

DOCUMENT 00 91 13 - ADDENDA

ADDENDUM NO.1:

DATE: April 14, 2015

PROJECT: Phase 1 Remodeling for New State's Attorney Office Facility  
Will County Court Annex  
57 N. Ottawa St & 57 W. Jefferson St.  
Joliet, Illinois

ARCHITECT/  
ENGINEER: Andrew R. Partak, Jr., AIA, Architect  
14141 W. Bruns Road  
Manhattan, Illinois 60442

PROJECT NO.: R1307

TO: All holders of Bidding Documents of Record.

This Addendum forms part of and modifies the Bidding/Contract Documents for the subject Project, dated March 17, 2015. Receipt of this Addendum is to be acknowledged by Bidders in the space provided on the Bid Form. FAILURE TO SO DO WILL SUBJECT THE BIDDER TO DISQUALIFICATION.

This Addendum consists of Two (2) pages, plus attachments.

**ADDENDUM ITEMS:**

**DRAWINGS:**

ITEM NO. 1: SHEET A5, Detail 1/A5 Typical Window Sill Detail: The scale of this detail is 1-1/2" = 1'-0".

ITEM NO. 2: SHEET M-5 – Roof HVAC plan [East]: Drawing shall be revised as indicated on attached Sheet M-5, revised 4/10/15.

ITEM NO. 3: SHEET MS-1 – HVAC Details: Drawing shall be revised as indicated on attached Sheet MS-1, revised 4/10/15.

ITEM NO. 4: SHEET MS-2 – HVAC Schedules: Drawing shall be revised as indicated on attached Sheet MS-2, revised 4/10/15.

ITEM NO. 5: SHEET MS-3 – HVAC Notes & Schedules: Drawing shall be revised as indicated on attached Sheet MS-3, revised 4/10/15.

**PROJECT MANUAL:**

**SPECIFICATIONS:**

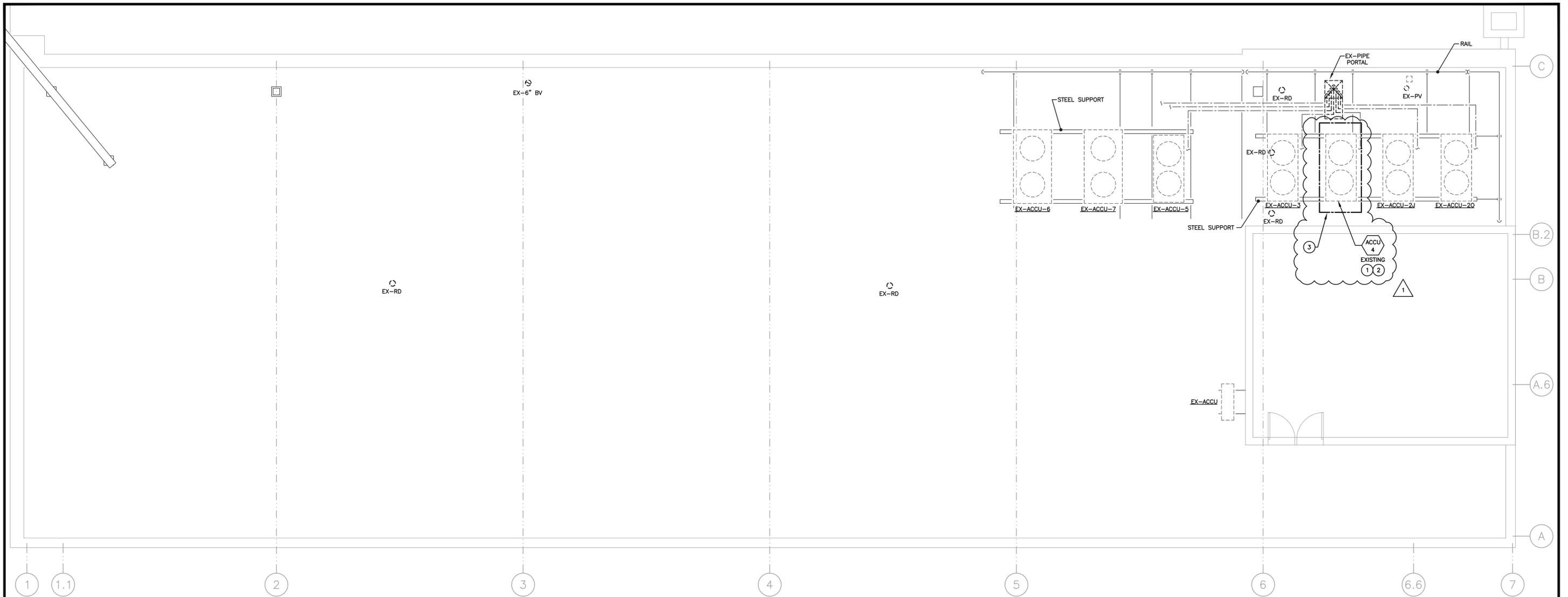
ITEM NO. 6: SECTION 09 68 16, Sheet Carpet: Delete section in its entirety and replace with attached Section 09 68 13, Carpet Tile.

**CLARIFICATIONS:**

ITEM NO. 7: Contractor's are responsible for costs associated with vehicle parking.

ITEM NO. 8: The Owner and the Architect shall be named as additional insured's on all insurance. Refer to Section 00 73 00 – Supplementary Conditions, Page 00 73 00-6, Paragraph .11.

END OF ADDENDUM 00 91 13



**ROOF HVAC PLAN**  
 SCALE: 1/4" = 1'-0" EAST SIDE

- PLAN NOTES**
- ① CLEAN EXISTING CONDENSER COILS, TEST & RECHARGE R-22 REFRIGERANT AS REQUIRED.
  - ② EXISTING CONDENSING UNITS, REFRIGERANT PIPING, AND VALVES TO REMAIN. APR HOT GAS BYPASS VALVES TO BE REPLACED, SEE DETAILS #R-1 & #R-10.
  - ③ ALTERNATE #1: NEW CONDENSING UNIT TO BE INSTALLED IN SAME LOCATION AS EXISTING DEMOLISHED UNIT. SEE MS SHEETS FOR MORE INFORMATION.

4/10/15 GENERAL REVISIONS

ROOF HVAC PLAN (EAST)

R1307A

PRIOR TO INSTALLATION, VERIFY ALL DUCTWORK, PIPING, WIRING, CONDUITS AND EQUIPMENT LOCATIONS SHOWN ON DRAWINGS TO AVOID CONFLICTS WITH THE BUILDING STRUCTURE, WALLS, CEILINGS, LIGHTS, ELECTRICAL ITEMS AND/OR OTHER TRADE ITEMS. NOTIFY DESIGN ENGINEER IN WRITING PRIOR TO ANY CHANGES.

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**ANDREW R. PARTAK, JR. AIA**  
 ARCHITECT

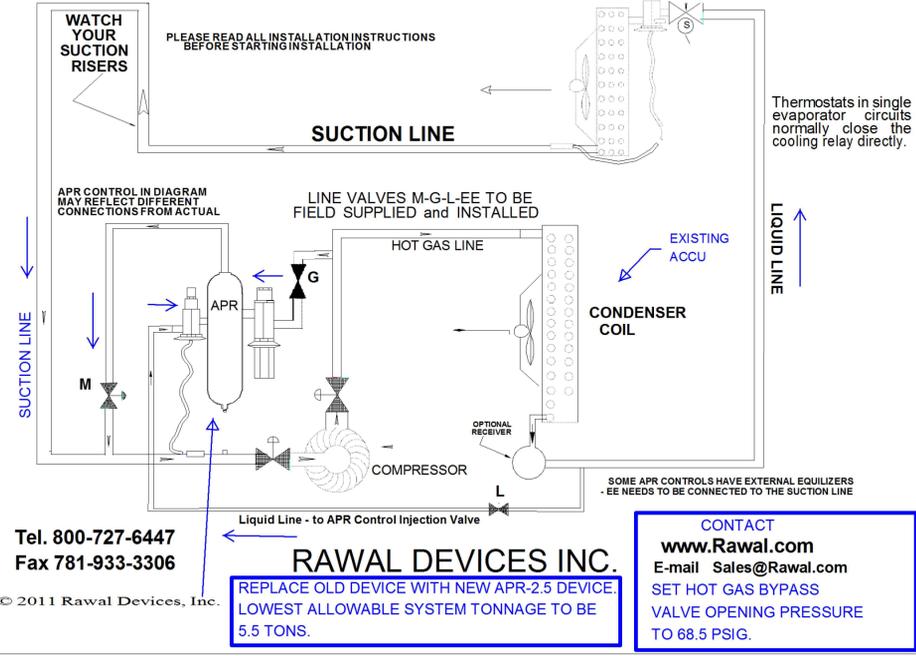
14141 W. BRUNS ROAD  
 MANHATTAN, ILLINOIS 60442 (815) 478-5604

