

**MECHANICAL SPECIFICATIONS:**

- GENERAL
  - VISIT THE SITE PRIOR TO TENDER AND VERIFY ALL CONDITIONS AND DIMENSIONS, INCLUDING LOCATIONS OF EXISTING CAPPED SERVICES, AND ALLOW FOR ANY RE-ROUTING OF EXISTING AND/OR NEW SERVICES AND EQUIPMENT IN TENDER PRICE. FAILURE TO DO SO SHALL NOT RELIEVE THE CONTRACTOR FROM RESPONSIBILITY.
  - REPORT TO THE CONSULTANT ALL AMBIGUITIES, DISCREPANCIES, OMISSIONS, ERRORS, DEPARTURES FROM BUILDING BYLAWS AND/OR FROM GOOD PRACTICE PRIOR TO TENDER CLOSING.
  - PROVIDE ALL WORK IN ACCORDANCE WITH THE REQUIREMENTS OF ALL GOVERNING AUTHORITIES AND LOCAL BY-LAWS.
  - APPLY FOR, OBTAIN AND PAY FOR ALL PERMITS AND INSPECTIONS REQUIRED PRIOR TO COMMENCEMENT OF CONSTRUCTION. INCLUDE ALL PROVINCIAL AND FEDERAL SALES TAXES.
  - ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE APPROVED SCHEDULE TO MEET THE PROJECT COMPLETION DATE AND ALL SPECIFIED INTERIM SCHEDULES.
  - COMPLY WITH THE GENERAL CONTRACTOR'S CONSTRUCTION SCHEDULE.
  - PROVIDE ALL CUTTING, PATCHING AND CLEAN-UP OF FLOORS, WALLS, CEILINGS, ETC. ALL SUCH WORK SHALL BE PERFORMED BY TRADESMEN SKILLED IN AND CERTIFIED FOR THIS PARTICULAR TRADE.
  - PROVIDE SHOP DRAWINGS OF ALL SPECIFIED PRODUCTS AND SUBMIT FOR APPROVAL TO THE CONSULTANT.
  - DURING PROGRESS OF WORK, SUBSTITUTE PRODUCTS WILL ONLY BE CONSIDERED WHEN TENDERED PRODUCTS BECOME UNOBTAINABLE AND WRITTEN PROOF IS SUBMITTED.
  - PROVIDE THE OWNER WITH A WRITTEN WARRANTY FOR ALL LABOUR, MATERIALS, AND EQUIPMENT IN THIS CONTRACT FOR A PERIOD OF ONE YEAR COMMENCING AT SUCH TIME AS THE OWNER OR HIS REPRESENTATIVE DEEMS THE WORK IS ACCEPTABLE.
  - OBTAIN AND PAY FOR TWO SETS OF WHITE PRINTS OF MECHANICAL DRAWINGS, AS JOB PROGRESSES, MARK UP THE WHITE PRINTS IN RED TO ACCURATELY INDICATE INSTALLED WORK. UPON COMPLETION OF THIS WORK, HAND THESE OVER TO THE CONSULTANT FOR REVIEW AND APPROVAL.
  - INCLUDE COST OF PREMIUM TIME IN TENDER PRICE FOR WORK DURING NIGHTS, WEEKENDS OR OTHER TIME OUTSIDE NORMAL WORKING HOURS NECESSARY TO MAINTAIN ALL MECHANICAL SERVICES IN OPERATION AND TO COMPLETE THE WORK.
  - PROVIDE A COMPLETE COST BREAKDOWN OF ALL MATERIALS, EQUIPMENT AND LABOUR COSTS ASSOCIATED WITH EACH SUBMISSION FOR EXTRA OR DELETED WORK.
  - CONFER WITH ALL TRADES INSTALLING EQUIPMENT WHICH MAY AFFECT THE MECHANICAL WORK AND ARRANGE THE WORK IN PROPER RELATION WITH EQUIPMENT INSTALLED UNDER ALL DIVISIONS OF THE CONTRACT.
  - IDENTIFY EACH DUCTED SERVICE COMPLETE WITH DIRECTIONAL FLOW ARROWS. LOCATE IDENTIFICATION AND FLOW ARROWS NOT MORE THAN 12M (40 FEET) APART IN STRAIGHT RUNS OF DUCTS. USE WORDING INDICATED ON THE MECHANICAL LEGEND. USE 50MM (2 INCHES) HIGH STENCIL LETTERS.
  - ALL WALL AND FLOOR OPENINGS SHALL BE PACKED AND SEALED WITH AN APPROVED FIRE RESISTANT INSULATION TO 25MM (1 INCH) FROM END SIDE OF OPENING ON BOTH SIDES OF FLOOR OR WALL. REMAINING PORTION SHALL BE SEALED WITH AN APPROVED FIRE STOP SUBSTANCE EQUAL TO 'DOW CORNING' #3-6548 SILICON RTV FOAM PENETRATION SEALANT.
  - IN ALL AREAS REQUIRING CORE DRILLING THROUGH EXISTING FLOOR SLABS AND STRUCTURAL WALLS FOR MECHANICAL SERVICES, ETC., ALLOW FOR ALL NECESSARY X-RAYING BY LANDLORD'S APPROVED COMPANY, TO LOCATE HIDDEN ELECTRICAL SERVICES, STRUCTURAL REINFORCING, ETC., AND INCLUDE ALL COSTS IN TENDER PRICE. CO-ORDINATE THIS WORK WITH LANDLORD AND/OR TENANT CO-ORDINATOR FOR TIME, DURATION AND LOCATIONS REQUIRED, AND ADHERE TO THE LANDLORD'S REQUIREMENTS. X-RAYING SHALL BE CARRIED OUT AFTER 11:00 PM AND IN ACCORDANCE WITH THE REQUIREMENTS OF THE AUTHORITIES HAVING JURISDICTION. ONLY PERSONNEL QUALIFIED IN THE USE OF THE TYPE OF EQUIPMENT REQUIRED TO X-RAY, THE DOWNOTS OR DRILLING SHALL BE PERMITTED TO PERFORM THIS WORK ON THE SITE. NO CORE DRILLING SHALL PROCEED WITHOUT PRIOR WRITTEN CONSENT OF THE LANDLORD. ALL NOISE-RELATED CONSTRUCTION ACTIVITIES SHALL BE PERFORMED AFTER REGULAR BUSINESS HOURS (8:00 AM TO 6:00 PM) APPROVED BY THE LANDLORD.
  - CHECK AND VERIFY LOCATION OF EXISTING MECHANICAL AND ELECTRICAL INTERFERENCES BELOW FLOOR SLAB IN ALL AREAS REQUIRING CORE DRILLING AND ENSURE COMPATIBILITY OF AREA BELOW TO THE SATISFACTION OF THE LANDLORD.
  - ALL SHUTDOWNS OF ANY PORTION OF THE EXISTING BASE BUILDING SYSTEMS SHALL BE PERFORMED BY THE LANDLORD'S BUILDING OPERATIONS STAFF AND/OR CO-ORDINATED WITH THE LANDLORD FOR TIME AND DURATION OF INTERRUPTIONS AND ADHERED TO THE LANDLORD'S INSTRUCTIONS IN THIS REGARD. COST FOR SHUTDOWNS, DRAINING AND REFILLING OF BASE BUILDING SYSTEMS SHALL BE INCLUDED IN THE TENDER PRICE. ENSURE THAT ALL DOMESTIC HOT WATER TANKS ARE ISOLATED ELECTRICALLY PRIOR TO DRAIN DOWN OF WATER SYSTEMS.
  - PROVIDE ALL ACCESS DOORS WHERE SHOWN AND/OR REQUIRED BY SITE CONDITIONS, IN CEILINGS OR WALLS. ACCESS DOORS SHALL BE EQUAL TO MILCOOR OR LEHAGE, AND MUST BE COMPATIBLE WITH CEILING/WALL TYPE AND ACCESS DOORS IN RATED CEILINGS OR WALLS SHALL BE ULC APPROVED FOR THE APPLICATION.
  - MECHANICAL CONTRACTOR SHALL CO-ORDINATE WITH GENERAL CONTRACTOR FOR SIZE, LOCATION AND INSTALLATION OF ACCESS PANELS IN DRYWALL CEILINGS TO EQUIPMENT WHERE INDICATED ON PLAN AND/OR REQUIRED FOR PROPER SERVICING OF EQUIPMENT. CEILING ACCESS PANELS SHALL BE SUPPLIED AND INSTALLED BY THE MECHANICAL CONTRACTOR. INSTALLATION AND FINAL LOCATION TO COMPLY WITH THE INTERIOR DESIGNER'S APPROVAL.
  - RE-USE EXISTING MATERIALS AND EQUIPMENT WHEREVER POSSIBLE AND PROVIDE NEW ONLY WHERE REQUIRED AND AS SPECIFIED TO ENSURE A COMPLETE INSTALLATION. ALL EQUIPMENT, MATERIALS AND ASSOCIATED CONTROLS SALVAGED FROM DEMOLITION NOT USED IN THIS CONTRACT SHALL BE RETURNED TO LANDLORD/OWNER.
  - CHECK AND VERIFY ON SITE FOR ROUTING OF NEW DUCTWORK, AND LOCATION OF NEW EQUIPMENT AND INCLUDE IN TENDER PRICE FOR ANY RELOCATIONS OF EXISTING SERVICES OR ADJUSTMENTS OF NEW SERVICES OR EQUIPMENT AS REQUIRED TO SUIT THE SITE CONDITIONS. PROVIDE OFFSETS IN DUCTWORK AS REQUIRED TO AVOID

