

GDI ENGINEERING



Porter Pool House

Residencial

Arlington, Texas

MECHANICAL SPECIFICATIONS

PROVIDE EQUIPMENT INDICATED ON THE DRAWINGS, AND AS REQUIRED FOR A COMPLETE FUNCTIONING SYSTEM DEFINITIONS:

1. **FURNISH** MEANS TO SUPPLY AND DELIVER TO PROJECT SITE, READY FOR INSTALLATION.

2. **INSTALL** MEANS TO PLACE IN POSITION AND MAKE CONNECTIONS FOR SERVICE OR USE.

3. **PROVIDE** MEANS TO FURNISH AND INSTALL, COMPLETE AND READY FOR INTENDED USE.

4. **WARRANTY**: PROVIDE LABOR AND MATERIALS TO REPAIR OR REPLACE DEFECTIVE PARTS AND MATERIALS AS REQUIRED FOR ONE YEAR AFTER SUBSTANTIAL COMPLETION OR OWNER ACCEPTANCE OF THE COMPLETED PROJECT.

5. **PROVIDE OPERATION MANUALS, MAINTENANCE MANUALS AND SCHEMATICS** FOR ALL MECHANICAL EQUIPMENT INSTALLED.

6. **COORDINATION**: COORDINATE WITH THE WORK OF OTHER SECTIONS, EQUIPMENT FURNISHED BY OTHERS, REQUIREMENTS OF THE OWNER, AND WITH THE CONSTRAINTS OF THE EXISTING CONDITIONS OF THE PROJECT SITE.

7. **ROOF PENETRATIONS** SHALL COMPLY WITH "SMACNA" AND "NRCA" STANDARDS, AND WITH THE REQUIREMENTS OF THE EXISTING ROOFING WARRANTY, IF APPLICABLE. DO NOT PERFORM ROOFING PENETRATIONS IN A MANNER WHICH WOULD VOID OR OTHERWISE LIMIT THE EXISTING ROOF WARRANTY.

8. **DUCT DIMENSIONS**: UNLESS OTHERWISE NOTED, DUCT DIMENSIONS ON THE DRAWINGS ARE INSIDE CLEAR DIMENSIONS.

9. **SHEET METAL DUCTWORK**:

9.1. PROVIDE SHEET METAL DUCTWORK FABRICATED AND INSTALLED IN ACCORDANCE WITH ASHRAE AND SMACNA STANDARDS, FOR 1" W.G. PRESSURE CLASS, SEAL CLASS "A".

9.2. SHEET METAL SHALL BE GALVANIZED SHEET STEEL OF LOCK FORMING QUALITY, WITH G90 ZINC COATING. SHEET STEEL SHALL COMPLY WITH ASTM A653 STANDARD SPECIFICATION FOR STEEL SHEET METAL, ZINC COATED (GALVANIZED) OR ZINC-IRON ALLOY-COATED (GALVANNEALED) BY THE HOT DIP PROCESS, AND A924 STANDARD SPECIFICATION FOR GENERAL REQUIREMENTS FOR SHEET, METALLIC-COATED BY THE HOT DIP PROCESS.

9.3. ALL ANGLE IRON USED FOR SUPPORT SHALL BE GALVANIZED.

9.4. CONNECTIONS TO WALLS OR FLOOR SHALL BE AIR TIGHT WITH ANGLE IRON AND CAULKING.

9.5. SEAL ALL DUCT SEAMS, TRANSVERSE AND LONGITUDINAL, AIR TIGHT.

9.6. PROVIDE TURNING VANES AT ALL 90° ELBOWS.

9.10. TRAPEZE DUCT HANGERS: PROVIDE MINIMUM 1" X 2" X 1" X 18 GAUGE CHANNELS WITH MINIMUM 1" X 18 GAUGE STRAPS TO STRUCTURAL SUPPORT.

9.11. ROUND SHEET METAL DUCT: PROVIDE SPIRAL SEAM (ALL SIZES) OR SNAP LOCK (DUCT SIZES UP TO 10") GALVANIZED STEEL COMPLYING WITH SMACNA STANDARDS.

9.12. SPIRAL SEAM DUCTWORK SHALL HAVE SMACNA SEAM TYPE RL-1.

9.13. FIBER GLASS DUCT BOARD IS AN ACCEPTABLE ALTERNATIVE IF APPROVED BY OWNER AND THE LOCAL BUILDING CODE OFFICIAL. PRODUCT AND INSTALLATION MUST MEET NAIMA STANDARDS AND OTHER APPLICABLE CODES AND REGULATIONS.

9.14. EXPOSED DUCTWORK: EXPOSED DUCTWORK SHALL BE CLEANED OF DEBRIS AND OIL, THEN WIPED DOWN WITH VINEGAR OR OTHER SURFACE PREPARING CHEMICAL TO PREPARE DUCT FOR PAINT.

9.15. DUCT SEALANT: PROVIDE POLYMERIC RUBBER TYPE SEALANT FOR USE ON BOTH INTERIOR LOCATED DUCTWORK AND DUCTWORK EXPOSED TO OUTDOOR CONDITIONS. SEALER SHALL HAVE HIGH BONDING STRENGTH FOR SURE, FIRST TIME SEALING OF JOINTS IN LOW, MEDIUM, AND HIGH PRESSURE DUCT SYSTEMS. SEALER SHALL BE HIGH IN SOLID CONTENT.

9.16. PROVIDE A TWO PART TAPE SEALING SYSTEM, CONSISTING OF WOVEN FIBER TAPE IMPREGNATED WITH A GYPSUM MINERAL COMPOUND, AND A MODIFIED ACRYLIC/SILICONE ACTIVATOR THAT REACTS EXOTHERMICALLY WITH THE TAPE. TWO PART TAPE SEALING SYSTEM MUST BE RATED FOR BOTH INDOOR AND OUTDOOR APPLICATION. TAPE SHALL NOT CONTAIN ASBESTOS.

9.20. DUCT INSULATION: MATERIAL FOR SUPPLY AND RETURN AIR DUCT ABOVE CEILING INSIDE THE BUILDING SHALL HAVE THE EQUIVALENT THERMAL RESISTANCE OF MINIMUM R-6. THE REQUIRED R VALUES ARE FOR INSTALLED INSULATION WITH 25% COMPRESSION AT THE CORNERS.

9.21. PROVIDE PINS AND WASHERS IN ACCORDANCE WITH SMACNA REQUIREMENTS AND AS REQUIRED TO PREVENT INSULATION FROM SAGGING.

9.22. PROVIDE ADEQUATE INSULATION AT THE SUPPLY AIR DIFFUSERS TO PREVENT CONDENSATION.

9.23. FLEXIBLE DUCT: UL #181 LISTED, CLASS 1, AND CONTAIN A 0.1 PERM RATED POLYETHYLENE INNER LINER, WITH R-8 FIBERGLASS INSULATION. FLEXIBLE DUCTS SHALL BE SECURED TO RIGID SHEET METAL COLLARS AND AIR DIFFUSERS WITH NYLON TIES OR STAINLESS STEEL WORM GEAR STRAPS.

9.24. SEAL ALL CONNECTIONS AND JOINTS AIRTIGHT.

9.25. SUPPORT FLEXIBLE DUCTS FROM THE BUILDINGS STRUCTURE WITH MINIMUM 1" WIDE, 1/8 GAUGE, GALVANIZED STEEL STRAP AT MAXIMUM 4'-0" CENTERS. PROVIDE 4" WIDE SHEET METAL SADDLES AT EACH SUPPORT EACH STRAP. SAG OF FLEXIBLE DUCT BETWEEN HANGERS SHALL NOT EXCEED 1/2" PER FOOT OF SUPPORT SPACING. 9.26. RADIUS FOR TURNS OF FLEXIBLE DUCTS SHALL BE A MINIMUM OF ONE DUCT DIAMETER.

9.27. FLEXIBLE DUCT RUNS SHALL NOT EXCEED 10'-0" IN LENGTH AND SHALL BE THE SAME SIZE AS THE DIFFUSER NECK CONNECTION.

9.28. ROUND VOLUME DAMPERS: PROVIDE MINIMUM 20 GAUGE GALVANIZED STEEL FRAME AND BLADES, MINIMUM 3/8" SQUARE STEEL AXLE, MOLDED SYNTHETIC BEARINGS, WITH LOCKING POSITION REGULATOR. REGULATOR SHALL BE POSITIONED WITH SHEET METAL BRACKET BEYOND DUCT COVERING, WHERE POSITIONING REGULATOR IS NOT ACCESSIBLE, PROVIDE COUPLING AND EXTENSION ROD WITH REGULATOR FOR CEILING OR WALL INSTALLATION, AS REQUIRED.

9.29. RECTANGULAR VOLUME DAMPERS: PROVIDE MINIMUM 16 GAUGE GALVANIZED STEEL CHANNEL FRAME, 16 GAUGE GALVANIZED STEEL BLADES, MINIMUM 1/2" HEXAGONAL AXLE, BOLDED SYNTHETIC BEARINGS, WITH 3/8" SQUARE PLATED STEEL CONTROL SHAFT. LINKAGES SHALL BE CONCEALED IN THE FRAME. OPERATING SHAFT SHALL EXTEND BEYOND FRAME AND DUCT TO A LOCKING QUADRANT WITH ADJUSTABLE LEVER. MAXIMUM BLADE WIDTH SHALL NOT EXCEED 6".

9.30. DUCT TURNING VANES: PROVIDE FABRICATED TURNING VANES AND VANE RUNNERS, CONSTRUCTED IN ACCORDANCE WITH SMACNA "HVAC DUCT CONSTRUCTION STANDARDS". PROVIDE TURNING VANES CONSTRUCTED OF CURVED BLADES, SUPPORTED WITH BARS PERPENDICULAR TO BLADES, AND SET INTO SIDE STRIPS SUITABLE FOR MOUNTING IN DUCTWORK. FOLLOW SMACNA GUIDELINES FOR SPACING SUPPORT, AND CONSTRUCTION. ALL BLADES SHALL BE DOUBLE THICKNESS AIRFOIL TYPE.

9.31. FLEXIBLE DUCT CONNECTORS: PROVIDE U.L. LABELED 30 OUNCE NEOPRENE COATED FIBERGLASS FABRIC DUCT CONNECTORS. DUCT ACCESS DOORS: PROVIDE HINGED ACCESS DOORS IN DUCTWORK WHERE REQUIRED FOR ACCESS TO EQUIPMENT.

9.32. PROVIDE INSULATED ACCESS DOORS FOR INSULATED DUCTWORK. CONSTRUCT OF SAME OR THICKER GAUGE SHEET METAL AS DUCT IN WHICH IT IS INSTALLED.

9.33. PROVIDE FLUSH FRAMES FOR UN-INSULATED DUCTS, AND EXTENDED FRAMES FOR EXTERNALLY INSULATED DUCTS.

9.34. PROVIDE CONTINUOUS HINGE ON ONE SIDE, WITH ONE HANDLE-TYPE LATCH FOR ACCESS DOORS 12" HIGH AND SMALLER, AND TWO HANDLE-TYPE LATCHES FOR LARGER ACCESS DOORS.

10. **HVAC CONTROL SYSTEM**: PROVIDE ALL THE NECESSARY CONTROLS AND CONTROL WIRING IN CONDUIT COMPATIBLE TO SYSTEMS SHOWN ON EQUIPMENT SCHEDULE.

11. **PROGRAMMABLE THERMOSTAT** FOR EACH SYSTEM SHALL ENABLE THE SUPPLY FAN AND CYCLE THE COOLING AND HEATING STAGES TO MAINTAIN SPACE SET-POINT.

12. **SUPPLY FAN RUNS** CONTINUOUSLY DURING THE OCCUPIED MODE. EACH THERMOSTAT SHALL HAVE A DEAD BAND OF AT LEAST 5 DEGREES (ADJ) WITHIN WHICH THE SUPPLY OF HEATING AND COOLING IS SHUT OFF. EACH THERMOSTAT SHALL HAVE SETBACK AND SET-UP CAPABILITY DURING THE UNOCCUPIED MODE. FOR SETBACK, THE HEATING SHALL RESTART AND TEMPORARILY OPERATE ACCORDING TO A SET-POINT ADJUSTABLE DOWN TO 55 DEGREES. FOR SET-UP, THE COOLING SHALL RESTART AND TEMPORARILY OPERATE ACCORDING TO A SET-POINT ADJUSTABLE UP TO 85 DEGREES OR TO PREVENT HIGH SPACE HUMIDITY LEVELS.

13. WHERE DEMAND CONTROLLED VENTILATION IS SPECIFIED ON PLANS, EACH SYSTEM SHALL BE PROVIDED WITH A MOTORIZED OUTSIDE AIR DAMPER THAT WILL AUTOMATICALLY SHUT WHEN THE SYSTEM OR SPACES SERVED ARE NOT IN USE. VENTILATION OUTSIDE AIR DAMPERS SHALL BE CAPABLE OF AUTOMATICALLY CLOSING DURING PREOCCUPANCY BUILDING WARM-UP, COOL DOWN, AND SETBACK, EXCEPT WHEN VENTILATION REDUCES ENERGY COSTS (e.g., NIGHT PURGE) OR WHEN VENTILATION MUST BE SUPPLIED TO MEET CODE REQUIREMENTS.

14. **COMMISSIONING / VERIFICATION**: HVAC CONTROL SYSTEM SHALL BE TESTED TO ENSURE THAT CONTROL ELEMENTS ARE CALIBRATED, ADJUSTED, AND IN PROPER WORKING CONDITION, AND THAT THE SYSTEM MEETS THE DESIGN REQUIREMENTS.

15. **TEST AND BALANCE**: CONTRACT DIRECTLY A THIRD PARTY TO PROVIDE TEST AND BALANCE OF THE HVAC SYSTEM. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR SCHEDULING, TEST AND ADJUST ALL MECHANICAL SYSTEM AND EQUIPMENT TO ASSURE PROPER BALANCE AND OPERATION. PERFORM TESTS IN ACCORDANCE WITH NEBB PROCEDURAL STANDARDS-1999 OR AABC 2002, AND ASHRAE STANDARD 111. ELIMINATE NOISE AND VIBRATION, AND ASSURE PROPER FUNCTION OF CONTROLS. SUBMIT COMPLETED TEST AND BALANCE REPORT TO OWNER'S REPRESENTATIVE. BALANCING CONTRACTOR SHALL BE INDEPENDENT AND CERTIFIED WITH NEBB OR AABC. BALANCE ALL SYSTEMS WITHIN 5% OF AIR FLOW INDICATED ON DRAWINGS, AND REPORT ALL DISCREPANCIES TO THE HVAC CONTRACTOR FOR CORRECTION. MARK FINAL BALANCE POSITIONS ON DAMPERS WITH PERMANENT MARKER.

16. **COMPLETION REQUIREMENTS**: THE CONTRACTOR SHALL PROVIDE, WITHIN 90 DAYS AFTER THE DATE OF SYSTEM ACCEPTANCE, RECORD DRAWINGS AND AN OPERATING AND MAINTENANCE MANUAL TO THE BUILDING OWNER OR THE DESIGNATED REPRESENTATIVE OF THE OWNER. THE RECORD DRAWING SHALL BE OF THE ACTUAL INSTALLATION AND INCLUDE AS A MINIMUM THE LOCATION AND PERFORMANCE DATA ON EACH PIECE OF EQUIPMENT, GENERAL CONFIGURATION OF DUCT AND PIPE DISTRIBUTION SYSTEM INCLUDING SIZES, AND THE TERMINAL AIR OR WATER DESIGN FLOW RATES. THE OPERATING AND MAINTENANCE MANUALS SHALL BE IN ACCORDANCE WITH INDUSTRY-ACCEPTED STANDARDS AND SHALL INCLUDE, AT A MINIMUM, THE FOLLOWING:

(A) SUBMITTAL DATA STATING EQUIPMENT SIZE AND SELECTED OPTIONS FOR EACH PIECE OF EQUIPMENT REQUIRING MAINTENANCE;
(B) OPERATION MANUALS AND MAINTENANCE MANUALS FOR EACH PIECE OF EQUIPMENT REQUIRING MAINTENANCE, EXCEPT EQUIPMENT NOT FURNISHED AS PART OF THE PROJECT. REQUIRED ROUTINE MAINTENANCE ACTIONS SHALL BE CLEARLY IDENTIFIED;
(C) NAMES AND ADDRESSES OF AT LEAST ONE SERVICE AGENCY;
(D) HVAC CONTROLS SYSTEMS MAINTENANCE AND CALIBRATION INFORMATION, INCLUDING WIRING DIAGRAMS, SCHEMATICS, AND CONTROL SYSTEM SET-POINTS SHALL BE PERMANENTLY RECORDED ON CONTROL DRAWINGS AT CONTROL DEVICES OR, FOR DIGITAL CONTROL SYSTEMS, IN PROGRAMMING COMMENTS.
(E) A COMPLETE NARRATIVE OF HOW EACH SYSTEM EACH SYSTEM IS INTENDED TO OPERATE, INCLUDING SET-POINTS.