DRAWN BY: UE
DATE: 3/17/15

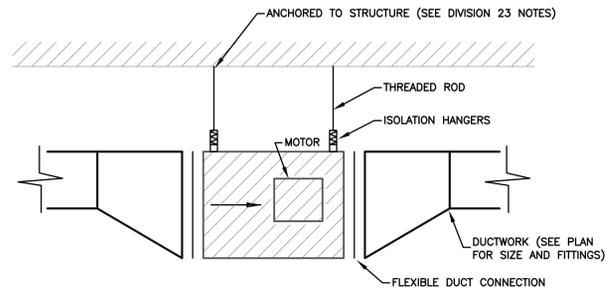
**PHASE ONE OFFICE REMODELING**  
 WILL COUNTY COURT ANNEX  
 OTTAWA & JEFFERSON STS., JOLIET, ILL.  
 COUNTY OF WILL, OWNER

**SHEET**  
**M-5**  
 OF X

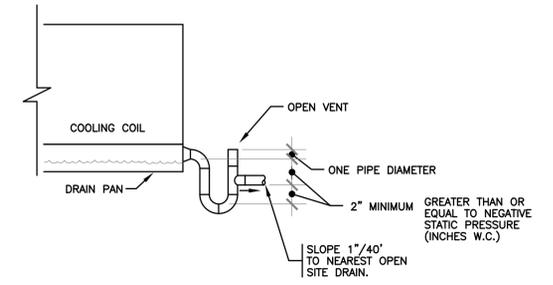
# APR IN SINGLE EVAPORATOR MODE WITH REMOTE AIR-COOLED CONDENSER



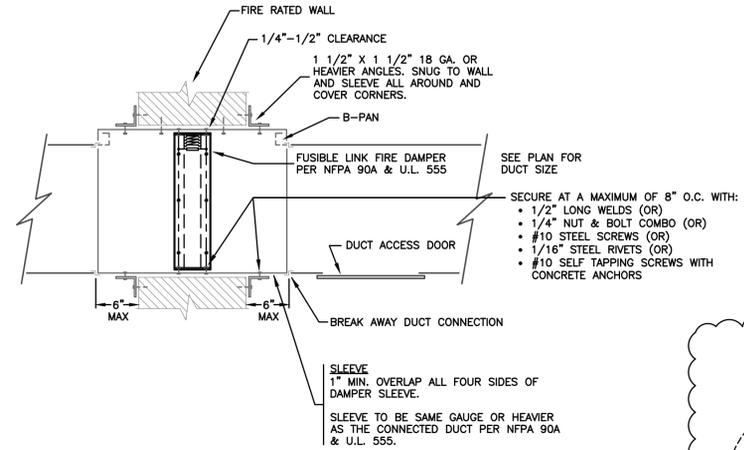
HOT GAS BYPASS DETAIL  
NO SCALE #R-10



INLINE FAN SECTION DETAIL  
NO SCALE #D-2-7B

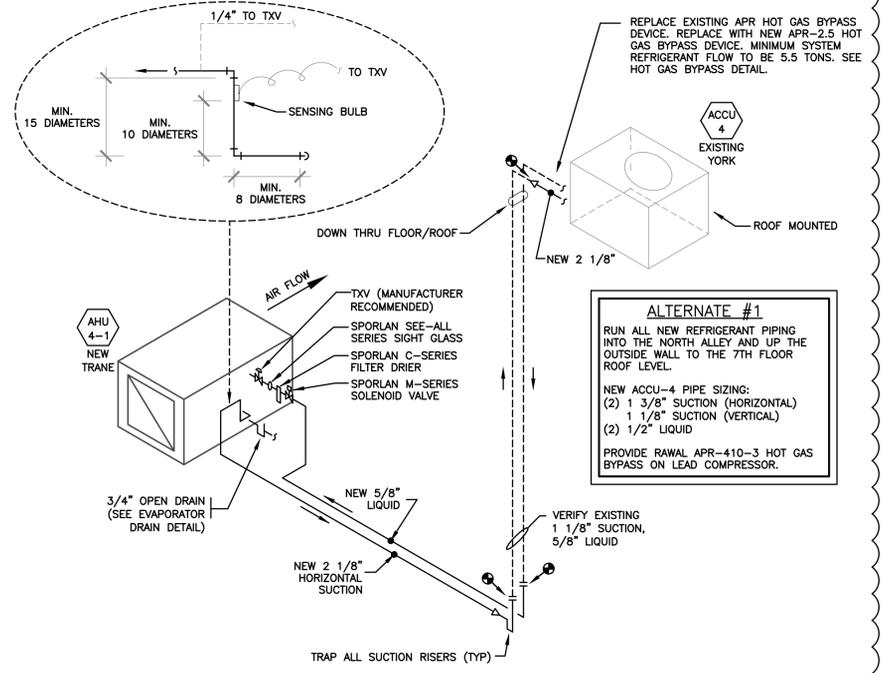


EVAPORATOR DRAIN DETAIL (DRAW THRU)  
NO SCALE #P-13

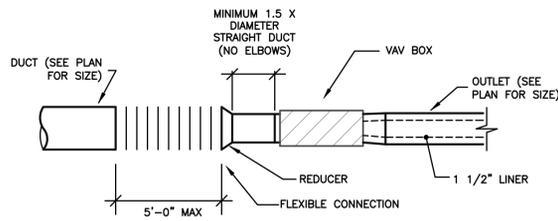


TYPE "B" FIRE DAMPER  
DETAIL IN DUCT  
NO SCALE #D-3-4

- ALTERNATE #1 TYPICAL REFRIGERANT PIPING INSTALLATION NOTES**
- R-410A IS A HIGHER PRESSURE REFRIGERANT THAT REQUIRES COMPONENTS OF THE SYSTEM TO BE RATED ACCORDINGLY.
  - ROUTE ALL REFRIGERANT PIPING AS STRAIGHT AS POSSIBLE. AVOID UNNECESSARY CHANGES OF DIRECTION.
  - SUCTION LINES TO BE INSTALLED WITH A SLOPE OF 1/4" TO 1" PER 10 FEET OF RUN TOWARD THE INDOOR COIL.
  - LIQUID LINE TO BE INSTALLED WITH A SLIGHT SLOPE IN THE DIRECTION OF FLOW. SIMILAR TO SUCTION LINE.
  - DOUBLE RISERS MUST NOT BE INSTALLED.
  - DO NOT INSTALL RISER TRAPS. (SEE THE TRANE TUBE SIZE AND COMPONENT SELECTION APPLICATION GUIDE FOR TRANE TTA UNITS USING R-410A REFRIGERANT.)
  - NEW FILTER DRIER, TXV, SIGHT GLASS, ACCESS PORTS ETC. TO BE PER THE MANUFACTURERS INSTALLATION RECOMMENDATIONS.
  - REMOVE THE PRE-INSTALLED FILTER DRIER FROM THE NEW TRANE TTA CONDENSING UNIT. INSTALL A NEW FILTER DRIER PER MANUFACTURERS RECOMMENDATIONS.
  - PROVIDE AND INSTALL ACCESS PORTS (SCHRAEDER VALVE WITH A CORE) AT THE CONDENSING UNIT AND THE EVAPORATOR.
  - WARNING: DO NOT INSTALL A LIQUID LINE SOLENOID VALVE IN ANY SYSTEM EQUIPPED WITH A CHECK VALVE. FAILURE TO FOLLOW THIS RECOMMENDATION COULD RESULT IN A REFRIGERANT LINE EXPLODING UNDER PRESSURE WHICH COULD RESULT IN DEATH OR SERIOUS INJURY.
  - REFER TO MANUFACTURERS APPLICATION GUIDES AND INSTALLATION/OPERATION MANUALS FOR MORE INFORMATION.

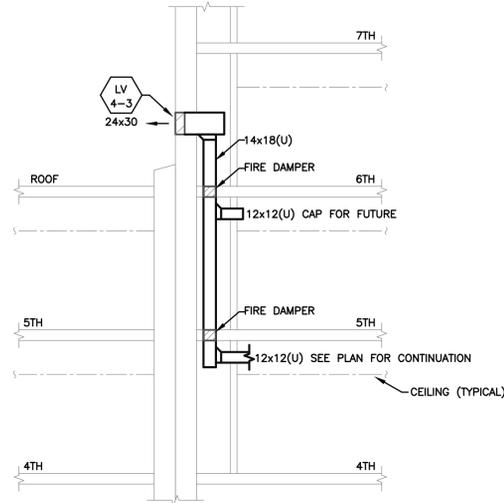


REFRIGERANT PIPING DIAGRAM  
NO SCALE #R-1

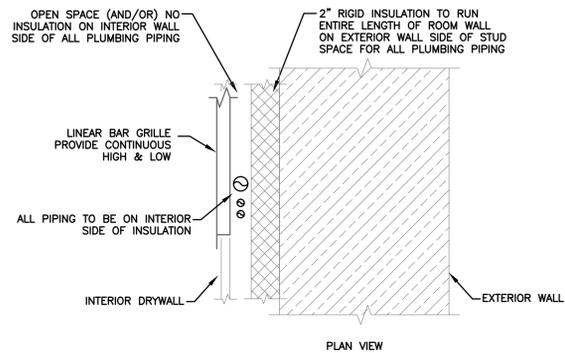


TYPICAL VAV BOX DETAIL  
NO SCALE #D-1-5

VAV CONN. SCHEDULE	
INLET SIZE	MIN. INLET STRAIGHT DUCT LENGTH
4"	12"
5"	12"
6"	12"
7"	12"
8"	12"
9"	18"
10"	18"
12"	18"
14"	24"



EXHAUST RISER DETAIL  
NO SCALE #D-2-12



OUTSIDE WALL PIPING DETAIL  
NO SCALE #D-1-14

4/10/15 GENERAL REVISIONS

HVAC DETAILS

R1307A

PRIOR TO INSTALLATION, VERIFY ALL DUCTWORK, PIPING, WIRING, CONDUITS AND EQUIPMENT LOCATIONS SHOWN ON DRAWINGS TO AVOID CONFLICTS WITH THE BUILDING STRUCTURE, WALLS, CEILINGS, LIGHTS, ELECTRICAL ITEMS AND/OR OTHER TRADE ITEMS. NOTIFY DESIGN ENGINEER IN WRITING PRIOR TO ANY CHANGES.

