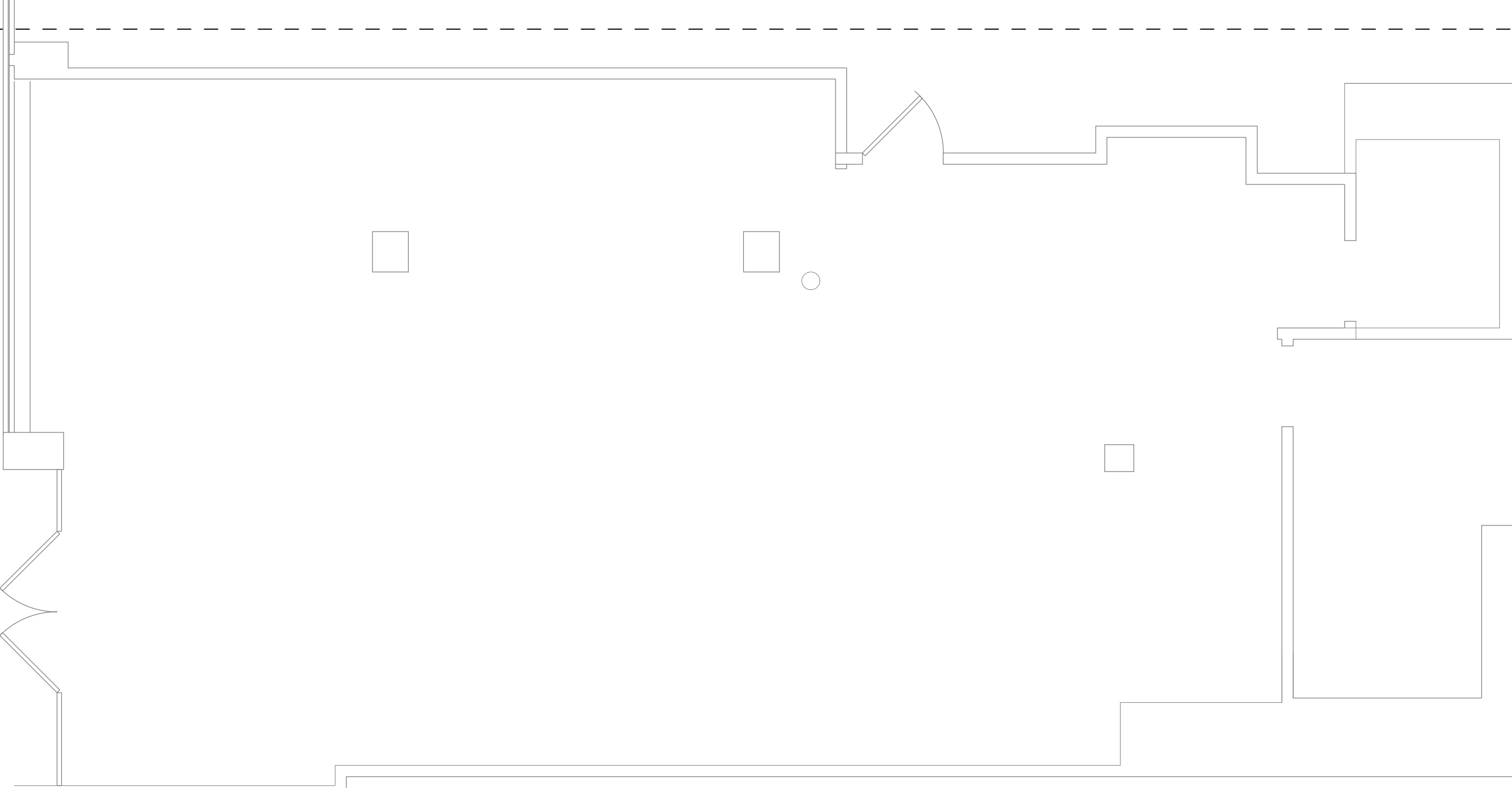




EXISTING FLOOR PLAN
SCALE: 1/4" = 1'-0"

ROOM FINISH SCHEDULE										
ROOM NUMBER	ROOM NAME	FLOOR	BASE	WALL FINISH				CEILING		REMARK
				NORTH	EAST	SOUTH	WEST	FINISH	HEIGHT	
100	SALE AREA	*PORCELAIN	BLK 4" COVE	GRAPHIC/ PAINT	PAINT	GRAPHIC/ PAINT	PAINT	GYP	15' - 0"	COUNTERTOP: QUARTZ BLACK & WHITE CABINET DURABLE LAMINATE WITH BLACK AND WHITE FINISH
101	SERVICE COUNTER	*PORCELAIN	BLK 4" COVE	GRAPHIC/ PAINT	PAINT	PAINT	PAINT	OPEN TO STRUCTURE	11' - 6"	
102	EX. BATHROOM	*PORCELAIN	COVE	PAINT	PAINT	PAINT	PAINT	GYP	8' - 0"	
103	EX. STORAGE	*PORCELAIN	BLK 4" COVE	PAINT	PAINT	PAINT	PAINT	GYP	10' - 0"	
104	WALK IN COOLER	+ALUMINUM PANEL	NONE	METAL PANEL	METAL PANEL	METAL PANEL	METAL PANEL	METAL PANEL	8' - 0"	

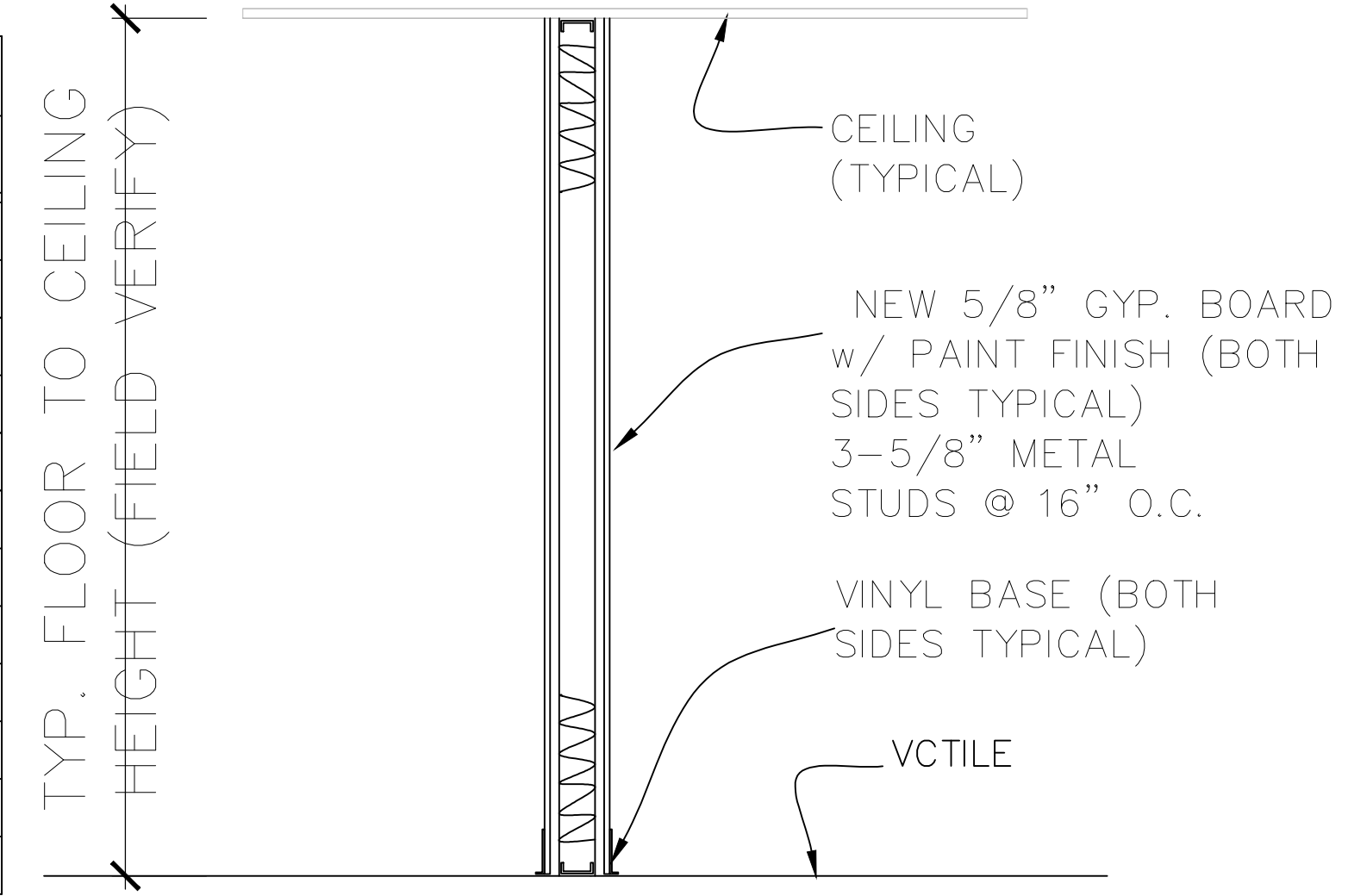
*PORCELAIN: DRAGON BLACK, SATIN FINISH, 24"X48"
+ ALUMINUM PANEL WITH INSULATION FOAMED LAYER BETWEEN METAL LAYERS

EQUIPMENT SCHEDULE		
NO.	QTY.	DESCRIPTION
1	2	P.O.S.
2	1	36" HIGH CASHIER COUNTER
3	1	LOTTO MACHINE
4	1	WALK IN BEER COOLER
5	5	SHELVES
6	1	SHELVES
7	3	WIRE SHELVES
8	1	COUNTER
9	1	HAND SINK
10	1	COFFEE MACHINE
11	1	MOP SINK
12	MANY	LOZIER LIQUOR GONDOLA SHELVING

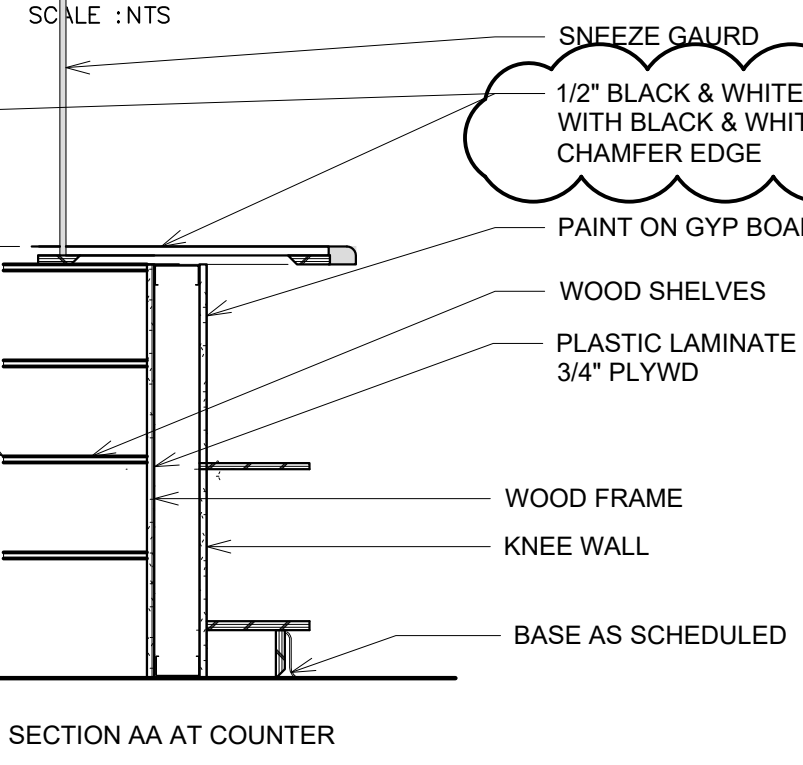
GENERAL NOTES - FINISHES

- A REFER TO REFLECTED CEILING PLAN FOR CEILING FINISHES.
B ALL PAINT TO BE SEMI GLOSS , REF. TO ELEVATIONS FOR COLORS
C EXISTING DOORS TO BE PAINTED
D HATCHED AREAS INDICATE AREA/ITEMS NOT IN SCOPE OF WORK.
E ALL ADHESIVES MUST CONTAIN "NO ADDED UREA/FORMALDEHYDE" & MUST MEET LEED LOW-VOC REQUIREMENTS.
F ALL PAINTS MUST MEET LEED LOW VOC REQUIREMENTS.
H CONTRACTOR TO PROVIDE NECESSARY THRESHOLD TRANSITIONS AT EXISTING DOORS.