HVAC GENERAL NOTES

- SEE ARCHITECTURAL PLANS FOR TYPE OF CEILING TO MATCH THE AIR DEVICES SELECTION.
- DO NOT OPERATE AIR HANDLERS OR EXHAUST FANS UNTIL ALL INTERIOR CLEANING AND PAINTING IS COMPLETE. THE CLEANING OF FOULED COILS OR FAN ASSEMBLIES DUE TO PAINT OR CONSTRUCTION DEBRIS WILL BE THE RESPONSIBILITY OF THE HVAC CONTRACTOR.
- RECTANGULAR DUCT SIZES INDICATED ARE ACTUAL SHEET METAL DIMENSIONS IN INCHES. ALL ROUND DUCT SIZES INDICATE NET FREE INSIDE DIAMETER AND DO NOT ACCOUNT FOR ANY INSULATION. ROUND DUCTS ARE EXTERNALLY INSULATED.
- MAJOR EQUIPMENT SHOWN ON THE PLANS AND ELEVATIONS ILLUSTRATE THE GENERAL ARRANGEMENT AND SPACE ALLOCATION. VERIFY THE SPACE REQUIREMENTS FOR EACH SYSTEM COMPONENT USING MANUFACTURER CERTIFIED SHOP DRAWINGS AND MAKE THE NECESSARY ADJUSTMENTS IN EQUIPMENT PLACEMENT AND CONNECTIONS IN ORDER TO ACCOMMODATE THE EXACT EQUIPMENT TO BE INSTALLED IN COORDINATION WITH ARCHITECTURAL SPACES.
- REFER TO DETAILS FOR SUPPORTS. ANCHOR BOLTS AND HANGERS FOR ALL EQUIPMENT, OTHER MISCELLANEOUS STEEL BRACING, SUPPORTS, AND REINFORCEMENT STEEL REQUIRED TO SUPPORT EQUIPMENT SHALL BE FURNISHED AS PART OF THE SCOPE.
- ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH ALL APPLICABLE CODES, STANDARDS, AND AUTHORITIES HAVING JURISDICTION.
- DUCTWORK AND PLENUMS SHALL BE SEALED IN ACCORDANCE WITH THE MECHANICAL CODE AND SMACNA METHOD AND COMMERCIAL ENERGY CONSERVATION CODE. SEAL ALL LONGITUDINAL AND TRANSVERSE JOINTS. SEAL ALL PENETRATIONS OF FLOORS, SMOKE WALLS, FIRE WALLS, AND EXTERIOR WALLS.
- DO NOT RUN DUCT ON PIPE OVER ELECTRICAL PANELS. COORDINATE LOCATION OF DUCTS AND EQUIPMENT IN MECHANICAL ROOMS WITH THE ELECTRICAL AND PLUMBING CONTRACTOR BEFORE ANY INSTALLATION.
- ALL DUCT RUN-OUTS TO SUPPLY AND EXHAUST AND DIFFUSERS AND RECEPTORS SHALL HAVE NORMAL BALANCING DAMPERS. PROVIDE YOUNG REGULATORS WITH REMOTE ADJUSTMENT WHERE CEILING IS INACCESSIBLE.
- ALL DUCTWORK SHALL BE INSTALLED AND MANUFACTURED IN ACCORDANCE WITH LATEST SMACNA STANDARDS.
- SECURE ALL PERMITS AND PROVIDE ANY REQUIRED TEMPORARY UTILITIES.
- ALL FLEXIBLE DUCT SHALL BE UL 181, CLASS 1 AIR DUCT BLACK LINER. MAXIMUM LENGTH OF FLEXIBLE DUCT SHALL NOT EXCEED 5'-0". PROVIDE RIGID ROUND INSULATED AIR DUCT. ROUNDOUT AS REQUIRED. FLEXIBLE DUCT SHALL HAVE THE EQUIVALENT OF ONLY TWO 90 DEGREE ELBOWS. MAXIMUM FLEX DUCTS ARE SAME SIZE AS DIFFUSER NECK.
- THE AIR QUANTITIES SHOWN ON THE DRAWINGS FOR INDIVIDUAL OUTLETS MAY BE CHANGED TO OBTAIN UNIFORM TEMPERATURE WITH EACH ZONE, BUT THE TOTAL AIR QUANTITY SHOWN FOR EACH ZONE MUST BE OBTAINED.
- INSTALL SMOKE DETECTOR FOR ALL UNITS WITH THE CAPACITY OF 2,000 CFM AND HIGHER AS REQUIRED BY CODE. FIRE ALARM CONTRACTOR TO FURNISH AND TERMINATE.
- ALL SUPPLY AND RETURN AIR DUCTS LOCATED IN UNCONDITIONED ATTICS OUTSIDE THE ENVELOPE OR OUTSIDE THE BUILDING SHALL BE INSULATED USING R-8 INSULATION. EXTERNALLY INSULATED DUCT SHALL BE R-8 (INSTALLED) OR MINIMUM REQUIRED BY CURRENT ADOPTED COMMERCIAL ENERGY CONSERVATION CODE.
- ALL SUPPLY AND RETURN DUCTS LOCATED IN A CONDITIONED SPACE OR INSIDE THE ENVELOPE SHALL BE INSULATED USING MINIMUM R-6 INSULATION (INSTALLED R-VALUE), EXTERNALLY INSULATED DUCT SHALL BE R-6 OR MINIMUM REQUIRED BY THE CURRENT ADOPTED ENERGY CONSERVATION CODE.
- PROVIDE RECORD DRAWINGS OF THE ACTUAL INSTALLATION TO THE BUILDING OWNER OR THE DESIGNATED REPRESENTATIVE OF THE BUILDING OWNER. RECORD DRAWINGS SHALL INCLUDE AS A MINIMUM THE LOCATION AND PERFORMANCE DATA ON EACH PIECE OF EQUIPMENT, GENERAL CONFIGURATION OF DUCT AND PIPE DISTRIBUTION SYSTEM INCLUDING SIZES, AND THE TERMINAL AIR OR WATER DESIGN FLOW RATES.
- PROVIDE OPERATING AND MAINTENANCE MANUALS TO THE BUILDING OWNER OR DESIGNATED REPRESENTATIVE OF THE BUILDING OWNER. THESE MANUALS SHALL BE IN ACCORDANCE WITH INDUSTRY ACCEPTED STANDARDS AND SHALL INCLUDE, AT A MINIMUM, THE FOLLOWING:
 - SUBMITTAL DATA STATING EQUIPMENT SIZE AND SELECTED OPTIONS FOR EACH PIECE OF EQUIPMENT REQUIRING MAINTENANCE.
 - OPERATION MANUALS AND MAINTENANCE MANUALS FOR EACH PIECE OF EQUIPMENT REQUIRING MAINTENANCE EXCEPT EQUIPMENT NOT FURNISHED AS PART OF THE PROJECT. REQUIRED ROUTINE MAINTENANCE ACTIONS SHALL BE CLEARLY IDENTIFIED.
 - NAMES AND ADDRESSES OF AT LEAST ONE SERVICE AGENCY.
 - HVAC CONTROLS SYSTEM MAINTENANCE AND CALIBRATION INFORMATION INCLUDING WIRING DIAGRAMS, SCHEMATICS, AND CONTROL SEQUENCE DESCRIPTIONS, AND DESIRED OR FIELD-DETERMINED SET POINTS SHALL BE PERMANENTLY RECORDED ON CONTROL DRAWINGS AT CONTROL DEVICES OR FOR DIGITAL CONTROL SYSTEMS, IN PROGRAMMING COMMENTS.
 - A COMPLETE NARRATIVE OF HOW EACH SYSTEM IS INTENDED TO OPERATE, INCLUDING SUGGESTED SET POINTS.
- DUCTWORK THAT IS DESIGNED TO OPERATE AT STATIC PRESSURES IN EXCESS OF 3 IN W.G. SHALL BE LEAK TESTED ACCORDING TO INDUSTRY-ACCEPTED TEST PROCEDURES. REPRESENTATIVE SECTIONS TOTALING NO LESS THAN 25% OF THE TOTAL INSTALLED DUCT AREA FOR THE DESIGNATED PRESSURE CLASS SHALL BE TESTED. DUCT SYSTEMS WITH PRESSURE RATINGS IN EXCESS OF 3 IN W.G SHALL BE IDENTIFIED ON THE DRAWINGS. THE MAXIMUM PERMITTED DUCT LEAKAGE SHALL BE NO MORE THAN 1% OF THE TOTAL AIRFLOW IN THE SECTION TESTED OR AS REQUIRED BY CURRENT COMMERCIAL ENERGY CONSERVATION CODE.
- ALL HVAC SYSTEMS SHALL BE BALANCED IN ACCORDANCE WITH GENERALLY ACCEPTED ENGINEERING STANDARDS. A WRITTEN BALANCE REPORT SHALL BE PROVIDED TO THE OWNER OF DESIGNATED REPRESENTATIVE OF THE BUILDING OWNER.
- HVAC CONTROL SYSTEMS SHALL BE TESTED TO ENSURE THAT CONTROL ELEMENTS ARE CALIBRATED, ADJUSTED, AND PROPER WORKING CONDITION AS REQUIRED BY COMMERCIAL ENERGY CONSERVATION CODE.
- PROVIDE AND INSTALL 7-DAY PROGRAMMABLE THERMOSTAT.

LEGEND

	DUCT WORK (WIDTHxDEPTH)
	LINED DUCT WORK (WIDTHxDEPTH DIMENSIONS ARE FOR I.D.)
	SUPPLY DUCT, SECTION
	RETURN DUCT, SECTION
	EXHAUST DUCT, SECTION
	RISE OR DROP IN DIRECTION OF AIR FLOW
	FLEX. CONN.
	DUCT TRANSITION, ROUND AND RECTANGULAR
	SPLITTER DAMPER
	EXTRACTOR AT BRANCH DUCT
	TURNING VANES
	FLEXIBLE DUCT
	SINGLE LINE DUCT WORK
	AVD AUTOMATIC VOLUME DAMPER
	MVD MANUAL VOLUME DAMPER
	BDD BACKDRAFT DAMPER
	MD MODULATING DAMPER
	AFD AUTOMATIC FIRE DAMPER
	AD ACCESS DOOR
	SD SUPPLY DIFFUSER
	RR RETURN REGISTER
	ER EXHAUST REGISTER
	SWR SIDE WALL SUPPLY REGISTER
	SWE SIDE WALL RETURN OR EXHAUST
	LD LINEAR DIFFUSER
	DL DOOR LOUVER
	UC UNDER CUT DOOR
	VAV VARIABLE AIR VOLUME
	T TEMPERATURE SENSOR
	S DUCT SMOKE DETECTOR
	T/B TO BELOW
	F/B FROM BELOW
	T/A TO ABOVE
	F/A FROM ABOVE
	TS TOGGLE SWITCH
	T THERMOSTAT

SPECIAL NOTICE TO CONTRACTORS

- ALL CONTRACTORS (GENERAL CONTRACTOR AND SUB-COONTRACTORS) BIDDING THIS PROJECT ARE REQUIRED TO VISIT THE JOB SITE AND VERIFY THE EXISTING CONDITIONS PRIOR TO SUBMITTING THEIR BID. CONTRACTORS ARE TO CAREFULLY REVIEW ALL CONSTRUCTION DOCUMENTS AND NOTE ANY DISCREPANCIES BETWEEN THE CONSTRUCTION DOCUMENTS AND THE CONDITIONS OBSERVED AT THE JOB SITE PRIOR TO SUBMISSION OF ANY BID. THE BUILDING OWNER REPRESENTATIVE LISTED BELOW MAY BE CONTACTED FOR ACCESS TO THE JOB SITE.
- CONTRACTORS ARE RESPONSIBLE FOR VERIFYING THE LOCATION AND CONDITION OF ALL POINTS OF CONNECTION, LOCATION AND CONDITION OF ALL BUILDING (ROOF/FLOOR/CEILING) PENETRATIONS, LOCATION AND CONDITION OF ALL UTILITIES AND BUILDING SYSTEMS INCLUDING, BUT NOT LIMITED TO, GAS, WATER, SEWER, VENT, ELECTRICAL, BUILDING MECHANICAL SYSTEMS, DUCT CONNECTIONS, EXHAUST/OUTSIDE AIR CONNECTIONS, SECURITY, FIRE ALARM, DATA, AND PHONE PRIOR TO SUBMISSION OF THEIR BID.
- ANY DISCREPANCIES BETWEEN THE CONSTRUCTION DOCUMENTS AND THE CONDITIONS OBSERVED SHALL BE BROUGHT TO THE ATTENTION, IN WRITING, TO THE ARCHITECT PRIOR TO PROCEEDING WITH CONSTRUCTION.
- NO WORK SHALL BE DONE ON ANY PART OF THE BUILDING BEYOND THE POINT INDICATED IN EACH SUCCESSIVE INSPECTION WITHOUT FIRST OBTAINING THE WRITTEN APPROVAL OF THE CODE OFFICIAL. NO CONSTRUCTION SHALL BE CONCEALED WITHOUT BEING INSPECTED AND APPROVED.



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INNOVATING SOLUTIONS

GDI ENGINEERING
3707 Cypress Creek Parkway, Suite 310
Houston, TX 77068
Office: 346-509-5860
www.gdiengdesign.com

REVISIONS

No.	Description	Date
-	DRAFT	03.22.2024
-	FIRST SET	04.25.2024
-	SITE COMMENT	05.06.2024

PORTER FAMILY RESIDENCE ALTERATION

2410 PERKINS ROAD, ARLINGTON TX76106

MECHANICAL
SPECIFICATIONS,
LEGEND & GENERAL
NOTES.

Drawn By: M.F

Scale: NTS

Date: 04.26.2024

PROJ. NO.:

M1.00

SHEET NO.

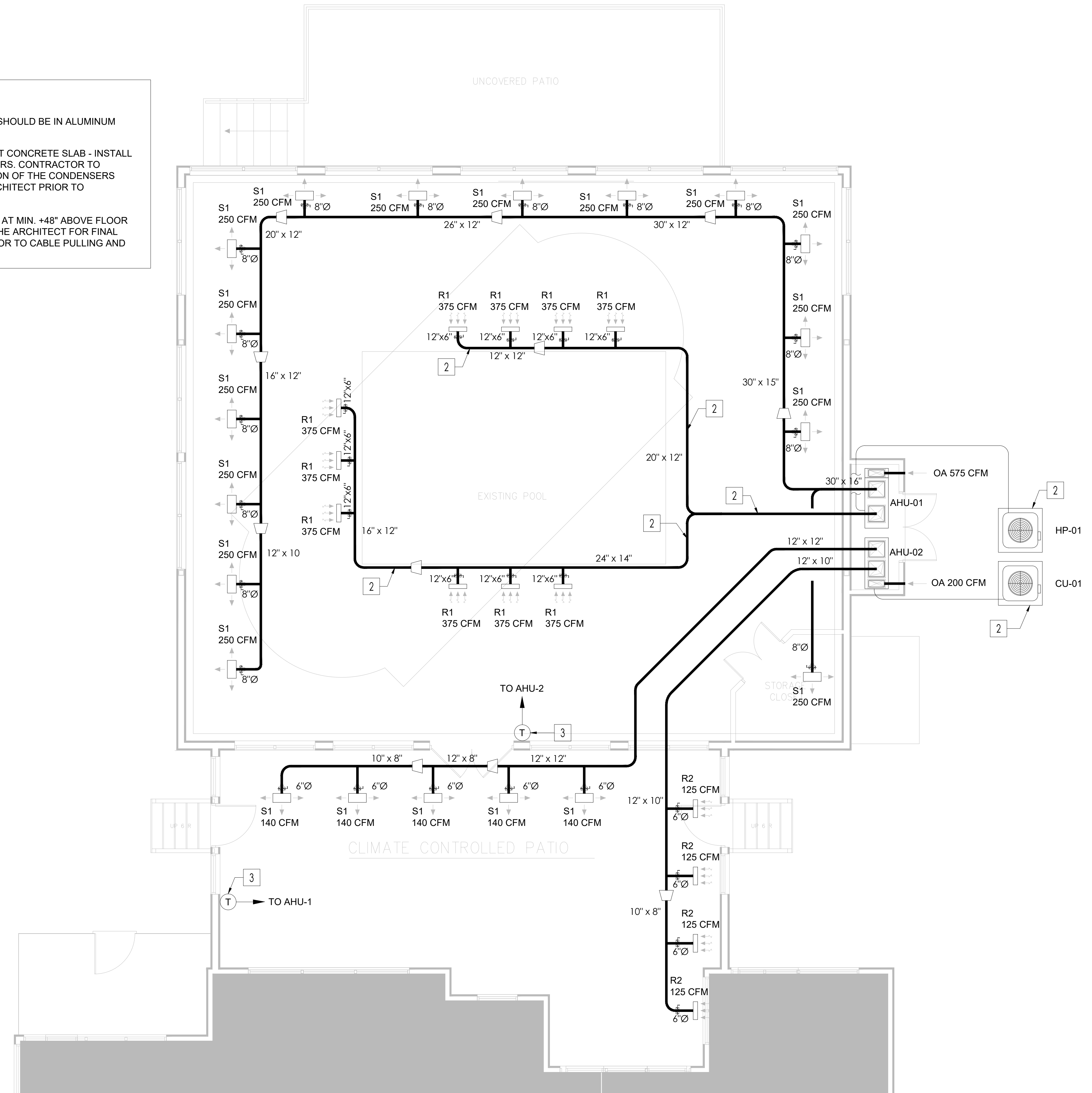


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MECHANICAL KEYED NOTES:

- 1 → AHU-02 RETURN AIR DUCTS SHOULD BE IN ALUMINUM SHEET METAL.
- 2 → OUTDOOR CONDENSING UNIT CONCRETE SLAB - INSTALL UNIT ON VIBRATION ISOLATORS. CONTRACTOR TO VALIDATE THE FINAL POSITION OF THE CONDENSERS WITH THE OWNER & THE ARCHITECT PRIOR TO CONSTRUCTION.
- 3 → PROVIDE A/C THERMOSTATS AT MIN. +48" ABOVE FLOOR LEVEL. COORDINATE WITH THE ARCHITECT FOR FINAL INSTALLATION POSITION PRIOR TO CABLE PULLING AND FIXATION.



REVISIONS

No.	Description	Date
-	DRAFT	03.22.2024
-	FIRST SET	04.25.2024
-	SITE COMMENT	05.06.2024

PORTER FAMILY RESIDENCE ALTERATION

2410 PERKINS ROAD, ARLINGTON TX76106

MECHANICAL LAYOUT

Drawn By: M.F Scale: 1/16"=1'-0"
Date: 04.26.2024 PROJ. NO.:

M 2.00

SHEET NO.

MECHANICAL LAOUT

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

SCHEDULE No. 1
SPLIT AIR HANDLING UNIT

TAG	AHU-1
SERVING	BEDROOMS & GYM
MANUFACTURER	CARRIER
MODEL	FJ4DNXB24
POWER SUPPLY	208-230V / 1Ø / 60Hz
UNIT AMPACITY (A)	3.6
MOCP (A)	15
AIR FLOW (CFM)	700
EXTERNAL STATIC PRESSURE (INCHES OF WATER)	0.6
FAN MOTOR HP	1/3
TOTAL COOLING CAPACITY (T.R)	2.0
APPROX. WEIGHT (lbs)	131
DIMENSIONS WxDxH	17 5/8" x 22 1/16" x 49 5/8"

NOTES:

1. PROVIDE CONDENSATE PUMP, IF REQUIRED.
2. PROVIDE DISCONNECT SWITCH.
3. PROVIDE MERV 13 THROWAWAY FILTER.
4. PROVIDE VIBRATION ISOLATION.
5. DIMENSIONS ARE PROVIDED FOR UPRIGHT UNIT.

SCHEDULE No. 4
POOL DEHUMIDICATION CONDENSER SCHEDULE

TAG	CU-1
MANUFACTURER	DESERT-AIRE
OUTDOOR MODEL	RC5S051C2H21900
CONNECTED INDOOR UNIT	AHU-2
AMBIENT AIR TEMPERATURE (°F)	105
POWER SUPPLY	208-230V / 1Ø / 60Hz
MINIMUM CIRCUIT AMPACITY	10.4 A
MAX OVERCURRENT DEVICE	15 A
OUTDOOR DIMENSIONS (H x W x D) (inch)	38" x 29" x 40"
APPROX. WEIGHT (lbs)	315

NOTES:

1. PROVIDE DISCONNECT SWITCH.
2. PROVIDE VIBRATION ISOLATION.
3. PROVIDE FREEZE THERMOSTAT.
4. PROVIDE CONCRETE BASE SLAB.

SCHEDULE No. 2
HEAT PUMP CONDENSER SCHEDULE

TAG	HP-1
MANUFACTURER	CARRIER
OUTDOOR MODEL	25SCA524A003
CONNECTED INDOOR UNIT	AHU-1
POWER SUPPLY	208-230V / 1Ø / 60Hz
SEER2 / EER2 / HSPF2	14.3 / 12 / 7.5
MINIMUM CIRCUIT AMPACITY	14.5 A
COMPRESSOR RLA	11.1 A
MAX OVERCURRENT DEVICE	25 A
NOMINAL COOLING CAPACITY (T.R)	2.0
APPROXIMATE WEIGHT (lbs.)	160
OUTDOOR DIMENSIONS (H x W x D) (inch)	32 1/16" x 31 3/16" x 31 3/16"

NOTES:

1. PROVIDE DISCONNECT SWITCH.
2. PROVIDE VIBRATION ISOLATION.
3. PROVIDE FREEZE THERMOSTAT.
4. PROVIDE CONCRETE BASE SLAB.

SCHEDULE No. 5
AIR OUTLETS

TAG	DESCRIPTION	MANUFACTURER	MODEL	SIZE	AIRFLOW CFM
S1	SUPPLY GRILL	PRICE INDUSTRIES	TYPE 20/30	24in. x 6in.	250
S2	SUPPLY GRILL	PRICE INDUSTRIES	TYPE 20/30	16in. x 4in.	140
R1	RETURN GRILL	PRICE INDUSTRIES	TYPE 60	24in. x 8in.	375
R2	RETURN GRILL	PRICE INDUSTRIES	TYPE 60	16in. x 4in.	125

NOTES:

1. COORDINATE FINISH, COLOR, BORDER AND EXACT LOCATION WITH OWNER PRIOR TO ORDERING.
2. PROVIDE OPPOSED BLADE DAMPER.
3. PROVIDE DUCT TRANSITIONS AS REQUIRED.

SCHEDULE No. 3
POOL DEHUMIDICATION AIR HANDLING UNIT SCHEDULE

TAG	AHU-2
SERVING	POOL
MANUFACTURER	DESERT AIRE
MODEL	LV08R2DETFLJHA
POWER SUPPLY	230V / 1Ø / 60Hz
UNIT AMPACITY (A)	231
MOCP (A)	250
AIR FLOW (CFM)	3,750
OUTDOOR AIR FLOW (CFM)	537
EXTERNAL STATIC PRESSURE (INCHES OF WATER)	1.0
FAN MOTOR (HP)	3.0
TOTAL COOLING CAPACITY (BTU/H)	106,401
SENSIBLE COOLING CAPACITY (BTU/H)	70,080
AUXILIARY HEATING CAPACITY (kW)	30
DEHUMIDIFICATION CAPACITY (LB/H)	34.4
ROOM DESIGN CONDITION db - wb (°F)	80 - 66.6
APPROX. WEIGHT (lbs)	1,260

NOTES:

1. PROVIDE CONDENSATE PUMP, IF REQUIRED.
2. PROVIDE DISCONNECT SWITCH.
3. PROVIDE 2" MERV 8 THROWAWAY FILTER.
4. PROVIDE VIBRATION ISOLATION.
5. DIMENSIONS ARE PROVIDED FOR UPRIGHT UNIT.
6. COOLING & HEATING CAPACITIES ARE RATED FOR THIS SITE CONDITIONS.
7. PROVIDE OCCUPANCY SENSOR FOR THE POOL AREA TO ALLOW OUTDOOR AIR MOTORIZED DAMPER TO CLOSE ONCE THE POOL AREA IS NOT OCCUPIED.



