



October 22, 2012

Chevron Energy Solutions Company  
A Division of Chevron U.S.A. Inc.  
12980 Foster, Suite 400  
Overland Park, KS 66213-2649  
Tel: 913-748-8800 Fax: 913-748-8734

### **ADDENDUM – Chevron-1**

FROM: Chevron Energy Solutions Company

TO: Prospective Bidders

RE: Addendum – Chevron-1 to Houston Community College – Alief Center Renovation

You are instructed to read and to note the following described changes, corrections, clarifications, approvals, additions, and/or deletions.

Receipt of Addendum – Chevron-1 is to be acknowledged on the bid form by the Bidder.

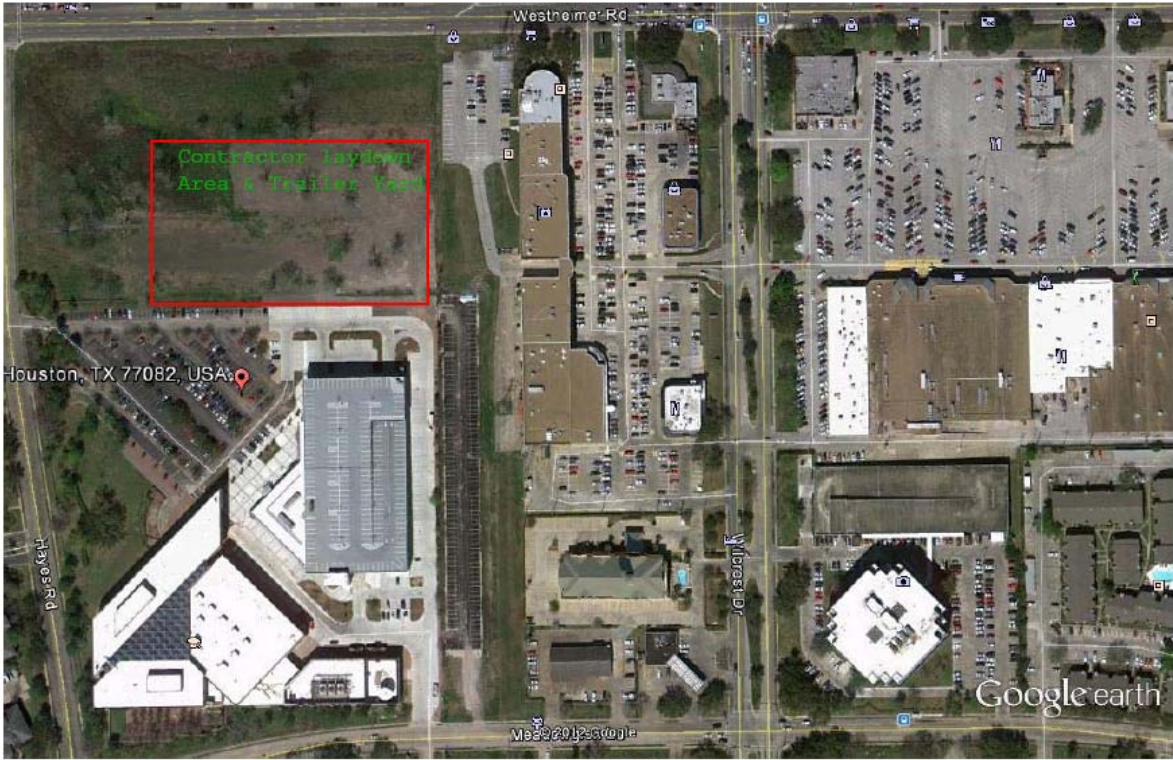
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#### **CHANGES/CLARIFICATIONS**

- 1) Owner shall have first right of refusal for all equipment removed from the facility. Bidder shall be responsible for removal and proper disposal of refrigerant. If existing chillers must be disassembled to allow them to be removed from the facility, reassembly is not required.
- 2) There will be lay down area available for the Contractors. It will be located north of the Alief Center parking lot; map is attached at the end of this document. General Contractor shall provide security fence around area shown. Bidder shall be responsible for secure containers as required.
- 3) Existing air-handling units to be replaced that are currently serving occupied areas on the 1<sup>st</sup> floor include: AHU-1-1, AHU-3-1, AHU-P-1 and AHU-P-2.
- 4) New variable frequency drives shall be provided by Bidder and installed by General Contractor.
- 5) Control valves and control dampers (not provided with AHU) shall be provided by Controls Contractor and installed by Bidder.
- 6) Chiller automatic isolation valves shall be replaced. New valves provided by Controls Contractor and installed by Bidder; existing actuators shall be reused.
- 7) Remove existing balancing valves on existing air-handling units to remain that shall receive new pressure independent control valves, provide and install spool piece as required.
- 8) Refrigerant monitor shall be provided and installed by Bidder. Controls Contractor shall interface with refrigerant monitor and interlock with purge system. Controls Contractor shall also provide and install strobe lights and pull stations/emergency push buttons. Power wiring by General Contractor.



- 9) Fume hoods and fume hood controls shall be provided and installed by Bidder. Controls Contractor shall interface to fume hood controller via BACnet. Point mapping shall be provided by Bidder.
- 10) Cooling tower motors to be provided and installed by Bidder. Electrical by General Contractor.
- 11) Drawings show existing VAV boxes to be locked closed on the 3<sup>rd</sup> and 4<sup>th</sup> floor; this work shall be completed by Controls Contractor.
- 12) Roof curbs and penetrations associated with mechanical installation shall be provided and installed by Bidder. Contact HCC Roofing Consultant, Mike Perry – 281-633-1258, regarding roofing requirements including warranty.
- 13) Fire protection shall be provided and installed by General Contractor. This shall include any existing fire protection systems that must be removed and replaced or relocated to remove and install equipment.
- 14) Fire dampers shall be provided and installed by Bidder.
- 15) Smoke detectors shall be provided and installed by General Contractor.
- 16) Bidder shall determine means necessary to remove and install equipment. Should existing doors, walls, louvers, etc. need to be removed and replaced, Bidder shall include this work in his/her price. Bidder shall also include roof protection to prevent damage while working on the roof.
- 17) The chilled water tie-ins for the new FCU's serving the north stairwell are not shown on the drawings. New chilled water supply and return piping shall be routed to existing 2" lines from shaft near room "Building Ops 2002". Coordinate exact location with Chevron Construction Manager and Engineer.
- 18) Asbestos abatement shall be by General Contractor.



Google earth





October 29, 2012

Chevron Energy Solutions Company  
A Division of Chevron U.S.A. Inc.  
12980 Foster, Suite 400  
Overland Park, KS 66213-2649  
Tel: 913-748-8800 Fax: 913-748-8734

## **ADDENDUM – Chevron-2**

FROM: Chevron Energy Solutions Company

TO: Prospective Bidders

RE: Addendum – Chevron-2 to Houston Community College – Alief Center Renovation

You are instructed to read and to note the following described changes, corrections, clarifications, approvals, additions, and/or deletions.

Receipt of Addendum – Chevron-2 is to be acknowledged on the bid form by the Bidder.

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### **CHANGES/CLARIFICATIONS**

- 1) Remove Paragraph 2.5.C.5 from Specification Section 23 36 00. Refer to revised fume hood supply and exhaust valve schedules.
- 2) Specification Section 23 05 14 is attached and shall be included in Bid Documents.
- 3) Five (5) existing Liebert units located on the 2<sup>nd</sup> floor across from the freight elevator shall be removed by Bidder. Remove piping back to valves and provide blind flanges. FM-200 shall be removed by General Contractor.
- 4) Air-handling units that must be broken down and reassembled in the field shall be reassembled per manufacturer's written instructions. All joints shall be caulked and properly sealed. Apply ¼" thick by 1-1/4" wide closed cell neoprene gasketing to all joints. Use commercial grade silicone (indoor use) to seal seams.
- 5) The following changes shall be included in Section 23 64 16, Part 1 GENERAL, Article 1.6 VERIFICATION OF CHILLER CAPACITY AND EFFICIENCY, Paragraph A FACTORY PERORMANCE TEST;

Remove subparagraph 4 and subparagraph 5 and replace with the following: The equipment will be accepted if the test procedures and results are in conformance with AHRI Standard 550/590. If the equipment fails to perform within allowable tolerances, the manufacturer will be allowed to make necessary revisions to his equipment and retest as required. The manufacturer shall assume all expenses incurred by the owner or his representative to witness the request.



Subparagraph 6 Line a, Revise line "a" to read: For each ton below the allowable capacity as set forth in AHRI 550/590 of the design capacity, \$1,000 (one thousand dollars) per ton will be deducted from the contract price.

Subparagraph 6 Line b, Revise line "b" to read: Allowable capacity = [(1 - tolerance) x design capacity]; tolerance per AHRI 550/590.

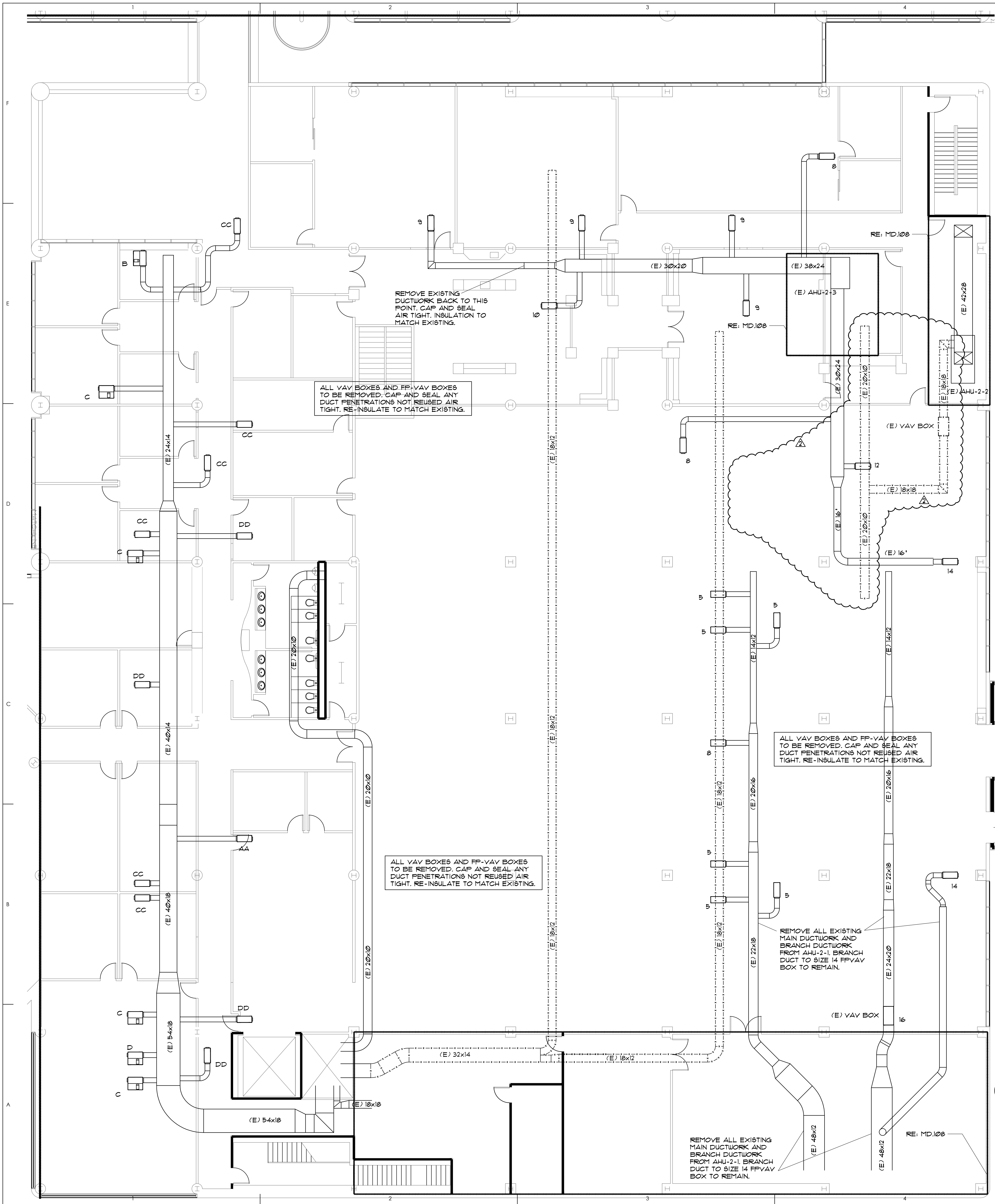
Subparagraph 6 Line c, Add the following to end of line "c": tolerance per AHRI 550/590.

