

MECHANICAL SYMBOLS, LEGENDS

NOTE: THIS IS A MASTER LEGEND AND NOT ALL SYMBOLS, ETC. ARE NECESSARILY USED ON THE DRAWINGS.

PIPING

- CD CONDENSATE DRAIN (CD)
- ACD AUXILIARY CONDENSATE DRAIN (ACD)
- RL REFRIGERANT LIQUID (RL)
- RD REFRIGERANT DISCHARGE (HOT GAS) (RD)
- RS REFRIGERANT SUCTION (RS)
- EXISTING PIPING TO BE REMOVED
- EXISTING PIPING TO REMAIN

HVAC EQUIPMENT & DUCTWORK

NOTE: ALL DUCT DIMENSIONS SHOWN ON DRAWINGS ARE INSIDE DIMENSIONS. SEE SECTION 15250 OF THE SPECIFICATION FOR DUCTWORK TO RECEIVE INSULATION OR LINER.

- EXISTING DUCTWORK OR EQUIPMENT TO REMAIN
- EXISTING DUCTWORK OR EQUIPMENT TO BE REMOVED
- BRANCH DUCT WITH 45° RECTANGLE-ROUND BRANCH FITTING AND MANUAL VOLUME DAMPER
- ELBOW WITH TURNING VANES
- RETURN, EXHAUST, OR OUTSIDE AIR DUCT UP
- RETURN, EXHAUST, OR OUTSIDE AIR DUCT DOWN
- SUPPLY AIR DUCT UP
- SUPPLY AIR DUCT DOWN
- EQUIPMENT WITH FLEXIBLE DUCT CONNECTION
- 10" CSD-1 300 CFM NECK SIZE, TYPE, CFM OF SUPPLY DIFFUSER OR REGISTER
- MANUAL VOLUME DAMPER
- SQUARE TO ROUND TRANSITION
- DUCT MOUNTED SMOKE DETECTOR (SD-SUPPLY/RD-RETURN)
- FIRE DAMPER
- FIRE SMOKE DAMPER
- SMOKE DAMPER
- VOLUME DAMPER
- MOTORIZED DAMPER
- BACKDRAFT DAMPER
- CARBON DIOXIDE SENSOR
- HUMIDITY SENSOR
- PULL STATION
- STATIC PRESSURE SENSOR
- TEMPERATURE SENSOR
- HUMIDISTAT
- THERMOSTAT

ABBREVIATIONS

ABBREVIATIONS	ABBREVIATIONS
AFF ABOVE FINISHED FLOOR	MC MECHANICAL CONTRACTOR
BAS BUILDING AUTOMATION SYSTEM	MIN MINIMUM
BD BACKDRAFT DAMPER	NC NOISE CRITERIA
CFM CUBIC FEET PER MINUTE	OA OUTSIDE AIR
DDC DIRECT DIGITAL CONTROL	RA RETURN AIR
DX DIRECT EXPANSION	SA SUPPLY AIR
EA EXHAUST AIR	SD SMOKE DUCT DETECTOR
FFA FROM FLOOR ABOVE	TFA TO FLOOR ABOVE
FFB FROM FLOOR BELOW	TFB TO FLOOR BELOW
GPM GALLONS PER MINUTE	TYP TYPICAL
IN WC INCHES OF WATER COLUMN	UNO UNLESS NOTED OTHERWISE
MAX MAXIMUM	W/ WITH
MBH 1000 BTU PER HOUR	W/O WITHOUT

STANDARD MOUNTING HEIGHTS

MECHANICAL (AFF, AFG, UNLESS NOTED OTHERWISE)
THERMOSTATS (USER ADJUSTABLE) 48"
CONTROLS (CENTERLINE) 48"

ANNOTATION

- MECHANICAL PLAN CALLOUT
- MECHANICAL EQUIPMENT DESIGNATION (CONTRACTOR FURNISHED AND INSTALLED UNLESS NOTED OTHERWISE)
- CONNECTION POINT OF NEW WORK TO EXISTING
- DETAIL REFERENCE UPPER NUMBER INDICATES DRAWING NUMBER LOWER NUMBER INDICATES SHEET NUMBER
- SECTION CUT DESIGNATION

