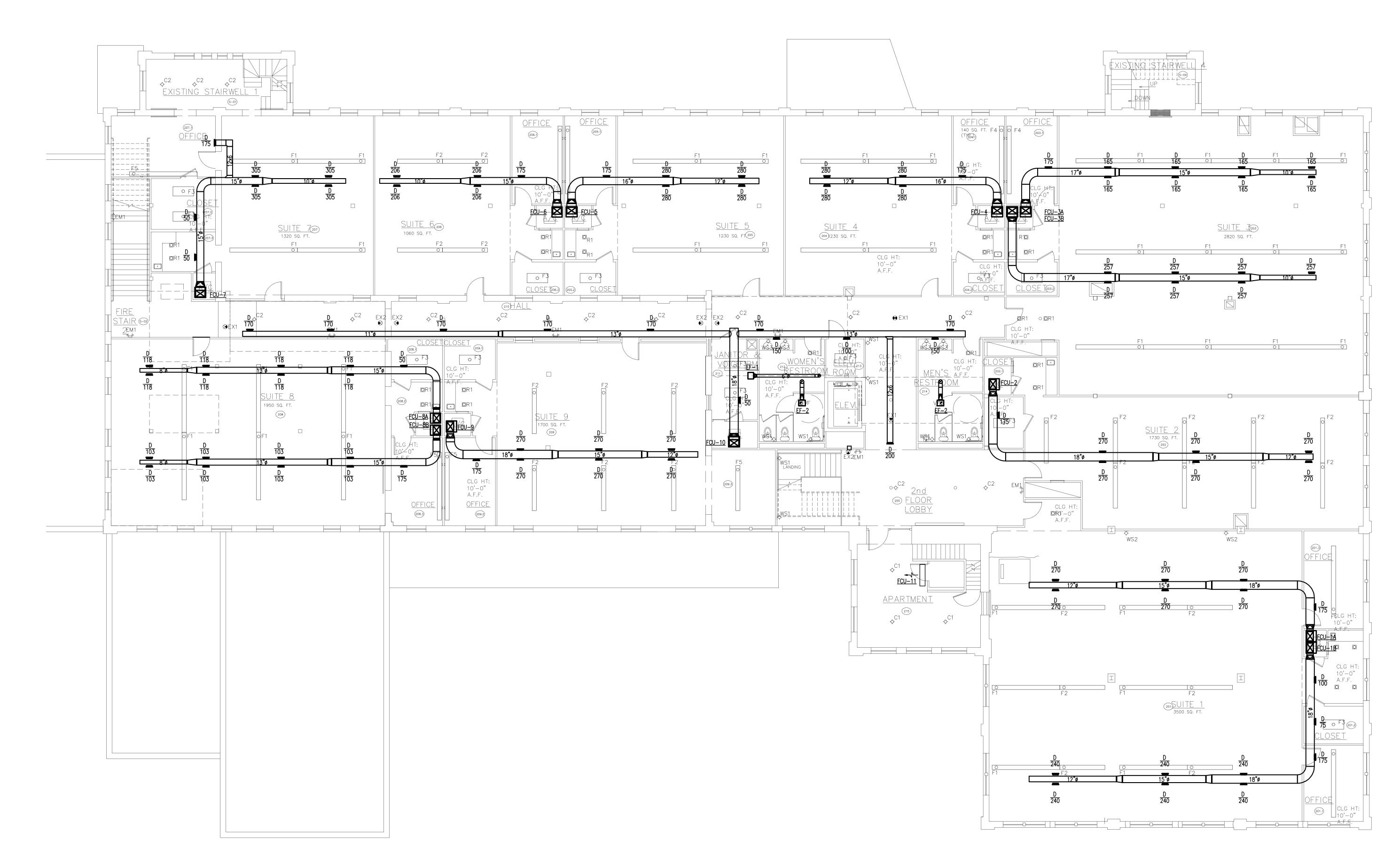


Y:\3800's\3897\Dwgs\3897m11,12,13,14.dwg,



INTERIM REVIEW ONLY

Document Incomplete: Not intended for permit or construction.

Engineer: N. Curt Jones, P.E.

P.E. Serial No.: 58428

Date: 11 October 2013

JONES ENGINEERS, L.P.

Consulting Mechanical/Electrical/Plumbing Engineers
9820 Whithorn Dr. Houston, Texas 77095 (713)222-7766
Texas Registered Engineering Firm #F-3811

EW ONLY

: Not intended uction.

