

RMF PROJECT NUMBER

819140.A0

FINE ARTS BUILDING

SWITCHGEAR REPLACEMENT

BUILDING NUMBER:

0320

BUILDING CODE:

FA

PREPARED FOR

NORTHERN KENTUCKY UNIVERSITY

HIGHLAND HEIGHTS, KENTUCKY

OPERATIONS AND MAINTENANCE

BID DOCUMENTS

DRAWING NO.	TITLE
E0.01	ELECTRICAL LEGENDS & ABBREVIATIONS
E1.01	ELECTRICAL FLOOR PLAN – DEMOLITION
E2.01	ELECTRICAL FLOOR PLAN – NEW WORK
E4.01	ONE LINE DIAGRAM – DEMOLITION
E5.01	ONE LINE DIAGRAM – NEW WORK
E5.02	CAMPUS POWER RISER DIAGRAM
E6.01	ELECTRICAL SWITCHBOARD ELEVATION

PROJECT PHASE	PROJECT NAME	PROJECT NUMBER
BID DOCUMENTS	FINE ARTS BUILDING SWITCHGEAR REPLACEMENT	AE-42-20
ISSUE DATE	PRIMARY ASSOCIATE	NKU PM
7/15/2019	RMF ENGINEERING, INC.	ROBERT FOX



PREPARED BY

RMF ENGINEERING, INC.

