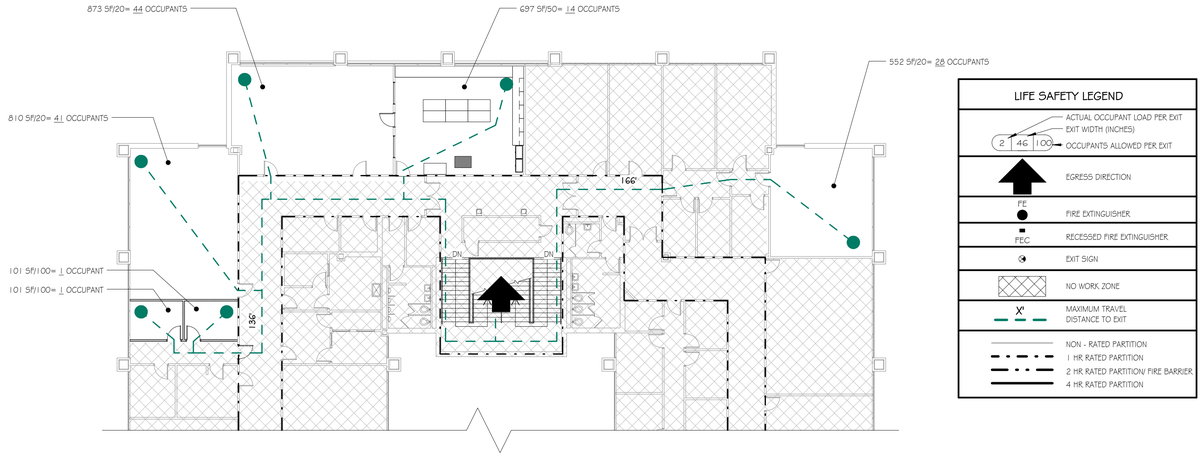
USC Aiken
Engineering Renovations

471 University Parkway
Aiken, SC 29801

for

UNIVERSITY OF SOUTH CAROLINA AIKEN

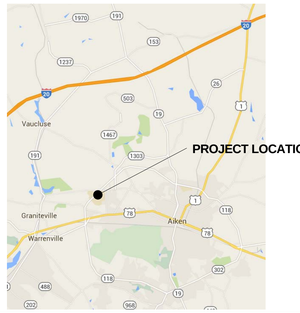


1 LIFE SAFETY PLAN
1/16" = 1'-0"

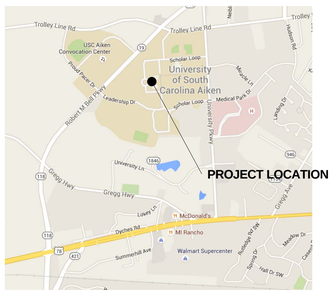
PROJECT TEAM

ARCHITECTS	GOODWYN MILLS AND CAWOOD, INC.
INTERIOR DESIGNERS	GOODWYN MILLS AND CAWOOD, INC.
ELECTRICAL ENGINEERS	ELECTRICAL DESIGN CONSULTANTS, INC.

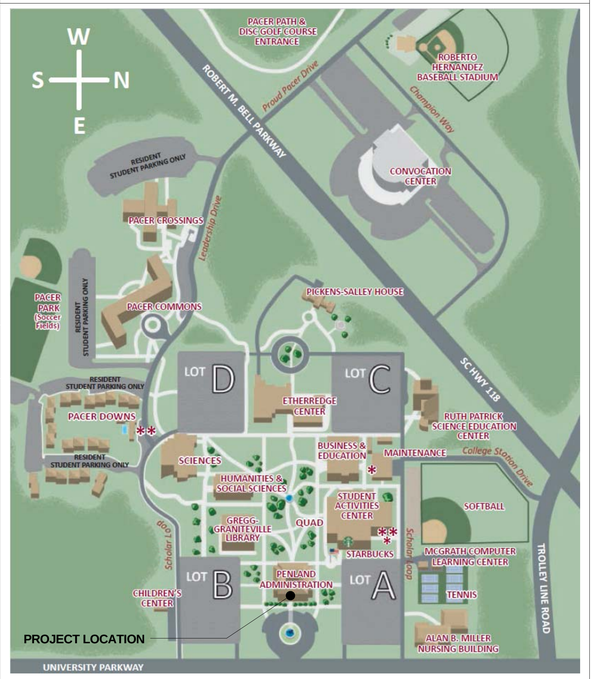
VICINITY MAP



LOCATION MAP



CAMPUS MAP



LIFE SAFETY, BUILDING CODE, AND SHEET INFORMATION

BUILDING CODE SUMMARY

NAME OF PROJECT: USC AIKEN ENGINEERING RENOVATIONS
ADDRESS: 471 UNIVERSITY PARKWAY, AIKEN, SC 29801 (PENLAND BUILDING)
PROPOSED USE: BUSINESS
OWNER OR AUTHORIZED AGENT: BRIAN ENTER PHONE # (803)641-3254
OWNED BY: ☐ CITY/COUNTY ☐ PRIVATE ■ STATE
CODE ENFORCEMENT JURISDICTION: ☐ CITY ☐ COUNTY ■ OSE

LEAD DESIGN PROFESSIONAL:

POSITION	FIRM	NAME	PHONE #	E-MAIL
ARCHITECT	GOODWYN, MILLS & CAWOOD	MICHAEL KEESHEN	864.527.0460	mike.keeshen@gmcnetwork.com
PROJECT MGR.	GOODWYN, MILLS & CAWOOD	MATTHEW KING	864.527.0460	matthew.king@gmcnetwork.com

YEAR EDITION OF CODE: 2012 INTERNATIONAL BUILDING CODE

☐ NEW CONSTRUCTION ☐ RENOVATION (EXISTING BLDG.) ■ UPFIT ☐ ALTERATION

BUILDING DATA IBC

CONSTRUCTION TYPE: ■ II-B
SPRINKLERS: ■ NO ☐ YES
STANDPIPES: ■ NO ☐ YES
FIRE DISTRICT: ■ NO ☐ YES
BUILDING HEIGHT: 2 STORY/STORIES
MEZZANINE: ■ NO ☐ YES
HIGH RISE: ■ NO ☐ YES

GROSS BUILDING AREA (SQ. FT.):

FLOOR	EXISTING	NEW	RENO/ UPFIT
FIRST FLOOR	0	0	0
SECOND FLOOR	0	0	3134
TOTAL	0	0	3134

ALLOWABLE AREA

PRIMARY OCCUPANCY: ■ BUSINESS
MIXED OCCUPANCY: ■ NO

FIRE PROTECTION REQUIREMENTS

LIFE SAFETY PLAN SHEET #, IF PROVIDED A-001

LIFE SAFETY SYSTEM REQUIREMENTS

EMERGENCY LIGHTING: ☐ NO ■ YES
EXIT SIGNS: ☐ NO ■ YES
FIRE ALARM: ☐ NO ■ YES
SMOKE DETECTION SYSTEMS: ☐ NO ■ YES

EXIT REQUIREMENTS

NUMBER AND ARRANGEMENT OF EXITS

EXIT CORRIDORS ARE 1 HR. RATED AND SHALL REMAIN.
THE OCUPCANT LOAD WAS REDUCED IN ONE AREA AND UNCHANGED IN ALL OTHER AREAS.
NO CHANGES TO EXISTING EGRESS COMPONENTS.

INDEX OF DRAWINGS

STATE OF SOUTH CAROLINA — MICHAEL P. KEESHEN — No. 2657 — REGISTERED ARCHITECT

STATE OF SOUTH CAROLINA — GOODWYN, MILLS & CAWOOD, INC — GREENVILLE, SC — No. 01039 — REGISTERED ARCHITECT

5/25/2016 4:49:45 PM

GOODWYN | MILLS | CAWOOD
101 East Washington Street, Suite 200 | Greenville, SC 29601
Tel 864.527.0460 | GMCNETWORK.COM

ISSUE | DATE
Issue for Bid | 05/25/16
drawn by: JCB
checked by: MEK

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CP 50002895
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TITLE SHEET

A-001
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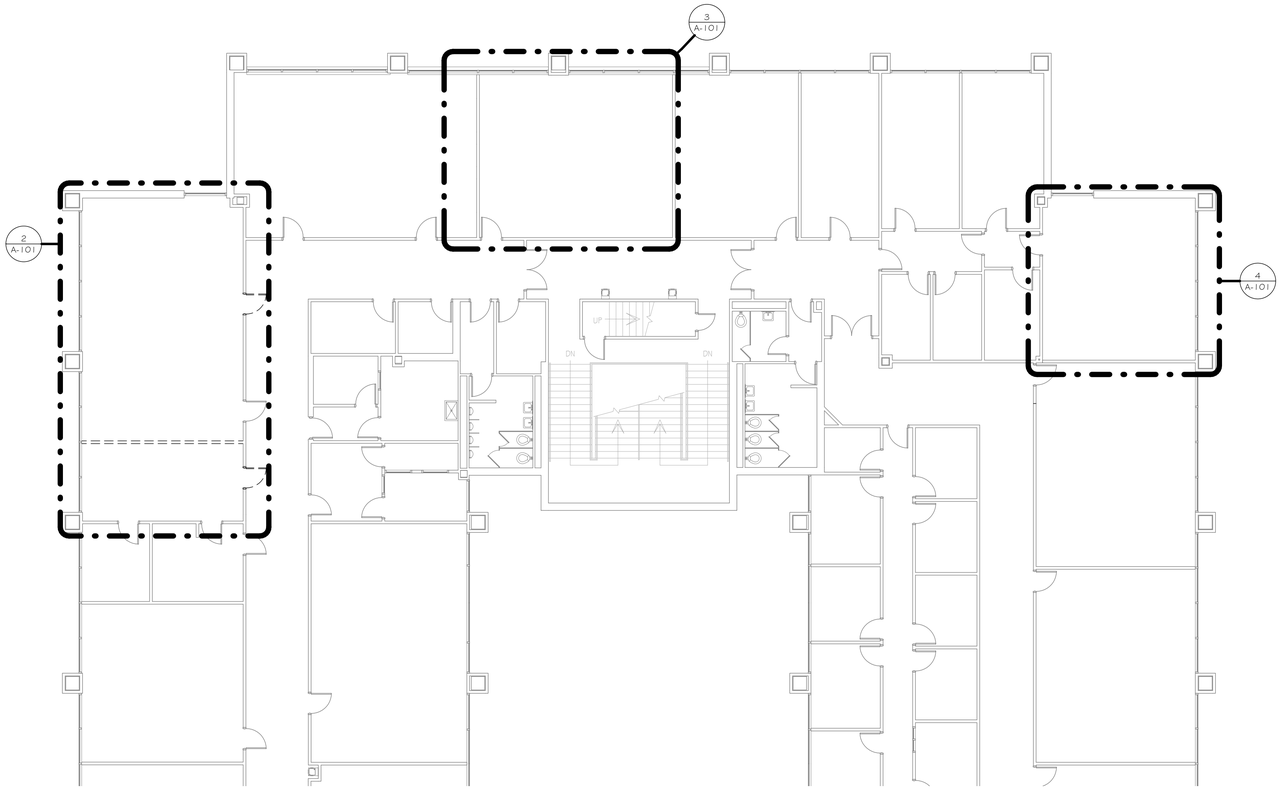
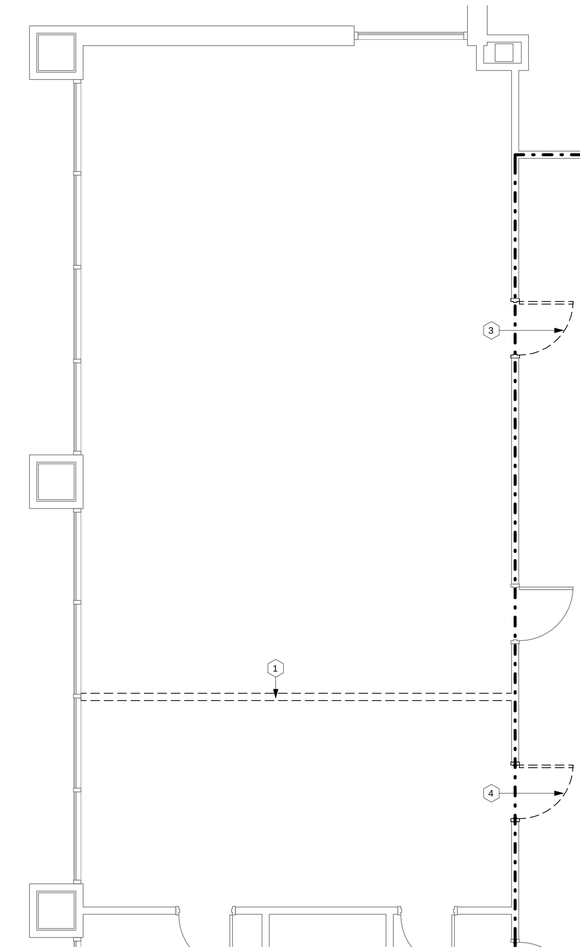
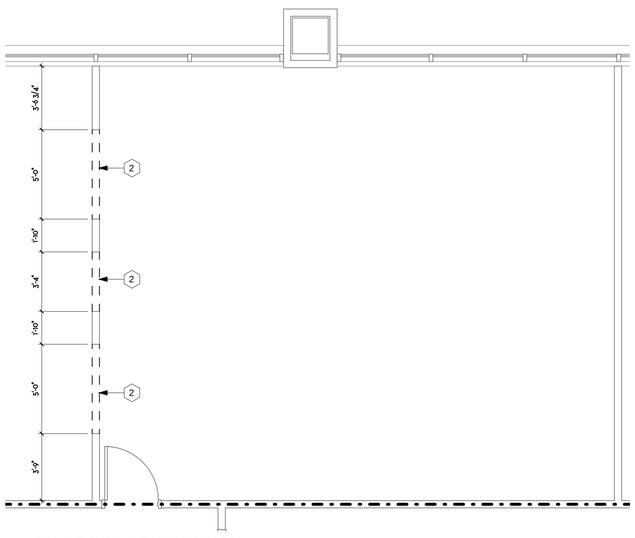


1 DEMOLITION REFERENCE FLOOR PLAN
1/32"=1'-0"



2 DEMOLITION PLAN - OFFICE AREA
1/4"=1'-0"



3 DEMOLITION PLAN - ENGINEERING AREA
1/4"=1'-0"

4 DEMOLITION PLAN -COMPUTER CLASSROOM
1/4"=1'-0"

DEMOLITION PLAN NOTES

1. DEMOLISH EXISTING WALL IN ITS ENTIRETY.
2. DEMOLISH PORTION OF EXISTING WALL FOR NEW DOOR OR WINDOW. VERIFY IN FIELD.
3. REMOVE DOOR AND FRAME AND TURN OVER TO OWNER.
4. REMOVE DOOR AND FRAME, SALVAGE DOOR AND FRAME TO REUSE IN NEW LOCATION.

STATE OF SOUTH CAROLINA
MICHAEL P. KESSLER
GOODWYN MILLS CAWOOD SC
No. 2657
REGISTERED ARCHITECT

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GREENVILLE, SC
No. 01039
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DEMOLITION PLANS

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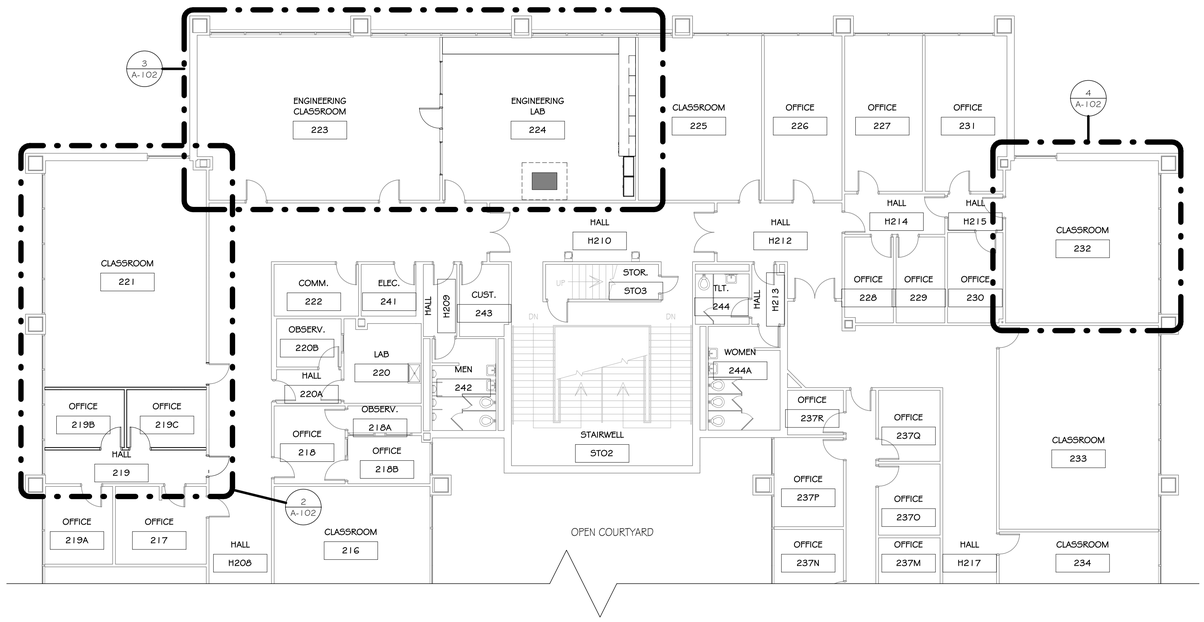
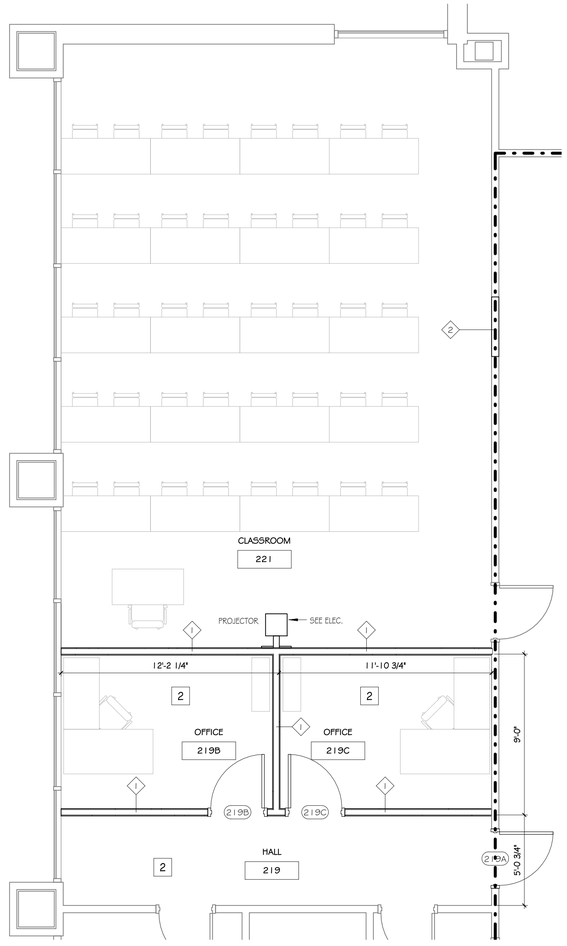
sheet of



