

# RICE UNIVERSITY WIESS GEOLOGY UPGRADES

MD-01 ROOF DEMOLITION  
 MD-02 BASEMENT DEMOLITION  
 M-01 ROOF NEW WORK  
 M-02 BASEMENT NEW WORK  
 M-03 SCHEDULES MECHANICAL  
 M-04 TYPICAL DETAILS MECHNAICAL  
 M-05 TYPICAL DETAILS MECHANICAL

ED-01 ROOF DEMOLITION  
 ED-02 BASEMENT DEMOLITION  
 E-01 ROOF – CABLE AND CONDUIT PLAN  
 E-02 BASEMENT – OAHU-1 CABLE AND CONDIT PLAN  
 E-03 NEW WORK – CABLE AND CONDUIT SCHEDULES  
 E-04 NEW WORK – ROOF TOP PANEL SCHEDULES

NO.	DATE	DESCRIPTION REVISION	APPD.
0	04/10/19	ISSUE FOR CONSTRUCTION	EMK

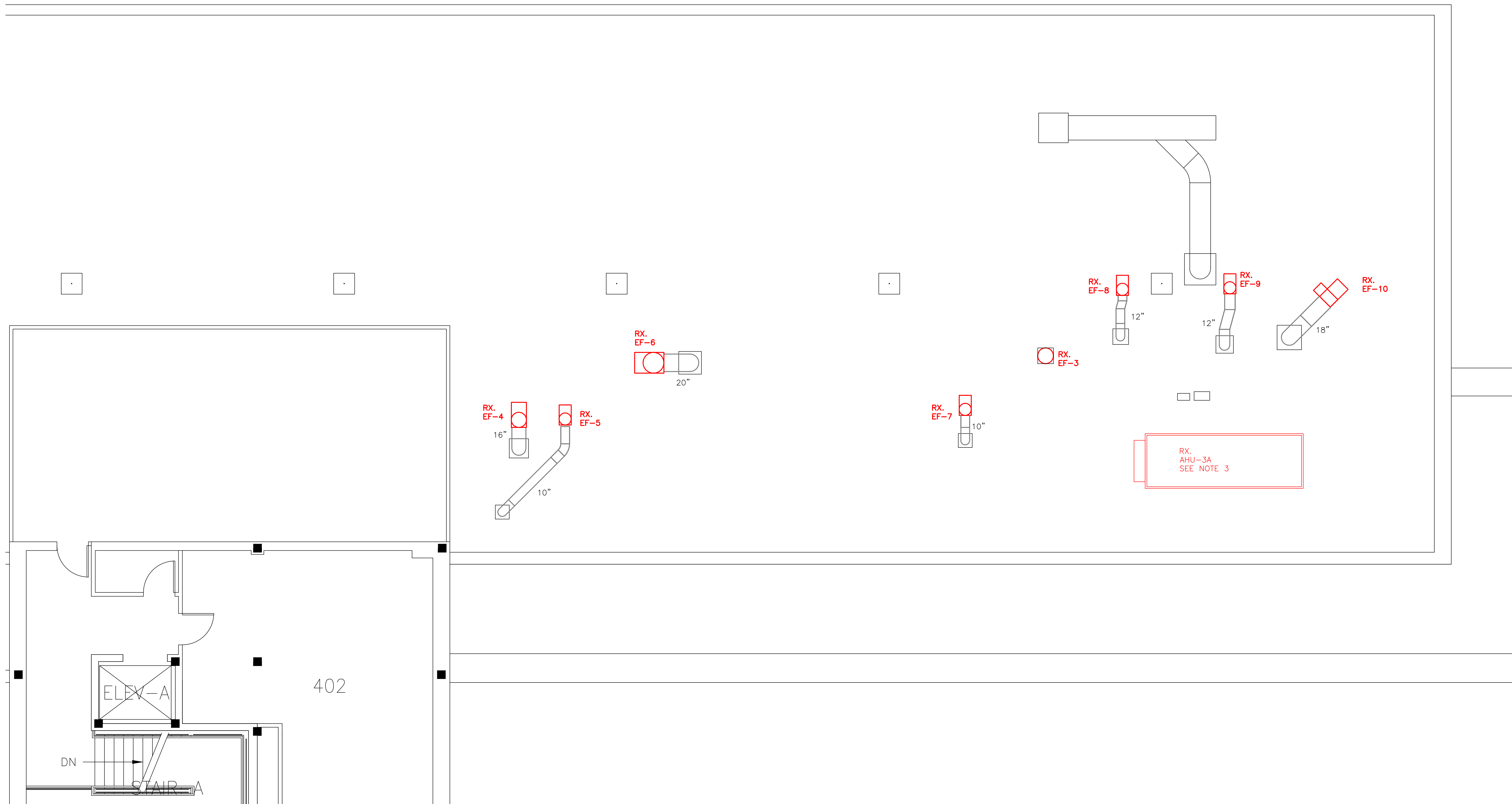


**Galaxy Consulting Engineers LLC**  
 14606 E GINGER SPICE CT  
 CYPRESS TX 77494  
 Website: GalaxyCE.com  
 Firm Registration No.F-8814

281-253-7859  
 EK@GalaxyCE.com

WILLIAM MARSH RICE UNIVERSITY  
 WIESS GEOLOGY HVAC UPGRADES  
 TITLE SHEET  
 —

SCALE NONE
JOB NO. RU18-10
SHEET NO. 1 of 14
SHEET NAME T-01



NOTES:

1. CONTRACTOR SHALL COORDINATE WITH RICE UNIVERSITY PROJECT MANAGER FOR SCHEDULING OUTAGES.
2. CONTRACTOR SHALL SUBMIT TO THE RICE UNIVERSITY PROJECT MANAGER A PROPOSED OUTAGE PLAN THAT WILL LIST THE INDIVIDUAL UNITS THAT ARE TO BE PLACE DURING EACH OUTAGE, THE AND THE DURATION OF EACH OUTAGE.
3. AHU-3A SHALL BE REMOVED AND HAVE THE REPLACEMENT UNIT SET AND WEATHER SEALED ON THE SAME DAY.

NO.	DATE	DESCRIPTION	APPD.
A	03/27/19	ISSUE FOR BID	EMK
		REVISION	



**Galaxy Consulting Engineers LLC**

14606 E GINGER SPICE CT  
 CYPRESS TX 77494  
 Website: GalaxyCE.com  
 Firm Registration No.F-8814

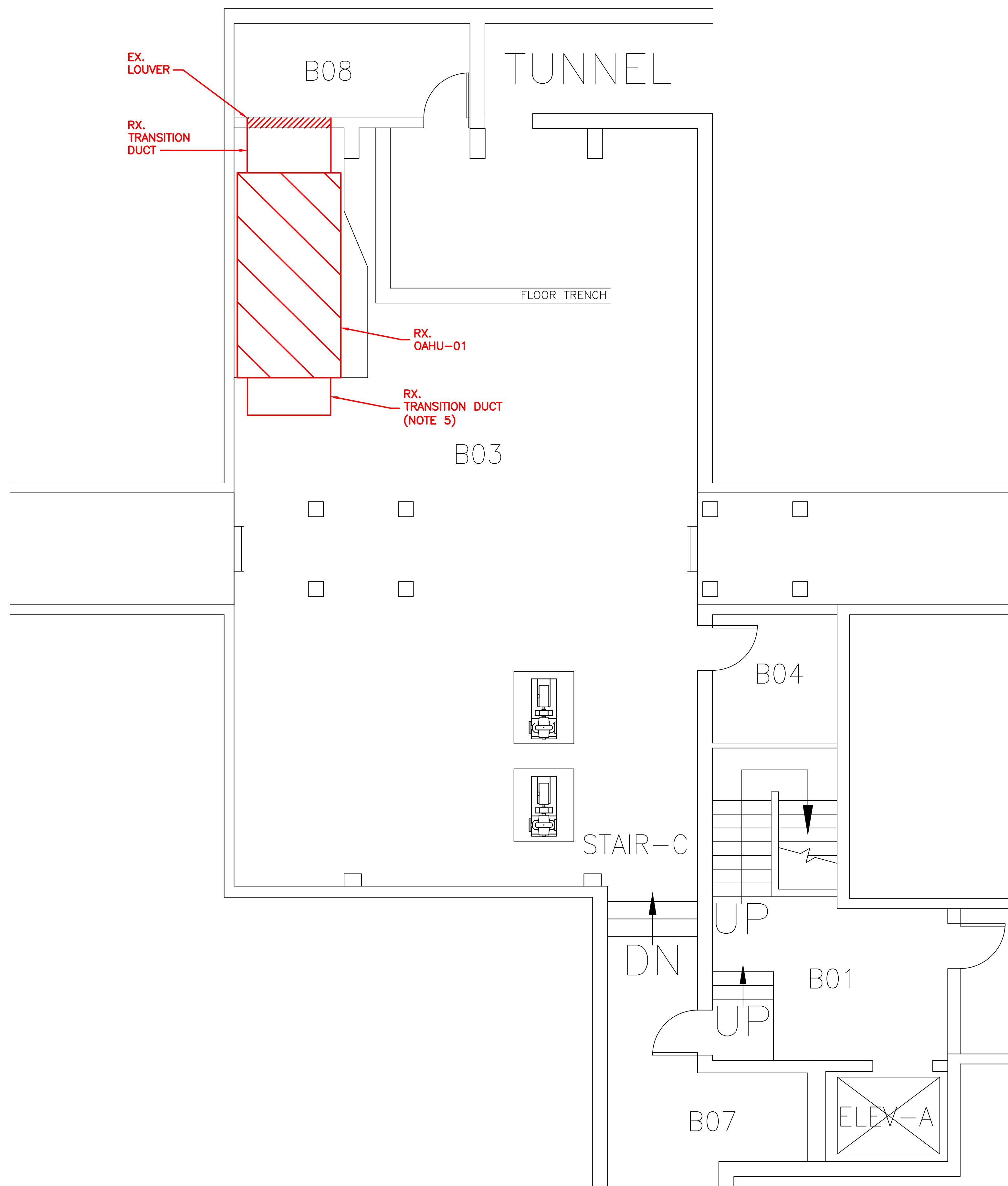
281-253-7859  
 EK@GalaxyCE.com

WILLIAM MARSH RICE UNIVERSITY  
 WIESS GEOLOGY HVAC UPGRADES  
 ROOF  
 DEMOLITION

SCALE	NONE
JOB NO.	RU18-10
SHEET NO.	2 OF 14
SHEET NAME	MD-01

NOTES:

1. EXISTING OUTDOOR AIR HANDLING UNIT OAHU-1 SHALL BE REMOVED IN SECTION. ACCESS IS THROUGH CHASE B08.
2. CONTRACTOR SHALL REMOVE EXISTING OUTDOOR AIR LOUVER FROM B08 TO INLET OF OAHU-1 FOR ACCESS, AND FOR REINSTALLATION AFTER NEW UNIT IS INSTALLED.
3. CONTRACTOR SHALL COORDINATE WITH RICE UNIVERSITY PROJECT MANAGER FOR SCHEDULING OUTAGE.
4. CONTRACTOR SHALL SUBMIT TO THE RICE UNIVERSITY PROJECT MANAGER A PROPOSED OUTAGE PLAN THAT WILL INCLUDE A SCHEDULE OF ACTIVITIES AND DURATION.
5. REMOVE DUCT SMOKE DETECTOR FOR REINSTALLATION IN NEW TRANSITION DUCT.



