MECHANICAL SPECIFICATIONS

SECTION 15010

BASIC MECHANICAL REQUIREMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Basic HVAC Requirements specifically applicable to Division 15 Sections.

1.2 SCOPE OF WORK

A. Work Included:

1. Coordinate the work in this Division with all trades.

2. Verify all dimenslons in the field.

3. Construction drawings, coordination, and "As-Built" drawings.
4. Automatic temperature controls.
5. Complete system of low pressure ductwork, flexible ducts, with heating coils, supply and return air terminals.

6. Heating hot water supply and return piping.
7. Thermal insulation of ducts, pipe and equipment.
8. Testing and balancing of HVAC air and hydronic systems.

B. Related Work Specified Elsewhere And Provided By Others.
1. Fire smoke protection including smoke and/or fire detectors related with HVAC.

2. Concrete work of any type, and cutting and patching of roofs.
3. Fire rated walls and penetration.

4. Access panels, other than duct access panels.

5. Painting, except as specifically noted.

6. x

7. Life safety systems, coordination and design.

8. All electrical conduit.

9. All electrical wiring and connections for 110v and above.

10. All disconnects.

1.3 ORDINANCE, CODES AND REGULATION

A. The work of this Division shall be performed in accordance with the applicable requirements of all legal authorities having jurisdiction, which shall include all local ordinances and codes, safety orders, and the requirements of the local and State Fire Marshal, in force and current at the time of entering into the agreement.

B. State and local taxes that are legislated at the time of entering into the agreement are included in this contract.

1.4 PERMITS AND INSPECTIONS

A. Obtain all permits, (fees by owner) inspections, required by all legal authorities and agencies having jurisdiction for the work of this Division. The certificates of all such permits and inspections shall be delivered to the Job Site and posted immediately upon issuance.

1.5 DRAWINGS

A. The drawings indicate HVAC work required for a complete and proper HVAC installation. Additional items may be required and shall be provided by contractor.

1. For purposes of clearness and legibility., the construction drawings may be diagrammatic and although the size and location of the equipment shall be indicated to scale wherever possible, the Contractor shall make use of all of the data in all of the contract documents and continuously verify this information in the field as the work progresses.
2. The drawings shall indicate the required size and location of equipment, pipe and duct location, size, and points of termination and the number and size thereon, and lay out the proper roules to conform to the structure, avoid obstructions and preserve clearances and headroom.

B. Verification of dimensions: The Contractor shall ascertain where all equipment rooms, shafts and equipment spaces have been planned for his use by the Architect and alert the architect prior to start of construction of any problems.

C. The HVAC drawings shall be in conformance with the intent of the architectural and structural drawings in the representation of the general construction work. The HVAC Contractor shall make his shop drawings available to all other trades to coordinate the HVAC work with other work on the project.

D. The construction (shop) drawings shall contain the following information:

E. "As-Built" drawings: A set of HVAC prints shall be maintained at the job site during construction specifically to record all changes and deviations from the set of drawings as issued for construction. At the completion of work, the HVAC drawings will be modified to include all changes and a final issue of one set of mylar "As-Built" drawings will be turned over to the Owner's Representative.

1.6 SUBMITTALS

A. Reference all listing to the specification's article to which each is applicable.

B. Submit on all materials and equipment, even if same is as specified, or shown on the Drawings.

C. Include complete catalog information, such as construction, curves, capacities, etc., as applicable.

D. Shop drawings shall be submitted in complete groups of materials as much as possible, and each item of material submitted shall be initialed by the contractor as verification that the submittal has been reviewed in detail, and is in fact the contractor's choice of material.

E. Copies of each submittal shall be delivered to General Contractor's job office.

F. See equipment specifications for individual submittal requirements.

ARI Air Conditioning and Refrigeration Institute

ASHRAE American Society of Heating, Refrigerating, and Air Conditioning Engineers

ASME American Society of Mechanical Engineers

ASTM American Society for Testing and Materials

AGA American Gas Association

AISC American Institute of Steel Construction

AMCA Air Moving and Conditioning Association

UL Underwriters' Laboratories, Inc.

1.9 CLEAN UP

A. Upon completion of the work of each section of this Division and at various times during the progress of the work when requested by the general contractor, the HVAC contractor shall remove from the building and site all surplus material, rubbish and debris resulting from the work of that section and the involved portions of the site shall be left in a neat, clean and acceptable condition.

1.10 PRELIMINARY OPERATION

A. Should the Owner and/or General Contractor require that any portion of the systems or equipment be operated prior to the final scheduled dates for completion and acceptance of the work, the HVAC contractor shall consent. Such operation shall be under the direct supervision of, the HVAC contractor. Warranty on those pieces of equipment started for the benefit of the Owner will commence at start-up of each piece of equipment and all costs associated with early start-up will be the responsibility of the Owner.

1.11 ACCESS

B. Architectural access doors shall be supplied by the General Contractor and installed by the General Contractor.

1.12 SLEEVES AND BLOCKOUTS

A. Individual pipe sleeves shall be provided and installed by the HVAC contractor, multiple pipe and duct blockouts shall be provided by the General Contractor.

1.13 SUPERVISION

A. The services of an experienced Foreman/General Foreman shall be provided who shall constantly be in charge of the erection of the systems in this Division and who shall have complete knowledge of the installation and operation of all machinery, apparatus and other work installed under his supervision.

1.14 QUALITY ASSURANCE

A. Material and equipment incorporated in the work shall be as follows:

1. New and manufactured without defect.

2. Of the size, type, capacity, quality, model and manufacturer specified.

3. In conformance to applicable standards.

4. Suitable for the use in the service specified or intended.

B. Design, fabrication, and assembly shall conform to the best engineering and shop practice. Parts of duplicate units shall be of standard dimensions, gauges, and material and shall be interchangeable with like parts in like units. All items of similar nature shall be by the same manufacturer.

C. Manufacturers of products used in the work shall be regularly engaged in and shall have a history of successful production of such items; certification of same may be required.

D. Installers shall be skilled and experienced in the particular crafts involved in the work and shall be sufficient in number of prompt accomplishment of the work. They shall be directed at all times by one person having skill and experience in each particular crafts and complete familiarity with the work and methods needed for its proper accomplishment.

1.15 WARRANTY

A. All apparatus and equipment furnished as part of the work of this Division shall be guaranteed to be free of defect of materials and workmanship for a period of one year after the date of equipment start-up requested by the Owner.

SECTION 15250

DUCTWORK INSULATION

PART 1 GENERAL

1.01 WORK INCLUDED

A. Ductwork insulation.

1.02 QUALITY ASSURANCE

A. Applicator: Company specializing in ductwork insulation application with three years minimum experience.

B. Materials: UL listed; flame spread/fuel contributed/smoke developed rating of 25/50/10 in accordance with NFPA 255.

PART 2 PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS - INSULATION

A. Owens Corning, Certainteed, Manville, Knauf or approved equal.

2.02 MATERIALS

A. Standard duct insulation to be flexible glass fiber; commercial grade; 'k' value of 0.29 at 75 degrees F foil kraft facing. Minumum thickness 1.5 inches, R-value 2.1.

B. Standard duct liner to be flexible glass fiber; 'k' value of 0.24 at 75 degrees F, 1.3 lb/cu ft minimum density; either dual density or coated air side for maximum 4,000 ft/min air velocity.

C. Adhesives: Waterproof fire-retardant type.

D. Tie Wire: Annealed galvanized steel, 16 gage.

PART 3 EXECUTION

3.01 INSTALLATION

A. Insulation Application:(exterior of duct work)

1. Secure insulation with wires 12 inches on centers on straight ducts, and 6 inches on elbows, or staple joints and tape with self adhesive foil faced tape.