Date: 6/21/13

Second Floor

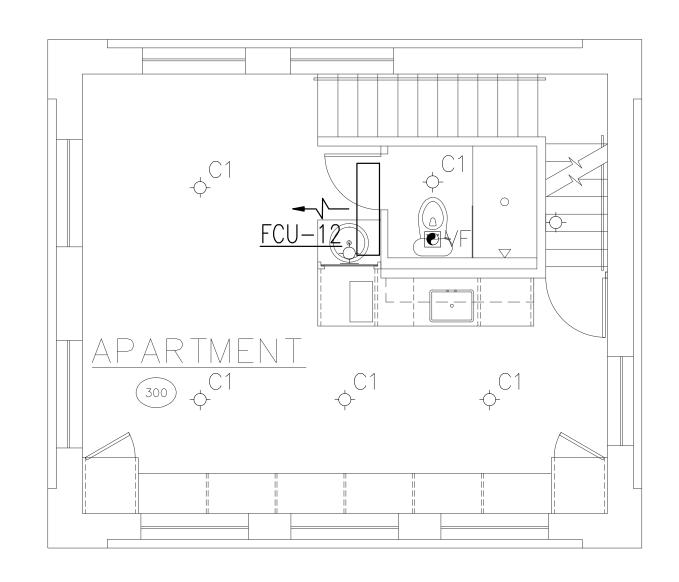
Progress Set

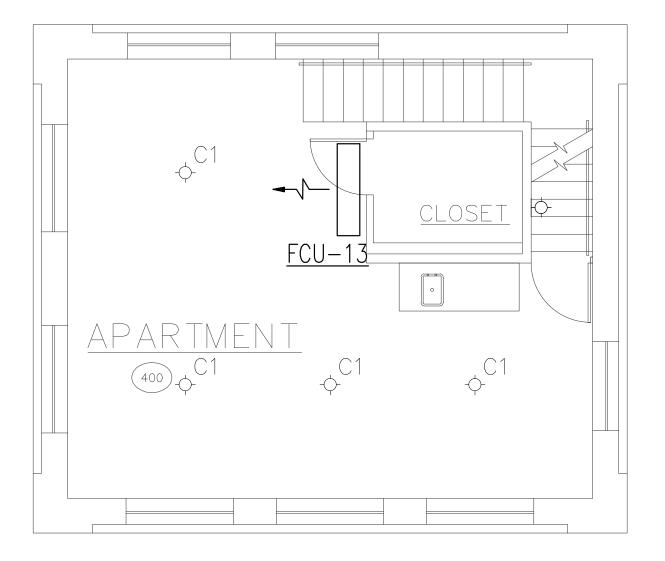
Clock Tower Building
Phase 4 Renovation

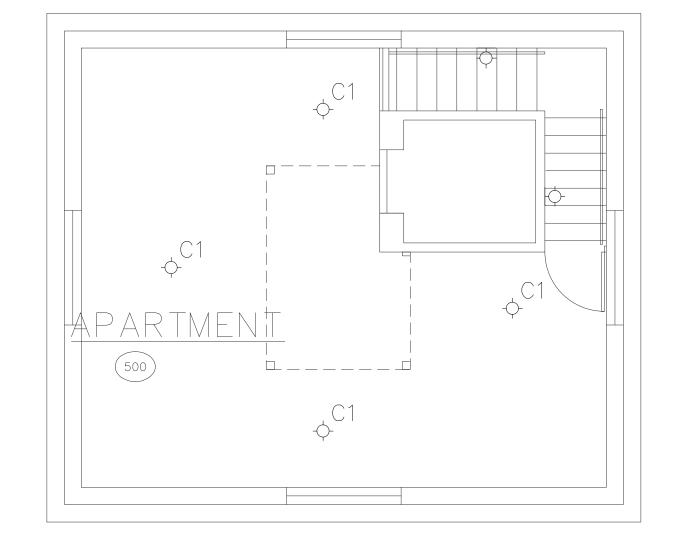
M1.2

SECOND FLOOR MECHANICAL PLAN

| Scale: 1/8" = 1'-0"







3rd FLOOR MECHANICAL PLAN

Scale: 1/4" = 1'-0"

2 4th FLOOR MECHANICAL PLAN

Scale: 1/4" = 1'-0"

3 Scale: 1/4" = 1'-0"

Clock Tower Building
Phase 4 Renovation

Nonya Grenade ARCHITECT

Progress Set

3rd, 4th, & 5th Floor

Mechanical Plan

Date: 6/21/13

M1.3

JONES ENGINEERS, L.P.

