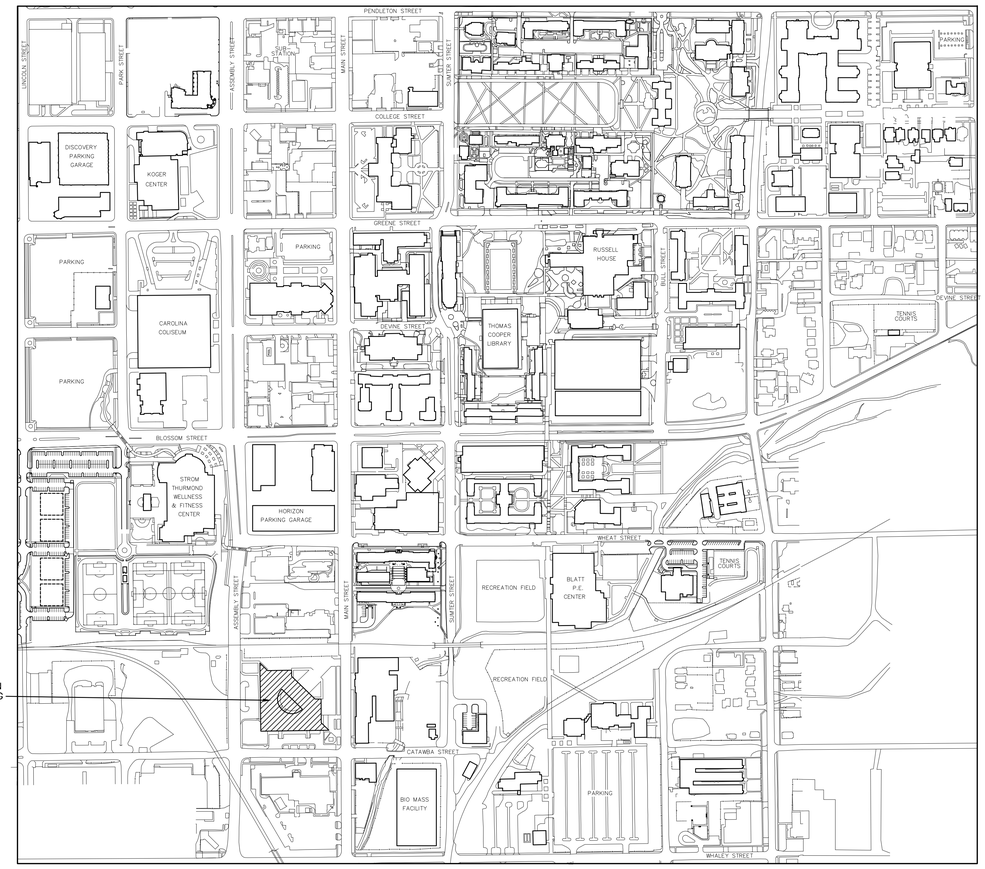
DEFERRED MAINTENANCE
SWEARINGEN ENGINEERING CENTER
MECHANICAL SYSTEMS AND CONTROLS
COLUMBIA, SOUTH CAROLINA

Project No. H27-6094-K

UNIVERSITY of SOUTH CAROLINA



THE UNIVERSITY OF SOUTH CAROLINA

NOTES

1. DO NOT SCALE DRAWINGS. VERIFY ALL REQUIRED INFORMATION IN FIELD BY VISITING SITE PRIOR TO SUBMITTING BID.
2. DIMENSIONS ARE IN INCHES UNLESS OTHERWISE NOTED.
3. WHENEVER THE WORD "PROVIDE" IS USED IT SHALL MEAN FURNISH AND INSTALL COMPLETE AND READY FOR USE.
4. ALL MATERIALS CALLED FOR TO BE REMOVED SHALL REMAIN THE PROPERTY OF THE OWNER. ANY ITEM THE OWNER DOES NOT WISH TO KEEP SHALL BE REMOVED FROM THE SITE OF WORK.
5. PROVIDE ALL ITEMS OF MISCELLANEOUS STEEL AS REQUIRED FOR INSTALLATION OF ALL MECHANICAL OR CONTROL COMPONENTS.
6. PIPING SYSTEMS SHALL BE DRAINED AS REQUIRED FOR INSTALLATION OF WORK.
7. PROVIDE FOR ACCESS TO ALL MECHANICAL/CONTROL ITEMS REQUIRING CLEANING OR ADJUSTMENT.

INDEX OF DRAWINGS

0 300 600 1200

SCALE : 1" = 300' - 0"

MECHANICAL DESIGN INC.
4403 Broad River Road
Columbia, S.C. 29210
(803) 731-9834
(803) 731-9837 FAX
CONTACT: Danny Wilds

DATE: 01/11/13 COMM. NO. 133000

CAMPUS PLANNING AND CONSTRUCTION
COLUMBIA, SC 29208

SEAL: SOUTH CAROLINA NCQUALIFICATION MECHANICAL DESIGN, INC. COLUMBIA, SC No. C00096 CERTIFICATE OF

SEAL: REGISTERED PROFESSIONAL ENGINEER No. 11155 01/11/13 DANNY WILDS

BUILDING:	DRAWING:	DATE:	DESCRIPTION
173	T1-133000	11JAN13	
REV.			

DRAWN BY: JPO CHECKED BY: CDW

DATE	ORIG. BY	DRAWN BY

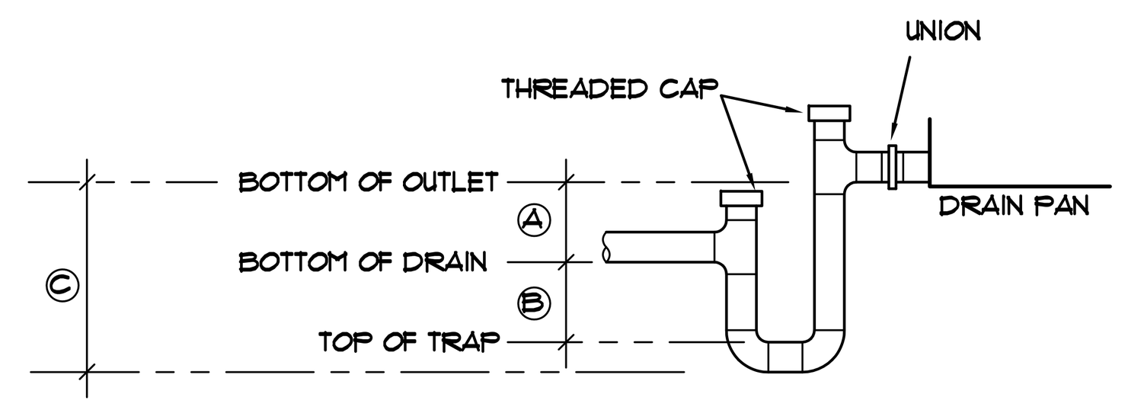
PROJECT TITLE: DEFERRED MAINTENANCE - SWEARINGEN ENGINEERING CENTER MECHANICAL SYSTEMS AND CONTROLS

University of South Carolina

SHEET: T1

1 OF 5

SHEET IN SET: OF



(A) 1" FOR EACH 1" OF MAXIMUM NEGATIVE STATIC PRESSURE PLUS 1" (3" MINIMUM)

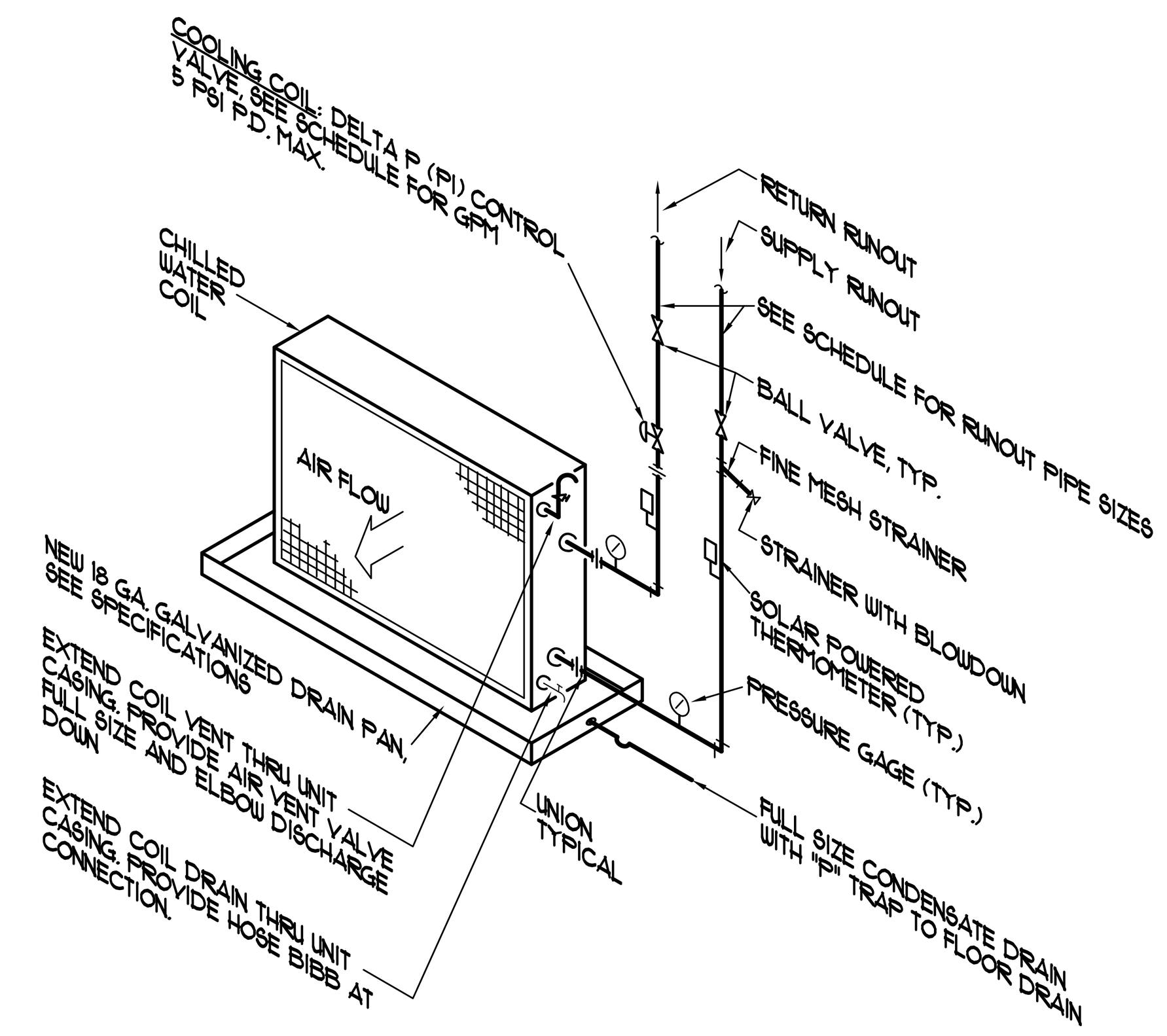
(B) ½ OF DIMENSION A

(C) A + B + PIPE DIAMETER (1" MIN)

NOTE:
CONDENSATE DRAIN PIPE SIZE SHALL BE FULL SIZE DRAIN CONNECTION BUT NOT LESS THAN 1" DIAMETER. DRAIN LINE SHALL BE INSULATED TYPE "L" COPPER

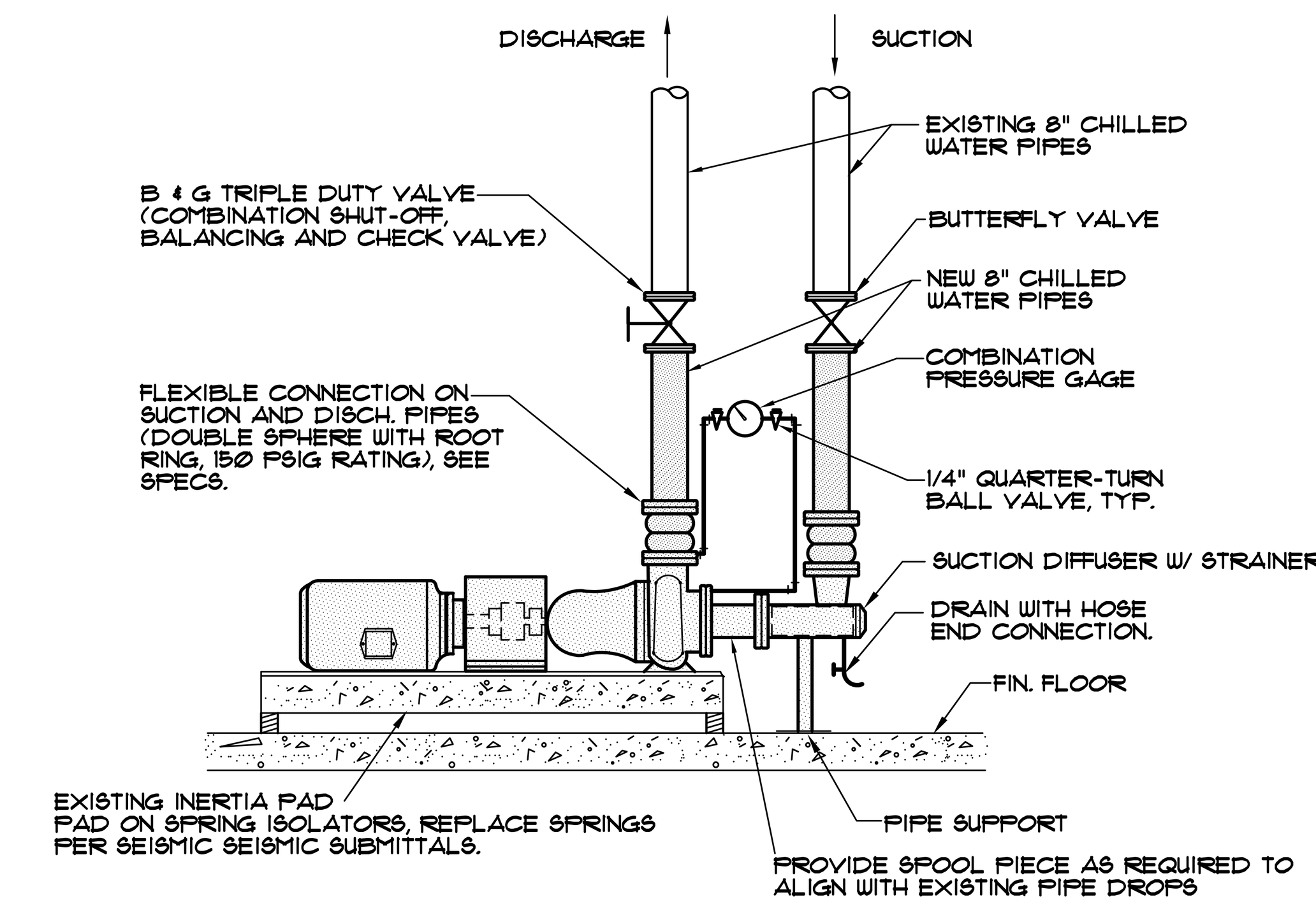
CONDENSATE DRAIN PIPE INSTALLATION DETAIL