AIR HANDLER UNIT SCHEDULE (NATURAL GAS)

MARK	MANUFACTURER	MODEL	SUPPLY FAN			COOLING COIL			HEATING COIL			ELECTRICAL			NOTES				
			CFM	ESP (IN)	MIN. HP	TC (MBH)	SC (MBH)	EA (DB/MB)	LA (DB)	MODEL	INPUT (MBH)	OUTPUT (MBH)	%EFF	V/PH		MCA	MOCP		
AHU-1	TRANE	TUD2C080A9	1,600	0.80	1.0	140	R-410A	47.5	34.4	80/67	58	4TXCC060BC3	80	64	80.0	120/1	11.4	15	A,B,C,D,E,F,G,H,J

NOTES:
 A. EQUIPMENT COMPONENTS SHALL BE BY THE SAME MANUFACTURER.
 B. EQUIPMENT SIZED FOR 95° F AMBIENT TEMPERATURE.
 C. PROVIDE 1" PLEATED THROWAWAY AIR FILTERS.
 D. PROVIDE IN HORIZONTAL CONFIGURATION.
 E. PROVIDE WITH 7-DAY PROGRAMMABLE THERMOSTAT WITH OCCUPIED/UNOCCUPIED SETTINGS AND STAGED HEATING AND COOLING CAPABILITY AS REQUIRED FOR OPERATION OF AUXILIARY HEATING AND COOLING CONTROLS WITH A 5°F DEADBAND. PROVIDE THERMOSTAT KEYPAD LOCK CAPABILITY.
 F. DIVISION 16 CONTRACTOR TO FURNISH AND INSTALL A SMOKE DETECTOR IN THE RETURN AIR DUCT.
 G. DISCONNECT SWITCH FURNISHED BY DIVISION 16 CONTRACTOR.
 H. PROVIDE WITH SPRING VIBRATION ISOLATION AND ALL-THREAD HANGING RODS.
 I. SPECIFIED FAN ESP DOES NOT INCLUDE LOSSES FOR DIRTY FILTERS.
 J. NO SUBSTITUTIONS ALLOWED.

CONDENSING UNIT SCHEDULE

MARK	SERVICE	MANUFACTURER	MODEL	NOMINAL CAPACITY (TONS)	REFR. TYPE	TC (MBH)	SC (MBH)	MIN. NO. OF STAGES	SEER	MCA	MOCP	V/PH	NOTES
CU-1	AHU-1	TRANE	4TA3048A3	4	R-410A	47.5	34.4	1	14.0	18	30	208/3	A,B,C,D,E,F,G,H,J

NOTES:
 A. PROVIDE LOW AMBIENT CONTROL TO 30° F.
 B. EQUIPMENT SIZED FOR 95° F AMBIENT TEMPERATURE.
 C. CONTRACTOR SHALL VERIFY WITH EQUIPMENT SUPPLIER EXACT QUANTITY AND SIZE OF REFRIGERANT PIPING.
 D. PROVIDE LIQUID LINE FILTER DRYER AND SIGHT GLASS.
 E. PROVIDE CONCRETE HOUSEKEEPING PAD PER SPECIFICATIONS.
 F. DISCONNECT SWITCH FURNISHED BY DIVISION 16 CONTRACTOR.
 G. STARTERS FOR ALL MOTORS SHALL BE FURNISHED INTEGRAL WITH UNIT.
 H. COORDINATE SIZE OF CONDUCTOR TERMINATION LUGS WITH CONDUCTOR SIZES SHOWN ON ELECTRICAL DRAWINGS.
 I. NO SUBSTITUTIONS ALLOWED.