**INTERFERENCES:**

- SEAL AIR TIGHT ALL AROUND DUCTWORK AND PIPING PENETRATIONS THROUGH PARTITIONS ABOVE CEILING.
- BASE BUILDING REQUIREMENTS
  - ALL CONSTRUCTION WORK IN THE BUILDING MUST BE CARRIED OUT IN STRICT ACCORDANCE WITH LANDLORD'S TENANT CONSTRUCTION MANUAL AND BE CLEARED THROUGH PROPERTY MANAGEMENT. OBTAIN A COPY FROM LANDLORD PRIOR TO TENDER CLOSING.
  - DELIVERIES TO BE ARRANGED THROUGH BUILDING SUPERINTENDENT OF ANY WORK SCHEDULED AFTER NORMAL BUSINESS HOURS OR ON THE WEEKEND SO HE MAY NOTIFY SECURITY TO ALLOW CONTRACTORS ENTRANCE TO THE BUILDING.
  - ALL MECHANICAL WORK TO BE UNDERTAKEN BY QUALIFIED TRADESMEN WHO ARE TO SUPPLY THEIR TICKET NUMBER TO THE BUILDING SUPERINTENDENT PRIOR TO COMMENCING WORK. UNDER NO CIRCUMSTANCES SHALL AN APPRENTICE BE PERMITTED TO WORK IN THE BUILDING UNLESS DIRECTLY SUPERVISED BY A QUALIFIED TRADESMAN ON SITE.
- PREMIUM TIME
  - ALL WORK WHICH SHALL REQUIRE SHUTDOWN OF MECHANICAL SERVICES AND LIFE SAFETY SYSTEMS (SPRINKLER & STANDPIPE), AND NOISE-RELATED CONSTRUCTION ACTIVITIES SHALL BE PERFORMED ON PREMIUM TIME. INCLUDE IN THE TENDER PRICE FOR SUCH WORK.
- HEATING, VENTILATING AND AIR CONDITIONING
  - ALL DUCTWORK AND HANGERS SHALL BE FABRICATED FREE FROM VIBRATION, RATTLE OR DRUMMING UNDER OPERATING CONDITIONS AND IN ACCORDANCE WITH THE LATEST ASHRAE AND SMACNA RECOMMENDATIONS.
  - ROUND DUCTWORK:
 

CONSTRUCT ROUND DUCTWORK USING SPIRAL LOCK SEAM TYPE DUCT CONFORMING TO FOLLOWING GAUGES:

DUCT DIAMETER	THICKNESS OF SHEET METAL
8" & UNDER	0.5 MM (26 GA.)
9" TO 12"	0.5 MM (26 GA.)
14" & ABOVE	0.6 MM (24 GA.)
  - DUCT SEALING:
    - SUPPLY AND EXHAUST DUCTS AND PLENUMS: SEAL ALL TRANSVERSE JOINTS AND LONGITUDINAL SEAMS WITH HIGH VELOCITY DUCT SEALER (BAKELITE 530-09 OR EQUIVALENT). DUCT TAPE NOT ACCEPTABLE.
    - RETURN DUCTS AND PLENUMS: SEAL ALL TRANSVERSE JOINTS WITH HIGH VELOCITY DUCT SEALER (BAKELITE 530-09 OR EQUIVALENT). DUCT TAPE NOT ACCEPTABLE.
  - MAKE GOOD ALL EXISTING INSULATION WHEN CONNECTING TO EXISTING SERVICES.
- INSULATION
  - PREMOLDED PIPE INSULATION: SECTIONAL FIBREGLASS IN PREMOLDED SECTIONS 900 MM (36") LONG SPLIT AND READY FOR APPLICATION WITH MAXIMUM K FACTOR OF 0.035 AT 24 DEGREES C (75 DEGREES F) MEAN TEMPERATURE AND CAPABLE OF USE ON SERVICE FROM -40 DEGREES C (-40 DEGREES F) TO 260 DEGREES C (500 DEGREES F) AND WITH FACTORY APPLIED VAPOR SEAL JACKET OF VINYL COATED FOIL CRAFT LAMINATE WITH REINFORCING OF OPEN MESH GLASS FIBRE.
 

APPLICATION SCHEDULE:

    - DOMESTIC COLD WATER 12MM (1/2") PREMOLDED
    - DOMESTIC HOT WATER 12MM (1/2") PREMOLDED
  - ALL INSULATION, VAPOUR BARRIER AND PVC COVERS ARE TO MEET THE REQUIREMENTS OF NFPA-90A AND MUST HAVE A FIRE HAZARD RATING OF NOT MORE THAN 25 FOR FLAME SPREAD AND 50 FOR THE SMOKE DEVELOPED WHEN TESTED IN ACCORDANCE WITH CAN/ULC-5102.
  - RIGID INTERNAL DUCT LINER:
 

INSULATION SHALL BE 25 MM (1") THICK, 48 KG/M<sup>3</sup> (3.0 LB/FT<sup>3</sup>) DENSITY. FIX MECHANICAL FASTENERS TO BOTH HORIZONTAL AND VERTICAL SURFACES AT APPROXIMATELY 12 INCHES CENTRES EACH DIRECTION. CUT INSULATION MATERIAL TO REQUIRED SIZE AND APPLY TO INTERIOR OF DUCT AND/OR PLENUM WITH HORIZONTAL SURFACES OVERLAPPING VERTICAL SURFACES AND EDGES TIGHTLY BUTTED TOGETHER. INSULATION SHALL BE APPLIED TO THE DUCTWORK WITH A MINIMUM 90% COVERAGE OF ADHESIVE AND MECHANICAL FASTENERS, WHERE MECHANICAL FASTENERS PENETRATE FACTORY FINISH AND AT ALL JOINTS, APPLY A HEAVY LAYER OF SEAL COATING. SEAL OFF LEADING EDGE OF INSULATION TO DUCT SURFACE WITH REINFORCED SEAL COATING.
- PLUMBING
  - DOMESTIC WATER PIPING: TYPE L COPPER MARKED CERTIFIED FOR COMPLIANCE WITH ASTM B88-83 WITH WROUGHT COPPER OR CAST BRONZE PRESSURE SOLDER FITTINGS.
  - SOLDERED FITTINGS IN POTABLE WATER SYSTEMS: PROVIDE LEAD, ANTIMONY, CADMIUM ZINC FREE SOLDER COMPOSED OF TIN/COPPER/SILVER OR NICKEL COMPONENTS.
  - SANITARY DRAINAGE AND VENT PIPING - SUSPENDED: DWV COPPER TO ASTM B306-88 WITH 50-50 SOLDERED CAST BRASS DRAINAGE FITTINGS TO CSA B158.1-1976 OR WROUGHT COPPER FITTINGS TO ANSI B16-29-1986.6
- CLOSED OUT DOCUMENTS
  - AT THE END OF THE PROJECT, SUBMIT 3 COPIES OF CLOSED OUT DOCUMENTS CONTAINING NEW EQUIPMENT SHOP DRAWINGS REVIEWED BY THE CONSULTANT, CONTRACTOR'S NFPA 13 CONFORMANCE LETTER, WARRANTY CERTIFICATE, AIR BALANCE REPORT, & AS-BUILT DRAWINGS.

**LEGEND**

**NOTES:** EQUIPMENT SHOWN DOTTED [---] ARE EXISTING TO BE REMOVED. EQUIPMENT SHOWN [—] ARE EXISTING TO REMAIN. EQUIPMENT SHOWN BOLD [—] ARE NEW OR RELOCATED.

- THERMOSTAT
- ⊞ SQUARE DIFFUSER
- TYPE OF GRILLE OR DIFFUSER
- A-60-50 GRILLE OR DIFFUSER SIZE
- AIR QUANTITY IN CFM
- ⊞ RETURN AIR GRILLE
- DUCTWORK C/W 1" INTERNAL INSULATION
- ⊞ DUCTWORK C/W 1" EXTERNAL DUCT INSULATION
- ⊞ ROUND DUCT TAKE-OFF C/W BALANCING DAMPER
- ⊞ RIGID DUCT WORK UP/DOWN C/W BALANCING DAMPER
- ⊞ BY-PASS BOX
- SIZE OF BY-PASS BOX
- 16 11375 MAX AIR FLOW (CFM)
- 140 MIN AIR FLOW (CFM)
- AD ACCESS DOOR ON DRYWALL CEILING
- BD BALANCING DAMPER
- ES AIR FLOW SWITCH
- RE DENOTES RELOCATE
- C/E CONNECT TO EXISTING (PROVIDE NEW CONNECTION TO PLUMBING LINE AS REQUIRED)
- ⊞ DENOTES REFER TO NOTE 2.