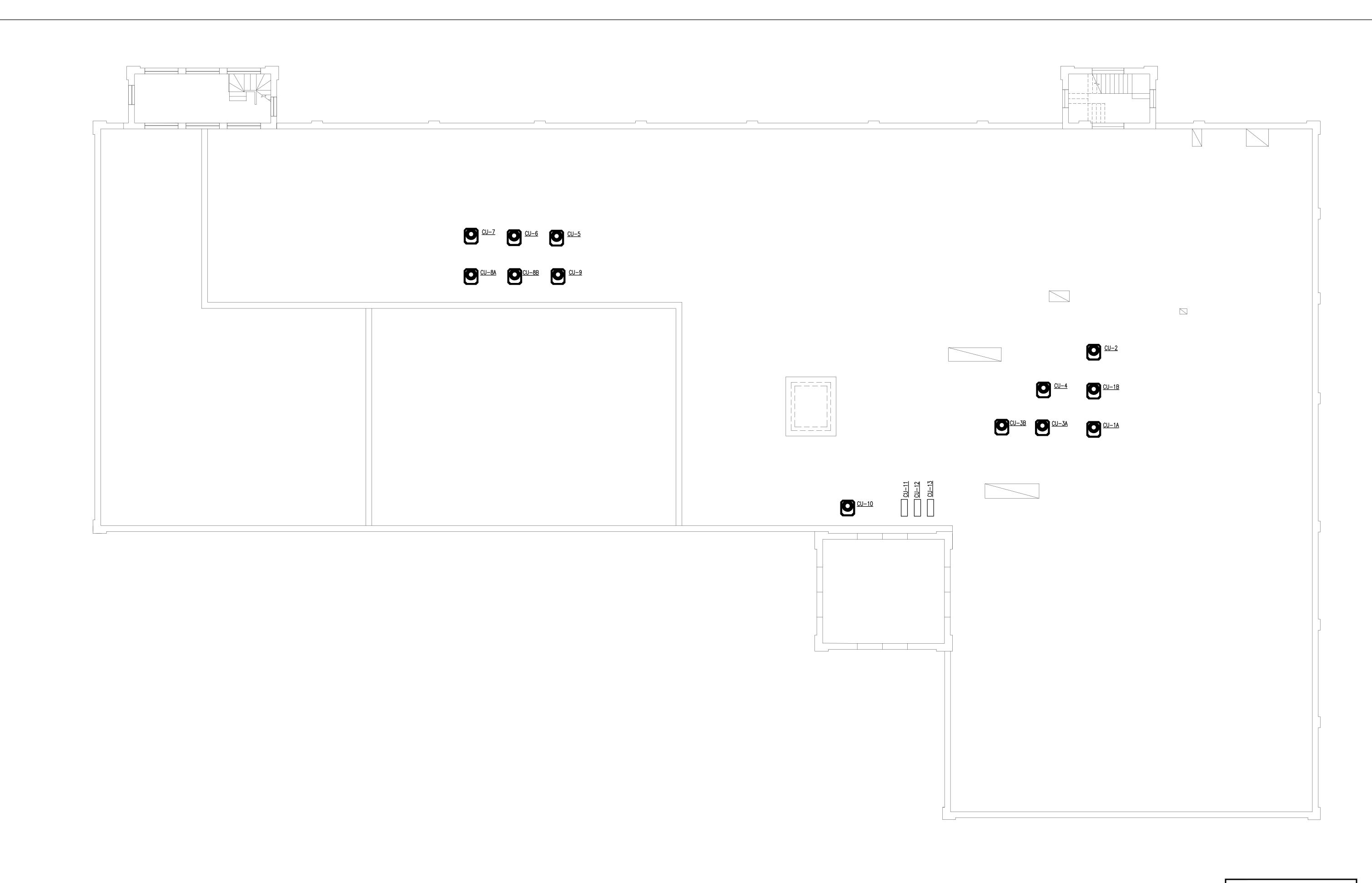
Consulting Mechanical/Electrical/Plumbing Engineers
9820 Whithorn Dr. Houston, Texas 77095 (713)222-7766
Texas Registered Engineering Firm #F-3811

P.E. Serial No.: <u>58428</u>

INTERIM REVIEW ONLY

Document Incomplete: Not intended for permit or construction.

Engineer: N. Curt Jones, P.E.



INTERIM REVIEW ONLY Document Incomplete: Not intended for permit or construction. Engineer: N. Curt Jones, P.E.

P.E. Serial No.: <u>58428</u>

Date: <u>11 October 2013</u>

JONES ENGINEERS, L.P.