Section 23 64 16, Part 1 GENERAL, Article 1.6 VERIFICATION OF CHILLER CAPACITY AND EFFICIENCY, Paragraph B;

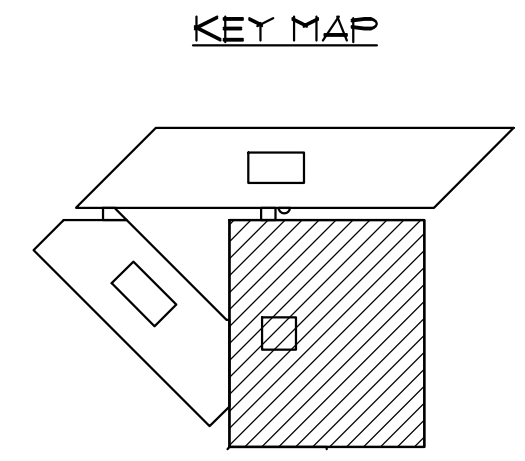
Paragraph B.: Add the following to end of paragraph B: Conduct the performance test in accordance with AHRI Standard 550/590 procedures and tolerances.

Section 23 64 16, Part 1 GENERAL, Article 1.9 WARRANTY, Paragraph B; change "materials" to "materials, labor and refrigerant".

- 6) Section 23 73 13, Part 2 PRODUCTS, Delete Article 2.12 AIRFLOW MEASUREMENT".
- 7) CH-2 and CH-4 have mechanical issues and are not currently operable. One (1) chiller is required to be running to condition the building.
- 8) Bidder shall tie-in chilled water lines for the new FCU's serving the north stairwell per Addendum Chevron-1. This piping originally served two (2) ceiling hung units and has been abandoned. Bidder shall remove abandoned piping.
- 9) Division-1 General Requirements are attached and shall be included in Bid Documents. Specifications available at: <http://app.e-builder.net/public/PublicFolderView.aspx?FolderID={9f9ffb87-d872-4f75-9c86-cd331e9cd2e4}>. All correspondence from Bidder shall be through Chevron Energy Solutions.
- 10) Bidder shall include a project schedule with his/her bid.
- 11) EF-1 shall be equipped with 2-speed motor.
- 12) ELAP-1 and ELAP-2 shall be rotated 90 degrees, coordinate exact location/orientation with Chevron Energy Solutions Project Manager and Engineer.
- 13) Provide alternate Deduct for Carrier Chillers as substitution for Trane Chillers.
- 14) The following sheets have been revised and are attached: MD.104, M.102, M.103, M.104, M.107, M.401, M.406, M.408 and M.601.



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



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5850 SAN FELIPE, SUITE 140, HOUSTON TX 77057  
OFFICE: 713-266-8984  
WWW.DVORDEN.COM  
REGISTRATION NO. F-6034

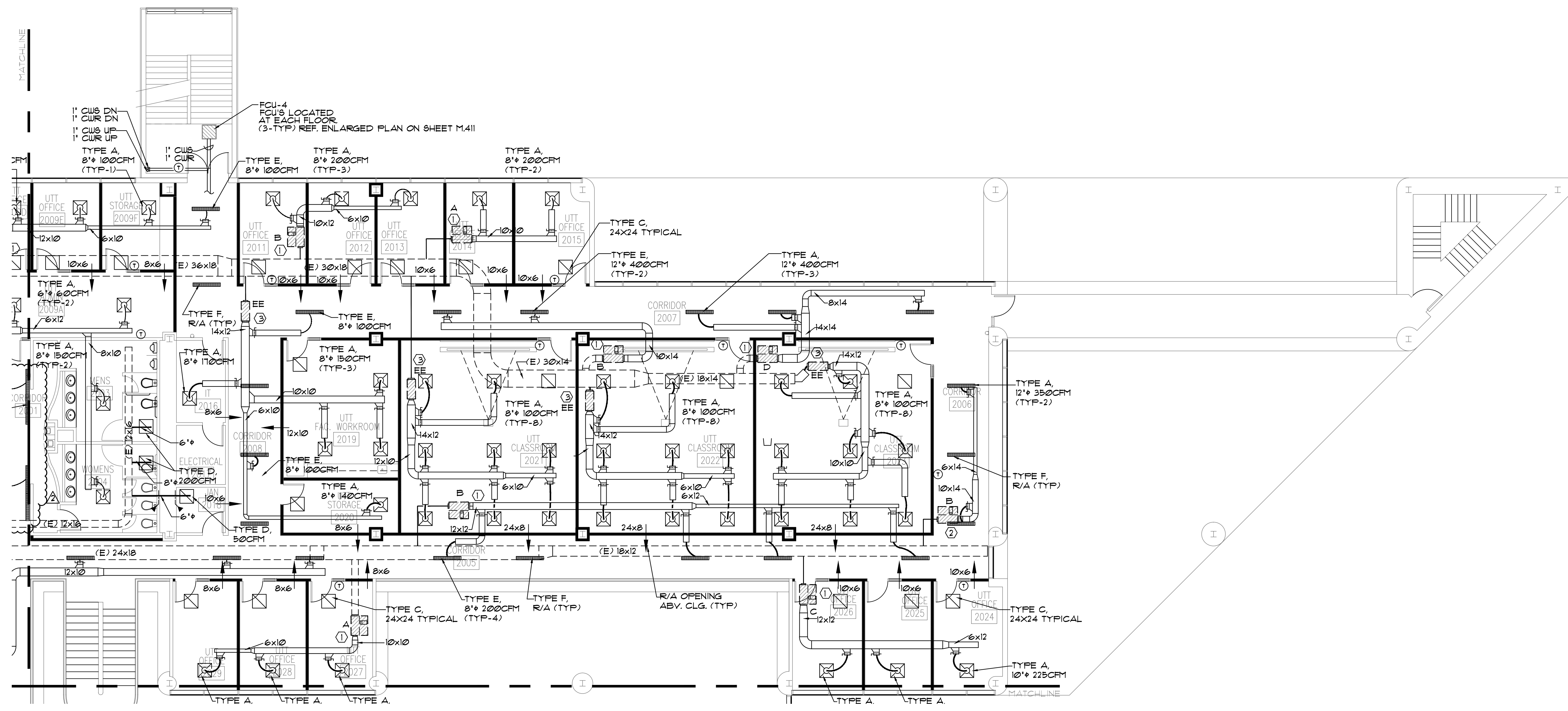
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10-17-2012	ISSUED FOR BID
10-09-2012	ISSUED FOR PERMIT



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DRAWN BY	RH/MAH
CHECKED BY	MAH
JOB NO.	1397
SCALE	1/8" = 1'-0"
DATE	10-09-2012
ISSUE	ISSUED FOR BID

2nd FLOOR MECHANICAL DEMOLITION - PART 3

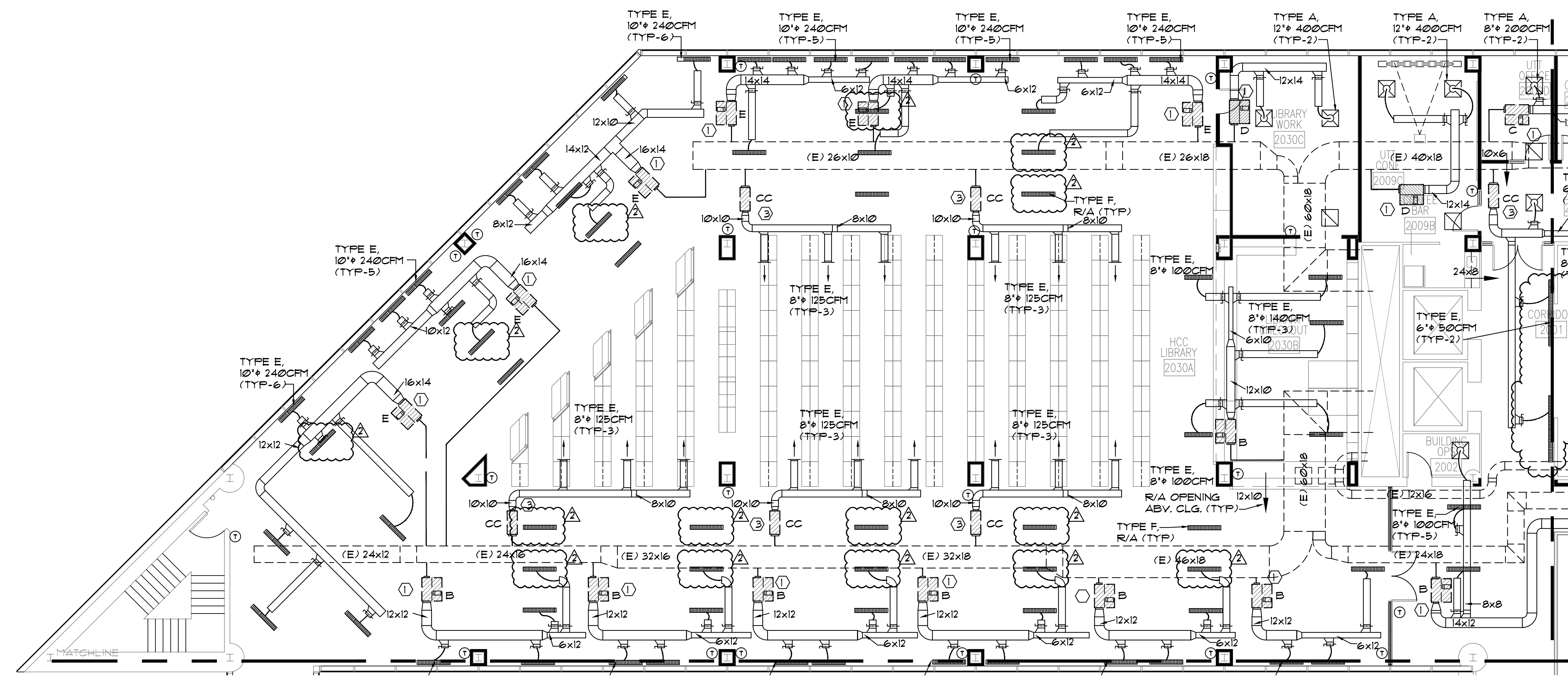
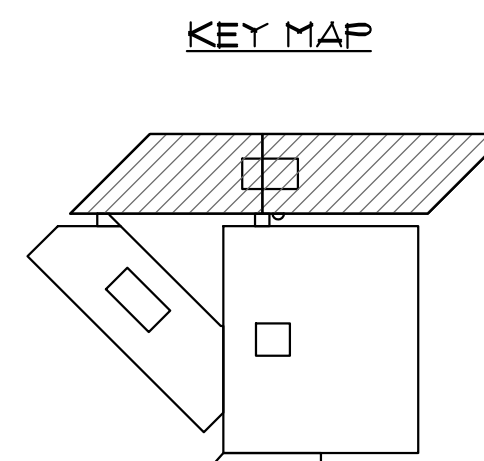
DRAWING NUMBER  
**MD.104**