NOT TO SCALE



WATER COIL PIPING DIAGRAM

NOT TO SCALE

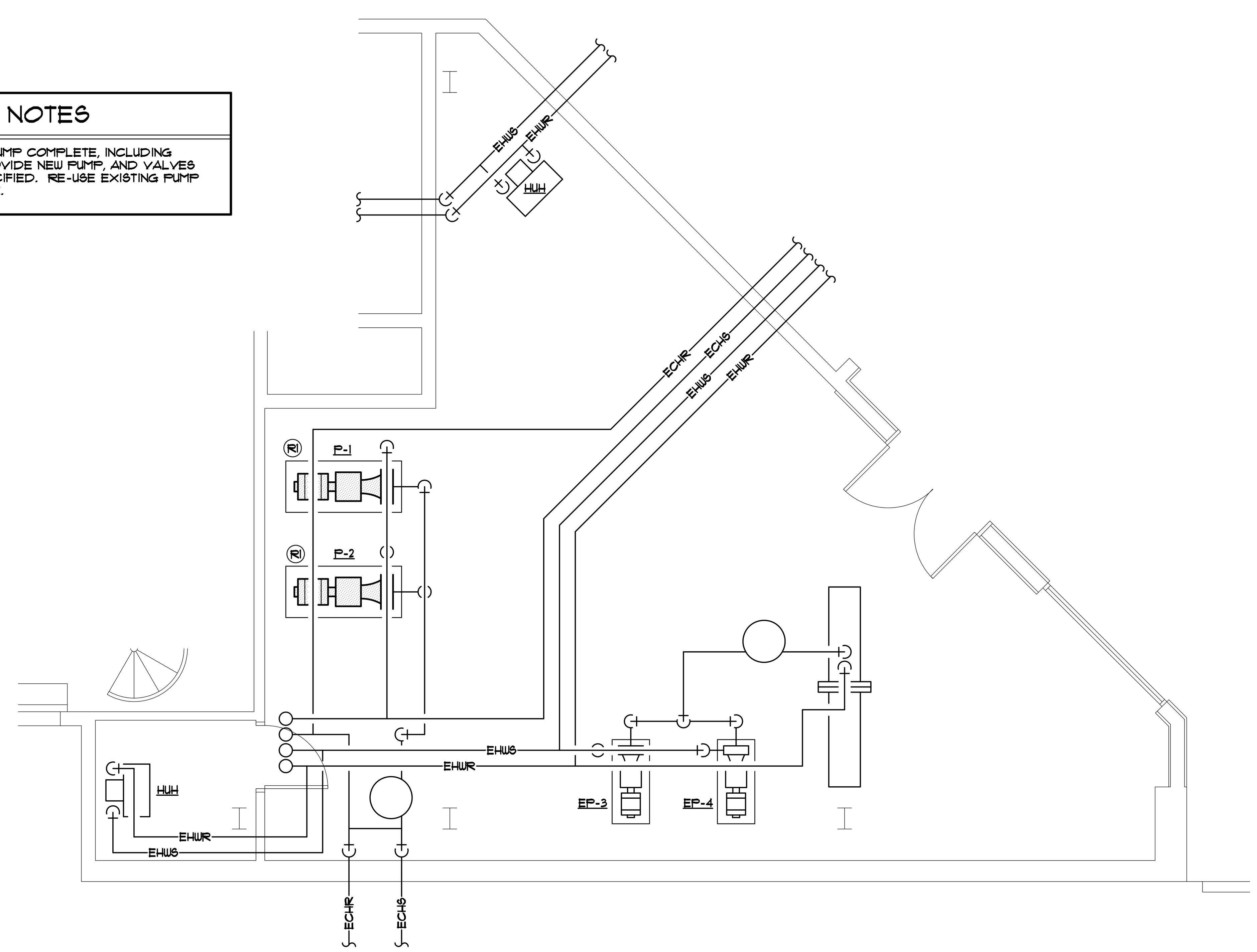


CHILLED WATER PUMP DETAIL

NOT TO SCALE

RENOVATION NOTES

(R1) REMOVE EXISTING CHILLED WATER PUMP COMPLETE, INCLUDING ASSOCIATED VALVES AND VFD. PROVIDE NEW PUMP, AND VALVES AS SCHEDULED, DETAILED AND SPECIFIED. RE-USE EXISTING PUMP MOTOR VARIABLE FREQUENCY DRIVE.



HVAC FLOOR PLAN - BASEMENT MECH ROOM 0B03

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

AIR HANDLING UNIT COIL AND MOTOR SCHEDULE

MARK	AREA SERVED	TRANE MODEL NUMBER	TRANE SERIAL NUMBER	FAN: MAX CFM	FAN: EXIST. MOTOR	FAN: NEW MOTOR	NEW COOLING COIL: TOTAL MBH	SENS. MBH	MAX AIR P.D.	ENT. AIR °FDB	ENT. AIR °FWB	LVG. AIR °FDB	LVG. AIR °FWB	GPM	EWT (°F)	LWT (°F)	MAX WTR P.D. (FT.)	RUNOUT PIPE SIZE	REMARKS
AH-1.1	1ST FLR C & D WINGS	CCDB25EE0F	K86K14416	14,500	20	20	458.1	387.8	0.726	79.3	64.9	55	54.3	76.1	48	60	10.0	3"	
AH-1.2	1ST FLR A WING	CCDB08AE0F	K86K14407	5,500	5	5	153.0	134.9	0.542	79.4	65.5	57	56.6	25.4	48	60	10.0	2"	
AH-1.3	1ST FLR A WING	CCDB21BE0F	K86K14408	12,500	15	15	411.2	326.5	0.863	77.8	64.5	54.1	53.4	68.3	48	60	12.0	2-1/2"	
AH-2.1	2ND FLR C & D WINGS	CCDB31BE0F	K86K14417	18,000	20 (1)	25 (1)	536.1	468.7	0.717	78.8	64.4	55.1	54.5	89.1	48	60	10.0	3"	
AH-2.2	2ND FLR A WING	CCDB14BE0F	K86K14413	7,200	7.5	7.5	275.3	214.5	0.871	80.4	65.4	53.3	52.6	43.7	48	60	10.0	2-1/2"	
AH-2.3	2ND FLR A WING	CCDB35ME0F	K86K14418	17,200	15	15	531.5	447.1	0.659	78.3	64.4	54.6	53.9	88.3	48	60	15.7	3"	
AH-3.1	3RD FLR C & D WINGS	CCDB41RE0G	K87B02994	22,000	20 (1)	25 (1)	635.2	584.4	0.651	79.6	64.4	55.5	54.8	105.6	48	60	10.0	3"	
AH-3.2	3RD FLR A WING	CCDB21CE0G	K87B02994	11,700	10 (1)	15 (1)	326.8	303.4	0.497	79.6	64.6	56.0	55.3	54.3	48	60	10.0	2-1/2"	
AH-3.3	3RD FLR A WING	CCDB17CE0G	K87B02772	11,200	15	15	319.3	295.7	0.613	79.9	64.6	55.9	55.2	53.1	48	60	15.0	2-1/2"	

(1) REMOVE EXISTING ABB VARIABLE FREQUENCY DRIVE (VFD), AND REPLACE WITH NEW ABB VFD FOR NEW MOTOR SIZE

PUMP SCHEDULE (1)

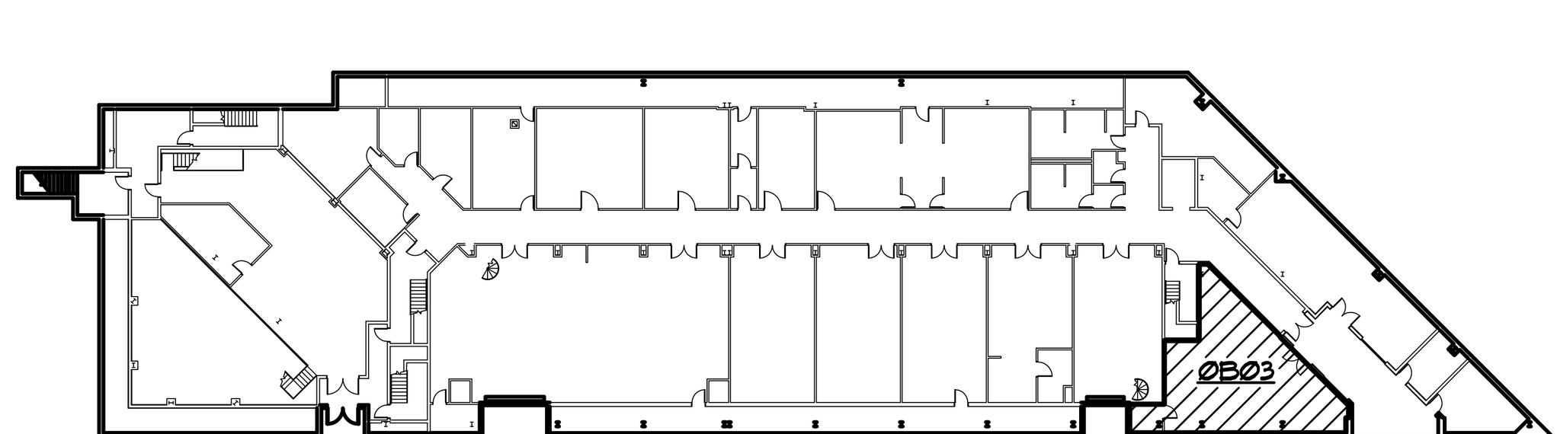
MARK	B & G MODEL (2)	GPM	HEAD	RPM	MIN. EFF.	MOTOR H.P.	SERVICE
P-1	1510	1,300	105'	1750	81.5%	50	SYSTEM PRIMARY
P-2	1510	1,300	105'	1750	81.5%	50	SYSTEM STANDBY

(1) PUMP TO MATCH AVAILABLE ELECTRICAL SERVICE, SEE ELECTRICAL.

(2) OR EQUAL BY ARMSTRONG, PATTERSON OR APPROVED EQUAL, SEE SPECIFICATIONS.

(3) PROVIDE P-1 and P-2 WITH NEW VARIABLE FREQUENCY DRIVES.

(4) BRAKE HORSEPOWER SHALL NOT EXCEED 90% OF MOTOR HORSEPOWER.



KEY PLAN - BASEMENT

MECHANICAL DESIGN INC.
4403 Broad River Road
Columbia, S.C. 29210
(803) 731-9834
(803) 731-9837 FAX
CONTACT: Danny Wilds
DATE: 01/11/13
COMM. NO. 133000

CAMPUS PLANNING AND CONSTRUCTION
COLUMBIA, SC 29208

SEAL: SOUTH CAROLINA MECHANICAL DESIGN, INC. Columbia, SC No. C00096 CERTIFICATE OF AUTHORIZATION

SEAL: SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER No. 11155 01/11/13 DANNY WILDS

CHECKED BY: CDW
DRAWN BY: JPO
DATE: 11JAN13
DRAWING: T1-133000
BUILDING: 173

REV.	DESCRIPTION	DATE	ORIG. BY	DRAWN BY

PROJECT TITLE: DEFERRED MAINTENANCE - SWEARINGEN ENGINEERING CENTER MECHANICAL SYSTEMS AND CONTROLS

Project No. H27-6094-K

University of South Carolina

SHEET: M1

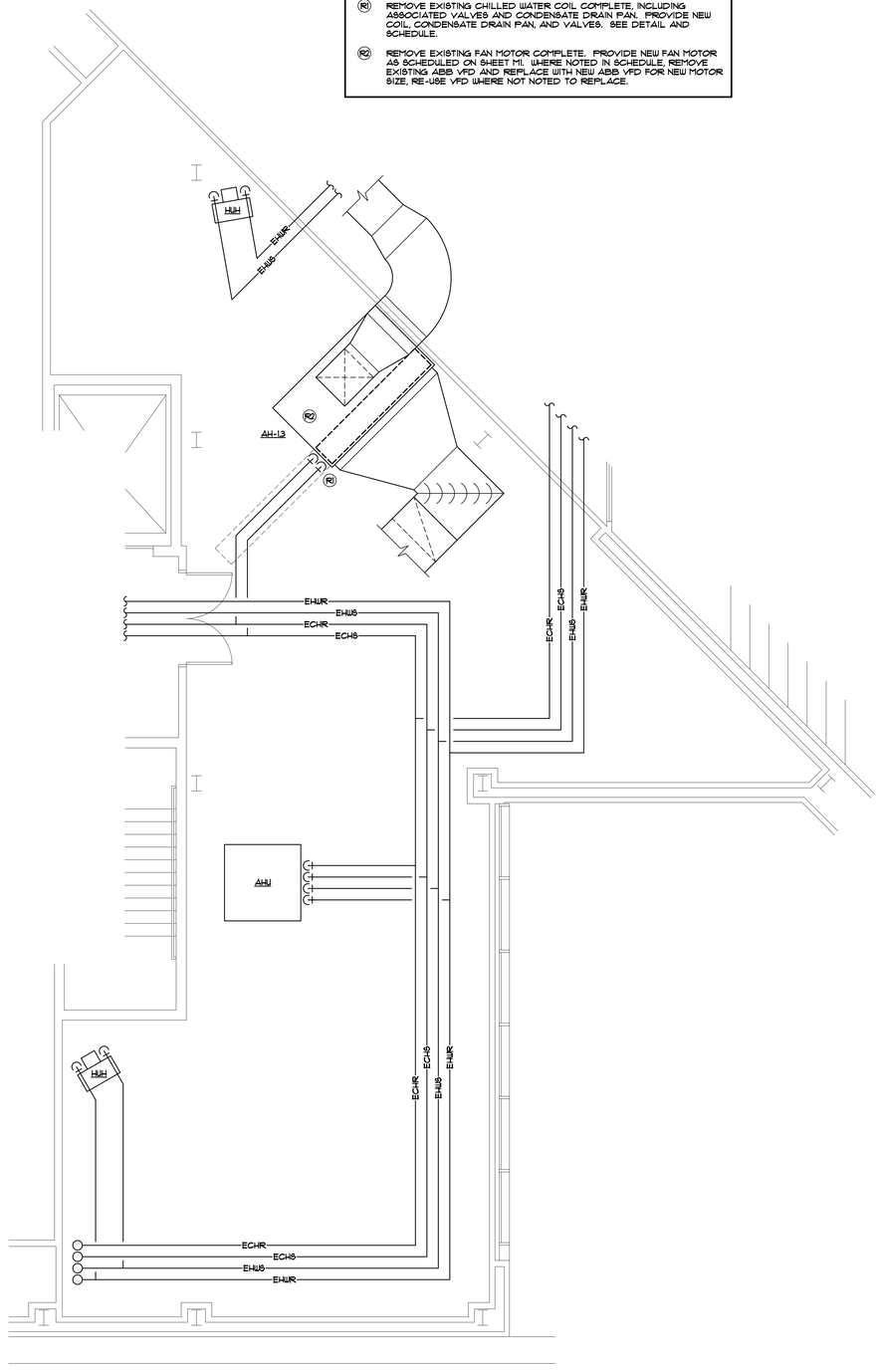
2 OF 5

SHEET IN SET:
OF

RENOVATION NOTES

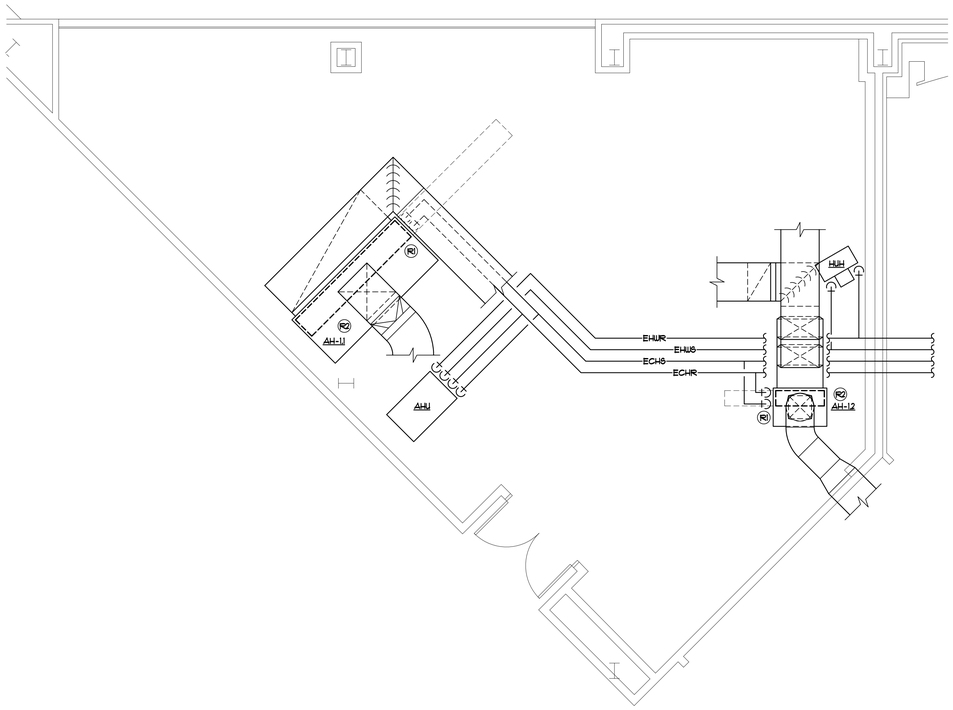
(R1) REMOVE EXISTING CHILLED WATER COIL COMPLETE, INCLUDING ASSOCIATED VALVES AND CONDENSATE DRAIN PAN. PROVIDE NEW COIL, CONDENSATE DRAIN PAN, AND VALVES. SEE DETAIL AND SCHEDULE.