NO.	DATE	DESCRIPTION	APPD.
0	04/10/19	ISSUE FOR CONSTRUCTION	EMK

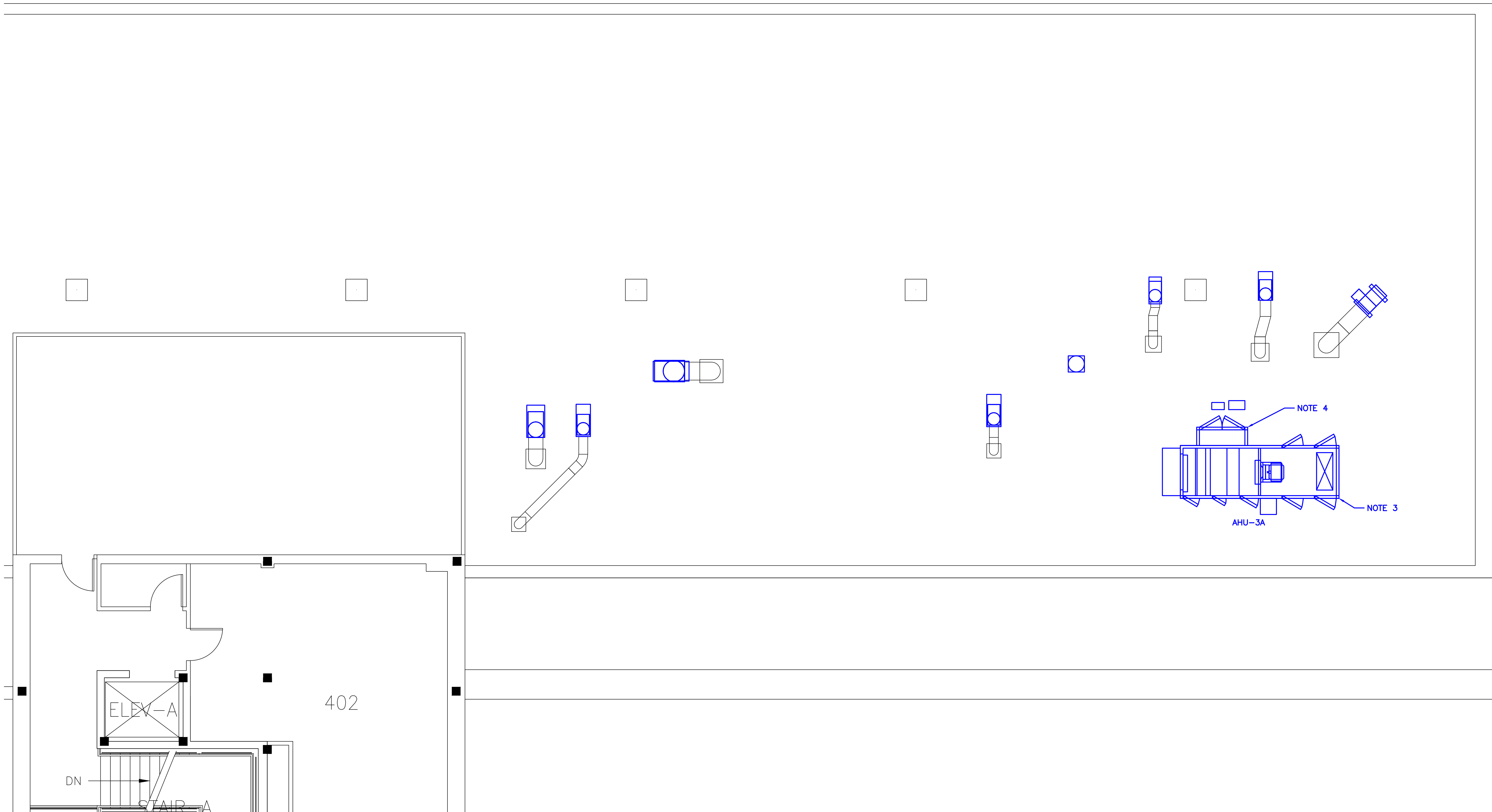


**Galaxy Consulting Engineers LLC**  
 14606 E GINGER SPICE CT  
 CYPRESS TX 77494  
 Website: GalaxyCE.com  
 Firm Registration No.F-8814

281-253-7859  
 EK@GalaxyCE.com

WILLIAM MARSH RICE UNIVERSITY  
 WIESS GEOLOGY HVAC UPGRADES  
 BASEMENT  
 DEMOLITION

SCALE	NONE
JOB NO.	RU18-10
SHEET NO.	3 of 14
SHEET NAME	MD-02



NOTES:

1. CONTRACTOR SHALL COORDINATE WITH RICE UNIVERSITY PROJECT MANAGER FOR SCHEDULING OUTAGES.
2. CONTRACTOR SHALL SUBMIT TO THE RICE UNIVERSITY PROJECT MANAGER A PROPOSED OUTAGE PLAN THAT WILL LIST THE INDIVIDUAL UNITS THAT ARE TO BE PLACE DURING EACH OUTAGE, THE AND THE DURATION OF EACH OUTAGE.
3. AHU-3A SHALL BE REMOVED AND HAVE THE REPLACEMENT UNIT SET AND WEATHER SEALED ON THE SAME DAY.
4. CONTRACTOR TO ARRANGE PIPING SUCH THAT BOTH CONTROL VALVES ARE MOUNTED INSIDE WEATHER ENCLOSURE.

NO.	DATE	DESCRIPTION	APPD.
0	04/10/19	ISSUE FOR CONSTRUCTION	EMK
		REVISION	



**Galaxy Consulting Engineers LLC**

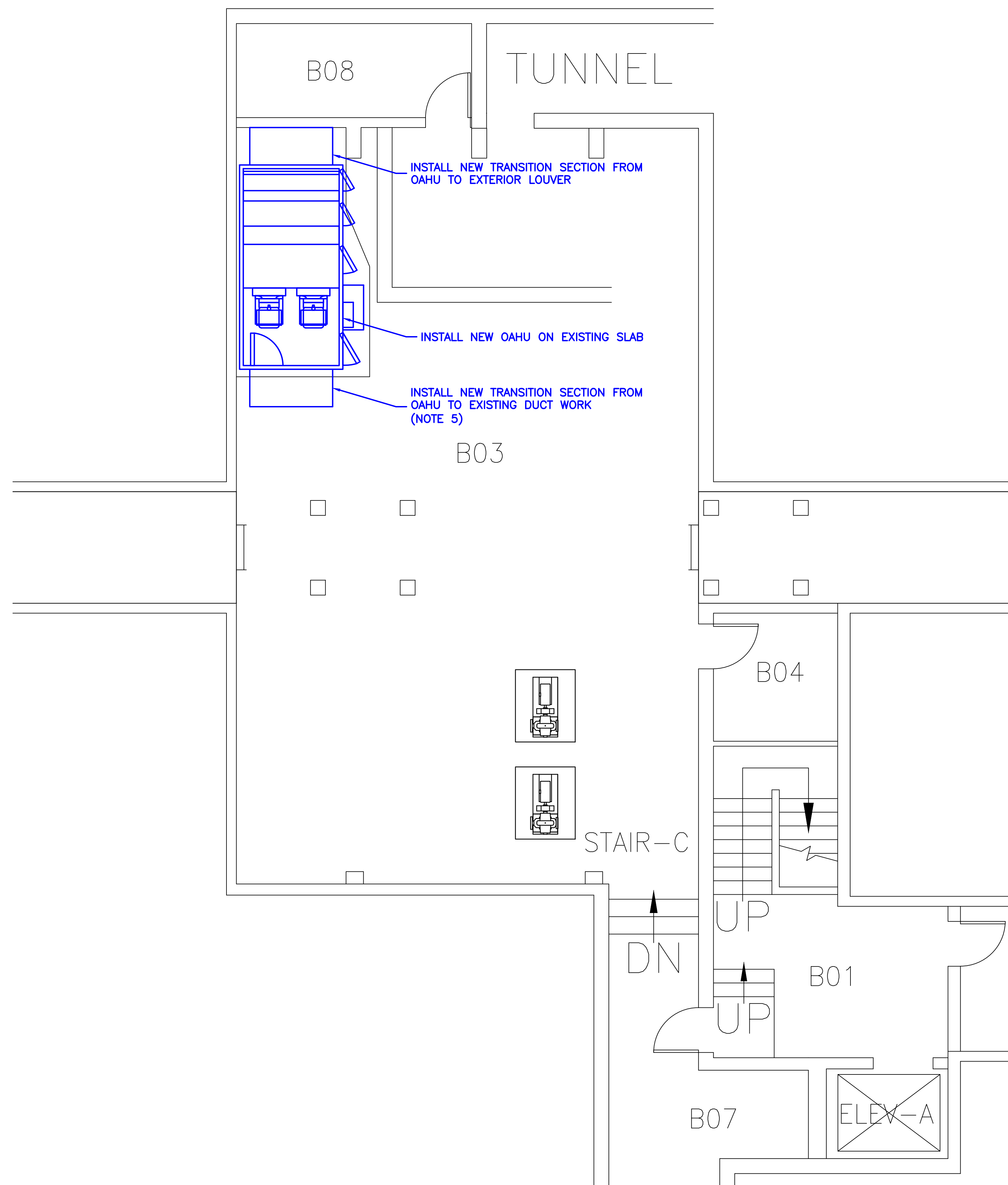
14606 E GINGER SPICE CT  
 CYPRESS TX 77494  
 Website: GalaxyCE.com  
 Firm Registration No.F-8814

