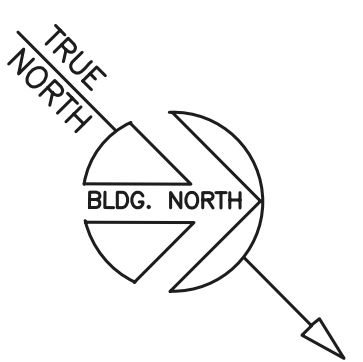
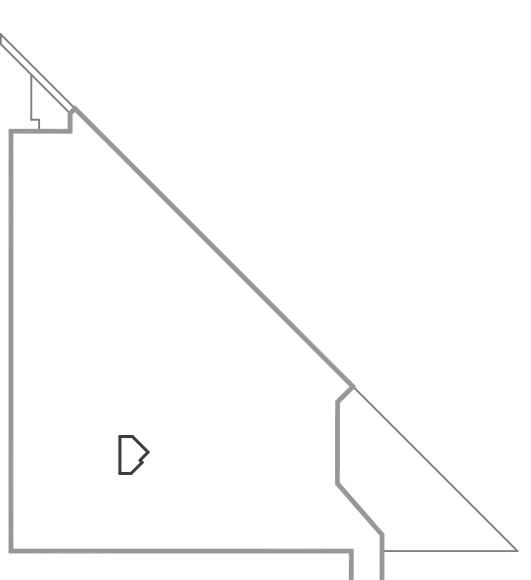


- LOWER LEVEL 1:**
 1. INSTALL WALL UNIT PER MANUFACTURER'S INSTRUCTIONS.
 2. SURFACE MOUNT LINE SET AND INTER-UNIT CONDUCTOR IN SLIM DUCT, CORE THROUGH FLOOR FOR ACCESS TO UL2.
 3. MOUNT REMOVE THERMOSTAT WITH MANUFACTURER SUPPLIED HOLDER.
 4. PROVIDE FIRE CAULK IN FLOOR PENETRATIONS.

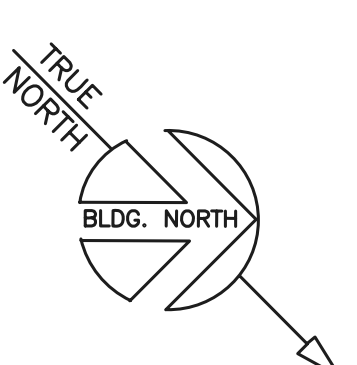
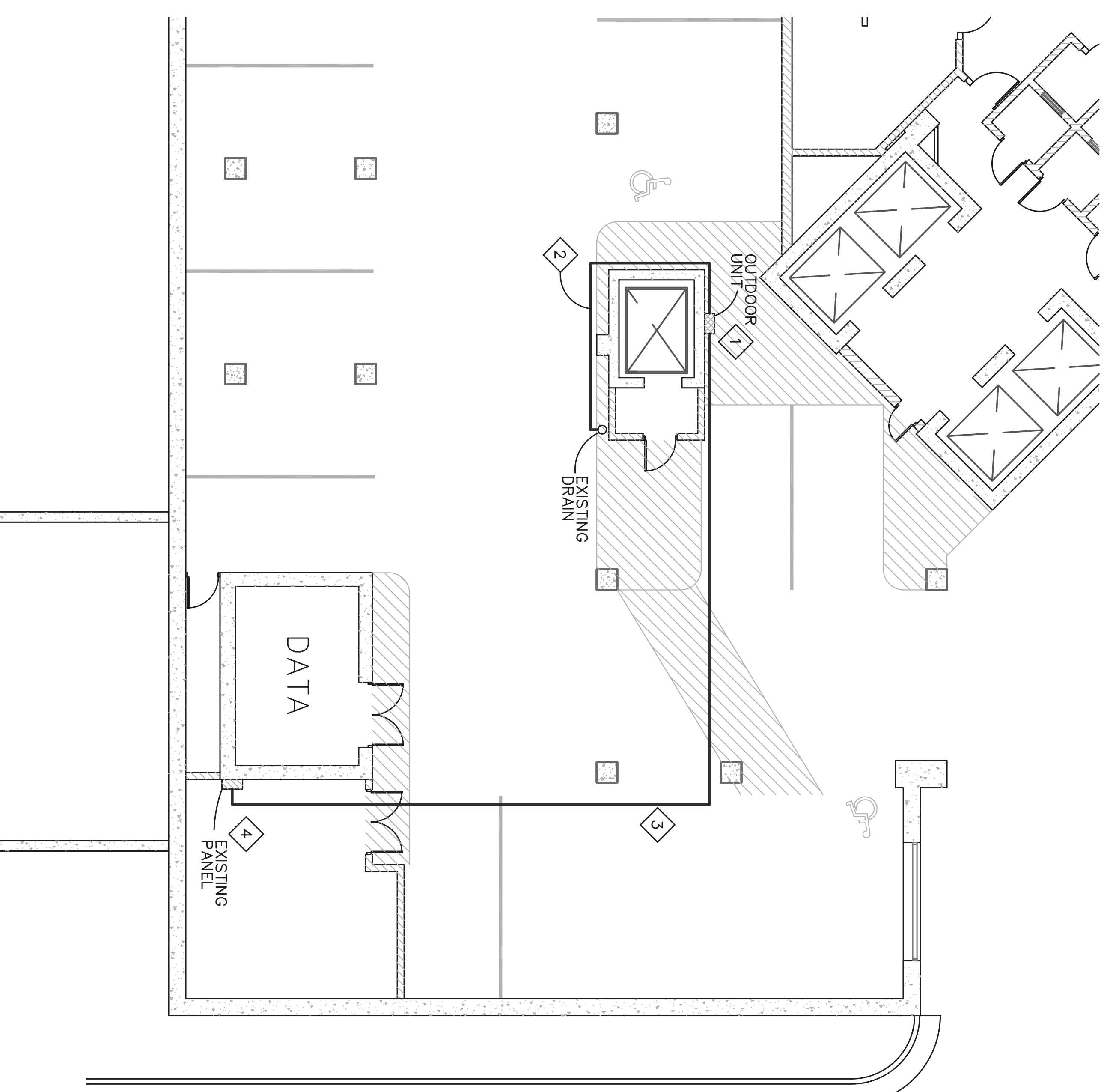


JUSTICE CENTER
 LOWER LEVEL 1
 0 8 16 24

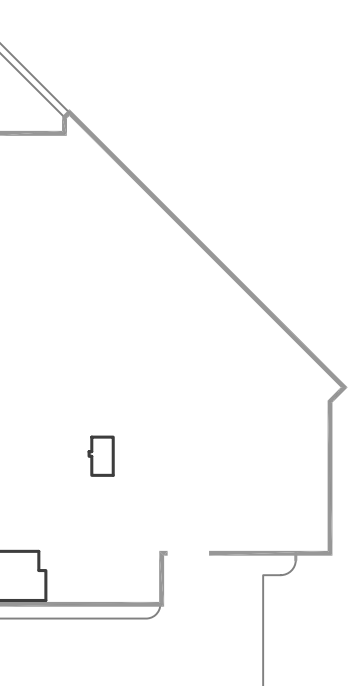


KEY PLAN

- LOWER LEVEL 2:**
 1. MOUNT OUTDOOR UNIT TO CONCRETE WALL USING A STEEL STRUCTURE. HEIGHT FROM FLOOR TO BOTTOM OF STRUCTURE SHALL BE A MINIMUM OF 6'-6".
 2. PROVIDE PITCHED DRAIN LINE TO OPEN SITE DRAIN USING 1/2" CPVC OR 1/2" COPPER, SECURE TO CONCRETE WALL.
 3. CONDUCTORS: 2-12 AWG, 1-12 AWG GROUND, 1-12 AWG GROUNDING CONDUCTOR (NEUTRAL), INSTALL CONDUCTORS IN 3/4" EMT SECURED TO CEILING.
 4. TIE IN TO EXISTING PANEL. COORDINATE WITH OWNER.



