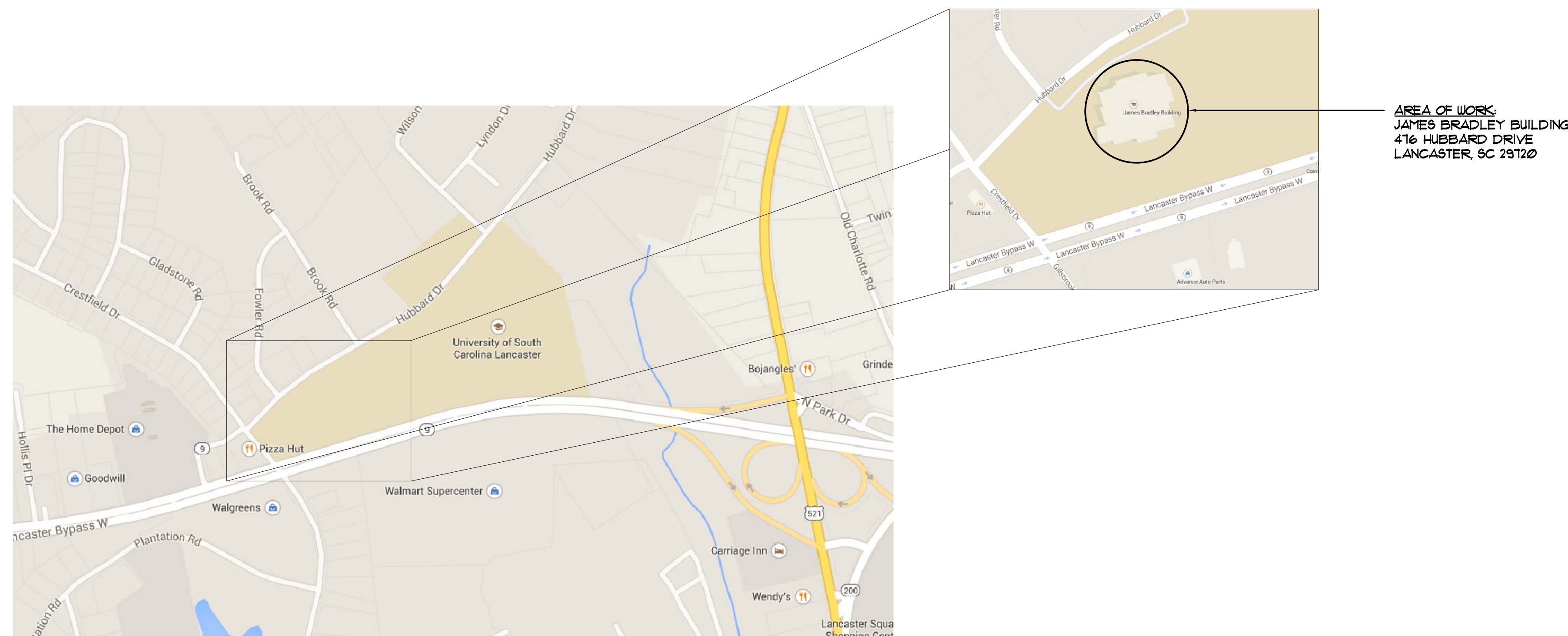


USC LANCASTER - BRADLEY BLDG. LAB EXHAUST SYSTEM UPGRADES

STATE PROJECT NO. H37-9515

THE UNIVERSITY OF SOUTH CAROLINA
LANCASTER, SOUTH CAROLINA

FACILITIES PLANNING AND CONSTRUCTION

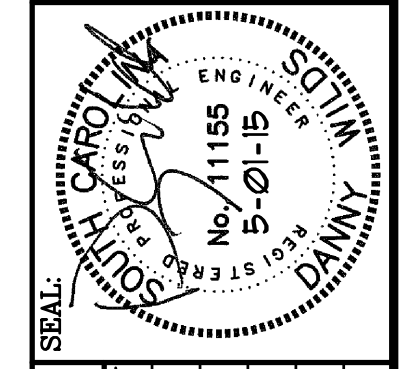


INDEX OF DRAWINGS	
C001	COVER SHEET
M001	MECHANICAL NOTES, SCHEDULES, AND DETAILS
M100	MECHANICAL DEMOLITION FLOOR PLAN
M101	MECHANICAL RENOVATION FLOOR PLAN
E1	ELECTRICAL NOTES, LEGEND, AND KEY PLAN
E2	ELECTRICAL DEMOLITION FLOOR PLAN
E3	ELECTRICAL RENOVATION FLOOR PLAN

CODE REVIEW INFORMATION	
PROJECT DESIGNED IN ACCORDANCE WITH:	
1.	International Building Code - 2012 Edition.
2.	International Plumbing Code - 2012 Edition.
3.	International Mechanical Code - 2012 Edition.
4.	National Electric Code - 2011 Edition.



MECHANICAL DESIGN, INC.
4403 Broad River Road
Columbia, S.C. 29210
(803) 731-9534
(803) 731-9537 FAX
CONTACT: Danny Wilds
DATE: 05/01/15 COMM. NO. 153195



DRAWING	DATE	DRAWN BY	CHECKED BY
BRADLEYC001	01 MAY 15	CDW	CDW
REV.	DESCRIPTION	DATE	BY

PROJECT TITLE: USC LANCASTER - BRADLEY BLDG. LAB EXHAUST SYSTEM UPGRADES
S.C. STATE PROJ. NO. H37-9515
University of South Carolina

SHEET: C001
OF 1
SHEET IN SET: OF

CAMPUS PLANNING AND CONSTRUCTION
COLUMBIA, SC 29208

VENTILATING FAN SCHEDULE

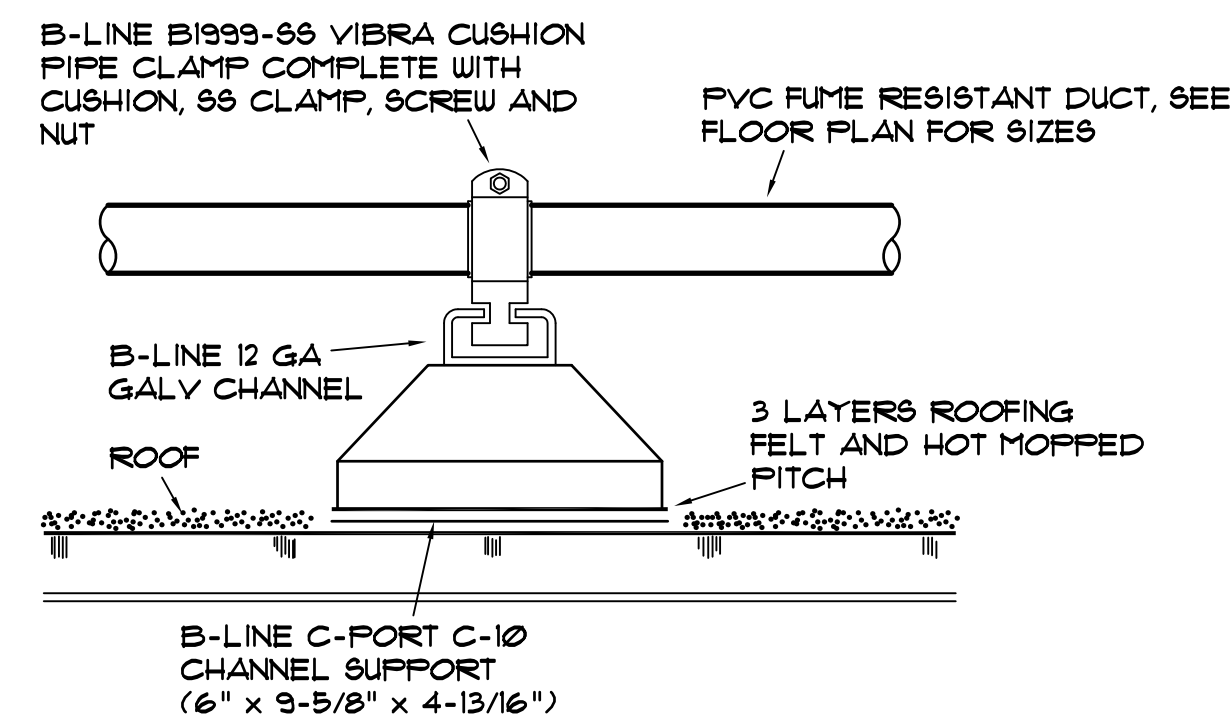
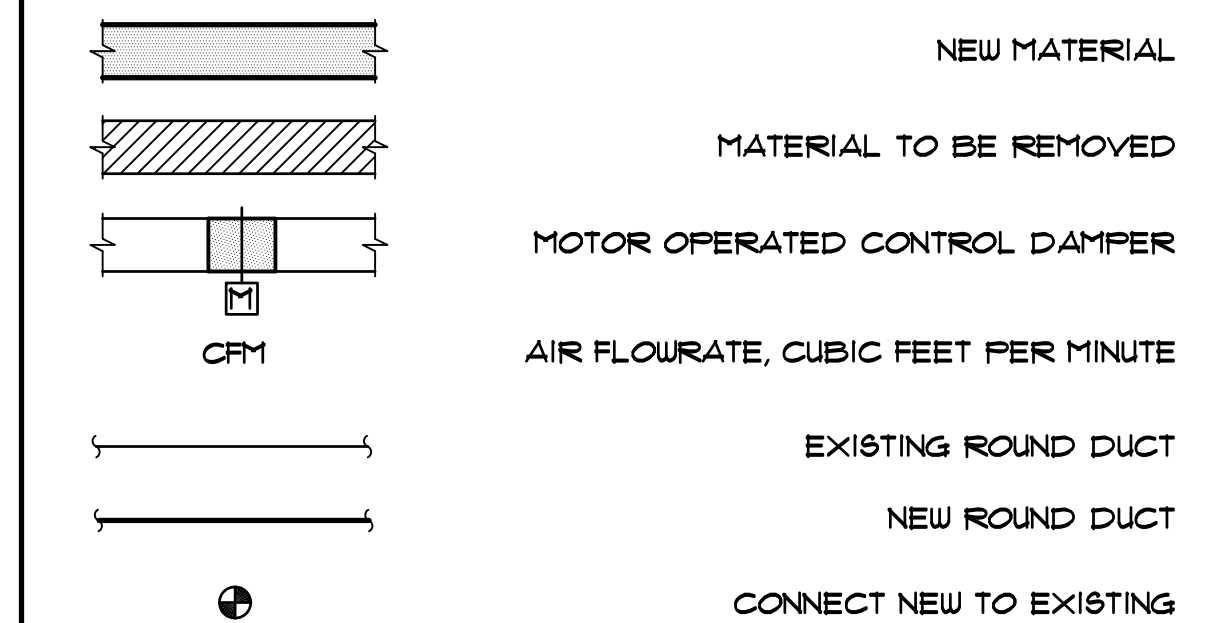
MARK	GREENHECK MODEL (2)	CFM	FAN S.P.	MOTOR SIZE (1)	SONES	DRIVE	CONTROLLED BY
LEF-1 (3) (6)	SUD-8-VG	700	3/4"	1/2 HP	12.6	DIRECT	(5)
LEF-4 (3) (6)	SUD-8-VG	700	3/4"	1/2 HP	12.6	DIRECT	(5)
LEF-5 (3) (6)	SUD-8-VG	700	3/4"	1/2 HP	12.6	DIRECT	(5)
LEF-6 (3) (6)	SUD-8-VG	700	3/4"	1/2 HP	12.6	DIRECT	(5)
EF-2 (4)	CUE-095-D	930	1/4"	1/6 HP	8.1	DIRECT	(5)