250 GRANDVIEW DRIVE

SUITE 515

FORT MITCHELL, KY 41017

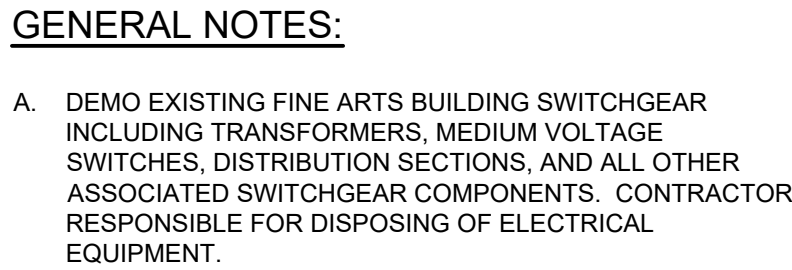
PHONE: 800.938.5760

www.rmf.com

PROJECT ENGINEERS




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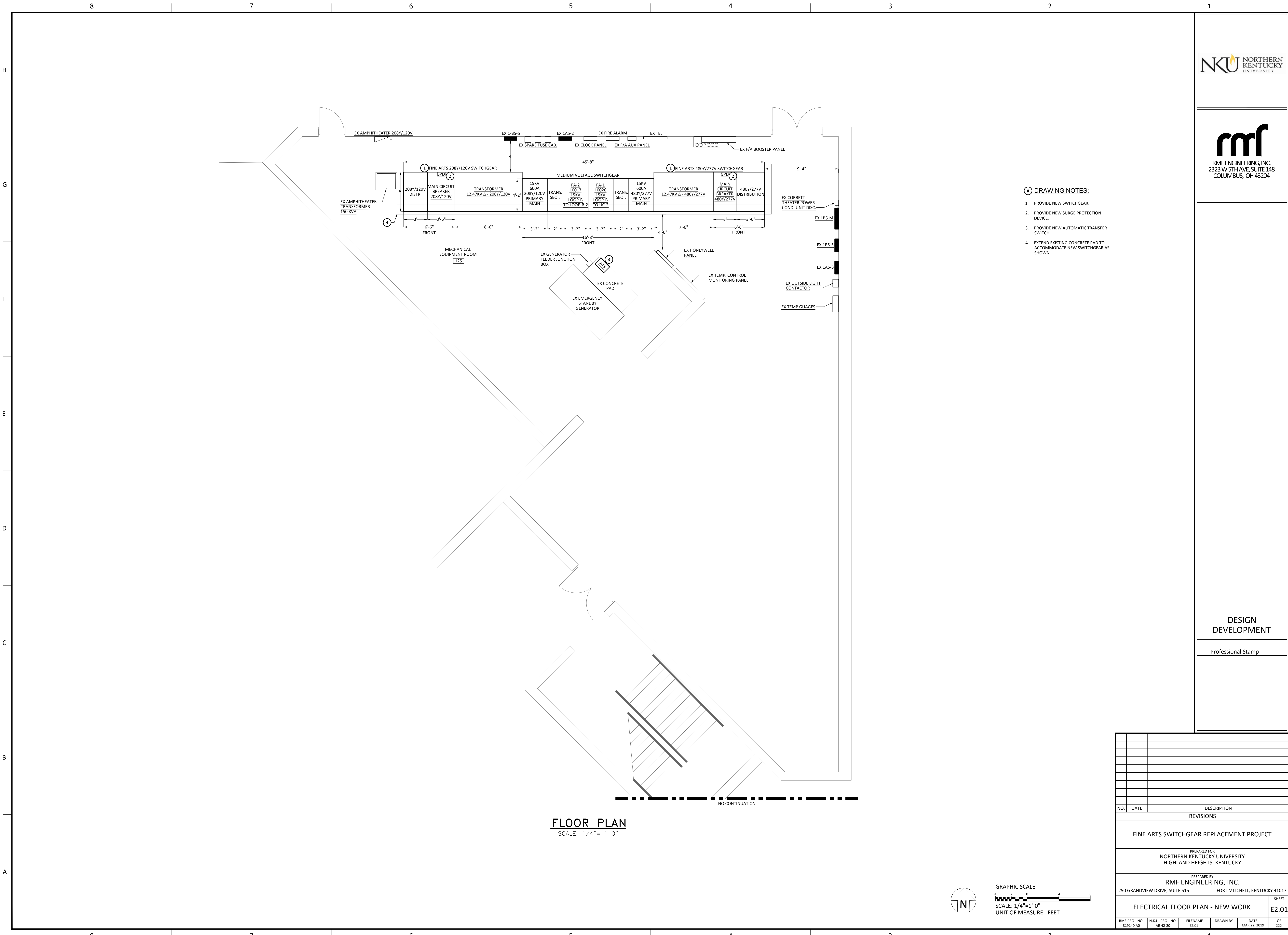
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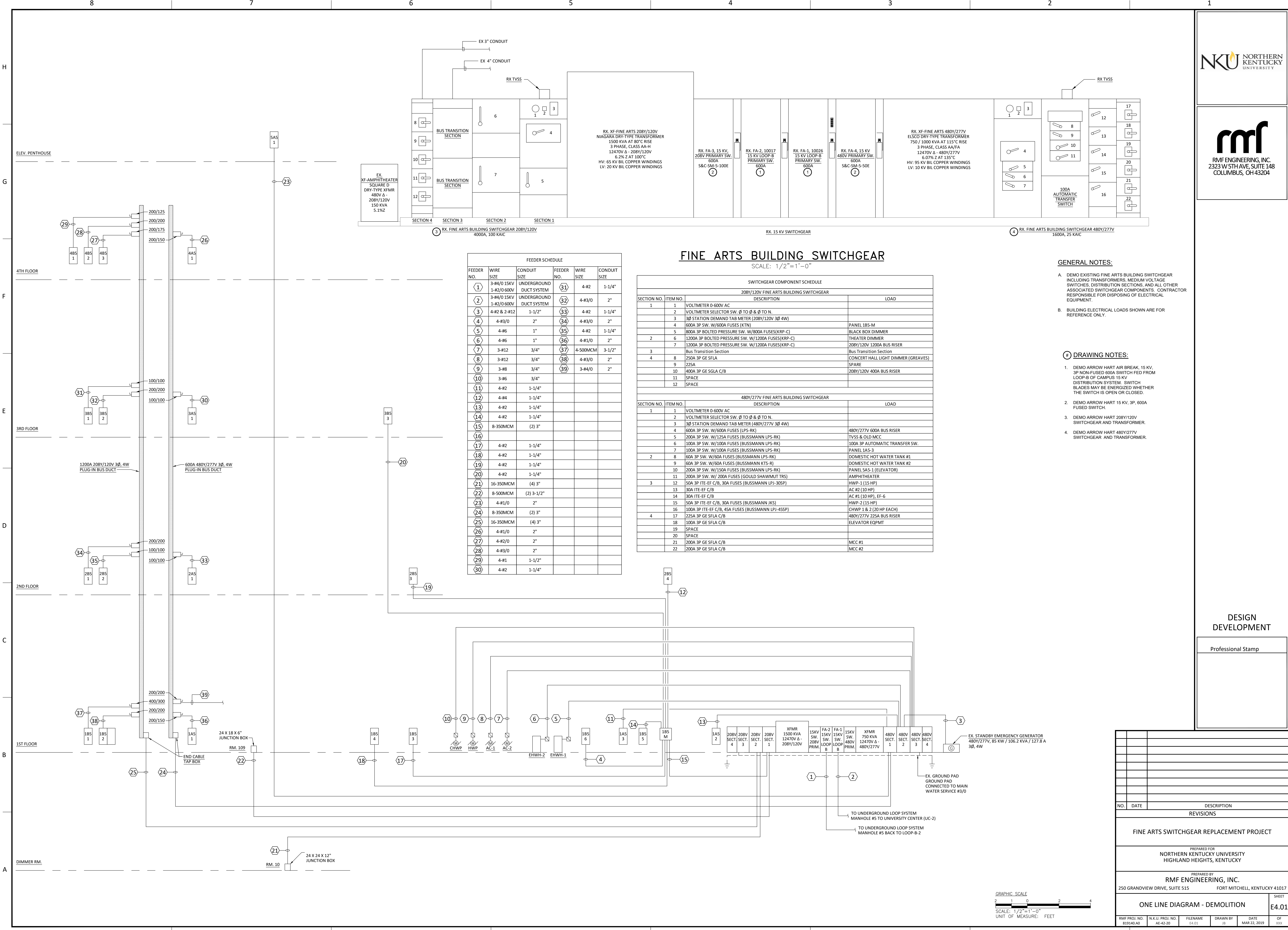
GRAPHIC SCALE