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DRAWN BY:	UE
DATE:	3/17/15

PHASE ONE OFFICE REMODELING  
WILL COUNTY COURT ANNEX  
OTTAWA & JEFFERSON STS., JOLIET, ILL.  
COUNTY OF WILL, OWNER

SHEET  
**MS-1**  
OF X

ROOM NUMBER & NAME	AREA (S.F.)	Ref. No.	OCCUPANCY CLASSIFICATION	VENTILATION										Equipment Note						
				P/1000	CODE	ACTUAL	CFM/F	CFM	CFM/6F	CFM	Vbz	CFM	FIX		CFM/	CFM/	CFM			
401-DRUG OFF. 5	180	45	OFF-OFFICE SPACES	5	0.9	1.0	5	5	0.06	11	16	-	0	-	-	-	-	-	-	
402-DRUG OFF. 4	125	45	OFF-OFFICE SPACES	5	0.6	1.0	5	5	0.06	8	13	-	0	-	-	-	-	-	-	
403-DRUG OFF. 3	125	45	OFF-OFFICE SPACES	5	0.6	1.0	5	5	0.06	8	13	-	0	-	-	-	-	-	-	
404-DRUG OFF. 2	125	45	OFF-OFFICE SPACES	5	0.6	1.0	5	5	0.06	8	13	-	0	-	-	-	-	-	-	
405-DRUG OFF. 1	125	45	OFF-OFFICE SPACES	5	0.6	1.0	5	5	0.06	8	13	-	0	-	-	-	-	-	-	
406-COMP. OFF. 1	125	45	OFF-OFFICE SPACES	5	0.6	1.0	5	5	0.06	8	13	-	0	-	-	-	-	-	-	
407-COMP. OFF. 2	125	45	OFF-OFFICE SPACES	5	0.6	1.0	5	5	0.06	8	13	-	0	-	-	-	-	-	-	
408-COMP. OFF. 3	125	45	OFF-OFFICE SPACES	5	0.6	1.0	5	5	0.06	8	13	-	0	-	-	-	-	-	-	
409-COMP. OFF. 4	125	45	OFF-OFFICE SPACES	5	0.6	1.0	5	5	0.06	8	13	-	0	-	-	-	-	-	-	
410-COMP. OFF. 5	120	45	OFF-OFFICE SPACES	5	0.6	1.0	5	5	0.06	7	12	-	0	-	-	-	-	-	-	
420-DRUG OFF. 6	150	45	OFF-OFFICE SPACES	5	0.8	1.0	5	5	0.06	9	14	-	0	-	-	-	-	-	-	
421-DRUG OFF. 7	200	45	OFF-OFFICE SPACES	5	1.0	1.0	5	5	0.06	12	17	-	0	-	-	-	-	-	-	
419-DRUG GEN. OFF.	655	45	OFF-OFFICE SPACES	5	3.3	4.0	5	20	0.06	39	59	-	0	-	-	-	-	-	-	
419A-HALL	95	49	PS-CORRIDORS	0	0.0	0.0	0	0	0.06	6	6	-	0	-	-	-	-	-	-	
422-DRUG OFF. 8	130	45	OFF-OFFICE SPACES	5	0.7	1.0	5	5	0.06	8	13	-	0	-	-	-	-	-	-	
423-DRUG OFF. 9	135	45	OFF-OFFICE SPACES	5	0.7	1.0	5	5	0.06	8	13	-	0	-	-	-	-	-	-	
415-IT/WORKROOM	225	94	WORK-COMPUTER (W/O PRINTING)	4	0.9	1.0	5	5	0.06	14	19	-	0	-	-	-	-	-	-	
416-PRINTER/COPIER	95	94	WORK-COMPUTER (W/O PRINTING)	4	0.4	1.0	5	5	0.06	6	11	-	0	-	-	-	-	-	-	
417-DRUG RECORDS	160	65	RET-STORAGE ROOMS	0	0.0	0.0	0	0	0.12	19	19	-	0	-	-	-	-	-	-	
412A-HALL	330	49	PS-CORRIDORS	0	0.0	0.0	0	0	0.06	20	20	-	0	-	-	-	-	-	-	
411-STORAGE	100	95	CLOSET	0	0.0	0.0	0	0	0	0	0	-	0	-	-	-	-	-	-	
411A-STAIR	110	96	STAIR	0	0.0	0.0	0	0	0	0	0	-	0	-	-	-	-	-	-	
412-HALL	280	49	PS-CORRIDORS	0	0.0	0.0	0	0	0.06	17	17	-	0	-	-	-	-	-	-	
413-WOMENS	135	53	PS-TOILET ROOMS (Jan Clos=1 WC)	0	0.0	0.0	0	0	0	0	0	-	2	75	0	150	-	-	-	
414-MENS	135	53	PS-TOILET ROOMS (Jan Clos=1 WC)	0	0.0	0.0	0	0	0	0	0	-	2	75	0	150	-	-	-	
412A-HALL	180	49	PS-CORRIDORS	0	0.0	0.0	0	0	0.06	11	11	-	0	-	-	-	-	-	-	
418-COMP. GEN. OFF.	645	45	OFF-OFFICE SPACES	5	3.2	4.0	5	20	0.06	39	59	-	0	-	-	-	-	-	-	
	5070				17.4	24		120		285	405		100							

ROOM NAME & NUMBER	SUPPLY (CFM)			VENTILATION (CFM)			OA Fraction Zp/Voz/Vpz	Ventilation Note
	Load	91%	32%	Voz	CFM	CFM		
401-DRUG OFF. 5	470	428	42	42	1	16	37.4%	-
402-DRUG OFF. 4	230	210	35	35	1	13	36.2%	-
403-DRUG OFF. 3	230	210	35	35	1	13	36.2%	-
404-DRUG OFF. 2	230	210	35	35	1	13	36.2%	-
405-DRUG OFF. 1	230	210	35	35	1	13	36.2%	-
406-COMP. OFF. 1	230	210	35	35	1	13	36.2%	-
407-COMP. OFF. 2	230	210	35	35	1	13	36.2%	-
408-COMP. OFF. 3	230	210	35	35	1	13	36.2%	-
409-COMP. OFF. 4	230	210	35	35	1	13	36.2%	-
410-COMP. OFF. 5	230	210	35	35	1	12	35.4%	-
420-DRUG OFF. 6	280	255	39	39	1	14	35.7%	-
421-DRUG OFF. 7	400	364	56	56	1	17	30.4%	-
419-DRUG GEN. OFF.	380	346	163	163	1	59	36.3%	-
419A-HALL	50	46	22	22	1	6	26.5%	-
422-DRUG OFF. 8	80	73	34	34	1	13	37.2%	-
423-DRUG OFF. 9	80	73	34	34	1	13	38.1%	-
415-IT/WORKROOM	170	155	170	170	1	19	10.9%	-
416-PRINTER/COPIER	150	137	150	150	1	11	7.1%	-
417-DRUG RECORDS	50	46	50	50	1	19	38.4%	-
412A-HALL	80	73	80	80	1	20	24.8%	-
411-STORAGE	50	46	33	33	1	0	0.0%	-
411A-STAIR	40	36	26	26	1	0	0.0%	-
412-HALL	70	64	46	46	1	17	38.2%	-
413-WOMENS	50	46	33	33	1	0	0.0%	-
414-MENS	50	46	33	33	1	0	0.0%	-
412A-HALL	50	46	33	33	1	11	33.2%	-
418-COMP. GEN. OFF.	370	337	241	241	1	59	24.4%	-
	4940	4500	1594	1594		405		

Multiple Zone = 1  
Single or 100% = 2  
Max Zp = 38.4%  
Ev = 0.7  
O/A Percent: Critical Space  
Corrected Total Outdoor Airflow Rate

AIR COOLED CONDENSING UNIT SCHEDULE		
TAG	ACCU-4	ACCU-4 (ALT. #1)
LOCATION SERVING	4TH FLOOR (EAST)	4TH FLOOR (EAST)
MFGR.	YORK	TRANE
MODEL	H1CE150A46C	TTA180E
NOMINAL TONS	12.5	15
REF. TYPE	R-22	R-410A
CAPACITY (MAX. MBH)	144	163
% UNLOAD	100% (1 STAGE)	50% (2 STAGE)
CIRCUITS	1	2
COMPRESSOR DATA	QTY	1
	TYPE	SCROLL
	MANUF.	MANIFOLDED SCROLL
ELECTRICAL DATA	MCA/MOCP	27/35
	VOLT	460
	PHASE	3
UNIT WEIGHT (LBS.)	900	
REMARKS/ACCESSORIES	2	1,3,4,5