- (1) FANS TO MATCH AVAILABLE ELECTRICAL SERVICE, SEE ELECTRICAL
- (2) OR EQUAL BY COOK, TWIN CITY, CARNES, PENN OR APPROVED EQUAL
- (3) PROVIDE WITH DISCONNECT AND BACKDRAFT DAMPER
- (4) PROVIDE WITH ALUM. ROOF CURB, DISCONNECT AND BACKDRAFT DAMPER
- (5) LINE VOLTAGE SCR CONTROLLER - CONNECT FAN TO EXISTING EMS (ALC)
- (6) PROVIDE GREENHECK HI-PRO POLYESTER COATING ON FAN SURFACES IN CONTACT WITH EXHAUST AIR STREAM

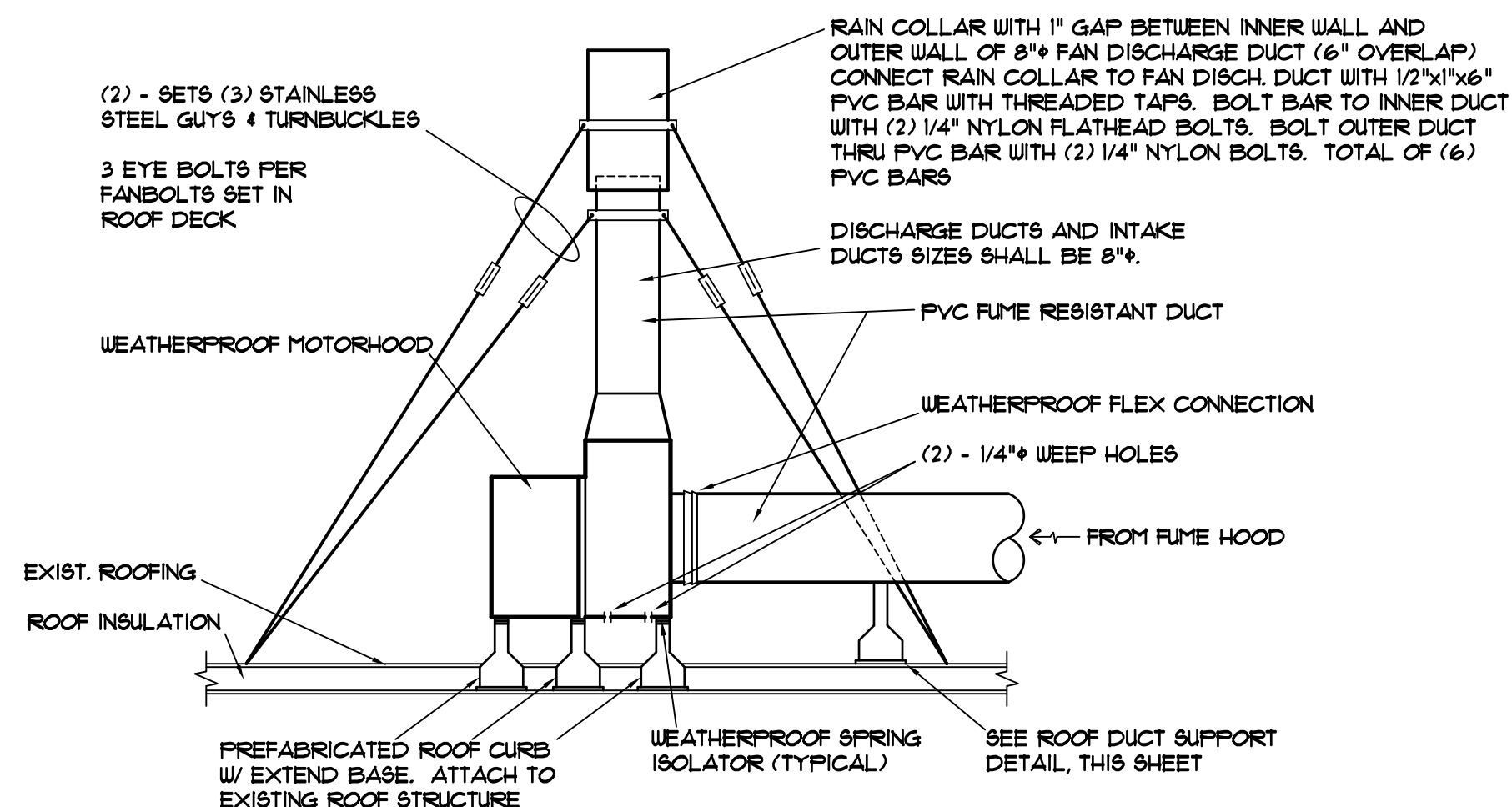
NOTES

1. DO NOT SCALE DRAWINGS. ROUGH FROM EXISTING CONDITIONS, AND EQUIPMENT MANUFACTURER'S DRAWINGS.
2. DIMENSIONS ARE IN INCHES UNLESS OTHERWISE NOTED. DUCT SIZES SHOWN ON DRAWINGS ARE INTERIOR DIMENSIONS.
3. WHENEVER THE WORD "PROVIDE" IS USED IT SHALL MEAN FURNISH AND INSTALL COMPLETE AND READY FOR USE.
4. INSTALLATION OF EQUIPMENT, DUCTWORK, AND PIPING, INCLUDING VIBRATION ISOLATION SHALL COMPLY WITH 2012 INTERNATIONAL BUILDING CODE FOR SEISMIC PROTECTION. SEE SPECIFICATIONS.
5. PROVIDE NEW 8" HEAVY DUTY ROUND CONTROL DAMPERS EQUAL TO RUSKIN CDRE25 WITH MOTOR OPERATOR. DAMPERS AT CEILING EXHAUST SHALL BE LOW LEAKAGE WITH BLADE SEALS. DAMPERS AT HOOD CONNECTIONS SHALL BE PROVIDED WITHOUT BLADE SEALS.

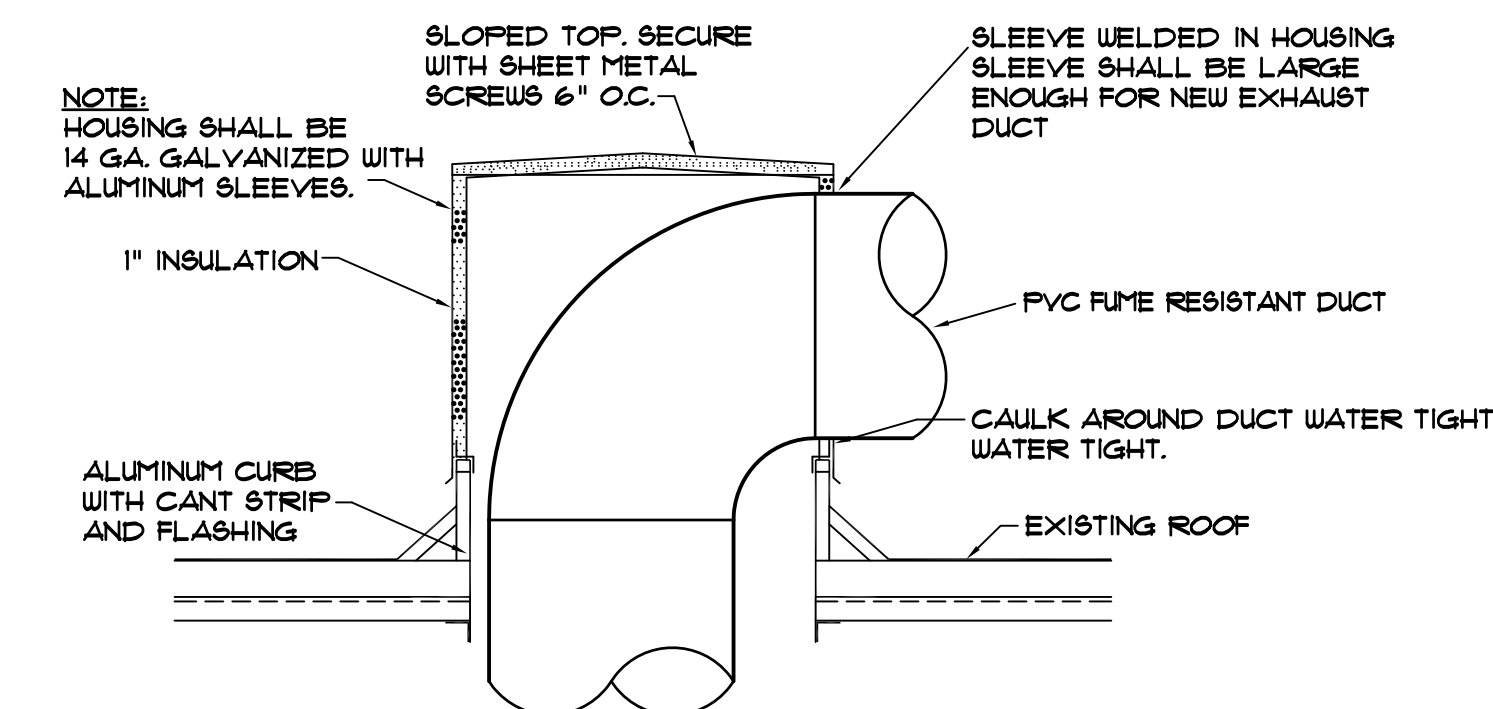
SYMBOLS



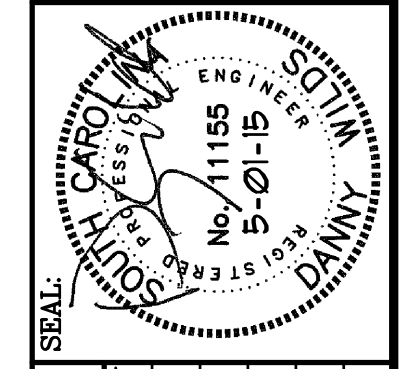
ROOFTOP DUCT SUPPORT DETAIL
NO SCALE



UTILITY FAN / FUME HOOD EXHAUST DETAIL
NO SCALE



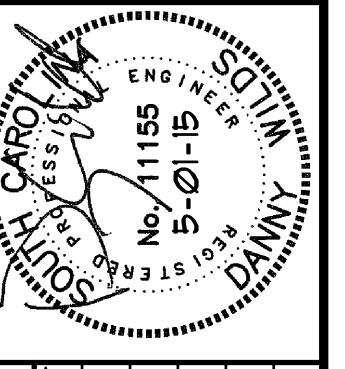
DUCT PENETRATION PENTHOUSE DETAIL
NOT TO SCALE