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No.	Date	Issued or Revised
	Aug 07, 2024	Issued for Tender
	Jun 07, 2024	Issued for Permit
	Mar 26, 2024	Issued for Review

STAMP

**C. W. M. CHONG**  
9041472  
Jun 7/24  
PROVINCE OF ONTARIO

PROJECT:  
**HVAC SYSTEMS REVISIONS & HOT WATER TANK REPLACEMENT**  
150 DISCO ROAD, BLDG 'A'  
TORONTO

DRAWING TITLE:  
**LEGEND & SPECIFICATION**

SCALE: AS NOTED	DATE: NOV 2023
DRAWN BY: A.L./M.C.	PROJECT NO: 2341
DRAWING NO:	<b>M-1</b>

**ROOFTOP UNIT SCHEDULE:**

UNIT NO.	DESCRIPTION	MANUFACTURER	MODEL No.	TOTAL COOLING (BTUH)	SEN. COOLING (BTUH)	HEATING INPUT (BTUH)	HEATING OUTPUT (BTUH)	SUPPLY AIR FLOW (CFM)	MIN. O/D AIR (CFM)	VOLTAGE	FULL LOAD AMP
RTU 1	EXT'G ROOFTOP A/C UNIT (2ND FLR)	LENNOX	LCC120S2BH	120,000	-	240,000	192,000	4,060	812	600V/3Φ	5.9 X2 (COMPR), 3.9 (L.D. FAN), 1.0 X2 (COND. FAN) 0.5 (COMB.), 1.0 (EXH. FAN)
RTU 2	EXT'G A/C UNIT (2ND FLR - SOUTH SIDE)	LENNOX	TGA060S2DH1J	60,000	-	150,000	120,000	1,920	384	600V/3Φ	5.3 (COMPR), 2.2 (L.D. FAN), 1.0 (COND. FAN) 0.55 (COMB.), 1.5 (EXH. FAN)
RTU 3	EXT'G ROOFTOP A/C UNIT (2ND FLR - NORTH SIDE)	LENNOX	LGA072H2BH-J	72,000	-	125,000	100,000	1,910	382	600V/3Φ	7.4 (COMPR), 2.7 (L.D. FAN), 1.0 (COND. FAN) 0.5 (COMB. FAN), 1.7 (EXH. FAN)
RTU 4	EXT'G ROOFTOP A/C UNIT (ELEVATOR SHAFT)	JOHNSON CONTROLS	ZED06000B2C2BCA1A2	60,000	-	N/A	N/A	2,000	400	208V/3Φ	16.0 (COMPR), 4.3 (L.D. FAN), 4.4 (COND. FAN)

**HRV UNIT SCHEDULE:**

UNIT NO.	DESCRIPTION	MANUFACTURER	MODEL No.	SUPPLY AIR FLOW (CFM)	EFFICIENCY	VOLTAGE	FULL LOAD AMP	WEIGHT	REMARKS
HRV-1	NEW HRV UNIT (BASEMENT)	LIFEBREATH	350DCS	300	92%	120V/1Φ	6.3A	160 LBS	C/W WIRING WALL MOUNTED 5-SPEED MAIN CONTROL PANEL. PROVIDE ALL NECESSARY UNISTRUT CHANNELS, THREADED RODS, VIBRATION ISOLATORS, CEILING ANCHORS, ETC. (SIZED TO SUPPORT THE WEIGHT OF HRV UNIT). PROVIDE FLEXIBLE DUCT CONNECTORS AT ALL FOUR DUCT OUTLETS. HRV UNIT SHALL BE COMPLETE WITH AUTO DEFROST CYCLE.