GDI ENGINEERING
3707 Cypress Creek Parkway, Suite 310
Houston, TX 77068
Office: 346-509-5860
www.gdiengdesign.com

REVISIONS

No.	Description	Date
-	DRAFT	03.22.2024
-	FIRST SET	04.25.2024
-	SITE COMMENT	05.06.2024

PORTER FAMILY RESIDENCE ALTERATION

2410 PERKINS ROAD, ARLINGTON TX76106

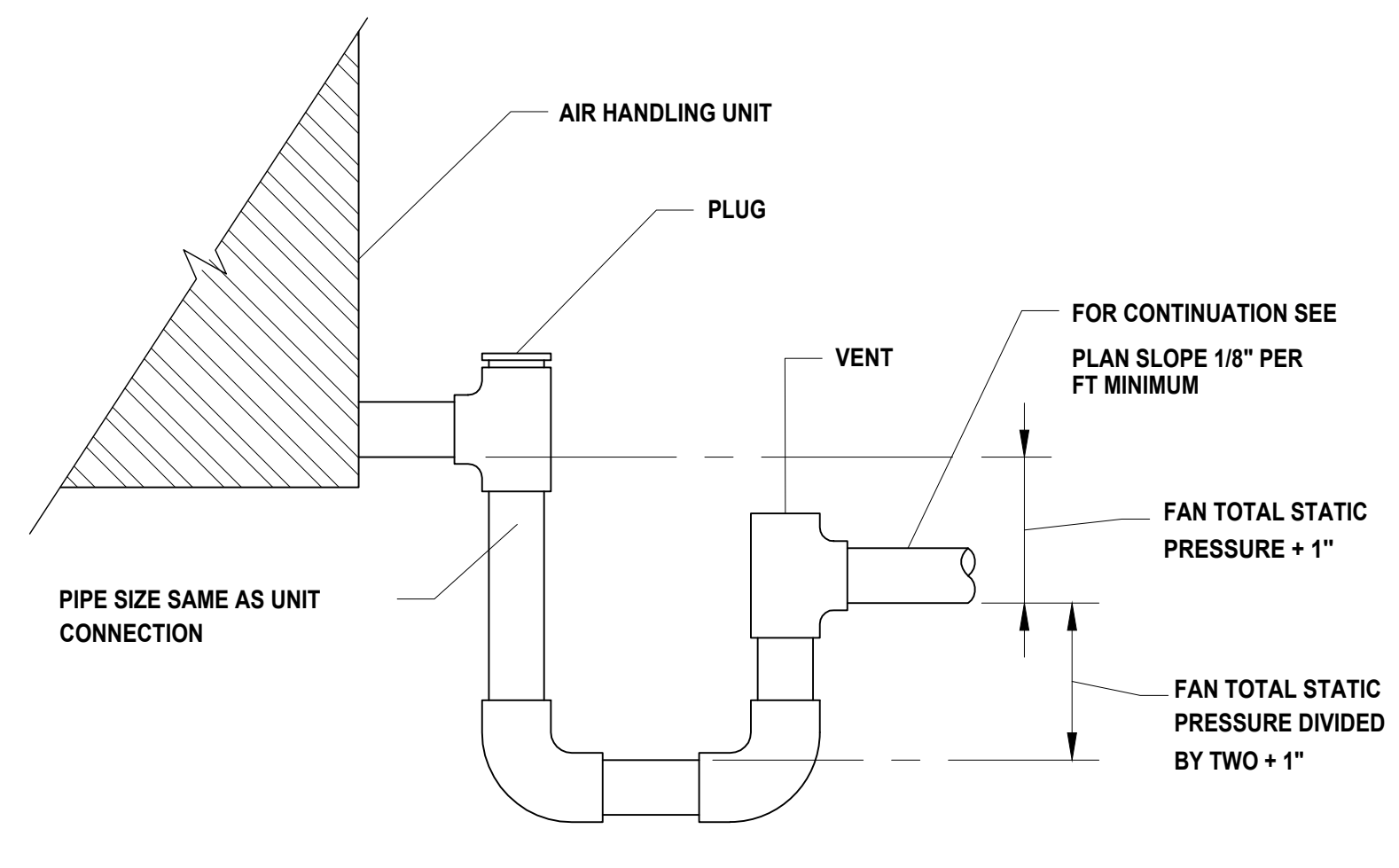
MECHANICAL EQUIPMENT SCHEDULE.

Drawn By: M.F Scale: NTS

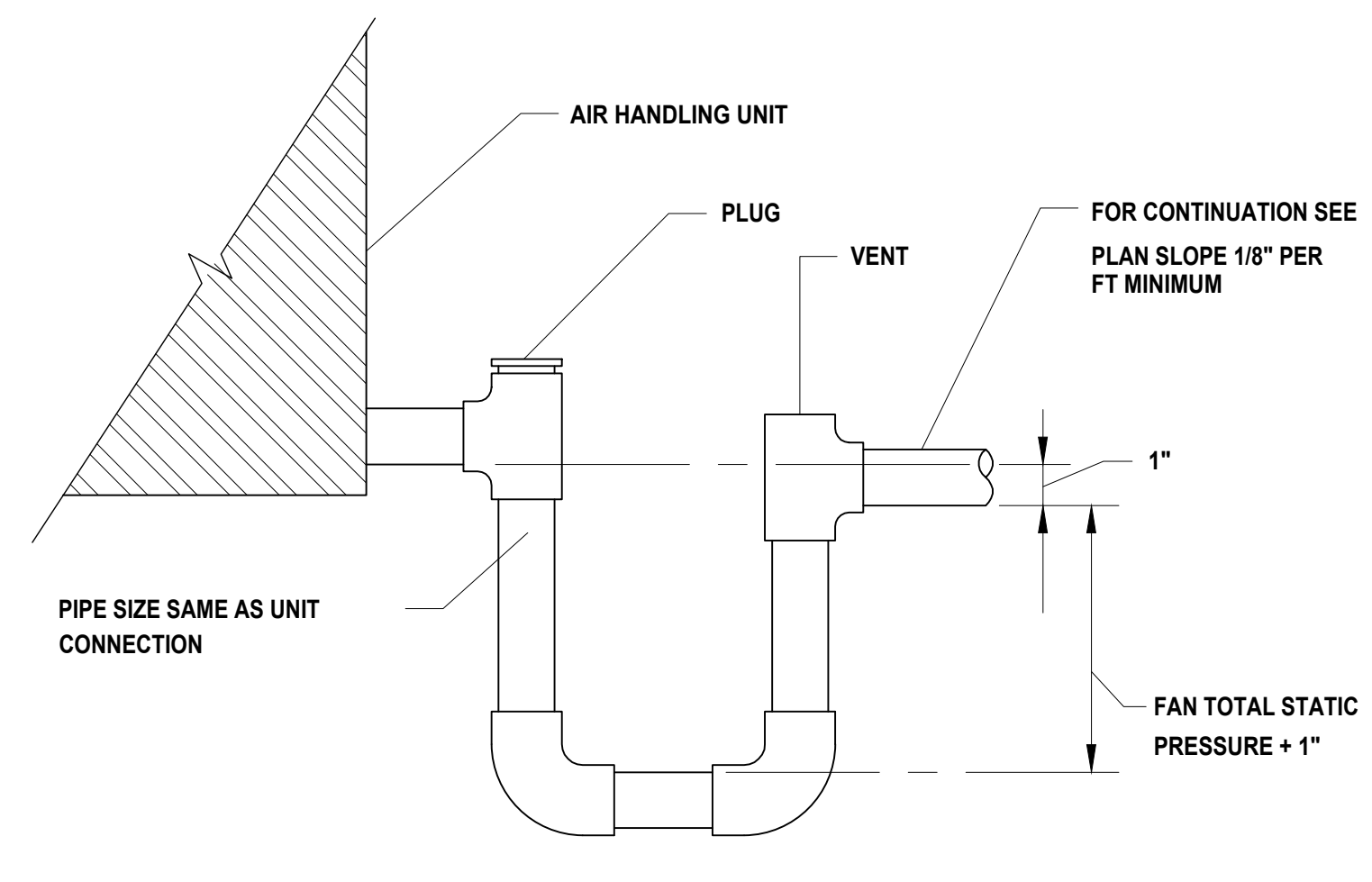
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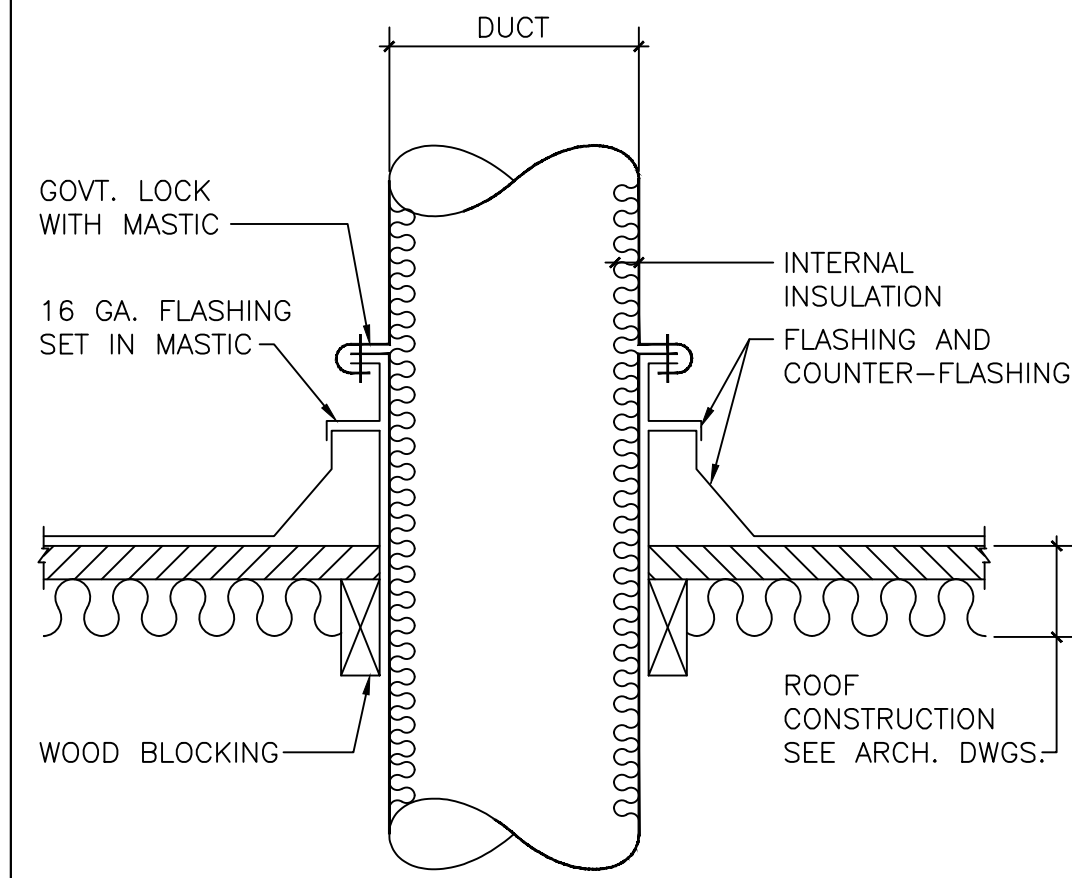
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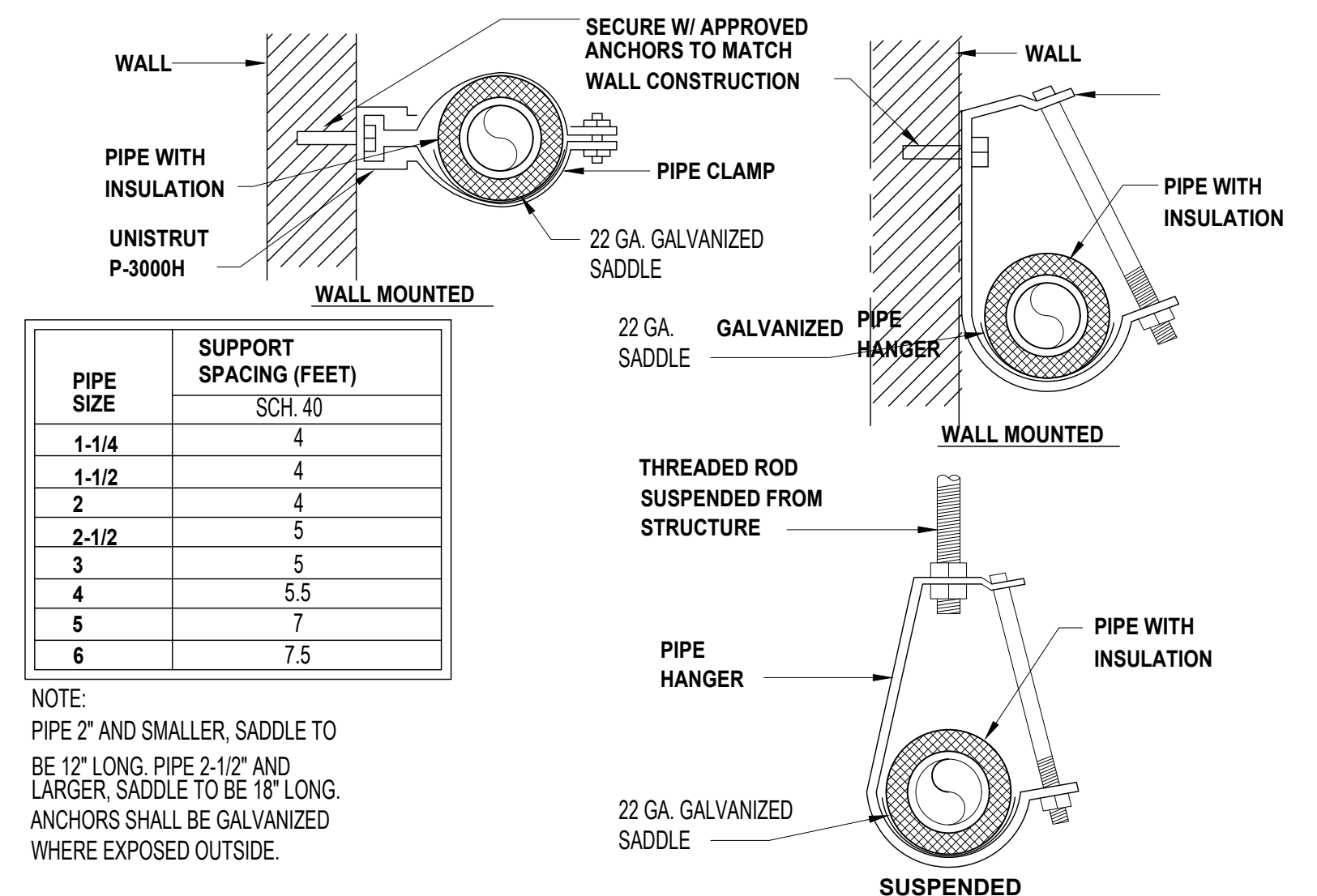
1 CONDENSATE DRAIN DETAIL
SCALE: N.T.S.



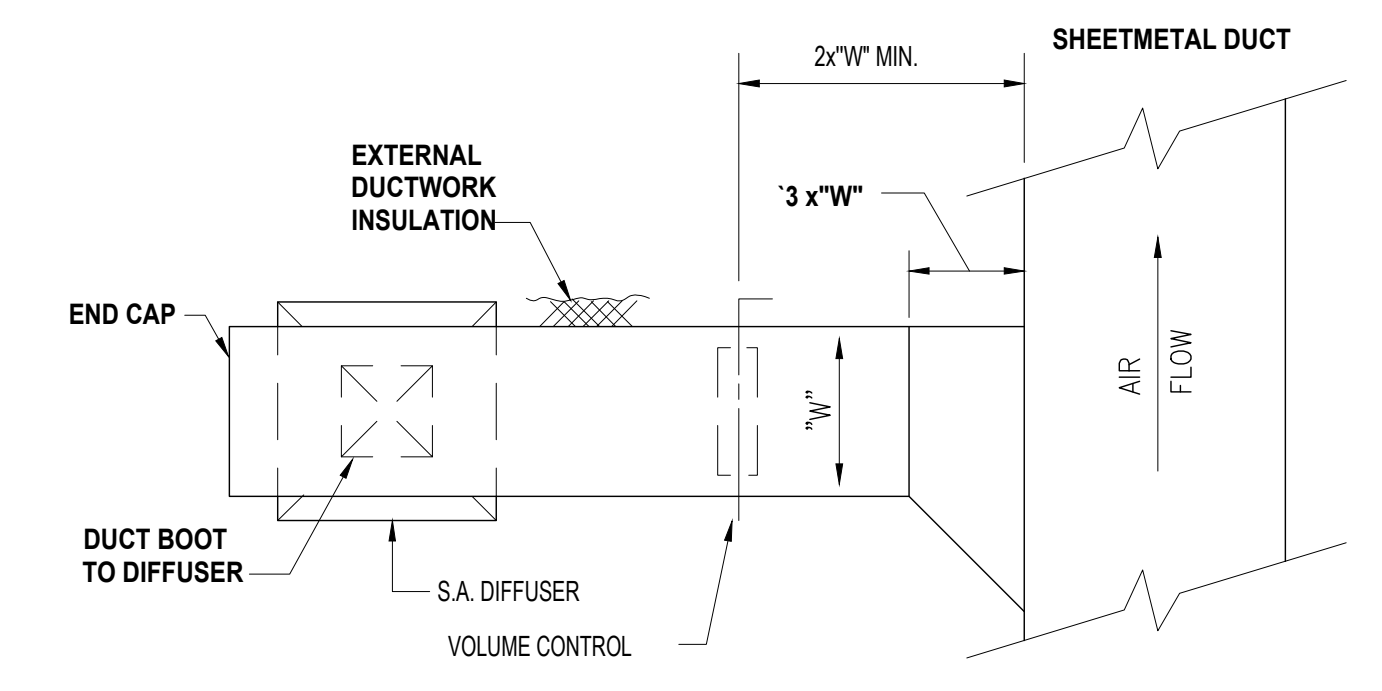
2 DUCT ROOF PENETRATION
SCALE: N.T.S.



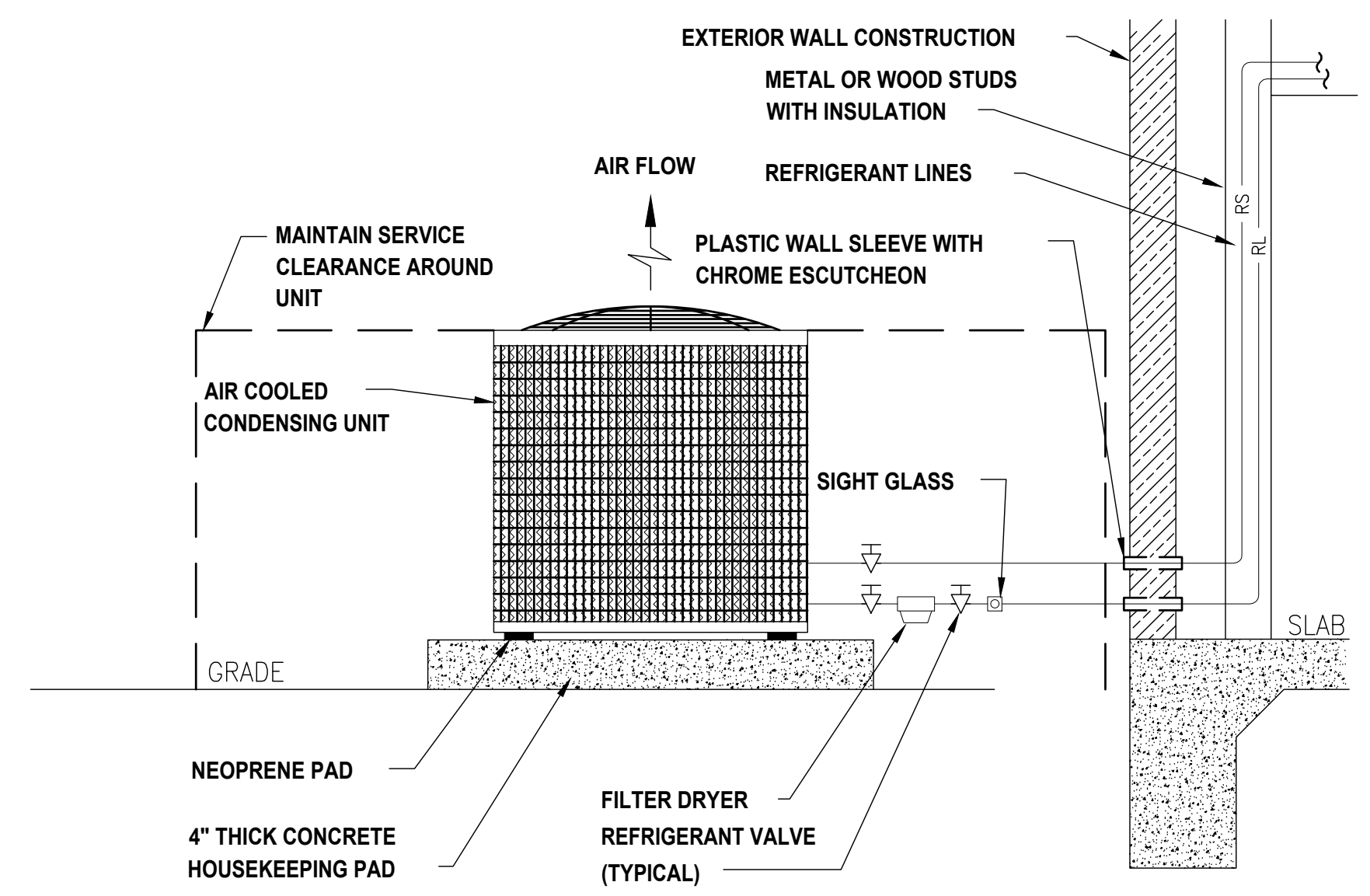
3 PIPE THRU EXTERIOR WALL
SCALE: N.T.S.