Consulting Mechanical/Electrical/Plumbing Engineers
9820 Whithorn Dr. Houston, Texas 77095 (713)222-7766
Texas Registered Engineering Firm #F-3811

Clock Tower Building
Phase 4 Renovation

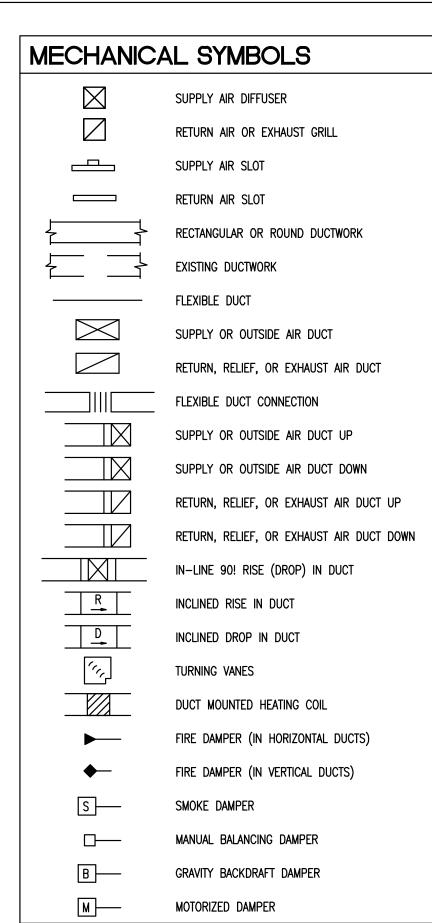
Progress Set

Mechanical Roof Plan

Date: 6/21/13

MECHANICAL ROOF PLAN

| Scale: 1/8" = 1'-0" Scale: 1/8" = 1'-0"



GENERAL MECHANICAL NOTES:

- THE DRAWINGS ARE DIAGRAMMATIC IN NATURE AND WERE MADE FROM THE BEST INFORMATION AVAILABLE. CONFIRM ALL LOCATIONS AND DIMENSIONS IN THE FIELD. VISIT THE SITE PRIOR TO BID. THE CONTRACTOR WILL BE RESPONSIBLE FOR THE CONDITIONS AS THEY EXIST AND NO ADDITIONAL COSTS WILL BE ALLOWED FOR READILY OBSERVABLE CONDITIONS.
- 2. Guarantee Labor and Materials for 1 year.
- COORDINATE THE LOCATION OF ALL AIR DISTRIBUTION DEVICES WITH THE ARCHITECTURAL reflected ceiling plan including light fixtures and life safety devices.
- VERIFY LOCATION OF THERMOSTATS/TEMPERATURE SENSORS WITH THE ARCHITECT/ENGINEER PRIOR TO INSTALLATION TO COORDINATE WITH THE LATEST FURNITURE AND MILLWORK PLANS. INSTALL DEVICES AT 48" AFF, UNLESS NOTED OTHERWISE ON THE PLANS.
- ALL WORK SHALL COMPLY WITH THE LOCAL BUILDING, PLUMBING, AND MECHANICAL CODES, NFPA 90A, AND ANY OTHER APPLICABLE CODES.
- 6. ALL LOCATIONS OF DEVICES ARE APPROXIMATE. SEE ARCHITECTURAL DRAWINGS FOR EXACT
- 7. SEAL NEW OR EXISTING PENETRATIONS IN OF FLOORS, RATED PARTITIONS, AND CORRIDOR
- 8. SECURE ALL PERMITS AND PROVIDE ANY REQUIRED TEMPORARY UTILITIES.
- 9. ALL WORK AND SERVICE INTERRUPTIONS SHALL BE COORDINATED WITH THE OWNER SUCH THAT THE WORK IS PERFORMED AT THE OWNERS CONVENIENCE. THIS MAY BE DURING EVENINGS AND
- 10. CONTRACTOR TO PROVIDE "AS-BUILT" DRAWINGS INDICATING THE CONFIGURATION OF THE CONSTRUCTED WORK.
- 11. SUBMIT INFORMATION ON ALL NEW EQUIPMENT IN THE FORM OF SHOP DRAWINGS. REFER TO ARCHITECTURAL SPECIFICATIONS FOR THE CORRECT PROCEDURE. PROVIDE AIR BALANCE REPORT
- 12. PROVIDE 3 COPIES OF THE OPERATION AND MAINTENANCE MANUALS TO THE OWNER. PROVIDE INSTRUCTION ON THE SYSTEM OPERATION TO THE OWNER.
- 13. FLEX DUCT LENGTH NOT TO EXCEED 6'-0". PROVIDE MANUAL DAMPER AT ALL TAKE-OFFS. 14. ALL DUCTWORK SHALL BE INSTALLED IN ACCORDANCE WITH THE LATEST SMACNA STANDARDS. DUCTWORK SHALL BE GALVANIZED STEEL WITH MIN R-8 EXTERNAL FIBERGLASS INSULATION AND
- 15. ALL DUCTWORK DIMENSIONS ARE CLEAR INSIDE DIMENSIONS.
- 16. TURNING VANES ARE REQUIRED AT EACH TURN IN THE DUCT. EXTRACTORS ARE REQUIRED AT