**DIFFUSER & GRILLE SCHEDULE:**

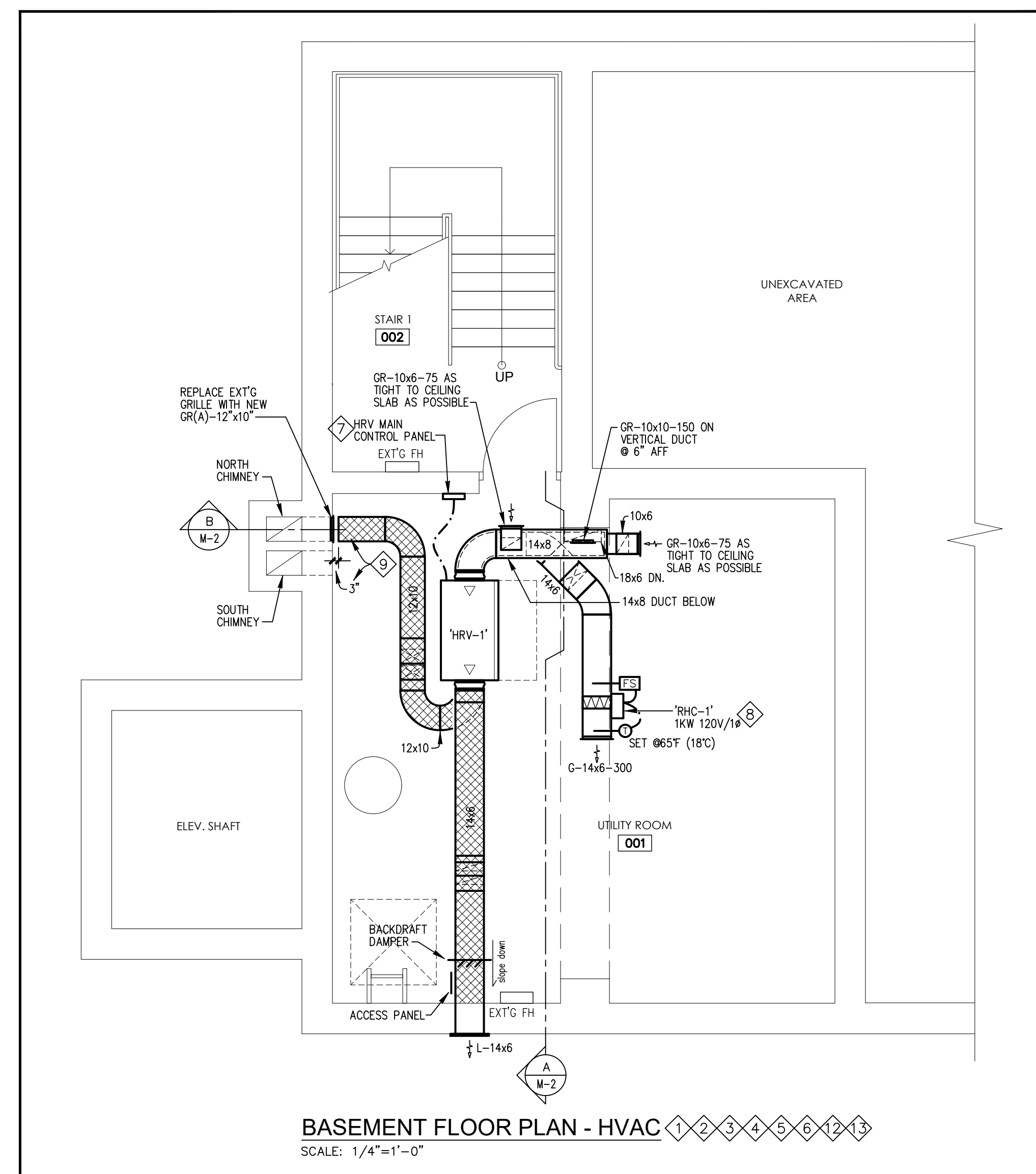
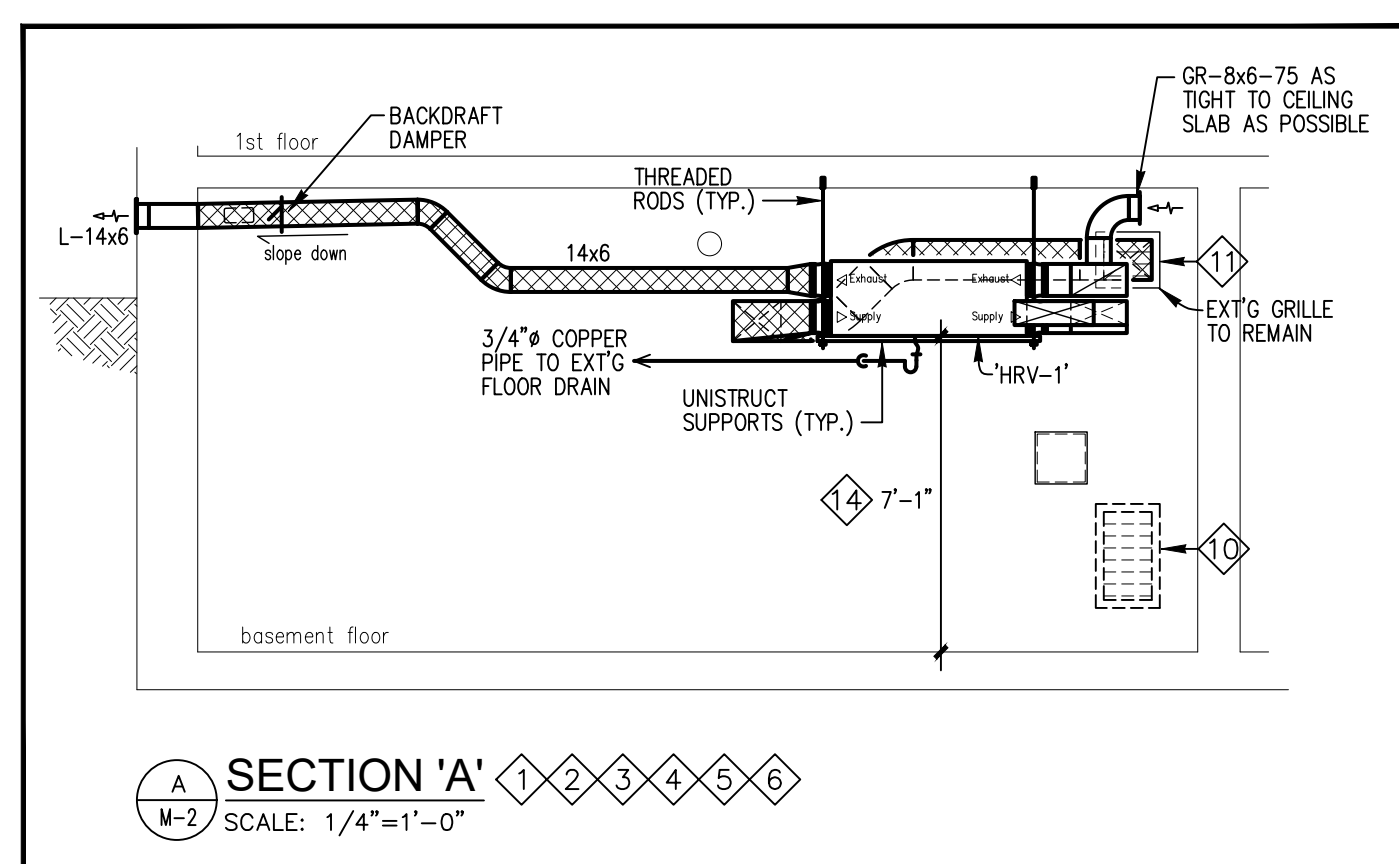
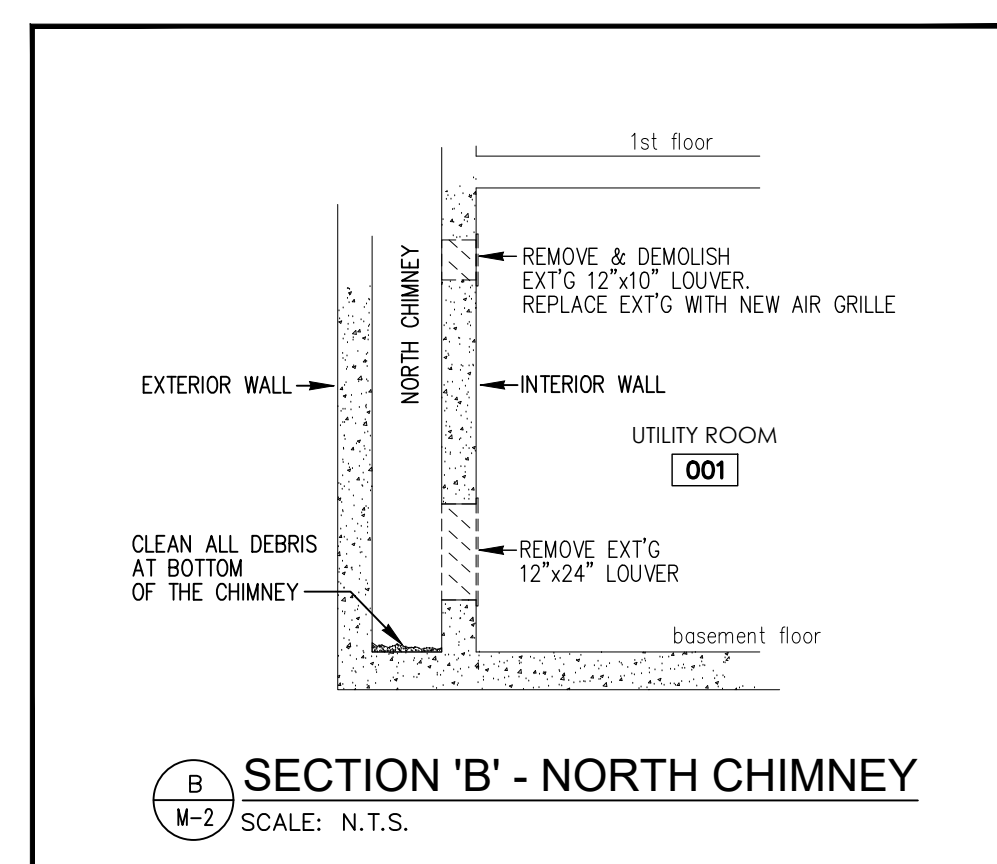
DESIGNATION	MANUFACTURER	MODEL No.	CEILING TYPE	REMARKS	EQUAL
A	-	-	T-BAR	EXT'G SQUARE CONE DIFFUSER / 4-CONE / INLET SIZE AS SHOWN ON FLOOR PLAN	
D	-	-	-	EXT'G SUPPLY AIR GRILLE / GRILLE SIZE AS SHOWN ON DRAWING	
G	E.H. PRICE	520/F/A/A/B12	-	NEW LOUVERED FACE SUPPLY AIR GRILLE / DOUBLE DEFLECTION / WHITE FINISH / SIZE AS SHOWN ON FLOOR PLAN	NAILOR, TITUS
GR	E.H. PRICE	530/F/A/A/B12	-	NEW LOUVERED FACE EXHAUST AIR GRILLE (STEEL CONSTRUCTION) / WHITE FINISH / SIZE AS SHOWN ON FLOOR PLAN	NAILOR, TITUS
GR(A)	E.H. PRICE	610/F/A/A/B12	-	NEW LOUVERED FACE EXHAUST AIR GRILLE (ALUMINUM CONSTRUCTION) / WHITE FINISH / SIZE AS SHOWN ON FLOOR PLAN	NAILOR, TITUS
L	E.H. PRICE	DE439	-	NEW EXTRUDED ALUMINUM EXTERIOR LOUVER / STANDARD 1.5" EXTERIOR FLANGE / BIRD SCREENPOWDERED ALUMINUM FINISH / SIZE AS SHOWN ON FLOOR PLAN	NAILOR, TITUS
P	E.H. PRICE	24"x24"/PRODIGY SERIES DIFFUSER	T-BAR	NEW PRODIGY SERIES SQUARE PLAUQUE DIFFUSER / 24"x24" / WHITE FINISH / 1 MASTER & 3 DRONE DIFFUSERS / PROVIDE ONE (1) DIAL THERMOSTAT / PROVIDE PRESSURE RELIEF COLLARS FOR ALL DIFFUSERS / INLET SIZE AS SHOWN ON DRAWING / SEE NOTE	NAILOR, TITUS
R	E.H. PRICE	80 EGGORATE	T-BAR	NEW EGGORATE FACE RETURN GRILLE / WHITE FINISH / WITH BORDER FOR DRYWALL & EXPOSED DUCT INSTALLATION / CORE ONLY FOR T-BAR CEILING INSTALLATION / SIZE AS SHOWN ON FLOOR PLAN	NAILOR, TITUS

**FAN HEATER SCHEDULE:**

DESIGNATION	MANUFACTURER	MODEL No.	KW	VOLTAGE	REMARKS	EQUAL
FH-1	OUELLET	OAC08007	8.0	347V/1PH	NEW FAN HEATER / SURFACE MOUNTED / WHITE FINISH / PROVIDE NEW EXTERNAL RC840 24VAC RELAY	STELPRO, REZNOR