SCALE: 1/4"=1'-0"
UNIT OF MEASURE: FEET

No.	DATE	DESCRIPTION							
REVISIONS									
FINE ARTS SWITCHGEAR REPLACEMENT PROJECT									
PREPARED FOR NORTHERN KENTUCKY UNIVERSITY HIGHLAND HEIGHTS, KENTUCKY									
PREPARED BY RMF ENGINEERING, INC. 250 GRANDVIEW DRIVE, SUITE 515 FORT MITCHELL, KENTUCKY 41017									
ELECTRICAL FLOOR PLAN - DEMOLITION									SHEET E1.01
RMF PROJ. NO. 819140.A0	N.K.U. PROJ. NO. AE-42-20	FILENAME E1.D1	DRAWN BY -	DATE MAR 22, 2019					OF XXX





FINE ARTS BUILDING SWITCHGEAR

SCALE: 1/2"=1'-0"

FEEDER SCHEDULE					
FEEDER NO.	WIRE SIZE	CONDUIT SIZE	FEEDER NO.	WIRE SIZE	CONDUIT SIZE
1	3-#4/0 15KV 1-#2/0 600V	UNDERGROUND DUCT SYSTEM	31	4-#2	1-1/4"
2	3-#4/0 15KV 1-#2/0 600V	UNDERGROUND DUCT SYSTEM	32	4-#3/0	2"
3	4-#2 & 2-#12	1-1/2"	33	4-#2	1-1/4"
4	4-#3/0	2"	34	4-#3/0	2"
5	4-#6	1"	35	4-#2	1-1/4"
6	4-#6	1"	36	4-#1/0	2"
7	3-#12	3/4"	37	4-500MCM	3-1/2"
8	3-#12	3/4"	38	4-#3/0	2"
9	3-#8	3/4"	39	3-#4/0	2"
10	3-#6	3/4"			
11	4-#2	1-1/4"			
12	4-#4	1-1/4"			
13	4-#2	1-1/4"			
14	4-#2	1-1/4"			
15	8-350MCM	(2) 3"			
16					
17	4-#2	1-1/4"			
18	4-#2	1-1/4"			
19	4-#2	1-1/4"			
20	4-#2	1-1/4"			
21	16-350MCM	(4) 3"			
22	8-500MCM	(2) 3-1/2"			
23	4-#1/0	2"			
24	8-350MCM	(2) 3"			
25	16-350MCM	(4) 3"			
26	4-#1/0	2"			
27	4-#2/0	2"			
28	4-#3/0	2"			
29	4-#1	1-1/2"			
30	4-#2	1-1/4"			

SWITCHGEAR COMPONENT SCHEDULE		
208Y/120V FINE ARTS BUILDING SWITCHGEAR		
SECTION NO.	ITEM NO.	DESCRIPTION
1	1	VOLTMETER 0-600V AC
	2	VOLTMETER SELECTOR SW. Ø TO Ø & Ø TO N.
	3	3Ø STATION DEMAND TAB METER (208Y/120V 3Ø 4W)
	4	600A 3P SW. W/600A FUSES (KTN)
	5	800A 3P BOLTED PRESSURE SW. W/800A FUSES(KRP-C)
	6	1200A 3P BOLTED PRESSURE SW. W/1200A FUSES(KRP-C)
	7	1200A 3P BOLTED PRESSURE SW. W/1200A FUSES(KRP-C)
	8	Bus Transition Section
	9	250A 3P GE SFLA
	10	225A
	11	400A 3P GE SFLA C/B
	12	SPACE
480Y/277V FINE ARTS BUILDING SWITCHGEAR		
SECTION NO.	ITEM NO.	DESCRIPTION
1	1	VOLTMETER 0-600V AC
	2	VOLTMETER SELECTOR SW. Ø TO Ø & Ø TO N.
	3	3Ø STATION DEMAND TAB METER (480Y/277V 3Ø 4W)
	4	600A 3P SW. W/600A FUSES (LPS-RK)
	5	200A 3P SW. W/175A FUSES (BUSSMANN LPS-RK)
	6	100A 3P SW. W/100A FUSES (BUSSMANN LPS-RK)
	7	100A 3P SW. W/100A FUSES (BUSSMANN LPS-RK)
	8	60A 3P SW. W/60A FUSES (BUSSMANN LPS-RK)
	9	60A 3P SW. W/60A FUSES (BUSSMANN KTS-R)
	10	200A 3P SW. W/150A FUSES (BUSSMANN LPS-RK)
	11	200A 3P SW. W/200A FUSES (GOULD SHAWMUT TRS)
	12	50A 3P ITE-EF C/B, 30A FUSES (BUSSMANN LPJ-30SP)
2	13	30A ITE-EF C/B
	14	30A ITE-EF C/B
	15	50A 3P ITE-EF C/B, 30A FUSES (BUSSMANN JKS)
	16	100A 3P ITE-EF C/B, 45A FUSES (BUSSMANN LPJ-45SP)
	17	225A 3P GE SFLA C/B
	18	100A 3P GE SFLA C/B
	19	SPACE
	20	SPACE
	21	200A 3P GE SFLA C/B
	22	200A 3P GE SFLA C/B