(R2) REMOVE EXISTING FAN MOTOR COMPLETE. PROVIDE NEW FAN MOTOR AS SCHEDULED ON SHEET M1. WHERE NOTED IN SCHEDULE, REMOVE EXISTING ABB VFD AND REPLACE WITH NEW ABB VFD FOR NEW MOTOR SIZE, RE-USE VFD WHERE NOT NOTED TO REPLACE.



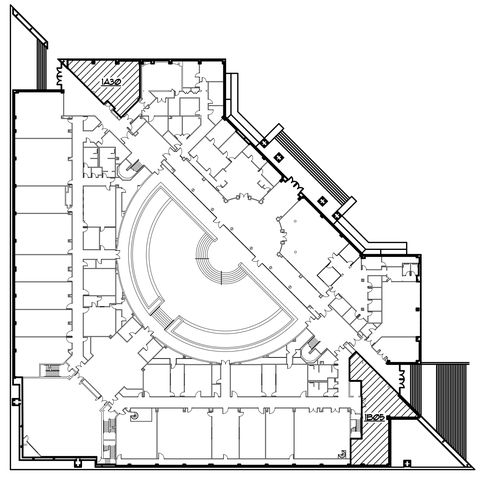
HVAC FLOOR PLAN - 1ST FLOOR MECH ROOM 1B05

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



HVAC FLOOR PLAN - 1ST FLOOR MECH ROOM 1A30

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



KEY PLAN - 1ST FLOOR

MECHANICAL DESIGN INC.
4403 Broad River Road
Columbia, S.C. 29210
(803) 731-9834
(803) 731-9837 FAX
CONTACT: Danny Wilds

DATE: 01/11/13 COMM. NO. 133000

CAMPUS PLANNING AND CONSTRUCTION
COLUMBIA, SC 29208

SEAL: SOUTH CAROLINA MECHANICAL DESIGN, INC. CERTIFICATE OF AUTHORIZATION No. 000096

SEAL: NORTH CAROLINA PROFESSIONAL ENGINEER No. 11155 DANNY WILDS

REV.	DESCRIPTION	DATE
	T1-133000	11JAN13

DRAWING: T1-133000 DATE: 11JAN13
BUILDING: 173 DRAWN BY: JPO
CHECKED BY: CDW
ORIG. BY DRAWN BY

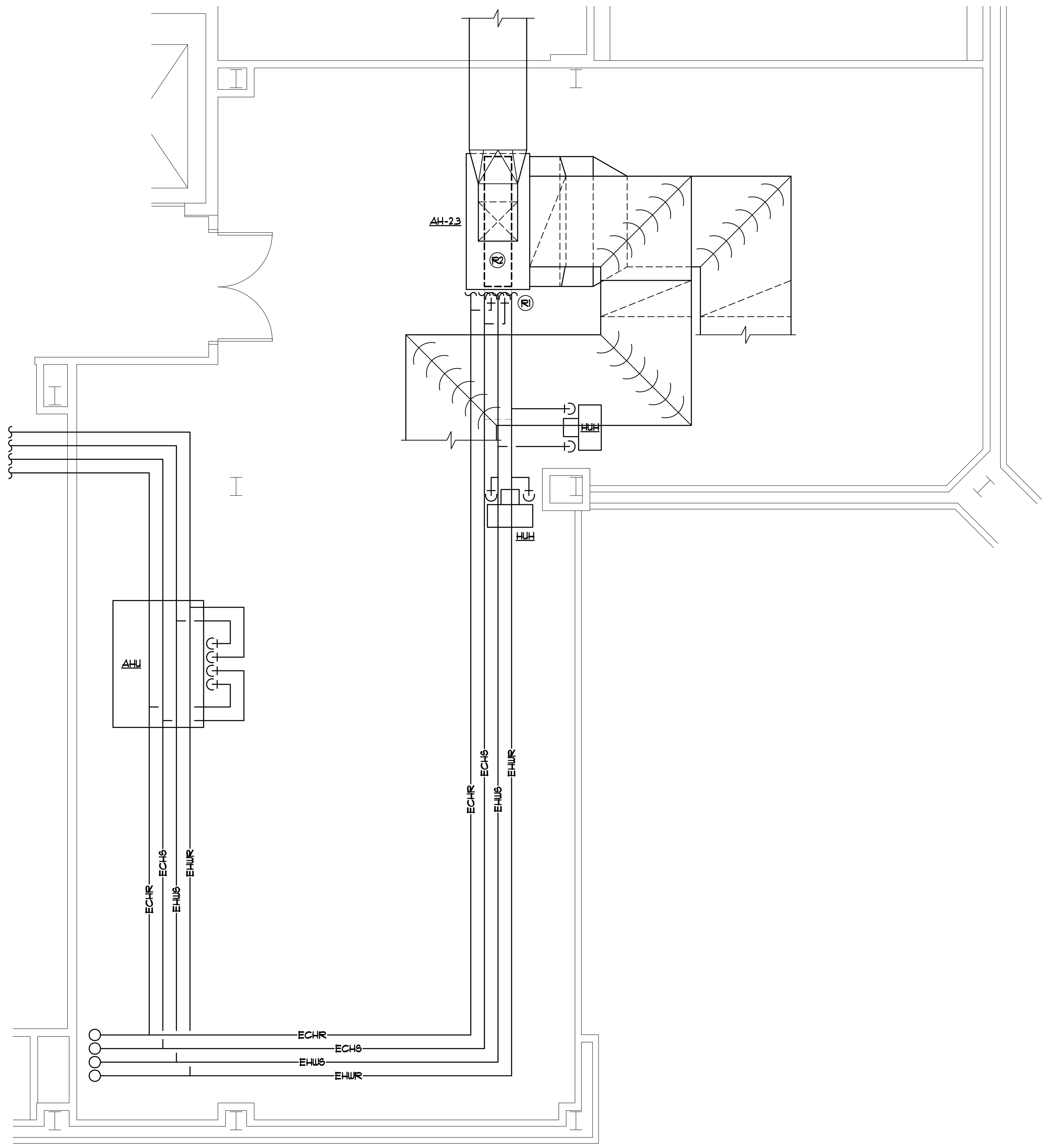
PROJECT TITLE: DEFERRED MAINTENANCE - SWEARINGEN ENGINEERING CENTER MECHANICAL SYSTEMS AND CONTROLS
Project No. H27-6094-K
University of South Carolina

SHEET: M2
2 OF 5
SHEET IN SET: OF

RENOVATION NOTES

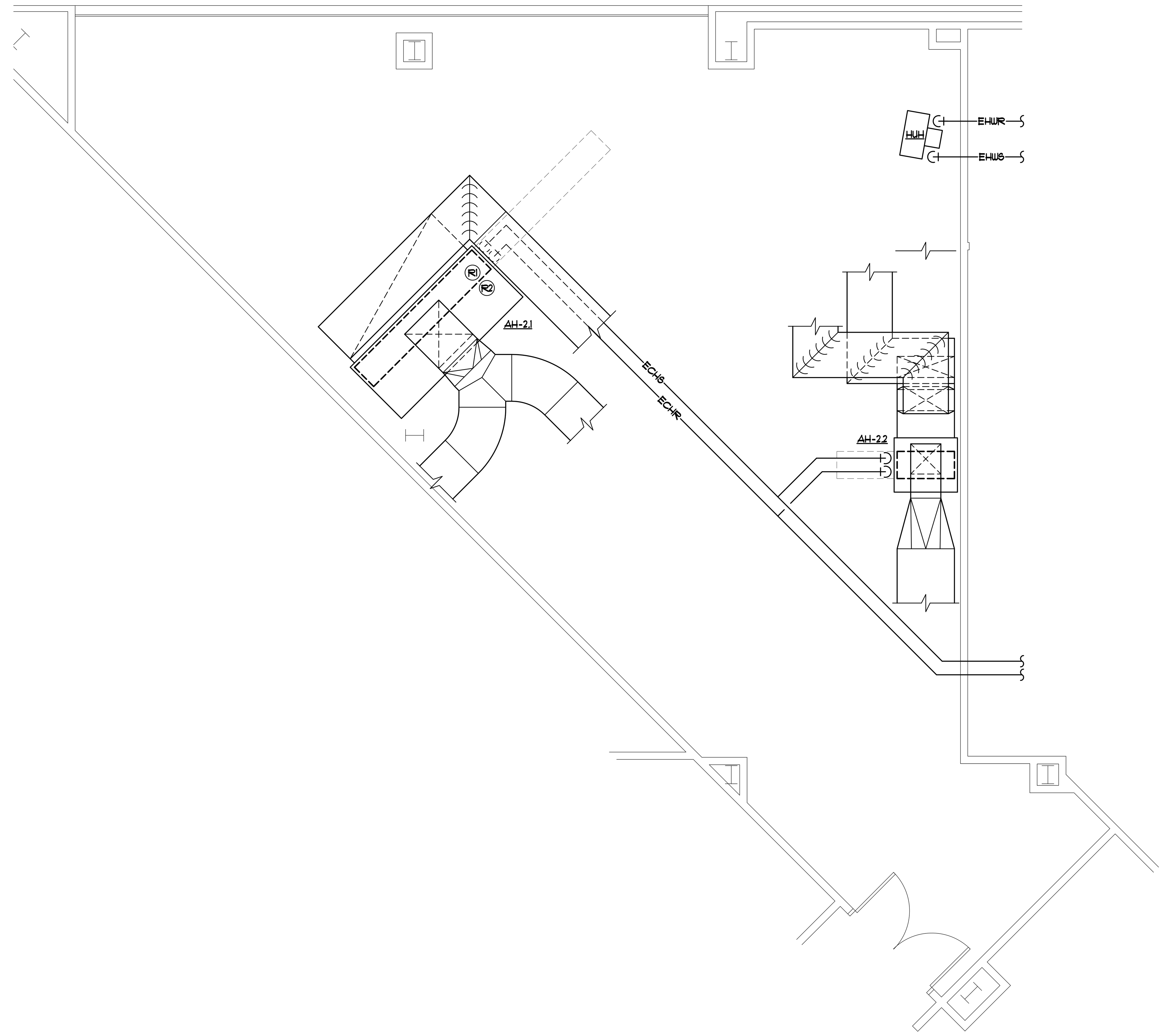
(R1) REMOVE EXISTING CHILLED WATER COIL COMPLETE, INCLUDING ASSOCIATED VALVES AND CONDENSATE DRAIN PAN. PROVIDE NEW COIL, CONDENSATE DRAIN PAN, AND VALVES. SEE DETAIL AND SCHEDULE.

(R2) REMOVE EXISTING FAN MOTOR COMPLETE. PROVIDE NEW FAN MOTOR AS SCHEDULED ON SHEET M1. WHERE NOTED IN SCHEDULE, REMOVE EXISTING ABB VFD AND REPLACE WITH NEW ABB VFD FOR NEW MOTOR SIZE, RE-USE VFD WHERE NOT NOTED TO REPLACE.



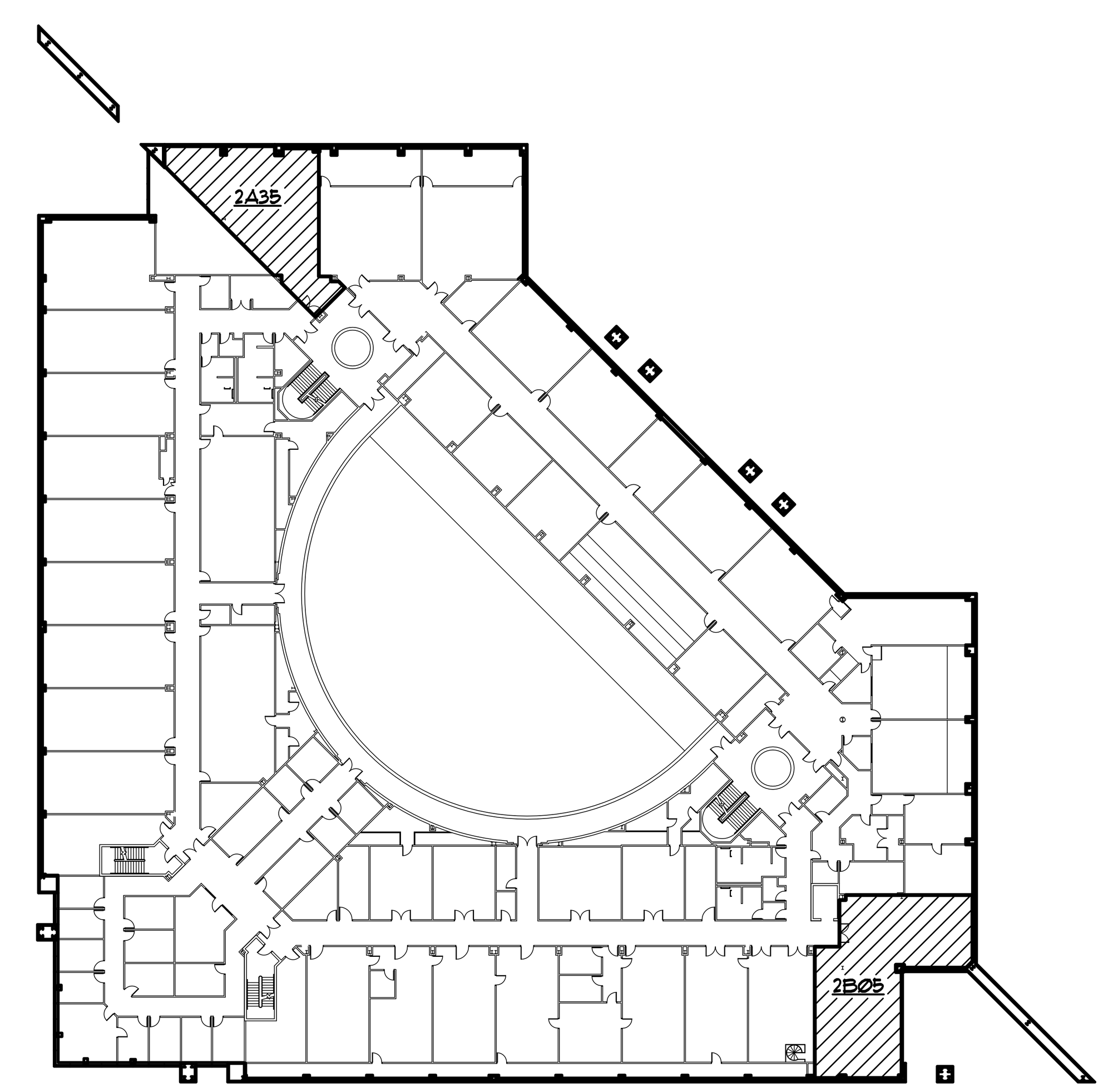
HVAC FLOOR PLAN - 2ND FLOOR MECH ROOM 2B05

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



HVAC FLOOR PLAN - 2ND FLOOR MECH ROOM 2A35

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



KEY PLAN - 2ND FLOOR

MECHANICAL DESIGN INC.
4403 Broad River Road
Columbia, S.C. 29210
(803) 731-9834
(803) 731-9837 FAX
CONTACT: Danny Wilds

DATE: 01/11/13 COMM. NO. 133000

CAMPUS PLANNING AND CONSTRUCTION
COLUMBIA, SC 29208

SEAL: SOUTH CAROLINA MECHANICAL DESIGN, INC. Columbia, SC No. C00096 CERTIFICATE OF AUTHORIZATION

SEAL: SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER No. 11155 01/11/13 DANNY WILDS

CHECKED BY:	CDW
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DATE:	11JAN13
DRAWING:	T1-133000
BUILDING:	173

REV.	DESCRIPTION	DATE	ORIG. BY	DRAWN BY

PROJECT TITLE: DEFERRED MAINTENANCE - SWEARINGEN ENGINEERING CENTER MECHANICAL SYSTEMS AND CONTROLS

Project No. H27-6094-K

University of South Carolina

SHEET: M3

4 OF 5

SHEET IN SET: OF

GENERAL CONSTRUCTION NOTES

1. PROVIDE RACEWAY AND WIRING TO ALL DEVICES AND EQUIPMENT INDICATED ON THE CONTRACT DRAWINGS. THE DRAWINGS INDICATE PARTIAL RACEWAY AND WIRING REQUIREMENTS TO HELP CLARIFY THE DESIGN INTENT. WHERE RACEWAY AND/OR WIRING IS NOT INDICATED FOR DEVICES OR EQUIPMENT THE ARRANGEMENT. GROUPING, AND ROUTING SHALL BE PROVIDED IN ACCORDANCE WITH THE 2008 NATIONAL ELECTRICAL CODE.
2. VERIFY ACTUAL MOUNTING LOCATIONS AND ARRANGEMENTS OF EQUIPMENT FURNISHED AND INSTALLED BY THE MECHANICAL CONTRACTOR PRIOR TO ELECTRICAL ROUGH–IN. MAKE ADJUSTMENTS TO THE ELECTRICAL WORK AS REQUIRED TO ACCOMMODATE ACTUAL MOUNTING LOCATIONS.
3. PROVIDE A GREEN INSULATED GROUND WIRE IN ALL RACEWAYS.
4. PROVIDE ADDITIONAL SUPPORTS FOR CONTROL PANELS, SWITCHES, RACEWAYS. AND OTHER ELECTRICAL EQUIPMENT WHEREVER THE BUILDING STRUCTURE IS NOT SUITABLE FOR DIRECT MOUNTING.
5. CUTTING, DRILLING, FITTING AND PATCHING: PROVIDE CHASES, SLOTS, AND OPENINGS IN EXISTING BUILDING COMPONENTS TO ALLOW FOR ELECTRICAL INSTALLATIONS. PERFORM CUTTING, DRILLING, FITTING, AND PATCHING REQUIRED TO:

   A) INSTALL EQUIPMENT, MATERIALS, AND RACEWAYS IN EXISTING STRUCTURES.

