

- PROVIDE ALL LABOR, MATERIALS, EQUIPMENT, SERVICES, TOOLS, TRANSPORTATION, INCIDENTALS AND DETAILS NECESSARY TO PROVIDE A COMPLETE AND FULLY OPERATIONAL MECHANICAL SYSTEM AS SHOWN ON THE DRAWINGS, CALLED FOR IN THE SPECIFICATIONS AND AS REQUIRED BY THE JOB CONDITIONS. ALL WORK NOT SPECIFICALLY NOTED AS BEING PROVIDED BY THE LANDLORD SHALL BE PROVIDED BY THE GENERAL CONTRACTOR. ALL WORK (MATERIALS, FABRICATION, INSTALLATION, ETC.) SHALL COMPLY WITH THE APPLICABLE SECTIONS OF ALL STATE AND LOCAL CODES (MECHANICAL CODE, BUILDING CODE, ENERGY CODE, ETC.) AND THE LATEST EDITION OF SMACNA.
- READ THE SPECIFICATIONS AND REVIEW DRAWINGS FOR ALL DIVISIONS OF WORK. COORDINATE AND SCHEDULE ALL WORK WITH AND BETWEEN ALL CONTRACTORS AND PROVIDE ALL SUBCONTRACTORS WITH A COMPLETE SET OF BID DOCUMENTS. FIELD VERIFY AND COORDINATE WORK BETWEEN ALL TRADES, LANDLORD REQUIREMENTS, CEILING HEIGHTS AND EXISTING CONDITIONS PRIOR TO THE START OF WORK OR ORDERING OF EQUIPMENT.
- VERIFY ALL CONDITIONS IN FIELD PRIOR TO BID. VISIT JOB SITE AND BE FAMILIAR WITH LANDLORD REQUIREMENTS AND EXISTING CONDITIONS. NO ALLOWANCE WILL BE MADE FOR EXTRAS DUE TO FAILURE TO VISIT THE JOB SITE AND/OR FAILURE TO PREDETERMINE ALL REQUIREMENTS IMPOSED BY THE LANDLORD, EXISTING CONDITIONS OR OTHER AUTHORITIES. REFER TO RESPONSIBILITY SCHEDULE ON SHEET C101 FOR MORE INFORMATION.
- VERIFY DUCT ROUTING AS EARLY IN THE JOB PROCESS AS POSSIBLE. IF MINOR CHANGES ARE REQUIRED, NOTIFY TENANT CONSTRUCTION MANAGER IMMEDIATELY. DUCT DIMENSIONS ARE NOMINAL CLEAR INSIDE DIMENSIONS. DUCT LAYOUTS ARE SCHEMATIC. FIELD COORDINATE ALL DUCT RUNS PRIOR TO DUCT FABRICATION. NO EXTRAS SHALL BE AWARDED FOR DUCT REVISIONS CAUSED BY LACK OF COORDINATION. ALL CONCEALED DUCTWORK SHALL BE WRAPPED WITH A MINIMUM R-VALUE OF 4.2, 1.0 PCF INSULATION. REFER TO SPECIFICATIONS FOR MORE INFO.
- ALIGNMENT/PLACEMENT OF HVAC DEVICES IS CRITICAL. COORDINATE ALIGNMENT WITH THE ARCHITECTURAL REFLECTED CEILING PLAN AND LIGHTING PLAN. COORDINATE BOX-OUT LOCATIONS FOR ALL DRYWALL MOUNTED AIR DEVICES WITH CEILING FRAMING. ORIENT AIR DEVICES TO MINIMIZE VIEW INTO PLENUM/DUCT. CEILING AIR DEVICES TO HAVE BLADE OPENINGS FACING WALL OR SOFFIT AND WALL AIR DEVICES TO HAVE OPENINGS FACING UP.
- SPIN-IN FITTINGS WITHOUT MANUAL BALANCING DAMPERS TO BE USED FOR ALL ROUND BRANCH TAPS AT INACCESSIBLE LOCATIONS WITH BALANCING REQUIRED WITHIN TWO (2) FEET OF DIFFUSER WITH PLASTER FRAME. FLEX DUCT TO BE A MAXIMUM OF 5'-0" LONG AND SHALL BE INSULATED.
- PROVIDE AS-BUILT DRAWINGS ALONG WITH ALL EQUIPMENT SHOP DRAWINGS, INFORMATION ON THERMOSTATS, CONTROL WIRING DIAGRAMS AND OTHER PERTINENT INFORMATION TO LANDLORD AND TENANT AT COMPLETION OF PROJECT.
- FURNISH AND INSTALL STRUCTURAL STEEL REQUIRED TO SUPPORT EQUIPMENT AND COORDINATE LOCATIONS AND REQUIREMENTS WITH THE LANDLORD REPRESENTATIVE. COST OF THIS WORK AND ANY STRUCTURAL ENGINEERING FEES REQUIRED SHALL BE INCLUDED IN THIS BID.
- ALL EQUIPMENT, PIPING AND/OR DUCTWORK NOT BEING USED OR SHOWN TO REMAIN IS FULLY REMOVED AND NOT ABANDONED. REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION.
- ANY EXISTING WALL, FLOOR OR CEILING SURFACE THAT IS DAMAGED DURING CONSTRUCTION SHALL BE REPAIRED TO MATCH NEAR AND/OR EXISTING CONDITIONS.
- COMPLETELY INSTALL ALL ACCESSORIES PER EQUIPMENT MANUFACTURER RECOMMENDATIONS, INCLUDING ALL TEMPERATURE CONTROL CONNECTIONS. PROVIDE ALL MISCELLANEOUS MATERIALS AND LABOR REQUIRED TO COMPLETE THIS WORK PER MANUFACTURER PROVIDED INSTRUCTIONS.
- GENERAL CONTRACTOR SHALL CONTRACT AN AIR BALANCING CONTRACTOR. BALANCE ALL HVAC SYSTEMS TO AIRFLOW VALUES (CFM) NOTED ON PLANS AND PROVIDE AIR BALANCING REPORT TO TENANT FOR ALL HVAC SYSTEMS. CAREFULLY FOLLOW SPECIFICATIONS FOR AIR BALANCE WORK. GENERAL CONTRACTOR SHALL FIELD VERIFY AND COORDINATE REQUIREMENTS PRIOR TO BID AND INCLUDE THE COST OF THIS WORK IN THIS BID.
- FURNISH AND INSTALL ACCESS PANELS AS DIRECTED AND AS SPECIFIED BY TENANT FOR ALL EQUIPMENT OR OTHER ITEMS REQUIRING ACCESS. VERIFY AND COORDINATE PLACEMENT OF ACCESS WITH EQUIPMENT SERVICE CLEARANCES AND WITH TENANT CONSTRUCTION MANAGER.
- PRIOR TO MAKING ANY PIPE OR DUCT ROOF PENETRATION OR POSITIONING ANY EQUIPMENT ON THE ROOF, ALL PROPOSED LOCATIONS AND/OR PENETRATIONS SHALL MATCH LOCATIONS INDICATED ON THE LANDLORD APPROVED PLANS AND SHALL BE FIELD VERIFIED AND APPROVED BY LANDLORD FIELD REPRESENTATIVE.
- ALL EQUIPMENT TO BE SUPPORTED FROM STRUCTURAL MEMBERS. NO WEIGHT CAN BE PLACED ON THE ROOFING MATERIALS OR INSULATION.
- FURNISH AND INSTALL TEMPORARY WEATHERPROOFING OF ALL ROOF PENETRATIONS, UNTIL LANDLORD APPROVED ROOFING CONTRACTOR HAS MADE THE FINAL PATCH. VERIFY REQUIREMENTS WITH LANDLORD.
- ALL ROOF CUTTING, PATCHING AND FLASHING REQUIRED SHALL BE BY A LANDLORD APPROVED ROOFING CONTRACTOR AT THE GENERAL CONTRACTOR'S EXPENSE. COORDINATE ROOF PENETRATIONS WITH LANDLORD'S REPRESENTATIVE. FIELD VERIFY AND COORDINATE REQUIREMENTS WITH LANDLORD PRIOR TO BID AND INCLUDE THE COST OF THIS WORK IN THIS BID.
- ALL MECHANICAL EQUIPMENT, PIPES AND DUCTS, PENETRATING AND/OR LOCATED ON ROOF SHALL BE PAINTED TO MATCH COLOR OF ROOF. USE THE APPROPRIATE COATS OF PRIMER/PRETREATMENT, PRIOR TO FINAL COAT. THE FINAL COAT OF THE ROOF MATCHING COLOR SHALL BE APPROVED BY LANDLORD CONSTRUCTION COORDINATOR. SPACE NUMBER SHALL BE PERMANENTLY MARKED ON ALL ROOF-MOUNTED EQUIPMENT.
- FURNISH AND INSTALL IDENTIFICATION ON ALL EQUIPMENT MOUNTED OUTSIDE OF SPACE (ON ROOF OR GRADE). PROVIDE PLASTIC LAMINATED PLATE OR STENCIL WITH A MINIMUM OF 4" HIGH BLACK LETTERS, INDICATING TENANTS NAME AND SPACE NUMBER. VERIFY REQUIREMENTS WITH LANDLORD.
- GENERAL CONTRACTOR SHALL PERFORM STARTUP ON ALL HVAC EQUIPMENT AND CONTROL SYSTEM. PRIOR TO ENERGIZING ANY HVAC UNIT FOR PERMANENT OR TEMPORARY HEATING OR COOLING, GENERAL CONTRACTOR MUST HAVE APPROVAL FROM TENANT CONSTRUCTION MANAGER AND IS REQUIRED TO HAVE COMPLETED STARTUP PROCEDURES AS OUTLINED IN THE MANUFACTURER PROVIDED INSTALLATION AND STARTUP MANUALS FOR EACH PIECE OF HVAC EQUIPMENT.
- GENERAL CONTRACTOR SHALL PROVIDE A FIRE WATCH AND PORTABLE FIRE EXTINGUISHER (MINIMUM SIZE 2A:20BC), WHENEVER ANY WELDING IS DONE WITHIN THE DEMISED PREMISES. THE PERSON PERFORMING THE FIRE WATCH SHALL REMAIN IN THE SPACE FOR AT LEAST ONE (1) HOUR AFTER THE COMPLETION OF ANY WELDING. THIS SHALL BE COORDINATED THROUGH THE LOCAL FIRE DEPARTMENT.
- FURNISH AND INSTALL FIRE-RATED PIPE SLEEVES AND SEALS ON ALL PIPING THAT PENETRATES A FIRE-RATED PARTITION.
- FIRE PROTECTION PLANS MUST BE ENGINEERED AND WET SIGNED AND SEALED BY A LANDLORD APPROVED, LICENSED, REGISTERED FIRE PROTECTION CONTRACTOR IN THE LOCAL JURISDICTION. GENERAL CONTRACTOR SHALL FIELD VERIFY AND COORDINATE REQUIREMENTS WITH LANDLORD PRIOR TO BID AND INCLUDE THE COST OF THIS WORK IN THIS BID.
- FIRE PROTECTION CONTRACTOR SHALL MODIFY SPRINKLER HEADS AND PIPING FOR NEW TENANT STORE LAYOUT. RUN HYDRAULIC CALCULATIONS AS REQUIRED. REFER TO SPECIFICATIONS. DESIGN NEW LAYOUT TO MEET NFPA 13, LOCAL AUTHORITY HAVING JURISDICTION AND LANDLORD REQUIREMENTS.

### MECHANICAL GENERAL NOTES

NTS P

⊕	THERMOSTAT	⊕	SEMI-RECESSED SPRINKLER HEAD	CS	CONDENSER WATER SUPPLY
⊙	SENSOR	⊕	CONNECT TO EXISTING	CR	CONDENSER WATER RETURN
⊗	CARBON DIOXIDE SENSOR	⊕	SUPPLY DIFFUSER	CWS	CHILLED WATER SUPPLY
⊕	DUCT SMOKE DETECTOR	⊕	UNDERCUT DOOR	CWR	CHILLED WATER RETURN
⊕	DUCT OFFSET	⊕	EXHAUST GRILLE/FAN	DCW	DOMESTIC COLD WATER
⊕	SUPPLY DUCT - UP	⊕	ACCESS DOOR	DIFF	DIFFUSER
⊕	SUPPLY DUCT - DN	⊕	SPIN-IN FITTING	DISC	DISCONNECT
⊕	RA OR EXH. DUCT UP	⊕	SPIN-IN FITTING W/ MANUAL BALANCE DPR	DN	DOWN
⊕	RA OR EXH. DUCT DN	⊕	RETURN GRILLE	DPR	DAMPER
⊕	ELBOW TURNING VANES	⊕	(E)/EX. EXISTING	EA	EACH
⊕	FIRE DAMPER (F DPR)	⊕	(R) RELOCATED	EXH	EXHAUST
⊕	MANUAL BALANCE DPR	⊕	X <sup>10</sup> ROUND DUCT ABOVE	F DPR	FIRE DAMPER
⊕	REMOTE ADJUSTABLE DAMPER	⊕	AGCU AIR-COOLED CONDENSING UNIT ABOVE FINISHED FLOOR	FLEX	FLEXIBLE FLOOR
⊕	TRANSITION	⊕	AD ACCESS DOOR ABOVE	FRVAV	FAN POWERED VAV
⊕	DUCTWORK	⊕	AFV ABOVE FINISHED FLOOR	GC	GENERAL CONTRACTOR
⊕	(E) DUCTWORK	⊕	AHU ARCHITECT AIR HANDLING UNIT	HORSEPOWER	MAXIMUM
⊕	COND PIPE	⊕	BDD BACKDRAFT DAMPER	MCA	MIN CIRCUIT AMPACITY
⊕	HYDRONIC PIPE	⊕	BEL BELOW	MIN	MINIMUM
⊕	(E) HYDRONIC PIPE	⊕	BLDG BUILDING	MTD	MOUNTED
⊕	(E) WATER PIPE	⊕	CFM CUBIC FEET PER MINUTE	NTS	NOT TO SCALE
⊕	(E) SANITARY PIPE	⊕	CLG CEILING	OA	OUTSIDE AIR
⊕	SPRINKLER PIPE	⊕	CLG CONDENSATE CONTINUATION	RA	RETURN AIR
⊕	UPRIGHT SPRINKLER HEAD	⊕	CONTR CONTRACTOR	RTU	ROOFTOP UNIT
⊕	CONCEALED SPRINKLER HEAD	⊕		SA	SUPPLY AIR
⊕		⊕		TV	TURNING VANES
⊕		⊕		TYP	TYPICAL
⊕		⊕		VAV	VARIABLE AIR VOLUME
⊕		⊕		WHP	WATER-SOURCE HEAT PUMP
⊕		⊕		W/	WITH