DATE	DESCRIPTION	DRAWN BY	CHECKED BY
01 MAY 15		CDW	CDW

PROJECT TITLE: USC LANCASTER - BRADLEY BLDG. LAB EXHAUST SYSTEM UPGRADES
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 University of South Carolina

MECHANICAL DESIGN, INC.
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REV.	DESCRIPTION	DATE	DRAWN BY	CHECKED BY

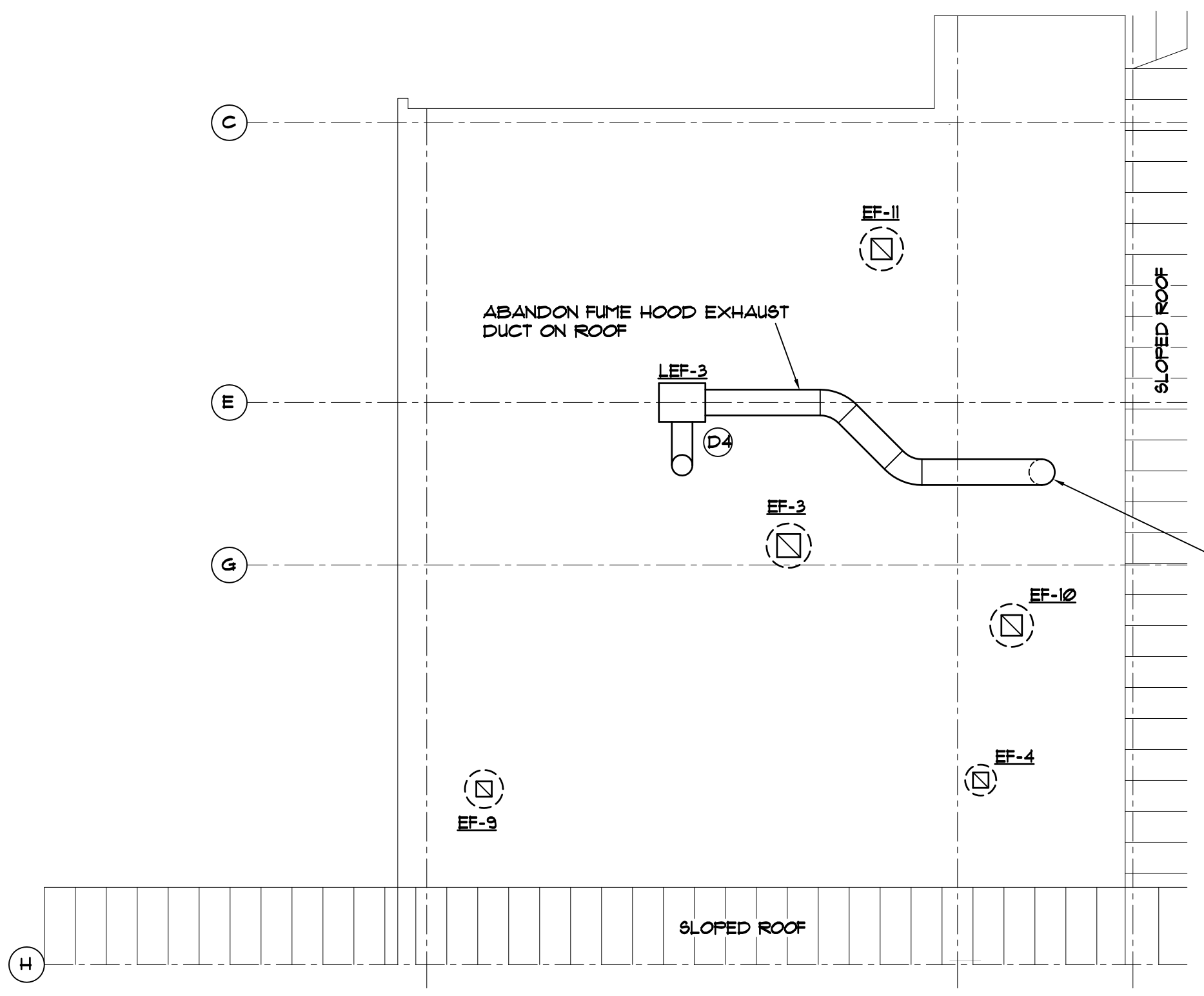
PROJECT TITLE: USC LANCASTER - BRADLEY BLDG.
LAB EXHAUST SYSTEM UPGRADES

S.C. STATE PROJ. NO. H37-9515

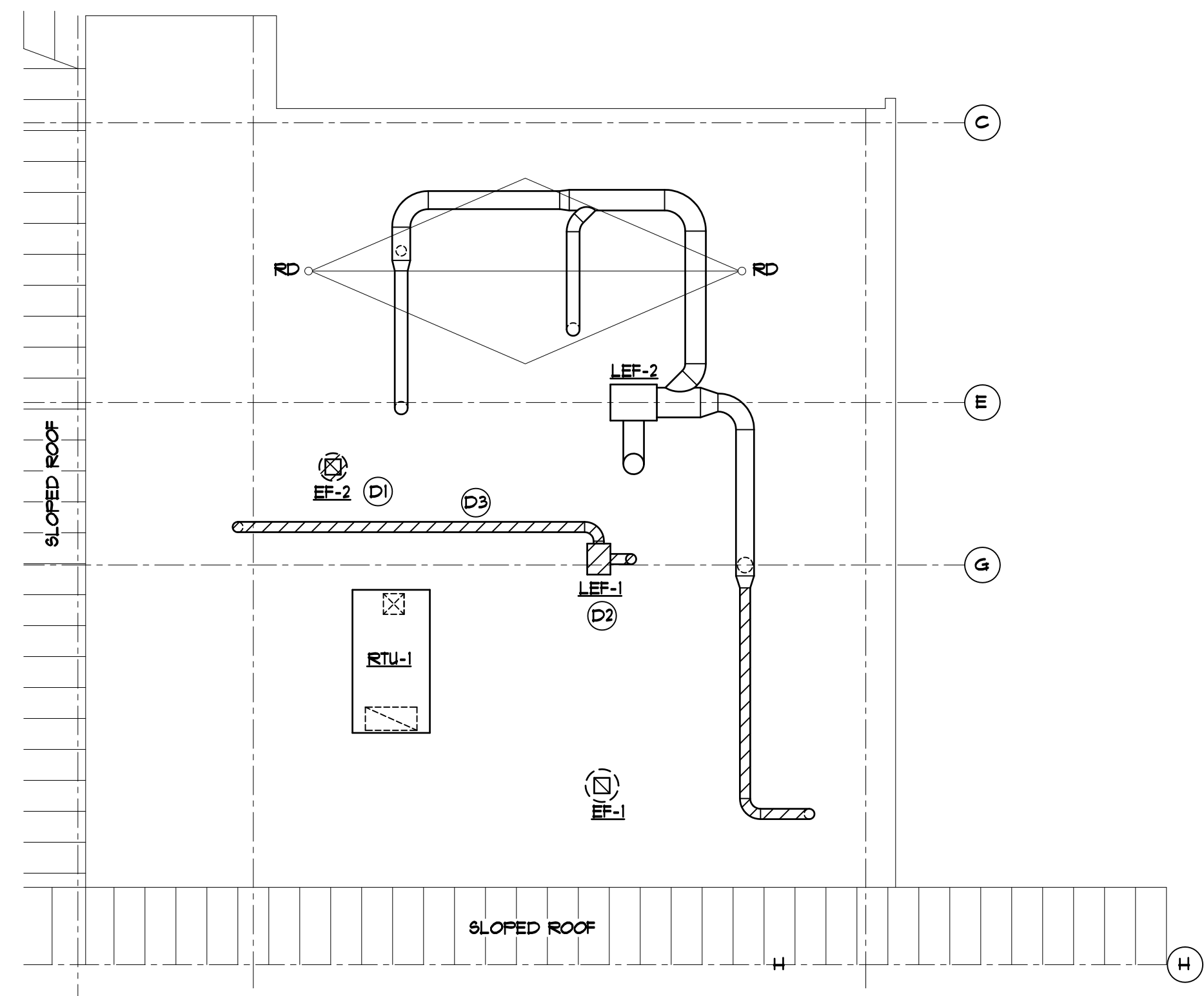
University of South Carolina

SHEET: M100
OF 3
SHEET IN SET: OF

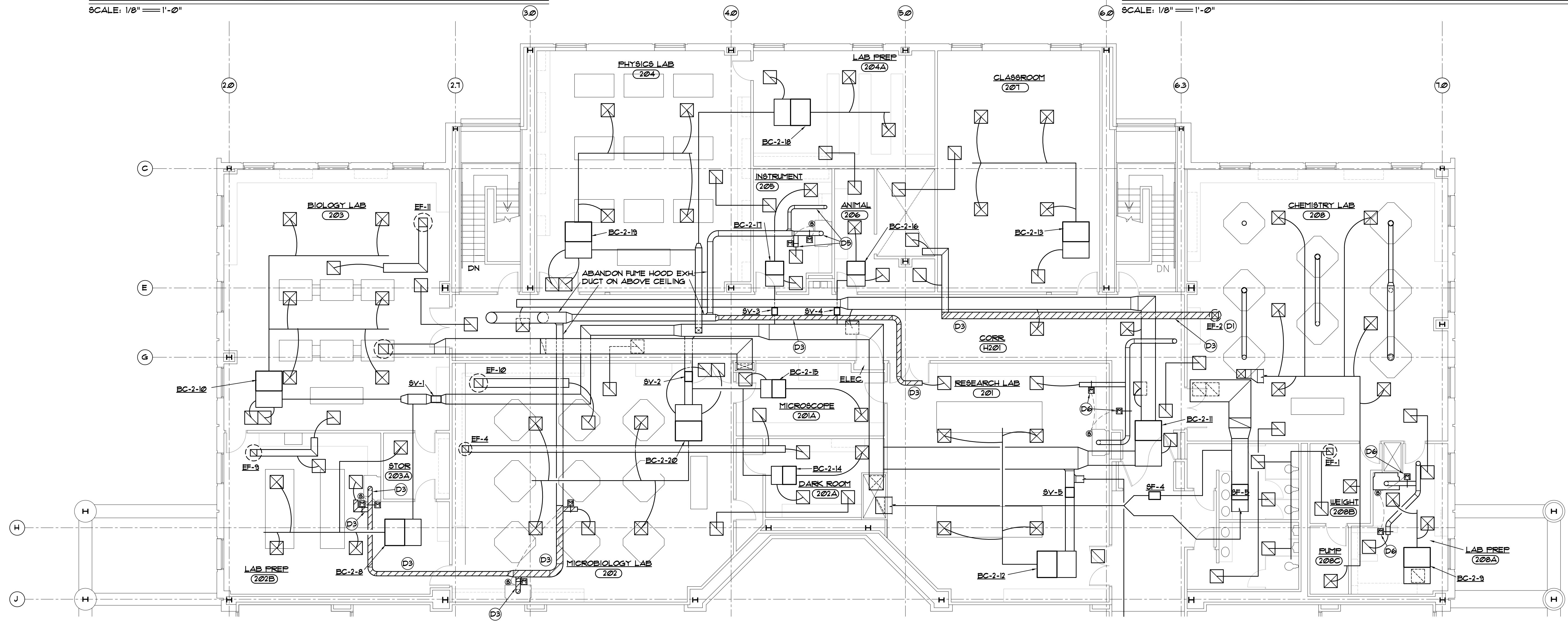
- ### DEMOLITION NOTES
- (D1) REMOVE ROOF MOUNTED CENTRIFUGAL EXHAUST FAN COMPLETE INCLUDING CURB, DUCT PENETRATION, AND POWER CONNECTION.
 - (D2) REMOVE ROOF MOUNTED UTILITY SET FAN COMPLETE INCLUDING EXH. DUCT SHOWN HATCHED. RE-USE EQUIPMENT RAILS AND GUY WIRES.
 - (D3) REMOVE EXHAUST DUCT SHOWN HATCHED COMPLETE INCLUDING HANGERS AND SUPPORTS. INCLUDE REMOVAL OF MOTOR OPERATED CONTROL DAMPERS, REMOVE DOWN TO CONNECTION TO FUME HOOD.
 - (D4) ABANDON EXISTING FUME EXHAUST FAN. LOCK-OUT CONTROLS AND DISCONNECT SWITCH, AND TAG "NOT USABLE".
 - (D5) LOCK-OUT CONTROLS TO DAMPERS FOR BOTH FUME EXHAUST HOODS AND TAG HOODS "NOT USABLE".
 - (D6) REMOVE MOTOR OPERATED CONTROL DAMPER IN EXISTING 8" EXHAUST DUCT. REPLACE WITH NEW AS SHOWN ON RENOVATION PLAN.