GENERAL NOTES:

- A. DEMO EXISTING FINE ARTS BUILDING SWITCHGEAR INCLUDING TRANSFORMERS, MEDIUM VOLTAGE SWITCHES, DISTRIBUTION SECTIONS, AND ALL OTHER ASSOCIATED SWITCHGEAR COMPONENTS. CONTRACTOR RESPONSIBLE FOR DISPOSING OF ELECTRICAL EQUIPMENT.
- B. BUILDING ELECTRICAL LOADS SHOWN ARE FOR REFERENCE ONLY.

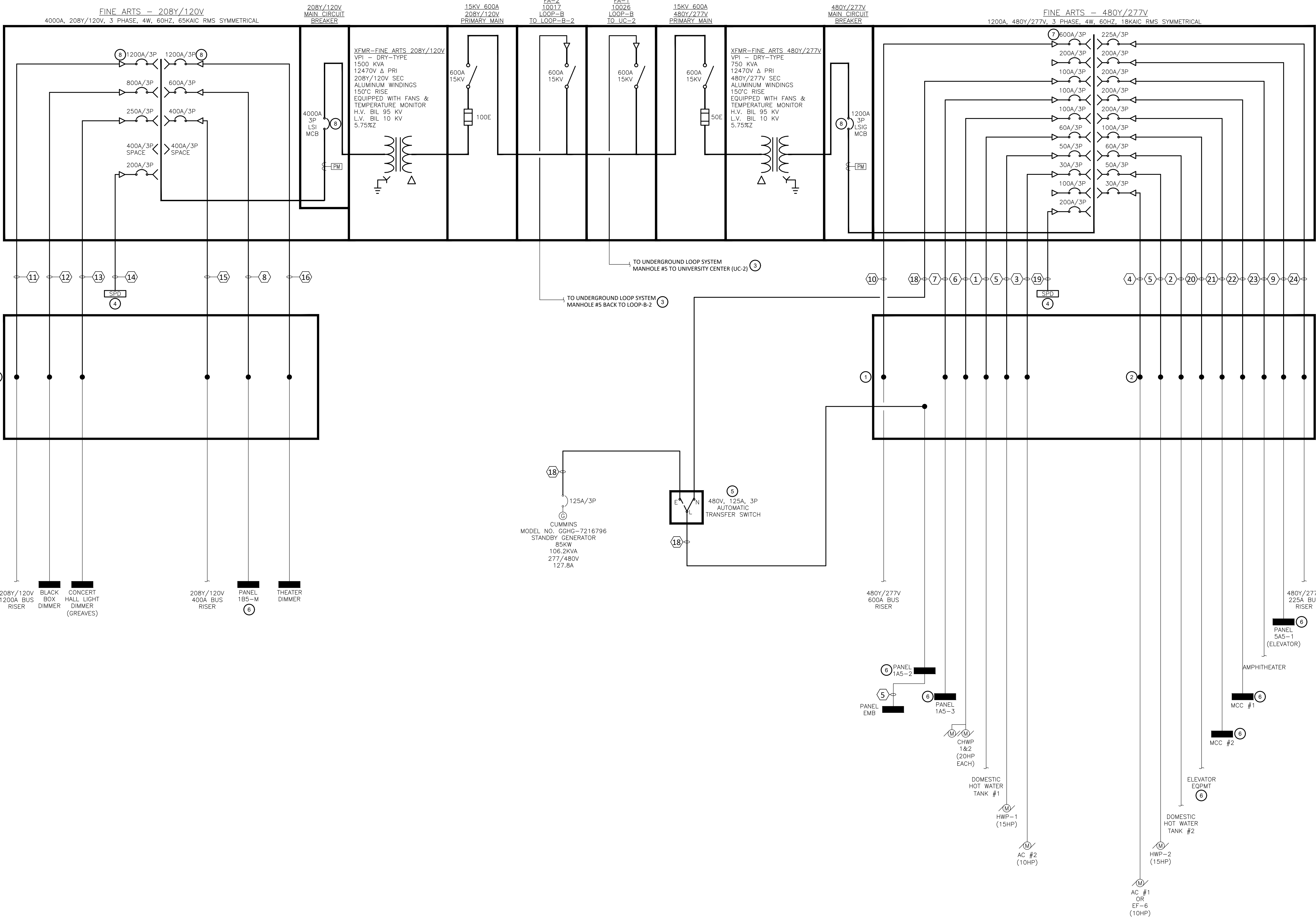
DRAWING NOTES:

1. DEMO ARROW HART AIR BREAK, 15 KV, 3P NON-FUSED 600A SWITCH FED FROM LOOP-B OF CAMPUS 15 KV DISTRIBUTION SYSTEM. SWITCH BLADES MAY BE ENERGIZED WHETHER THE SWITCH IS OPEN OR CLOSED.
2. DEMO ARROW HART 15 KV, 3P, 600A FUSED SWITCH.
3. DEMO ARROW HART 208Y/120V SWITCHGEAR AND TRANSFORMER.
4. DEMO ARROW HART 480Y/277V SWITCHGEAR AND TRANSFORMER.