2. Stop and point insulation around access doors and damper operators to allow operation with out disturbing wrapping.

SECTION 15890

DUCTWORK

PART 1 GENERAL

1.01 WORK INCLUDED

A. Sheet metal ductwork, steel and aluminum.

B. Flexible ductwork.

PART 2 PRODUCTS

2.01 MATERIALS

A. Steel Ducts: galvanized steel sheet, lock-forming quality having zinc coating of 1.25 oz per sq ft for each side in conformance with ASTM A90.

C. Fasteners: Rivets, bolts, or sheet metal screws.

D. Sealant: Non-hardening, water resistant, fire resistive, compatible with mating materials.

E. Hanger Rod: Steel, galvanized; threaded one end, or continuously threaded.

2.02 SHEET METAL DUCTWORK

A. Fabricate and support in accordance with Sacramento City Mechanical code and with SMACNA Duct Construction Standards, except as indicated. Provide duct material, gages, reinforcing and sealing for operating pressures indicated. Duct tape not permitted.

B. Construct T's, bends, and elbows with radius of not l than 1-1/2 times width of duct on centerline. Where possible and;

1. Where rectangular elbows are used, provide turning vanes.

2. Where round ductwork is used provide four (4) adjustable elbows.

C. Increase duct sizes gradually, not exceeding 30 degrees divergence wherever possible.

D. Where rectangular ducts pass under beams with insufficient clearance, use beam boxes and transitions as recommended by SMACNA, maintaining the original duct area where more than 80 percent of the original duct height cannot be maintained. For clearances that diminish the duct height less than 20 percent, use transition fittings on top or bottom only, and maintain the horizontal duct dimension.

E. Where round ducts pass under beams with insufficient clearance, but duct diameter is reduced by less than 20 percent, the round duct may be cut out on the top and a flat plate with 30 degrees transitions welded in place. In all other cases convert to rectangular and use beam boxes.

F. Connect flexible ducts downstream of terminal box with duct tape. Connect flexible ducts upstream of terminal box with duct sealer, and draw bands.

G. Use crimp joints with or without bead for joining round duct sizes with crimp in direction of air flow.

H. Use double nuts on threaded rod supports.

PART 3 EXECUTION

3.01 INSTALLATION

A. Provide openings in ductwork where required to accommodate sensors and controllers.

B. Locate ducts with sufficient space around equipment to allow normal operating and maintenance activities.

C. At all main supply duct connections to main rectangular supply risers, provide a 45 degrees throat fitting as detailed by SMACNA. Use this same fitting wherever rectangular branch taps are made into a rectangular main.

D. At all round branch take-offs in rectangular duct mains provide a straight 90 degree tap unless conical reduces taps or 5 degree laterals are indicated on the drawings.

E. At all round branch take-offs in round duct mains, provide a saddle tap and a straight 90 degree take-off unless conical reducers or 45 degree laterals are indicated on the drawings.

F. Wherever round ducts branch use a 45 degree lateral T-Y fitting.

G. Connect terminal units on upstream side ducts directly or with high pressure glass fiber flexible duct.

H. Connect diffusers or troffer boots to low pressure ducts with 6 feet maximum length of acoustical flexible duct.

I. Use aluminum ductwork at shower and pool exhaust system, pitch back to register.

J. No flexible connections at pool.

K. No flexible alumaflex allowed anywhere on project.

SECTION 15936

AIR INLETS AND OUTLETS

PART 1 GENERAL

1.01 WORK INCLUDED

A. Diffusers.

B. Diffuser boots.

C. Registers/grilles.
PART 2 PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS - CEILING DIFFUSERS

A. Titus, Krueger, Anemostat, Tuttle and Bailey.

2.02 CEILING DIFFUSERS

A. Modular core with fully adjustable pattern and removable face, pool area (MCD, aluminum)

B. Provide surface mount on inverted T-bar type frame. In plaster ceilings, provide plaster frame and ceiling frame.

C. Fabricate of steel with steel (Air Conditioned duty).

D. Diffusers shall be suitable for direct connection to round ductwork.

E. Provide opposed blade damper adjustable from diffuser face, only in hard ceilling locations.

2.03 CEILING GRID CORE EXHAUST AND RETURN REGISTERS/GRILLES

A. 1/2" grid, Titus 50-F

B. Fabricate margin frame with concealed mounting for hard ceilings or lay-in frame for suspended grid ceilings.

C. Fabricate of steel with factory baked enamel finish.

2.04 WALL SUPPLY REGISTERS/GRILLES

A. Streamlined and individually adjustable blades, with spring or other device to set blades, vertical face, double deflection Titus 350 FL.

B. Fabricate margin frame with countersunk screw or concealed mounting and gasket.

C. Fabricate of steel with factory prime coat finish.

D. Provide integral, gang-operated opposed blade dampers with removable key operator, operable from face.

2.05 WALL EXHAUST AND RETURN REGISTERS/GRILLES

A. Streamlined blades, with spring or other device to set blades, horizontal face Titus 350 FL.

B. Fabricate margin frame with countersunk screw or concealed mounting.

C. Fabricate of steel, with factory baked enamel finish.

D. Where not individually connected to exhaust fans, provide integral, gang-operated opposed blade dampers with removable key operator, operable from face.

PART 3 EXECUTION

3.01 INSTALLATION

A. Check location of outlets and inlets and make necessary adjustments in position to conform with architectural features, symmetry, and lighting arrangement.

B. Install diffusers to ductwork with air tight connection.

C. Provide balancing dampers on duct take-off to diffusers, and grilles and registers.

D. Paint unlined ductwork visible behind air outlets and inlets matte

E. Where moisture is present, use aluminum construction (pool and shower areas).

SECTION 15990

TESTING, ADJUSTING, AND BALANCING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Testing, adjustment, and balancing of air and condenser water systems by an independent NEBB or AABC air balance contractor and certified registered Professional engineer (PE).

B. Measurement of final operating condition of HVAC systems.

C. CAL GREEN CODE, testing and balancing shall comply with sections 5.410.4 thru 5.410.4.5.1.

1.02 REPORT FORMS

A. Submit reports on NEBB forms, duly signed and approved by NEBB or AABC certified engineer.

1.03 QUALITY ASSURANCE

A. Perform Work under supervision of an independant NEBB or AABC Certified Testing Balacing and Adjusting Supervisor and registered Professional Engineer.

B. Total system balance shall be performed in accordance with NEBB or AABC Procedural Standards for Testing, Balancing and Adjusting of Environmental Systems.

1.04 SEQUENCING AND SCHEDULING

A. Sequence work to commence after completion of systems & schedule completion of work before Substantial Completion of Project.

B. Schedule and provide assistance in final adjustment and test of life safety systems with Fire Authority where required.

PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION

3.01 EXAMINATION

A. Before commencing work, verify that systems are complete and operable. Ensure the following:

1. Equipment is operable and in a safe and normal operating condition.

2. Temperature control systems are installed complete and operable.

3. Proper thermal overload protection is in place for all HVAC related electrical equipment.

4. Final filters are clean and in place. If required, install temporary media in addition to final filters.

5. Duct systems are clean of debris.

6. Correct fan rotation.

7. Volume dampers are in place and open.

8. Coil fins have been cleaned and combed.

9. Access doors are closed and duct end caps are in place.

10. Air outlets are installed and connected.

11. Duct system leakage has been minimized.
12. Preliminary air testing and balancing report to include;
12A. TOTAL CFM READING AT MAIN DUCTWORK TRANSVERSE.
12B. ALL SUPPLY AND RETURN OUTLES CFM.
12C. MOTOR AMPERAGE READING FOR THE SUPPLY AND EXHAUST FAN.

