WAREHOUSE AND OFFICE HEADQUARTERS

45 BLOWERS CRES, AJAX, ON,L1Z 0N4

CONTENT	ISSUED FOR	DATE	PROJECT NO.
MECHANICAL DRAWINGS	PERMIT	JUNE 30, 2025	FH2024029

	DRAWING SCHEDULE
DWG. NO	DRAWING TITLE
M-000	COVER SHEET AND DRAWING LIST
M-001	MECHANICAL SPECIFICATION
M-002	MECHANICAL SPECIFICATION AND LEGEND
M-003	MECHANICAL SCHEDULE
M-004	MECHANICAL DETAILS
M-100	GROUND FLOOR MECHANICAL HVAC PLAN
M-101	SECOND FLOOR MECHANICAL HVAC PLAN
M-200	GROUND FLOOR MECHANICAL PLD PLAN
M-201	SECOND FLOOR MECHANICAL PLD PLAN
M-300	GROUND FLOOR MECHANICAL SP PLAN
M-301	SECOND FLOOR MECHANICAL SP PLAN
M-400	MECHANICAL ROOF PLAN

 NOISSUED FOR
 DATE

 1 50% REVIEW
 2024-05-29

 2 FINAL REVIEW
 2024-07-08

 3 PERMIT
 2025-06-30

FARHEATER ENGINEERING

INC.

15 ALLSTATE PARKWAY, SUITE 633 MARKHAM, ONTARIO, L3R 5B4 CONTACT@FARHEATER.COMWWW.FARHEATER.COMTELL: 437-999-2424



STAMP:



PROJECT NAME:
WAREHOUSE AND
OFFICE
HEADQUARTERS

PROJECT ADDRESS:

45 BLOWERS CRES,AJAX, ON,L1Z 0N4

NORTH:

DRAWN BY: DATE: H.L 2024-05-14

CHECKED BY:

F.M N.T.S.

DRAWING TITLE:

COVER SHEET AND DRAWING LIST

PROJECT NUMBER:

DRAWING NUMBER:

FH2024029

MECHANICAL SPECIFICATIONS

1.1. 1.2.	COMPLY WITH ALL REQUIREMENTS OF DIVISION 1, OWNER, PROJECT MANAGER AND/OR CONSTRUCTION MANAGER. PERFORM ALL MECHANICAL WORK DETAILED ON THESE DRAWINGS IN ACCORDANCE WITH THE MOST STRINGENT INDUSTRY STANDARDS TO PROVIDE A COMPLETE AND FULLY OPERATIONAL SYSTEM TO THE SATISFACTION OF THE	1.3
	OWNER AND/OR MECHANICAL CONSULTANT.	1.2

GENERAL

WORK SPECIFIED ON THESE DRAWINGS IS INTENDED TO SHOW OVERALL MECHANICAL SCOPE, DIVISION OF RESPONSIBILITY BETWEEN MECHANICAL CONTRACTOR AND THEIR SUB-TRADES IS THE RESPONSIBILITY OF THE PRIME MECHANICAL CONTRACTOR.

- NO SYSTEM SHALL BE CONCEALED/BURRIED/COVERED PRIOR TO INSPECTION BY MECHANICAL CONSULTANT AND LOCAL AUTHORITIES HAVING JURISDICTIONS. THIS CONTRACTOR SHALL CONTACT FARHEATER ENGINEERING INC. A MINIMUM OF 5 BUSINESS PRIOR TO REQUIRED INSPECTION DATE. WHEN SYSTEMS HAVE BEEN CONCEALED/BURRIED/COVERED PRIOR TO THIS INSPECTION WITHOUT WRITTEN CONSENT BY THE MECHANICAL CONSULTANT, THE MECHANICAL CONTRACTOR SHALL UNCOVER/EXPOSE ALL SUCH SYSTEMS AT NO ADDITIONAL
- THE MOST RIGOROUS OF THIS SPECIFICATION AND BASE BUILDING STANDARDS SHALL FORM THE BASIS FOR THIS CONSTRUCTION. COMPLY WITH BUILDING OWNER'S OR LANDLORD'S REQUIREMENTS FOR MECHANICAL SYSTEM INSTALLATIONS AND EXISTING SYSTEM SHUTDOWN AND CONNECTION.
- OBTAIN AND PAY FOR ALL REQUIRED PERMITS AND FEES TO PERFORM THE WORK WITHIN THESE DOCUMENTS. ADHERE TO ALL CODES, STANDARDS AND BYLAWS. ARRANGE AND PAY FOR ALL REQUIRED INSPECTIONS FROM LOCAL AUTHORITY'S HAVING JURISDICTION. INCLUDE ALL COSTS ASSOCIATED TO THIS IN TENDER AMOUNT. ANY DEFICIENCIES NOTES BY AUTHORITY'S HAVING JURISDICTION SHALL BE IMMEDIATELY REPORTED TO THE MECHANICAL CONSULTANT INCLUDING REQUIRED CORRECTIVE MEASURES.
- INCLUDE IN THE TENDER AMOUNT ALL REQUIRED LABOUR AND MATERIALS TO SUIT EXISTING CONDITIONS. NO EXTRAS WILL BE AWARDED TO SUIT EXISTING CONDITIONS. CUTTING, PATCHING AND CORE DRILLING REQUIRED BY THIS TRADE SHALL BE PAID FOR FOR BY THIS CONTRACTOR
- OWNER/LANDLORD STRUCTURAL ENGINEER'S REQUIREMENTS. PROVIDE DETAILS OF NEW OPENINGS THROUGH TRUCTURAL COMPONENTS FOR BASE BUILDING STRUCTURAL ENGINEER'S APPROVAL AT MECHANICAL PROVIDE ALL REQUIRED FIRE STOPPING FOR MECHANICAL SYSTEMS THROUGH RATED PARTITIONS (INCLUDING

ARRANGE AND PAY TO X-RAY AND SCAN EXISTING CONCRETE STRUCTURES IN ACCORDANCE WITH

- 0-HOUR RATED PARTITIONS.) FIRE STOP SHALL BE ULC LISTED FOR THE REQUIRED SEPARATION AND BE INSTALLED INC ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTION. ALL FIRE STOPPING SHALL BE REVIEWED BY MANUFACTURER'S REP. ACCEPTABLE MANUFACTURER'S: 3M, HILTI
- 10. MEET CONSTRUCTION SPECIFICATION AS PREPARED BY ARCHITECT/GENERAL CONTRACTOR/OWNER INCLUDING ALL
- INCLUDE ALL PREMIUM LABOUR TO SUIT REQUIREMENTS AS LISTED WITHIN THESE DOCUMENTS. AND TO MEET PROJECT SCHEDULING. CONFIRM WITH OWNER /LANDLORD FOR SUITABLE AFTER-HOURS WORK SCHEDULE.
- FLASHING AND COUNTER FLASHING FOR EXTERIOR PENETRATIONS OR WATER-PROOFED FLOORS SHALL BE PROVIDED BY MECHANICAL CONTRACTOR'S SUB-CONTRACTORS AND INCLUDED IN MECHANICAL TENDER PRICE. USE PREFABRICATED ALUMINUM OR PVC FLASHINGS FOR ROOF, AND MEMBRANE OR COPPER FOR WALLS AND FLOORS. ENSURE ALL OPENINGS THROUGH VERTICAL AND HORIZONTAL BUILDING SURFACES PROOF AND WATER PROOF, USING AN APPROVED ELEXIBLE SEALANT
- 3. ALL EQUIPMENT SHALL FROM A MANUFACTURER LISTED WITHIN THESE DOCUMENTS AS BEING BASIS OF DESIGN OR APPROVED. WHERE A LIST OF APPROVED MANUFACTURERS IS NOT PROVIDED, PROVIDE EQUIPMENT FROM MANUFACTURER LIST ON THE DOCUMENTS. REQUESTS FOR EQUIPMENT SUBSTITATION SHALL BE PROVIDED IN WRITING INCLUDING PROPOSED COST SAVINGS FOR SAID EQUIPMENT. THE QUALITY AND PERFORMANCE CHARACTERISTICS OF SUBSTITUTED PRODUCT SHALL BE EQUIVALENT TO THE SPECIFIED PRODUCT, ALL SUBSTITUTE PRODUCTS SHALL BE APPROVED BY CONSULTANTS, ANY ADDITIONAL COSTS INCURRED BY THE MECHANICAL
- 14 ALL CONTROLS WORK SHALL BE PERFORMED BY OWNER'S/LANDLORD'S APPROVED CONTRACTOR AND INCLUDED IN 2.1.1. SUBMIT PDF COPIES OF BALANCING REPORTS ONCE SYSTEMS MEET THRESHOLDS NOTED ABOVE. MECHANICAL TENDER PRICE. ENSURE CONTROLS CONTRACTOR INCLUDES ALL LABOUR AND MATERIAL REQUIRED TO COMPLETE THE CONTROLS SCOPE OF WORK DETAILED ON THESE DRAWINGS PROVIDE ALL CONTROLS WIRING AND 2.1.2. TEST ALL CONTROL SYSTEMS INCLUDING FUNCTION OF THERMOSTATS AND READINGS OF CONTROL POINTS. CONDUIT TO PERFORM SAID WORK. INCLUDE ALL HIGH VOLTAGE POWER WIRING AND TRANSFORMERS AS REQUIRED
- COMPLETE THIS WORK, WHICH IS NOT EXPRESSLY CALLED FOR ON ELECTRICAL DRAWINGS. ACCESS DOORS SHALL BE PROVIDED IN ALL HARD SURFACES TO ALLOW FOR INSPECTION/MAINTENANCE OF MECHANICAL SYSTEMS. ACCESS DOOR FINISHES SHALL BE AS PER ARCHITECT'S/DESIGNER'S/ENGINEER'S REQUIREMENTS. PROVIDE ACCESS DOORS WITH SUITABLE RECESS TO ACCEPT WALL FINISHES (TILE, CARPET, ETC.
- PROVIDE FIRE RATED ACCESS DOORS IN FIRE RATED PARTITIONS. .16. PROVIDE ONE YEAR LABOUR AND MATERIAL WARRANTY FOR THE COMPLETE MECHANICAL INSTALATION FROM DATE
- SUBMIT OPERATING AND MAINTENANCE MANUALS IN PDF FORMAT FOR REVIEW. ONCE APPROVED SUBMIT FINAL PDF COPY AND THREE (3) HARD COPIES OF DOCUMENTS TO OWNER, INCLUDE ALL APPROVED SHOP DRAWINGS. ARRANTY LETTERS, AIR AND WATER BALANCING REPORTS, OPERATING INSTRUCTIONS, MAINTENANCE PROCEDURES, CONTRACTOR AND SUB-CONTRACTOR CONTACT INFORMATION, INSPECTION REPORTS FROM THIRD PARTY INSPECTION AGENCIES AND AUTHORITIES HAVING JURISDICTION AND ALL OTHER PERTANANT INFORMATION. FINAL HARD-COPY SHOP DRAWINGS SHALL BE SEPARATED WITH DIVIDERS IN A NEAT AND ORDERLY FASHION COMPLETE WITH TABLE OF CONTENTS. ALLOW A MINIMUM OF 5% OF CONTRACT VALUE TO BE HELD UNTIL SUCH TIME
- THAT OPERATING AND MAINTENANCE MANUALS ARE ACCEPTED AND RECEIVED BY OWNER IN HARD COPY. 18 AS-BUILT DRAWINGS SHALL BE COMPLETED USING AUTOCAD. RECORD ACCURATELY INSTALLED WORK ON SITE AND TRANSFER INFORMATION TO AUTOCAD. SUBMIT BOTH PDF AND AUTOCAD COPIES AS-BUILT. ALLOW A MINIMUM OF 5%
- OF CONTRACT VALUE TO BE HELD UNTIL SUCH TIME THAT AS-BUILT DRAWINGS ARE APPROVED. 19. CHANGE NOTICE QUOTATIONS SHALL BE SUBMITTED COMPLETE WITH DETAILED COST BREAKDOWN OF LABOUR AND MATERIALS. FAILURE TO PROVIDE DETAILED BREAKDOWNS WILL RESULT IN REJECTION. ALL MECHANICAL CHANGE NOTICES SHALL BE PRICED IN ACCORDANCE WITH "MECHANICAL CONTRACTORS ASSOCIATION" (MCA) LABOUR UNITS AND MARK UPS (NOT TO EXCEED 20%). ALL MATERIALS SHALL BE IDENTIFIED INCLUDING ALLPRISER LIST PRICE, AND
- I.20. TEMPORARY FILTERS 25MM (1 IN.) SHALL BE PROVIDED AT ALL BASE BUILDING RETURN AIR OPENINGS WHICH REMAIN OPERATIONAL DURING CONSTRUCTION. FILTERS TO BE REPLACED WHEN 50% USABLE LIFT REMAINS OR WEEKLY WHICHEVER COMES FIRST). REMOVE UPON CONSTRUCTION COMPLETION.

21. RETURN ALL BASE BUILDING MECHANICAL COMPONENTS TO LANDLORD/OWNER AS DIRECTED. COORDINATE

- WITHIN THE PROPERTY AS PER LANDLORD/OWNER'S DIRECTION. 1.22. THE MECHANICAL CONTRACTOR SHALL BE SOLELY RESPONSIBLE TO KEEP ALL AREAS PERTAINING TO HIS WORK, INCLUDING CONSTRUCTION AREA. STORAGE AND STAGING CLEAN AND TIDY, ALL AREAS SHALL BE FREE OF SURPLUS
- 1.23. DO NOT ALLOW MATERIAL/EQUIPMENT TO BE STORED IN EXCESS OD BUILDING STRUCTURE LIMITATION.
- 1.24. MECHANICAL CONTRACTOR SHALL PROTECT ALL EXISTING PROPERTY AND ADJACENT PROPERTIES FROM DAMAGE INCLUDING WORK COMPLETED BY OTHER TRADES WITHIN THE PROJECT SCOPE OF WORK MECHANICAL CONTRACTOR SHALL BE FULLY RESPONSIBLE TO PAY FOR CORRECTIVE MEASURES TO ALL DAMAGE CAUSED BY THEM, THEIR PERSONNEL OR THEIR SUB-TRADES.
- 1.25. DIVISION 15 CONTRACTORS ARE RESPONSIBLE TO ENSURE THAT THEIR EMPLOYEES AND SUB-TRADES OBSERVE A SAFETY REGULATIONS, SECURITY REGULATIONS AND FIRE SAFETY RULES, INCLUDING CONDUCT THEIR WORK WITHIN ACCORDANCE WITH LOCAL WORKPLACE HEALTH AND SAFETY REGULATIONS.
- I.26. ALL MATERIALS SHALL BE NEW, (UNLESS SPECIFICALLY STATED AS BEING USED) AND FREE OF DEFECT. AL MATERIALS AND EQUIPMENT SHALL BARE THE APPROVAL OF LOCAL AUTHORITIÉS (INCLUDING CSA, ULC ETC.) AND BE
- 7. ALL EQUIPMENTS SHALL MEET THE MINIMUM PERFORMANCE SPECIFIED IN THESE DOCUMENTS INCLUDING SPATIAL PROPERTIES. SUPPLY EQUIPMENT FROM THE BASIS OF DESIGN. OR APPROVED ALTERNATE MANUFACTURERS AS LISTED ON THESE DOCUMENTS. BASE BID PRICE SHALL INCLUDE EQUIPMENT AS SPECIFIED ON THESE DRAWINGS WITH OPTIONAL EQUIPMENT SUBSTITUTIONS LISTED AS COST SAVINGS.
- L28 REQUESTS FOR ALTERNATE FOLIPMENT MANUFACTURERS SHALL BE PROVIDED IN WRITING AND INCLUDE ALL RELEVANT PERFORMANCE AND CONSTRUCTION INFORMATION. INCLUDE IN REQUEST COST SAVING TO OWN OFFERED TO USE ALTERNATE EQUIPMENT. DO NOT PROCEED WITH ALTERNATE MANUFACTURER WITHOUT WRITTEN
- I.30. PROVIDE ALL REQUIRED SUPPORTS, HANGERS RODS, FRAMES, MISCELLANEOUS METALS AND OTHER MATERIAL REQUIRED TO ADEQUATELY SUPPORT AND INSTALL NEW EQUIPMENT. ALL SUPPORTS SHALL BE DESIGNED AND
- STAMPED BY A STRUCTURAL ENGINEERING LICENSED IN THE PROVIDE OF THE PROJECT. SUBMIT ALL STAMPED SUPPORT SHOP DRAWINGS FOR REVIEW PRIOR TO ORDERING EQUIPMENT. .31. INSTALL SUPPORTS TO MEET REQUIREMENTS OF APPLICABLE CODES, AND TO SUITABLE SUPPORT THE EQUIPMENT VITHOUT UNDER STRESS/STRAIN TO THE EQUIPMENT AND ASSOCIATED SYSTEMS
- 32. ALL EQUIPMENT SHALL BE SUPPORTING FROM BUILDING STRUCTURES, DO NOT SUPPORT EQUIPMENT FROM OTHER EQUIPMENT/PIPES/DUCTS OR THEIR SUPPORT SYSTEMS .33. PROVIDE LAMACOID NAME PLATES ON ALL NEW AND EXISTING MECHANICAL EQUIPMENT SHOWING VOLTAGE
- DESIGNATION, CRU# AND USE. NUMBERS AND LETTERS TO BE 3/8" (10MM) HIGH. NAME PLATES SHALL BE PERMANENT AND NOT FADE OVER TIME. .34. IDENTIFY ALL VALVES WITH TAGS, PROVIDE A FRAMED LIST OF VALVES, INDICATING THEIR LOCATION AND USE. SUPPLY TO OWNER/TENANT. PROVIDE NEW (OR UPDATE) VALVE TAG LOCATION MAP ON FRAMES 11X17 PRINTS

PROVIDE PDF COPIES TO OWNER.

EQUIPMENT AND SYSTEMS WITH OTHER CONTRACTORS INCLUDING, BUT NOT LIMITED TO, ARCHITECTURAL, STRUCTURAL, LEED, ELECTRICAL, AND CIVIL DISCIPLINES

1.1. THIS MECHANICAL CONTRACTOR SHALL BARE THE RESPONSIBILITY TO COORDINATE ALL NEW MECHANICAL

- MECHANICAL CONTRACTOR SHALL BE FULLY RESPONSIBLE AND TAKE IN PROVIDING INTERFERENCE DRAWINGS FOR ALL TRADES, OBTAIN ALL INFORMATION FROM OTHER TRADES AND PREPARE ONE COMBINED SET OF ITERFERENCE DRAWINGS. SITE VERIFY ALL EXISTING INFORMATION INCLUDING ALL DIMENSIONS OF EXISTING STRUCTURE AND EQUIPMENT AND INCLUDE IN INTERFERENCE DRAWINGS.
- ALL MECHANICAL FINISHES AND LOCATIONS SHALL BE REVIEWED AND APPROVED BY ARCHITECTURAL DIVISION AND/OR OWNER INCLUDING, BUT NOT LIMITED TO, AIR TERMINALS, THERMOSTATS/CONTROLS, EXPOSED INSULATION/ DUCTWORK. WHERE A DISCREPANCY EXISTS BETWEEN MECHANICAL AND ARCHITECTURAL DRAWINGS S TO THE LEVEL OF FINISHED REQUIRED, THE MOST STRINGENT/COSTLY REQUIREMENTS SHALL BE CARRIED IN THE TENDER AMOUNT, OBTAIN CLARIFICATION FOR FINAL FINISH PRIOR TO ORDERING
- ALL MECHANICAL FOLIPMENT WEIGHTS, SUPPORTS, AND OPENING SHALL BE REVIEWED AND APPROVED BY A STRUCTURAL ENGINEER. WHEN APPLICABLE, HIRE BASE BUILDING STRUCTURAL ENGINEER TO PERFORM ALL SUCH REVIEWS. MECHANICAL CONTRACTOR SHALL PAY FOR ALL SUCH REVIEWS AND INCLUDE COST IN TENDER
- **EQUIPMENT START-UP AND BALANCING** PROVIDE ALL TEMPORARY FOR ALL NEW MECHANICAL FOUIPMENT, START UP REPORT SHALL BE PREPARED BY A
- FACTORY TRAINED REPRESENTATIVE AND SHOW THAT THE EQUIPMENT IS IN GOOD CONDITION PROVIDE ALL TEMPORARY POWER, GAS, AND OTHER UTILITIES AS REQUIRED TO PERFORM START UP OF
- THIS CONTRACTOR SHALL VISIT THE SITE TO REVIEW EXISTING CONDITIONS PRIOR TO SUBMITTING TENDER PRICING. 2.3. PERFORM BALANCING OF MECHANICAL SYSTEMS ONCE ALL COMPONENTS ARE INSTALLED AND PRESSURE TESTED
 - JTILITIES IF EQUIPMENT TO BE BALANCED PRIOR TO SAID SERVICES BEING IN PLACE TO SUIT PROJECT SCHEDULE. WHERE START UP OF EQUIPMENT OCCURS WHILE THE BUILDING IS STILL IN CONSTRUCTION, REPLACE ALL FILTERS AND STRAINERS AFTER START UP.