   B) REMOVE AND REPLACE DEFECTIVE WORK THAT DOES NOT CONFORM TO REQUIREMENTS OF THE CONTRACT DOCUMENTS.

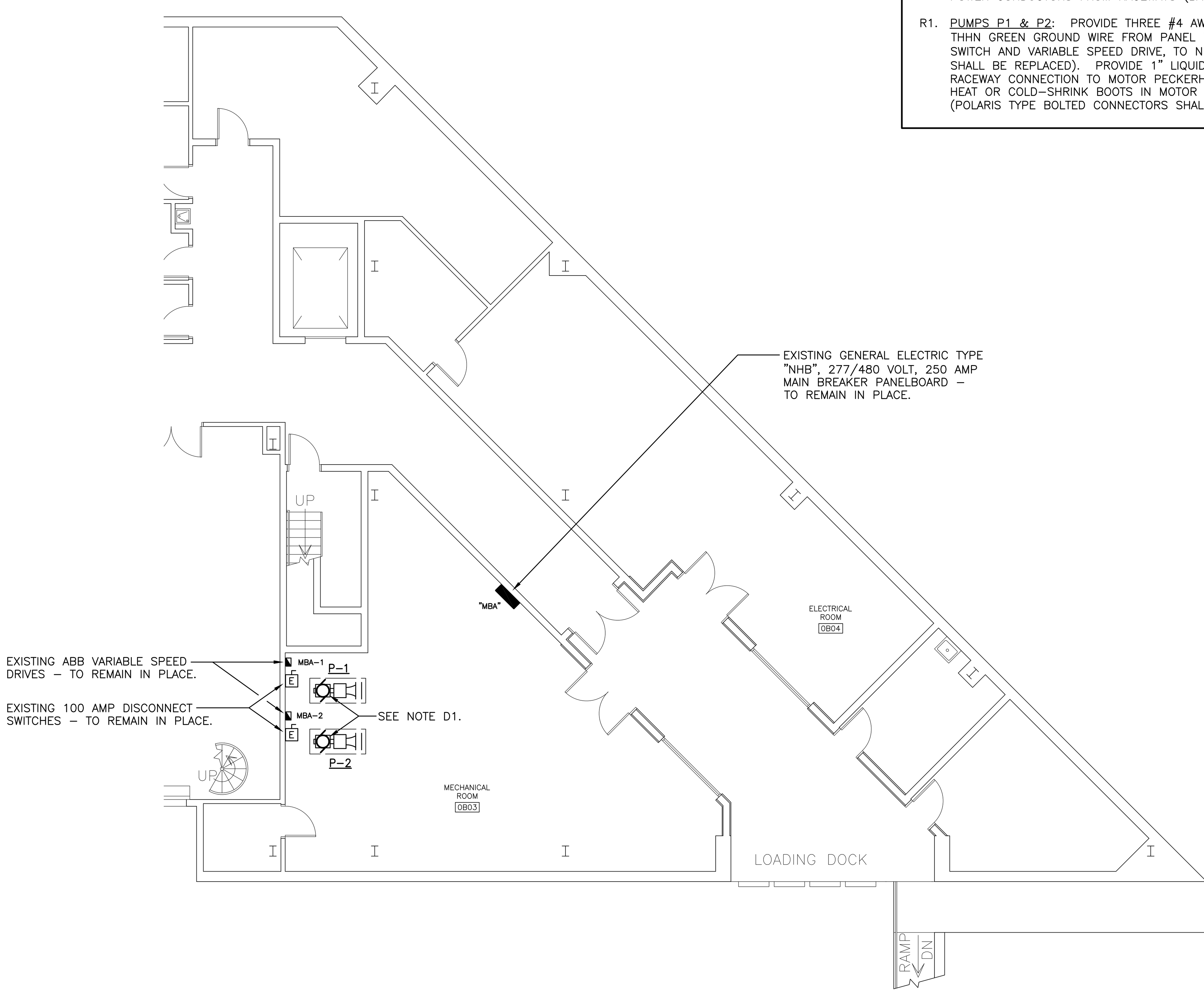
   C) UPON WRITTEN INSTRUCTIONS FOR THE ENGINEER, UNCOVER AND RESTORE WORK TO PROVIDE FOR ENGINEER OBSERVATION OF CONCEALED WORK.

   PATCH EXISTING SURFACES AND BUILDING COMPONENTS USING NEW MATERIALS THAT MATCH EXISTING MATERIALS. PATCHING SHALL BE PERFORMED BY EXPERIENCED INSTALLERS.
6. COORDINATE ALL REQUIRED OUTAGES TO EXISTING ELECTRICAL SERVICES WITH DENNIS GALLAGHER – USC ELECTRICAL MAINTENANCE DEPARTMENT.

ELECTRICAL NOTES

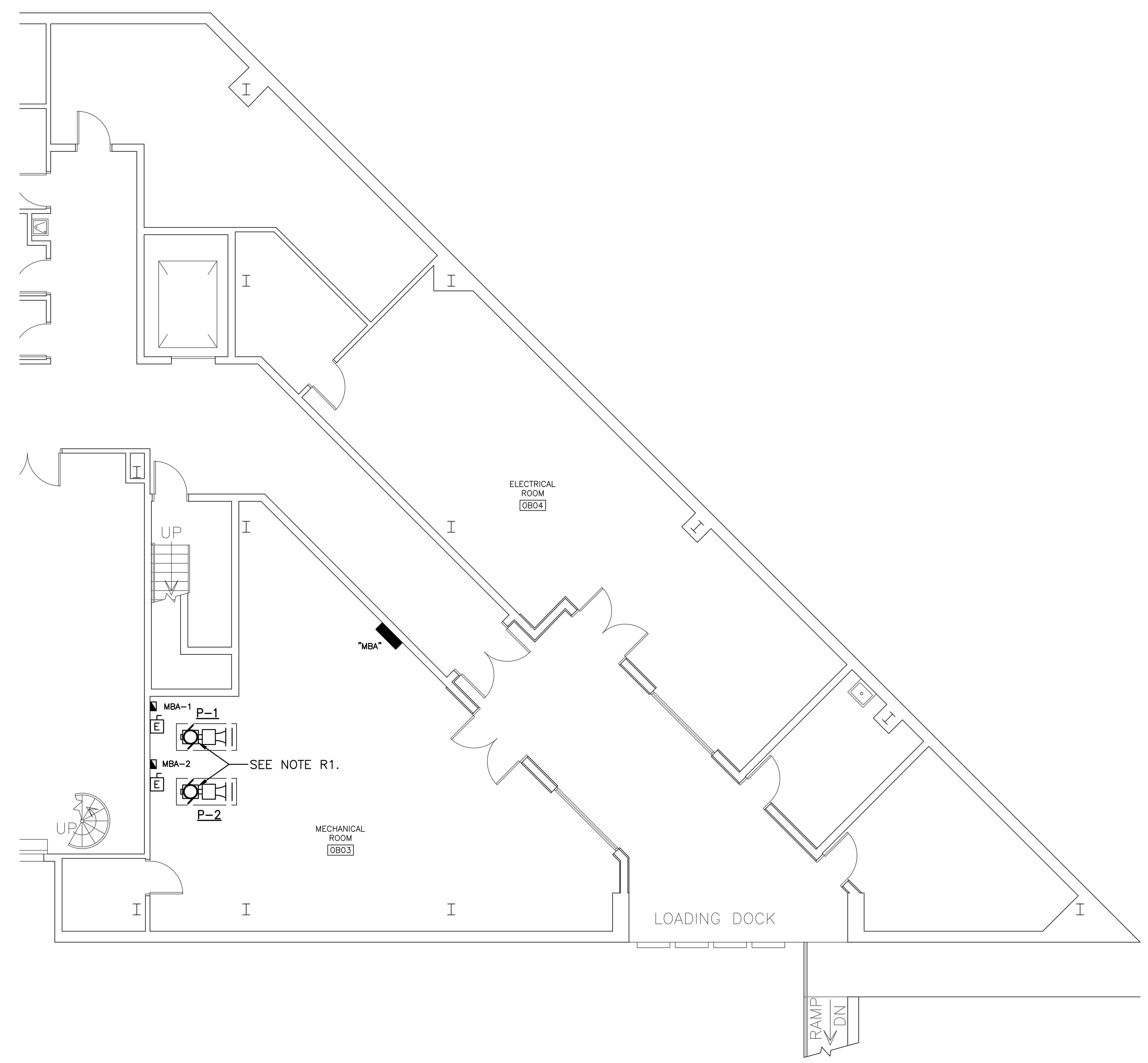
D1. PUMPS P1 & P2: EXISTING 50 HORSEPOWER, 480–VOLT PUMP MOTORS ARE BEING REPLACED UNDER THIS CONTRACT. EXISTING RACEWAYS, 100–AMP 3–POLE CIRCUIT BREAKERS IN PANEL "MBA", 100–AMP DISCONNECT SWITCHES, AND VARIABLE SPEED DRIVES SHALL REMAIN IN PLACE AND SHALL BE RE–USED. DISCONNECT EXISTING PUMP MOTOR, FLEXIBLE METAL CONDUIT TO MOTOR PECKERHEAD, AND ALL ASSOCIATED POWER CONDUCTORS FROM RACEWAYS (BACK TO PANELBOARD "MBA").

R1. PUMPS P1 & P2: PROVIDE THREE #4 AWG THHN CONDUCTORS WITH ONE #8 AWG THHN GREEN GROUND WIRE FROM PANEL "MBA", THROUGH EXISTING DISCONNECT SWITCH AND VARIABLE SPEED DRIVE, TO NEW PUMP MOTOR (ALL POWER CONDUCTORS SHALL BE REPLACED). PROVIDE 1" LIQUID–TIGHT FLEXIBLE METAL CONDUIT FOR FINAL RACEWAY CONNECTION TO MOTOR PECKERHEAD. PROVIDE SPLIT–BOLT SPLICES AND HEAT OR COLD–SHRINK BOOTS IN MOTOR PECKERHEAD FOR CONDUCTOR TERMINATIONS (POLARIS TYPE BOLTED CONNECTORS SHALL NOT BE USED).



1 E1 BASEMENT ELECTRICAL DEMOLITION PLAN

SCALE: 1/8" = 1'–0"



2 E1 BASEMENT ELECTRICAL RENOVATION PLAN

SCALE: 1/8" = 1'–0"

CAMPUS PLANNING AND CONSTRUCTION
COLUMBIA, SC 29208

US21213
BEA BELKA ENGINEERING ASSOCIATES, INC.
7 CLUSTERS COURT, SUITE 201
COLUMBIA, SOUTH CAROLINA 29210
(803) 731–0650 fax (803) 731–2880
EMAIL: kbelka@bellsouth.net

SEAL:

CHECKED BY: KLB
DRAWN BY: KLB
DATE: 11 JAN 13
PROJECT NUMBER: H27–6094–K
BUILDING: 173

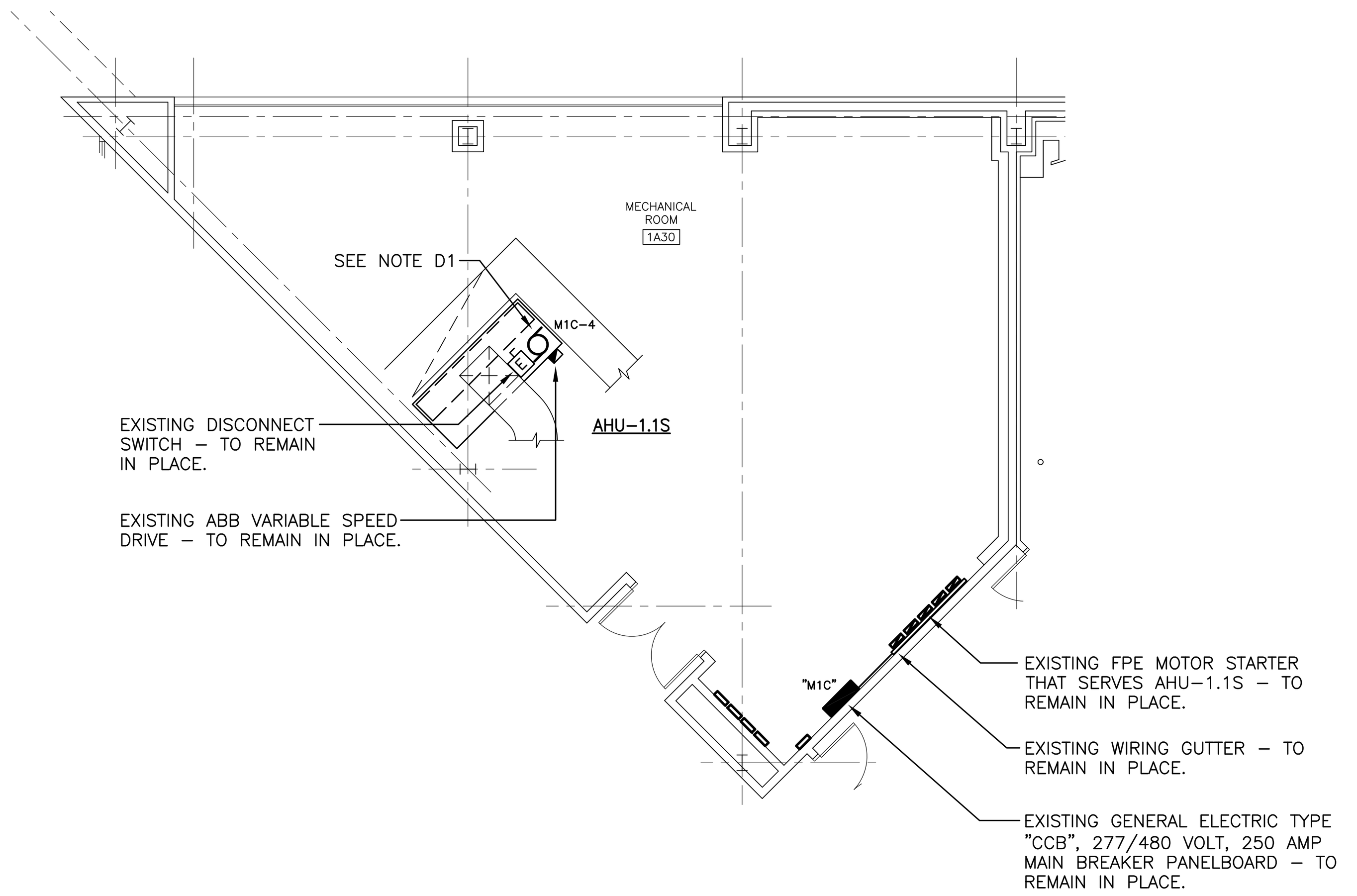
REV.	DESCRIPTION	DATE	ORIG. BY	DRAWN BY

PROJECT TITLE: DEFERRED MAINTENANCE – SWEARINGEN ENGINEERING CENTER MECHANICAL SYSTEMS AND CONTROLS

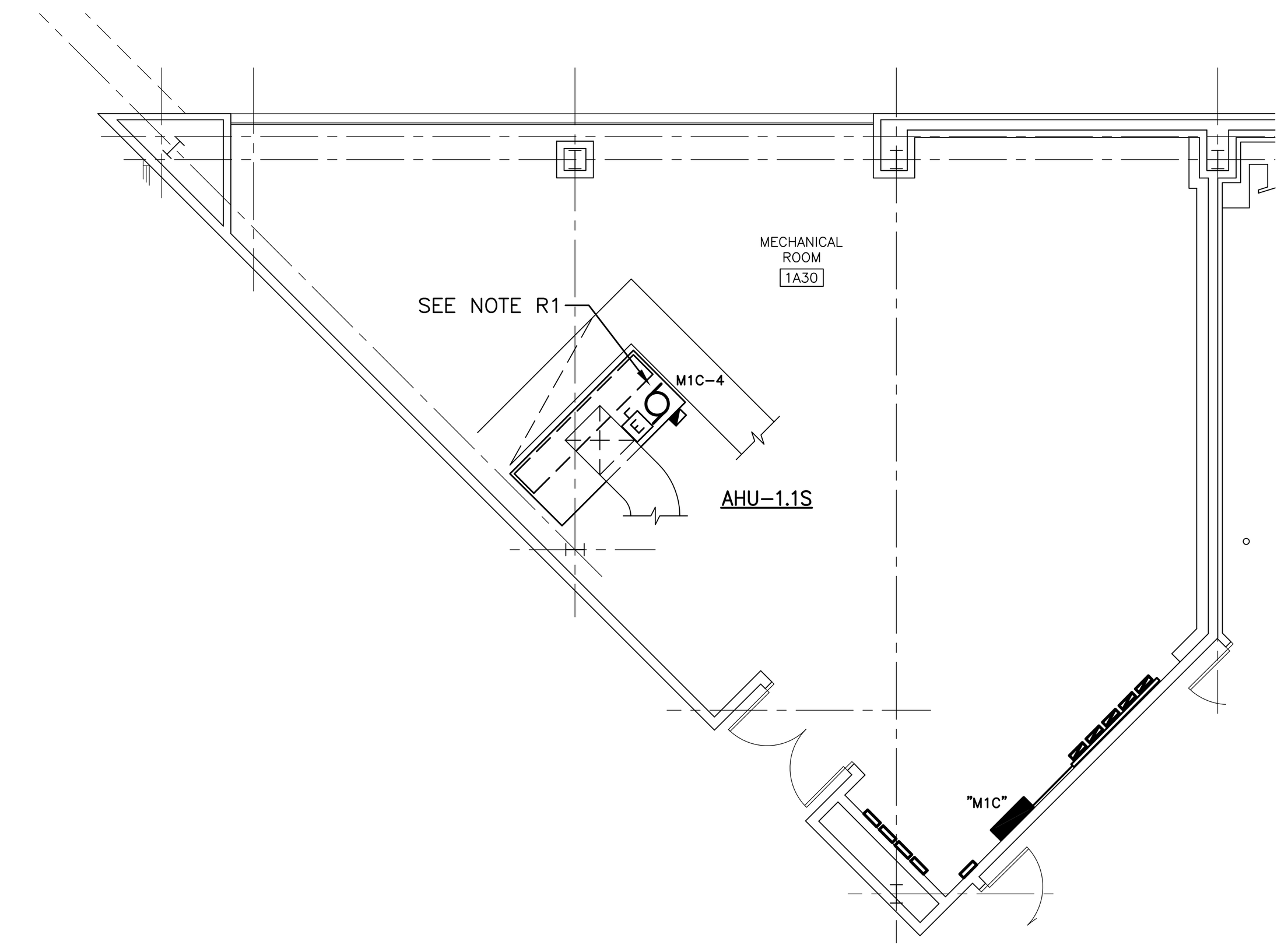
University of South Carolina

SHEET: E1 OF

SHEET IN SET: 1 OF 4



1/E2 FIRST FLOOR ELECTRICAL DEMOLITION PLAN
SCALE: 1/8" = 1'-0" (NORTHWEST CORNER OF BUILDING)



2/E2 FIRST FLOOR ELECTRICAL RENOVATION PLAN
SCALE: 1/8" = 1'-0" (NORTHWEST CORNER OF BUILDING)

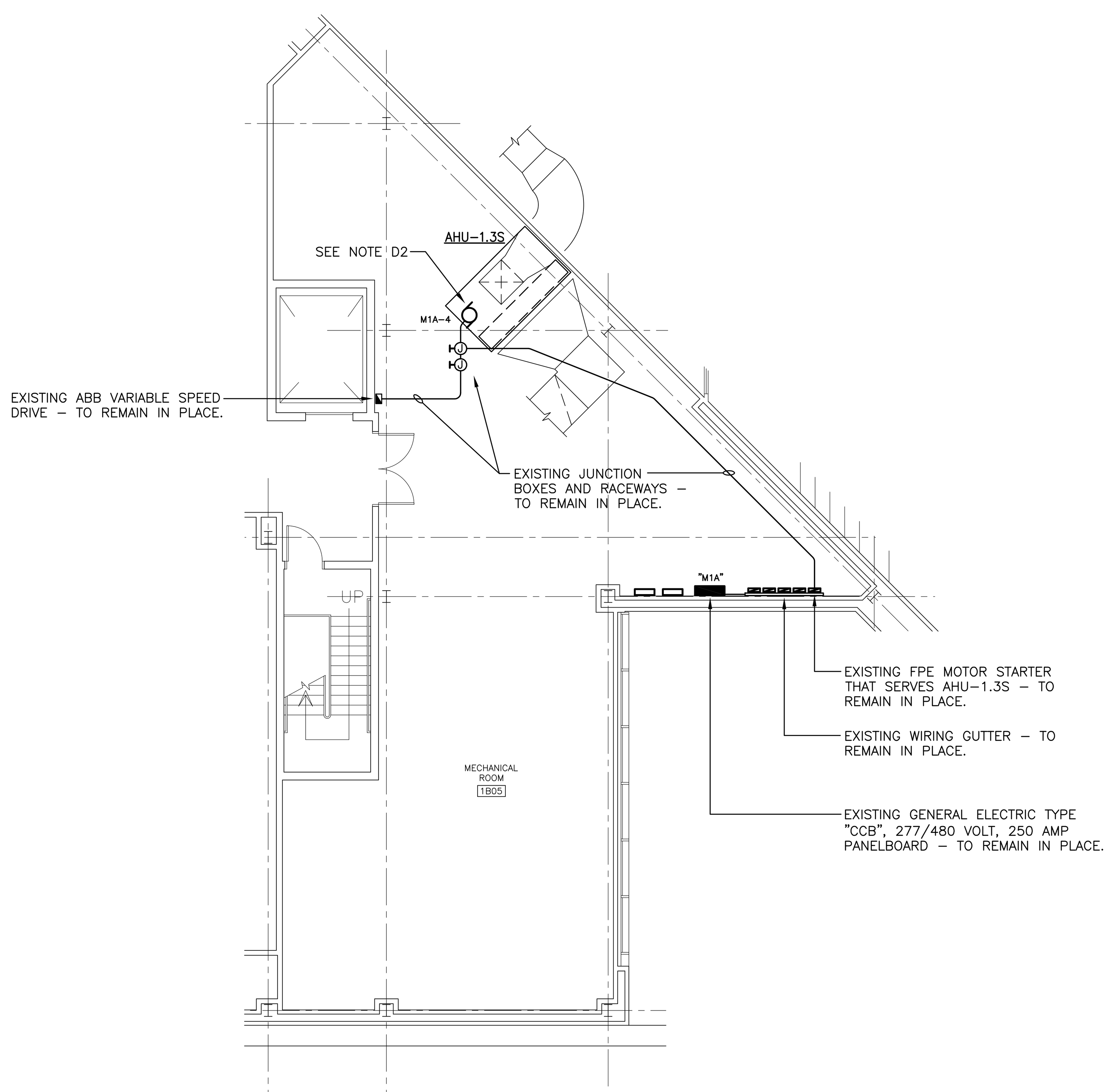
ELECTRICAL NOTES

D1. AHU-1.1S: EXISTING 20 HORSEPOWER, 480-VOLT FAN MOTOR IS BEING REPLACED UNDER THIS CONTRACT. EXISTING RACEWAYS, 60-AMP 3-POLE CIRCUIT BREAKER IN PANEL "M1C", DISCONNECT SWITCH, FPE STARTER, AND VARIABLE SPEED DRIVE SHALL REMAIN IN PLACE AND SHALL BE RE-USED. DISCONNECT EXISTING FAN MOTOR, FLEXIBLE METAL CONDUIT TO MOTOR PECKERHEAD, AND ALL ASSOCIATED POWER CONDUCTORS FROM RACEWAYS (BACK TO PANELBOARD "M1C").

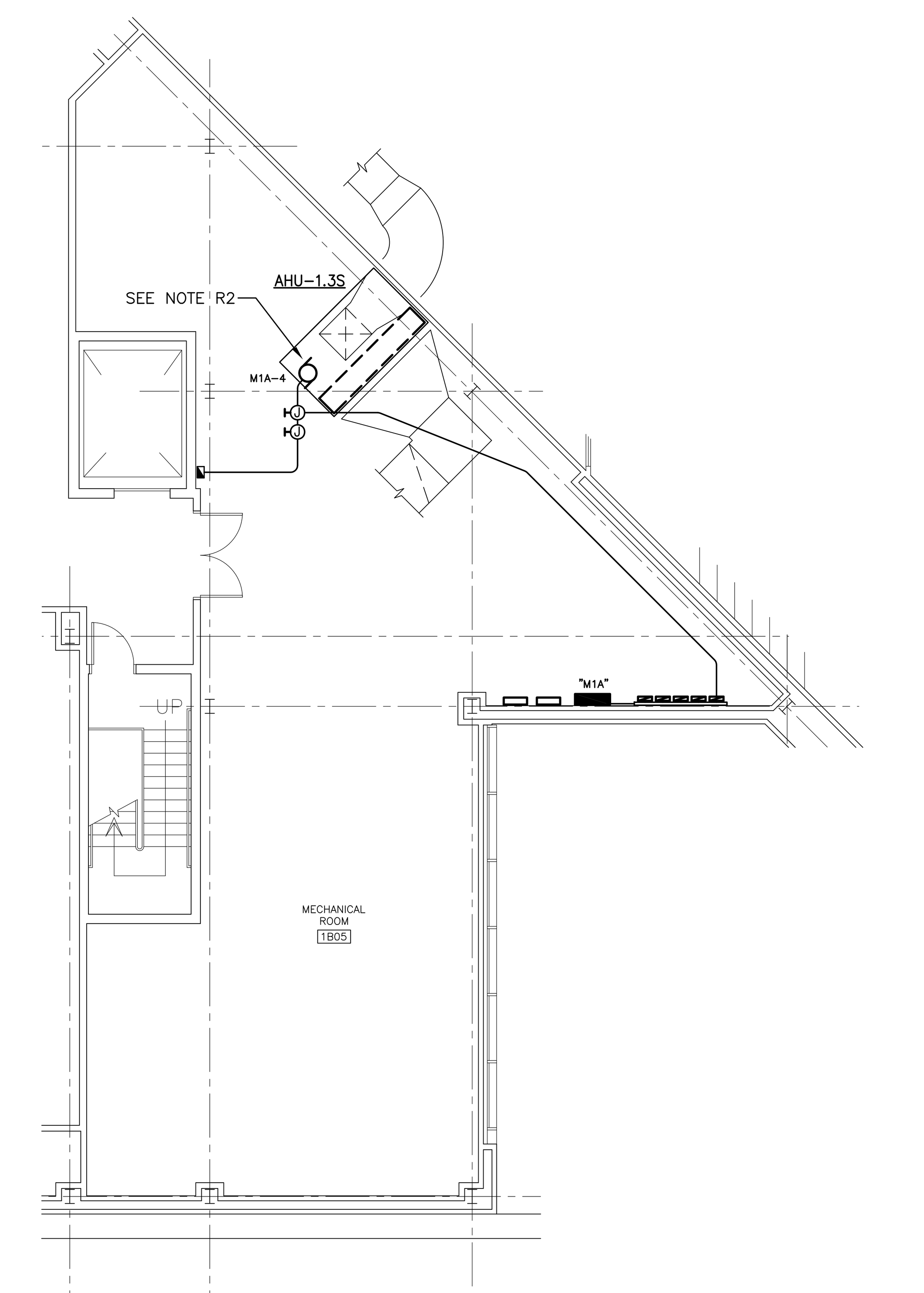
R1. AHU-1.1S: PROVIDE THREE #10 AWG THHN CONDUCTORS WITH ONE #10 AWG THHN GREEN GROUND WIRE FROM PANEL "M1C", THROUGH EXISTING FPE STARTER, DISCONNECT SWITCH, AND VARIABLE SPEED DRIVE, TO NEW FAN MOTOR (ALL POWER CONDUCTORS SHALL BE REPLACED). PROVIDE 3/4" FLEXIBLE METAL CONDUIT FOR FINAL RACEWAY CONNECTION TO MOTOR PECKERHEAD. PROVIDE SPLIT-BOLT SPLICES AND HEAT OR COLD-SHRINK BOOTS IN MOTOR PECKERHEAD FOR CONDUCTOR TERMINATIONS (POLARIS TYPE BOLTED CONNECTORS SHALL NOT BE USED).

D2. AHU-1.3S: EXISTING 15 HORSEPOWER, 480-VOLT FAN MOTOR IS BEING REPLACED UNDER THIS CONTRACT. EXISTING RACEWAYS, 40-AMP 3-POLE CIRCUIT BREAKER IN PANEL "M1A", AND VARIABLE SPEED DRIVE SHALL REMAIN IN PLACE AND SHALL BE RE-USED. DISCONNECT EXISTING FAN MOTOR, FLEXIBLE METAL CONDUIT TO PECKERHEAD, AND ALL ASSOCIATED POWER CONDUCTORS FROM RACEWAYS (BACK TO PANELBOARD "M1A").

R2. AHU-1.3S: PROVIDE THREE #10 AWG THHN CONDUCTORS WITH ONE #10 AWG THHN GREEN GROUND WIRE FROM PANEL "M1A", THROUGH EXISTING FPE STARTER AND VARIABLE SPEED DRIVE, TO NEW FAN MOTOR (ALL POWER CONDUCTORS SHALL BE REPLACED). PROVIDE 3/4" FLEXIBLE METAL CONDUIT FOR FINAL RACEWAY CONNECTION TO MOTOR PECKERHEAD. PROVIDE SPLIT-BOLT SPLICES AND HEAT OR COLD-SHRINK BOOTS IN MOTOR PECKERHEAD FOR CONDUCTOR TERMINATIONS (POLARIS TYPE BOLTED CONNECTORS SHALL NOT BE USED).