B. Report any defects or deficiencies noted during performance of services to Architect/Engineer.

C. Promptly report abnormal conditions in mechanical systems or conditions which prevent system balance.

D. If, for design reasons, system cannot be properly balanced, report as soon as observed.

3.02 PREPARATION

A. Provide instruments required for testing, adjusting, and balancing operations.

B. Provide additional balancing devices as required.

3.03 INSTALLATION TOLERANCES

A. Adjust air handling systems to +\- 10% from figures indicated.

3.04 ADJUSTING

A. Permanently mark settings of valves, dampers, and other adjustment devices allowing settings to be restored.

B. After adjustment, take measurements to verify balance has not been disrupted or that such disruption has been rectified.

C. Leave systems in proper working order, replacing belt guards, closing access doors, closing doors to electrical switch boxes, and restoring thermostats to specified settings.

3.05 AIR SYSTEM PROCEDURE

A. Adjust air handling and distribution systems to provide required or design supply, return, and exhaust air quantities.

B. Make air quantity measurements in ducts by Pitot tube traverse of entire cross sectional area of duct.

C. Measure air quantities at air inlets and outlets.

D. Adjust distribution system to obtain uniform space temperatures free from objectionable drafts and noise.

E. Use volume control devices to regulate air quantities only to extent that adjustments do not create objectionable air motion or sound levels. Effect volume control by duct internal devices such as dampers and splitters.

F. Vary total system air quantities by adjustment of fan speeds. Provide drive changes required. Vary branch air quantities by damper regulation.

G. Measure static air pressure conditions on air supply units, including filter and coil pressure drops, and total pressure across the fan. Make allowances for 50 percent loading of filters.

H. Adjust outside air automatic dampers, outside air, return air, and exhaust dampers for design conditions.

I. Measure temperature conditions across outside air, return air, and exhaust dampers to check leakage rate.

J. Where modulating dampers are provided, take measurements & balance at extreme conditions.

K. Measure building static pressure and adjust supply, return, and exhaust air systems to provide required relationship between each to maintain positive static pressure.

EXISTING AIR BALANCE SCHEDULE

	S/A	R/A	O.S.A.	EXHAUST
RTU-12..... POOL	8200	7200	1000	–
RTU-1,2,3, 4,5,6,7,8,9	49000	0	16080	–
RTU-10,11& 13	14000	0	4900	7000
RTU-14,15, 16	12000	0	3700	–
X	0	0	0	–
X	0	0	0	–
EF-1,2	–	–	–	5600
EF-3POOL	–	–	–	5100
EF-4-14	–	–	–	2680
EF	–	–	–	0
EF	–	–	–	0
EF	–	–	–	0
EF	–	–	–	0
TOTAL	71200	7200	25680	20380
BLDG. PRESSURE (O/A-E/A)		=		5300
XX				

AIR BALANCE SCHEDULE

	S/A	R/A	O.S.A.	EXHAUST
RTU-12..... POOL	8200	7200	1000	–
RTU-1,2,3, 4,5,6,7,8,9	49000	0	16080	–
RTU-10,11& * 13	14000	0	4900	7000
RTU-14,15, 16	12000	0	3700	–
X	0	0	0	–
X	0	0	0	–
EF-1,2	–	–	–	5600
EF-3POOL	–	–	–	7800
EF-4-14	–	–	–	2680
EF	–	–	–	0
EF	–	–	–	0
EF	–	–	–	0
EF	–	–	–	00
TOTAL	71200	7200	25680	23080
BLDG. PRESSURE (O/A-E/A)		=		2600
*LOW OSA TO RTU/10,11,13				

AIR BALANCE SCHEDULE

	S/A	R/A	O.S.A.	EXHAUST
RTU-12..... POOL	8200	7200	1000	–
RTU-1,2,3, 4,5,6,7,8,9	49000	0	16080	–
RTU-10,11& ** 13	14000	0	7000	7000
RTU-14,15, 16	12000	0	3700	–
X	0	0	0	–
X	0	0	0	–
EF-1,2	–	–	–	5600
EF-3POOL	–	–	–	7800
EF-4-14	–	–	–	2680
EF	–	–	–	0
EF	–	–	–	0
EF	–	–	–	0
EF	–	–	–	00
TOTAL	71200	7200	27780	23080
BLDG. PRESSURE (O/A-E/A)		=		4700
**HIGH OSA TO RTU/10,11,13				

GENERAL NOTES

1. MECHANICAL CONTRACTOR SHALL COORDINATE ALL WORK WITH OTHER TRADES AND SHALL WORK HARMONIOUSLY TO MEET PROJECT COMPLETION DATE,
2. INTERFERENCES OR OBSTRUCTIONS BETWEEN TRADES OCCURRING DURING CONSTRUCTION SHALL BE REPORTED IMMEDIATELY TO THE ENGINEER AND ALL WORK SHALL CEASE IN THAT AREA UNTIL RESOLVED BY THE ENGINEER AND/OR ARCHITECT.
3. ALL WORK SHALL BE PERFORMED IN A NEAT WORKMANLIKE MANNER IN ACCORDANCE WITH GOOD CONSTRUCTION PRACTICES.
4. THE MECHANICAL CONTRACTOR MUST VERIFY AND COORDINATE ALL FLOOR, WALL, AND ROOF OPENINGS WITH GENERAL CONTRACTOR PRIOR TO INSTALLATION OF EQUIPMENT AND DUCTWORK. SEE STRUCTURAL DRAWINGS. ALL OPENINGS, PATCHING, ETC., AND WATERPROOFING BY GENERAL CONTRACTOR.
5. MECHANICAL CONTRACTOR SHALL INSTALL AUTOMATIC FIRE SMOKE DAMPERS IN ALL FIRE RATED CEILINGS, WALLS AND FLOORS AS REQUIRED, SEE ARCHITECTURAL DRAWINGS FOR LOCATIONS.
6. MECHANICAL CONTRACTOR SHALL FURNISH AND INSTALL DUCT ACCESS DOORS ADJACENT TO FIRE SMOKE DAMPERS.
7. INSIDE OF PLENUMS, DUCTS, ETC., BEHIND ALL AIR DISTRIBUTION DEVICES SHALL BE PAINTED FLAT BLACK.
8. MANUAL VOLUME DAMPERS SHALL BE PROVIDED IN ALL DUCT TAKE-OFFS TO INDIVIDUAL CEILING DIFFUSERS, REGISTERS, AND GRILLES.
9. CODE APPROVED (WITH SCRIM CLOTH) FLEXIBLE DUCT MAY BE USED IN CONCEALED SPACES FOR LAST PLENUM AND DIFFUSER CONNECTIONS ONLY (AT CONTRACTOR'S OPTION). MAXIMUM 6'-0" LONG.
10. MECHANICAL CONTRACTOR MUST PROVIDE TRANSITION FITTINGS FOR ROOF PENETRATIONS FROM ROUND TO SQUARE OR WHATEVER NECESSARY FOR EXHAUST, SUPPLY, AND RETURN DUCT APPLICATIONS.
11. EITHER THE SUPPLY AND RETURN DUCTS ARE SHOWN INSIDE LINED OR WHERE LINING IS NOT INDICATED, INSULATE ALL DUCTS AS PER SPECIFICATIONS, GENERAL NOTES AND MANUFACTURER PRINTED INSTRUCTIONS, INCLUDING ALL DUCT DROPS TO CEILING OUTLETS.
12. THE AIR CONDITIONING CONTRACTOR SHALL BE RESPONSIBLE FOR THE ACQUISITION AND PAYMENT OF ALL PERMITS AND INSPECTIONS REQUIRED AND RELATED FEES FOR THIS INSTALLATION. ALL WORK SHALL COMPLY WITH APPLICABLE STATE AND LOCAL CODES.
13. THESE PLANS ARE DIAGRAMMATIC AND ARE NOT INTENDED TO REPRESENT THE ACTUAL SITE CONDITIONS. CONTRACTOR SHALL VERIFY CONDITIONS PRIOR TO COMMENCING WORK, DO NOT SCALE THESE PLANS, REFER TO ARCHITECTURAL DRAWINGS FOR DIMENSION AND SCALES.
14. SHEET METAL DUCT WORK SHALL BE GALVANIZED STEEL SHEET OF THICKNESS AS RECOMMENDED AND CONSTRUCTED IN UMC CHAPTER 6.
15. MECHANICAL CONTRACTOR SHALL COORDINATE VOLTAGE AND PHASE OF EACH ITEM OF EQUIPMENT WITH ELECTRICAL CONTRACTOR BEFORE ORDERING.
16. PROVIDE OPERATIONS AND MAINTENANCE MANUALS FOR ALL EQUIPMENT.
17. ALL TAKE-OFFS ARE TO BE CONSTRUCTED WITH SCOOP FITTINGS OR EXTRACTORS. ALL ELLS SHALL CONTAIN DOUBLE THICKNESS TURNING VANES. NO EXCEPTIONS ALLOWED.
18. PROVIDE SHOP DRAWING SUBMITTAL DATA ON ALL PRE-MANUFACTURED EQUIPMENT..