GRILLE, REGISTER AND DIFFUSER SCHEDULE

MARK	MANUFACTURER	MODEL	FACE TYPE	MOUNTING LOCATION	FACE SIZE (IN)	MAX. NC	MAX. PRESS. DROP (IN. W.C.)	NOTES
CSD1	TITUS	250A	LOUVERED	SURFACE	24"x12"	30	0.1	A,B,C,D,E,F
CSD2	TITUS	250AA	LOUVERED	SURFACE	24"x12"	30	0.1	A,B,C,D,E,F
CRG1	TITUS	4FL	LOUVERED	SURFACE	24"x12"	30	0.05	D,F
CRG2	TITUS	55FL	LOUVERED	SURFACE	24"x24"	34	0.08	D,F

NOTES:
 A. NECK SIZE SHOWN ON DRAWINGS.
 B. 4-WAY THROW PATTERN UNLESS OTHERWISE SHOWN ON DRAWINGS.
 C. BRANCH DUCT SIZE SHALL BE SAME AS NECK SIZE UNLESS OTHERWISE SHOWN ON DRAWINGS.
 D. BAKED ENAMEL FINISH, OFF WHITE.
 E. PROVIDE NECK FOR DUCT CONNECTION.
 F. FRAME TYPE TO MATCH CONSTRUCTION TYPE, COORDINATE WITH ARCHITECTURAL REFLECTED CEILING PLAN.

FAN SCHEDULE

MARK	MANUFACTURER	MOUNTING	MODEL	CFM	ESP (IN)	DRIVE (BELT/DIRECT)	MIN. HP	FAN RPM	V/PH	NOTES
EF-1	EA	GREENHECK SURFACE	SP-B80	100	0.25	DIRECT	80 WATTS	950	115/1	A,B,C,D
EF-2	EA	GREENHECK SURFACE	SP-B80	100	0.25	DIRECT	80 WATTS	950	115/1	A,B,C,D
EF-3	EA	GREENHECK ATTIC	BOF-120-7	3000	0.25	BELT	3/4	580	115/1	A,B,D,H
EF-4	EA	GREENHECK ATTIC	BOF-120-7	3000	0.25	BELT	3/4	580	115/1	A,B,D,H
SF-1	SA	LEADING EDGE WALL	LCHD240	5100	---	DIRECT	1/4	1,175	115/1	B,E,F,G
SF-2	SA	LEADING EDGE WALL	LCHD240	5100	---	DIRECT	1/4	1,175	115/1	B,E,F,G
SF-3	SA	LEADING EDGE WALL	LCHD240	5100	---	DIRECT	1/4	1,175	115/1	B,E,F,G
SF-4	SA	LEADING EDGE WALL	LCHD240	5100	---	DIRECT	1/4	1,175	115/1	B,E,F,G

NOTES:
 A. PROVIDE RUBBER IN SHEAR ISOLATION AND ALL-THREAD HANGING RODS.
 B. PROVIDE FACTORY MOUNTED DISCONNECT SWITCH.
 C. NOT USED.
 D. PROVIDE MANUFACTURER'S SPRING-LOADED BACKDRAFT DAMPER.
 E. MOUNT WALL MOUNTING BRACKET.
 F. PROVIDE WALL SWITCH AND COORDINATE HEIGHT WITH OWNER AND ARCHITECT.
 G. FANS TO BE OSCILLATING.
 H. INCLUDE BACKDRAFT DAMPER BY GREENHECK, MODEL WD-330.
 I. INTERNAL THERMAL OVERLOAD PROTECTION.

FOR ALL BIDDING QUESTIONS, CONTACT THE OWNER. DO NOT CONTACT THE ENGINEER.

BID PER PLANS - NO EQUALS OR SUBSTITUTIONS ALLOWED.