3/E2 FIRST FLOOR ELECTRICAL DEMOLITION PLAN
SCALE: 1/8" = 1'-0" (SOUTHEAST CORNER OF BUILDING)



4/E2 FIRST FLOOR ELECTRICAL RENOVATION PLAN
SCALE: 1/8" = 1'-0" (SOUTHEAST CORNER OF BUILDING)

CAMPUS PLANNING AND CONSTRUCTION
COLUMBIA, SC 29208

BEA BELKA ENGINEERING ASSOCIATES, INC. US21213
7 CLUSTERS COURT, SUITE 201
COLUMBIA, SOUTH CAROLINA 29210
(803) 731-0650 fax (803) 731-2880
EMAIL: kbelka@bellsouth.net

SEAL: SOUTH CAROLINA BELKA ENGINEERING ASSOC. INC. No. C00953 CERTIFICATE OF AUTHORIZATION
SOUTH CAROLINA PROFESSIONAL ENGINEER No. 12465 KEVIN L. BELKA REGISTERED

BUILDING: 173 | PROJECT NUMBER: H27-6094-K | DATE: 11 JAN 13 | DRAWN BY: KLB | CHECKED BY: KLB

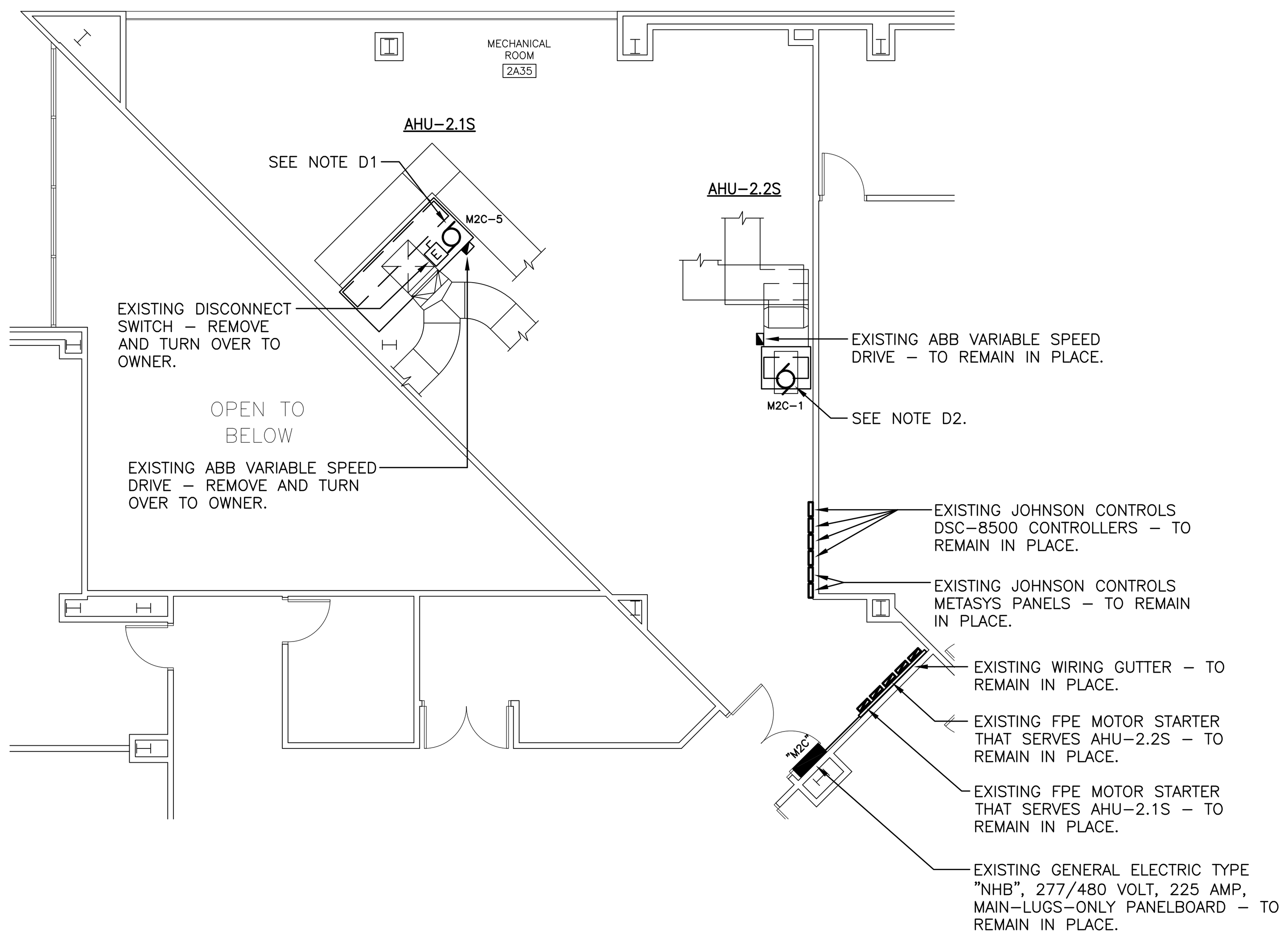
REV.	DESCRIPTION	DATE	ORIG. BY	DRAWN BY

PROJECT TITLE: DEFERRED MAINTENANCE – SWEARINGEN ENGINEERING CENTER MECHANICAL SYSTEMS AND CONTROLS

University of South Carolina

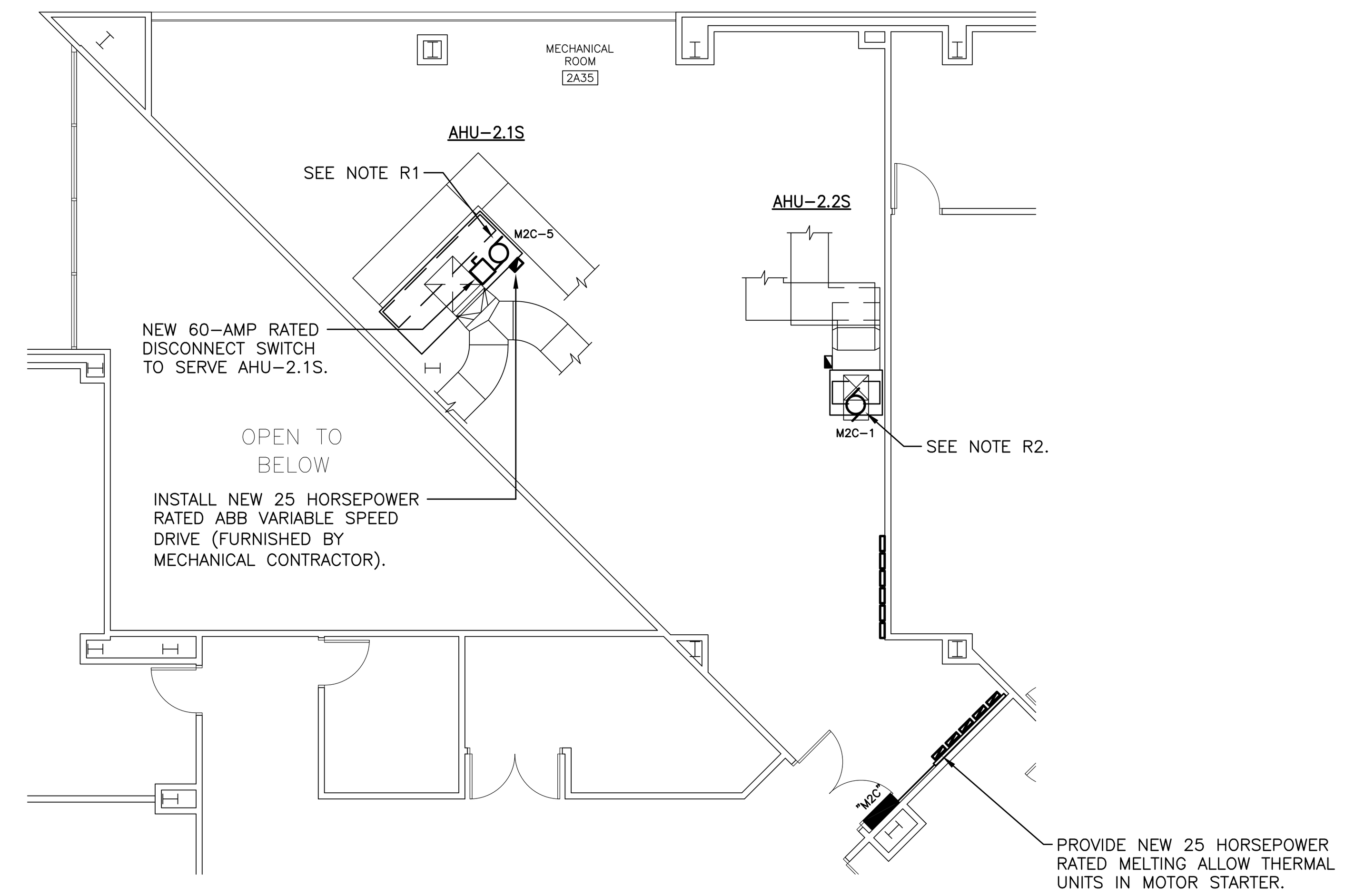
SHEET: E2 OF

SHEET IN SET: 2 OF 4



1/E3 SECOND FLOOR ELECTRICAL DEMOLITION PLAN

SCALE: 1/8" = 1'-0" (NORTHWEST CORNER OF BUILDING)



2/E3 SECOND FLOOR ELECTRICAL RENOVATION PLAN

SCALE: 1/8" = 1'-0" (NORTHWEST CORNER OF BUILDING)

ELECTRICAL NOTES

D1. AHU-2.1S: EXISTING 20 HORSEPOWER, 480-VOLT FAN MOTOR IS BEING REPLACED WITH A 25 HORSEPOWER MOTOR UNDER THIS CONTRACT. EXISTING 70-AMP 3-POLE CIRCUIT BREAKER IN PANEL "M2C" AND FPE MOTOR STARTER SHALL REMAIN IN PLACE AND SHALL BE RE-USED. DISCONNECT EXISTING FAN MOTOR, DISCONNECT SWITCH, VARIABLE SPEED DRIVE, AND ALL ASSOCIATED RACEWAYS AND POWER CONDUCTORS (BACK TO PANELBOARD "M2C"). NOTE THAT CONDUCTORS APPEAR TO BE ROUTED THROUGH EXISTING JOHNSON CONTROLS DSC-8500 PANELS – THIS POWER WIRING AND CONDUIT SHALL ALSO BE REMOVED/REPLACED.

R1. AHU-2.1S:

PROVIDE ONE 60-AMP/3-POLE/480-VOLT/FUSED/NEMA-1 RATED DICONNECT SWITCH TO REPLACE THE EXISTING DISCONNECT SWITCH. FUSES SHALL BE CLASS RK5 AND SHALL BE SIZED PER THE MOTOR MANUFACTURER'S RECOMMENDATIONS.

PROVIDE THREE MELTING ALLOY THERMAL UNITS RATED FOR THE 25 HORSEPOWER MOTOR IN THE EXISTING FPE MOTOR STARTER.

INSTALL ONE 25 HORSEPOWER RATED ABB VARIABLE SPEED DRIVE TO REPLACE THE EXISTING 20 HORSEPOWER RATED ABB DRIVE. THE DRIVE SHALL BE FURNISHED BY THE MECHANICAL CONTRACTOR.

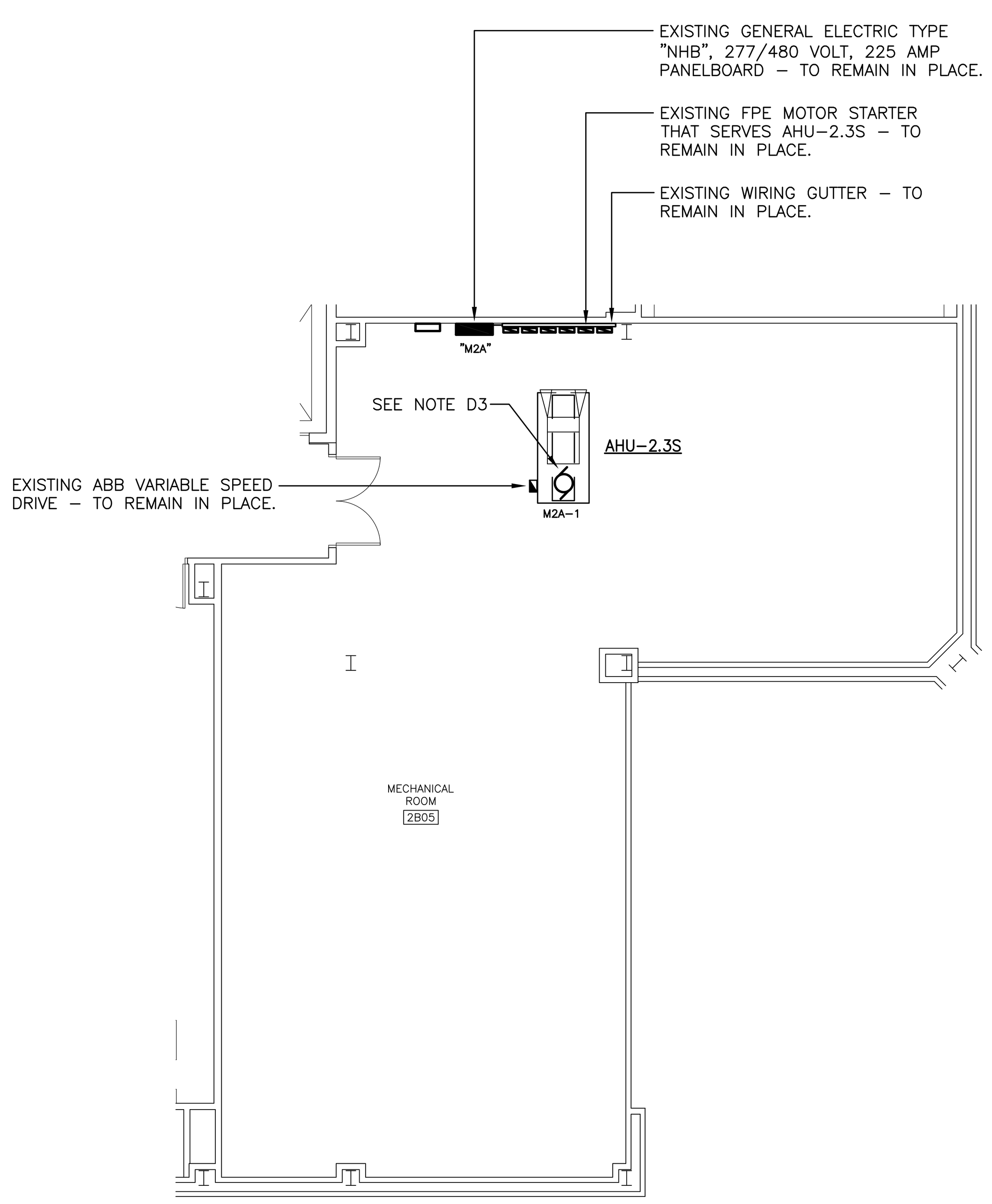
PROVIDE THREE #8 AWG THHN CONDUCTORS WITH ONE #10 AWG THHN GREEN GROUND WIRE IN 3/4" RMC CONDUIT FROM PANEL "M2C", THROUGH NEW STARTER, JOHNSON CONTROLS DSC-8500 PANELS, AND VARIABLE SPEED DRIVE, TO NEW FAN MOTOR (ALL POWER CONDUCTORS SHALL BE REPLACED). PROVIDE 3/4" FLEXIBLE METAL CONDUIT FOR FINAL RACEWAY CONNECTION TO MOTOR PECKERHEAD. PROVIDE SPLIT-BOLT SPLICES AND HEAT OR COLD-SHRINK BOOTS IN MOTOR PECKERHEAD FOR CONDUCTOR TERMINATIONS (POLARIS TYPE BOLTED CONNECTORS SHALL NOT BE USED).

D2. AHU-2.2S: EXISTING 7.5 HORSEPOWER, 480-VOLT FAN MOTOR IS BEING REPLACED UNDER THIS CONTRACT. EXISTING RACEWAYS, 20-AMP 3-POLE CIRCUIT BREAKER IN PANEL "M2C", FPE STARTER, AND VARIABLE SPEED DRIVE SHALL REMAIN IN PLACE AND SHALL BE RE-USED. REMOVE EXISTING FAN MOTOR, FLEXIBLE METAL CONDUIT TO MOTOR PECKERHEAD, AND ALL ASSOCIATED POWER CONDUCTORS FROM RACEWAYS (BACK TO PANELBOARD "M2C"). NOTE THAT CONDUCTORS APPEAR TO BE ROUTED THROUGH EXISTING JOHNSON CONTROLS DSC-8500 PANELS – THIS POWER WIRING SHALL ALSO BE REMOVED/REPLACED.