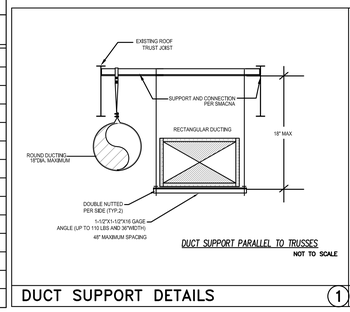
LEGEND & ABBREVIATIONS

LEGEND	ABBREVIATIONS	
SUPPLY AIR GRILLE/DIFFUSER	A.F.F.	ABOVE FINISHED FLOOR
RETURN AIR GRILLE/REGISTER	BTUH	BRITISH THERMAL UNITS PER HOUR
EXHAUST AIR GRILLE/REGISTER	CFM	CUBIC FEET PER MINUTE
SUPPLY AIR UP	(E)	EXISTING
SUPPLY AIR DOWN	EA	EXHAUST AIR
RETURN AIR UP	ESP	EXTERNAL STATIC PRESSURE
RETURN AIR DOWN	HP	HORSEPOWER
EXHAUST AIR UP	LBS,	POUNDS
EXHAUST AIR DOWN	MCA	MAXIMUM CURRENT AMPS
THERMOSTAT (MOUNT AT 42" A.F.F.)	MOCP	MINIMUM OVERCURRENT PROTECTION
FIRE DAMPER	OSA	OUTSIDE AIR
SMOKE/FIRE DAMPER	RA	RETURN AIR
SMOKE DETECTOR	SA	SUPPLY AIR
MANUAL VOLUME DAMPER	TSP	TOTAL STATIC PRESSURE
FLEXIBLE CONNECTION	UTR	UP THRU ROOF
	WMS	GALVANIZED WIRE MESH SCREEN
	U/C	UNDERCUT DOOR 1"

AIR OUTLET SCHEDULE

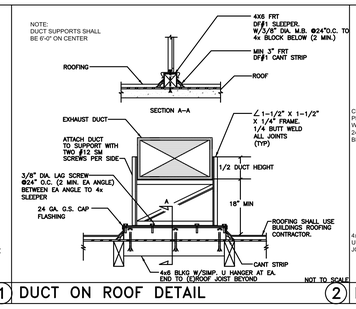
UNIT	TYPE	MODEL	ACCESSORIES (NECK SIZE SHALL MATCH ROUND DUCT SIZE SERVING DEVICE IN-TBAR CLG (24X24 FACE SIZE)
CD-1	CEILING DIFFUSER	TITUS TMSA-AA	ALUMINUM WITH PATTERN CONTROLLER & T-BAR FRAME
CD-2	CEILING DIFFUSER	TITUS TMS-AA	ALUMINUM WITH T-BAR FRAME
CD-3	CEILING DIFFUSER	TITUS 25D-AA	ALUMINUM WITH PATTERN CONTROLLER, BORDER TYPE 3 18"x18" GRILLE SIZE, 24"x24" PANEL SIZE, FOR TBAR CEILING
DL	DRUM LOUVER	TITUS DL	PROVIDE OPTIONAL DAMPER
CG	CEILING GRILLE	TITUS 50F	22"x22" SIZE WITH FRAME #3
CR	CEILING REGISTER	TITUS 50F	FRAME #1 & OBD
EG	EXHAUST GRILLE	TITUS 50F	ALUMINUM
ER	EXHAUST REGISTER	TITUS 350FL	ALUMINUM WITH OBD
RG	RETURN GRILLE	TITUS 50F	ALUMINUM
RAG	RETURN AIR GRILLE	TITUS 350F	ALUMINUM
TG	TRANSFER GRILLE	TITUS 350F	ALUMINUM
SG	SUPPLY AIR GRILLE	TITUS 300FL	ALUMINUM
SR	SUPPLY AIR REGISTER	TITUS 300FL	ALUMINUM WITH OBD

NECK SIZE SAME AS DUCT SIZE UNLESS NOTED OTHERWISE.



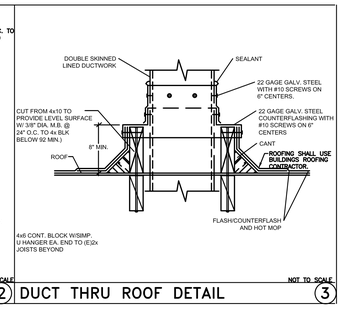
DUCT SUPPORT PARALLEL TO TRUSSES
NOT TO SCALE

DUCT SUPPORT DETAILS (1)



NOT TO SCALE

DUCT ON ROOF DETAIL (2)



NOT TO SCALE

DUCT THRU ROOF DETAIL (3)

EXHAUST FAN SCHEDULE

SYMBOL	MAKE & MODEL NUMBER	LOCATION	SERVICE	CFM	E.S.P. (IN. W.G.)	RPM	DRIVE	ELECTRICAL H.P.	ELECTRICAL VOLTS-PH-HZ	OPER. WEIGHT (LBS.)	ATTACH. DETAIL	REMARKS
EF 3	COOK 245ACRUB-HP	ROOF	POOL RESTROOMS	7,800	0.625	1220	BELT	3	460V-3Ø-60	200		FURNISH BIRD SCREEN, BACKDRAFT DAMPER, HINGED BASE TO INSTALL ON EXISTING CURB.

NOTES:
A. INTERLOCK WITH EXISTING CONTROLS AND NEW RTU/POOL.