ENERGY CODE NOTES:

1. DUCT SEALING: DUCTWORK AND PLENUMS SHALL BE SEALED IN ACCORDANCE WITH THE CITY OF HOUSTON

- MECHANICAL CODE AND SMACNA METHOD A. 2. BALANCING: SYSTEM SHALL BE BALANCED IN ACCORDANCE WITH GENERALLY ACCEPTED ENGINEERING STANDARDS (NEBB 1999, AABC 2002, OR ASHRAE 111) AND PER APPENDIX E OF THE CITY OF HOUSTON COMMERCIAL ENERGY CONSERVATION CODE. AIR SYSTEMS SHALL BE IN A MANNER TO FIRST MINIMIZE THROTTLING LOSSES. THEN FOR FANS WITH FAN SYSTEM POWER GREATER THAN 1 HP, FAN SPEED SHALL BE ADJUSTED TO MEET DESIGN FLOW CONDITIONS.
- 3. ENERGY CODE COMPLETION REQUIREMENTS.

DRAWINGS: CONSTRUCTION DOCUMENTS SHALL REQUIRED THAT WITHIN 90 DAYS AFTER THE DATE OF SYSTEM ACCEPTANCE RECORD DRAWINGS OF THE ACTUAL INSTALLATION BE PROVIDED TO THE BUILDING OWNER OR THE DESIGNATED REPRESENTATIVE OF THE BUILDING OWNER. RECORD DRAWINGS SHALL INCLUDE AS A MINIMUM THE LOCATION AND PERFORMANCE DATA ON EACH PIECE OF EQUIPMENT, GENERAL CONFIGURATION OF DUCT AND PIPE DISTRIBUTION SYSTEM INCLUDING SIZES, AND THE TERMINAL AIR OR WATER DESIGN FLOW

MANUALS: CONSTRUCTION DOCUMENTS REQUIRE THAT AN OPERATING MANUAL AND A MAINTENANCE MANUAL BE PROVIDED TO THE BUILDING OWNER OR THE DESIGNATED REPRESENTATIVE OF THE BUILDING OWNER WITHIN 90 DAYS AFTER THE DATE OF SYSTEM ACCEPTANCE. THESE MANUALS SHALL BE IN ACCORDANCE WITH INDUSTRY ACCEPTED STANDARDS. AND SHALL INCLUDE AT A MINIMUM THE FOLLOWING:

(A) SUBMITTAL DATA STATING EQUIPMENT SIZE AND LECTED OPTIONS FOR EACH PIECE OF EQUIPMENT REQUIRING MAINTENANCE. (B) OPERATING MANUALS AND MAINTENANCE MANUALS FOR EACH PIECE OF EQUIPMENT REQUIRING MAINTENANCE, EXCEPT EQUIPMENT NOT FURNISHED AS PART OF THE PROJECT. REQUIRED ROUTINE MAINTENANCE SHALL BE CLEARLY IDENTIFIED. (C) NAMES AND ADDRESSES OF AT LEAST ONE SERVICE (D) HVAC CONTROLS SYSTEM MAINTENANCE AND

CALIBRATION INFORMATION INCLUDING WIRING DIAGRAMS, SCHEMATICS AND CONTROL SEQUENCE DESCRIPTIONS. DESIRED OR FIELD DETERMINED SET POINTS SHALL B PERMANENTLY RECORDED ON CONTROL DRAWINGS, AT CONTROL DEVICES OR FOR DIGITAL CONTROL SYSTEMS, IN THE PROGRAMMING COMMENTS. (E) COMPLETE NARRATIVE OF HOW EACH SYSTEM IS INTENDED TO OPERATE, INCLUDING SUGGESTED

