

## MECHANICAL SYMBOLS

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

**PIPING**

- RL REFRIGERANT LIQUID (RL)
- RD REFRIGERANT DISCHARGE (HOT GAS) (RD)
- RS REFRIGERANT SUCTION (RS)
- DIRECTION OF FLOW
- BALL VALVE
- CONTROL VALVE
- ⊕ THREE-WAY CONTROL VALVE
- ⊖ SHUTOFF VALVE
- ⊘ STRAINER
- ⊙ UNION
- ELBOW UP
- ELBOW DOWN
- ⊕ TEE UP
- ⊖ TEE DOWN

### 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)
- VOLUME DAMPER
- HUMIDISTAT
- MOTORIZED DAMPER
- THERMOSTAT
- BACKDRAFT DAMPER

### ABBREVIATIONS

AF	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 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 THERMOSTATS (USER ADJUSTABLE)	48"
CONTROLS (CENTERLINE)	48"

### ANNOTATION

- ① MECHANICAL PLAN CALLOUT
- CU MECHANICAL EQUIPMENT DESIGNATION (CONTRACTOR FURNISHED AND INSTALLED UNLESS NOTED OTHERWISE)
- MT DETAIL REFERENCE UPPER NUMBER INDICATES DETAIL NUMBER LOWER NUMBER INDICATES SHEET NUMBER

## FAN COIL UNIT SCHEDULE (DX COOLING, ELECTRIC HEAT)

MARK	MANUFACTURER	MODEL	SUPPLY FAN			COOLING COIL					HEATING COIL			ELECTRICAL			NOTES	
			CFM	ESP (IN)	MIN. HP	REFR. TYPE	TH (MBH)	SH (MBH)	EAT (DB/WB)	LAT (DB)	MIN. OUTPUT (MBH)	OUTPUT KW	STAGES	MIN. O/A (CFM)	V/PH	MCA		MOCP
FCU-1	mitsubishi	PKA-A12	380	-	-	R-410A	12.0	12.0	75/67	-	-	-	0	208/1	1	15	A,B,G,J,K	
FCU-2	TRANE	4TEC3F42	1,050	0.6	0.5	R-410A	35.7	22.5	79 / 68	58	33.0	9.7	2	280	208/1	47/26	50/30	A-I
FCU-3	TRANE	4TEC3F42	1,350	0.6	1.0	R-410A	36.0	26.1	77 / 64	58	41.6	12.2	2	200	208/1	47/26	50/30	A-I
FCU-4	TRANE	4TEC3F60	1,800	0.6	1.0	R-410A	50.0	37.9	77 / 64	58	52.7	15.4	2	240	208/1	44/52	45/60	A-I
FCU-5	TRANE	4TEC3F60	1,800	0.6	1.0	R-410A	48.2	35.8	76 / 64	58	54.5	16.0	2	240	208/1	44/52	45/60	A-I

NOTES:

- EQUIPMENT COMPONENTS SHALL BE BY THE SAME MANUFACTURER.
- EQUIPMENT SIZED FOR 95° F AMBIENT TEMPERATURE.
- PROVIDE 1" PLEATED THROWAWAY AIR FILTERS.
- PROVIDE IN HORIZONTAL CONFIGURATION.
- 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 ACRYLIC, VANDEL-PROOF, LOCKING THERMOSTAT COVER.
- DIVISION 16 CONTRACTOR TO FURNISH SMOKE DETECTOR. DIVISION 15 CONTRACTOR TO INSTALL IN THE RETURN AIR DUCT.
- DISCONNECT SWITCH FURNISHED BY DIVISION 16 CONTRACTOR.
- PROVIDE WITH SPRING VIBRATION ISOLATION AND ALL-THREAD HANGING RODS.
- SPECIFIED FAN ESP DOES NOT INCLUDE LOSSES FOR DIRTY FILTERS.
- PROVIDE WITH WALL MOUNTED PROGRAMMABLE THERMOSTAT FOR 24-HR AIR CONDITIONING.
- PROVIDE CONDENSATE PUMP INTERNAL TO UNIT TO LIFT CONDENSATE ABOVE THE CEILING FOR DRAIN TO DISCHARGE LOCATION. CONDENSATE DRAIN BY PLUMBING CONTRACTOR.