- ACCEPTABLE ALTERNATES: YORK, CARRIER
- EXISTING
- NEW
- CRANKCASE HEATER  
- ANTI-SHORT CYCLE TIMER  
- TIMED DELAY RELAY  
- LOW AMBIENT CONTROL
- DUAL CIRCUITED, FULL FACE AREA COIL

AIR HANDLING UNIT SCHEDULE		
TAG	AHU-4-1	AHU-4-1 (ALT. #1)
LOCATION SERVING	4TH FLOOR (EAST)	4TH FLOOR (EAST)
MFGR.	TRANE	TRANE
MODEL	CSAA-10	CSAA-10
REF. TYPE	R-22	R-410A
SUPPLY FAN DATA	CFM	4400
	SUPPLY ESP	2.2
	RETURN ESP	1.8
	RPM	2178
	HP	7.5
COIL DATA	VOLT	460
	PHASE	3
	COIL TYPE	DX COOLING
	CAPACITY (MBH)	144
	SUCTION TEMP.	50
AIR FILTER DATA	ROWS	6
	FINS (PER FOOT)	144
	CIRCUITS	
	P.D. (IN. H2O)	.6
	EAT (DB/WB)	80.5/65.5
FILTER DATA	TYPE	2" PLEATED MERV 8
	QTY.	
	SIZE (EA.)	
OUTDOOR AIR (CFM)	700	700
UNIT WEIGHT (LBS.)	1500	1500
REMARKS/ACCESSORIES	1,2,3,4	1,2,3,4,5

- ACCEPTABLE ALTERNATES: YORK, CARRIER
- NEW
- VERIFY AHU SECTIONS: COOLING COIL SECTION, ANGLED FILTER SECTION, SUPPLY FAN SECTION (SEE M-4)
- LEFT HAND ACCESS & CONNECTIONS  
- STAINLESS STEEL DRAIN PAN  
- VIBRATION ISOLATORS  
- DOUBLE WALL WITH FOAM INSULATION  
- HI EFFICIENCY TEFC MOTOR (ASHRAE 90.1 COMPLIANT)  
- PNEUMATIC CONTROLS
- DUAL CIRCUITED, FULL FACE AREA COIL

### VAV BOX SCHEDULE

TAG	MANUFACTURER	MODEL	SIZE		CFM		STATIC PRESSURE				NC LEVELS		ELECTRIC HEAT COIL				ELECTRICAL		CONTROL TYPE	REMARKS	
			UNIT	OUTLET	MAX	MIN	INLET	DOWN	MIN	RAD	DIS	CFM	KW	V/PH	STEPS	EAT	LAT	MCA	MOCP		
VAV 4-1	TITUS	PESV	08	12x10	470	320	1	0.25	0.02	20	18	320	4.5	277/1	S	57	101.4	21	25	PNEUMATIC	4th FLOOR/NEW
VAV 4-2	TITUS	PESV	08	12x10	690	360	1	0.25	0.04	24	21	360	5	480/3	S	57	100.9	8	15	PNEUMATIC	4th FLOOR/NEW
VAV 4-3	TITUS	PESV	08	12x10	690	360	1	0.25	0.04	24	21	360	5	480/3	S	57	100.9	8	15	PNEUMATIC	4th FLOOR/NEW
VAV 4-4	TITUS	PESV	08	12x10	690	360	1	0.25	0.04	24	21	360	5	480/3	S	57	100.9	8	15	PNEUMATIC	4th FLOOR/NEW
VAV 4-5	TITUS	PESV	08	12x10	680	320	1	0.25	0.04	24	21	320	4.5	277/1	S	57	101.4	21	25	PNEUMATIC	4th FLOOR/NEW
VAV 4-6	TITUS	PESV	08	12x10	590	0	1	0.25	0.01	23	20	-	-	-	-	-	-	-	-	PNEUMATIC	4th FLOOR/NEW
VAV 4-7	TITUS	PESV	08	12x10	450	0	1	0.25	0.01	19	17	-	-	-	-	-	-	-	-	PNEUMATIC	4th FLOOR/NEW
VAV 4-8	TITUS	PESV	08	12x10	680	450	1	0.25	0.04	24	21	450	4.5	277/1	S	57	101.4	21	25	PNEUMATIC	4th FLOOR/NEW

- NOTES:
- Acceptable Alternates: Price, Trane
  - New
  - Standard Features: Primary automatic reset thermal cutout, Secondary manual reset thermal cutout, Airflow switch, Derated nickel chrome heating elements, Magnetic or Safety contactors, Line terminal block, Control terminal block, ETL listed, 80/20 nickel chrome element wire.
  - All performance based on tests conducted in accordance with ASHRAE 130-2008 and AHRI 880-2008.
  - All NC levels determined using AHRI 885-2008 Appendix E.
  - All airflow, pressure losses and heating performance values have been corrected for altitude.
  - Units of measure: dimensions (in), airflow (cfm), water flow (gpm), air pressure (in wg), water head losses (ft) and temperatures (degF).
  - In the "Steps" column, code "S" denotes a modulating SCR heater.
  - The minimum supply circuit ampacity (MCA) and maximum overcurrent protection (MOP) ratings were calculated in accordance with UL standards based on motor and electric coil full load current ratings.
  - Provide PE switch in VAV box enclosure. Interlock with room electric baseboard heater. Field wire controls between VAV box, baseboard and t-stat (by controls contractor). Baseboards to be 1st stage and VAV box heater to be 2nd stage of heat.
  - Titus II dual minimum pneumatic controller with electric heat.

### WORK ITEM SCHEDULE

ITEM	PROVIDED BY	INSTALLED BY	WIRED BY	NOTES/REMARKS
SMOKE DETECTORS	EC	EC	EC	(A)
REMOTE TEST STATIONS	EC	EC	EC	(A)
CONTROL PANELS	CC	CC	CC	
T-STATS/REMOTE SENSORS	MC/CC	CC	CC	VAV'S, EBB'S
ELECTRICAL DISCONNECTS	EC	EC	EC	
OCCUPANCY SENSORS	EC	EC	EC	TOILET EF'S

- MC - MECHANICAL CONTRACTOR  
EC - ELECTRICAL CONTRACTOR  
CC - CONTROLS CONTRACTOR
- NOTES:  
(A) SEE DIVISION 23 NOTES ON MECHANICAL SHEETS FOR SMOKE DETECTOR AND REMOTE TEST STATION INFORMATION.

### FAN SCHEDULE

TAG
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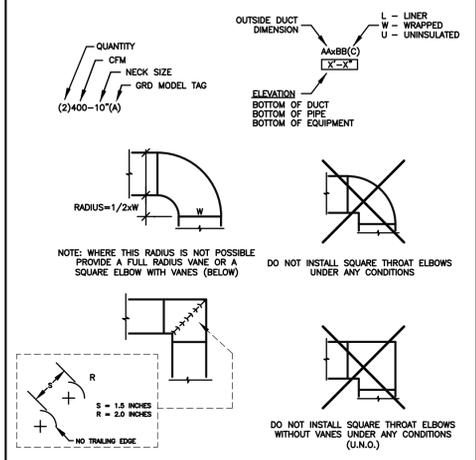
**DIVISION 23 (HVAC)**

**STANDARD SYMBOLS LEGEND**

	EQUIPMENT TAG		POINT OF NEW CONNECTION
	REVISION TAG		PHOTO VIEW POINT
	COLUMN LINE TAG		SECTION/DETAIL IDENTIFIER
			SECTION CUT
			SHEET LOCATION
N.I.C.	NOT IN CONTRACT	U.N.O.	UNLESS NOTED OTHERWISE

**DUCTWORK SYMBOLS LEGEND**

	S/A DIFFUSER	EX	- EXISTING
	R/A DIFFUSER	BV	- B-VENT
	SLOT DIFFUSER	PL	- PLUMBING VENT
	FLEXIBLE DUCT	RD	- ROOF DRAIN
	SPIN COLLAR	MOD	- MOTOR OPERATED DAMPER
	THERMOSTAT	MVD	- MANUAL VOLUME DAMPER
	REMOTE SENSOR	FD	- FIRE DAMPER
	VEHICLE EXHAUST SENSOR	OPD	- OPPOSED BLADE DAMPER
	HUMIDISTAT	PBD	- PARALLEL BLADE DAMPER
	CONTROL CABINET	BDD	- BACK DRAFT DAMPER
		SP	STATIC PRESSURE SENSOR
		SD	SMOKE DETECTOR
		SC	SPEED CONTROLLER
		SPS	SPACE PRESSURE SENSOR
		CO2	CARBON DIOXIDE SENSOR



**1) GENERAL:**  
 JOB SPECIFICATIONS ARE AS FOLLOWS:

CODE - CONTRACTOR TO LOCATE, REVIEW AND COMPLY WITH ALL LOCAL, STATE AND/OR NATIONAL CODES. CONTRACTOR TO SPECIFICALLY LOCATE, REVIEW AND COMPLY WITH ALL LOCAL CODE AMENDMENTS.