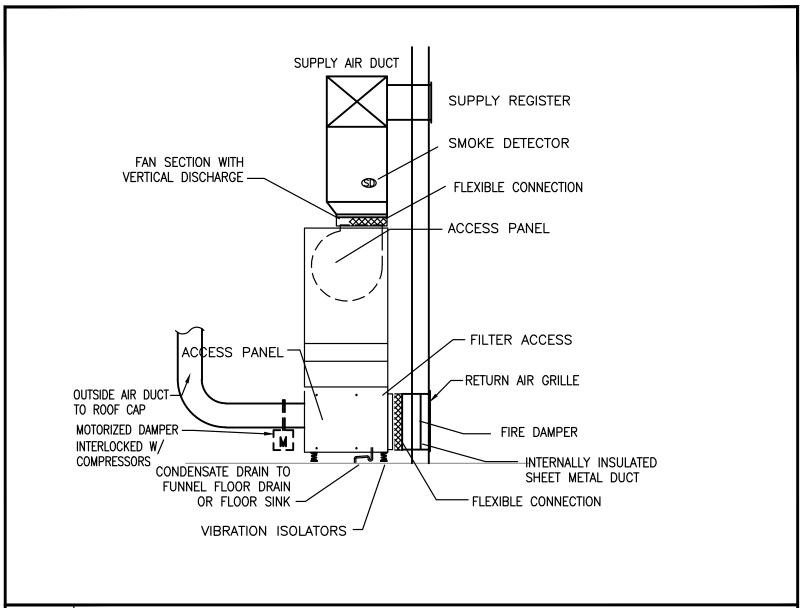
AUTOMATIC SHUTDOWN HVAC SYSTEM SHALL BE EQUIPPED WITH CONTROLS THAT CAN START AND STOP THE SYSTEM UNDER DIFFERENT TIME SCHEDULES FOR SEVEN DIFFERENT TIMES PER WEEK, AND BE CAPABLE OF RETAINING PROGRAMMING AND TIME SETTING DURING LOSS OF POWER FOR A PERIOD OF LESS THAN 10 HOURS AND INCLUDE AN ACCESSIBLE MANUAL OVERRIDE, OR EQUIVALENT FUNCTION THE ALLOWS TEMPORARY OPERATION OF THE SYSTEM FOR TWO HOURS.

BOTH OUTDOOR AIR SUPPLY AND EXHAUST SYSTEMS SHALL BE EQUIPPED WITH MOTORIZED DAMPERS THAT WILL AUTOMATICALLY SHUT WHEN THE SYSTEMS OR SPACES SERVED ARE NOT IN USE. VENTILATION OUTDOOR AIR DAMPERS SHALL BE CAPABLE OF AUTOMATICALLY SHUTTING OFF DURING PREOCCUPANCY BUILDING WARM UP, COOL DOWN AND SETBACK.

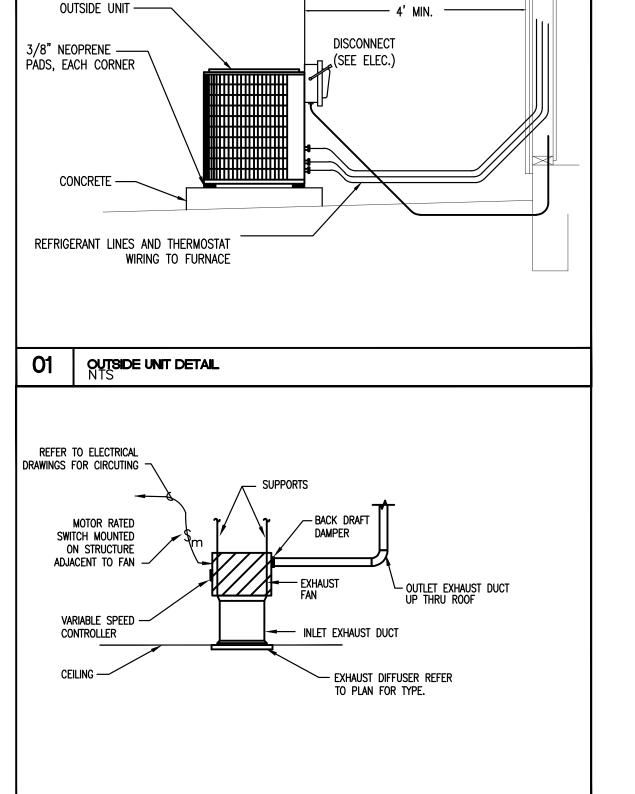
1. DUCTWORK WITHIN THE BUILDING ENVELOPE WILL HAVE A MINIMUM INSULATION VALUE OF R-6, DUCTWORK LOCATED OUTSIDE OF THE BUILDING ENVELOPE WILL BE INSULATED WITH A MINIMUM OF R-8. DUCTWORK SHALL HAVE VAPOR RETARDERS WITH A PERM RATING NOT TO EXCEED 0.5 PERM. ALL JOINTS TO BE SEALED.