JUSTICE CENTER
 LOWER LEVEL 2
 0 8 16 24



KEY PLAN

DANE COUNTY
 PUBLIC WORKS
 TELEPHONE (608) 266-4018
 1919 ALLIANCE ENERGY WAY
 MADISON WISCONSIN 53713

BID NUMBER:
 310035

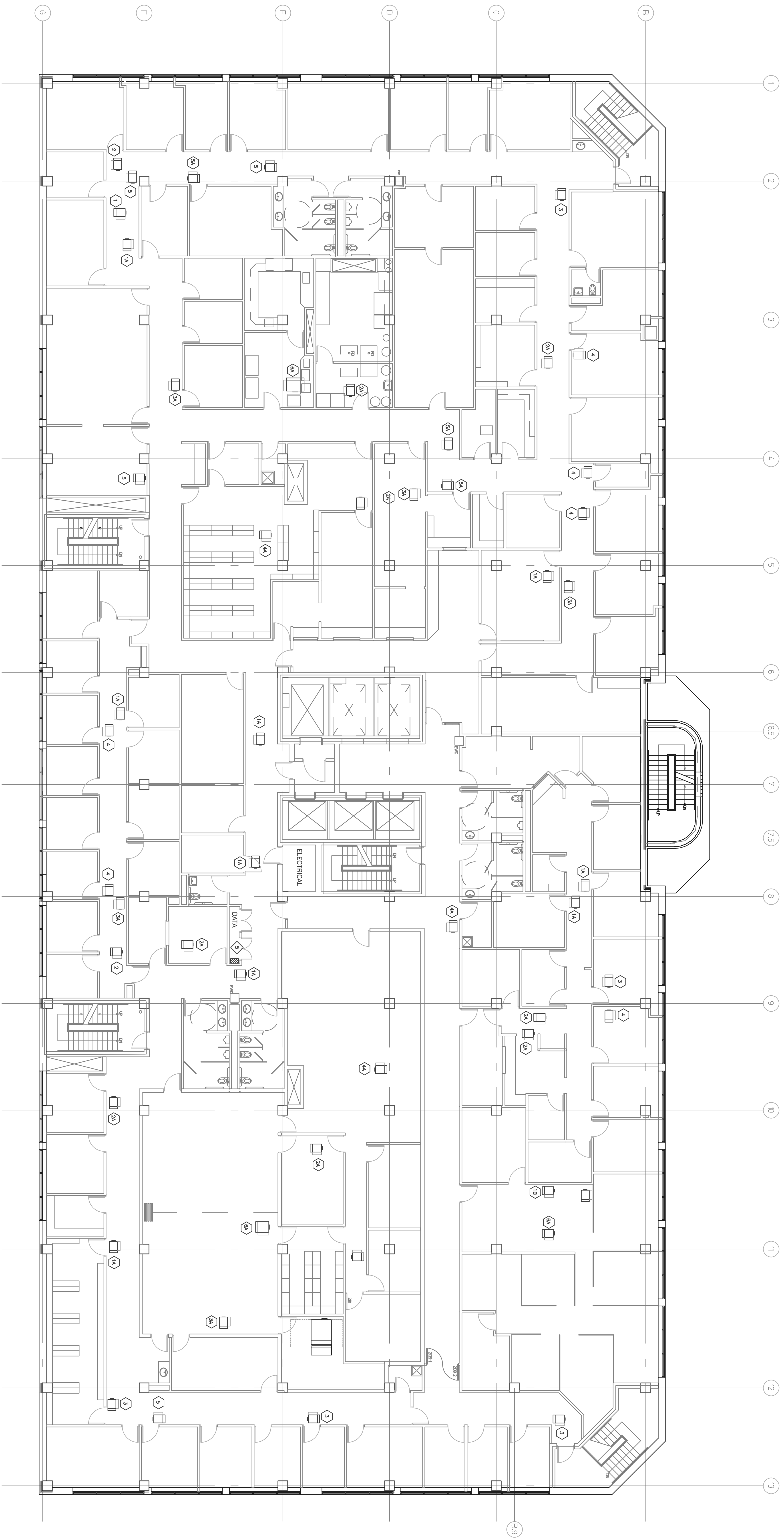
RETRO-COMMISSIONING PROJECT
 JUSTICE CENTER
 MADISON, WISCONSIN
 OWNER: DANE COUNTY, WISCONSIN

Sheet Title:

No.	Date	Description	By
1	09-09-09	-	ABC

Project Number:	Designed By:
101121A	
Date Issued:	Reviewed By:
11-30-10	
Sheet Number:	

H1.0



- PSB SECOND FLOOR - PNEUMATIC VAV CONVERSION TO DDC:**
1. REMOVE EXISTING PNEUMATIC CONTROLLER ON EACH VAV BOX. MAINTAIN INTEGRITY OF VAV BOX FOR REUSE. CONTRACTOR RESPONSIBLE FOR REPLACING ANY DAMAGED COMPONENTS.
 2. PROVIDE NEW DDC VAV CONTROLLER FOR EACH VAV BOX. INSTALL CONTROLLER SECURELY AND SQUARE TO VAV BOX.
 3. REMOVE EXISTING PNEUMATIC ROOM THERMOSTATS AND PROVIDE NEW DDC TYPE ROOM SENSOR/THERMOSTAT AND DISCHARGE AIR SENSOR.
 4. PROVIDE I/P ON EACH VAV TO REUTILIZE PNEUMATIC HEATING VALVES. EXISTING PNEUMATIC LINES MAY BE REUTILIZED.
 5. PROVIDE NEW NETWORK CONTROL PANEL AND TRANSDUCER PANEL. WALL MOUNT PANELS IN DATA CLOSET AND PROVIDE NEW DEDICATED CIRCUIT FOR POWER AREAS BEING SERVED BY VAVS. IS FULLY OCCUPIED. COORDINATE INSTALLATION SCHEDULE WITH OWNER AND PHASE INSTALLATION ACCORDINGLY TO MINIMIZE DOWN TIME OF EACH ZONE.

DANE COUNTY
PUBLIC WORKS

TELEPHONE (608) 266-4018
FAX (608) 266-4018
4401508 WISCONSIN 53715

BID NUMBER:
310035

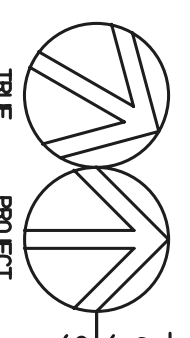
RETRO-COMMISSIONING PROJECT
PUBLIC SAFETY BUILDING
MADISON, WISCONSIN
OWNER: DANE COUNTY, WISCONSIN

Sheet Title:

Revisions:	No.	Date	Description	By:
	01	08-01-01		abc

Project Number: 101121A
Date Issued: 11-30-10
Designed By:
Reviewed By:

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



PNEUMATIC VAV CONVERSION TO DDC
SECOND FLOOR PLAN

H1.1



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CORPORATION
STRUCTURAL ■ CIVIL ■ HVAC ■ PLUMBING
ELECTRICAL ■ TECHNOLOGY

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BROOKFIELD WISCONSIN (262) 783-6130
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REB No. 310035

RETRO-COMMISSIONING PROJECT

2ND FLOOR MODULINE RETROFIT
CITY-COUNTY BUILDING
MADISON, WISCONSIN
OWNER: DANE COUNTY, WISCONSIN

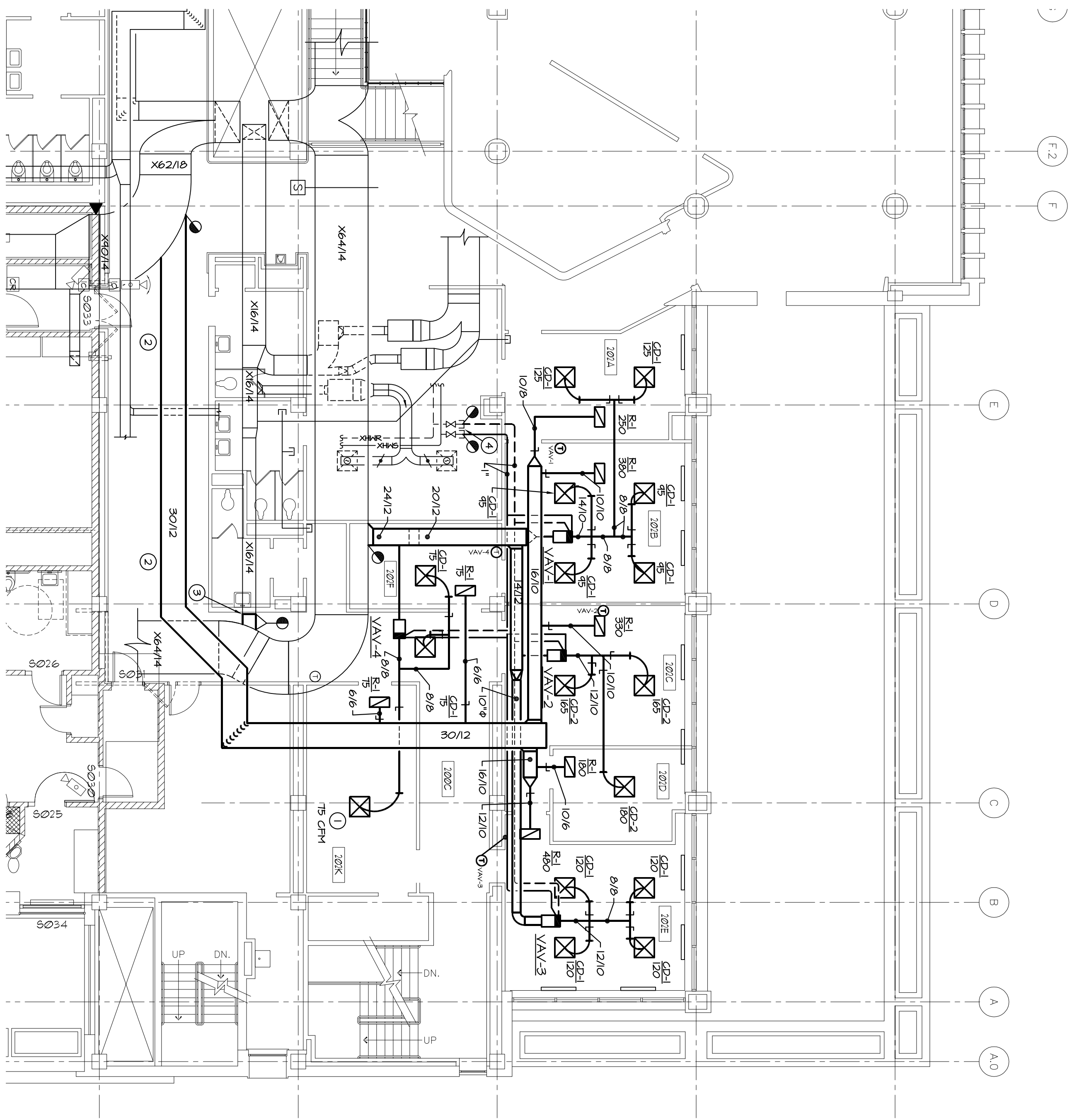
Sheet Title:
**2ND FLOOR
DEMOLITION AND
NEW CONSTRUCTION
PLANS**