281-253-7859  
 EK@GalaxyCE.com

WILLIAM MARSH RICE UNIVERSITY  
 WIESS GEOLOGY HVAC UPGRADES  
 ROOF  
 NEW WORK

SCALE  
 NONE  
 JOB NO.  
 RU18-10  
 SHEET NO.  
 4 OF 14  
 SHEET NAME  
 M-01





NOTES:

1. NEW OUTDOOR AIR HANDLING UNIT OAHU-1 SHALL BE BROUGHT INTO BUILDING IN SECTIONS. ACCESS IS THROUGH CHASE B08.
2. CONTRACTOR SHALL REMOVE EXISTING OUTDOOR AIR LOUVER FROM B08 TO INLET OF OAHU-1 FOR ACCESS, AND FOR REINSTALLATION AFTER NEW UNIT IS INSTALLED.
3. CONTRACTOR SHALL COORDINATE WITH RICE UNIVERSITY PROJECT MANAGER FOR SCHEDULING OUTAGE.
4. CONTRACTOR SHALL SUBMIT TO THE RICE UNIVERSITY PROJECT MANAGER A PROPOSED OUTAGE PLAN THAT WILL INCLUDE A SCHEDULE OF ACTIVITIES AND DURATION.
5. REINSTALL DUCT SMOKE DETECTOR IN NEW TRANSITION.

NO.	DATE	DESCRIPTION	REVISION
0	04/10/19	ISSUE FOR CONSTRUCTION	EMK



**Galaxy Consulting Engineers LLC**

14606 E GINGER SPICE CT  
 CYPRESS TX 77494  
 Website: GalaxyCE.com  
 Firm Registration No.F-8814

281-253-7859  
 EK@GalaxyCE.com

WILLIAM MARSH RICE UNIVERSITY  
 WIESS GEOLOGY HVAC UPGRADES  
 BASEMENT  
 NEW WORK

SCALE NONE
JOB NO. RU18-10
SHEET NO. 5 of 14
SHEET NAME M-02

## AIR HANDLING UNITS

IDENT	AREA SERVED	MANUFACTURER	FAN						OUTDOOR AIR				COOLING						HEATING						Notes	
			AIRFLOW	EXT. SP	TOT. SP	HP	Elec	Starter	MINIMUM	MAXIMUM	FRNUMID	MAX FV	ENTERING	LEAVING	LOAD	CHW	CHW	MAX	AIRFLOW	EAT	LAT	LOAD	WATER FLOW	EWT		WATER PD
			CFM	IN	IN				CFM	CFM	CFM	FPM	DB/WB	DB/WB	BTUH	GPM	ENT/LV	WP DROP	CFM	°F	°F	BTUH	GPM	°F		FT h2O
OAHU-1	BLDG OUTDOOR AIR	TEMTROL	25,000	3.5	5.5	30	208/3	vfd	25,000	25,000	25,000	500	98/78	55/54	2,186,000	427	45/55	15'	25,000	20	55	945,000	48	160	15'	
AHU-3a	3RD FLOOR Lab 328	TEMTROL	3,410	4	5.5	30	208/3	--	3,410	3,410	3,410	500	98/78	54/53	297,000	60	45/55	15'	3,410	20	55	129,000	6.5	160	15'	

### GEOLOGY BUILDING ENERGY MANAGEMENT SYSTEM

THE KEITH WIESS GEOLOGY BUILDING UTILIZES THE SIEMENS BUILDING AUTOMATION SYSTEM CONTRACTOR IS TO PROVIDE ALL THE CONTROL POINTS LISTED BELOW FOR EACH OF THE AIR HANDLING UNITS. THIS SHALL INCLUDE THE CONTROL DEVICES, INSTALLATION, PROGRAMMING AND INTEGRATION SERVICES.

#### GEOLOGY\_OAHU-1

1. SIEMENS SYSTEM OUTSIDE AIR TEMPERATURE
2. AHU OUTSIDE AIR TEMPERATURE
3. SMOKE DETECTOR-2 ON/OFF STATUS
4. OUTSIDE AIR DAMPER ON/OFF (OPEN/CLOSED?)
5. OUTSIDE AIR DAMPER END SWITCH STATUS
6. FREEZE STAT ON/OFF\*
7. PREHEAT VALVE VOLTAGE SIGNAL
8. PREHEAT TEMPERATURE
9. CHW VALVE SIGNAL
10. AHU ON/OFF STATUS
11. AHU START/STOP COMMAND
12. LOW STATIC ALARM ON/OFF
13. HIGH STATIC ALARM ON/OFF
14. SMOKE DETECTOR-1 ON/OFF STATUS
15. FAN VFD SPEED SIGNAL
16. DUCT STATIC PRESSURE READING AND SETPOINT FACEPLATE
17. DISCHARGE AIR TEMPERATURE AND SETPOINT FACEPLATE
18. DISCHARGE AIR TEMPERATURE PID LOOP TUNING PARAMETERS

#### GEOLOGY\_AHU-3A

1. UNIT OUTSIDE AIR TEMPERATURE
2. PREHEAT VALVE SIGNAL
3. PREHEAT TEMPERATURE
4. ON/OFF STATUS
5. START/STOP COMMAND
6. CHW VALVE SIGNAL
7. SUPPLY AIR TEMPERATURE SETPOINT
8. SUPPLY AIR TEMPERATURE VALUE
9. SMOKE DETECTOR ALARM ON/OFF
10. FREEZE STAT ALARM ON/OFF
11. HIGH STATIC ALARM ON/OFF
12. DUCT STATIC PRESSURE

NO.	DATE	DESCRIPTION	APPD.
0	04/10/19	ISSUE FOR CONSTRUCTION	EMK



### Galaxy Consulting Engineers LLC

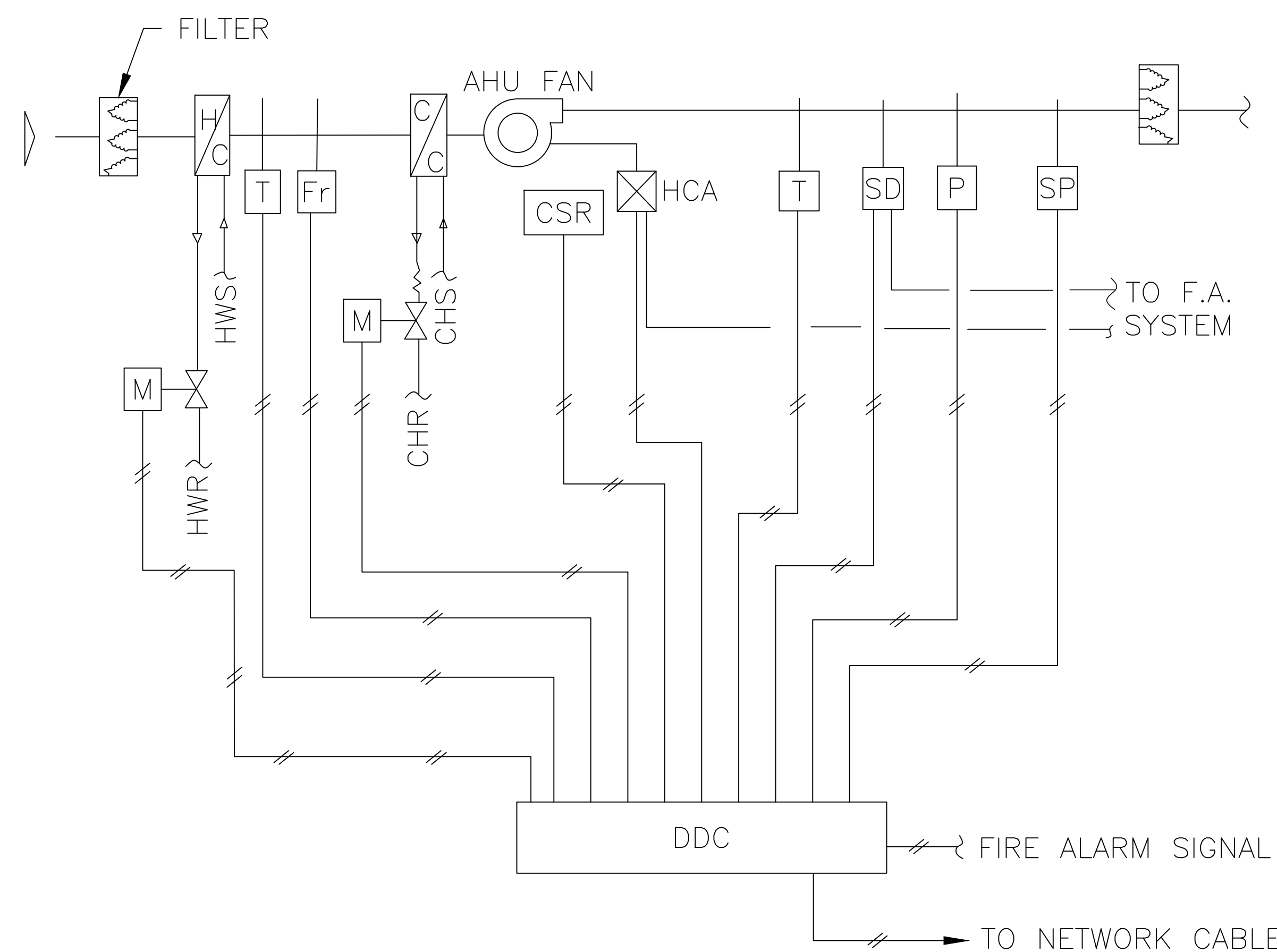
14606 E GINGER SPICE CT  
 CYPRESS TX 77494  
 Website: GalaxyCE.com  
 Firm Registration No.F-8814