. PERFORM BALANCING TO SUIT PROJECT SCHEDULE. IF REQUIRED PAY AND PROVIDE ALL TEMPORARY POWER AND

- 6. GENERALLY SPEAKING ALL CEILINGS, WALLLS, DOORS, WINDOWS, PLENUMS, SHEET METAL, AND BUILDING OMPONENTS AFFECTING THE PERFORMANCE OF A UNIT SHALL BE FULLY COMPLETE PRIOR TO THE BALANCING.
- LL BALANCING SHALL BE COMPLETED BY A SINGLE FIRM INCLUDING BOTH AIR AND WATER SYSTEMS. FOLLOWING SYSTEMS SHALL BE BALANCED:
- 2.8. AIR SYSTEMS SHALL TESTED ONCE THE DUCTWORK SYSTEMS ARE COMPLETED AND SEALED. FILTERS ARE CLEAN. FAN ROTATION HAS BEEN VERIFIED TO BE IN THE CORRECT DIRECTION, ALL CONTROL ELEMENTS INCLUDING THERMOSTATS, SMOKE, DETECTORS, AND DUCT MOUNTED SENSORS ARE INSTALLED, COILS ARE CLEAN, DUCT ACCESS DOORS ARE CLOSED, ALL FIRE/SMOKE/CONTROL DAMPERS ARE INSTALLED AND FUNCTIONAL.
- TEST ALL AIR SYSTEMS TO BE +/- 5% OF THE DESIGN VALUES. 2.8.2. PERFORM REBALANCING OF SYSTEMS AS MANY AS REQUIRED TO OBTAIN SUITABLE READINGS. 2.8.3. BALANCING DAMPERS WHICH EXHIBIT VIBRATION AND OR NOISE SHALL BE REPLACED.
- ONCE AIR SYSTEMS ARE BALANCED. ALLOW SYSTEMS TO CONTINUE TO RUN FOR FIVE DAYS, AFTER RUNNING REPLACE ALL FILTERS. INSPECT ALL MOVING COMPONENTS AND CONFIRM SYSTEM OPERATION, PRODUCE ALL ADDITIONAL NOISE/IBRATION CONTROL ELEMENTS TO ELIMINATE EXCESS NOISE/VIBRATION. LUBRICATE ALL MOVING PART AND REPAIR ANY NOTICEABLE DEFECTS IN THE SYSTEM 2.10 WATER SYSTEMS SHALL BE TESTED ONCE ALL PIPE WORK IS COMPLETE, FILLED, PRESSURE TESTED, VENTED AND
- VOID OF AIR, PUMPS PROVEN TO OPERATE IN CORRECT DIRECTION, STRAINERS IN PLACE AND CLEANED, ALL VALVES AND CIRCUIT BALANCING VALVES ARE INSTALLED AND SYSTEMS ARE COMPLETE.
- 2.10.1. TEST ALL WATER SYSTEMS TO BE +/- 5% OF THE DESIGN VALUES. 2.10.2. PERFORM REBALANCING OF SYSTEMS AS MANY TIMES AS REQUIRED TO OBTAIN SUITABLE READINGS.
- COMPLETION OF CONTRACT 3.1. THE MECHANICAL CONTRACTOR SHALL PROVIDE ALL LABOUR AND MATERIAL TO INSTALL ALL SYSTEMS SHOWN
- AND/OR IMPLIED ON THESE DRAWINGS IN GOOD WORKING ORDER. 3.2. A MINIMUM OF 10% OF THE CONTRACT VALUE SHALL BE RESERVED FOR PROJECT COMPLETION
- 3.3. AT THE COMPLETION OF THE PROJECT PROVIDE THE FOLLOWING INFORMATION TO THE CONSULTANT FOR REVIEW:
- 3.3.2. AS BUILT DRAWINGS IN AUTOCAD AND PDF FORMAT CLOSE OUT DOCUMENTS INCLUDING A BINDER OF APPROVED SHOP DRAWINGS, TAB REPORTS, AND 07M MANUALS.
- 3.3.4. NFPA 13 SIGN OFF LETTER IF APPLICABLE
- 3.4. SCHEDULE WORK TO MEET PROJECT SCHEDULE. ARRANGE TO PROVIDE CLOSE OUT DOCUMENTS PRIOR TO SCHEDULE COMPLETION TO ENSURE NO DELAY IN PROJECT CLOSE
- ALL SYSTEMS SHALL BE COMPLETED AND FULLY FUNCTIONAL AT PROJECT COMPLETION. REPLACE ALL FILTERS AND STRAINERS AT PROJECT COMPLETION. ENSURE ALL TEMPORARY CONSTRUCTION AIDS, AND OR CONSTRUCTION DEBRIS IS REMOVED FROM SITE. WHERE WORKING IN EXISTING BUILDING, ALL EXISTING FINISHES TO REMAIN SHALL

- COMPLY WITH THE REQUIREMENTS OF DIVISION 01, THE OWNER/LANDLORD, PROJECT MANAGER AND CONSTRUCTION MANAGER WITH ALL REGARDS TO DEMOLITIONS.
- INCLUDE FOR ALL PERMITS AND FEES TO PERFORM THE EXTENT OF THE DEMOLITION WORK IN THESE DOCUMENTS. INCLUDING FEES AND TAXES ASSOCIATED WITH THE DISPOSAL OF HAZARDOUS SUBSTANCES. ARRANGE AND PAY FOR A WASTE GENERATION NUMBER FOR THE PROPERTY TO ALLOW FOR THE REMOVAL OF SAID ITEMS.
- 1.3 PROVIDE ALL DEMOLITION OF MECHANICAL SYSTEMS AS SHOWN ON THESE DRAWINGS AND REFERRED TO ON REQUIREMENTS WITH OWNER/LANDLORD PRIOR TO COMMENCEMENT OF DEMOLITION, RELOCATE ALL COMPONENTS
 - PERFORM ALL DEMOLITION WORK IN ACCORDANCE WITH THE REQUIREMENTS OF CAN/CSA-S350 CODE OF PRACTICE FOR SAFETY IN DEMOLITION OF STRUCTURES, ONTARIO BUILDING CODE, ONTARIO FIRE CODE, OCCUPATION HEALTH AND SAFETY ACT, AND ALL LOCAL CODES, BY-LAWS AND REGULATION IN THE JURISDICTION OF THE WORK FOR THE
 - NOTE TO REMOVE OR DEMOLISH A PIECE OF EQUIPMENT, SYSTEMS, OR MECHANICAL INFRASTRUCTURE SHALL BE

PROVIDE ALL NECESSARY SUPPORTS, LIFTS, PLATFORMS, HOISTS, AND/OR INFRASTRUCTURE REQUIRED TO

- IMPLY REMOVAL OF THE SYSTEM IN ITS ENTIRETY INCLUDING ALL SUPPORTS, ACCESSORIES AND OTHER ITEMS THA ARE NO LONGER REQUIRED. WHERE DOUBT EXISTS TO THE EXTENT OF THE REMOVAL OBTAIN WRITTEN
- WHERE REMOVAL OF MATERIAL WILL BE CARRIED OUT BY OTHER TRADES, CUT, CAP, AND MAKE SAFE ALL MECHANICAL SYSTEMS TO ALLOW FOR THIS REMOVAL INCLUDING DRAINING AND DISPOSING OF ANY SYSTEM
- PROVIDE DEMOLITION WORK SCHEDULE TO THE OWNER AND CONSULTANT IMMEDIATELY UPON CONTRACT AWARD DEMOLITION SCHEDULE SHOW INCLUDE AREAS OF WORK, TIME OF WORK, SYSTEM DOWN TIMES, SYSTEM TIE-OVER 1.8.1. ALL EQUIPMENT SHUT DOWNS SHALL ONLY BE STARTED AFTER RECEIVING WRITTEN APPROVAL FROM OWNER.
- PROVIDE A MINIMUM OF 5 BUSINESS DAYS NOTICE FOR SHUT-DOWN OF EXISTING SYSTEMS. 1.8.2. ALL DOWNTIME TO SYSTEMS SERVING OCCUPIED AREAS OF THE BUILDING SHALL BE LIMITED TO AFTER HOURS TIME
- INCLUDE ALL ASSOCIATED WITH THE DAMAGED SYSTEM. ALL DAMAGE SHALL BE NOTIFIED TO THE RELEVANT BASE OWNER AND CONSULTANT IMMEDIATELY UPON OCCURRING. THIS CONTRACTOR SHALL PROTECT ALL BUILDING SYSTEMS IN THE AREA OF THE MECHANICAL DEMOLITION WORK
- FOR THE FULL DURATION OF THIS PROJECT. ANY BUILDING SYSTEMS DAMAGED BY MECHANICAL BUILDING TRADE ASSOCIATED WITH THE DAMAGED SYSTEM. ALL DAMAGE SHALL BE NOTIFIED TO THE OWNER AND CONSULTANT .29. ADHERE TO ALL BASE BUILDING STANDARDS FOR NEW EQUIPMENT. OBTAIN OWNER/LANDLORD APPROVAL FOR ALL IMMEDIATELY UPON OCCURRING .10. THE SCOPE AND EXTENT OF THE DEMOLITION OR REVISIONS TO WORK IS ONLY GENERALLY INDICATED ON THE
 - DRAWINGS. VERIFY EXISTING CONDITIONS ON SITE PRIOR TO SUBMITTING BID AND PROVIDE ALL REQUIRED LABOUR AND MATERIAL TO PERFORM FULL SCOPE OF DEMOLITION. SHOULD DOUBT EXIST TO SCOPE OF WORK OBTAIN WRITTEN CLARIFICATION FROM CONSULTANT. NOTE ANY EXISTING BUILDING DEMOLITION AND WORK WITHIN THE CONFINES OF THE EXISTING SYSTEMS. SITE VERIFY EXACT SIZE AND QUANTITY OF MECHANICAL SYSTEMS BEING REMOVED.
 - .12. REFER TO DRAWINGS OF OTHER DISCIPLINES INCLUDING ARCHITECTURAL, STRUCTURAL, AND ELECTRICAL, TO DETERMINE THE FULL EXTENT OF THE PROJECT DEMOLITION AS WELL AS NEW SYSTEMS BEING INSTALLED TO ENSURE THAT MECHANICAL DEMOLITION SCOPE IS FULLY COORDINATED WITH OTHER DISCIPLINES.

- 1.13. PROVIDE ALL REQUIRED VALVES TO FACILITATE THE REMOVAL OF SYSTEMS WITH PORTIONS REMAINING
- 1.13.1. INCLUDE FOR ALL PIPE FREEZING AND SYSTEM DRAINING TO FACILITATE PARTIAL REMOVAL OF SYSTEMS. 1.13.2. WHERE SYSTEMS ARE DRAINED TO ALLOW FOR PARTIAL REMOVAL, INCLUDE ALL REQUIRED LABOUR AND MATERIAL TO FILL AT THE COMPLETION OF THE WORK, HIRE BASE BUILDING CHEMICAL TREATMENT FIRM TO BRING SYSTEM CHEMICAL TREATMENT BACK UP TO PRE-CONSTRUCTION LEVELS EACH TIME SYSTEMS IS
- WHERE REMOVAL OF MECHANICAL SYSTEMS REQUIRED ELECTRICAL, ARCHITECTURAL OR STRUCTURAL WORK TO PERFORM A FULL AND COMPLETE REMOVAL, HIRE SAID TRADES TO PERFORM SAID WORK. WHERE REMOVING EXISTING VALVES, REMOVE ALL VALVE TAGS AND UPDATE VALVE TAG CHART IN MECHANICAL
- WHERE DEMOLITION OCCURS IN EXISTING BUILDING TO REMAIN, PERFORM ALL WORK TO MINIMIZED DISRUPTION O OPERATING AREAS OF THE BUILDING. ONLY USE CORRIDORS, BUILDING ENTRANCES, ELEVATORS, ESCALATORS, STAIRWELLS, AND LOADING AREAS AS APPROVED BY THE OWNER. WHERE PASSAGE IS REQUIRED HROUGH OPERATING SECTIONS OF THE BUILDING, PERFORM SAID WORK AFTER HOURS AND ARRANGE AND PAY FOR FULL CLEAN UP OF AREAS BE BASE BUILDING CLEANING STAFF PRIOR TO THE START OF THE NEXT
- WHERE DEMOLITION IS REQUIRED IN ACTIVE AREAS OF THE BUILDING, ARRANGE AND PAY FOR SECURITY TO PRESENT FOR FULL DURATION OF THE DEMOLITION, INCLUDE ALL TEMPORARY PROTECTION OF BUILDING SPACES SHALL BE CLEANED AND REINSTATED A MINIMUM OF 1 HOUR BEFORE THE NEXT BUSINESS DAY.
- ALL MATERIAL SHALL BE REMOVED FROM SITE AND DISPOSED OF IN ACCORDANCE WITH LOCAL JURISDICTIONS. RECYCLE ALL CONTENT SUITABLE FOR RECYCLING. DO NOT STORE DEMOLISHED EQUIPMENT/MATERIAL ON SITE.
- ALL EQUIPMENT/MATERIAL SCHEDULED TO BE RETURNED TO THE OWNER SHALL BE RELOCATED TO THE OWNER SHALL BE RELOCATED ANYWHERE WITHIN PROPERTY FOR SUITABLE STORAGE. PROTECT EQUIPMENT/MATERIAL
- FOR THE FULL DURATION OF THE PROJECT. INCLUDE FOR THE REMOVAL OF ALL HAZARDOUS WASTE SUCH AS THAT FOUND WITHIN DRAINAGE PITS, INTERCEPTORS, AND THE LIKE.
- OBTAIN THE BUILDING HAZARDOUS SUBSTANCES REPORT FROM THE OWNER PRIOR TO COMMENCEMENT OF WORK. ADHERE TO ALL REQUIREMENTS OF THE HAZARDOUS SUBSTANCE GUIDELINES FOE THE BUILDING.
 WHERE HAZARDOUS SUBSTANCES ARE FOUND IN SITE, INCLUDING BUT NOT LIMITED TO THE ASBESTOS AND/OR MOLD, IMMEDIATELY STOP WORK AND NOTIFY OWNER AND CONSULTANT. DO NOT RETURN TO AREA OF WORK UNTIL SUCH TIME AS SAID SUBSTANCE HAS BEEN ABATED AND REMOVED FROM SITE BY SPECIALIZED
- RECLAIM AND DISPOSE OF ALL REFRIGERANT IN ACCORDANCE WITH LOCAL BY-LAWS, STANDARDS AND
- 1.23. WHERE MECHANICAL SYSTEMS BEING REMOVED RUN THROUGH WALLS/FLOORS/ROOFS/EXTERIOR SURFACES 1.23.1. HIRE BASE BUILDING ROOFING AND WATERPROOFING CONTRACTORS TO MAKE GOOD ALL PENETRATIONS
- THROUGH BUILDING EXTERIOR. 1.23.2. WHERE REMOVING ROOF TOP EQUIPMENT ON CURBS, REMOVE ASSOCIATED CURB AND MAKE GOOD ROOF

- GENERAL COMPLY WITH ALL REQUIREMENTS OF DIVISION 1, OWNER, PROJECT MANAGER AND/OR CONSTRUCTION
- COORDINATE THE WORK OF THIS ALL TRADES. INCLUDE FOR ALL MATERIAL AND LABOUR TO INSTALL THESE

SYSTEMS TO SUIT THE EXISTING AND NEW SYSTEMS OF OTHER TRADES.