AGENCY NOTE: REQUIREMENT OF 10'-0"(ten feet) BETWEEN AIR INTAKE OPENINGS AND PLUMBING EXHAUST VENT OUTLETS (CMC 311.3)

ROOF TOP PACKAGE UNIT SCHEDULE

SYMBOL	MAKE & MODEL NUMBER	LOCATION	SERVICE	CFM	OSA	COOLING CAPACITY TOTAL	COOLING CAPACITY SENSIBLE	COOLING EER	COOLING IEER	HEATING TYPE	HEATING INPUT (BTUH)	HEATING OUTPUT (BTUH)	HEATING COP	HEATING AFUE(%)	E.S.P. (IN. W.G.)	ELECTRICAL BHP	ELECTRICAL VOLTS-PH-HZ	ELECTRICAL MCA	ELECTRICAL MOCP	POWER EXHAUST	NEW EQMT. WEIGHT (LBS.)	ATTACH. DETAIL	REMARKS
RTU POOL	AAON RNA-020--C-A-3-GABOB 20 TON GAS ELEC.	ROOF	POOL SUPPLY	8,200	2,000	268,400	230,100	11.86	15.19	GAS	540,000	432,000	NA	80	1.00	7.5	460-3Ø-60	54	70	NA	3500 W/CURB		FURNISH WITH FACTORY POWERED CONVENIENCE OUTLET,14" STANDARD ROOF CURB, SITE CONTROLS INTERFACE, DOWN SUPPLY/BACK RETURN UNIT. AAON FACTORY TO BLOCK STANDARD RETURN AND PROVIDE FLANGED CONNECTION FOR REAR RETURN, 4548 UNIT, TWO VARIABLE CAPACITY COMPRESSORS 8 ROW EVAP COIL, 25 YEAR STAINLESS STEEL GAS HEAT EXCHANGER, HIGH TURNDOWN MODULATING GAS HEAT, 4" MERV 8 FILTERS, MODULATING HOT GAS REHEAT, NON FUSED DISCONNECT, SMOKE CONTROL SHUTDOWN TERMINALS, PHASE AND BROWNOUT PROTECTION, CAV UNIT CONTROLLER, FIELD WIRED GFI OUTLET, INSULATED UNIT BASE, CONDENSER COIL GUARDS, DOUBLE WALL 2500 HRS PAINTED UNIT

NOTES:
A. PROVIDE SITE CONTROLS EMS INTERFACE CAPABILITY.
B.

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JOB NO. 2023-009

NO	DATE	DESCRIPTION
1	06/20/24	MECHANICAL 90% PROGRESS
2	07/15/24	MECHANICAL BUILDING DEPT SUBMITTAL

DESIGNED ABW | DRAWN ABW | CHECKED LAZ | DATE 05/01/24

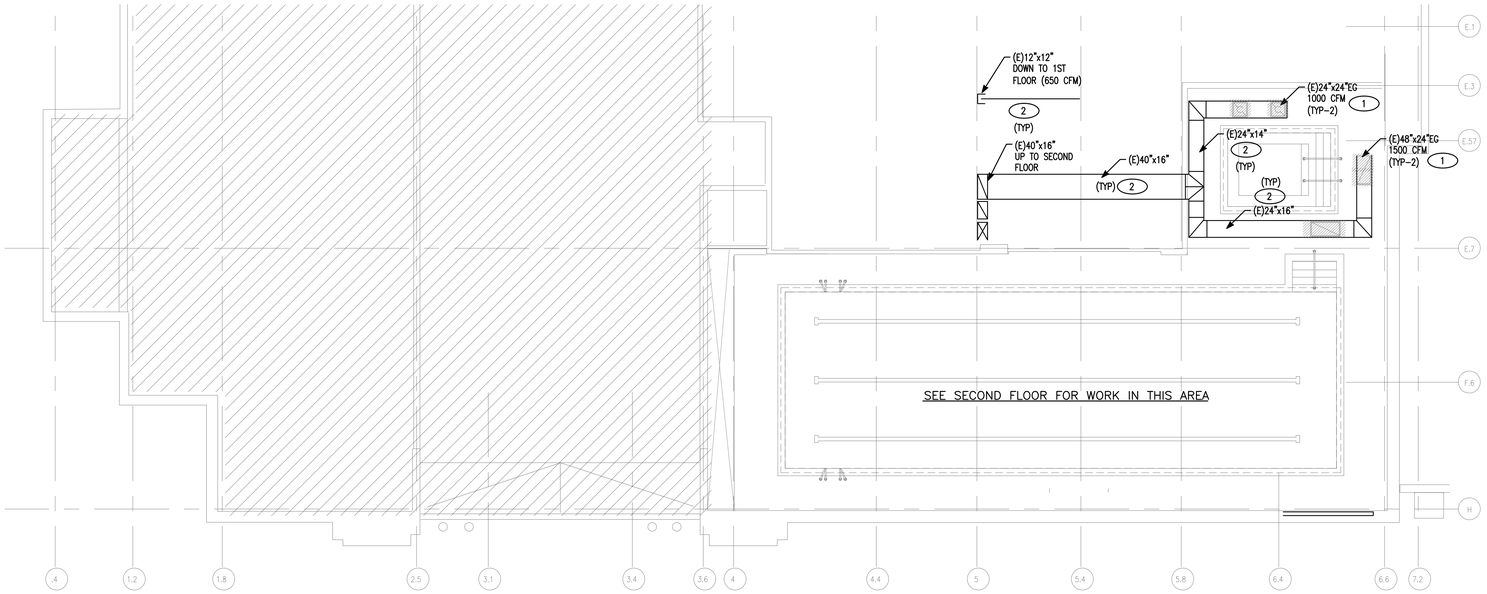
PROJECT
24 HOUR FITNESS
75 W ROUTE 59
NANUET, NY 10954

DRAWING TITLE
MECHANICAL LEGEND NOTES AND SPECIFICATIONS

DRAWING NO.
M1.0

SHEET OF

PROJECT NO.
2023-009



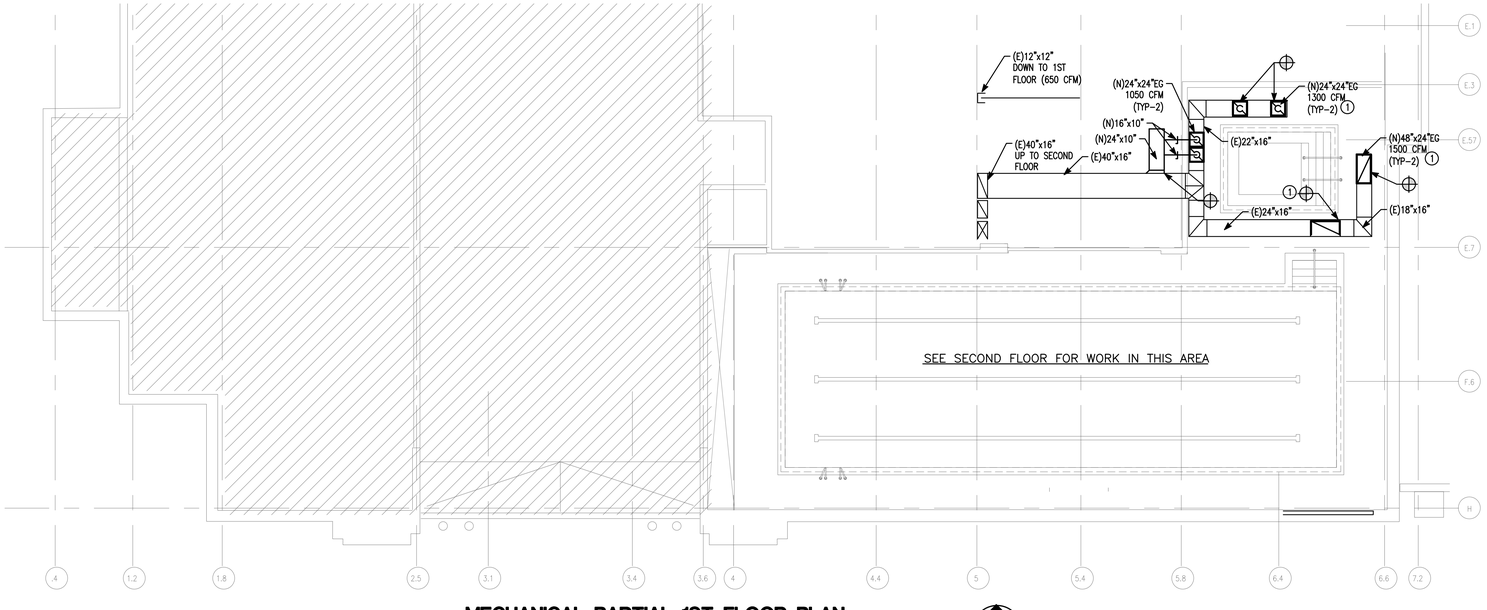
MECHANICAL PARTIAL 1ST FLOOR DEMO PLAN

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

PLAN NORTH

SHEET SPECIFIC DEMO NOTES:

1. EXISTING CEILING EXHAUST GRILLE SHALL BE DEMOLISHED, PREPARE FOR INSTALLATION OF NEW EXHAUST GRILLE. SEE PLAN THIS SHEET.
2. EXISTING DUCTING TO REMAIN.
3. EXISTING CEILING SUPPLY AIR GRILLES TO REMAIN.