Revisions:	No.	Date:	Description:	By:
	01	07-00-00	-	ABC

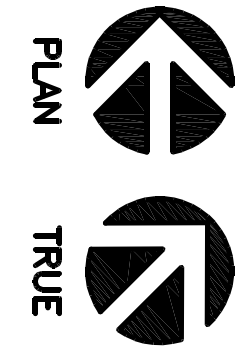
Project Number:	Designed By:
101121A	A&O
Date Issued:	Reviewed By:
11-30-10	MAH

Sheet Number:

H1.2



2 2ND FLOOR NEW CONSTRUCTION PLAN
SCALE: 1/8"=1'-0"



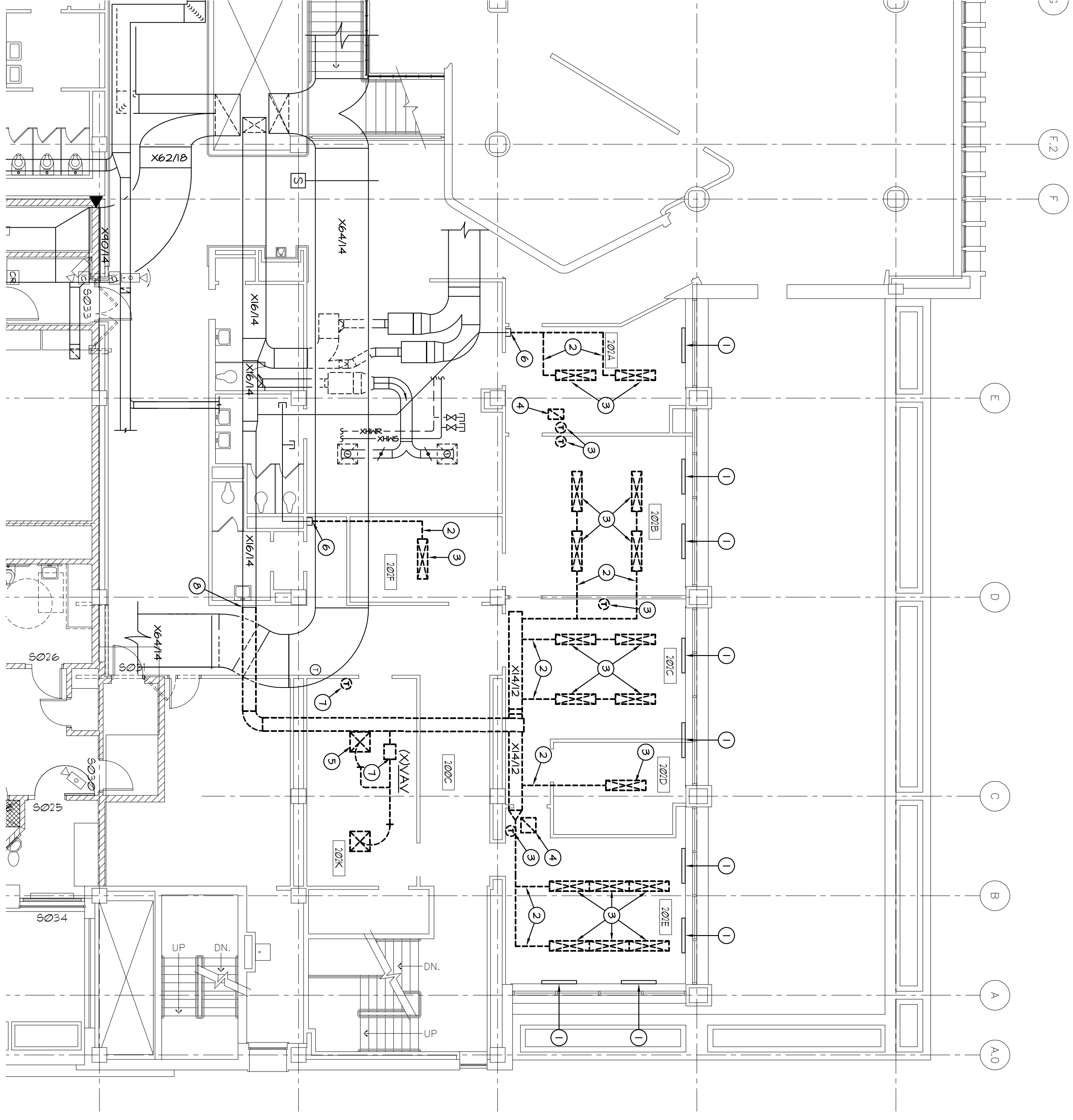
LETTER NOTES:

- 1 NEW LOCATION OF EXISTING DIFFUSER, BALANCE TO LISTED CFM
- 2 DUCT INSTALLATION IN THIS AREA WILL REQUIRE MODIFICATIONS TO THE EXISTING ACT SHEETS AND ELECTRICAL CONDUITS IN THIS AREA. CONTRACTOR SHALL MAKE A SCHEDULED VISIT TO VERIFY THE LOCATION OF ALL CONDUITS.
- 3 CONNECT EXISTING 8/4" SUPPLY DUCT TO EXISTING 6/4" SUPPLY DUCT AS SHOWN
- 4 CONNECT NEW HOT WATER BRANCH PIPING TO EXISTING VALVED AND CAPPED CONNECTION

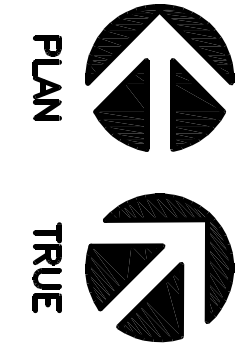
GENERAL NOTES:

- 1 PROVIDE TEST AND BALANCE FOR THE WORK IN THIS AREA

EXISTING FIELD CONDITIONS AND PROJECTIONS SHALL BE VERIFIED BY THE CONTRACTOR. SUCH AS PRESENT LOCATION OF ARCHITECTURAL AND OTHER MISCELLANEOUS CONSTRUCTION APPEARS ON THE DRAWING. RETROFIT AND CONSTRUCTION SHALL BE DONE IN ACCORDANCE WITH THE DESIGN AND ENGINEER DO NOT ASSUME ANY EXISTING WORK IS CORRECT AND REPRESENTATIVE OF THOSE ACTUAL CONDITIONS. ALL CONDITIONS SHALL BE VERIFIED BY THE CONTRACTOR. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AT THE SITE.



1 2ND FLOOR DEMOLITION PLAN
SCALE: 1/8"=1'-0"



LETTER NOTES:

- 1 EXISTING RADIATION TO REMAIN
- 2 REMOVE EXISTING DUCTWORK TO EXTERNS SKIN
- 3 REMOVE EXISTING HOULINE DIFFUSER AND ASSOCIATED CONTROLS, PROVIDE A WALL PLATE WHERE EXISTING THERMOSTAT HAS BEEN REMOVED
- 4 REMOVE EXISTING RETURN/TRANSFER AIR GRILLE AS SHOWN
- 5 REMOVE AND RELOCATE EXISTING DIFFUSER AS SHOWN
- 6 REMOVE EXISTING DUCT BACK TO THIS POINT AND CAP DUCT AIRTIGHT
- 7 REMOVE EXISTING VAV TERMINAL UNIT AND ASSOCIATED CONTROLS
- 8 REMOVE EXISTING DUCT BACK TO THIS POINT AND TEMPORARILY CAP DUCT AIRTIGHT

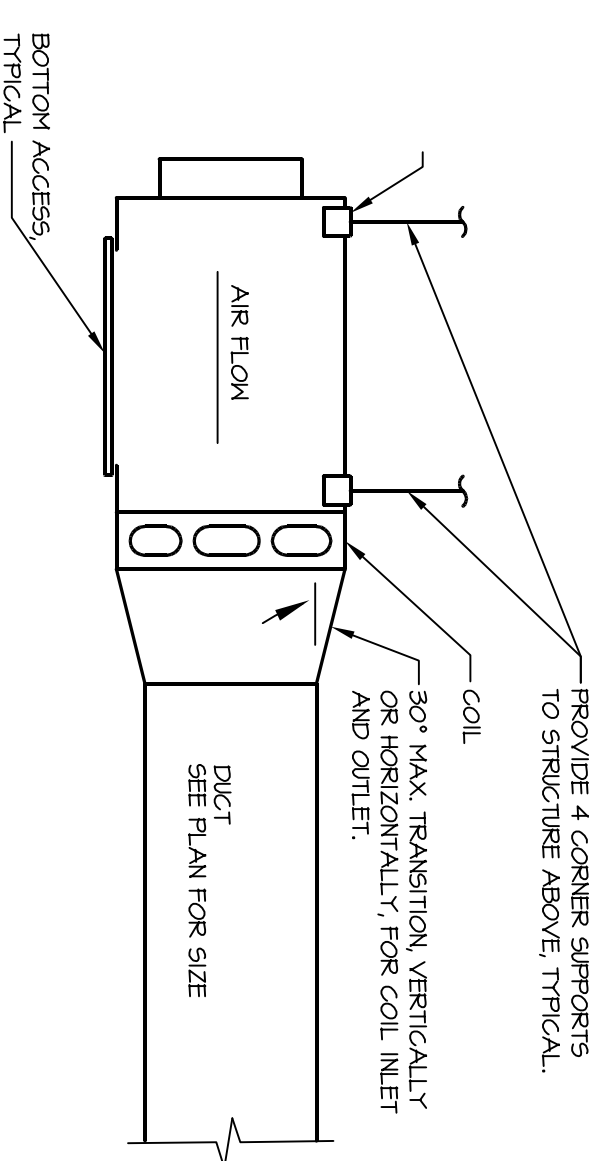
GENERAL NOTES:

- 1 EXISTING EQUIPMENT SHALL BE TURNED OVER TO OWNER FOR SPACE PART REMOVAL. CONTRACTOR SHALL PROVIDE OF DEMOLISHED EQUIPMENT AS DIRECTED BY THE OWNER.
- 2 CONTRACTOR SHALL TAKE APPROPRIATE MEASURES TO PROTECT DATA AND OTHER INFORMATION FROM REMOVAL AND PRESERVE AS NECESSARY TO PREPARE ALL WORK REQUIRED UNDER THIS SECTION OF WORK.