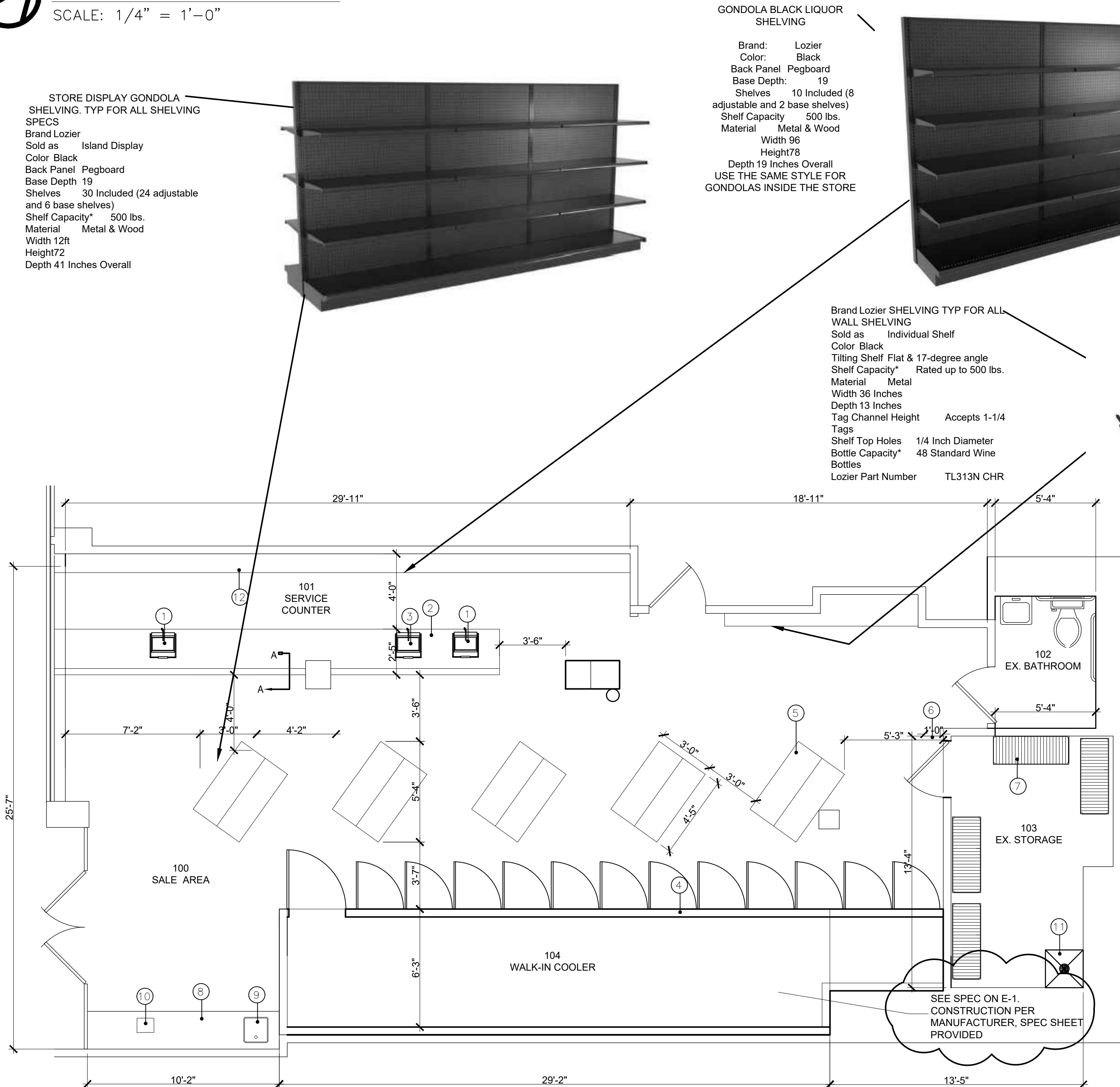
NEW STUD WALL



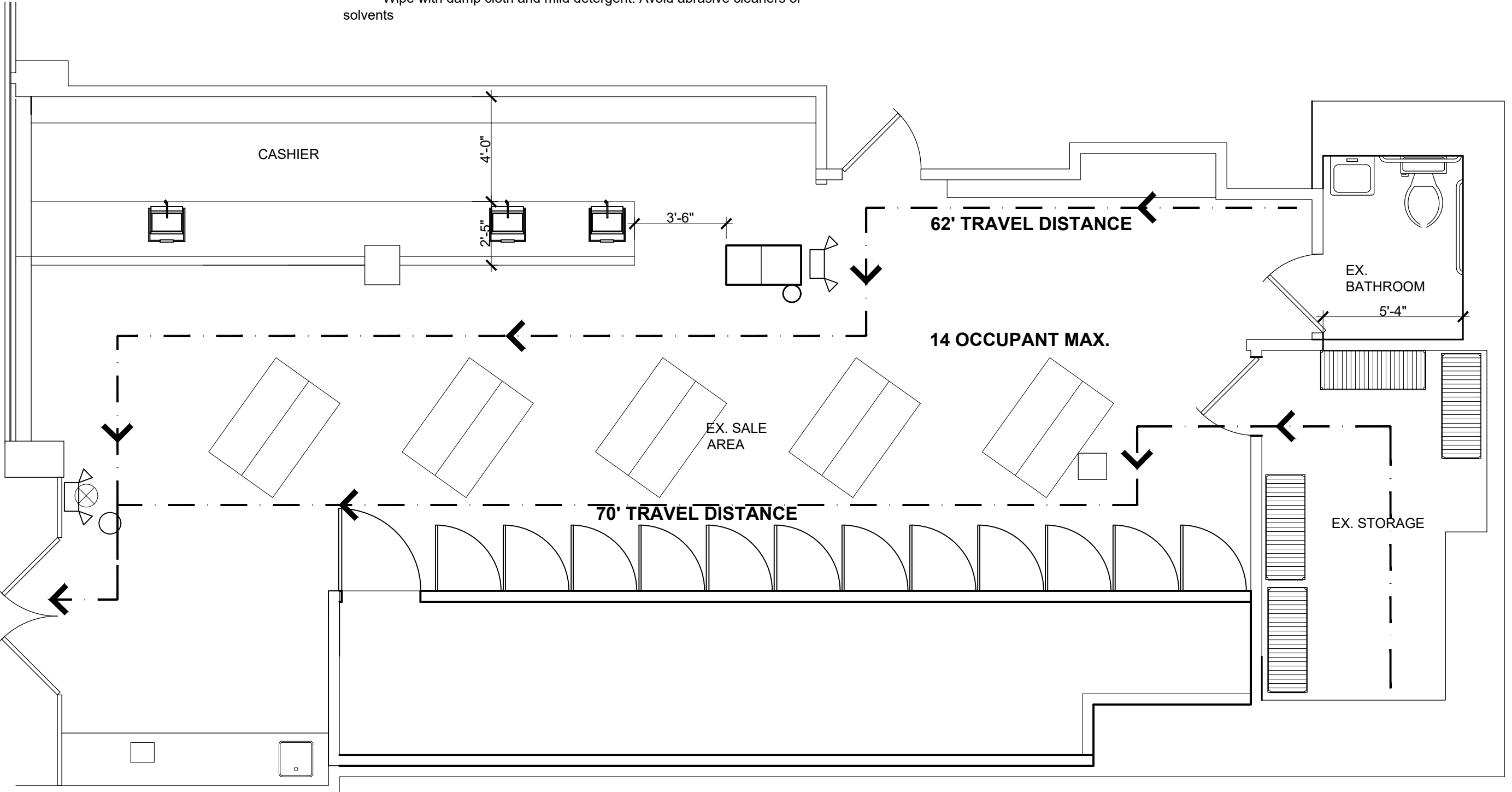
INTERIOR WALL SECTION



Shelves shall be constructed of MDF or particleboard core with high-pressure decorative laminate (HPDL) face and balancing backer sheet. Designed for high-durability retail environments with frequent product loading/unloading
• Standard Thickness: 3/4" or 1", Depth: Typically 12"-18" depending on shelving system, length: Custom per display or storage requirement at-grade MDF or Particleboard
• Industrial grade MDF: Minimum density 45 lb/ft³, Particleboard: Minimum density 47 lb/ft³. Moisture-resistant core available upon request
• Surface: High-pressure decorative laminate (HPL), 0.028" nominal (Grade HGS or VGS). Back: Balance sheet (Grade BKL or cabinet liner). Edges: PVC or ABS edge banding, 1mm or 3mm thick; color-matched or high-contrast for visual branding
• Edges sealed on all sides to prevent moisture penetration. Laminate applied using industrial-grade adhesive and hot press. Square or radius edge profiles based on aesthetic and safety considerations
• Complies with ANSI/NEMA LD3 for laminate performance, Optional fire-rated laminate and core (Class A/B) upon request. Resistant to surface abrasion and impact per retail environment standards
• Installed with commercial-grade metal brackets, wall standards, or concealed cleats. Minimum support spacing: every 36", or per structural requirements. Must be securely anchored to wall or shelving system to prevent tipping or deflection
• Standard capacity: 40-50 lbs per sq ft, evenly distributed. Reinforced core or double-thickness available for heavy-load applications
• Wipe with damp cloth and mild detergent. Avoid abrasive cleaners or solvents



PROPOSED FLOOR PLAN
SCALE: 1/4" = 1'-0"



LIFE SAFETY PLAN
SCALE: 1/4" = 1'-0"

PROJECT:
MARK'S MKT

LOCATION:
277 GRATIOT AVE
DETROIT, MI 48226

APPLICANT:

EA
ARCHITECT

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DRAWN BY:
E.A.

APPROVED BY:
A ALSAATI

SUBMITTALS

REVISIONS:

PROJECT NO

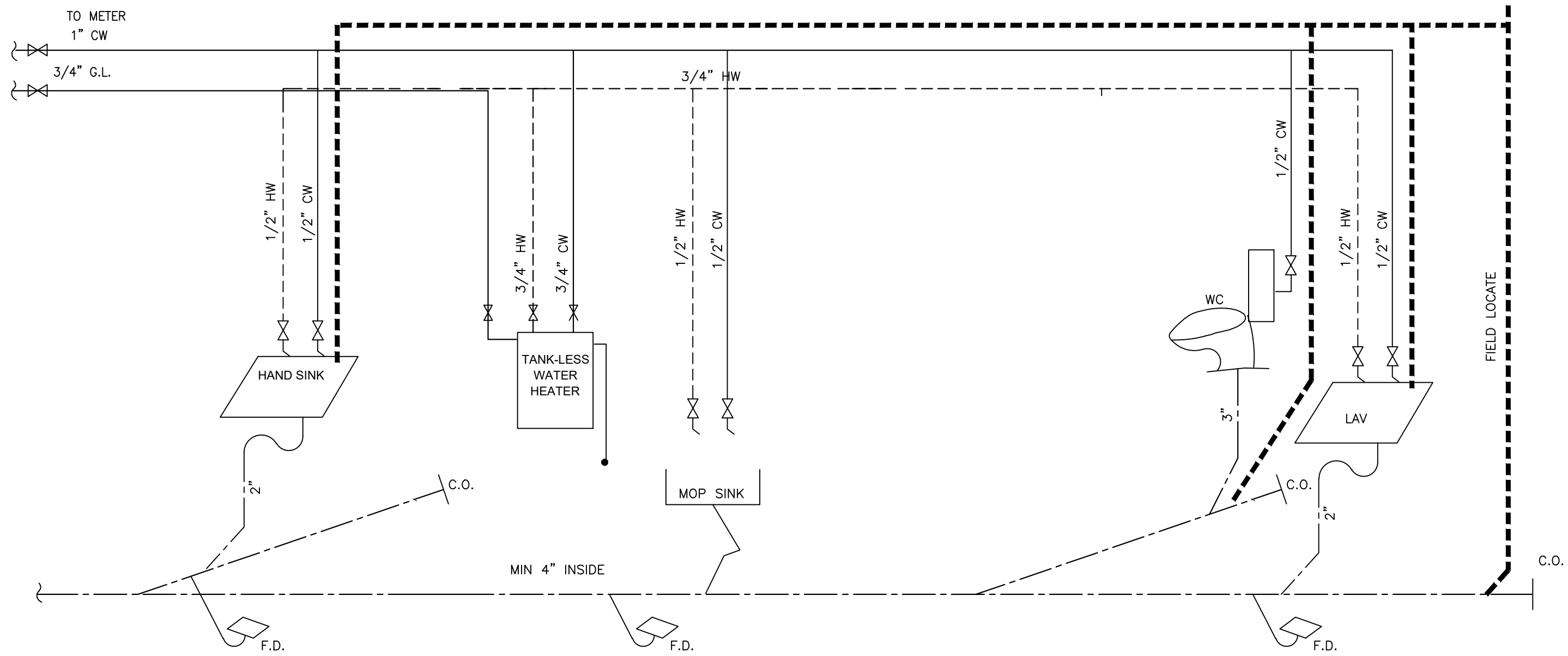
DATE
01/30/2025
SCALE
NOTED

SHEET TITLE
EXISTING/PROPOSED
FLOOR PLANS

A-1

SEAL

STATE OF MICHIGAN
ADMAN H. AL-SAATI
No. 3612
REGISTERED PROFESSIONAL ENGINEER

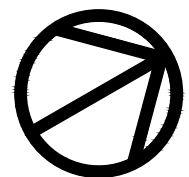
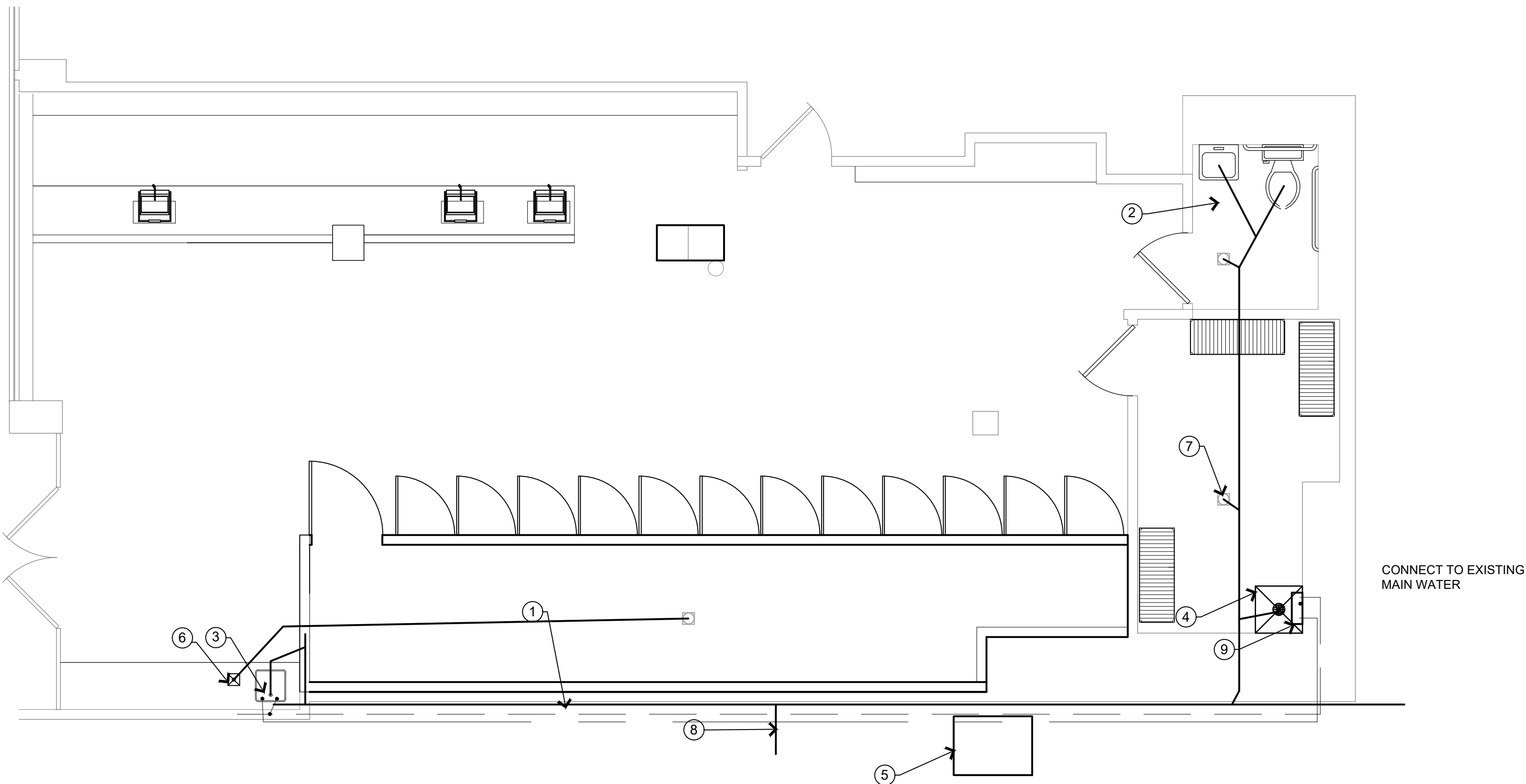


TYP. PLUMBING RISER DIAGRAM

ALL MAIN PLUMBING ARE EXISTING. CONNECTION TO THE EXISTING IN BASEMENT BASED ON FIELD INSPECTION

CHECK CLEAN OUTS AT END OF BUILDING DRAIN & AT CHANGE OF DIRECTION (TYP.)