**2ND FLOOR PARTIAL NEW CONSTRUCTION PLAN - MECHANICAL**  
 SCALE 1/8" = 1'-0"

**PLENUM NOTE:**  
 RETURN AIR CEILING PLENUMS ARE UTILIZED ON THIS PROJECT THROUGHOUT. DURING THE COURSE OF CONSTRUCTION, THE CONTRACTOR SHALL ASCERTAIN THAT ALL ROOMS TO WHICH AIR IS SUPPLIED, HAVE RETURN AIR PATHS BACK TO AND THRU THE CEILING PLENUM. ANY SPACES OBSERVED WHICH DO NOT HAVE SUCH OPENINGS SHALL BE REPORTED TO A/E IMMEDIATELY FOR RESOLUTION. PIPING AND DUCTWORK SHALL BE INSTALLED IN SUCH A MANNER SO AS NOT TO BLOCK THE RETURN AIR PATH, RETURN AIR OPENINGS TO SHAFTS & INTAKE DUCTWORK. ALL MATERIALS IN PLENUMS SHALL BE PLENUM RATED NON-COMBUSTIBLE MATERIALS.

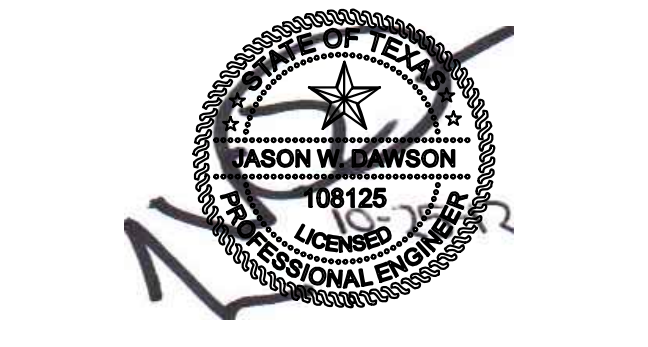
- MECHANICAL KEYED NOTES:**
- ① NEW FAN POWERED VAV BOX. REFER TO SCHEDULE.
  - ② NEW LAB HOOD, 800CFM. PROVIDE WITH 8" DUCT TO OUTDOOR. PROVIDE WITH PHOENIX CONTROLS INTERLOCKED INTO BAS SYSTEM.
  - ③ NEW VAV BOX. REFER TO SCHEDULE.



**2ND FLOOR PARTIAL NEW CONSTRUCTION PLAN - MECHANICAL**  
 SCALE 1/8" = 1'-0"

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 5850 SAN FELIPE, SUITE 140 HOUSTON TX 77057  
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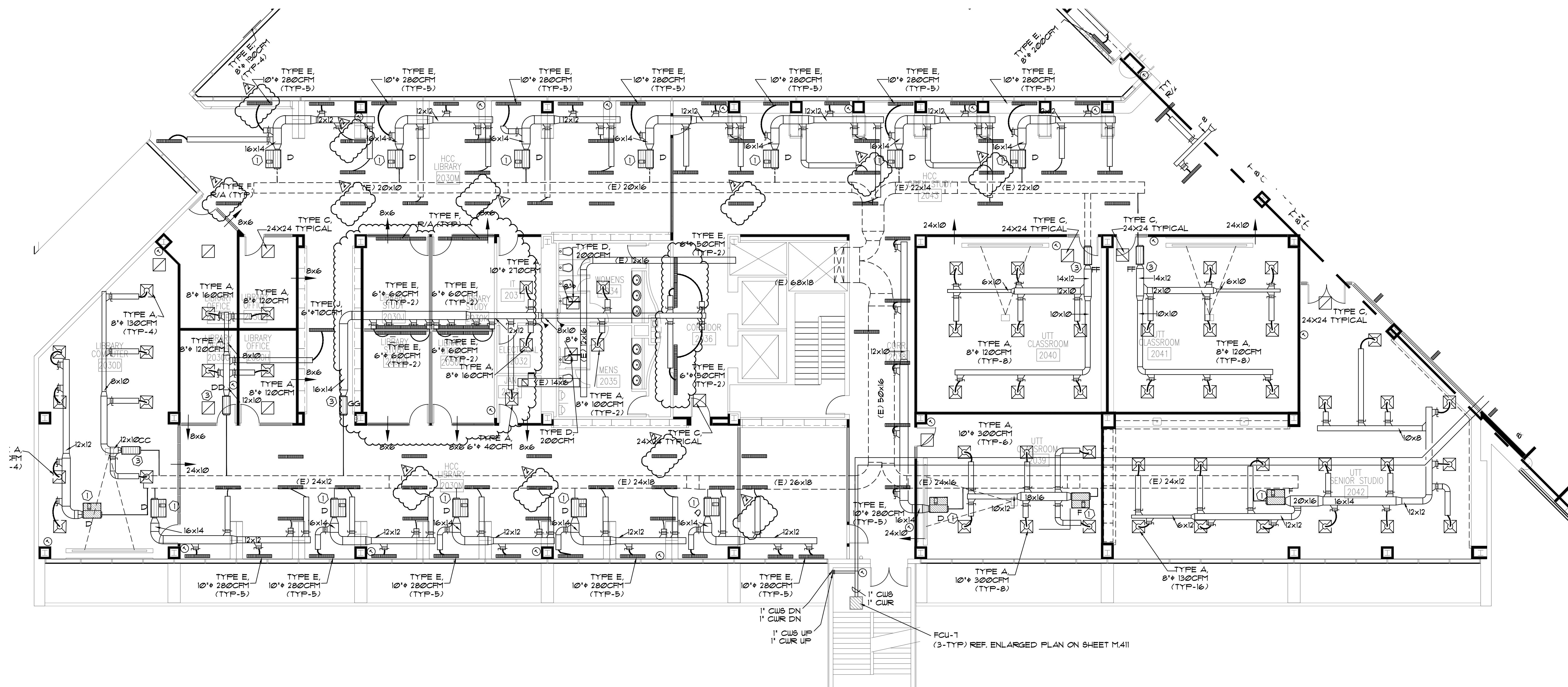
DATE	DATE	DESCRIPTION
10-25-2012	10-17-2012	ISSUED FOR PERMIT
10-17-2012	10-09-2012	ISSUED FOR BID
10-09-2012		ADDENDUM NO. CHEVRON 2



FILENAME: MECHANICAL-R.dwg  
 JOB ABBREV: HCC-UT-ALIEF  
 DRAWN BY: RH/MAH CHECKED BY: MAH  
 JOB NO.: 1397 SCALE: 1/8" = 1'-0"  
 DATE: 10-09-2012 ISSUE: ISSUED FOR BID

2nd FLOOR MECHANICAL PLAN - PART 1

DRAWING NUMBER: **M.102**



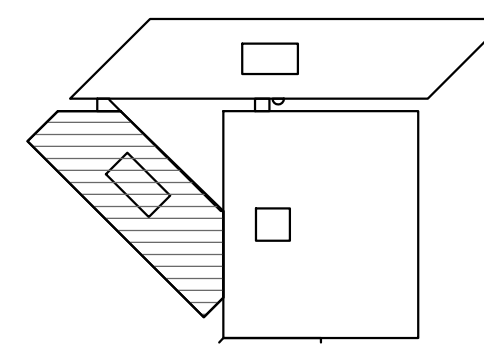
**2ND FLOOR PARTIAL NEW CONSTRUCTION PLAN - MECHANICAL**  
SCALE 1/8" = 1'-0"

**MECHANICAL KEYED NOTES:**

- ① NEW FAN POWERED VAV BOX. REFER TO SCHEDULE.
- ② NEW LAB HOOD, 800CFM. PROVIDE WITH 8" DUCT TO OUTDOOR. PROVIDE WITH PHOENIX CONTROLS INTERLOCKED INTO BAS SYSTEM.
- ③ NEW VAV BOX. REFER TO SCHEDULE.

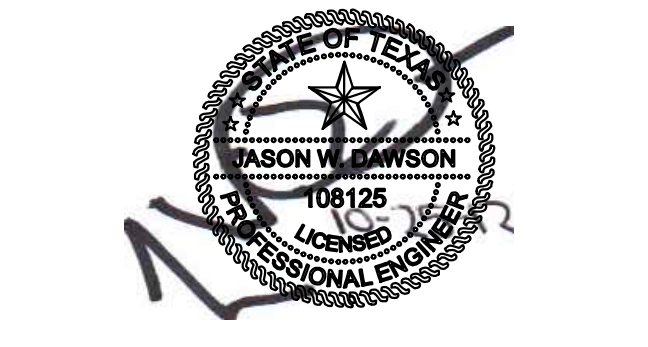
**FLENUM NOTE:**  
RETURN AIR CEILING FLENUMS ARE UTILIZED ON THIS PROJECT THROUGHOUT. DURING THE COURSE OF CONSTRUCTION, THE CONTRACTOR SHALL ASCERTAIN THAT ALL ROOMS TO WHICH AIR IS SUPPLIED, HAVE RETURN AIR PATHS BACK TO AND THRU THE CEILING FLENUM. ANY SPACES OBSERVED WHICH DO NOT HAVE SUCH OPENINGS SHALL BE REPORTED TO A/E IMMEDIATELY FOR RESOLUTION. PIPING AND DUCTWORK SHALL BE INSTALLED IN SUCH A MANNER SO AS NOT TO BLOCK THE RETURN AIR PATH. RETURN AIR OPENINGS TO SHAFTS & INTAKE DUCTWORK ALL MATERIALS IN FLENUMS SHALL BE FLENUM RATED NON-COMBUSTIBLE MATERIALS.