WORKMANSHIP/WARRANTY - CONTRACTOR IS RESPONSIBLE FOR ALL MEANS, MATERIALS, METHODS, TECHNIQUES, SEQUENCES AND DETAILS TO PERFORM ITS WORK. ALL MATERIALS, EQUIPMENT AND WORKMANSHIP, SHALL BE GUARANTEED FOR A MINIMUM OF ONE (1) YEAR FROM THE DATE THE EQUIPMENT/SYSTEMS ARE PLACED INTO OPERATION AND ACCEPTED BY THE OWNER. WARRANTY TO INCLUDE LABOR & MATERIALS REQUIRED FOR WARRANTY ISSUES.

SUBMITTALS - CONTRACTOR TO COORDINATE SUBMITTAL SCHEDULE WITH OWNER IMMEDIATELY AFTER ACCEPTANCE OF CONTRACT. AS SOON AS POSSIBLE, EMAIL NEW EQUIPMENT, FIXTURES AND/OR SHOP DRAWING SUBMITTALS (INCLUDING ALL ACCESSORIES). NO NEW EQUIPMENT, FIXTURES AND/OR SHOP DRAWING ITEMS ARE TO BE INSTALLED UNTIL SUBMITTED INFORMATION IS APPROVED. UPON COMPLETION OF PROJECT, CONTRACTORS TO PROVIDE (4) HARD COPIES OF OPERATION AND MAINTENANCE MANUALS FOR ALL NEW EQUIPMENT WITH TYPE WRITTEN SECTION TAGS AND IN SAME COLORED BINDERS.

SHOP DRAWINGS/AS BUILT DRAWINGS - BEFORE INSTALLATION, PROVIDE 1/4" SCALE 'SHOP DRAWINGS' FOR COORDINATION AND APPROVAL. 'SHOP DRAWINGS' TO SHOW DIMENSIONS, ELEVATIONS AND LOCATIONS OF ALL EQUIPMENT, DUCTWORK, PIPING, WIRING AND CONDUIT. INSTALLATION TO START ONLY AFTER WRITTEN APPROVAL FROM ENGINEER. UPON COMPLETION OF THE INSTALLATION WORK, PROVIDE 'AS BUILT' CHANGES CLEARLY SHOWING THE FINAL DIMENSIONS, ELEVATIONS AND LOCATIONS OF ALL EQUIPMENT, DUCTWORK, PIPING, WIRING AND CONDUIT. ALL SHOP DRAWING AND AS BUILT DRAWING CHANGES TO BE MADE WITH 'AUTO CAD' DRAFTING SOFTWARE AND SUBMITTED IN PAPER AND DIGITAL FORMAT. DESIGN DRAWINGS, NOTES AND/OR ADDENDUMS ARE NOT TO BE COPIED OR REPRODUCED IN ANY WAY FOR USE AS 'SHOP DRAWINGS' OR SUBMITTALS. PROVIDE FOUR PAPER COPIES OF DRAWINGS.

OPERATION AND MAINTENANCE MANUALS - CONTRACTOR TO PROVIDE OPERATION AND MAINTENANCE MANUALS WITH THE FOLLOWING:  
 - WARRANTY LETTER FROM CONTRACTOR.  
 - COMPLETE LIST OF MODEL NUMBERS AND SERIAL NUMBERS FOR EACH PIECE OF EQUIPMENT  
 - INSTALLATION AND OPERATION MANUALS FOR EACH PIECE OF EQUIPMENT  
 - PARTS LIST FOR EACH PIECE OF EQUIPMENT  
 - LOCATION AND PHONE NUMBER FOR LOCAL VENDORS FOR EACH PIECE OF EQUIPMENT FOR PARTS AVAILABILITY FOR FUTURE  
 - SCHEMATIC REPRESENTATION OF LOCATION FOR EACH PIECE OF EQUIPMENT

ACCESS DOORS - CONTRACTOR TO FURNISH AND INSTALL ACCESS DOORS AS REQUIRED. MEP TRADE TO COORDINATE WITH CARPENTRY CONTRACTOR THE LOCATION OF ACCESS DOORS IN ALL CEILINGS, SOFFITS AND WALLS FOR ACCESS TO EQUIPMENT, VALVES, DAMPERS, FIRE DAMPERS, CLEAN OUTS, SWITCHES, CONTROLS, ETC.

STRUCTURE PROTECTION - THE BUILDING OR STRUCTURE SHALL NOT BE WEAKENED BY THE INSTALLATION OF MECHANICAL SYSTEMS, WHERE FLOORS, WALLS, CEILINGS OR ANY OTHER PORTION OF THE BUILDING OR STRUCTURE ARE REQUIRED TO BE ALTERED OR REPLACED IN THE PROCESS OF INSTALLING OR REPAIRING ANY SYSTEM, THE BUILDING OR STRUCTURE SHALL BE LEFT IN A SAFE STRUCTURAL CONDITION IN ACCORDANCE WITH THE INTERNATIONAL BUILDING CODE AND INTERNATIONAL MECHANICAL CODE.

FIRE RESISTANT ASSEMBLIES - PENETRATIONS OF WALL/FLOOR/CEILING ASSEMBLIES AND ASSEMBLIES REQUIRED TO HAVE A FIRE-RESISTANCE RATING SHALL BE PROTECTED IN ACCORDANCE WITH THE INTERNATIONAL BUILDING CODE.

ACCESSIBILITY - MANUAL ACCESSIBLE ITEMS IN OCCUPIED SPACES (SUCH AS CONTROLS, THERMOSTATS, SWITCHES AND ELECTRICAL OUTLETS) TO BE LOCATED NO HIGHER THAN 48" AND NO LOWER THAN 15" PER THE AMERICANS WITH DISABILITIES ACT (ADA) REQUIREMENTS. VERIFY LOCAL ACCESSIBILITY CODE REQUIREMENTS OVER AND ABOVE THE ADA REQUIREMENTS. COORDINATE FINAL MOUNTING HEIGHTS WITH OWNER.

**2) GENERAL HVAC CONDITIONS:**  
 KEEP OUTSIDE AIR INTAKES A MINIMUM OF 10'-0" AWAY FROM CONTAMINANT SOURCES.

KEEP B-VENTS A MINIMUM OF 3'-0" ABOVE ROOF PENETRATION AND/OR 2'-0" ABOVE ANY PART OF THE BUILDING WITHIN 10'-0". B-VENTS TO CLEAR COMBUSTIBLES BY 3" MIN.

THERMOSTATS, SENSORS AND CONTROL PANELS FOR HVAC EQUIPMENT SHALL BE LOCATED IN ACCORDANCE WITH THE MECHANICAL PLANS. FURNISH AND INSTALL CLEAR LOCKING COVERS FOR ALL T-STATS. ALL COVERS TO BE KEYPED THE SAME.



PANEL EXTERIOR

**EXISTING PNEUMATIC CONTROL PANEL**

FOR REFERENCE ONLY (SEVENTH FLOOR AHU)

**3) DUCTWORK:**  
 ALL DUCTWORK SHALL MEET S.M.A.C.N.A. STANDARDS AS LISTED IN THE INTERNATIONAL MECHANICAL CODE. DUCTWORK TO BE GALVANIZED SHEET METAL UNLESS NOTED OTHERWISE.

RECTANGULAR S/A	- 1 1/2" LINER, UNLESS NOTED OTHERWISE.
RECTANGULAR R/A	- 1 1/2" LINER, UNLESS NOTED OTHERWISE.
RECTANGULAR E/A	- UNINSULATED.
RECTANGULAR O/A	- 2" FIBERGLASS WRAP
ROUND S/A	- 2" FIBERGLASS WRAP
ROUND R/A	- UNINSULATED.
ROUND E/A	- UNINSULATED.
FLEX S/A	- INSULATED (5'-0" MAXIMUM LENGTH)
FLEX R/A	- INSULATED (5'-0" MAXIMUM LENGTH)
FLEX E/A	- UNINSULATED (5'-0" MAXIMUM LENGTH)
RECT. DUCT LENGTHS	- 59" WITH S&D JOINTS
DIMENSIONS	- OUTSIDE DIMENSIONS SHOWN ON PLANS
ELBOW RADIUS	- ONE HALF THE DUCT WIDTH (SEE DUCTWORK SYMBOLS LEGEND)
SHOE-TAPS	- 6" LONG
BALANCING DAMPERS	- ALL FINAL DIFFUSER & GRILLE TAP LOCATIONS (LOCKING TYPE)
CONTROL DAMPERS (MOD)	- OPPOSED BLADE AIRFOIL TYPE (RUSKIN CD60)
BACKDRAFT DAMPERS	- ALUMINUM MEDIUM DUTY TYPE (RUSKIN BD6)
DUCT PRESSURE CLASS	- 1" W.C. (LOW PRESSURE)
DUCT SEAL CLASS	- CLASS A
INSULATION & LINER	- MINIMUM R-6 FOR INTERIOR DUCTWORK, MINIMUM R-8 FOR EXTERIOR DUCTWORK. ADD INSULATION TO LINED DUCTWORK IF NEEDED.
	- DUCT LINER TO BE KNAUF SONIX XP DUCT LINER (1.5 PCF) OR OWENS CORNING EQUIVALENT
	- DUCT WRAP FOR INTERIOR DUCTWORK TO BE KNAUF FRIENDLY FEEL DUCT WRAP (1.5 PCF) OR OWENS CORNING EQUIVALENT.