TRAP PRIMERS FOR ALL EX. FLOOR DRAINS (TYP.)



PROPOSE PLUMBING PLAN

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

PROVIDE VENTS AS REQUIRED BY LOCAL CODE. VENT PIPES TO BE CONCEALED INSIDE WALLS ADDED TO MAIN VENT PIPE THRU-ROOF. PROVIDE THE REQUIRED DISTANCE FROM FRESH AIR INTAKE DEVICES ON ROOF.

KEYED PLUMBING NOTES:

1. CONNECT TO EXISTING SANITARY LINE
2. EX. BATHROOM, ALL CONNECTIONS ARE EXISTING
3. NEW SINK WITH 1/2" HOT/ COLD WATER. CONNECT TO ACCESS POINT
4. NEW MOP SINK
5. CONDENSER FOR WALK IN COOLER TO BE SUPPORTED BY IRON. CHECK DETAIL
6. FLOOR DRAINS OUTSIDE COOLER RECOMMENDED BY PLUMBING CONTRACTOR AFTER FIELD MEETING. HOWEVER PER 2021 MPC 802.1.2 DRAIN INSIDE COOLER TO CONNECT TO WASTE FLOOR DRAIN WITH 1" AIR GAP.
7. FLOOR DRAIN IN STORAGE ROOM
8. CONNECT DRAIN TAP TO AN EXISTING TAP LEADING TO THE MAIN SEWER IN THE BASEMENT
9. NEW TANK-LESS WATER HEATER

FIXTURE BRANCH SCHEDULE

ABBR.	FIXTURE	COLD WATER	HOT WATER	WASTE	VENT
W.C.	WATER CLOSET	1/2"	---	3"	3"
LAV.	LAVATORY/HAND SINK	1/2"	1/2"	1-1/2"	1-1/2"
F.D.	FLOOR DRAIN	---	---	2"	1-1/2"
F.S.	FLOOR SINK	---	---	2"	1-1/2"
S.S.	SERVICE SINK	1/2"	1/2"	2"	1-1/2"

NOTE: PIPE SIZES SHOWN ARE MINIMUM.

PLUMBING NOTES:

1. FURNISH ALL LABOR, EQUIPMENT AND MATERIAL TO PROVIDE A COMPLETE SYSTEM OF PLUMBING, SEWERS, WATER PIPING, ETC.. ALL PLUMBING MATERIALS AND WORKMANSHIP SHALL CONFORM TO ALL STATE AND LOCAL CODES.
2. ALL PIPING IS SHOWN DIAGRAMATICALLY ONLY. EXACT LOCATION WILL BE DETERMINED AT THE JOB SITE.
3. PITCH ALL DRAIN LINES 1/8" PER FOOT UNLESS OTHERWISE NOTED.
4. ALL PLUMBING SHALL BE CONCEALED UNLESS OTHERWISE NOTED
5. ALL ELEVATIONS SHALL BE VERIFIED AT THE JOB SITE.
6. ALL WATER PIPING SHALL BE INSTALLED WITH A PITCH TO THE DRAINS. PLUMBING CONTRACTOR SHALL PROVIDE DRAWOFFS AT ALL LOW POINTS. WATER PIPING SHALL BE GALVANIZED IRON OR TYPE (L) ABOVE GRADE AND TYPE (K) BELOW GRADE COPPER WITH SUELOS JOINTS.
7. PROVIDE ALL REQUIRED SHUT-OFF VALVES, UNIONS AND FITTINGS. PROVIDE BALL VALVES AT ALL FOOD SERVICE EQUIPMENT.
8. HOT AND/OR COLD WATER DROPS TO 2 OR MORE FIXTURES SHALL RUN FULL SIZE TO AIR CHAMBERS BEYOND THE FURTHEST FIXTURE BRANCH FROM DROPS. PROVIDE 12" AIR CHAMBERS AT ALL FIXTURES.
9. ALL HOT AND COLD WATER PIPING ARE TO BE INSULATED. WRAP DOMESTIC COLD WATER WITH ANTI-SWEAT TAPE.
10. ALL PLUMBING AND SEWER TRENCHING, BACKFILLING AND SPECIAL CUTTING SHALL BE PERFORMED BY THE CONTRACTOR. INTERIOR TRENCHES SHALL BE BACKFILLED WITH SAND. EXTERIOR TRENCHES, WHEN COMPLETED, SHALL HAVE THE SAME LOAD BEARING CAPACITY AS ADJACENT GRADES.
11. ALL WASTE AND SOIL PIPING SHALL BE GALVANIZED OR CAST IRON WHERE SUSPENDED, AND CAST IRON WHERE UNDERGROUND. P.V.C. ACCEPTABLE WHERE CODE PERMITS. VITRIFIED CLAY MAY BE USED 5' FROM BUILDING.
12. ALL P.V.C. PIPING SHALL BE SCHEDULE 40, EXCEPT WHERE NOTED.
13. ALL PIPING ABOVE THE CEILING SHALL CONSIST OF NON-COMBUSTIBLE MATERIAL.
14. THE CONTRACTOR SHALL CERTIFY THAT ALL THE EQUIPMENT MATERIALS AND WORKMANSHIP ARE FREE FROM DEFECTS FOR A PERIOD OF AT LEAST ONE AFTER FINAL ACCEPTANCE.
15. PROVIDE TEP VALVE FOR H.C. LAV HOT WATER. PROVIDE COOLER CONDENSATE LINE DRAIN AIR GAP.

PER 2021 MOC 802.1.2: FLOOR DRAINS LOCATED WITHIN WALK-IN REFRIGERATORS OR FREEZERS IN FOOD SERVICE AND FOOD ESTABLISHMENTS SHALL BE INDIRECTLY CONNECTED TO THE SANITARY DRAINAGE SYSTEM BY MEANS OF AN AIR GAP. WHERE A FLOOR DRAIN IS LOCATED WITHIN AN AREA SUBJECT TO FREEZING, THE WASTE LINE SERVING THE FLOOR DRAIN SHALL NOT BE TRAPPED AND SHALL INDIRECTLY DISCHARGE INTO A WASTE RECEPTOR LOCATED OUTSIDE OF THE AREA SUBJECT TO FREEZING.

PROJECT:
MARKI'S MKT

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APPROVED BY:

SUBMITTALS

REVISIONS:

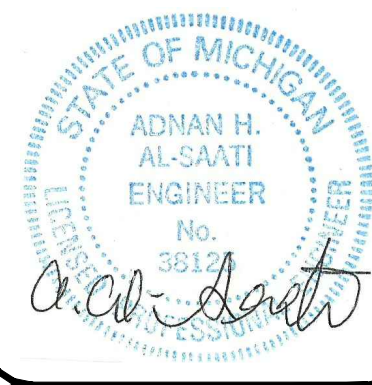
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DATE
01/30/2025
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SHEET TITLE
ELECTRICAL
PLAN

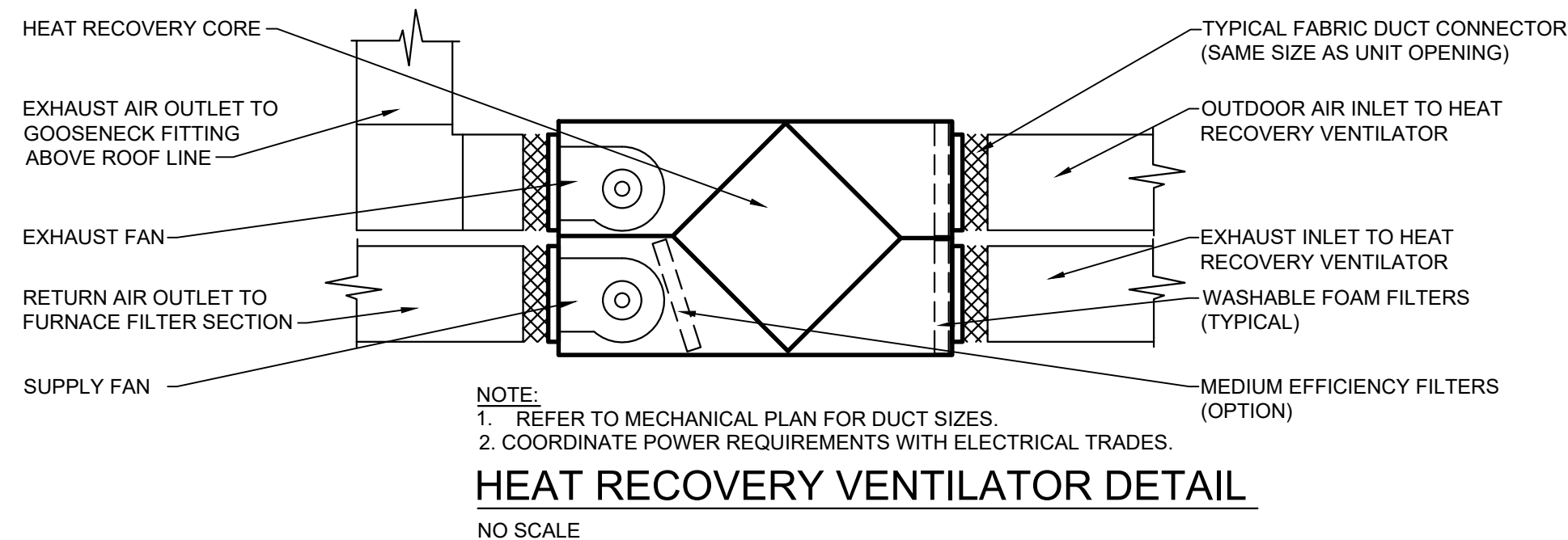
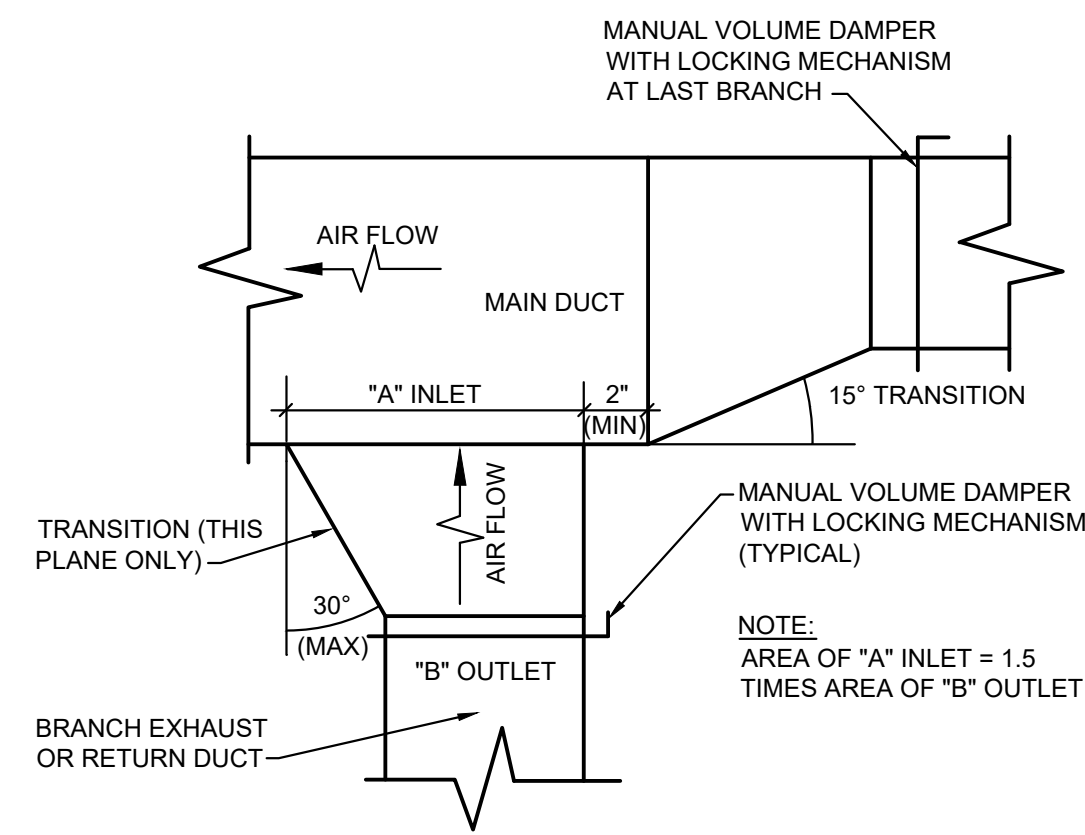
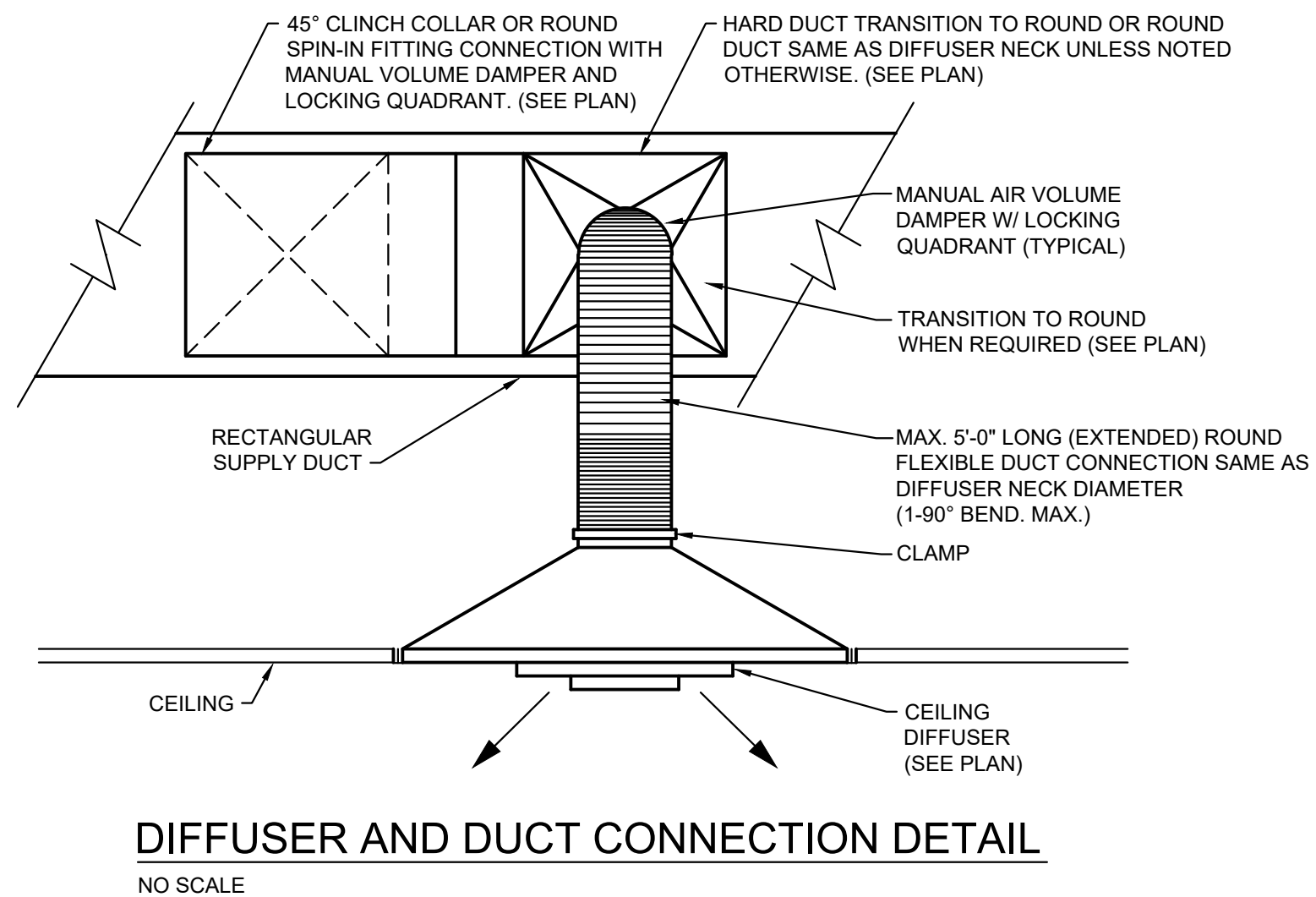
P-1

