### HVAC GENERAL NOTES

#### GENERAL:

1. ALL MECHANICAL EQUIPMENT AND INSTALLATIONS SHALL CONFORM WITH THE REQUIREMENTS OF THE 2006 INTERNATIONAL MECHANICAL CODE, THE 2006 INTERNATIONAL BUILDING BUILDING CODE, 2009 INTERNATIONAL ENERGY CONSERVATION CODE, APPLICABLE ASHRAE AND SMACNA STANDARDS, STATE AMENDMENTS, NFPA 90A, 101, UNDERWRITERS LABORATORIES (OR ETL) AND ALL APPLICABLE LOCAL CODES, AMENDMENTS, AND ORDINANCES.

- 2. PRIOR TO PURCHASING ANY MATERIALS OR STARTING ANY WORK, CONTRACTOR SHALL FIELD VERIFY ALL EXISTING CONDITIONS, DUCTWORK SIZES AND LOCATIONS, EQUIPMENT, ETC. SHOWN ON THE DRAWINGS OR AFFECTING THIS WORK AND
- 3. SHOP DRAWINGS SHALL BE SUBMITTED TO AND APPROVED BY THE ENGINEER/ARCHITECT PRIOR TO ORDERING, PURCHASING, OR FABRICATING ANY MECHANICAL EQUIPMENT. SHOP DRAWINGS SHALL INCLUDE: ALL EQUIPMENT SCHEDULED OR SPECIFIED ON THE DRAWINGS; DUCTWORK DRAWN TO 1/4" SCALE OR THE SCALE SHOWN ON THE DRAWINGS; REFRIGERANT PIPING AND CONTROL WIRING SCHEMATICS CERTIFIED BY THE AIR CONDITIONING EQUIPMENT MANUFACTURER.
- 4. ALL MECHANICAL EQUIPMENT SHALL BE INSTALLED ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.
- 5. ALL MECHANICAL EQUIPMENT AND SYSTEMS SHALL BE GUARANTEED FOR A PERIOD OF ONE YEAR AFTER ACCEPTANCE BY OWNER.
- 6. ALL HVAC COMPRESSORS SHALL HAVE EXTENDED 5-YEAR MANUFACTURER'S WARRANTY.

SHALL REPORT ANY DEVIATIONS TO THE ARCHITECT.

- 7. FOR EXACT LOCATION OF OUTDOOR AIR CONDITIONING UNITS SEE ARCHITECTURAL AND STRUCTURAL DRAWINGS.
- 8. PORTIONS OF DUCTWORK AND PIPE INSULATION VISIBLE THROUGH AIR DISTRIBUTION DEVICES IN FINISHED AREAS SHALL BE PAINTED FLAT BLACK.
- 9. MOUNT THERMOSTATS AND SENSORS 4'-0" AFF UNLESS NOTED OTHERWISE. COORDINATE THERMOSTAT LOCATIONS WITH OTHER TRADES. LOCATE HUMIDISTAT AND CO2 SENSOR ADJACENT TO SYSTEM THERMOSTAT WHERE APPLICABLE.
- 10. ANY EXISTING WALL, FLOOR, OR CEILING SURFACE THAT IS DISTURBED DURING THE COURSE OF THE HVAC WORK SHALL BE REPAIRED TO MATCH NEW AND/OR EXISTING CONDITIONS.
- 11. AFTER CONSTRUCTION, THE ENTIRE HVAC SYSTEM SHALL BE TESTED, ADJUSTED, AND BALANCED TO DELIVER THE AIR QUANTITIES SHOWN ON THE DRAWINGS. SUBMIT CERTIFIED (AABC OR NEBB) TEST AND BALANCE REPORT TO THE ARCHITECT FOR APPROVAL. SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
- 12. CONTRACTOR SHALL COORDINATE THE INSTALLATION OF ALL MECHANICAL EQUIPMENT, DUCTWORK, PIPING, ETC. TO FIT WITHIN THE SPACE ALLOWED BY THE ARCHITECTURAL AND STRUCTURAL CONDITIONS. CUTTING OR OTHERWISE ALTERING ANY STRUCTURAL MEMBERS SHALL NOT BE PERMITTED WITHOUT WRITTEN PERMISSION FROM THE ARCHITECT.
- 13. AIR HANDLING AND FAN COIL UNITS LOCATED ABOVE THE LOWEST LEVEL FINISHED FLOOR SHALL BE INSTALLED WITH AN AUXILIARY CONDENSATE DRAIN PAN UNDER THE UNIT. PROVIDE AN ELECTRONIC WATER LEVEL DETECTOR WIRED TO SHUTDOWN THE UNIT UPON DETECTION IN SECONDARY DRAIN PAN.
- 14. ALL PIPE AND DUCT PENETRATIONS OF FIRE AND/OR SMOKE-RATED ASSEMBLIES SHALL BE FIRE-STOPPED AS REQUIRED TO RESTORE THE ASSEMBLY TO ITS ORIGINAL INTEGRITY. FIRE BARRIER PRODUCTS SHALL BE AS MANUFACTURED BY TREMCO, HILTI, 3M OR APPROVED EQUAL.
- 15. PROVIDE ACCESS PANELS IN NON-ACCESSIBLE CEILINGS AND IN WALL STRUCTURE TO ALLOW ADEQUATE ROOM FOR MAINTENANCE OF EQUIPMENT AND BALANCING OF SYSTEMS. ACCESS PANELS IN CEILING AND WALLS SHALL BE PROVIDED WHERE SHOWN ON THE DRAWINGS OR NECESSARY TO ACCESS DAMPERS, VALVES, ETC. COORDINATE EXACT LOCATION OR ALL ACCESS PANELS WITH THE ARCHITECT DURING THE SHOP DRAWING PROCESS.
- 16. ALL MECHANICAL EQUIPMENT SHALL BE LABELED WITH A SEMI-RIGID PLASTIC LAMINATE NAMEPLATE WITH 2" HIGH WHITE LETTERS ON A BLACK BACKGROUND SECURELY AFFIXED TO THE EQUIPMENT. THE NAMEPLATE SHALL SHOW THE EQUIPMENT TAG USED ON THESE DRAWINGS.
- 17. PROTECT ALL DUCT AND EQUIPMENT OPENINGS DURING CONSTRUCTION WITH PLASTIC. ALL RETURN AIR OPENINGS SHALL BE PROVIDED WITH MERV-8 TEMPORARY FILTRATION IF SYSTEMS ARE OPERATED DURING CONSTRUCTION.
- 18. LABEL ALL WAREHOUSE ROOFTOP EQUIPMENT ON THE UNDERSIDE OF THE ROOF DECK WITH DESIGNATION TO MATCH CONSTRUCTION DOCUMENTS. LABELS TO BE MINIMUM 12-INCH HIGH LETTERS/DIGITS TO BE VISIBLE FROM GROUND

