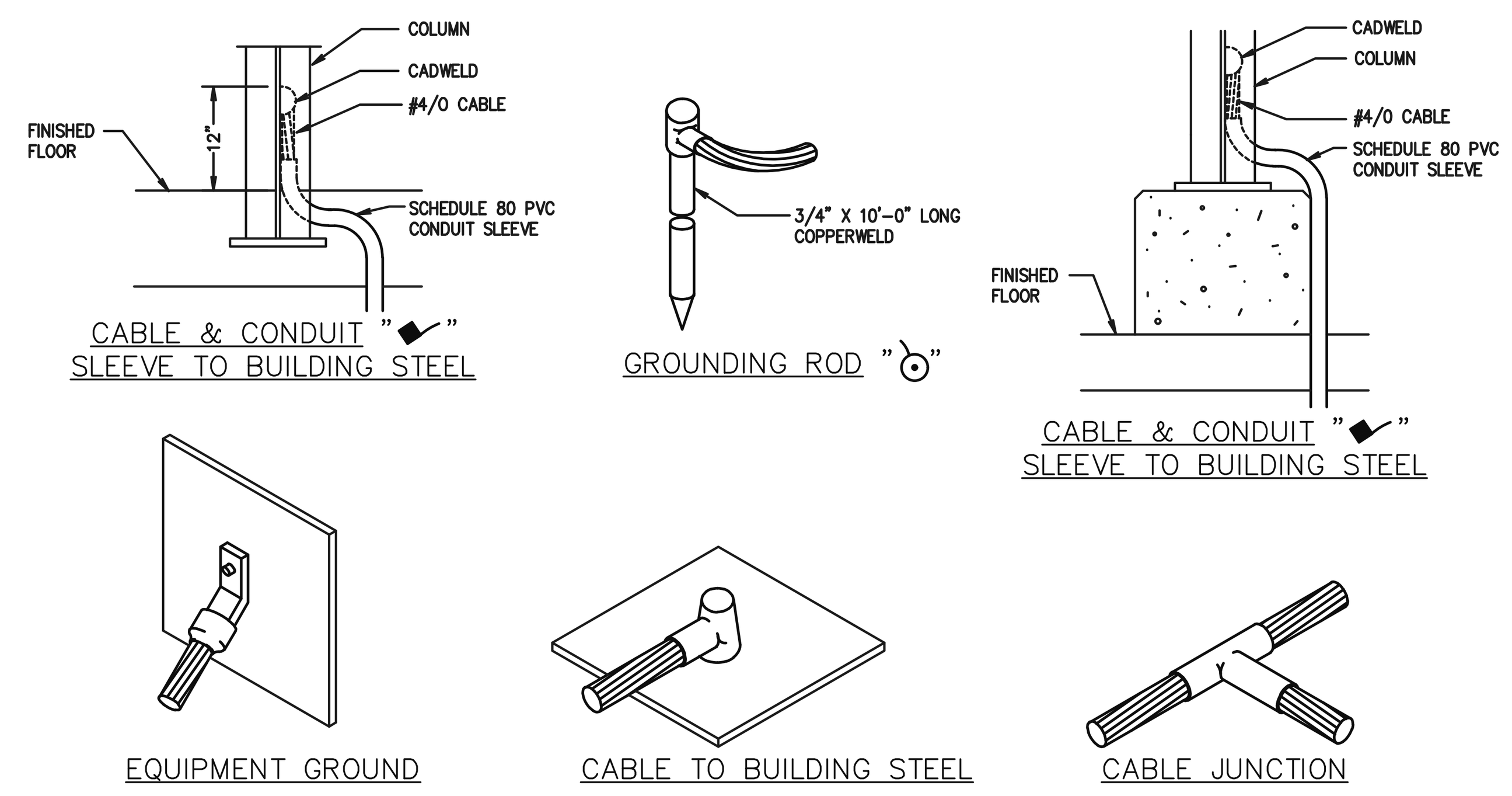
WIRE SIZING TABLE

IF DISTANCE A+B IN FEET IS: (SEE DIAGRAM AT RIGHT)	USE COPPER WIRE IN METALLIC CONDUIT, AWG SIZE AS FOLLOWS ON ENTIRE CIRCUIT AND SIZE CONDUIT ACCORDINGLY:
FOR 120V–20A BRANCH CIRCUITS ONLY, UNLESS OTHERWISE NOTED	
0' TO 100'	#12 (MIN.)
100' TO 175'	#10
175' TO 300'	#8
300' TO 450'	#6 (MAX.)
FOR 277V–20A BRANCH CIRCUITS ONLY, UNLESS OTHERWISE NOTED	
0' TO 250'	#12 (MIN.)
250' TO 400'	#10
400' TO 700'	#8
700' TO 1000'	#6 (MAX.)