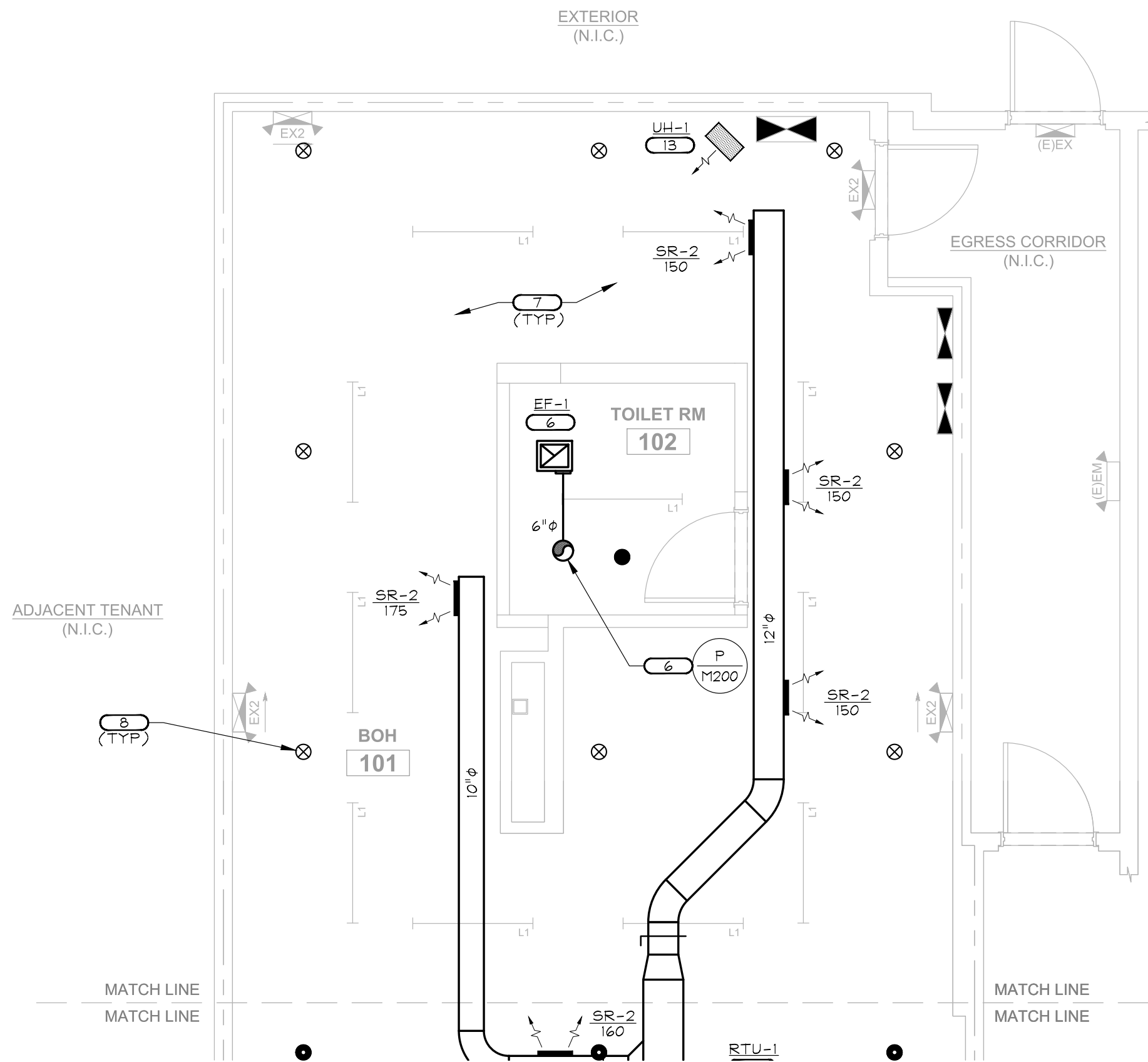
### HVAC LEGEND AND ABBREVIATIONS

NTS N

- GENERAL CONTRACTOR SHALL INSTALL A HONEYWELL VISION PRO ADJUSTABLE PROGRAMMABLE THERMOSTAT WITH AUTOMATIC CHANGEOVER AND OCCUPIED/UNOCCUPIED SETTINGS. THERMOSTAT SHALL INCLUDE REMOTE SENSOR CAPABILITIES. GENERAL CONTRACTOR TO FURNISH AND INSTALL PLENUM RATED CONTROL WIRING BETWEEN HVAC UNIT AND THERMOSTAT. PROVIDE ALL MANUALS AND INSTRUCTIONS TO THE STORE MANAGER (INSTRUCT MANAGER ON OPERATION UPON TURNOVER) AND THE PROJECT MANAGER (FOR THE CLOSEOUT PACKAGE). THERMOSTAT TO BE LOCATED IN THE BACK OF HOUSE AREA AS SHOWN. SPACE TEMPERATURE SETPOINT - UNOCCUPIED SETPOINTS SHALL BE 78°F COOLING AND 60°F HEATING. WARM-UP/OCCUPIED SETPOINTS SHALL BE 72°F COOLING AND 68°F HEATING. SETPOINTS SHALL BE LOCKED OUT TO PREVENT ADJUSTMENT MORE THAN 3°F UP OR DOWN FROM DEFAULT.
- GENERAL CONTRACTOR SHALL FURNISH AND INSTALL A HONEYWELL REMOTE SENSOR FOR THERMOSTAT, WHERE INDICATED. GENERAL CONTRACTOR TO FURNISH AND INSTALL PLENUM RATED CONTROL WIRING FROM REMOTE SENSOR TO THERMOSTAT AND CONNECT PER MANUFACTURER'S INSTRUCTIONS.
- RTU-1: GENERAL CONTRACTOR SHALL PROVIDE AN ELECTRIC COOLING, GAS HEATING ROOFTOP UNIT COMPLETE WITH FACTORY CURB. GENERAL CONTRACTOR SHALL VERIFY MODEL NUMBERS AND ELECTRICAL REQUIREMENTS PRIOR TO INSTALLATION. GENERAL CONTRACTOR TO REMOVE AND DISPOSE OF EXISTING RTU, ALL ASSOCIATED DUCT WORK, CURB AND ACCESSORIES. GENERAL CONTRACTOR SHALL PROVIDE STEEL SUPPORT AS REQUIRED AND THREE SETS OF FILTERS. CHANGE FILTERS AFTER FINAL STORE CLEANING AND AGAIN PRIOR TO AIR BALANCE. MODIFY EXISTING ROOF OPENING AS REQUIRED. FIELD VERIFY EXACT LOCATION, SIZE AND ALL OTHER REQUIREMENTS. ALL ROOF WORK TO BE PERFORMED BY A LANDLORD APPROVED ROOFING CONTRACTOR AT THE GENERAL CONTRACTOR'S EXPENSE. LABEL ROOFTOP UNIT PER LANDLORD REQUIREMENTS AND PER SPECIFICATIONS. SEE HVAC EQUIPMENT SCHEDULE FOR MORE INFORMATION.
- SMOKE DETECTOR FURNISHED AND WIRED BY FIRE ALARM CONTRACTOR AND INSTALLED BY GENERAL CONTRACTOR IN RETURN AIR PATH. UPON DETECTION OF SMOKE, DETECTOR SHALL SIGNAL TENANT/LANDLORD FIRE ALARM SYSTEM AND UNIT SHALL SHUT DOWN. FIELD VERIFY AND COORDINATE ALL REQUIREMENTS WITH LANDLORD AND LANDLORD'S REQUIRED FIRE ALARM CONTRACTOR PRIOR TO BID AND INCLUDE ALL MATERIAL AND LABOR COSTS FOR THIS WORK IN BID. SMOKE DETECTOR SHALL BE INSTALLED IN AN ACCESSIBLE LOCATION.
- GENERAL CONTRACTOR SHALL PROVIDE SUPPLY AND RETURN AIR DROPS FROM RTU FULL SIZE OF EQUIPMENT OPENING WITH FLEXIBLE DUCT CONNECTIONS. TRANSITION TO DUCT SIZE SHOWN.
- EF-1: GENERAL CONTRACTOR SHALL PROVIDE A CEILING MOUNTED EXHAUST FAN, COMPLETE WITH INTEGRAL BACKDRAFT DAMPER. EXHAUST CAPACITY SHALL BE 75 CFM AT 0.375" S.P. INSTALL AND SECURE PER MANUFACTURER'S RECOMMENDATIONS. EXTEND DUCT TO ROOF PENETRATION AS INDICATED. FIELD VERIFY EXACT SIZE, LOCATION, ELEVATION AND ALL OTHER REQUIREMENTS. SEE FAN SCHEDULE FOR MORE INFORMATION.
- REUSE AS MUCH AS POSSIBLE FROM THE EXISTING SPRINKLER SYSTEM AND ALARM SYSTEM. MODIFY SYSTEM AS REQUIRED TO MEET CODE. THE SPRINKLER HEADS IN THE STORE FRONT AREA ARE TO BE CONCEALED. FIELD COORDINATE ALL REQUIREMENTS WITH LANDLORD, EXISTING CONDITIONS AND AUTHORITY HAVING JURISDICTION.
- SPRINKLER HEADS SHOWN FOR REFERENCE ONLY. LICENSED FIRE PROTECTION PROFESSIONAL TO DETERMINE ACTUAL AMOUNT AND LOCATION OF HEADS. ALIGN SPRINKLER HEAD LOCATIONS WITH LIGHTS AND OTHER CEILING ELEMENTS. COORDINATE WITH LANDLORD AND TENANT.
- DASHED LINE REPRESENTS THE MANUFACTURER'S RECOMMENDED CLEARANCE.
- GENERAL CONTRACTOR SHALL PROVIDE A CONDENSATE DRAIN FROM HVAC EQUIPMENT. DRAIN SHALL BE 1" MINIMUM AND HAVE A TRAP DEPTH OF 1.5" UNIT TOTAL STATIC PRESSURE (MINIMUM 5" DEEP). THIS CONTRACTOR SHALL FURNISH AND INSTALL A SPLASH BLOCK AND EXTEND UV RESISTANT PVC PIPING WITH CHEMICALLY WELDED JOINTS TO SPLASH BLOCK. FIELD VERIFY AND COORDINATE MATERIALS AND ALL OTHER REQUIREMENTS.
- FURNISH AND INSTALL A 1"x1" ALUMINUM WIRE MESH SCREEN OVER OPEN END OF RETURN AIR DUCT. PROVIDE MANUAL BALANCING DAMPER AND BALANCE RTU-1 TO 2,485 CFM.
- SUPPLY AIR DUCTWORK FROM ROOFTOP UNIT SHALL BE MADE FULL SIZE AND TRANSITION TO 34"x20" AT ELBOW.
- UH-1: GENERAL CONTRACTOR TO FURNISH AND INSTALL AN ELECTRIC UNIT HEATER. UNIT SHALL BE UL LISTED. MOUNT UNIT HEATER USING WALL BRACKET MOUNT BY MANUFACTURER. BOTTOM OF UNIT HEATER TO BE MOUNTED 12'-0" A.F.F. IN THE NON-SALES AREA. REFER TO SCHEDULE ON SHEET M200.

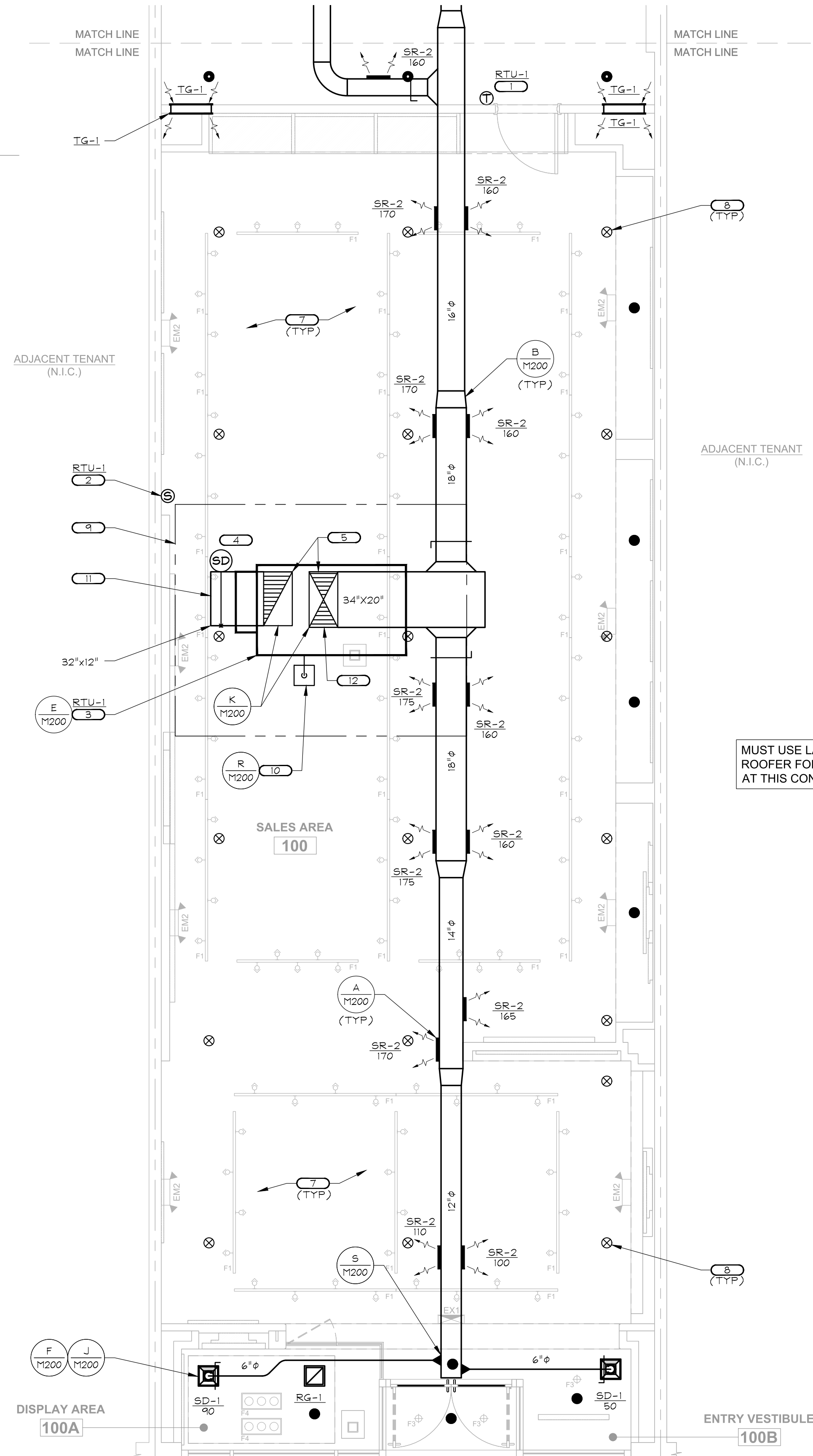
### MECHANICAL CODED NOTES

NTS L



### MECHANICAL PLAN

NTS A



MUST USE LANDLORD REQUIRED ROOFER FOR ALL ROOF PENETRATIONS AT THIS CONTRACTORS EXPENSE.

NORTH

1/4" = 1'-0" A

REVISIONS:

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**MECHANICAL PLAN AND NOTES**

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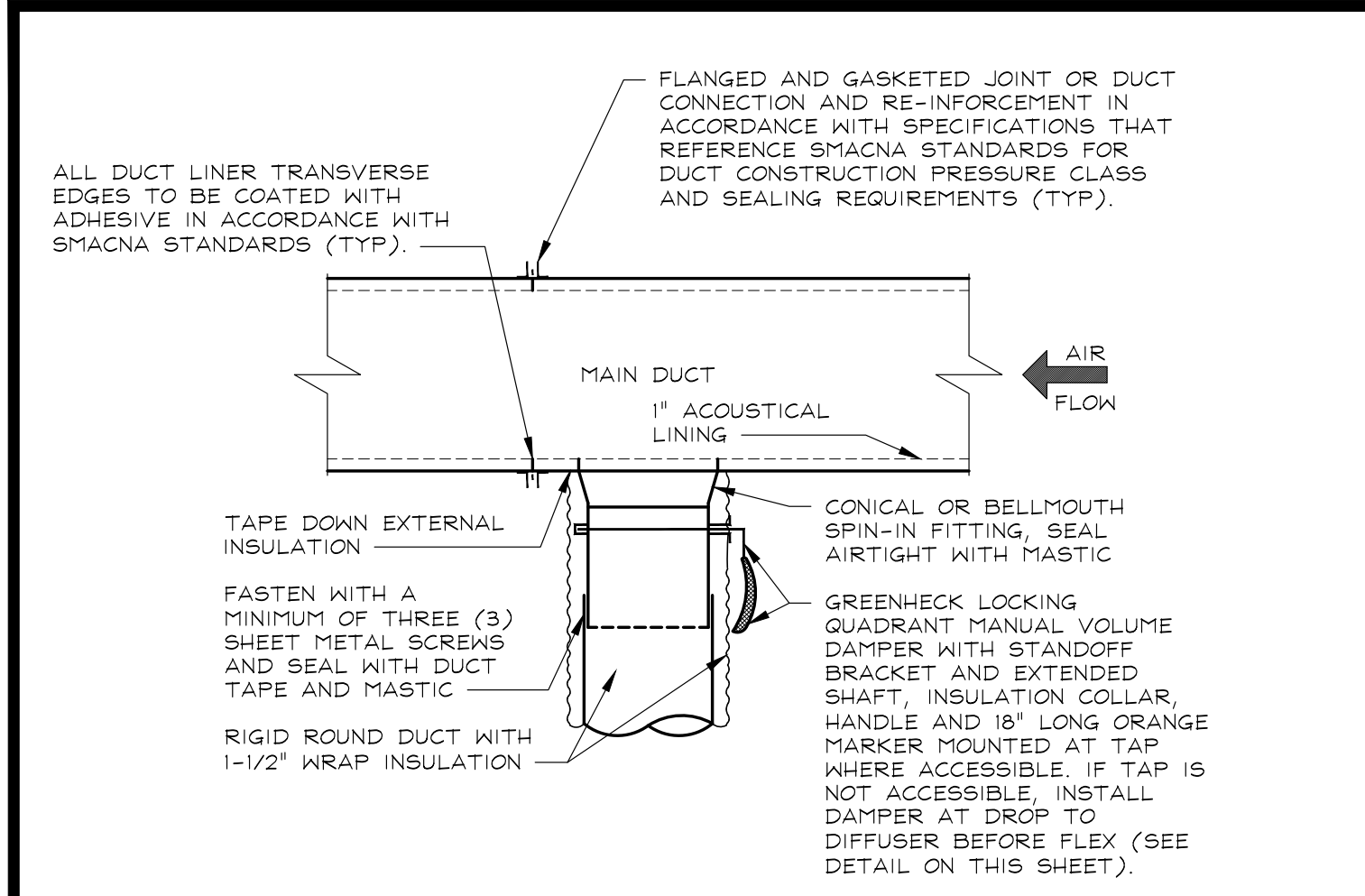
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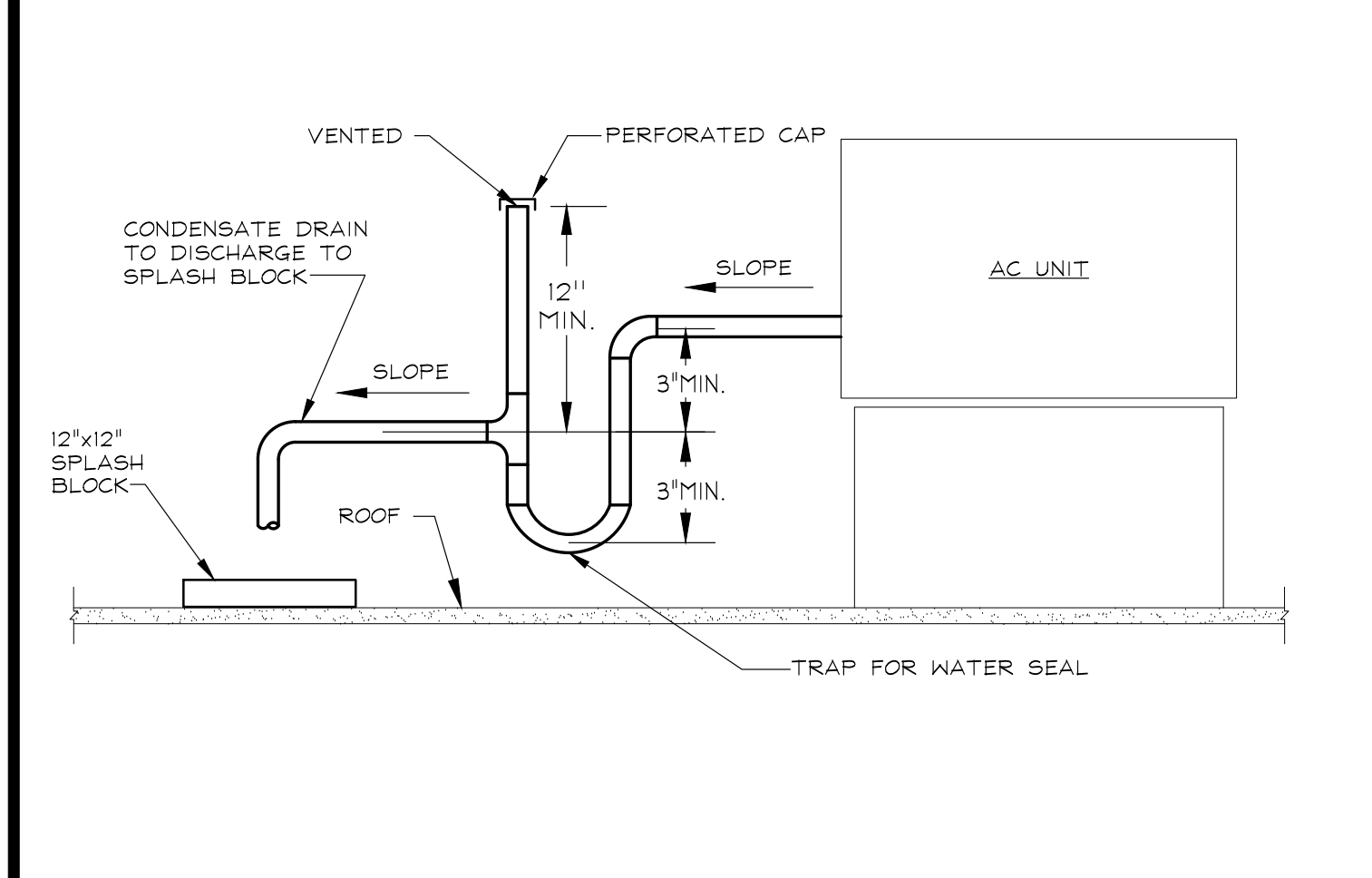
**M100**