MECHANICAL PARTIAL 1ST FLOOR PLAN

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

PLAN NORTH

SHEET SPECIFIC NEW WORK NOTES:

1. NEW CEILING EXHAUST GRILLE TO BE INSTALLED IN EXISTING DUCTING.
2. NEW CEILING EXHAUST GRILLE TO BE INSTALLED IN EXISTING DUCTING.
3. TRANSITION AND OFFSET SUPPLY AIR DUCT WITH-IN NEW CURB AND EXISTING CURB TO CONNECT TO EXISTING DUCT THRU ROOF.
4. DUCT DOWN THRU ROOF, FLASH AND COUNTERFLASH ROOF PENETRATION, UTILIZE MALLS ROOFING CONTRACTOR FOR ALL ROOF WORK.
5. INSTALL NEW PACKAGE UNIT AND CURB ON EXISTING PLATFORM. FLASH AND COUNTERFLASH CURB TO PLATFORM AND SECURE TO CURB TO PLATFORM, UTILIZE MALLS ROOFING CONTRACTOR FOR ALL ROOF WORK. FIELD VERIFY EXACT LOCATION OF NEW POOL UNIT ON EXISTING PLATFORM TO FACILITATE THE SUPPLY AIR CONNECTION TO EXISTING DROP THRU ROOF AND MINIMIZE REVISION TO ROOF PLATFORM.
6. EXISTING SCREEN WALL, NEW UNIT INSTALLATION SHALL NOT EXCEED HEIGHT OF SCREEN WALL.
7. INSTALL NEW EXHAUST FAN ON EXISTING 30"x30" ROOF CURB. FLASH AND COUNTERFLASH CURB TO PLATFORM AND SECURE TO CURB TO PLATFORM.

NO	DATE	DESCRIPTION
1	06/20/24	MECHANICAL 90% PROGRESS
2	07/15/24	MECHANICAL BUILDING DEPT SUBMITTAL

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JOB NO. 2023-009

DESIGNED	DRAWN	CHECKED	DATE
ABW	ABW	LAZ	05/01/24

PROJECT

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75 W ROUTE 59
NANUET, NY 10954

DRAWING TITLE

MECHANICAL
1ST FLOOR
PLAN

DRAWING NO.

M1.1

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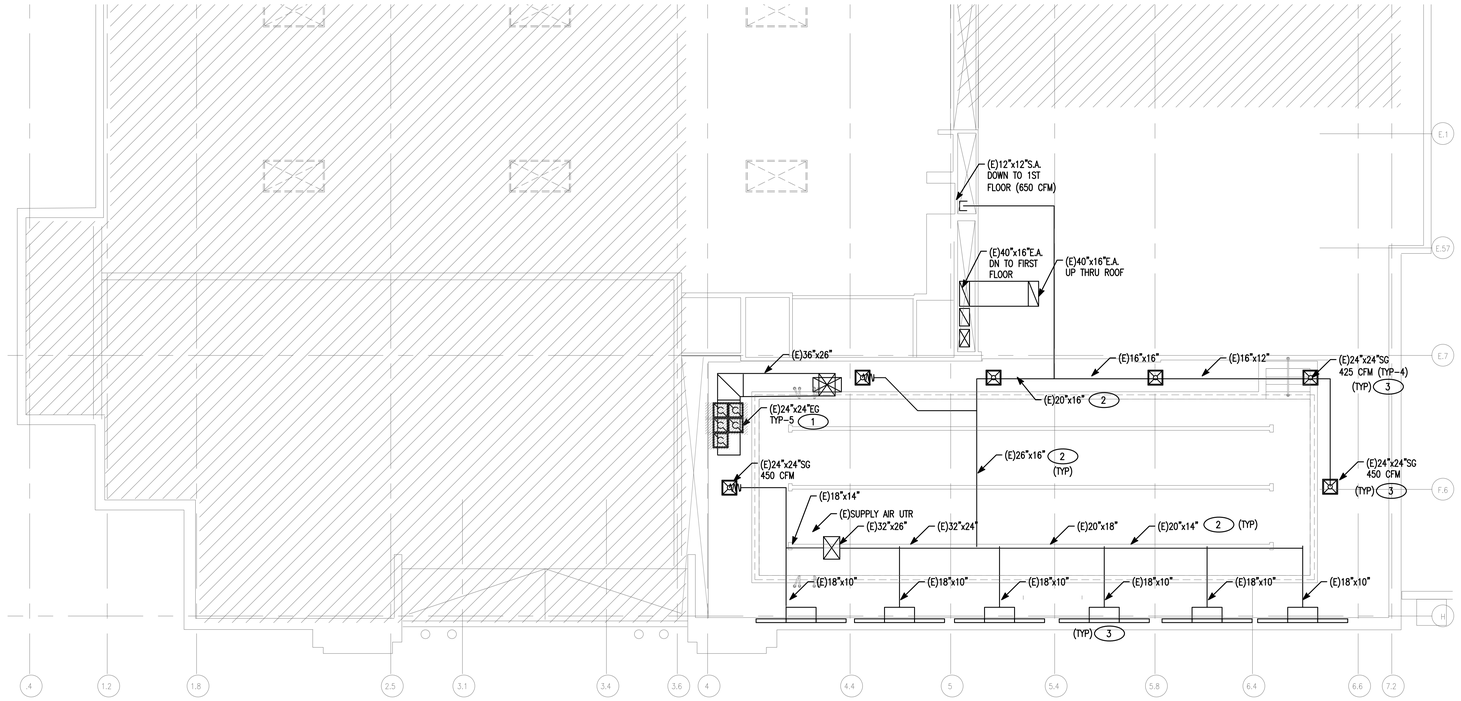
2023-009