120V diagram: A(ft), B(ft); 'RP' PANEL; 1ST ON CIRCUIT; LAST ON CIRCUIT; 1/2 WIRE LENGTH FROM FIRST TO LAST RECEPTACLE ON CIRCUIT

277V diagram: A(ft), B(ft); 'LP' PANEL; 1ST ON CIRCUIT; LAST ON CIRCUIT; 1/2 WIRE LENGTH FROM FIRST TO LAST LIGHTING FIXTURE ON CIRCUIT

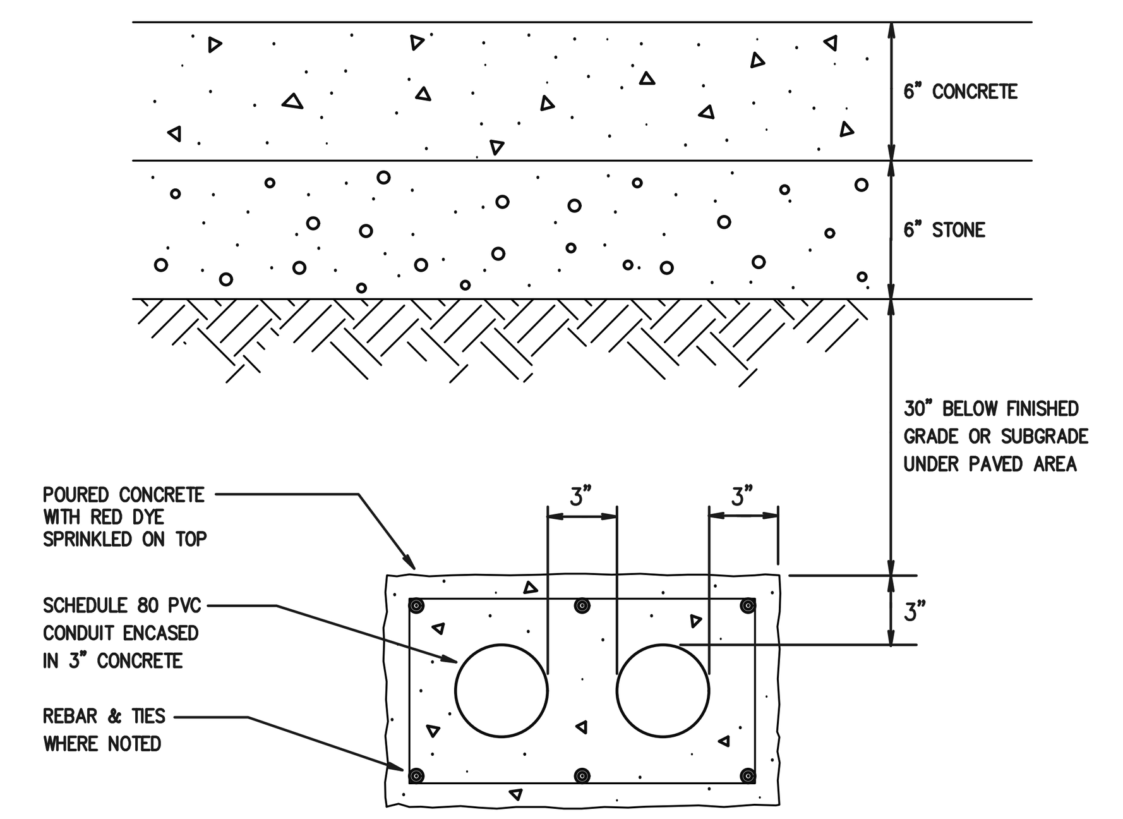
THESE TABLES ARE BASED ON AN EVENLY DISTRIBUTED LOAD ALLOWING A 3% VOLTAGE DROP AT LAST OUTLET; APPLY ACCORDINGLY.