- UNLESS OTHERWISE SPECIFIED, CONSTRUCT AND INSTALL ALL DUCTWORK IN ACCORDANCE WITH ANSI/SMACNA
- HVAC DUCT CONSTRUCTION STANDARDS USING A MINIMUM PRESSURE CLASSIFICATION OF POSITIVE OR NEGATIVE 500 PA (2" W.C) AND A MINIMUM VELOCITY OF 10 M/S (2000 FPM) SUCH THAT THE DUCTWORK DOES NOT
- FOR DUCTWORK SUBJECTED TO MORE THAN 500 PA (2" W.C) POSITIVE/NEGATIVE PRESSURE, CONSTRUCT DUCTWORK TO MEET ANSI/SMANCA DUCT STANDARD TO SUIT APPLICABLE PRESSURE CLASSIFICATION PLUS 10%
- STANDARD DUCTWORK SHALL BE CONSTRUCTED FROM GALVANIZED STEEL SHEETS, HOT DIPPED IN ACCORDANCE WITH ASTM A653. GALVANIZING FOR BARE UNCOVERED DUCTS TO BE FINISH PAINTED TO BE G60. ALL OTHER GALVANZING TO BE G90
- FABRICATE AND INSTALL DUCTWORK TO ENSURE INTERIOR SURFACE IS SMOOTH AND FREE OF OBSTRUCTIONS, ND THAT DUCTWORK DOES NOT VIBRATE OR CREATE NOISE ONCE SYSTEMS ARE IN OPERATION
- DUCTWORK HANGERS SHALL BE FABRICATED AND INSTALLED IN ACCORDANCE WITH LATEST SMACNA STANDARDS AS A MINIMUM INCLUDE ALL ADDITIONAL SUPPORTS AS REQUIRED TO SUIT SYSTEMS SPECIFIES AND ENSURE A FULLY OPERATIONAL AND VIBRATION FREE DUCTWORK SYSTEM.
- FLEXIBLE DUCTWORK SHALL BE SPIRALLY WOUND, SEMI-RIGID, SELF SUPPORTING CORRUGATED ALUMINUM DUCT WITH CONTINUOUS TRIPLE LOCK SEAMS. ULC-S110 LISTED AND LABELLED AS A CLAS 1 AIR DUCT. CONSTRUCTED OF DEAD SOFT ALUMINUM STRIP FACTORY COVERED WITH 40MM (1'-1/2"), 12 KG/M³ (0.75 LB/FT³) DENSITY
- FIBERGLASS INSULATION WITH VINYL JACKET MEETING FLAME AND SMOKE DEVELOPMENT REQUIREMENTS OF AN/ULC S-102. BASIS OF DESIGN SHALL BE NOVAFLEX GROUND T/L-A TRIPLE LOCK ACOUSTIC DUCT. FLEXIBLE DUCTS SERVING DIFFUSERS/GRILLES SHALL HAVE A MAX LENGTH OF 2400 MM (8'-0"). FLEXIBLE DUCTS SERVING TERMINAL CONTROL UNITS (VAV/FAN POWERED VAV) SHALL HAVE A MAXIMUM LENGTH 12000 MM (4'-0")
- AND A MINIMUM Of 3 DUCT DIAMETERS OF STRAIGHT LENGTH. ALL FLEXIBLE DUCTWORK SHALL BE INSTALLED WITHOUT EXCESS LENGTH AND SUPPORTED IN ACCORDANCE VITH ANSI/SMACNA HVAC DUCT CONSTRUCTION STANDARDS.
- FIRE DAMPERS SHALL BE INSTAMD IN ALL DUCTWORK PASSING FIRE RATED PARTITIONS, DAMPERS SHALL BE CURTAIN BLADE TYPE, DYNAMIC, GALVANIZED STEEL FUSIBLE LINK DAMPERS, ULC CLASSIFIED TO STANDARD CAN/ULC-S112 AND IN ACCORDANCE WITH NFPA 90A.
- DAMPERS SHALL BE OUT OF STREAM TYPE UNLESS SIZE OR LOCATIONS DICTATES THE USE OF IN STREAM
- 2.12. FIRE DAMPERS SHALL BE SELECTED IN ACCORDANCE WITH THE RATING OF THE PARTITION AND LOCAL CODES DBC). MINIMUM DAMPER RATING SHALL 1.5 HOURS WITH 74C (165F) FUSIBLE LINK (UNLESS APPLICATION REQUIRED HIGHER TEMPERATURE RATING). PROVIDE ACCESS DOORS IN DUCTS AND HARD SURFACES AS REQUIRED TO ACCESS AND MAINTAIN FIRE
- 2.14. PROVIDE CURTAIN OR PARALLEL BLADE TYPE DAMPERS TO MAINTAIN FIRE RATING INTEGRITY OF MEMBRANI BEING PIERCED. MINIMUM RATING TO BE 1-1/2 HOURS WITH {1000C} [2120F] FUSIBLE LINK. PROVIDE MULTIPLE
- FIRE DAMPERS SHALL BE MANUFACTURED BY NAILOR INDUSTRIES INC, GREENHECK FAN CORP, NCA MANUFACTURING OR RUSKIN CO. SELECT DAMPERS TO SUIT ORIENTATION, SIZE, REQUIRED RATING, AND ALL OTHER FACTORS REQUIRED.
- ROVIDE FLEXIBLE DUCT CONNECTIONS BETWEEN ALL AIR HANDLING EQUIPMENT AND SYSTEM DUCTWORK. FLEXIBLE DUCT CONNECTIONS SHALL BE 0.68 mm (0.027") THICK WOVEN FIBERGLASS WITH POLYCHLOROPRENE COATING MEETING NFPA 90A/90B, NFPA-701 AND CAN/ULC S109-03. DURODYNE NEOPRENE FLEXIBLE CONNECTOR
- PROVIDE ALL MANUAL BALANCING DAMPERS AS SHOWN ON DRAWINGS AND AS REQUIRED TO PROVIDE FULLY BALANCED HVAC SYSTEMS. PROVIDE BALANCING DAMPERS IN EXISTING DUCTWORK AS REQUIRED TO BALANCED YSTEM TO PERFORMANCE LEVELS SHOWN ON THE DRAWINGS. BALANCING CONTRACTOR SHALL BE A MEMBER II GOOD STANDING OF AABC OR NEBC. SUBMIT BALANCING REPORT IN PDF FORMAT TO THE CONSULTANT FOR REVIEW. BALANCING REPORT SHALL INCLUDE LEGIBLE DRAWINGS INDICATED TERMINAL LOCATION. ALL BALANCING SHALL BE COMPLETED WITHIN +/- 3% OF VALUES LISTED WITHIN DOCUMENTS. REPLACE/ADJUST FAN HEAVES, BELTS AND PULLEYS AS REQUIRED TO OBTAIN DESIGN AIR QUANTITIES. INDICATE DESIGN AND ACTUAL PERFORMANCE OF EACH EQUIPMENT AND TERMINAL PROVIDE TEN (10) ADDITIONAL HOURS OF BALANCING WORK AFTER INITIAL APPROVED BALANCING TO SUIT TENANT COMFORT BALANCING. THIS WORK SHALL BE PERFORMED AFTER THE TENANT HAS MOVED IN, AS MAY BE REQUIRED FOR COMFORT BALANCING. WHERE REQUIRED HIRE
- BASE BUILDING TESTING/BALANCING CONTRACTOR AND INCLUDE COST WITHIN MECHANICAL TENDER. 8. BALANCING DAMPERS SHALL BE BY NAILOR INDUSTRIES, TAMCO, GREENHECK, NCA OR GREENHECK

PLUMBING AND DRAINAGE

PROVIDE ALL PLUMBING AND DRAINAGE SYSTEMS COMPLETE WITH ALL EQUIPMENT, PIPING, CONNECTIONS SUPPORTS, HANGERS AND ACCESSORIES TO PROVIDE A FULLY COMPLETE AND FUNCTIONAL SYSTEM, PROVIDE ALL SYSTEMS BETWEEN UTILITY CONNECTIONS (WATER AND DRAINAGE) AND EQUIPMENT AND/OR CAPPED

PRESSURE TEST ALL PIPING SYSTEMS IN ACCORDANCE WITH LOCAL & PROVINCIAL CODES FOR LEAKS, BEFORE

- PROVIDE ALL PLUMBING FIXTURES INCLUDING ALL REQUIRED TRIM AND SUPPORTS. COORDINATE FIXTURE FINISHES AND ACCESSORIES WITH ARCHITECTURAL DMSION. ROUGH-IN AND PROVIDE FINAL CONNECTION TO ALL EQUIPMENT.
- PROVIDE ALL REQUIRED FIRE EXTINGUISHERS IN ACCORDANCE WITH OBC, OFC AND NFPA STANDARDS.
- INSULATION IS ADDED. SUBMIT REPORT TO THE OWNER AND A COPY TO THE ENGINEER. PROVIDE ALL TRENCHING AND BACKFILLING REQUIRED FOR DIVISION 15 WORK.
- ALL PLUMBING FIXTURES SHALL BE VENTED IN ACCORDANCE WITH LOCAL PLUMBING CODES, CONNECT NEW VENTING TO EXISTING SYSTEMS OR PROVIDE NEW VENTING SYSTEMS WHERE EXISTING ARE NOT SUFFICIENT PRIME ALL TRAPS AS REQUIRED TO MEET CODE REQUIREMENTS AND REQUIREMENTS OF LOCAL AUTHORITIES
- PROVIDE NEW TRAP SEAL PRIMERS AS NECESSARY. ALL PLUMBING FIXTURES SHALL BE INSTALLED IN CONFORMANCE WITH MANUFACTURER'S RECOMMENDATIONS
- FOR UNDERGROUND INSTALLATIONS, PROVIDE SUITABLE BEDDING, COVERAGE AND SLOPE TO EASE DRAINAGE.
- PROVIDE TEMPORARY CAPS AND/OR SCREEN ON ALL SYSTEMS DURING CONSTRUCTION TO PREVENT DEBRIS FROM ENTERING. AT THE COMPLETION OF CONSTRUCTION, FLUSH All SYSTEMS TO REMOVE DEBRIS.
- 12 SEPARATE DISSIMILAR METALS BY MEANS OF GASKETS. DI-ELECTRIC UNIONS OR COUPLINGS THAT PREVENT ELECTROLYTIC ACTION. (E.G. BRASS BETWEEN COPPER AND STEEL)
- COORDINATE THE INSTALLATION OF ALL PLUMBING AND DRAINAGE SYSTEMS WITH OTHER TRADES, INSTALL SYSTEMS AS HIGH AS POSSIBLE. SUPPORT ALL SYSTEMS FROM BUILDING STRUCTURE. 1.14. PROVIDE SUITABLE DRAIN DOWN LOCATIONS FOR ALL SYSTEMS. INSTALL SYSTEMS TO ALLOW THEM TO BE
- .15. PROVIDE ALL POINT OF USE CSA APPROVED BACKFLOW PREVENTERS AT EQUIPMENT AS REQUIRED BY CODE AND AS SHOWN ON THESE DRAWINGS. ALL BACKFLOW PREVENTER SHALL DRAIN TO SUITABLE HUB DRAIN AND BE INSTALLED TO ALLOW FOR INSPECTION. .16. PROVIDE SLEEVES FOR ALL PIPES PASSING THROUGH WALLS, FLOORS AND CEILINGS. SLEEVES SHALL BE
- .17. ALL SYSTEMS SHALL BE SUPPORTED FROM BUILDING STRUCTURE (SUPPORTS FROM OTHER EQUIPMENT OR

SCHEDULE 4-0 BLACK STEEL AND PACKED TO ENSURE A WATER TIGHT INSTALLATION. PROVIDE 3M OR EQUAL FIRE

EXTERIOR OF INSULATION COUPLET£ WITH SADDLES 1.18. EXISTING SANITARY DRAIN LOCATIONS AND INVERT ELEVATIONS SHALL BE VERIFIED ON SITE PRIOR TO

2.1. SANITARY DRAINAGE AND VENT PIPE ABOVE GROUND:

DRAINAGE TO BUILDING DRAINAGE.

- 2-1/2" AND SMALLER TO BE DWV COPPER WITH DWV DRAINAGE FITTINGS WITH 95% TIN/ANTIMONY SOLDER JOINTS. 3" AND LARGER TO BE CSA CLASS 400 CAST IRON PIPE AND FITTINGS WITH MECHANICAL JOINTS 2.2. SANITARY DRAINAGE AND VENT PIPE BELOW GROUND:
- 2-1/2" AND SMALLER TO BE PVC SEWER PIPE AND FITTINGS WITH SOLVENT WELDED FITTINGS. 3" AND LARGER TO BE IPEX RING-TITE SDR35 CSA CERTIFIED TO B182.2 PVC GASKETTED SEWER PIPE.
- DOMESTIC HOT COLD AND RECIRCULATION PIPING TO BE TYPE L HARD COPPER WITH WROUGHT IRON COPPER FITTING WITH 95/5 TIN/ANTIMONY SOLDER JOINTS. PROVIDE NEW KITZ FIG 44 200 PSI SOLDERED GATE VALVES

- PROVIDE ALL LABOUR, MATERIALS, PRODUCTS AND ACCESSORIES TO SUPPLY AND INSTALL A FULLY OPERATIONAL NATURAL GAS DISTRIBUTION SYSTEM IN ACCORDANCE WITH THE LATEST VERSION OF CSA B149, TSSA REGULATIONS AND THE CANADIAN GAS ASSOCIATED'S REQUIREMENTS.
- All SYSTEMS SHALL BE INSTALLED BY PERSONEL LICENSED BY TSSA TO PERFORM SUCH WORK
- PROVIDE ALL SEISMIC CONTROL AND RESTRAINT DEVICES AS REQUIRED TO SUIT LOCAL CODES TAG ALL SYSTEMS WITH INSTALLATION TAG INCLUDING DATE OF INSTALLATION, COMPLIANCE CODE FOLLOWED
- INSTALLING CONTRACTOR INSTALLATION SUPERVISORS, AND DATE OF AHJ INSPECTION, TAGS SHALL NOT FADE OR BE DAMAGED OVER TIME AND BE FULLY LEGIBLE FOR THE LIFE OF THE GAS SYSTEM. ARRANGE AND PAY FOR GAS SERVICE AND METER INSTALLATION TO BE PROVIDED BY LOCAL GAS UTILITY.
- SCHEDULE WORK WITH GAS UTILITY TO MEET ALL CONSTRUCTION SCHEDULES. PROVIDE ALL APPLICATION DOCUMENTS TO UTILITY AS REQUIRED.
- ALL GAS PIPE SHALL BE SCHEDULE 40 MILD BLACK CARBON STEEL, ASTM A53 GRADE B COMPLETE WITH MALLEABLE CAST IRON SCREWED FITTING AND JOINTS FOR PIPES 50MM (2") AND SMALLER, OR BEVELLED AND COMPLETE WITH BUTT WELDED FITTINGS AND JOINTS FOR PIPES 65MM (2-1/2") AND LARGER. SCREWED BALL VALVES SHALL BE CSA CERTIFIED MINIMUM 3100 KPA (450 PSI) WOG RATED 1/4 TURN FULL PORT
- NON-LUBRICATED BRASS BALL VALVES WITH TEFLON PTFE SEAT, CHROME PLATED SOLID BALL AND REMOVABLE LEVEL HANDLE AS MANUFACTURED BY NEO VALVES KITZ, OR TOYO VALVE COMPANY
- PROVIDE ISOLATION VALVES AT ALL EQUIPMENT AND AS REQUIRED BY CSA B149 AND LOCAL CODES AND PROVIDE AND INSTALL ALL PRESSURE REGULATING STATIONS INCLUDING PRESSURE REDUCING AND PRESSURE

RELIEF COMPONENTS AS SHOWN ON DRAWINGS AND AS REQUIRED TO REDUCE BUILDING GAS PRESSURE

- SYSTEMS TO SUIT EQUIPMENT REQUIREMENTS, PROVIDE GAS PRESSURE RELIEF STATIONS DOWNSTREAM OF ALL PRESSURE REDUCING STATIONS 3.10 ALL PRESSURE REGULATING STATION SHALL BE VENTED TO ATMOSPHERE IN ACCORDANCE WITH LOCAL CSA B149 AND LOCAL CODES AND BY LAWS. WHERE VENTING REGULATORS TO ATMOSPHERE IS NOT POSSIBLE, AND WHERE APPROVED BY CONSULTANT PROVIDE VENTLESS REGULATORS, ALL RELIEF VENTS SHALL BE PIPED INDIVIDUALLY
- TO ATMOSPHERE AND SIZED FOR A MAXIMUM PRESSURE DROP OF 10% OF THE PRESSURE REDUCING VALVE SETPOINT WITH A 25% SAFETY FACTOR. VENTED PRESSURE REGULATORS SHALL BE SPRING-LOADED SELF OPERATED, TIGHT CLOSING, SELECTED FOR THE FACILITY GAS PRESSURE AND PIPING PRESSURE LOSS, AND CONNECTED EQUIPMENT LOAD AI FULL FIRING RATE PLUS 20% SPARE CAPACITY COMPILE WITH 1035 KPA (150 PSI) RATED CAST IRON BODY WITH CORROSIVE RESISTANT EPOXY ENAMEL. ALUMINUM DIAPHRAGM WITH SPRING CASE WITH NITRILE DIAPHRAGM, DISC, AND
- BODY O-RING, THROTTLING TYPE HIGH FLOW RATE TIGHT SHUT-OFF RELIEF VALVE SELECTED TO PROTECT FOUIPMENT DOWNSTREAM OF REGULATOR 3.12. NON VENTED REGULATORS SHALL BE LEVER ACTION. DEAD END LOCKUP TYPE COMPLETE WITH A VENT LIMITER SELF ALIGNING VALVE, DIS-CAST ALUMINUM HOUSING, AND SYNTHETIC RUBBER COMPOUND DIAPHRAGM. THES VALVES SHALL ONLY BE USED WHERE THE BUILDING PERFORMANCE IS IN CONFORMANCE WITH THEIR LISTINGS
- CLEARLY IDENTIFY ALL SYSTEM PRESSURES UPSTREAM AND DOWNSTREAM OF PRESSURE REGULATORS WITH STENCILLED MARKING ON DRAWINGS, AND LAMACOID PRESSURE TAGS.
- ACCEPTABLE PRESSURE REGULATOR MANUFACTURERS ARE MAXITROL, JORDAN VALVE, FISHER CONTROLS, AND LESLIE CONTROLS. 3 15 PROVIDE 6 MM (1/4") DIAMETER TEST PORTS UPSTREAM AND DOWNSTREAM OF EACH REGULATOR ASSEMBLY

DRAWINGS OR AS REQUIRED BY CODE.

INSULATION TO PREVENT DETERIORATION OVER TIME.

- ALL REGULATOR STATIONS SHALL BE ACCESSIBLE WITHOUT THE USE OF LADDERS OR LIFTS. SLOPE GAS PIPING IN THE DIRECTION OF FLOW TO LOW POINTS. PROVIDE FULL PIPE DIAMETER 150 MM (6") LONG DRIP POCKETS AT THE BOTTOM OF ALL VERTICAL RISERS, AT ALL PIPING LOW POINTS, AND WHEREVER SHOWN ON
- 3.18. PAINT ALL NATURAL GAS PIPING INSIDE AND OUTSIDE OF BUILDING WITH TWO COATS OF YELLOW ANAMEL APPLIED OVER PRIMER. PIPE SHALL PAINTED IN ITS ENTIRETY INCLUDING BELOW SUPPORTS. PROVIDE SMS LTD. (OR STENCIL PAINTED) LABLES SHOWING GAS PRESSURE, DIRECTION OF FLOW AND 'NAT. GAS'.

3.19. PROVIDE GAS CONNECTIONS TO ALL EQUIPMENT INCLUDING KITCHEN EQUIPMENT IN ACCORDANCE WITH

DRAWINGS, PLANS, SCHEDULES, AND MANUFACTURERS RECOMMENDATION 3.20. GAS SUPPORTS ON ROOF SHALL BE COMPRISED OF SINGLE PIECE VULCANIZED RUBBER COMPLETE WITH GALVANIZED STEEL U CHANNEL SUPPORTS AND STRUTS. SUPPORTS SHALL WEIGHT NO LESS THAN 1 LBS PER 1" IN LENGTH. INSTALL SUPPORTS ON 600MM X 600MM (24" X 24") PATIO PAVER ON TOP OF 500MM X 500MM (20" X 20") 25 $^{\circ}$ MM (1") THICK RIGID ROOF DECK INSULATION. PROVIDE WEATHER PROOF COATING ON EXTERIOR EDGE OF ROOF

FARHEATER **ENGINEERING** 15 ALLSTATE PARKWAY, SUITE 633 MARKHAM, ONTARIO, L3R 5B4 CONTACT@FARHEATER.COM WWW.FARHEATER.COM TELL: 437-999-2424

DATE

2024-05-29

2024-07-08

2025-06-30

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3 PERMIT

50% REVIEW

2 FINAL REVIEW



PROJECT NAME: **WAREHOUSE AND OFFICE HEADQUARTERS**

PROJECT ADDRESS:

45 BLOWERS CRES,AJAX, ON,L1Z 0N4

NORTH:

DRAWN BY:

H.L 2024-05-14 CHECKED BY:

MECHANICAL

SPECIFICATION

DRAWING TITLE:

PROJECT NUMBER:

DRAWING NUMBER:

FH2024029

MECHANICAL SPECIFICATIONS

1.24 PROVIDE ADDITIONAL SPRINKLER HEADS OF EACH TYPE AS REQUIRED BY CODE. INSTALLED IN METAL CARINET IN 4. TESTING 4.1. CARRY OUT NOT LESS THAN THE FOLLOWING TESTS: 4.2. BALL TEST ALL SANITARY DRAINS. 1.25. EACH SPRINKLER HEAD BRANCH LINE SHALL INCLUDE A 25MM (1") CAPPED CONNECTION FOR FUTURE SPRINKLER HEAD. DESIGN BRANCH LINES TO HANDLE THE GREATER OF 1 ADDITIONAL SPRINKLER HEAD PER BRANCH OR 10% ADDITIONAL SPRINKLER HEADS PER BRANCH. 4.3. PERFORM WATER PRESSURE TESTS ON ALL DRAINAGE AND VENT SYSTEMS WHEN ROUGH-IN OF THE SYSTEM COMPLETED. SYSTEM SHALL BE FILLED WITH WATER FOR 2 HOURS WITHOUT NOTICEABLE LEAKS . PRESSURE TEST ALL PUMPED SANITARY SYSTEM AT 150% OF SYSTEM PRESSURE FOR A MINIMUM OF 6HRS WITHOUT 1.26. INSTALL SPRINKLER SYSTEM AS HIGH AS POSSIBLE AND COORDINATE INSTALLATION WITH ALL OTHER TRADES. 1.27. SLOPE ALL HORIZONTAL SPRINKLER PIPING SO THAT IT CAN BE EASILY COMPLETELY DRAINED. PROVIDE CAPPED 5 PROVIDE ALL TESTING AND BALANCING OF EXISTING AND NEW HVAC SYSTEMS AND PROVIDE BALANCING REPORTS 1.28. COORDINATE REQUIREMENT OF SPRINKLER SYSTEM FIRE ALARM CONNECTION WITH ELECTRICAL DIVISION AND FIRE 4.6. PROVIDE ALL ADDITIONAL TESTING AS REQUIRED BY LOCAL AUTHORITIES IN THEIR PRESENCE. ALARM CONTRACTOR. MECHANICAL CONTRACTOR SHALL TAKE LEAD ROLE IN COORDINATED ALL SUCH WORK. 4.7. PERFORM TESTS PRIOR TO CONCEALING SYSTEMS. 1.29. NO SPRINKLER WORK SHALL BE CONCEALED UNTIL SUCH TIME AS IT HAS BEEN APPROVED BY THE ENGINEER OF RECORD AND THE AUTHORITY HAVING JURISDICTION. 4.8. REMOVE ALL COMPONENTS WHICH WILL NOT WITHSTAND TEST PRESSURE, AND REPLACE AFTER TESTS. 4.9. FAILURE OF TEST WILL REQUIRE SYSTEMS TO BE REINSTALLED UNTIL SUCH TIME AS THE TEST IS PASSED. REPEAT 1.30. TEST ALL SPRINKLER SYSTEMS TO NFPA 13 REQUIREMENTS. TESTS AS MANY TIMES AS REQUIRED UNTIL SYSTEM PASSSES. DO NOT CAULK OR COVER LEAKS. REMOVE AND 1.31. TEST ALL STANDPIPE AND FIRE HOSE SYSTEM TO NFPA 14 REQUIREMENTS. 1.32. TEST ALL SYSTEM IN ACCORDANCE WITH OFC, LOCAL FIRE MARSHAL AND BUILDING OFFICIALS REQUIREMENTS. 1. CLEANING AND DISINFECT ALL DOMESTIC WATER SYSTEMS TO ACCEPTABLE LOCAL AUTHORITY STANDARDS. 3. INSTALL ALL TEST AND DRAIN CONNECTION IN ACCORDANCE WITH NFPA 13 REQUIREMENTS, PIP£ DRAIN TO NEAREST PROVIDE ALL TESTING OF DOMESTIC WATER SYSTEMS IN ACCORDANCE WITH AWWA STANDARD C651.86. PROVIDE TEST RECORDS TO OWNER. ARRANGE AND PAY FOR ALL WATER QUALITY TESTS BY INDEPENDENT TESTING BUILDING SANITARY DRAINAGE SYSTEMS. DO NOT DRAIN TO OUTDOORS. 1.34. PROVIDE GUARDS FOR SPRINKLER HEAD IN AREAS SUBJECT TO DAMAGE INCLUDING, BUT NOT LIMITED TO, ELEVATOR 2. FLUSH ALL DRAINAGE SYSTEMS AFTER SYSTEM HAS BEEN INSTALLED. REMOVE ALL DEBRIS AND PROVIDE CAMERA SCOPE OF LINES TO VERIFY CONDITIONS. LOCATION, AND ANY OTHER LOCATION WHERE SPRINKLER HEAD COULD BE DAMAGED. 3. PROVIDE FINAL CONNECTION TO ALL KITCHEN EQUIPMENT INCLUDING ALL ISOLATION VALVES, HOSES, AND FLEXIBLE 35. PROVIDE PROTECTION OF SPRINKLER HEADS FOR FULL DURATION OF CONSTRUCTION. REPLACE AT NO ADDITIONAL PIPES. ADHERE TO MANUFACTURER'S RECOMMENDED INSTALLATION REQUIREMENTS FOR SPECIFIC INSTALLATION COST ANY SPRINKLER HEAD THAT IS DAMAGED, ALTERED, PAINTED, OR OTHERWISE AFFECTED. 1.36. PROVIDE NEPA SIGN-OFF LETTER AT THE COMPLETION OF PROJECT 5.4 PROVIDE ALL BACKELOW PREVENTERS FOR KITCHEN FOUIPMENT IN ACCORDANCE WITH CSA STANDARDS 1.37. REMOVE AND REPAIR/REPLACE ANY SYSTEM COMPONENT WHICH DOES NOT PASS INSPECTION/TESTING. 5.5. PROVIDE ALL TRAP SEAL PRIMERS TO SUIT NEW DRAINS IN ACCORDANCE WITH LOCAL PLUMBING CODE 1.38. REMOVE AND REINSTALL ANY SPRINKLER COMPONENT NOT SUITABLE FOR TEST PRESSURES. FIRE PROTECTION 1.39. PROVIDE AS BUILT DRAWINGS IN CAD AND PDF FORMAT AT THE COMPLETION OF PROJECT. 1.40 INSTALL ALL BACKELOW PREVENTERS AS REQUIRED BY CODE WITH PIPED DRAINS TO NEAREST BUILDING SANITARY . PROVIDE ALL LABOUR, MATERIAL, EQUIPMENT, ENGINEERING, AND SERVICES REQUIRED TO SUPPLY A CODE DRAINAGE SYSTEM. ALL ISOLATION VALVES ON BACKFLOW PREVENTERS SHALL BE SUPERVISED. INSTALL BACKFLOW COMPLIANT FIRE PROTECTION SYSTEM IN ACCORDANCE WITH THESE DOCUMENTS. PREVENTERS TO ENSURE THEIR LISTING, MANUFACTURER NAME AND MODEL NUMBER AND FLOW DIRECTION ARROW ARE VISIBLE. 2. THESE DOCUMENTS ARE INTENDED TO SHOW A GENERAL SCOPE OF WORK RELATED TO FIRE PROTECTION. All SYSTEMS SHALL BE IN STRICT ACCORDANCE WITH: FIRE PUMP 1.2.2. NFPA 13 1.2.3. NFPA 14 THE FOLLOWING ITEMS TO BE SUPPLIED BY THE FIRE PROTECTION CONTRACTOR. 1.2.4. ONTARIO BUILDING CODE (OBC) PEERLESS MODEL 8AEF17Q HORIZONTAL SINGLE STAGE DOUBLE SUCTION U.L.C. AND F.M. APPROVED CENTRIFUGAL FIRE PUMP, RATED 1500 U.S. G.P.M. @110 P.S.I. OF HEAD. SUCTION PRESSURE = 15 P.S.I. 1.2.5. ONTARIO FIRE CODE (OFC) FLEXIBLE COUPLING CLARK MODEL JW6H-UFADDO-D (PRESSURE LIMITING DRIVER) DIESEL ENGINE OPERATING AT 231.3 H.P./1780 R.P.M. 1.2.6. LOCAL FIRE MARHSALL'S REQUIREMENTS TACHOMETER AND METER FOR RECORDING OPERATING HOURS 1.2.7. OWNER'S INSURANCE PROVIDERS REQUIREMENTS OIL PRESSURE GAUGE WATER TEMPERATURE GAUGE 1.3. FIRE PROTECTION CONTRACTOR SHALL PROVIDE THE FOLLOWING SCOPE OF WORK INCLUDED IN THEIR TENDER WATER COOLED EXHAUST MANIFOLD 1.3.1. HYDRAULICALLY DESIGN ALL NEW AND MODIFICATIONS OF EXISTING FIRE PROTECTIONS SYSTEM BY A QUALIFIED THE DIESEL ENGINE SHALL BE MOUNTED ON A COMMON FABRICATED STEEL BASE, WITH PUMP, COUPLING AND SPRINKLER ENGINEER LICENSED TO PRACTICE IN THE PROVINCE OF INSTALLATION. COUPLING GUARD. THE FOLLOWING OPERATING ACCESSORIES ARE ALSO INCLUDED: TWO (2) SETS OF 12 VOLT BATTERIES C/W RACK AND CABLES. 1.3.2. THE SPRINKLER CONTRACTOR'S ENGINEER SHALL BECOME THE SPRINKLER FNGINEER OF RECORD AND SUBMIT ALL ONE (1) 4" EXHAUST SILENCER C/W FLEXIBLE CONNECTION. THE EXHAUST SILENCER SHALL EXHAUST THROUGH THE REQUIRED DESIGN TO THE CITY BUILDING DEPARTMENT, FIRE MARSHALL AND BUILDING INSURANCE PROVIDER. **BUILDING ROOF** 1.3.3. PROVIDING FIRE PROTECTION ZONING IN ACCORDANCE WITH EXISTING BUILDING ZONING AND AS PER THESE ONE (1) 8" VENTURE FLOW METER ONE (1) RAW WATER PIPING ONE (1) 200 IMPERIAL GALLON DOUBLE WALLED FUEL TANK C/W LEVEL GAUGE. LOW LEVEL SUPERVISORY SINGI F AND 1.3.4. PROVIDE SPRINKLER SYSTEM HYDRAULIC PERFORMANCE TO SUIT THE HAZARD CLASSIFICATION OF THE SPACE. SUCTION AND DISCHARGE PRESSURE GAUGES. 1.3.5. ADHERE TO ALL FM GLOBAL REQUIREMENTS WHERE APPROPRIATE. AIR RELEASE VALVE. 4. PROVIDE ALL REQUIRED SPRINKLER HEADS REQUIRED TO PROVIDE CODE COMPLIANT DESIGN, THESE DOCUMENTS ONE (1) ENGINE DRIVEN FIRE PUMP CONTROLLER

ARE INTENDED TO SHOW THE MINIMUM NUMBER OF SPRINKLER HEADS.

1.12. ALL SPRINKLER PIPING SHALL BE RIGID STEEL PIPE.

DAMAGE TO GALVANIC PROCESS DURING INSTALLATION

THE MANUFACTURERS NAME, PRESSURE RATING, LISTING, SHALL BE VISIBLE.

1.19.2. UPRIGHT SPRINKLER HEADS SHALL HAVE BRONZE OR BRIGHT CHROME FINISH

1.20. PROVIDE FIRE EXTINGUISHERS IN ACCORDANCE WITH OBC, OFC AND NFPA 10.

WITH WALL MOUNTING OR MOUNTING CABINET AS REQUIRED BY DRAWINGS.

SUBJECTED TO WITH A 25% FACTOR OF SAFETY.

PLATED ESCUTCHEON PLATE.

.5. DESIGN SPRINKLER HEAD AND FIRE HOSE LAYOUT IN CONJUNCTION WITH ARCHITECTURAL DRAWINGS

MAXIMUM SYSTEM THEY WILL BE SUBJECTED TO INCLUDING A 25% FACTOR OF SAFETY.

VERIFY AVAILABLE WATER FLOW AND PRESSURE OF SYSTEM. INCLUDE FOR MUNICIPAL MAIN WATER FLOW AND

1.11. ALL SPRINKLER HEADS SHALL BE CENTERED IN CEILING TILES AND IN LINED WITH CEILING COMPONENTS INCLUDING LIGHTS AND DIFFUSERS. HEAD LAYOUT SHALL BE APPROVED BY ARCHITECT PRIOR TO INSTALLATION.

1.13. SPRINKLER PIPING 2" AND SMALLER SHALL BE SCHEDULE 40 BLACK CARBON STEEL. ASTM A53, GRADE B, COMPLETE

1.14. SPRINKLER PIPING 2-1/2" AND LARGER SHALL BE SCHEDULE 40 BLACK CARBON STEEL, ASTM A52, GRADE B COMPLETE

1.15. DRY SPRINKLER PIPING SHALL BE GALVANIZED SCHEDULE 40 BLACK STEEL WITH JOINTS AS PER THE ABOVE. REPAIR

1.16. IN LIEU OF THE ABOVE, PROVIDE VICTAULIC FIRELOCK FITTINGS AND VICTAULIC STYLE 005 RIGID COUPLING JOINTS.

1.17. ALL SPRINKLER FITTINGS AND JOINTS SHALL BE APPROVED FOR THE MAXIMUM SYSTEM PRESSURE THEY WILL BE

1.18. ALL SPRINKLER VALVES SHALL BE PROVIDED BY A SINGLE MANUFACTURER. VALVES SHALL BE INSTALLED SUCH THAT

1.19. SPRINKLER HEADS SHALL BE MANUFACTURED BY TYCO, VICTAULIC, VIKING OR RELIABLE. SUBMIT SAMPLES OF EACH

1.19.1. RECESSED SPRINKLER HEADS SHALL BE COMPLETE WITH WHITE PAINTED COVER PLATE UNLESS OTHERWISE

1.19.3. PENDANT TYPE SPRINKLER HEADS TO BE COMPLETE WITH CHROME PLATED SPRINKLER HEAD WITH CHROME

1.19.4. SIDEWALL SPRINKLER HEADS SHALL BRONZE OR CHROME PLATED HEADS LISTED FOR SIDEWALL APPLICATION. 1.19.5. UNLESS OTHERWISE SPECIFIED USE SPRINKLER HEADS LISTED TO 74C (165F) RATED HEADS. WHERE SPRINKLER HEADS ARE SUBJECT TO HIGHER TEMPERATURES, PROVIDE PRESSURE REQUIREMENTS AS REQUIRED TO SUIT

1.21. IN ALL TYPICAL SPACES PROVIDE ABC-050WWD, 3A10BC RATED MULTI-PURPOSE DRY-CHEMICAL FIRE EXTINGUISHER

1.22. IN ALL BACTERIAL ROOMS PROVIDE C02-150WW 15LB. CARBON DIOXIDE TYPE 10BC RATED FIRE EXTINGUISHER WITH

1.23. PROVIDE COMBINATION TEST AND DRAIN FITTINGS WITH ORIFICE SIZED ACCORDING TO INSTALLED SPRINKLER HEADS. TEST AND DRAIN FITTINGS SHALL BE ULC LISTED AND FM APPROVED AND INSTALLED IN ACCESSIBLE AREA

WITH BUTT WELDED JOINTS AND CARBON STEEL BUTT WELDED FITTINGS TO ASTM A234, GRADE WPB, LONG SWEEF

PRESSURE TESTS AT NEAREST FIRE HYDRANT. PROVIDE TEST RESULTS AS PART OF SHOP DRAWINGS PROCESS. ALL SPRINKLER SYSTEM COMPONENTS SHALL BE ULC LISTED AND FM APPROVED, SUITABLE FOR FIRE PROTECTION SYSTEMS. ALL SYSTEM PIPES, VALVES, FITTINGS, JOINTS, DEVICES, AND ACCESSORIES SHALL BE SUITABLE FOR THE

PROVIDE FIRE PROTECTION SIGN OFF LETTER STAMPED BY SPRINKLER ENGINEER OF RECORD STATING THAT INSTALLATION IS IN ACCORDANCE WITH ALL REQUIRED CODES APPLICABLE TO THE INSTALLATION. SUBMIT SHOP DRAWINGS AND HYDRAULIC CALCULATION COMPLETE WITH SPRINKLER ENGINEER'S STAMP TO CONSULTANT AND ALL AUTHORITIES FOR REVIEW. SHOP DRAWINGS SHALL INCLUDE ALL SPRINKLER HEADS, MECHANICAL GROOVED COUPLINGS, VALVES, SENSORS, FIRE HOSE CABINETS, FIRE EXTINGUISHERS AND ALL OTHER EQUIPMENT INCLUDED IN FIRE PROTECTION SCOPE OF WORK.	 ALL ITEMS LISTED UNDER 8.0 FIRE PUMP SHALL INCLUDE ALL LABOR, EQUIPMENT, PIPING AND FITTINGS AND SHALL BE INSTALLED BY FIRE PROTECTION CONTRACTOR IN ACCORDING WITH N.F.P.A. #20 AND FACTORY MUTUAL DATA SHEETS. FIRE PROTECTION CONTRACTOR TO INCLUDE FOR COST OF SUFFICIENT DIESEL FUEL TO COMPLETE ALL TESTING REQUIRED TO OBTAIN FIRE PUMP ACCEPTANCE. FUEL TANK TO BE LEFT FULL UPON COMPLETION OF CONTRACT.
VEDIEV AVAILABLE WATER ELOW AND PRESSURE OF SYSTEM INCLUDE FOR MUNICIPAL MAIN WATER ELOW AND	

ONE (1) 10 G.P.M. @120 P.S.I.JOCKEY PUMP C/W CONTROLLER (INCLUDING PIPE.VALVES AND FITTINGS).

ONE (1) 6" X10" CONCENTRIC INCREASER.

ONE (1) 10" X8" SUCTION REDUCER.

PROVIDE ALL LABOUR AND MATERIAL REQUIRED TO INSULATE ALL MECHANICAL SYSTEMS AS SPECIFIED WITH THIS

- SECTION AND AS NOTED ON DRAWINGS UNLESS OTHERWISE SPECIFIED, INSULATION THERMAL PERFORMANCE IS TO MEET OR EXCEED THE MORE
- AND ASHRAE 90.1. ALL SYSTEM SUBJECT TO CONDENSATION (INCLUDING COLD AND DUAL TEMPERATURE) SHALL BE INSULATED COMPLETE WITH VAPOUR BARRIER. VAPOUR BARRIER SHALL BE INSTALLED OVER All SYSTEM COMPONENTS
- INCLUDING VALVES, VAPOUR BARRIER SHALL BE COMPLETE AND CONTINUOUS IN ITS ENTIRETY, ANY DAMAGE TO VAPOUR BARRIER SHALL REQUIRE FULL REMOVAL AND REPLACEMENT. DO NOT PATCH NEW VAPOUR BARRIERS INSTALLED AS PART OF THIS CONTRACT INSULATION SHALL ONLY BE APPLIED ONCE SYSTEMS HAVE BEEN TESTED AND REVIEWED BY ENGINEER AND
- INSTALL INSULATION ON PIPES AND DUCTS WHICH ARE CLEAN AND DRY, AND WITH ENVIRONMENTAL CONDITIONS AS
- STORE ALL INSULATION MATERIAL ON SITE IN A DRY STORAGE AREA AND ENVIRONMENTAL CONDITIONS AS REQUIRED BY THE INSULATION MANUFACTURES
- . ALL INSULATION OF MECHANICAL SYSTEMS SHALL BE INSTALLED BY A SINGLE INSULATION CONTRACTOR
- ALL INSULATION SHALL HAVE FLAME AND SMOKE SPREAD RATINGS OF 25/50 AND AS REQUIRED BY THE LOCAL BUILDING CODE AND REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION AND AS PER CAN/ULC-S114 AND
- ACCEPTABLE INSULATION MANUFACTURERS ARE JOHNS MANVILLE, OWENS CORNING, MANSON INSULATION, AND
- MACHINE ROOMS, STORAGE ROOMS, ELEVATOR SHAFTS, GARBAGE ROOMS, MECHANICAL ROOMS, LOW HEAD ROOM

 1.10. ALL PIPE/DUCT LABELS SHALL BE APPLIED TO OUTSIDE OF INSULATION USING STENCILS OR WITH PIPE WRAP LABELS

 3.5.3. SUPPLY AIR DUCTS 2" (50MM)
 - INSTALLED IN SUCH A WAY AS TO BE VISIBLE FROM THE FLOOR. I. ALL INSULATION BUTT JOINTS SHALL BE FIRMLY CONNECTED JOINED AND INSTALLED IN SUCH A WAY AS TO NOT
 - SEPARATE OVER TIME.
 - FOR SYSTEMS UP TO 250 F (121 C) PROVIDE BELFORM INSULATION LTD KOOLPHEN K-BLOCK INSULATED PIPE SUPPORT INSERTS, A MINIMUM OF 6" (150MM) LONG, PRE-MOULDED, RIGID, SECTIONAL PHENOLIC FOAM INSULATION (MATCHING THICKNESS OF ADJACENT INSULATION) WITH REINFORCED FOIL AND KRAFT PAPER VAPOUR JACKET AND A 180 DEGREE CAPTIVE GALVANIZED STEEL SADDLE.
 - FOR AROVE GROUND PIPE PROVIDE PREFORMED MINERAL FIRRE RIGID. SECTIONAL, SLEEVE TYPE INSULATION TO ASTM STANDARD C 547, STANDARD SPECIFICATION FOR MINERAL FIBRE PIPE INSULATION, WITH A FACTORY APPLIED | 3.9. VAPOLIR BARRIER JACKET FOLIAL TO JOHN MANVILLE INC MICRO-LOK AP- T PLUS KNAUE FIRER GLASS PIPE INSULATION WITH ASJ-SSL JACKET, MANSON INSULATION INC ALLEY K APT OR OWNES CORNING FIBERGLASS PIPE
 - FOR ALL VALVES AND ACCESSORIES IN PIPING SYSTEMS PROVIDE BLANKET MINERAL FIBRE TYPE ROLL INSULATION TO ASTM C553, STANDARD SPECIFICATION FOR MINERAL FIBRE BLANKET THERMAL INSULATION FOR COMMERCIAL AND INDUSTRIAL APPLICATIONS, 24 KG/M² (1-1/2 LB./FT/²) DENSITY WITH A FACTORY APPLIED VAPOUR BARRIER
 - 2.4. PROVIDE THE FOLLOWING INSULATION THICKNESS:
 - DOMESTIC COLD WATER PIPING UP TO AND INCLUDING 4" (100MM) 1" (25MM) WITH VAPOUR BARRIEF
 - DOMESTIC COLD WATER PIPING LARGER THAN 4" (100 MM) 1-1/2" WITH VAPOUR BARRIER
 - DOMESTIC HOT WATER AND RECIRC PIPING UP TO AND INCLUDING 1-1/2" (40MM) 1" (25MM DOMESTIC HOT WATER AND RECIRC PIPING LARGER THAN 1-1/2" - 2" (50MM)
 - STORM PIPING 1" (25MM) WITH VAPOUR BARRIER
 - ABOVE GROUND SANITARY PIPING 1" (25MM) WITH VAPOUR BARRIER.