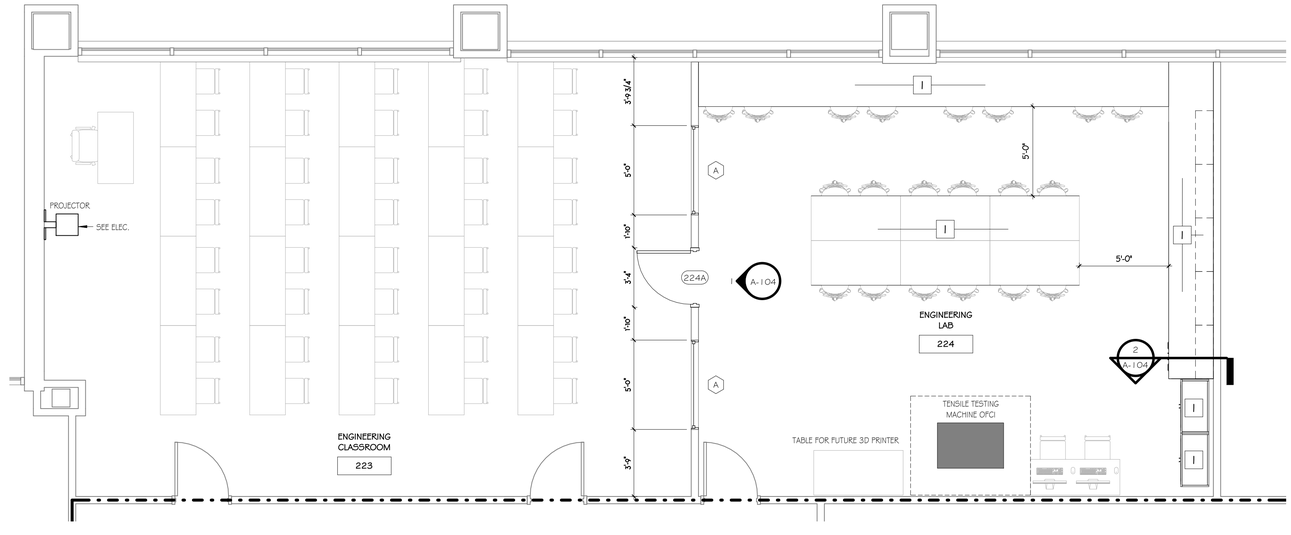
KEYED NOTES

1. REFER TO THE OWNER FURNISHED AND INSTALLED CASEWORK DOCUMENTS FOR SCOPE OF MILLWORK.
2. REMOVE ALL WAX FROM EXISTING VCT FLOORING BEFORE INSTALLING NEW CARPET

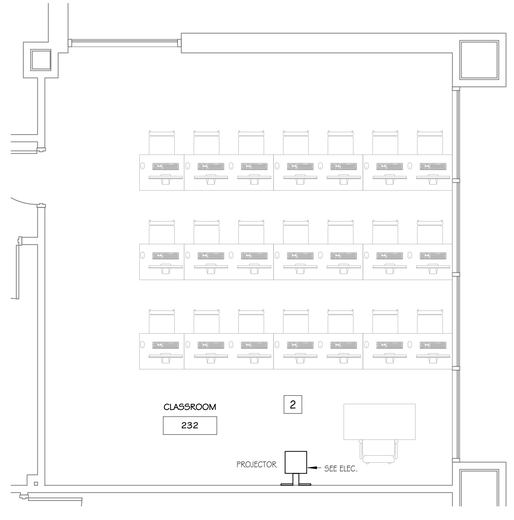
1 NEW REFERENCE FLOOR PLAN
1/32"=1'-0"



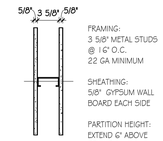
2 ENLARGED OFFICE AREA PLAN
1/4"=1'-0"



3 ENLARGED ENGINEERING AREA PLAN
1/4"=1'-0"



4 ENLARGED COMPUTER CLASSROOM PLAN
1/4"=1'-0"

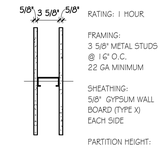


FRAMING:
3 5/8" METAL STUDS
@ 16" O.C.
22 GA MINIMUM

SHEATHING:
5/8" GYPSUM WALL
BOARD EACH SIDE

PARTITION HEIGHT:
EXTEND 6" ABOVE
CEILING

WALL TYPE 1



RATING: 1 HOUR

FRAMING:
3 5/8" METAL STUDS
@ 16" O.C.
22 GA MINIMUM

SHEATHING:
5/8" GYPSUM WALL
BOARD (TYPE X)
EACH SIDE

PARTITION HEIGHT:
HEIGHT REQUIRED
TO FILL PREVIOUS
DOOR OPENING

WALL TYPE 2

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FLOOR PLAN

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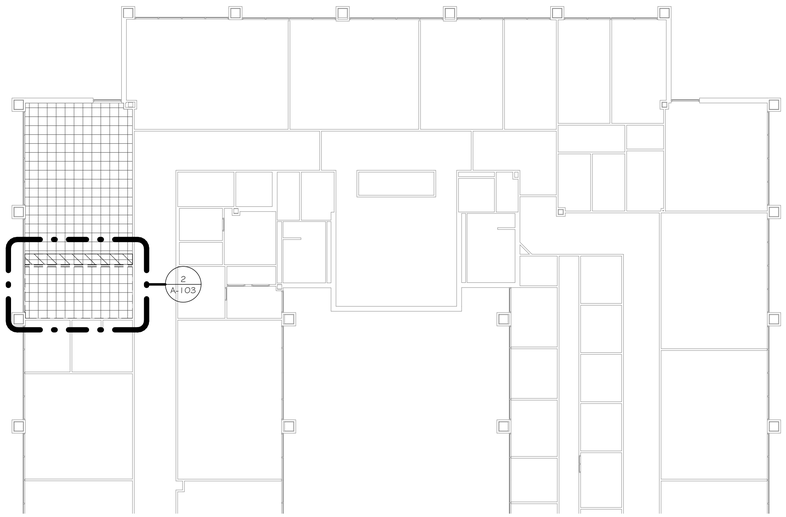
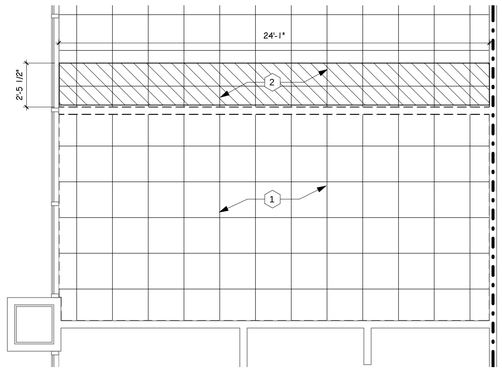


1 REFERENCE DEMOLITION REFLECTED CEILING PLAN
1/64"=1'-0"

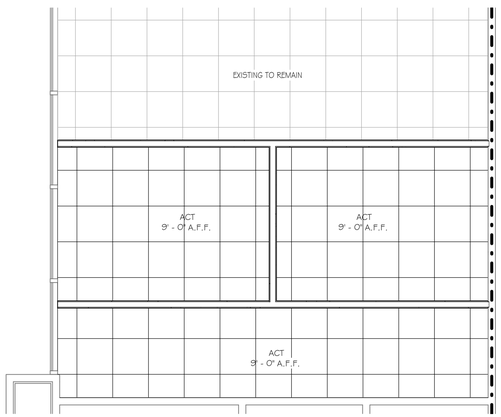


2 ENLARGED DEMOLITION REFLECTED CEILING PLAN - OFFICE AREA
1/4"=1'-0"

RCP DEMOLITION PLAN NOTES

1. DEMOLISH ACT CEILING
2. REWORK PORTION OF ACT CEILING GRID, TIE EXISTING CEILING INTO NEW WALL

3 REFERENCE REFLECTED CEILING PLAN
1/64"=1'-0"



4 ENLARGED REFLECTED CEILING PLAN - OFFICE AREA
1/4"=1'-0"

REFLECTED CEILING PLAN

GENERAL NOTES

1. INTERIOR CEILING HEIGHTS AS INDICATED ON THE REFLECTED CEILING PLANS.

2. REFER TO CONSTRUCTION FLOOR PLANS FOR REQUIRED COMPOSITION OF WALL CONSTRUCTION.

3. LOCATION OF LIGHTS, DIFFUSERS, AND RETURN AIR GRILLES TO BE COORDINATED BETWEEN REFLECTED CEILING PLANS & LIGHTING PLANS. FINAL LOCATION TO BE APPROVED BY ARCHITECT OR OWNER.

4. WHERE EXIT SIGNS ARE LOCATED ABOVE DOORWAYS, CENTER ABOUT DOOR.

REFLECTED CEILING PLAN LEGEND

CEILING FINISHES:

2'X2' LAY-IN ACOUSTICAL CEILING & GRID SYSTEM

LIGHTING & DEVICES:

REFER TO ELECTRICAL DOCUMENTS

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REFLECTED CEILING PLANS

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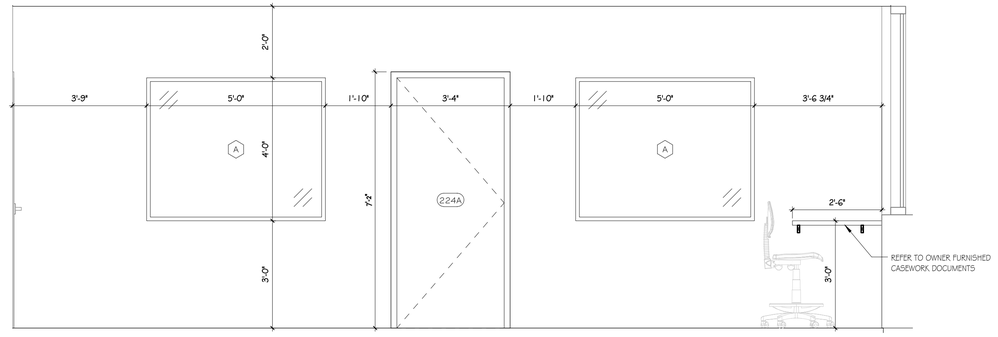
ROOM FINISH SCHEDULE

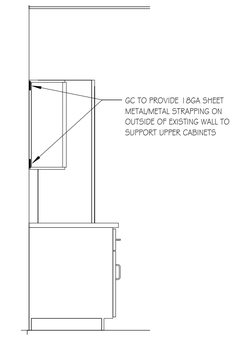
Level	Room Number	Room Name	Floors		Walls				Ceilings	Comments
			Floor Finish	Base Finish	N Wall Finish	E Wall Finish	S Wall Finish	W Wall Finish	Ceiling Material	
Level 1										
Level 1	219	HALL	CPT	RB	PNT-1	PNT-1	PNT-1	PNT-1	ACT	REMOVE ALL WAX FROM EXISTING VCT BEFORE INSTALLING CARPET
Level 1	219B	OFFICE	CPT	RB	PNT-1	PNT-1	PNT-1	PNT-1	ACT	REMOVE ALL WAX FROM EXISTING VCT BEFORE INSTALLING CARPET
Level 1	219C	OFFICE	CPT	RB	PNT-1	PNT-1	PNT-1	PNT-1	ACT	REMOVE ALL WAX FROM EXISTING VCT BEFORE INSTALLING CARPET
Level 1	221	CLASSROOM	ETR	ETR	PNT-1	PNT-1	PNT-1	PNT-1	ETR	
Level 1	223	ENGINEERING CLASSROOM	ETR	ETR	PNT-1	PNT-1	PNT-1	PNT-1	ETR	
Level 1	224	ENGINEERING LAB	ETR VCT	RB	PNT-1	PNT-1	PNT-1	PNT-1	ETR	
Level 1	232	CLASSROOM	CPT	RB	PNT-1	PNT-1	PNT-1	PNT-1	ETR	REMOVE ALL WAX FROM EXISTING VCT BEFORE INSTALLING CARPET

FINISH LEGEND

FLOOR			WALL		
NUMBER	TYPE	DETAIL DESCRIPTION	NUMBER	TYPE	DETAIL DESCRIPTION
CPT	CARPET	Manufacturer: MOHAWK Name: MOTORSPORTS II - PHOTOFINISH II Style: Color: #935 FREEPASS Size:	PNT-1	MAIN WALL PAINT	Manufacturer: SHERWIN WILLIAMS Name: RELIABLE WHITE Style: Color: WHITE
			PNT-2	DOOR FRAME PAINT	Manufacturer: SHERWIN WILLIAMS Name: Style: Color: MATCH EXISTING FRAMES COLOR
BASE			CEILING		
RB	RUBBER BASE	Manufacturer: ROPPE Name: TBD Style: TBD Color: FULL RANGE Size: TBD	ACT-1	ACOUSTICAL CEILING TILE SYSTEM	Manufacturer: ARMSTRONG Name: TBD Style: TBD Color: WHITE Size: 24" X 24"



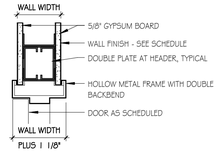
1 ELEVATION - NEW WALL - ENGINEERING LAB
1/2"=1'-0"



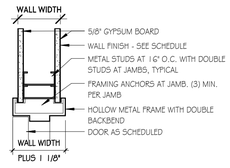
2 CASEWORK SECTION
1/2"=1'-0"

DOOR HEAD, JAMB AND SILL TYPE

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



H1



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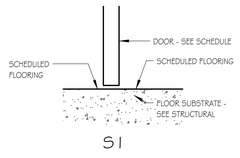


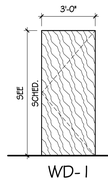
S1

DOOR SCHEDULE

WT	Door						Frame			Head	Jamb	Sill	Comments
	Elev	Width	Height	Thk	Mat'l	Finish	Elev	Mat'l	Finish				
219A	EXT	3' - 0"	7' - 0"	1 3/4"	WOOD	EXT	F1	MTL	PNT-2	H1	J1	S1	FIRE RATED, REUSE EXISTING
219B	WD-1	3' - 0"	7' - 0"	1 3/4"	WOOD	STN	F1	MTL	PNT-2	H1	J1	S1	STAIN TO MATCH EXISTING DOORS
219C	WD-1	3' - 0"	7' - 0"	1 3/4"	WOOD	STN	F1	MTL	PNT-2	H1	J1	S1	STAIN TO MATCH EXISTING DOORS
224A	WD-1	3' - 0"	7' - 0"	1 3/4"	WOOD	STN	F1	MTL	PNT-2	H1	J1	S1	STAIN TO MATCH EXISTING DOORS

DOOR TYPE

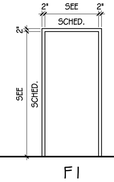
SCALE: 1/4" = 1'-0"



WD-1
FLUSH SOLID CORE WOOD VENEER DOOR

FRAME TYPE

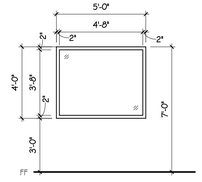
SCALE: 1/4" = 1'-0"



F1
NEW HOLLOW METAL FRAME

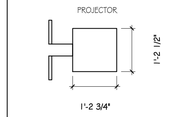
WINDOW TYPE

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

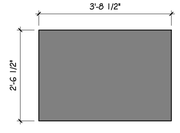


A
HOLLOW METAL FRAME WINDOW

EQUIPMENT LEGEND



EPSON BRIGHTLINK 595w PROJECTOR
OWNER FURNISHED, OWNER INSTALLED.
SEE ELEC.



INSTRON TENSILE STRENGTH TESTING SYSTEM
MODEL 5982
200/208V CIRCUIT REQUIRED
OWNER FURNISHED, OWNER INSTALLED

STATE OF SOUTH CAROLINA
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DOOR SCHEDULE & INTERIOR FINISHES

A-104
sheet of

LEGEND

LIGHTING AND POWER

CONDUIT RUN CONCEALED ABOVE CEILING OR IN WALL CONTAINING 3 NUMBER 12 CONDUCTORS UNLESS SHOWN OTHERWISE. HASH MARKS, IF SHOWN, INDICATE QUANTITY OF NUMBER 12 CONDUCTORS. WHERE DRAWING SPACE PROHIBITS HASH MARKS BEING SHOWN REFER TO CIRCUIT NUMBERS AND PROVIDE REQUIRED NUMBER OF CONDUCTORS PER CIRCUIT TYPE.

CONDUIT RUN CONCEALED IN OR BELOW FLOOR SLAB, OR UNDERGROUND.

A-2,4,6 — HOMERUN TO PANELBOARD, LETTER OR LETTERS INDICATE PANELBOARDS, NUMBERS INDICATE CIRCUIT NUMBERS.

L.E.D. TROFFER FIXTURE. SEE FIXTURE SCHEDULE FOR DIMENSIONS AND MOUNTING TYPE.

EMERGENCY L.E.D. TROFFER. SEE FIXTURE SCHEDULE FOR DIMENSIONS, MOUNTING TYPE AND BATTERY PACK INFORMATION (IF APPLICABLE).

J — JUNCTION BOX, FLUSH WALL MOUNTED.

5 — DUPLEX CONVENIENCE OUTLET, +18" TO CENTER LINE OF OUTLET UNLESS OTHERWISE NOTED. "5" INDICATES THE CIRCUIT NUMBER.

DUPLEX CONVENIENCE OUTLET MOUNTED ABOVE COUNTER, AT +46" TO CENTERLINE OF OUTLET.

QUADRUPLEX RECEPTACLE, +18" TO CENTER LINE OF OUTLET UNLESS OTHERWISE NOTED.

SPECIAL RECEPTACLE TO SUIT EQUIPMENT FURNISHED.

$ — SINGLE POLE TOGGLE SWITCH, 3'-6" MOUNTING HEIGHT.

$3 — THREE OR FOUR WAY SWITCH AS INDICATED. +3-6" MOUNTING HEIGHT.

LUTRON MAESTRO 0-10 VOLT, LOW-VOLTAGE DIMMER WITH OCCUPANCY SENSOR FOR L.E.D. FIXTURES. MOUNT AT +3'-6" ABOVE FINISHED FLOOR.

CR — ELECTRIC CORD REEL SHALL BE REELCRAFT LG3040 SERIES WITH DUPLEX OUTLET 12 AWG WIRE, 3 CONDUCTORS, AND 40' CORD LENGTH EQUAL MANUFACTURES ARE APPLETON OR DANIEL WOODHEAD ARE ACCEPTABLE.

WIREMOLD V4000 SERIES - PROVIDE RECEPTACLES @ 24" ON CENTER AND DATA @ 18" ON CENTER UNLESS OTHERWISE NOTED. REFER TO DETAIL 3/E-100.

PANELBOARD, SEE SCHEDULE.

FIRE ALARM SYSTEM

S — SIGNAL, HORN AND STROBE LIGHT. +6'-10" MOUNTING HEIGHT TO CENTER OF DEVICE.

V — SIGNAL, SPEAKER, AND STROBE LIGHT, +6'-10" MOUNTING HEIGHT TO CENTER OF DEVICE

SL — STROBE LIGHT, 6'-10" MOUNTING HEIGHT TO CENTER OF DEVICE. WHERE SHOWN IN CEILING PROVIDE FLUSH CEILING MOUNTED DEVICE.

F — PULL STATION. WALL MOUNTED +3'-6" ABOVE FLOOR TO CENTER OF DEVICE.

SD — SMOKE DETECTOR, CEILING MOUNTED.