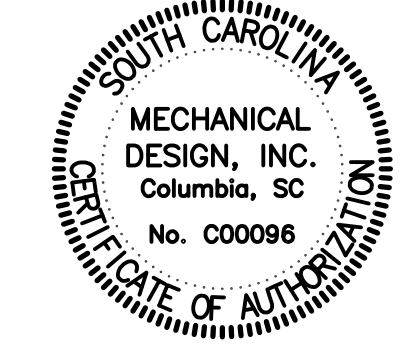
PARTIAL ROOF LEVEL MECHANICAL PLAN - DEMOLITION
SCALE: 1/8" = 1'-0"



PARTIAL ROOF LEVEL MECHANICAL PLAN - DEMOLITION
SCALE: 1/8" = 1'-0"

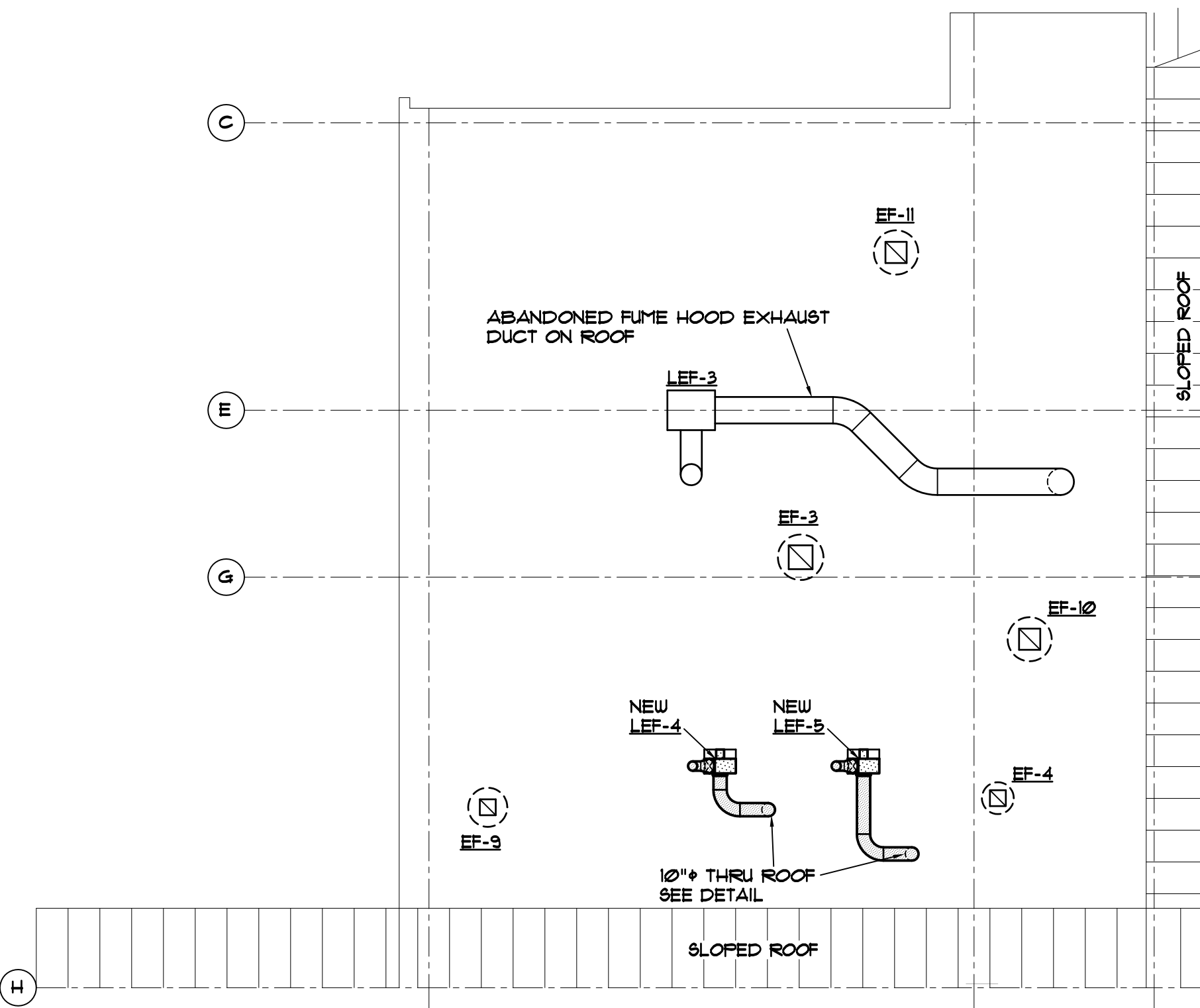


PARTIAL SECOND LEVEL MECHANICAL PLAN - DEMOLITION
SCALE: 1/8" = 1'-0"