**DUCTWORK (MEDIUM PRESSURE):**

RECTANGULAR S/A TO BOX	- 56" TDC JOINTS
	- 1 1/2" LINER
	- 3" PRESSURE CLASS (SEAL CLASS A)
RECTANGULAR R/A	- 56" TDC JOINTS
	- 1 1/2" LINER
	- 2" PRESSURE CLASS (SEAL CLASS A)
ROUND S/A TO BOX	- 5" JOINTS, SPIRAL
	- 2" WRAP
	- 3" PRESSURE CLASS (SEAL CLASS A)
FLEX S/A TO BOX	- 4" JOINTS
	- INSULATED
	- 3" PRESSURE CLASS (SEAL CLASS A)
DUCTWORK DOWNSTREAM OF BOX	- (SEE LOW PRESSURE DUCTWORK NOTES)
INSULATION & LINER	- MINIMUM R-6 FOR INTERIOR DUCTWORK, MINIMUM R-8 FOR EXTERIOR DUCTWORK. ADD INSULATION TO LINED DUCTWORK IF NEEDED.

\* ALL RECTANGULAR BRANCH DUCTS TO HAVE OPPOSED BLADE DAMPERS.

\* ALL JOINTS, LONGITUDINAL AND TRANSVERSE SEAMS, AND CONNECTIONS IN DUCTWORK, SHALL BE SECURELY FASTENED AND SEALED WITH WELDS, GASKETS, MASTICS (ADHESIVES), MASTIC-PLUS-EMBEDDED-FABRIC SYSTEMS, OR TAPES, TAPE AND MASTICS USED TO SEAL DUCTWORK SHALL BE LISTED AND LABELED IN ACCORDANCE WITH UL 181A OR UL 181B. DUCT CONNECTIONS TO FLANGES OF AIR DISTRIBUTION SYSTEM EQUIPMENT SHALL BE SEALED AND MECHANICALLY FASTENED. DUCT TAPE IS NOT PERMITTED AS A SEALANT ON ANY METAL DUCTS.

**4) PIPING:**  
 ALL HVAC PIPING AND PIPE MATERIALS TO MEET ASTM AND ASME STANDARDS AS LISTED IN THE INTERNATIONAL MECHANICAL CODE AND LOCAL CODES. CONTACT THE CITY/TOWNSHIP FOR THE PROPER EDITIONS AND AMENDMENTS OF THE ALL RELATIVE CODE PUBLICATIONS. ALL GAS PIPING AND MATERIALS TO MEET ASTM STANDARDS AS LISTED IN THE INTERNATIONAL FUEL GAS CODE.

PRESSURE RATINGS - PIPE, FITTING AND VALVE PRESSURE RATINGS TO EXCEED MAXIMUM SYSTEM OPERATING PRESSURE BY A MINIMUM OF 20%. VERIFY EACH PIPE SYSTEM OPERATING PRESSURE BEFORE INSTALLATION.

REFRIGERANT PIPING:  
 ALL REFRIGERANT PIPING TO BE TYPE "ACR" COPPER. SUCTION LINES TO BE INSULATED. LIQUID LINES TO BE UNINSULATED.

DRAIN PIPING:  
 ALL DWV PIPING TO BE PLAIN END SCH. 40 DWV PVC WITH SOCKET TYPE DWV PVC FITTINGS.

PIPE INSULATION (KNAUF EARTHWOOL 1000' PIPE INSULATION OR OWENS CORNING EQUIVALENT) (PER 2012 IECC):  
 BASED ON INSULATION HAVING A CONDUCTIVITY NOT EXCEEDING 0.27 BTU PER INCH/HR · FT<sup>2</sup> · °F.

REFRIGERANT SUCTION LINES - 3/4" CLOSED CELL ELASTOMERIC REFRIGERANT PIPE INSULATION (INSUL-TUBE OR EQUAL)

**6) ANCHORING, SUPPORT & ISOLATION (EQUIPMENT, PIPING & DUCTWORK):**  
**ANCHORING & SUPPORT:**  
 ANCHOR ALL EQUIPMENT, DUCTWORK AND PIPING TO APPROVED STRUCTURES WITH UL LISTED AND FACTORY MUTUAL APPROVED ANCHORING AND SUPPORT PRODUCTS. APPROVED ANCHORING SYSTEMS INCLUDE CONCRETE DROP IN ANCHORS, TOP CHORD MOUNTED C-CLAMPS AND TOP CHORD MOUNTED BEAM CLIP DUCTWORK STRAP HANGERS. APPROVED SUPPORT SYSTEMS INCLUDE MINIMUM 3/8" THREADED ROD, MINIMUM 1" 20 GAUGE SHEET METAL DUCT STRAPS, U-CHANNELS, ANGLE IRON AND/OR PIPE, CLEVIS HANGERS. FOLLOW THE ABOVE REQUIREMENTS UNLESS NOTED OTHERWISE BY EQUIPMENT MANUFACTURER OR STAMPED STRUCTURAL SUPPORT DRAWINGS.

**EQUIPMENT VIBRATION ISOLATION:**  
 FURNISH AND INSTALL VIBRATION ISOLATION TO PREVENT TRANSMISSION OF SOUND AND VIBRATION FROM MOTORIZED AND ROTATING EQUIPMENT TO THE BUILDING STRUCTURE. TYPICAL APPROVED VIBRATION ISOLATION PRODUCTS INCLUDE ISOLATION HANGERS, ISOLATION SPRINGS, ISOLATION PADS AND ISOLATION CURBS. PROVIDE THE ABOVE ISOLATION FOR ALL EQUIPMENT 1/2 HORSEPOWER OR GREATER OR AS PER THE MANUFACTURERS RECOMMENDATIONS. FURNISH AND INSTALL ISOLATION CURBS AND FLEXIBLE PIPING CONNECTIONS ONLY AS SPECIFICALLY NOTED ON PLANS.

FURNISH AND INSTALL EQUIPMENT DUCTWORK CONNECTIONS WITH SIX INCH (6") LONG DOUBLED THICK, AIR TIGHT, WATER TIGHT AND FIREPROOF FLEXIBLE CONNECTORS. (AIR HANDLING UNITS, INLINE FANS, UTILITY SETS, ROOF MOUNTED UNITS WITH ISOLATION PADS OR ISOLATION CURBS, ETC.)

**PIPING SUPPORT:**  
 PIPING TO BE SUPPORTED WITH CLEVIS HANGERS AND INSULATION PROTECTORS WHERE INSULATED. ALLOW FOR EXPANSION AND DO NOT DIRECTLY ATTACH PIPE BETWEEN ANY TWO FIXED STRUCTURES.

MAXIMUM PIPE SUPPORT SPACING SHALL BE AS FOLLOWS:  
 STEEL PIPE - 12' HORIZONTAL, 15' VERTICAL  
 COPPER PIPE - 12' HORIZONTAL, 10' VERTICAL  
 PVC PIPE - 4' HORIZONTAL, 10' VERTICAL (MID-STORY GUIDE)

**DUCTWORK SUPPORT:**  
 DUCTWORK TO BE SUPPORTED IN ACCORDANCE WITH S.M.A.C.N.A. STANDARDS. MAXIMUM OF 12' O.C. SUPPORT INTERVALS.

**7) SMOKE DETECTORS AND REMOTE TEST STATIONS:**  
 SMOKE DETECTORS TO BE PROVIDED AS PER NFPA AND LOCAL CODES. SMOKE DETECTORS SHALL BE INSTALLED IN RETURN AIR SYSTEMS, WITH A DESIGN CAPACITY GREATER THAN 2000 CFM. IN THE RETURN AIR DUCT OR PLENUM UPSTREAM OF ANY FILTERS, EXHAUST AIR CONNECTIONS, OUTDOOR AIR CONNECTIONS OR DECONTAMINATION EQUIPMENT AND APPLIANCES. SAMPLING TUBES TO MATCH LONG DIMENSION OF DUCT PLENUM. DUCT SMOKE DETECTOR TO SHUT UNIT(S) DOWN UPON ALARM. SMOKE DETECTORS TO BE 4-WIRE PHOTOELECTRIC TYPE (SYSTEM SENSOR INNOVAIR/FLEX SERIES OR EQUAL). REMOTE TEST STATION(S) TO BE EQUAL TO EDWARDS SIGNALING PRODUCTS MODEL SD-TRK4. FINAL MAKE AND MODEL TO BE COORDINATED WITH SMOKE DETECTORS FOR ALL UNITS.

**8) FIRE DAMPERS:**  
 FIRE DAMPERS TO BE PROVIDED AS PER NFPA AND LOCAL CODES. MINIMUM 18x18 ACCESS DOOR TO BE PROVIDED AT EVERY FIRE DAMPER NOT LOCATED DIRECTLY BEHIND A REMOVABLE GRILLE, REGISTER OR DIFFUSER. FIRE DAMPERS TO BE "B STYLE", U.L. 555 LISTED, 1.5 HOUR DAMPERS (SAFE AIR DOWDCO 150 SERIES OR EQUAL) UNLESS NOTED OTHERWISE.