SEAL



AIR DEVICE SCHEDULE								
MARK.	DESCRIPTION	SIZE	MAJUMUM CFM	MAXIMUM PRESSURE DROP (INCH WG.)	MAXIMUM NC LEVEL	BASED ON		
						MANUFACTURER	MODEL	REMARKS
SO-1	SQUARE LOUVER FACED CEILING DIFFUSER	24"X24"	SEE CAPACITY SCHEDULE	0-1"	30	PRICE	SCD	1-5
SD-2	SQUARE LOINER FACED CEILING DIFFUSER	12"X12"	SEE CAPACITY SCHEDULE	0.1"	30	PRICE	SCD	1-5
RG-1	EGGCRA TE RETURN GRILLE	24"X24"	2,300	0.1"	30	PRICE	80	1, 3, 5
EG-1	EGGCRA E JO-IAUST GRILLE	24"x12"	1,100	0.1	30	PRICE	80	1,3,5
EG-2	EGGCRA 1E EJO-IAUST GRILLE	12"X12"	500	0.1"	30	PRICE	80	1, 3, 5
REMARKS:								
1. DESIGN CFM AS NOIED ON PLANS.								
2. SEE AR DEVICE CAPACITY SCHEDULE FOR NECK SIZE. DUCT SIZE TO OFFUSER, REGISIR, AND/OR GRUE SHALL BE EQUAL TO NECK SIZE, UNLESS OTHERWISE NOTED.								
3. PROVIDE MOUNTING FRAME AND BORDER STYE TO ACCOMMODATE THE ARCHITECTS REFLECTED CEILING, WALL, AND/OR FLOOR CONSTRUCTION								
4. PROVIDE AIR DEVICE VOLUME DAMPER								
5. AIR DEVICE FINISH (COLOR) SHALL BE COORDINATED WITH ARCHITECTURAL TRADES.								

AIR DEVICE CAPACITY SCHEDULE		
MARK	CFM RANGE	NECK SIZE
S0-1 (SCD 24"x24")	0-125	6"Ø
	126 - 230	6"Ø
	231-380	10"Ø
	361-550	12"Ø
SD-2 (SCD 12"x12")	0-100	5"Ø
	101 - 125	6"Ø



- ### MECHANICAL KEYED NOTES:
- (MECHANICAL KEYED NOTES APPLY TO THIS SHEET ONLY)
- | | |
|---|---|
| 1 | 8"Ø EXHAUST AIR UP, GOOSENECK TERMINATION WITH INSECT SCREEN.
TERMINATION SHALL BE A MINIMUM 15'-0" ABOVE GRADE. |
| 2 | 8"Ø OUTSIDE AIR UP, GOOSENECK TERMINATION WITH INSECT SCREEN.
TERMINATION SHALL BE A MINIMUM 25'-0" ABOVE GRADE. |

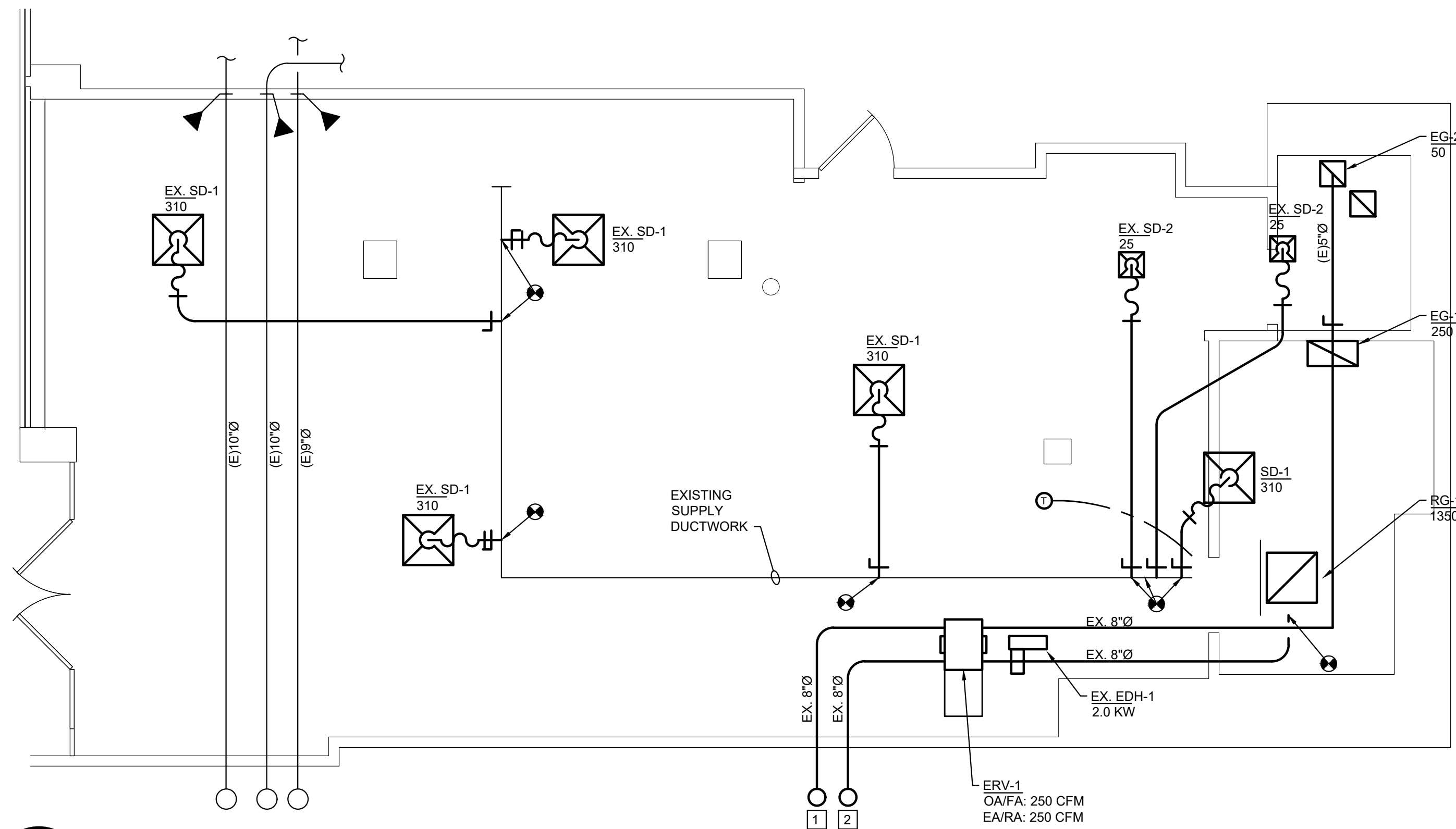
NOTES:

CONDENSER INFORMATION ARE SHOWING ON SHEET E
MECHANICAL ENGINEER CHECKED CALCULATION AND
WAS APPROVED
CITY OF DETROIT APPROVED MECHANICAL DRAWINGS

VENTILATION SCHEDULE														
ZONE IDENTIFICATION				ZONE OUTDOOR AIRFLOW							PRIMARY OUTDOOR AIR FRACTION			REMARKS
ZONE/ROOM	AREA (SF)	OCCUPANCY CLASSIFICATION	OCCUPANT DENSITY ^a (#/1000 sf)	PEOPLE OUTDOOR RT ^b (cfm/person)	AREA OUTDOOR RAIP (cfm/sf)	OCCUPANTS (#/people)	BREA THING ZONE OUTDOOR AIRFLOW ^c (cfm)	ZONE AIR DISTIBL ^c MON EFFECTNESS ^c	ZONE OUTDOOR AIRFLOW ^d (cfm)	ZONE PRIMARY AIRFLOW (cfm)	ZONE PRIMARY OUTD FRACTION ^e	MAXIMUM SYSTEM PRIMARY OUTDOOR AIR FRACTION		
(E)FCU TOTALS	MAIN ENTRANCE	50	CORRIDORS	0	0	0.06	0	3	0.08	4	25	0.16	1	
	MARKET AREA	932	SUPERMARKETS	8	7.5	0.06	8	116	0.08	145	1,525	0.10	1	
	CORRIDOR	43	CORRIDORS	0	0	0.06	0	3	0.08	4	25	0.16	1	
	TOILET ROOM	36	TOILET ROOMS: PUBLIC	0	0	0	0	0	0.08	0	25	0.00	1	
	1,061						8			1,600			0.16	
P: TOTAL SYSTEM OCCUPANCY (# people)				8	D: OCCUPANT DIVERSITY				1.0	UNCORRECTED OUTDOOR AIR INTAKE ^f (cfm)			122	
Ew: SYSTEM VENTILATION EFFICIENCY ^g					Vet: CORRECTED OUTDOOR AIR INTAKE ^h (cfm)				136	OUTDOOR AIR PROVIDED (cfm)			250	
EQUATIONS AND TABLE VALUES PER 2021 MICHIGAN MECHANICAL CODE:														
a. OCCUPANCY CLASS ^a 10. OCCUPANT DENSITY, PEOPLE OUTDOOR (Rp), AND AREA OUTDOOR RAIE IN BREATHING ZONE (Rz) ARE ENTERED VALUES PER TABLE 403.3.1.1, MINIMUM VENTILATION RATES.								e. ZONE PRIMARY OUTDOOR AIR FRACTION EQUATION (4-5): Zp = Voz / Vpz						
b. BREATHING ZONE OUTDOOR AIRFLOW EQUATION(4-1) Vbz = RpPz + RaAz.								f. OCCUPANT DIVERSITY EQUATION (4-7): D = Pa/Σall zonesPz						
c. ZONE AIR DISTRIBUTION EFFECTIVENESS (Ez) ARE ENTERED VALUES PER TABLE 1103.3.1.1.2.								g. UNCOARECIED OUTDOOR AIR INTAKE EQUATION (4-6): Vou=D Σall zonesRpPz+Σall zonesRpPz						
d. ZONE OUTDOOR AIRFLOW EQUATION (4-2). Voz =Vez/ Ez								h. SYSTEM VENTILATION EFFICIENCY (Ez) ARE VALUES ENTERED PER TABLE 403.3.1.1.2.3.2						
								i. CORRECIED OUTDOOR AIR INTAKE EQUATION (4-8): Vot = Vou/Ev						
REMARKS:														
1. OUTSIDE AIR REQUIREMENTS PROVIDED BY EVR TO (E)FCU														