**BY-PASS BOX SCHEDULE:**

DESIGNATION	MANUFACTURER	MODEL No.	VOLTAGE	REMARKS	EQUAL
BP-1	E.H. PRICE	LGB-16	120V/1PH	NEW BY-PASS BOX C/W 120V-24VAC 20VA STEPDOWN TRANSFORMER / SUPPLY AIR TEMPERATURE SENSOR / DIAL MODEL THERMOSTAT / C/W AUTOMATIC HEATING/COOLING CHANGEVER CONTROL / UNDERSIDE SERVICE ACCESS PANEL / SET MINIMUM AIR FLOW AT 10% OF THE MAXIMUM	NAILOR, TITUS



**NOTES**

- ALL CONSTRUCTION WORK IN THE BUILDING MUST BE CARRIED OUT IN STRICT ACCORDANCE WITH LANDLORD'S RULES & REGULATIONS AND BE CLEARED THROUGH PROPERTY MANAGEMENT.
- ALL NEW DUCT CONNECTIONS (JOINTS & SEAMS) ARE TO BE SEALED WITH DUCT SEALER TO PROVIDE AN AIR TIGHT DUCT SYSTEM. DUCT TAPE IS NOT ACCEPTABLE.
- ALL UNUSED SPIN-ON OR DUCTWORK OPENINGS SHALL BE CAPPED OFF.
- UNLESS OTHERWISE NOTED, ALL BALANCING DAMPERS SHALL BE ACCESSIBLE & SHALL NOT BE ABOVE DRYWALL CEILING.
- UNLESS OTHERWISE SHOWN, NEW FLEXIBLE DUCTWORK TO HAVE A MAXIMUM LENGTH OF 10'. CONNECT DUCTWORK TO DIFFUSERS AND RIGID DUCTWORK WITH A MINIMUM OF 3 TAPPING SCREWS. SEAL WITH DUCT SEALER. FLEXIBLE DUCTWORK TO BE SUPPORTED FROM BUILDING STRUCTURE WHERE IT IS NOT SELF-SUPPORTING AND MUST NOT BE ALLOWED TO LIE ON CEILING OR OTHER EQUIPMENT.
- PROVIDE AIR BALANCING FOR HRV UNIT, ROOFTOP UNITS (#1, #2, & #3) & THEIR ASSOCIATED DIFFUSERS & AIR GRILLES SHOWN ON DRAWINGS M-2 & M-4. ALLOW FOR AN ADDITIONAL AIR BALANCING TRIP WITHIN 6 MONTHS FROM THE END OF THE PROJECT FOR FUTURE AIR FLOW ADJUSTMENT.
- PROVIDE SURFACE MOUNTED BACKBOX FOR MOUNTING OF HRV UNIT CONTROL PANEL. VERIFY EXACT BACKBOX SIZE WITH HRV UNIT MANUFACTURER. PROVIDE 1/2" CONTROL WIRING CONDUIT FROM CONTROL PANEL BACKBOX TO HRV UNIT.
- PROVIDE A NEW THERMOLEC 1KW ELECTRIC REHEAT COIL 'RHC-1', 120V, C/W AIR FLOW SWITCH, DUCT MOUNTED TEMPERATURE SENSOR, SSR FOR MODULATING CONTROL, & ALL NECESSARY WIRING & HARDWARE TO PROVIDE A COMPLETE SYSTEM. AIR DISCHARGE SETPOINT SHALL BE @ 65°F.
- 12"x10" DUCT INLET SHALL BE MOUNTED DIRECTLY IN FRONT OF THE 12"x10" AIR GRILLE WITH 3" AIR GAP BETWEEN THE DUCT OPENING & THE AIR GRILLE.
- REMOVE EXT'G GRILLE & SEAL OFF OPENING.
- REPLACE EXT'G AIR GRILLE WITH NEW. APPROXIMATE SIZE IS 12"x10". CONTRACTOR TO VERIFY EXACT SIZE AT SITE PRIOR TO ORDERING.
- DELETED.
- PROVIDE ALL NECESSARY X-RAYING & CORING AS REQUIRED BY MECHANICAL, ELECTRICAL & GENERAL CONTRACTORS FOR THIS PROJECT. VERIFY ALL CORE DRILLING REQUIREMENTS WITH ALL SUB-CONTRACTORS PRIOR TO TENDER CLOSE. THIS CONTRACTOR TO VERIFY TYPE & ACCESSIBILITY OF CEILING SPACE BELOW OR WALL PRIOR TO TENDER CLOSE. INCLUDE ALL COSTS ASSOCIATED WITH X-RAYING & CORING, RETAINING THE SERVICES & OBTAINING THE APPROVAL FROM STRUCTURAL ENGINEER FOR ALL CORING LOCATIONS. PROVIDE AMPLE NOTICE TO ARRANGE WITH OWNER TO CARRY OUT X-RAYING, CORING, ETC. INCLUDE COSTS OF SECURITY GUARD SERVICES. ALL SUCH WORK TO BE DONE AFTER 11 PM.
- CONTRACTOR SHALL VERIFY SITE CONDITIONS. IF POSSIBLE, CONTRACTOR SHALL INSTALL THE NEW HRV UNIT AS HIGH AS POSSIBLE.

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	Mar 26, 2024	Issued for Review