R2. AHU-2.2S: PROVIDE THREE #12 AWG THHN CONDUCTORS WITH ONE #12 AWG THHN GREEN GROUND WIRE FROM PANEL "M2C", THROUGH EXISTING FPE STARTER, JOHNSON CONTROLS DSC-8500 PANELS, AND VARIABLE SPEED DRIVE, TO NEW FAN MOTOR (ALL POWER CONDUCTORS SHALL BE REPLACED). PROVIDE 3/4" FLEXIBLE METAL CONDUIT FOR FINAL RACEWAY CONNECTION TO MOTOR PECKERHEAD. PROVIDE SPLIT-BOLT SPLICES AND HEAT OR COLD-SHRINK BOOTS IN MOTOR PECKERHEAD FOR CONDUCTOR TERMINATIONS (POLARIS TYPE BOLTED CONNECTORS SHALL NOT BE USED).

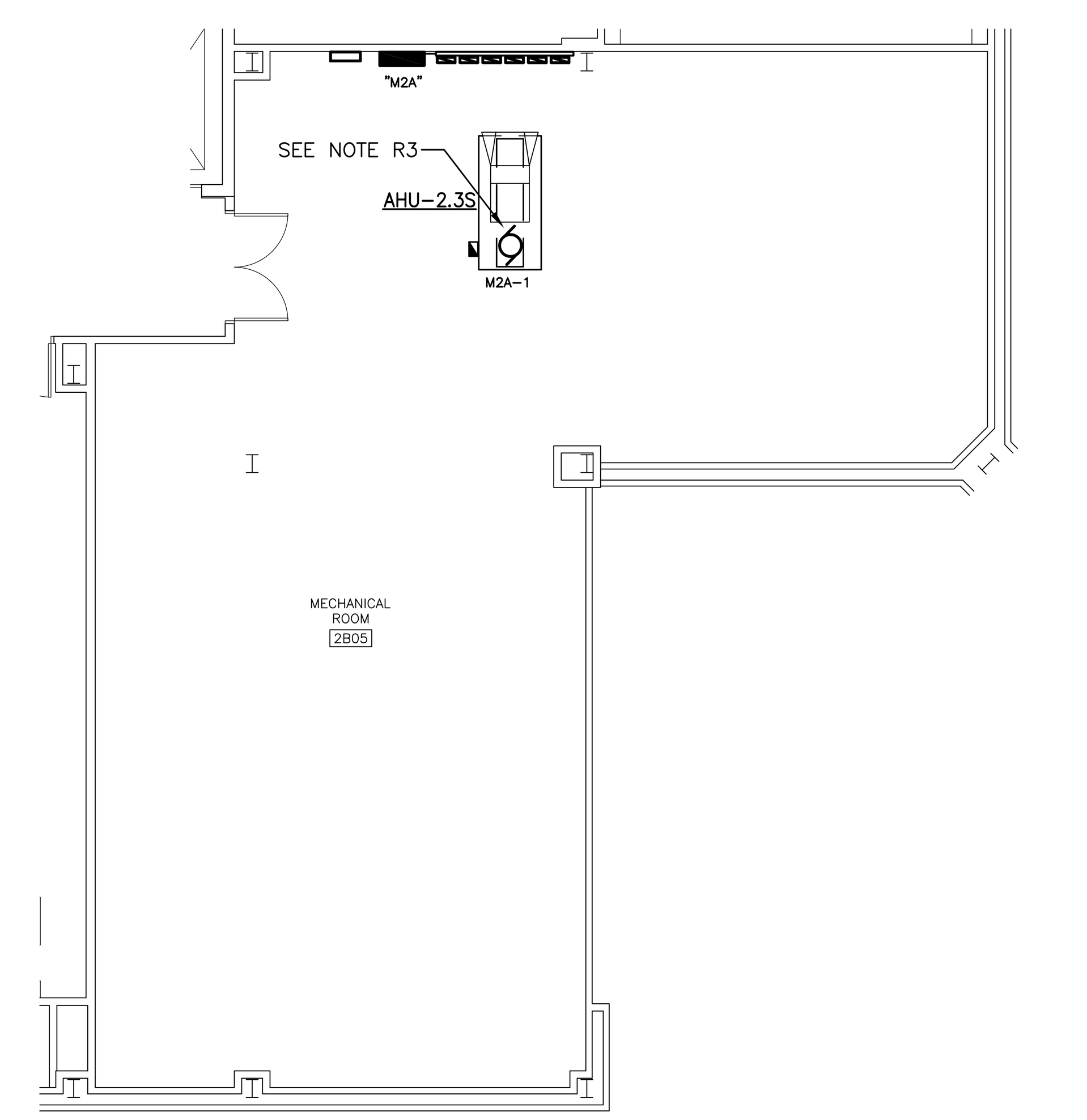
D3. AHU-2.3S: EXISTING 15 HORSEPOWER, 480-VOLT FAN MOTOR IS BEING REPLACED UNDER THIS CONTRACT. EXISTING RACEWAYS, 40-AMP 3-POLE CIRCUIT BREAKER IN PANEL "M2A", FPE STARTER, AND VARIABLE SPEED DRIVE SHALL REMAIN IN PLACE AND SHALL BE RE-USED. DISCONNECT EXISTING FAN MOTOR, FLEXIBLE METAL CONDUIT TO MOTOR PECKERHEAD, AND ALL ASSOCIATED POWER CONDUCTORS FROM RACEWAYS (BACK TO PANELBOARD "M2A").

R3. AHU-2.3S: PROVIDE THREE #10 AWG THHN CONDUCTORS WITH ONE #10 AWG THHN GREEN GROUND WIRE FROM PANEL "M2A", THROUGH EXISTING FPE STARTER AND VARIABLE SPEED DRIVE, TO NEW FAN MOTOR (ALL POWER CONDUCTORS SHALL BE REPLACED). PROVIDE 3/4" FLEXIBLE METAL CONDUIT FOR FINAL RACEWAY CONNECTION TO MOTOR PECKERHEAD. PROVIDE SPLIT-BOLT SPLICES AND HEAT OR COLD-SHRINK BOOTS IN MOTOR PECKERHEAD FOR CONDUCTOR TERMINATIONS (POLARIS TYPE BOLTED CONNECTORS SHALL NOT BE USED).



3/E3 SECOND FLOOR ELECTRICAL DEMOLITION PLAN

SCALE: 1/8" = 1'-0" (SOUTHEAST CORNER OF BUILDING)



4/E3 SECOND FLOOR ELECTRICAL RENOVATION PLAN

SCALE: 1/8" = 1'-0" (SOUTHEAST CORNER OF BUILDING)

CAMPUS PLANNING AND CONSTRUCTION
COLUMBIA, SC 29208

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BEA BELKA ENGINEERING ASSOCIATES, INC.
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COLUMBIA, SOUTH CAROLINA 29210
(803) 731-0650 fax (803) 731-2880
EMAIL: kbelka@bellsouth.net

SEAL: SOUTH CAROLINA BELKA ENGINEERING ASSOC. INC. No. C00953 CERTIFICATE OF AUTHORIZATION
SOUTH CAROLINA PROFESSIONAL ENGINEER No. 12465 KEVIN L. BELKA REGISTERED

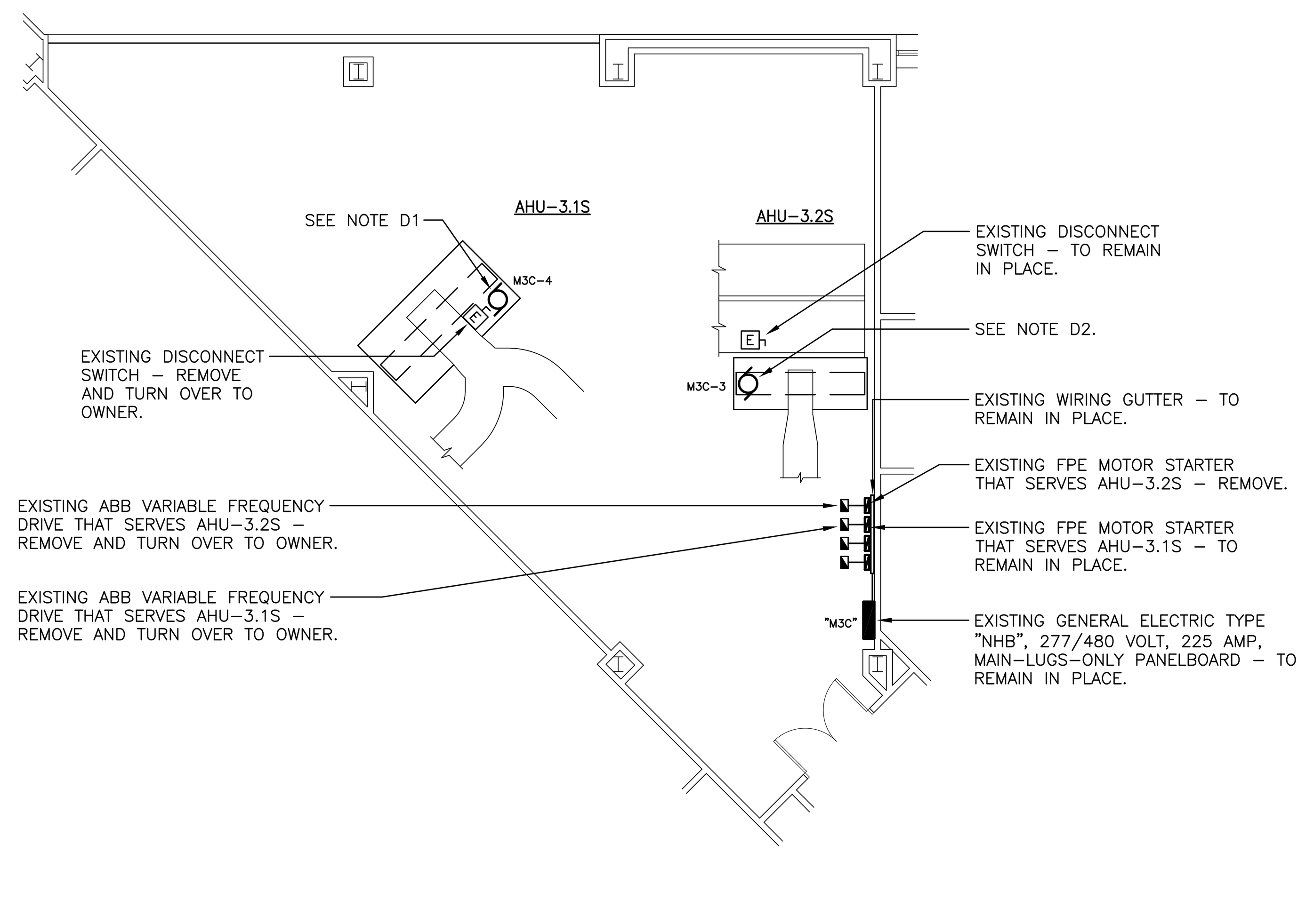
BUILDING: 173	PROJECT NUMBER: H27-6094-K	DATE: 11 JAN 13	DRAWN BY: KLB	CHECKED BY: KLB
REV.	DESCRIPTION	DATE	ORIG. BY	DRAWN BY

PROJECT TITLE: DEFERRED MAINTENANCE – SWEARINGEN ENGINEERING CENTER MECHANICAL SYSTEMS AND CONTROLS

University of South Carolina

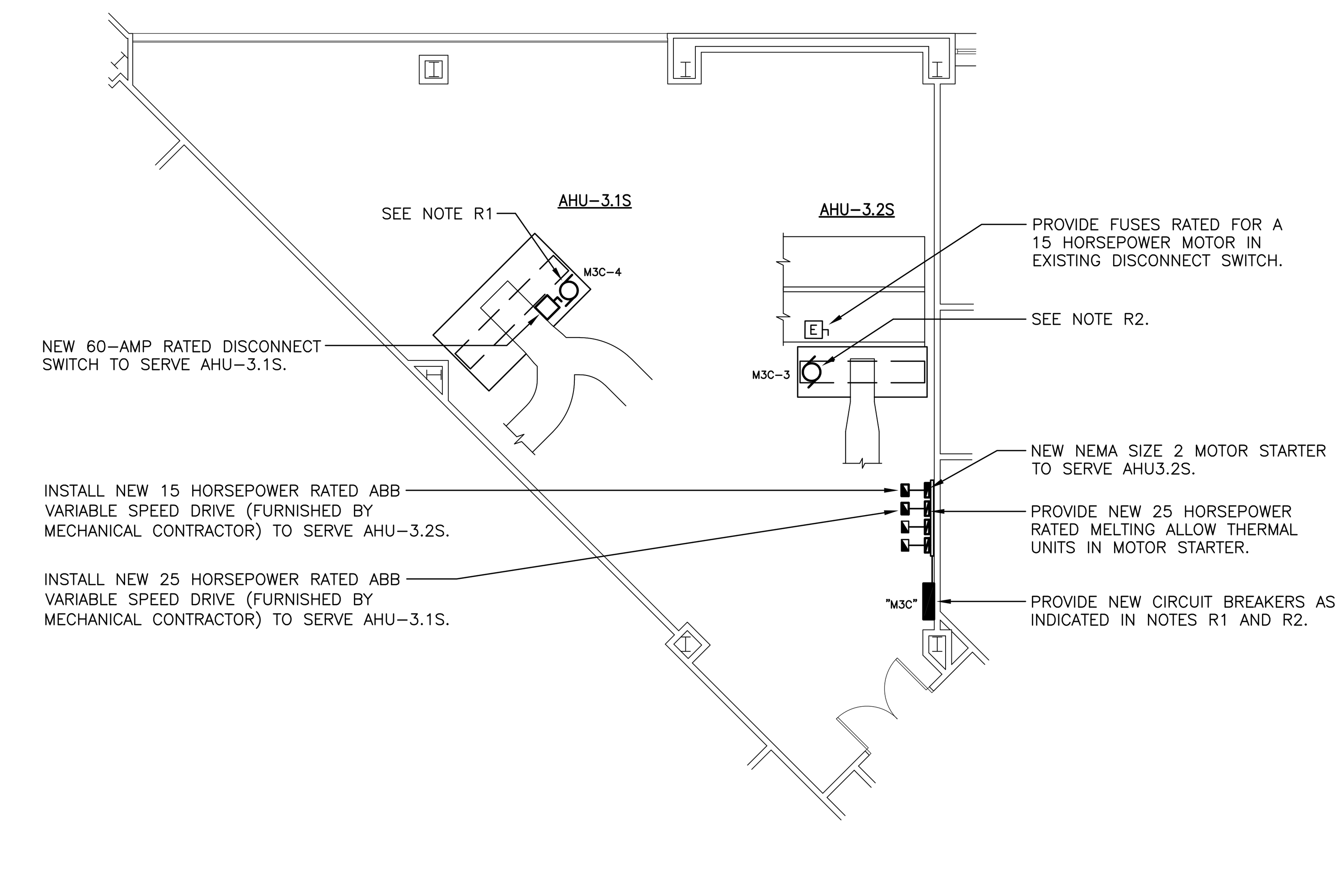
SHEET: E3 OF

SHEET IN SET: 3 OF 4



1 E4 THIRD FLOOR ELECTRICAL DEMOLITION PLAN

SCALE: 1/8" = 1'–0" (NORTHWEST CORNER OF BUILDING)



2 E4 THIRD FLOOR ELECTRICAL RENOVATION PLAN

SCALE: 1/8" = 1'–0" (NORTHWEST CORNER OF BUILDING)

ELECTRICAL NOTES

D1. AHU–3.1S: EXISTING 20 HORSEPOWER, 480–VOLT FAN MOTOR IS BEING REPLACED WITH A 25 HORSEPOWER MOTOR UNDER THIS CONTRACT. EXISTING 60–AMP 3–POLE CIRCUIT BREAKER IN PANEL "M3C" SHALL BE REMOVED AND REPLACED AS INDICATED IN NOTE R1 BELOW. DISCONNECT EXISTING FAN MOTOR, DISCONNECT SWITCH, VARIABLE SPEED DRIVE, AND ALL ASSOCIATED RACEWAYS AND POWER CONDUCTORS (BACK TO PANELBOARD "M3C").