TELEPHONE / DATA SYSTEMS

▷ — DATA OUTLET., +18" TO CENTER LINE OF OUTLET UNLESS NOTED OTHERWISE. STUB UP 1"C. TO CEILING SPACE ABOVE.

AV — A/V JUNCTION BOX. PROVIDE 4 $\frac{11}{16}$" TWO GANG JUNCTION BOX WITH TWO (2) 1-$\frac{1}{4}$" CONDUITS STUBBED ABOVE ACCESSIBLE CEILING IN CLASSROOM. +18" TO CENTER LINE OF OUTLET UNLESS OTHERWISE NOTED. PROVIDE WITH BLANK STAINLESS STEEL COVER. WHERE SHOWN ON WIREMOLD COORDINATE FACEPLATE REQUIREMENTS WITH THE OWNER.

OCCUPANCY SENSORS

SWITCH, WALL MOUNTED OCCUPANCY SENSOR (WATTSTOPPER PW-100 OR EQUAL).

FIXTURE SCHEDULE

TYPE	DESCRIPTION	MANUFACTURER
A	L.E.D. FIXTURE, 2' x 4' RECESSED SPECIFICATION GRADE GRID TYPE TROFFER WITH SATIN WHITE LENS. (38.9 INPUT WATTS) LUMEN OUTPUT: 4000 LUMENS AT 3500°K DRIVER: MULTI VOLT	LITHONIA "2GTL" SERIES METALUX COLUMBIA PHILIPS
EMERGENCY BATTERY PACK OR	1. RECESSED AND SURFACE MOUNTED FLUORESCENT EMERGENCY TROFFER FIXTURES SHALL BE PROVIDED WITH BATTERY PACK UNIT INSTALLED IN BALLAST COMPARTMENT AND SHALL PROVIDE MINIMUM 1400 LUMEN OUTPUT FROM FOR A MINIMUM OF 90 MINUTES AND SHALL BE PROVIDED INDICATOR LIGHT AND TEST SWITCH AT BALLAST COMPARTMENT. 2. FLUORESCENT DOWNLIGHTS NOTED EMERGENCY SHALL BE EQUIPPED WITH SOLID STATE BATTERY PACK THAT SHALL PROVIDE 90 MINUTES OF EMERGENCY LIGHTING WHEN AC POWER FAILS AND PROVIDED WITH REMOTE MOUNTED INDICATOR LIGHT AND TEST SWITCH.	IOTA SILTRON LITHONIA CHLORIDE SIDE-LITE EMERGI-LITE LIGHTGUARD LITE-ALARMS

GENERAL NOTES:

1. DO NOT SCALE DRAWINGS TO LOCATE EQUIPMENT OR OUTLETS.
2. MOUNTING HEIGHTS AS INDICATED ON THE DRAWINGS SHALL BE FROM THE FINISHED FLOOR TO THE CENTER LINE OF THE OUTLET BOX.
3. THE ELECTRICAL DRAWINGS ARE ONLY A PART OF THE CONTRACT DOCUMENTS. ALL OF THE DRAWINGS AND SPECIFICATIONS MUST BE REVIEWED FOR THEIR INTERRELATIONSHIP AND REQUIRED COORDINATION BETWEEN DISCIPLINES.
4. 112 SYMBOL INDICATING ROOM OR SPACE NUMBER.
5. IN AREAS WHERE COMPUTER OUTLETS AND TELEPHONE OUTLETS ARE LOCATED BENEATH A WINDOW, AND WINDOW PREVENTS THE ROUTING OF CONDUIT UP TO CEILING SPACE, CONDUIT SHALL BE ROUTED TO A WALL WHICH ALLOWS CONDUIT TO RISE UP TO CEILING SPACE.
6. ALL CONDUIT ROUTED FROM DISCONNECT TO EXTERIOR HVAC UNITS SHALL BE ROUTED UNDERGROUND. TURN UP ADJACENT TO UNIT AND MAKE TRANSITION TO SEALTITE TO SERVE UNIT. CONDUIT SHALL BE. ROUTED CONCEALED IN WALL.
6. FLUSH RECESSED OUTLET BOXES INSTALLED IN NON-COMBUTIBLE MATERIAL SHALL BE INSTALLED SUCH THAT FRONT EDGE OF BOX WILL NOT BE SET BACK OF THE FINISHED SURFACE MORE THAN 1/4". FLUSH RECESSED OUTLET BOXES INSTALLED IN COMBUSTIBLE MATERIAL SHALL BE INSTALLED SUCH THAT FRONT EDGE OF BOX IS FLUSH WITH THE THE FINISHED SURFACE". COMPLY WITH N.E.C. 314-20. SUPPORT OF OUTLET BOX BY RECEPTACLE AND COVERPLATE IS NOT ACCEPTABLE.
7. ALL CONDUIT, OUTLET BOXES, AND LOW VOLTAGE CABLING SHALL BE APPROPRIATELY SUPPORTED THROUGHOUT THE PROJECT. SUPPORT OF THESE ITEMS BY CEILING GRID OR GRID SUPPORT WIRES IS NOT ACCEPTABLE.
8. ALL RECEPTACLES LOCATED WITHIN 6'-0"TO THE EDGE SINK OR OTHER WATER SOURCE SHALL BE GFCI TYPE DEVICE IN ACCORDANCE WITH N.E.C 210-8.A.7. COORDINATE LOCATIONS WITH ARCHITECTURAL AND PLUMBING DRAWINGS PRIOR TO ROUGH-IN.

DEMOLITION NOTES:

1. THE CONTRACTOR SHALL FIELD VERIFY EXACT ROUTINGS OF EXISTING RACEWAYS BEFORE STARTING ANY WORK AND NOTIFY THE ARCHITECT OF ANY KNOWN DISCREPANCIES.
2. THE CONTRACTOR SHALL UTILIZE AS MUCH OF THE EXISTING OUTLETS AND RACEWAYS AS POSSIBLE TO RECONNECT EXISTING AND NEW CIRCUITS.
3. THE CONTRACTOR SHALL REMOVE EXISTING CONDUCTORS AND INSTALL NEW CONDUCTORS AS SHOWN OR AS REQUIRED TO COMPLETE REVISED CIRCUITS AND TO CONFORM TO N.E.C.
4. ALL EXISTING EQUIPMENT REMOVED FROM SERVICE AND NOT INTENDED FOR REUSE SHALL REMAIN THE PROPERTY OF OWNER AND SHALL BE STORED OR DISPOSED OF AS DIRECTED BY THE OWNER.
5. MAINTAIN SERVICE TO ALL EXISTING CIRCUITS THAT ARE NOT SCHEDULED FROM REMOVAL.
6. PROVIDE BLANK COVERS ON ALL JUNCTION BOXES AND OUTLET BOXES NOT INTENDED FOR REUSE.
7. EXISTING CEILING, WALLS AND FLOORS DISTURBED OR DISFIGURED BY THE ELECTRICAL RENOVATIONS SHALL BE PATCHED, MENDED OR REPLACED BY TRADES ACTIVELY PARTICIPATING IN THIS TYPE OF WORK. RESPONSIBILITY FOR REPAIRS SHALL BE COORDINATED BETWEEN GENERAL CONTRACTOR AND ELECTRICAL SUBCONTRACTOR.
8. EXISTING EQUIPMENT SHOWN ON ARCHITECTURAL, MECHANICAL PLUMBING AND ELECTRICAL DRAWINGS THAT WILL REMAIN SHALL HAVE SERVICE MAINTAINED OR RECONNECTED TO EXISTING OR NEW PANELBOARD AS NECESSARY.
9. ALL EXISTING LIGHT FIXTURES REMOVED FROM AREAS WHERE NEW CEILINGS AND LIGHT FIXTURES ARE TO BE INSTALLED SHALL REMAIN THE PROPERTY OF THE OWNER. (SEE NOTE #4)
10. TO MAINTAIN SERVICE, TO EXTEND, OR TO RECONNECT CIRCUITS WHERE CONDUIT CAN NOT BE CONCEALED, SURFACE METAL RACEWAY (WIREMOLD) SHALL BE USED. VERIFY WITH ARCHITECT PRIOR TO INSTALLATION.
11. ELECTRICAL CONTRACTOR SHALL REVIEW ARCHITECTURAL DRAWINGS FOR DOOR SWINGS, CABINETS, COUNTERS AND OTHER BUILT-IN EQUIPMENT. CONDITIONS INDICATED ON ARCHITECTURAL DRAWINGS SHALL GOVERN.
12. COORDINATE ELECTRICAL WITH ARCHITECTURAL DETAILS, FLOOR PLANS, ELEVATIONS, STRUCTURAL MECHANICAL AND PLUMBING DRAWINGS. PROVIDE FITTINGS, JUNCTION BOXES AND ACCESSORIES TO MEET CONDITIONS.
13. DEVICES LOCATED AT COUNTERS SHALL BE MOUNTED ABOVE COUNTER TOPS UNLESS KNEE SPACE IS PROVIDED WITH DRILLED HOLE IN COUNTER TOP FOR SERVICE CORDS. VERIFY WITH ARCHITECT.
14. ELECTRICAL CONTRACTOR SHALL PROVIDE PLUGS OR RECEPTACLES TO MATCH DEVICES FURNISHED WITH OWNER FURNISHED EQUIPMENT AND EQUIPMENT FURNISHED BY OTHERS. (VERIFY)
15. WHERE CONDUIT RUNS ARE SHOWN EXPOSED IN AN AREA WITHOUT CEILING, ANY CONDUIT RUN GOING DOWN IN A WALL SHALL BE CONCEALED.
16. WHERE EXISTING CONCRETE FLOOR SLAB IS SAW CUT AND CONCRETE IS CHIPPED OUT FOR ELECTRICAL UNDER FLOOR EQUIPMENT ANY ELECTRICAL CONDUIT, WIRING AND PLUMBING PIPING THAT IS DAMAGED SHALL BE PATCHED, MENDED OR REPLACED BY TRADES ACTIVELY PARTICIPATING IN THIS TYPE OF WORK. RESPONSIBILITY FOR REPAIRS SHALL BE COORDINATED BETWEEN GENERAL CONTRACTOR AND ELECTRICAL SUBCONTRACTOR.
17. CONTRACTOR SHALL SURVEY EXISTING SPACES FOR ABANDONED SYSTEMS CABLING CURRENTLY LOCATED ABOVE CEILING. CONTRACTOR TO VERIFY IF CABLING IS OPERABLE AND IN USE. ANY CABLE NOT IN USE SHALL BE REMOVED IN ITS ENTIRETY. ANY CABLE IN USE SHALL REMAIN AND SHALL BE SUPPORTED ACCORDINGLY TO MEET NEC. CONTRACTOR TO PROVIDE HANGERS AND J-HOOKS TO SUPPORT EXPOSED CABLING. ALL CABLING SHALL BE BUNDLED TOGETHER WITH PLENUM RATED TIE WRAPS AND SUPPORTED FROM STRUCTURE ABOVE. SUPPORT OF CABLING FROM CEILING HANGER WIRE, CONDUIT, SPRINKLER PIPE, DUCT WORK, ETC. WILL NOT BE ACCEPTABLE.
18. CONTRACTOR TO SURVEY EXISTING AREAS ABOVE CEILING FOR EXISTING ELECTRICAL CONDUIT AND JUNCTION BOXES WHICH ARE TO REMAIN. ANY CONDUIT OR JUNCTION BOXES NOT CURRENTLY IN COMPLIANCE WITH NEC SHALL BE SUPPORTED ACCORDINGLY TO MEET CODE. CONTRACTOR TO PROVIDE ADDITIONAL HANGERS TO SUPPORT AS NECESSARY.
19. CONTRACTOR TO REVIEW EXISTING CONDUIT PENETRATIONS OF RATED WALL AT RENOVATED SPACES. CONTRACTOR TO PROPERLY FIRE STOP ANY EXISTING CONDUIT PENETRATIONS OF RATED WALLS IN ORDER TO MAINTAIN INTEGRITY OF RATED WALL.

PANEL 2LC

VOLTAGE: 120 / 208
PHASE: 3
WIRE: 4

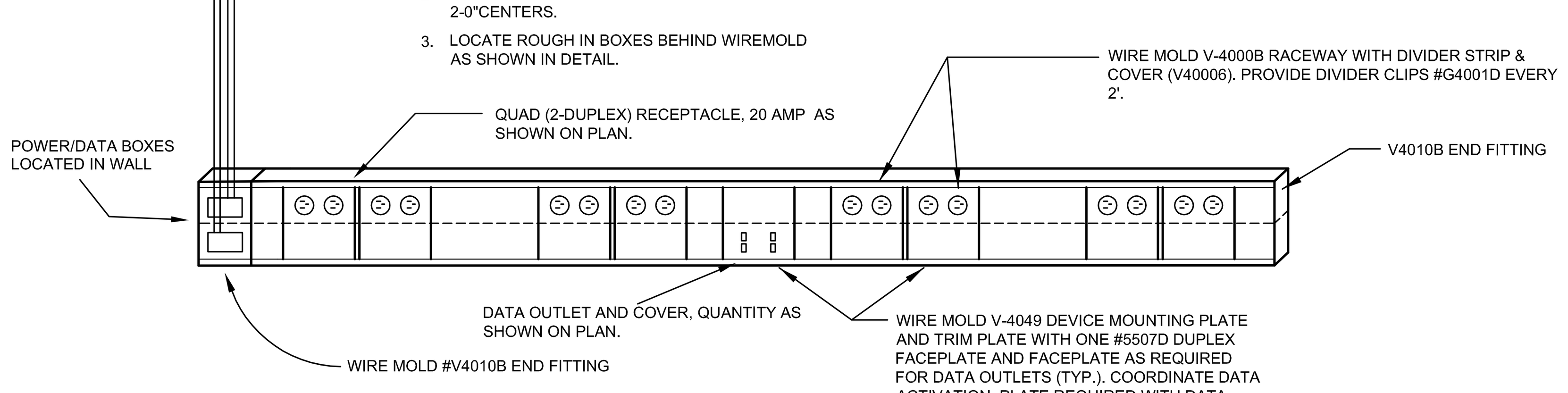
MAIN: **100** A BREAKER

MOUNTING: SURFACE
LOCATION: ELEC
AIC RATING: 10 KAIC

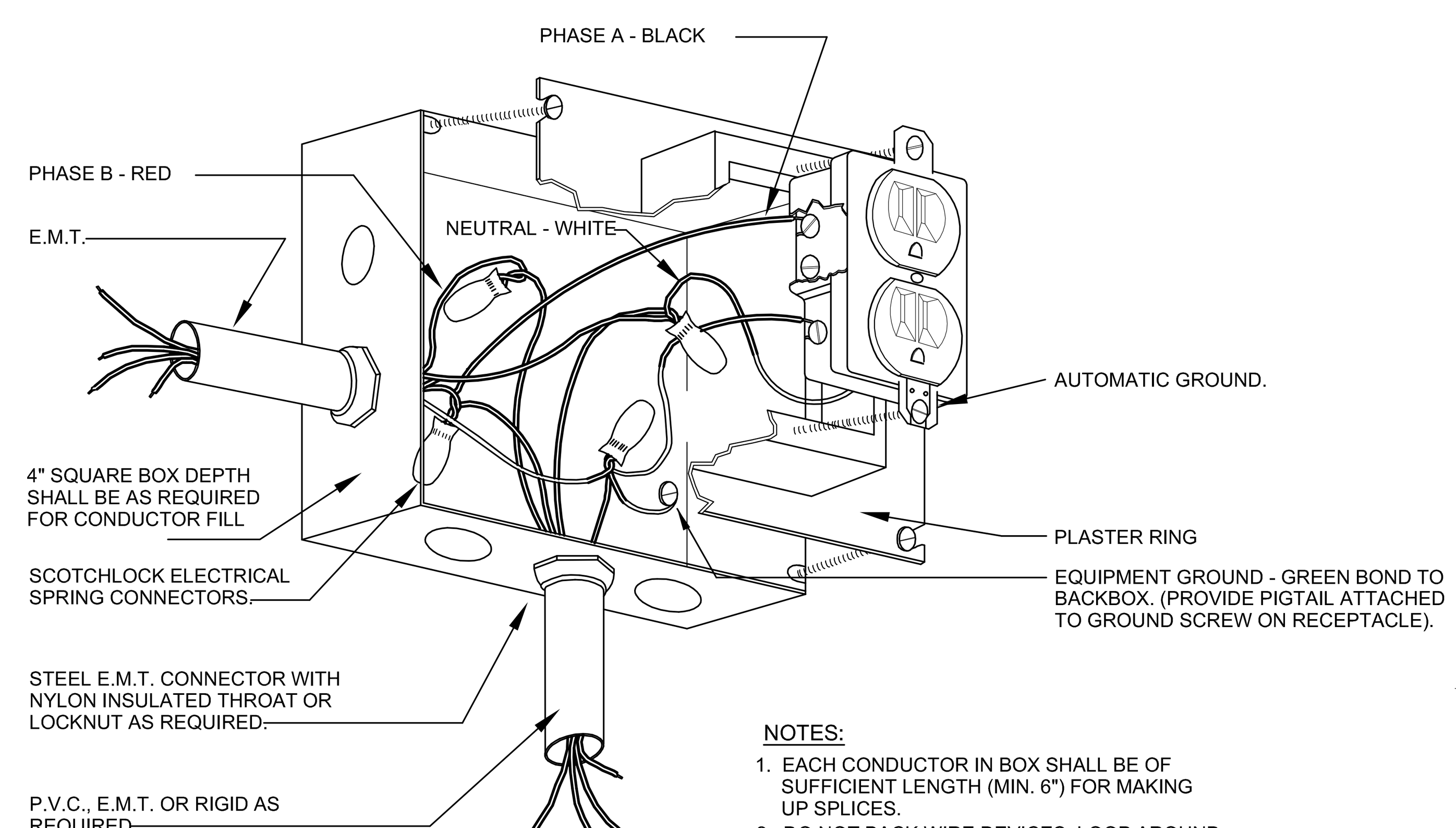
SERVING	LOAD (Kva) LTG	REC	MTR	MECH	KIT	MISC	NOTE	BREAKER AMPS	P	CKT NO	PHASE A	B	C	CKT NO	BREAKER P	AMPS	NOTE	LOAD (Kva) MISC	KIT	MECH	MTR	REC	LTG	SERVING
RECEPTACLES - -219C		1.1						20	1	1	2.6			2	1	20						1.5		RECEPTACLES - - 232
RECEPTACLES - -219B		1.1						20	1	3		2.6		4	1	20						1.5		RECEPTACLES - - 232
RECEPTACLES - -224		0.7						20	1	5			2.2	6	1	20						1.5		RECEPTACLES - - 232
RECEPTACLES - -224		0.7						20	1	7	2.2			8	1	20						1.5		RECEPTACLES - - 232
RECEPTACLES - -224		1.0						20	1	9		2.5		10	1	20						1.5		RECEPTACLES - - 232
RECEPTACLES - -224		1.0						20	1	11			2.5	12	1	20						1.5		RECEPTACLES - - 232
RECEPTACLES - -221		0.8						20	1	13	2.3			14	1	20						1.5		RECEPTACLES - - 232
RECEPTACLES - -221		0.8						20	1	15		0.8		16	1	20								SPARE
RECEPTACLES - -221		0.8						20	1	17			0.8	18	1	20								SPARE
SPARE								20	1	19	0.0			20	1	20								SPARE
SPARE								20	1	21		0.0		22	1	20								SPARE
SPARE								20	1	23			0.0	24	1	20								SPARE
SPARE								20	1	25	0.0			26	1	20								SPARE
TENSILE TESTING MACHINE						1.7		20	1	27		4.2		28	1	30		2.5						TEMPERATURE CABINET
						1.7				29			4.2	30				2.5						
TOTAL KVA	0.0	8.0	0.0	0.0	0.0	3.3					7.1	10.0	9.7					5.0	0.0	0.0	0.0	10.5	0.0	TOTAL KVA

TOTALS						
Lighting:	0.0	X 125%=	0.0	**GENERAL PANEL NOTES**		
Receptacles:	18.5	NEC 220.44	14.3	1	-	
Motors:	0.0	NEC 220.18(A)	0.0	2	-	
Mechanical:	0.0	X 100%=	0.0	3		
Kitchen:	0.0	NEC 220.56	0.0	**NOTES (REFER TO NOTES COLUMN)**		
Miscellaneous:	8.3	X 100%=	8.3	A		
TOTAL KVA	**27**	CODE KVA	**23**	B	-	
TOTAL AMPS	**129**	CODE AMPS	**63**	C	-	

NOTES:
1. FIELD CONFIRM ALL LENGTHS BEFORE FABRICATING. PROVIDE ALL ASSOCIATED ACCESSORIES REQUIRED FOR A COMPLETE INSTALLATION.
2. ALL OUTLETS SHALL BE ON 2-0"CENTERS.
3. LOCATE ROUGH IN BOXES BEHIND WIREMOLD AS SHOWN IN DETAIL.