**9) TESTING & BALANCING:**  
 BALANCE ALL EQUIPMENT, GRILLES, REGISTERS AND DIFFUSERS TO FLOW RATES SHOWN ON THE PLANS. FURNISH AND INSTALL ALL NECESSARY DRIVES, SHAVES, BELTS, MOTORS ETC. TO PROVIDE COMPLETE AND OPERABLE SYSTEMS. ALL TESTING AND BALANCING TO BE PERFORMED BY N.E.B.C. AND/OR A.A.B.C. CERTIFIED TECHNICIANS. TEST AND BALANCE CONTRACTOR TO BE INDEPENDENT FROM MECHANICAL CONTRACTOR. PROVIDE FOUR PAPER COPIES OF REPORT.

**10) CONTROL SYSTEMS**

**GENERAL**  
 THE FOLLOWING ARE CONTROL SEQUENCES ONLY. CONTROLS DESIGN AND INSTALLATION SHALL BE BY A MANUFACTURER'S AUTHORIZED CONTROLS CONTRACTOR. CONTROL ACCESSORIES TO BE INSTALLED, PIPED AND WIRED AS PER THE ORIGINAL EQUIPMENT MANUFACTURERS (OEM) REQUIREMENTS. NON-OEM BUILT UP CONTROL EQUIPMENT SHALL BE HONEYWELL AS THE BASIS OF DESIGN (OR JOHNSON EQUAL). COORDINATE LOCATION OF ALL NEW CONTROL PANELS AND CONTROLS WITH OWNER PRIOR TO INSTALLATION. PROVIDE (4) HARD COPIES AND AN ADDED "PIF" COPY OF SYSTEM DESIGN DRAWINGS INCLUDING EQUIPMENT SUBMITTALS, FLOW DIAGRAMS, EQUIPMENT TAGS (MATCHING THE PLAN TAGS) AND COMPONENT SCHEDULES FOR REVIEW AND APPROVAL PRIOR TO INSTALLATION.

**PNEUMATIC CONTROL** - THE NEW AIR HANDLING SYSTEM CONTROLS TO BE PNEUMATIC AND TO TIE INTO EXISTING BUILDING PNEUMATIC PIPING SYSTEM. PROVIDE ALL ELECTRO-PNEUMATIC TRANSDUCERS AS NECESSARY TO ACHIEVE DESIRED SEQUENCES. ALL NEW CONTROL COMPONENTS TO MATCH THE EXISTING BUILDING PNEUMATIC CONTROL STANDARDS. VERIFY COMPONENT STANDARD WITH OWNER PRIOR TO INSTALLATION. NEW AIR HANDLER CONTROL CABINET TO MATCH THE LOOK, SIZE AND COMPONENT ORIENTATION AS THE EXISTING CABINETS SERVING THE SIMILAR 6TH AND 7TH FLOORS. THIS TO INCLUDE SIMILAR GAUGES AND COMPONENT LOCATIONS (SEE PICTURE ON DRAWING SHEET MS-3.) PROVIDE FILTRATION AS NEEDED TO MAINTAIN CLEAN, DRY AND OIL FREE AIR TO ALL SWITCHES, TRANSMITTERS AND SENSORS ETC. ZONE THERMOSTATS AND SYSTEM TO BE TWO PIPE.

**VAV AIR HANDLING UNIT SYSTEM CONTROL**  
**FAN CONTROL:**  
 MODULATE THE SUPPLY FAN VFD TO MAINTAIN DUCT STATIC PRESSURE SETPOINT .75" WC (ADJ.). PROVIDE A DUCT STATIC PRESSURE SENSOR MOUNTED 2/3 DOWN THE LENGTH OF THE SUPPLY DUCT FROM THE FAN OUTLET. PNEUMATIC STATIC PRESSURE SENSOR TO TIE INTO PE TRANSDUCER WITH 0-10V OUTPUT TO THE FAN VFD DRIVE. SUPPLY AND RELIEF FAN DRIVES TO BE HONEYWELL SMART DRIVE OR ABB ACH550 SERIES. 9RELIEF FAN DRIVE MUST BE ABLE TO ACCEPT TWO SPEEDS FROM JADE AUX CONTACTS.)

MINIMUM AIR HANDLING UNIT (AHU) AIRFLOW:  
 THERE ARE TO BE (2) DISTINCT MINIMUM VFD AHU AIR FLOW SET POINTS. ONE FOR WHEN THE COMPRESSORS ARE ENERGIZED AND ANOTHER FOR THE COMPRESSORS ARE DE-ENERGIZED. BOTH TO BE PER THE MANUFACTURERS RECOMMENDATIONS. NEITHER SET POINT TO BE LOWER THAN MINIMUM REQUIRED FOR SPACE PRESSURE. OPEN BOXES WITH HEAT TO MINIMUM AS REQUIRED TO RELIEVE EXCESS AIR FLOW.

**DISCHARGE AIR TEMPERATURE CONTROL:**  
 DURING THE COOLING SEASON, THE VAV UNIT TO MAINTAIN A CONSTANT DISCHARGE AIR TEMPERATURE OF 55 DEGREES (ADJ.) IN THE HEATING SEASON (BELOW 50F (ADJ.)), THE UNIT DISCHARGE AIR SET POINT TO BE OPERATOR ADJUSTABLE TO A MAXIMUM OF 60F (ADJ.). PNEUMATIC PROPORTIONAL-INTEGRAL (PI) CONTROLLER (HONEYWELL RP920 PI SERIES) TO CONTROL DISCHARGE AIR WITH PE SWITCHES TO HONEYWELL JADE Y1, Y2 ETC. CONTROLLER TO TIE INTO A RATIO RELAY TO EXPAND SIGNAL FOR 0-10V SCR TRANSDUCER TO MAIN AIR HANDLER HEATER. PROVIDE COOLING/HEATING LOCKOUT. (CONDENSING UNIT HOT GAS BYPASS TO BE AUTOMATIC BASED ON SUCTION PRESSURE.)

**OUTDOOR AIR:**  
 IN OCCUPIED MODE WHEN THE INDOOR FAN MOTOR IS ENERGIZED, THE OUTDOOR AIR DAMPER TO OPEN TO MINIMUM POSITION. WHEN THE FAN IS DE-ENERGIZED THE OUTDOOR AIR DAMPER IS TO BE CLOSED. IN ECONOMIZER MODE, BOTH THE OUTDOOR AIR DAMPER AND RETURN DAMPER TO MODULATE AS NOTED BELOW.

OCCUPIED ECONOMIZER DX COOLING:  
 PNEUMATIC DISCHARGE AIR TEMPERATURE CONTROLLER TO INTEGRATE WITH HONEYWELL JADE ECONOMIZER MODULE DAMPER CONTROL. PROVIDE HONEYWELL SYLK BUS DUCT TEMPERATURE AND HUMIDITY SENSORS IN THE OUTSIDE AIR AND RETURN AIR DUCTS. JADE ECONOMIZER TO SENSE OUTDOOR AIR AND RETURN AIR CONDITIONS AND MODULATE RETURN AIR AND OUTDOOR DAMPERS TO MAINTAIN MIXED AIR TEMPERATURE SETPOINT OF 55F (ADJ.). EXHAUST DAMPER TO FULLY OPEN IN ECONOMIZER RELIEF MODE.

WHEN AMBIENT AIR HAS MORE ENERGY THAN RETURN AIR, THE OUTDOOR AIR DAMPER TO MOVE TO MINIMUM POSITION. RETURN AIR DAMPER TO OPEN AND THE COMPRESSORS TO STAGE AS NEEDED TO MAINTAIN DISCHARGE AIR TEMPERATURE SETPOINT. WHEN THE AMBIENT AIR HAS LESS ENERGY THAN RETURN AIR, THE OUTDOOR AIR DAMPER TO FULLY OPEN, THE RETURN AIR DAMPER TO CLOSE AND THE COMPRESSORS TO STAGE AS NEEDED TO MAINTAIN DISCHARGE AIR TEMPERATURE SETPOINT. BELOW 55F (ADJ.) AMBIENT, THE OUTDOOR AIR AND RETURN AIR DAMPERS TO MODULATE TO MIXED AIR TEMPERATURE SETPOINT AND ALL COMPRESSOR STAGES TO BE DE-ENERGIZED. DURING OCCUPIED MODE, THE OUTSIDE AIR DAMPER TO MODULATE DOWN TO MINIMUM POSITION.

**DEMAND CONTROL VENTILATION:**  
 PROVIDE CO2 SENSOR IN RETURN DUCTWORK AND INTEGRATE TO JADE ECONOMIZER MODULE. JADE TO SENSE RETURN AIR CO2 LEVELS AND MODULATE OUTSIDE AIR MINIMUM POSITION TO MAINTAIN AN AVERAGE RETURN AIR CO2 BELOW 650 PPM (ADJ.).