CHECKED BY: JTP  
DRAWN BY: LJ

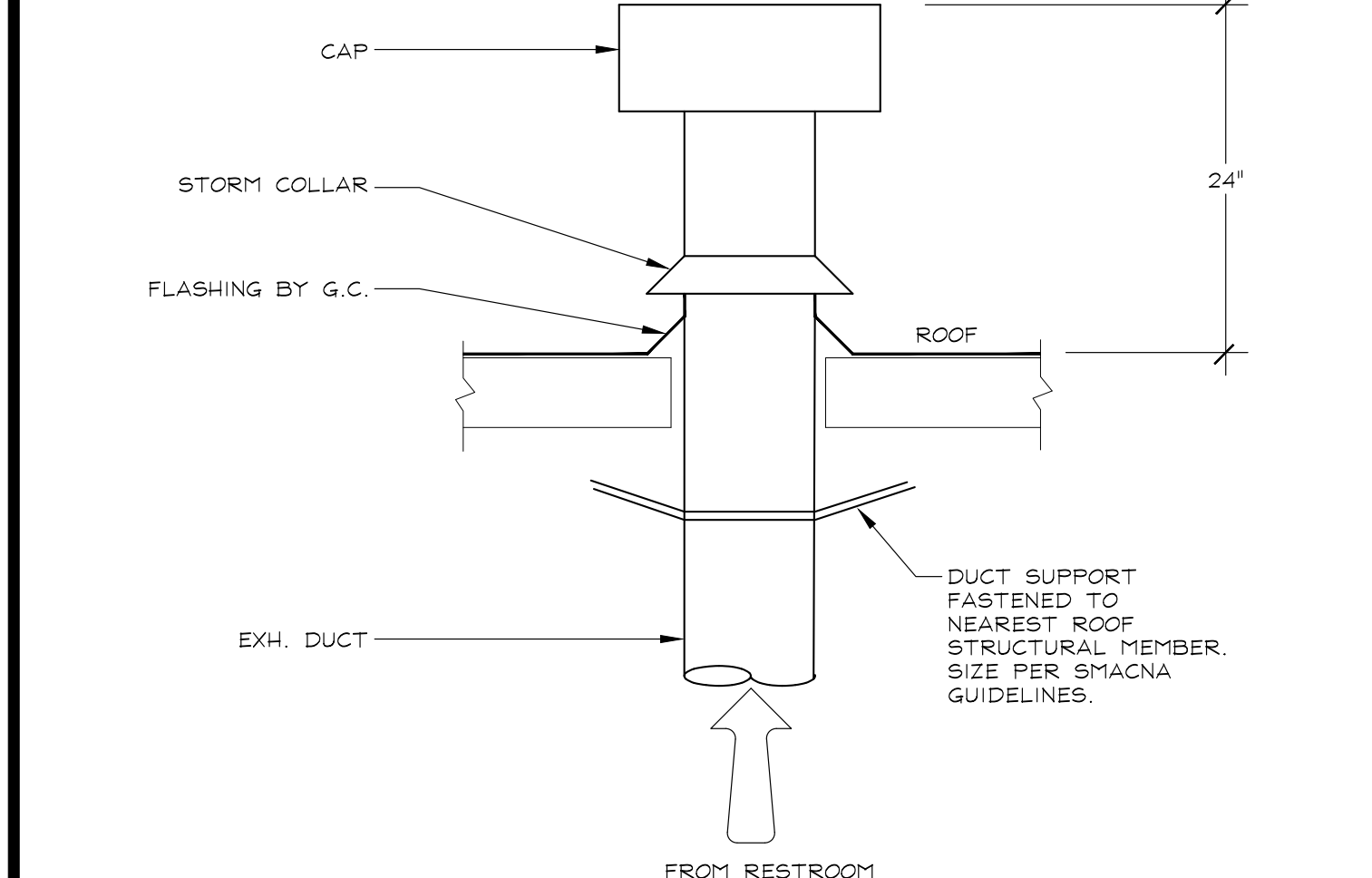
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09/27/2022



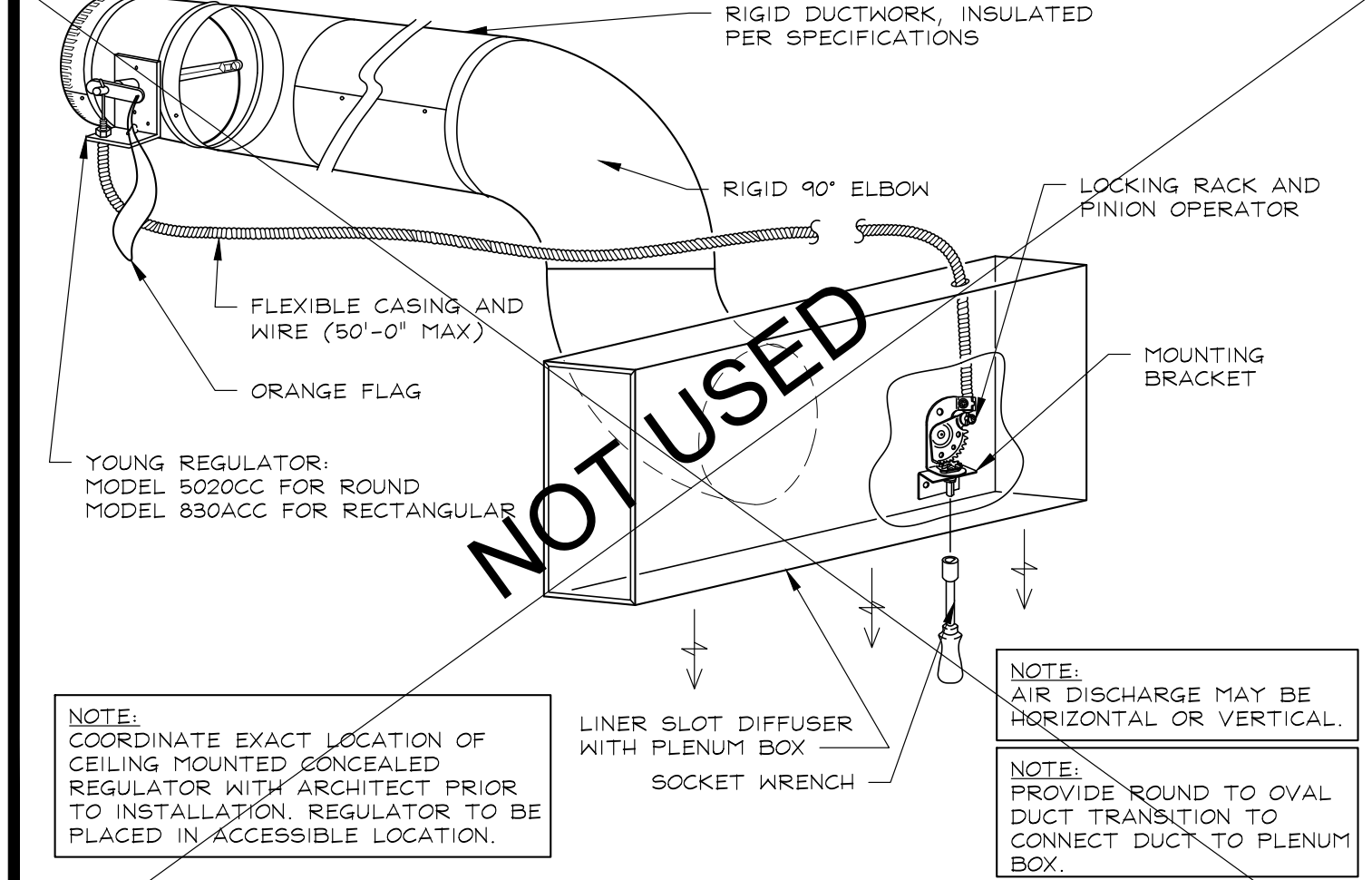
**ROUND DUCT TAKE-OFF DETAIL** N.T.S. S



**RTU CONDENSATE DRAIN DETAIL** N.T.S. R



**EXHAUST AIR DUCT ASSEMBLY** N.T.S. P



**YOUNG REGULATOR - LINEAR** N.T.S. N

**ELECTRIC HEAT SCHEDULE**

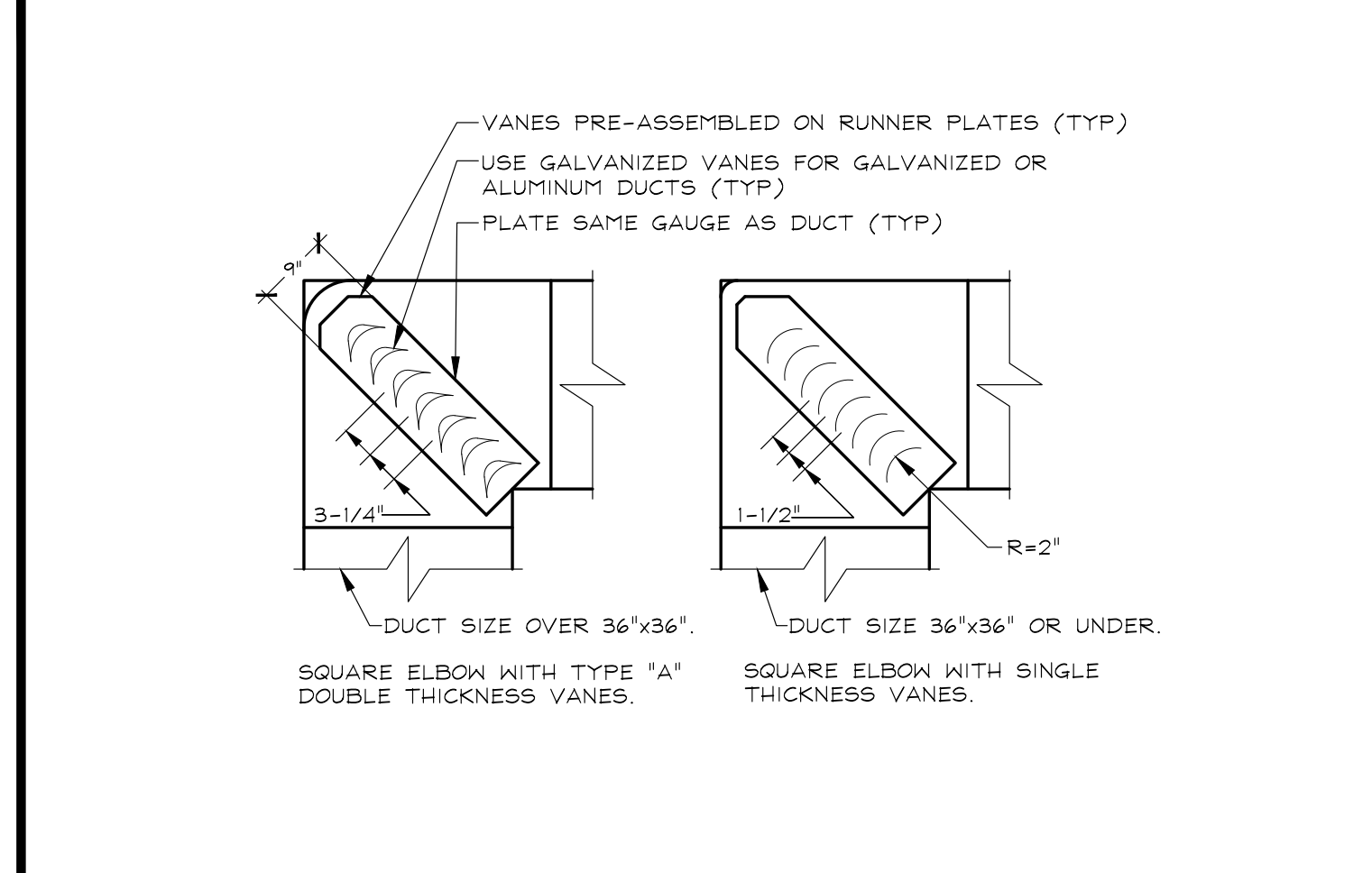
MARK	UH-1
MANUFACTURER	GMARK
MODEL	MUH
TYPE	HUNG UNIT
AIR FLOW (CFM)	350
<b>ELECTRICAL</b>	
VOLTS/PH/Hz	480 / 3 / 60
HEATER KW	3.000
AMPS	3.6
APPROX. WEIGHT (LBS)	27
SERVES	NON-SALES
ACCESSORIES	1, 2
NOTES	A, F
<b>ACCESSORIES:</b>	
1. PROVIDE UNIT COMPLETE FROM FACTORY WITH ALL REQUIRED CONTROLS (THERMAL CUTOUPS, AIRFLOW SWITCH, MAGNETIC CONTACTS, CONTROL TRANSFORMER, DISCONNECT SWITCH, CONTROL ENCLOSURE, WALL MOUNTING BRACKET, ETC.).	
2. PROVIDE FROM FACTORY WITH INTEGRAL THERMOSTAT SET AT 68°F.	
3. SUSPEND FROM FACTORY WITH THERMOSTAT FOR FIELD MOUNTING WHERE INDICATED ON PLANS.	
<b>NOTES:</b>	
A. INTERLOCK WITH HVAC UNIT TO OPERATE ONLY WHEN UNIT IS NOT CALLING FOR COOLING.	
B. INTERLOCK WITH HVAC UNIT TO OPERATE ONLY WHEN SUPPLY FAN IS ON AND UNIT IS NOT CALLING FOR COOLING.	
C. SEMI-RECESS 2" IN WALL AT 12" AFF.	
D. SUSPEND FROM STRUCTURE 6" BELOW CEILING WITH SPRING VIBRATION ISOLATION DEVICES.	
E. SURFACE MOUNT AT BASEBOARD ON EXTERIOR WALL.	
F. MOUNTED TO WALL AT 12"-0" A.F.F.	

TENANT AND OR TENANT CONTRACTOR SHALL SUPPLY LANDLORD AND LANDLORD VENDOR RAVTI THE FOLLOWING INFORMATION ON THE HVAC UNIT UPON PROJECT COMPLETION:  
 ALL HVAC UNITS NEED TO BE REGISTERED INTO RAVTI WEBSITE AT [HTTPS://RAVTI.WUFOO.COM/FORMS/QT3S0MNI1KBC6GR](https://ravti.wufoo.com/forms/qt3s0mni1kbc6gr). ONCE REGISTERED YOU WILL RECEIVE A QR STICKER TO ADHERE TO THE NORTH SIDE OF THE UNIT.