. CONSTRUCTION - VENTILATING CEILINGS. SUSPENDED CEILING MATERIAL SHALL HAVE A CLASS 1 FLAME-SPREAD CLASSIFICATION ON BOTH SIDES, DETERMINED IN ACCORDANCE WITH THE BUILDING CODE. CEILING SUPPORTS SHALL BE OF NONCOMBUSTIBLE LIGHTING FIXTURES RECESSED INTO VENTILATING CEILINGS

SHALL BE OF A TYPE APPROVED FOR THAT PURPOSE. 3. APPLIANCES DESIGNED TO BE FIXED IN POSITION SHALL BE SECURELY FASTENED IN PLACE. SUPPORTS FOR APPLIANCES SHALL BE DESIGNED AND CONSTRUCTED TO SUSTAIN VERTICAL AND HORIZONTAL LOADS WITHIN THE STRESS LIMITATIONS SPECIFIED IN THE IBC, SECTION 304.4 - UNIFORM MECHANICAL CODE.



VERTICAL FAN COIL UNIT DETAIL



REST ROOM EXHAUST FAN DETAIL

					FAN C	OIL UNIT S	CHEDULE						
_					FAN DATA		OUTSIDE				TRICAL	HEAT	
MARK	MANU.	MODEL	TYPE	LOCATION	CFM	ESP	AIR CFM	FILTER	V/PH	MCA	MAX OVERCURRENT	KW	REMARKS
FCU-1A	TRANE	GAM5-60	HORIZONTAL	ATTIC	1800	0.5	180	1"TA	230/1	53	60	7.2	SINGLE POINT CONNECTION
FCU-1B	TRANE	GAM5-60	HORIZONTAL	ATTIC	1800	0.5	180	1"TA	230/1	53	60	7.2	SINGLE POINT CONNECTION
FCU-2	TRANE	GAM5-60	HORIZONTAL	ATTIC	1800	0.5	180	1"TA	230/1	53	60	7.2	SINGLE POINT CONNECTION
FCU-3A	TRANE	GAM5-48	HORIZONTAL	ATTIC	1500	0.5	150	1"TA	230/1	51	60	7.2	SINGLE POINT CONNECTION
FCU-3B	TRANE	GAM5-48	HORIZONTAL	ATTIC	1500	0.5	150	1"TA	230/1	51	60	7.2	SINGLE POINT CONNECTION
FCU-4	TRANE	GAM5-42	HORIZONTAL	ATTIC	1300	0.5	130	1"TA	230/1	48	50	7.2	SINGLE POINT CONNECTION
FCU-5	TRANE	GAM5-42	HORIZONTAL	ATTIC	1300	0.5	130	1"TA	230/1	48	50	7.2	SINGLE POINT CONNECTION
FCU-6	TRANE	GAM5-36	HORIZONTAL	ATTIC	1000	0.5	100	1"TA	230/1	48	50	7.2	SINGLE POINT CONNECTION
FCU-7	TRANE	GAM5-48	HORIZONTAL	ATTIC	1500	0.5	150	1"TA	230/1	51	60	7.2	SINGLE POINT CONNECTION
FCU-8A	TRANE	GAM5-36	HORIZONTAL	ATTIC	1000	0.5	100	1"TA	230/1	48	50	7.2	SINGLE POINT CONNECTION
FCU-8B	TRANE	GAM5-36	HORIZONTAL	ATTIC	1000	0.5	100	1"TA	230/1	48	50	7.2	SINGLE POINT CONNECTION
FCU-9	TRANE	GAM5-60	HORIZONTAL	ATTIC	1800	0.5	180	1"TA	230/1	53	60	7.2	SINGLE POINT CONNECTION
FCU-10	TRANE	GAM5-60	HORIZONTAL	ATTIC	1800	0.5	180	1"TA	230/1	53	60	7.2	SINGLE POINT CONNECTION

NOTE: 1. PROVIDE FACTORY SUPPLIED DIGTIAL THERMOSTATS ON ALL UNITS

2. PROVIDE "STERILAIRE" UV-C EMMITER DOWNSTREAM OF DX COIL. WRAP ALL EXPOSED WIRING WITH UL181 ALUMINUM TAPE. [TILLMAN & ASSOCIATES, 713/983-7999]