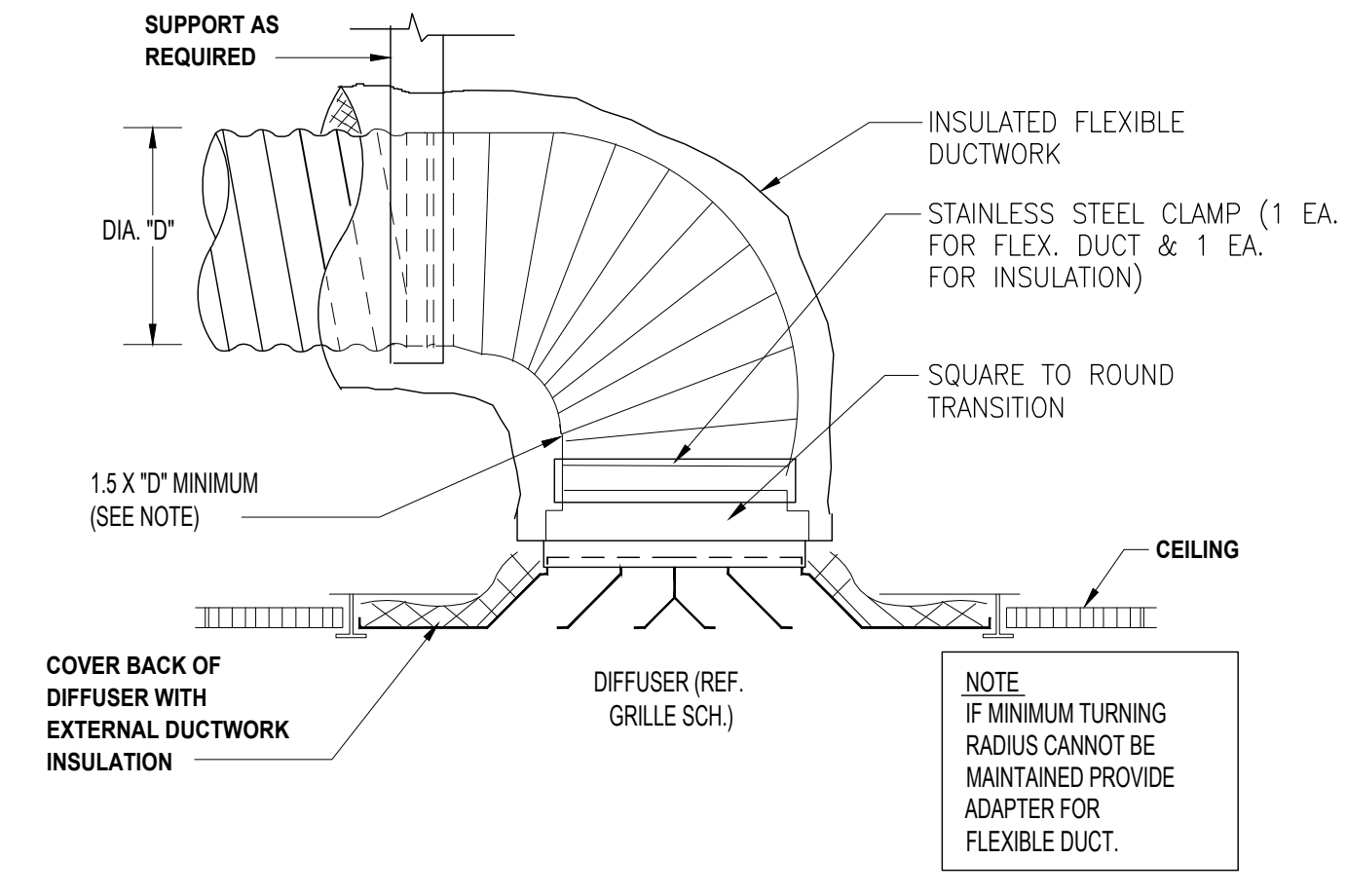
5 CONDENSATE SUPPORT & INSTALLATION DETAIL
SCALE: N.T.S.



6 RIGID SUPPLY DUCT TAP TO SINGLE AIR DIFFUSER
SCALE: N.T.S.



7 OUTDOOR HEAT PUMP INSTALLATION DETAIL
SCALE: N.T.S.



8 FLEXIBLE DUCT CONNECTION TO SUPPLY AIR DIFFUSER
SCALE: N.T.S.

REVISIONS

No.	Description	Date
-	DRAFT	03.22.2024
-	FIRST SET	04.25.2024
-	SITE COMMENT	05.06.2024

PORTER FAMILY RESIDENCE ALTERATION
2410 PERKINS ROAD, ARLINGTON TX76106

MECHANICAL DETAILS.

Drawn By: M.F Scale: NTS
Date: 04.26.2024 PROJ. NO.:

M 5.00

SHEET NO.

ELECTRICAL SPECIFICATIONS

1. DO NOT SCALE DRAWINGS, VERIFY DIMENSIONS IN FIELD PRIOR TO COMMENCEMENT OF WORK.
2. WHEREVER THE WORD "PROVIDE" IS USED, IT SHALL MEAN TO "PROVIDE AND INSTALL".
3. FINAL CONNECTIONS TO EQUIPMENT SHALL BE PER MANUFACTURER'S APPROVED WIRING DIAGRAMS, DETAILS AND INSTRUCTIONS, IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE MATERIALS AND EQUIPMENT COMPATIBLE WITH EQUIPMENT ACTUALLY SUPPLIED.
4. IT IS THE INTENT OF THESE DRAWINGS AND SPECIFICATIONS TO ESTABLISH A STANDARD OF QUALITY, THE ENGINEER RESERVES THE RIGHT TO APPROVE METHODS AND MATERIALS NOT REFLECTED HEREIN.
5. CONTRACTOR SHALL REVIEW ARCHITECTURAL, STRUCTURAL, MECHANICAL, AND OTHER RELATED DRAWINGS PRIOR TO BID.
6. CONTRACTOR SHALL VISIT SITE PRIOR TO BID AND VERIFY THAT CONDITIONS ARE AS INDICATED IN THE CONTRACT DOCUMENTS, CONTRACTOR SHALL INCLUDE IN HIS BID, ANY COSTS REQUIRED TO MAKE HIS WORK MEET THE CONTRACT SCOPE UTILIZING EXISTING CONDITIONS.
7. WORK SHALL BE PERFORMED IN A WORKMANLIKE MANNER TO THE SATISFACTION OF THE ARCHITECT.
8. WORK, MATERIALS AND EQUIPMENT SHALL CONFORM TO THE LATEST EDITIONS OF LOCAL, STATE AND NATIONAL CODES AND ORDINANCES.
9. PROVIDE PERMITS AND INSPECTIONS REQUIRED.
10. GUARANTEE THE INSTALLATION AGAINST DEFECTS IN MATERIALS AND WORKMANSHIP WHICH MAY OCCUR UNDER NORMAL USAGE FOR A PERIOD OF ONE YEAR AFTER OWNER'S ACCEPTANCE, DEFECTS SHALL BE PROMPTLY REMEDIED WITHOUT COST TO THE OWNER.
11. PROVIDE RECORD DRAWINGS TO ENGINEER. DRAWINGS SHALL INCLUDE ALL ADDENDUM ITEMS, CHANGE ORDERS, ALTERATIONS, REROUTINGS, ETC.
12. VERIFY SPECIFIC LOCATION OF EQUIPMENT TO BE FURNISHED BY OTHERS PRIOR TO ROUGH-IN.
13. ELECTRICAL SYSTEMS SHALL BE TESTED FOR PROPER OPERATION, IF TESTS SHOW THAT WORK IS DEFECTIVE, CONTRACTOR SHALL MAKE CORRECTIONS NECESSARY AT NO COST TO OWNER.
14. RECESSED LIGHT FIXTURES INSTALLED IN GYP. BOARD OR PLASTER CEILINGS SHALL HAVE PLASTER FRAMES INSTALLED PRIOR TO CEILING MATERIAL.
15. RECESSED FIXTURES INSTALLED INDOORS SHALL BE THERMALLY PROTECTED.
16. SEE DIVISION 15 DRAWINGS FOR LOCATION OF MECHANICAL EQUIPMENT, PROVIDE SERVICE TO AND CONNECT EQUIPMENT AS REQUIRED.
17. PROVIDE EQUIPMENT GROUNDING CONDUCTOR IN ALL CONDUITS.
18. ALL ELECTRICAL SYSTEMS COMPONENTS SHALL BE LISTED OR LABELED BY U.L. OR OTHER RECOGNIZED TESTING FACILITY.
19. WIRE TERMINATION PROVISIONS FOR PANELBOARDS, CIRCUIT BREAKERS, SAFETY SWITCHES, AND ALL OTHER ELECTRICAL APPARATUS SHALL BE LISTED AS SUITABLE FOR 75 DEGREE C.
20. THE FOLLOWING CONDUCTOR SIZES SHALL BE UTILIZED FOR 20 AMP CIRCUITS PERTAINING TO DISTANCES (IN FEET) INDICATED:

120VOLT, 1PH	CONDUCTOR	240 VOLT, (1PH)
0-64	#12AWG	0-129
65-106	#10AWG	130-212
107-160	#8AWG	213-321

NOTE: BASED ON 75°C COPPER CONDUCTORS INSTALLED IN EMT WITH 16AMP LOAD @ 85% P.F.
21. CONTRACTOR SHALL REVIEW ARCHITECTURAL, STRUCTURAL AND MECHANICAL DRAWINGS AND SHALL PROVIDE LIGHTS, SWITCHES, RECEPTACLES, EQUIPMENT CONNECTIONS, ETC., AND ASSOCIATED CIRCUITING IN NEW AND REMODELED AREAS, EVEN IF SUCH AREAS ARE NOT SHOWN ON ELECTRICAL DRAWINGS. LAYOUTS, FIXTURE TYPES, QUANTITIES AND SPACING SHALL BE IN ACCORDANCE WITH SIMILAR AREAS ON THIS PROJECT. CONTRACTOR SHALL INCLUDE COSTS FOR THE ABOVE IN HIS BID. IN ADDITION, CONTRACTOR SHALL PROVIDE LAYOUT DRAWINGS FOR WORK IN SUCH AREAS AND SUBMIT FOR APPROVAL PRIOR TO ROUGH-IN.
22. WIRE SHALL BE COPPER, 75 DEGREES C RATED FOR GENERAL USE, FOR WIRING WITHIN 3 INCHES OF FLUORESCENT BALLASTS WIRE SHALL BE COPPER, MINIMUM 90 DEGREES C RATED, SIZES INDICATED ARE FOR INSTALLATION IN A MAXIMUM 30 DEGREES C AMBIENT, CONDUCTOR AMPACITY SHALL BE DERATED FOR HIGHER AMBIENT INSTALLATIONS, 600 VOLT COMPACT ALUMINUM WIRE AND CABLE IN SIZES 1/0 AND LARGER MAY BE SUBSTITUTED FOR COPPER ON SERVICES AND FEEDERS IF AMPACITY IS EQUIVALENT TO OR GREATER
23. CONTRACTOR SHALL BE RESPONSIBLE FOR REPLACING EQUIPMENT WHICH IS DAMAGED DUE TO INCORRECT FIELD WIRING PROVIDED UNDER THIS SECTION OR FACTORY WIRING IN EQUIPMENT PROVIDED UNDER THIS SECTION.
24. CONTRACTOR'S FAILURE TO ORDER OR RELEASE ORDER FOR MATERIALS AND/OR EQUIPMENT WILL NOT BE ACCEPTED AS A REASON TO SUBSTITUTE ALTERNATE MATERIALS, EQUIPMENT OR INSTALLATION METHODS.
25. ELECTRICAL SYSTEMS SHALL BE COMPLETE, OPERABLE AND READY FOR CONTINUOUS OPERATION AT COMPLETION OF PROJECT.
26. RECEPTACLES WHICH ARE SHOWN WALL MOUNTED ON THE ELECTRICAL DRAWINGS ON WALLS WHICH, ON THE ARCHITECTURAL DRAWINGS AND ELEVATIONS ARE SHOWN AS GLASS OR PARTITIONS, SHALL BE FLUSH FLOOR DUPLEX RECEPTACLES MOUNTED ADJACENT TO BAS OR WALLS.
27. RECEPTACLES AT COUNTER SHALL BE MOUNTED WITH THEIR LONG AXIS HORIZONTAL AT +44" UNLESS NOTED.
28. FLUSH FLOOR RECEPTACLE OUTLETS SHALL BE WIREMOLD 842 SERIES, PROVIDE CARPET OR TILE FLANGE TO MATCH FLOOR FINISH.
29. THE COLOR OF THE DEVICES AND COVER PLATES SHALL BE AS DIRECTED BY ARCHITECT. IN DAMP OR WET LOCATIONS COVER PLATES SHALL BE STAINLESS STEEL, IN DRY LOCATIONS COVER PLATES SHALL BE SMOOTH HIGH ABUSE NYLON OR EQUIVALENT, PROVIDE COVER PLATES FOR SWITCHES, RECEPTACLES, TELEPHONE, TELEVISION, COMPUTER AND J-BOX OUTLETS AS REQUIRED.
30. ROMEX CABLE WITH A GROUNDING CONDUCTOR MAY BE USED WHERE PERMITTED BY BOTH THE N.E.C. AND LOCAL ORDINANCES.
31. DISCONNECT SWITCHES SHALL BE GENERAL DUTY TYPE, FUSIBLE SWITCHES SHALL ACCEPT CLASS 'R' FUSES ONLY AND REJECT ALL OTHERS.
32. FINAL CONNECTIONS TO VIBRATING EQUIPMENT SHALL BE WITH FLEX (LIQUIDTIGHT FOR EXTERIOR APPLICATIONS) AND APPROVED FITTINGS, DO NOT SECURE CONDUITS, DISCONNECTS OR DEVICES TO DUCTWORK OR MECHANICAL EQUIPMENT.
33. THE ENGINEER OF RECORD HAS PERFORMED SHORT CIRCUIT CALCULATIONS AND THE AIC RATINGS INDICATED FOR EACH DEVICE IS ADEQUATE TO PROTECT THE EQUIPMENT AND THE ELECTRICAL SYSTEM.
34. THE ENGINEER OF RECORD HAS PERFORMED VOLTAGE DROP CALCULATIONS AND ALL BRANCH CIRCUITS AND FEEDERS COMPLY WITH NEC 210-19(A) FPN NO4.
35. THE CONTRACTOR SHALL PROVIDE 120V CONNECTION TO NEAREST MAINTENANCE RECEPTACLE WHERE REQUIRED FOR CONDENSATE PUMPS ASSOCIATED WITH FAN COIL UNITS, COORDINATE WITH MECHANICAL CONTRACTOR.
36. THE CONTRACTOR SHALL COORDINATE THE SPECIFIC LOCATION, MOUNTING HEIGHT, ROTATION, TYPE, COLOR, ETC. OF ALL DEVICES PRIOR TO INSTALLATION.
37. CONNECTIONS TO HYDROMASSAGE BATHTUBS, JACUZZI TUBS OR SIMILAR EQUIPMENT SHALL BE MADE IN ACCORDANCE WITH ARTICLE 680.70 OF THE NEC. PROVIDE BONDING AS REQUIRED BY ARTICLE 680.74 OF THE NEC.
38. ALL INDOOR FLUORESCENT FIXTURES THAT UTILIZE DOUBLE-ENDED LAMPS AND CONTAIN BALLAST(S) THAT CAN BE SERVICED IN PLACE OR BALLASTED LUMINARIES THAT ARE SUPPLIED FROM MULTIWIRE BRANCH CIRCUITS AND CONTAIN BALLAST(S) THAT CAN BE SERVICED IN PLACE SHALL COMPLY WITH 410.73 (G) OF THE NEC.
39. CEILING MOUNTED SMOKE AND CARBON MONOXIDE DETECTORS PER NFPA 72, SECTION R314 MUST COMPLY WITH U.L. 2075 AND SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURERS SPECIFICATIONS.
40. ALL SMOKE DETECTORS AND COMBINATION SMOKE/CARBON MONOXIDE DETECTORS SHALL BE HARDWIRED ON SAME CIRCUIT AND HAVE A BATTERY BACKUP SYSTEM.
41. WHEN MORE THAN EITHER ONE (1) SMOKE ALARM OR MORE THAN ONE (1) CARBON MONOXIDE ALARM IS REQUIRED TO BE INSTALLED WITHIN AN INDIVIDUAL DWELLING UNIT, ALL ALARM DEVICES SHALL BE INTERCONNECTED IN SUCH A MANNER THAT THE ACTUATION OF ONE ALARM WITH ACTIVATE ALL OF THE ALARMS IN THE INDIVIDUAL UNIT, SMOKE AND CARBON MONOXIDE ALARMS SHALL BE INSTALLED IN THE FOLLOWING LOCATIONS. (IRC SECTION R3143 AS AMENDED)
 - A. SMOKE ALARMS IN EACH SLEEPING ROOM.
 - B. SMOKE ALARMS OUTSIDE OF EACH SEPARATE SLEEPING AREA IN THE IMMEDIATE VICINITY OF THE BEDROOMS.
 - C. SMOKE ALARMS ON EACH ADDITIONAL STORY OF THE DWELLING INCLUDING BASEMENTS BUT NOT INCLUDING CRAWL SPACE AND UNINHABITABLE ATTICS, IN DWELLINGS OR DWELLING UNITS WITH SPLIT LEVELS AND WITHOUT AN INTERVENING DOOR BETWEEN THE ADJACENT LEVELS, A SMOKE ALARM INSTALLED ON THE UPPER LEVEL SHALL SUFFICE FOR THE ADJACENT LOWER LEVEL PROVIDED THAT THE LOWER LEVEL IS LESS THAN ONE FULL STORY BELOW THE UPPER LEVEL.
 - D. CARBON MONOXIDE ALARMS OUTSIDE OF SLEEPING AREAS IN THE IMMEDIATE VICINITY OF THE BEDROOMS IN DWELLING UNITS WITHIN WHICH FUEL-FIRED APPLIANCES ARE INSTALLED AND IN DWELLING UNITS THAT HAVE ATTACHED GARAGES.
 - E. CARBON MONOXIDE ALARMS WITHIN EACH BEDROOM WHICH CONTAINS A FUEL-FIRED APPLIANCE.
43. ALL BRANCH CIRCUITS THAT SUPPLY 125-VOLT, SINGLE PHASE, 15 AND 20 AMP BRANCH CIRCUITS SUPPLYING OUTLETS INSTALLED IN DWELLING UNIT FAMILY ROOMS, DINING ROOMS, LIVING ROOMS, PARLORS, LIBRARIES, DENS, BEDROOMS, SUNROOMS, RECREATION ROOMS, CLOSETS, HALLWAYS, OR SIMILAR ROOMS OR AREAS SHALL BE PROTECTED BY A LISTED ARC-FAULT CIRCUIT INTERRUPTER, COMBINATION-TYPE, INSTALLED TO PROVIDE PROTECTION OF THE BRANCH CIRCUIT, NEC ARTICLE 210.12 (A).
44. ALL ATTIC ACCESSSES SHALL BE PROVIDED WITH A SWITCHED LIGHT AND 120 VOLT GFI OUTLET AT OR NEAR THE FORCED AIR UNIT, LOCATE LIGHT SWITCH AT THE ATTIC ACCESS OPENING.