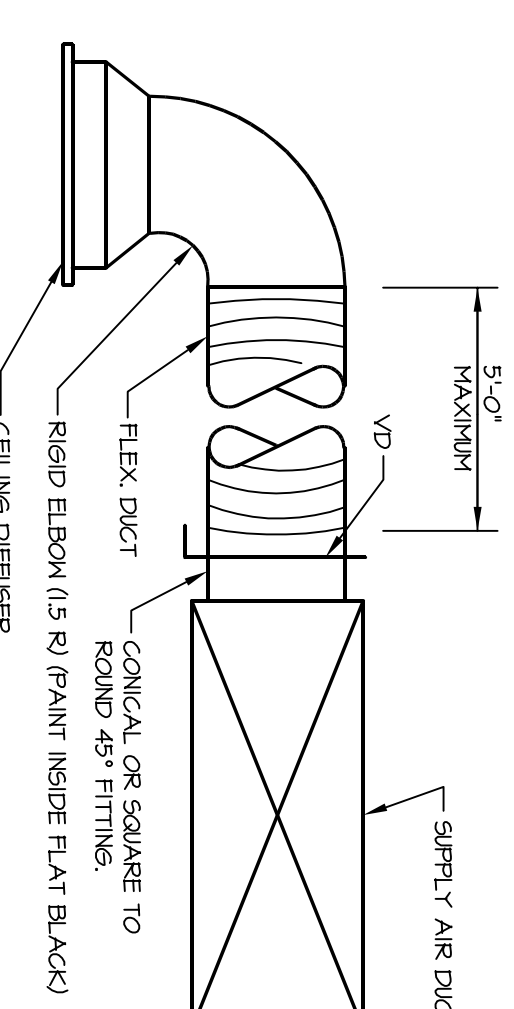
VAV-XX VARIABLE AIR VOLUME TERMINAL UNIT WITH REHEAT SCHEDULE															
UNIT NO.	SERVICE	TRADE MODEL NO.	MAX. P.D. (IN.)	AIRFLOW (CFM)				HOT WATER REHEAT COIL DATA				REMARKS			
				MINIMUM	HEATING	ENT.	UNIT	EAT.	LAT.	CAPACITY (BTU/H)	CFM		MAX. WATER	MIN. ROWS	BRANCH PIPE SIZE
1	SEE PLANS	VCAF	0.25	640	195	180	160	55	48	7.90	0.2	4.0	1	3/4"	
2	SEE PLANS	VCAF	0.25	310	195	180	160	55	48	6.725	0.1	4.0	1	3/4"	
3	SEE PLANS	VCAF	0.25	460	195	180	160	55	48	6.290	0.1	4.0	1	3/4"	
4	SEE PLANS	VCAF	0.25	225	195	180	160	55	48	3.040	0.4	4.0	1	3/4"	

AIR DEVICE SCHEDULE									
UNIT NO.	MANUFACTURER / MODEL NO.	TYPE	SIZE (FACE / NECK)	CFM RANGE	MATERIAL	MOUNTING		DAYNER	REMARKS
						LAY-IN	CEILING		
CD-1	TTUS / TDC	SQUARE / LOWERED	24"x24" / 6x6	0 - 150	STEEL	●	●		
CD-2	TTUS / TDC	SQUARE / LOWERED	24"x24" / 6x6	151 - 275	STEEL	●	●		
CD-3	50"	EGG GRADE	24"x12"	0 - 500	ALUMINUM	●	●		

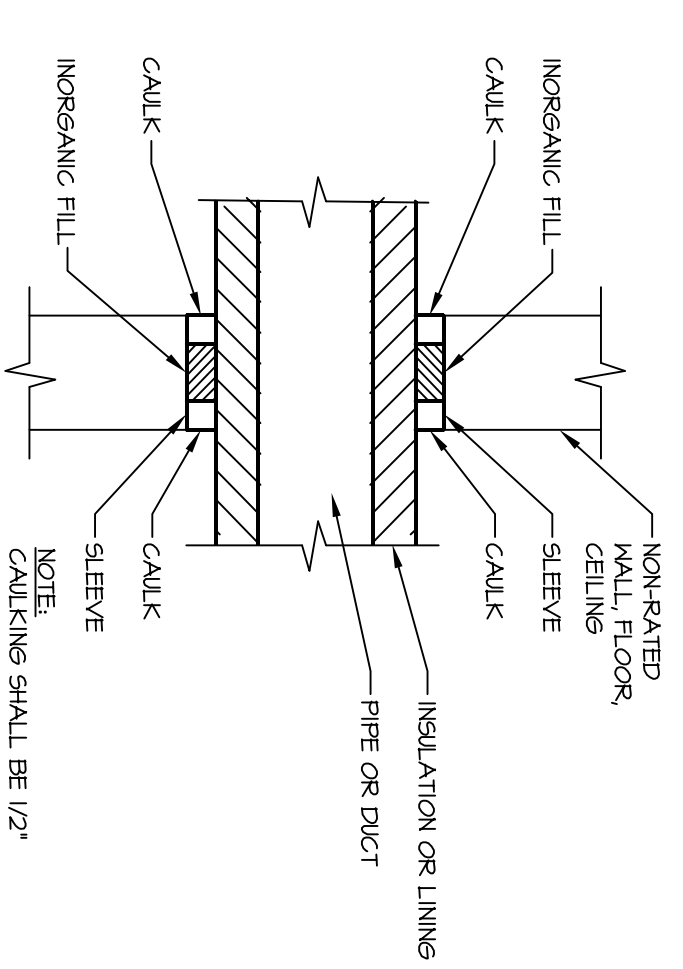
- GENERAL NOTES:**
- CONTRACTOR SHALL VERIFY MOUNTING SURFACE / FRAME REQUIREMENTS.
 - BRANCH DUCT SIZE TO DIFFUSER SHALL BE THE SAME AS THE NECK SIZE OF THE DIFFUSER UNLESS NOTED OTHERWISE.
 - SEE SPECIFICATION SECTION 23 31 13 FOR GALLE REGISTER, AND DIFFUSER FINISHES.
 - MAXIMUM STATIC PRESSURE DROP THROUGH GALLE REGISTER OR DIFFUSER SHALL NOT EXCEED 0.1".
 - MAXIMUM NC LEVELS FOR GALLE REGISTERS OR DIFFUSERS SHALL NOT EXCEED 25.
 - UNLESS NOTED OTHERWISE, ALL DIFFUSERS SHALL BE 14"X14" THICK.



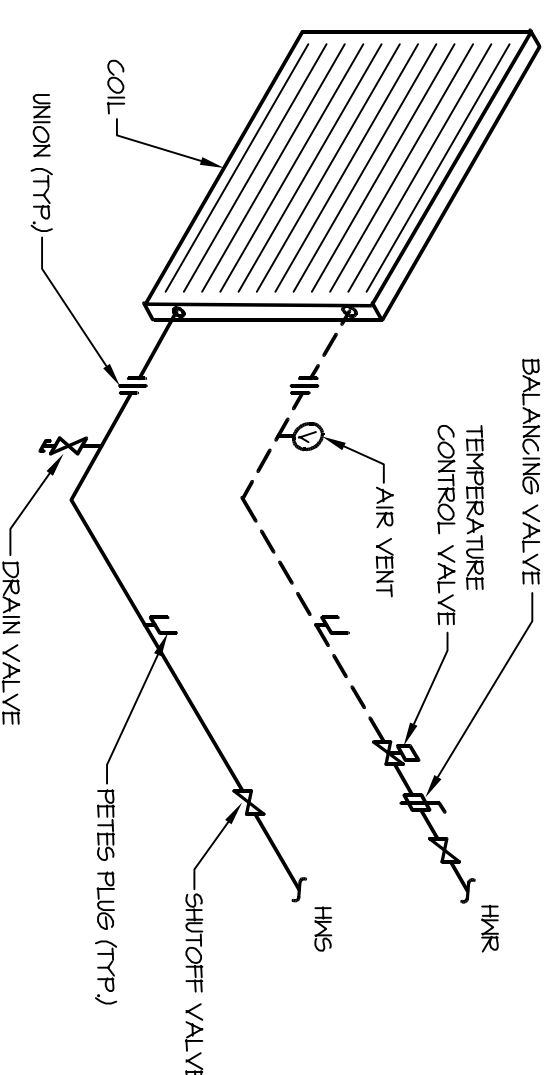
5 VAV BOX INSTALLATION DETAIL
SCALE: NONE