ENERGY RECOVERY VENTILATOR SCHEDULE																			
MARK	SERVES	LOCATION	OUTSIDE/FRESH AIR FAN			RETURN/EXHAUST FAN			ELECTRICAL DATA			MOUNTING	SUMMER ENERGY RECOVERY WINTER ENERGY RECOVERY				BASED ON MANUFACTURER AND WEIGHT (LBS.)	REMARKS	
			AIRFLOW (CFM)	EXTERNAL STATIC PRESSURE (INCH W.G.)	HP	AIRFLOW (CFM)	EXTERNAL STATIC PRESSURE (INCH W.G.)	HP	VOLTS / PHASE	UNIT MCA	UNIT MOC		TOTAL EFFECTIVENESS %	COOLING LOAD REDUCTION (MBH)	TOTAL EFFECTIVENESS %	HEATING LOAD REDUCTION (MBH)			
ERV-1	SPACE QUIBIOE AIR REQUIERMENTS	CEILING SPACE	250	0.50"	(2)0.11	250	0.50"	(2)0.11	12Q.1Ø	15.0	15	HUNG	53.4	5.4	68.5	17 0	RENEW AIRE EV PREMIUM L	60	1-10
REMARKS:																			
1. UNIT SHALL ETL LISTED										6. PROVIDE WALL MOUNTED DIGITAL TIME CLOCK									
2. VENTILATION TYPE: STATIC PLATE, HEAT AND HUMIDITY TRANSFER										7. PROVIDE LINE CORD POWER CONNECTION.									
3. PROVIDE EC MOTOR DIRECT DRIVE MOIRZEO IMPELLER ON OUTSIDE/FRESH AND RETURN/EXHAUST AIRSTREAMS.										8. PROVIDE ELECTRIC DUCT HEATER REFER TO ELECTRIC DUCT HEATER SCHEDULE.									
4. PROVIDE MOTORIZED DAMPER FOR OUTSIDE/FRESH AIRSTREAM AND GRAVITY BACKDRAFT DAMPER FOR RETURN/ EXHAUST AIRSTREAM.										9. PROVIDE HANGING KIT AND VIBRATION ISOLATION KIT*									
5. PROVIDE 1" FILTERS, MERV 13, OUTSIDE/FRESH AND RETURN/EXHAUST AIRSTREAMS.										10. PROVIDE START-UP BY MANUFACTURER'S REPRESENTATIVE									

ELECTRIC DUCT HEATER SCHEDULE									
MARK	SERVES	LOCATION	CFM	HEATING CAPACITY (KW)	NUMBER OF STAGES	VOL TB/PHASE	INSIDE DUCT SIZE (WxH)	BASED ON MANUFACTURER AND MODEL NUMBER	REMARKS
EOH-1	OUTSIDE AIR REQUIREMENTS	FRESH AIR DUCT/NORK	250	20	1	120/1"	12") (12"	RENEW AIRE EK-1212002SCCHR-11-1SV-N	1-5
REMARKS:									
1 UNIT SHALL BE UL LISTED									
2-PROVIDE HEATER WITH: DISCONNECT SWITCH; AUTOMATIC LIMIT SWITCH; MANUAL RESET LIMIT SWITCH, CONTACTS; FLOW SWITCH; & TERMINAL STRIP.									
3-PROVIDE SLIP-IN MOUNT ANO OPEN COIL ELEMENT SIYLE									
4-FLOW CONFIGURATION SH4LL BE COORDINAT'ED TO PROVIDE CONTROL PANEL SERVICE ACCESS									
5-HEATER CONTROL: PROVIDE SOLD STATE RELAY (SCR)WITH REMOTE 7 DAY PROGRAMMABLE THERMOSTAT AND DUCT SENSOR									



H V A C P L A N

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

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SUBMITTALS

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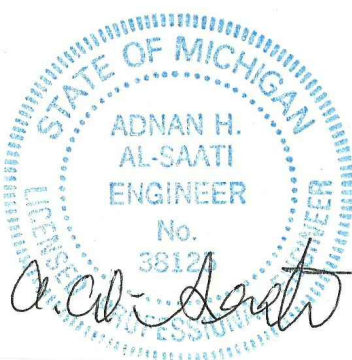
PROJECT NC

DATE
01/30/2025
SCALE
NOTED

SHEET TITLE
MECHANICAL
PLANS

M-1

SEAL



MECHANICAL GENERAL

- A. PROVIDE MATERIALS AND EQUIPMENT AND EXECUTE THE WORK, INCLUDING ALL TESTING AND INSPECTIONS, IN COMPLIANCE WITH THE APPLICABLE PROVISIONS OF FEDERAL, STATE, AND LOCAL GOVERNMENT LAWS, ORDINANCES, REFERENCED CODES, AND STANDARDS CURRENT AS OF THE ISSUE DATE OF THESE DRAWINGS, INCLUDING THE GOVERNING LAWS, ORDINANCES, CODES AND STANDARDS CONSTITUTE MINIMUM REQUIREMENTS. ALL MORE STRINGENT REQUIREMENTS SHALL MODIFY, SUPPLEMENT, AND SUPERCEDE APPLICABLE PORTIONS OF GOVERNING LAWS, ORDINANCES, CODES, AND STANDARDS.
- B. CONTRACTOR SHALL PRESENT CERTIFICATE TO THE OWNER'S REPRESENTATIVE THAT ALL APPLICABLE BUILDING PERMITS HAVE BEEN SECURED PRIOR TO STARTING ANY WORK AND PROVIDE THE OWNER WITH ALL REQUIRED CERTIFICATES OF FINAL APPROVAL FROM GOVERNING JURISDICTIONS AT COMPLETION OF THE WORK. PROVIDE ALL SHOP DRAWINGS AS REQUIRED IN FOLLOWING SECTIONS.
- C. MAKE ALL CONNECTIONS TO EXISTING SYSTEMS DURING DESIGNATED PERIODS UPON APPROVAL OF THE OWNER AND AT NO INCREASE IN CONTRACT SUM.
- D. REFER TO ALL GENERAL NOTES ON DRAWINGS FOR ADDITIONAL REQUIREMENTS.
- E. MECHANICAL EQUIPMENT SHALL HAVE DECALS AND TAGS TO INDICATE LIFTING AND RIGGING, SERVICE AREAS, AND CAUTION IDENTIFICATION FOR SAFETY TO ASSIST SERVICE PERSONNEL.
- F. UNIT NAMEPLATE SHALL BE PROVIDE IN TWO LOCATIONS ON THE EQUIPMENT. AFFIX TO THE EXTERIOR OF THE EQUIPMENT AND TO THE INTERIOR OF THE CONTROL COMPARTMENT ACCESS DOOR.

SHOP DRAWINGS

- A. NO APPARATUS OR EQUIPMENT SHALL BE SHIPPED FROM STOCK OR FABRICATED UNTIL SHOP DRAWINGS HAVE BEEN REVIEWED AND STAMPED "REVIEWED," OR "REVIEWED AS NOTED."
- B. PROVIDE DETAILED SHOP DRAWINGS OF ALL SHEETMETAL DUCTWORK WITH NECESSARY SECTIONS, DETAILS, DIMENSIONS, ETC. SUBMIT AMCA CERTIFIED PERFORMANCE CURVES FOR EACH FAN INDICATING ITS OPERATING POINT, EFFICIENCY, STARTING TIME, AND DATA RELATIVE TO SOUND LEVELS. ALL SHEETMETAL SHOP DRAWINGS SHALL BEAR INDEPENDENT BALANCE AGENCY (AABC) APPROVAL STAMP BEFORE SHOP DRAWINGS ARE SUBMITTED TO THE ARCHITECT FOR APPROVAL.
- C. SUBMIT FOR APPROVAL, SHOP DRAWINGS FOR ALL EQUIPMENT, INCLUDING MATERIALS, VALVES, HEATING SPECIALTIES, WIRING DIAGRAMS, AND CONTROL DIAGRAM, INCLUDING, BUT NOT LIMITED TO THE ITEMS LISTED BELOW, WHERE ITEMS ARE REFERRED TO BY SYMBOL NUMBERS ON THE DRAWINGS AND SPECIFICATIONS. ALL SUBMITTALS SHALL BEAR THE SAME SYMBOL NUMBERS. ALL DRAWINGS SHALL CONTAIN THE PROJECT NAME AND PROJECT NUMBER. NO LOOSE SHEETS SHALL BE SUBMITTED UNLESS A COVER SHEET IS ATTACHED.
- D. PROVIDE THE FOLLOWING EQUIPMENT SHOP DRAWINGS: ENERGY RECOVERY VENTILATORS; AIR DEVICES; HEATING UNITS; FILTERS; INSULATION; VIBRATION ISOLATORS; TEMPERATURE CONTROLS; AND THERMOSTATS.
- E. APPROVAL OF SHOP DRAWINGS DOES NOT RELIEVE THE CONTRACTOR OF HIS RESPONSIBILITIES TO CONFORM TO THE DESIGN INTENT OF THE CONTRACT DOCUMENTS. APPROVAL OF SHOP DRAWINGS IS INTENDED TO BE FOR GENERAL CONFORMANCE WITH THE CONSTRUCTION DOCUMENTS ONLY. ANY INSTALLED EQUIPMENT WHICH REQUIRES WORK BY OTHER TRADES SHALL BE COORDINATED WITH THOSE TRADES. REFER TO OTHER TRADES BID DOCUMENTS.

CODES, PERMITS, AND FEES

- A. UNLESS OTHERWISE INDICATED, ALL REQUIRED PERMITS, LICENSES, INSPECTIONS, APPROVALS, AND FEES FOR MECHANICAL WORK SHALL BE SECURED AND PAID FOR BY THIS CONTRACTOR. ALL WORK SHALL CONFORM TO ALL APPLICABLE CODES, RULES, AND REGULATIONS.
- B. RULES OF LOCAL UTILITY COMPANIES SHALL BE COMPLIED WITH.
- C. ALL WORK SHALL BE EXECUTED IN ACCORDANCE WITH THE RULES AND REGULATIONS SET FORTH IN LOCAL AND STATE CODES. WHERE THE DRAWINGS AND/OR SPECIFICATIONS INDICATE MATERIALS OR CONSTRUCTION IN EXCESS OF CODE REQUIREMENTS, THE DRAWINGS AND/OR SPECIFICATIONS SHALL GOVERN.

BASIC MATERIALS AND METHODS

- A. PROVIDE ALL ITEMS, ARTICLES, MATERIALS, OPERATIONS, AND METHODS LISTED, MENTIONED OR SCHEDULED ON DRAWINGS AND/OR HEREIN, INCLUDING ALL LABOR, MATERIALS, EQUIPMENT, AND INCIDENTALS NECESSARY AND REQUIRED FOR THEIR COMPLETION. THE WORK SHALL INCLUDE INSTALLATION, CLEANING, AND TESTING OF COMPLETE AND OPERATING HVAC, TEMPERATURE CONTROL, AND OTHER SPECIAL SYSTEMS.

MECHANICAL SPECIFICATIONS

HEATING AND VENTILATING

- A. GENERAL
- REFER TO SCHEDULES FOR CAPACITIES, ACCESSORIES, AND LEVEL OF QUALITY.
- B. CONTROLS
- UNITS SHALL BE ORDERED AND INSTALLED WITH MANUFACTURED STANDARD CONTROLS. SCOPE OF CONTROLS WORK SHALL BE COORDINATED WITH MECHANICAL CONTRACTOR, CONTROLS CONTRACTOR, AND GENERAL CONTRACTOR.
- REFER TO SCHEDULES FOR EQUIPMENT REQUIREMENTS.

SYSTEM TESTING AND BALANCING

- A. ALL HVAC SYSTEMS SHALL BE TESTED AND BALANCED TO DEMONSTRATE THAT SPECIFIED CAPACITIES AND PROPER CONTROL FUNCTIONING HAS BEEN ATTAINED. FAN SYSTEMS ARE NOT TO BE COMPLETED PRIOR TO RUNNING PERFORMANCE TESTS, AND PRIOR TO TRAINING AND INSTRUCTION OF THE OWNER'S PERSONNEL IN THE SYSTEMS OPERATION.
- B. ENGAGE THE SERVICES OF AN INDEPENDENT CERTIFIED TEST AND BALANCE AGENCY THAT SPECIALIZES IN AND WHOSE BUSINESS IS LIMITED TO THE TESTING AND BALANCING OF AIR CONDITIONING SYSTEMS AND IS NOT AFFILIATED IN ANY WAY WITH MANUFACTURER, SUPPLIER, OR INSTALLATION CONTRACTOR. THE AGENCY SELECTED SHALL BE CERTIFIED BY ASSOCIATED AIR BALANCE COUNCIL (AABC) OR NATIONAL ENVIRONMENTAL BALANCING BUREAU (NEBB).

- C. TAKE CHARGE OF AND DIRECT THE PERFORMANCE TESTS AND SUBMIT A COMPLETE REPORT ON SAME TO THE ARCHITECT. REFER TO "PERFORMANCE TESTS" IN THIS SECTION OF THE SPECIFICATIONS.
- D. EXAMINE THE AIR HANDLING SYSTEMS TO SEE THAT THEY ARE FREE FROM OBSTRUCTIONS. DETERMINE THAT ALL DAMPERS AND REGISTERS ARE OPEN, THAT MOVING EQUIPMENT IS LUBRICATED, THAT FILTERS ARE FUNCTIONING, AND PERFORM OTHER INSPECTION AND MAINTENANCE ACTIVITIES NECESSARY FOR PROPER OPERATION OF THE SYSTEMS.
- E. DEMONSTRATE THAT THE AIR HANDLING EQUIPMENT PERFORMS AS SPECIFIED. ADJUST VARIABLE TYPE PULLEYS AND VOLUME DAMPERS, WHERE NECESSARY TO ACHIEVE DESIGN AIR VALUES.
- F. PERFORM THIS WORK IN ACCORDANCE WITH THE PROCEDURES AND STANDARDS DESCRIBED IN THE SMACNA "BALANCING AND ADJUSTMENT MANUAL." REPORTS ARE TO BE MADE ON SMACNA FORMS OR FACSIMILES THEREOF.
- G. TESTING AND BALANCING OF ALL AIR AND/OR HYDRONIC SYSTEMS SHALL BE PERFORMED BY A SINGLE AGENCY IN COMPLETE ACCORDANCE WITH THE AABC "STANDARDS AND INSTRUMENTATION'S FORM NUMBER 81266 VOLUME NUMBER 1" AS PUBLISHED BY AABC, INCLUDING ALL CURRENT REVISIONS THERETO OR BY NATIONAL ENVIRONMENTAL BALANCING BUREAU (NEBB).