GENERAL NOTES

1. ALL 120 VOLT, SINGLE PHASE 15 AND 20 AMPERE BRANCH CIRCUIT SUPPLYING OUTLETS INSTALLED IN DWELLING UNIT FAMILY ROOMS, DINING ROOMS, LIVING ROOMS, PARLORS, LIBRARIES, DENS, BEDROOMS, SUNROOMS, RECREATION ROOMS, CLOSETS, HALLWAYS, OR SIMILAR AREAS SHALL BE PROTECTED BY A LISTED ARC-FAULT CIRCUIT INTERRUPTER, COMBINATION TYPE INSTALLED TO PROVIDE PROTECTION OF THE BRANCH CIRCUIT. (NEC ARTICLE 210.12(A))
2. IN EVERY KITCHEN, FAMILY ROOM, DINING ROOM, LIVING ROOM, PARLOR, LIBRARY, DEN, SUNROOM, BEDROOM, RECREATION ROOM OR SIMILAR ROOM OR AREA OF DWELLING UNITS RECEPTACLE OUTLETS SHALL BE INSTALLED IN ACCORDANCE WITH THE GENERAL PROVISIONS SPECIFIED IN THE FOLLOWING ARTICLES
 - a. NEC ARTICLE 210.52(A) (1) SPACING, RECEPTACLES SHALL BE INSTALLED THAT NO POINT ALONG THE FLOOR LINE OF THE WALL IS MORE THAN 6 FEET FROM A RECEPTACLE.
 - b. NEC article 210.52(a) (2) AS AMENDED WALL SPACE, ANY WALL 24-INCHES OR MORE IN LENGTH SHALL BE PROVIDED WITH A RECEPTACLE OUTLET, WALL SPACE SHALL INCLUDE AROUND CORNERS, THE FIRST SLIDING PANEL OF A SLIDING DOOR, FIXED ROOM DIVIDERS SUCH AS A FREESTANDING BAR TYPE COUNTER, WALL SPACE NED NOT INCLUDE THE SPACE BEHIND OPERABLE DOORS, AND NEED NOT INCLUDE ENTRIES, HALLWAYS ETC, LESS THAN 5-FEET WIDE LOCATED IN BEDROOMS.
 - c. NEC ARTICLE 210.52(A) (3) AS AMENDED FLOOR RECEPTACLES.
3. IN EVERY KITCHEN, FAMILY ROOM, DINING ROOM, LIVING ROOM, PARLOR, LIBRARY, DEN, SUNROOM, BEDROOM, RECREATION ROOM OR SIMILAR ROOM OR AREA OF DWELLING UNITS, ALL 125 VOLT 15 AND 20 AMP RECEPTACLES SHALL BE LISTED TAMPER-RESISTANT RECEPTACLES NEC 406.12)
4. ALL WORK AND EQUIPMENT UNDER THIS DIVISION SHALL BE IN STRICT COMPLIANCE WITH THE CODES, STANDARDS AND PRACTICES LISTED HEREIN, AND THEIR RESPECTIVE DATES ARE FURNISHED AS THE MINIMUM LATEST REQUIREMENTS.
 - A. LIFE SAFETY CODE
 - B. NATIONAL FIRE PROTECTION ASSOCIATION
 - C. NATIONAL ELECTRICAL CODE
 - D. AMERICAN NATIONAL STANDARDS INSTITUTE
 - E. INSTITUTE IF ELECTRICAL AND ELECTRONIC ASSOCIATION
 - F. NATIONAL ELECTRICAL MANUFACTURER'S ASSOCIATION (NEMA)
 - G. REQUIREMENTS OF LOCAL POWER COMPANY
 - H. BUILDING CODE
5. THE ELECTRICAL INSTALLATION SHALL MEET THE APPROVAL OF THE LOCAL GOVERNING AUTHORITIES AND THE OWNER'S REPRESENTATIVE PRIOR TO ACCEPTANCE.
6. REFER TO THE ARCHITECTURAL, MECHANICAL, PLUMBING, FIRE PROTECTION, CIVIL INTERIOR DESIGN FOR RELATED INFORMATION AND ADDITIONAL INSTALLATION REQUIREMENTS TO BE CONSIDERED AS PART OF THE ELECTRICAL CONTRACT DOCUMENTS.
7. IT IS NOT THE INTENT OF THESE PLANS TO SHOW EVERY MINOR DETAIL OF CONSTRUCTION THE CONTRACTOR IS EXPECTED TO FURNISH ALL ITEMS FOR A COMPLETE ELECTRICAL SYSTEM, PROVIDE EVERYTHING NECESSARY FOR EQUIPMENT TO BE PLACED IN PROPER WORKING ORDER, THE CONTRACTOR SHALL FURNISH AND INSTALL ALL MINOR ITEMS WHICH ARE OBVIOUSLY NECESSARY TO COMPLETE THE INSTALLATION.
8. LIGHT SWITCHES SHALL BE MOUNTED 48 INCHES ABOVE FINISHED FLOOR TO CENTER LINE OF THE DEVICE, UNLESS NOTED OTHERWISE, GANG SWITCHES AND DIMMER WITH A COMMON PLATE WHERE TWO (2) OR MORE ARE INDICATED ADJACENT TO EACH OTHER.
9. RECEPTACLES SHALL BE LOCATED 18" ABOVE FINISHED FLOOR TO CENTER LINE OF DEVICE, UNLESS NOTED OTHERWISE, ABOVE-COUNTER RECEPTACLES SHALL BE MOUNTED 6" ABOVE BACK SPLASH TO CENTERLINE OF DEVICE UNLESS NOTED OTHERWISE.
10. USE GALVANIZED RIGID STEEL CONDUIT WHERE EPOSED TO EXTERIOR CONDITIONS OR WHERE EXPOSED IN ANY LOCATIONS WHERE SUBJECT TO MECHANICAL DAMAGE, EMT SHALL BE PROVIDED WITH SET SCREW STEEL FITTINGS FOR INSTALLATION IN ALL CONCEALED WALLS AND CEILINGS IN DRY AREAS, ALL CONDUIT FOR LIGHTING PROTECTION SHALL BE PVC, SCHEDULE 40, UNLESS OTHERWISE NOTED, PVC MAY BE USED WHERE BURIED UNDER GRADE AND ENCASED IN CONCRETE SLAB OR WALLS, ALUMINUM CONDUIT IS NOT ALLOWED, EMT CAN BE USED IN DRY AREAS WHEN INSTALLED 10 FEET ABOVE FINISHED FLOOR LEVEL.
11. ALL CONDUITS IN PUBLIC SHALL BE CONCEALED UNLESS NOTED OTHERWISE.

ELECTRICAL LIST OF DRAWINGS (LoD):

SHEET TAG	TITLE	SCALE
E 0-00	ELECTRICAL SPECIFICATIONS & GENERAL NOTES	NTS
E 1-00	LIGHTING LAYOUT	1/4"=1'-0"
E 2-00	POWER LAYOUT	1/4"=1'-0"
E 3-00	SINGLE LINE DIAGRAM, GROUNDING DETAILS, PANEL BOARD SCHEDULE & LOAD CALCULATIONS	NTS
E 5-00	GENERAL DETAILS	NTS



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 3707 Cypress Creek Parkway, Suite 310
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REVISIONS

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PORTER FAMILY RESIDENCE ALTERATION
 2410 PERKINS ROAD, ARLINGTON TX76106

ELECTRICAL SPECIFICATIONS

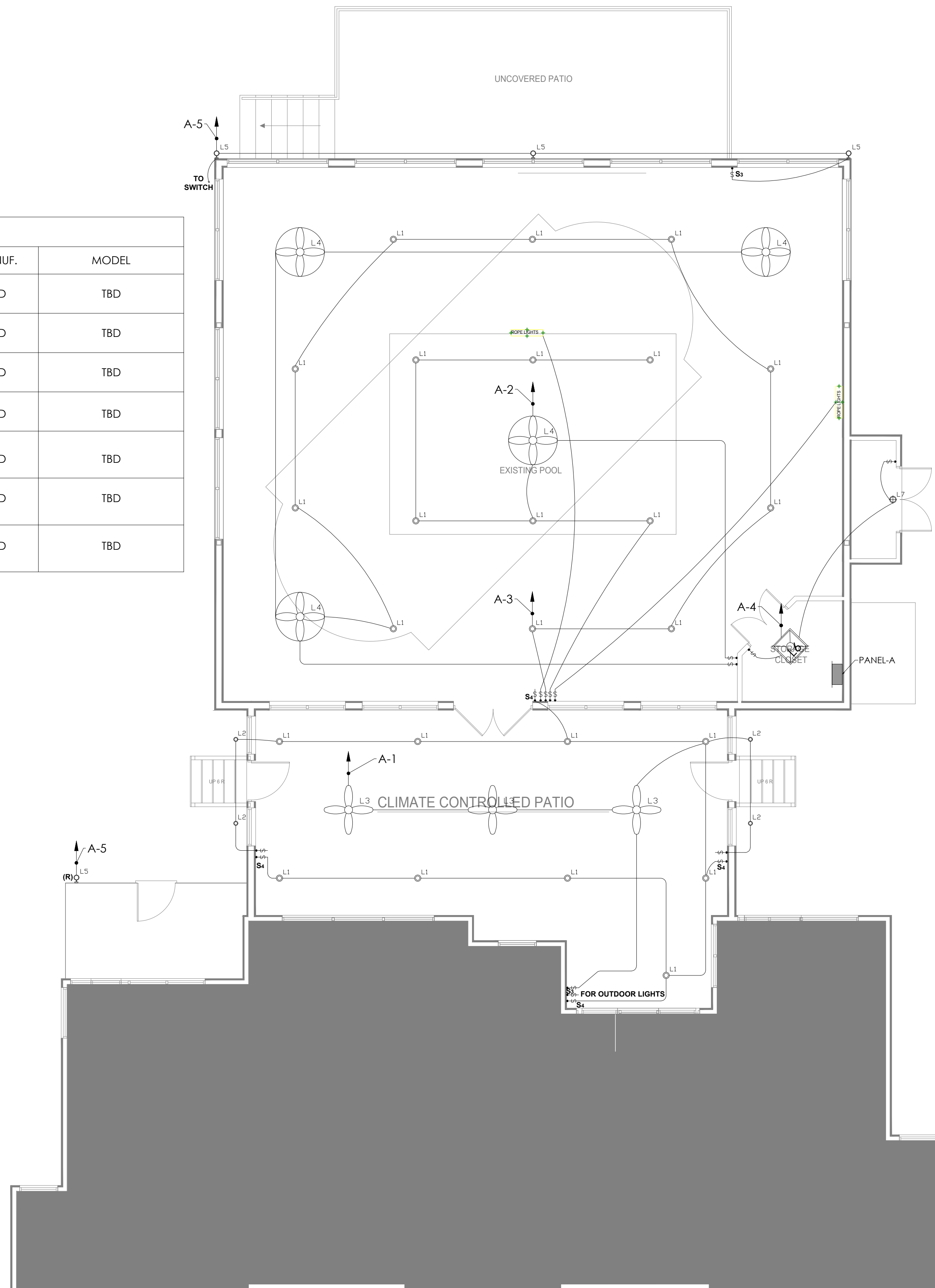
Drawn By: S.H Scale: NTS
 Date: 04.26.2024 PROJ NO.:

E0-00

SHEET NO.

LIGHTING-FIXTURE-SCHEDULE								
TAG	SYMBOL	DESCRIPTION	TYPE	W	V	MOUNT.	MANUF.	MODEL
L1	○	RECESSED DOWNLIGHT - 6"	LED	15W	120V	REC.	TBD	TBD
L2	○	RECESSED DOWNLIGHT - 4"	LED	10W	120V	REC.	TBD	TBD
L3	⊗	CEILING FAN	LED	50W	120V	SUSP.	TBD	TBD
L4	⊗	CEILING BIG ASS FAN	LED	100W	120V	SUSP.	TBD	TBD
L5	○	FLOOD LIGHT	LED	25W	120V	WALL	TBD	TBD
L6	⊞	2X2 SURFACE MOUNT LIGHT	LED	33W	120V	SURF.	TBD	TBD
L7	⊕	CLOSET LIGHT	LED	20W	120V	SURF.	TBD	TBD

ELECTRICAL LEGEND	
	JUNCTION BOX FOR EXHAUST FANS
	OCCUPANCY SENSOR
	ONE WAY LIGHTING SWITCH
	TWO WAYS LIGHTING SWITCH
	SELF CONTAINED SMOKE/CARBON MONOXIDE (120 W/BATTERY BACKUP) - CEILING MOUNTED
	SELF CONTAINED SMOKE DETECTOR/ANNUNCIATOR (120 W/BATTERY BACKUP) - CEILING MOUNTED SPECIFIED UL217



REVISIONS

No.	Description	Date
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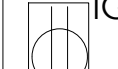


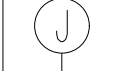

LIGHTING PLAN

Drawn By: S.H Scale: 3/16" = 1'-0"
Date: 04.26.2024 PROJ. NO.:

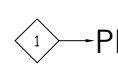
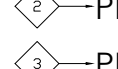
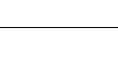
E1-00

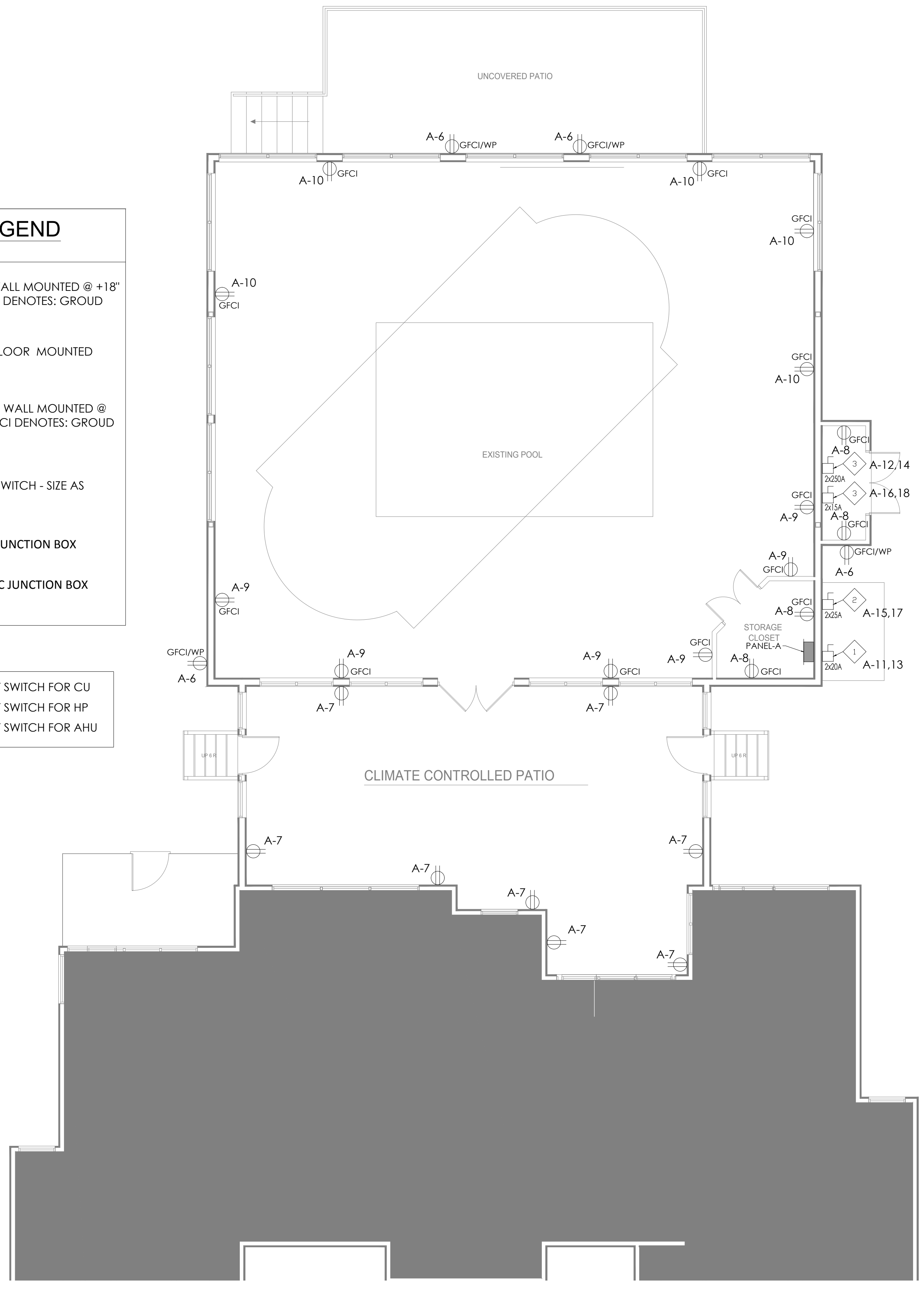
SHEET NO.

ELECTRICAL LEGEND

-  DUPLEX RECEPTACLE - WALL MOUNTED @ +18" AFF UNLESS NOTED GFCI DENOTES: GROUND FAULT PROTECTION
-  DUPLEX RECEPTACLE - FLOOR MOUNTED IG DENOTES: IG TYPE
-  QUADRIplex RECEPTACLE - WALL MOUNTED @ +18" AFF UNLESS NOTED GFCI DENOTES: GROUND FAULT PROTECTION
-  NON-FUSED DISCONNECT SWITCH - SIZE AS INDICATED
-  WALL MOUNTED ELECTRIC JUNCTION BOX
-  CEILING MOUNTED ELECTRIC JUNCTION BOX

SHEET NOTES:

-  PROVIDE NEMA 3R DISCONNECT SWITCH FOR CU
-  PROVIDE NEMA 3R DISCONNECT SWITCH FOR HP
-  PROVIDE NEMA 3R DISCONNECT SWITCH FOR AHU



