

ADDENDUM NO. ONE
NCSB -FBMS

To the Plans and Specifications for:
Nassau County School Board – Project No. 98110-031
Fernandina Beach Middle School Kitchen / Dining Remodeling and Campus
Renovations/Enhancements

Prepared
By:

ARCHITECT
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Certificate No: 791

Date: October 15, 2018

Index:

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<u>23</u>	ITEMS TOTAL	

ARCHITECTURAL

Item No. 1, Pre-Bid Meeting Sign-In Sheet

See attached for the Pre-Bid Meeting Sign-In Sheet.

Item No. 2, Demolition Notes

Refer to Sheet 1A101 – Building 8 Demolition Floor Plan:

- a. Change Demolition Key Note 1 located at the top right side of the drawing to Note 2.
- b. Exist Vest, 06-09. Add Demotion Key Note 4 next to Note 15.
- c. Add Demolition Key Note 8 at the South Wall of Rooms 08-07, 08-05G, and 08-05A.
- d. Add Demolition Key Note 9 to Rooms 08-06A, 08-05J, 08-05K and 08-05F.
- e. Demolition Key Notes 7 and 7A are not used at Building 8.

Item No. 3, Building 8 – Roof

Sheet 1A601, Roof Plan. Add the following note: “ The existing roof is a modified bitumen built-up roofing system by Siplast. The system has a granular surface cap sheet. The roof is currently under warranty. The Contractor shall ensure that modifications and repairs to the existing roof will not void the warranty.”

Item No. 4, Aluminum Walkway Covers

Section 10 53 00. Add the following to paragraph 2.2.2, “The following manufacturer is approved provided all components and configuration are equivalent to the basis of design specified in this section and as indicated on the drawings: Dittmer Architectural Aluminum.

Item No. 5, Exit Sign

Sheet LS-4 and E-2. Delete Exit sign at exterior door 02-01B.

Item No. 6, Construction Phasing Plan

- a. Refer to Sheet AS101: Change the graphic symbol shown on the Construction Phasing Plan for the “ELEC ROOM UPGRADES” to show Phase II. The written description for the Electrical Service Upgrades is correct as Phase II.
- b. Change the location indicated for “REMOVE UNDERGROUND FUEL TANK’ to match the location shown on C101.
- c. Change the irrigation lines east of Bldg. 02 to match the irrigation lines shown on C103.

Item No. 7, Fencing

- a. Refer to Sheet AS103, Building 1 (Gymnasium). Relocate new 6’0” wide control gate approximately 15 feet south so that gate aligns with the East-West sidewalk of the Gymnasium. This change shall also be reflected on AS101 and AS102.

Item No. 8, Slab Depression Plan

Refer to Sheet 1A205. Add indication of the mop sink in the NE corner of Room 08-14A as shown on 1A202.

Item No. 9, Reflective Ceiling Plan – Bldg. 8

Refer to Sheet 1A701. Remove note, “New 2’0” x 2’0” ceiling tiles in existing” at Rooms 08-09 and 08-10.

Item No. 10, Building Elevations / Display Boards.

Clarification of New Aluminum/Glass Display Boards.

- a. Sheet 2A301, South Elevation, Bldg. 3. Provide (3) new display boards.
- b. Sheet 2A301, South Elevation, Bldg. 5. Provide (5) new display boards.
- c. Sheet 2A302, South Elevation, Bldg. 6. Provide (6) new display boards.
- d. Sheet 2A302, South Elevation, Bldg. 8. Provide (1) new display board.

STRUCTURAL

Item No.11, Structural Roof Plan

Refer to attached Sheet S102 and S203for changes to the Structural Drawings.

ELECTRICAL

Item No. 12, Specifications: 27 51 15 Intercom, Public Address and Music System

- a. Delete section 27 51 15 Intercom, Public Address and Music System entirely.
- b. Add revised section 27 51 15 Intercom, Public Address and Music System, attached.
- c. Review and comply with all parts of specification 27 51 15.

Item No. 13, SPECIFICATIONS: 27 13 48 Local Area Network Premise Distribution System

- a. Delete section 27 13 48 Local Area Network Premise Distribution System, entirely.
- b. Add revised section 27 13 48 Local Area Network Premise Distribution System, attached.
- c. See new paragraph 2.01 B. 5.

Item No. 14, Drawing E-2

- a. Delete existing Drawing and insert attached new Drawing dated October 15, 2018.
- b. Delete exit light fixture in room 02-01.
- c. Add exit light fixtures at south end of corridor.
- d. See new Note 3.

Item No. 15, DRAWING E-3

- a. Delete existing Drawing and insert attached new Drawing dated October 15, 2018.
- b. See revised power, communications and door control wiring.
- c. See revised Note 9 and new Note 10.