#### MECHANICAL/ELECTRICAL COORDINATION:

- 1. CONTRACTOR SHALL COORDINATE ELECTRICAL CHARACTERISTICS AND REQUIREMENTS OF ALL MECHANICAL EQUIPMENT WITH ELECTRICAL DRAWINGS PRIOR TO ORDERING EQUIPMENT OR SUBMITTING SHOP DRAWINGS, AND SHALL FURNISH EQUIPMENT WIRED FOR THE VOLTAGES SHOWN THEREIN. SHOP DRAWING SUBMITTALS SHALL CLEARLY STATE THAT THE ELECTRICAL CHARACTERISTICS OF ALL EQUIPMENT HAS BEEN COORDINATED WITH THE ELECTRICAL CONTRACT DOCUMENTS AND THE ELECTRICAL CONTRACTOR.
- 2. ALL MECHANICAL EQUIPMENT REQUIRING ELECTRICAL POWER SHALL BE INSTALLED WITH DISCONNECT SWITCHES AT EACH PIECE OF EQUIPMENT. COORDINATE SWITCH TYPE (FUSED OR NON-FUSED) WITH EQUIPMENT CHARACTERISTICS,
- MANUFACTURER'S RECOMMENDATIONS AND THE ELECTRICAL DRAWINGS.

  3. ALL REQUIRED CONTROL WIRING (INCLUDING POWER WIRING REQUIRED FOR CONTROL PANELS, DEVICES, ETC.) NOT SHOWN ON THE ELECTRICAL DRAWINGS SHALL BE INCLUDED AS PART OF THE MECHANICAL WORK. WIRING IN HVAC
- PLENUM SPACES SHALL BE INSTALLED ACCORDING TO CODE REQUIREMENTS.

  4. UNLESS NOTED OTHERWISE, TRANSFORMERS, CONTROLS AND CONTROL WIRING REQUIRED FOR ALL MECHANICAL SYSTEMS SHALL BE FURNISHED WITH THE EQUIPMENT IT SERVES AND INSTALLED BY THE MECHANICAL CONTRACTOR. MOTOR
- 1. ALL FANS SUPPLYING MORE THAN 2000 CFM OF AIR TO ANY SPACE AND ALL RECIRCULATING FAN SYSTEMS SERVING AREAS OF EGRESS SHALL BE INSTALLED WITH A SMOKE DETECTOR IN THE SUPPLY DUCTWORK. DUCT SMOKE DETECTORS SHALL BE INSTALLED IN THE RETURN AIR PATH OF AIR DISTRIBUTION SYSTEMS UTILIZING A COMMON SUPPLY AND/OR RETURN AIR PLENUM WITH A COMBINED DESIGN CAPACITY GREATER THAN 2000 CFM. THE SMOKE DETECTOR SHALL BE WIRED TO STOP THE FAN UPON DETECTION OF SMOKE, AND SIGNAL THE BUILDING FIRE ALARM CONTROL PANEL. UNLESS OTHERWISE INDICATED, THE SMOKE DETECTOR SHALL BE FURNISHED BY THE ELECTRICAL CONTRACTOR. MOUNTED IN THE DUCT BY THE MECHANICAL CONTRACTOR, AND WIRED BY THE ELECTRICAL CONTRACTOR.
- CONTRACTOR, MOUNTED IN THE DUCT BY THE MECHANICAL CONTRACTOR, AND WIRED BY THE ELECTRICAL CONTRACTOR.

  2. SUPPLY, RETURN AND 6.A. DUCTWORK SHALL BE CONSTRUCTED OF CALVANIZED SHEET METAL AS RECOMMENDED IN SMACINA DUCT CONSTRUCTION STANDARDS, LATEST EDITION. ALL JOINTS AND SEAMS IN ALL SHEET METAL DUCTWORK
- 3. CONCEALED SHEET METAL SUPPLY & O.A. DUCTWORK IN NON—AIR CONDITIONED AREAS SHALL BE INSULATED WITH 3" THICK, 0.75 LB/FT3 DENSITY FIBERGLASS BLANKET INSULATION WITH FOIL VAPOR BARRIER, U.L. LISTED, R=10.2. PUNCTURES AND TEARS IN THE FOIL JACKET SHALL BE PATCHED WITH FOIL TAPE TO MAINTAIN THE INTEGRITY OF THE VAPOR BARRIER.

STARTERS FOR HVAC EQUIPMENT SHALL BE FURNISHED WITH THE MOTOR OR APPARATUS WHICH IT OPERATES. MOTOR STARTER INSTALLATION SHALL BE BY THE DIVISION 16 CONTRACTOR.

- 4. ALL RETURN AND TRANSFER AIR DUCTWORK AND EXPOSED SHEET METAL SUPPLY DUCTWORK (IN WAREHOUSE AREAS( SHALL BE INTERNALLY INSULATED/LINED. SEE SPECIFICATIONS 23 3100.
- 5. ALL OPEN ENDED BUCTS AND PAN OUTLETS SHALL HAVE 1/2" X 1/2" HARDWARE CLOTH AFFIXED TO THE OPENING.