REVISIONS

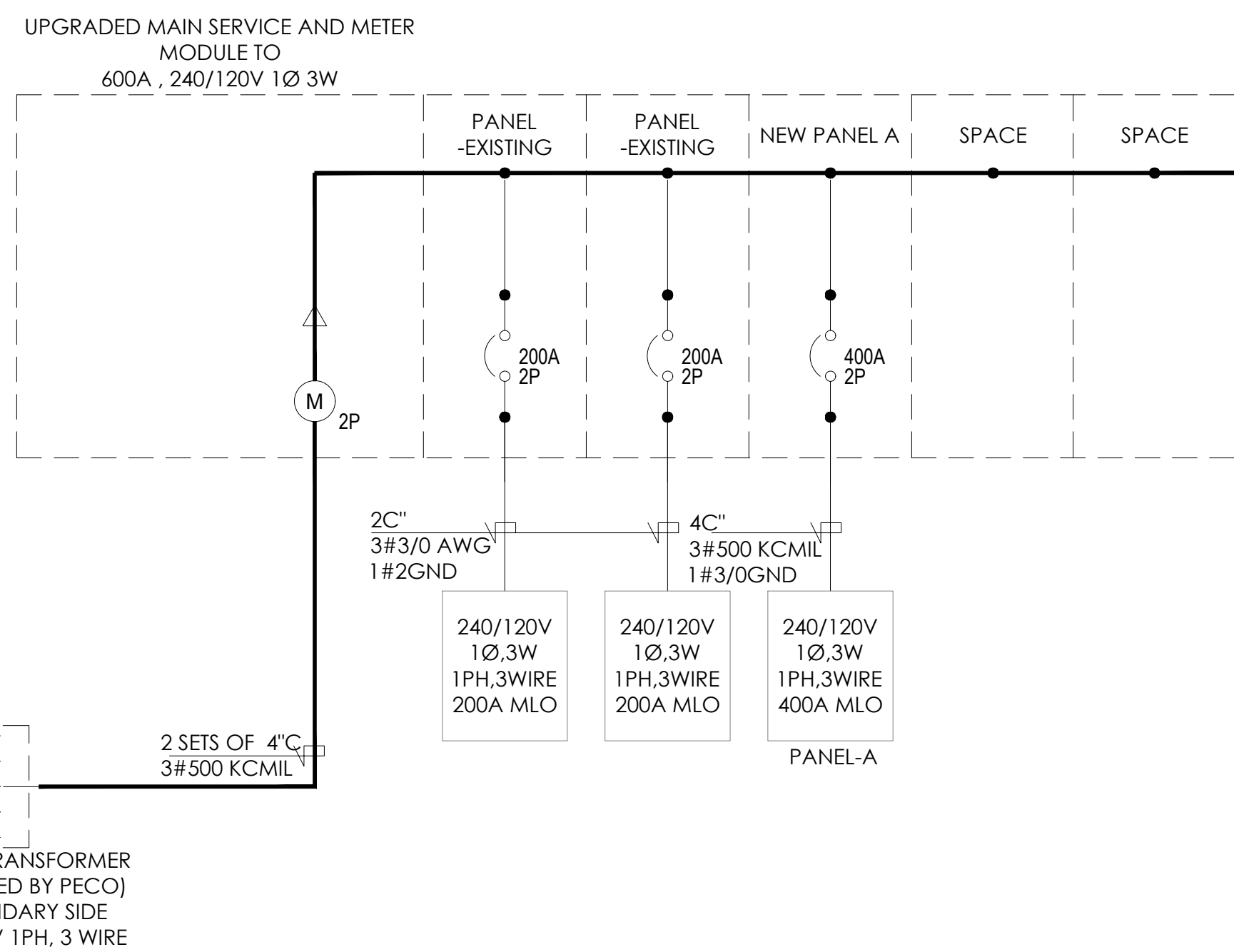
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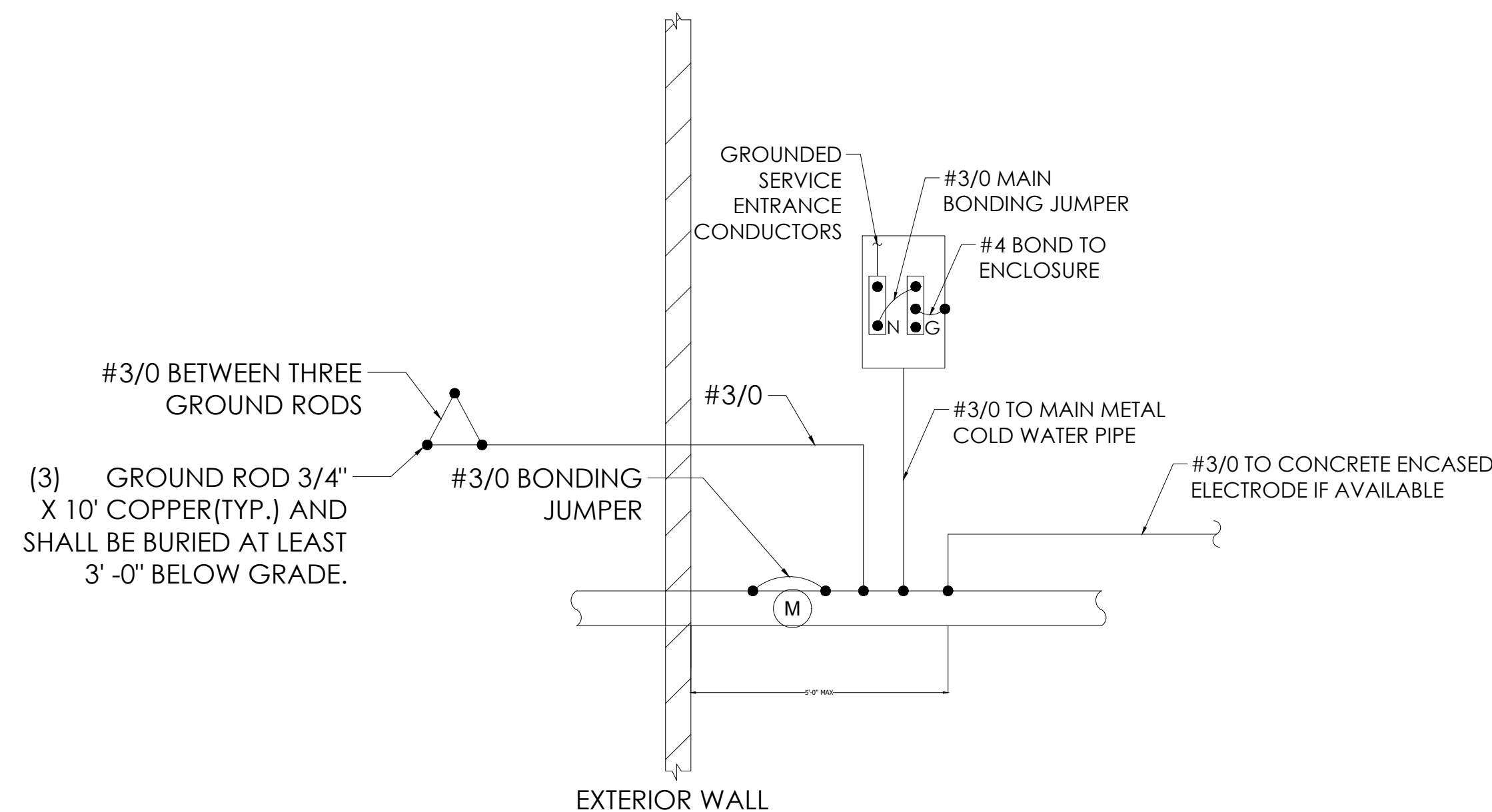
POWER LAYOUT

Drawn By: S.H Scale: 3/16" = 1'-0"
 Date: 04.26.2024 PROJ. NO.:

E2-00
SHEET NO.



- ELECTRICAL SINGLE DIAGRAM NOTES:**
- E.C. SHALL ENSURE THE ELECTRIC SERVICE IS PROPERLY BONDED AND GROUNDED PER NEC ARTICLES 230 AND 250
 - CONDUCTORS SIZE ARE BASED ON COPPER CONDUCTORS. E.C. SHALL NOTIFY ENGINEER AND MAKE THE CHANGES IF E.C. USE ALUMINUM CONDUCTORS.
 - REFER TO DWG.2/E200 FOR GROUNDING AND BONDING DETAILS



ELECTRICAL GROUNDING AND BONDING NOTES:

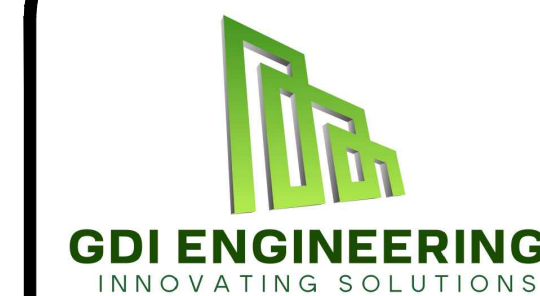
- E.C. SHALL ENSURE THE ELECTRIC SERVICE IS PROPERLY BONDED AND WALL GROUNDED PER NEC ARTICLES 230 AND 250.
- CONDUCTORS SIZE ARE BASED ON COPPER CONDUCTORS.
- BONDING JUMPER FOR WATER METER IS PERMITTED TO BE OMITTED IF NON-METALLIC WATER PIPE IS USED.

Location: STORAGE									
LOAD SUMMARY		CL	DF	CONNECTED LOAD		DEMAND TOTAL			
				A	B				
L	Lighting	1.30	1.25	0.85	0.85	1.63			
R	Convenience Recept	4.86		2.70	2.16	4.86			
H	Heating (Space)		1.25						
C	Cooling		1.00						
A	HVAC	63.38	1.00	31.69	31.69	63.38			
P	Process		1.00						
O	Other Continuous		1.25						
K	Kitchen		13.00						
N	Noncontinuous		1.00						
			1.00						
Total		69.54		35.04	34.50	69.57			
Total Demand Load (KVA)		69.54							
Total Demand Current (A)		355.79							
Min. Feeder Ampacity (A)		351.37							

PANEL A									
PANELBOARD DESIGNATION									
SYSTEM VOLTAGE		240/120V, 1Ø, 3W							
BUS SIZE		400A							
SYSTEM TYPE		NORMAL							
FEEDER PROT		400A-2P C/B Bus Plug							
CONDUCTOR SIZE		500-Kcmil - JØG CU							
CONDUCTOR/PHASE		1							
MAINS		400A MCB							
SCCR		FULLY RATED							
MCB RATING		80%							
GROUND FAULT		NO							
FEEDER LENGTH (FT)		100							
FEEDER V. DROP (%)		0.860							
FAULT CURRENT									
KAIC RATING		22							
ENCLOSURE		TYPE 1							

DESCRIPTION	WIRE	GRD	CB	KVA	A	B	KVA	CB	WIRE	GRD	DESCRIPTION
1 LIGHTING CLIMATE CONTROLLED PATIO	L 2X 14 AWG	-#14G	15A-1P	0.40	0.55	0.15	0.15	15A-1P	2x 14 AWG	-#14G	LIGHTING EXISTING POOL
3 LIGHTING EXISTING POOL	L 2X 14 AWG	-#14G	15A-1P	0.55	0.65	0.10	0.10	15A-1P	2x 14 AWG	-#14G	LIGHTING STORAGE - MECH ROOM
5 LIGHTING OUTDOOR LIGHTS	L 2X 14 AWG	-#14G	15A-1P	0.10	0.82	0.72	0.72	20A-1P	2x 12 AWG	-#12G	RECEPTACLES OUTDOOR
7 RECEPTACLES CLIMATE CONTROLLED PATIO	R 2X 12 AWG	-#12G	20A-1P	1.44	2.16	0.72	0.72	20A-1P	2x 12 AWG	-#12G	RECEPTACLES STORAGE - MECH ROOM
9 RECEPTACLES POOL AREA	R 2X 12 AWG	-#12G	20A-1P	1.08	1.98	0.90	0.90	20A-1P	2x 12 AWG	-#12G	RECEPTACLES POOL AREA
11 CU-01	A 3x 12 AWG	-#12G	20A-2P	1.80	29.52	27.72		250A-2P	3x 350-kcmil	-#1G	AHU-01
13	A			1.80	29.52	27.72					AHU-01
15 HP-01	A 3x 10 AWG	-#10G	25A-2P	1.74	2.17	0.43		15A-2P	3x 14 AWG	-#14G	AHU-02
17	A			1.74	2.17	0.43					AHU-02
19 SPACE											SPACE
21 SPACE											SPACE
23 SPACE											SPACE
				Total Connected Load	35.04	34.50					

LOAD CALCULATIONS			
Step	Directions		
LIGHTING & GENERAL USE RECEPTACLES: 220.82(B)(1)			
1	Square footage	7,428 x 3 =	22,284 va
SMALL APPLIANCES & LAUNDRY CIRCUITS: 220.82(B)(2)			
2	Number of circuits	4 x 1500 =	6,000 va
APPLIANCES & MOTOR LOADS: 220.82(B)(3) & (4)			
3	Washing Machine	1,500 va	
	Dryer	5,000 va	
	Dishwasher	1,200 va	
	Trash Compactors	500 va	
	Range	8,000 va	
	Fridges	4,500 va	
	Oven	4,000 va	
	Microwave	1,500 va	
	Water Heaters	9,000 va	
	TOTAL	63,484 va	
TOTAL STEPS 1-3: 220.82(B)			
4	1. Total of Loads	63,484 - 10,000 va =	53,484
	2. Line 1	53,484 x 40% =	21,394
	3. Line 2	21,394 + 10,000 va =	31,394
HEATING & AIR CONDITIONING LOADS: 220.82(C)			
5	A. Air-Conditioning Equipment	76380 va	
	B. Heat Pump without Suppl. Heating	N/A va	
	C. Suppl. Heating for HP	N/A va	
	D. Electrical Space Heating	N/A va	
	E. Electric Thermal Storage	N/A va	
CALCULATE TOTAL SERVICE OR FEEDER LOAD: 220.82(A)			
6	Total of Line 3 from Step 4	31,394 va	
	Enter only the largers load from Step 5 +	76,380 va	
	Total Calculated Service or Feeder Load =	107,774 va	
CALCULATED SERVICE OR FEEDER SIZE			
7	Total Calculated Load	107,774 va / 240 volts =	449 amps
	This calculation resulted in a calculated load of 449 amps, the main feeder 400 amps will not be able to serve the single family house, so the service will need to be upgraded to 600A		



GDI ENGINEERING
3707 Cypress Creek Parkway, Suite 310
Houston, TX 77068
Office: 346-509-5860
www.gdiengdesign.com