## CONDENSING UNIT SCHEDULE

MARK	SERVICE	MANUFACTURER	MODEL	NOMINAL CAPACITY (TONS)	REFR. TYPE	TH (MRH)	SH (MRH)	MIN. NO. OF STAGES	SEER	MCA	MOCP	V/PH	NOTES
CU-1	FCU-1	MITSUBISHI	PUY-A12	1	R-410A	12.0	12.0	1	13.5	13	15	208/1	B,C,D,E,F,G,H,I
CU-2	FCU-2	TRANE	4TTA3036	3	R-410A	35.7	22.5	1	13.3	15	25	208/3	A-H
CU-3	FCU-3	TRANE	4TTA3036	3	R-410A	36.0	26.1	1	13.3	15	25	208/3	A-H
CU-4	FCU-4	TRANE	4TTA3060	5	R-410A	50.0	37.9	1	13.3	24	40	208/3	A-H
CU-5	FCU-5	TRANE	4TTA3060	5	R-410A	48.2	35.8	1	13.3	24	40	208/3	A-H

NOTES:

- PROVIDE LOW AMBIENT CONTROL TO 30° F.
- EQUIPMENT SIZED FOR 95° F AMBIENT TEMPERATURE.
- CONTRACTOR SHALL VERIFY WITH EQUIPMENT SUPPLIER EXACT QUANTITY AND SIZE OF REFRIGERANT PIPING.
- PROVIDE LIQUID LINE FILTER DRYER AND SIGHT GLASS.
- PROVIDE CONCRETE HOUSEKEEPING PAD PER SPECIFICATIONS.
- DISCONNECT SWITCH FURNISHED BY DIVISION 16 CONTRACTOR.
- STARTERS FOR ALL MOTORS SHALL BE FURNISHED INTEGRAL WITH UNIT.
- COORDINATE SIZE OF CONDUCTOR TERMINATION LUGS WITH CONDUCTOR SIZES SHOWN ON ELECTRICAL DRAWINGS.
- PROVIDE LOW AMBIENT CONTROL TO 0° F.

## FAN SCHEDULE

MARK	SERVICE (EA, RA, SA)	MANUFACTURER	MOUNTING	MODEL	CFM	ESP (IN)	DRIVE (BELT/DIRECT)	MIN. HP	FAN RPM	V/PH	NOTES
EF-1	EA	GREENHECK	ROOF	GB-81	550	0.5	BELT	1/6	1,451	115/1	A,B,C,E
EF-2	EA	GREENHECK	INLINE	CSP-B110	100	0.5	DIRECT	80 W	950	115/1	A,B,D,E

NOTES:

- PROVIDE RUBBER IN SHEAR ISOLATION AND ALL-THREAD HANGING RODS.
- PROVIDE FACTORY MOUNTED DISCONNECT SWITCH.
- INTERLOCK FAN OPERATION WITH FCU-5 FOR SIMULTANEOUS OPERATION.
- INTERLOCK FAN OPERATION WITH FCU-2 FOR SIMULTANEOUS OPERATION.
- PROVIDE MANUFACTURER'S SPRING-LOADED BACKDRAFT DAMPER.

## GRAVITY HOOD SCHEDULE

MARK	SERVICE (INTAKE, EXHAUST)	MANUFACTURER	MODEL	CFM	MAX. PD. (IN)	THROAT AREA (SQ. FT)	NOTES
GH-1	INTAKE	GREENHECK	GRSI-12	280	0.04	0.82	A,B
GH-2	INTAKE	GREENHECK	GRSI-16	680	0.04	1.45	A,B

NOTES:

- PROVIDE 1/4" ALUMINUM INSECT SCREEN.
- PROVIDE MANUFACTURER'S STANDARD INSULATED ROOF CURB. BOTTOM OF HOOD SHALL BE A MINIMUM OF 8" ABOVE ROOF SURFACE.