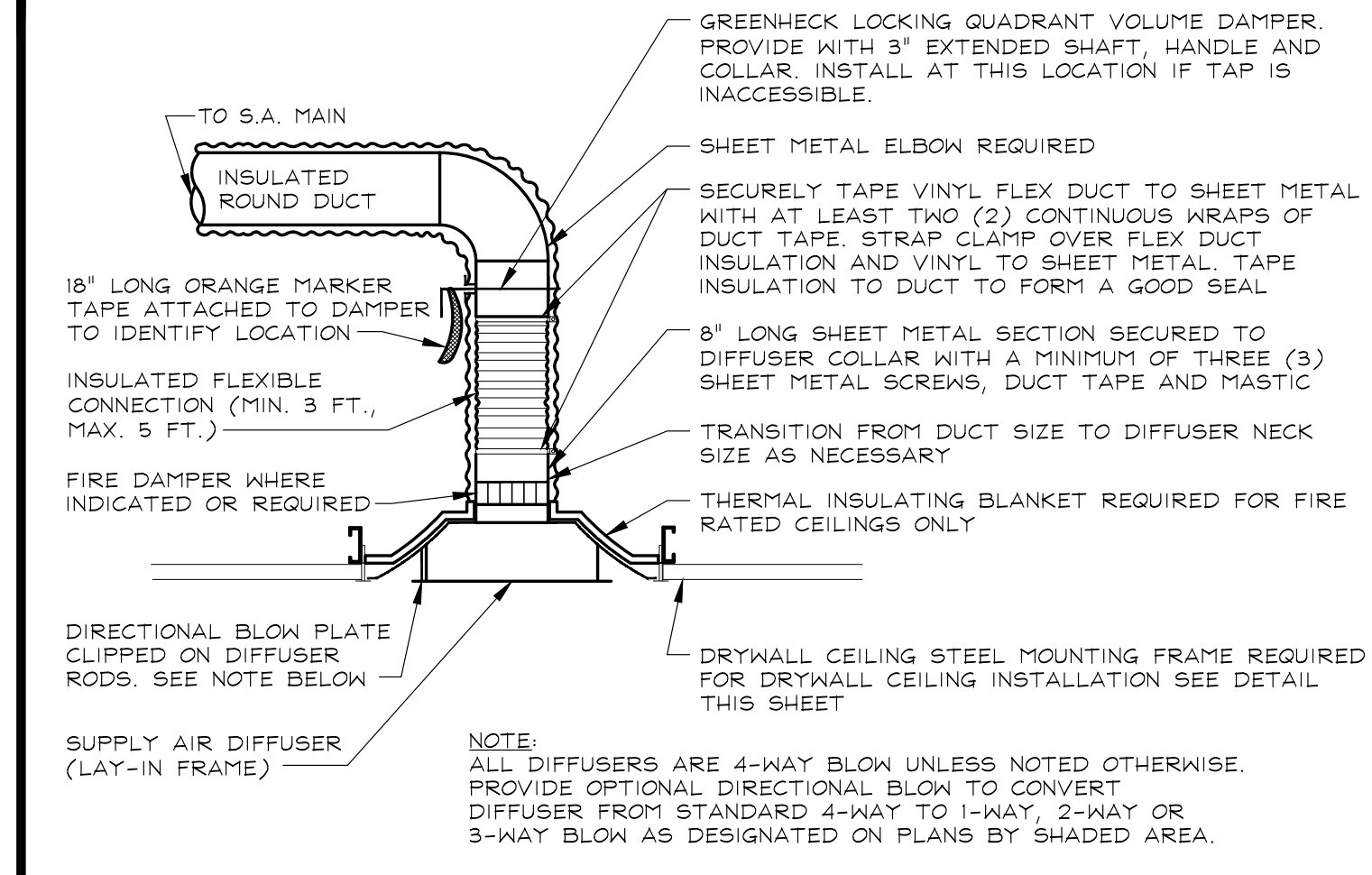
- MAKE
- MODEL
- SERIAL
- TONNAGE
- YEAR MANUFACTURED
- ALL WARRANTY INFORMATION
- PICTURES OF EACH UNIT INCLUDING STICKER

CONTACT LANDLORD FOR MORE INFORMATION\*\*  
 IF HVAC UNITS ARE REPLACED AND/OR RELOCATED, OLD HVAC UNIT(S) AND THE CURB(S) MUST BE REMOVED AND THE ROOF MEMBRANE RESTORED BY LANDLORD REQUIRED ROOFER.

**HVAC SCHEDULES** N.T.S. C



**TURNING VANE DETAIL** N.T.S. K



**DIFFUSER MOUNTING DETAIL** N.T.S. J

**FAN SCHEDULE - RESTROOM**

MARK	EE-1
MANUFACTURER	BROAN
MODEL	L150
TYPE	CEILING
DRIVE TYPE	DIRECT
<b>PERFORMANCE</b>	
AIR FLOW (CFM)	75
EXT. STATIC (IN W.C.)	0.5
FAN SPEED (RPM)	710
<b>ELECTRICAL</b>	
VOLTS/PH/Hz	120 / 1 / 60
FAN MOTOR WATTS	100
APPROX. WEIGHT (LBS.)	23.1
SERVES	RESTROOM
ACCESSORIES	A, B
<b>NOTES:</b>	
1. PROVIDE WITH INTEGRAL BACKDRAFT DAMPER, PLUG TYPE DISCONNECT SWITCH AND SPEED CONTROL.	
2. GENERAL CONTRACTOR TO FURNISH AND INSTALL VIBRATION ISOLATION AS REQUIRED.	
3. INTERLOCK OPERATION WITH LIGHTS.	
4. FURNISHED AND INSTALLED BY GENERAL CONTRACTOR.	

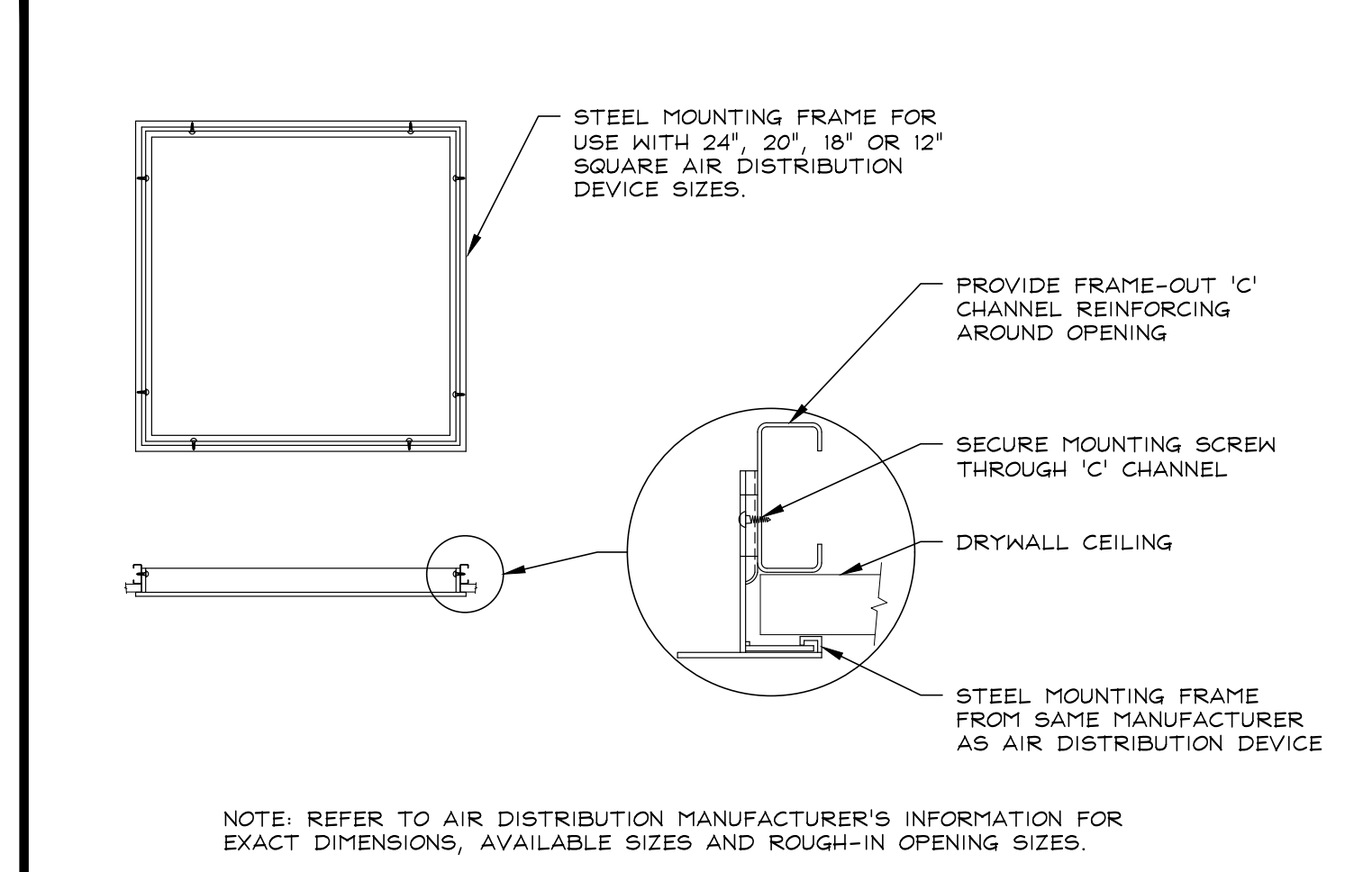
**OUTSIDE AIR SCHEDULE**

SPACE DESIGNATION	FLOOR AREA (SF)	SPACE OUTSIDE AIR REQUIREMENTS (PER IMC 2018)			OUTSIDE AIR (CFM)
		OCCUPANCY	CFM PER PERSON	CFM PER SF	
SALES	1666	25	7.5	0.12	515
NON-SALES	803	2	10	0.12	117

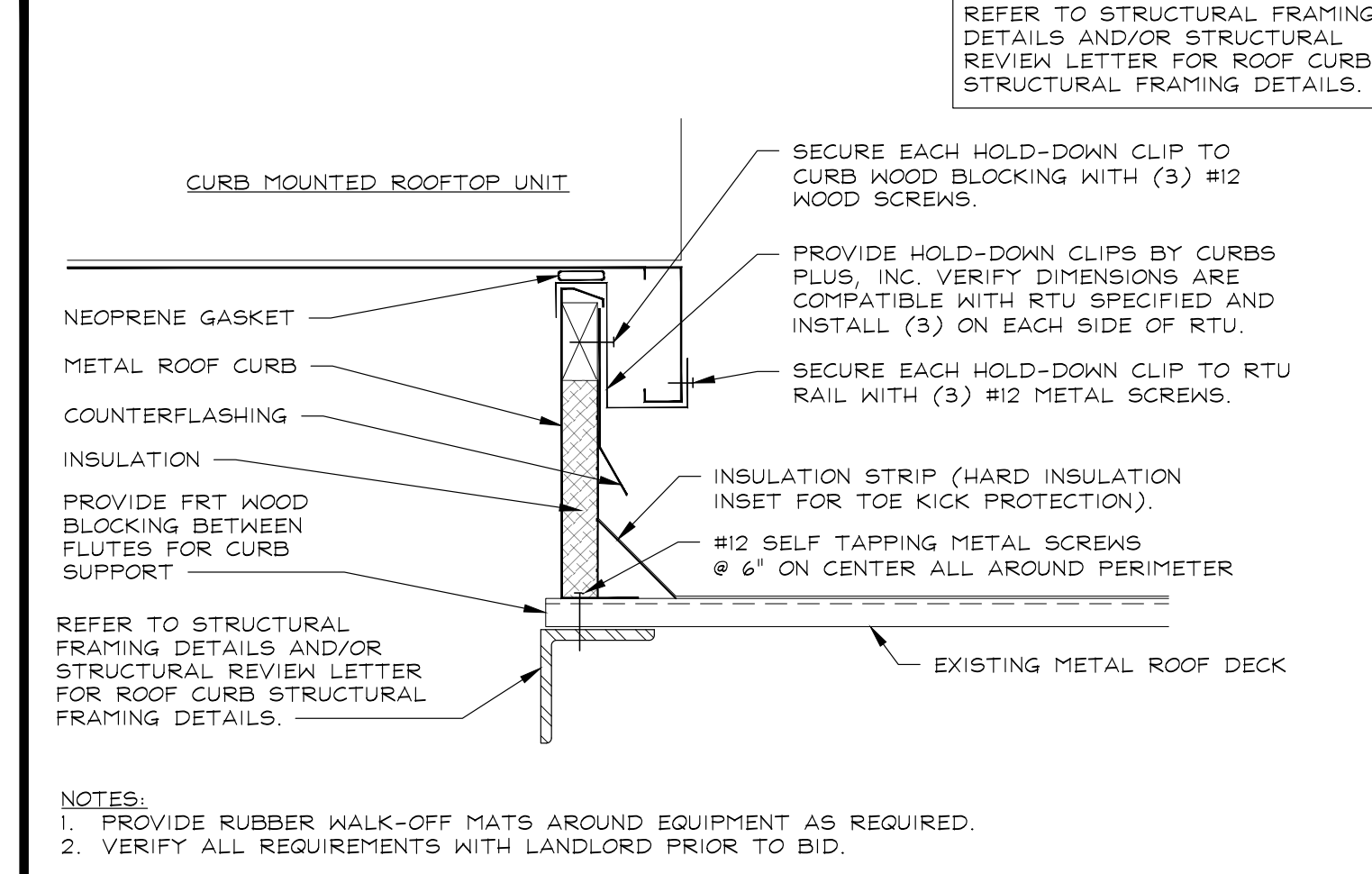
MINIMUM OUTSIDE AIR REQUIRED = 515  
 MINIMUM OUTSIDE AIR DELIVERED = 515 CFM



**DRYWALL FRAME MOUNTING DETAIL** N.T.S. F



**ROOFTOP UNIT MOUNTING DETAIL** N.T.S. E



**DIFFUSER ON ROUND DUCT DETAIL** N.T.S. A

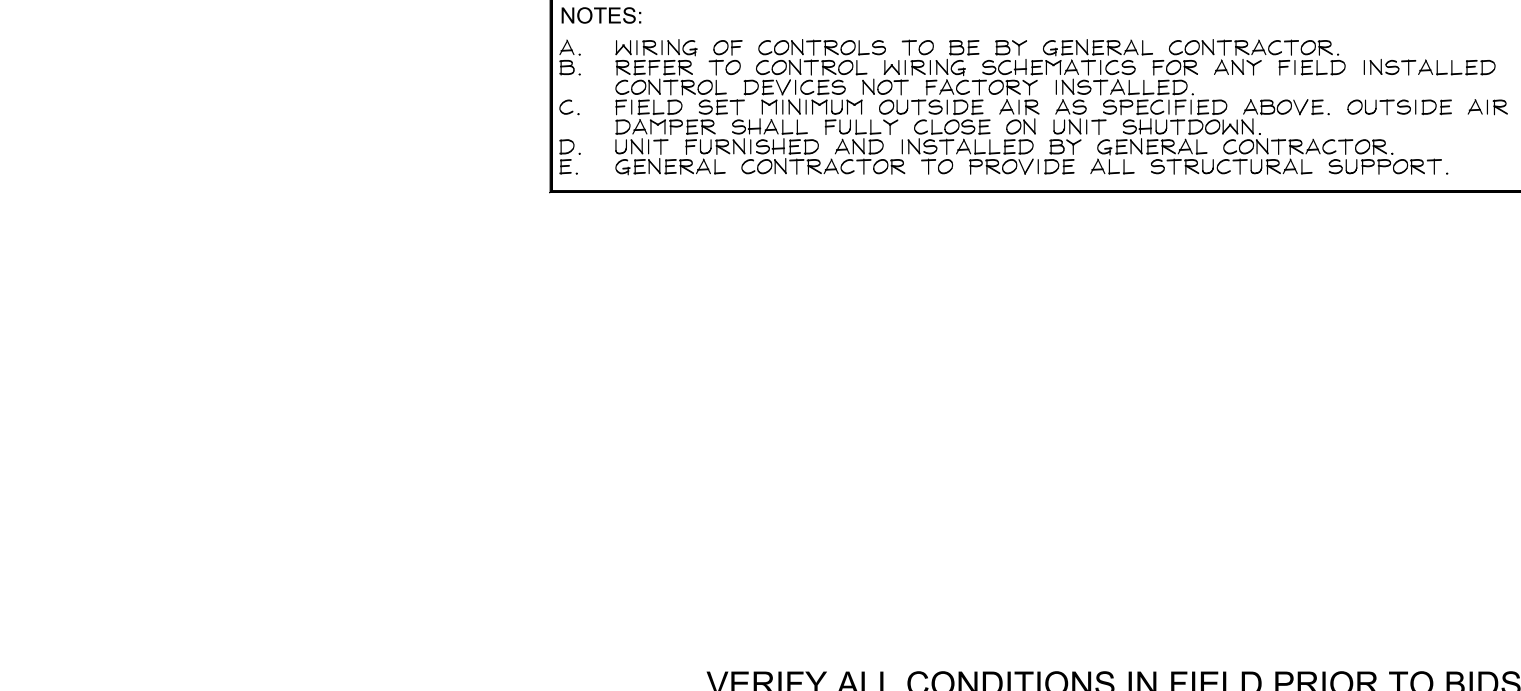
**AIR DISTRIBUTION SCHEDULE**

MARK	CATALOG NUMBER	SIZE		MOUNTING		MATERIAL		BORDER STYLE	NOTES
		MOD.	SIZE	CEILING	OTHER	STEEL	ALUM.		
SR-2	TITUS S301	14"x8"	12"x6"		DUCT			A	
SD-1	TITUS 07N1	12"x12"	6"ø					B	
RG-1	TITUS 07N1	12"x12"	8"ø					B	
TG-1	TITUS 350RL	24"x12"	22"x10"		WALL			D	

NOTES (APPLY TO ALL AIR DISTRIBUTION DEVICES):  
 SYMBOL KEY / MARK:  
 FIRST LETTER: S-SUPPLY R-RETURN E-EXHAUST  
 SECOND LETTER: D-DIFFUSER R-REGISTER G-GRILLE  
 CATALOG NUMBERS REFER TO PRICE AIR DEVICES.  
 PROVIDE DIRECTIONAL BLOW FOR AIRFLOW OTHER THAN 4-WAY. SEE DETAIL ON THIS SHEET.  
 SEE ARCHITECTURAL SHEETS FOR FINISH COLOR, IF NO COLOR IS SPECIFIED, PROVIDE STANDARD WHITE.  
 BORDER STYLE:  
 A. SURFACE MOUNTED - PROVIDE WITH TITUS BORDER STYLE 22 FOR DRYWALL CEILING MOUNTING FOR LINEAR DEVICES.  
 B. LAY-IN FRAME FOR DRYWALL CEILING MOUNTING. SEE DETAIL ON THIS SHEET.  
 C. LAY-IN FRAME FOR T-BAR CEILING.  
 D. SURFACE MOUNTED.  
 NOTES:  
 1. PROVIDE WITH ENGINEERED PLENUM MPI-39.  
 2. PROVIDE TRANSITION FROM PLENUM BOX OPENING TO DUCT.