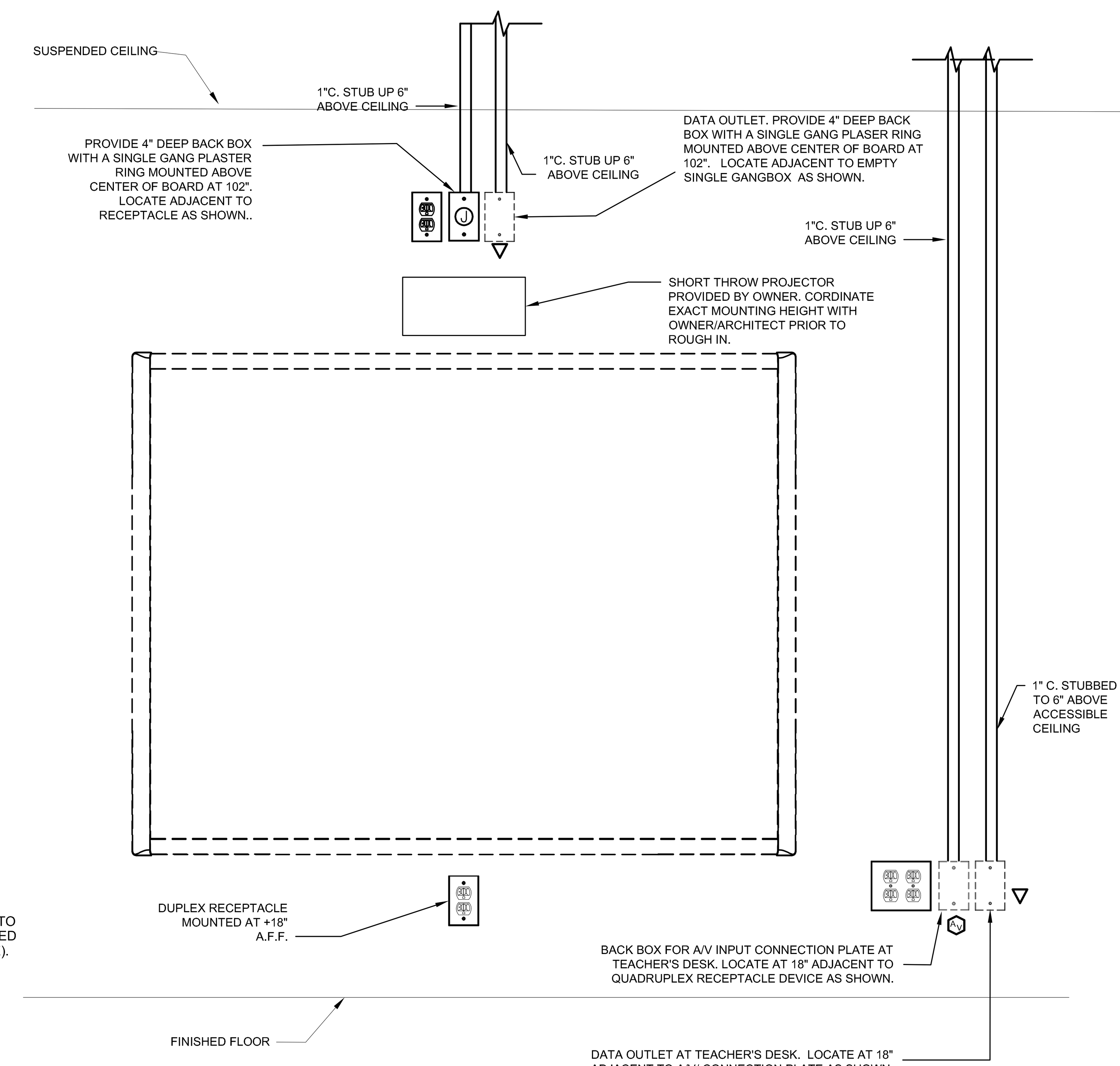


1 E-100 DETAIL - TWO CHANNEL RACEWAY
SCALE: NONE
EQUAL BY HUBBELL OR PANDUIT IS ACCEPTABLE.



NOTES:
1. EACH CONDUCTOR IN BOX SHALL BE OF SUFFICIENT LENGTH (MIN. 6") FOR MAKING UP SPLICES.
2. DO NOT BACK WIRE DEVICES. LOOP AROUND TERMINAL SCREWS.
3. FACE OF PLASTER RING SHALL BE FLUSH WITH WALL.

2 E-100 DETAIL - RECEPTACLE CONNECTION
SCALE: NONE



3 E-100 TYPICAL CLASSROOM AUDIO/VISUAL DEVICE RISER
SCALE: NONE

NOTE: "N.I.C." ABOVE DENOTES DEVICES THAT ARE "NOT IN CONTRACT" AND PROVIDED UNDER SEPARATE CONTRACT. DIVISION16 TO PROVIDE AND INSTALL ALL CONDUIT AND BACKBOXES FOR ALL DEVICES AS SHOWN.

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ISSUE	DATE
ISSUE FOR BID	05/25/16

drawn by: DA
checked by: MAPIII

USC Aiken - Engineering Renovations
471 Univeristy Parkway
Aiken, South Carolina 29801
GMC # 160007

SOUTH CAROLINA ELECTRICAL DESIGN CONSULTANTS, INC. No. C01139 CERTIFICATE OF AUTHORIZATION

SOUTH CAROLINA REGISTERED PROFESSIONAL ENGINEER ... ASHLEY PAULK, III
[illegible]
05·25·16

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LEGEND, NOTES, DETAILS AND FIXTURE SCHEDULE

E-100

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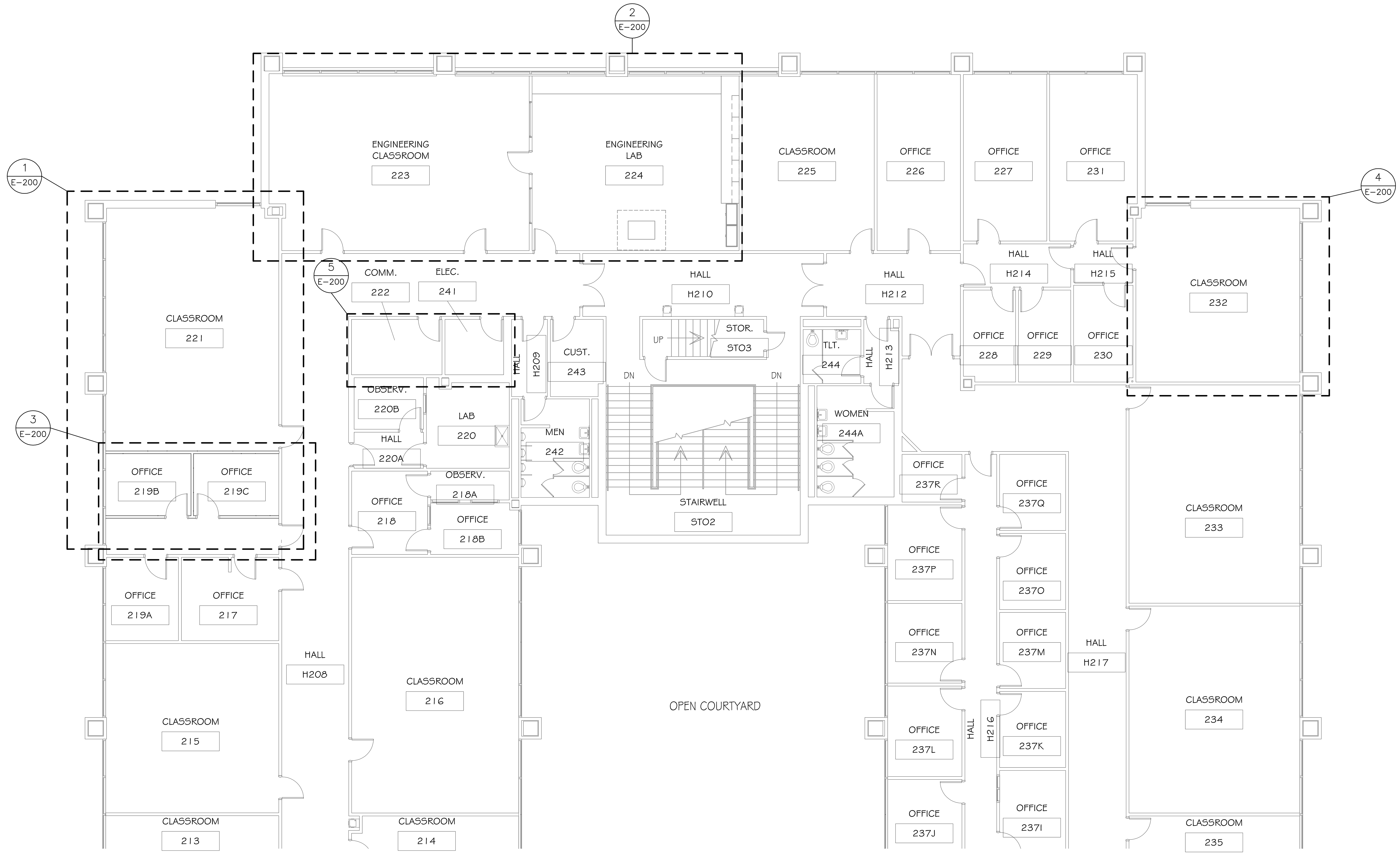

1 E-101 **ELECTRICAL COMPOSITE PLAN**
SCALE: 1/4"=1'-0"

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ELECTRICAL COMPOSITE PLAN

E-101

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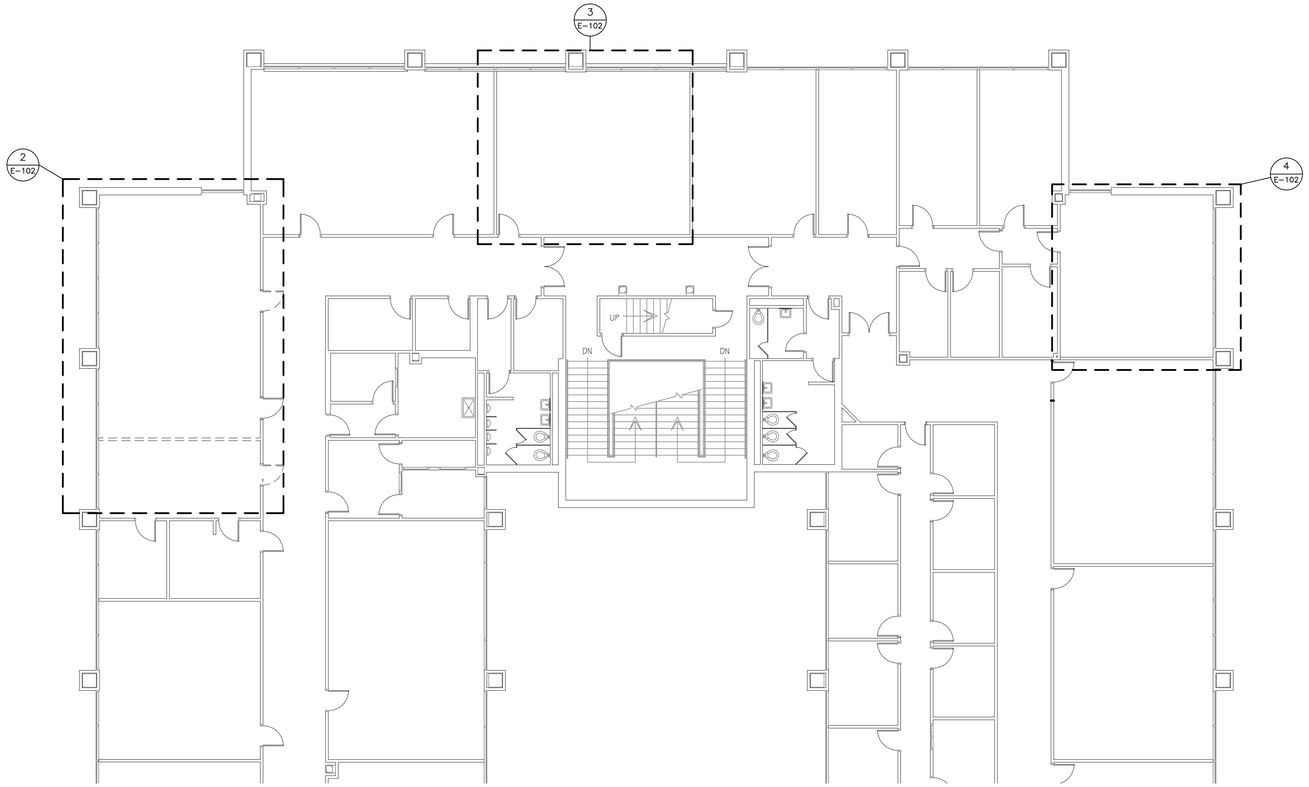
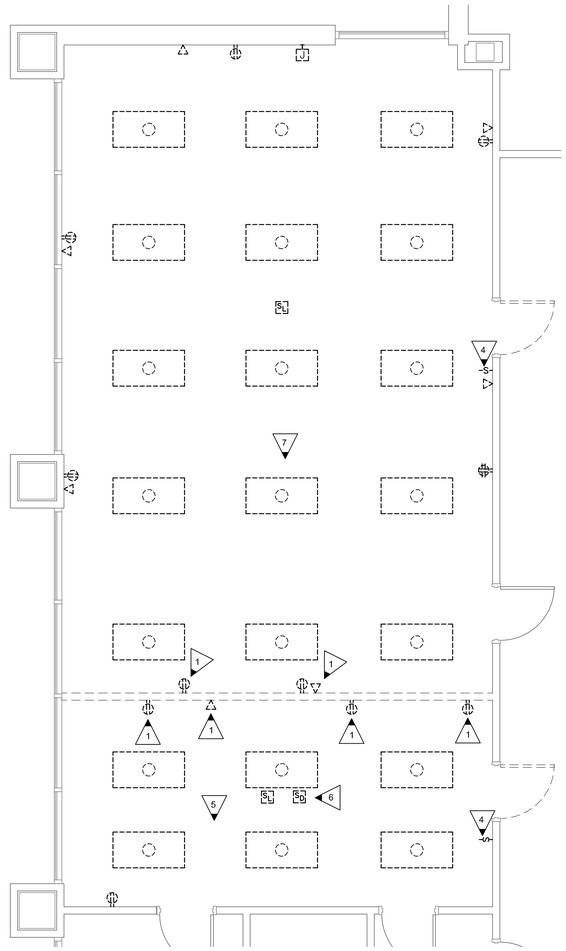
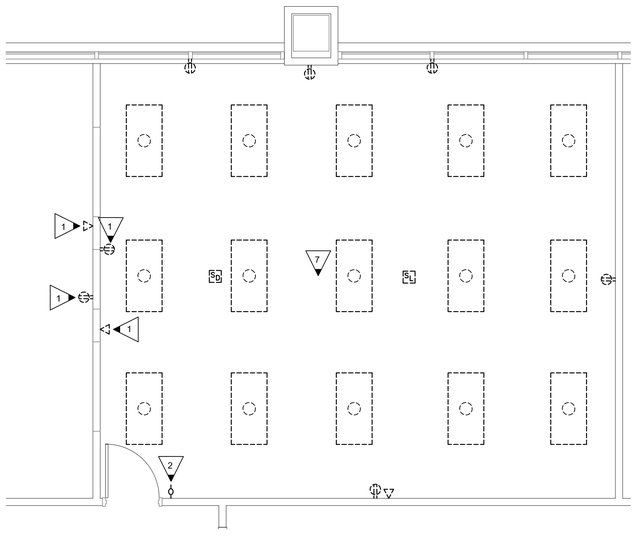


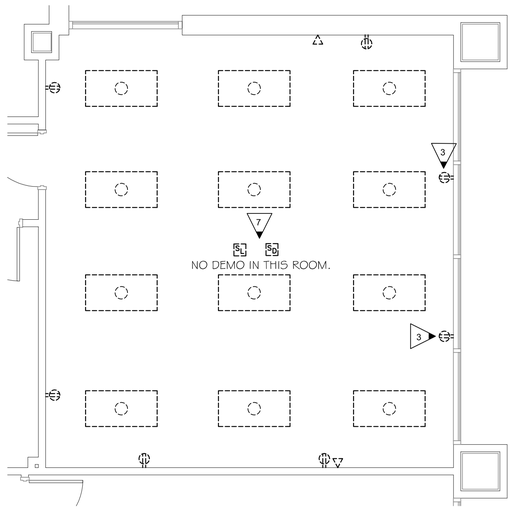
1 E-102 ELECTRICAL DEMOLITION PLAN
SCALE: 3/32"=1'-0"



2 E-102 ELECTRICAL DEMOLITION PLAN - OFFICE AREA
SCALE: 1/4"=1'-0"



3 E-102 ELECTRICAL DEMOLITION PLAN - ENGINEERING LAB AND CLASSROOM
SCALE: 1/4"=1'-0"



4 E-102 ELECTRICAL DEMOLITION PLAN - COMPUTER CLASSROOM
SCALE: 1/4"=1'-0"

GENERAL NOTES:

1. ALL DEVICES SHOWN ARE EXISTING TO REMAIN UNLESS OTHERWISE NOTED.

KEYED NOTES:

1. CONTRACTOR SHALL DEMOLISH RECEPTACLES AND DATA OUTLETS SHOWN ON WALL. REFER TO SHEET E-200 FOR NEW WALL LOCATIONS WITH NEW POWER LOCATIONS AND DATA OUTLETS.
2. CONTRACTOR SHALL REMOVE EXISTING OCCUPANCY SWITCH AND RETURN TO OWNER, REPLACE WITH NEW OCCUPANCY SENSOR. SWITCH SHALL MATCH EXISTING SWITCHES IN THIS SPACE.
3. EXISTING RECEPTACLES SHALL BE REMOVED. CONTRACTOR SHALL ABANDON RECEPTACLE, PATCH WALL AND PAINT TO MATCH EXISTING WALL IN SPACE.
4. EXISTING SWITCHES SHALL BE REMOVED AND RELOCATED AS SHOWN ON NEW WORK PLAN. CONTRACTOR SHALL PATCH HOLE OF EXISTING SWITCH LOCATION AND PAINT TO MATCH SPACE.
5. REMOVE ALL EXISTING LIGHT FIXTURES IN THIS SPACE. REFER TO 3/E-200 FOR NEW LIGHTING LAYOUT OF THIS SPACE.
6. CONTRACTOR SHALL REMOVE EXISTING FIRE ALARM DEVICES AND RELOCATE DEVICES AS SHOWN ON NEW WORK PLANS, E200.
7. ALL LIGHT FIXTURES SHALL REMAIN UNLESS OTHERWISE NOTED.