## 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	OMNI	SQUARE FACE	LAY-IN	24"x24"	30	0.1	A,B,C,D,E,F
CSD2	TITUS	OMNI	SQUARE FACE	LAY-IN	12"x12"	30	0.1	A,B,C,D,E,F
SSD1	TITUS	CT-540	LINEAR BAR	SURFACE	SEE PLANS	30	0.1	A,C,F,G,H
PSD1	TITUS	TBDI-10	PLENUM SLOT	LAY-IN	60"x1.5" (2-SLOT)	30	0.1	A,C,D,E,F,G
CRG1	TITUS	PAR-AA	PERFORATED	LAY-IN	24"x24"	30	0.05	D,F,I,J
CRG2	TITUS	PAR-AA	PERFORATED	LAY-IN	12"x12"	30	0.05	D,F,I,J
CEG1	TITUS	PAR-AA	PERFORATED	LAY-IN	24"x24"	30	0.1	A,C,D,E,F

NOTES:

- NECK SIZE SHOWN ON DRAWINGS.
- 4-WAY THROW PATTERN UNLESS OTHERWISE SHOWN ON DRAWINGS.
- BRANCH DUCT SIZE SHALL BE SAME AS NECK SIZE UNLESS OTHERWISE SHOWN ON DRAWINGS.
- BAKED ENAMEL FINISH, OFF WHITE.
- PROVIDE NECK FOR DUCT CONNECTION.
- FRAME TYPE TO MATCH CONSTRUCTION TYPE. COORDINATE WITH ARCHITECTURAL REFLECTED CEILING PLAN.
- SUPPLIER SHALL FURNISH CONTINUOUS SLOT DIFFUSER WITH PATTERN CONTROLLER, VOLUME DAMPER, MOUNTING CLIPS AND BORDER TYPE FOR TAPING AND FLOATING TO GYPBOARD CEILING. REFERENCE ARCHITECTURAL PLANS FOR EXACT LENGTH.
- ALUMINUM FINISH (SIMILAR TO TITUS #101 LUSTER CLEAR). COORDINATE WITH ARCHITECT.
- PROVIDE DONCO AIR PRODUCTS, MODEL LS-22x22 OR LS-11x11, BLACK SHEET METAL LIGHT SHIELD RAISED OFF OF BACK PAN BY 4".
- PROVIDE 22x22 OR 11x11 BACKPAN FOR CONNECTION OF LIGHT SHIELD UNLESS OTHERWISE NOTED.



ARCHITECTURE  
PLANNING  
INTERIOR DESIGN

2425 WEST LOOP SOUTH  
SUITE 665  
HOUSTON TEXAS 77027  
FAX 713-552-9810  
713-552-0707  
WWW.MGARCHITECTS.COM

### CONSULTANTS

STRUCTURAL ENGINEER:  
SCA Consulting Engineers

M/E/P/ ENGINEER:  
Henderson Engineers



Aloma Walk Branch  
Aloma Ave.  
Oviedo, FL 32765

### ISSUE:

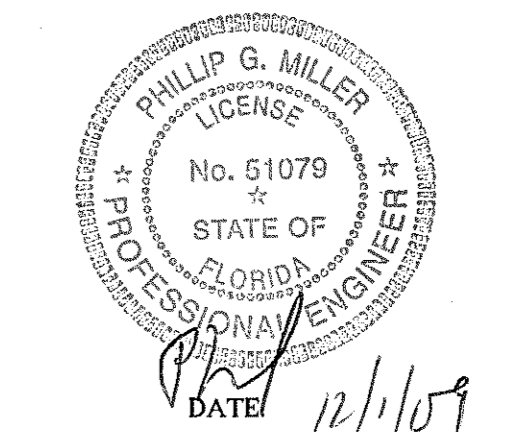
MARK	DATE	DESCRIPTION
09-15-09		DEVELOPER REVIEW
11-16-09		ISSUE FOR PERMIT
12-02-09		ISSUE FOR PERMIT

PROJECT NO:  
**09-529.a**

### MECHANICAL SCHEDULES

**M-601**

PROFESSIONAL ENGINEER  
Phillip G. Miller  
FL PE# -  
51079



**HENDERSON ENGINEERS**  
10370 RICHMOND AVENUE, SUITE 370  
HOUSTON, TX 77042  
TEL 713 783 7707 FAX 713 783 7797  
www.hel-eng.com  
0950002686  
FL CORPORATE NUMBER: EB 7606  
EXPIRES 02/28/11