PERFORMANCE TESTS

- A. A PERFORMANCE TEST SHALL BE RUN ON ALL MECHANICAL SYSTEMS IN THE PRESENCE OF THE ARCHITECT OR THE OWNER'S REPRESENTATIVE, THE OWNER'S OPERATION PERSONNEL, AND UNDER THE DIRECTION OF THE TESTING AND BALANCING TRADE. THE DURATION OF THE TEST SHALL BE A MINIMUM OF 8 HOURS OF CONTINUOUS SUCCESSFUL OPERATION (WITH NO DOWN TIME) IN WEATHER SUCH THAT A REASONABLE LOAD IS PLACED ON THE EQUIPMENT, AIR TEMPERATURES, VOLTAGES, AMPERAGES, RPM'S, ETC., SHALL ALL BE TAKEN AND RECORDED HOURLY. AT THIS TIME, ANY ADJUSTMENTS TO AIRFLOW, ETC. SHALL BE MADE.

- B. WHERE THE TIME OF YEAR PRECLUDES WEATHER TESTING OF EITHER SYSTEM, THEN SYSTEM OPERATION SHALL BE SIMULATED TO FACILITATE TESTING AT REQUIRED AIR TEMPERATURES, RESULTS RECORDED AND ANY ADJUSTMENTS SHALL BE PERFORMED AT THIS TIME.

SHEET METAL

- A. ALL DUCTWORK SHALL BE GALVANIZED SHEET METAL AS INDICATED ON THE DRAWINGS OR AS DIRECTED HEREIN. ALL SHEET METAL WORK SHALL BE IN ACCORDANCE WITH THE LATEST EDITIONS OF SMACNA "HVAC DUCT CONSTRUCTION STANDARDS, METAL AND FLEXIBLE" MANUALS, NPFA 90A AND 96, AND THE LATEST EDITION OF THE ASHRAE GUIDE AND DATA BOOKS. ALL DUCTWORK SIZES INDICATED ON THE PLANS ARE THE INTERNAL DIMENSIONS.
- B. ALL DUCTWORK SHALL BE SEALED AIR TIGHT AND SHALL NOT ALLOW MORE THAN 10% AIR LEAKAGE THROUGHOUT THE ENTIRE SYSTEM.
- C. SHEET METAL DUCTWORK SHALL BE SMOOTH INSIDE AND TRUE TO SIZE.
- D. DUCTWORK FITTINGS SHALL BE PER SMACNA STANDARDS. RADIUS TURNS ON SUPPLY AIR DUCTS SHALL BE 1-1/2 TIMES THE DUCT WIDTH, MINIMUM. WHERE SPACE OR CLEARANCES REQUIRES THE USE OF MITERED TURNS, PROVIDE HIGH PERFORMANCE DOUBLE THICKNESS TURNING VANES EQUAL TO AERO/DYNE "HEP."
- E. PROVIDE FACTORY MANUFACTURED TEST HOLES IN DUCTWORK WHERE REQUIRED TO FACILITATE AIR BALANCE.
- F. DUCT CONSTRUCTION AND SUPPORT DESIGN SHALL BE PER SMACNA. MINIMUM DUCT DESIGN IS PRESSURE CLASS 2" W.G. ALL DUCTWORK FROM THE AIR HANDLING UNIT FAN AND/OR STAND ALONE FAN (SUPPLY, RETURN, AND/OR EXHAUST) TO A MAIN DUCT DAMPER (CONTROL) SHALL BE DESIGNED FOR THE MAXIMUM TOTAL FAN OUTPUT PRESSURE (THIS IS TO PREVENT DUCT FAILURE IN CASE WHERE A MAIN DUCT DAMPER CLOSES BY DESIGN OR MALFUNCTION). ALL OTHER DUCTWORK SHALL BE DESIGNED FOR THE MAXIMUM SYSTEM EXTERNAL FAN OUTPUT PRESSURE.
- G. ALL RECTANGULAR DUCTWORK SHALL BE IN ACCORDANCE WITH THE LATEST SMACNA STANDARDS WITH REGARD TO DUCT GAGE THICKNESS, REINFORCEMENT SPACING, BRACING, HANGERS, AND SUPPORTS. ALL LONGITUDINAL SEAMS SHALL BE MADE WITH A PITTSBURGH LOCK (TYPE 1-1). TRANSVERSE JOINTS SHALL BE MADE WITH A POCKET LOCK (TYPE T-17) FOR DUCTWORK UP TO 3" W.G.
- H. AT EACH POINT OF CONNECTION OF DUCTWORK TO FANS, PROVIDE A FLEXIBLE CONNECTION EQUAL TO VENTFABRICS, INC. "VENTGLAS I.A.", NOT LESS THAN 6" IN LENGTH AND MADE OF HEAVY GRADE FABRIC DOUBLE COATED WITH NEOPRENE AND PROVIDED WITH A SUITABLE FRAME AT EACH END, ARRANGED FOR BOLTING TO THE INLET OR OUTLET OF FAN AND DUCTWORK, RESPECTIVELY.

- I. FLEXIBLE CONNECTORS ON DUCTWORK TO AIR HANDLING EQUIPMENT SHALL HAVE A MAXIMUM FLAME/SMOKE DEVELOPED RATING NOT TO EXCEED 25/50.
- J. PROVIDE VOLUME DAMPERS IN THE DUCT SYSTEMS WHERE SHOWN ON PLANS AND WHERE REQUIRED TO INSURE PROPER SYSTEM BALANCING.
- K. PROVIDE FACTORY FABRICATED VOLUME DAMPERS IN ALL SUPPLY AND EXHAUST BRANCH DUCTS AND OTHERS WHERE INDICATED ON DRAWINGS. VOLUME DAMPERS SHALL BE CONSTRUCTED WITH APPLICABLE SMACNA STANDARDS.
- L. MANUAL VOLUME DAMPERS SHALL BE MADE OF GALVANIZED STEEL 18 GAUGE OR HEAVIER. DAMPERS FOR DUCTWORK UP TO 12 INCHES DEEP SHALL BE ONE BLADE CARRIED ON A 3/8-INCH SQUARE STEEL ROD MOUNTED IN THE SIDE OF DUCT WITHOUT FRAME AND FITTED WITH A LOCKING TYPE QUADRANT. SINGLE BLADE HAND DAMPERS UP TO 12-INCHES WIDTH MAY BE USED. DAMPERS FOR DUCTS OF GREATER DEPTH SHALL BE MULTI-BLADE TYPE. MAXIMUM BLADE WIDTH 12-INCHES UP TO 36-INCHES BLADE LENGTH, 8-INCHES MAXIMUM WIDTH OVER 36-INCHES LENGTH. BLADES SHALL BE MOUNTED IN FRAME AND INTERCONNECTED FOR OPERATION FROM ONE LOCKING TYPE HAND QUADRANT.

DUCTWORK CONSTRUCTION

- A. LOW PRESSURE DUCTWORK:
- LONGITUDINAL JOINTS SHALL BE PITTSBURGH TYPE AND SHALL BE SEALED WITH MINNESOTA MINING AND MANUFACTURING COMPANY'S (3M) EC-800 OR AS APPROVED SEALING COMPOUND AS SHOWN ON DRAWING.
- TRANSVERSE JOINTS SHALL BE STANDING "S" SLIP TYPE FOR HORIZONTAL JOINTS UP TO AND INCLUDING 40" WIDTH, AND REINFORCED BAR SLIP (CLEAT) JOINT FOR 41" TO 84" WIDTH; AND 1-1/2" ANGLE REINFORCED SLIP TYPE JOINT FOR DUCTS OVER 84".
- DRIVE SLIP TYPE FOR VERTICAL JOINTS.
- ALL DUCTS WIDER THAN 48" SHALL BE PROVIDED WITH 1-1/2"x1-1/2"x1/8" ANGLE IRON STIFFENERS ON ALL SIDES ON MAXIMUM OF 48" CENTER.

B. ROUND/OVAL SPIRAL DUCTWORK:

- ROUND/OVAL SPIRAL DUCTWORK SHALL BE LINDAB GASKETED SPIRAL DUCTWORK AND FITTINGS OR APPROVED EQUAL. INSTALL AND SUSPENDED AS PER MANUFACTURER'S RECOMMENDATIONS. GAUGES FOR SHOP FABRICATED DUCTWORK SHALL BE AS FOLLOWS:
- | | |
|----------------------|--------------|
| · UP TO 12" DIAMETER | NO. 26 GAUGE |
| · 13" TO 30" | NO. 24 GAUGE |
| · 31" TO 42" | NO. 22 GAUGE |
| · 43" TO 60" | NO. 20 GAUGE |

C. FLEXIBLE AIR DUCTWORK

- INSULATED FLEXIBLE AIR DUCTS SHALL BE U. L. 181 LISTED WITH TRILAMINATE OF ALUMINUM FOIL, FIBERGLASS AND POLYESTER INNER LINER ON GALVANIZED STEEL HELIX WITH R-5.0 RATING. FIBERGLASS INSULATION SHALL HAVE 25/50 FLAME/SMOKE FIRE RETARDANT VAPOR BARRIER JACKET.

- ALL CONNECTIONS TO DIFFUSERS ARE TO BE MADE WITH ADJUSTABLE CLAMPS AND TIGHTENED AIRTIGHT.

- MANUFACTURERS: CLEVAFLEX OR FLEXMASTER TYPE 5

D. HANGERS FOR DUCTWORK:

- ALL SHEET METAL DUCTWORK SHALL BE SECURELY SUPPORTED ON APPROVED HANGERS OR SADDLES AS REQUIRED.

- RECTANGULAR HORIZONTAL DUCTWORK SHALL BE SUPPORTED BY ROUND STEEL RODS, THREADED AT BOTH ENDS AND BOLTED THROUGH THE SUPPORTING STEEL ACROSS THE DUCT.

- SUPPORTING STEEL SHALL BE AS FOLLOWS:
- | |
|--|
| DUCT SIZE (MAXIMUM DIMENSION) SUPPORT STEEL SPACING |
| · UP TO 26", 2"x3" · 1' STRAP 8'-0" |
| · 27" TO 48" (INCLUSIVE): L 1-1/2"x1-1/2"x1/8" · 8'-0" |
| · 49" TO 59" (INCLUSIVE): L 2"x2"x1/8" |
| · Over 60": L 2-1/2"x2-1/2"x3/16" · 5'-0" |

- ALL DUCTWORK AND/OR PIPING INSIDE THE BUILDING SHALL BE SUSPENDED FROM THE TOP CHORD OF BAR JOIST POINTS ONLY. DO NOT CONNECT TO THE FLOOR/ROOF DECK.

- ALL SHARP ENDS AND EDGES SHALL BE GROUND DOWN SMOOTH OR COVERED TO PREVENT INJURY TO PERSONNEL.

- HANGER RODS, ANGLES, AND STRAPS SHALL BE ATTACHED TO BEAM CLAMPS, CONCRETE INSERTS, AND APPROVED ANCHORS. ALL SUCH DEVICES SHALL BE UNDERWRITER'S LABORATORIES APPROVED. INSERTS AND ANCHORS SHALL BE SET IN COOPERATION WITH ALL TRADES INVOLVED.

- C-CLAMPS SHALL NOT BE USED FOR ATTACHING HANGERS.

INSULATION - GENERAL

- A. THE CONTRACTOR SHALL FURNISH ALL LABOR AND MATERIALS NECESSARY FOR THE INSTALLATION OF THERMAL INSULATION ON ALL HOT AND COLD SURFACES WHICH REQUIRE INSULATION FOR HEAT OR COLD CONSERVATION, COMFORT OF OCCUPANTS, EFFICIENCY OR EASE OF OPERATION OR TO PREVENT CONDENSATION OR DRIPPING. THE INSULATION SHALL BE COMPLETE AND EFFECTIVE THROUGHOUT THE BUILDING.

INSULATION - MATERIALS

- A. ALL INSULATION MATERIALS SHALL BE CLASS A BY UNDERWRITER'S LABORATORIES. STANDARD FIBERGLASS INSULATION SHALL BE MINIMUM 5 LBS. DENSITY AND SHALL HAVE UL RATING NOT EXCEEDING 25 FLAME SPREAD, 35 FUEL CONTRIBUTED, AND 50 SMOKE DEVELOPED. ACCESSORIES SUCH AS ADHESIVE, MASTICS, CEMENTS, AND CLOTH FOR FITTINGS SHALL BE PERMANENTLY FIRE AND SMOKE RESISTANT. CHEMICALS USED FOR TREATING PAPER IN JACKET LAMINATES SHALL BE UNAFFECTED BY WATER OR HUMIDITY.
- B. MANUFACTURES: CERTAIN TEED/SAINT GOBAIN, OWENS CORNING, JOHN-MANSVILLE, ARMSTRONG CORK COMPANY.

DUCT INSULATION

- A. ALL CONCEALED SUPPLY AND RETURN AIR DUCTS SHALL BE INSULATED PER ASHRAE STANDARD 90.1, GENERAL REQUIREMENTS.
- B. CONCEALED DUCTWORK SHALL BE INSULATED WITH FACE DUCTWRAP 1" THICK, ONE (1) LB/CU FT. DENSITY WITH FACTORY APPLIED "FRK" VAPOR BARRIER JACKET OR LAMINATED ALUMINUM FOIL, OPEN MESH GLASS FIBER REINFORCING MESH SCRIM AND FLAMEPROOF KRAFT PAPER. INSULATION SHALL BE EQUAL TO OWENS-CORNING FIBERGLASS COMMERCIAL GRADE TYPE 100.
- ENSURE INSULATION IS CONTINUOUS THROUGH INSIDE WALLS, PACK AROUND DUCTS WITH FIRE PROOF SELF-SUPPORTING INSULATION MATERIAL, PROPERLY SEALED.
- FINISH INSULATION NEATLY AT HANGERS, SUPPORTS AND OTHER PROTRUSIONS.
- LOCATE COVER SEAMS IN LEAST VISIBLE LOCATIONS.
- C. ALL SUPPLY AND RETURN AIR DUCTWORK SHALL BE INSULATED ACCORDING TO THE ASHRAE 90.1 ENERGY STANDARDS. GENERAL REQUIREMENTS FOR INSULATION SHALL BE AS FOLLOWS: R-6 FOR SUPPLY AND RETURN DUCTS IN AN UNCONDITIONED SPACE.