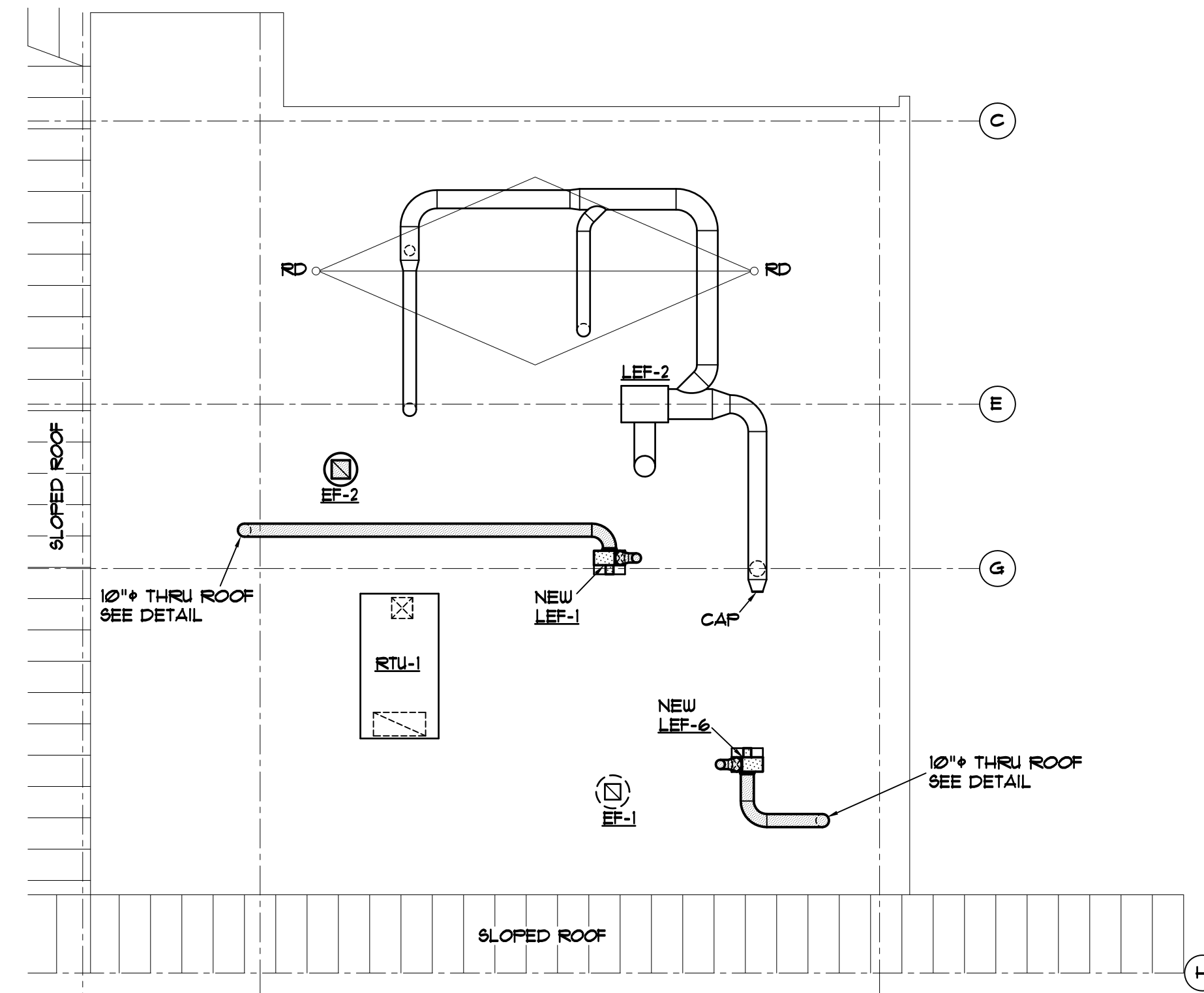


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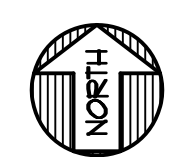
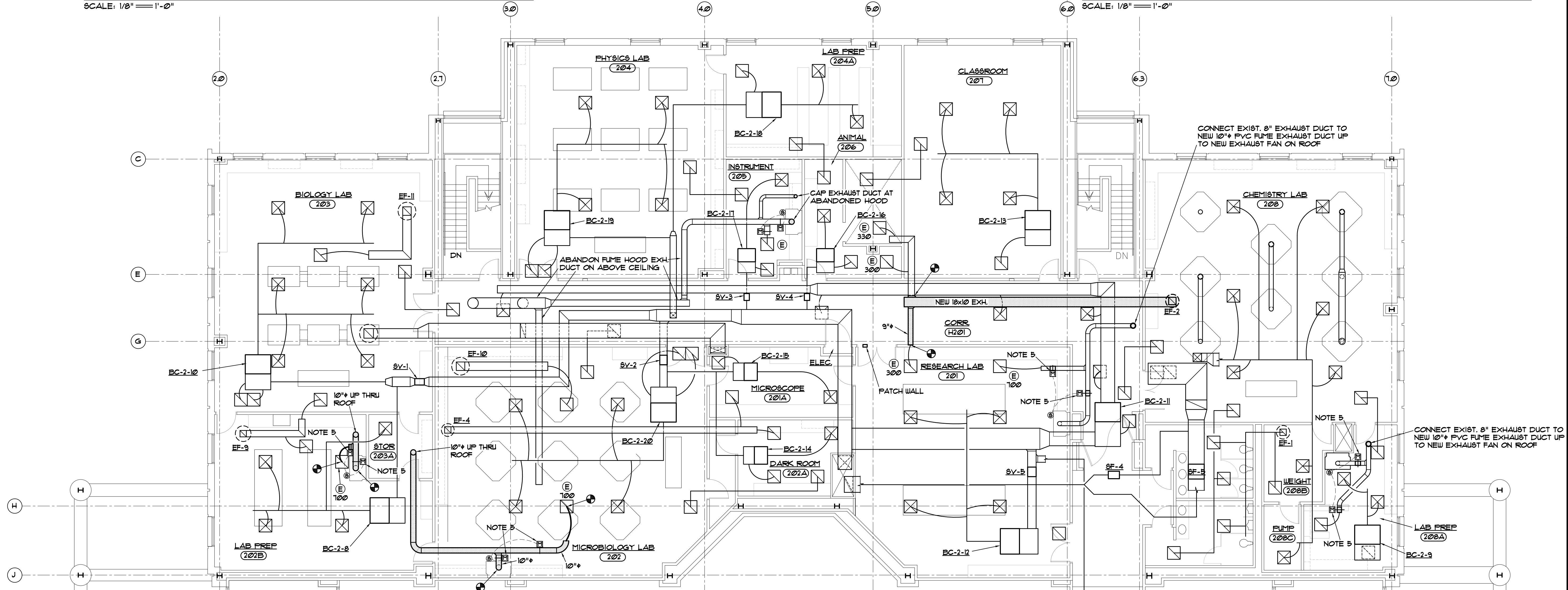
CONTACT: Danny Wilds
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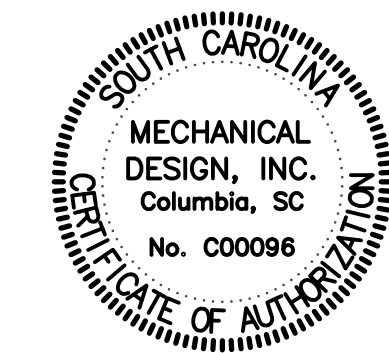
PARTIAL ROOF LEVEL MECHANICAL PLAN - RENOVATION
SCALE: 1/8" = 1'-0"



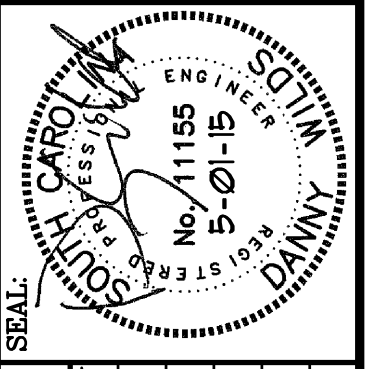
PARTIAL ROOF LEVEL MECHANICAL PLAN - RENOVATION
SCALE: 1/8" = 1'-0"



PARTIAL SECOND LEVEL MECHANICAL PLAN - RENOVATION
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REV.	DESCRIPTION	DATE	CDW	CDW

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University of South Carolina

GENERAL CONSTRUCTION NOTES

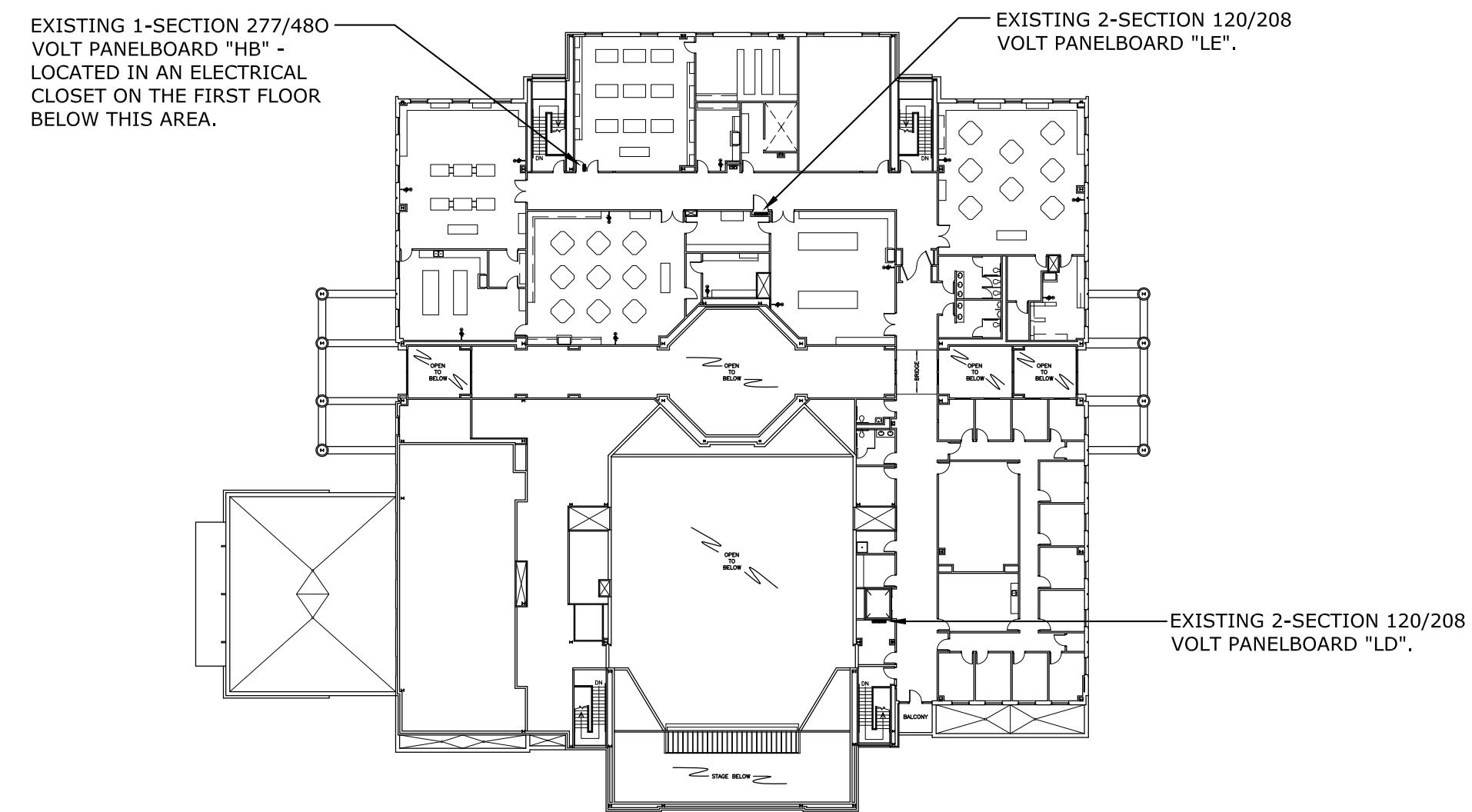
- PROVIDE ALL WORK IN ACCORDANCE WITH THE FOLLOWING CODES AND STANDARDS:
 - INTERNATIONAL BUILDING CODE 2012 EDITION
 - NFPA 70 - NATIONAL ELECTRICAL CODE 2011 EDITION
 - PROVIDE RACEWAY AND WIRING TO ALL DEVICES AND EQUIPMENT INDICATED ON THE CONTRACT DRAWINGS. THE DRAWINGS INDICATE PARTIAL RACEWAY AND WIRING REQUIREMENTS TO HELP CLARIFY 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 2011 EDITION OF THE NATIONAL ELECTRICAL CODE. CONTRACTOR MAY ONLY RE-USE EXISTING RACEWAYS AND WIRING WHERE THEIR CURRENT INSTALLATION METHODS COMPLY WITH THE 2011 EDITION OF THE NATIONAL ELECTRICAL CODE (CONTRACTOR MAY CORRECT DEFICIENT INSTALLATION METHODS IF PRACTICAL).
 - ALL CONDUIT PENETRATIONS THROUGH WALLS AND CEILINGS SHALL BE 2-HOUR FIRESTOPPED - HILTI OR EQUAL.
 - RACEWAYS SHALL BE 3/4" EMT WITH COMPRESSION TYPE FITTINGS UNLESS NOTED OR DETAILED OTHERWISE. ALL WIRE SHALL BE COPPER WITH THHN INSULATION.
 - JUNCTION BOXES SHALL BE STEEL TYPE WITH SCREW COVER, SIZED AND SUPPORTED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE. PROVIDE JUNCTION BOXES AS REQUIRED FOR POWER AND CONTROL WIRING RENOVATIONS.
 - INSTALL ELECTRICAL SYSTEMS WITHOUT INTERFERING WITH DUCTS, PIPES, STRUCTURAL MEMBERS, OR OTHER SYSTEMS.
 - THOROUGHLY CLEAN ALL EQUIPMENT AND SYSTEMS BEFORE PLACING IN OPERATION. RESTORE FINISHED SURFACES IF DAMAGED AND DELIVER THE ENTIRE INSTALLATION IN AN APPROVED CONDITION. THE CONTRACTOR SHALL INSTRUCT THE OWNER'S PERSONNEL IN THE PROPER OPERATION AND MAINTENANCE OF ALL SYSTEMS.
 - THE CONTRACTOR SHALL GUARANTEE THE WORK INSTALLED UNDER THIS CONTRACT FOR A PERIOD OF ONE YEAR AFTER DATE OF FINAL ACCEPTANCE. DEFECTS WHICH APPEAR AS A RESULT OF NORMAL USAGE SHALL BE REMEDIED BY THE CONTRACTOR TO THE COMPLETE SATISFACTION OF THE OWNER WITHOUT COST TO THE OWNER.
 - CUTTING, DRILLING, 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 FROM THE ARCHITECT/ENGINEER, UNCOVER AND RESTORE WORK TO PROVIDE FOR ARCHITECT/ENGINEER OBSERVATION OF CONCEALED WORK.
- PROTECT EXISTING STRUCTURES, FURNISHINGS, FINISHES, MECHANICAL SYSTEMS, AND ELECTRICAL SYSTEMS WHILE PERFORMING CUTTING, DRILLING, FITTING, AND PATCHING.
- PATCH EXISTING SURFACES AND BUILDING COMPONENTS USING NEW MATERIALS THAT MATCH EXISTING MATERIALS. PATCHING SHALL BE PERFORMED BY EXPERIENCED INSTALLERS.