 - 5. WRAP ALL EXPOSED INSULATION WITH WHITE SHEET PVC AND FITTING COVERS JACKET. INSTALL JACKET WITH OVERLAPPING LONGITUDINAL AND CIRCUMFERENTIAL JOINTS AND PROVIDE WATER TIGHT INSULATION. PROVIDE
 - SLIP-TYPE JACKET EXPANSION JOINTS WHERE REQUIRED. 6. INSULATION SHALL BE APPLIED DIRECTLY TO THE PIPE AND NOT AROUND HANGERS AND SUPPORTS.
 - 2.7. INSTALL ALL INSULATION IN ACCORDANCE WITH MANUFACTURER SPECIFICATIONS.
 - 2.8. PROVIDE PREFORMED INSULATION ON All BARRIER FREE LAVATORIES INCLUDING P-TRAP, ANGLE STOPS AND PIPIN INSULATION.
 - 2.9. ALL INSULATION SHALL BE CONTINUOUS AND BE EXTENDED THROUGH WALL AND FLOOR OPENINGS. SUPPLY SOUND
 - PROOF AND FIRE PROOF PENETRATIONS TO SUIT.
 - 2.10. INSULATION APPLIED IN TWO LAYERS SHALL HAVE JOINTS STAGGERED. 11. INSULATE OVER FLANGES AND MECHANICAL COUPLINGS WITH INSULATION TO MATCH PIPE INSULATION THICKNESS
 - AND OUTSIDE DIAMETER OF FLANGE/COUPLING. FILL THE VOID BETWEEN THE FLANGE/COUPLING INSULATION AND THE PIPE INSULATION WITH THE SAME MATERIAL. ENSURE A CONTINUOUS VAPOUR SEAL ACROSS FULL
 - 2.12. DO NOT INSULATE TERMINAL UNIT CONTROL VALVES SO LONG AS THEY ARE SITUATION ABOVE CONDENSATE PAN. 2.13. WHERE INSULATING INLINE COMPONENTS WITH FLEXIBLE INSULATION. DO NOT COMPRESS PRODUCT MORE THAN

SHEET METAL INSULATION FOR EXPOSED RECTANGULAR DUCTS PROVIDE PREFORMED BOARD TYPE INSULATION TO ASTM C612, STANDARD SPECIFICATION FOR MINERAL FIBER BOCK AND BOARD THERMAL INSULATION WITH A FACTORY APPLIED REINFORCED ALUMINUM FOIL AND KRAFT PAPER FACING EQUAL TO KNAUF FIBER GLASS INSULATION BOARD WITH ESK FACING MANSON INSULATION INC AK BOARD FSK, JOHNS MANVILLE INC TYPE 814 SPIN-GLAS OR OWENS CORNING 703, 704. FOR EXPOSED ROUND OR OVAL DUCTS PROVIDE ROLL FORM INSULATION TO ASTM C1393 STANDARD SPECIFICATION OR PERPENDICULARLY ORIENTED FIBER ROLL AND SHEET THERMAL INSULATION FOR PIPES AND TANKS WITH A FACTORY APPLIED VAPOUR BARRIER FACING CONSISTING OF CUT STRIPS OF RIGID MINERAL BOARD INSULATION LUED TO AN ALUMINUM FOIL AND KRAFT PAPER FACING ACCEPTABLE TO MULTI-GLASS INSULATION LTD MULTI-FLEX

GENERAL LEGEND

PIPE DOWN

FAN SPEED CONTROLLER

BACKELOW PREVENTE

- GAS LOW PRESSURE

NEW DIFFUSER

EXISTING S/A

EXISTING R/A

RETURN AIR GRIL

BD MANUAL BALANCING DAMP

FLEXIBLE DUCT

EXISTING GAS (LOW PRESSUR

HVAC LEGEND

EXISTING EQUIPMENT TO REMAIN

SQUARE SUPPLY AIR DUCT UP

QUARE SUPPLY AIR DUCT DOWN

SQUARE RETURN OR EXHAUST AIR DUCT UP

ROUND RETURN OR EXHAUST AIR DUCT DOWN

BAFFLE ONE SIDE OF DIFFUSER
THERMOSTAT (ELECTRIC OR PNEUMATIC)

PD LEGEND

NEW DOMESTIC COLD WATER

EXISTING DOMESTIC COLD WATE

EXISTING BURIED SANITARY DRAIN TO REMAIN

NEW BURIED SANITARY DRAIN

RUNNING TRAP WITH CLEANOU

LEGEND SP

SP NEW SPRINKLER LINE

1" 165°F EXTENDED COVERAGE UPRIGHT (K=22.4)

1/2" 165°F CONCEALED PENDENT (K=5.8) (VK498

(K=5.6) Q/R ● 1/2" 155°F STANDARD RESPONSE PENDENT (K=5.6)

1/2" 165°F STANDARD COVERAGE DRY SIDEWALL

NEW GAS PIPE

DRAIN WITH CLEANOUT

HOT WATER SUPPLY

HOT WATER RETURN

FIRE EXTINGUISHER

RECIRCULATING HOT WATER

FLOOR DRAIN

NEW DOMESTIC HOT WATER

SQUARE RETURN OR EXHAUST AIR DUCT DOWN ROUND RETURN OR EXHAUST AIR DUCT UP

MKF. GLASS-CELL FABRICATORS LTD. R-FLEX. OWNS CORNING PIPE AND TANK INSULATION. JOHNS MANVILLE INC PIPE STANDARD C553 STANDARD SPECIFICATION FOR MINERAL FIBRE BLANKET THERMAL INSULATION 24 KG/M^3 (1-1/2) LB./FT^3) DENSITY WITH A FACTORY APPLIED VAPOUR BARRIER FACING EQUAL TO KNAUF FIBER GLASS BLANKE' INSULATION AND MULTI-PURPOSE FSK FACING, MANSON INSULATION INC ALLEY WRAP FSK, JOHNS MANVILLE INC

DUCT WRAP TYPE 150 MICROLITE OR ISOFAB FACED FLEXIBLE FSK INSULATION. CELL SELF-ADHERING ELASTOMERIC EPDM RUBBER INSULATION IN ACCORDANCE WITH REQUIREMENTS ASTM C534. STANDARD SPECIFICATION FOR PERFORMED FLEXIBLE ELASTOMERIC CELLULAR THERMAL INSULATION IN SHEET AND TUBULAR FORM WITH ALL REQUIRED INSTALLATION ACCESSORIES FOLIAL TO ARMACELL AP/ARMAELEX SA AND WRAPPED IN ALUMINUM SHEETING WITH ALUMINUM BANDING WITH ALL JOINTS SEALED WITH WEATHERPROOF

PROVIDE THE FOLLOWING INSULATION THICKNESS:

- 3.5.1. OUTDOOR AIR INTAKE DUCTS, CASINGS, PLENUMS UP TO MIXING BOXES OR COILS 1-1/2" (40MM)
- 3.5.2. PRE-TREATED OUTDOOR AIR DUCTS, CASINGS, PLENUMS 1-1/2 (40MM)
- 3.5.4. FINAL 10 FEET OF EXHAUST DUCTS WORK BEFORE BUILDING EXTERIOR 1" (50MM)
- 3.5.5. EXPOSED DUCTWORK IN AREAS WHICH IT IS NOT SERVING 1" (50MM) 3.6. DUCTWORK EXPOSED WITHIN THE SPACE IT SERVES DOES NOT REQUIRE EXTERNAL INSULATION.

INSTALL ALL INSULATION IN ACCORDANCE WITH MANUFACTURER SPECIFICATIONS

- DUCTWORK LINED WITH ACOUSTIC INSULATION CAN SUBTRACT THE THICKNESS OF ACOUSTIC INSULATION FROM THE
- REQUIRED EXTERNAL INSULATION TO DETERMINE FINAL EXTERNAL INSULATION. INSULATION SHALL BE APPLIED DIRECTLY TO THE DUCT AND NOT AROUND HANGERS AND SUPPORTS, PROVIDE RIGID BOARD INSULATION BELOW HANGERS WITH ALUMINUM SADDLE WEAR PLATE BETWEEN INSULATION AND SUPPORTS.
- 10. ALL INSULATION SHALL BE CONTINUOUS AND BE EXTENDED THROUGH WALL AND FLOOR OPENINGS. SUPPLY SOUND PROOF AND FIRE PROOF PENETRATIONS TO SUIT
- INSULATION APPLIED IN TWO LAYERS SHALL HAVE JOINTS STAGGERED
- 2. INSULATE OVER ELANGES WITH INSULATION TO MATCH PIPE INSULATION THICKNESS AND OUTSIDE DIAMETER OF FLANGE/COUPLING. FILL THE VOID BETWEEN THE FLANGE/COUPLING INSULATION AND THE PIPE INSULATION WITH THE SAME MATERIAL. ENSURE A CONTINUOUS VAPOUR SEAL ACROSS FULL INSTALLATION
- 3. PROVIDE ACOUSTIC DUCT LINING WHERE NOTED ON DRAWINGS AND AS A MINIMUM THE FIRST 10 FEET ON BOTH
- SUPPLY AND RETURN DUCTS DOWNSTREAM OF FANS/TERMINAL UNITS PLUS AT LEAST TWO CHANGES OF DIRECTION .14. ACOUSTIC DUCT LINING SHALL BE A MINIMUM OF 1" (25MM) THICK ACOUSTIC LINING MATERIAL MEETING NEPA 90A REQUIREMENTS AND FLAME AND SMOKE SPREAD DÈVELOPMENT FIRE HAZARD RATINGS OF CAN/ULC-S102, FLEXIBLE
- FOR ROUND DUCT, BOARD TYPE FOR RECTANGULAR DUCTS, CONSISTING OF A BONDED FIBERGLASS MAT COATED ON THE INSIDE (AIRSIDE) FACE WITH A BLACK FIRE-RESISTANCE RATING. MATERIAL SHALL HAVE NOISE REDUCTION COEFFICIENT OF 70 OR HIGHER.
- 3.15. INSTALL LINING IN ACCORDANCE WITH ANSI/SMACNA HVAC DUCT CONSTRUCTION STANDARDS PLUS FOR ALL INSTALLATION REGARDLESS OF VELOCITY AT THE LEADING AND TRAILING EDGES OF DUCT LINER SECTION PROVIDE GALVANIZED STEEL NOSING CHANNEL AS PER ANSI/SMACNA STANDARDS.

PROVIDE ALL CONTROLS AS SHOWN ON THESE DRAWINGS

- ALL CONTROLS WORK SHALL BE PROVIDED BY BASE BUILDING CONTROLS CONTRACTOR AND INCLUDED IN
- MECHANICAL SCOPE OF WORK AND TENDER.
- ALL CONTROLS WIRING SHALL BE PLENUM RATED.
- MECHANICAL CONTRACTOR SHALL PROVIDE ALL 120V AND LOW VOLTAGE WIRING AS REQUIRED TO COMPLETE CONTROLS SCOPE OF WORK. PROVIDE AII TRANSFORMERS AS REQUIRED TO PROVIDE LOW VOLTAGE CONTROL WIRING. WHERE CONTROLS WORK REQUIRED 120V WIRING, HIRE ELECTRICAL CONTRACTOR TO PERFORM ALL SAID
- . PROVIDE ALL NEW THERMOSTATS TO SUIT BASE BUILDING STANDARDS WHERE APPLICABLE.
- WHERE THERMOSTATS HAVE OCCUPANT INTERACTION, THEY SHALL BE INSTALLED 4'-0" ABOVE FINISHED FLOOR.

NO ISSUED FOR 50% REVIEW 2024-05-29 2 FINAL REVIEW 2024-07-08 3 PERMIT 2025-06-30 **FARHEATER ENGINEERING** 15 ALLSTATE PARKWAY, SUITE 633

MARKHAM, ONTARIO, L3R 5B4 CONTACT@FARHEATER.COM WWW.FARHEATER.COM TELL: 437-999-2424





PROJECT NAME: **WAREHOUSE AND** OFFICE **HEADQUARTERS**

PROJECT ADDRESS: 45 BLOWERS CRES,AJAX, ON,L1Z 0N4

NORTH:

STAMP:

DRAWN BY:

H.L 2024-05-14 **CHECKED BY:**

F.M N.T.S.

DRAWING TITLE:

MECHANICAL SPECIFICATION AND LEGEND

PROJECT NUMBER:

DRAWING NUMBER:

FH2024029 M-002

	RTU SCHEDULE																				
ITEN 4	OTV	MAKE	MODEL NUMBER	050/405	UNIT	SUPP	LY FAN	EXTERNA	L DIMENSIO	ONS(FT)	HEATING	COOLING	HEATING	HEATING	OPERATING WEIGHT	FED	IEED/OFED	POWER(V/Hz/PH)	MCA	MOD	DEMARKS
ITEM	QTY	MAKE	MODEL NUMBER	SERVICE	SIZE(TON)	AIR FLOW (CFM)	E.S.P(IN H2O)	HEIGHT	WIDTH	LENGHT	(MBH)	(MBH)	EAT(F)	LAT(F)	MAX(LB)	EER	IEER/SEER	POWER(V/HZ/PH)	MCA	MOP	REMARKS
RTU-1	1	TRANE	DHC102HWRHA	SECOND FL.	8.5	3400	1.00	3.91	4.44	7.39	200	94.36	70	114.4	1307	11.8	15.5	575/60/3	23.0	25.0	
RTU-2	TU-2 1 TRANE DHC102HWRHA GROUND FL. 10 3700 1.00 4.24 5.27 8.31 250 109.15 70 120.9 1683 11.8 15.5 575/60/3 23.0 30.0																				
	OTES: - PROVIDE FACTORY SUPPLIED 24" ROOF CURB AND ALL REQUIRED MISCELLANEOUS SUPPORTS.RTU TO BE INSTALLED LEVEL TO FLOOR LEVEL BELOW. PROVIDE FACTORY INSTALLED 20A GFCI.ALL WIRING TO BE FIELD INSTALLED FROM INDEPENDENT 120V POWER SOURCE.OUTLET TO REMAIN OPERATIONAL WHEN POWER TO RTU IS SHUT OFF.																				

									EXHAUST	FAN SCHE	DULE			
										POW	ER SUPP	LY		
ITEM	QTY	LOCATION	MANUFACTURER	MODEL	TYPE		EXTERNAL STATIC PRESSURE(IN.H2O)		RPM	VOLTS	PHASE	Hz	WEIGHT (LB)	REMARKS
EF-1	1	ROOF/MECH.ROOM	GREENHECK	GB-180-7	DOWNBLAST	3000	0.25	1.0	3461	115	1	60	97	C/W 18" ROOF CURB , TYPE 1 & 3 STARTER , MOTORIZED DAMPER
EF-2	1	ROOF	соок	70C15DL	DOWNBLAST	50	0.25	0.05	1401	115	1	60	20	-
EF-3	1	ROOF	соок	90C15DH	DOWNBLAST	300	0.25	0.13	1305	115	1	60	23	-
EF-4	1	ROOF/ELEC.ROOM	GREENHECK	GB-141-5	DOWNBLAST	1000	0.25	0.5	1800	115	1	60	74	C/W 18" ROOF CURB , TYPE 1 & 3 STARTER , MOTORIZED DAMPER

	ELECTRIC HEATER SCHEDULE														
HEATER	HEATER MANUFACTURER MODEL STYLE CAPACITY AIRFLOW ELECTIRCAL WEIGHT (MBH) (KW) (CFM) (L/S) POWER (V/P/Hz) LBS KG MOUNTING REMARKS														
BBH-1	OUELLET	OFM1002	BASEBOARD HEATER	3.4	1.0	-	-	120/1/60	11	4.8	WALL	REMOTE THERMOSTAT			
BBH-2	OUELLET	OFM2008	BASEBOARD HEATER	6.8	2.0	-	-	208/1/60	15	6.8	WALL	REMOTE THERMOSTAT			
BBH-3 NOTE:	OUELLET	OFM0502	BASEBOARD HEATER	1.7	0.5	-	-	120/1/60	7.3	3.3	WALL	REMOTE THERMOSTAT			

PROVIDE 2" MERV 13 FILTERS, WEATHERPROOF DISCONNECT, BAROMETRIC RELIEF DAMPER, DUAL ENTHALPY ECONOMIZER, AND DIGITAL PROGRAMMABLE 7-DAY THERMOSTAT

1. REFER TO ARCHITECTURAL DRAWINGS FOR UNIT FINISH. MOUNTING AND COLOR REQUIREMENTS IF SHOWN.

2. PROVIDE ALL SUPPORTS TO HANG/SUSPEND/MOUNT UNIT AS REQUIRED. 3. ACCEPTABLE ALTERNATIVE MANUFACTURERS: STELPRO, CHOMALOX

4. ALL REMOTE THERMOSTATS SHALL BE LOW VOLTAGE AND UNITS SHALL BE COMPLETE WITH FACTORY SUPPLIED TRANSFORMER.

					DIRECT GA	S-FIRE	D MUA	SCHEDULE							
HEATER	LOCATION	MANUFACTURER	MODEL	,	EXTERNAL STATIC PRESSURE (IN.H2O)		PUT	ELECTIRCAL	MO	ΓOR	FLA	DIMENSIONS (L"XW"XH")	WEI	GHT	REMARKS
					,	(MBH)	(KW)	POWER (V/P/Hz)	(HP)	(KW)	12.3	90X21X21	LBS	KG	
MUA-1	ROOF	CAMBRIDGE AIR SOLUTIONS	SA250	1200	0.22	250	230	115/1/60	3/4	0.55			285	129.2	

ALL MOUNTING HARDWARE BY OTHERS- HEATER WIDTH=21", - RECOMMENDED ROOF OPENING: 81/2" L X 16" W,- 10'-15' AFF RECOMMENDED DISCHARGE HEIGHT

	GAS FIRED UNIT HEATER SCHEDULE															
				INP	rUT	OUT	PUT	THERMAL		SUPPL	Y FAN		ELECTIRCAL	WEI	GHT	
HEATER	LOCATION	MANUFACTURER	MODEL	(MDLI)	(12141)	(MDLI)	(KW)	EFFICIENCY (%)	CAPACITY MOTOR			ΓOR	POWER		140	REMARKS
				(MBH)	(KVV)	(MBH)	(KVV)	(72)	(CFM)	(L/S)	(HP)	(KW)	(V/P/Hz)	LBS	KG	
UH-1	WAREHOUSE	MODINE	HDS100SS0111FBAN	100	29.3	82	24.3	82	1490	703	1/ 6	0.11	115/1/60	125	56	
NOTE: UNIT HEA	NOTE: UNIT HEATER TO BE COMPLETED WITH:															

1. DISCONNECT SWITCH 2. 6" COMBUSTION AIR 3. VIBRATION ISOLATION HANGERS 4. 60 DEGREE DISCHARGE NOZZLE 5. THERMOSTAT 6. COMBUSTION AIR INDUCER

				AIF	R TERMINAL	. SCHEDULE		
ITEM#	MANUFACTURER	TYPE	MODEL NO.	SIZE	MOUNTING	FINISH	FRAME/BORDER	REMARKS
Α	EH PRICE	SQUARE PLAQUE DIFFUSER	SPD	24"X24'	T-BAR	WHITE POWDER COAT	TYPE-31-BAR	
В	EH PRICE	EGG CRATE RETURN	80	AS INDICATED	T-BAR	WHITE POWDER COAT	N/A	
С	EH PRICE	ROUND CONE DIFFUSER	RCD	3'Ø	SUSPENDED	WHITE POWDER COAT	N/A	
D	EH PRICE	LINEAR SLOT	SDS	2 SLOT,60"	T-BAR	WHITE POWDER COAT	-	

ALL FINISHES AND MOUNTINGS SHALL BE COORDINATE WITH ARCHITECTURAL DRAWINGS.