GRILLES, REGISTERS, AND CEILING DIFFUSERS

- A. REFER TO SCHEDULE ON DRAWINGS FOR CAPACITIES, SIZES, AND TYPES.
- B. GRILLES AND REGISTERS PERFORMANCE SHALL BE BASED ON TESTS CONDUCTED IN ACCORDANCE WITH ADC STANDARDS 1062 A2, "AIR DIFFUSING EQUIPMENT TEST CODE" AND ASHRAE STANDARD 3368 "METHOD OF TESTING FOR RATING THE ACOUSTIC PERFORMANCE OF AIR CONTROL AND TERMINAL DEVICES AND SIMILAR EQUIPMENT."
- C. GRILLES, REGISTERS, AND DIFFUSERS SHALL BE MANUFACTURED BY PRICE, TITUS, CARNES, OR KRUGER. PROVIDE DAMPERS AT EACH DIFFUSER AND REGISTER. PROVIDE OPTIONS PER SCHEDULE ON DRAWINGS.

WIRING

- A. ALL WIRING SHALL COMPLY WITH LOCAL AND NATIONAL ELECTRIC CODES AND THE MANUFACTURER'S PUBLISHED INSTALLATION MANUAL.
- B. PROVIDE LAMINATED COLOR CODED WIRING DIAGRAM TO MATCH FACTORY INSTALLED WIRING AND BE PROVIDED IN BOTH POINT TO POINT AND LADDER DIAGRAM FORMAT AND AFFIXED TO THE INTERIOR OF THE CONTROL COMPARTMENT ACCESS DOOR.

THERMOSTATS

- A. IN GENERAL, ALL THERMOSTATS, INCLUDING SENSORS, ETC. SHALL BE PROVIDED BY THE HVAC EQUIPMENT MANUFACTURER.

- B. MECHANICAL TRADES SHALL FURNISH AND INSTALL ALL REQUIRED AUTOMATIC TEMPERATURE CONTROLS, INCLUDING WIRING, TRANSFORMERS, 7-DAY PROGRAMMABLE THERMOSTATS FOR PROPER OPERATION OF THE HVAC SYSTEM. WIRING SHALL BE IN ACCORDANCE WITH N.E.C. STANDARDS. COORDINATE WITH CONTROLS AND ELECTRICAL CONTRACTORS.

MISCELLANEOUS CONTROLS (INTERLOCK CONTROLS - ERV, FCU)

- A. PROVIDE ALL NECESSARY INTERLOCKING CONTROL DEVICES SUCH AS, STARTER RELAYS, ELECTRIC SOLENOID VALVES AND CONTROL TRANSFORMERS FOR A COMPLETE OPERATING SYSTEM.

CONTROLS INSTALLATION

- A. ALL WIRING IN CONNECTION WITH THE TEMPERATURE CONTROLS, AS WELL AS, THE WIRING IN CONNECTION WITH ALL ELECTRIC SWITCHES FOR CONTROLLING OF SYSTEMS, DAMPERS, AND EQUIPMENT, SHALL BE PROVIDED BY THE CONTROL CONTRACTOR. ALL INSTALLATION AND MATERIALS SHALL CONFORM TO THE ELECTRICAL SPECIFICATIONS FOR THIS PROJECT. WIRING SHALL BE IN CONDUITS AND IN ACCORDANCE WITH THE NATIONAL ELECTRIC CODE.

PROJECT:

MARK'S MKT

LOCATION:

277 GRATIOT AVE
DETROIT, MI 48226

APPLICANT:

EA
ARCHITECT

6445 WINONA AVE. ALLEN
PARK, MI 48101
PH:(313) 282-3453
EALSHAIB@GMAIL.COM

DRAWN BY:

E.A.

APPROVED BY:

EDWARD ALSHAIB

SUBMITTALS

REVISIONS:

PROJECT NO

DATE

01/30/2025

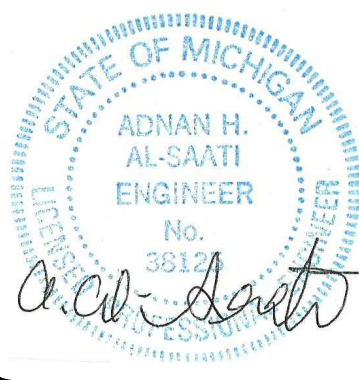
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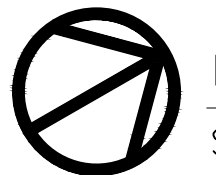
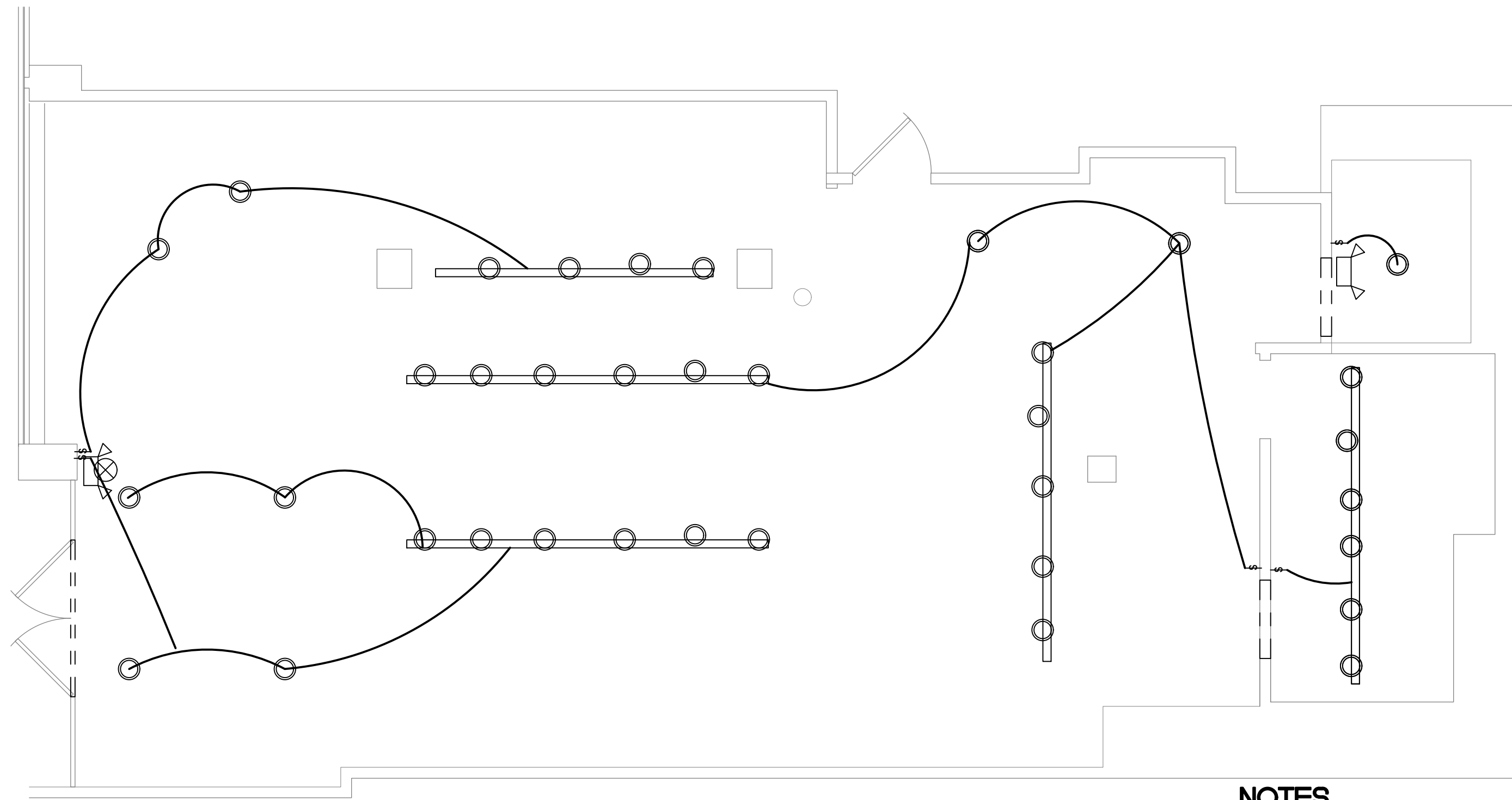
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SHEET TITLE

MECHANICAL
SPEC

SEAL

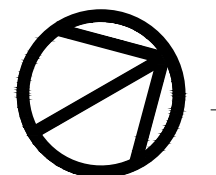
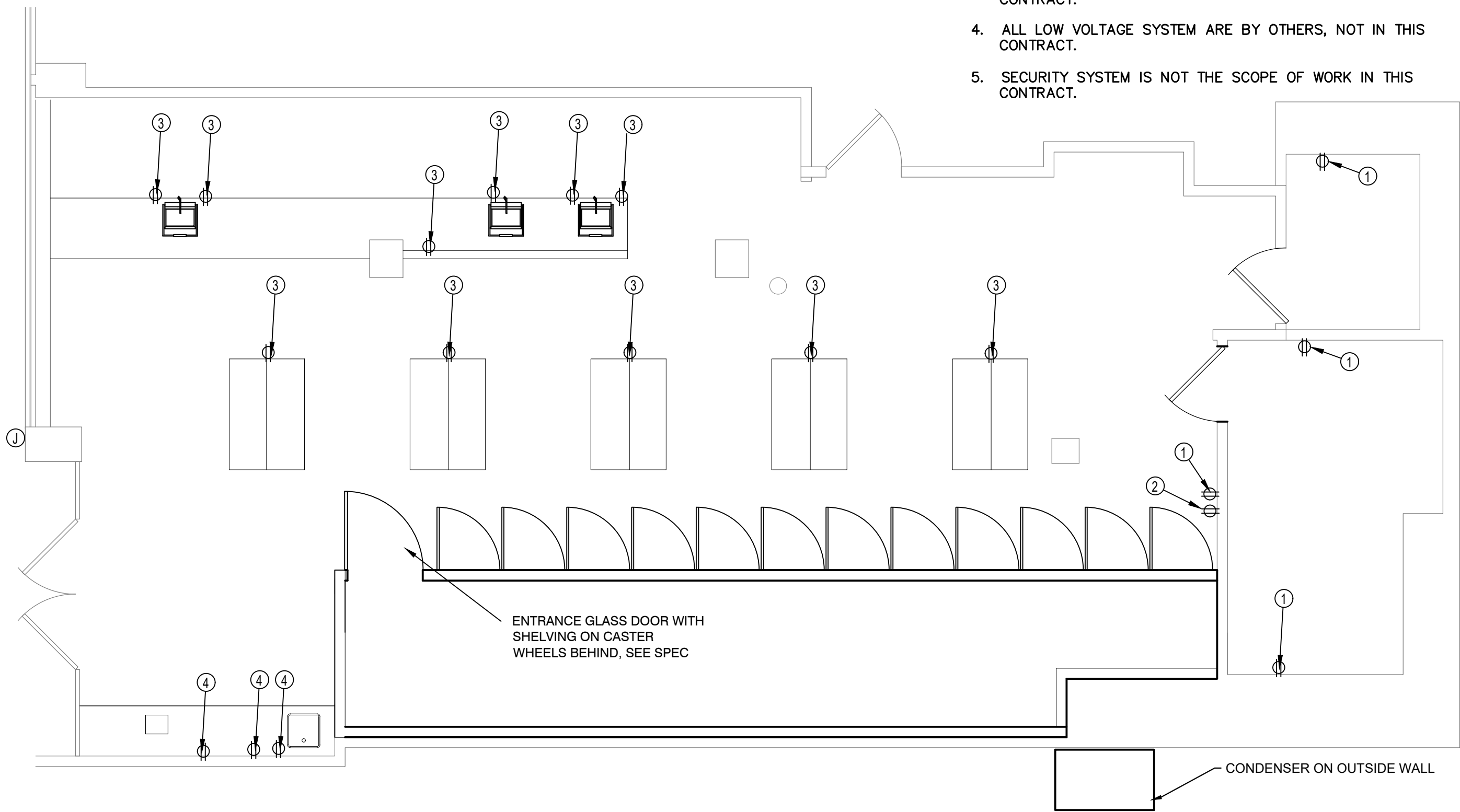