DESIGN DEVELOPMENT

Professional Stamp

NO.	DATE	DESCRIPTION
REVISIONS		
FINE ARTS SWITCHGEAR REPLACEMENT PROJECT		
PREPARED FOR NORTHERN KENTUCKY UNIVERSITY HIGHLAND HEIGHTS, KENTUCKY		
PREPARED BY RMF ENGINEERING, INC. 250 GRANDVIEW DRIVE, SUITE 515 FORT MITCHELL, KENTUCKY 41017		
ONE LINE DIAGRAM - DEMOLITION		SHEET E4.01
RMF PROJ. NO. 819140.A0	N.K.U. PROJ. NO. AE-42-20	FILENAME E4.01
DRAWN BY JB	DATE MAR.22, 2019	OF XXX



COPPER FEEDER SCHEDULE		
FEEDER NO.	WIRE SIZE	CONDUIT SIZE
1	4-#6 & 1-#10 G.	1"
2	4-#6 & 1-#10 G.	1"
3	3-#10 & 1-#10 G.	3/4"
4	3-#10 & 1-#10 G.	3/4"
5	3-#8 & 1-#10 G.	3/4"
6	3-#2 & 1-#8 G.	1-1/4"
7	3-#2 & 1-#8 G.	1-1/4"
8	(2) SETS OF 4-350 KCMIL & 1-#3/0 G.	(2) 3"
9	4-#1/0 & 1-#6 G.	2"
10	(2) SETS OF 4-350 KCMIL & 1-#3/0 G.	(2) 3"
11	(4) SETS OF 4-350 KCMIL & 1-#3/0 G.	(4) 3"
12	(2) SETS OF 4-500 KCMIL & 1-#1/0 G.	(2) 4"
13	4-250 KCMIL & 1-#4 G.	2-1/2"
14	3-#3/0 & 1-#6 G.	2"
15	4-500 KCMIL & 1-#3 G.	4"
16	(4) SETS OF 4-350 KCMIL & 1-#3/0 G.	(4) 3"
17	NOT USED	
18	4-#2 & 1-#8 G.	1-1/4"
19	3-#3/0 & 1-#6 G.	2"
20	3-#2 & 1-#8 G.	1-1/4"
21	3-#3/0 & 1-#6 G.	2"
22	3-#3/0 & 1-#6 G.	2"
23	3-#3/0 & 1-#6 G.	2"
24	4-250 KCMIL & 1-#4 G.	2-1/2"

GENERAL NOTES:

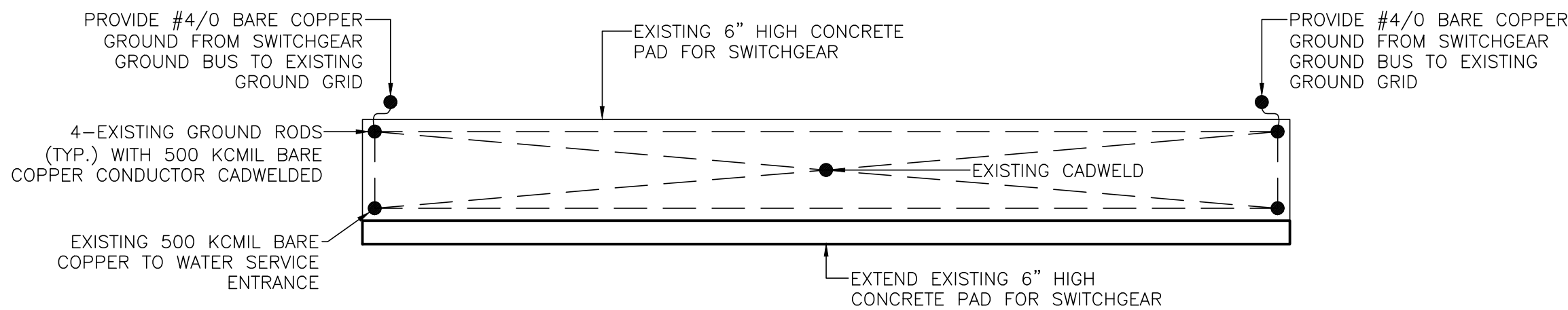
- A. PROVIDE FINE ARTS BUILDING SWITCHGEAR INCLUDING TRANSFORMERS, MEDIUM VOLTAGE SWITCHES, DISTRIBUTION SECTIONS, AND ALL OTHER ASSOCIATED SWITCHGEAR COMPONENTS. TIE IN TO EXISTING GROUNDING SYSTEM.
- B. BUILDING ELECTRICAL LOADS SHOWN ARE FOR REFERENCE ONLY.
- C. NEW CONDUCTORS SHALL BE COPPER. SEE SPECIFICATIONS FOR DETAILS.
- D. PROTECTIVE DEVICE COORDINATION AND SHORT CIRCUIT STUDIES SHALL BE PERFORMED IN CONJUNCTION WITH THE ENGINEER. SWITCHGEAR MANUFACTURER SHALL CONSULT WITH ENGINEER ON SELECTION OF CIRCUIT BREAKERS TO BALANCE PROTECTIVE DEVICE COORDINATION, ARC FLASH VALUES, AND COST. FINAL PROTECTIVE DEVICE COORDINATION, SHORT CIRCUIT, AND ARC FLASH STUDIES INCLUDING ARC FLASH LABELS SHALL BE SUPPLIED BY THE ENGINEER. ALL OTHER LABELS AND WARNING SIGNAGE AS REQUIRED BY THE NATIONAL ELECTRICAL CODE (NEC), NFPA, AND OSHA SHALL BE SUPPLIED BY THE MANUFACTURER.
- E. ENGINEER TO SET ALL ADJUSTABLE CIRCUIT BREAKERS PRIOR TO SWITCHGEAR BEING ENERGIZED.
- F. SERVICE EQUIPMENT SHALL BE LABELED WITH THE MAXIMUM AVAILABLE FAULT CURRENT.
- G. PROVIDE ENGRAVED LABELS FOR ALL POWER DISTRIBUTION EQUIPMENT PROVIDED OR MODIFIED IN THIS PROJECT. LABELS SHALL BE PROVIDED PER DRAWINGS AND SPECIFICATIONS.