281-253-7859  
 EK@GalaxyCE.com

WILLIAM MARSH RICE UNIVERSITY  
 WIESS GEOLOGY HVAC UPGRADES  
 SCHEDULES  
 MECHANICAL

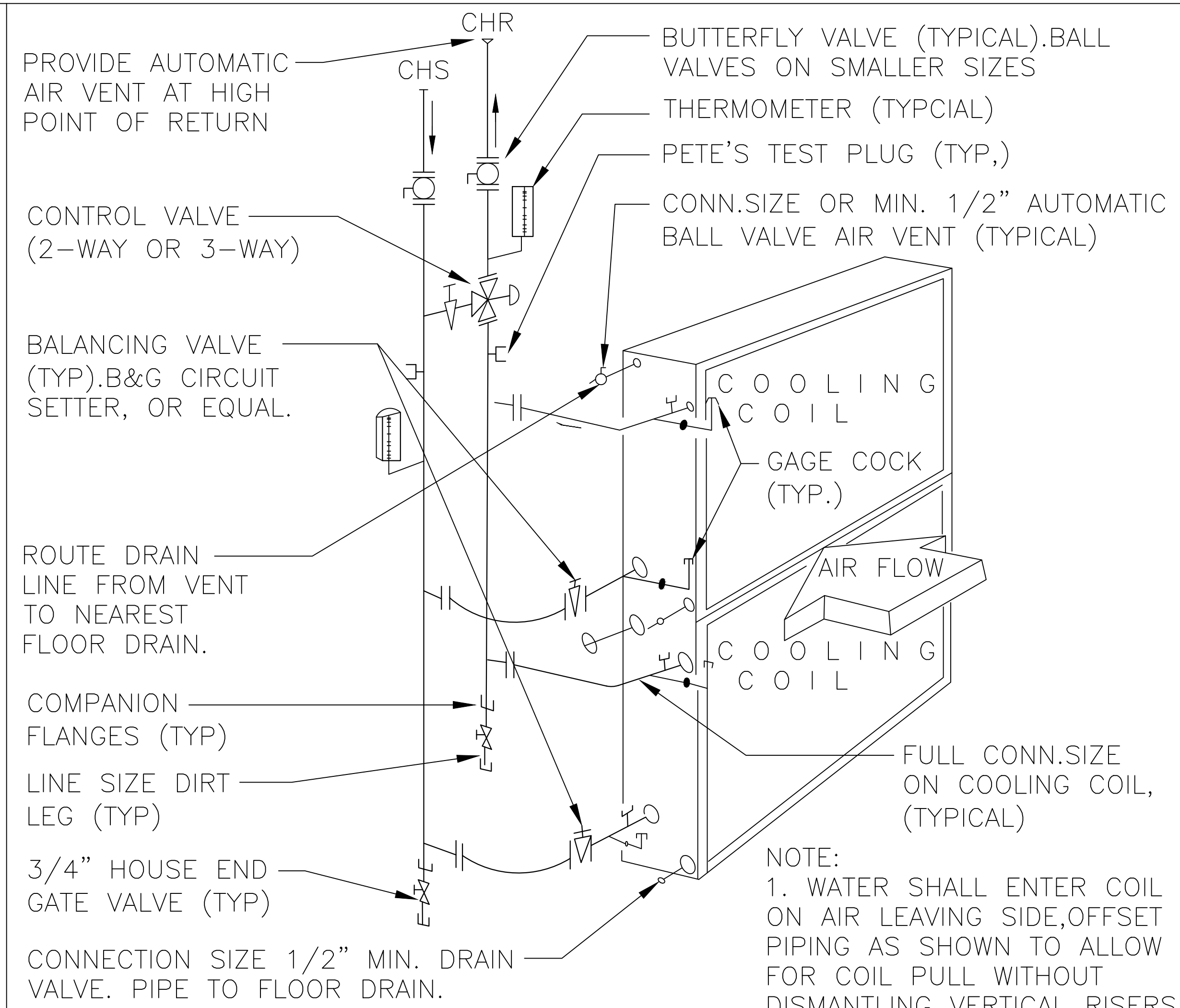
SCALE NONE
JOB NO. RU18-10
SHEET NO. 6 of 14
SHEET NAME M-03





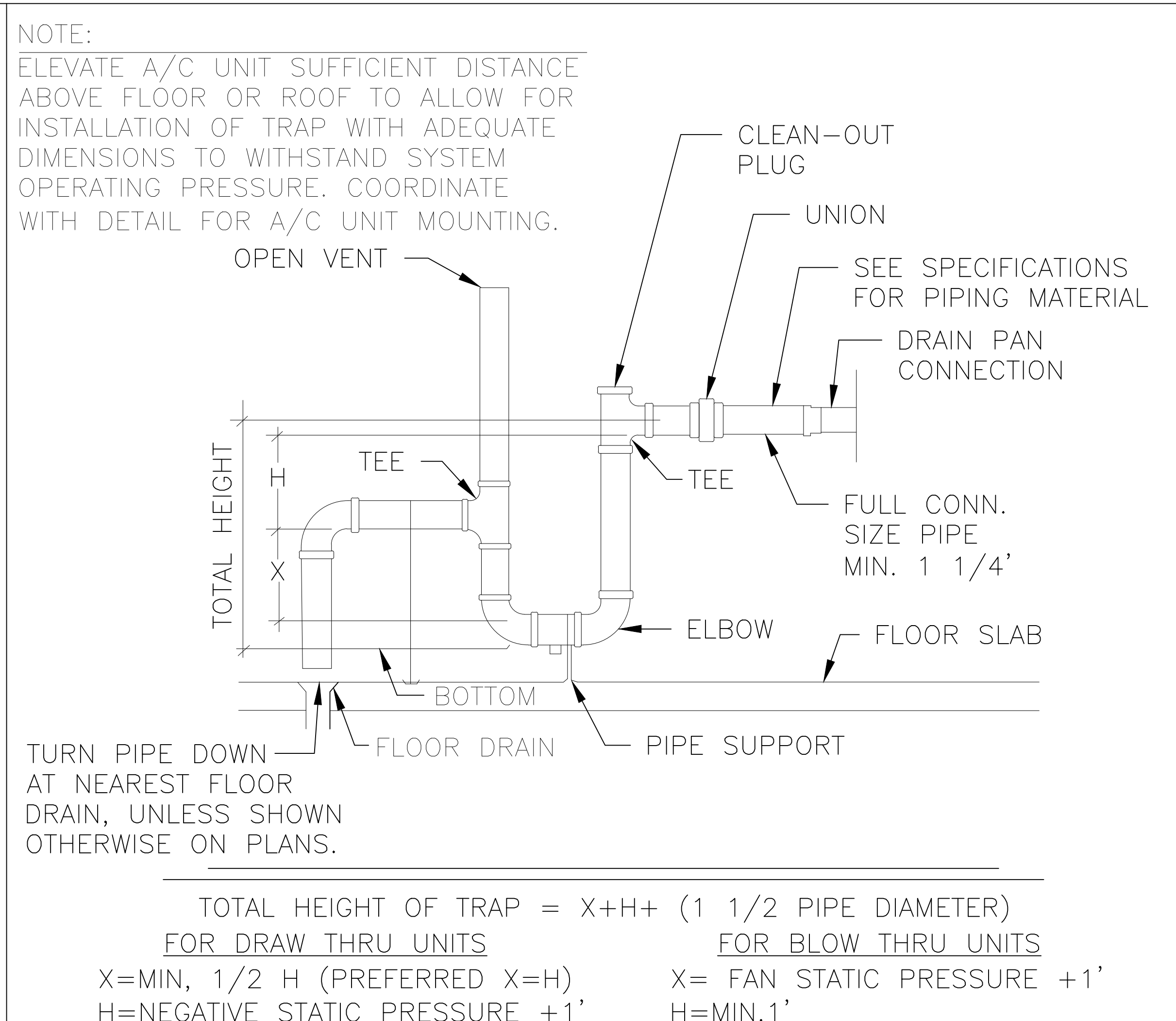
AHU-3A

01



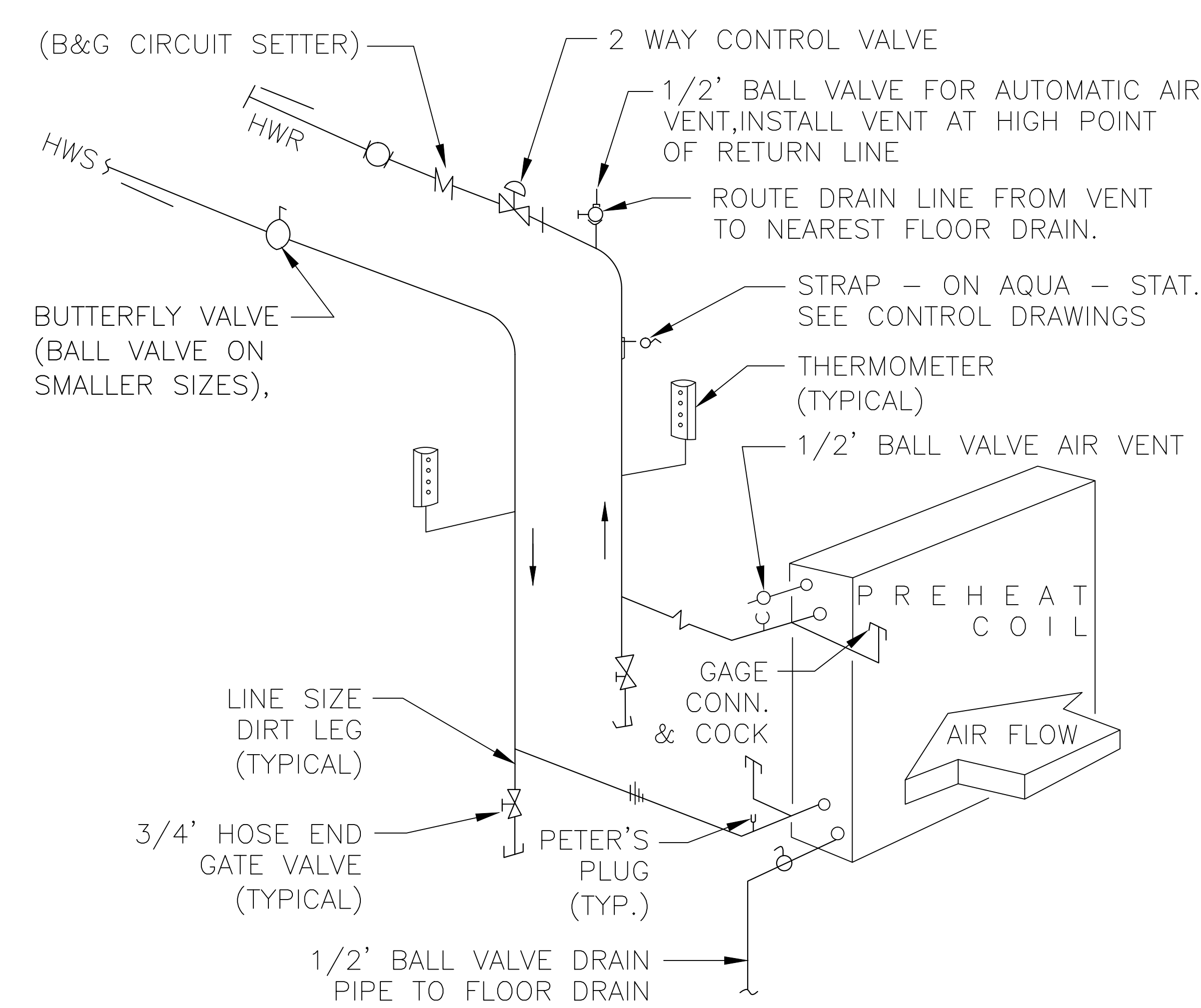
CHILLED WATER PIPING AT MULTIPLE COOLING COILS