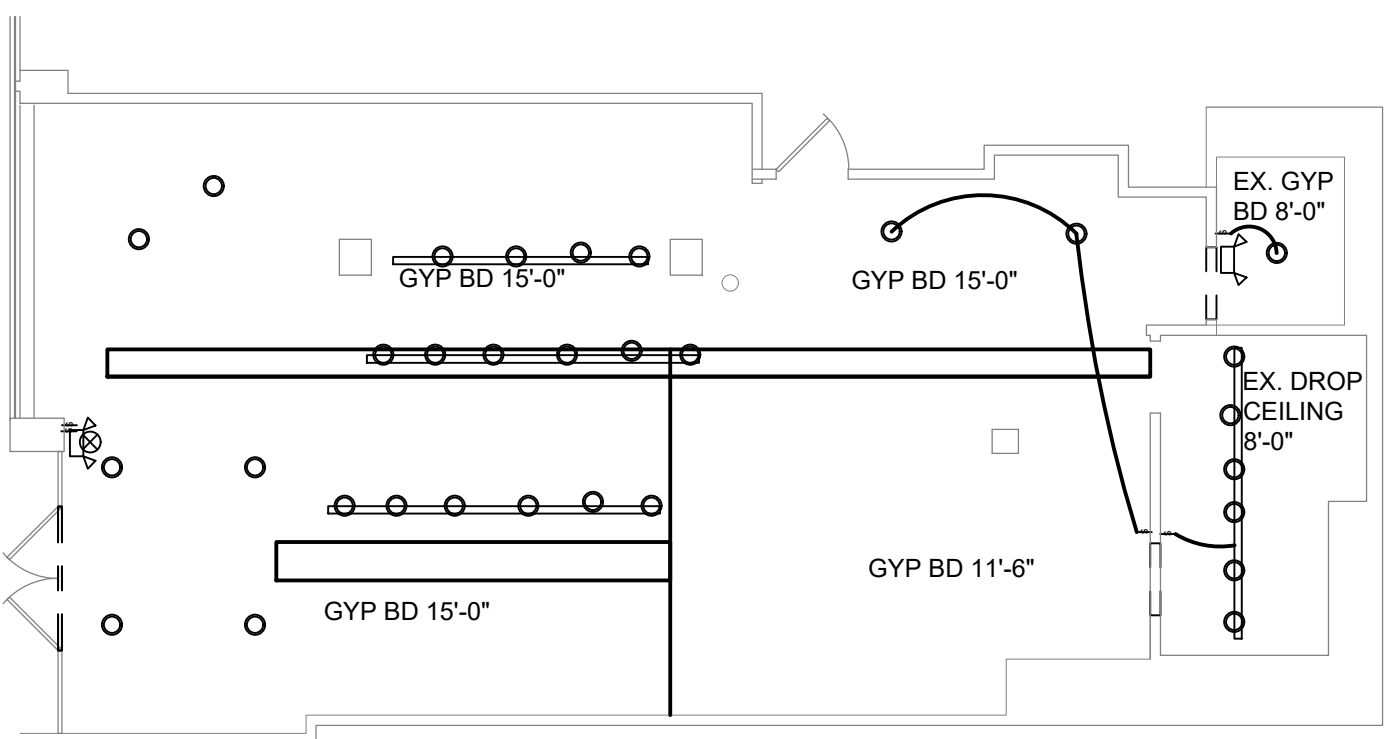
LIGHTING PLAN
SCALE: 1/4" = 1'-0"

NOTES

1. ALL BREAKERS ARE RATED FOR THE AMPACITY SHOWN.
2. ALL WIRES SHALL BE MIN # 12 AWG.
3. FIRE ALARM IS NOT THE SCOPE OF WORK IN THIS CONTRACT.
4. ALL LOW VOLTAGE SYSTEM ARE BY OTHERS, NOT IN THIS CONTRACT.
5. SECURITY SYSTEM IS NOT THE SCOPE OF WORK IN THIS CONTRACT.



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



REFLECTED CEILING PLAN
SCALE: 1/8" = 1'-0"

NOTE:
ALL CEILING HEIGHTS ARE FIELD VERIFIED
ALL DUCTWORK EXISTING, THERE IS NO EFFECT ON THE CEILING
WALK IN COOLER HEIGHT IS TYPICLCE HEIGHT 8' WILL NOT
CONFLICT WITH CEILING HEIGHT

SYMBOL LEGEND	
SYMBOL	DESCRIPTION
	FLUORESCENT 2-100W (EX.), SATISFY 3000 LM WHITE FINISH, 120-277V
	WALL MOUNTED EXIT LIGHT FIXTURE W/ BACK-UP BATTERY ARROW INDICATES EGRESS DIRECTION (EX.)
	WALL MOUNTED EMERGENCY LIGHT FIXTURE DUAL VOLT. W/ BACK-UP BATTERY
	ROUND MOUNTED LIGHTS (EX.)

NO.	ELECTRICAL ROUGH-IN
1	EXISTING DR, 120, 20A, 16" AFF. GENERAL PURPOSE OUTLET-GFCI TYPE WHERE APPLICABLE (VERIFY QUANTITIES)
2	DR, 120, 20A, GPO, 42" AFF. COOLER, GFCI TYPE
3	DR, 120, 20A, 36" AFF. GENERAL PURPOSE COUNTER OUTLET
4	DR, 120, 20A, 36" AFF. GFCI, GENERAL PURPOSE COUNTER OUTLET
5	DR, 120, 20A, 36" AFF. GFCI, GENERAL PURPOSE COUNTER OUTLET
J	JUNCTION BOX, TO PROVIDE POWER FOR THE SIGN

NOTE:
- VERIFY CONDITIONS OF ALL EXISTING ELECTRICAL SYSTEM.
- PROVIDE GROUND AS REQUIRED BY LOCAL CODES.
- DISCONNECT FROM SOURCE AND CAP ALL CIRCUITS NOT BEING USED.
- ALL OUTLETS IN KITCHEN TO BE GFI TYPE

Condensing Unit

Model : **TS040MR404A3-T**

PERFORMANCE CHART

	40°F (SST)	30°F	25°F	20°F	15°F	10°F	0°F	-10°F
90°F (AMBIENT)	45990	38953	35398	32030	28880	26285	20870	-
95°F	44700	37587	34140	30880	27805	25273	19958	-
100°F	42600	35837	32843	29500	26730	24260	19045	-
110°F	39680	33333	30523	27340	24800	22225	17490	-

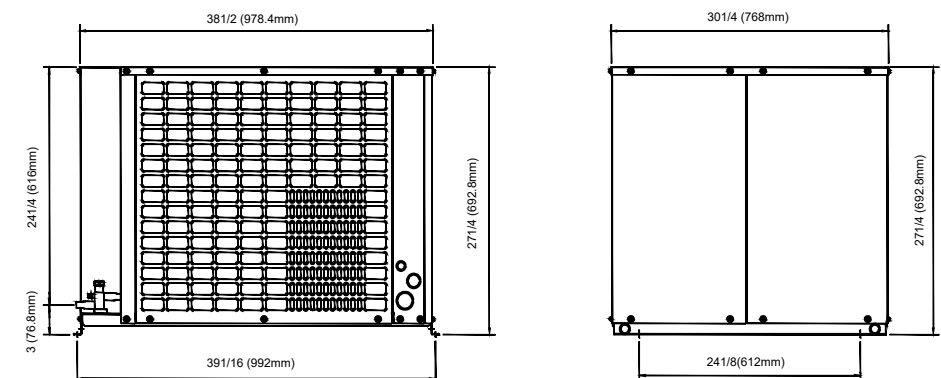
	40°F (SST)	30°F	25°F	20°F	15°F	10°F	0°F	-10°F
90°F (AMBIENT)	44500	38140	35020	32100	29635	26840	22027	17290
95°F	42367	36373	33427	30700	28105	25690	20925	16270
100°F	40233	34807	32060	29533	27050	24667	20025	15470
110°F	37080	32070	29600	27433	25250	23167	-	-

SPECIFICATION

	TS040MR404A3-T
Compressor	ZS29KAE-TF5
Line Size	1/2" Liquid 1-1/8" Suction
Refrigerant (Receiver 90%)	18 lbs
Fan Data	1 Fan (376ACFM)
Dimensions	38.5(D) x 30.25(W) x 27.25(H)
Net Weight	306 lbs
Power Supply	208-230/3ph/60hz
Compressor Amp	20.5(RLA), 114.0(LRA)
MCA/MOPD	28.0/40
Sound dBA	74
AWEF Value (R-404A, R-448A / R-449A)	7.6, 7.6

Design and specifications subject to change without notice

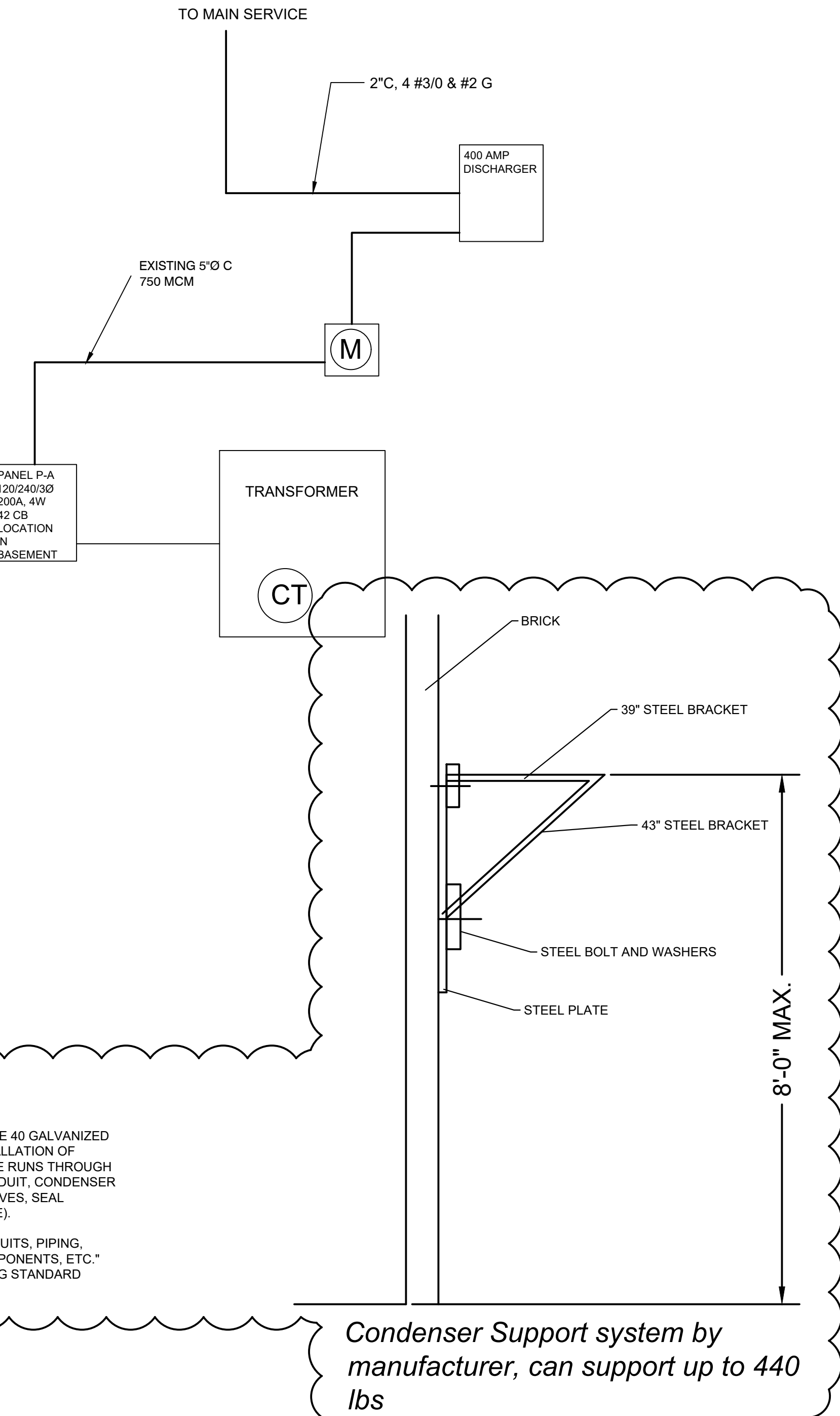
PLAN VIEW



FURNISH AND INSTALL STRUCTURAL SCHEDULE 40 GALVANIZED SLEEVES GROUTED & SEALED PRIOR TO INSTALLATION OF CONDUITS OR CONDENSER REFRIGERANT LINE RUNS THROUGH EXTERIOR WALL. UPON INSTALLATION OF CONDUIT, CONDENSER REFRIGERANT LINE RUNS THROUGH THE SLEEVES. SEAL THE OPENING COMPLETELY (INSIDE & OUTSIDE).

ALL THE EXPOSED "EXTERIOR DUCTING, CONDUITS, PIPING, METAL SUPPORTS, ANY MISCELLANEOUS COMPONENTS, ETC." NEED TO BE PAINTED WITH EXTERIOR BUILDING STANDARD COLOR.

VOLTAGE: 120/208/3 PH. AMPS: 200 AMPS WIRE: 4W 42 CIRCUITS 200 MCB											LOCATION BASEMENT	
EXISTING PANEL DESIGNATION: A												
DESCRIPTION	VOLT-AMP				CIR. NO.	VOLT-AMP				DESCRIPTION		
	CB-AMP	A	B	C		A	B	C	CB-AMP			
LIGHTS	20	1080			1				20	LIGHTS		
BATHROOM LIGHTS, FAN	20		1950		3			1200	20	LIGHTS		
BATHROOM OUTLET	20			1080	5				1080	(3) GPO		
LIGHTS	20	1080			7			1080	20	(3) GPO		
LIGHTS	20		1080		9				20	LIGHTS		
WATER HEATER	20			1080	11			1080	20	FRONT LIGHTING		
SPARE	20				13				1080	20	SIGN	
WALK IN COOLER	50		1000		15					20	SPARE	
			1000		17					20	SPARE	
	20	1000			19					20	SPARE	
DISCONNECT	20		1000		21					20	SPARE	
SPARE					23					20	SPARE	
SPARE					25			2000				
SPARE	20				27			2000		30	RTU	
SPARE	20				29				2000			
MAIN	20	2000			31					20	SPARE	
MAIN	20		2000		33				1200	20	EMMERGENCY LIGHTS (*)	
MAIN	20			2000	35					20		
SPARE	20	---			37			---		20		
SPARE	20		---		39			---		20		
SPARE	20			---	41			---	20	SPARE		
TOTALS				5160	8030	5160		5160	6360	6360	(*)	LOCK ON DEVICE
TOTAL PHASES		A= 10,320			B= 14,390			C= 11,520				
TOTAL CONNECTED LOAD IN VA:		36,230			MAX. AMPS PER PHASE: 98			USE: 200 AMPS				
NOTES: LIGHTING LOADS THAT RUN CONTINUOUSLY FOR THREE HOURS ARE CALCULATED @ 125% OF THE RATED LOADS.												



Condenser Support system by manufacturer, can support up to 440 lbs

PROJECT:
MARK'S MKT

LOCATION:
277 GRATIOT AVE
DETROIT, MI 48226

APPLICANT:

EA
ARCHITECT

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PARK, MI 48101
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DRAWN BY:
E.A.

APPROVED BY:

SUBMITTALS

REVISIONS:

PROJECT NO

DATE
01/30/2025
SCALE
NOTED

SHEET TITLE
ELECTRICAL
PLAN

E-1

SEAL