**KEY MAP**



DATE	DATE	DESCRIPTION
10-25-2012	ADDENDUM NO. CHEVRON 2	
10-17-2012	ISSUED FOR BID	
10-09-2012	ISSUED FOR PERMIT	

PROFESSIONAL SEALS

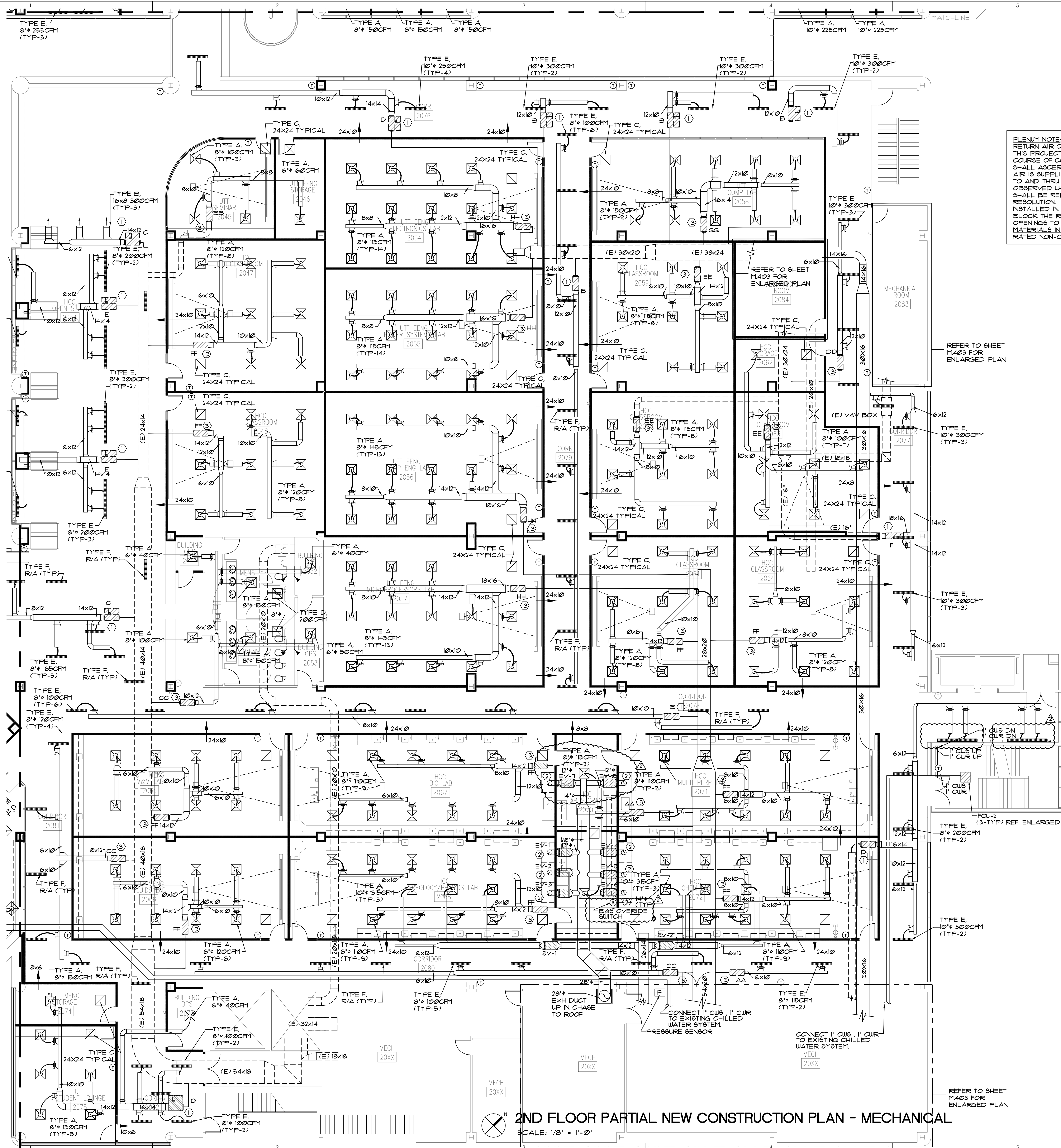


FILENAME	MECHANICAL-R.dwg
JOB ABBREV.	HCC-UT-ALIEF
DRAWN BY	RH/MAH
CHECKED BY	MAH
JOB NO.	1397
SCALE	1/8" = 1'-0"
DATE	10-09-2012
ISSUE	ISSUED FOR BID

**2nd FLOOR MECHANICAL PLAN - PART 2**

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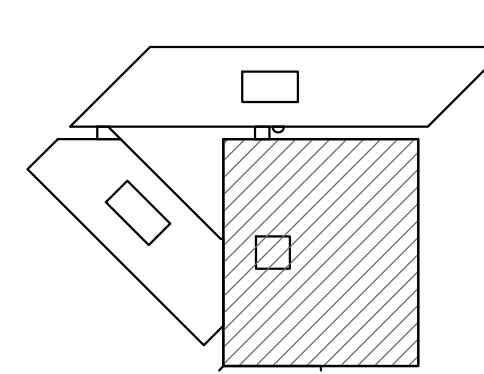


**PLENUM NOTE:**  
RETURN AIR CEILING PLENUMS ARE UTILIZED ON THIS PROJECT THROUGHOUT. DURING THE COURSE OF CONSTRUCTION, THE CONTRACTOR SHALL ASCERTAIN THAT ALL ROOMS TO WHICH AIR IS SUPPLIED, HAVE RETURN AIR PATHS BACK TO AND THRU THE CEILING PLENUM. ANY SPACES OBSERVED WHICH DO NOT HAVE SUCH OPENINGS SHALL BE REPORTED TO A/E IMMEDIATELY FOR RESOLUTION. PIPING AND DUCTWORK SHALL BE INSTALLED IN SUCH A MANNER SO AS NOT TO BLOCK THE RETURN AIR PATH. RETURN AIR OPENINGS TO SHAFTS & INTAKE DUCTWORK ALL MATERIALS IN PLENUMS SHALL BE PLENUM RATED NON-COMBUSTIBLE MATERIALS.

**MECHANICAL KEYED NOTES:**

- 1 NEW FAN POWERED VAV BOX. REFER TO SCHEDULE.
- 2 NEW LAB HOOD, 800CFM. PROVIDE WITH 8" DUCT TO OUTDOOR. PROVIDE WITH PHOENIX CONTROLS INTERLOCKED INTO BAS SYSTEM.
- 3 NEW VAV BOX. REFER TO SCHEDULE.

**KEY MAP**



DATE	DESCRIPTION
10-25-2012	ADDENDUM NO. CHEVRON 2
10-17-2012	ISSUED FOR BID
10-09-2012	ISSUED FOR PERMIT



FILENAME:	MECHANICAL-R.dwg
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DRAWN BY:	RH/MAH
CHECKED BY:	MAH
JOB NO.:	1397
SCALE:	1/8" = 1'-0"
DATE:	10-09-2012
ISSUE:	ISSUED FOR BID

**2nd FLOOR MECHANICAL PLAN - PART 3**

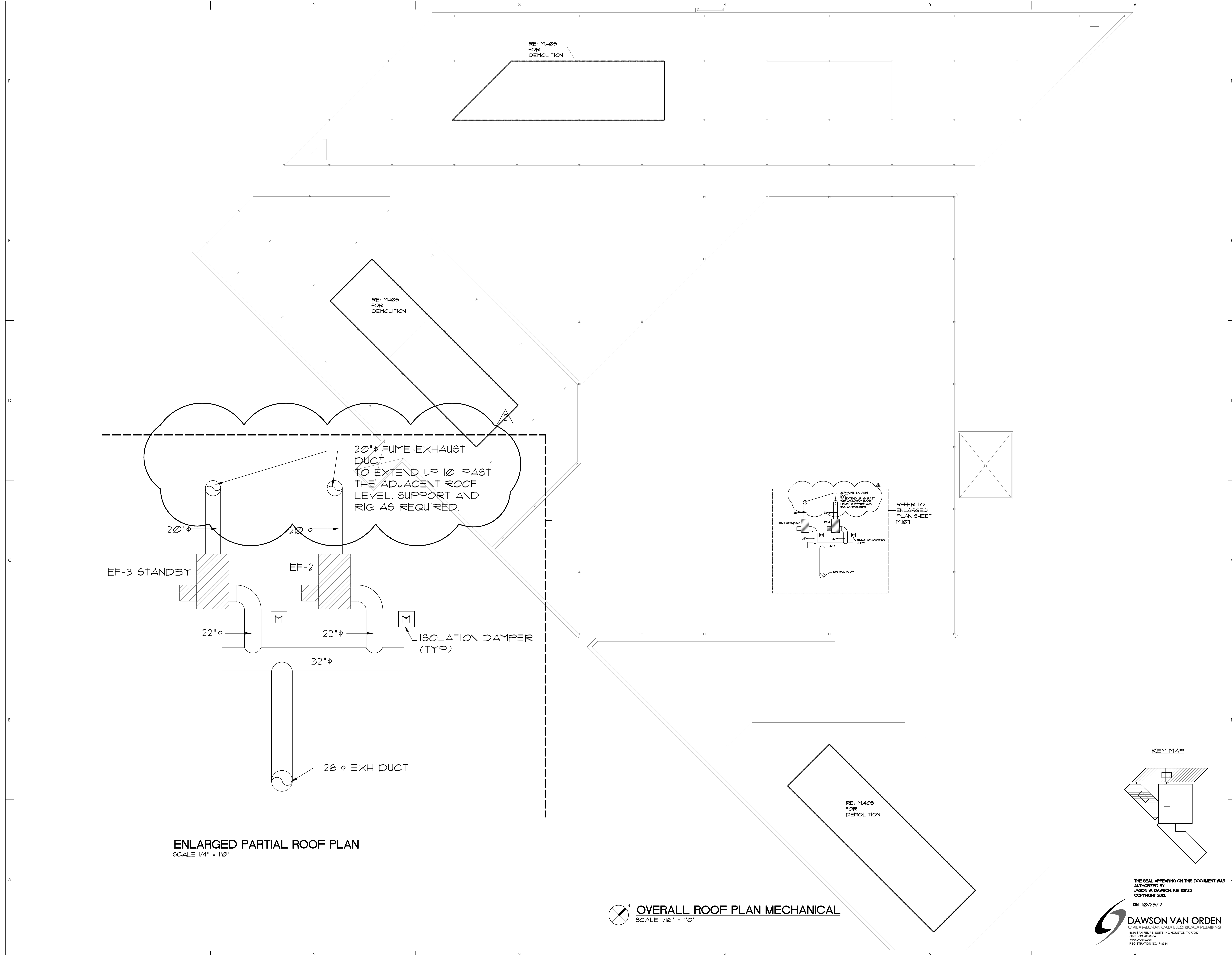
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**2ND FLOOR PARTIAL NEW CONSTRUCTION PLAN - MECHANICAL**

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

**M.104**



**ENLARGED PARTIAL ROOF PLAN**  
SCALE 1/4" = 1'-0"

**OVERALL ROOF PLAN MECHANICAL**  
SCALE 1/16" = 1'-0"

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DATE	DATE	DESCRIPTION
10-09-2012	ISSUED FOR PERMIT	
10-17-2012	ISSUED FOR BID	
10-25-2012	ADDITION NO. CHEVRON 2	



FILENAME: MECHANICAL-R.dwg  
JOB ABBREV.:  
DRAWN BY: RH/MAH CHECKED BY: MAH  
JOB NO.: 1397 SCALE: 1/16" = 1'-0"  
DATE: 10-09-2012 ISSUE: ISSUED FOR BID