GENERAL DEMOLITION NOTES

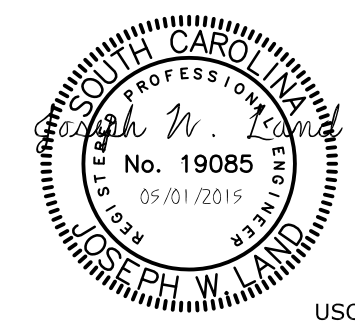
- THE CONTRACTOR SHALL VISIT THE SITE/BUILDING TO FIELD VERIFY EXISTING CONDITIONS (PARTICULARLY ABOVE-CEILING CONDITIONS OF EXISTING RACEWAY AND WIRING INSTALLATION METHODS) PRIOR TO BID AND SHALL INCLUDE ALL WORK REQUIRED FOR COMPLETE DEMOLITION IN HIS BID - SEE GENERAL CONSTRUCTION NOTE 2 ON THIS DRAWING.

ELECTRICAL LEGEND

SYMBOL	DESCRIPTION
	EXISTING PANELBOARD - TYPE AS INDICATED ON PLAN.
	EXISTING MOTOR-DRIVEN EXHAUST FAN - TO BE ABANDONED IN PLACE.
	EXISTING MOTOR-DRIVEN EXHAUST FAN - DISCONNECT CIRCUIT AND RECONNECT AS NOTED ON PLAN.
	EXISTING MOTOR OPERATED DAMPERS AND ASSOCIATED CONTROLS - COORDINATE WITH THE MECHANICAL CONTRACTOR AND REMOVE EXISTING RACEWAYS AND WIRING THAT SERVE THEM.
	ELECTRICAL CONNECTION TO A MOTOR OR TO MOTOR-DRIVEN EQUIPMENT. PROVIDE RACEWAY AND WIRING AS NOTED ON PLAN.
	STEEL JUNCTION BOX WITH SCREW COVER. MOUNT ABOVE ACOUSTICAL DROP CEILING IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE.

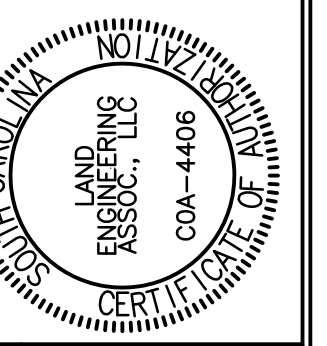


1 SECOND LEVEL KEY PLAN
E-1 NOT TO SCALE



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OFFICE OF
FACILITIES MANAGEMENT
COLUMBIA, SC 29208



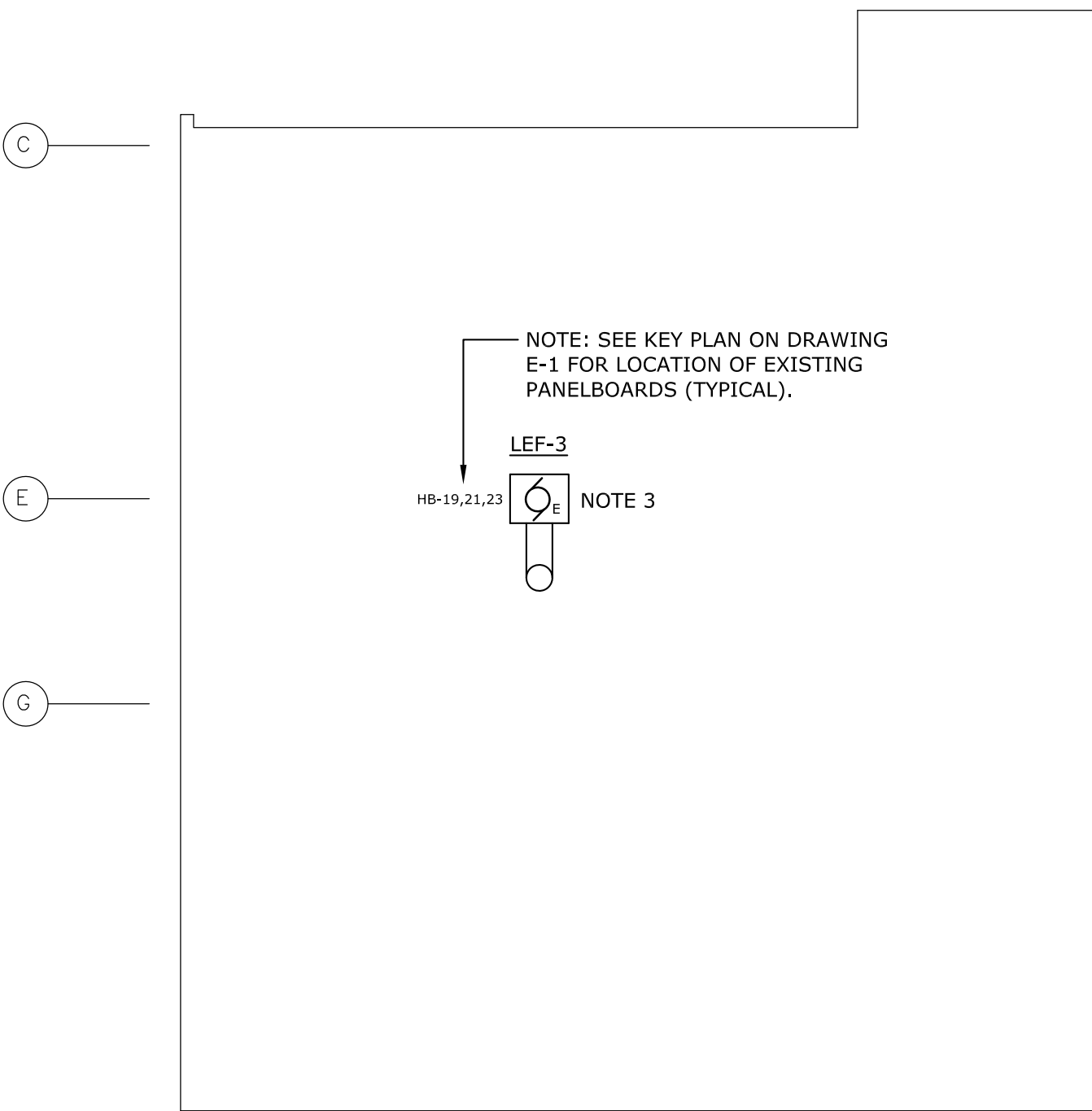
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825	-	01MAY15			JWL	KNJ	

PROJECT TITLE: USC LANCASTER - BRADLEY BLDG. LAB EXHAUST SYSTEM UPGRADES

S.C. STATE PROJ. NO. H37-9515

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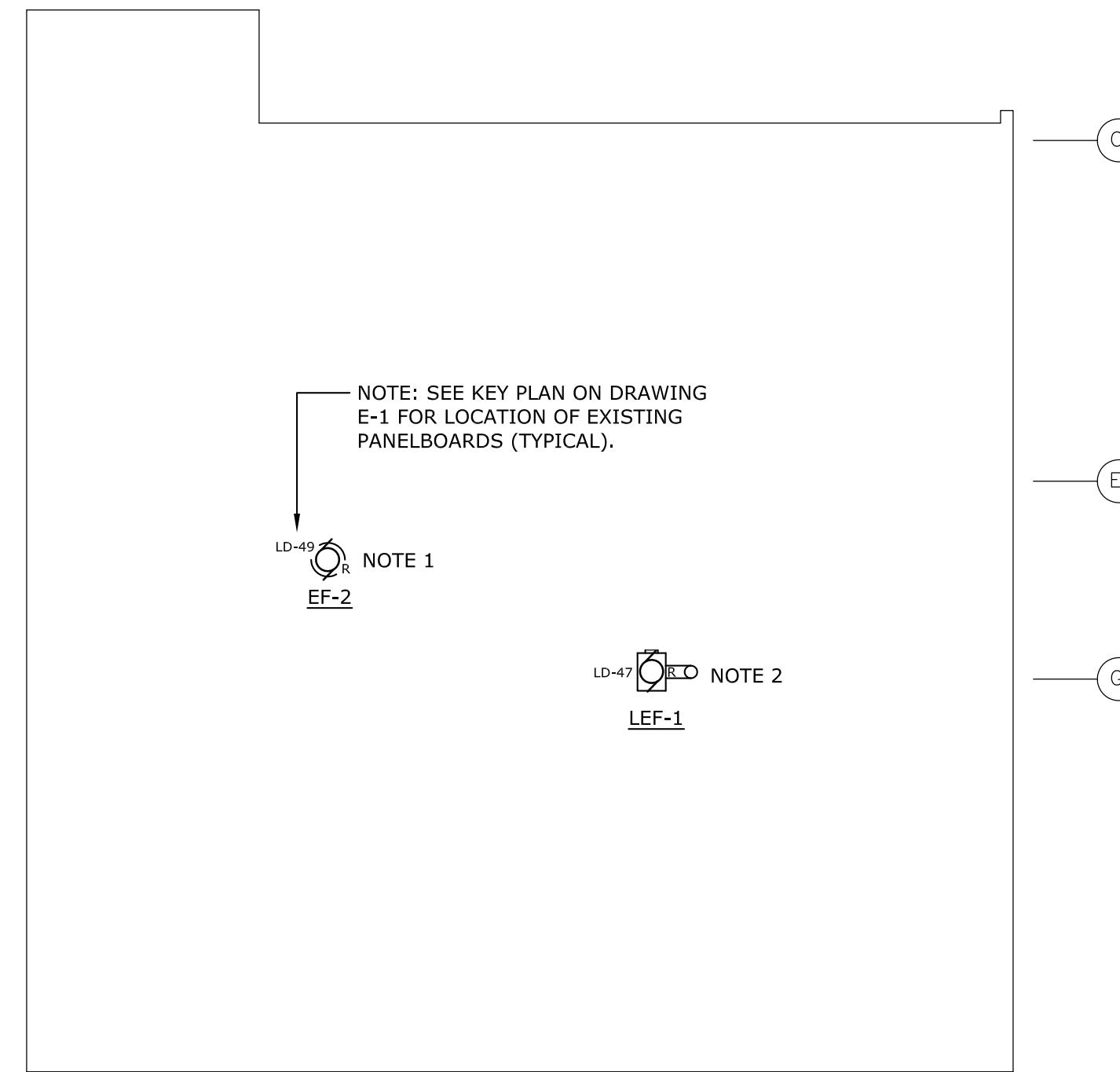
SHEET: **E-1**
1 OF 3
SHEET IN SET:
4 OF 6