**SPACE PRESSURE:**  
 SPACE PRESSURE TO BE MAINTAINED WITH VFD RELIEF FAN. JADE TO ENABLE RELIEF FAN IN ECONOMIZER MODE. TWO VFD SPEEDS TO BE SET BASED ON JADE DAMPER SIGNAL POSITION USING JADE AUXILIARY CONTACTS 1&2. (FAN POSITIONS TO BE OFF, SPEED 1 AND SPEED 2). RELATIVE SPEEDS TO BE ADJUSTED WITH VFD AS NEEDED TO MAINTAIN POSITIVE SPACE PRESSURE.

**ELECTRIC HEAT:**  
 AN OEM BUILT IN SCR CONTROLLER TO MODULATE THE MAIN AIR HANDLER ELECTRIC HEAT COIL TO MAINTAIN DISCHARGE AIR TEMPERATURE SETPOINT, A SEPARATE PRESSURE 'FAN OFF' LOOP TO IMMEDIATELY DE-ENERGIZE ALL ELECTRIC HEATERS WHEN MAIN AHU FAN IS DE-ENERGIZED OR THE SYSTEM IS IN NIGHT SET BACK MODE. (ELECTRIC HEATERS TO INCLUDE MAIN AHU HEATER AND ALL VAV BOX HEATERS. ELECTRIC BASEBOARD TO REMAIN ENERGIZED AS NOTED BELOW.) 'FAN OFF' PRESSURE TO BE ABOVE 15 PSI (ADJ.).

**FREEZE STAT / SYSTEM ALARMS:**  
 PROVIDE A FREEZE STAT IN THE DISCHARGE AIR PLENUM. IF AT ANY TIME THE DISCHARGE AIR TEMPERATURE FALLS BELOW 45F (ADJ.), THE AIR HANDLING UNIT FAN TO DE-ENERGIZE, COMPRESSORS TO BE DE-ENERGIZED, THE OUTDOOR AIR DAMPER TO CLOSE AND THE SYSTEM TO ALARM. COORDINATE LOCATION OF ALL AUDIBLE AND VISIBLE ALARMS WITH THE BUILDING ENGINEERING STAFF.

**MORNING WARM UP MODE:**  
 ALL VAV BOXES TO OPEN TO 100% AND THE UNIT TO PROVIDE 110F (ADJ.) SUPPLY AIR FOR THE SCHEDULED MORNING WARM UP TIME FRAME. WHEN THE RETURN AIR TEMPERATURE HAS REACHED 72F (ADJ.) THE UNIT TO OPERATE IN NORMAL OCCUPIED MODE.

**VAV TERMINAL UNIT CONTROL:**  
 ALL BOXES TO MODULATE TO MAINTAIN SPACE TEMPERATURE. IN HEATING MODE, THE BOX TO MAINTAIN THE SCHEDULED MINIMUM AIRFLOW. IN COOLING MODE, THE BOX MINIMUM TO RESET TO ZERO. BOX CONTROLLER TO BE TITUS II DUAL MINIMUM CONTROLLER WITH ELECTRIC HEAT (0 PSI MAX HEAT - 15 PSI MAX COOL). PROVIDE DUAL PRESSURE SETBACK STATS.

**VAV TERMINAL ELECTRIC HEATING:**  
 EACH VAV ZONE TO HAVE TWO STAGES OF HEAT CONTROLLED FROM THE BOX. THE FIRST STAGE TO BE THE ROOM ELECTRIC BASEBOARD AND THE SECOND TO BE THE SCR CONTROLLED MODULATING BOX REHEAT COIL. STAGE ONE RE PE SWITCH TO ENERGIZE BASEBOARD. STAGE TWO TO TIE INTO A RATIO RELAY TO EXPAND SIGNAL FOR 0-10V SCR TRANSDUCER TO BOX HEATER.

PERIMETER ROOMS WITH ELECTRIC BASEBOARD ONLY, TO HAVE SINGLE STAGE REMOTE WALL MOUNTED CONTROL PER THE PLANS. POWER TO ALL THE PERIMETER BASEBOARD TO BE ENERGIZED WITH A COMMON SWITCH CONTACTOR(S). COORDINATE LOCATION OF COMMON SWITCH WITH ELECTRICIAN AND BUILDING ENGINEERING STAFF.

**UNOCCUPIED MODES:**  
 DURING UNOCCUPIED MODES, AHU FAN, HEATING AND COOLING TO BE DE-ENERGIZED. DURING THE HEATING SEASON, THE PERIMETER BASEBOARD TO BE ENABLED. A NIGHT STAT (PLACED IN A COMMON EXTERIOR AREA) TO PUT THE SYSTEM IN OCCUPIED MODE IF SPACE TEMPERATURE DROPS BELOW 45F (ADJ.)

PROVIDE A 365 DAY PROGRAMMABLE DIGITAL TIME CLOCK TO MAINTAIN OCCUPIED AND UNOCCUPIED MODES. OCCUPIED MODE TIME CLOCK TO ENABLE: SUPPLY FAN DRIVE, RELIEF FAN DRIVE, JADE, DAT CONTROL (EP SWITCH) AND 'FAN OFF' LOOP (EP SWITCH). UNOCCUPIED MODE TIME CLOCK TO DISABLE THE SAME BUT ALSO LEAVE THE MAIN AHU FAN ENERGIZED FOR 5 MINUTES (ADJ.) AFTER THE 'FAN OFF' LOOP DE-ENERGIZES THE ELECTRIC HEAT COILS.

**MISCELLANEOUS**  
 CEILING MOUNTED TOILET EXHAUSTERS - TO BE ENERGIZED BY OCCUPANCY SENSOR FOR BOTH FAN AND LIGHT. AHU-1-2 SYSTEM CONTROL TO REMAIN. BALANCE GRD AND BOX AIR FLOWS AS SHOWN ON PLANS.

**11) ALTERNATES:**  
**ALTERNATE #1**  
 REPLACE EXISTING ROOF MOUNTED ACCU-4 WITH NEW UNIT. SEE OTHER MS SHEETS FOR MORE INFORMATION. PROVIDE ADDITIONAL GALVANIZED SUPPORT RAILS AS NEEDED.

4/10/15 GENERAL REVISIONS

HVAC NOTES & SCHEDULES R1307A

PRIOR TO INSTALLATION, VERIFY ALL DUCTWORK, PIPING, WIRING, CONDUITS AND EQUIPMENT LOCATIONS SHOWN ON DRAWINGS TO AVOID CONFLICTS WITH THE BUILDING STRUCTURE, WALLS, CEILINGS, LIGHTS, ELECTRICAL ITEMS AND/OR OTHER TRADE ITEMS. NOTIFY DESIGN ENGINEER IN WRITING PRIOR TO ANY CHANGES.

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DRAWN BY:	UE
DATE:	3/17/15

**PHASE ONE OFFICE REMODELING**  
**WILL COUNTY COURT ANNEX**  
 OTTAWA & JEFFERSON STS., JOLIET, ILL.  
 COUNTY OF WILL, OWNER

**SHEET MS-3**  
 OF X

## SECTION 09 68 13 –CARPET TILE

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

#### 1.2 SUMMARY

- A. Provide modular carpet tile:
  - 1. Carpet for adhesive installation.

#### 1.3 SUBMITTALS

- A. Submit for approval samples, product data, warranty, maintenance data, extra stock, proposed seaming layout.

#### 1.4 QUALITY ASSURANCE

- A. Comply with governing codes and regulations. Provide products of acceptable manufacturers which have been in satisfactory use in similar service for three years. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.
- B. Provide carpet materials meeting applicable fire regulations.

#### 1.5 WARRANTIES

- A. Manufacturer's standard 25 year wear warranty.

## PART 2 - PRODUCTS

### 2.1 MATERIALS

#### A. Carpet: Manufacturer shall be Tarkett.

##### 1. Carpet:

- a. Style name: Tandus Centiva.
- b. Construction: Multi-Level Pattern Loop.
- c. Construction: Multi-level pattern loop.
- d. Fiber: Nylon 6
- e. Dye Method: 100% Solution Dyed.
- f. Pattern Repeat: None.
- g. Tufted Weight: 20 oz/cu. Yd.
- h. Gauge: 1/12 per inch
- i. Stitches: 10.0 stitched per inch.
- j. Finished pile thickness: 0.116 inch.
- k. Total thickness: 0.235 inch.
- l. Average density: 6207.
- m. Size: 24 inch by 24 inch.
- n. Primary backing: synthetic.
- o. Secondary backing: ecoworx tile.
- p. Lightfastness: Rating of not less than 5 on International Grey Scale after 40 SFU's when tested in accordance with AATCC Test Method 16E.

#### B. Mounting:

1. Adhesive.

#### C. Accessories:

1. Edge guard: Heavy-gage aluminum.
2. Reducer strip: Vinyl or rubber.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. Comply with recommendations of Carpet and Rug Institute "Specifier's Handbook".
- B. Prepare surfaces and install materials in accordance with manufacturer's instructions and approved submittals. Clean, patch, and level substrate. Install materials in proper relation with adjacent construction and with uniform appearance. Coordinate with work of other sections.
- C. Install edge guards and reducer strips as required; clean and protect.

END OF SECTION 09 68 13