GROUNDING NOTES:

1. GROUNDING CABLE SHALL BE LAID SLACK A MINIMUM OF 18" BELOW FINISHED GRADE (30" BELOW FINISHED GRADE WHERE GROUNDING RING EXISTS).
2. GROUND RODS SHALL BE LOCATED A MINIMUM OF 10'-0" AWAY FROM BUILDING. GROUND BUS FROM BUILDING TO GROUND ROD SHALL BE INSTALLED IN SCHEDULE 80 PVC CONDUIT.
3. GROUND RESISTANCE SHALL BE 3 OHMS MAXIMUM. ADDITIONAL RODS OR ROD EXTENSIONS SHALL BE DRIVEN TO OBTAIN THIS VALUE BY TEST.
4. ALL GROUND CABLE SHALL BE A #4/0-7 STRAND SOFT, BARE COPPER CABLE MINIMUM.
5. ALL CONNECTIONS TO BE MADE BY THE THERMOLD PROCESS CADWELD PROCESS OF ERICO PRODUCTS INC.
6. BOND LINE SIDE OF WATER METER TO FOOTING REBAR AND BUILDING STEEL PER "MAIN SERVICE GROUNDING DETAIL".
7. BONDING JUMPER BETWEEN EXISTING AND NEW CEILING STEEL (6'-0" MAXIMUM). CADWELD BOTH ENDS TO STEEL.

GROUNDING DETAILS
SCALE: NONE



TYPICAL UNDERGROUND – UNDER PAVEMENT CONDUIT DETAIL
SCALE: NONE

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New Panel HC

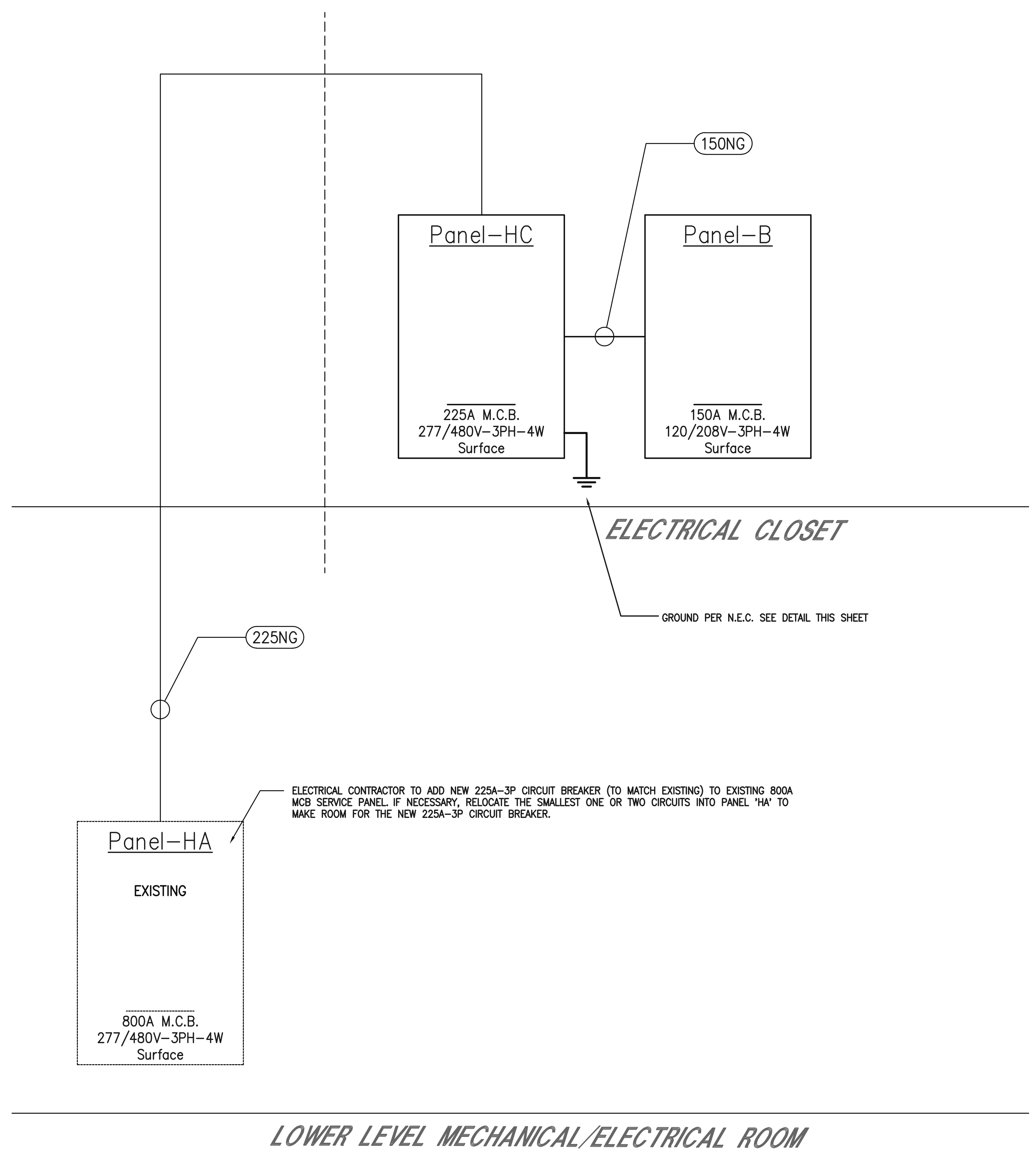
NOTES	225A MCB			VOLTAGE: 277/480V-3PH-4W					SURFACE	NOTES
	LOAD DESCRIPTION	LOAD	BKR AMP	BKR No	PH	BKR No	BKR AMP	LOAD	LOAD DESCRIPTION	
	45 KVA STEPDOWN XFMR	15,472	70	1	A	2	100	26,603	RTU-1	
	*	14,711	3P	3	B	4	3P	26,603	*	
	*	9,240	-	5	C	6	-	26,603	*	
	Ltg: Exterior Post	885	20	7	A	8	20	1,330	ENTHALPY ECONOMIZER	
	Ltg: Exterior @Soffit	391	20	9	B	10	3P	1,330	*	
	Lighting Contactor	2,400	30	11	C	12	-	1,330	*	
	Ltg: Pavilion		20	13	A	14	20		Ltg: Pavilion	
	Ltg: Pavilion		20	15	B	16	20		Ltg: Pavilion	
			20	17	C	18	20			
			20	19	A	20				
			20	21	B	22				
			20	23	C	24				
				25	A	26				
				27	B	28				
				29	C	30				