Item No. 16, DRAWING E-4

- a. Delete existing Drawing and insert attached new Drawing dated October 15, 2018.
- b. See revised mini-split AHU numbering.

Item No. 17, DRAWING E-12

- a. Delete existing Drawing and insert attached new Drawing dated October 15, 2018.
- b. Add ground rods and grounding electrode conductor at north side of building 08.
- c. See revised circuiting at Staff Dining room 08-05N.

Item No. 18, DRAWING E-13

- a. Delete existing Drawing and insert attached new Drawing dated October 15, 2018.
- b. Add concrete encased rebar grounding at Electric room 08-011.
- c. See added Note 9.

Item No. 19, DRAWING E-16

- a. Delete existing Drawing and insert attached new Drawing dated October 15, 2018.
- b. See revised lighting at Outdoor Dining.

Item No. 20, DRAWING E-18

- a. Delete existing Drawing and insert attached new Drawing dated October 15, 2018.
- b. See additional intercom call buttons, speakers and wiring to Building 02 added.
- c. See revised Notes 6 and 7.

Item No. 21, DRAWING E-21

- a. Delete existing Drawing and insert attached new Drawing dated October 15, 2018.
- b. See revised grounding requirements on the single line diagram.
- c. See revised Notes.

Item No. 22, DRAWING E-22

- a. Delete existing Drawing and insert attached new Drawing dated October 15, 2018.
- b. See added circuit 16 at panel schedule "D1".

Item No. 23, DRAWING E-23

- a. Delete existing Drawing and insert attached new Drawing dated October 15, 2018.
- b. See revised fixture "VE" in Lighting Fixture Schedule.

End of Addendum No. One

MANDATORY PRE-BID MEETING

SIGN-IN SHEET

Project Name: FERNANDINA BEACH MS KITCHEN/DINING
REMODELING AND CAMPUS
RENOVATIONS/ENHANCEMENTS

Meeting Date: Fri., Oct. 12, 2018 @ 1 p.m.

Project Address: 315 Citrona Drive, Fernandina Beach

Meeting Location: FBMS

Initial	Contact Person	Company	Phone Number	E-Mail Address
<i>BMV</i>	Bob McVeigh	Bhide & Hall Architects, P.A.	(904) 264-1919	bmcveigh@bhide-hall.com
<i>DK</i>	David Kramer	Nassau County District Schools	(904) 225-5343	kramerda@nassau.k12.fl.us
<i>WK</i>	Wayne Kelly, P.E.	M.V. Cummings Engineers, Inc.	(904) 724-0660	WCKelly@mvce.net
<i>MK</i>	Mark Keister, P.E.	Atlantic Engineering Services	(904) 743-4633	m.keistere@aespj.com
<i>MT</i>	Mike Tibble, P.E.	Mittauer & Associates	(904) 278-0030	Mtibble@mittauer.com
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	Vaughn Paul	CC Borden		Vaughn@CCBorden.com
<i>HP</i>	Hunter Pruitt	CPPI		Hunter.Pruitt@CPPI.com
	April Campbell	PARS Construction	(904) 642-6144	acampbell@pars-construction.com

**MANDATORY PRE-BID MEETING
SIGN-IN SHEET**

Project Name: FERNANDINA BEACH MS KITCHEN/DINING
REMODELING AND CAMPUS
RENOVATIONS/ENHANCEMENTS

Meeting Date: Fri., Oct. 12, 2018 @ 1 p.m.

Project Address: 315 Citrona Drive, Fernandina Beach

Meeting Location: FBMS

Initial	Contact Person	Company	Phone Number	E-Mail Address
BW	Brandon Warner	Thomas May Construction	(904) 272-4808	bwarner@tmay.net
JK	Julia Kovalenko	CC Borden	(904) 354-3458	Julia@CCBorden.com
	Jeff Blundell	Core Construction	904 399 1033	Jeff@core-construction.co.com
	Norman Eyles	CASH BUILDING	904-355-6651	NEYLES@CASHBUILDINGMATERIAL.COM
	Bruce Cox	Arwood Waste Inc	904-751-1628	bruce@arwoodsiteservices.com
	ALI HAKIMI	PARS CONSTRUCTION	904-642-6144	AHAKIMI@PARS-CONSTRUCTION.COM
	Dan MAY	PARS Construction	904-310-5551	Est. PARS Construction ESTWITIG@PARS-CONSTRUCTION.COM
	AIAN VAN CLEEF	Certified Controls	904-384-4003	avandcleef@certifiedcontrols.com
	Keith Lund	Thomas May Const	(904) 272-4808	