DRAWING NOTES:

1. PROVIDE JUNCTION BOXES AS REQUIRED TO INTERCEPT EXISTING CONDUCTORS.
2. SPLICE EXISTING CONDUCTORS (TYP).
3. SEE E5.02 FOR CONTINUATION.
4. PROVIDE NEW SURGE PROTECTION DEVICE.
5. PROVIDE NEW AUTOMATIC TRANSFER SWITCH.
6. PROVIDE TEMPORARY POWER TO FEED EXISTING LOAD DURING SHUTDOWN.
7. PROVIDE CIRCUIT BREAKER WITH GROUND-FAULT PROTECTION.
8. PROVIDE CIRCUIT BREAKER WITH ENERGY REDUCTION MAINTENANCE SWITCH.

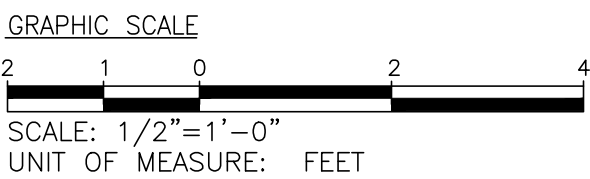
FINE ARTS BUILDING SWITCHGEAR

NOT TO SCALE

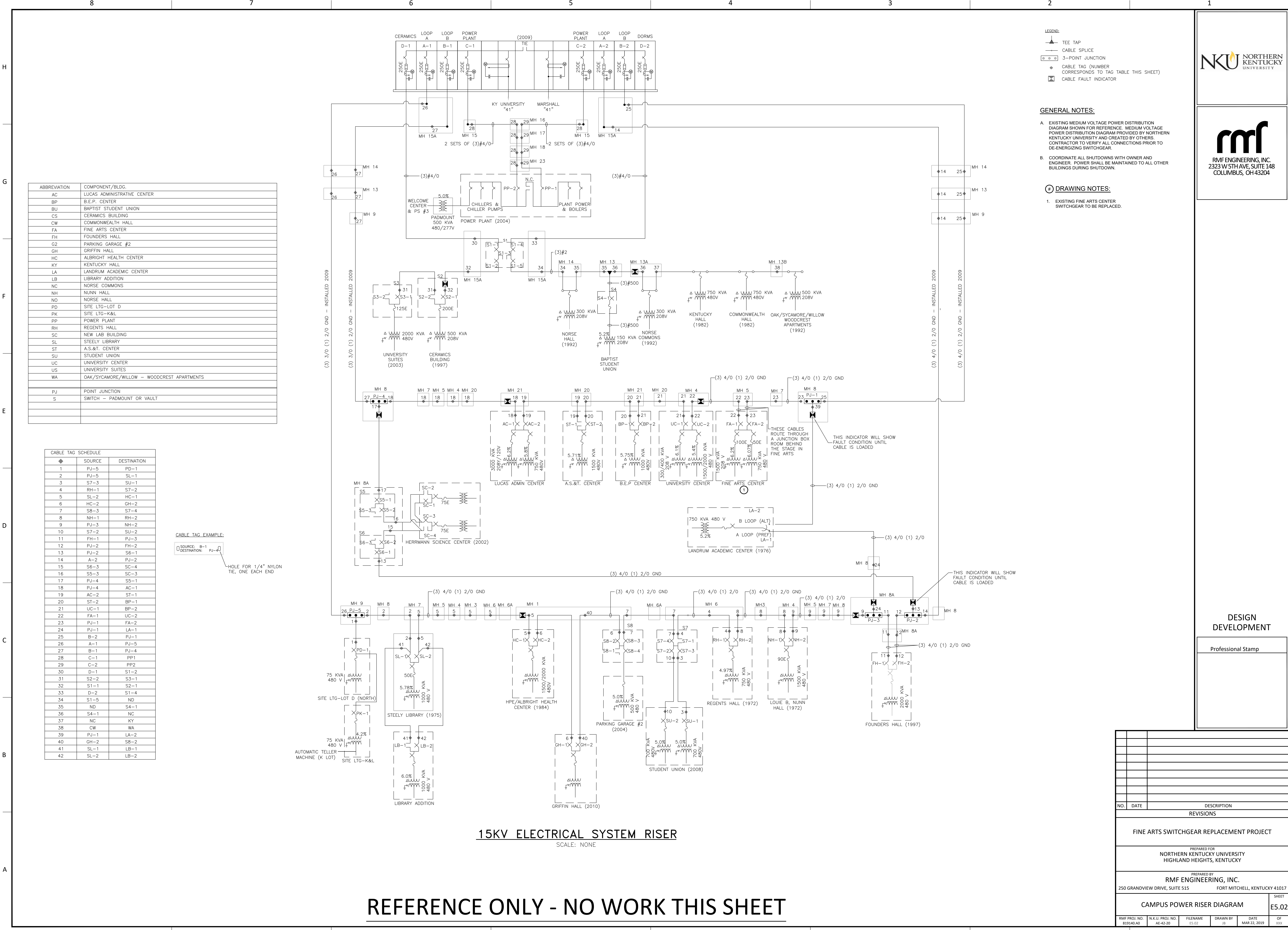


DETAIL OF SWITCHGEAR PAD & GROUNDING

NOT TO SCALE



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PREPARED BY RMF ENGINEERING, INC. 250 GRANDVIEW DRIVE, SUITE 515 FORT MITCHELL, KENTUCKY 41017		
ONE LINE DIAGRAM - NEW WORK		SHEET E5.01
RMF PROJ. NO. 819140.A0	N.K.U. PROJ. NO. AE-42-20	FILENAME E5.01
DRAWN BY JB	DATE MAR 22, 2019	OF XXX



ABBREVIATION	COMPONENT/BLDG.
AC	LUCAS ADMINISTRATIVE CENTER
BP	B.E.P. CENTER
BU	BAPTIST STUDENT UNION
CS	CERAMICS BUILDING
CW	COMMONWEALTH HALL
FA	FINE ARTS CENTER
FH	FOUNDERS HALL
G2	PARKING GARAGE #2
GH	GRIFFIN HALL
HC	ALBRIGHT HEALTH CENTER
KY	KENTUCKY HALL
LA	LANDRUM ACADEMIC CENTER
LB	LIBRARY ADDITION
NC	NORSE COMMONS
NH	NUNN HALL
NO	NORSE HALL
PD	SITE LTG-LT D
PK	SITE LTG-K&L
PP	POWER PLANT
RH	REGENTS HALL
SC	NEW LAB BUILDING
SL	STEELY LIBRARY
ST	A.S.&T. CENTER
SU	STUDENT UNION
UC	UNIVERSITY CENTER
US	UNIVERSITY SUITES
WA	OAK/SYCAMORE/WILLOW - WOODCREST APARTMENTS
PJ	POINT JUNCTION
S	SWITCH - PADMOUNT OR VAULT

CABLE TAG SCHEDULE	SOURCE	DESTINATION
1	PJ-5	PD-1
2	PJ-5	SL-1
3	S7-3	SU-1
4	RH-1	S7-2
5	SL-2	HC-1
6	HC-2	GH-2
7	S8-3	S7-4
8	NH-1	RH-2
9	PJ-3	NH-2
10	S7-2	SU-2
11	FH-1	PJ-3
12	PJ-2	FH-2
13	PJ-2	S6-1
14	A-2	PJ-2
15	S6-3	SC-4
16	S5-3	SC-3
17	PJ-4	S5-1
18	PJ-4	AC-1
19	AC-2	ST-1
20	ST-2	BP-1
21	UC-1	BP-2
22	FA-1	UC-2
23	PJ-1	FA-2
24	PJ-1	LA-1
25	B-2	PJ-1
26	A-1	PJ-5
27	B-1	PJ-4
28	C-1	PP1
29	C-2	PP2
30	D-1	S1-2
31	S2-2	S3-1
32	S1-1	S2-1
33	D-2	S1-4
34	S1-5	ND
35	ND	S4-1
36	S4-1	NC
37	NC	KY
38	CW	WA
39	PJ-1	LA-2
40	GH-2	S8-2
41	SL-1	LB-1
42	SL-2	LB-2