02



COOLING COIL CONDENSATE DRAIN

03



HOT WATER PIPING AT PREHEAT COIL

04

NO.	DATE	DESCRIPTION	REVISION	APPD.
0	04/10/19	ISSUE FOR CONSTRUCTION		EMK

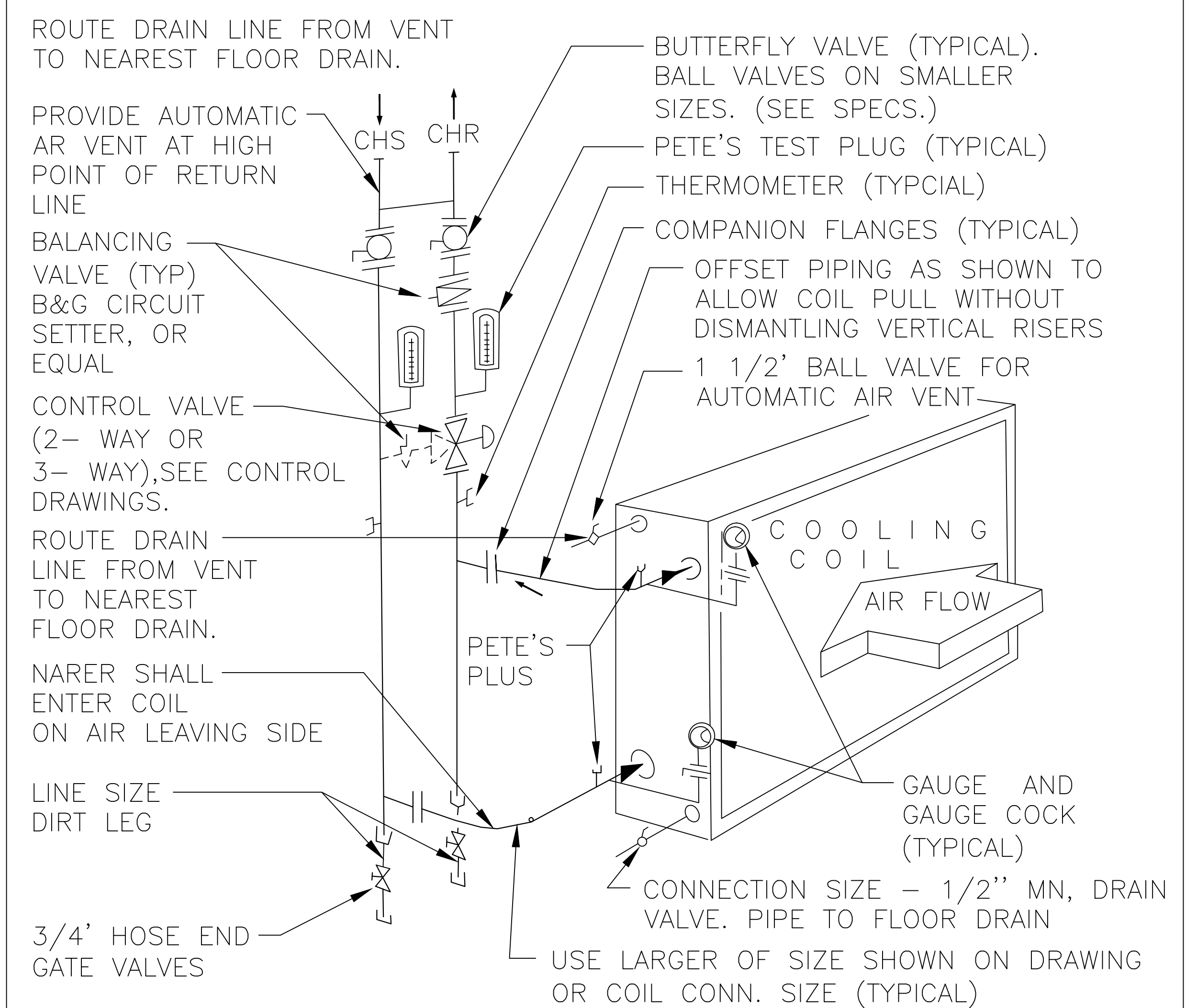
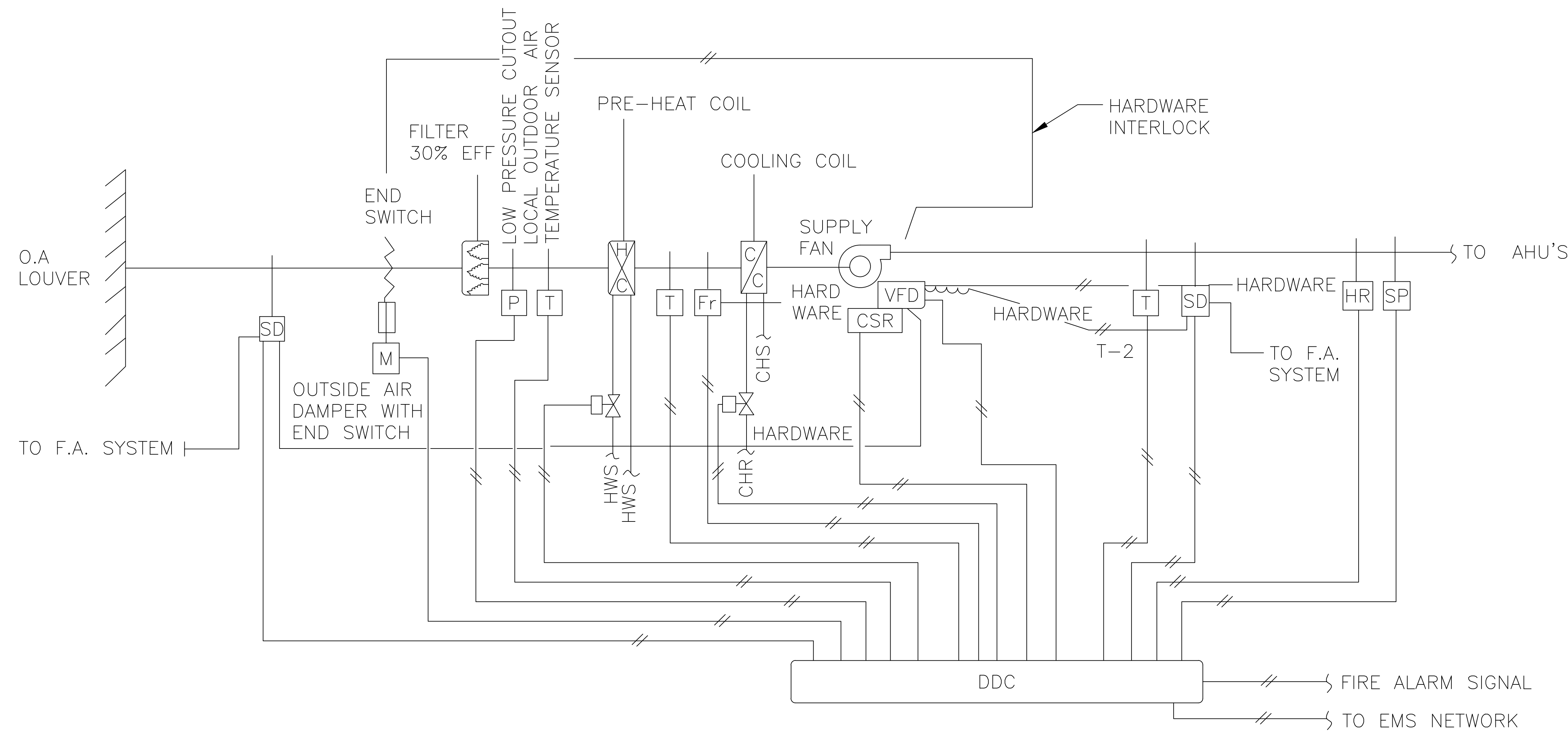


**Galaxy Consulting Engineers LLC**  
 14606 E GINGER SPICE CT  
 CYPRESS TX 77494  
 Website: GalaxyCE.com  
 Firm Registration No.F-8814