ROOF MECHANICAL PLAN

DRAWING NUMBER  
**M.107**

**MECHANICAL DEMOLITION KEYED NOTES:**

- ① REMOVE EXISTING SECONDARY CHILLED WATER PUMP AND DISCONNECT/REMOVE 8" CHILLED WATER PIPING BACK TO SHUT-OFF VALVES AS REQUIRED FOR REMOVAL AND RE-INSTALLATION OF NEW PUMP. REMOVE ALL EXISTING PUMP CONTROL VALVING. PUMP REPLACEMENT TO BE PHASED.
- ② REMOVE EXISTING CONDENSER WATER PUMP AND DISCONNECT/REMOVE CONDENSER 12" WATER PIPING BACK TO SHUT-OFF VALVES AS REQUIRED FOR REMOVAL AND RE-INSTALLATION OF NEW PUMP. REMOVE ALL EXISTING PUMP CONTROL VALVING. PUMP REPLACEMENT TO BE PHASED.
- ③ EXISTING 15 HP PRIMARY CHILLED WATER PUMP WITH VFD TO BE TEMPORARILY DISCONNECTED AND REMOVED FOR NEW CHILLER INSTALLATION. CONTRACTOR TO FIELD VERIFY REMOVAL REQUIREMENTS OF PUMPS AND PUMP PADS. PUMPS AND PUMP PADS TO BE RE-INSTALLED AFTER ASSOCIATED CHILLER IS INSTALLED.
- ④ REMOVE EXISTING WATER COOLED CHILLER. DISCONNECT/REMOVE ALL CHILLED WATER AND CONDENSER WATER PIPING BACK TO SHUT-OFF VALVES AS REQUIRED FOR REMOVAL AND RE-INSTALLATION OF NEW CHILLER. REMOVE ALL EXISTING CHILLER CONTROL VALVING. CHILLER REPLACEMENT TO BE PHASED.

TEMPORARILY DISCONNECT AND REMOVE DUCTWORK FROM AHU-1-2 FOR INSTALLATION OF CHILLERS. DUCTWORK IS TO BE REINSTALLED AFTER CHILLER INSTALLATION IS COMPLETE.

REMOVE EXISTING CHILLER REFRIGERANT RELIEF PIPING SYSTEM.

REMOVE EXISTING AHU-1-2. DISCONNECT EXISTING DUCTWORK FOR RE-CONNECTION SUPPLY AND RETURN PIPING TO BE REMOVED BACK TO SHUT-OFF VALVES.

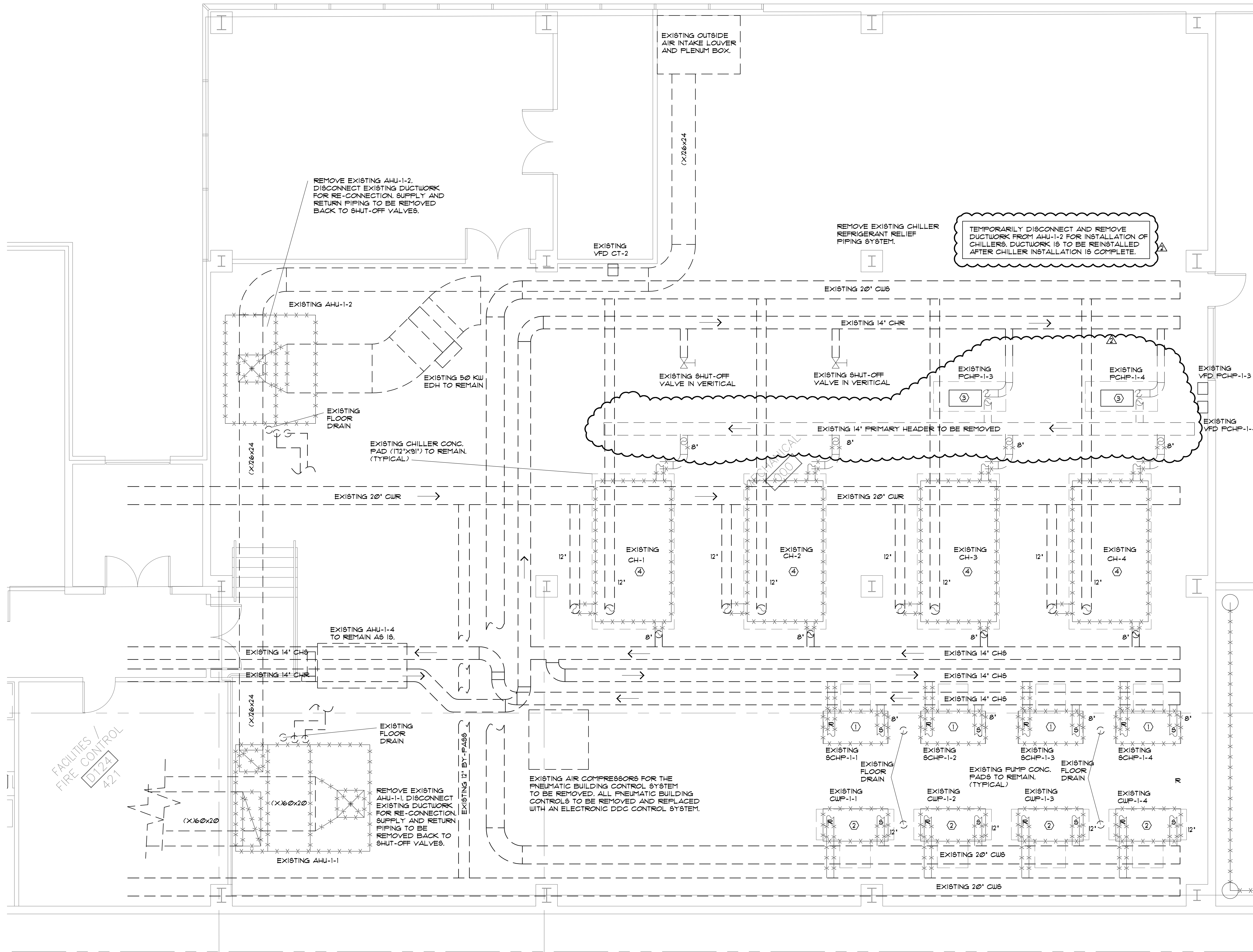
EXISTING CHILLER CONC. PAD (12"x8") TO REMAIN (TYPICAL)

EXISTING AIR COMPRESSORS FOR THE PNEUMATIC BUILDING CONTROL SYSTEM TO BE REMOVED. ALL PNEUMATIC BUILDING CONTROLS TO BE REMOVED AND REPLACED WITH AN ELECTRONIC DDC CONTROL SYSTEM.

REMOVE EXISTING AHU-1-1. DISCONNECT EXISTING DUCTWORK FOR RE-CONNECTION SUPPLY AND RETURN PIPING TO BE REMOVED BACK TO SHUT-OFF VALVES.

**MECHANICAL SYMBOLS**

AHU	AIR HANDLING UNIT
ACC	AIR COOLED CHILLER
ACCU	AIR COOLED CONDENSING UNIT
CD	CONDENSATE DRAIN
DB	DRY BULB
EF	EXHAUST FAN
FCU	FAN COIL UNIT
FD	FIRE DAMPER
F	FAHRENHEIT DEGREE
FLEX	FLEXIBLE CONNECTION
GPM	GALLONS PER MINUTE
HWS	HEATING WATER SUPPLY
HWR	HEATING WATER RETURN
HP	HORSE POWER
MVD	MANUAL VOLUME DAMPER
MU	MAKE UP AHU
OA	OUTSIDE AIR
OBD	OPPOSED BLADE DAMPER
RA	RETURN AIR
RH	RELATIVE HUMIDITY
RTU	ROOFTOP A/C UNIT
SA	SUPPLY AIR
SD	SMOKE DETECTOR
SP	STATIC PRESSURE
SPEC	SPECIFICATION
TYP	TYPICAL
WB	WET BULB



**ENLARGED CENTRAL PLANT DEMOLITION - MECHANICAL**  
SCALE 1/4" = 1'-0"

10-25-2012	ADDENDUM NO. CHEVRON 2
10-17-2012	ISSUED FOR BID
10-09-2012	ISSUED FOR PERMIT
DATE	DESCRIPTION

PROFESSIONAL SEALS



FILENAME	MECHANICAL DEMO.dwg
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DRAWN BY	WD
CHECKED BY	JWD
JOB NO.	1397
SCALE	1/4" = 1'-0"
DATE	10-09-2012
ISSUE	ISSUED FOR BID

SHEET CONTENTS  
ENLARGED PLANS

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ON 10/25/12

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OFFICE: 713-266-8984  
WWW.DAWSONVANORDEN.COM  
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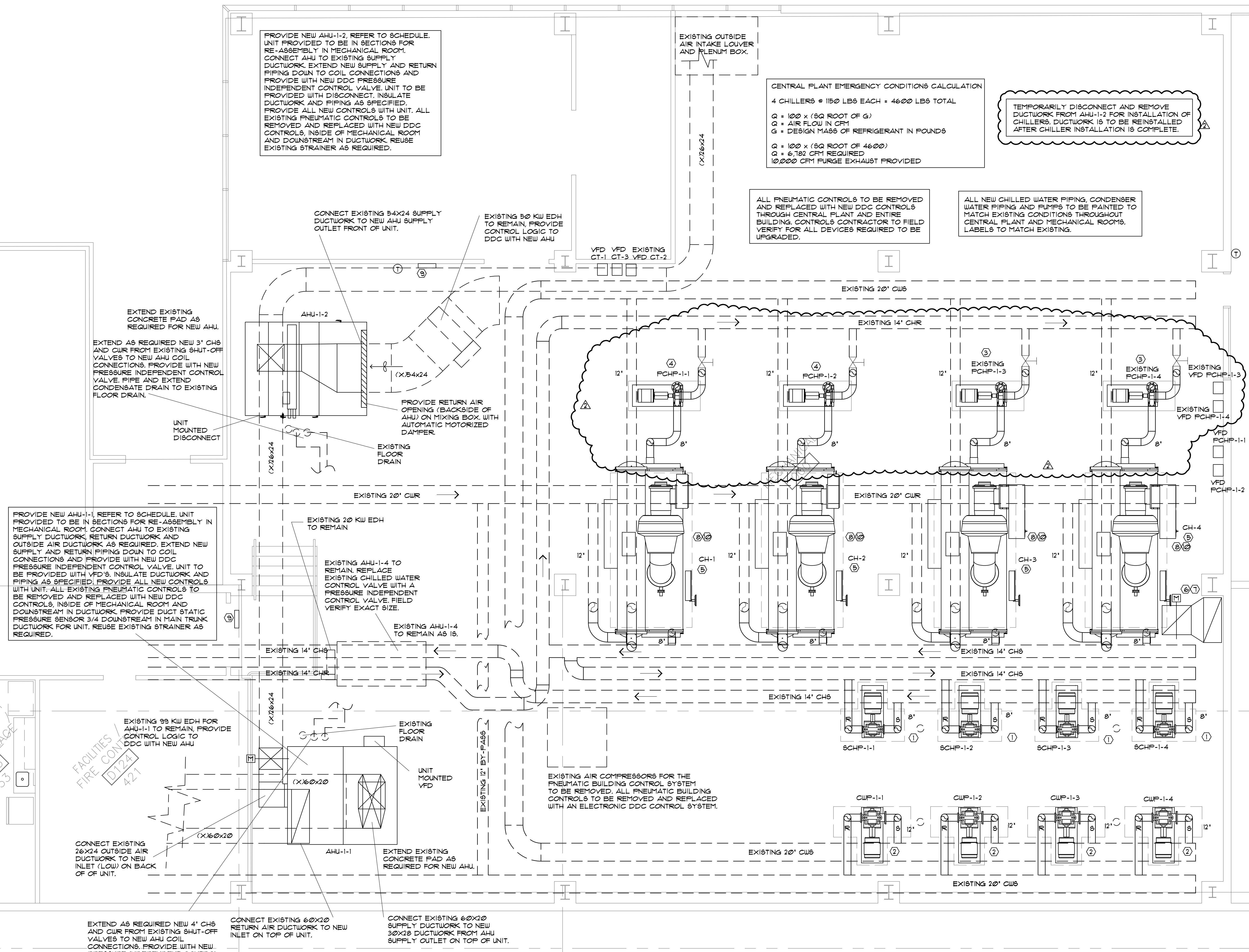
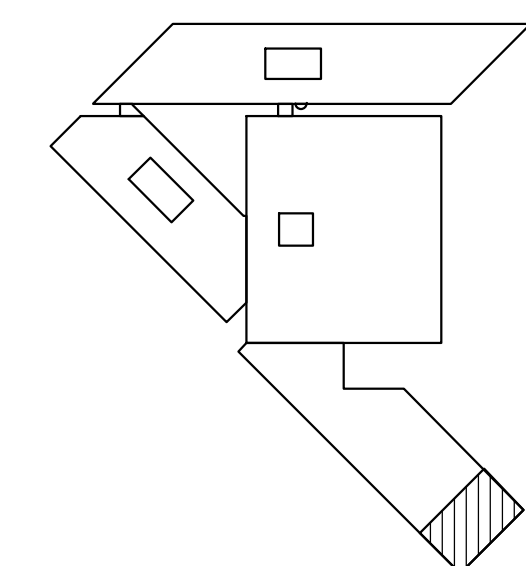
**MECHANICAL KEYED NOTES:**