**ROOFTOP UNIT SCHEDULE - GAS**

MARK	RTU-1
MANUFACTURER	TRANE
MODEL #	YSJ090
NOMINAL TONNAGE / EER	7.5 / 11.0
SUPPLY AIR FLOW (CFM)	3,000
OUTSIDE AIR FLOW (CFM)	515
AMBIENT OAT (°FDB)	45
EXT. S.P. (IN. W.C.)	0.8
<b>DX COOLING COIL</b>	
EAT (°FDB/AB)	77.6 / 64.8
TOTAL (MBH)	90.37
SENSIBLE (MBH)	72.59
<b>NATURAL GAS HEAT</b>	
INPUT (MBH)	200.0
OUTPUT (MBH)	162.0
<b>ELECTRICAL</b>	
VOLTS/PH/Hz	460/3/60
MOTOR (HP)	3.1
MCA (AMPS)	21.0
MOCP (AMPS)	25
MAX. WEIGHT (LBS.)	1,260
ACCESSORIES	1,3-8,12
NOTES	A-E
<b>ACCESSORIES:</b>	
1. FACTORY PROVIDED NON-FUSED DISCONNECT # THRU THE BASE ELEC.	
2. FACTORY PROVIDED DUCT SMOKE DETECTOR IN RETURN AIR.	
3. FACTORY FURNISHED (FIELD INSTALLED) 1/4" HIGH ROOF CURB.	
4. FACTORY FURNISHED ENTHALPY ECONOMIZER, HOOD WITH BIRDSCREEN AND BAROMETRIC RELIEF (SOME FIELD ASSEMBLY REQUIRED).	
5. FACTORY PROVIDED (FIELD WIRED) NON-POWERED GFI OUTLET.	
6. FACTORY PROVIDED (FIELD INSTALLED) THERMOSTAT AND REMOTE SENSOR.	
7. FACTORY PROVIDED HINGED ACCESS DOORS.	
8. FACTORY FURNISHED (FIELD INSTALLED) HALL GUARD.	
9. FACTORY PROVIDED WITH COASTAL CONDENSER COIL COATING.	
10. FACTORY FURNISHED POWER EXHAUST FOR RELIEF AIR (SOME FIELD ASSEMBLY REQUIRED).	
11. FACTORY PROVIDED WITH HOT GAS HEAT FOR DEHUMIDIFICATION.	
12. FACTORY PROVIDED WITH 2" FILTER RACK.	



**DUCT TAKE-OFFS & TRANSITIONS** N.T.S. B

REVISIONS:

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**MECHANICAL SCHEDULES AND DETAILS**

CHECKED BY: JTP  
 DRAWN BY: LJ

DATE ISSUED: 09/27/2022

SAI # 220410  
 DRAWING NUMBER: M200

23 05 00 GENERAL PROVISIONS FOR HVAC

- A. PROVIDE ALL MATERIALS AND EQUIPMENT AND PERFORM ALL LABOR REQUIRED TO INSTALL A HEATING AND COOLING SYSTEM, COMPLETE AS INDICATED ON THE DRAWINGS, AS REQUIRED BY CODE AND AS SPECIFIED HEREIN.
B. THE GENERAL CONTRACTOR, UNLESS OTHERWISE NOTED IS TO PROVIDE POWER WIRING FOR EACH ITEM OF ELECTRICAL EQUIPMENT AND MAKE FINAL CONNECTIONS TO MOTORS.
C. ALL FINISH PAINTING IS TO BE PERFORMED BY THE GENERAL CONTRACTOR, EXCEPT AS NOTED ELSEWHERE. GENERAL CONTRACTOR, AT THIS CONTRACTOR'S EXPENSE, SHALL RESTORE TO ORIGINAL CONDITION ANY PAINTING DEFACED DURING CONSTRUCTION AND AFTER ORIGINAL PAINTING.
D. ALL WORK SHALL CONFORM TO CODES, RULES, AND REGULATIONS:

- 1. NATIONAL ELECTRICAL CODE.
2. STANDARD FOR INSTALLATION OF AIR CONDITIONING AND VENTILATING SYSTEMS, NFPA 90A.
3. CODE FOR SAFETY TO LIFE FROM FIRE IN BUILDINGS AND STRUCTURES, NFPA 101.
4. FEDERAL OCCUPATIONAL SAFETY AND HEALTH STANDARDS.
5. STATE MECHANICAL CODE.
6. STATE BUILDING CODES FOR DEVIATIONS FROM DRAWINGS OR SPECIFICATIONS.
7. STATE INDUSTRIAL COMMISSION REQUIREMENTS.
8. LOCAL BUILDING CODE REQUIREMENTS.
9. BUILDING INSURING AGENCY REQUIREMENTS.
10. STATE PLUMBING CODE.
11. NFPA.

- E. ALL PERMITS REQUIRED BY LAWS, ORDINANCES AND BUILDING CODES HAVING JURISDICTION SHALL BE OBTAINED AT THE PROPER TIME BY AND AT THE EXPENSE OF THIS CONTRACTOR.
F. THIS CONTRACTOR SHALL OBTAIN ALL INSPECTIONS REQUIRED BY ALL LAWS, ORDINANCES AND PUBLIC AUTHORITY HAVING JURISDICTION AND SHALL OBTAIN CERTIFICATES OF SUCH INSPECTIONS AND SUBMIT THEM TO THE ARCHITECT. THE CONTRACTOR SHALL PAY ALL FEES, CHARGES, ASSESSMENTS AND OTHER EXPENSES IN CONNECTION THEREWITH.

- G. PIPING AND EQUIPMENT LAYOUT IS SCHEMATIC. EXACT LOCATIONS ARE DETERMINED BY STRUCTURAL AND OTHER CONDITIONS. DESIGN OF SYSTEM MAY NOT BE CHANGED. ONLY EXACT LOCATION OF PIPING AND DUCTS MAY BE REVISED TO SUIT CONSTRUCTION CONDITIONS AND AID IN COORDINATION WITH WORK OF OTHER CONTRACTORS.

- H. THE MATERIALS AND EQUIPMENT INSTALLED IN THE WORK SHALL MEET THE REQUIREMENTS OF THE CONTRACT DOCUMENTS AND NO MATERIALS OR EQUIPMENT SHALL BE ORDERED UNTIL REVIEWED BY THE ENGINEER, LANDLORD AND/OR ARCHITECT.

- I. GENERAL CONTRACTOR SHALL SUBMIT SHOP DRAWINGS PER THE DOCUMENTS PROVIDED BY THIS CONTRACTOR.
J. CATALOG DATA FOR EQUIPMENT REVIEWED BY THE ARCHITECT SHALL NOT SUPERSEDE THE ENGINEER'S CONTRACT DOCUMENTS, THE REVIEW OF THE ENGINEER SHALL NOT RELIEVE THIS CONTRACTOR FROM RESPONSIBILITY FOR DEVIATIONS FROM DRAWINGS OR SPECIFICATIONS, PROVIDING PROPER CLEARANCE, FABRICATION PROCESS AND COORDINATION WITH OTHER TRADES.

- K. WHEN SUBMITTED FOR THE ARCHITECT'S REVIEW, SHOP DRAWINGS SHALL BEAR THIS CONTRACTOR'S CERTIFICATION THAT THE GENERAL CONTRACTOR HAS REVIEWED, CHECKED AND APPROVED THE SHOP DRAWINGS THAT THEY ARE IN HARMONY WITH THE REQUIREMENTS OF THE PROJECT AND WITH THE PROVISIONS OF THE CONTRACT DOCUMENTS AND THAT THIS CONTRACTOR HAS VERIFIED ALL FIELD MEASUREMENTS AND CONSTRUCTION CRITERIA. MATERIALS, CATALOG NUMBERS AND SIMILAR DATA GENERAL CONTRACTOR SHALL ALSO CERTIFY THAT THE WORK REPRESENTED BY THE SHOP DRAWINGS AS RECOMMENDED BY THIS CONTRACTOR AND THE GENERAL CONTRACTOR'S GUARANTEE WILL FULLY APPLY.
L. ALL CONTRACTORS SUBMITTING PROPOSALS FOR THIS WORK SHALL FIRST EXAMINE THE SITE AND ALL CONDITIONS THEREIN. ALL PROPOSALS SHALL TAKE INTO CONSIDERATION ALL SUCH CONDITIONS AS MAY AFFECT THE WORK UNDER THIS CONTRACT. THE SUBMITTING OF A BID AUTOMATICALLY IMPLIES THAT THIS EXAMINATION OF SITE HAS BEEN DONE.

- M. GENERAL CONTRACTOR SHALL VERIFY LOCATION OF UTILITIES AND NOTE CONDITIONS WHICH WOULD AFFECT THE WORK. ALL DISCREPANCIES SHALL THEN BE REPORTED PRIOR TO THE BID AWARD.

- N. PROVIDE INSTRUCTION TO LANDLORD'S OPERATING PERSONNEL AS NECESSARY, SHOWING LOCATIONS AND PROPER OPERATION OF MAJOR ITEMS OF EQUIPMENT AND SYSTEM COMPONENTS AND REFERRING TO THE OPERATING INSTRUCTION MANUAL DESCRIBED BELOW AS A GUIDE.
O. COMPLETE WRITTEN MANUAL OF OPERATING INSTRUCTIONS INCLUDING COPIES OF SHOP DRAWINGS AND A LISTING OF EQUIPMENT SUPPLIERS, ASSEMBLE IN 8-1/2" X 11" HARD BACKED INDEXED BINDER. MATERIAL SHALL BE AS FOLLOWS:

- 1. TITLE PAGE: TITLE OF JOB, LANDLORD/TENANT, ADDRESS, DATE, SUBMISSION, CONTRACTOR AND ENGINEER.
2. INDEX.
3. LIST OF MAJOR EQUIPMENT USED IN PROJECT ACCOMPANIED BY GENERAL CONTRACTOR PURCHASE ORDER NUMBERS AND SUPPLIERS NAMES AND ADDRESSES.
4. ONE COPY OF EACH SHOP DRAWING GROUPED BY TYPES OF EQUIPMENT (I.E., ROOFTOP UNITS, FANS, ETC.).
5. SECTION FOR EACH SYSTEM INCLUDING:
a. BRIEF DESCRIPTION OF SYSTEM OPERATION WITH LOCATION OF MAJOR COMPONENTS.
b. HVAC SYSTEM MAINTENANCE AND CALIBRATION INFORMATION, INCLUDING WIRING DIAGRAMS AND SCHEMATICS.

- P. SUBMIT A COMPLETED COPY TITLED "HVAC OPERATING INSTRUCTION MANUAL" ON THE BINDING EDGE OF BINDER TO ARCHITECT FOR APPROVAL AFTER ARCHITECT'S REVIEW AND ANY CORRECTIONS REQUIRED ARE COMPLETED, SUBMIT A COPY OF THE MANUAL TO THE LANDLORD.
Q. WITHIN 90 DAYS AFTER THE DATE OF SYSTEM ACCEPTANCE, RECORD DRAWINGS OF THE ACTUAL INSTALLATION SHALL BE PROVIDED TO LANDLORD. RECORD DRAWINGS SHALL INCLUDE AS A MINIMUM THE LOCATION AND PERFORMANCE DATA ON EACH PIECE OF EQUIPMENT, GENERAL CONFIGURATION OF DUCT DISTRIBUTION SYSTEM INCLUDING SIZES, AND THE AIR DESIGN FLOW RATES.

- R. ANY REFERENCE TO TENANT OR TENANT CONSTRUCTION MANAGER, OR FURNISHED BY ANY OF THE ABOVE, REFERS TO LOVESAC.
S. REFER TO RESPONSIBILITY SCHEDULE ON SHEET C10 FOR INFORMATION IN REGARD TO RESPONSIBILITY OF WORK OR ITEMS WHICH MAY AFFECT BID.

- T. TRADE NAMES, MANUFACTURERS AND SHOP DRAWINGS
1. WHERE TRADE NAMES AND MANUFACTURERS ARE USED ON THE DRAWINGS OR IN THE SPECIFICATIONS, THE EXACT EQUIPMENT SHALL BE USED. THE USE OF ANY UNAUTHORIZED EQUIPMENT SHALL BE SUBJECT TO REMOVAL AND REPLACEMENT AT THIS CONTRACTOR'S EXPENSE.
2. GENERAL CONTRACTOR SHALL SUBMIT ONLY SUBSTITUTION REQUESTS TO TENANT CONSTRUCTION MANAGER FOR APPROVAL. SUBMISSIONS SHALL BE MADE EARLY ENOUGH IN PROJECT TO ALLOW FOUR (4) WORKING DAYS FOR TENANT CONSTRUCTION MANAGER'S REVIEW WITHOUT CAUSING DELAYS OR CONFLICTS TO THE JOB'S PROGRESS. SUBMITTALS SHALL BEAR THE STAMP OF THE GENERAL CONTRACTOR AND THE SUB-CONTRACTOR SHOWING THAT HE HAS REVIEWED AND CONFIRMED THAT THE SUBMITTALS ARE IN CONFORMANCE WITH THE CONTRACT DRAWINGS AND SPECIFICATIONS OR INDICATE WHERE EXCEPTIONS HAVE BEEN TAKEN.

- U. DEMOLITION
1. GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR THE DEMOLITION AND REMOVAL OF EXISTING WORK. FIELD VERIFY AND COORDINATE ANY EXISTING EQUIPMENT REQUIRED TO BE LEFT INTACT AND PROTECT EQUIPMENT TO REMAIN DURING CONSTRUCTION.

- V. FINAL HVAC INSPECTIONS
1. ASIDE FROM NORMAL INTERIM INSPECTIONS OF WORK IN PLACE, TENANT SHALL HAVE AN INDEPENDENT CONTRACTOR INSPECT THE FINISHED INSTALLATION UPON COMPLETION FOR COMPLIANCE WITH THE PLANS, SPECIFICATIONS AND CODES. THE INSTALLING CONTRACTOR WILL BE RESPONSIBLE TO BRING ALL ITEMS REPORTED BY THE INDEPENDENT CONTRACTOR UP TO PLANS AND SPECIFICATION REQUIREMENTS.

- W. WARRANTY AND GUARANTEE
1. GENERAL CONTRACTOR SHALL GUARANTEE ALL MATERIALS AND LABOR PROVIDED UNDER THIS CONTRACT AND SHALL MAKE GOOD, REPAIR OR REPLACE AT NO ADDITIONAL COST ANY DEFECTIVE WORK, MATERIAL, OR EQUIPMENT DISCOVERED WITHIN 12 MONTHS FROM THE DATE OF CERTIFICATE OF OCCUPANCY. THIS GUARANTEE SHALL EXTEND TO LABOR AND MISCELLANEOUS MATERIALS REQUIRED FOR THE INSTALLATION OF EQUIPMENT, BUT SHALL NOT OVERLAP WITH WARRANTY PROVIDED BY MANUFACTURER. THE CONTRACTOR IS RESPONSIBLE TO VERIFY, COORDINATE AND FOLLOW ALL PROPER HANDLING AND INSTALLATION TECHNIQUES WITH MANUFACTURER(S) IN ORDER TO MAINTAIN MANUFACTURER'S WARRANTY.
2. HVAC UNITS SHALL BE FURNISHED BY THE GENERAL CONTRACTOR. GENERAL CONTRACTOR UPON DELIVERY, GENERAL CONTRACTOR SHALL VERIFY ALL EQUIPMENT IS AS SPECIFIED ON DRAWINGS INCLUDING ALL ELECTRICAL REQUIREMENTS, ACCESSORIES AND OTHER REQUIREMENTS. ANY DISCREPANCIES MUST BE REPORTED TO TENANT CONSTRUCTION MANAGER WITHIN THE FIRST TWENTY-FOUR (24) HOURS AFTER DELIVERY.

23 05 01 HVAC BASIC MATERIALS AND METHOD

- A. THIS CONTRACTOR IS TO BECOME INFORMED OF THE EXACT DIMENSIONS OF FINISHED WORK WHERE PIPES, DUCTS AND EQUIPMENT ARE TO BE PLACED AND WILL ARRANGE THE WORK ACCORDINGLY, ASSUMING ALL RESPONSIBILITY FOR PROPER LOCATION AND COORDINATION OF THE WORK.
B. IN THE ERECTION OF THE DUCTWORK, SPECIAL CARE SHALL BE USED PROVIDING SUPPORT.
C. ALL DUCTWORK SHALL BE PLACED SO AS TO AVOID INTERFERENCE WITH PLUMBING PIPES, ELECTRIC CONDUITS OR PIPES OF OTHER CONTRACTORS.
D. ALL DUCTWORK MUST BE PROVIDED WITH SUFFICIENT DISTANCE FROM WALLS, PIPES AND OTHER OBSTACLES TO PERMIT THE APPLICATION OF FULL THICKNESS OF INSULATION SPECIFIED.
E. THIS CONTRACTOR SHALL PERFORM AN ACCURATE AND COMPLETE BALANCE OF AIR SYSTEMS AS PART OF THIS CONTRACT, WHICH SHALL BE COMPLETED BEFORE FINAL ACCEPTANCE OF THE WORK OF THIS CONTRACT. AIR BALANCE SHALL BE SUBCONTRACTED TO A CERTIFIED MEMBER OF ASSOCIATED AIR BALANCE COUNCIL.