  6. EXHAUST DUCTWORK SHALL BE GALVANIZED SHEET METAL CONSTRUCTED TO SMACNA STANDARDS AND SHALL NOT BE INSULATED UNLESS NOTED OTHERWISE.
- 7. ALL DUCTWORK SHALL BE SUPPORTED BY THE BUILDING STRUCTURE AND SHALL NOT REST ON CEILING TILES OR CEILING STRUCTURE. DUCT SUPPORTS AND ATTACHMENT TO STRUCTURE SHALL BE PER SMACNA STANDARDS.
- 8. FLEXIBLE DUCTWORK SHALL BE THERMAFLEX M-KE U.L. 181 LISTED, CLASS 1 FLEXIBLE AIR DUCT OR EQUAL, R=8.0 (2-1/4" THICK, 0.75 PCF DENSITY FIBERGLASS WITH METALLIZED POLYESTER FILM VAPOR BARRIER). AIR CONNECTORS ARE NOT ACCEPTABLE. FLEX DUCT DIAMETER SHALL MATCH DEVICE NECK DIAMETER. PROVIDE ROUND GALVANIZED STEEL DUCT RUNOUTS TO MAINTAIN A MAXIMUM FLEXIBLE DUCT LENGTH OF 8'-0". FLEXIBLE DUCTWORK SHALL BE INSTALLED AS STRAIGHT AS POSSIBLE AND SHALL BE ROUTED AND SUPPORTED WITHOUT FORMING CRIMPS OR OTHER AIR FLOW RESTRICTIONS. PROVIDE SQUARE TO ROUND ADAPTERS OR BOOTS TO CONNECT TO AIR DEVICE NECK WHEN REQUIRED. INSTALL FLEXIBLE DUCTWORK SUPPORTS AT ALL ROUND NECK INLETS/INLETS EQUAL TO THERMAFLEX FLEX-FLOW ELBOW.
- 9. ROUND AND FLEXIBLE SUPPLY AIR DUCTWORK SHALL BE CONNECTED TO MAIN DUCTS WITH A SPIN-IN FITTING WITH SCOOP AND BALANCING DAMPER (EXCEPT WHERE INSTALLED ABOVE INACCESSIBLE CEILINGS, THE DAMPER SHALL BE OMITTED AND PROVIDED IN THE AIR DEVICE NECK).
- 10. IN ADDITION TO EXTERNAL INSULATION REQUIRMENTS, LINE ALL SHEET METAL DUCTWORK A MINIMUM OF 10'-0" (OR AS INDICATED) DOWNSTREAM OF ALL AIR HANDLING UNITS, FAN COIL UNITS AND ROOFTOP UNITS. DUCT LINER SHALL BE 1" THICK, 3 LB/FT3 DENSITY (MINIMUM R VALUE 4.0 OR AS REQUIRED BY APPLICABLE ENERGY CODE); CERTAINTEED "TOUGHGARD 2" OR EQUAL BY KNAUF OR JOHNS-MANVILLE. THE LEADING EDGE OF THE DUCT LINER SHALL
- HAVE A SHEET METAL NOSING.

  11. DUCTWORK DIMENSIONS SHOWN ON THE DRAWINGS ARE INSIDE CLEAR DIMENSIONS.
- 12. EXTERNAL STATIC PRESSURE (ESP) DOES NOT INCLUDE COIL, CASING OR FILTER PRESSURE DROP.
- 13. INSTALL FIRE DAMPERS IN ALL RATED WALLS, FLOOR AND CEILING PENETRATIONS. FIRE DAMPERS SHALL BE THE DYNAMIC TYPE WITH BLADES OUT OF THE AIRSTREAM WHERE POSSIBLE. REFER TO THE ARCHITECTURAL DRAWINGS FOR LOCATIONS OF RATED ASSEMBLIES. PROVIDE ACCESS DOORS IN DUCTWORK AT EACH FIRE DAMPER LOCATION. INSTALL SMOKE DAMPERS IN ALL DUCT PENETRATIONS THROUGH SMOKE RATED WALLS. WHERE DUCTS PENETRATE WALLS THAT CARRY BOTH FIRE AND SMOKE RATINGS, THE DAMPERS INSTALLED SHALL BE COMBINATION FIRE AND SMOKE DAMPERS. ALL DAMPERS SHALL BE U.L. 555 AND/OR 555S LABELED.
- 14. LOCATIONS OF GRILLES, REGISTERS, & DIFFUSERS SHOWN ON THE DRAWINGS ARE APPROXIMATE. COORDINATE EXACT LOCATIONS WITH LIGHTS, CEILING GRID, ETC. AND ARCHITECTURAL REFLECTED CEILING PLAN.
- 1. REFRIGERANT PIPING SHALL BE TYPE L OR REFRIGERATION SERVICE COPPER TUBING WITH BRAZED JOINTS. SUCTION PIPING SHALL BE INSULATED WITH 3/4" MANVILLE AEROTUBE II PIPE INSULATION SLID OVER TUBING WITHOUT CUTTING. ALL JOINTS AND SEAMS SHALL BE SEALED WITH ADHESIVE.
- 2. CONDENSATE FROM ALL AIR CONDITIONING EQUIPMENT SHALL BE TRAPPED AND ROUTED TO THE NEAREST ROOF/FLOOR DRAIN. CONDENSATE PIPING SHALL BE SCHEDULE 40 PVC (EXCEPT INSULATED COPPER IN HVAC PLENUMS). CONDENSATE SHALL BE PUMPED AS REQUIRED.

## BUILDING AUTOMATION SYSTEM:

PROVIDE BUILDING AUTOMATION SYSTEM FOR DIRECT DIGITAL CONTROL AND MONITORING OF ALL HVAC EQUIPMENT, WITH OPERATOR WORKSTATION AND FULL GRAPHICAL OPERATOR INTERFACE. SYSTEM SHALL HAVE CAPABILITY TO INTERFACE WITH LIOGHTING CONTROL PANELS FOR ZONED LIGHTING CONTROL AND HAVE LOAD SHEDDING CAPABILITY. SYSTEM SHALL BE TRANE TRACER SUMMIT OR EQUAL.

NOTE:

MECHANICAL CONTRACTOR SHALL COORDINATE THE ELECTRICAL CHARACTERISTICS OF ALL HVAC EQUIPMENT (VOLTAGE, PHASE, ETC.) WITH THE ELECTRICAL CONTRACTOR AND ELECTRICAL PLANS, BEFORE ORDERING ANY MECHANICAL EQUIPMENT. ANY SUBSEQUENT MISMATCH BETWEEN MECHANICAL EQUIPMENT ELECTRICAL REQUIREMENTS AND THE ELECTRICAL SERVICE, AS DESIGNED AND PROVIDED SHALL BE THE RESPONSIBILITY OF THE MECHANICAL CONTRACTOR.