- ① PROVIDE NEW SECONDARY CHILLED WATER PUMP WITH DDC CONTROL VALVING AND RECONNECT TO EXISTING 8" PIPING REQUIRED. PROVIDE ANY OFFSETS AND REDUCERS AS REQUIRED FOR RECONNECTION. INSULATE AS SPECIFIED/MATCH EXISTING. MODIFY CONCRETE PUMP BASE AS REQUIRED FOR NEW PUMP. PROVIDE WITH NEW VFD.
- ② PROVIDE NEW CONDENSER WATER PUMP WITH DDC CONTROL VALVING AND RECONNECT TO EXISTING 12" PIPING AS REQUIRED. PROVIDE ANY OFFSETS AND REDUCERS AS REQUIRED FOR RECONNECTION. MODIFY CONCRETE PUMP BASE AS REQUIRED FOR NEW PUMP.
- ③ EXISTING 15 HP PRIMARY CHILLED WATER PUMP WITH VFD TO BE RECONNECTED AND REINSTALLED. CONTRACTOR TO FIELD VERIFY REMOVAL AND REINSTALLATION REQUIREMENTS OF PUMPS AND PUMP PADS.
- ④ NEW 15 HP PRIMARY CHILLED WATER PUMP WITH VFD. REFER TO SCHEDULE. PROVIDE WITH 8" CONCRETE BASE. INSULATE AS SPECIFIED/MATCH EXISTING.
- ⑤ PROVIDE NEW WATER COOLED CHILLER. REFER TO SCHEDULE. EXTEND AND CONNECT EXISTING CHILLED WATER AND CONDENSER WATER PIPING TO NEW CHILLER WITH NEW DDC PRESSURE INDEPENDENT CONTROL VALVING AS REQUIRED. CHILLER REPLACEMENT TO BE PHASED. CHILLERS ARE TO BE DISASSEMBLED BY UNIT MANUFACTURER AND REASSEMBLED ON SITE IN CENTRAL PLANT BY UNIT MANUFACTURER AS REQUIRED FOR INSTALLATION. RIGGING BY MECHANICAL CONTRACTOR. MECHANICAL CONTRACTOR TO FIELD VERIFY ALL EXISTING CONDITIONS OF CHILLED WATER PIPING AND CONDENSER WATER PIPING TO EXISTING CHILLERS PRIOR TO BID. EXTEND, OFFSET, PROVIDE REDUCERS TO NEW CHILLED AND CONDENSER WATER PIPING FROM EXISTING POINTS OF TERMINATION TO NEW CONNECTIONS AT CHILLER AS REQUIRED FOR A COMPLETE AND FUNCTIONING SYSTEM. EXTEND EXISTING CONCRETE PAD AS REQUIRED FOR NEW CHILLER INSTALLATION.
- ⑥ 50x20 DOWN TO 12" AFF. BOTTOM END OF DUCT TO BE LEFT OPEN WITH BIRD SCREEN OVER OPENING.
- ⑦ 36x36 UP TO EF-1 ON ROOF. EF-1 TO BE INTERLOCK WITH EMERGENCY FURGE VENTILATION SYSTEM.
- ⑧ PROVIDE REFRIGERANT DETECTOR VULCAN MODEL 301EM-20 (REFRIGERANT DETECTOR 12-23) OR EQUAL AT CHILLER AND MOUNT PER MANUFACTURER'S RECOMMENDATIONS.
- ⑨ PROVIDE MAIN CONTROLLER VULCAN MODEL 301EM-20 OR EQUAL. PROVIDE WITH RELAY AND SENSOR WIRING TO AND FROM ALL EQUIPMENT FOR DEACTIVATION OF EQUIPMENT IN THE EVENT OF A GAS DETECTION. PROVIDE COMPLETE DETECTION SYSTEM FOR RELAY INTERLOCKED TO EF-1. VISUAL ALARM INSIDE AND OUTSIDE OF PLANT (ALERT BEACON) AND AUDIBLE ALARM INSIDE AND OUTSIDE OF PLANT (ALARM HORN). DETECTION SYSTEM TO COMPLY WITH ASHRAE 15 AND INTERLOCK INTO MAIN BAS SYSTEM. PROVIDE ALARM LEVELS OF LOW: 50 PPM AND HIGH: 150 PPM. PROVIDE WARNING SIGNS AND SELF CONTAINED BREATHING APPARATUS TO COMPLY WITH ASHRAE 15.
- ⑩ PROVIDE AND PIPE NEW 3" REFRIGERANT OVERFLOW FROM SUCTION ELBOW NEXT TO COMPRESSOR ON CHILLER UP THROUGH THE ROOF AND GOOSENECK AS REQUIRED. INSTALL PER MANUFACTURER'S RECOMMENDATIONS.

**MECHANICAL SYMBOLS**

AHU	AIR HANDLING UNIT
ACC	AIR COOLED CHILLER
ACCU	AIR COOLED CONDENSING UNIT
CD	CONDENSATE DRAIN
DB	DRY BULB
EF	EXHAUST FAN
FCU	FAN COIL UNIT
FD	FIRE DAMPER
F	FAHRENHEIT DEGREE
FLEX	FLEXIBLE CONNECTION
GPM	GALLONS PER MINUTE
HWS	HEATING WATER SUPPLY
HWR	HEATING WATER RETURN
HP	HORSE POWER
MVD	MANUAL VOLUME DAMPER
MU	MAKE UP AHU
OA	OUTSIDE AIR
OBD	OPPOSED BLADE DAMPER
RA	RETURN AIR
RH	RELATIVE HUMIDITY
RTU	ROOFTOP A/C UNIT
SA	SUPPLY AIR
Sm	SMOKE DETECTOR
SP	STATIC PRESSURE
SPEC	SPECIFICATION
TYP	TYPICAL
WB	WET BULB

**KEY MAP**



**CENTRAL PLANT EMERGENCY CONDITIONS CALCULATION**  
4 CHILLERS @ 1150 LBS EACH = 4600 LBS TOTAL  
Q = 100 x (SQ ROOT OF G)  
Q = AIR FLOW IN CFM  
G = DESIGN MASS OF REFRIGERANT IN POUNDS  
Q = 100 x (SQ ROOT OF 4600)  
Q = 6,782 CFM REQUIRED  
10,000 CFM FURGE EXHAUST PROVIDED

TEMPORARILY DISCONNECT AND REMOVE DUCTWORK FROM AHU-1-2 FOR INSTALLATION OF CHILLERS. DUCTWORK IS TO BE REINSTALLED AFTER CHILLER INSTALLATION IS COMPLETE.

ALL PNEUMATIC CONTROLS TO BE REMOVED AND REPLACED WITH NEW DDC CONTROLS THROUGH CENTRAL PLANT AND ENTIRE BUILDING. CONTROLS CONTRACTOR TO FIELD VERIFY FOR ALL DEVICES REQUIRED TO BE UPGRADED.

ALL NEW CHILLED WATER PIPING, CONDENSER WATER PIPING AND PUMPS TO BE PAINTED TO MATCH EXISTING CONDITIONS THROUGHOUT CENTRAL PLANT AND MECHANICAL ROOMS. LABELS TO MATCH EXISTING.