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MARK A. PAULK
05-25-16

ELECTRICAL DEMOLITION PLAN - OFFICE AREA, ENGINEERING LAB AND COMPUTER CLASSROOM

E-102

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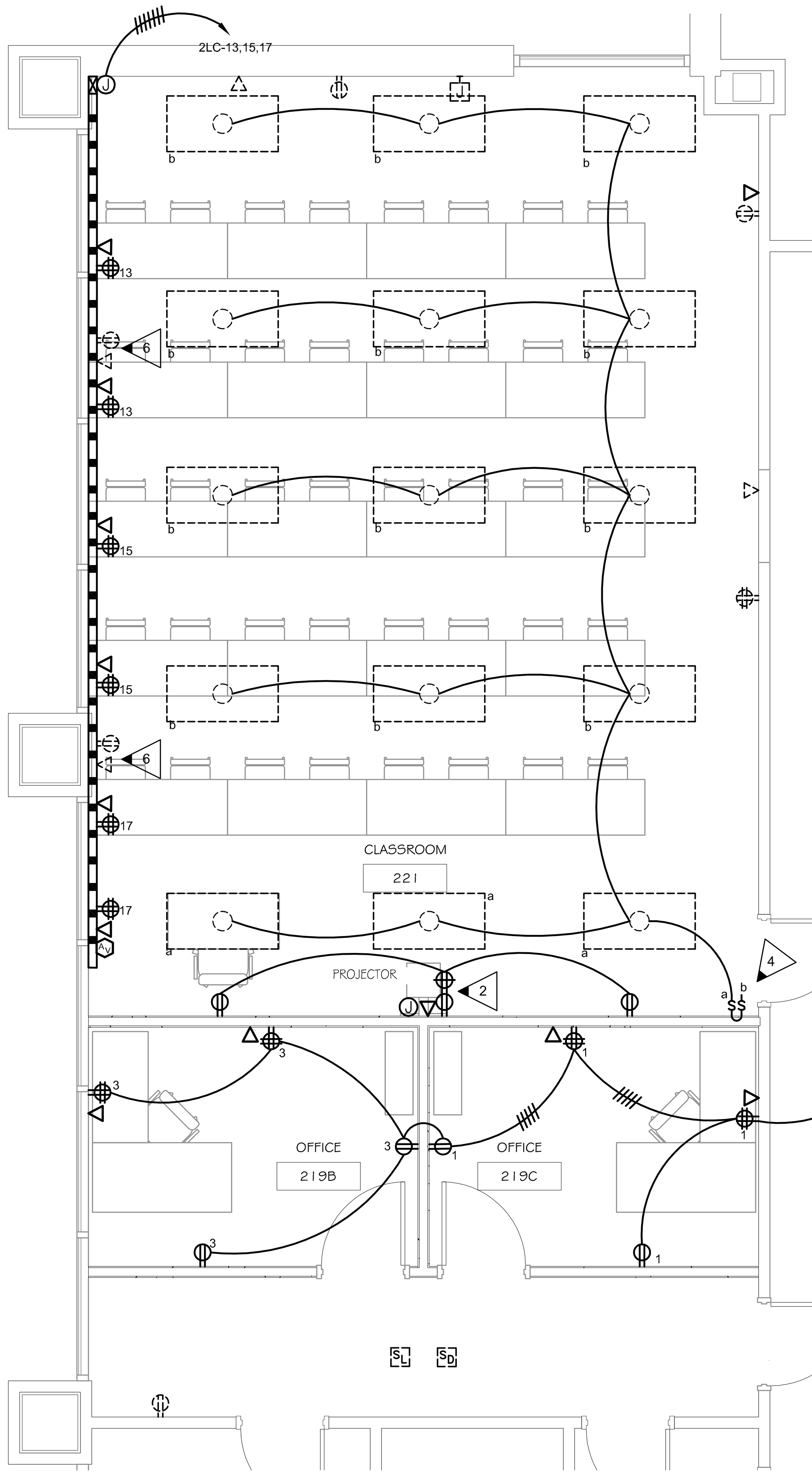
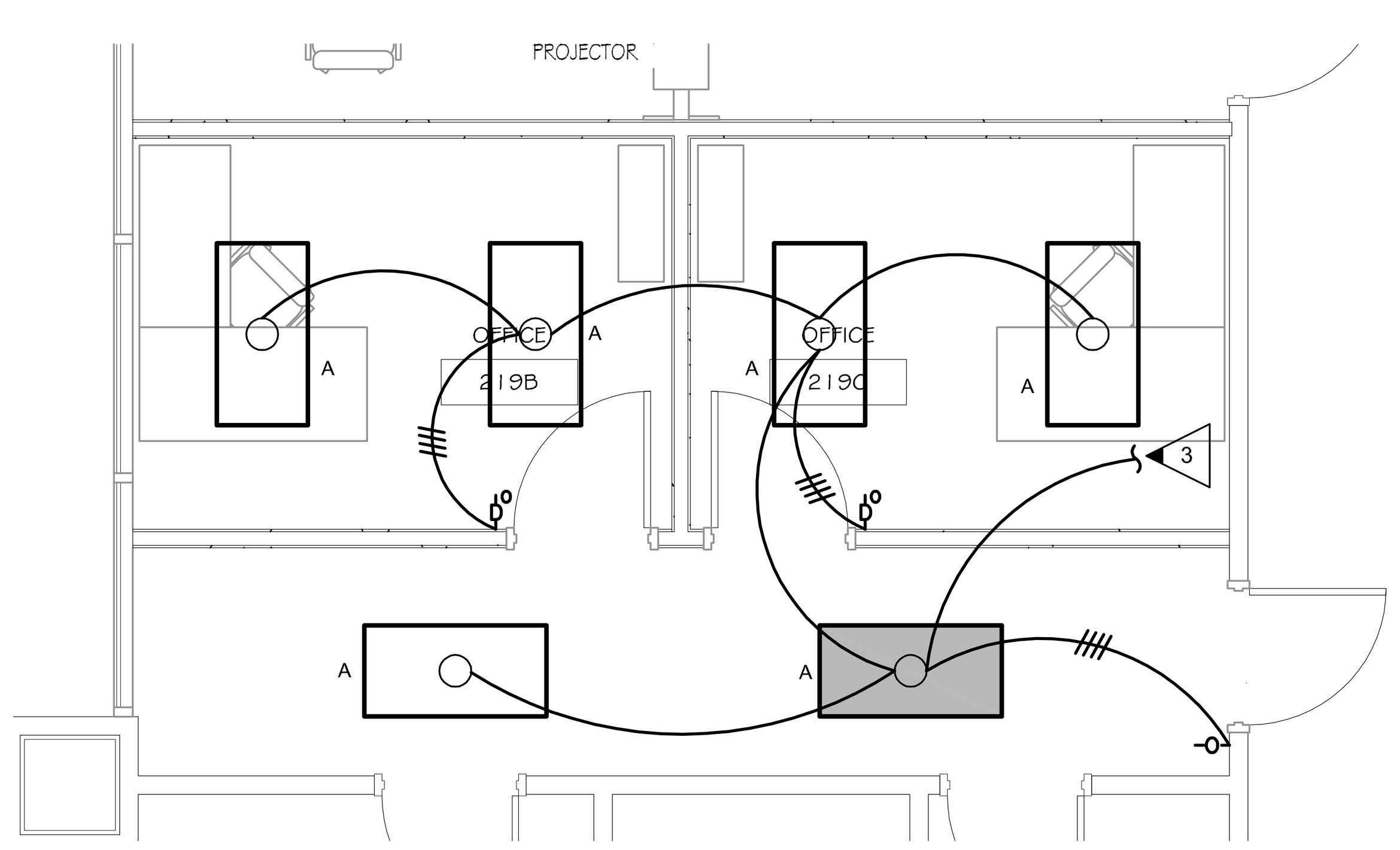
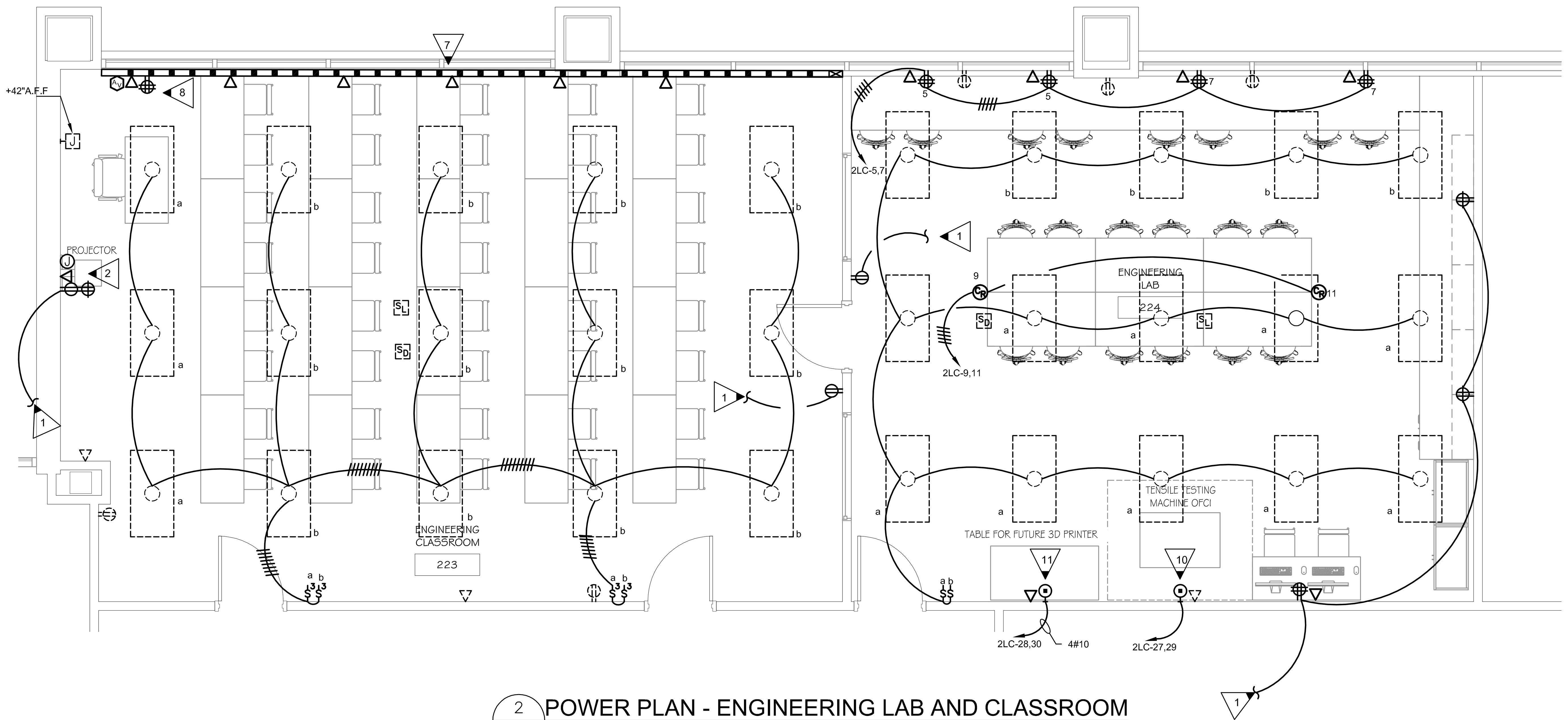


1 E-200 POWER PLAN - OFFICE AREA
SCALE: 1/4"=1'-0"



3 E-200 LIGHTING PLAN - OFFICE AREA
SCALE: 1/4"=1'-0"



2 E-200 POWER PLAN - ENGINEERING LAB AND CLASSROOM
SCALE: 1/4"=1'-0"

GENERAL NOTES:

1. NOTE THAT ALL DASHED LIGHTING FIXTURES ARE EXISTING LIGHTING FIXTURES THAT SHALL REMAIN. CONTRACTOR SHALL PROVIDE SWITCHING AS SHOWN ON DRAWINGS FOR EXISTING LIGHTING FIXTURES.

2. CONTRACTOR SHALL RELOCATE ALL EXISTING RECEPTACLES TO ACCOMADATE FOR NEW CASEWORK. COORDINATE EXACT MOUNTING HEIGHT OF RECEPTACLES WITH ARCHITECT/OWNER PRIOR TO ROUGH IN.

KEYED NOTES:

1. CONTRACTOR SHALL CONNECT TO NEAREST 120 VOLT RECEPTACLE CIRCUIT AND MAINTAIN CIRCUIT CONTINUITY IN THE SPACE. CONTRACTOR MUST VERIFY THAT 120 VOLT CIRCUIT WILL NOT BE OVERLOADED PRIOR TO ADDING ADDITIONAL LOAD TO CIRCUIT. EACH RECEPTACLE SHALL BE RATED AND 200 ADDITIONAL WATTS.

2. REFER TO DETAIL 3/E-100 FOR ELEVATION OF SHORT THROW PROJECTOR AND TEACHER'S DESK.

3. CONTRACTOR SHALL CONNECT TO EXISTING LIGHTING CIRCUIT SERVING THIS SPACE. CONTRACTOR SHALL ALSO PROVIDED EMERGENCY BATTERY PACK FOR FIXTURE AS SHOWN.

4. RELOCATE SWITCH(ES) TO THIS LOCATION. REFER TO DEMOLITION PLANS E-102 FOR EXISTING LOCATION

5. CONTRACTOR SHALL PROVIDE TWO (2) DEDICATED CIRCUITS PER ROW. COORDINATE EXACT CONNECTION WITH OWNER.

6. CONTRACTOR SHALL REMOVE EXISTING RECEPTACLES TO ACCOMMODATE FOR NEW CASEWORK AND WIREMOLD. CONTRACTOR SHALL PATCH EXISTING RECEPTACLE HOLE AND PAINT TO MATCH WALL IN SPACE.

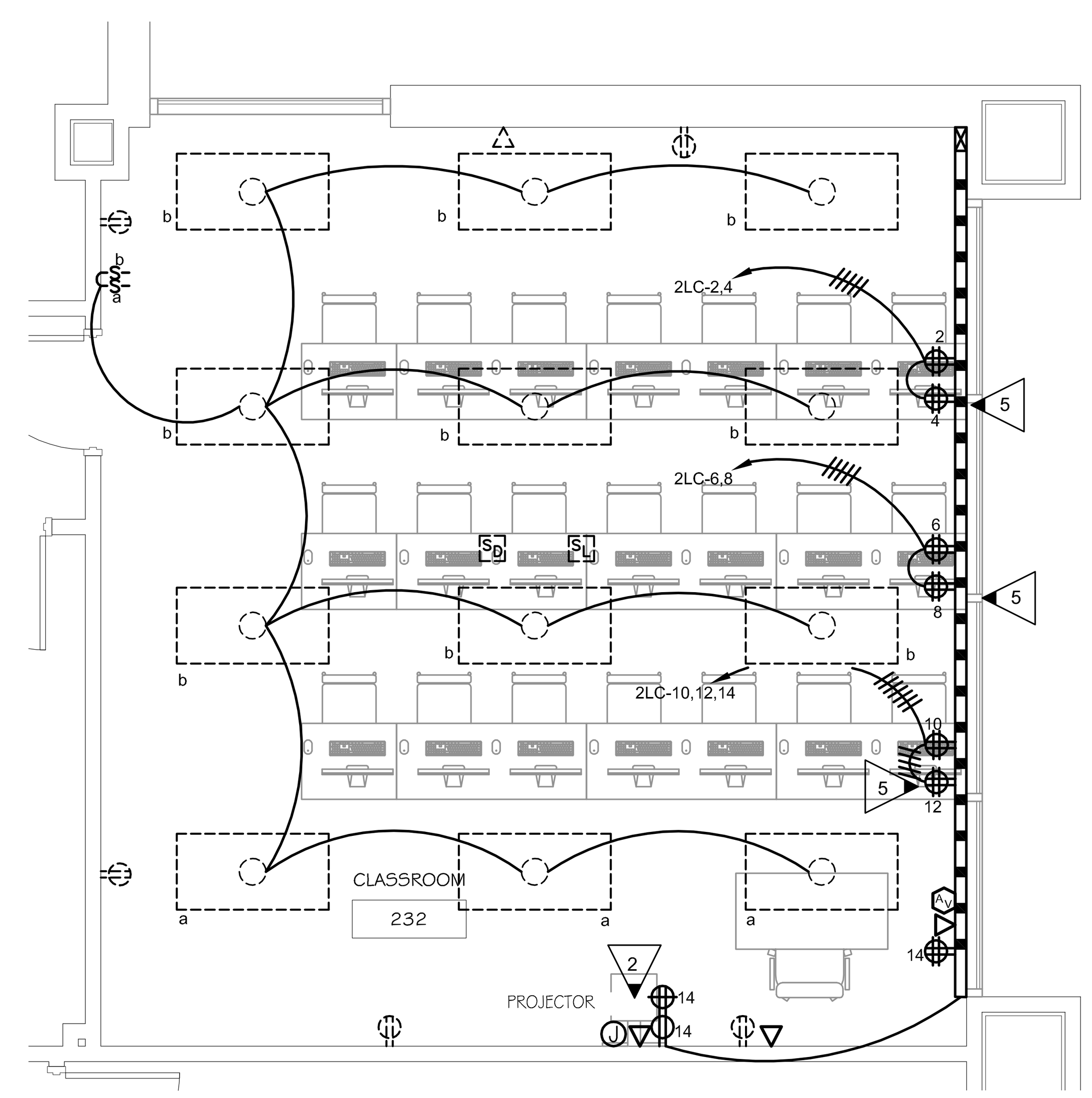
7. REMOVE EXISTING WIREMOLD AND REPLACE WITH NEW. RECONNECT EXISTING CIRCUITS SERVING TO THE NEW WIREMOLD TO MAINTAIN CIRCUIT CONTINUITY.