CABLE TAG EXAMPLE:
SOURCE: 8-1
DESTINATION: PJ-4
HOLE FOR 1/4" NYLON TIE, ONE EACH END

15KV ELECTRICAL SYSTEM RISER

SCALE: NONE

REFERENCE ONLY - NO WORK THIS SHEET

- LEGEND:
- TEE TAP
 - CABLE SPLICE
 - 3-POINT JUNCTION
 - CABLE TAG (NUMBER CORRESPONDS TO TAG TABLE THIS SHEET)
 - CABLE FAULT INDICATOR

GENERAL NOTES:

- EXISTING MEDIUM VOLTAGE POWER DISTRIBUTION DIAGRAM SHOWN FOR REFERENCE. MEDIUM VOLTAGE POWER DISTRIBUTION DIAGRAM PROVIDED BY NORTHERN KENTUCKY UNIVERSITY AND CREATED BY OTHERS. CONTRACTOR TO VERIFY ALL CONNECTIONS PRIOR TO DE-ENERGIZING SWITCHGEAR.
- COORDINATE ALL SHUTDOWNS WITH OWNER AND ENGINEER. POWER SHALL BE MAINTAINED TO ALL OTHER BUILDINGS DURING SHUTDOWN.

DRAWING NOTES:

- EXISTING FINE ARTS CENTER SWITCHGEAR TO BE REPLACED.

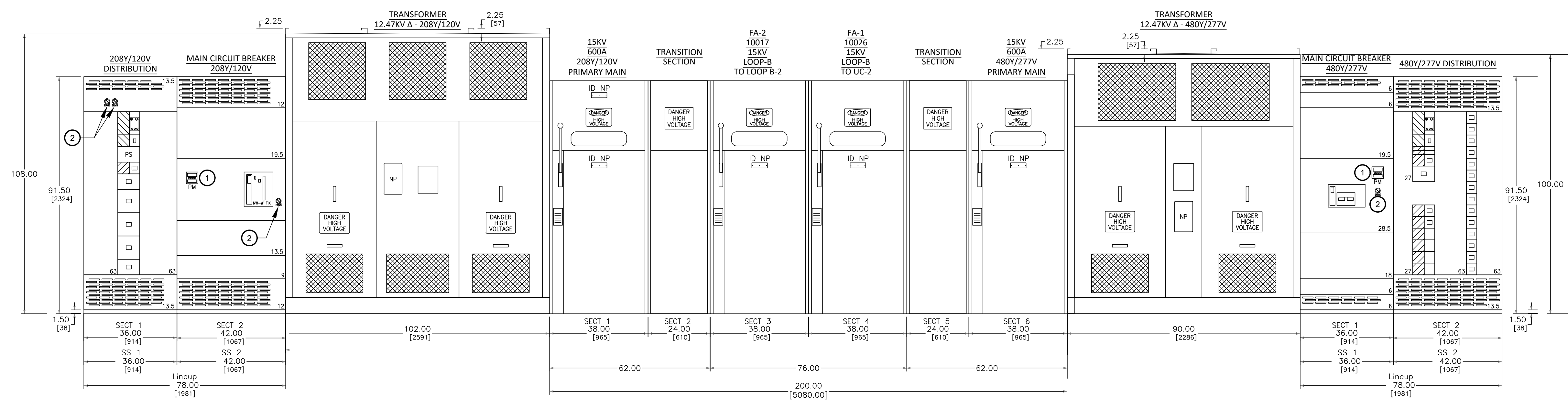


RMF ENGINEERING, INC.
2323 W 5TH AVE, SUITE 148
COLUMBUS, OH 43204

DESIGN DEVELOPMENT

Professional Stamp

NO.	DATE	DESCRIPTION
REVISIONS		
FINE ARTS SWITCHGEAR REPLACEMENT PROJECT		
PREPARED FOR NORTHERN KENTUCKY UNIVERSITY HIGHLAND HEIGHTS, KENTUCKY		
PREPARED BY RMF ENGINEERING, INC. 250 GRANDVIEW DRIVE, SUITE 515 FORT MITCHELL, KENTUCKY 41017		
CAMPUS POWER RISER DIAGRAM		SHEET E5.02
RMF PROJ. NO. 819140.A0	N.K.U. PROJ. NO. AE-42-20	FILENAME E5.02
DRAWN BY JB	DATE MAR. 22, 2019	OF XXX



SWITCHBOARD ELEVATION

SCALE: 1/2"=1'-0"

GENERAL NOTES:

- A. COORDINATE EXACT DIMENSIONS WITH MANUFACTURER. DIMENSIONS SHOWN ARE IN INCHES AND CENTIMETERS IN BRACKETS.
- B. BASIS OF DESIGN IS SCHNEIDER ELECTRIC - SQUARE D WITH QED-2 SWITCHBOARDS, TRANSFORMERS, AND METAL ENCLOSED SWITCHGEAR WITH TYPE HVL SWITCHES.

⑧ DRAWING NOTES:

1. PROVIDE VERIS INDUSTRIES ELECTRICAL METER.
2. PROVIDE ENERGY REDUCTION MAINTENANCE SWITCH.



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COLUMBUS, OH 43204

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