				HVAC LEGEND				
SYMBOL	DESCRIPTION	ABBREVIATIONS	SYMBOL	DESCRIPTION	ABBREVIATIONS	SYMBOL	DESCRIPTION	ABBREVIATIONS
BDD	BACK DRAFT DAMPER	BDD		1000 BTUH/HR	мвн		GARAGE EXHAUST FAN	GEF
	CEILING DIFFUSER	CD		ABOVE CEILING	A/C		GARAGE SUPPLY FAN	GSF
	CEILING RETURN GRILLE	CRA		ABOVE FINISHED FLOOR	AFF		HEAT EXCHANGER	HEX
A 100 6"ø	DIFFUSER TAG, TYPE "A", BALANCED FOR 100 CFM, 6"Ø NECK			ADJUSTABLE FREQUENCY DRIVE	AFD		INTAKE HOOD	IH
D >	DROP	D		AIR-COOLED CONDENSING UNIT	ACU		KITCHEN HOOD EXHAUST FAN	KEF
> 12x10	DUCT SIZE — RECTANGULAR			AIR CONDITIONER	A.C.		KITCHEN MAKE-UP AIR UNIT	KMU
> 8"ø >	DUCT SIZE - ROUND			AIR HANDLER	AH		LEAVING AIR TEMPERATURE	LAT
	DUCT SMOKE DETECTOR			AIR HANDLING UNIT	AHU		LEAVING WATER TEMPERATURE	LWT
	DUCT TRANSITION			AIR SEPARATOR	AS		MAKE-UP AIR	MA
FCU 	EQUIPMENT DESIGNATION			BOILER	В		MAKE-UP AIR UNIT	MAU
<b>•</b>	FIRE DAMPER (HORIZONTAL)	FD		BOOSTER FAN	BF		NORMALLY CLOSED	NC
<b>—</b>	FIRE DAMPER (VERTICAL)	FD		BOTTOM OF DUCT	BOD		NORMALLY OPEN	NO
	FLEXIBLE DUCT			CABINET UNIT HEATER	CUH		ON CENTER	OC
$\oplus$	HUMIDISTAT	Н		CHILLER	СН		OPPOSED BLADE DAMPER	OBD
	LINED DUCT			CHILLED WATER PUMP	CHWP		OUTSIDE AIR	OA
<b>!</b>	MANUAL VOLUME DAMPER	MVD		COMBINATION FIRE/SMOKE DAMPER	FSD		POWERED INDUCTION UNIT	PIU
	MOTORIZED DAMPER	MD		CONDENSATE DRAIN	CD		REFRIGERANT LIQUID	RL
	RETURN AIR DUCT TURNED DOWN			CONDENSATE RECEIVER & PUMP	CRP		REFRIGERANT SUCTION	RS
	RETURN AIR DUCT TURNED UP			CONDENSER WATER	CW		RELIEF HOOD	RH
R	RISE	R		CONDENSER WATER PUMP	CWP		RETURN AIR	RA
	SIDEWALL SUPPLY REGISTER OR GRILLE			COOLING TOWER	СТ		ROOF TOP UNIT	RTU
	SIDEWALL RETURN AIR REGISTER OR GRILLE			DEAERATOR	DA		SELF CONTAINED AIR CONDITIONING UNIT	SCU
<b>&gt;</b>	SMOKE DAMPER			DUCT ACCESS DOOR	AD		STAINLESS STEEL (TYPE 316 U.N.O.)	SS
	SPIN IN FITTING W/ DAMPER & FLEX DUCTWORK			DUCT SILENCER	DS		STATIC PRESSURE (IN. W.C.)	SP
	SUPPLY AIR DUCT TURNED DOWN			DRY BULB	DB		SUPPLY AIR	SA
	SUPPLY AIR DUCT TURNED UP			ELECTRIC BASEBOARD HEATER	EBH		SUPPLY FAN	SF
0	THERMOSTAT, WALL MOUNTED	TSTAT		ELECTRIC DUCT HEATER	EDH		SUPPLY GRILLE	SG
	TURNING VANES			ELECTRIC CEILING HEATER	ECH		SUPPLY REGISTER	SR
	UNDER CUT (DOOR) 1"	UC		ELECTRIC UNIT HEATER	EUH		STEAM BOILER	SB
	WALL LOUVER INTAKE	WL		ELECTRIC WALL HEATER	EWH		STEEL RELIEF HOOD	SRH
<u> </u>	WALL LOUVER EXHAUST	WL		ENERGY RECOVERY UNIT	ERU		TOILET EXHAUST FAN	TEF
<u> </u>	CARBON DIOXIDE SENSOR, WALL MOUNTED			ENTERING AIR TEMPERATURE	EAT		TOP OF DUCT	TOD
H2	HYDROGEN SENSOR, WALL MOUNTED			ENTERING WATER TEMPERATURE	EWT		UNLESS NOTED OTHERWISE	UNO
				EXHAUST FAN	EF		VARIABLE AIR VOLUME UNIT	VAV
				EXHAUST REGISTER	ER	VFD	VARIABLE FREQUENCY DRIVE	VFD
				EXPANSION TANK	ET		WALL LOUVER	WL
				EXTERNAL STATIC PRESURE (IN W.C.)	ESP		WET BULB	WB
				FAN COIL UNIT	FCU		DUCTLESS SPLIT-SYSTEM INDOOR UNIT	DSI
				FLY FAN	FF		DUCTLESS SPLIT-SYSTEM OUTDOOR UNIT	DSO
					11		3. 2. 2. 2. 2. 2. 3. 3. 3. 3. 3. 3. 3. 3. 3. 3. 3. 3. 3.	

# DESIGN CONDITIONS

SITE LOCATION: JACKSON COUNTY, GEORGIA 34.27N LAT., 83.83W LONG. 1276 FEET ELEVATION

ASHRAE 90.1—2004 CLIMATE ZONE 3A

DESIGN CONDITIONS: 23.0°F WINTER DESIGN DRY BULB (ASHRAE 99.6%)
90.3°F DRY BULB AND 73.7°F MEAN COINCIDENT WET BULB SUMMER DESIGN (ASHRAE 1%)

65°F WINTER INDOOR DESIGN DRY BULB (HEATING — WAREHOUSE)

78°F DRY BULB AND 50% RH INDOOR DESIGN (COOLING – WAREHOUSE)
70°F WINTER INDOOR DESIGN DRY BULB (HEATING – OFFICE AREA)

75°F DRY BULB AND 50% RH INDOOR DESIGN (COOLING - OFFICE AREA)

CALCULATIONS BASED ON ASHRAE DESIGN CRITERIA AND CALCULATION METHODOLOGY.