TOTAL CONNECTED LOAD: 126,898 W 153 AMPS
5/16/2025

New Panel B

NOTES	150A MCB			VOLTAGE: 120/208V-3PH-4W					SURFACE	NOTES
	LOAD DESCRIPTION	LOAD	BKR AMP	BKR No	PH	BKR No	BKR AMP	LOAD	LOAD DESCRIPTION	
	Receps: Exterior	720	20	1	A	2	50	4,000	Range	GFCI
	Receps: Exterior	720	20	3	B	4	2	4,000	*	
	Recep: Countertop	1,500	20	5	C	6	20	1,500	Recep: Countertop	
	Recep: Countertop	1,500	20	7	A	8	20	1,500	Recep: Countertop	
	Recep: Countertop	1,500	20	9	B	10	20	1,200	Recep: Microwave	
GFCI	Refrigerator	800	20	11	C	12	20	720	Receps: Podium	
GFCI	Kitchen Hood	144	20	13	A	14	20	800	U/C Ice Machine	GFCI
GFCI	Condensate Pump (X2)	200	20	15	B	16	20	283	CF-1	
	Receps: HVAC Maintenace	720	20	17	C	18	20			
	HP-280 (AC-280)	1,560	20	19	A	20	20	1,248	HP-284 (AC-281)	
	*	1,560	2P	21	B	22	2P	1,248	*	
	SPARE		20	23	C	24	20		SPARE	
	Water Heater (12 KW)	4,000	45	25	A	26	20		SPARE	
	*	4,000	3P	27	B	28	20		SPARE	
	*	4,000	-	29	C	30			SPACE ONLY	
	SPARE		20	31	A	32			SPACE ONLY	
	SPARE		20	33	B	34			SPACE ONLY	
	SPARE		20	35	C	36			SPACE ONLY	
	SPACE ONLY			37	A	38			SPACE ONLY	
	SPACE ONLY			39	B	40			SPACE ONLY	
	SPACE ONLY			41	C	42			SPACE ONLY	

TOTAL CONNECTED LOAD: 39,423 W 109 AMPS
5/16/2025



PARTIAL ONE LINE DIAGRAM
N.T.S.

C&A No. 24-035
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