8. CONTRACTOR SHALL PROVIDE POWER FOR RECEPTACLE WITH EXISTING CIRCUIT FEEDING WIREMOLD.

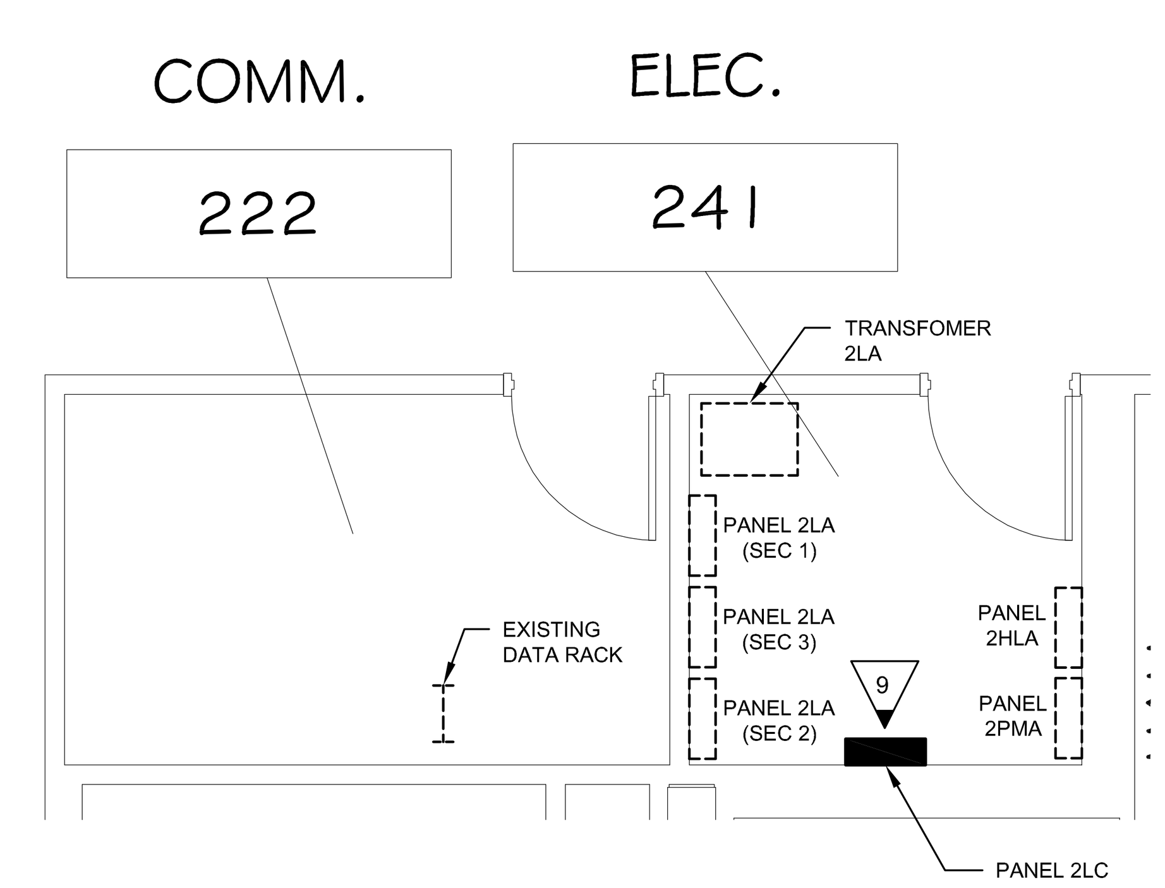
9. CONTRACTOR SHALL PROVIDE NEW 30 SPACE PANEL "2LC". PANEL SHALL HAVE 100 AMP MAIN BREAKER FEED FROM THE PANEL SERIES "2LA". RE-ARRANGE BREAKERS IN PANEL "2LA" AS NECESSARY. PROVIDE 1 1/4" C., 3#3, 1#8G.

10. CONTRACTOR SHALL REMOVE EXISTING DUPLEX OUTLET AND REPLACE WITH SPECIAL RECEPTACLE (NEMA L6-20R) FOR OWNER PROVIDED EQUIPMENT, ADJACENT TO DATA OUTLET, TO SERVE THE TENSILE TEST MACHINE IN ROOM 224. CONTRACTOR SHALL VERIFY RECEPTACLE TYPE PRIOR TO ROUGH IN.

11. CONTRACTOR SHALL PROVIDE A SPECIAL RECPETACLE (NEMA L6-30R) TO SERVE OWNER PROVIDED TEMPERATURE CABINET. CONTRACTOR SHALL VERIFY RECEPTACLE TYPE PRIOR TO ROUGH IN.



4 E-200 POWER PLAN - COMPUTER CLASSROOM
SCALE: 1/4"=1'-0"



5 E-200 EXISTING ELECTRICAL ROOM LAYOUT
SCALE: 1/4"=1'-0"

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ISSUE FOR BID	05/25/16

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SOUTH CAROLINA — ELECTRICAL DESIGN CONSULTANTS, INC. No. C01139 — CERTIFICATE OF AUTHORIZATION

USC Aiken - Engineering Renovations
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GMC # 160007

ISSUE FOR BID

05•25•16

POWER PLAN - OFFICE AREA, ENGINEERING LAB AND COMPUTER CLASSROOM

E-200

sheet of

SPECIFICATIONS:

SECTION 16000 - GENERAL

1.01 WORK INCLUDED

A. THIS DIVISION OF THE SPECIFICATIONS (16000) COVERS THE COMPLETE ELECTRICAL SYSTEM FOR ALL WORK SHOWN ON THE DRAWINGS AS SPECIFIED HEREIN PROVIDING ALL MATERIAL, LABOR AND EQUIPMENT REQUIRED FOR THE INSTALLATION OF THE ELECTRICAL SYSTEMS COMPLETE AND IN OPERATING CONDITION.

B. INCLUDE IN THE ELECTRICAL WORK ALL THE NECESSARY SUPERVISION AND THE ISSUING OF ALL COORDINATING INFORMATION TO ANY OTHER TRADES WHO ARE SUPPLYING WORK TO ACCOMMODATE THE ELECTRICAL INSTALLATIONS.

C. THE DRAWINGS FOR ELECTRICAL WORK UTILIZE SYMBOLS AND SCHEMATIC DIAGRAMS WHICH HAVE NO DIMENSIONAL SIGNIFICANCE. THE WORK SHALL THEREFORE, BE INSTALLED TO FULFILL THE DIAGRAMMATIC INTENT EXPRESSED ON THE ELECTRICAL DRAWINGS.

D. REVIEW ARCHITECTURAL DRAWINGS FOR DOOR SWINGS, CABINETS, COUNTERS, MOLDINGS AND BUILT-IN EQUIPMENT, CONDITIONS INDICATED ON ARCHITECTURAL DRAWINGS SHALL GOVERN. PRIOR TO ROUGH-IN OF RECEPTACLES AND SYSTEMS OUTLETS, REFER TO ARCHITECTURAL CASEWORK DRAWINGS FOR ROUGH-IN COORDINATION.

E. SUBMIT FOR APPROVAL BY THE ARCHITECT ALL MATERIALS AND EQUIPMENT TO BE INCORPORATED IN THE ELECTRICAL WORK.

F. SUBMIT ONLY SHOP DRAWINGS WHICH COMPLY WITH THE CONTRACT DOCUMENTS.

G. MARK EACH INDIVIDUAL SUBMITTAL ITEM TO SHOW SPECIFICATION SECTION WHICH PERTAINS TO THE ITEM.

H. WHEN SHOP DRAWINGS ARE REVIEWED, SOME ERRORS MAY BE DETECTED BUT OTHERS MAY BE OVERLOOKED. THIS DOES NOT GRANT THE CONTRACTOR PERMISSION TO PROCEED IN ERROR. REGARDLESS OF ANY INFORMATION CONTAINED IN THE SHOP DRAWINGS, THE REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS SHALL BE FOLLOWED AND ARE NOT WAIVED OR SUPERSEDED IN ANY WAY BY THE SHOP DRAWING REVIEW.

I. ONE COMPLETE SET OF ELECTRICAL DRAWINGS SHALL BE RESERVED FOR AS-BUILT DRAWINGS. ANY APPROVED DEVIATION FROM THE CONTRACT DRAWINGS SHALL BE RECORDED ON THESE DRAWINGS.

J. COMPLETED AS-BUILT DRAWINGS SHALL BE PRESENTED TO THE ARCHITECT PRIOR TO FINAL INSPECTION.

K. PROVIDE AT THE TIME OF FINAL INSPECTION THREE SETS OF MAINTENANCE AND OPERATING INSTRUCTION FOR: LIGHTING AND POWER PANELBOARDS, FUSES, WIRING DEVICES

L. ALL ELECTRICAL WORK SHALL MEET OR EXCEED THE LATEST REQUIREMENTS OF THE FOLLOWING CODES AND/OR OTHER AUTHORITIES EXERCISING JURISDICTION OVER THE ELECTRICAL CONSTRUCTION WORK AND THE PROJECT.

a. THE NATIONAL ELECTRICAL CODE (NFPA 70) - 2014 EDITION
b. THE NATIONAL ELECTRICAL SAFETY CODE (ANSI C-2)
c. THE LIFE SAFETY CODE (NFPA 101) - 2003 EDITION
d. THE INTERNATIONAL BUILDING CODE - 2003 EDITION
e. REGULATIONS OF THE LOCAL UTILITY COMPANY WITH RESPECT TO METERING AND SERVICE ENTRANCE.
f. MUNICIPAL AND STATE ORDINANCES GOVERNING ELECTRICAL WORK.

M. ALL REQUIRED PERMITS AND INSPECTION CERTIFICATES SHALL BE OBTAINED, AND MADE AVAILABLE AT THE COMPLETION OF THE WORK. PERMITS, INSPECTIONS, AND CERTIFICATION FEES SHALL BE PAID FOR AS A PART OF THE ELECTRICAL WORK.

N. THIS CONTRACTOR SHALL SCHEDULE HIS WORK AND IN EVERY WAY POSSIBLE COOPERATE WITH ALL OTHER CONTRACTORS ON THE JOB TO AVOID DELAYS, INTERFERENCES, AND UNNECESSARY WORK. HE SHALL NOTIFY THEM OF ALL OPENINGS, HANGERS, EXCAVATIONS, ETC., SO THAT PROPER PROVISIONS SHALL BE MADE FOR HIS WORK.

O. THIS CONTRACTOR SHALL DO ALL CUTTING AND EXCAVATING NECESSARY FOR THE COMPLETE INSTALLATION OF HIS WORK, BUT HE SHALL NOT CUT THE WORK OF ANY OTHER CONTRACTOR WITHOUT FIRST CONSULTING THE ARCHITECT. HE SHALL REPAIR ANY WORK DAMAGED BY HIM OR HIS WORKMEN, EMPLOYING THE SERVICES OF THE CONTRACTOR WHOSE WORK IS DAMAGED. SAW CUT EXISTING SLAB AS REQUIRED FOR ROUTING CONDUITS AND FLOOR BOXES NOTED TO BE INSTALLED IN EXISTING FLOORS. RESTORE TO ORIGINAL FINISH.

P. RACEWAYS, FIXTURES, DEVICES, AND OTHER ELECTRICAL EQUIPMENT SHALL BE INSTALLED IN A NEAT AND WORKMANLIKE MANNER AND IN ACCORDANCE WITH RECOGNIZED GOOD PRACTICE FOR A FIRST CLASS INSTALLATION.

Q. THE ARCHITECT OR HIS REPRESENTATIVE SHALL HAVE THE AUTHORITY TO REJECT ANY WORKMANSHIP NOT COMPLYING WITH THE CONTRACT DOCUMENTS.

R. THE ELECTRICAL CONTRACTOR SHALL PERSONALLY OR THROUGH AN AUTHORIZED LICENSED AND COMPETENT ELECTRICIAN, CONSTANTLY SUPERVISE THE WORK FROM BEGINNING TO COMPLETE AND FINAL INSPECTION.

S. ALL EMPTY CONDUITS SHALL HAVE A PULL STRING INSTALLED. ALL FLUSH RECESSED BOXES SHALL HAVE BLANK PLATES INSTALLED.

T. THE CONTRACTOR SHALL PERFORM ALL EXCAVATION TO INSTALL CONDUIT STRUCTURES AND EQUIPMENT SPECIFIED IN THIS DIVISION OF THE SPECIFICATIONS.

U. ALL EQUIPMENT REQUIRING ELECTRICAL POWER CONNECTIONS SHALL BE CONNECTED UNDER THIS DIVISION OF THESE SPECIFICATIONS.

V. ELECTRICAL CIRCUITS TO EQUIPMENT FURNISHED UNDER OTHER SECTIONS OF THESE SPECIFICATIONS ARE BASED ON DESIGN LOADS. IF ACTUAL EQUIPMENT FURNISHED HAS LOADS OTHER THAN DESIGN LOADS ELECTRICAL CIRCUITS AND PROTECTIVE DEVICES SHALL BE REVISED TO BE COMPATIBLE WITH EQUIPMENT FURNISHED AT NO ADDITIONAL COST TO THE OWNER. ANY REVISIONS MUST HAVE PRIOR APPROVAL BY THE ARCHITECT

W. REMOVE OIL, DIRT, GREASE AND FOREIGN MATERIALS FROM ALL RACEWAYS, FITTINGS, BOXES, PANELBOARD TRIMS AND CABINETS TO PROVIDE A CLEAN SURFACE FOR PAINTING. TOUCH-UP SCRATCHED OR MARRED SURFACES OF LIGHTING FIXTURES, PANELBOARD AND CABINET TRIMS, MOTOR CONTROL CENTER, SWITCHBOARD OR EQUIPMENT ENCLOSURES WITH PAINT FURNISHED BY THE EQUIPMENT MANUFACTURERS SPECIFICALLY FOR THAT PURPOSE.

X. ALL SYSTEMS AND COMPONENT PARTS SHALL BE GUARANTEED FOR ONE YEAR FROM THE DATE OF FINAL ACCEPTANCE OF THE COMPLETE PROJECT. DEFECTS FOUND DURING THIS GUARANTEED PERIOD SHALL BE PROMPTLY CORRECTED AT NO ADDITIONAL COST TO THE OWNER.

SECTION 16010 - LIGHTING AND POWER PANELBOARDS

A. COMPLETE PANELBOARD SHOP DRAWINGS SHALL BE SUBMITTED, LISTING AS A MINIMUM THE FOLLOWING ITEMS: VOLTAGE RATING, BUS ASSEMBLY RATING, MAIN BREAKER RATING BY CAPACITY, NUMBER OF POLES AND INTERRUPTING RATING IN RMS SYMMETRICAL AMPERES, SURFACE OR FLUSH MOUNTING, LISTING OF BRANCH BREAKERS BY CAPACITY NUMBER OF POLES AND INTERRUPTING RATING IN RMS SYMMETRICAL AMPERES, SCHEDULE SIMILAR TO THAT SHOWN ON THE DRAWINGS, DEPICTING BRANCH BREAKER ARRANGEMENT AND BREAKER SIZES AND GIVING FULL EXPLANATION FOR ANY DIFFERENCE BETWEEN THE TWO., LUG SIZES AS REQUIRED FOR FEEDERS SHOWN ON DRAWINGS.

B. FOR THE PURPOSE OF SELECTING QUALITY AND TYPES OF PANELS, EQUIPMENT AS MANUFACTURED BY SQUARE "D" COMPANY HAS BEEN SPECIFIED. FOLLOWING MANUFACTURERS MEETING THESE SPECIFICATIONS ARE ACCEPTABLE: G. E., SIEMENS, CUTLER HAMMER

C. FURNISH AND INSTALL CIRCUIT BREAKER LIGHTING AND POWER PANELBOARDS AS INDICATED IN THE PANELBOARD SCHEDULE AND WHERE SHOWN ON THE PLANS. PANELBOARDS SHALL BE OF THE DEAD-FRONT SAFETY TYPE, EQUIPPED WITH THERMAL MAGNETIC MOLDED CASE CIRCUIT BREAKERS WITH FRAME AND TRIP RATING AS SHOWN IN THE SCHEDULE.

D. CIRCUIT BREAKERS SHALL BE HACR RATED, QUICK-MAKE, QUICK-BREAK, THERMAL-MAGNETIC, TRIP-INDICATING, AND HAVE COMMON TRIP ON ALL MULTI-POLE BREAKERS. TRIP INDICATION SHALL BE CLEARLY SHOWN BY THE BREAKER HANDLE TAKING POSITION BETWEEN ON AND OFF, WHEN THE BREAKER IS TRIPPED. BRANCH CIRCUIT BREAKERS FEEDING CONVENIENCE OUTLETS SHALL HAVE SENSITIVE INSTANTANEOUS TRIP SETTING OF NOT MORE THAN 10 TIMES THE TRIP RATING OF THE BREAKERS. CONNECTION TO BUS IN ALL PANELS SHALL BE BOLTED. ALL BREAKERS SHALL BE 20 AMPERE TRIP, UNLESS OTHERWISE SHOWN. ALL BREAKERS SHALL BE MINIMUM FOR 120/208 VOLTS 10,000 A.I.C. SYM. UNLESS OTHERWISE NOTED.

E. PANEL FRONT SHALL BE PROVIDED WITH A CONTINUOUS PIANO HINGE ON ONE SIDE. CUTLER HAMMER “EZ-TRIM” IS NOT ACCEPTABLE.

F. A STEEL CIRCUIT DIRECTORY FRAME PERMANENTLY ATTACHED (SPOT WELDED) AT FACTORY (NOT GLUED), AND CARD WITH A CLEAR PLASTIC COVERING SHALL BE PROVIDED ON THE INSIDE OF THE DOOR. THE DIRECTORY CARD SHALL PROVIDE A SPACE AT LEAST 1/4" HIGH X 3" LONG FOR EACH CIRCUIT.

G. ALL PANELS SHALL BE EQUIPPED WITH A COPPER EQUIPMENT GROUNDING BAR. THE BAR SHALL HAVE LUGS OF SUFFICIENT SIZE TO HANDLE ALL GROUNDING CONDUCTORS.

H. WIRING IN PANELBOARDS SHALL BE NEATLY GROUPED AND SECURED WITH TY-WRAPS.

I. ELECTRICAL PANELS SHALL NOT BE USED AS WIREWAYS OR JUNCTION BOXES FOR CONTROL CONDUCTORS.

SECTION 16020 - RACEWAYS

A. ACCEPTABLE MANUFACTURERS OF RIGID STEEL AND ELECTRICAL METALLIC TUBING CONDUIT ARE: ALLIED TUBE AND CONDUIT CO., WHEATLAND TUBE CO., REPUBLIC CONDUIT

C. ALL METALLIC CONDUIT AND ELECTRIC METALLIC TUBING SHALL BE STEEL, OF STANDARD PIPE DIMENSIONS, SMOOTH INSIDE AND OUT, AND SHALL BE GALVANIZED. WHERE THE WORD "CONDUIT" IS USED HEREINAFTER IT SHALL MEAN EITHER, ELECTRIC METALLIC TUBING, FLEXIBLE STEEL CONDUIT, OR LIQUID TIGHT FLEXIBLE STEEL CONDUIT. INTERMEDIATE GRADE CONDUIT IS NOT ACCEPTABLE.

D. ALL CONDUIT SHALL BE CONCEALED IN BUILDING CONSTRUCTION EXCEPT AS NOTED OR SHOWN OTHERWISE. IN AREAS WITH NO FINISHED CEILING AND WHERE CONDUIT IS RUN EXPOSED ALL RUNS DOWN TO SWITCHES, RECEPTACLES, ETC. SHALL WHEN POSSIBLE BE CONCEALED IN WALL. IT IS THE INTENT OF THESE SPECIFICATIONS THAT ALL CONDUIT WILL BE CONCEALED WHENEVER POSSIBLE. WHERE OUTLETS ARE REQUIRED TO BE INSTALLED ON EXISTING WALLS IN A FINISHED SPACE, RACEWAY AND OUTLET BOX SHALL BE WIREMOLD SURFACE METAL RACEWAY.