**C. W. M. CHONG**  
PROFESSIONAL ENGINEER  
90414772  
JUN 17/24  
PROVINCE OF ONTARIO  
NORTH

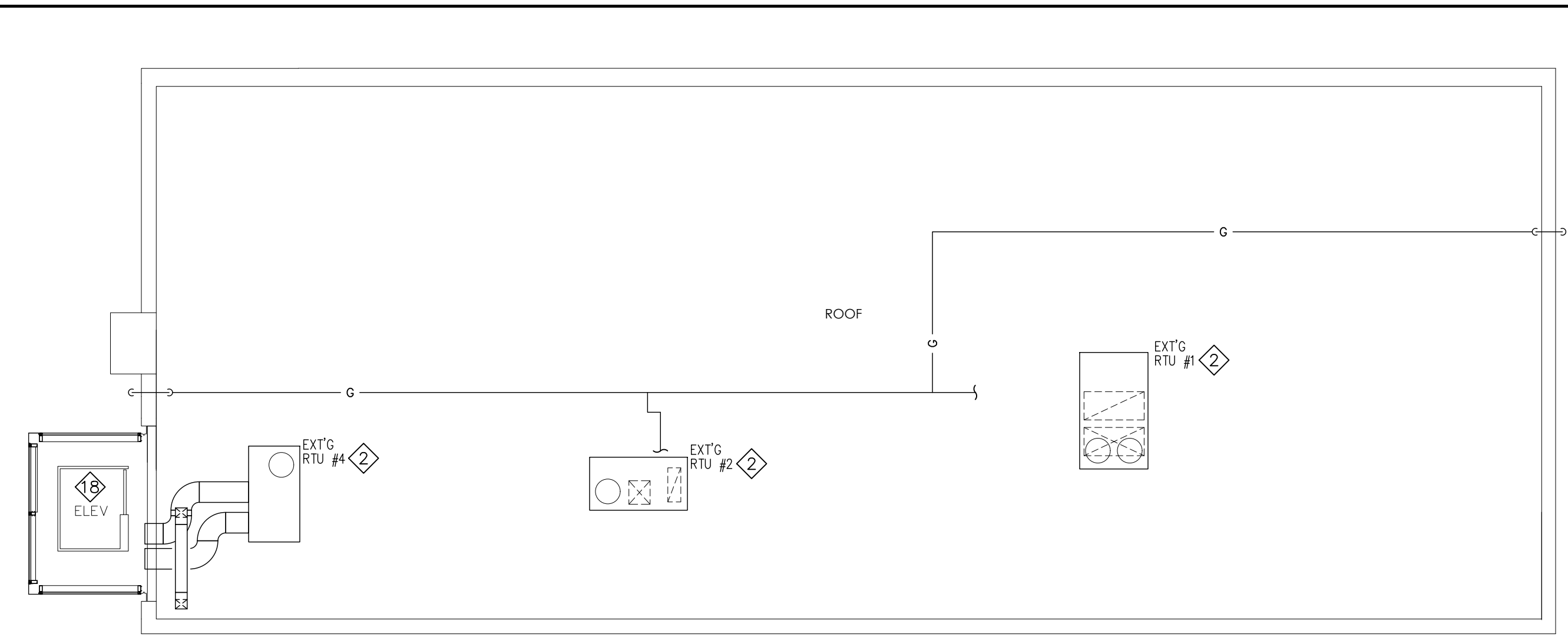
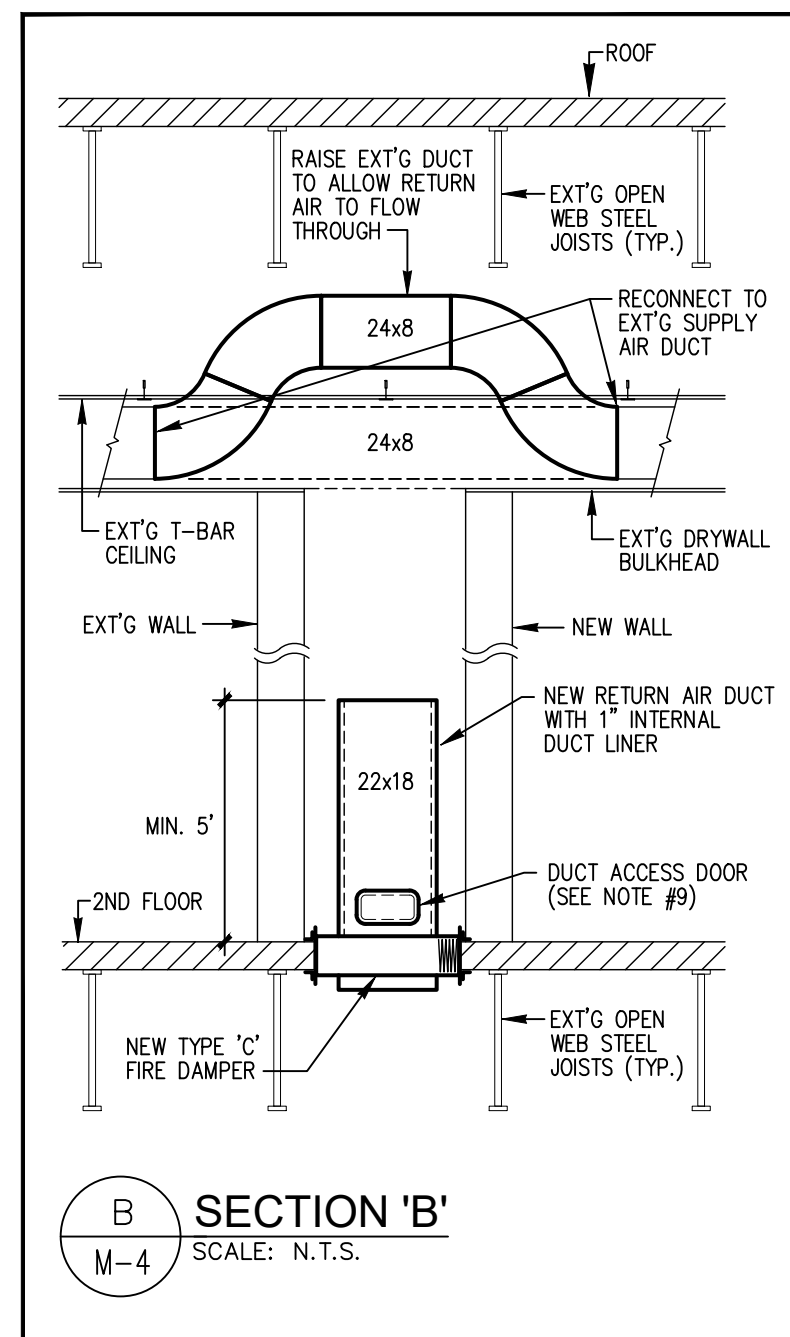
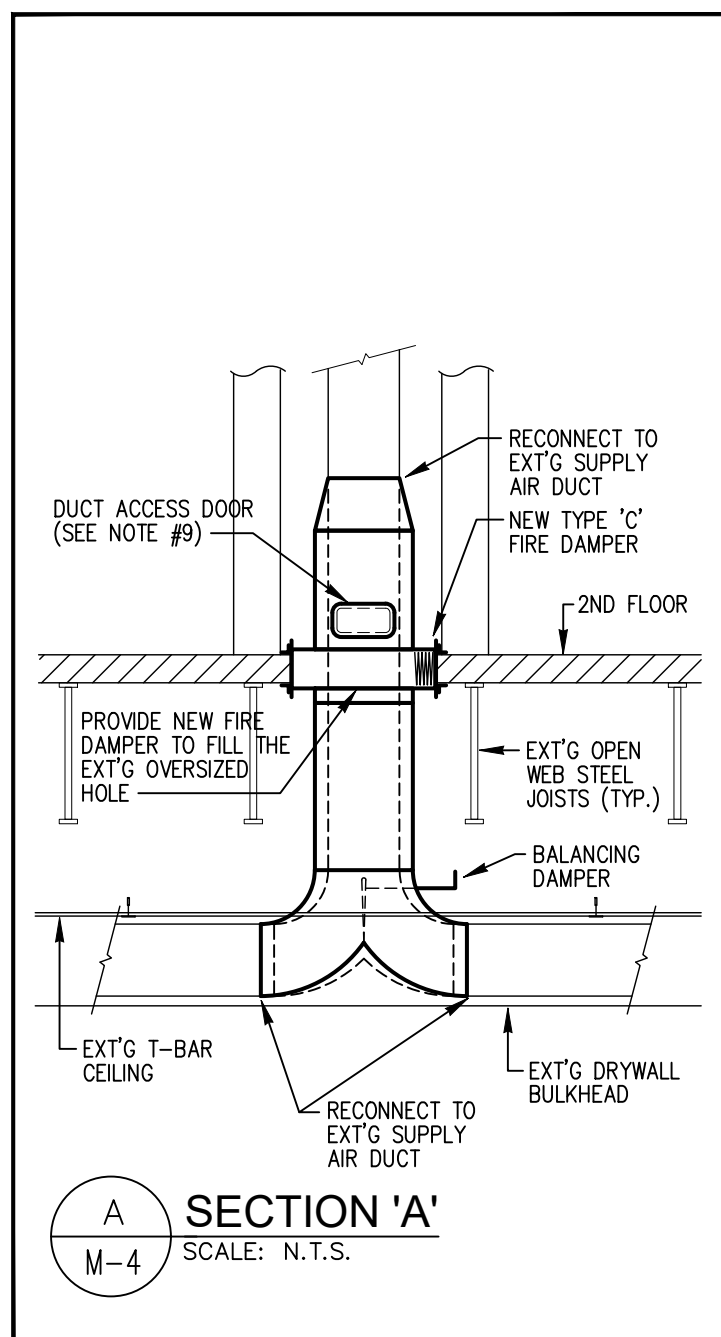
PROJECT:  
**HVAC SYSTEMS REVISIONS & HOT WATER TANK REPLACEMENT**  
150 DISCO ROAD, BLDG 'A'  
TORONTO

DRAWING TITLE:  
**BASEMENT FLOOR PLAN - HVAC**

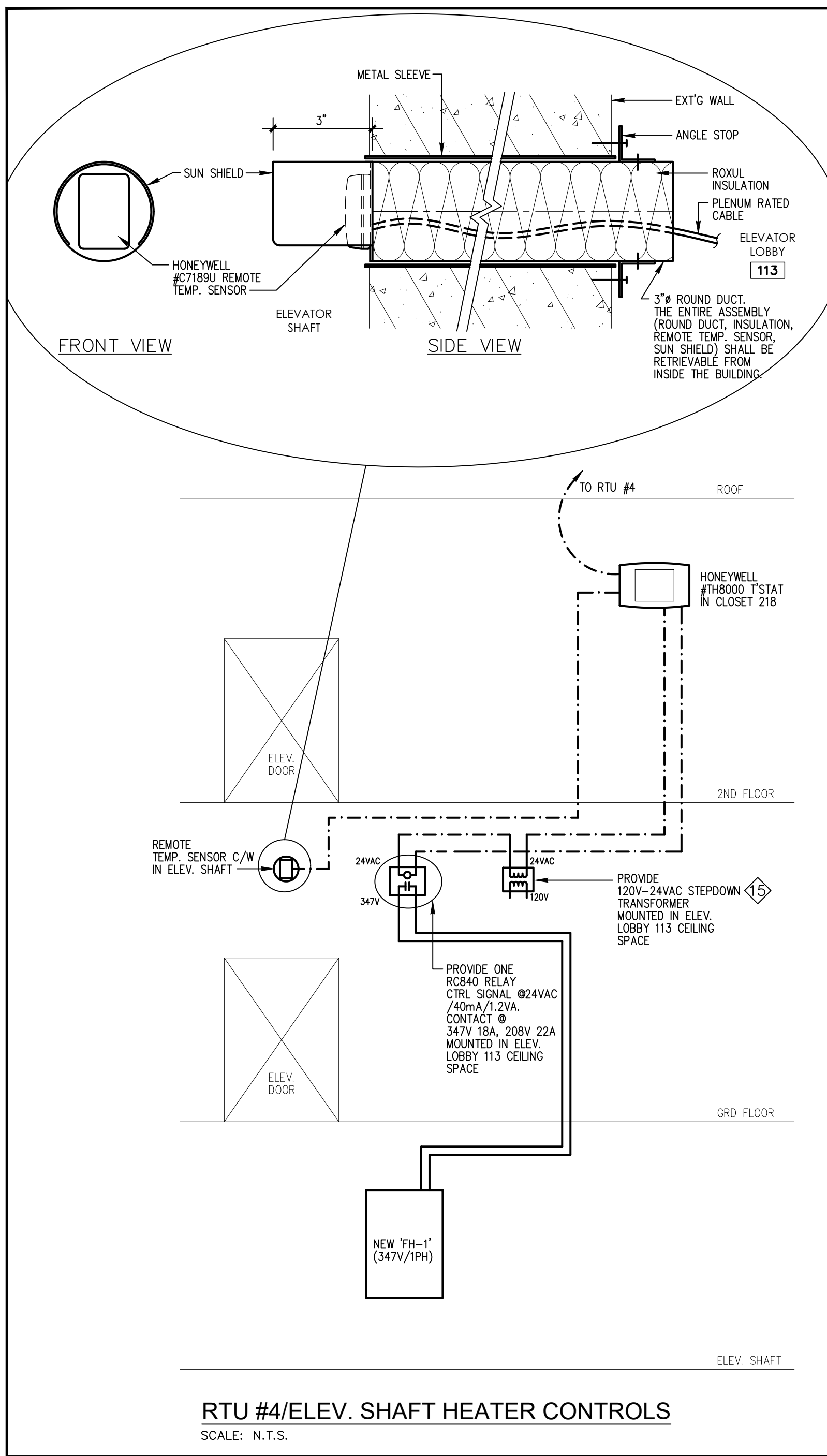
SCALE: AS NOTED  
DATE: NOV 2023  
DRAWN BY: A.L./M.C.  
PROJECT NO.: 2341