VERIFY QUANTITY AND ADDITIONAL SIZE INFORMATION ON DRAWINGS.

				COMME	RCIAL GA	S WATER HE	EATER SCH	EDULE						
ITEM#	ITEM# LOCATION MANUFACTURER MODEL NO. RECOVERY@90° F RISE GPH MBH VOLUME (US GAL) DIAMETER POWER (V/P/Hz) HEIGHT (IN) DRY WEIGHT (LBS) REMARKS													
HWT-1	HWT-1 MECHANICAL ROOM AO SMITH BTX-80 95 76.0 80 27 120/1/60 71.5 225													
INSTALL IN ACCORDANCE WITH MANUFACTURER'S INSTALLATION INSTRUCTIONS. PROVIDE SHUT-OFF VALVE.														

							PUMPS	SCHED	ULE										
							FLO'	W	НЕ	EAD		MOTOR	1	VARIABLE FLOW	VFD	PRESSU	RE RATING		
TAG	SERVICE	LOCATION	MANUFACTURER	STYLE	MODEL	FLUID	(USGPM)	(L/S)	(FT)	(KPA)	RPM	POW (HP)	/ER (KW)	(Y/N)	(Y/N)	(PSI)	(KPA)	CONTROLS	REMARKS
RP-1	DOMESTIC HOT WATER RECIRC.	MECHANICAL ROOM	BELL & GOSSETT	INLINE	ECOCIRC 20-18	WATER	1.5	0.09	10	29.89	3680	0.1	0.04	Υ	Υ	145	1000	TIMER	STAINLESS STEEL ALLOY
NOTE:																			

1. PROVIDE VIBRATION ISOLATION ON ALL PUMPS/SYSTEM TO MITIGATE VIBRATION/ NOISE TRANSMISSION.

2. ADJUST PUMP HEAD DESIGN TO SUIT INSTALLED CONDITIONS.

3. ALL VFD PUMPS SHALL BE PROVIDED LOOSE AND INSTALLED ON SITE IN PROXIMITY TO PUMP.

							EXPA	ANSION TA	NK SC	HEDULE												
TAG	SERVICE	LOCATION	MANUFACTURER	STYLE	MODEL	ACCEPT VOLU		TOTAL VC	LUME		ESSURE FANK		RESSURE TANK		RESSURE ING		SI	ZE	,	WEIGH	T (DRY)	REMARKS
17.6	CLITTIGE	200/(11014	WWW.	OTTEE	WODEL	(US GAL)	(L)	(US GAL)	(L)	(PSI)	(KPA)	(PSI)	(KPA)	(PSI)	(KPA)	DIAMI (IN)	ETER (MM)	HEIGH (IN) (N	Т //M)	(LBS)	(KG)	TALIWI WAY
ET-1	OFFICE WASHROOMS	MECHANICAL ROOM	ARMTOL	THERMXTROL	ST-12	3.2	12.1	4.4	16.7	35	241	70	483	150	1034	11	279	15	881	9	4.1	

NOTE:
1. FINAL SYSTEM SET POINT SHALL DETERMINE AND CALIBRATED AT THE TIME OF SYSTEM START UP AND COMMISSIONING.
2. TANK VOLUMES LISTESD ABOVE ARE A MINIMUM. ALTERNATE TANKS PROVIDE SHALL MEET OR EXCEED THESE VALUES.

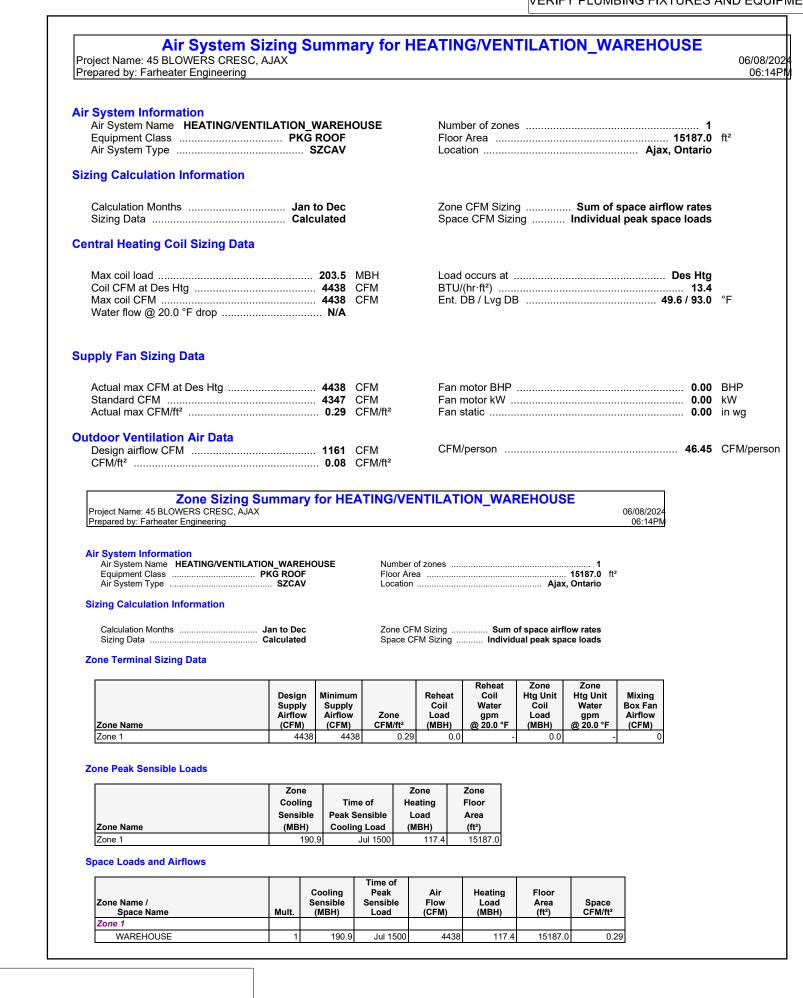
3. FLOOR MOUNTED TANKS SHALL BE ON 4" HOUSE KEEPING PAD. 4. PROVIDE ALL REQUIRED STEEL SUPPORTS FOR SUSPENDED TANKS AND SUPPORT FROM BUILDING STRUCTURE.

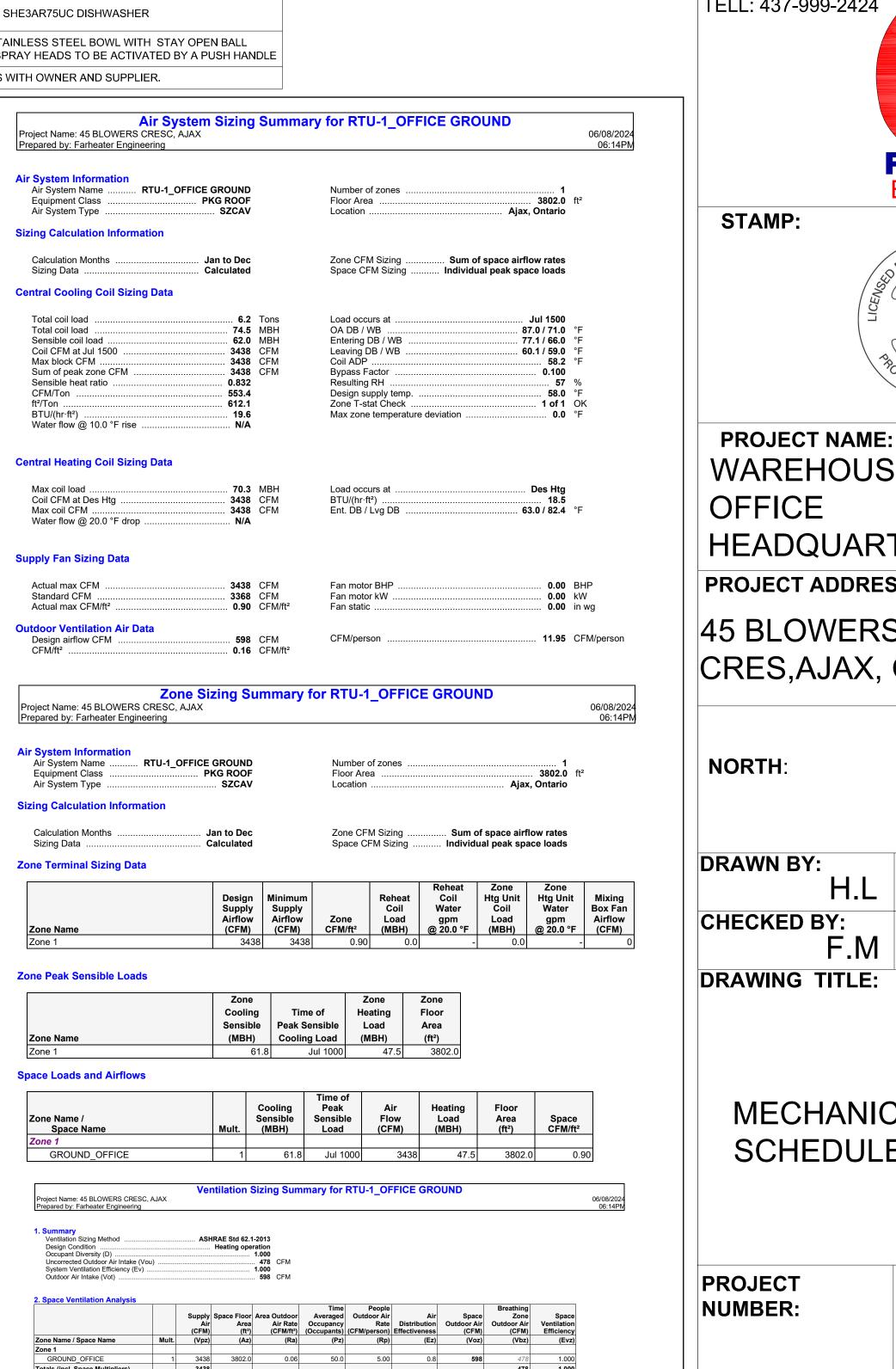
5. INSTALL TANK TO ALLOW FOR EASE OF REPLACEMENT OF BLADDER IF APPLICABLE.

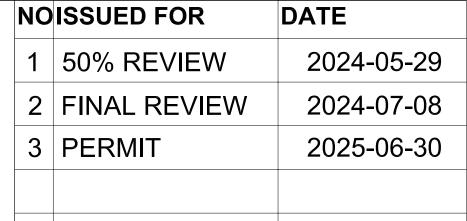
ITEM#	ОТҮ	FIXTURE	INDIRECT WASTE	DIRECT WASTE	VENT	COLD WATER	HOT WATER	REMARKS
WC-1	6	WATER CLOSET	-	3"	2"	1/2"	-	
LAV-1	6	LAVATORY	-	1 1/2"	1 1/2"	1/2"	1/2"	
SH-1	1	SHOWER	-	1 1/2"	1 1/2"	1/2"	1/2"	
HS-1	1	HAND SINK	-	1 1/2"	1 1/2"	1/2"	1/2"	
DW-1	1	DISHWASHER	1 1/2"	-	1 1/2"	-	1/2"	
EW-1	1	EMERGENCY EYE WASH STATION	-	1 1/2"	1 1/2"	1/2"	1/2"	

PROVIDE CHROM ANGLE STOP VALVE @ EACH CONNECTION TO EQUIPMENT. VERIFY PLUMBING FIXTURES AND EQUIPMENTS WITH OWNER AND SUPPLIER.

ITEM#	FIXTURE	
		DESCRIPTION
WC-1	WATER CLOSET	FLOOR MOUNT TOILET BOWL. ELONGATED PRESSURE ASSIST BO
LAV-1	LAVATORY	GLACIER BAY RECTANGULAR VESSEL SINK WITH SINGLE HOLE DRILLING IN WHITE
HS-1	HANDSINK	STAINLESS STEEL SINK,COMPLETE WITH PULL DOWN FAUCET, AN SUPPLY AND P-TRAP
SH-1	SHOWER	CHROME ROUNDED THERMOSTATIC SHOWER FAUCET WITH HANI SHOWER
DW-1	DISHWASHER	BOSCH 100 SERIES SHE3AR75UC DISHWASHER
EW-1	L EYEWASH	WALL MOUNTED STAINLESS STEEL BOWL WITH STAY OPEN BALL VALVE AND DUAL SPRAY HEADS TO BE ACTIVATED BY A PUSH HA
VERIFY PL	UMBING FIXTURES	S AND EQUIPMENTS WITH OWNER AND SUPPLIER.







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Engineering Inc.

WAREHOUSE AND OFFICE **HEADQUARTERS** PROJECT ADDRESS:

45 BLOWERS CRES,AJAX, ON,L1Z 0N4

NORTH:

DATE: **DRAWN BY:** H.L 2024-05-14
BY: SCALE:
F.M N.T.S. **CHECKED BY:**

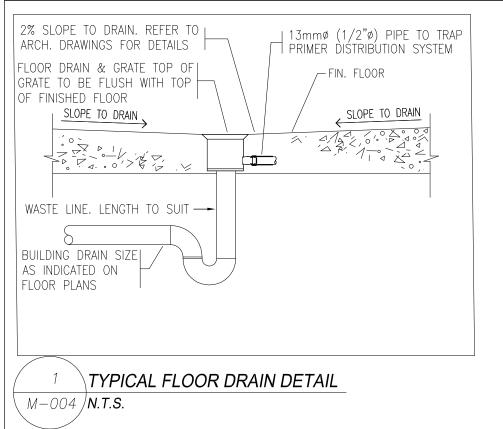
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MECHANICAL SCHEDULE

PROJECT NUMBER:

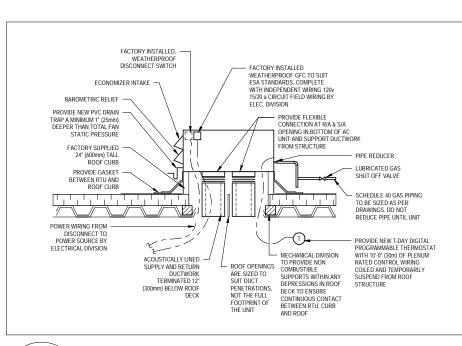
DRAWING NUMBER:

FH2024029 M-003

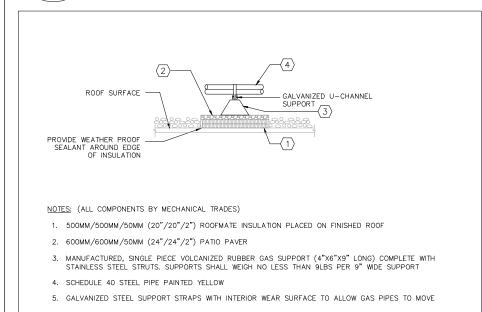


PROVIDE NEW 6"ø (150MM) EXHAUST GOOSENECK INTAKE COMPLETE WITH ½"X½"(15MMX15MM). PROVIDE NEW STAINLESS STEEL MESH SECURED TO DUCT.-- PROVIDE NEW GALVANIZED SHEET METAL PROVIDE WATER TIGHT INSTALLATION OF ROOF CONE. INTEGRATED WITH WATERPROOF ROOFING MEMBRANE.— SAMPLE ROOF CONSTRUCTION REFER TO ARCH PLANS OR SITE FOR ACTUAL ROOF COMPOSITION - PROVIDE NEW BOTTOM SUPPORT PROVIDE 25MM (1") INSULATION ON DUCT WITHIN BUILDING INSULATION TO BE FOIL BACKED AND PINNED TO DUCT. - REFER TO DRAWINGS FOR CONSTRUCTION

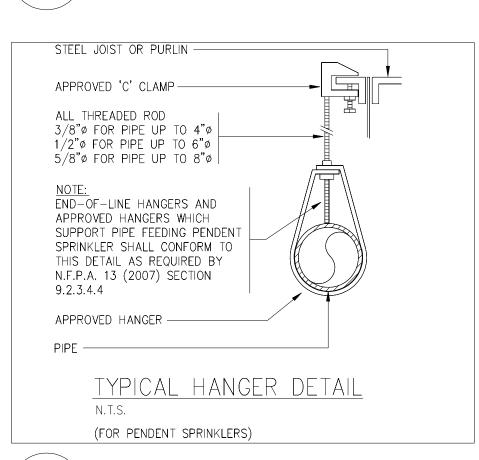




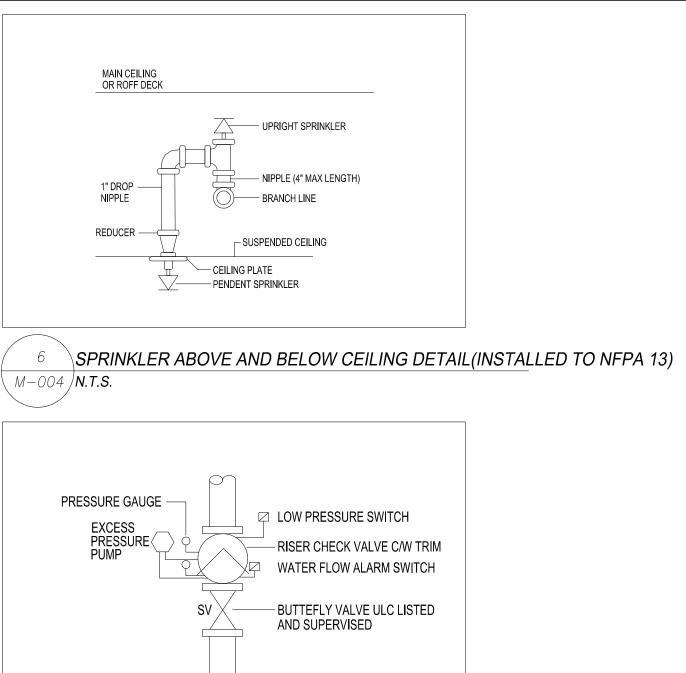
ROOF TOP UNIT DETAIL

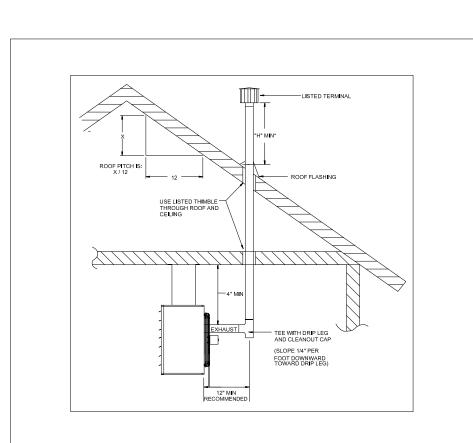


4 \SUPPORT FOR GAS PIPING ON ROOF 、M−004 /**N.T.S.**



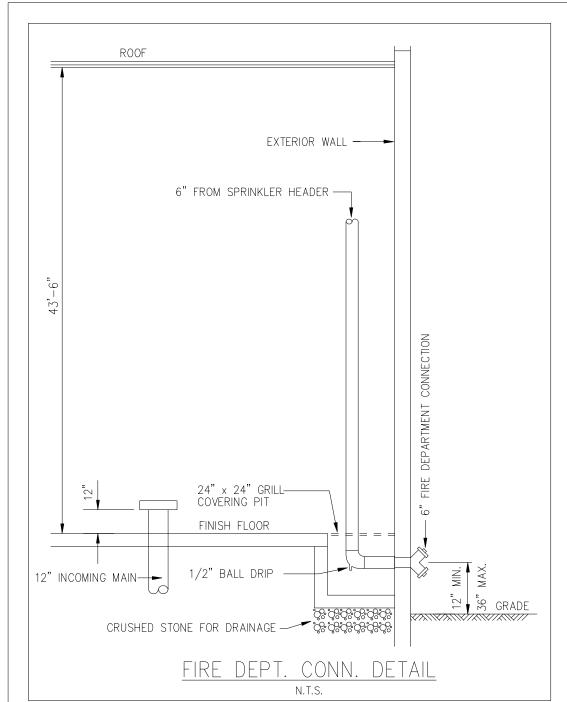
BEAM CLAMP HANGER DETAIL((INSTALLED TO NFPA 13) M-004 / N.T.S.