E. EMT FITTINGS SHALL BE COMPRESSION AND MADE OF STEEL FOR SIZES TWO INCHES OR SMALLER, STEEL SET SCREW TYPE FITTINGS MAY BE USED ON SIZES 2 1/2" OR LARGER. CONNECTORS AND COUPLINGS SHALL BE RAIN TIGHT AND SHALL HAVE A NYLON INSULATED THROAT. ALL FITTINGS SHALL BE "UL" APPROVED. EMT CONDUIT (IN SIZES 2 ½" THROUGH 4") PROVIDED WITH INTEGRAL STEEL COMPRESSION OR SET SCREW COUPLING ON ONE (1) END OF THE CONDUIT IS ACCEPTABLE. DIE CAST, AND INDENTER TYPE FITTINGS ARE NOT ACCEPTABLE. FITTINGS FOR FLEXIBLE STEEL CONDUITS AND LIQUID TIGHT FLEXIBLE CONDUIT SHALL BE STEEL AND HAVE NYLON INSULATED THROAT.

F. CONDUIT AND EMT SYSTEMS INDICATED ON THE DRAWINGS FOR COMMUNICATION AND SIGNALING SYSTEMS ARE FOR TYPICAL SYSTEMS. INSTALL CONDUIT AND EMT SYSTEMS FOR THE SYSTEM BEING INSTALLED.

G. CLOSE EMPTY CONDUIT AND EMT AS COMPLETE RUNS BEFORE PULLING IN THE CABLES AND WIRES.

H. INSTALL EXPOSED CONDUIT AND EMT PARALLEL TO OR AT RIGHT ANGLES WITH THE LINES OF THE BUILDING. LOCATE THEM SO THEY WILL NOT OBSTRUCT HEADROOM OR WALKWAYS OR CAUSE TRIPPING.

I. INSTALL CONDUIT OR EMT CLAMPS:
a. AT INTERVALS AS REQUIRED BY THE NEC.
b. ABOVE SUSPENDED CEILINGS, METAL SUPPORTS MAY BE INSTALLED AS PERMITTED BY THE NEC, EXCEPT THAT CONDUIT CANNOT BE SUPPORTED OR SECURED TO THE T-BAR GRID OR FROM THE WIRE SUPPORTING THE T-BAR GRID.
c. TRAPEZE, SPLIT RING, BAND OR CLEVIS HANGER MAY BE INSTALLED AS PERMITTED BY THE NEC. TRAPEZE HANGERS SHALL BE STRUCTURAL METAL CHANNELS, ANGLE IRONS OR PREFORMED METAL CHANNEL SHAPES WITH THE CONDUIT AND EMT RUNS HELD ON SPECIFIC CENTER BY U BOLTS, CLIPS OR CLAMPS. DO NOT SUPPORT CONDUIT FROM CEILING SUSPENSION WIRE OR FROM OTHER CONDUIT.
d. CHAIN, WIRE OR PERFORATED STRAP SUPPORTS WILL NOT BE ACCEPTABLE. NOR ARE THEY ACCEPTABLE AS A MEANS OF SECURING THE CONDUIT.

SECTION 16030 - CONDUCTORS

O. ACCEPTABLE MANUFACTURERS ARE: GENERAL, SOUTHWIRE, ESSEX OR APPROVED EQUAL

P. ALL WIRING SHALL BE MANUFACTURED IN THE UNITED STATES.

Q. RATINGS AND SIZES:

a. SHALL BE NOT LESS THAN INDICATED ON THE DRAWINGS AND NOT LESS THAN REQUIRED BY THE NEC.
b. MINIMUM SIZE SHALL BE NO. 12 AWG COPPER PROVIDED THE MAXIMUM VOLTAGE DROPS IN THE CONTROL CIRCUITS WILL NOT ADVERSELY AFFECT THE OPERATION OF THE CONTROLS.
c. CONDUCTOR SIZES INDICATED ON THE DRAWINGS ARE FOR COPPER CONDUCTORS.

R. CONDUCTORS AND GROUND WIRES:
a. SHALL BE COPPER.
b. SIZE NO. 8 AWG AND LARGER SHALL BE STRANDED.
c. SIZE NO. 10 AWG AND SMALLER SHALL BE SOLID.

E. CONDUCTOR INSULATION: CONDUCTOR INSULATION SHALL BE THE NEC TYPE THHN.

F. WIRE SHALL BE FACTORY COLOR CODED IN SIZE NO. 6 AND SMALLER. COLOR SHALL BE BY INTEGRAL PIGMENTATION WITH A SEPARATE COLOR FOR EACH PHASE, NEUTRAL AND GROUNDING CONDUCTOR. COLOR CODE PER PHASE SHALL BE CONTINUOUS THROUGHOUT THE PROJECT.

G. ALL WIRING SHALL BE IN CONDUIT UNLESS SPECIFICALLY NOTED OTHERWISE.

H. OUTER JACKETS SHALL BE COLOR CODED AS FOLLOWS:
a. THREE PHASE OR SINGLE PHASE CIRCUITS, 120/208 VOLTS:
b. PHASE A - BLACK
c. PHASE B - RED
d. PHASE C - BLUE
e. NEUTRAL - WHITE
f. INSULATED GROUND WIRE - GREEN
g. DEDICATED NEUTRALS SHALL BE PROVIDED FOR ALL MULTI-WIRE BRANCH CIRCUITS AND OUTER JACKET SHALL BE PROVIDED WITH APPROPRIATE COLORED TRACER. 120/208V: WHITE WITH RED TRACER, WHITE WITH BLUE TRACER, WHITE WITH BLACK TRACER.
h. ONLY FOR LARGE POWER CABLES AND WIRES WHICH DO NOT HAVE COLOR CODED JACKETS: NO. 6 AND LARGER.
i. INSTALL BANDS OF ADHESIVE NON-FADING COLORED TAPE OR SLIP-ON BANDS OF COLORED PLASTIC TUBING OVER THE CABLES AND WIRES AT THEIR ORIGINATING AND TERMINATIONS POINTS AND AT ALL OUTLETS OF JUNCTION BOXES.
j. COLOR SHALL BE PERMANENT AND SHALL WITHSTAND CLEANINGS.

SECTION 16040 - OUTLETS

A. BOXES SHALL BE GALVANIZED PRESSED SHEET STEEL FOR ALL CONCEALED WORK.

B. WHERE CONDUIT RUNS ARE EXPOSED, OUTLET SHALL BE OF THE CAST METAL TYPE.

C. FOR CONCEALED WORK EACH BOX SHALL BE PROVIDED WITH A SQUARE CORNERED PLASTER RING.

D. EACH SURFACE LIGHTING FIXTURE, RECEPTACLE AND SWITCH SHALL BE PROVIDED WITH FLUSH MOUNTED OUTLET BOX. ALL OUTLETS INSTALLED IN PANELS AND OTHER ARCHITECTURAL FEATURES SHALL BE CENTERED. THE LOCATION OF ANY OUTLET MAY BE MOVED AS MUCH AS 10'-0" BY THE ARCHITECT BEFORE THE OUTLET IS PLACED WITHOUT INCURRING ANY EXTRA COST. ALL DIMENSIONS REFER TO THE FINISHED FLOOR LINE. OUTLET BOXES SHALL BE PRESSED SHEET STEEL AND SHALL BE GALVANIZED FOR ALL CONCEALED WORK. WHERE CONDUIT RUNS ARE EXPOSED OUTLETS SHALL BE OF THE CAST METAL TYPE.

E. BOXES SHALL BE FOR THE SERVICE AND THE TYPE OF OUTLET AND SHALL NOT BE LESS THAN 4" SQUARE AND 1-1/2" DEEP EXCEPT WHERE OTHERWISE SPECIFIED. BOXES INSTALLED IN WALLS SHALL BE PROVIDED WITH A SQUARE CORNERED 1-1/2" PLASTER RING INSTALLED FLUSH WITH SURFACE OF WALL. COORDINATE DEPTH OF PLASTER RING REQUIRED FOR PARTICULAR WALL CONSTRUCTION. EACH OUTLET BOX ABOVE CEILING SHALL BE SUPPORTED FROM A STRUCTURAL MEMBER OF THE BUILDING EITHER DIRECTLY OR BY USING A SUBSTANTIAL AND APPROVED METAL SUPPORT. CONDUIT IS NOT AN APPROVED MEANS OF SUPPORT. BOXES INSTALLED IN WALL SHALL BE SUPPORTED EITHER DIRECTLY TO A STUD OR BETWEEN STUDS UTILIZING AN APPROVED BAR HANGER. IN NO CASE SHALL SWITCH BOX SUPPORT AND CLIPS USED FOR MOUNTING BOXES IN OLD WORK BE USED UNLESS SPECIFICALLY CALLED FOR. TOP OF OUTLET BOX SHALL BE LEVEL.

F. ALL CEILING OR WALL RECESSED OUTLET BOXES OR THEIR ASSOCIATED PLASTER RINGS SHALL BE FLUSH WITH THE FINISHED SURFACE. USING COVERPLATE TO SECURE WIRING DEVICES OR SHIMMING THE DEVICE IS NOT ACCEPTABLE. CONTRACTOR SHALL EXERCISE DUE CARE WHEN CUTTING OPENING IN WALLS OR CEILINGS FOR OUTLET BOXES SO THAT OPENING SIZE WILL PERMIT THE PROPER INSTALLATION OF BOXES AND DEVICES. FIXTURE STUDS IN CEILINGS AND BRACKET OUTLETS SHALL BE BOLTED WITH STOVE BOLTS OR SHALL BE LOCKING TYPE OF STUD MOUNTING.

G. REMOVE ONLY KNOCKOUTS AS REQUIRED AND PLUG UNUSED OPENINGS. USE THREADED PLUGS FOR CAST METAL BOXES AND SNAP-IN METAL COVERS FOR SHEET METAL BOXES.

H. "THERE SHALL BE NO OUTLETS INSTALLED BACK TO BACK. A MINIMUM OF 4" SHALL SEPARATE EACH OUTLET."

I. WHERE THE VOLUME ALLOWED PER CONDUCTOR EXCEEDS THAT ALLOWED IN TABLE 370-6(B) OF THE NEC FOR THE MINIMUM SIZE OUTLET SPECIFIED, A LARGER SIZE OUTLET BOX SHALL BE USED AND SHALL BE SIZED IN ACCORDANCE WITH THE TABLE NOTED ABOVE.

J. OUTLET BOXSES SHALL BE CLEAN AND FREE FROM DUST, PAINT, DIRT, PLASTER READY MIX JOINT COMPOUND AND /OR ANY OTHER DEBRIS.

K. ALL JUNCTION BOX COVER PLATES SHALL BE LABELED IDENTIFYING THE SYSTEM IT CONTAINS. THE LABEL SHALL BE NEATLY HAND WRITTEN WITH A WIDE TIP PERMANENT NON-REMOVABLE MARKER AND BE EASILY IDENTIFIED. JUNCTION BOXES CONTAINING HIGH VOLTAGE WIRING SHALL INCLUDE PANEL AND CIRCUIT DESIGNATION (EX. HA - 1,3,5 OR LA - 2,4,6). JUNCTION BOXES UTILIZED FOR LOW VOLTAGE SYSTEM SHALL BE LABELED IN ACCORDANCE WITH THE SYSTEM (EX. FA FOR FIRE ALARM SYSTEM).

SECTION 16050 - WIRING DEVICES AND DEVICE PLATE

A. FOR THE PURPOSE OF SELECTING QUALITY AND TYPE OF DEVICE, EQUIPMENT MANUFACTURED BY HUBBELL HAS BEEN SPECIFIED. THE FOLLOWING MANUFACTURERS MEETING THIS SPECIFICATION ARE ACCEPTABLE: PASS AND SEYMOUR, COOPER, LEVITON

B. SWITCHES: ALL WALL SWITCHES SHALL BE RATED 20 AMPERE, 120/277 VOLTS, HAVE SELF GROUNDING PROVISIONS, SIDE WIRING ONLY AND SHALL BE OF THE SILENT TYPE. COLOR SHALL BE GRAY.

a. SINGLE POLE: HBL 1221.
b. THREE WAY: HBL 1223.
c. FOUR WAY: HBL 1224.

C. RECEPTACLE: ALL RECEPTACLES SHALL BE OF THE GROUNDING TYPE, OF THE CONFIGURATION SHOWN ON THE DRAWINGS AND SHALL BE FLUSH WALL MOUNTING TYPE. COLOR SHALL BE GRAY, WITH EXCEPTION OF RECEPTACLES MOUNTED IN WIREMOLD #V4000 RACEWAY WHICH SHALL BE IVORY.

a. STANDARD DUPLEX RECEPTACLE: 20 AMPERE, 125 VOLT, NEMA TYPE 5-20 R, 2 POLE, 3 WIRE, STRAIGHT BLADE, U-GROUNDING SLOT, SPECIFICATION GRADE. HBL 5362.
b. GROUND FAULT INTERRUPTER RECEPTACLE: 20 AMPERE, 125 VOLTS, NEMA TYPE 5-20R, 2-POLE, 3-WIRE WITH GROUNDED U SLOT. HBL GF5362.

D. DEVICE PLATES: PLATES SHALL BE FURNISHED FOR ALL DEVICES AND OUTLETS INDICATED ON THE DRAWINGS (TELEPHONE, COMPUTER, TV, ETC.). ALL PLATES ON MASONRY WALLS SHALL BE OVERSIZED JUMBO TYPE.

E. FLUSH MOUNTED PLATES: BEVELED TYPE WITH SMOOTH ROLLED OUTER EDGE, STAINLESS STEEL TYPE 302 WITH BRUSHED FINISH.

F. SURFACE BOX PLATES, BEVELED, GALVANIZED STEEL, PRESSURE FORMED FOR SMOOTH EDGE TO FIT BOX.

G. DIE CAST WEATHERPROOF COVER. LOCKABLE HASP VERTICAL MOUNTING. INTERMATIC #WP1010MC.

H. SWITCHES:

a. SWITCHES SHALL BE CONNECTED TO THE LIVE SIDE OF THE CIRCUIT AND SHALL CONTROL ONLY THE OUTLETS INDICATED.
b. CONDUCTORS SHALL BE LOOPED AROUND THE TERMINAL SCREW.
c. WHERE MORE THAN ONE SWITCH IS INDICATED IN THE SAME LOCATION SWITCHES SHALL BE GANG MOUNTED UNDER A COMMON PLATE.
d. CENTER LINE OF SWITCHES IN GENERAL, SHALL BE SET 3'-6" ABOVE THE FLOOR (OFF POSITION DOWN) AND SHALL CLEAR THE DOOR TRIM OR CORNER BY 4" OR CENTER THE SPACE OCCUPIED.
e. ARCHITECTURAL PLANS SHALL BE CONSULTED BEFORE PLACING SWITCHES SO THEY WILL IN EVERY CASE BE LOCATED ON THE STRIKE SIDE OF THE DOOR AND CLEAR DOOR, CHAIR, WINDOW, AND BASEBOARD MOLDINGS.
f. SWITCHES SHALL BE SCREWED TIGHT TO THE BOXES AND SHALL NOT DEPEND ON THE COVER PLATE TO PULL THEM TIGHT.

I. RECEPTACLES:

a. CONDUCTORS SHALL BE LOOPED AROUND THE TERMINAL SCREWS, "DO NOT BACK WIRE DEVICES."
b. RECEPTACLES SHALL BE GROUNDED BY THE GREEN WIRE BOND AND SHALL BE PIGTAILED AS SHOWN ON THE DRAWINGS.
c. RECEPTACLES SHALL BE SCREWED TIGHT TO THE PLASTER RING OR OUTLET BOX AND SHALL NOT DEPEND ON THE DEVICE PLATE TO PULL THEM TIGHT.
d. CENTER LINE OF GENERAL USE RECEPTACLES SHALL BE IN GENERAL, SET 18" ABOVE THE FLOOR WITH RECEPTACLE MOUNTED IN THE VERTICAL POSITION AND WITH GROUNDING POLE AT THE BOTTOM.
e. COORDINATE RECEPTACLE HEIGHT WITH ARCHITECTURAL DRAWINGS AND LOCATE SO THAT BOTTOM OF RECEPTACLE PLATE SHALL BE 1" ABOVE COUNTER OR BACK SPLASH AND CLEAR ALL MOLDINGS.
f. CENTER LINE OF RECEPTACLES LOCATED ADJACENT TO LAVATORIES IN TOILETS SHALL BE SET 3'-6" ABOVE FLOOR.
g. RECEPTACLES SERVING WATER COOLERS SHALL BE LOCATED WITHIN COOLER HOUSING OR AS CLOSE TO BOTTOM OF HOUSING AS POSSIBLE. CORD SERVING UNIT SHALL BE AS SHORT AS POSSIBLE. IN NO CASE SHALL CORD OR RECEPTACLE BE SEEN FROM NORMAL VIEWING ANGLE.
h. ALL RECEPTACLES INSTALLED IN BATHROOMS OR TOILETS OR WITHIN 6 FEET OF LAVATORIES OR SINKS, OR ANY RECEPTACLE LOCATED ON BUILDING EXTERIOR SHALL BE GROUND FAULT CIRCUIT INTERRUPTER TYPE.
i. ALL RECEPTACLES INSTALLED IN KITCHENS OR OUTDOORS SHALL BE GFCI TYPE.

J. PLATES:

a. PLATES SHALL BE LEVEL AND ALL EDGES SHALL BE IN FULL CONTACT WITH WALL.
b. PLATES SHALL BE FURNISHED FOR ALL DEVICES AND OTHER OUTLETS INDICATED ON THE DRAWINGS.
c. INSTALL PLATES ON OUTLET BOXES AND JUNCTION BOXES IN UNFINISHED AREAS ABOVE CEILINGS AND ON SURFACE MOUNTED OUTLETS.
d. PLATES SHALL NOT BE USED TO KEEP DEVICES SECURE.
e. PLATES SHALL BE CLEAN AND FREE FROM DUST, PLASTER OR PAINT AND SPOTS.
f. PLATE SHALL COVER OPENINGS AROUND OUTLETS.

SECTION 16060 - LIGHTING FIXTURES AND LAMPS

A. LIGHTING FIXTURES SHALL BE SELECTED FROM THOSE FIXTURES INCLUDED IN THE FIXTURE SCHEDULE AS NOTED ON THE DRAWINGS OR IN THE SPECIFICATIONS.

B. LAMP MANUFACTURE: SYLVANIA, PHILLIPS, GENERAL ELECTRIC, E.Y.E.

C. FIXTURES SHALL BE SELECTED FROM THE FIXTURE SCHEDULE NOT ONLY BY CATALOG NUMBER BUT WITH CONSIDERATION TO MOUNTING, NUMBER AND TYPES OF LAMPS, AND REFERENCE NOTES AS CONTAINED IN THE FIXTURE SCHEDULE AND AS NOTED ON THE DRAWINGS AND IN THE SPECIFICATIONS. MANUFACTURERS NOT LISTED ON FIXTURE SCHEDULE OR ADDED BY ADDENDUM WILL NOT BE ACCEPTED.

D. SUPPORT OF LIGHTING FIXTURES SHALL BE THE RESPONSIBILITY OF THE FIXTURE INSTALLER AND SHALL BE AS FOLLOWS:

a. RECESSED FIXTURE FLUSH MOUNTED IN EXPOSED TEE, SUSPENDED ACOUSTICAL TILE CEILINGS SHALL BE OF THE LAY-IN TYPE AND SHALL BE SUPPORTED AT DIAGONAL CORNERS OF THE FIXTURE, UTILIZING TWO (2) #14 GAUGE STEEL WIRES ATTACHED TO THE BAR JOIST OR OVERHEAD STRUCTURE. FLEXIBLE CONDUIT AND WIRING FROM OUTLET BOX TO FIXTURE SHALL BE MINIMUM 3/8"C., AND MINIMUM #14 THHN CONDUCTORS. FACTORY SUPPLIED WHIPS OF SMALLER RATINGS ARE NOT ACCEPTABLE.