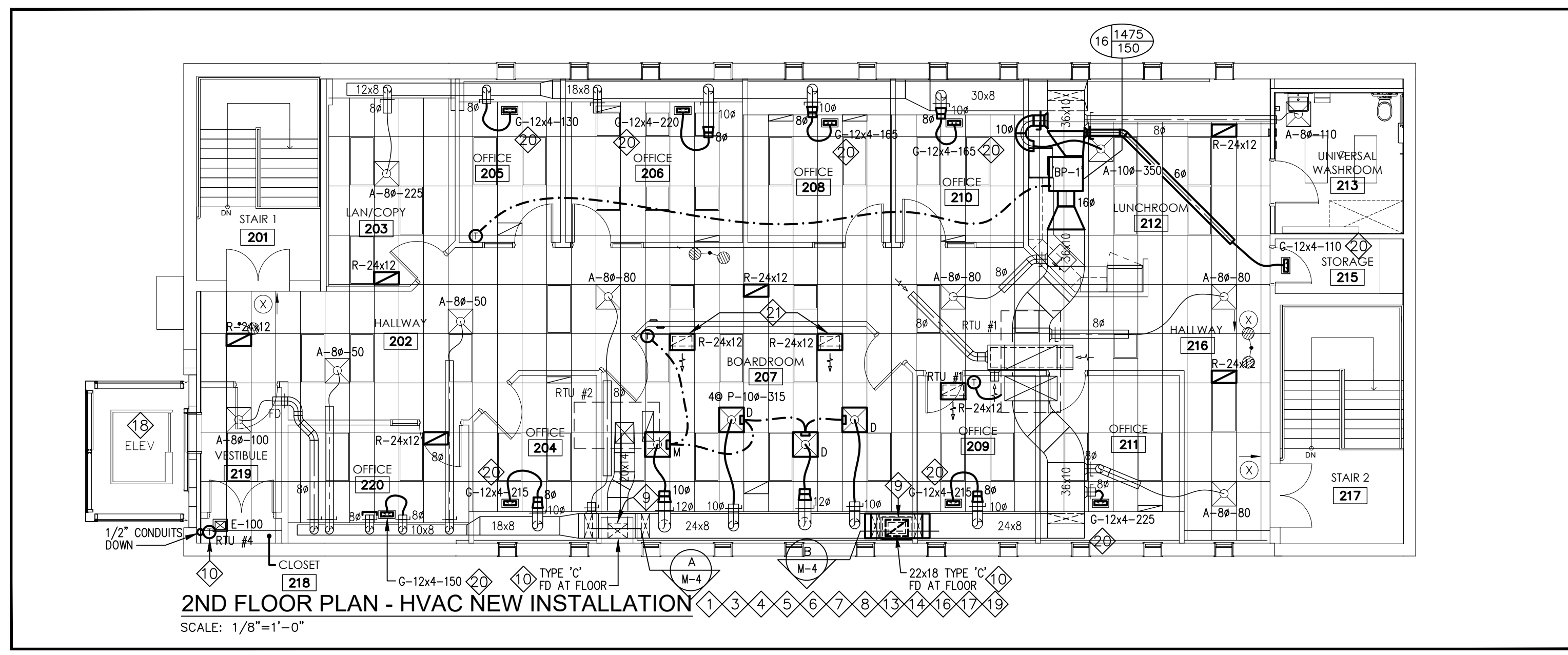




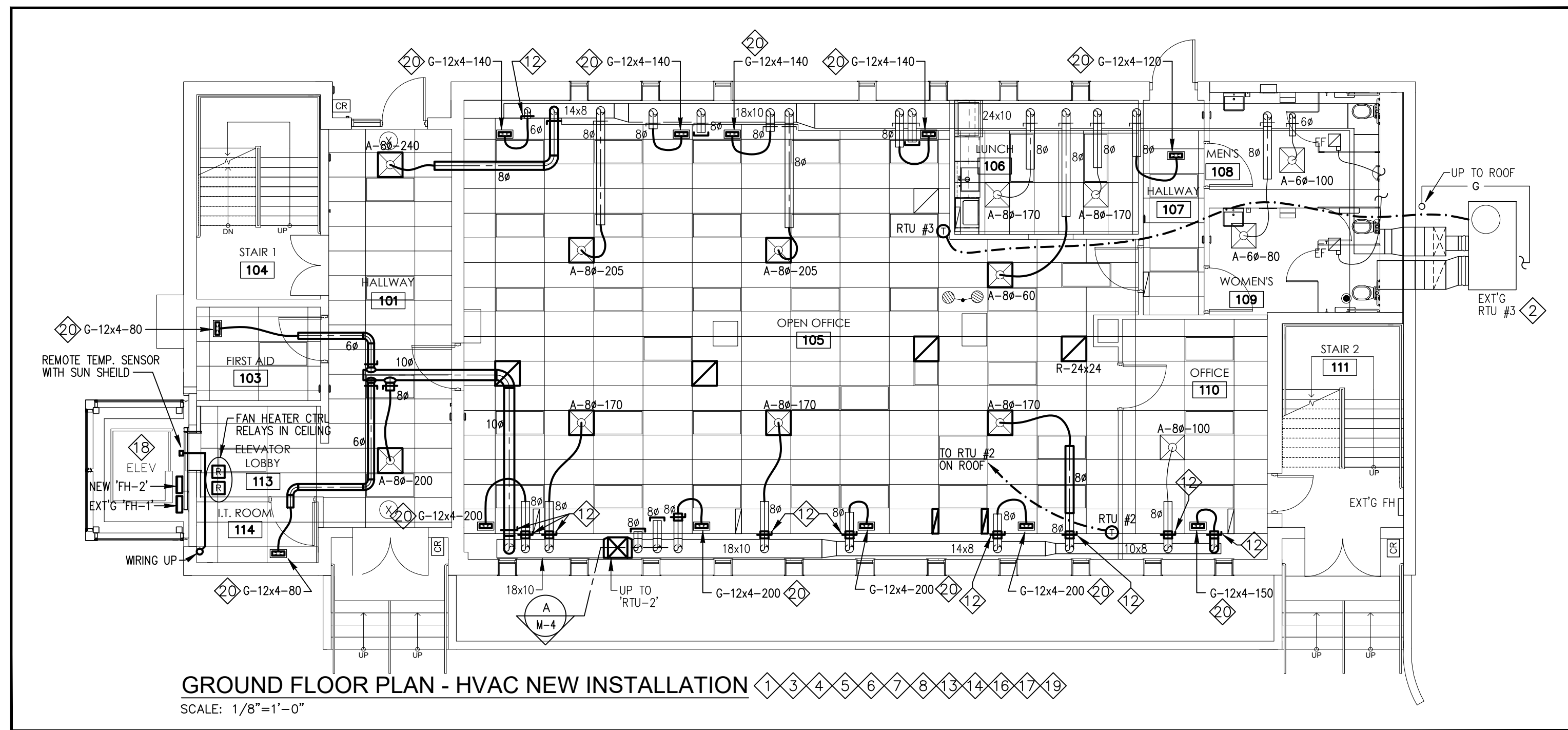
ROOF PLAN - HVAC NEW INSTALLATION  
SCALE: 1/8"=1'-0"



RTU #4/ELEV. SHAFT HEATER CONTROLS  
SCALE: N.T.S.