NO CAPACITY HAS BEEN INCLUDED IN THIS DESIGN FOR FUTURE ADDITIONS.

SHEET NO.	SHEET NAME
M-001	NOTES, LEGEND, & ABBREVIATIONS - H.V.A.C.
M-002	EQUIPMENT SCHEDULES - H.V.A.C.
M-003	DETAILS - H.V.A.C.
M-202	PARTIAL FLOOR PLAN - H.V.A.C.
M-203	PARTIAL FLOOR PLAN - H.V.A.C.
M-204	PARTIAL FLOOR PLAN - H.V.A.C.
M-205	PARTIAL FLOOR PLAN - H.V.A.C.
M-206	PARTIAL FLOOR PLAN - H.V.A.C.
M-207	PARTIAL FLOOR PLAN - H.V.A.C.
M-208	MAIN OFFICE FLOOR PLAN - H.V.A.C.
M-210	WAREHOUSE OFFICES & RESTROOM FLOOR PLANS - H.V.A.C.

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06/20/2013 PROGRESS/REVIEW
75% REVIEW
07/31/2013 ISSUED FOR BID/PERMIT
08/09/2013 ADDENDUM NO. 1

PROJECT INFORMATION

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PROFESSIONAL.

THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND EXISTING CONDITIONS AT THE SITE BEFORE PROCEEDING WITH EACH PHASE OF HIS WORK.

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07/31/2013 PROJECT NO 2013-018

NOTES, LEGEND, & ABBREVIATIONS

IEET NUMBER

- H.V.A.C.

M-001

FOR CONSTRUCTION

NOTES, LEGEND, AND ABBREVIATIONS - H.V.A.C.

		HVL	S FA	NS					
TAG	MODEL	DUTY	CFM	S.P.	MOTOR SIZE	RPM	DRIVE	WEIGHT (Lb)	ACCESSORIES
HVLS-A	SERCO VELOCITY SF24XL2006	HVLS CIRCULATION - 24 FT.	376,804		2 HP	VARIABLE	DIRECT	232	1,2
HVLS-B	SERCO VELOCITY SF10XL1006	HVLS CIRCULATION - 10 FT.	83,025		1 HP	VARIABLE	DIRECT	181	1,2

. WAREHOUSE CIRCULATION FANS (HVLS) SHALL BE SUSPENDED FROM STRUCTURE AS AN ASSEMBLY. SEE WAREHOUSE PLAN FOR LOCATIONS.

1. FIRE ALARM PACKAGE - COORDINATE EMERGENCY SHUTDOWN WITH FIRE PROTECTION CONTRACTOR.

BACNET CONTROL MODULE INTERFACED WITH BUILDING AUTOMATION SYSTEM - COORDINATE. ALL FANS TO BE CONTROLLED VIA BAS OPERATOR'S STATION.

SELECTION BASED ON PRODUCTS BY SERCO. EQUAL PRODUCTS BY BIG ASS FANS, MACROAIRE.

			GF	RILLE	, REG	ISTER	S &	DIFF	USERS	
TAG	MANUFACTURER	SERIES	CFM	DUTY	NECK (IN. DIA.)	FACE SIZE	DAMPER	MATERIAL	ТҮРЕ	ACCESSORIES
А	TITUS	TMS	SEE DWGS	SUPPLY	SEE DWGS	24X24	YES	STEEL	SQUARE CONE FACED DIFFUSER	2
В	TITUS	50F	SEE DWGS	RETURN	SEE DWGS	24X24	YES	ALUMINUM	EGG CRATE FACE GRILLE	2
С	TITUS	TMS	SEE DWGS	SUPPLY	SEE DWGS	12X12	YES	STEEL	SQUARE CONE FACED DIFFUSER	2
D	TITUS	TBD10	SEE DWGS	SUPPLY	SEE DWGS	48" LONG	YES	STEEL	LINEAR SLOT DIFFUSER	2,3,4
E	TITUS	T3SQ-4	SEE DWGS	SUPPLY	SEE DWGS	24X24	NO	STEEL	VAV DIFFUSER	5
F	TITUS	CT-700L	SEE DWGS	TRANSFER	SEE DWGS	SEE DWGS	NO	STEEL	DOOR GRILLE VISION PROOF	6
G	TITUS	50F	SEE DWGS	EXHAUST	SEE DWGS	12X12	YES	ALUMINUM	EGG CRATE FACE REGISTER	2
Н	TITUS	50F	SEE DWGS	EXHAUST	SEE DWGS	24X24	YES	ALUMINUM	EGG CRATE FACE REGISTER	
I										
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_		_						_		

1. REFER TO ARCHITECTURAL DRAWINGS FOR TYPE OF CEILING AND / OR SUSPENSION SYSTEM.

2. FINISH SHALL BE OF THE TYPE AND COLOR SELECTED BY THE ARCHITECT. SUBMIT CHART FOR SHOP DRAWINGS.

ACCESSORIES: 1. FIXED LOUVERS, 45 DEG. DEFLECTION, 3/4" BLADE SPACING

2. PROVIDE ADAPTOR FRAME FOR SURFACE MOUNT APPLICATION WHERE APPLICABLE

4. INSULATED PLENUM

THERMAL VARIABLE VOLUME DIFFUSER 6. AUXILIARY FRAME

EQUIPMENT SELECTIONS BASED ON PRODUCTS BY PRICE. EQUAL PRODUCTS, SUBJECT TO COMPLIANCE WITH ALL CRITERIA, BY TITUS, NAILOR, METAIL-AIRE.