- F. VIBRATION ISOLATION DEVICES
1. VIBRATION ISOLATION DEVICES SHALL BE FURNISHED AND INSTALLED WITH SUPPORTS BETWEEN VIBRATING EQUIPMENT AND THE STRUCTURE (FANS, AIR HANDLERS, ETC.) BY THIS CONTRACTOR.
2. VIBRATING EQUIPMENT HUNG FROM STRUCTURE SHALL BE ISOLATED WITH RUBBER AND SPRING DEVICES. VIBRATING EQUIPMENT SUPPORTED FROM FLOOR OR DECK SHALL BE ISOLATED WITH HOUSED SPRING MOUNT DEVICES AND DYNAMICALLY BALANCED.
3. EXAMINE DEAD LOAD AND OPERATING LOAD CONDITIONS WHEN SELECTING DEVICES, ADJUST FOR PROPER ALIGNMENT AND LOADING, AVOID "GROUNDING" THE ISOLATOR.
4. UPPER AND LOWER ATTACHMENTS TO STRUCTURES, DUCTS, EQUIPMENT, ETC.
5. CONSULT MANUFACTURER FOR APPLICATION DATA.

- 23 05 03 TESTING, ADJUSTING AND BALANCING FOR HVAC
A. ALL AIR DISTRIBUTION SYSTEMS ARE TO BE BALANCED IN ACCORDANCE WITH GENERALLY ACCEPTED ENGINEERING STANDARDS BY AN AABC OR NEBB CERTIFIED AIR BALANCER. DUCTED AIR RATES ARE TO BE MEASURED AND ADJUSTED TO DELIVER FINAL FLOW RATES WITHIN 10% OF DESIGN RATES. GENERAL CONTRACTOR TO DO ALL ADJUSTMENTS REQUIRED TO BALANCE THE SYSTEM WITHIN THE DESIGN PARAMETERS. UNITS RPPMS ARE TO BE ADJUSTED FIRST TO GET THE UNIT TO THE LOWEST RPPMS TO DELIVER THE REQUIRED CFM TO THE DIFFUSERS, THEN THE DAMPERS TO THE DIFFUSERS ARE TO BE ADJUSTED TO BALANCE THE SYSTEM. GENERAL CONTRACTOR IS TO PROVIDE ALL LABOR AND MATERIALS REQUIRED TO BALANCE THE SYSTEM.

- B. AFTER CORRECTING BALANCE OF ALL AIR SYSTEMS TO WITHIN 10% OF DESIGNED VALUES, SUBMIT FINAL AIR BALANCE REPORTS TO ARCHITECT, ENGINEER AND LOVESAC. FINAL BALANCE REPORT MUST INDICATE AIR VOLUME WITHIN 10% OF DESIGN, OR MUST STATE THE REASON THAT THE AIR BALANCE CANNOT BE ACHIEVED.
C. GENERAL CONTRACTOR SHALL SUBMIT FINAL AIR BALANCE REPORT PRIOR TO SUBMISSION OF REPORT TO ENGINEER AND ARCHITECT. IF ENGINEER OR ARCHITECT REVIEW THE AIR BALANCE REPORT MULTIPLE TIMES DUE TO THE CONTRACTOR NOT FOLLOWING THESE GUIDELINES OR SENDING A PRELIMINARY REPORT FOR REVIEW IN LIEU OF THE FINAL REPORT, THE GENERAL CONTRACTOR WILL BE RECHARGED FOR ALL REVIEWS BEYOND THE FIRST.
D. VERIFY CONTROLS DURING BALANCING, INCLUDING HUMIDITY CONTROLS WHERE APPLICABLE.
E. AT THE COMPLETION OF THE PROJECT, THE GENERAL CONTRACTOR SHALL SUBMIT FINAL AIR/WATER BALANCE REPORT TO LANDLORD AND AUTHORITY HAVING JURISDICTION AS REQUIRED.

- 23 06 00 CEILING EXHAUST FANS
A. GENERAL CONTRACTOR SHALL PROVIDE CENTRIFUGAL DIRECT DRIVE CEILING EXHAUST FAN(S), BASIS OF DESIGN BROAN OR EQUAL FANS BY LOREN COOK OR GREENHECK MEETING THE SAME REQUIREMENTS. THE FAN HOUSING SHALL BE CONSTRUCTED OF HEAVY GAUGE GALVANIZED STEEL. THE HOUSING INTERIOR SHALL BE LINED WITH 1/2" ACOUSTICAL INSULATION. THE OUTLET DUCT COLLAR SHALL INCLUDE AN ALUMINUM BACKDRIFT DAMPER AND SHALL BE ADAPTABLE FOR HORIZONTAL DISCHARGE.
B. THE ACCESS FOR WIRING SHALL BE EXTERNAL. THE MOTOR DISCONNECT SHALL BE INTERNAL AND OF THE PG 1/2 TYPE.
C. THE MOTOR SHALL BE MOUNTED ON VIBRATION ISOLATORS. THE FAN WHEEL SHALL BE OF THE FORWARD CURVED CENTRIFUGAL TYPE AND DYNAMICALLY BALANCED.
D. ALL FANS SHALL BEAR THE AMCA CERTIFIED RATINGS SEAL FOR SOUND AND AIR PERFORMANCE AND SHALL BE UL LISTED. CAPACITIES AS SHOWN ON THE DRAWINGS.
E. WIRING BY THE GENERAL CONTRACTOR.

- 23 07 00 HVAC INSULATION
A. DUCT INSULATION AND APPURTENANCES SHALL HAVE A FLAME SPREAD RATING NOT EXCEEDING TWENTY-FIVE (25) AND A SMOKE DEVELOPED RATING NOT EXCEEDING FIFTY (50).
B. RECTANGULAR DUCTWORK CONCEALED FROM VIEW SHALL HAVE 1" THICK FIBERGLASS DUCT LINER LAMINATED AND PINNED TO DUCT WITH 1/0 PCF DENSITY AND R-VALUE OF 4.2 MIN. OWENS-CORNING COMMERCIAL GRADE FIBERGLASS DUCT LINER.
C. ROUND DUCTWORK CONCEALED FROM VIEW SHALL HAVE FLEXIBLE FIBERGLASS DUCT WRAP LAMINATED TO POLY REINFORCED KRAFT VAPOR BARRIER FACING WITH 2" STAPLING FLANGE AND MIN. INSTALLED R-VALUE OF 4.2. OWENS-CORNING COMMERCIAL GRADE FIBERGLASS DUCT WRAP TYPE 100.
D. EXPOSED ROUND AND RECTANGULAR DUCTWORK SHALL HAVE NO INSULATION.
E. ALL DUCTWORK IN UNCONDITIONED SPACES SHALL HAVE INSULATION DUCT WRAP WITH A MINIMUM INSTALLED R-VALUE OF 5.0. CONDITIONED SPACES SHALL HAVE INSULATION DUCT WRAP WITH A MINIMUM INSTALLED R-VALUE OF 4.2.

- F. INSULATION SHALL NOT BE APPLIED UNTIL THE GENERAL CONSTRUCTION HAS PROGRESSED SUFFICIENTLY TO INSURE AGAINST PHYSICAL OR MOISTURE DAMAGE TO THE INSULATION. ALL INSULATION DAMAGED DURING CONSTRUCTION TO OBSERVE THIS DIRECTIVE SHALL BE REPLACED AT THIS CONTRACTOR'S EXPENSE.
G. HANGER RODS MUST BE PERPENDICULAR TO DUCTWORK BEFORE INSULATION IS INSTALLED.
H. INSTALL ALL INSULATION ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.
I. INSULATION SHALL BE APPLIED OVER FLANGES, JOINTS AND SEAMS IN PIPING AND DUCTWORK.
J. ALL JOINTS AND SEAMS IN INSULATION SHALL BE PROPERLY SEALED TO MAINTAIN VAPOR BARRIER INTEGRITY.
K. INSULATION SHALL BE OWENS-CORNING, EQUAL PRODUCT BY ARMSTRONG, CERTAINTED, SCHULLER OR KNAUF MAY BE FURNISHED AT THE CONTRACTOR'S OPTION.

- 23 31 13 HVAC AIR DISTRIBUTION AND RETURN SYSTEMS
A. PROVIDE AND INSTALL DUCTWORK AND PLENUMS OF SIZE AND LOCATION AS SHOWN ON DRAWINGS. ALL DUCTS FOR AIR VELOCITIES LESS THAN 2000 FPM AND STATIC PRESSURE IN DUCT 2" OR LESS SHALL BE CONSTRUCTED OF GALVANIZED SHEET METAL. THE GAUGE OF STEEL USED IN ALL DUCTS SHALL BE AS FOLLOWS:
1. WHERE GREATER RECTANGULAR DIMENSION IS 12" OR LESS USE 26 GAUGE.
2. WHERE GREATER RECTANGULAR DIMENSION IS FROM 12" THROUGH 30" USE 24 GAUGE.
3. WHERE GREATER RECTANGULAR DIMENSION IS FROM 31" THROUGH 64" USE 22 GAUGE.
4. WHERE GREATER RECTANGULAR DIMENSION IS FROM 65" THROUGH 84" USE 20 GAUGE.
B. TRANSVERSE JOINTS AND BRACING TO CONFORM TO "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE" (CURRENT SMACNA).
C. ALL DUCTS SHALL BE RIGID AND SHALL BE CROSS-BROKEN, PROPERLY STIFFENED WITH SUITABLE BRACES, TOES, OR ANGLES TO KEEP THEM TRUE TO SHAPE AND PREVENT BUCKLING. ALL VERTICAL DUCTS SHALL BE OF STRONG ENOUGH CONSTRUCTION TO CARRY 100 LBS. SUSPENDED LOAD FROM HANGERS WITHOUT BUCKLING. SOLDER ALL JOINTS WHERE NECESSARY TO INSURE TIGHT WORK. SEAMS OF ALL DUCTS AND JOINTS SHALL BE HAMMERED TO A SMOOTH SURFACE ON THE INSIDE.
D. CONSTRUCTION INCLUDING HANGERS AND SUPPORTING SYSTEMS OF ALL DUCTWORK SHALL ALSO BE IN ACCORDANCE WITH "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE" (CURRENT SMACNA).
E. FLEXIBLE CONNECTIONS SHALL BE INSTALLED ON THE OUTLET AND INTAKE OF AIR HANDLING UNITS AND FANS. THESE CONNECTIONS SHALL BE AT LEAST 6' LONG, MADE OF NFPA 90A APPROVED FLAMEPROOF FABRIC.
F. FURNISH AND INSTALL VOLUME CONTROLLER AND EXTRACTOR AT ALL BRANCH TAKEOFFS IN SUPPLY AND RETURN FROM MAIN DUCTS TO ALL BRANCH DUCTS WHERE SHOWN. UNIT SHALL BE OF TWO GAUGES HEAVIER THAN THE DUCT.
G. PROVIDE MANUAL ADJUSTING LEVER FOR EACH UNIT. UNITS SHALL MOVE FROM FULL OPEN TO FULLY CLOSED POSITION TO CONTROL AIR DIRECTION AND VOLUME.
H. FURNISH AND INSTALL TURNING VANES IN ALL ELBOWS OF RECTANGULAR DUCTS. THE BLADES TO BE HOLLOW-FORMED DOUBLE THICKNESS VANES.
I. INSTALL SUPPLY AND RETURN REGISTERS, GRILLES AND DIFFUSERS AS SHOWN ON THE DRAWINGS AND SCHEDULE.
J. FLEXIBLE SUPPLY AIR DUCTWORK SHALL BE BY FLEXMASTER TYPE 1B OR EQUAL, WITH 1" THICK FIBERGLASS BLANKET INSULATION WITH METALIZED FILM VAPOR BARRIER OUTER JACKET. FLEXIBLE DUCT IN RETURN AIR PLENUM TO BE CLEARLY LABELED CLASS II EVERY FOUR FEET. FLEXIBLE DUCT LENGTH MAY NOT EXCEED FIVE FEET. INSULATION SHALL HAVE MIN. INSTALLED R-VALUE OF 4.2.
K. METAL DUCTWORK - NO FIBERGLASS DUCT ALLOWED.
L. DUCT CONSTRUCTION SHALL BE AS FOLLOWS:
1. EXCEPT WHERE OTHERWISE INDICATED, CONSTRUCT ALL LOW PRESSURE DUCT IN ACCORDANCE WITH THE LATEST EDITION OF SMACNA STANDARDS WITH THE FOLLOWING PRESSURE CLASSIFICATIONS:
a. SUPPLY DUCTS: 2" W.G. POSITIVE.
b. RETURN AND EXHAUST DUCTS: 2" W.G. NEGATIVE.
2. SEAL ALL LOW PRESSURE DUCTS PER SMACNA CLASS B AND ALL MEDIUM PRESSURE DUCTS TO SMACNA CLASS A.
3. REGARDLESS OF ABOVE DUCT CONSTRUCTION AND SEALANT PRESSURE CLASSIFICATIONS, MAXIMUM DUCT AIR LEAKAGE WILL NOT EXCEED 5% AS REQUIRED FOR FINAL AIR BALANCE APPROVAL.

- M. ROUND DUCTWORK SHALL BE GALVANIZED STEEL WITH SPIRAL LOCK SEAM CONSTRUCTION FOR ALL SIZES 12" DIAMETER AND LARGER. ROUND DUCTWORK SIZES 10" DIAMETER AND SMALLER MAY BE SNAP-LOCK. RECTANGULAR DUCTWORK SHALL BE GALVANIZED STEEL WITH SEAMS AS DESCRIBED IN THESE SPECIFICATIONS. ROUND FITTINGS SHALL BE GALVANIZED STEEL WITH SPOT WELDED AND BONDED CONSTRUCTION. DUCTWORK SHALL BE AS MANUFACTURED BY UNITED MCGILL, SENGCO, OR APPROVED EQUAL.
N. ALL JOINTS AND SEAMS SHALL BE SEALED WITH 2" WIDE, GLASS- FIBER FABRIC REINFORCED TAPE. JOINTS ALSO SHALL BE RIVETED OR CONNECTED WITH SHEET METAL SCREWS. LIQUID SEALANTS BY UNITED MCGILL CORP., DON CORNING, MIRACLE ADHESIVES AND SUREBOND INC. WILL BE ACCEPTED IN LIEU OF TAPE.
O. DUCT TRANSITIONS SHALL NOT EXCEED 30 DEGREES SLOPE EXCEPT AS SPECIFICALLY NOTED OTHERWISE.

- 23 30 00 DAMPERS
A. RECTANGULAR DUCT GALVANIZED STEEL MANUAL BALANCE AND MOTORIZED DAMPER 6" WIDE 1/6 GAUGE OPPOSED BLADES, CHANNEL FRAME WITH BRACED CORNERS, CONCEALED LINKAGE, TEFLON FILLED BEARINGS, 3/8" DIAMETER AXLE, 6" LONG CONTROL SHAFT, MOTORIZED DAMPER TO HAVE REPLACEABLE BUTYL RUBBER SEALS INSTALLED ALONG THE TOP, BOTTOM AND SIDES OF THE FRAME, AS WELL AS, ALONG ALL SIDES OF EACH BLADE.
B. ROUND GALVANIZED STEEL MANUAL BALANCE DAMPER WITH SINGLE 1/6 GAUGE BLADE, CHANNEL FRAME, STAINLESS STEEL SLEEVE BEARINGS PRESSED INTO FRAME, 3/8" DIAMETER AXLE EXTENDED 6" FOR CONTROL SHAFT, BLADE STOP.
C. EQUIP DAMPERS WITH LOCKING QUADRANTS.
D. INSTALL BALANCE DAMPERS WHERE SHOWN ON THE DRAWINGS AND ELSEWHERE AS NECESSARY TO OBTAIN PROPER SYSTEM BALANCE.
E. CHECK DAMPERS FOR PROPER OPERATION BEFORE AND AFTER INSTALLATION.
F. DAMPERS SHALL BE GREENHECK, EQUAL PRODUCT BY RUSKIN, AMERICAN HARMING AND VENTILATING, LOUVERS AND DAMPERS, OR PREFCO MAY BE FURNISHED AT THE CONTRACTOR'S OPTION.

- G. FIRE DAMPERS SHALL BE FURNISHED WITH INTERLOCKING HINGED BLADES. ALL DAMPERS SHALL BE UL APPROVED AND LABELED AND SHALL MEET ALL REQUIREMENTS OF NFPA NO. 90A. FURNISH WITH UL LABELED FUSIBLE LINKS WITH TEMPERATURE RANGES TO CONFORM TO NFPA REQUIREMENTS.
H. ALL FIRE DAMPERS SHALL BE TYPE "B" WITH BLADES OUT OF THE AIRSTREAM AND RATED FOR USE IN DYNAMIC SYSTEMS.