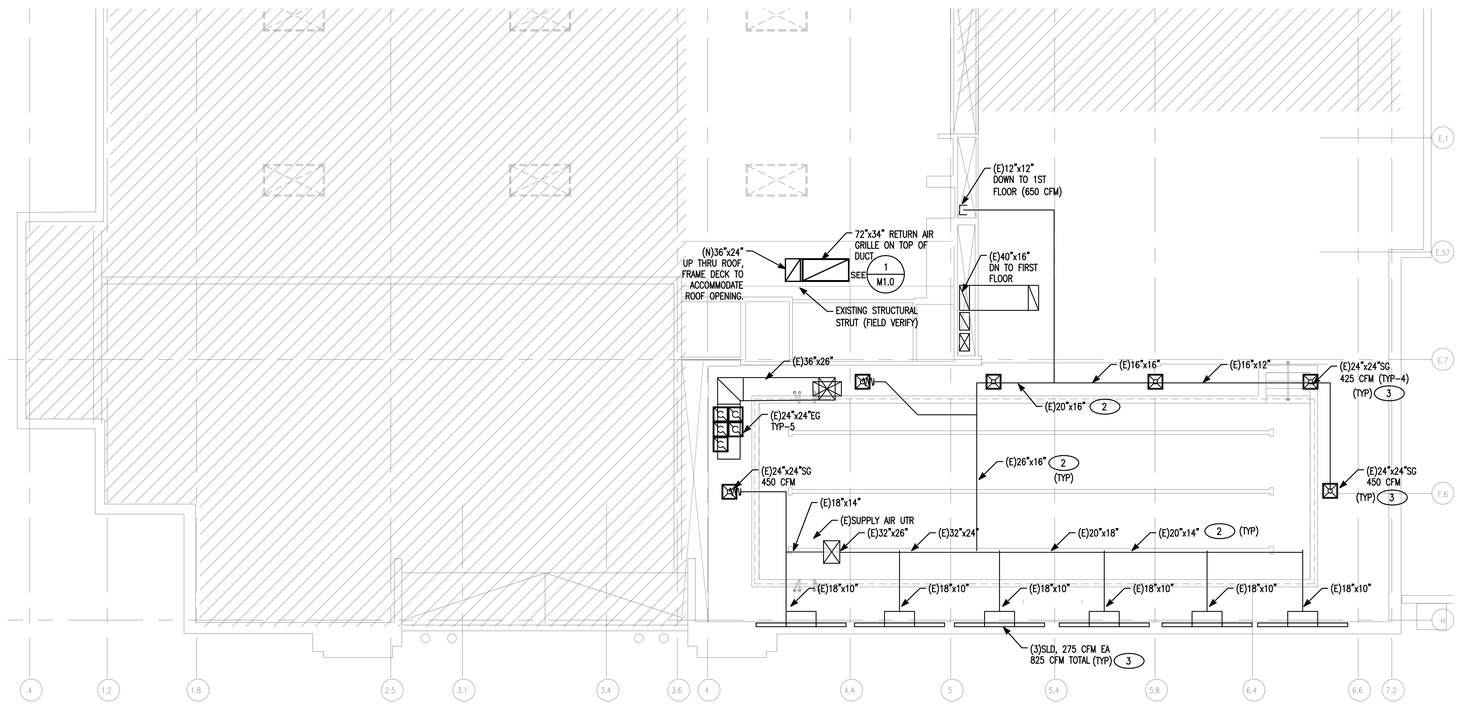
MECHANICAL PARTIAL 2ND FLOOR DEMO PLAN

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

PLAN NORTH

SHEET SPECIFIC DEMO NOTES:

1. EXISTING CEILING RETURN GRILLES SHALL BE DEMOLISHED. REPLACE WITH NEW CEILING TILES.
2. EXISTING DUCTING TO REMAIN.
3. EXISTING CEILING SUPPLY AIR GRILLES TO REMAIN.



MECHANICAL PARTIAL 2ND FLOOR NEW WORK PLAN

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

PLAN NORTH

SHEET SPECIFIC NEW WORK NOTES:

1. NEW CEILING EXHAUST GRILLE TO BE INSTALLED IN EXISTING DUCTING.
2. NEW CEILING EXHAUST GRILLE TO BE INSTALLED IN EXISTING DUCTING.
3. TRANSITION AND OFFSET SUPPLY AIR DUCT WITH-IN NEW CURB AND EXISTING CURB TO CONNECT TO EXISTING DUCT THRU ROOF.
4. DUCT DOWN THRU ROOF, FLASH AND COUNTERFLASH ROOF PENETRATION, UTILIZE MALLS ROOFING CONTRACTOR FOR ALL ROOF WORK.
5. INSTALL NEW PACKAGE UNIT AND CURB ON EXISTING PLATFORM. FLASH AND COUNTERFLASH CURB TO PLATFORM AND SECURE TO CURB TO PLATFORM, UTILIZE MALLS ROOFING CONTRACTOR FOR ALL ROOF WORK. FIELD VERIFY EXACT LOCATION OF NEW POOL UNIT ON EXISTING PLATFORM TO FACILITATE THE SUPPLY AIR CONNECTION TO EXISTING DROP THRU ROOF AND MINIMIZE REVISION TO ROOF PLATFORM.
6. EXISTING SCREEN WALL, NEW UNIT INSTALLATION SHALL NOT EXCEED HEIGHT OF SCREEN WALL.
7. INSTALL NEW EXHAUST FAN ON EXISTING 30"x30" ROOF CURB. FLASH AND COUNTERFLASH CURB TO PLATFORM AND SECURE TO CURB TO PLATFORM.

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DESIGNED	DRAWN	CHECKED	DATE
ABW	ABW	LAZ	05/01/24

PROJECT

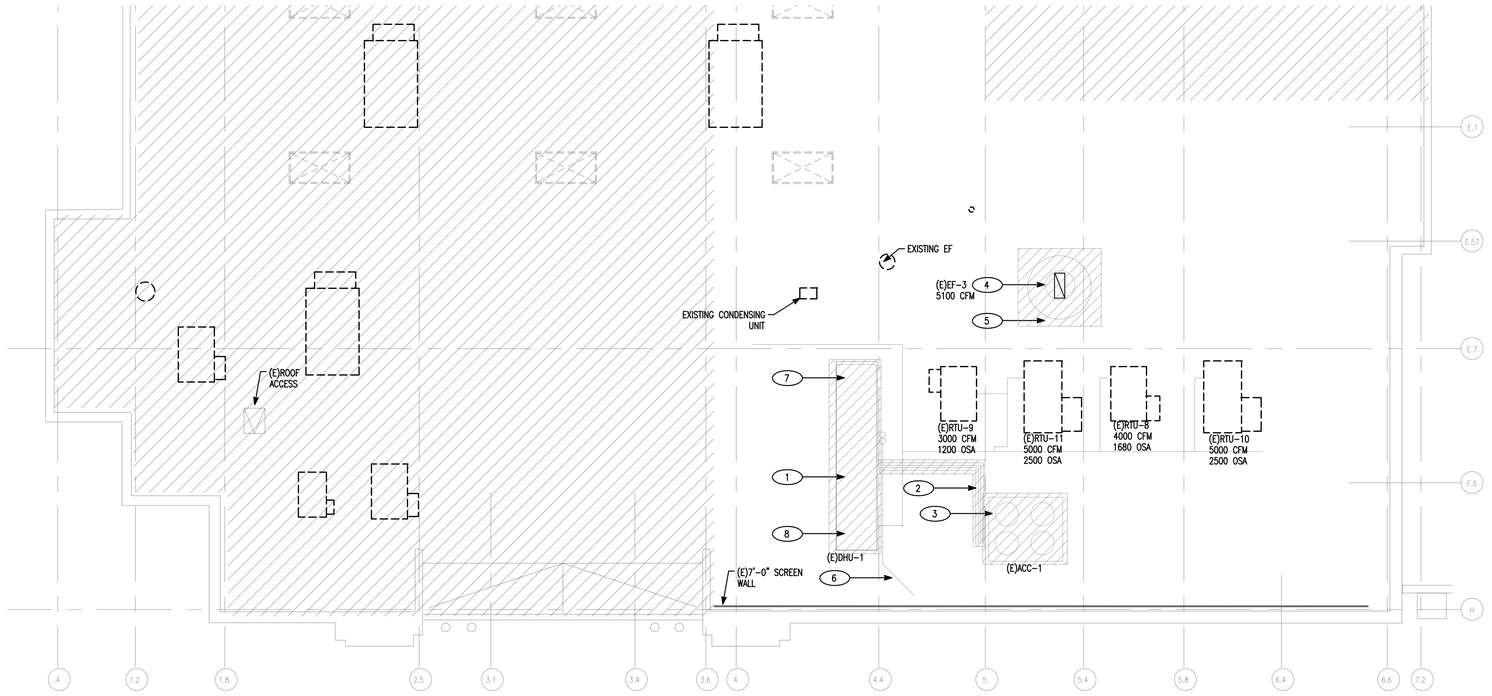
24 HOUR FITNESS
75 W ROUTE 59
NANUET, NY 10954