				FAN	S						
TAG	MANUFACTURER	MODEL	DUTY	CFM	S.P (IN. W.G.)	MOTOR SIZE (HP)	RPM	DRIVE	SONES	WEIGHT (Lb)	ACCESSORIES
EF-1	PENN~BARRY	ZEPHYR JR. ZJ1	TOILET EXHAUST	150	0.5"	125W	1200	DIRECT	3.4	20	1,2,4,5,6
EF-2	PENN~BARRY	ZEPHYR JR. ZJ1	TOILET EXHAUST	150	0.5"	125W	1200	DIRECT	3.4	20	1,2,4,5,6
EF-3	PENN~BARRY	ZEPHYR JR. ZJ1	TOILET EXHAUST	150	0.5"	125W	1200	DIRECT	3.4	20	1,2,4,5,6
EF-4	PENN~BARRY	ZEPHYR JR. ZJ1	TOILET EXHAUST	150	0.5"	125W	1200	DIRECT	3.4	20	1,2,4,5,6
EF-5	PENN~BARRY	DOMEX DX12B	TOILET EXHAUST	900	0.5"	1/4	875	BELT	10.3	98	1,6,7,8
EF-6	PENN~BARRY	DOMEX DX12B	TOILET EXHAUST	1275	0.5"	1/4	1000	BELT	11.0	98	1,6,7,8
EF-7	PENN~BARRY	DOMEX DX12B	TOILET EXHAUST	1,200	0.5"	1/4	975	BELT	11.0	98	1,6,7,8
EF-8	PENN~BARRY	DOMEX DX12B	TOILET EXHAUST	1175	0.5"	1/4	970	BELT	11.0	98	1,6,7,8
EF-9	PENN~BARRY	ZEPHYRETTE ZT	TOILET EXHAUST	75	0.375"	48W	1200	DIRECT	3.0	20	1,2,4,5,6
EF-P1	PENN~BARRY	DOMEX DX30B	FIRE PUMP VENTILATION	7,000	0.15"	3/4	500	BELT	12.1	210	6,9,13
2. WIRE INT 3. SOLID ST 4. DESIGNE 5. HANGING 6. DISCONN 7. PREFABR 8. PROVIDE 9. SHORT W	BACK DRAFT DAMPER TO WALL SWITCH. COORDITATE SPEED CONTROLLER R GRILLE. G ISOLATORS. NECT SWITCH. RICATED INSULATED ROOF BUILDING AUTOMATION S VALL HOUSING, FLUSH EXT	INATE WITH ELECTRICAL DW MOUNTED AT FAN FOR INIT CURB SYSTEM (BAS) INTERLOCK ERIOR WITH OSHA GUARD H LIGHTS, SEE ELECTRICAL I	IAL BALANCE.								

		ELECT	RIC H	EATE	RS				
MANUFACTURER	MODEL No.	APPLICATION	MOUNTING	K.W.	CFM	FAN HP	RPM	WEIGHT (LB)	ACCESSORIES
RAYWALL	AFH	WALL HEATER	WALL	3.0	245	FRAC.	1400	55	2,3,4
RAYWALL	AFH	WALL HEATER	WALL	1.5	245	FRAC.	1400	55	2,3,4
RAYWALL	5100	UNIT HEATER	WALL	5.0	100	1/125	1550	25	1,2,3,4
RAYWALL	RCH	CEILING HEATER	RECESSED	5.0	400	FRAC.	1300	50	2,3,4
	RAYWALL RAYWALL RAYWALL	RAYWALL AFH RAYWALL AFH RAYWALL 5100	MANUFACTURER MODEL No. APPLICATION  RAYWALL AFH WALL HEATER  RAYWALL AFH WALL HEATER  RAYWALL 5100 UNIT HEATER	MANUFACTURER MODEL No. APPLICATION MOUNTING  RAYWALL AFH WALL HEATER WALL  RAYWALL AFH WALL HEATER WALL  RAYWALL 5100 UNIT HEATER WALL	MANUFACTURER MODEL No. APPLICATION MOUNTING K.W.  RAYWALL AFH WALL HEATER WALL 3.0  RAYWALL AFH WALL HEATER WALL 1.5  RAYWALL 5100 UNIT HEATER WALL 5.0	RAYWALL AFH WALL HEATER WALL 3.0 245  RAYWALL AFH WALL HEATER WALL 1.5 245  RAYWALL 5100 UNIT HEATER WALL 5.0 100	MANUFACTURER MODEL No. APPLICATION MOUNTING K.W. CFM FAN HP  RAYWALL AFH WALL HEATER WALL 3.0 245 FRAC.  RAYWALL AFH WALL HEATER WALL 1.5 245 FRAC.  RAYWALL 5100 UNIT HEATER WALL 5.0 100 1/125	MANUFACTURER MODEL No. APPLICATION MOUNTING K.W. CFM FAN HP RPM  RAYWALL AFH WALL HEATER WALL 3.0 245 FRAC. 1400  RAYWALL AFH WALL HEATER WALL 1.5 245 FRAC. 1400  RAYWALL 5100 UNIT HEATER WALL 5.0 100 1/125 1550	MANUFACTURER         MODEL No.         APPLICATION         MOUNTING         K.W.         CFM         FAN HP         RPM         WEIGHT (LB)           RAYWALL         AFH         WALL HEATER         WALL         3.0         245         FRAC.         1400         55           RAYWALL         AFH         WALL HEATER         WALL         1.5         245         FRAC.         1400         55           RAYWALL         5100         UNIT HEATER         WALL         5.0         100         1/125         1550         25

ACCESSORIES: 1. FAN DELAY 2. DISCONNECT SWITCH. 3. AUTO-RESET THERMAL OVER LOADS. 4. INTEGRAL TAMPERPROOF THERMOSTAT

11. ALUMINUM BIRD SCREEN

12. CONTINUOUS OPERATION

EQUIPMENT SELECTIONS BASED ON PRODUCTS BYRAYWALL. EQUAL PRODUCTS BY MARKEL, Q-MARK.

13. CONTROL BY WALL THERMOSTAT WITH SWITCHING SUB-BASE FOR MANUAL OVERRIDE 14. MOTORIZED DISCHARGE SHUTTER/DAMPER WITH EDGE SEALS, FLUSH EXTERIOR MOUNTING

EQUIPMENT SELECTIONS BASED ON PRODUCTS BY PENN~BARRY. EQUAL PRODUCTS BY GREENHECK, COOK,

		SP	LIT	S	YSTI	ΞM	HE.	ΑT	PU	MP		
TAG	MODEL No. AHU/HPU	TOTAL CFM	OUTDOOR AIR CFM	ESP	MBH TOTAL COOL	MBH SENS. COOL	MBH INTL HEAT	MAX FAN HP	AUX. HEAT KW	MIN SEER	MIN HSPF	ACCESSORIES
AHU/HPU-1	GAMA5BOA18/4TWB3018	600	60	0.4	18	12.6	18	1/3	5	13.0	8.0	1,2,3,4,5
AHU/HPU-2	GAMA5BOA18/4TWB3018	600	60	0.4	18	12.6	18	1/3	5	13.0	8.0	1,2,3,4,5
B. INTEGRATE	APACITY BASED ON EAT 95 DI D HEATING CAPACITIES BASE LL UTILIZE R410a REFRIGERAN	ED ON 47 DEG				TERING AIR	TEMPERA	TURE.			I	

				WALL	LOU	VERS		
TAG	MODEL No.	SIZE WxH (INCHES)	CFM	MAX. PRESS. DROP (IN. W.C.)	OPERATOR	INTERLOCK	FRAME	ACCESSORIES
WL-P1	EA-680D	48"X48"	7000	0.15"	ELEC.	EF-1	ALUMINUM	1,2,3,4,5
NOTES: A. FINAL COLOR	SELECTION SHAL	L BE MADE BY ARC	L HITECT AT TI	ME OF SHOP DRAWING	GS APPROVAL.			