E. LIGHTING FIXTURES SHALL BE LOCATED AS SHOWN ON THE LIGHTING PLAN. IF FOR ANY REASON THIS IS IMPOSSIBLE OR IMPRACTICAL, THE ARCHITECT SHALL BE NOTIFIED IMMEDIATELY FOR A DECISION AS TO THE BEST DIRECTION FOR THE SHIFT.

F. UPON COMPLETION OF INSTALLATION, LIGHTING FIXTURES AND EQUIPMENT SHALL BE IN FIRST CLASS OPERATING ORDER, IN PERFECT CONDITION AS TO FINISH, FREE FROM DEFECTS. AT FINAL INSPECTION, FIXTURES SHALL BE COMPLETELY LAMPED, BE COMPLETE WITH REQUIRED DIFFUSERS, REFLECTORS, SIDE PANELS, LOUVERS OR THE OTHER COMPONENTS NECESSARY TO COMPLETE FIXTURES. ALL FIXTURES AND EQUIPMENT SHALL BE CLEAN AND FREE FROM DUST, INSECTS, PLASTER OR PAINT SPOTS. ANY REFLECTORS, DIFFUSERS, SIDE PANELS OR OTHER PARTS BROKEN PRIOR TO FINAL INSPECTION SHALL BE REPLACED BY CONTRACTOR.

SECTION 16065 - OCCUPANCY SENSORS

A. FOR THE PURPOSE OF SELECTING QUALITY AND TYPES OF SENSORS, EQUIPMENT AS MANUFACTURED BY “THE WATT STOPPER” HAS BEEN SPECIFIED. FOLLOWING MANUFACTURERS MEETING THESE SPECIFICATIONS ARE ACCEPTABLE:HUBBELL BUILDING AUTOMATION, NOVITAS, LEVITON

B. PRODUCTS SUPPLIED SHALL BE FROM A SINGLE MANUFACTURER THAT HAS BEEN CONTINUOUSLY INVOLVED IN THE MANUFACTURING OF OCCUPANCY SENSORS FOR A MINIMUM OF FIVE (5) YEARS. MIXING OF MANUFACTURERS SHALL NOT BE ALLOWED.

C. ALL COMPONENTS SHALL BE U.L. LISTED, OFFER A FIVE (5) YEAR WARRANTY AND MEET ALL STATE AND LOCAL APPLICABLE CODE REQUIREMENTS.

D. THE OBJECTIVE OF THIS SECTION IS TO ENSURE THE PROPER INSTALLATION OF THE OCCUPANCY SENSOR BASED LIGHTING CONTROL SYSTEM SO THAT LIGHTING IS TURNED OFF AUTOMATICALLY AFTER REASONABLE TIME DELAY WHEN A ROOM OR AREA IS VACATED BY THE LAST PERSON TO OCCUPY SAID ROOM OR AREA.

E. THE OCCUPANCY SENSOR BASED LIGHTING CONTROL SHALL ACCOMMODATE ALL CONDITIONS OF SPACE UTILIZATION AND ALL IRREGULAR WORK HOURS AND HABITS.

F. CONTRACTOR SHALL WARRANT ALL EQUIPMENT FURNISHED IN ACCORDANCE TO THIS SPECIFICATION TO BE UNDAMAGED, FREE OF DEFECTS IN MATERIALS AND WORKMANSHIP, AND IN CONFORMANCE WITH THE SPECIFICATIONS. THE SUPPLIER'S OBLIGATION SHALL INCLUDE REPAIR OR REPLACEMENT, AND TESTING WITHOUT CHARGE TO THE OWNER, ALL OR ANY PARTS OF EQUIPMENT WHICH ARE FOUND TO BE DAMAGED, DEFECTIVE OR NON-CONFORMING AND RETURNED TO THE SUPPLIER. THE WARRANTY SHALL COMMENCE UPON THE OWNER'S ACCEPTANCE OF THE PROJECT. WARRANTY ON LABOR SHALL BE FOR A MINIMUM PERIOD OF ONE (1) YEAR.

G. ALL PRODUCTS SHALL BE AS SHOWN DRAWINGS.

SECTION 16100 - PULL BOXES AND JUNCTION BOXES AND FITTINGS

H. BOXES SHALL BE PROVIDED IN THE RACEWAY SYSTEMS WHEREVER REQUIRED FOR THE PULLING OF WIRES AND THE MAKING OF CONNECTIONS.

I. PULL BOXES OF NOT LESS THAN THE MINIMUM SIZE REQUIRED BY THE NATIONAL ELECTRICAL CODE ARTICLE 370 SHALL BE CONSTRUCTED OF CODE-GAUGE GALVANIZED SHEET STEEL. BOXES SHALL BE FURNISHED WITH SCREW-FASTENED COVERS. COVERS ON FLUSH WALL MOUNTED BOXES IN WELL APPOINTED AREAS (OFFICES, RECEPTION, CLASSROOMS, MEDIA CENTER, ETC) SHALL BE MINIMUM 1/16 302 STAINLESS STEEL. BOXES LOCATED ON THE EXTERIOR OF THE BUILDING SHALL BE WATERTIGHT. COVERS SHALL BE SECURED WITH TAMPER PROOF SCREWS.

J. BOXES SHALL BE SECURELY AND RIGIDLY FASTENED TO THE SURFACE OF WHICH THEY ARE MOUNTED OR SHALL BE SUPPORTED FROM STRUCTURAL MEMBER OF THE BUILDING EITHER DIRECTLY OR BY USING A SUBSTANTIAL AND APPROVED METAL ROD OR BRACE.

K. ALL BOXES SHALL BE SO INSTALLED THAT THE WIRING CONTAINED IN THEM CAN BE RENDERED ACCESSIBLE WITHOUT REMOVING PART OF THE BUILDING.

L. WHERE SEVERAL CIRCUITS PASS THROUGH A COMMON PULL BOX, THE CIRCUITS SHALL BE TAGGED TO INDICATE CLEARLY THEIR ELECTRICAL CHARACTERISTICS, CIRCUIT NUMBER AND DESIGNATION.

M. ALL JUNCTION BOXES LARGER THAN 4" X 4" FLUSH MOUNTED IN WALL SHALL HAVE OVERLAPPING COVER PLATE TO COVER ROUGH-IN OPENINGS.

SECTION 16110 - GROUNDING

A. THE WORK REQUIRED UNDER THIS SECTION OF THE SPECIFICATIONS CONSISTS OF FURNISHING, INSTALLATION AND CONNECTIONS OF THE BUILDING SECONDARY GROUNDING SYSTEMS. EXTERIOR BRANCH CIRCUIT WIRING AND FEEDER CONDUCTORS EXTENDED BEYOND THE BUILDING ARE INCLUDED. THE BUILDING ELECTRICAL SYSTEM SHALL BE A 3 PHASE, 4 WIRE GROUNDED WYE DELTA SYSTEM SUPPLEMENTED WITH EQUIPMENT GROUNDING SYSTEM. EQUIPMENT GROUNDING SYSTEM SHALL BE ESTABLISHED WITH EQUIPMENT GROUNDING CONDUCTORS; THE USE OF METALLIC RACEWAYS FOR EQUIPMENT GROUNDING IS NOT ACCEPTABLE.

B. ALL MATERIALS SHALL BE UL LISTED AND BEAR A UL LABEL.

C. GROUNDING ELECTRODE CONDUCTOR SHALL BE BARE OR GREEN INSULATED COPPER CONDUCTOR SIZED AS INDICATED ON THE DRAWINGS.

D. EQUIPMENT GROUNDING CONDUCTORS SHALL BE GREEN INSULATED TYPE THHN CONDUCTORS SIZED AS INDICATED ON THE DRAWINGS. WHERE SIZE IS NOT INDICATED ON THE DRAWINGS, CONDUCTOR SIZE SHALL BE DETERMINED FROM THE NATIONAL ELECTRICAL CODE TABLE OF SIZES OF EQUIPMENT GROUNDING CONDUCTORS.

E. BONDING JUMPERS SHALL BE FLEXIBLE COPPER BONDING JUMPERS SIZED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE TABLE ON SIZES OF EQUIPMENT GROUNDING ELECTRODE CONDUCTORS.

F. EACH RECEPTACLE AND SWITCH DEVICE SHALL BE FURNISHED WITH A GROUNDING SCREW CONNECTED TO THE METALLIC DEVICE FRAME. BOND EQUIPMENT GROUNDING CONDUCTOR TO EACH OUTLET BOX. FOR ISOLATED GROUND RECEPTACLES, BOND EQUIPMENT GROUNDING CONDUCTOR TO BOX, AND ISOLATED GROUND CONDUCTOR TO DEVICE GROUNDING SCREW.

G. GROUND ALL NON-CURRENT CARRYING PARTS OF THE ELECTRICAL SYSTEM, I.E., WIREWAYS, EQUIPMENT ENCLOSURES AND FRAMES, JUNCTION AND OUTLET BOXES, MACHINE FRAMES AND OTHER CONDUCTIVE ITEMS IN CLOSE PROXIMITY WITH ELECTRICAL CIRCUITS, TO PROVIDE A LOW IMPEDANCE PATH FOR POTENTIAL GROUNDED FAULTS.

1. COLD WATER PIPING SYSTEM
2. GROUND ROD SYSTEM
3. STRUCTURAL STEEL METAL BUILDING FRAME, SEE DETAIL ON DRAWINGS
4. LIGHTNING PROTECTION SYSTEM
5. MAIN RE-BAR IN A FOUNDATION FOOTING
6. FIRE SPRINKLER PIPING
7. GAS PIPING

J. GROUND THE NEUTRAL OF ALL DRY TYPE TRANSFORMERS AS INDICATED ON THE DRAWINGS.

K. GROUNDING ELECTRODE CONNECTIONS TO STRUCTURAL STEEL, REINFORCING BARS, GROUND RODS, OR WHERE INDICATED ON THE DRAWINGS SHALL BE WITH CHEMICAL EXOTHERMIC WELD CONNECTION DEVICES RECOMMENDED FOR THE PARTICULAR CONNECTION TYPE. CONNECTIONS TO PIPING SHALL BE WITH UL LISTED MECHANICAL GROUND CLAMPS.

L. BONDING SHALL BE IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE.

M. GROUNDING CONDUCTORS SHALL BE PROVIDED IN ALL BRANCH CIRCUIT RACEWAYS AND CABLES. GROUNDING CONDUCTORS SHALL BE THE SAME AWG SIZE AS BRANCH CIRCUIT CONDUCTORS.

N. A GROUNDING CONDUCTOR SHALL BE INSTALLED IN ALL FLEXIBLE CONDUIT INSTALLATIONS. FOR BRANCH CIRCUITS, GROUNDING CONDUCTOR SHALL BE SIZED TO MATCH BRANCH CIRCUIT CONDUCTORS.

O. A FEEDER SERVING SEVERAL PANELBOARDS SHALL HAVE A CONTINUOUS GROUNDING CONDUCTOR WHICH SHALL BE CONNECTED TO EACH RELATED CABINET GROUNDING BAR.

SECTION 16120 - EQUIPMENT IDENTIFICATION

A. LAMINATED PLASTIC PLATES WITH 3/16" HIGH WHITE LETTER ETCHED ON BLACK BACKGROUND.

B. PLATES SHALL BE PERMANENTLY MOUNTED UTILIZING POP RIVETS OR A PERMANENT MASTIC/EPOXY.

C. PAINTED, STENCILED OR INDENTED TAPE IDENTIFICATION IS NOT ACCEPTABLE.

D. ALL ELECTRICAL APPARATUS SUCH AS WIRING TROUGHS, PANELBOARDS, INDIVIDUAL CIRCUIT BREAKERS, TRANSFORMERS AND DISCONNECT SWITCHES SHALL HAVE LAMINATED PLASTIC IDENTIFICATION PLATES. IDENTIFICATION SHALL MATCH LABELING SHOWN ON PLANS.

E. A "STEEL" CIRCUIT DIRECTORY FRAME PERMANENTLY ATTACHED AT FACTORY (NOT GLUED), AND A DIRECTORY CARD WITH A PLASTIC COVERING SHALL BE PROVIDED ON THE INSIDE OF EACH PANEL DOOR. THE DIRECTORY SHALL BE TYPED TO IDENTIFY THE LOAD FED BY EACH CIRCUIT AND THE AREAS SERVED. SPACES OR ROOM NUMBERS SHOWN ON THE DRAWINGS ARE NOT NECESSARILY THE FINAL NUMBERS TO BE ASSIGNED TO THESE AREAS. THE CONTRACTORS SHALL BEFORE COMPLETION OF THE PROJECT OBTAIN FROM THE ARCHITECT FINAL SPACE OR ROOM NUMBERS SO THAT IT CAN BE TYPED ONTO DIRECTORY.

F. CIRCUIT BREAKERS AND DISCONNECTS SHALL IDENTIFY DESIGNATION OF THE EQUIPMENT SERVED, CIRCUIT AND PANEL FROM WHICH IT IS SERVED AS WELL AS VOLTAGE/PHASE OF CIRCUIT.

G. ON ALL PANELBOARDS THE EXTERIOR IDENTIFICATION PLATE SHALL MATCH THAT ON THE DRAWINGS AND THE PANEL AND CIRCUIT NUMBER SERVING THE PANEL SHALL BE DESIGNATED WITHIN THE PANEL.

SECTION 16130 - DATA OR VOICE CONDUIT AND OUTLET SYSTEM

A. PROVIDE A COMPLETE SYSTEM OF CONDUITS AND OUTLET BOXES FOR DATA AND VOICE WIRING. EACH DATA OR VOICE OUTLET SHALL HAVE A CONDUIT ROUTED FROM THE FLUSHED RECESSED OUTLET BOX UP TO THE ACCESSIBLE CEILING SPACE ABOVE OR TO CRAWL SPACE BELOW. TURN CONDUIT OUT ABOVE CEILING WITH A 90° HORIZONTAL ELBOW AND TERMINATE WITH AN INSULATED BUSHING. WHERE CEILING FINISH IS EXPOSED STRUCTURE (I.E. NO ACOUSTICAL TILE CEILING), EXTEND CONDUIT TO AN AREA WITH AN ACCESSIBLE GYPBOARD/ACOUSTICAL CEILING. PROVIDE NYLON PULL STRING IN CONDUIT.

B. ALL CONDUIT AND OUTLET BOXES SHALL BE FOR DATA AND VOICE CABLE ONLY. JOINT USE WITH SOUND SYSTEMS, FIRE, TELEPHONE, ETC. IT IS NOT ACCEPTABLE.

C. LOCATION OF OUTLETS SHALL BE AS SHOWN ON THE DRAWINGS.

D. HEIGHT OF WALL OUTLETS SHALL BE AS NOTED ON THE DRAWINGS. ALL WALL OUTLET BOXES IN NEW CONSTRUCTION SHALL BE TWO GANG TYPE, 4" X 4" X 2 1/8" DEEP, WITH SINGLE GANG PLASTER RINGS. PLASTER RINGS SHALL BE FLUSH WITH FINISH OF WALL. COORDINATE DEPTH OF PLASTER RING REQUIRED WITH TYPE OF WALL CONSTRUCTION.

E. ALL CONDUIT SHALL BE CONCEALED UNLESS OTHERWISE NOTED.

F. PROVIDE 302 JUMBO STAINLESS STEEL BLANK WALL PLATES FOR ALL OUTLETS NOT CABLED.

SECTION 16220 - CONSTRUCTION REVIEWS INSPECTION AND TESTING

A. THE ARCHITECT OR HIS REPRESENTATIVE SHALL OBSERVE AND REVIEW THE INSTALLATION OF ALL ELECTRICAL SYSTEMS SHOWN ON THE DRAWINGS AND AS SPECIFIED HEREIN.

B. BEFORE COVERING OR CONCEALING ANY CONDUIT BELOW GRADE OR SLAB, IN WALL OR ABOVE CEILING, THE CONTRACTOR SHALL NOTIFY THE ARCHITECT SO THAT HE CAN REVIEW THE INSTALLATION.

C. AT THE TIME OF THE CONTRACTOR'S FINAL INSPECTION, ALL SYSTEMS SHALL BE CHECKED AND TESTED FOR PROPER INSTALLATION AND OPERATION BY THE CONTRACTOR IN THE PRESENCE OF THE ARCHITECT OR HIS REPRESENTATIVE.

D. THE CONTRACTOR SHALL FURNISH THE PERSONNEL, TOOLS AND EQUIPMENT REQUIRED TO INSPECT AND TEST ALL SYSTEMS.

E. FOLLOWING IS A LIST OF ITEMS THAT THE CONTRACTOR MUST DEMONSTRATE TO THE ARCHITECT OR HIS REPRESENTATIVE AS COMPLYING WITH THE PLANS AND SPECIFICATIONS. PLEASE NOTE THAT THIS LIST DOES NOT NECESSARILY REPRESENT ALL ITEMS TO BE COVERED IN THE FINAL INSPECTION, BUT SHOULD GIVE THE CONTRACTOR AN IDEA OF WHAT IS TO BE REVIEWED.

a. DEMONSTRATE THAT ALL PANELS HAVE BREAKERS AS SPECIFIED, GROUND BAR, COPPER BUS, TYPED DIRECTORY FOR CIRCUIT IDENTIFICATION AND THAT THEY ARE FREE OF TRASH.
b. DEMONSTRATE THAT ALL CONDUITS ARE SUPPORTED AS REQUIRED BY THE NATIONAL ELECTRICAL CODE.
c. DEMONSTRATE THAT ALL OUTLET BOXES ABOVE OR ON THE CEILING ARE SUPPORTED AS REQUIRED BY THE NATIONAL ELECTRICAL CODE.
d. DEMONSTRATE THAT OUTLET BOXES IN WALL OR CEILINGS OF COMBUSTIBLE MATERIALS ARE FLUSH WITH SURFACE OF WALL OR CEILING, AND THAT OUTLET BOXES IN WALLS OR CEILINGS OF NON-COMBUSTIBLE MATERIALS ARE SO INSTALLED THAT THE FRONT EDGE OF THE BOX OR PLASTER RING IS NOT SET BACK MORE THAN 1/4"
e. DEMONSTRATE THAT OUTLET BOXES IN WALL ARE SECURE
f. DEMONSTRATE THAT ALL DEVICES ARE PROPERLY SECURED TO BOXES, THAT DEVICE PLATES ARE PROPERLY ALIGNED AND ARE NOT BEING USED TO SECURE DEVICE.
g. UTILIZING A WOODHEAD NO. 1750 TESTING DEVICE, DEMONSTRATE THAT ALL 125 VOLT RECEPTACLES ARE PROPERLY CONNECTED.
h. DEMONSTRATE THAT ALL FIXTURES HAVE SPECIFIED LAMPS, BALLAST AND LENS, AND THAT THEY ARE SUPPORTED AS REQUIRED BY THE NATIONAL ELECTRICAL CODE OR AS CALLED FOR ON THE DRAWINGS OR IN THE SPECIFICATIONS.

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LEGEND, NOTES, DETAILS AND FIXTURE SCHEDULE

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