281-253-7859  
 EK@GalaxyCE.com

WILLIAM MARSH RICE UNIVERSITY  
 WIESS GEOLOGY HVAC UPGRADES  
 TYPICAL DETAILS  
 MECHANICAL

SCALE	NONE
JOB NO.	RU18-10
SHEET NO.	7 of 14
SHEET NAME	M-04

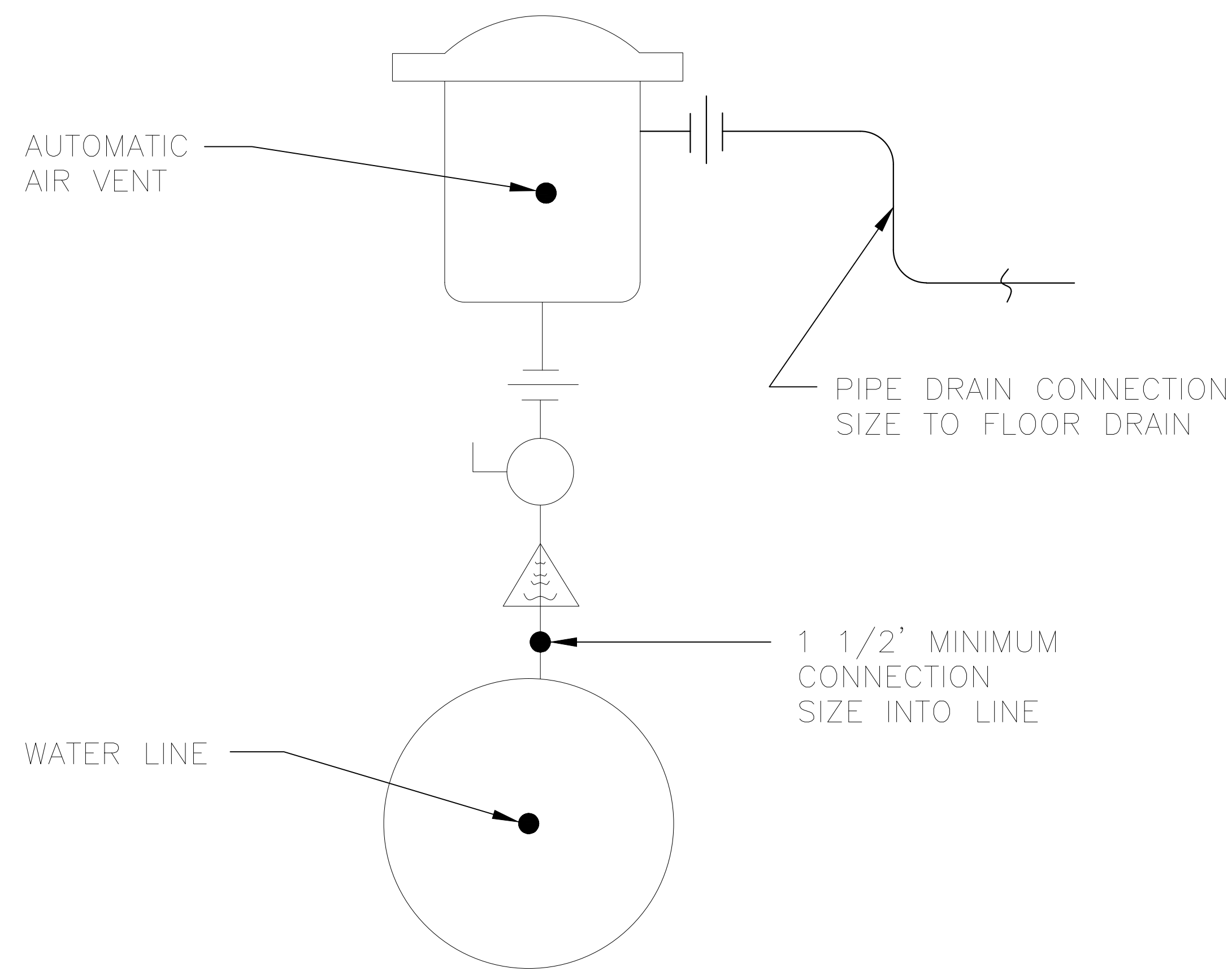


OUTSIDE AIR HANDLING UNIT CONTROLS

06

CHILLED WATER PIPING AT SINGLE COOLING COIL

07



AUTOMATIC AIR VENT

08

NO.	DATE	DESCRIPTION	REVISION
0	04/10/19	ISSUE FOR CONSTRUCTION	EMK



**Galaxy Consulting Engineers LLC**

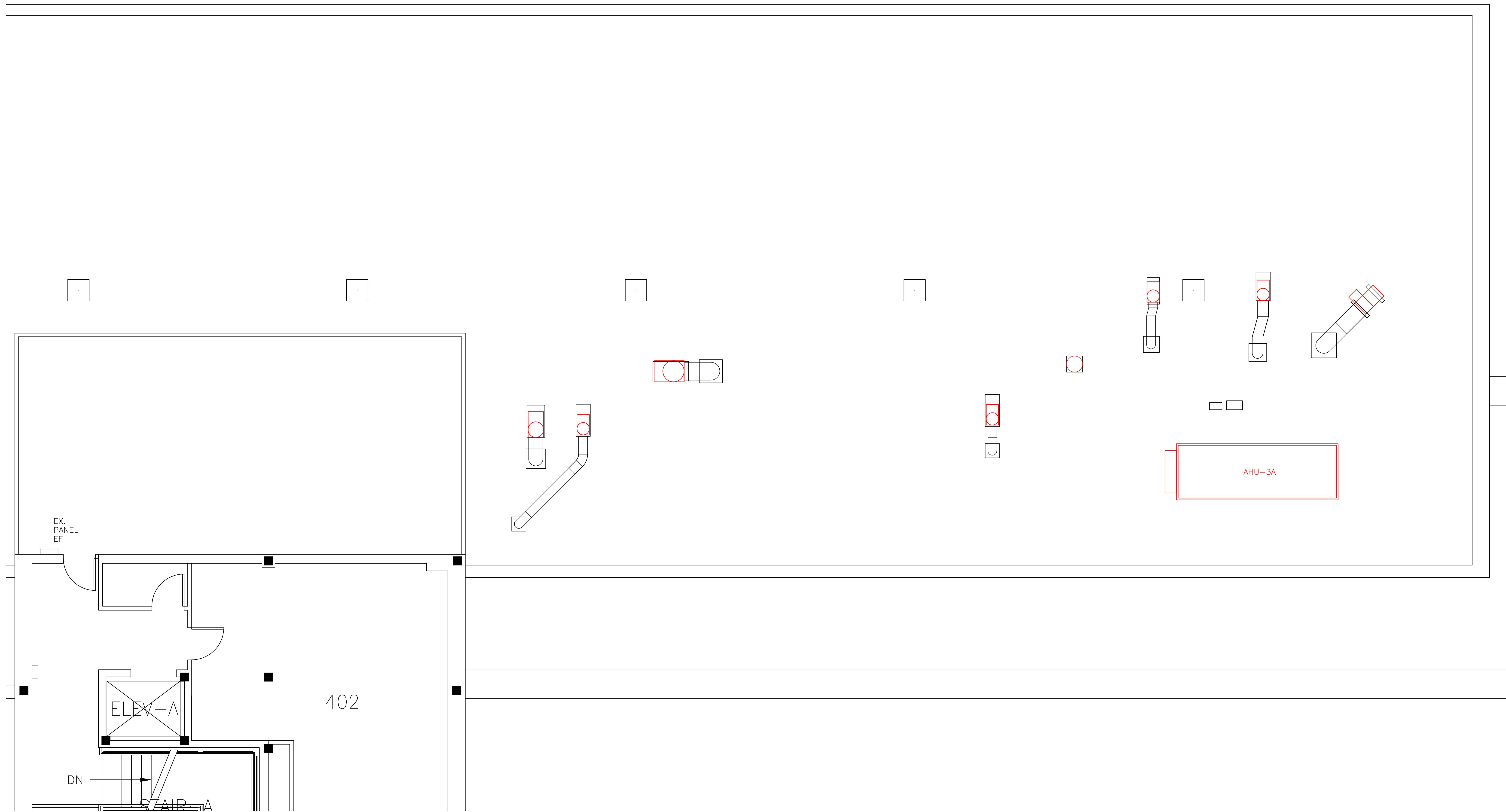
14606 E GINGER SPICE CT  
 CYPRESS TX 77494  
 Website: GalaxyCE.com  
 Firm Registration No.F-8814

281-253-7859  
 EK@GalaxyCE.com

WILLIAM MARSH RICE UNIVERSITY  
 WIESS GEOLOGY HVAC UPGRADES  
 TYPICAL DETAILS  
 MECHANICAL

SCALE NONE  
 JOB NO. RU18-10  
 SHEET NO. 8 of 14  
 SHEET NAME M-05





NOTES:

1. EACH EXHAUST FAN IS CONNECTED BY A LOCAL MOTOR RATED DISCONNECT SWITCH.
2. CONTRACTOR SHALL REUSE WEATHER RATED MOTOR DISCONNECT SWITCHES ON EXHAUST FANS EF-4, EF-5, EF-7, EF-8, EF-9.
3. CONTRACTOR TO INSTALL NEW FLEXIBLE CONDUIT AND WIRING FROM DISCONNECT SWITCHES TO FANS.
4. CONTRACTOR SHALL INSTALL NEW WEATHER RATED MOTOR DISCONNECT SWITCHES AND INSTALL NEW FLEXIBLE CONDUIT AND WIRING FROM DISCONNECT SWITCHES TO FANS ON EF-6, AND EF-10