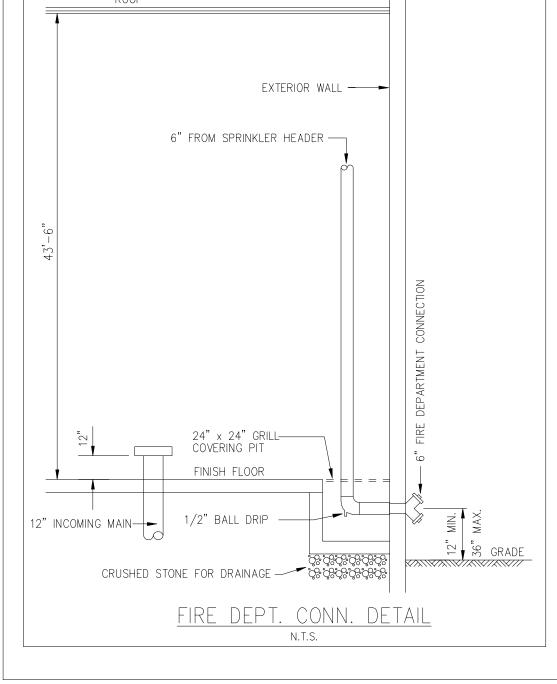




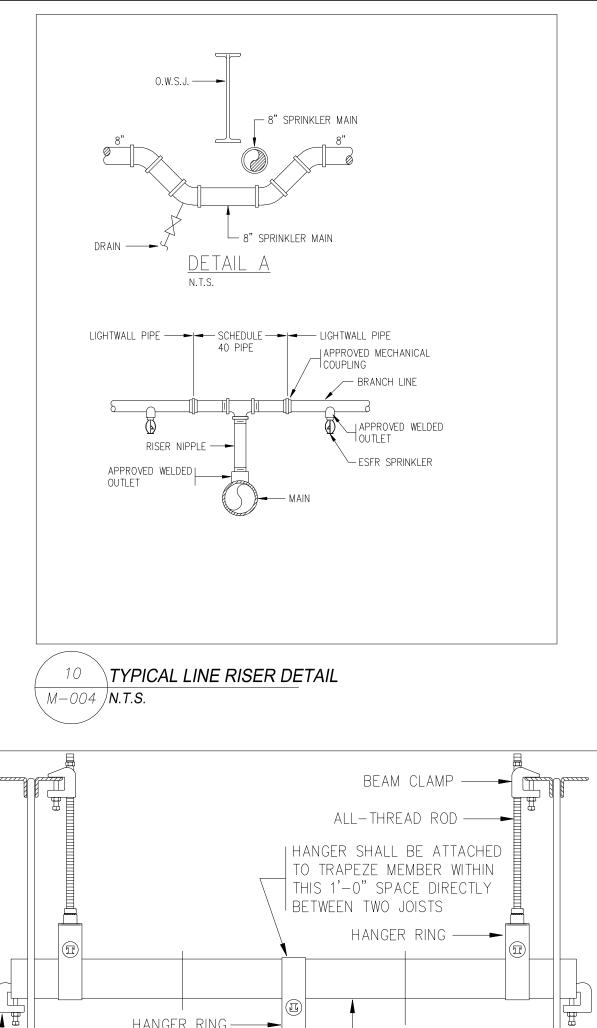
\ALARM VALVE DETAIL

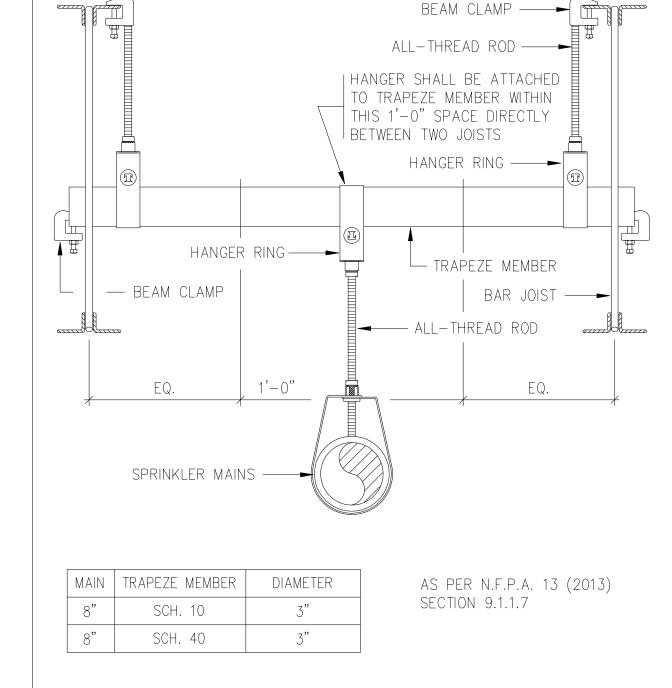




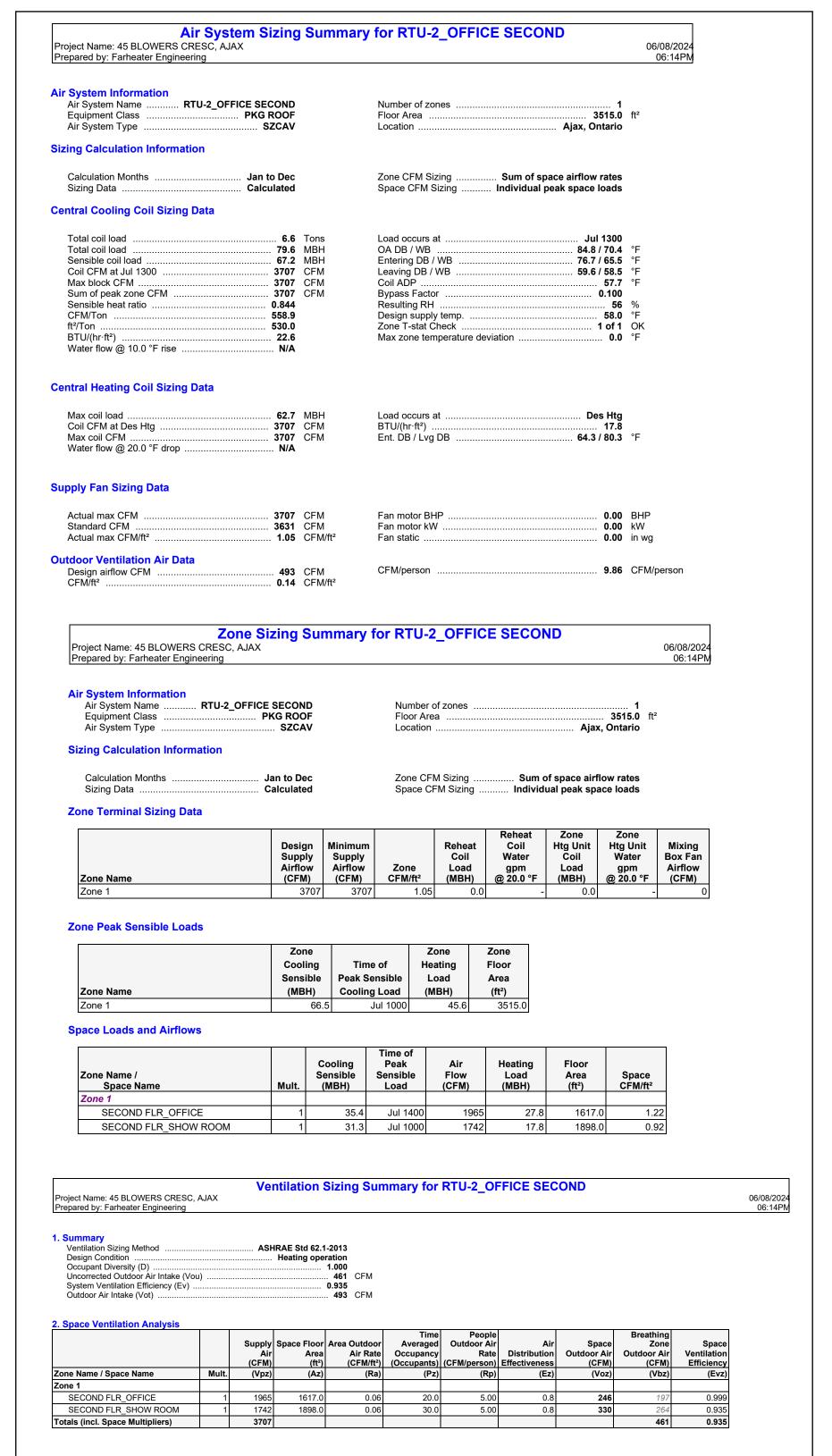


9 \FIRE DEPT. CONN. DETAIL





11 TYPICAL TRAPEZE HANGER DETAIL √M-004 **/N.T.S**.



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PROJECT NAME: WAREHOUSE AND OFFICE **HEADQUARTERS**

PROJECT ADDRESS:

45 BLOWERS CRES,AJAX, ON,L1Z 0N4

NORTH:

DATE: **DRAWN BY:** H.L 2024-05-14

SCALE: **CHECKED BY:** F.M N.T.S.

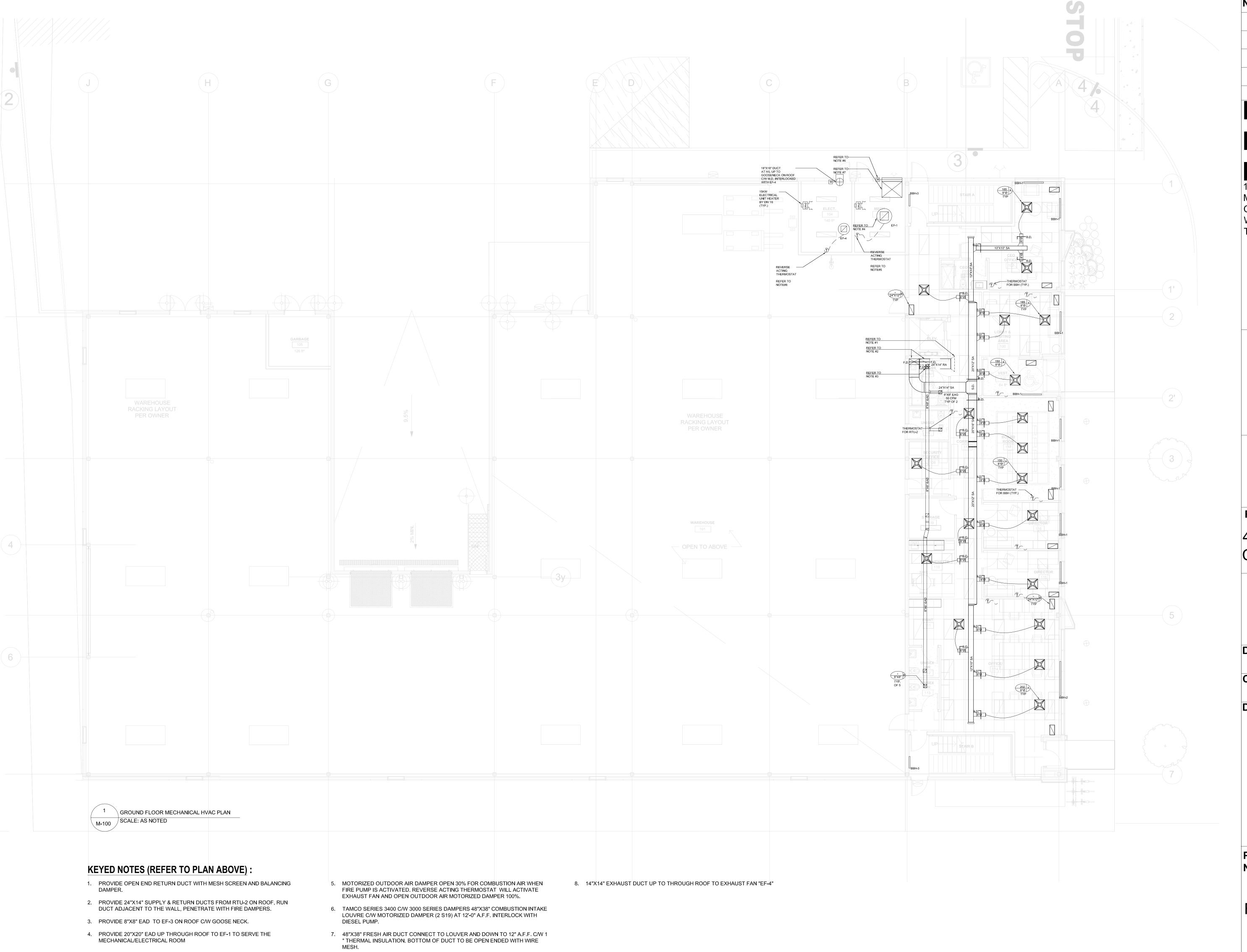
DRAWING TITLE:

MECHANICAL DETAILS

PROJECT NUMBER:

DRAWING NUMBER:

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PROJECT ADDRESS: 45 BLOWERS CRES,AJAX, ON,L1Z 0N4

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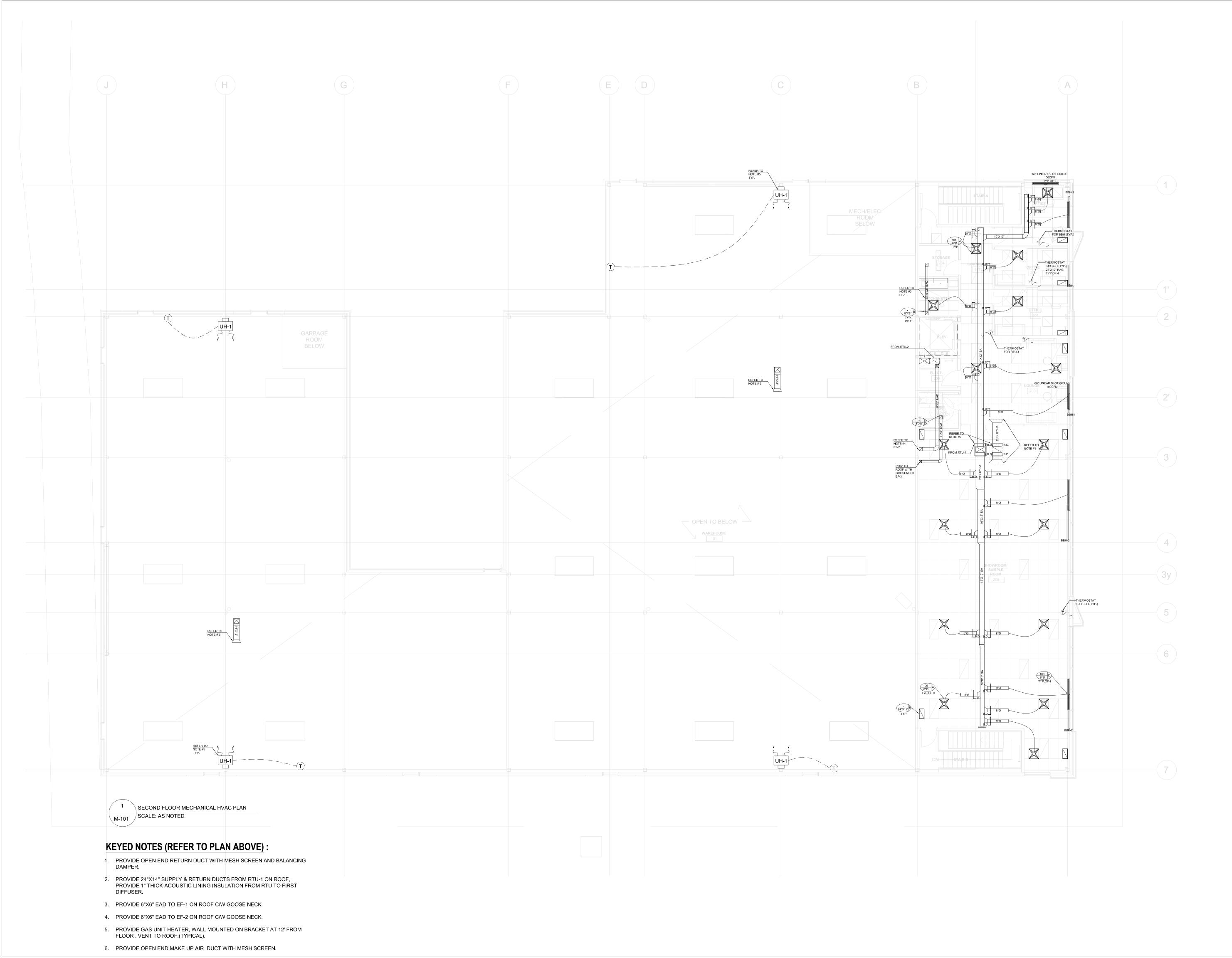
DRAWING TITLE:

GROUND FLOOR MECHANICAL HVAC PLAN

PROJECT NUMBER:

DRAWING NUMBER:

M-100 FH2024029



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PROJECT ADDRESS:

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NORTH:



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H.L 2024-05-14 SCALE: **CHECKED BY:**