2 PARTIAL ROOF ELECTRICAL DEMOLITION PLAN

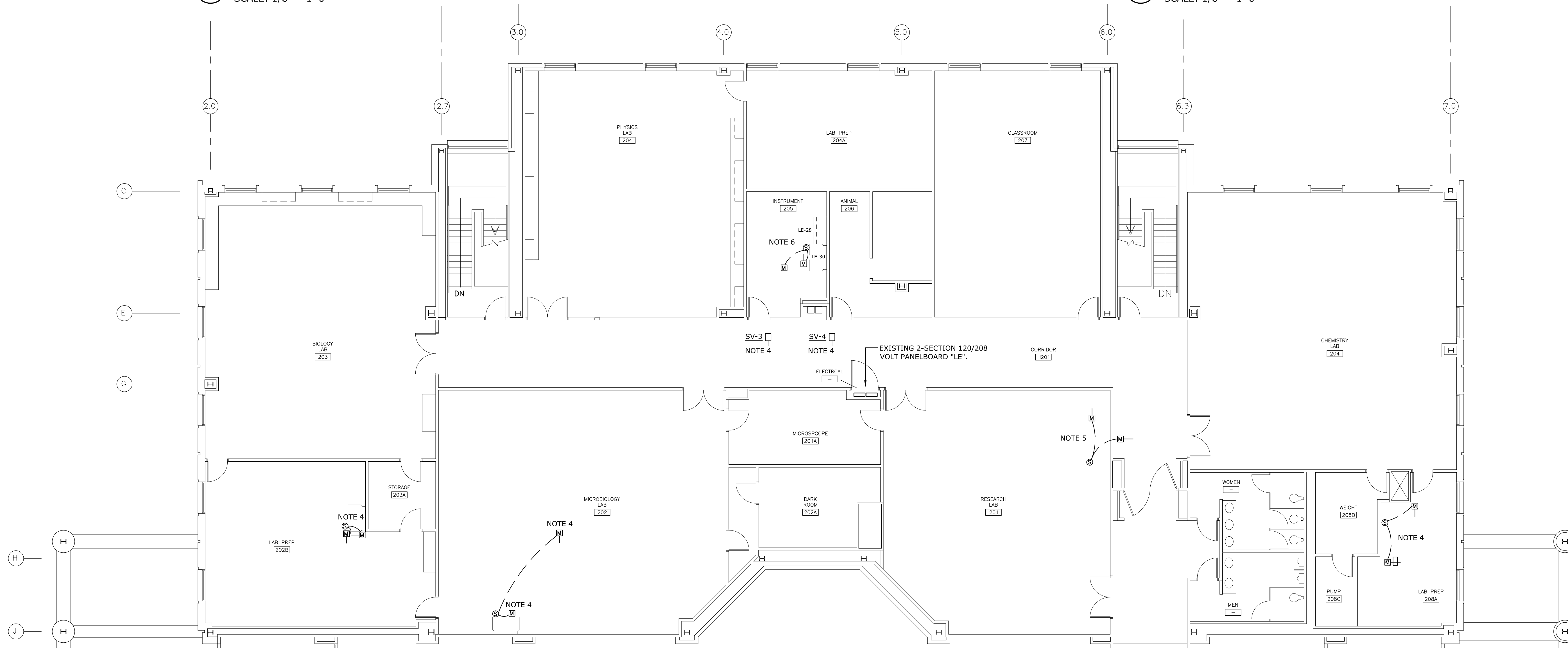
SCALE: 1/8" = 1'-0"

- DEMOLITION NOTES**
1. EF-2: DISCONNECT POWER FROM EXISTING EXHAUST FAN. EXTEND AND REWORK EXISTING RACEWAY AND WIRING TO SERVE NEW EF-2 EXHAUST FAN (SEE DRAWING E-3).
 2. LEF-1: DISCONNECT POWER FROM EXISTING EXHAUST FAN. EXTEND AND REWORK EXISTING RACEWAY AND WIRING TO SERVE NEW LEF-6 EXHAUST FAN (SEE DRAWING E-3).
 3. LEF-3: EXISTING EXHAUST FAN WILL BE ABANDONED IN PLACE. PROVIDE A WEATHERPROOF SIGN ON DISCONNECT SWITCH THAT READS "NOT IN SERVICE" AND TO ALSO TO INDICATE THE FAN'S CIRCUIT NUMBER (FIELD VERIFY CIRCUIT NUMBER).
 4. FOR MOTOR OPERATED DAMPERS AND CONTROLS REFERENCED TO THIS NOTE, COMPLETELY REMOVE EXISTING RACEWAYS AND WIRING THAT SUPPLY THEM - COORDINATE WORK WITH MECHANICAL CONTRACTOR.
 5. FOR MOTOR OPERATED DAMPERS AND CONTROLS REFERENCED TO THIS NOTE, DISCONNECT EXISTING RACEWAY AND WIRING. EXTEND AND REWORK EXISTING RACEWAY AND WIRING TO SERVE NEW DAMPERS AND CONTROLS NEAR SAME LOCATION - COORDINATE WORK WITH MECHANICAL CONTRACTOR.
 6. FOR MOTOR OPERATED DAMPERS AND CONTROLS REFERENCED TO THIS NOTE, TURN OFF EXISTING CIRCUIT BREAKERS IN PANELBOARD "LE" AND TAG BREAKERS "NOT IN USE - LEAVE IN OFF POSITION".



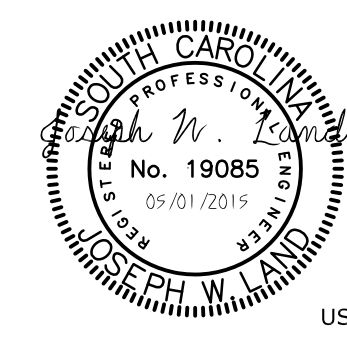
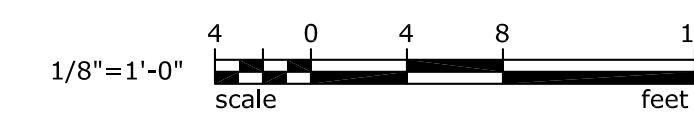
3 PARTIAL ROOF ELECTRICAL DEMOLITION PLAN

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



1 PARTIAL SECOND LEVEL ELECTRICAL PLAN - DEMOLITION

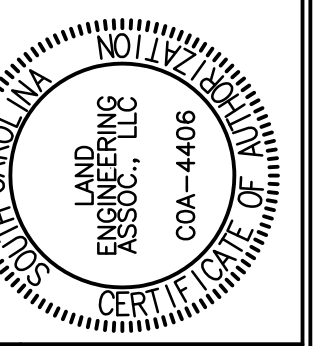
SCALE: 1/8" = 1'-0"



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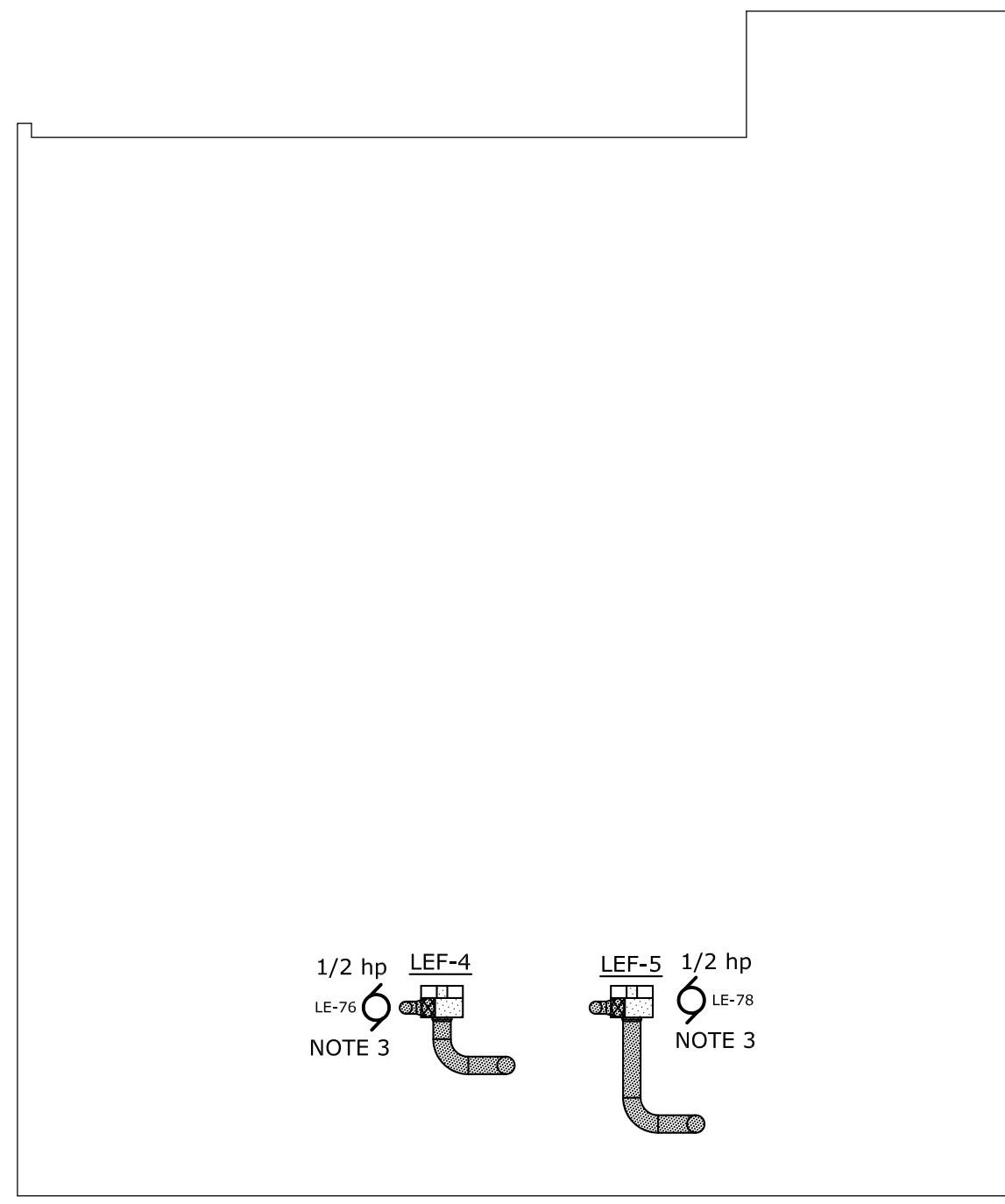
OFFICE OF FACILITIES MANAGEMENT COLUMBIA, SC 29208	
	SEAL: JOSEPH W. LAND PROFESSIONAL ENGINEER STATE OF SOUTH CAROLINA No. 19085 09-01-2015
CHECKED BY: JWL DATE:	ORIG. BY:
DRAWN BY: KNJ DATE:	REV.
BUILDING: 825 DRAWING:	DESCRIPTION:
PROJECT TITLE: USC LANCASTER - BRADLEY BLDG. LAB EXHAUST SYSTEM UPGRADES S.C. STATE PROJ. NO. H37-9515 University of South Carolina	
USC-2015-02	
SHEET: E-2 2 OF 3 SHEET IN SET: 5 OF 6	