NO.	DATE	DESCRIPTION	APPD.
0	04/10/19	ISSUE FOR CONSTRUCTION	EMK
		REVISION	



**Galaxy Consulting Engineers LLC**

14606 E GINGER SPICE CT  
 CYPRESS TX 77494  
 Website: GalaxyCE.com  
 Firm Registration No.F-8814

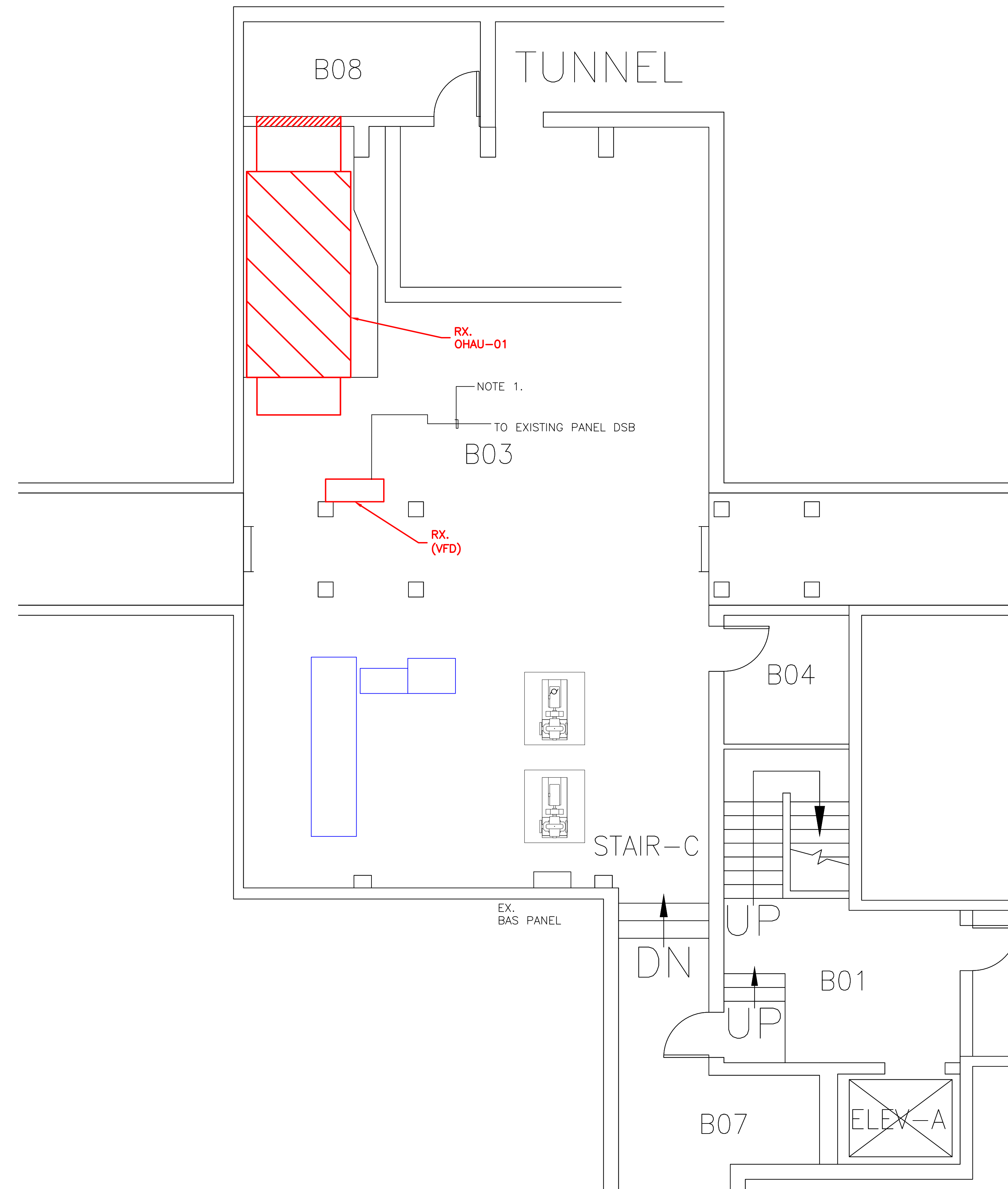
281-253-7859  
 EK@GalaxyCE.com

WILLIAM MARSH RICE UNIVERSITY  
 WIESS GEOLOGY HVAC UPGRADES  
 ROOF  
 DEMOLITION

SCALE NONE
JOB NO. RU18-10
SHEET NO. 9 of 14
SHEET NAME ED-01

NOTES:

1. REMOVE EXISTING FEEDERS TO OAHU-1 DRIVE.
2. TURN REMOVED DRIVE OVER TO RICE UNIVERSITY ELECTRICAL DEPARTMENT.



NO.	DATE	DESCRIPTION	APPD.
0	04/10/19	ISSUE FOR CONSTRUCTION	EMK
		REVISION	



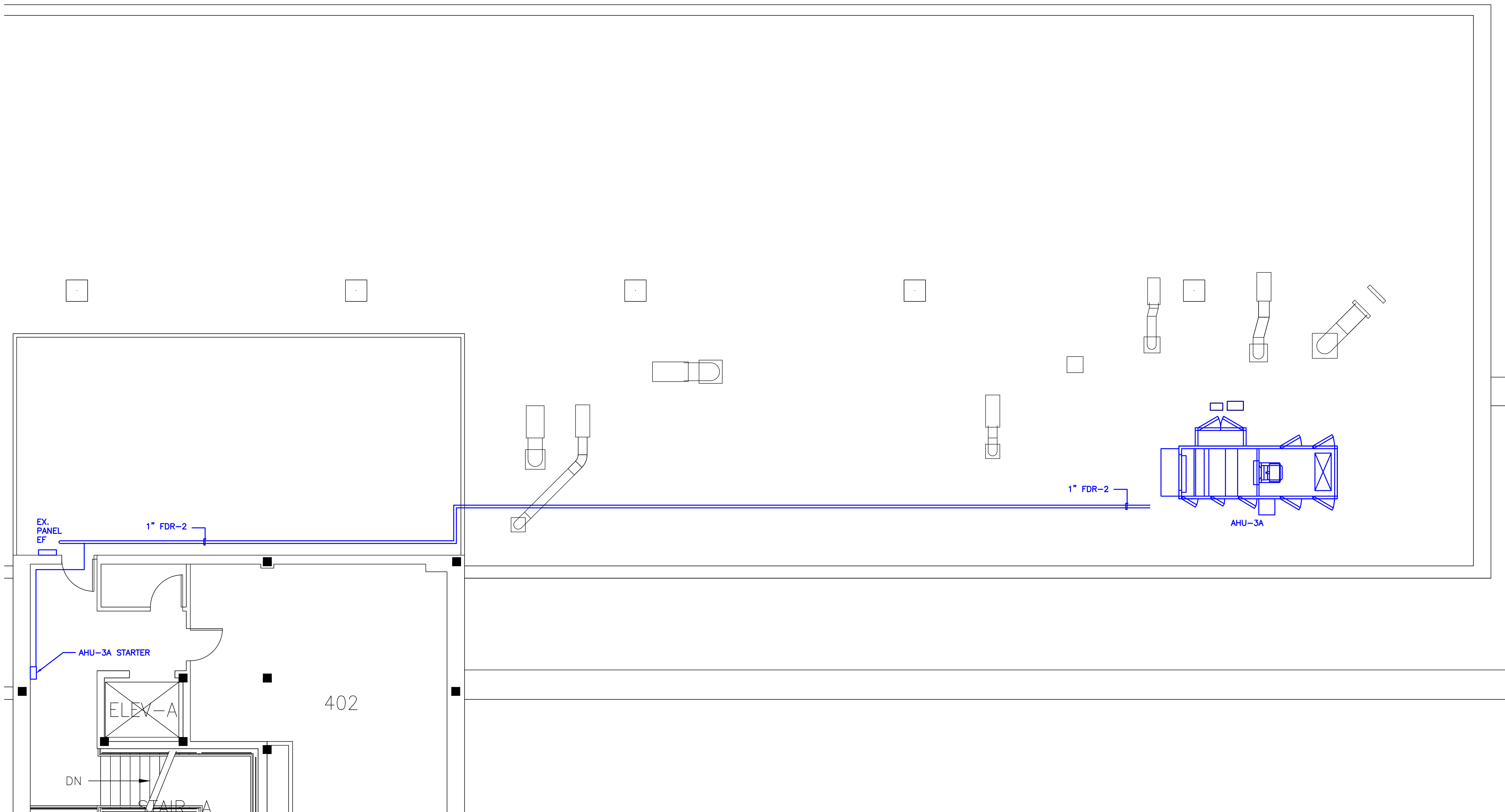
**Galaxy Consulting Engineers LLC**

14606 E GINGER SPICE CT  
 CYPRESS TX 77494  
 Website: GalaxyCE.com  
 Firm Registration No.F-8814

281-253-7859  
 EK@GalaxyCE.com

WILLIAM MARSH RICE UNIVERSITY  
 WIESS GEOLOGY HVAC UPGRADES  
 BASEMENT  
 DEMOLITION

SCALE NONE
JOB NO. RU18-10
SHEET NO. 10 of 14
SHEET NAME ED-02



NOTES:

1. SEE CABLE AND CONDUIT SCHEDULE CC1.
2. CONDUITS ACROSS ROOF TO BE SUPPORTED FROM RUBBERIZED BLOCKING TYPICAL OF EXISTING BLOCKING.
3. EACH EXHAUST FAN IS CONNECTED BY A LOCAL MOTOR RATED DISCONNECT SWITCH.
4. CONTRACTOR SHALL REUSE WEATHER RATED MOTOR DISCONNECT SWITCHES ON EXHAUST FANS EF-4, EF-5, EF-7, EF-8, EF-9. CONTRACTOR TO INSTALL NEW FLEXIBLE CONDUIT AND WIRING FROM DISCONNECT SWITCHES TO FANS.
5. CONTRACTOR SHALL INSTALL NEW WEATHER RATED MOTOR DISCONNECT SWITCHES AND INSTALL NEW FLEXIBLE CONDUIT AND WIRING FROM DISCONNECT SWITCHES TO FANS ON EF-6, AND EF-10