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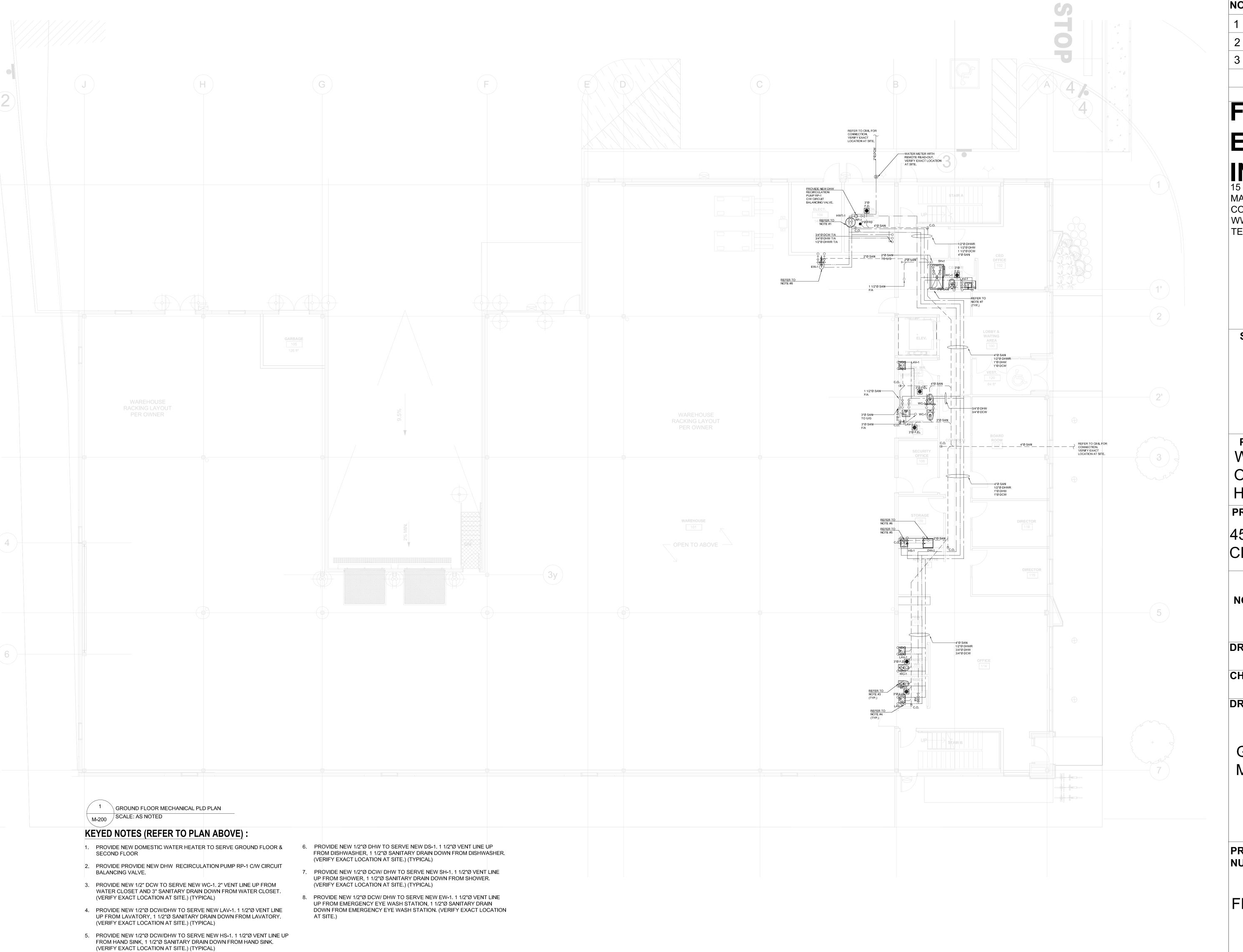
DRAWING TITLE:

SECOND FLOOR MECHANICAL HVAC PLAN

PROJECT NUMBER:

DRAWING NUMBER:

FH2024029



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PROJECT ADDRESS:

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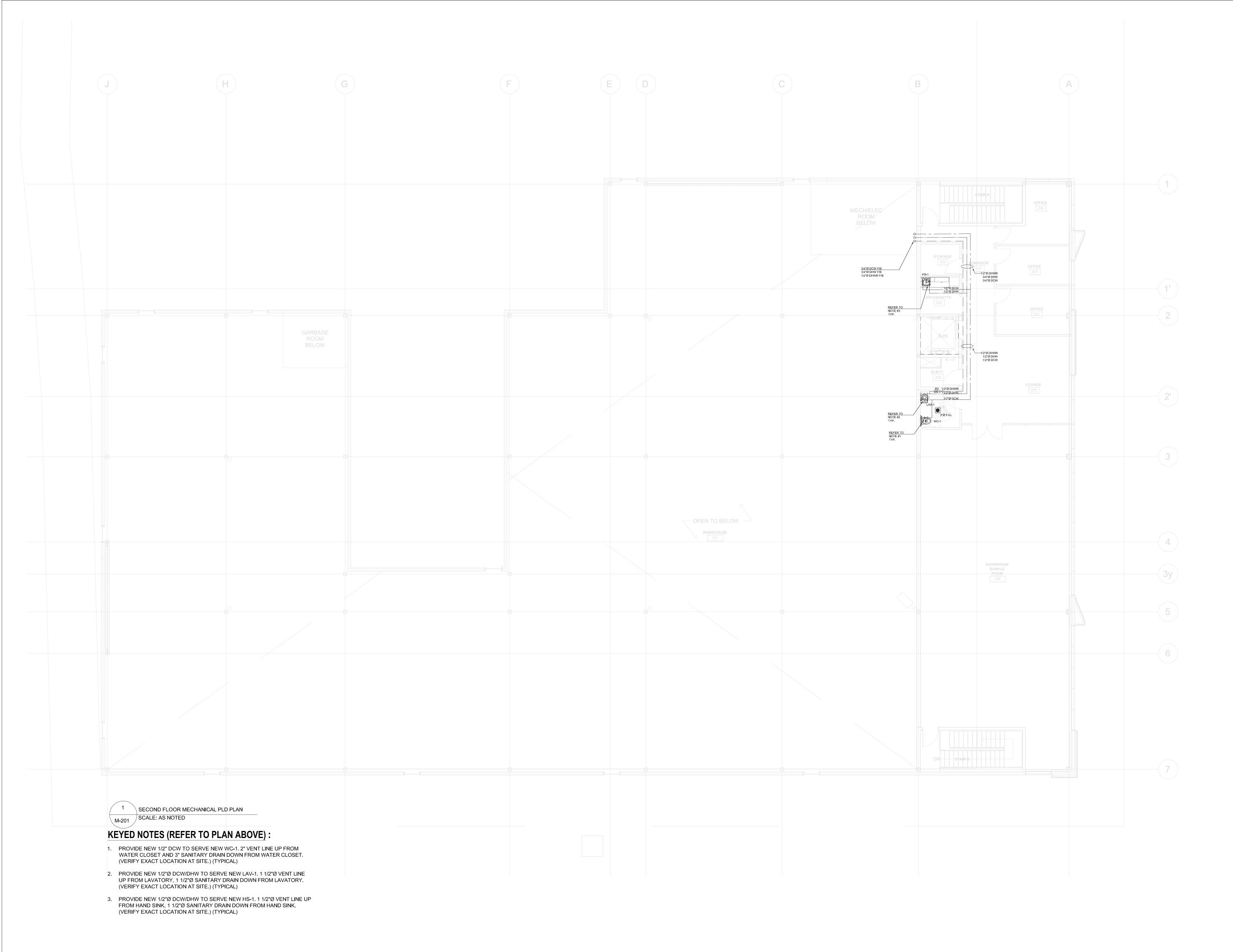
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GROUND FLOOR MECHANICAL PLD PLAN

PROJECT NUMBER:

DRAWING NUMBER:

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PROJECT ADDRESS:

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NORTH:



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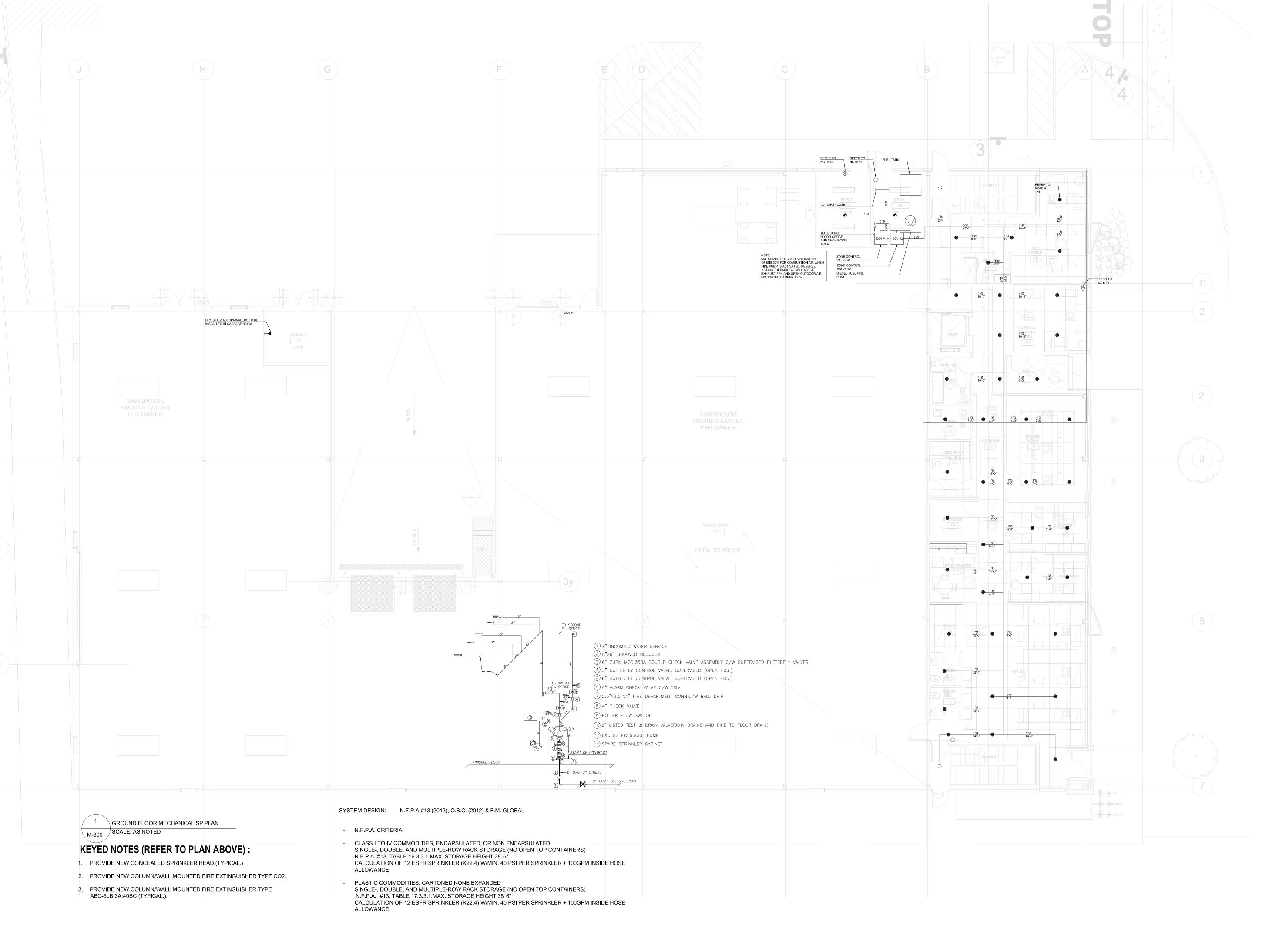
SECOND FLOOR MECHANICAL PLD PLAN

PROJECT

DRAWING NUMBER:

M-201 FH2024029

NUMBER:



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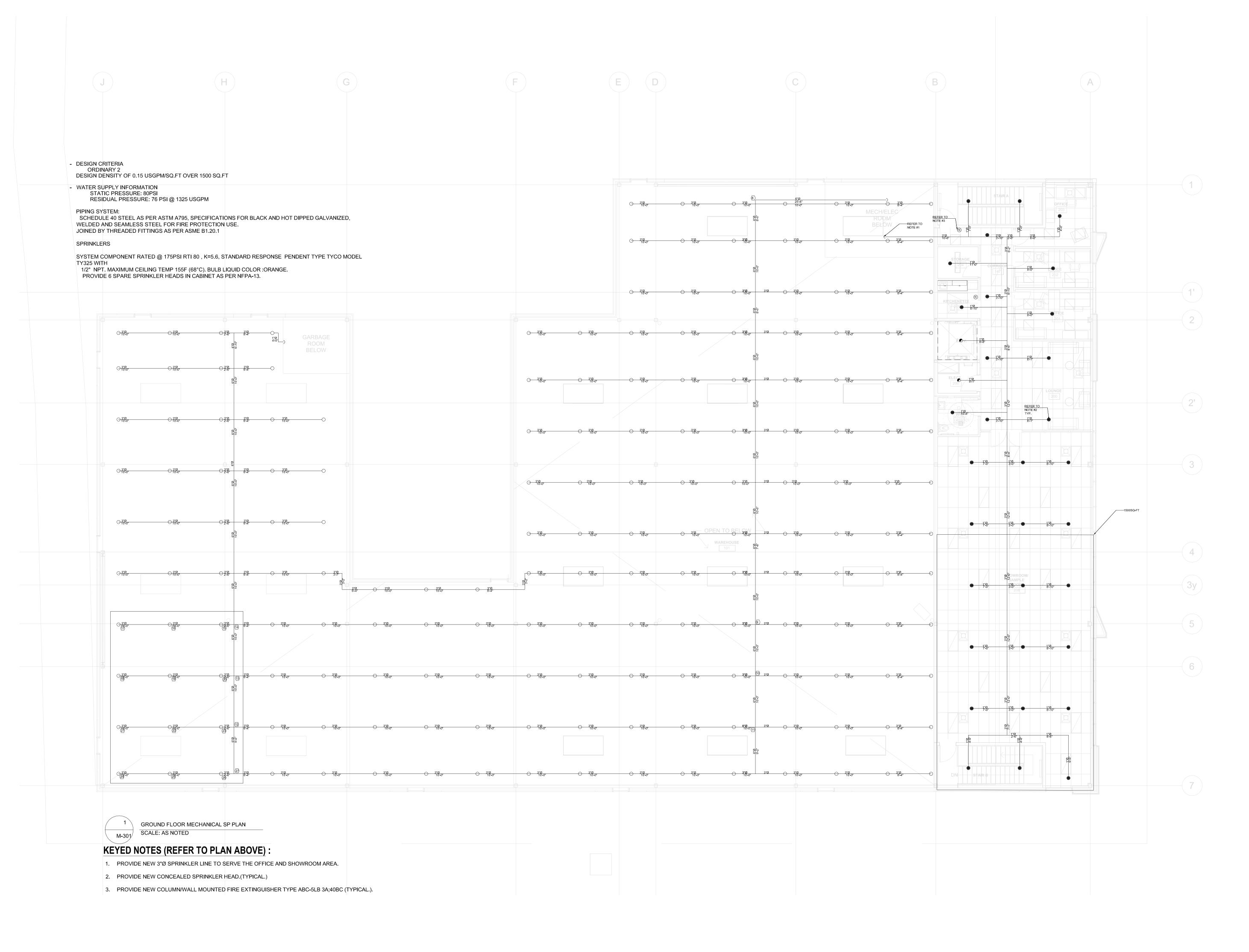
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GROUND FLOOR MECHANICAL SP PLAN

PROJECT NUMBER:

DRAWING NUMBER:

M-300 FH2024029



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PROJECT ADDRESS:

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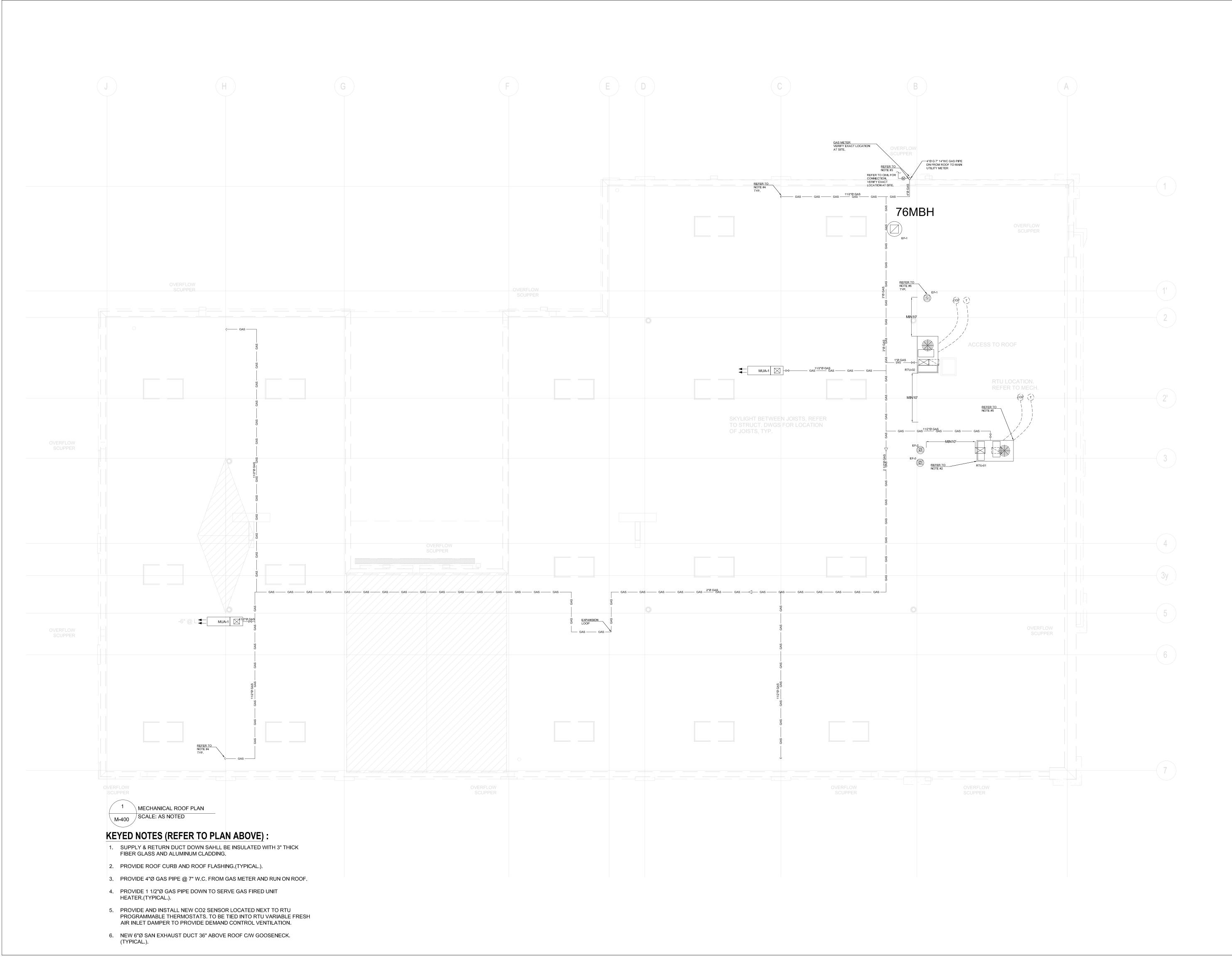
DRAWING TITLE:

SECOND FLOOR MECHANICAL SP PLAN

PROJECT NUMBER:

DRAWING NUMBER:

M-301 FH2024029



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 2024-05-29

 2 FINAL REVIEW
 2024-07-08

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NORTH:



SCALE:

DRAWN BY:

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F.M 1/8"=1'-0"

DRAWING TITLE:

MECHANICAL ROOF PLAN

PROJECT NUMBER:

DRAWING NUMBER:

FH2024029