3. PROVIDE STAINLESS STEEL IAQ DRAINPAN.

4. PROVIDE CONDENSATE LEVEL SENSING DEVICE IN PRIMARY DRAIN PAIN INTERLOCKED WITH UNIT OPERATION.

			AIR COO	LED CONDEN	SING UNIT	SCHEDULE			
				COOLING		E	LECTRICAL		
				CAPACITY				MAX	REMARKS
MARK	DESCRIPTION	MANU.	MODEL	TONS	EER	PH	MCA	OVERCURRENT	REMARKS
CU-1A	CONDENSING UNIT	TRANE	4TTB3060D1	5	13.0	230/1	35	60	
CU-1B	CONDENSING UNIT	TRANE	4TTB3060D1	5	13.0	230/1	35	60	
CU-2	CONDENSING UNIT	TRANE	4TTB3060D1	5	13.0	230/1	35	60	
CU-3A	CONDENSING UNIT	TRANE	4TTB3048D1	4	13.0	230/1	28	50	
CU-3B	CONDENSING UNIT	TRANE	4TTB3048D1	4	13.0	230/1	28	50	
CU-4	CONDENSING UNIT	TRANE	4TTB3042D1	3.5	13.0	230/1	26	45	
CU-5	CONDENSING UNIT	TRANE	4TTB3042D1	3.5	13.0	230/1	26	45	
CU-6	CONDENSING UNIT	TRANE	4TTB3036E1	3	13.0	230/1	20	35	
CU-7	CONDENSING UNIT	TRANE	4TTB3048D1	4	13.0	230/1	28	50	
CU-8A	CONDENSING UNIT	TRANE	4TTB3036E1	3	13.0	230/1	20	35	
CU-8B	CONDENSING UNIT	TRANE	4TTB3036E1	3	13.0	230/1	20	35	
CU-9	CONDENSING UNIT	TRANE	4TTB3060D1	5	13.0	230/1	35	60	
CU-10	CONDENSING UNIT	TRANE	4TTB3060D1	5	13.0	230/1	35	60	

	FAN SCHEDULE									
					ESP		MOTOR DATA			
MARK	MANUFACTURER	MODEL	FAN TYPE	CFM	IN. W.G.	RPM	HP (WATTS)	V/PH	REMARKS	
EF-1	GREENHECK	SP-A110	EXHAUST	75	.25	950	49 W	115/1	CEILING EXHAUST W/BACK DRAFT DAMPER AND SOLID STATE SPEED CONTROL.	
EF-2	GREENHECK	SP-A250	EXHAUST	225	.25	1000	83 W	115/1	CEILING EXHAUST W/BACK DRAFT DAMPER AND SOLID STATE SPEED CONTROL.	

			. Al	R DEVICE	SCHEDU	_E		
MARK	MANU.	MODEL	MAX CFM	MAX VEL FPM	MAX ESP IN WG	MAX NC	NECK SIZE	REMARKS
D2	TITUS	300FL	300			30	12"X6"	SIDEWALL 12"X6" FACE/SUPPLY
R	TITUS	50F	2000			30	22"x22"	24"x24" FACE EGGCRATE GRILLE / LAY-IN / RETURN, EXHAUS

					FAN C	OIL UNIT SO	CHEDULE					
					FAN D	ATA	OUTSIDE	ELECTRICAL			HEAT	
							AIR	V /DU	MCA	MAX		
MARK	MANU.	MODEL	TYPE	LOCATION	CFM	ESP	CFM	V/PH	MCA	OVERCURRENT	KW	REMARKS
FCU-11,12,13,14	MITSUBISHI	PKA-A24HA	WALL MOUNTED	STORAGE ROOM	705			208/1	1.0			SINGLE POINT CONNECTION

NOTE: 1. PROVIDE WALL MOUNTED FACTORY SUPPLIED DIGTIAL THERMOSTAT 2. INDOOR UNIT RECIEVES POWER FROM OUTDOOR UNIT THROUGH FIELD SUPPLIED INTERCONNECTED WIRING. 3. PROVIDE CONDENSATE PUMP ACCESSORY FROM MANUFACTURER (MITSUBISHI MODEL #SI1730-230).

CONDENSING UNIT SCHEDULE SCHEDULE										
	COOLING HEATING ELECTRICAL									
				CAPACITY	CAPACITY				MAX	
MARK	DESCRIPTION	MANU.	MODEL	TONS	BTU/H	SEER	PH	MCA	OVERCURRENT	REMARKS
CU-11,12,13,14	CONDENSING UNIT	MISTUBISHI	PUY-A24NHA	2	N/A	17.0	208/1	18	30	

INTERIM REVIEW ONLY
Document Incomplete: Not intended for permit or construction.
Engineer: N. Curt Jones, P.E.
P.E. Serial No.: <u>58428</u>

Consulting Mechanical/Electrical/Plumbing Engineers 9820 Whithorn Dr. Houston, Texas 77095 (713)222-7766 Texas Registered Engineering Firm #F-3811

Date: <u>11 October 2013</u>

 φ

Nonya Gr ARCHITE

Tower se 4 Renc

Progress Set

Mechanical Details

Date: 6/21/13