NO.	DATE	DESCRIPTION	REVISION
0	04/10/19	ISSUE FOR CONSTRUCTION	EMK



**Galaxy Consulting Engineers LLC**

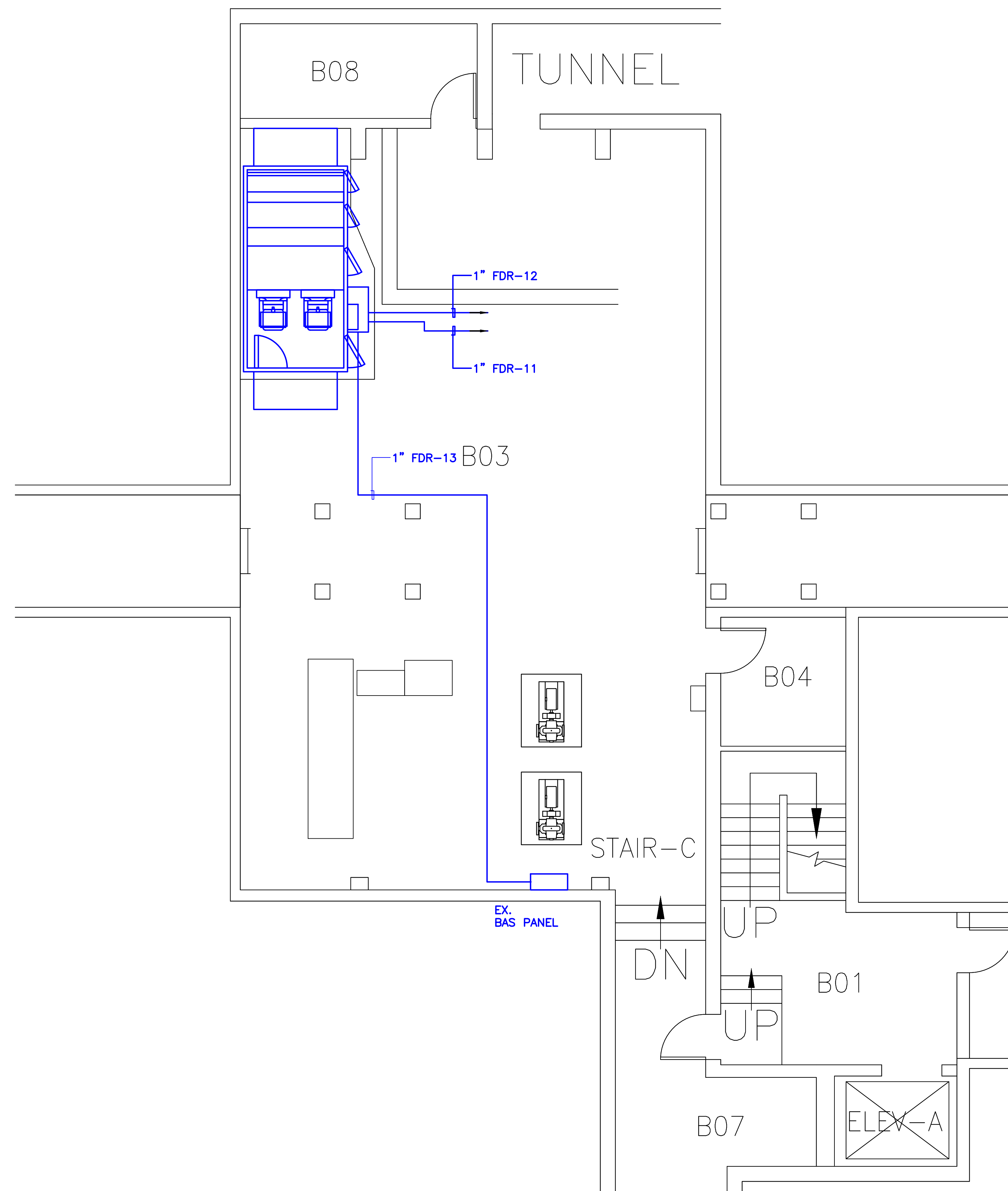
14606 E GINGER SPICE CT  
 CYPRESS TX 77494  
 Website: GalaxyCE.com  
 Firm Registration No.F-8814

281-253-7859  
 EK@GalaxyCE.com

WILLIAM MARSH RICE UNIVERSITY  
 WIESS GEOLOGY HVAC UPGRADES  
 ROOF - CONDUIT PLAN  
 CABLE AND CONDUIT PLAN

SCALE  
 NONE  
 JOB NO.  
 RU18-10  
 SHEET NO.  
 11 OF 14  
 SHEET NAME  
 E-01





NOTES:

1. CONTRACTOR SHALL INSTALL ALL NEW CONDUIT AND CABLE AS INDICATED ON THIS DRAWING.
2. CONTRACTOR MAY REUSE EXISTING COMMUNICATION CONDUIT AND CABLE IF HE CAN DEMONSTRATE TO THE UNIVERSITY CONSTRUCTION MANAGER THAT THE CONDUIT AND CABLE ARE IN EXCELLENT CONDITION.
3. ALL CONDUIT, CABLE, AND ELECTRICAL EQUIPMENT INSTALLATIONS SHALL MEET AS A MINIMUM THE NFPA 70 (NEC 2017) AND THE RICE UNIVERSITY SPECIFICATIONS.
4. ALL CONDUITS ARE SHOWN DIAGRAMMATICALLY, THE CONTRACTOR SHALL INSTALL ALL CONDUITS IN ACCORDANCE WITH NOTE 3 OF THIS DOCUMENT.
5. SEE CABLE AND CONDUIT SCHEDULE CC2.

NO.	DATE	DESCRIPTION	REVISION	APPD.
0	04/10/19	ISSUE FOR CONSTRUCTION		EMK



**Galaxy Consulting Engineers LLC**

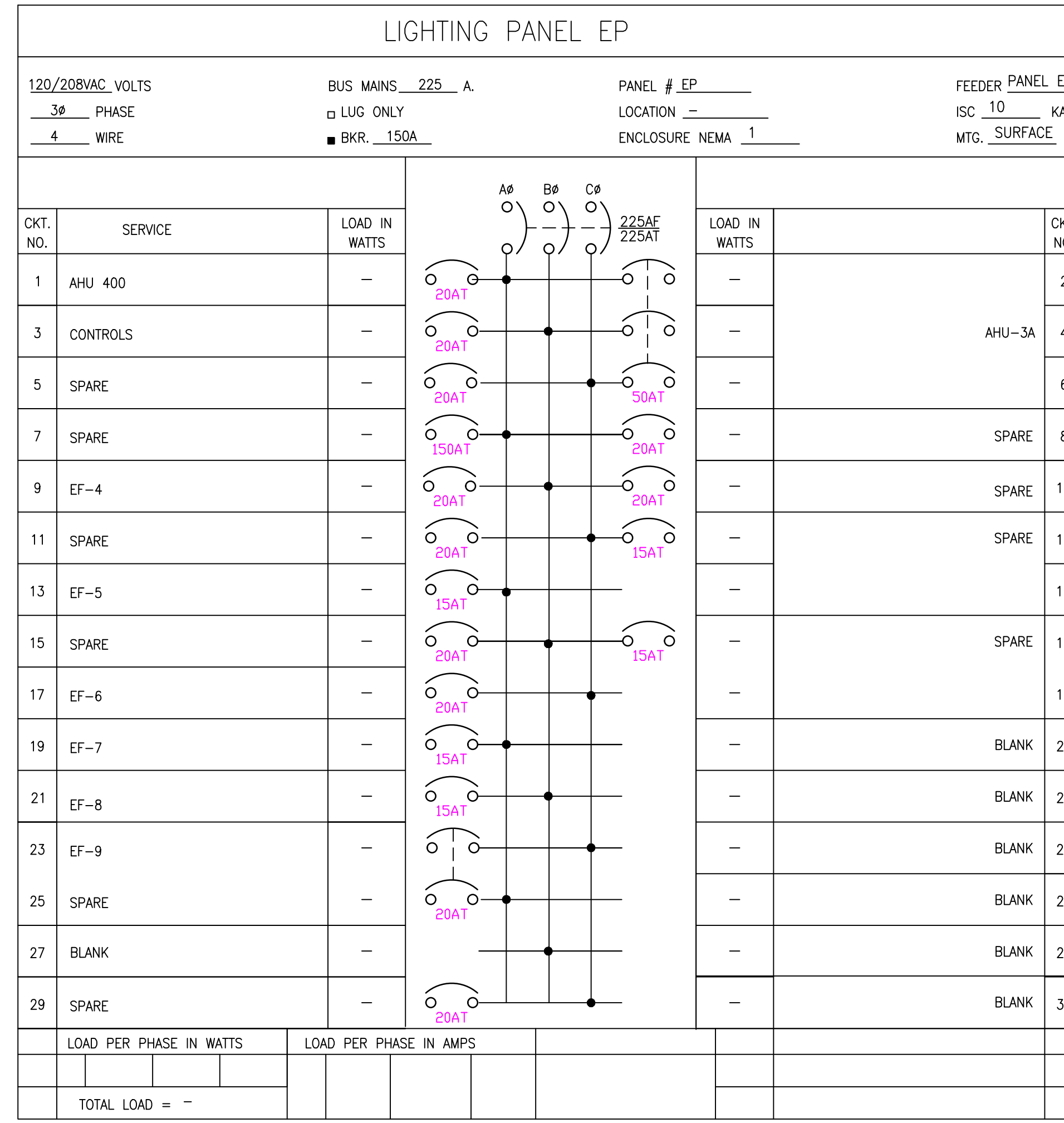
14606 E GINGER SPICE CT  
 CYPRESS TX 77494  
 Website: GalaxyCE.com  
 Firm Registration No.F-8814

281-253-7859  
 EK@GalaxyCE.com

WILLIAM MARSH RICE UNIVERSITY  
 WIESS GEOLOGY HVAC UPGRADES  
 BASEMENT-OAHU-1  
 CABLE AND CONDUIT PLAN

SCALE  
 NONE  
 JOB NO.  
 RU18-10  
 SHEET NO.  
 12 OF 14  
 SHEET NAME  
 E-02





NO.	DATE	DESCRIPTION	APP'D.
0	04/10/19	ISSUE FOR CONSTRUCTION	EMK



**Galaxy Consulting Engineers LLC**

14606 E GINGER SPICE CT  
 CYPRESS TX 77494  
 Website: GalaxyCE.com  
 Firm Registration No.F-8814

281-253-7859  
 EK@GalaxyCE.com

WILLIAM MARSH RICE UNIVERSITY  
 WIESS GEOLOGY HVAC UPGRADES  
 NEW WORK  
 ROOF TOP PANEL SCHEDULES

SCALE NONE
JOB NO. RU18-10
SHEET NO. 14 of 14
SHEET NAME E-04