- 23 37 13 AIR DISTRIBUTION DEVICES
A. SQUARE CEILING SUPPLY AIR DIFFUSER - STEEL SQUARE CEILING DIFFUSER, REMOVABLE PLAQUE FACE PANEL, ROUND NECK.
B. SQUARE CEILING RETURN AIR REGISTER - STEEL SQUARE CEILING DIFFUSER, REMOVABLE PLAQUE FACE PANEL, ROUND NECK.
C. LINEAR SLOT SUPPLY AIR DIFFUSER - ALUMINUM LINEAR SLOT DIFFUSER, PROVIDE WITH INSULATED PLENUM.
D. SUPPLY AIR GRILLE - STEEL DOUBLE DEFLECTION SUPPLY GRILLE, 3/4" BLADE SPACING, FRONT BLADES PARALLEL TO THE SHORT DIMENSION.
E. RETURN AIR GRILLE - STEEL RETURN AIR GRILLE, 1/2" BLADE SPACING WITH 35' FIXED DEFLECTION BLADES, FRONT BLADES PARALLEL TO THE SHORT DIMENSION.
F. FINISHES - FURNISH ALL AIR DISTRIBUTION DEVICES WITH PRIME COATED AND WHITE BAKED ENAMEL FINISH COAT UNLESS SPECIFIED OTHERWISE.
G. COORDINATE AIR DISTRIBUTION DEVICE LOCATIONS WITH ALL AFFECTED CONTRACTORS BEFORE INSTALLING DUCTWORK. SIGNIFICANT DEVIATIONS IN LOCATIONS FROM THOSE SHOWN ON THE DRAWINGS MUST BE APPROVED BY ARCHITECT BEFORE INSTALLATION.
H. SUSPEND CEILING AIR DEVICES FROM STRUCTURE ON WIRE HANGERS OR FROM RIGID DUCTWORK. CEILING MUST NOT BE USED TO SUPPORT AIR DISTRIBUTION DEVICES.
I. SECURELY FASTEN SIDE WALL AIR DEVICES TO RIGID DUCTWORK OR STRUCTURE.
J. AIR DISTRIBUTION DEVICES FURNISHED AND INSTALLED BY THE GENERAL CONTRACTOR SHALL BE TITUS OR EQUALS BY PRICE, KRUEGER OR NAILOR MEETING REQUIREMENTS AS SHOWN ON SHEET C10.

- 23 75 13 ROOFTOP PACKAGED HVAC UNITS
A. UNIT SHALL BE FACTORY ASSEMBLED AIR TO AIR ELECTRIC COOLING, GAS HEATING UNIT WITH REFRIGERATION SYSTEM, AIR HANDLING SYSTEM CASING AND CONTROLS.
B. CABINET SHALL BE GALVANIZED STEEL, BONDERIZED AND COATED WITH BAKED ENAMEL. UNIT SHALL BE ARRANGED FOR ALL EXTERIOR CONNECTIONS TO BE WITHIN ROOF CURB. CABINET SHALL BE LINED WITH 1" THICK NEOPRENE-COATED FIBERGLASS WITH EASILY REMOVABLE SERVICE PANELS TO ALL OPERATING COMPONENTS.
C. REFRIGERATION SYSTEM SHALL INCLUDE RECIPROCATING SERVICEABLE HERMETIC COMPRESSORS, CONDENSERS, INTERWINDED CIRCUIT EVAPORATOR COIL, EXPANSION VALVES, SERVICE VALVES, VIBRATION ISOLATORS, CRANKCASE HEATERS, SIGHT GLASSES, FILTER DRIERS, HOT GAS MUFFLERS, AND REFRIGERANT PIPING SAFETY CONTROLS SHALL INCLUDE FUSIBLE PLUG, LOW AND HIGH PRESSURE THERMOSTATS, COMPRESSOR MOTOR OVERLOADS, TIMER TO PREVENT SHORT CYCLING COMPRESSORS.
D. CONDENSER FANS SHALL BE VERTICAL DISCHARGE PROPELLER TYPE DIRECT DRIVEN BY INHERENTLY PROTECTED, PERMANENTLY LUBRICATED MOTORS.
E. COILS SHALL BE ALUMINUM PLATE FINS MECHANICALLY BONDED TO SEAMLESS COPPER TUBES WITH ALL JOINTS BRAZED. COILS SHALL BE COATED WHEN WITHIN FIVE (5) FEET OF COAST.
F. INDOOR BLOWER SHALL BE FORWARD-CURVED, CENTRIFUGAL, BELT-DRIVEN TYPE, EQUIPPED WITH PERMANENTLY LUBRICATED BEARINGS.
G. CONTROLS:
1. THE COOLING SYSTEM SHALL BE PROTECTED WITH HIGH PRESSURE THERMOSTATS, LOW PRESSURE THERMOSTATS, LOSS-OF-CHARGE PROTECTION, INDOOR COIL FREEZE THERMOSTATS, AND CURRENT LIMITER TO PREVENT SENSITIVE OVERLOAD DEVICES.
2. ALL DEVICES SHALL BE WIRED TO PREVENT COMPRESSOR RESTART UNTIL RESET OF CIRCUIT BREAKER.
3. THIS CONTRACTOR SHALL INSTALL HEATING/COOLING "S" SENSOR(S) AND "T" THERMOSTAT(S) PER PLAN TO PROVIDE CONTROL OF STAGED COOLING AND STAGED HEATING WITH AUTOMATIC CHANGEOVER AND "FAN ON" CONTROL. MOUNT DEVICES AT 48" AFF TO BOTTOM PER ADA. PROVIDE INITIAL PROGRAMMING OF SYSTEM.
4. WHEN THERMOSTAT/SENSOR CALLS FOR COOLING, FIRST STAGE OF COMPRESSOR SHALL ENERGIZE UNTIL SPACE TEMPERATURE IS SATISFIED. AFTER TEN MINUTES, SECOND STAGE OF COMPRESSOR SHALL ENERGIZE UNTIL SPACE TEMPERATURE IS SATISFIED.
5. WHEN THERMOSTAT/SENSOR CALLS FOR HEATING, FIRST STAGE OF HEAT SHALL ENERGIZE UNTIL SPACE TEMPERATURE IS SATISFIED. AFTER TEN MINUTES, SECOND STAGE OF HEAT SHALL ENERGIZE UNTIL SPACE TEMPERATURE IS SATISFIED.
6. FAN SHALL ENERGIZE AND RUN CONTINUOUSLY DURING OCCUPIED HOURS.
7. HVAC CONTROL SYSTEMS SHALL BE TESTED TO ENSURE THAT CONTROL ELEMENTS ARE CALIBRATED, ADJUSTED, AND IN PROPER WORKING CONDITION.

- H. PROGRAMMING OF CONTROLS/SEQUENCE OF OPERATION:
1. CONTRACTOR SHALL PROVIDE PROGRAMMING OF HVAC CONTROL SYSTEM PER MANUFACTURER'S INSTRUCTIONS AND IS REQUIRED TO MEET THE BELOW OPERATION.
2. SPACE TEMPERATURE SETPOINT - UNOCCUPIED SETPOINTS SHALL BE 78°F COOLING AND 60°F HEATING. WARM-UP/OCCUPIED SETPOINTS SHALL BE 72°F COOLING AND 68°F HEATING. SETPOINTS SHALL BE LOCKED OUT TO PREVENT ADJUSTMENT MORE THAN 3°F UP OR DOWN FROM DEFAULT.
3. ALL SETPOINTS ARE ADJUSTABLE - PRIOR TO PROGRAMMING OF CONTROLS SYSTEM, VERIFY SETPOINTS WITH TENANT CONSTRUCTION REPRESENTATIVE.
4. UNIT OPERATION - DURING OCCUPIED HOURS, FAN SHALL RUN CONTINUOUSLY ("FAN ON") AND UNIT SHALL STAGE COOLING OR HEATING. DURING UNOCCUPIED HOURS, FAN SHALL RUN ONLY WHEN HEATING OR COOLING ARE CALLED FOR ("FAN AUTO").
5. OCCUPIED/UNOCCUPIED/WARM-UP - UNOCCUPIED MODE SHALL BE SET FOR ONE HOUR AFTER MALL CLOSING TO ONE HOUR PRIOR TO MALL OPENING. UNOCCUPIED MODE SHALL HAVE MANUAL OVERRIDE.
6. REFER TO CONTROLS SECTION ABOVE FOR ADDITIONAL REQUIREMENTS.

- J. CONTRACTOR IS RESPONSIBLE FOR INSTALLING ALL CONTROLS, CONTROL WIRING AND TO MAKE OPERATIONAL.
K. ROOFTOP UNITS SHALL BE FURNISHED AND INSTALLED BY GENERAL CONTRACTOR. UPON DELIVERY OF UNITS, CONTRACTOR SHALL VERIFY ALL EQUIPMENT IS AS SPECIFIED ON DRAWINGS INCLUDING ALL ELECTRICAL REQUIREMENTS, RESOURCES AND OTHER REQUIREMENTS. ANY DISCREPANCIES MUST BE REPORTED TO TENANT CONSTRUCTION MANAGER WITHIN THE FIRST TWENTY-FOUR (24) HOURS AFTER DELIVERY.

(END OF MECHANICAL SPECIFICATIONS)

Table with project location and design data. City Name: Cincinnati IAP, Location: Ohio, Latitude: 39.1 Deg., Longitude: 84.7 Deg., Elevation: 876.0 ft, Summer Design Dry-Bulb: 91.0 °F, Summer Coincident Wet-Bulb: 74.0 °F, Summer Daily Range: 18.9 °F, Winter Design Dry-Bulb: 1.0 °F, Winter Design Wet-Bulb: -1.0 °F, Atmospheric Clearness Number: 1.07, Average Ground Reflectance: 0.20, Soil Conductivity: 0.800 BTU/(hr-ft²-F), Local Time Zone (GMT +/- N hours): 5.0 hours, Consider Daylight Savings Time: No, Simulation Weather Data: N/A, Current Data is: 2001 ASHRAE Handbook, Design Cooling Months: January to December.

Air System Information table. Air System Name: all, Equipment Class: PKG ROOF, Air System Type: SZCAV, Number of zones: 2, Floor Area: 1469.0 ft², Location: Cincinnati IAP, Ohio.

Sizing Calculation Information table. Calculation Months: Jan to Dec, Sizing Data: Calculated, Zone CFM Sizing: Sum of space airflow rates, Space CFM Sizing: Individual peak space loads.

Central Cooling Coil Sizing Data table. Total coil load: 7.1 Tons, Coil CFM at Aug 1200: 3000 CFM, Max block CFM: 3000 CFM, Sum of peak zone CFM: 3000 CFM, Sensible heat ratio: 0.784, CFM/Ton: 42.8, BTU/(hr-ft²) rise: 34.7, Water flow @ 10.0 °F rise: N/A. Load occurs at: Aug 1200, Entering DB / WB: 77.6 / 64.8 °F, Leaving DB / WB: 56.2 / 55.1 °F, Coil ADP: 53.9 °F, Bypass Factor: 0.100, Resulting RH: 50 %, Design supply temp: 57.0 °F, Zone 1 stat Check: 1.01 °K, Max zone temperature deviation: 0.0 °F.

Central Heating Coil Sizing Data table. Max coil load: 62.9 MBH, Coil CFM at Des Htg: 3000 CFM, Max coil CFM: 3000 CFM, Water flow @ 20.0 °F drop: N/A. Load occurs at: Des Htg, Ent. DB / Lvg DB: 57.6 / 77.6 °F.

Supply Fan Sizing Data table. Actual max CFM: 3000 CFM, Standard CFM: 2906 CFM, Actual max CFM/E: 1.22 CFM/E, Fan motor BHP: 0.00 BHP, Fan motor kW: 0.00 kW, Fan static: 0.00 in wg.

Table with ZONE LOADS, DESIGN COOLING, and DESIGN HEATING data. Includes details for Window & Skylight Solar Loads, Wall Transmission, Roof Transmission, Skylight Transmission, Door Loads, Floor Transmission, Partitions, Ceiling, Overhead Lighting, Task Lighting, Electric Equipment, People, Infiltration, Miscellaneous, Safety Factor, Total Zone Loads, Zone Conditioning, Plenum Wall Load, Plenum Roof Load, Return Fan Load, Ventilation Load, Supply Fan Load, Space Fan Coil Fans, Duct Heat Gain / Loss, Total System Loads, Central Cooling Coil, Central Heating Coil, Total Conditioning.

Key table. Positive values are ckg loads, Negative values are htg loads.

Vertical sidebar containing revision information (REVISIONS: 09/27/2022), company logo (SHREMSHOCK), company name (SHREMSHOCK), address (Shremshock Engineering, Inc., 7775 Walton Parkway Ste. 250 New Albany, OH 43054), phone (t: 614 545 4550 | f: 614 545 4555), project name (MECHANICAL SPECIFICATIONS AND HVAC CALCULATIONS), location (DEERFIELD TOWNE CENTER, 5695 DEERFIELD BLVD., SUITE #C-120, MASON, OH 45040), and drawing number (DRAWING NUMBER: M300).

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SAI # 220410, DRAWING NUMBER: M300