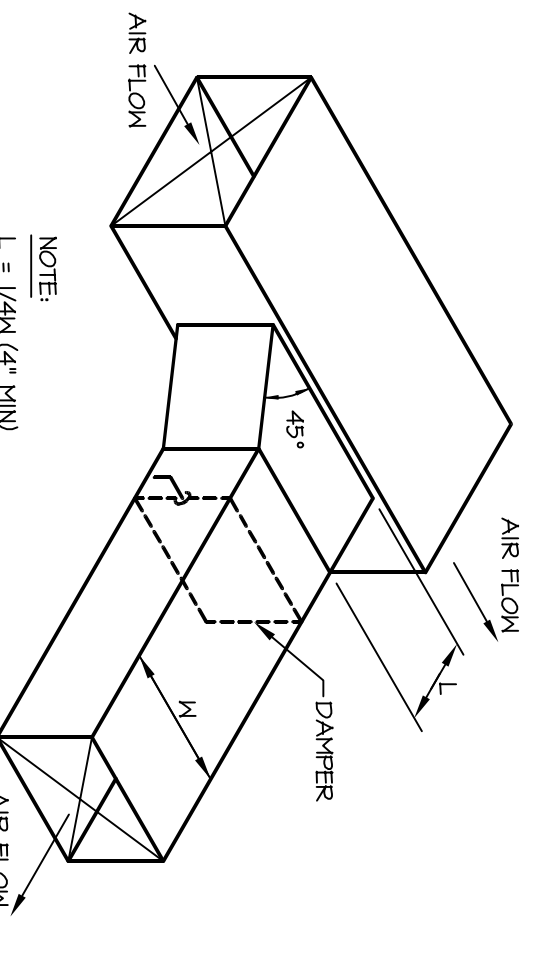
3 CEILING DIFFUSER CONNECTION
SCALE: NONE



1 PIPE OR DUCT SLEEVE DETAIL
SCALE: NONE



4 BOOSTER COIL PIPING DETAIL
SCALE: NONE



2 BRANCH DUCT TAKEOFF
SCALE: NONE

RETRO-COMMISSIONING PROJECT

2ND FLOOR MODULINE RETROFIT
CITY-COUNTY BUILDING
MADISON, WISCONSIN
OWNER: DANE COUNTY, WISCONSIN

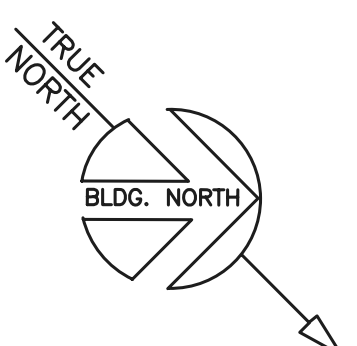
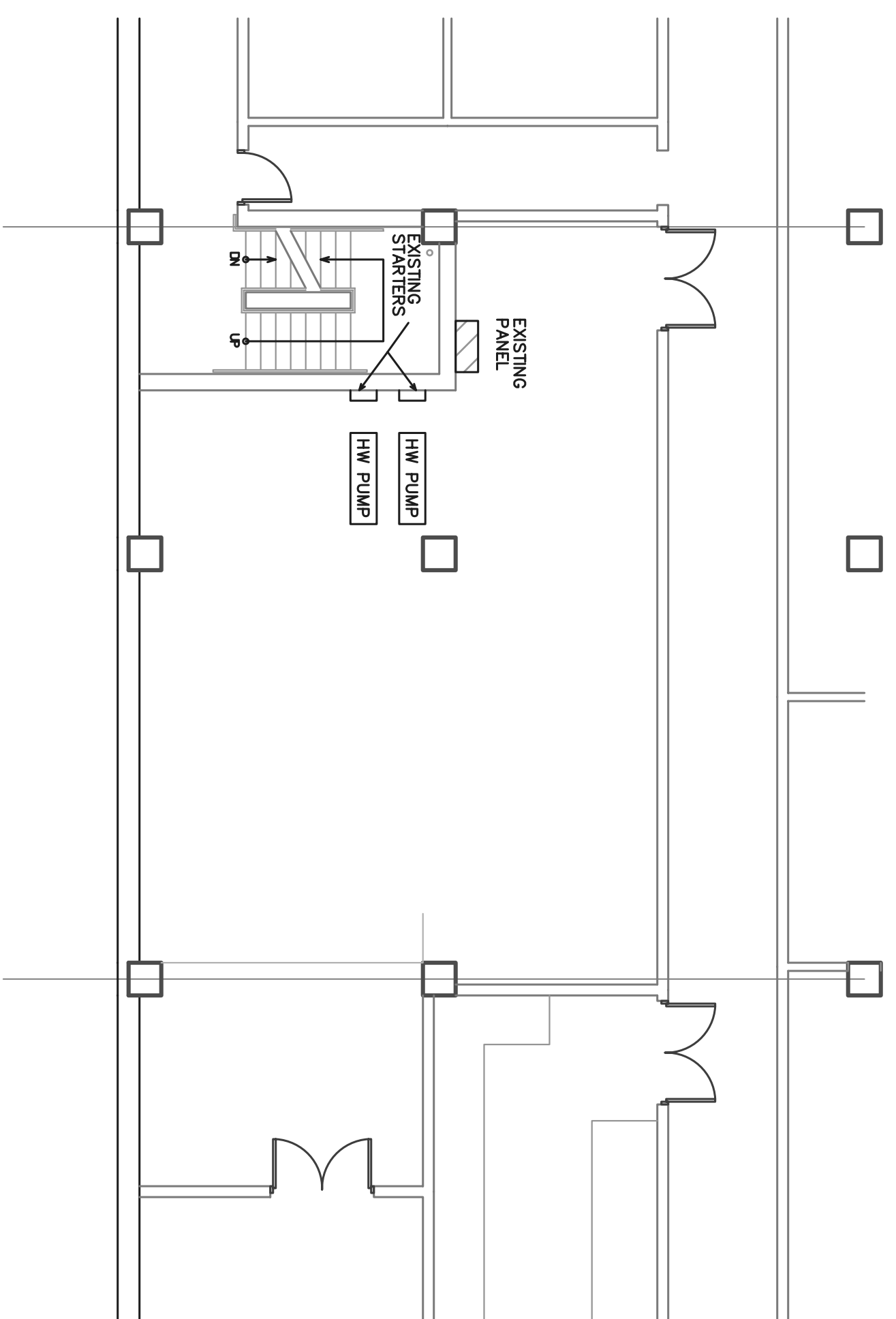
Revisions:

No.	Date	Description	By
1	00-00-00	-	ABC

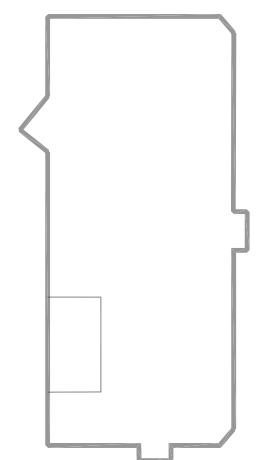
Project Number: 101121A
Designed By: A&O

Date Issued: 11-30-10
Reviewed By: MAH

Sheet Number: **H9.0**

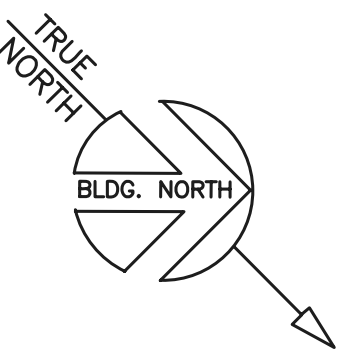
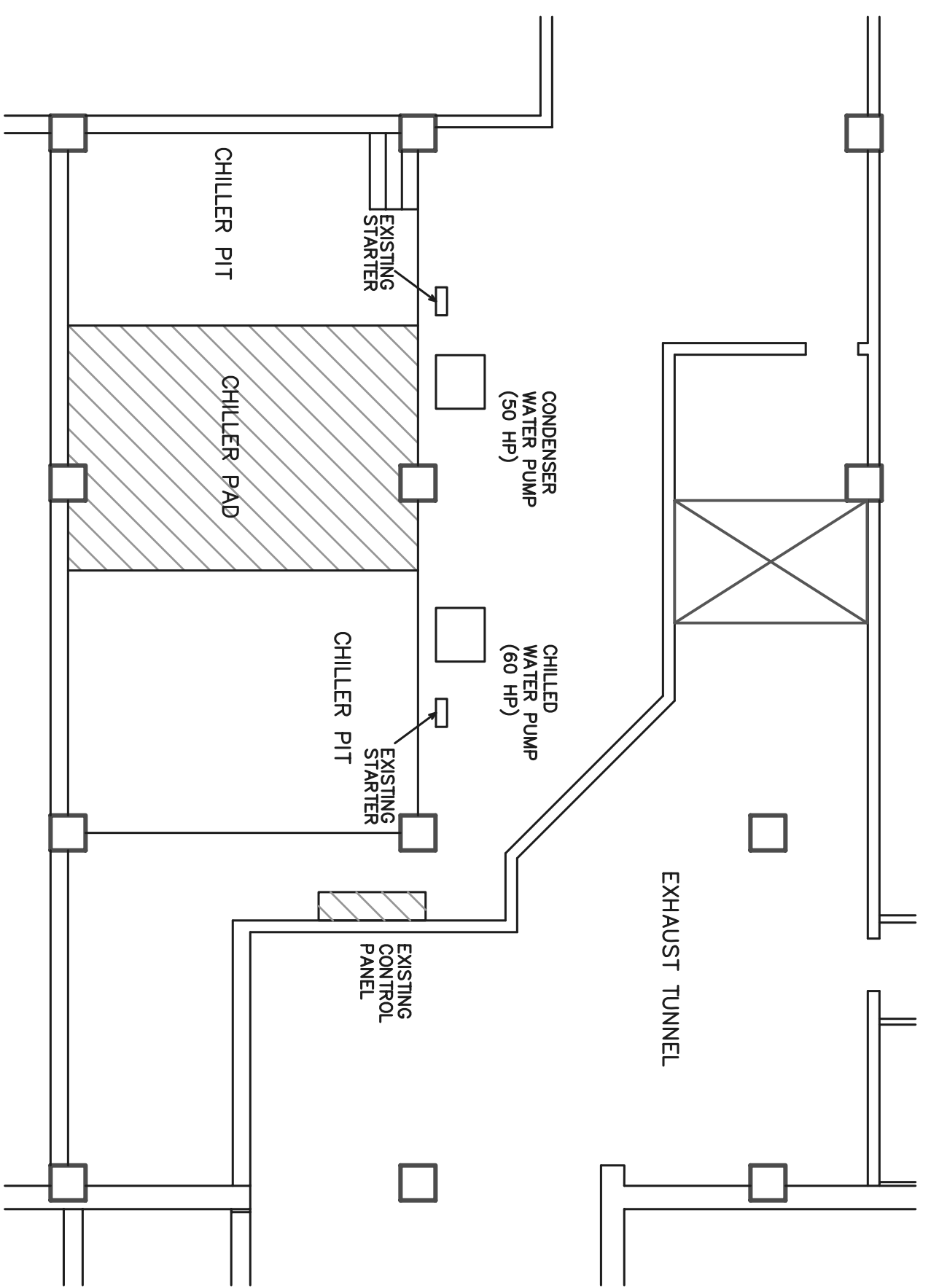