MECHANICAL SHEET INDEX

SHEET NO.	SHEET DESCRIPTION
M1.01	MECHANICAL SCHEDULES
M2.01	MECHANICAL FLOOR PLAN
M3.01	MECHANICAL DETAILS
M4.01	MECHANICAL SPECIFICATIONS

GARAGE VENTILATION CALCS PER IMC 403.3

SPACE	OCCUPANCY CLASSIFICATION	REQUIRED EXH CFM/SF	AREA SQ. FT.	EXH AIRFLOW REQUIRED	EXH AIRFLOW PROVIDED
TECHNICIAN AREA	REPAIR GARAGE	0.75	3970	2978	3000

ROOF VENTILATOR SCHEDULE

MARK	SERVICE	CFM	SP (WG)	THROAT SIZE	MFR	MODEL	ACCESSORIES
GRV-1	RELIEF	3000	0.08	20x20	GREENHECK	GRSR 24	1
GRV-2	RELIEF	3000	0.08	20x20	GREENHECK	GRSR 24	1

ACCESSORIES:
 1. GRAVITY BACKDRAFT DAMPER, BIRDSCREEN, SLOPED ROOF CURB.

RADIANT TUBE HEATER

MARK	AREA SERVED	V/PH	MBH INPUT	OVERALL LENGTH	IGNITION CURRENT	RUNNING CURRENT	MOUNT HEIGHT TO BOTTOM (FT.)	MANUFACTURER	MODEL	WEIGHT	ACCESSORIES
RH-1	SEE PLAN	120/1	80	20'-0"	4.8 AMPS	0.14 AMPS	12' - 13'	SCHWANK	SIS-JZ-80-20	111	1,2,3,4,5,6,7
RH-2	SEE PLAN	120/1	80	20'-0"	4.8 AMPS	0.14 AMPS	12' - 13'	SCHWANK	SIS-JZ-80-20	111	1,2,3,4,5,6,7
RH-3	SEE PLAN	120/1	80	20'-0"	4.8 AMPS	0.14 AMPS	12' - 13'	SCHWANK	SIS-JZ-80-20	111	1,2,3,4,5,6,7
RH-4	SEE PLAN	120/1	80	20'-0"	4.8 AMPS	0.14 AMPS	12' - 13'	SCHWANK	SIS-JZ-80-20	111	1,2,3,4,5,6,7

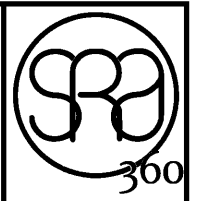
ACCESSORIES:
 1. PROVIDE 24 VOLT DIGITAL THERMOSTAT SCHWANK JS-0569-WR ALONG WITH RELAY SWITCH, JS-0568-CC, FOR SECOND CONNECTED BURNER - ONE THERMOSTAT FOR TWO HEATERS.
 2. PROVIDE 45 DEGREE MOUNTING ANGLE, CEILING SUSPENSION KIT
 3. TITANIUM COMBUSTION CHAMBER
 4. PROVIDE 4" TYPE B VENT CAP THRU ROOF SCHWANK JA-0528-XX
 5. PROVIDE 4" FRESH AIR INTAKE THRU ROOF.
 6. PROVIDE MANUFACTURER'S 24V RELAY.
 7. INSTALL PER MANUFACTURER'S RECOMMENDATIONS AND LOCAL & STATE CODES.

OUTSIDE AIR REQUIREMENTS

UNIT NO.	ROOM NO.	AREA S.F.	AREA SERVED	PERSONS PER 1000 S.F.	NO. OF PEOPLE	CFM PER PERSON	CFM PER S.F.	O.A. REQUIRED	S.A. PROVIDED	O.A. PROVIDED	NOTES
		55	RESTROOM		0			0	50	4	
		55	RESTROOM		0			0	50	4	
		275	ENTRY/ DROP OFF	10	3	5	0.06	32	750	65	B
		200	SERVICE	5	1	5	0.06	17	250	22	B
		187	MANAGER	5	1	5	0.06	16	250	22	
		180	LUNCH/ WORKROOM	25	2	5	0.06	21	250	22	B
TOTALS					6			81	1600	140	A

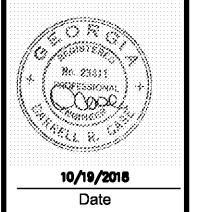
NOTES:
 A BALANCE UNIT OUTSIDE AIR TO
 B AREAS COMMUNICATE.

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Revisions
 2/26/18 - Prototype Update

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Sheet Title:
 MECHANICAL SCHEDULES
 Drawing No.
M-1.01
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