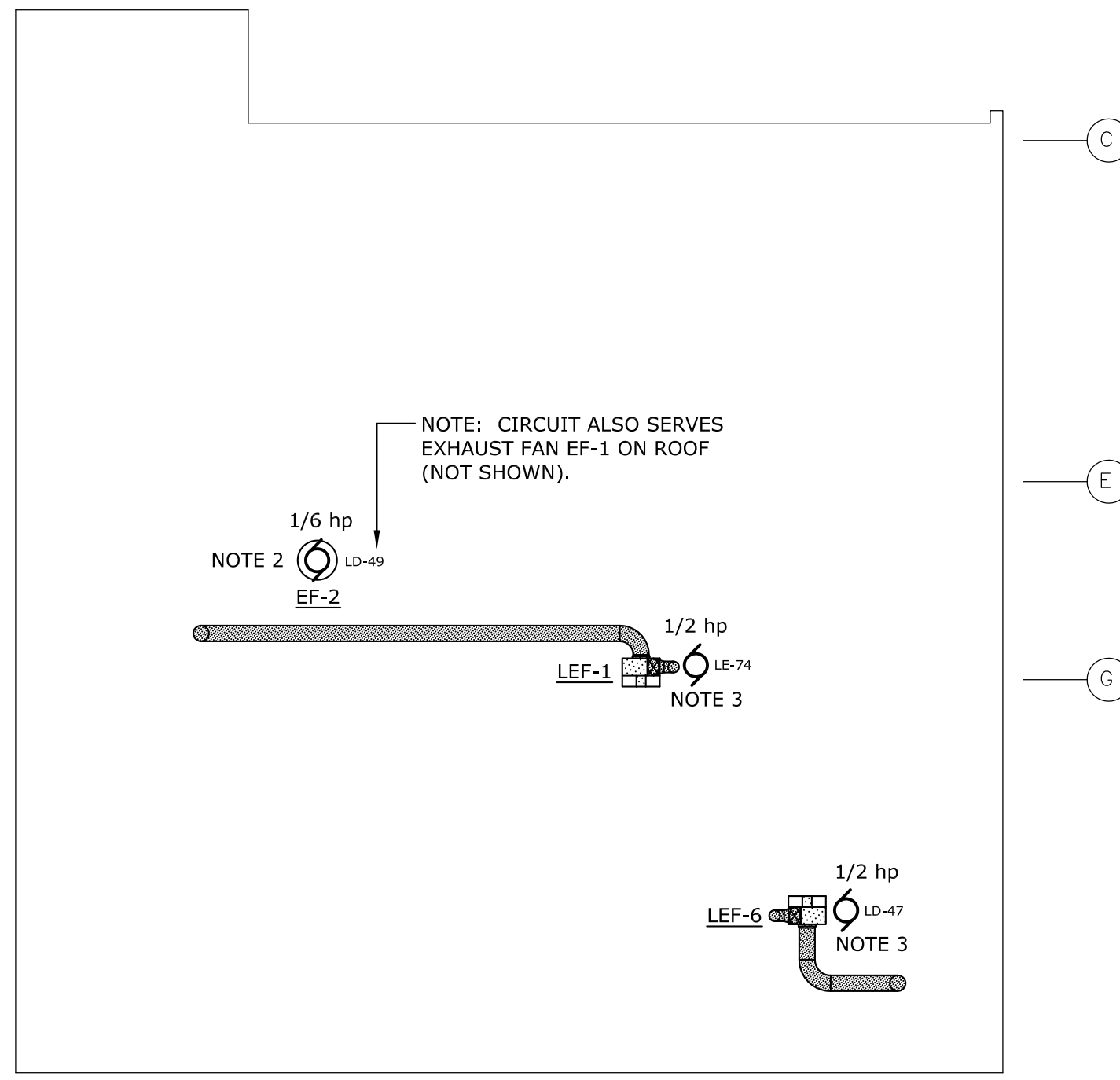
SEAL: [Professional Engineer Seal]	CHECKED BY: JWL
DRAWN BY: KNJ	DATE: 01 MAY 15
BUILDING: 825	DESCRIPTION:
REV.	

PROJECT TITLE: USC LANCASTER - BRADLEY BLDG. LAB EXHAUST SYSTEM UPGRADES
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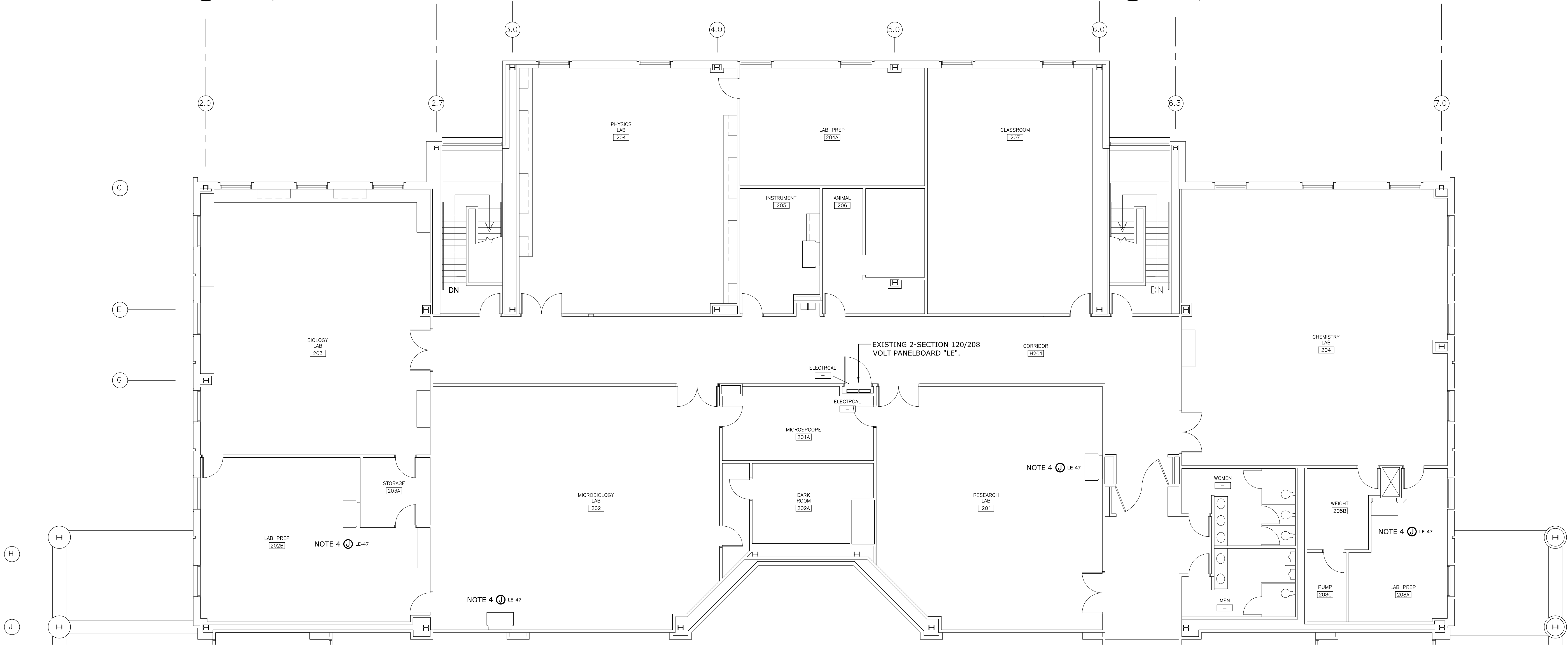
- ### RENOVATION NOTES
- NEW EXHAUST FANS WILL BE FURNISHED WITH AN ELECTRICAL DISCONNECT SWITCH PER THE MECHANICAL DRAWINGS. PROVIDE RACEWAY AND WIRING TO EACH EXHAUST FAN DISCONNECT SWITCH ON CIRCUIT INDICATED. ALL WIRING SHALL BE #12 AWG THIN COPPER CONDUCTORS WITH ONE GREEN INSULATED #12 AWG COPPER GROUND WIRE IN 3/4" EMT AND LFMC RACEWAYS.
 - EF-2: RECONNECT EXISTING EF-2 EXHAUST FAN CIRCUIT TO NEW EXHAUST FAN. INTERCEPT AND ROUTE CIRCUIT THROUGH EXISTING FAN SWITCH IN EXHAUST HOOD AND THROUGH SCR CONTROLLER FURNISHED BY THE MECHANICAL CONTRACTOR. PROVIDE A 240V/30 AMP/2-POLE/NEMA-3R FUSIBLE DISCONNECT SWITCH FOR FAN (EVEN THOUGH THE NEW FAN WILL BE PROVIDED WITH A DISCONNECT SWITCH). PROVIDE ONE 7 AMP RATED CLASS RK5 FUSE IN SWITCH FOR FAN CIRCUIT.
 - LEF-1, -4, -5, & -6: PROVIDE NEW RACEWAY AND CONDUCTORS FROM EXISTING PANELBOARD "LE" TO SERVE EXHAUST FAN - ROUTE THROUGH EXISTING FAN SWITCH IN EXHAUST HOOD AND THROUGH SCR CONTROLLER FURNISHED BY THE MECHANICAL CONTRACTOR. CONNECT CIRCUIT CONDUCTORS TO EXISTING SPARE 20 AMP CIRCUIT BREAKER IN PANEL. UPDATE PANELBOARD DIRECTORY TO INDICATE ADDED LOAD. ROUTE RACEWAY THROUGH DUCT PENETRATION AT ROOF - SEE MECHANICAL DRAWINGS FOR DUCT PENETRATION DETAIL. COORDINATE RACEWAY ROOF PENETRATION WITH MECHANICAL CONTRACTOR.
 - REMOVE 2-POLE TIE-HANDLE ACCESSORY FROM EXISTING CIRCUIT BREAKERS IN SPACES 47 & 49 OF PANELBOARD "LE". PROVIDE TWO #12 AWG THIN COPPER CONDUCTORS WITH ONE GREEN INSULATED #12 AWG COPPER GROUND WIRE IN 3/4" EMT AND FMC RACEWAYS TO SERVE LOW-VOLTAGE CONTROL TRANSFORMERS WHICH WILL BE PROVIDED BY THE MECHANICAL CONTRACTOR. USE SPARE BBREAKER IN SPACE 47 TO SERVE CIRCUIT. UPDATE PANELBOARD DIRECTORY TO INDICATE ADDED LOAD.



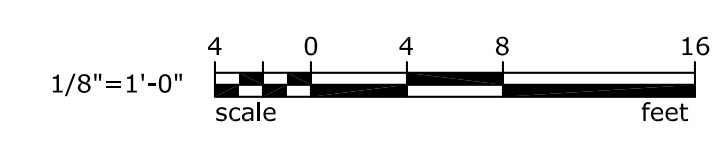
2 PARTIAL ROOF ELECTRICAL RENOVATION PLAN
SCALE: 1/8" = 1'-0"



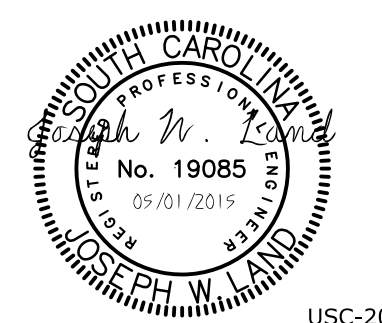
3 PARTIAL ROOF ELECTRICAL RENOVATION PLAN
SCALE: 1/8" = 1'-0"



1 PARTIAL SECOND LEVEL ELECTRICAL PLAN - RENOVATION
SCALE: 1/8" = 1'-0"



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