**ENLARGED CENTRAL PLANT - MECHANICAL**  
SCALE 1/4" = 1'-0"

10-25-2012	ADDENDUM NO. CHEVRON 2
10-17-2012	ISSUED FOR BID
10-09-2012	ISSUED FOR PERMIT
DATE	DESCRIPTION

PROFESSIONAL SEALS



FILENAME	MECHANICAL NEW.dwg
JOB ABBREV.	
DRAWN BY	WD
CHECKED BY	JWD
JOB NO.	1397
SCALE	1/4" = 1'-0"
DATE	10-09-2012
ISSUE	ISSUED FOR BID

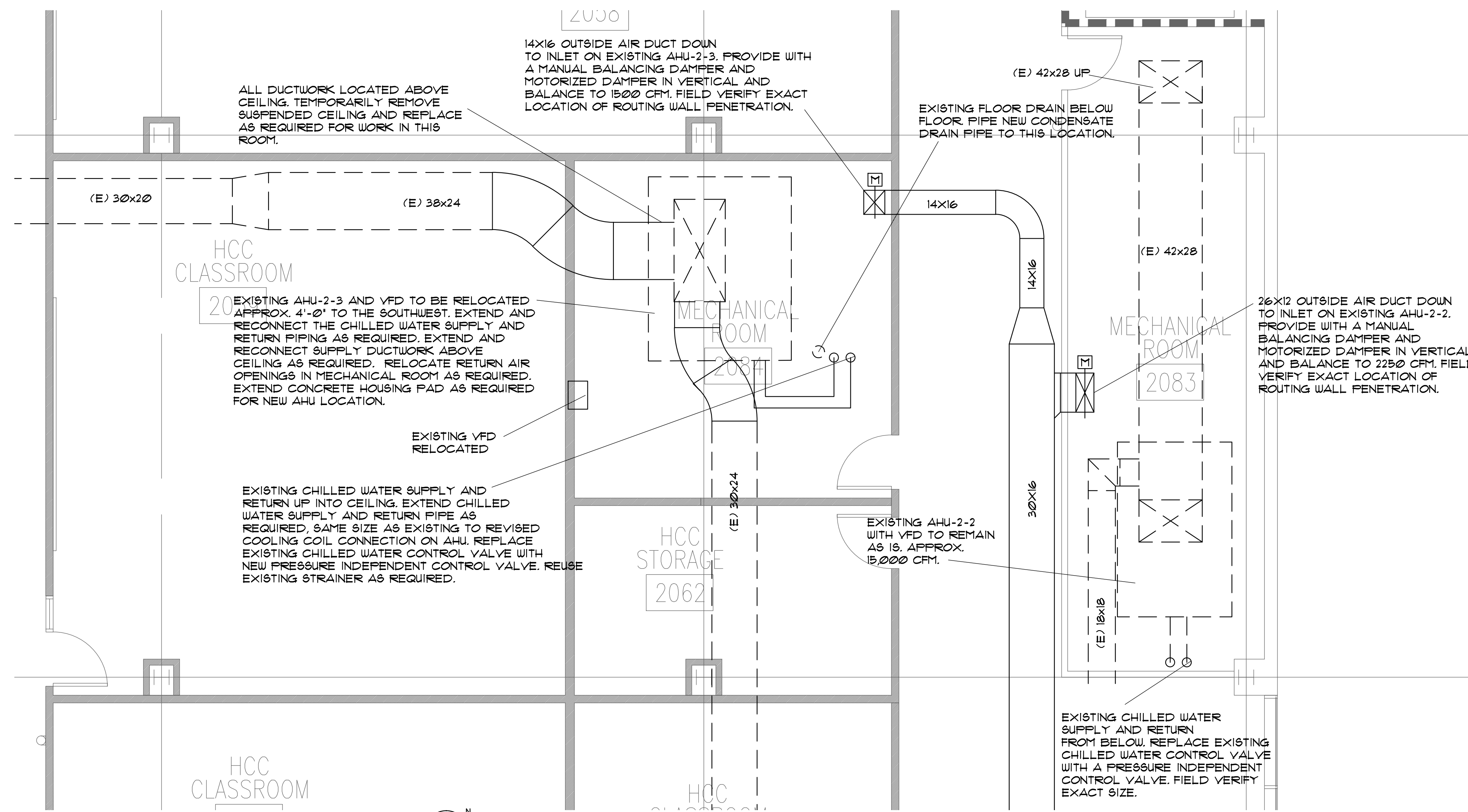
**ENLARGED PLANS**

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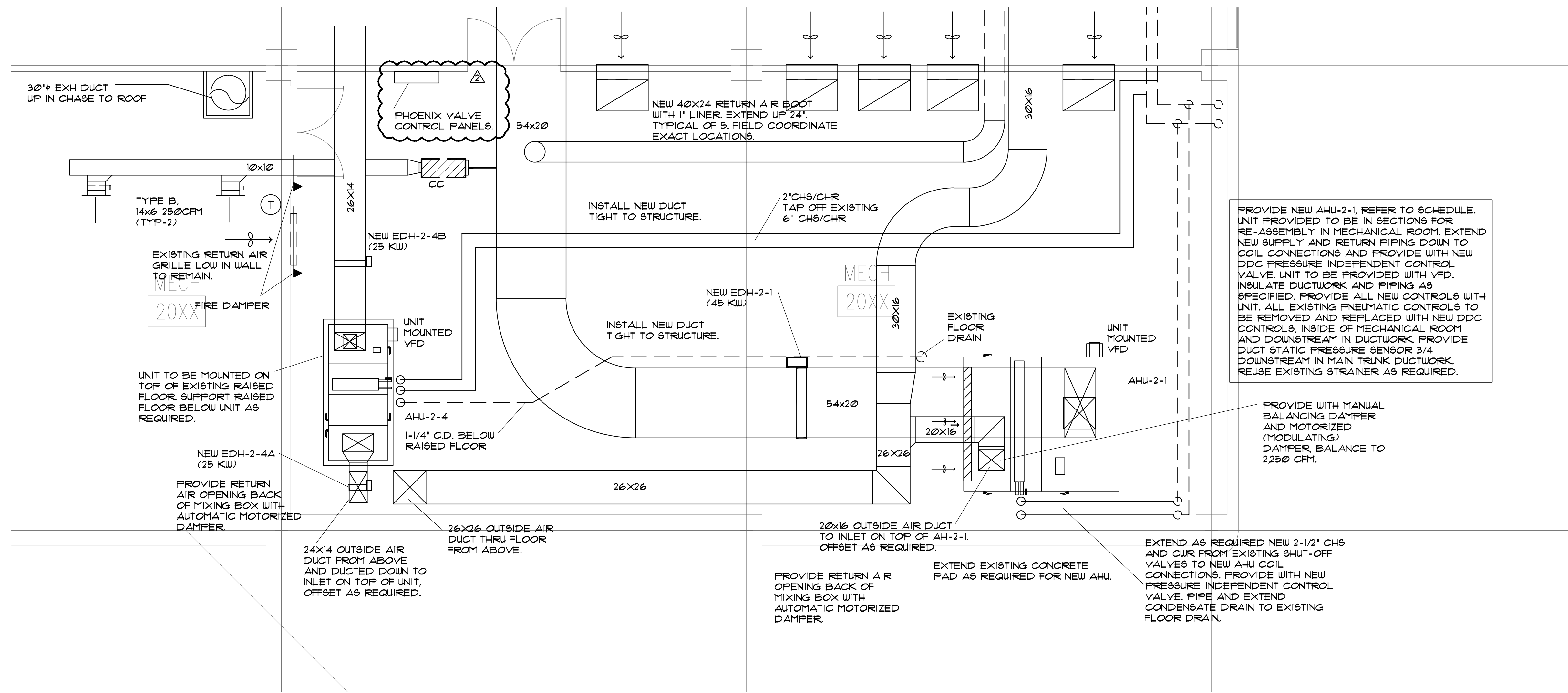


**DAWSON VAN ORDEN**  
CIVIL & MECHANICAL-ELECTRICAL PLUMBING  
5800 SAN FELIPE, SUITE 140, HOUSTON TX 77057  
www.dvoeng.com  
REGISTRATION NO. F-0324

DRAWING NUMBER  
**M.406**

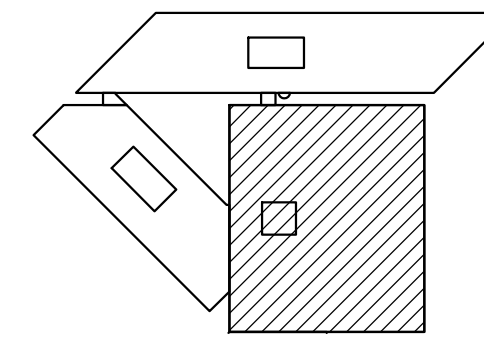


ENLARGED 2ND FLOOR MECHANICAL ROOMS - MECHANICAL  
SCALE 1/4" = 1'-0"



ENLARGED 2ND FLOOR MECHANICAL ROOM - MECHANICAL  
SCALE 1/4" = 1'-0"

KEY MAP



DATE	DESCRIPTION
10-25-2012	ADDENDUM NO. CHEVRON 2
10-17-2012	ISSUED FOR BID
10-09-2012	ISSUED FOR PERMIT

PROFESSIONAL SEALS



FILENAME	MECHANICAL NEW.dwg
JOB ABBREV.	
DRAWN BY	WD
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ENLARGED PLANS

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CIVIL + MECHANICAL + ELECTRICAL + PLUMBING  
5850 SAN FELIPE, SUITE 140, HOUSTON TX 77057  
Office: 713-266-8984  
www.dvord.com  
REGISTRATION NO. F-6034

DRAWING NUMBER  
**M.408**

VAV BOX SCHEDULE			
TYPE VAV-	COOLING CFM MAX	INLET (IN)	MANUFACTURER
AA	230	4"	CARRIER 35E
BB	360	5"	CARRIER 35E
CC	520	6"	CARRIER 35E
DD	710	7"	CARRIER 35E
EE	925	8"	CARRIER 35E
FF	1200	9"	CARRIER 35E
GG	1450	10"	CARRIER 35E
HH	2100	12"	CARRIER 35E

1. VAV BOXES TO BE BALANCED TO CFM LEVEL REQUIRED BY DIFFUSERS IN ZONE

FAN POWERED PARALLEL VAV BOX SCHEDULE									
TYPE VAV-	COOLING CFM	HEATING CFM	FAN HP	FAN SP	INLET (IN)	FAN VOLTS PH	HEATING KW/STAGES	VOLTS PHASE	MANUFACTURER
A	515	400	1/10	25	6"	217/1	25/1	217/1	CARRIER 45M-2
B	920	400	1/10	25	8"	217/1	25/1	217/1	CARRIER 45M-2
C	920	600	1/10	25	8"	217/1	4/1	217/1	CARRIER 45M-3
D	1430	600	1/10	25	10"	217/1	4/1	217/1	CARRIER 45M-3
E	1430	1050	1/4	25	10"	217/1	7/2	217/1	CARRIER 45M-4
F	2060	1050	1/4	25	12"	217/1	7/2	217/1	CARRIER 45M-4
G	2060	1500	1/2	25	12"	217/1	10/2	217/1	CARRIER 45M-5
H	2800	1500	1/2	25	14"	217/1	10/2	217/1	CARRIER 45M-5
J	2800	1900	1/2	25	14"	217/1	11.5/2	217/1	CARRIER 45M-6

- VAV BOXES TO BE BALANCED TO CFM LEVEL REQUIRED BY DIFFUSERS IN ZONE
- ALL UNITS PRESSURE DEPENDANT.
- ALL UNITS FAN MOTOR 220V 60 HZ 1 PHASE
- ALL MOTORS ECM TYPE
- REFER TO PLANS FOR ACCESS CONNECTION SIDE.

AIR DEVICE SCHEDULE				
MARK	DESCRIPTION	RADIATION DAMPER	OBD DAMPER	MANUFACTURER TITUS, UNLESS NOTED
A	CEILING DIFF	NO	NO	CMNI-AA, SQUARE FLAQUE LAY-IN
B	SIDE WALL	NO	YES	300FS, DBL, DEFLEC, VERT. FRONT
C	RETURN AIR	NO	NO	PAR-AA, PERFORATED FACE LAY-IN
D	EXHAUST	NO	YES	350FL, SURFACE MOUNT
E	SUPPLY	NO	YES	ML-38 SUPPLY SLOT DIFFUSER
F	RETURN	NO	NO	MLR-38 RETURN AIR SLOT REGISTER

- VERIFY ALL CEILING TYPES WITH ARCHITECTURAL DRAWINGS.
- ALL AIR DEVICES SHALL BE ALUMINUM UNLESS NOTED.
- SUPPLY RADIATION DAMPERS FOR DEVICES PENETRATING RATED CEILING.
- VERIFY FINAL COLOR/FINISH WITH ARCHITECT FOR ALL DIFFUSERS AND GRILLES.
- VERIFY FINAL COLOR/FINISH WITH ARCHITECT FOR ALL LOUVERS.
- PROVIDE TYPE E WITH INSULATED FLENUM ON TOP OF SLOT DIFFUSER SIZED FOR LENGTH AND WIDTH OF DIFFUSER.