PUBLIC SAFETY BUILDING
BASEMENT FLOOR PLAN

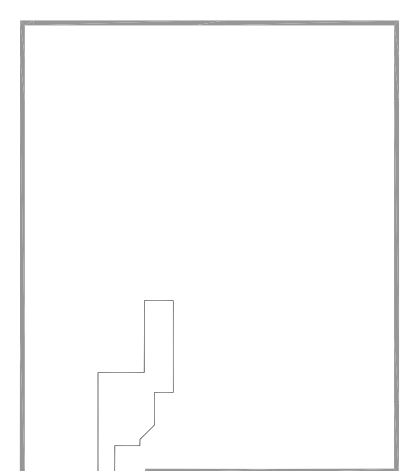


KEY PLAN

BUILDING	FLOOR	MOTOR ID	HP	VOLTAGE	QTY	MODEL NUMBER
PSB	BASEMENT	HWP	7.5	208	2	AC9550-VDR-02A-4-2
PSB	BASEMENT	CHILLED WATER PUMP	60	480	1	AC9550-VDR-078A-4
PSB	PENTHOUSE	COOLING TOWER	40	480	1	AC9550-VDR-059A-4
PSB	PENTHOUSE	RF-2	2	480	1	AC9550-VDR-04A1-4
PSB	PENTHOUSE	RF-3	5	480	1	AC9550-VDR-08A-4
PSB	PENTHOUSE	RF-4	3	480	1	AC9550-VDR-04A1-4
CCB	BASEMENT	CW PUMP	60	480	1	AC9550-VDR-078A-4
CCB	BASEMENT	COND. PUMP	50	480	1	AC9550-VDR-072A-4
CCB	GROUND	HWP	7.5	480	2	AC9550-VDR-072A-4
CCB	THIRD	HWP	7.5	480	2	AC9550-VDR-072A-4



CITY-COUNTY BUILDING
SUB-BASEMENT FLOOR PLAN



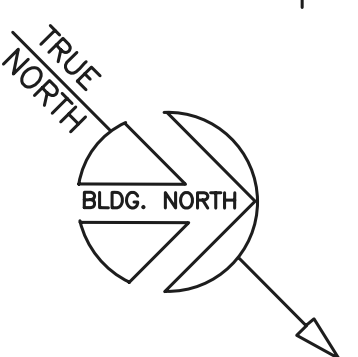
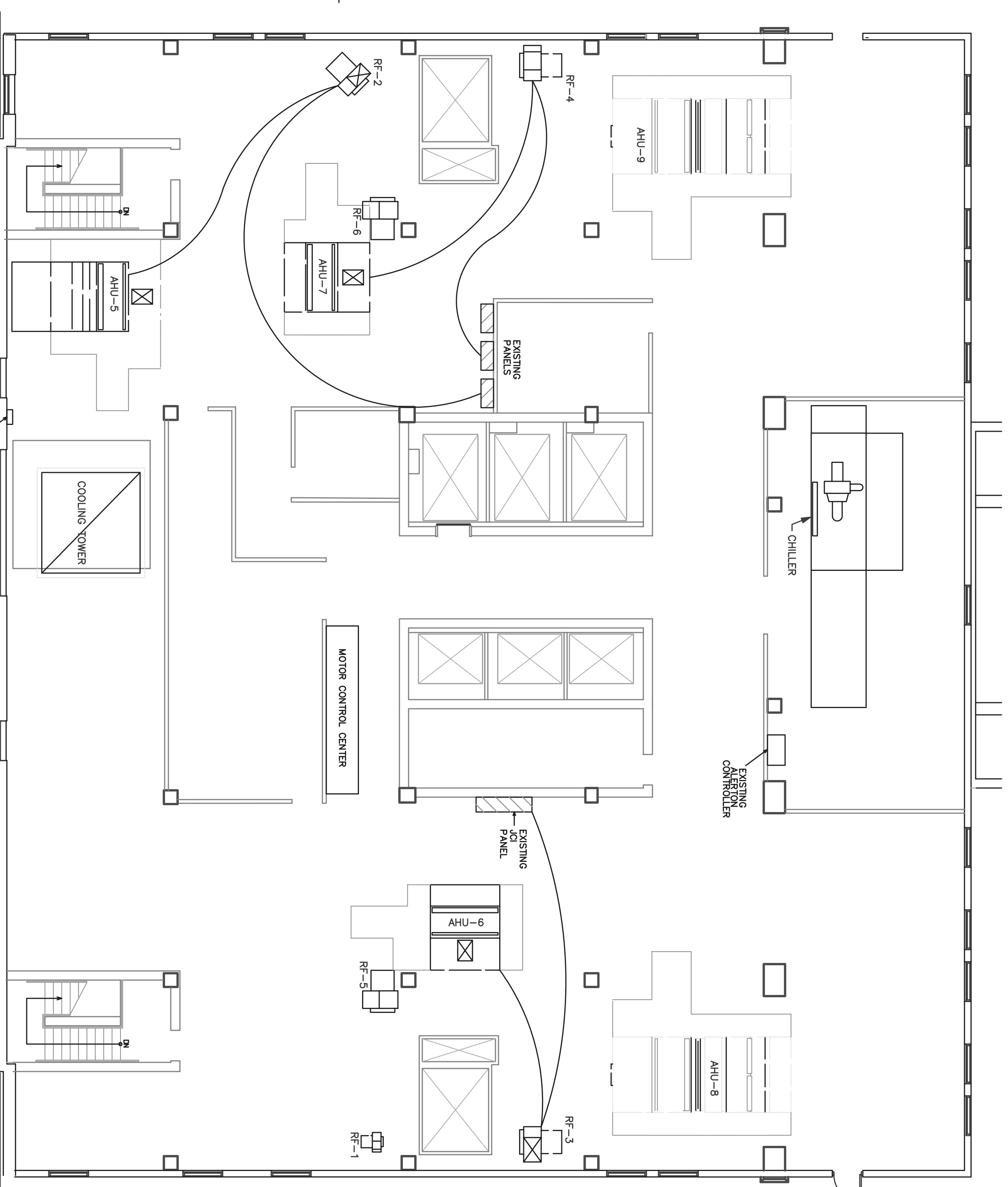
KEY PLAN

- PSB BASEMENT – HW PUMPS:**
- CONTRACTOR SHALL PROVIDE AND INSTALL NEW VARIABLE FREQUENCY DRIVES TO SERVE EXISTING HOT WATER PUMPS (7.5 HP – 208V).
 - EXISTING CONDUCTORS MAY BE REUSED TO THE EXTENT POSSIBLE FOR POWER SERVING VFDs.
 - REMOVE EXISTING STARTERS AND WALL MOUNT VFDs IN THE PROXIMITY OF THE STARTERS.
 - VFDs SHALL BE CONTROLLED BY SYSTEM PRESURE.
 - OWNER WILL PROVIDE 1/4" THREADED WELL FOR PRESSURE SENSOR; CONTRACTOR TO PROVIDE PRESSURE SENSOR AND CONTROL WIRING.
 - PROVIDE AND INSTALL NEW ALERTON XCL 1188 CONTROLLER IN EXISTING PANEL.
 - SENSOR SHALL BE TIED INTO NEW CONTROLLER AND INTEGRATED TO BUILDING AUTOMATION SYSTEM PER SPECIFICATION SECTION 23 09 23.

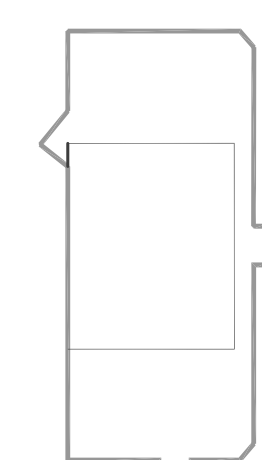
- PSB PENTHOUSE – COOLING TOWER:**
- CONTRACTOR SHALL PROVIDE AND INSTALL NEW VARIABLE FREQUENCY DRIVES TO SERVE EXISTING COOLING TOWER FAN (40 HP).
 - VFD SHALL BE WALL MOUNTED.
 - EXISTING CONDUCTORS MAY BE REUSED TO THE EXTENT POSSIBLE FOR POWER SERVING VFDs.
 - CONTRACTOR SHALL PROVIDE CONNECTION TO EXISTING 'ALERTON' CONTROLLER FOR VFD CONTROL.
 - SENSOR SHALL BE TIED INTO NEW CONTROLLER AND INTEGRATED TO BUILDING AUTOMATION SYSTEM PER SPECIFICATION SECTION 23 09 23.
 - OWNER TO PROVIDE SEQUENCE OF OPERATIONS; OPERATION WILL BE BASED ON CONDENSER WATER TEMPERATURE.