REVISIONS

No.	Description	Date
-	DRAFT	03.22.2024

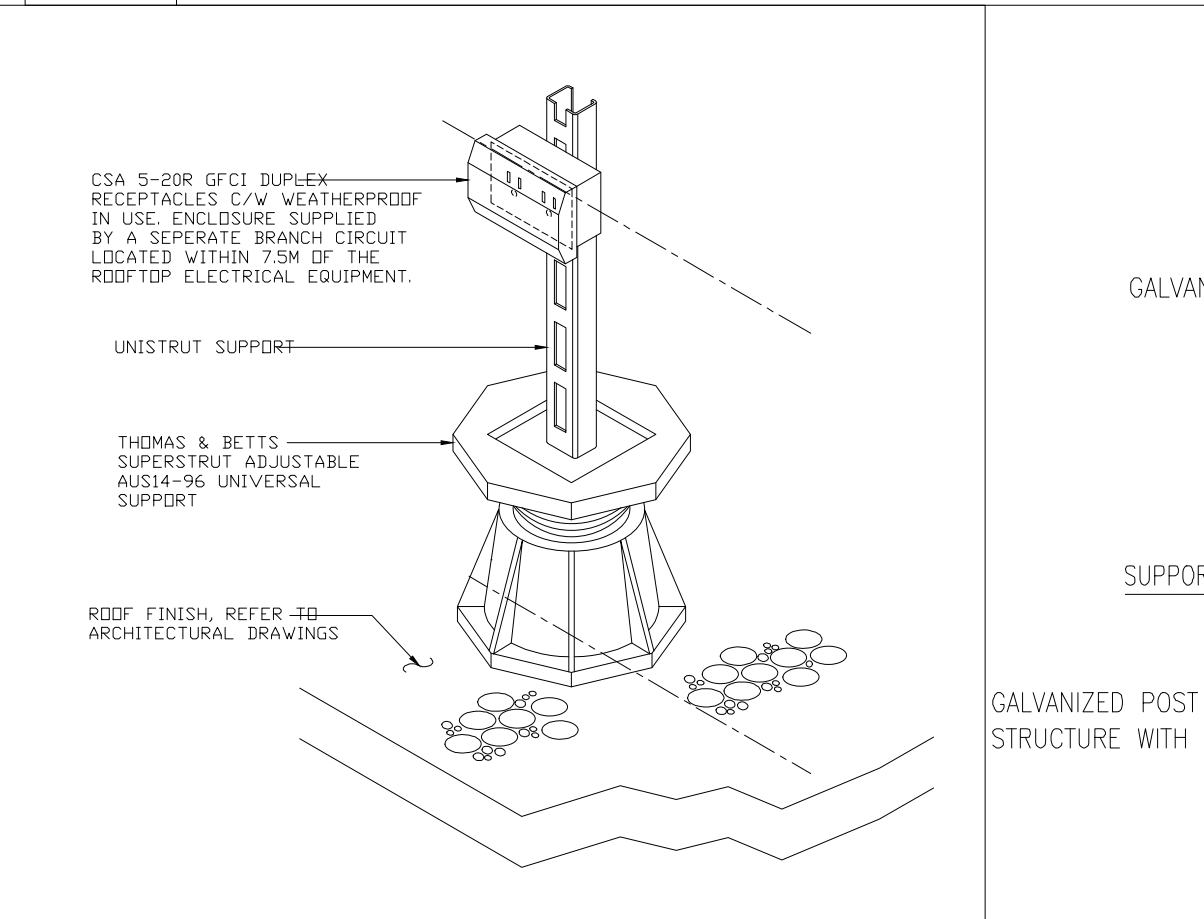
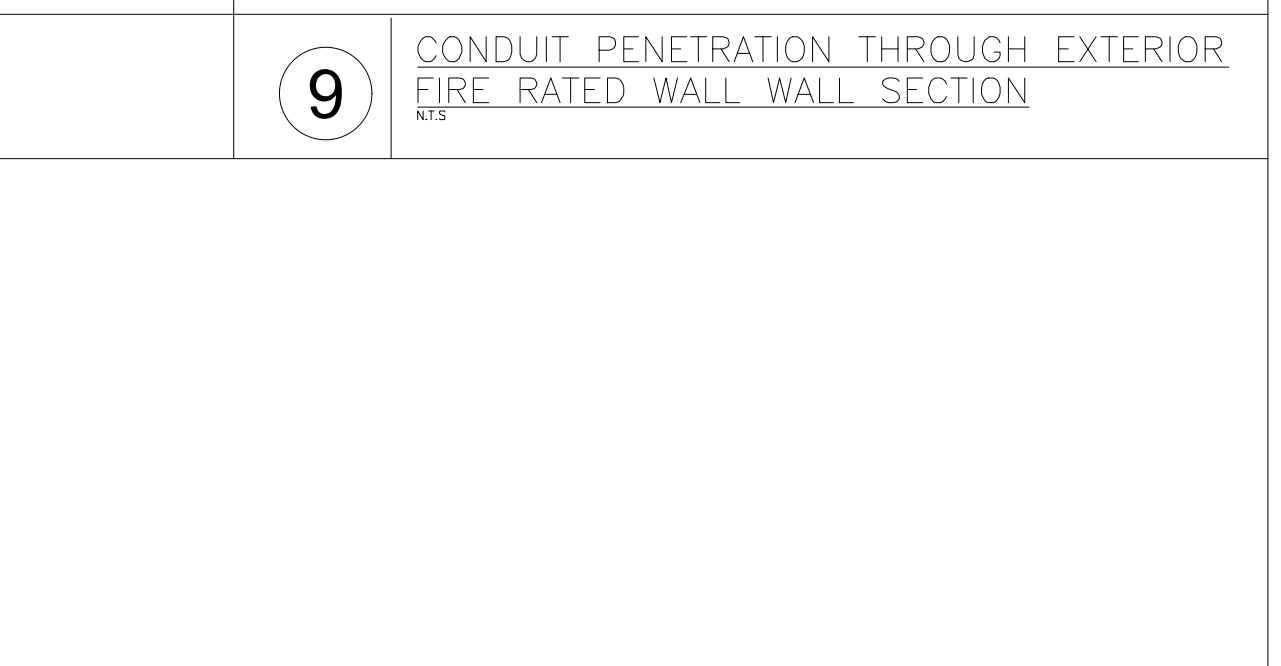
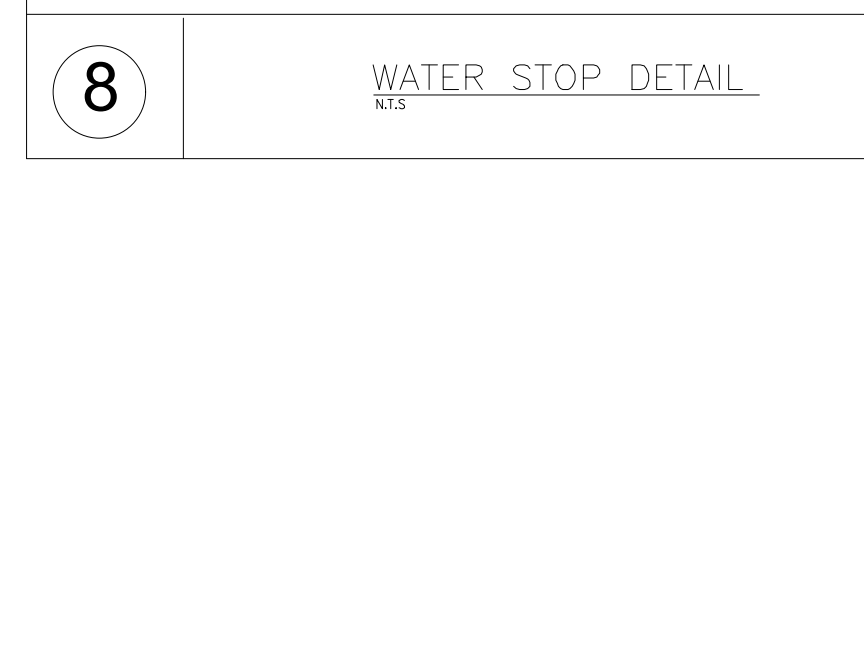
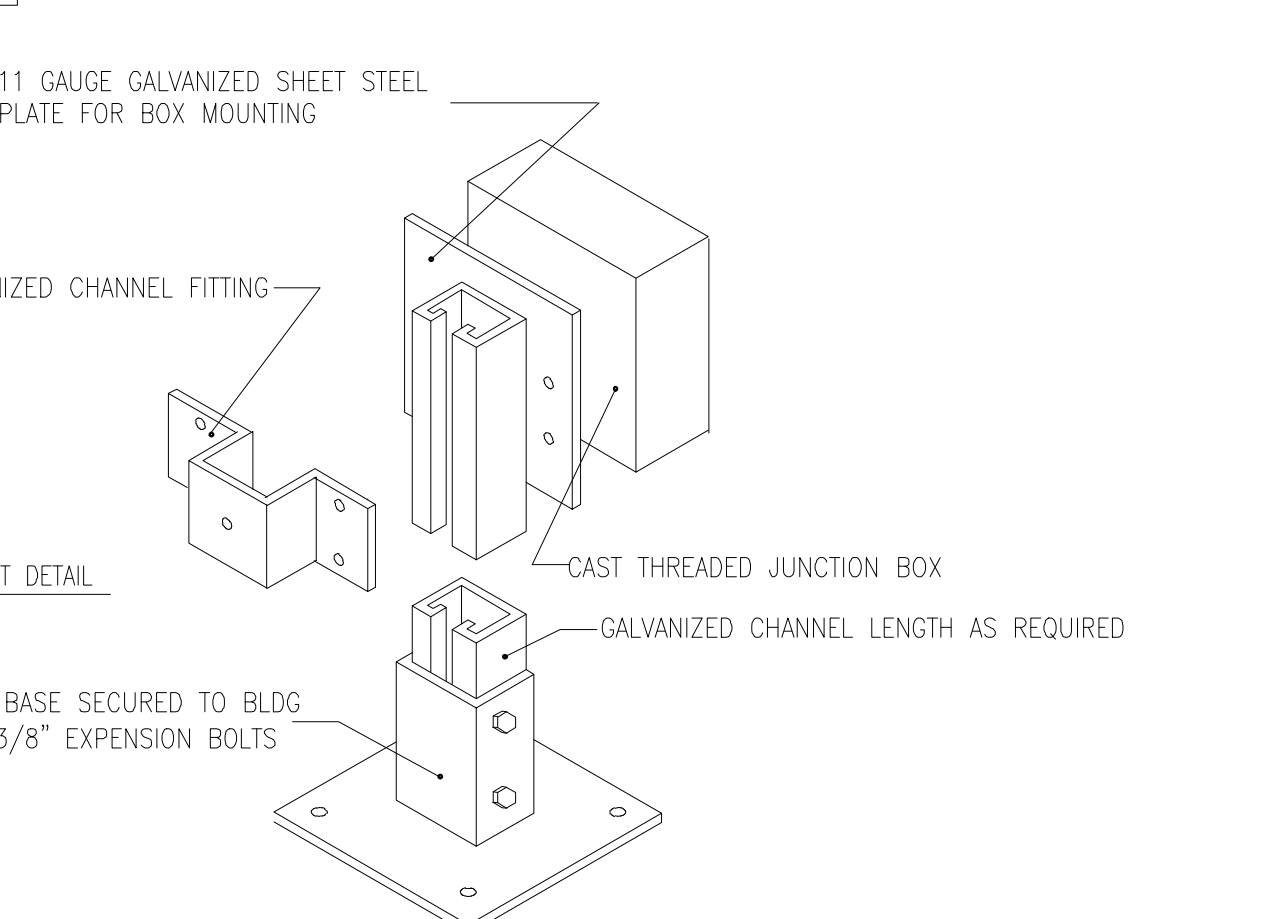
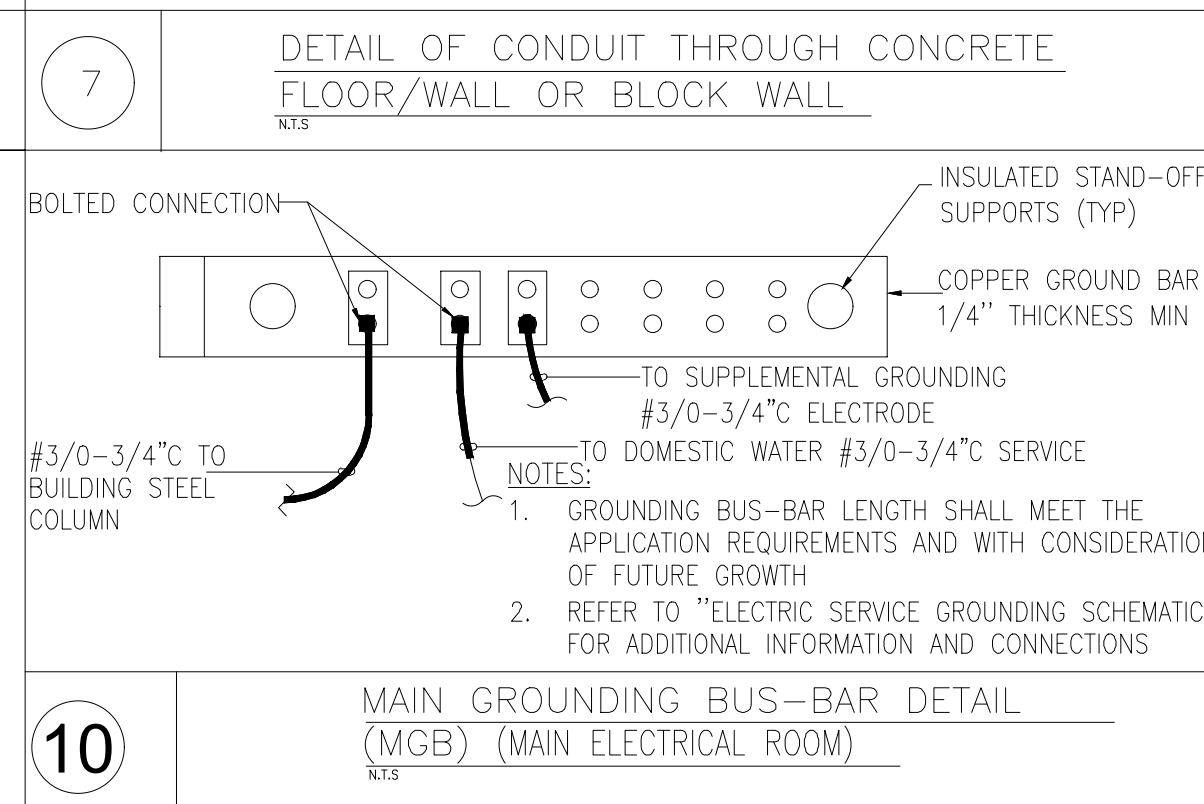
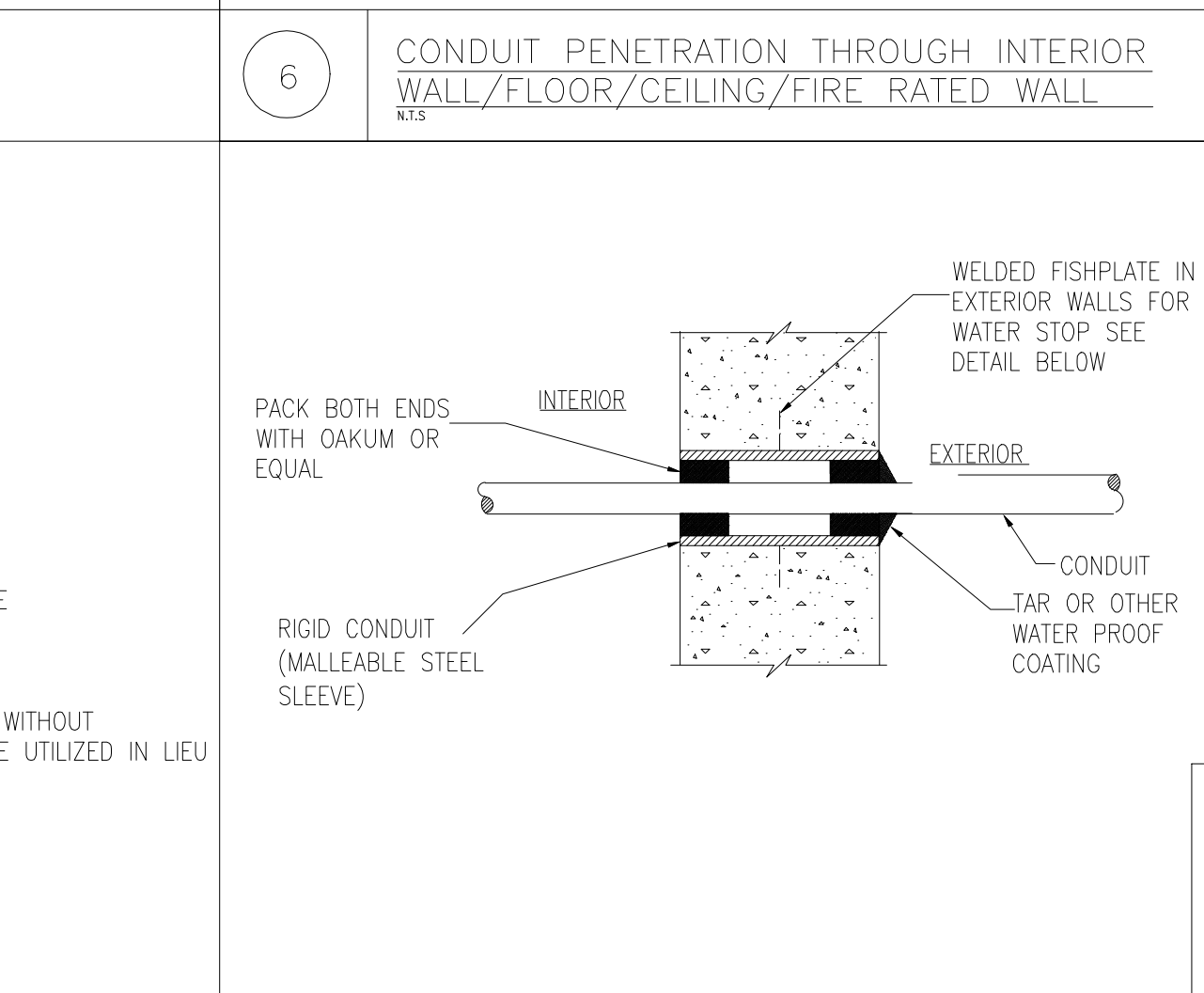
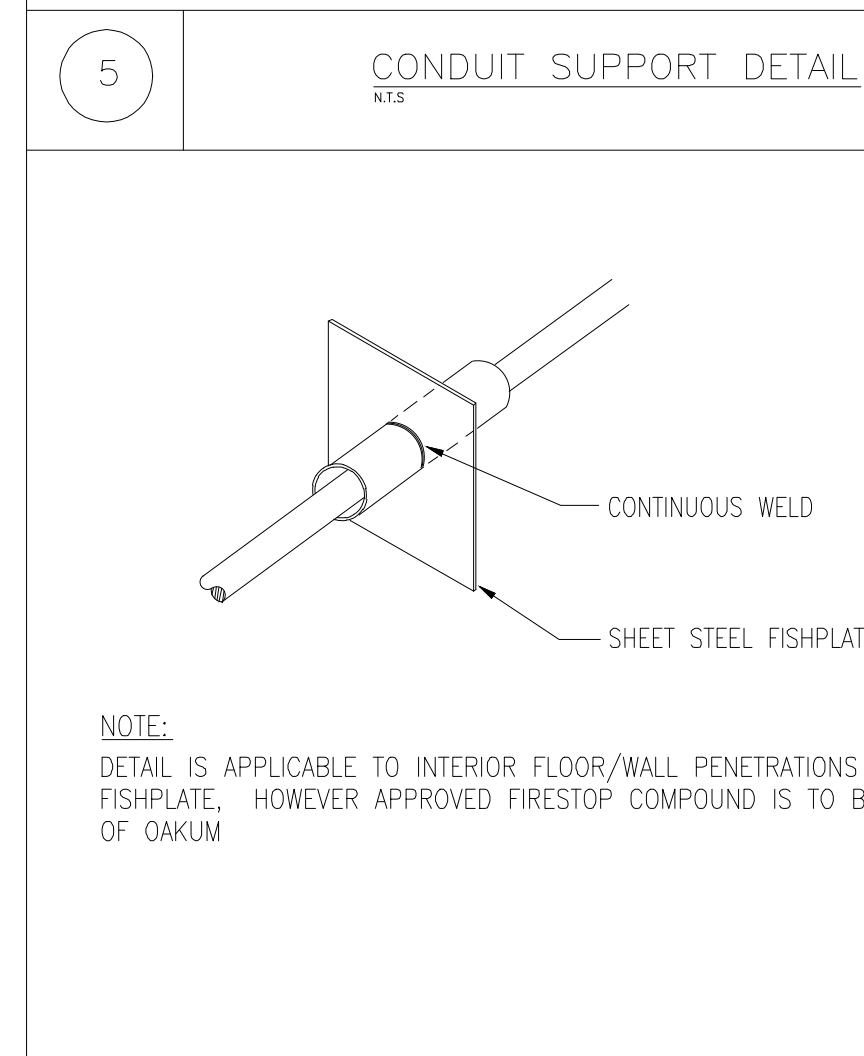
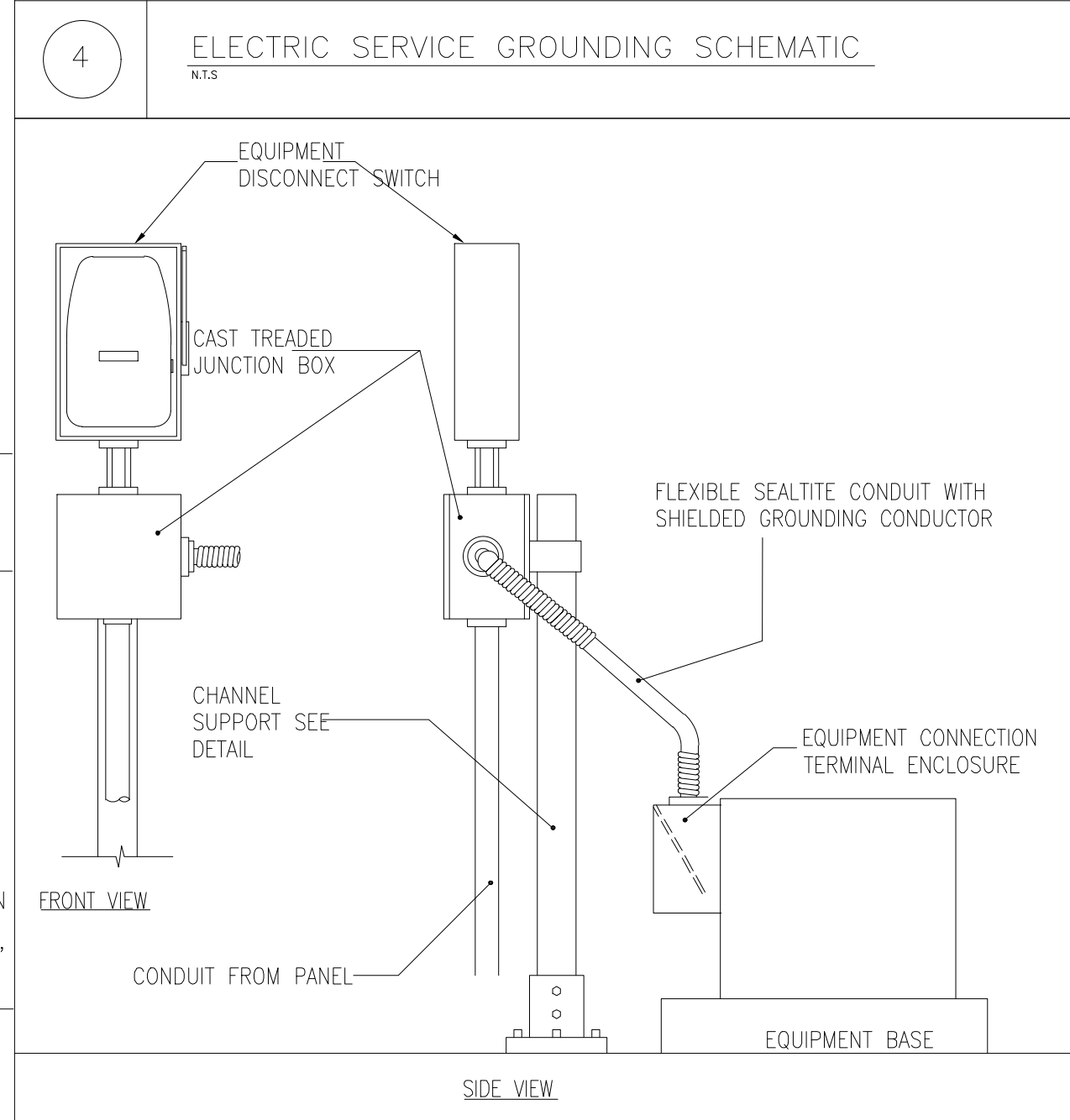
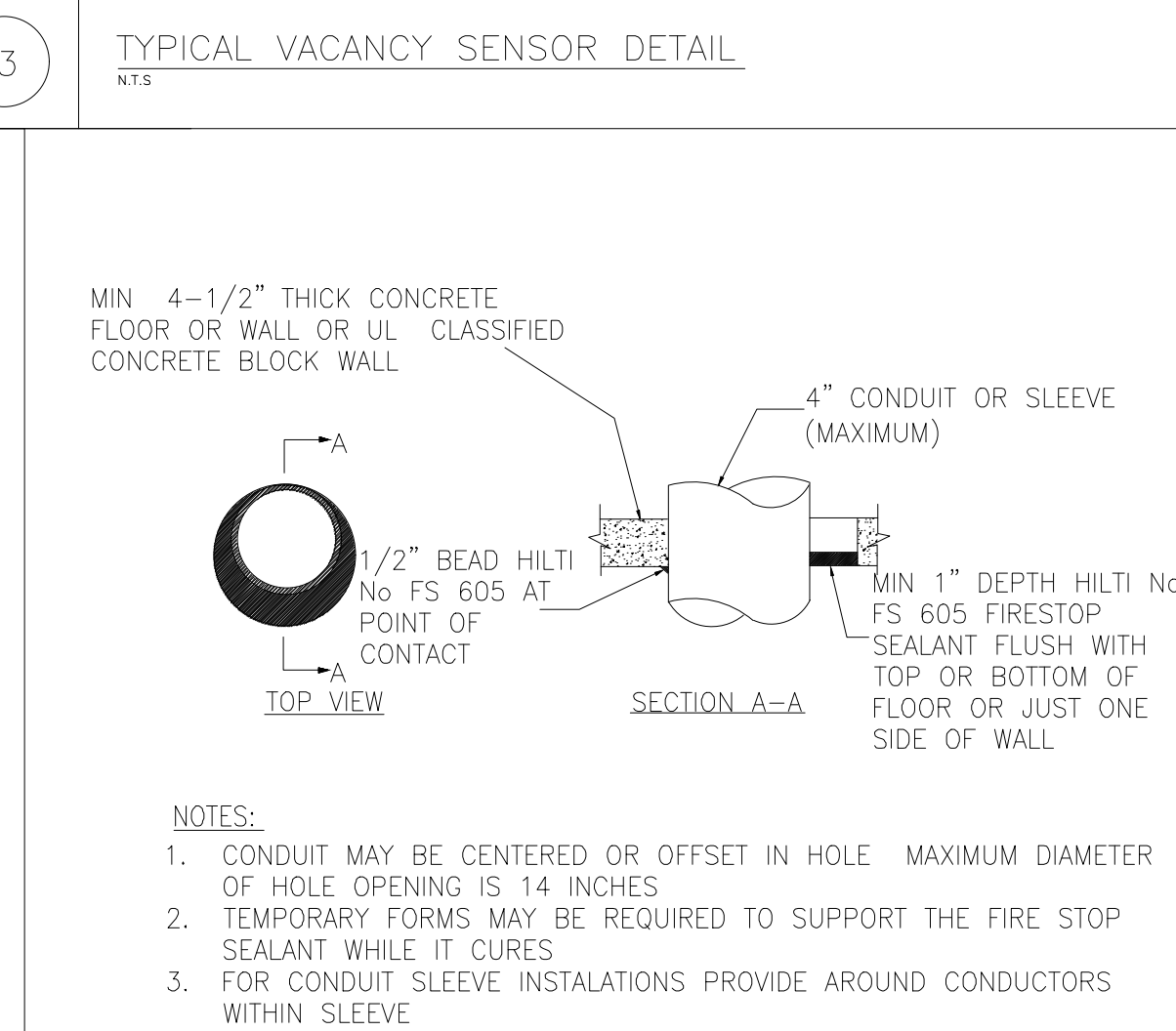
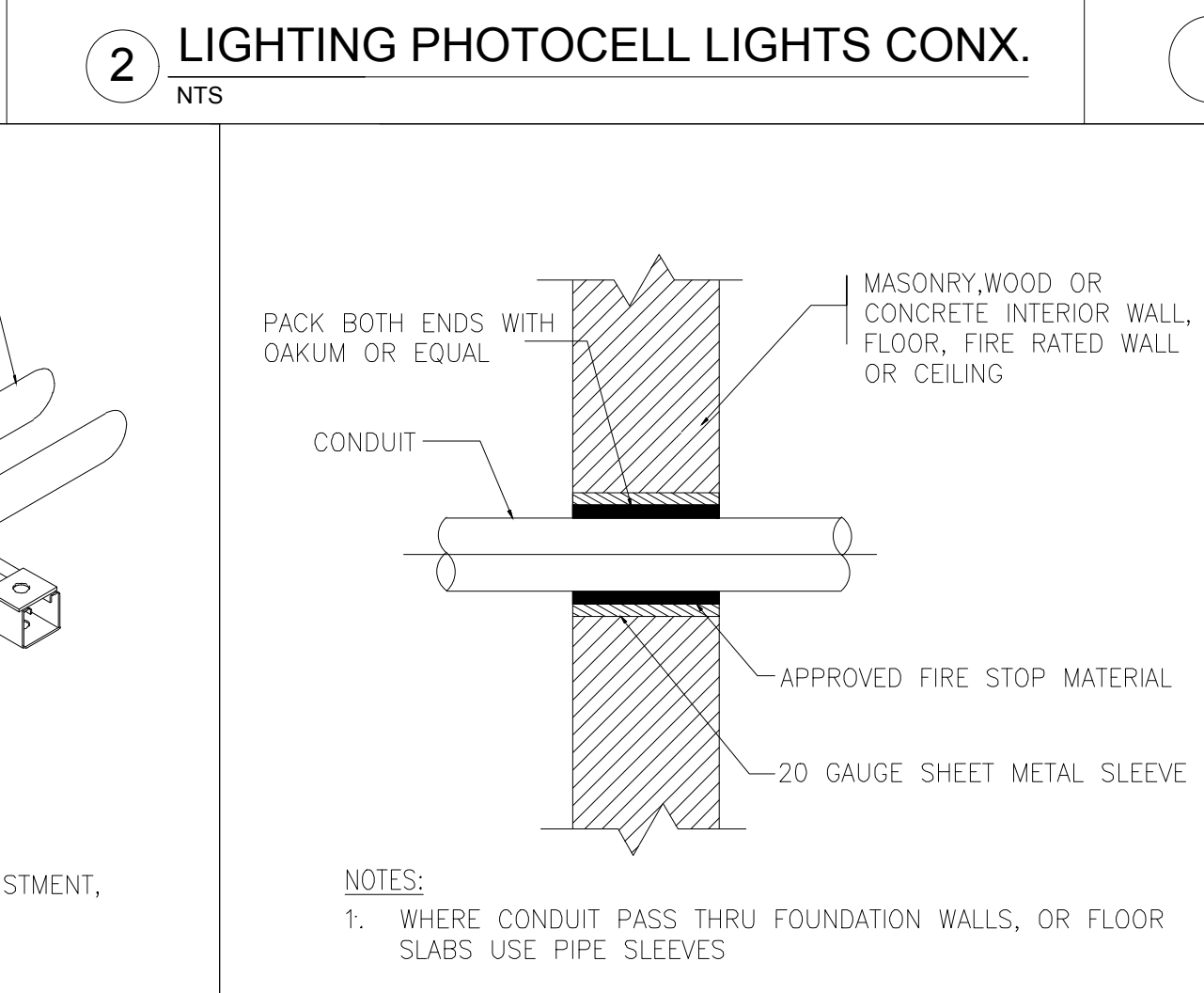
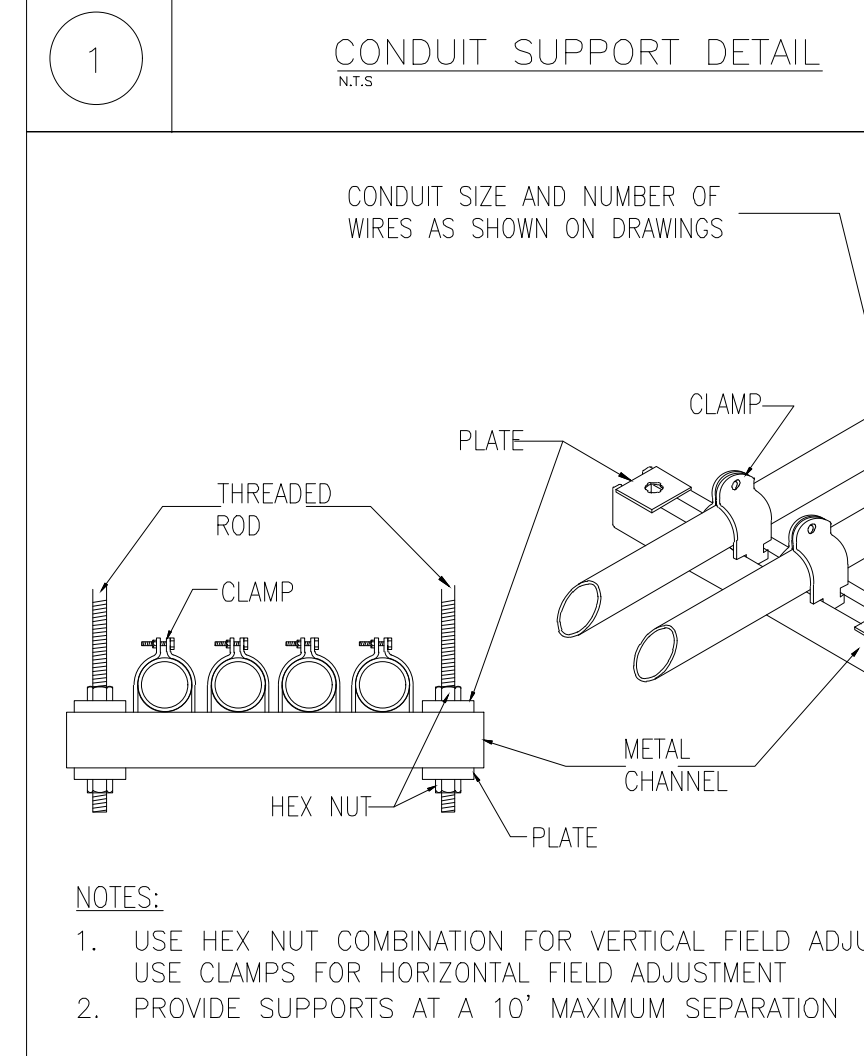
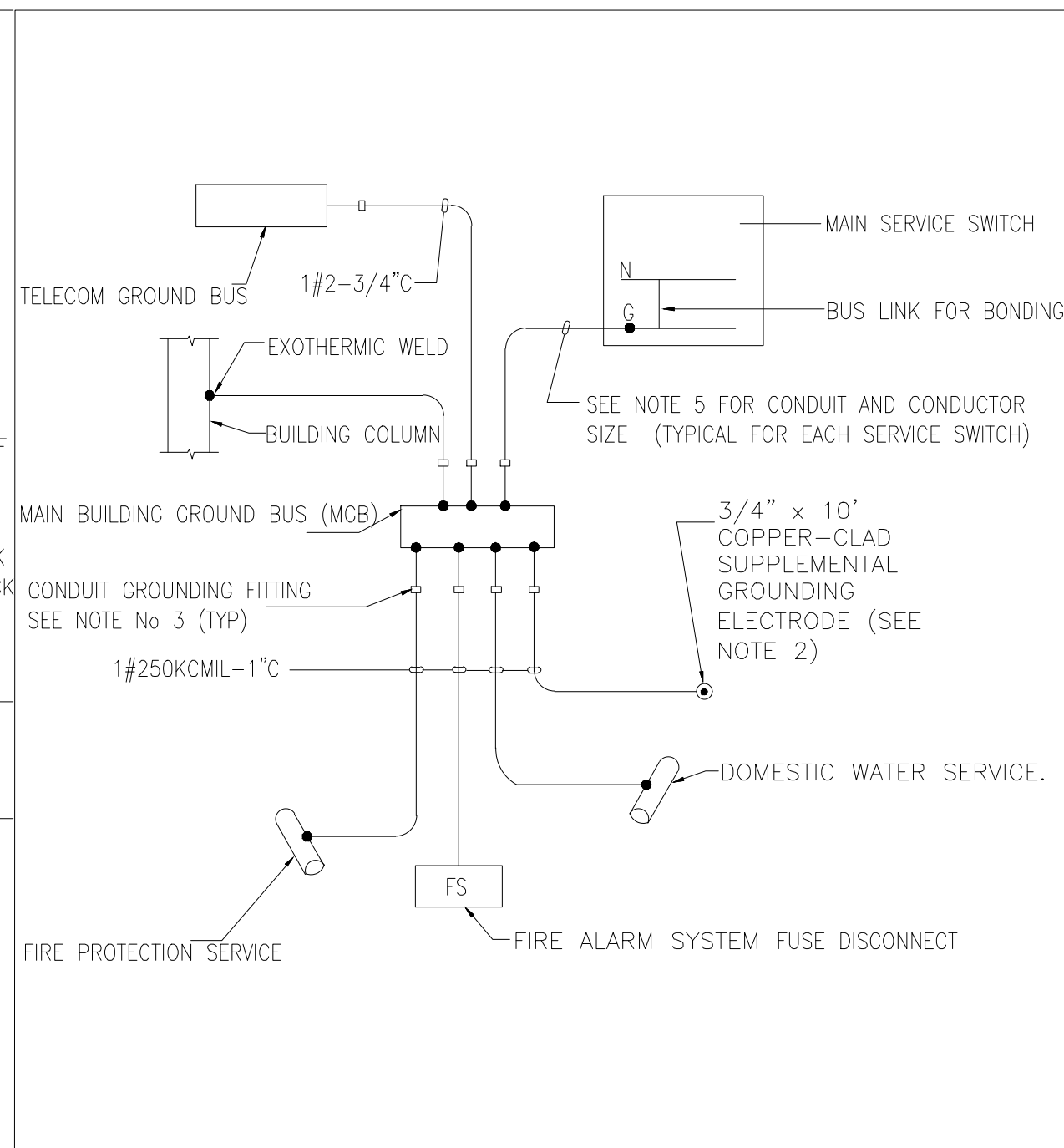
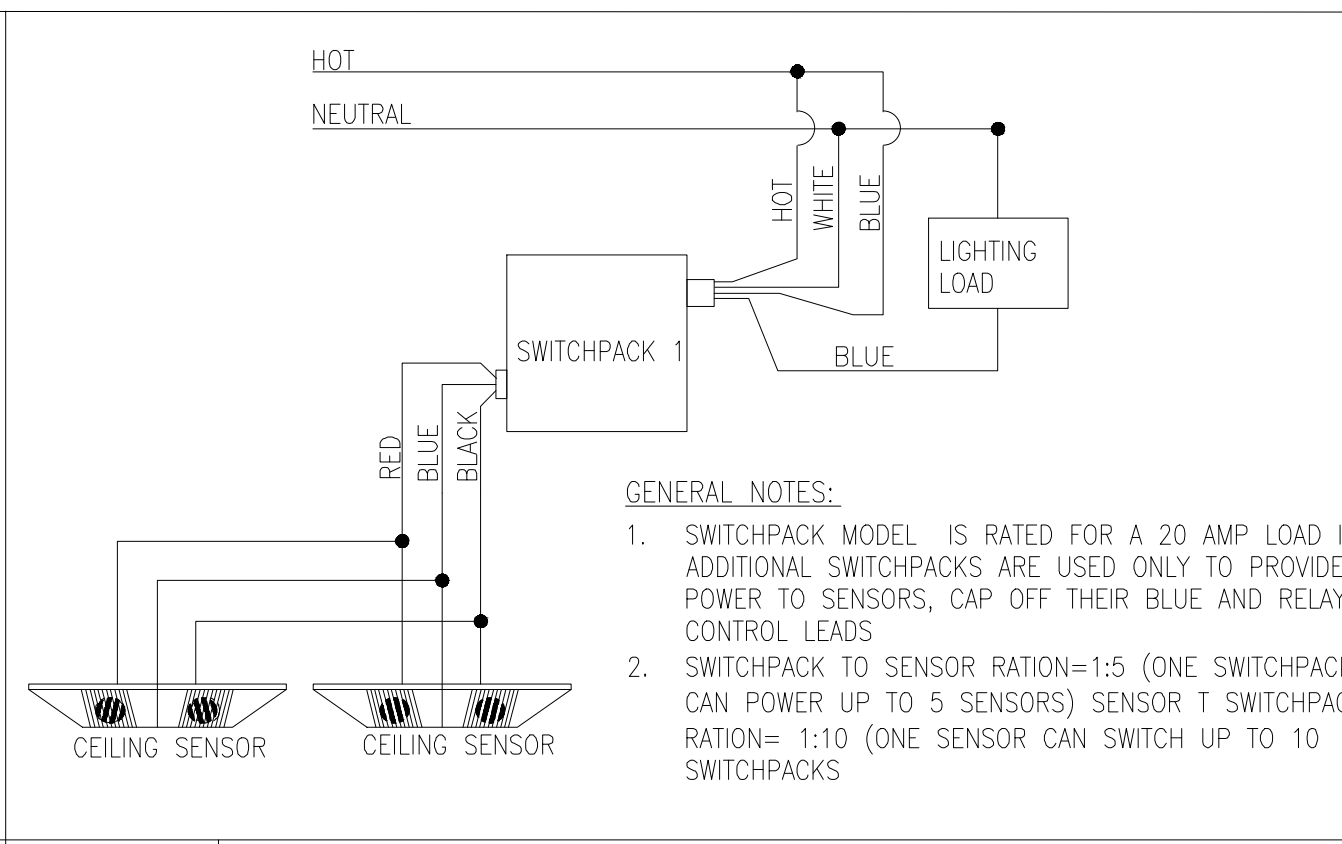