ACCESSORIES 1. PROVIDE ELECTRIC ACTUATOR W/ ALL NECESSARY DAMPER LINKAGES AND MOUNTING HARDWARE. 2. INTERLOCK LOUVER W/ ASSOCIATED FANS AS SCHEDULED 3. ADJUST ACTUATORS & LINKAGES TO PROVIDE FULL OPENING & CLOSING OF THE LOUVER.

5. INSECT SCREEN

SELECTIONS ARE BASED ON ARROW. APPROVED EQUALS BY GREENHECK, RUSKIN.

B. REFER TO ARCHITECTURAL DRAWINGS FOR EXACT LOCATIONS OF LOUVERS.

1. FACTORY INSTALLED ELECTRIC HEAT WITH THERMAL OVERLOADS

4. DISCONNECT FOR EACH AIR HANDLER AND HEAT PUMP

3. DUAL SET POINT AUTOMATIC CHANGEOVER THERMOSTAT & SUB-BASE

SELECTIONS BASED ON PRODUCTS BY TRANE. EQUAL PRODUCTS BY CARRIER, LENNOX, YORK/JCI.

2. SINGLE POINT POWER CONNECTION.

5. COMPRESSOR ANT-RECYCLE CONTROL

					FAN D	АТА			CO	OLING COIL			HEATING DA	ATA		
TAG	MANUFACTURER	MODEL No.	NOMINAL TONS	TOTAL CFM	MIN OA CFM	MAX FAN HP	ESP	TOTAL MBH	SENSIBLE MBH	EAT DB/WB (DEG. F.)	EFFICIENCY EER/SEER	MBH IN (NAT. GAS)	МВН ОПТ	THERMAL EFFICIENCY (%)	WEIGHT (LB)	ACCESSORIES
RTU-A	TRANE	YCD151	12.5	5000	500	2.00	0.50"	149.6	113.4	80/67	12.0/	150	122	80	2335	1,2,3,4,5,7,8,9,12,14,15,16,17,18,19
RTU-B	TRANE	YCD181	15	6000	600	3.00	0.50"	181.5	138.0	80/67	12.0/	250	203	80	2366	1,2,3,4,5,7,8,9,12,14,15,16,17,18,19
RTU-C	TRANE	YCD241	20	8000	800	5.00	0.50"	259.0	192.5	80/67	11.0/	250	203	80	2409	1,2,3,4,5,7,8,9,12,14,15,16,17,18,19
RTU-1	TRANE	YHC047	4	1590	260	1.00	075"	50.4	37.1	80/67	-/17.5	80	64	80	946	1,2,3,6,8,9,10,11,12,13,14,15,16,17,19
RTU-2	TRANE	YHC047	4	1590	260	1.00	075"	50.4	37.1	80/67	-/17.5	80	64	80	946	1,2,3,6,8,9,10,11,12,13,14,15,16,17,19
RTU-3	TRANE	4YCC3024	2	800	80	0.25	0.50"	23.0	16.1	80/67	11.0/13.0	64	51.2	80	348	1,2,3,6,8,9,10,12,15,16,17
RTU-4	TRANE	4YCC3024	2	800	140	0.25	0.50"	23.0	16.1	80/67	11.0/13.0	64	51.2	80	348	1,2,3,6,8,9,10,12,15,16,17
RTU-5	TRANE	YHC092	7.5	3000	300	1.50	075"	92.0	68.6	80/67	12.6/-	150	120	80	1388	1,2,3,4,5,7,8,9,11,12,14,15,16,17,19
RTU-6	TRANE	YHC067	5	2000	280	1.00	075"	60.0	45.3	80/67	-/17.2	80	64	80	969	1,2,3,6,8,9,10,11,12,13,14,15,16,17,19
RTU-7	TRANE	YHC037	3	1200	140	0.50	0.50"	36.2	26.8	80/67	-/17.5	80	64	80	722	1,2,3,6,8,9,10,11,12,13,14,15,16,17,19
RTU-8	TRANE	YHC047	4	1600	160	1.00	0.50"	50.5	37.2	80/67	-/17.5	80	64	80	946	1,2,3,6,8,9,10,11,12,13,14,15,16,17,19
RTU-9	TRANE	YHC120	10	4000	660	3.00	075"	119.1	93.1	80/67	12.5/-	200	160	80	1600	1,2,3,4,5,7,8,9,11,12,13,14,15,16,17,19
RTU-10	TRANE	YHC120	10	4000	600	3.00	075"	119.1	93.1	80/67	12.5/-	200	160	80	1600	1,2,3,4,5,7,8,9,11,12,13,14,15,16,17,19
RTU-11	TRANE	YHC037	3	1200	100	0.50	075"	36.2	26.8	80/67	-/17.5	80	64	80	722	1,2,3,6,8,9,10,11,12,14,15,16,17,19
RTU-12	TRANE	YHC120	10	4000	490	3.00	075"	119.1	93.1	80/67	12.5/-	200	160	80	1600	1,2,3,4,5,7,8,9,11,12,13,14,15,16,17,19
RTU-13	TRANE	YHC072	6	2400	160	1.00	075"	72.0	54.9	80/67	12.6/-	120	96	80	987	1,2,3,4,5,7,8,9,11,12,13,14,15,16,17,19
SEER/EER RAT CESSORIES: PRE-FABRICAT BAS COMPATI COMPRESSOR SMOKE DETEC ECONOMIZER	ACITIES BASED ON ENTERIFINGS ARE BASED AT 80 DEF FED INSULATED STRUCTURA BLE (BACnet) CONTROLLER ANTI-RECYCLE CONTROLS FTOR FURNISHED & INSTALI WITH DIFFERENTIAL ENTHA UTSIDE AIR DAMPER	G. F DB / 67 DEG. F. WE AL ROOF CURB (SEE SP /COMMUNICATION IN LED BY RTU MFG. WITH	B ENTERING THE ECIFICATIONS) TERFACE /SPACI	E EVAPORATO	OR COIL AND	) 95 DEG. F	DB ENTER			N						