R1. AHU–3.1S:

PROVIDE ONE 60–AMP/3–POLE/480–VOLT/FUSED/NEMA–1 RATED DICONNECT SWITCH TO REPLACE THE EXISTING DISCONNECT SWITCH. FUSES SHALL BE CLASS RK5 AND SHALL BE SIZED PER THE MOTOR MANUFACTURER'S RECOMMENDATIONS.

PROVIDE THREE 25–HORSEPOWER RATED MELTING ALLOW THERMAL UNITS IN EXISTING FPE STARTER THAT SERVES AHU–3.1S.

INSTALL ONE 25 HORSEPOWER RATED ABB VARIABLE SPEED DRIVE TO REPLACE THE EXISTING 20 HORSEPOWER RATED ABB DRIVE. THE DRIVE WILL BE FURNISHED BY THE MECHANICAL CONTRACTOR.

PROVIDE ONE 70–AMP RATED, 3–POLE CIRCUIT BREAKER IN PANELBOARD "M3C" TO SERVE NEW 25 HORSEPOWER RATED FAN MOTOR.

PROVIDE THREE #8 AWG THHN CONDUCTORS WITH ONE #10 AWG THHN GREEN GROUND WIRE IN 3/4" RMC CONDUIT FROM PANEL "M3C", THROUGH EXISTING STARTER AND NEW VARIABLE SPEED DRIVE, TO NEW FAN MOTOR (ALL POWER CONDUCTORS SHALL BE REPLACED). PROVIDE 3/4" FLEXIBLE METAL CONDUIT FOR FINAL RACEWAY CONNECTION TO MOTOR PECKERHEAD. PROVIDE SPLIT–BOLT SPLICES AND HEAT OR COLD–SHRINK BOOTS IN MOTOR PECKERHEAD FOR CONDUCTOR TERMINATIONS (POLARIS TYPE BOLTED CONNECTORS SHALL NOT BE USED).

D2. AHU–3.2S: EXISTING 10 HORSEPOWER, 480–VOLT FAN MOTOR IS BEING REPLACED WITH A 15 HORSEPOWER MOTOR UNDER THIS CONTRACT. EXISTING 30–AMP 3–POLE CIRCUIT BREAKER IN PANEL "M3C" SHALL BE REMOVED AND REPLACED AS INDICATED IN NOTE R2 BELOW. EXISTING DISCONNECT SWITCH SHALL REMAIN IN PLACE BUT NEW FUSES SHALL BE PROVIDED AS INDICATED IN NOTE R2 BELOW. EXISTING RACEWAYS SHALL REMAIN IN PLACE AND BE RE–USED EXCEPT THAT EXISTING FLEXIBLE METAL RACEWAY CONNECTED TO MOTOR PECKERHEAD SHALL BE REMOVED AND REPLACED. DISCONNECT EXISTING FAN MOTOR, VARIABLE SPEED DRIVE, AND ALL ASSOCIATED POWER CONDUCTORS (BACK TO PANELBOARD "M3C").

R2. AHU–3.2S:

PROVIDE THREE NEW FUSES IN EXISTING DISCONNECT SWITCH. FUSES SHALL BE CLASS RK5 AND SHALL BE SIZED PER THE MOTOR MANUFACTURER'S RECOMMENDATIONS.

PROVIDE ONE NEW NEMA SIZE 2, 3–POLE, 480–VOLT MOTOR STARTER WITH NEMA–1 ENCLOSURE TO REPLACE THE EXISTING FPE STARTER – COIL VOLTAGE SHALL MATCH THAT OF THE EXISTING FPE STARTER. PROVIDE THREE MELTING ALLOW THERMAL UNITS RATED FOR A 15 HORSEPOWER MOTOR IN STARTER.

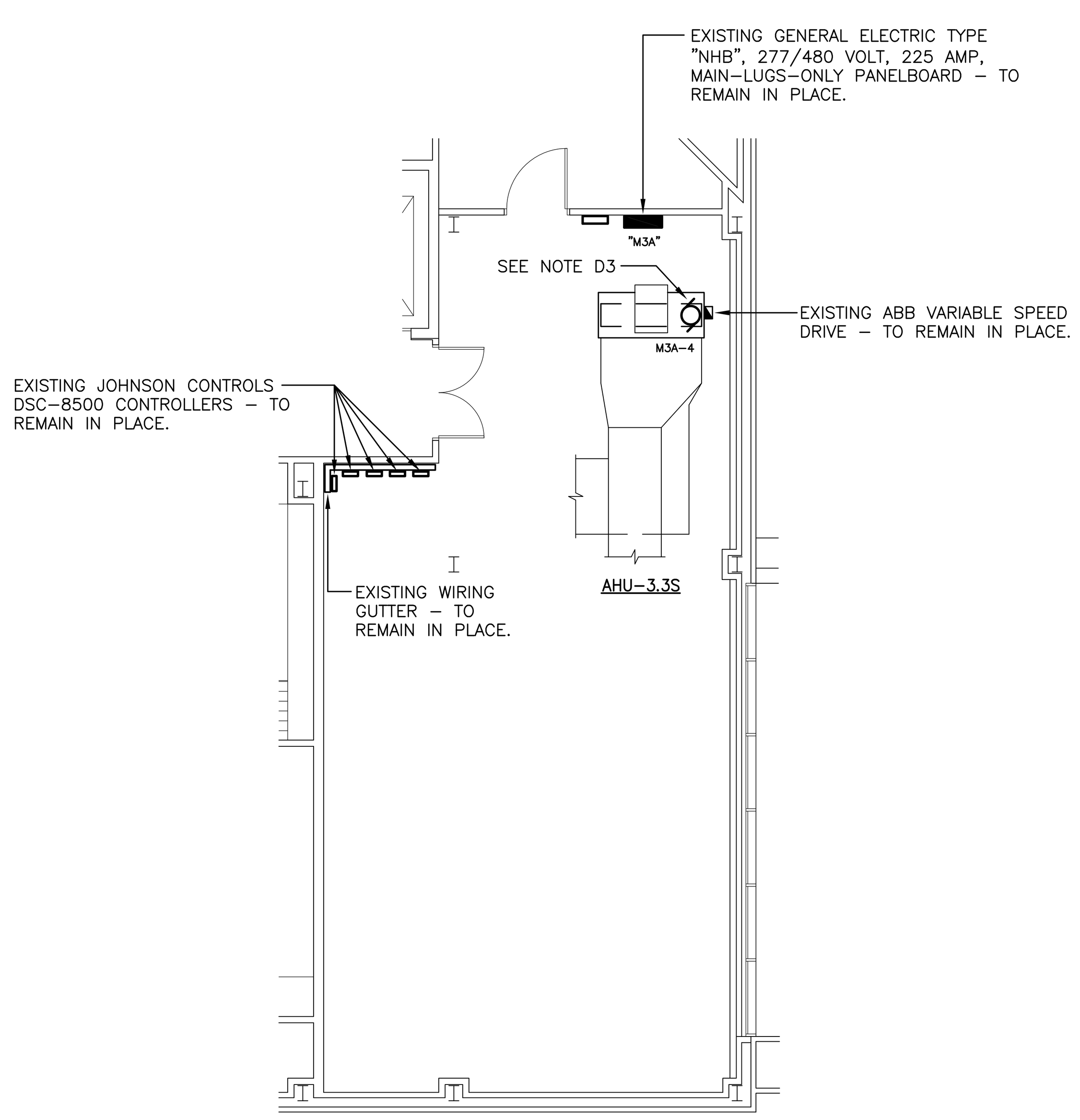
INSTALL ONE 15 HORSEPOWER RATED ABB VARIABLE SPEED DRIVE TO REPLACE THE EXISTING 10 HORSEPOWER RATED ABB DRIVE. THE DRIVE WILL BE FURNISHED BY THE MECHANICAL CONTRACTOR.

PROVIDE ONE 40–AMP RATED, 3–POLE CIRCUIT BREAKER IN PANELBOARD "M3C" TO SERVE NEW 15 HORSEPOWER RATED FAN MOTOR.

PROVIDE THREE #10 AWG THHN CONDUCTORS WITH ONE #10 AWG THHN GREEN GROUND WIRE FROM PANEL "M3C", THROUGH NEW STARTER AND VARIABLE SPEED DRIVE, TO NEW FAN MOTOR (ALL POWER CONDUCTORS SHALL BE REPLACED). PROVIDE 3/4" FLEXIBLE METAL CONDUIT FOR FINAL RACEWAY CONNECTION TO MOTOR PECKERHEAD. PROVIDE SPLIT–BOLT SPLICES AND HEAT OR COLD–SHRINK BOOTS IN MOTOR PECKERHEAD FOR CONDUCTOR TERMINATIONS (POLARIS TYPE BOLTED CONNECTORS SHALL NOT BE USED).

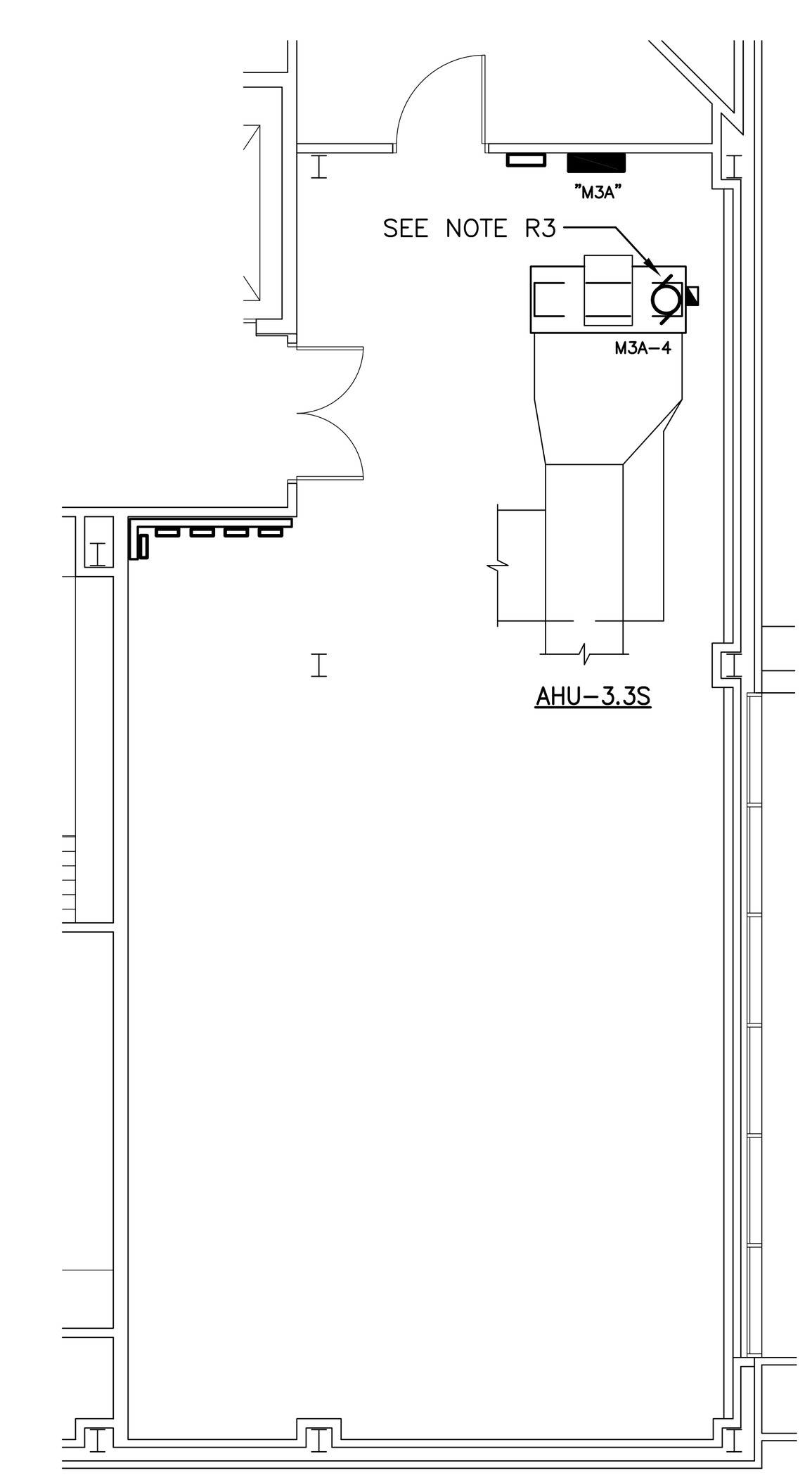
D3. AHU–3.3S: EXISTING 15 HORSEPOWER, 480–VOLT FAN MOTOR IS BEING REPLACED UNDER THIS CONTRACT. EXISTING RACEWAYS, 40–AMP 3–POLE CIRCUIT BREAKER IN PANEL "M3A", AND VARIABLE SPEED DRIVE SHALL REMAIN IN PLACE AND SHALL BE RE–USED. DISCONNECT EXISTING FAN MOTOR, FLEXIBLE METAL CONDUIT TO MOTOR PECKERHEAD, AND ALL ASSOCIATED POWER CONDUCTORS FROM RACEWAYS (BACK TO PANELBOARD "M3A"). NOTE THAT CONDUCTORS APPEAR TO BE ROUTED THROUGH EXISTING JOHNSON CONTROLS DSC–8500 PANELS – THIS POWER WIRING SHALL ALSO BE REMOVED/REPLACED.

R3. AHU–3.3S: PROVIDE THREE #10 AWG THHN CONDUCTORS WITH ONE #10 AWG THHN GREEN GROUND WIRE FROM PANEL "M3A", THROUGH EXISTING JOHNSON CONTROLS DSC–8500 PANELS AND VARIABLE SPEED DRIVE, TO NEW FAN MOTOR (ALL POWER CONDUCTORS SHALL BE REPLACED). PROVIDE 3/4" FLEXIBLE METAL CONDUIT FOR FINAL RACEWAY CONNECTION TO MOTOR PECKERHEAD. PROVIDE SPLIT–BOLT SPLICES AND HEAT OR COLD–SHRINK BOOTS IN MOTOR PECKERHEAD FOR CONDUCTOR TERMINATIONS (POLARIS TYPE BOLTED CONNECTORS SHALL NOT BE USED).



3 E4 THIRD FLOOR ELECTRICAL DEMOLITION PLAN

SCALE: 1/8" = 1'–0" (SOUTHEAST CORNER OF BUILDING)



4 E4 THIRD FLOOR ELECTRICAL RENOVATION PLAN

SCALE: 1/8" = 1'–0" (SOUTHEAST CORNER OF BUILDING)

CAMPUS PLANNING AND CONSTRUCTION
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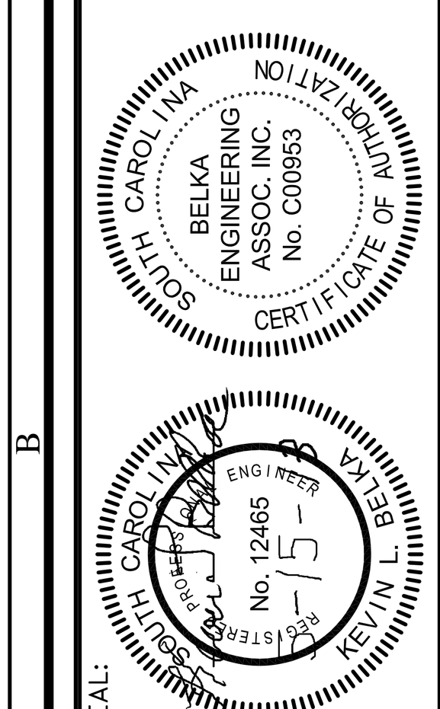

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BUILDING: 173	PROJECT NUMBER: H27-6094-K	DATE: 11 JAN 13

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University of South Carolina

SHEET: E4 OF

SHEET IN SET: 4 OF 4