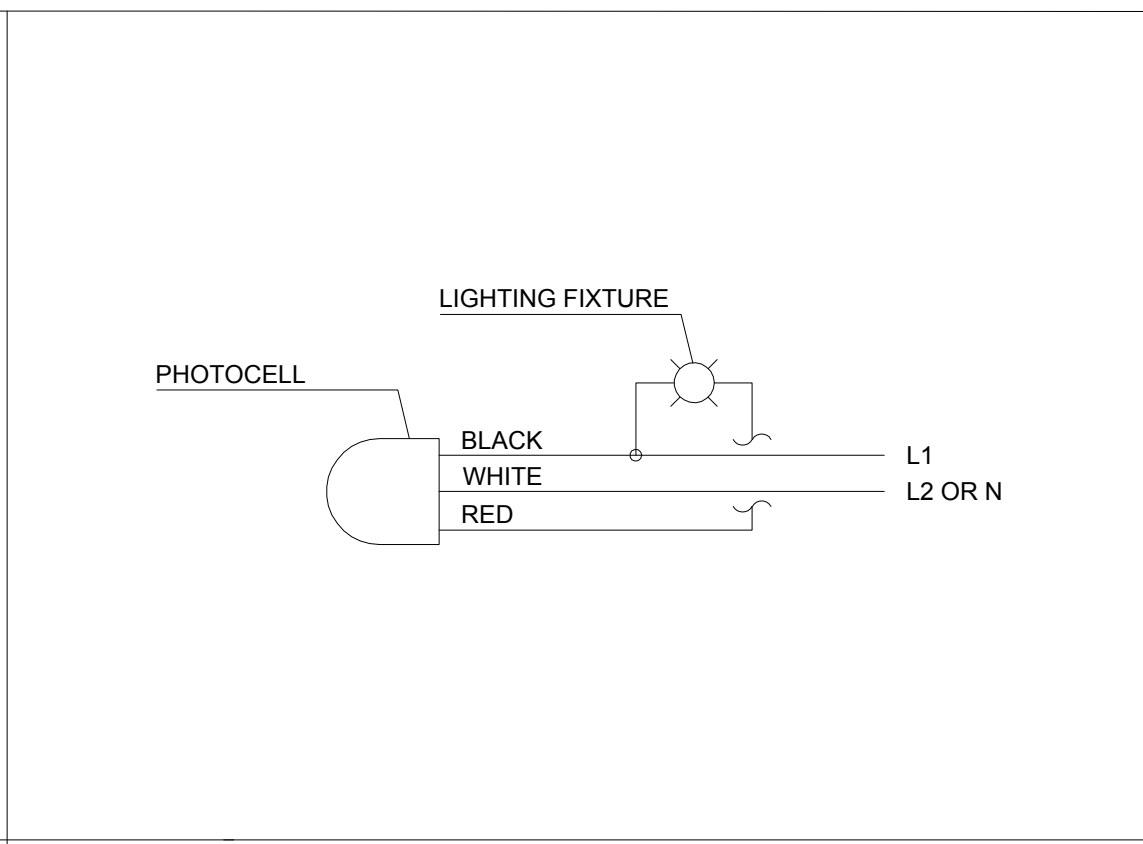
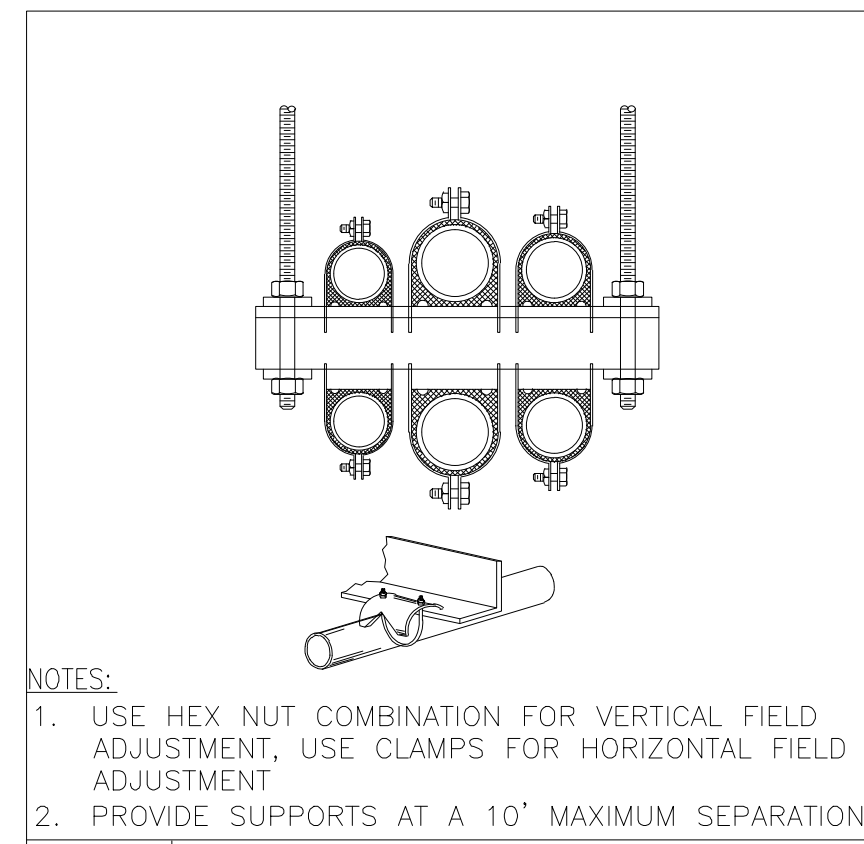
PORTER FAMILY RESIDENCE ALTERATION
2410 PERKINS ROAD, ARLINGTON TX76106

SINGLE LINE DIAGRAM, GROUNDING DETAILS, PANEL BOARD SCHEDULE & LOAD CALCULATIONS

Drawn By: S.H Scale: NTS
Date: 04.26.2024 PROJ. NO.:

E3-00

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REVISIONS		
No.	Description	Date
-	DRAFT	03.22.2024

PORTER FAMILY RESIDENCE ALTERATION
 2410 PERKINS ROAD, ARLINGTON TX76106

GENERAL DETAILS

Drawn By: S.H. Scale: NTS
Date: 04.26.2024 PROJ. NO.:

E4-00
SHEET NO.