- PSB PENTHOUSE – RETURN FANS (ALTERNATE BID 1):**
- CONTRACTOR SHALL PROVIDE AND INSTALL NEW VARIABLE FREQUENCY DRIVES TO SERVE EXISTING RETURN FANS, RF-2 (2 HP), RF-3 (5 HP), AND RF-4 (3 HP).
 - REMOVE EXISTING STARTERS; INSTALL VFDs ON FLOOR MOUNTED 'UNISTRUT' STANDS; COORDINATE LOCATION WITH OWNER.
 - CONTRACTOR SHALL PROVIDE CONNECTION TO EXISTING JOHNSON CONTROLS PANEL FOR START/STOP CONTROL AND FAN STATUS.
 - REMOVE CONTROL WIRING CURRENTLY FEEDING MOTOR CONTROL CENTER; PROVIDE NEW WIRING FROM EXISTING PANELS TO VFDs.

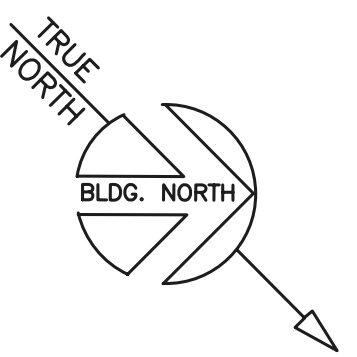
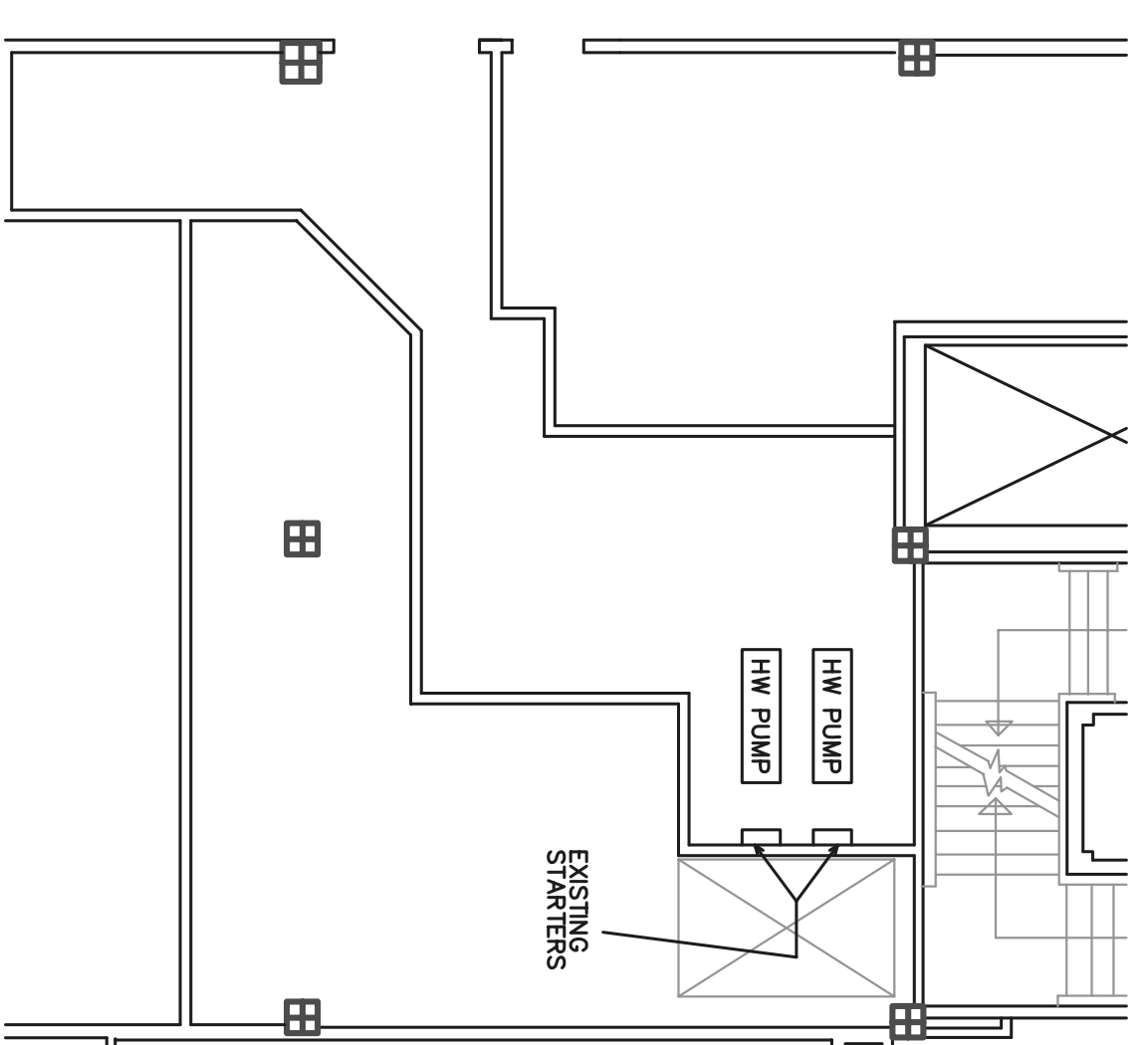
- CCB BASEMENT (ALTERNATE BID 2):**
- CONTRACTOR SHALL PROVIDE AND INSTALL NEW VARIABLE FREQUENCY DRIVES TO SERVE CHILLED WATER PUMP (60 HP) AND CONDENSER WATER PUMP (50 HP); EXISTING CONDUCTORS MAY BE USED TO SERVE VFDs IF POSSIBLE.
 - CONTRACTOR SHALL INSTALL NEW VFDs ON EXISTING STARTER STAND; MODIFY AS REQ'D.
 - CONTRACTOR SHALL REPLACE EXISTING CONTROLERS SERVING CHILLERS; REPLACE WITH ALERTON CONTROLLERS AND ADD THE POINTS NECESSARY TO CONTROL CHILLERS AND PUMPS.
 - CONTRACTOR SHALL INTEGRATE WITH BUILDING AUTOMATION SYSTEM PER SPECIFICATION SECTION 23 09 23.
 - OWNER TO PROVIDE SEQUENCE OF OPERATION.
 - EXISTING PNEUMATIC CHILLER ISOLATION VALVES WILL BE REUTILIZED.



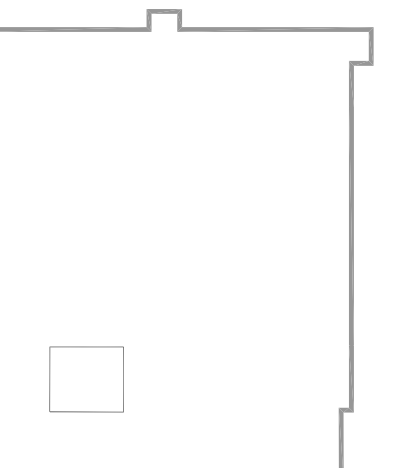
PUBLIC SAFETY BUILDING
GROUND FLOOR PLAN



KEY PLAN

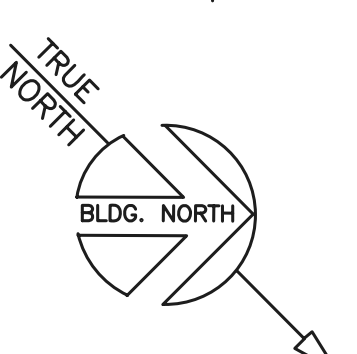


CITY-COUNTY BUILDING
GROUND FLOOR PLAN

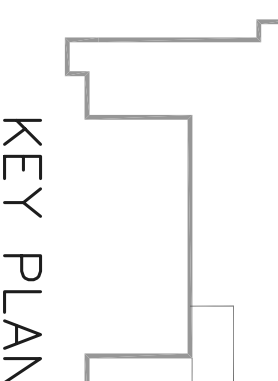


KEY PLAN

- CCB GROUND FLOOR – HW PUMPS:**
- CONTRACTOR SHALL PROVIDE AND INSTALL NEW VARIABLE FREQUENCY DRIVES TO SERVE EXISTING HOT WATER PUMPS (7.5 HP).
 - EXISTING CONDUCTORS MAY BE REUSED TO THE EXTENT POSSIBLE FOR POWER SERVING VFDs.
 - REMOVE EXISTING STARTERS AND WALL MOUNT VFDs IN THE PROXIMITY OF THE STARTERS.
 - VFDs SHALL BE CONTROLLED BY SYSTEM PRESURE.
 - OWNER WILL PROVIDE 1/4" THREADED WELL FOR PRESSURE SENSOR; CONTRACTOR TO PROVIDE PRESSURE SENSOR AND CONTROL WIRING.
 - SENSOR SHALL BE TIED INTO EXISTING ARI PANEL AND INTEGRATED WITH BUILDING AUTOMATION SYSTEM PER SPECIFICATION SECTION 23 09 23.