DRAWING TITLE

MECHANICAL
2ND FLOOR
PLANS

DRAWING NO.
M1.2
SHEET OF

PROJECT NO.
2023-009



MECHANICAL PARTIAL ROOF DEMO PLAN

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

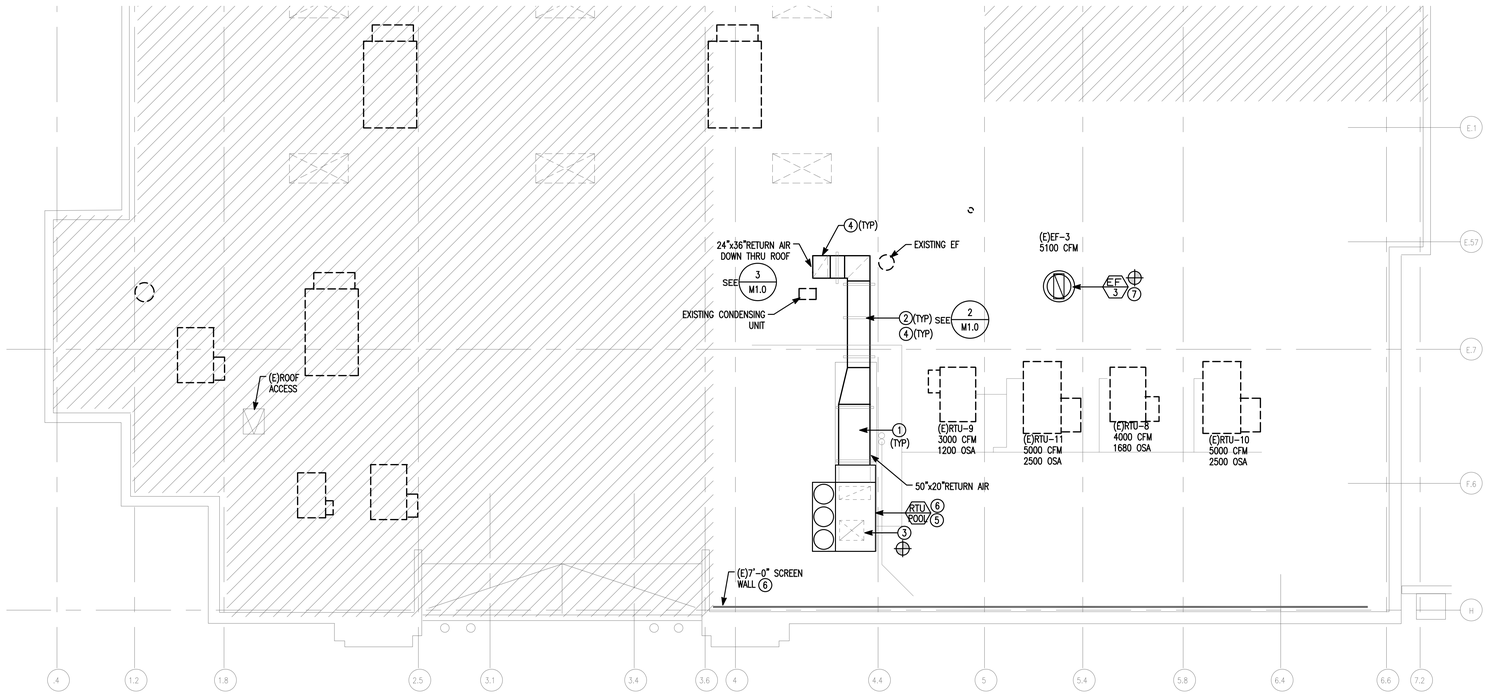
PLAN NORTH

SHEET SPECIFIC DEMO NOTES:

1. EXISTING DEHUMIDIFIER AIR HANDLING UNIT, INCLUDING STRUCTURAL CURB TO BE DEMOLISHED. PROTECT EXISTING PLATFORM WATERTIGHT INTERGRIDITY.
2. EXISTING REFRIGERATION PIPING AND ELECTRICAL TO BE DEMOLISHED INCLUDING PIPE SUPPORTS. PROTECT EXISTING ROOFING WATERTIGHT INTERGRIDITY.
3. EXISTING DEHUMIDIFIER CONDENSING UNIT, INCLUDING STRUCTURAL CURB TO BE DEMOLISHED. SEAL BOLT HOLES INTO STRUCTURAL PIERS WATERTIGHT, PROTECT EXISTING PLATFORM WATERTIGHT INTERGRIDITY.
4. EXISTING EXHAUST FAN TO BE DEMOLISHED. EXISTING CURB TO BE REUSED, PROTECT EXISTING CURB FROM DAMAGE.
5. EXISTING EXHAUST FAN PLUME COATING ON ROOF SHALL BE REMOVED, MALLS ROOFER SHALL INVESTIGATE THE CONDITION OF THE ROOF THAT IS EXPOSED.
6. EXISTING CONDENSATE DRAIN PIPING TO BE DEMOLISHED INCLUDING PIPE SUPPORTS. PROTECT EXISTING ROOFING WATERTIGHT INTERGRIDITY.
7. EXISTING RETURN AIR DUCT SHALL BE CAPPED OFF BELOW PLATFORM DECK, PATCH ROOF PLATFORM WATER-TIGHT.
8. EXISTING SUPPLY AIR DUCT SHALL BE CUT BACK TO ALLOW TRANSITION TO NEW SUPPLY AIR DUCT BELOW PLATFORM DECK. AREA SHALL BE WATERPROOFED BY NEW EQUIPMENT CURB.

SHEET GENERAL NOTES:

1. FIELD VERIFY ALL EQUIPMENT LOCATIONS, CURB SIZES, SCREEN WALL HEIGHTS, DUCTS THRU ROOF LOCATIONS AND DIMENSIONS, ETC.



MECHANICAL PARTIAL ROOF NEW WORK PLAN

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

PLAN NORTH

SHEET SPECIFIC NEW WORK NOTES:

1. DUCTING SHALL BE INSULATED TO R=8, BROKE FOR DRAINAGE, SEALED WATERTIGHT.
2. NEW DUCT SUPPORT, SEE DETAIL.
3. TRANSITION AND OFFSET SUPPLY AIR DUCT WITH-IN NEW CURB AND EXISTING CURB TO CONNECT TO EXISTING DUCT THRU ROOF.
4. DUCT DOWN THRU ROOF, FLASH AND COUNTERFLASH ROOF PENETRATION, UTILIZE MALLS ROOFING CONTRACTOR FOR ALL ROOF WORK.
5. INSTALL NEW PACKAGE UNIT AND CURB ON EXISTING PLATFORM. FLASH AND COUNTERFLASH CURB TO PLATFORM AND SECURE TO CURB TO PLATFORM, UTILIZE MALLS ROOFING CONTRACTOR FOR ALL ROOF WORK. FIELD VERIFY EXACT LOCATION OF NEW POOL UNIT ON EXISTING PLATFORM TO FACILITATE THE SUPPLY AIR CONNECTION TO EXISTING DROP THRU ROOF AND MINIMIZE REVISION TO ROOF PLATFORM.
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SHEET GENERAL NOTES:

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DRAWING TITLE

MECHANICAL ROOF PLANS

DRAWING NO.

M1.3

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