FUME HOOD SCHEDULE WITH SASH (TYP-8)							
MARK	LAB SERVICE	CONSTANT VARIABLE	BENCH TOP OR WALK-IN	LENGTH (FEET)	CFM	CONNECTION	MANUFACTURER
FH-1	WET CHEM	CONSTANT	BENCH TOP	4	800	(1) - 14"	MOTT-VERTICAL SASH

- BENCH TOP FUME HOODS TO BE SET AT 28-1/2" HEIGHT VERTICAL MAX. SASH OPENING.
- PROVIDE LOW FLOW ALARMS AS REQUIRED AND INTEGRATED INTO BAS.

FUME HOOD EXHAUST FAN SCHEDULE - ROOF MOUNTED								
MARK	SERVICE	CFM	STATIC PRESS	FAN RPM	DRIVE TYPE	VOLT PHASE	HP	MANUFACTURER
EF-2	WET CHEM HOOD	6400	2.5	1230	BELT	460/3	5	GREENHECK SUB-224
EF-3	WET CHEM HOOD	6400	2.5	1230	BELT	460/3	5	GREENHECK SUB-224

- EXHAUST FAN #2 SHALL BE INTERLOCKED WITH NEW AHU 2-4.
- EXHAUST FAN #3 (STANDBY) SHALL BE INTERLOCKED WITH NEW AHU 2-4.
- PROVIDE 2 SPEED FAN WHICH OPERATES 100% DURING OCCUPIED TIME AND 50% DURING UN-OCCUPIED TIME.

SUPPLY AIR VALVES SCHEDULE - MEDIUM PRESSURE									
MARK	SUPPLY MAX CFM OCCUPIED	SUPPLY MIN CFM UNOCCUPIED	R/O HOOD EXHAUST MIN CFM	EXHAUST MAX CFM OCCUPIED	EXHAUST MIN CFM UNOCCUPIED	MAX PD W/G	SIZE	MANUFACTURER / MODEL	
SV-1	945	473	3#800	0	1455	121	0.1	SINGLE 10"	PHOENIX CONTROLS - MAVAFIOMAM
SV-2	945	473	3#800	0	1455	121	0.1	SINGLE 10"	PHOENIX CONTROLS - MAVAFIOMAM

- SUPPLY AIR VALVE TO BE INTEGRATED AND CONTROLLED WITH EXHAUST HOOD AND EXHAUST VALVE WITHIN LAB ROOM AND MAKE-UP AIR UNIT. REFER TO EXHAUST VALVE SCHEDULE FOR VALVE TO BE INTEGRATED WITH.
- MAINTAIN OFFSET AS SCHEDULED FROM NEGATIVE ROOM PRESSURE.
- COORDINATE ALL CONTROL FEATURES OF SUPPLY AIR VALVE PRIOR TO ORDERING.
- PROVIDE WITH CONTROL PANELS AS REQUIRED FOR A COMPLETE AND FUNCTIONING SYSTEM.

EXHAUST AIR VALVES SCHEDULE - MEDIUM PRESSURE								
MARK	EXH. CFM MAX OCCUPIED	SUPPLY EXH. VALVE OFFSET	EXH. MIN CFM UNOCCUPIED	EXH. MIN CFM	CFM OFFSET	MAX PD W/G	SIZE	MANUFACTURER / MODEL
EV-1	800	SV-1	400	0	***	0.1	SINGLE 10"	PHOENIX CONTROLS - EXVEFIOMAM
EV-2	800	SV-1	400	0	***	0.1	SINGLE 10"	PHOENIX CONTROLS - EXVEFIOMAM
EV-3	800	SV-1	400	0	***	0.1	SINGLE 10"	PHOENIX CONTROLS - EXVEFIOMAM
EV-4	800	SV-2	400	0	***	0.1	SINGLE 10"	PHOENIX CONTROLS - EXVEFIOMAM
EV-5	800	SV-2	400	0	***	0.1	SINGLE 10"	PHOENIX CONTROLS - EXVEFIOMAM
EV-6	800	SV-2	400	0	***	0.1	SINGLE 10"	PHOENIX CONTROLS - EXVEFIOMAM
EV-7	800	--	400	0	***	0.1	SINGLE 10"	PHOENIX CONTROLS - EXVEFIOMAM
EV-8	800	--	400	0	***	0.1	SINGLE 10"	PHOENIX CONTROLS - EXVEFIOMAM

- EXHAUST AIR VALVE TO BE INTEGRATED AND CONTROLLED WITH EXHAUST HOOD AND SUPPLY VALVE WITHIN LAB ROOM AND MAKE-UP AIR UNIT. REFER TO SUPPLY AIR VALVE SCHEDULE.
- MAINTAIN OFFSET AS SCHEDULED FOR NEGATIVE ROOM PRESSURE.
- COORDINATE ALL CONTROL FEATURES OF EXHAUST AIR VALVE PRIOR TO ORDERING.
- \*\*\* REFER TO SUPPLY AIR VALVE SCHEDULE FOR CFM OFFSET TO BE MAINTAINED.
- PROVIDE H2S EQUIVALENT COATING OR COATING REQUIRED BASED UPON CHEMICALS EXHAUSTED FOR EACH VALVE.
- PROVIDE FLOW ALARM ON NEW FUME HOOD THAT IS COMPATIBLE WITH FUME HOOD.
- INTERGRATE TO CONTROL SYSTEM ALARMS TO MONITOR FUME HOOD AND MAINTAIN REQUIRED CFM FLOW PER EXHAUST VALVE SCHEDULE. FLOW RANGE AND VELOCITY ARE OUT OF REQUIRED RANGE ALARM SHALL SOUND AND MAIN CONTROL SYSTEM TO BE ALERTED. EXHAUST VALVES TO BE PROVIDED WITH AUXILIARY INPUTS.
- PROVIDE WITH CONTROL PANELS AS REQUIRED FOR A COMPLETE AND FUNCTIONING SYSTEM.

FAN AND COIL UNIT SCHEDULE												
MARK	CHILLED WATER COIL	FAN	HEATING	MIN. CK AMPS	MOCP	GPM	MANUFACTURER					
	SUPPLY CFM	OA CFM	TOTAL BTUH	SEN BTUH	HP	STATIC PRESS	VOLTS PHASE	KW				
FCU-1-3	350	40	10,124	8,126	25	1.00	208/1	1.5	8.3	15	15	CARRIER 42UKN-12

- SELECTIONS OR BASED ON EUT/LUT 42/56F.
- PROVIDE WITH PRESSURE INDEPENDENT CONTROL VALVE FOR EACH UNIT.
- UNITS SHALL BE SUSPENDED FROM STRUCTURE

**MECHANICAL KEYED NOTES:**

- NEW FAN POWERED VAV BOX. REFER TO SCHEDULE.
- NEW LAB HOOD, 800CFM. PROVIDE WITH 8" DUCT TO OUTDOOR. PROVIDE WITH PHOENIX CONTROLS INTERLOCKED INTO BAS SYSTEM.
- NEW VAV BOX. REFER TO SCHEDULE.

**MECHANICAL SYMBOLS**

- AHU AIR HANDLING UNIT
- ACC AIR COOLED CHILLER
- ACCU AIR COOLED CONDENSING UNIT
- CD CONDENSATE DRAIN
- DB DRY BULB
- E EXISTING ITEM TO REMAIN
- EF EXHAUST FAN
- FCU FAN COIL UNIT
- FD FIRE DAMPER
- F FAHRENHEIT DEGREE
- FLEX FLEXIBLE CONNECTION
- GPM GALLONS PER MINUTE
- HWS HEATING WATER SUPPLY
- HWR HEATING WATER RETURN
- HP HORSE POWER
- MVD MANUAL VOLUME DAMPER
- MU MAKE UP AHU
- OA OUTSIDE AIR
- OBD OFFPOSED BLADE DAMPER
- RA RETURN AIR
- RH RELATIVE HUMIDITY
- RTU ROOFTOP A/C UNIT
- SA SUPPLY AIR
- SD SMOKE DETECTOR
- SPM STATIC PRESSURE
- SPEC SPECIFICATION
- TYP TYPICAL
- WB WET BULB
- FD FIRE DAMPER
- R/A OPENING
- VERIFY SIZE ON FLOOR PLAN.

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ON 10/25/12  
**DAWSON VAN ORDEN**  
CIVIL + MECHANICAL + ELECTRICAL + PLUMBING  
5850 SAN FELIPE, SUITE 140 HOUSTON TX 77057  
OFFICE: 713.266.8984  
WWW.DAWSONVANORDEN.COM  
REGISTRATION NO. F-8334

DATE	DATE	DESCRIPTION
10-25-2012		ADDENDUM NO. CHEVRON 2
10-17-2012		ISSUED FOR BID
10-09-2012		ISSUED FOR PERMIT



FILENAME: MECHANICAL-R.dwg  
JOB ABBREV: HCC-UT-ALIEF  
DRAWN BY: RH/MAH CHECKED BY: MAH  
JOB NO.: 1397 SCALE: 1/8" = 1'-0"  
DATE: 10-09-2012 ISSUE: ISSUED FOR BID



October 31, 2012

Chevron Energy Solutions Company  
A Division of Chevron U.S.A. Inc.  
12980 Foster, Suite 400  
Overland Park, KS 66213-2649  
Tel: 913-748-8800 Fax: 913-748-8734

### **ADDENDUM – Chevron-3**

FROM: Chevron Energy Solutions Company

TO: Prospective Bidders

RE: Addendum – Chevron-3 to Houston Community College – Alief Center Renovation

You are instructed to read and to note the following described changes, corrections, clarifications, approvals, additions, and/or deletions.

Receipt of Addendum – Chevron-3 is to be acknowledged on the bid form by the Bidder.

---

#### **CHANGES/CLARIFICATIONS**

- 1) Section 23 64 16, Part 1 GENERAL, Article 1.9 WARRANTY shall be replaced with:
  - A. See Section 01 77 00 - Closeout Procedures, for additional warranty requirements.
  - B. Provide a one year warranty for parts, labor, and refrigeration from date of issuance of occupancy permit. Warranty to coincide with manufacturer's parts warranty.
  - C. Provide second through fifth year parts warranty on compressors.
- 2) All supply ductwork to be externally wrapped.
- 3) TDF/TDC duct flange is acceptable for rectangular fume hood ductwork, mig welded joints are acceptable for round fume hood ductwork.
- 4) Painting specified on Sheet M.406 shall be by Bidder.
- 5) New equipment pads required for mechanical work shall be provided and installed by Bidder.
- 6) Bidder shall provide list of any electrical support required for temporary setups.
- 7) Original structural drawing S1 is included for reference.
- 8) Bid Due Date shall be revised. Bids will be received by **1:00 p.m. (local time) Friday, November 2<sup>nd</sup>, 2012.**