CITY-COUNTY BUILDING
THIRD FLOOR PLAN



KEY PLAN

- CCB THIRD FLOOR – HW PUMPS:**
- CONTRACTOR SHALL PROVIDE AND INSTALL NEW VARIABLE FREQUENCY DRIVES TO SERVE EXISTING HOT WATER PUMPS (7.5 HP).
 - EXISTING CONDUCTORS MAY BE REUSED TO THE EXTENT POSSIBLE FOR POWER SERVING VFDs.
 - REMOVE EXISTING STARTERS; INSTALL VFDs ON FLOOR MOUNTED 'UNISTRUT' STAND; COORDINATE LOCATION WITH OWNER.
 - VFDs SHALL BE CONTROLLED BY SYSTEM PRESURE.
 - OWNER WILL PROVIDE 1/4" THREADED WELL FOR PRESSURE SENSOR; CONTRACTOR TO PROVIDE PRESSURE SENSOR AND CONTROL WIRING.
 - SENSOR SHALL BE TIED INTO EXISTING ALERTON PANEL AND INTEGRATED WITH BUILDING AUTOMATION SYSTEM PER SPECIFICATION SECTION 23 09 23.

RETRO-COMMISSIONING PR

PUBLIC SAFETY BUILDING + CITY-COUNTY BUILDING

MADISON, WISCONSIN

COUNTY, WISCONSIN

DANE COUNTY
PUBLIC WORKS

TELEPHONE (608)268-4018
FAX (608)268-4019
MADISON, WISCONSIN 53713

BID NUMBER:
310035

Sheet Title:

Revisions:	No.	Date	Description	By
	1	10-09-09		ABC

Project Number:	Designed By:
101121A	

Date Issued:	Reviewed By:
11-30-10	

Sheet Number:

E1.1



**ARNOLD AND
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ELECTRICAL ■ CIVIL ■ HVAC ■ PLUMBING
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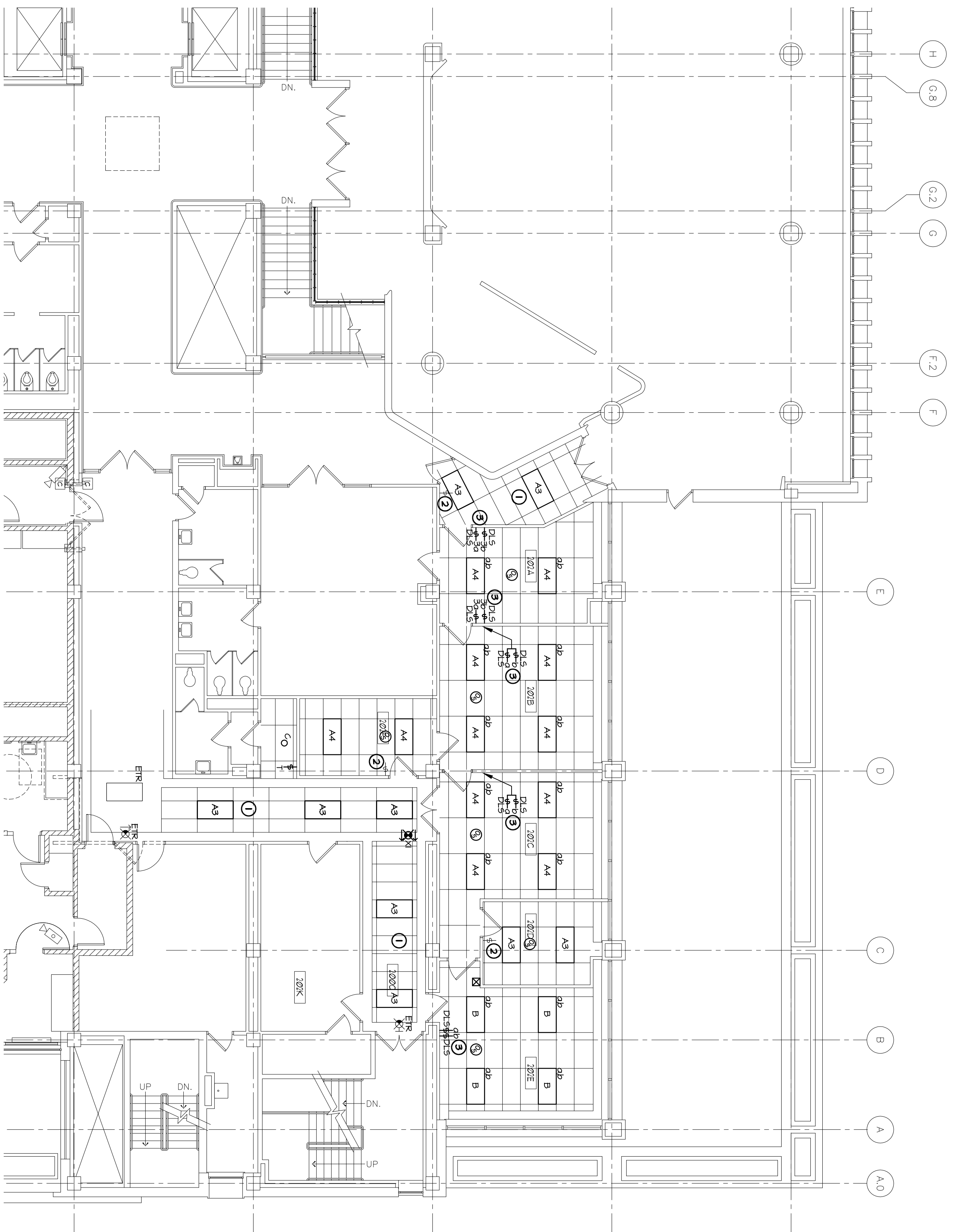
FRB No. 310035

- GENERAL NOTES:**
- EXISTING LIGHTING FIXTURES TO BE REMOVED SHALL BE IDENTIFIED BY A CIRCLE WITH AN 'X' AND REMOVED. VERIFY EXISTING CONDITIONS ON SITE.
 - REAR EXISTING CIRCUITS FOR NEW REPOWERED ROOMS. VERIFY AS NOTED ON DRAWING.
 - PROVIDE NEW LIGHTING CONTROLS AS NOTED ON DRAWING.
- SHEET NOTES:**
- CONNECT BY CONDUIT LIGHTING AND CONTROL.
 - EXISTING SWITCH TO REMAIN.
 - EXISTING SWITCH LOCATION SHALL BE MAINTAINED. EXISTING 3-WAY SWITCH SHALL BE MAINTAINED. 2-WAY SWITCH SHALL BE MAINTAINED. 2-WAY SWITCH SHALL BE MAINTAINED FOR EXISTING LIGHTING.

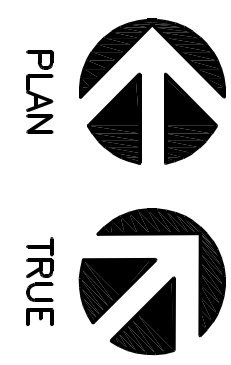
LIGHTING FIXTURE SCHEDULE

DES. NO.	LAMP DATA	DESCRIPTION	MANUFACTURER	LIGHTING FIXTURE	VOLT	BALLAST TYPE	HIGHT	CEILING FIXTURE TYPE	OPTICAL ACCESSORIES	ACCEPTABLE MANUFACTURERS	SEE NOTE	ABBREVIATIONS:	
												DM = DRY WALL	LV = LIVE IN GROUND
A3	FP32850/ECO	2 X 4 TRICOPER	LITONIA	2995 6 32 FMA/125 HVOLT	120	R	R	-	-	-	-		
A4	FP32850/ECO	2 X 4 TRICOPER	LITONIA	2995 6 32 FMA/125 HVOLT	120	R	R	-	-	-	-		
B	FP32850/ECO	2 X 4 NONRECT/CONNECT	LITONIA	2995 6 32 FMA/125 HVOLT	120	R	R	-	-	-	-		
C	CP2000CE/24H	Ø CAN LIGHT	LITONIA	AF 2200T 6 PR HVOLT	120	-	R	-	-	-	-		
XI	LED	EXIT LIGHT	LITONIA	LE 5 HI R EL N	120	-	S	-	-	-	-		

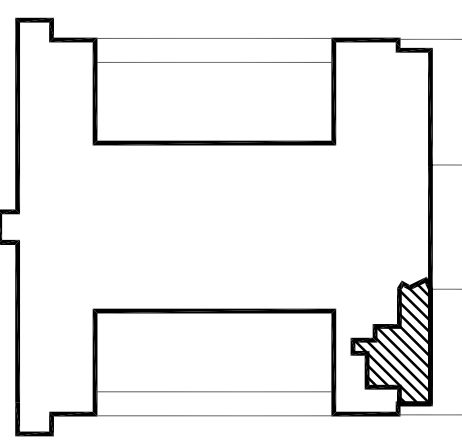
NOTE: SEE SPECIFICATIONS SECTION FOR ADDITIONAL INFORMATION REGARDING LIGHTING FIXTURE AND INSTALLATION REQUIREMENTS. PROVIDE OPTIONS AND ACCESSORIES REFERENCED BY THE COLUMN TITLED "ACCEPTABLE MANUFACTURERS".



1 2ND FLOOR NEW CONSTRUCTION PLAN
SCALE: 1/8" = 1'-0"



PLAN TRUE



RETRO-COMMISSIONING PROJECT

2ND FLOOR MODULINE RETROFIT
CITY-COUNTY BUILDING
MADISON, WISCONSIN
OWNER: DANE COUNTY, WISCONSIN

Sheet Title:
2ND FLOOR NEW
CONSTRUCTION
PLAN

Revisions:		No.	Date	Description	By
Δ	00-00-00	-			ABC

Project Number: 101121A
Designed By: A&O
Date Issued: 11-30-10
Reviewed By: AES

Sheet Number:
E12