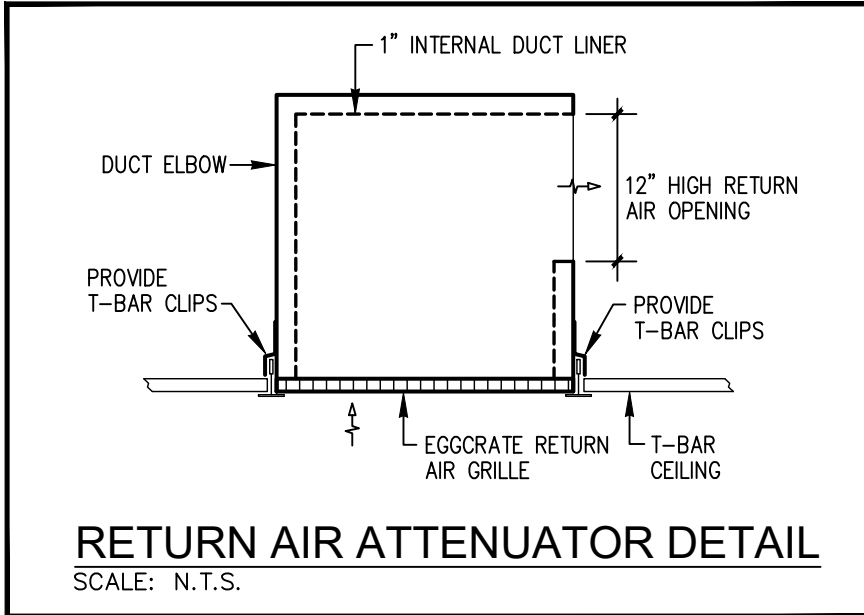
2ND FLOOR PLAN - HVAC NEW INSTALLATION  
SCALE: 1/8"=1'-0"



GROUND FLOOR PLAN - HVAC NEW INSTALLATION  
SCALE: 1/8"=1'-0"

NOTES

- 1 ALL CONSTRUCTION WORK IN THE BUILDING MUST BE CARRIED OUT IN STRICT ACCORDANCE WITH LANDLORD'S RULES & REGULATIONS AND BE CLEARED THROUGH PROPERTY MANAGEMENT.
- 2 REPLACE ALL AIR FILTERS IN ROOFTOP UNITS RTU #1, #2, #3 & #4 WITH NEW AT THE END OF THE PROJECT.
- 3 ALL NEW DUCT CONNECTIONS (JOINTS & SEAMS) ARE TO BE SEALED WITH DUCT SEALER TO PROVIDE AN AIR TIGHT DUCT SYSTEM. DUCT TAPE IS NOT ACCEPTABLE.
- 4 ALL UNUSED SPIN-ON OR DUCTWORK OPENINGS SHALL BE CAPPED OFF.
- 5 UNLESS OTHERWISE NOTED, ALL BALANCING DAMPERS SHALL BE ACCESSIBLE & SHALL NOT BE ABOVE DRYWALL CEILING.
- 6 UNLESS OTHERWISE SHOWN, NEW FLEXIBLE DUCTWORK TO HAVE A MAXIMUM LENGTH OF 10'. CONNECT DUCTWORK TO DIFFUSERS AND RIGID DUCTWORK WITH A MINIMUM OF 3 TAPPING SCREWS. SEAL WITH DUCT SEALER. FLEXIBLE DUCTWORK TO BE SUPPORTED FROM BUILDING STRUCTURE WHERE IT IS NOT SELF-SUPPORTING AND MUST NOT BE ALLOWED TO LIE ON CEILING OR OTHER EQUIPMENT.
- 7 PROVIDE AIR BALANCING FOR HRV UNIT, ROOFTOP UNITS (#1, #2, & #3) & THEIR ASSOCIATED DIFFUSERS & AIR GRILLES SHOWN ON DRAWINGS M-2 & M-4. ALLOW FOR AN ADDITIONAL AIR BALANCING TRIP WITHIN 6 MONTHS FROM THE END OF THE PROJECT FOR FUTURE AIR FLOW ADJUSTMENT.
- 8 **OUTDOOR AIR REQUIREMENT:**  
(5,810 SQFT x 0.06 SQFT + 54 x 5 CFM/PPL)/0.8 = 773.25 CFM  
**OUTDOOR AIR SUPPLY:**  
TOTAL OUTDOOR AIR SUPPLY = TOTAL SUPPLY AIR FROM RTU-1, RTU-2 & RTU-3 x 20% = 7,890 CFM x 20% = 1,578 CFM
- 9 PROVIDE 12"x6" ACCESS DOOR ON DUCT TO ACCESS FIRE DAMPER.
- 10 PROVIDE TYPE 'C' FIRE DAMPER AT FLOOR PENETRATION C/W BREAK AWAY JOINTS.
- 11 CONTRACTOR TO LOCATE & REMOVE EXTG THERMOSTAT FOR RTU #4. PROVIDE A NEW THERMOSTAT COMPLETE WITH REMOTE TEMPERATURE SENSOR. INSTALL THE REMOTE TEMPERATURE SENSOR INSIDE THE ELEVATOR SHAFT AT 1ST FLOOR LEVEL (MIDPOINT IN THE SHAFT). THIS THERMOSTAT SHALL ALSO CONTROL THE FORCED FLOW HEATER AT THE BOTTOM OF THE ELEVATOR SHAFT.
- 12 PROVIDE BALANCING DAMPER WHERE FOUND MISSING. SIZE OF BALANCING DAMPER TO MATCH SIZE OF DUCT.
- 13 WIPE CLEAN ANY DIFFUSER OR AIR GRILLE (EXTG & NEW) FOUND TO BE DIRTY AT THE END OF THE PROJECT.
- 14 HVAC CONTRACTOR SHALL COORDINATE ALL DUCTWORK INSTALLATION WITH ELECTRICAL, PLUMBING & GENERAL CONTRACTORS PRIOR TO ROUGH-IN TO AVOID INTERFERENCE.
- 15 VERIFY WITH RTU & THERMOSTAT MANUFACTURERS WHETHER EXTERNAL STEPDOWN TRANSFORMER IS REQUIRED PRIOR TO INSTALLATION.
- 16 **HVAC CONTRACTOR SHALL BE THE PRIME CONTRACTOR FOR THIS PROJECT.**
- 17 PROVIDE ALL NECESSARY X-RAYING & CORING AS REQUIRED BY MECHANICAL, ELECTRICAL & GENERAL CONTRACTORS FOR THIS PROJECT. VERIFY ALL CORE DRILLING REQUIREMENTS WITH ALL SUB-CONTRACTORS PRIOR TO TENDER CLOSE. THIS CONTRACTOR TO VERIFY TYPE & ACCESSIBILITY OF CEILING SPACE BELOW OR WALL PRIOR TO TENDER CLOSE. INCLUDE ALL COSTS ASSOCIATED WITH X-RAYING & CORING, RETAINING THE SERVICES & OBTAINING THE APPROVAL FROM STRUCTURAL ENGINEER FOR ALL CORING LOCATIONS. PROVIDE AMPLE NOTICE TO ARRANGE WITH OWNER TO CARRY OUT X-RAYING, CORING, ETC.. INCLUDE COSTS OF SECURITY GUARD SERVICES. ALL SUCH WORK TO BE DONE AFTER 11 PM.
- 18 THIS CONTRACTOR SHALL RETAIN & PAY FOR THE SERVICES OF BASE BUILDING ELEVATOR SERVICE COMPANY FOR ALL ACCESS INTO THE ELEVATOR SHAFT (FOR HVAC, ELECTRICAL, ETC.).
- 19 PROVIDE ALL NECESSARY ADDITIONAL CROSS TEES AS REQUIRED FOR NEW OR RELOCATED DIFFUSERS & RETURN AIR GRILLES.
- 20 FOR EACH OF TYPE 'C' AIR GRILLES, PROVIDE SHEET METAL PLENUM BOX ABOVE AIR GRILLE WITH ROUND DUCT COLLAR ON THE SIDE FOR FLEXIBLE DUCT CONNECTION. PROVIDE SUPPORTS FOR PLENUM BOX FROM THE STEEL JOISTS ABOVE.
- 21 SEE "RETURN AIR ATTENUATOR DETAIL" FOR SOUND ATTENUATION AT THE TWO NEW RETURN AIR GRILLES IN BOARDROOM 207.



RETURN AIR ATTENUATOR DETAIL  
SCALE: N.T.S.

**Tanco Engineering Limited**  
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No.	Date	Issued or Revised
	Aug 07, 2024	Issued for Tender
	Jun 07, 2024	Issued for Permit
	Mar 26, 2024	Issued for Review



PROJECT:  
**HVAC SYSTEMS REVISIONS & HOT WATER TANK REPLACEMENT**  
150 DISCO ROAD, BLDG 'A'  
TORONTO

DRAWING TITLE:  
**GROUND FLOOR, 2ND FLOOR, & ROOF PLANS - HVAC NEW INSTALLATION**

SCALE	AS NOTED	DATE	NOV 2023
DRAWN BY	A.L./M.C.	PROJECT NO.	2341
DRAWING NO.	M-4		