PACKAGED DX ROOFTOP AIR CONDITIONER

				DUCT	LESS SP	LIT	SYS'	ТЕМ	-				
	TAG	MANUFACTURER	ТҮРЕ	MODEL No. FCU/COND. UNIT	SERVES	TOTAL CFM	MAX FAN HP	ESP	MBH TOT COOL	MBH SENS COOL	MIN SEER	MBH TOT HEAT	ACCESSORIES
	AC-1/CU-1	MITSUBISHI	DUCTLESS	PKA-A12/PUY-A12	TELCO ROOM	380	30 WATTS	0.00	12.0	8.4	13.8	N/A	1,2,3,4,5,6,7
- 11													

A. COOLING CAPACITY BASED ON 80 DEG. F. db/67 DEG. F. wb INDOOR ENTERING AIR TEMPERATURE AND 95 DEG. F. db ENTERING OUTDOOR UNIT. B. HEATING CAPAPCITY BASED ON 47 DEGREES F. db ENTERING OUTDOOR UNIT.

1. LOW AMBIENT CONTROL DOWN TO 0 DEF. F.

9. PROVIDE DISCONNECT AND GFIC CONVENIENCE OUTLET (CONVENIENCE OUTLET TO BE POWERED AHEAD OF UNIT DISCONNECT)

13. DEMAND CONTROLLED VENTILATION (DCV) CONTROL WITH MODULATING OA DAMPER AND CO2 SPACE SENSOR

18. INTERNALLY-LINED DROP PLENUM WITH 4-WAY DRUM LOUVER DISTRIBUTION, UNITED ENTERTEC "DPD" OR EQUAL

EQUIPMENT SELECTIONS BASED ON PRODUCTS BY TRANE. EQUAL PRODUCTS, SUBJECT TO COMPLIANCE WITH ALL CRITERIA, BY CARRIER, LENNOX, YORK/JCI.

8. SINGLE POINT POWER CONNECTION

14. HINGED ACCESS PANELS

17. U.L. CLASS 2 MERV 13 FILTERS

15. R-410A REFRIGERANT

19. HAIL GUARDS

10. LOW AMBIENT OPERATION WITH HEAD PRESSURE CONTROL TO 0 DEG. F.

11. DEHUMIDIFICATION (HOT GAS REHEAT) & HUMIDITY SENSOR/HUMIDISTAT

12. 5-YEAR COMPRESSOR WARRANTY & 10 YEAR HEAT EXCHANGER WARRANTY

16. PROVIDE SLOPED STAINLESS STEEL OR NON-CORROSIVE DRAIN PAN

2. WASHABLE FILTER. 3. INDOOR AC UNIT POWERED FROM OUTDOOR UNIT, OUTDOOR DISCONNECT PROVIDED BY DIV. 26 ELECTRICAL

4. PROVIDE WIRED REMOTE CONTROLLER OPTION

5. PROVIDE CONDENSATE PUMP WITH CHECK VALVE. 6. PROVIDE R-410a REFRIGERANT.

7. PROVIDE INTERCONNECTING POWER WIRING FROM OUTDOOR UNIT TO INDOOR

EQUIPMENT SELECTIONS BASED ON PRODUCTS BY MITSUBISHI. EQUAL PRODUCTS, SUBJECT TO COMPLIANCE WITH ALL CRITERIA, BY SANYO, L.G., FRIEDRICH.

	COMF	PUT]	ER	ROO	M	ΑIJ	R CO	NDIT	TION	ERS
TAG	MODEL No.	CFM	E.S.P.	FAN HP	MBH TOTAL COOL	MBH SENS COOL	DESIGN CONDITIONS	HUMIDIFIER (#/HR)	KW REHEAT	NOTES/ACCESSORIES
CRAC-1,2	LIEBERT DS-070	9,000	0.2"	5	214.9	191.0	75F/45%RH	22	25	1 THROUGH 19
CRAC-3,4	LIEBERT DS-070	9,000	0.2"	5	214.9	191.0	75F/45%RH	22	25	1 THROUGH 19
. BELT DRIVI . DUAL REFR . STEAM GEN . CONDENSA . RETURN AI	CESS/SERVICEABILIT E CENTRIFUGAL FANS IGERATION CIRCUITS NERATING CANISTER ATE PUMP, DUAL-FLC R SMOKE DETECTOR	S S HUMIDIFIEI OAT, 145 GP	H @ 20 FT.			IDICATIC	ON AND UNIT SE	HUTDOWN UPO	N HIGH WAT	er Level
4. BELT DRIVI 5. DUAL REFR 6. STEAM GEN 7. CONDENSA 8. RETURN AI 9. DEHUMIDII 0. 4" THICK IN 1. 3-STAGE E 2. ROOF-MOU 3. WALL-MOU 4. INTERFACI 6. NON-LOCK	E CENTRIFUGAL FANS IGERATION CIRCUITS NERATING CANISTER NTE PUMP, DUAL-FLC	S HUMIDIFIE DAT, 145 GP SENSOR  TAINLESS S CONDENSIN ONTROL PA SION SYSTE WITCH	H @ 20 FT. WITH SUPER FEEL FIN TU IG UNIT NEL INCORI EM TO DEAC	HEAD, WITH RVISION CON BULAR PORATING LE	TACTS EAD/LAG I	TUNCTIO	N(LIEBERT i-CO		N HIGH WAT	er Level

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PRINT RECORD 06/20/2013 PROGRESS/REVIEW

07/08/2013 75% REVIEW 07/31/2013 ISSUED FOR BID/PERMIT ↑ 08/09/2013 ADDENDUM NO. 1

PROJECT INFORMATION

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2013-018

**EQUIPMENT** SCHEDULES - H.V.A.C.

SHEET NUMBER

**M-002** 

FOR CONSTRUCTION

**EQUIPMENT SCHEDULES - H.V.A.C.** 