21 05 00 FIRE PROTECTION GENERAL PROVISIONS

- A. PROVIDE ALL MATERIALS AND EQUIPMENT AND PERFORM ALL LABOR REQUIRED TO INSTALL A FIRE PROTECTION SYSTEM, COMPLETE AS INDICATED ON THE DRAWINGS AND AS REQUIRED BY CODE AND AS SPECIFIED HEREIN.
  - B. THE GENERAL CONTRACTOR, UNLESS OTHERWISE NOTED IS TO PROVIDE POWER WIRING FOR EACH ITEM OF ELECTRICAL EQUIPMENT AND MAKE FINAL CONNECTIONS TO MOTORS.
  - C. ALL FINISH PAINTING IS TO BE PERFORMED BY THE GENERAL CONTRACTOR, EXCEPT AS NOTED ELSEWHERE. GENERAL CONTRACTOR, AT THIS CONTRACTOR'S EXPENSE, SHALL RESTORE TO ORIGINAL CONDITION ANY PAINTING DEFACED DURING CONSTRUCTION AND AFTER ORIGINAL PAINTING.
  - D. ALL WORK SHALL CONFORM TO CODES, RULES, AND REGULATIONS:
    - 1. NATIONAL ELECTRICAL CODE.
    - 2. STANDARD FOR INSTALLATION OF AIR CONDITIONING AND VENTILATING SYSTEMS, NFPA 90A.
    - 3. CODE FOR SAFETY TO LIFE FROM FIRE IN BUILDINGS AND STRUCTURES, NFPA 101.
    - 4. FEDERAL OCCUPATIONAL SAFETY AND HEALTH STANDARDS.
    - 5. STATE MECHANICAL CODE.
    - 6. STATE BUILDING CODE.
    - 7. STATE INDUSTRIAL COMMISSION REQUIREMENTS.
    - 8. LOCAL BUILDING CODE REQUIREMENTS.
    - 9. BUILDING INSURING AGENCY REQUIREMENTS.
    - 10. STATE PLUMBING CODE.
    - 11. NFPA.
  - E. ALL PERMITS REQUIRED BY LAWS, ORDINANCES AND BUILDING CODES HAVING JURISDICTION SHALL BE OBTAINED AT THE PROPER TIME BY AND AT THE EXPENSE OF THIS CONTRACTOR.
  - F. THIS CONTRACTOR SHALL OBTAIN ALL INSPECTIONS REQUIRED BY ALL LAWS, ORDINANCES AND PUBLIC AUTHORITY HAVING JURISDICTION AND SHALL OBTAIN CERTIFICATES OF SUCH INSPECTIONS AND SUBMIT SAME TO THE ARCHITECT AND SHALL PAY ALL FEES, CHARGES, ASSESSMENTS AND OTHER EXPENSES IN CONNECTION THEREWITH.
  - G. THE MATERIALS AND EQUIPMENT INSTALLED IN THE WORK SHALL MEET THE REQUIREMENTS OF THE CONTRACT DOCUMENTS AND NO MATERIALS OR EQUIPMENT SHALL BE ORDERED UNTIL REVIEWED BY THE ENGINEER, LANDLORD AND/OR ARCHITECT.
  - H. CATALOG DATA FOR EQUIPMENT REVIEWED BY THE ARCHITECT SHALL NOT SUPERSEDE THE ENGINEER'S CONTRACT DOCUMENTS. THE REVIEW OF THE ENGINEER SHALL NOT RELIEVE THE GENERAL CONTRACTOR FROM RESPONSIBILITY FOR DEVIATIONS FROM DRAWINGS OR SPECIFICATIONS, PROVIDING PROPER CLEARANCE, FABRICATION PROCESS AND COORDINATION WITH OTHER TRADES.
  - I. PROVIDE INSTRUCTION TO LANDLORD'S OPERATING PERSONNEL AS NECESSARY, SHOWING LOCATIONS AND PROPER OPERATION OF MAJOR ITEMS OF EQUIPMENT AND SYSTEM COMPONENTS AND REFERRING TO THE OPERATING INSTRUCTION MANUAL DESCRIBED BELOW AS A GUIDE.
  - J. WITHIN 90 DAYS AFTER THE DATE OF SYSTEM ACCEPTANCE, RECORD DRAWINGS OF THE ACTUAL INSTALLATION SHALL BE PROVIDED TO THE BUILDING LANDLORD. RECORD DRAWINGS SHALL INCLUDE AS A MINIMUM THE LOCATION AND PERFORMANCE DATA ON EACH PIECE OF EQUIPMENT.
  - K. ANY REFERENCE TO TENANT OR TENANT'S CONSTRUCTION MANAGER OR FURNISHED BY ANY OF THE ABOVE REFERS TO LOVESAC.
  - L. REFER TO RESPONSIBILITY SCHEDULE ON SHEET C101 FOR INFORMATION IN REGARD TO RESPONSIBILITY OF WORK OR ITEMS WHICH MAY AFFECT BID.
  - M. DEMOLITION
    - 1. GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR THE DEMOLITION AND REMOVAL OF EXISTING WORK. FIELD VERIFY AND COORDINATE ANY EXISTING EQUIPMENT REQUIRED TO BE LEFT INTACT AND PROTECT EQUIPMENT TO REMAIN DURING CONSTRUCTION.
  - N. WARRANTY AND GUARANTEE
    - 1. GENERAL CONTRACTOR SHALL GUARANTEE ALL MATERIALS AND LABOR PROVIDED UNDER THIS CONTRACT AND SHALL MAKE GOOD, REPAIR OR REPLACE AT NO ADDITIONAL COST ANY DEFECTIVE WORK, MATERIAL, OR EQUIPMENT DISCOVERED WITHIN 12 MONTHS FROM THE DATE OF CERTIFICATE OF OCCUPANCY. THIS GUARANTEE SHALL EXTEND TO LABOR AND MISCELLANEOUS MATERIALS REQUIRED FOR THE INSTALLATION OF EQUIPMENT. THE GENERAL CONTRACTOR IS RESPONSIBLE TO VERIFY, COORDINATE AND FOLLOW ALL PROPER HANDLING AND INSTALLATION TECHNIQUES WITH MANUFACTURER(S) IN ORDER TO MAINTAIN MANUFACTURER'S WARRANTY.
- 21 05 13 COMMON WORK RESULTS FOR FIRE SUPPRESSION**
- A. MODIFY THE EXISTING SPRINKLER SYSTEM AND FURNISH ALL MATERIALS, LABOR, TOOLS, ADMINISTRATION, TRANSPORTATION, INCIDENTALS AND APPURTENANCES WHICH ARE REQUIRED TO COMPLETE IN EVERY DETAIL AND LEAVE IN WORKING ORDER ALL ITEMS OF WORK CALLED FOR HEREIN OR SHOWN ON THE ACCOMPANYING DRAWINGS. CONTRACTOR IS RESPONSIBLE FOR CONNECTING TO THE LANDLORD'S FIRE ALARM SYSTEM. COORDINATE WITH LANDLORD'S APPROVED FIRE ALARM AND SPRINKLER CONTRACTORS.
  - B. INCLUDE ANY MINOR ITEMS OF WORK NECESSARY TO PROVIDE A COMPLETE AND FULLY OPERATIVE FIRE PROTECTION SYSTEM.
  - C. THIS CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE EXACT HAZARD CLASSIFICATION, AS WELL AS, THE QUANTITY, SPACING, AND PROTECTED AREA LIMITATION OF SPRINKLER HEADS. CONTRACTOR SHALL FURTHER BE RESPONSIBLE FOR CONFIRMING HIS DETERMINATION WITH THE LANDLORD'S INSURING AGENCY AND THE LOCAL FIRE AUTHORITY HAVING JURISDICTION OVER THE PROJECT.
  - D. WHERE APPLICABLE, LOCATE SPRINKLER HEADS IN CENTER OF CEILING TILE, USE ARMORER ON ALL SPRINKLER BRANCH LINES TO ACCOMPLISH EXACT LOCATION OF HEAD.
  - E. PROVIDE AN NFPA-13 APPROVED AUTOMATIC FIRE SPRINKLER SYSTEM IN BUILDING. SYSTEM SHALL BE APPROVED BY THE LOCAL AND STATE FIRE MARSHAL'S OFFICE.
  - F. THE INSTALLING CONTRACTOR SHALL BE LICENSED AND CERTIFIED IN THE INSTALLATION OF AUTOMATIC SPRINKLER SYSTEMS IN THIS STATE.
  - G. THIS CONTRACTOR SHALL OBTAIN AND PAY FOR ANY INSPECTION FEES, CHARGES, AND ANY OTHER GOVERNMENTAL FEES APPLICABLE.
  - H. THIS CONTRACTOR SHALL FILE ALL NECESSARY DRAWINGS, SPECIFICATIONS, CONTRACTOR'S MATERIAL AND TEST CERTIFICATES.
  - I. THIS CONTRACTOR SHALL OBTAIN A CERTIFICATE OF INSPECTION AND APPROVAL AND SUBMIT TO THE ARCHITECT PRIOR TO THE REQUEST FOR FINAL PAYMENT.
  - J. THIS CONTRACTOR SHALL PROVIDE ALL PRODUCTS AND LABOR REQUIRED TO COMPLETE THE INSTALLATION OF ALL FIRE PROTECTION SPRINKLER SYSTEMS.
  - K. FIRE PROTECTION PIPING AND EQUIPMENT LAYOUT SHALL BE COORDINATED WITH ALL EQUIPMENT, BOTH KNOWN AND UNKNOWN, AND EQUIPMENT INCLUDED UNDER OTHER DIVISIONS OF THE SPECIFICATIONS.
  - L. ALL FIRE PROTECTION PIPING SHALL BE INSTALLED AS CONCEALED WORK, WHERE APPLICABLE.
  - M. THE ARCHITECT RESERVES THE RIGHT TO CHANGE THE LOCATION OF ANY SPRINKLER HEAD DURING FIRE RATED WALLS. FIRESTOPPING MATERIALS SHALL BE UL CLASSIFIED AND MEET THE REQUIREMENTS OF ASTM. THE METHOD OF INSULATION SHALL CONFORM TO UL FIRE RESISTANCE DIRECTORY.
  - N. FILL ANNULAR SPACE BETWEEN SLEEVE AND PIPE OR INSULATION ON ALL PENETRATIONS THROUGH FIRE RATED WALLS. FIRESTOPPING MATERIALS SHALL BE UL CLASSIFIED AND MEET THE REQUIREMENTS OF ASTM. THE METHOD OF INSULATION SHALL CONFORM TO UL FIRE RESISTANCE DIRECTORY.
  - O. CEILING GRID SYSTEMS SHALL NOT BE USED TO SUPPORT FIRE PROTECTION ITEMS, PIPING, OR ANY OTHER EQUIPMENT. EACH UTILITY AND THE CEILING GRID SYSTEM SHALL BE A SEPARATE INSTALLATION AND EACH SHALL BE INDEPENDENTLY SUPPORTED FROM THE BUILDING STRUCTURE WHERE INTERFERENCE OCCURS IN ORDER TO SUPPORT EQUIPMENT OR CEILING GRID SYSTEM. THIS CONTRACTOR MUST INSTALL TRAPEZE TYPE HANGERS OR SUPPORTS WHICH SHALL NOT BE LOCATED WHERE THEY INTERFERE WITH ACCESS TO FIRE DAMPERS, VALVES, LIGHT FIXTURES, AND OTHER MECHANICAL OR ELECTRICAL ITEMS.
  - P. INSTALL ALL SPRINKLER HEADS IN ROOMS IN AN ESTHETIC MANNER. SPRINKLER ARRANGEMENT SHALL BE PARALLEL AND PERPENDICULAR TO THE BUILDING WALLS. COORDINATE WITH ARCHITECT AND TENANT.
  - Q. GENERAL CONTRACTOR SHALL VERIFY THE LOCATION OF UTILITIES AND NOTE CONDITIONS WHICH WOULD AFFECT THE WORK. ALL DISCREPANCIES SHALL THEN BE REPORTED TO THE LANDLORD'S TENANT COORDINATOR PRIOR TO THE BID AWARD.
  - R. INSTALLATION WILL NOT BE CONSIDERED COMPLETE UNLESS AND UNTIL WRITTEN ACCEPTANCE IS RECEIVED FROM THE STATE FIRE MARSHAL AND THE LANDLORD'S INSURING AGENCY.
  - S. GENERAL CONTRACTOR TO MAINTAIN ONE SET OF DRAWINGS ON THE JOB TO BE USED STRICTLY FOR RECORDING ANY INSTALLATION DEVIATIONS FROM THE CONTRACT DRAWINGS.
  - T. GENERAL CONTRACTOR IS RESPONSIBLE FOR DAILY CLEAN-UP AND REMOVAL OF FIRE PROTECTION DEBRIS FROM THE SITE WEEKLY. THE PREMISES SHALL BE KEPT IN A NEAT AND ORDERLY CONDITION.
  - U. GENERAL CONTRACTOR SHALL REVIEW AND FOLLOW ALL LANDLORD REQUIREMENTS. THE SUBMITTING OF A BID AUTOMATICALLY IMPLIES THAT THESE REQUIREMENTS HAVE BEEN REVIEWED AND ARE IN THE BID PRICE AND INFORM LANDLORD IN ADVANCE OF ANY DOWN TIME.
  - V. ALL SLEEVES AND OPENINGS THROUGH FIRE RATED WALLS AND/OR FLOORS SHALL BE FIRE SEALED WITH CALCIUM SILICATE, SILICONE "RTV" FOAM, "SM" FIRE RATED SEALANTS OR EQUAL, SO AS TO RETAIN THEIR FIRE RATING.

PROVIDE ALL SHOP DRAWINGS TO LANDLORD FOR OUR FILE

MUST USE LANDLORD REQUIRED FIRE SPRINKLER CONTRACTOR

21 05 16 SHOP DRAWINGS

- A. CONTRACTOR SHALL SUBMIT FOR THE ARCHITECT'S AND LANDLORD REVIEW SIX (6) COMPLETE COPIES OF THE CATALOG DATA AND/OR SHOP DRAWINGS FOR THE LISTED ITEMS OF EQUIPMENT AND ALL COMPONENTS TO BE USED IN THE WORK, INCLUDING SPECIFIC PERFORMANCE DATA, MATERIAL DESCRIPTION, RATING, CAPACITY, WORKING PRESSURE, MATERIAL GAUGE OF THICKNESS, BRAND NAME, CATALOG NUMBER AND GENERAL TYPE. THE SUBMISSION SHALL BE COMPILED BY GENERAL CONTRACTOR AND REVIEWED BY ENGINEER BEFORE ANY OF THE EQUIPMENT IS ORDERED.
    - 1. SPRINKLERS (AS REQUIRED)
    - 2. VALVES (AS REQUIRED)
    - 3. TAMPER SWITCHES (AS REQUIRED)
    - 4. WATER FLOW SWITCHES (AS REQUIRED)
    - 5. HYDRAULIC CALCULATIONS (AS REQUIRED)
    - 6. CONNECTIONS TO LANDLORD'S FIRE ALARM SYSTEM (WHERE REQUIRED).
  - B. WHEN SUBMITTED FOR THE ARCHITECT'S REVIEW, SHOP DRAWINGS SHALL BEAR GENERAL CONTRACTOR'S CERTIFICATION THAT THEY HAVE REVIEWED, CHECKED AND APPROVED THE SHOP DRAWINGS, THAT THEY ARE IN HARMONY WITH THE REQUIREMENTS OF THE PROJECT AND WITH THE PROVISIONS OF THE CONTRACT DOCUMENTS AND THAT THEY HAVE VERIFIED ALL FIELD MEASUREMENTS AND CONSTRUCTION CRITERIA, MATERIALS, CATALOG NUMBER AND FIELD MEASUREMENTS AND SIMILAR DATA. GENERAL CONTRACTOR SHALL ALSO CERTIFY THAT THE WORK REPRESENTED BY THE SHOP DRAWINGS IS RECOMMENDED BY THIS CONTRACTOR AND THE GENERAL CONTRACTOR'S GUARANTEE WILL FULLY APPLY.
  - C. ALL CONTRACTORS SUBMITTING PROPOSALS FOR THIS WORK SHALL FIRST EXAMINE THE SITE AND ALL CONDITIONS THEREIN. ALL PROPOSALS SHALL TAKE INTO CONSIDERATION ALL SUCH CONDITIONS AS THEY MAY AFFECT THE WORK UNDER THIS CONTRACT. THE SUBMITTING OF A BID AUTOMATICALLY IMPLIES THAT THIS EXAMINATION OF THE SITE HAS BEEN DONE.
- 21 05 19 TESTS**
- A. THIS CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TESTING OF SPRINKLER PIPING PER NFPA.
  - B. TEST SPRINKLER PIPING WITH A HYDROSTATIC TEST AT 200 PSI FOR 2 HOURS WITH NO VISIBLE LEAKAGE.
  - C. TEST ALARMS, FLOW SWITCHES, AND TAMPERPROOF SWITCHES AND ADJUST AS NECESSARY.
  - D. GENERAL CONTRACTOR AND LANDLORD SHALL SIGN CERTIFICATES, INDICATING WITNESSING OF ALL TESTS REQUIRED BY NFPA-13 FOR ABOVE GROUND PIPING.
  - E. REPAIR ANY LEAKING JOINTS AND REPAIR ANY DAMAGE TO THE FACILITY THAT THE LEAK MAY HAVE CREATED. CLEAN, PAINT, OR REPLACE ANY DAMAGED COVERINGS AS REQUIRED TO MEET THE LANDLORD'S APPROVAL.
  - F. NOTIFY THE LANDLORD IN WRITING FOR ANY SCHEDULING OF ANY TESTS OR DOWNTIME OF THE EXISTING SPRINKLER SYSTEM.
- 21 05 25 SUPPORTS, ANCHORS, AND SEALS**
- A. UL LISTED HANGERS, BEAM CLAMPS, HANGER RODS, PIPE ATTACHMENTS, AND PIPE SLEEVES SHALL BE PER SP-55. EQUAL MANUFACTURERS TO BE SIMPLEX GRINNELL, B-LINE, OR MICHIGAN HANGERS.
  - B. ALL HANGER ASSEMBLIES SHALL BE UL AND FM APPROVED.
  - C. HANGER SPACING SHALL MEET NFPA-13 MINIMUM REQUIREMENTS.
- 21 05 26 INTERIOR PIPE TUBE AND FITTINGS AND SPRINKLER HEADS**
- A. SPRINKLER HEADS:
    - 1. ALL SPRINKLER HEADS SHALL BE NEW, QUICK RESPONSE, U.L. LISTED, F.M. LISTED AND APPROVED AUTOMATIC SPRAY TYPE AS MANUFACTURED BY STAR, RELIABLE, SIMPLEX-GRINNELL, VIKING, OR CENTRAL SPRINKLER CO.
    - 2. ALL SPRINKLER HEADS SHALL BE RATED FOR 165°F UNLESS INDICATED OTHERWISE ON DRAWINGS OR REQUIRED BY LOCAL CODES.
    - 3. "SALES" AREA SPRINKLER HEADS ARE TO BE FULLY CONCEALED ADJUSTABLE SCREW TYPE WITH WHITE COVER PLATE TO MATCH CEILING.
    - 4. "NON-SALES" AREA SPRINKLER HEADS ARE TO BE FULLY CONCEALED ADJUSTABLE SCREW TYPE WITH WHITE COVER PLATE TO MATCH CEILING.
    - 5. "NON-SALES" NO CEILING SPRINKLER HEADS ARE TO BE CHROME UPRIGHT, ADJUSTABLE SCREW TYPE.
    - 6. "MALL BULKHEAD" AREA SPRINKLER HEADS ARE TO BE FULLY CONCEALED ADJUSTABLE SCREW TYPE WITH WHITE COVER PLATE TO MATCH CEILING.
  - B. PIPING:
    - 1. SCHEDULE 40, BLACK STEEL PIPE, ASTM A-53 FOR FERROUS PIPING, WELDED AND SEAMLESS, ANSI B-36-10-70 FOR WROUGHT STEEL PIPE.
    - 2. CAST IRON OR MALLEABLE IRON SCREWED FITTINGS FOR PIPES 2 INCHES AND SMALLER. SCREWED OR CAST IRON FLANGED JOINTS FOR PIPES LARGER THAN 2 INCHES.
    - 3. GALVANIZED OR BLACK MALLEABLE IRON WITH BRASS SEAT SCREWED UNIONS FOR PIPES 2 INCHES AND SMALLER.
    - 4. MECHANICAL COUPLINGS AS MANUFACTURED BY VICTAULIC OR EQUAL ARE ACCEPTABLE, WHERE APPROVED BY CODE AND THE LANDLORD.
    - 5. HANGERS SHALL COMPLY WITH LANDLORD AND CODE REQUIREMENTS.
  - C. SPRINKLER SPACING SHALL NOT EXCEED 130 SQ. FT. IN "SALES" AREAS AND 100 SQ. FT. IN "STOCK" AREAS. COMPLY WITH LANDLORD'S DESIGN CRITERIA. PIPE SIZING SHALL BE BASED ON NFPA ORDINARY HAZARD.
  - D. ALL SPRINKLER LINES SHALL BE INSTALLED CONCEALED, AVOIDING INTERFERENCE WITH OTHER TRADES.
  - E. WHERE POSSIBLE, REWORK THE EXISTING SPRINKLER SYSTEM TO MEET THE NEW REQUIREMENTS OF THIS DESIGN.
  - F. PROVIDE AND INSTALL A VALVED TEST CONNECTION IN AN ACCESSIBLE LOCATION FOR THE SPRINKLER SYSTEM AS REQUIRED OR REQUESTED BY THE LANDLORD, LOCAL INSPECTOR, OR INSURANCE CARRIER.
  - G. THIS CONTRACTOR SHALL BE RESPONSIBLE FOR DAMAGE CAUSED BY LEAKS IN ANY OF THE EQUIPMENT INSTALLED. ALL REPAIRS OR REPLACEMENT OF DAMAGES SHALL BE BY THIS CONTRACTOR AT THIS CONTRACTOR'S EXPENSE.
  - H. PROPERLY COMPLETED AND SIGNED "SPRINKLER CONTRACTOR'S MATERIAL AND TEST CERTIFICATES" SHALL BE FURNISHED TO THE LANDLORD, AND AUTHORITIES HAVING JURISDICTION.

21 05 30 SPRINKLER PIPING SPECIALTIES

- A. PROVIDE ALL NECESSARY DRAINS. COORDINATE THE EXACT LOCATION WITH THE ARCHITECT AND LANDLORD PRIOR TO ANY INSTALLATION.
  - B. THIS CONTRACTOR IS TO BECOME INFORMED OF THE EXACT DIMENSIONS OF FINISHED WORK WHERE PIPES, DUCTS AND EQUIPMENT ARE TO BE PLACED AND WILL ARRANGE THE WORK ACCORDINGLY, ASSUMING ALL RESPONSIBILITY FOR PROPER LOCATION AND COORDINATION OF THE WORK.
- (END OF FIRE PROTECTION SPECIFICATIONS)

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DATE ISSUED:  
09/27/2022

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FIRE PROTECTION SPECIFICATIONS

CHECKED BY: JTP  
DRAWN BY: LJ

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SAI # 220410

DRAWING NUMBER:

M301