MANDATORY PRE-BID MEETING

SIGN-IN SHEET

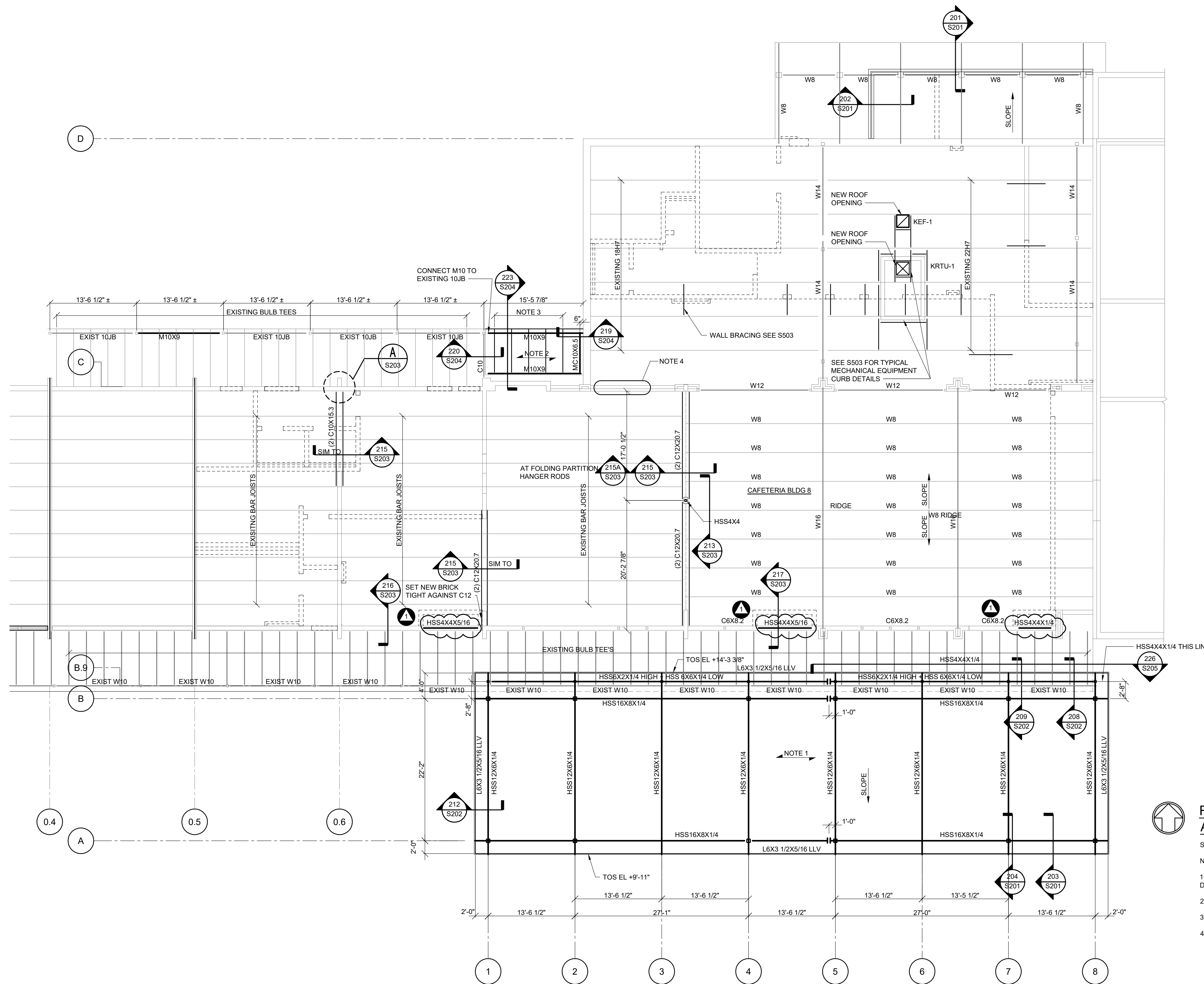
Project Name: FERNANDINA BEACH MS KITCHEN/DINING
REMODELING AND CAMPUS
RENOVATIONS/ENHANCEMENTS

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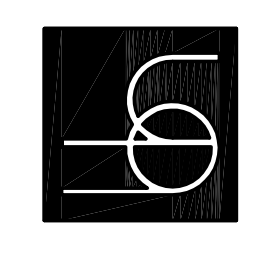
Meeting Location: FBMS

Initial	Contact Person	Company	Phone Number	E-Mail Address
W.C.	William Carle	CPPP	(904) 316-2015	William.Carle@CPPP.com
H.P.	Hunter Pruitt	CPPI	352-339-4552	hunter.pruitt@cppi.com
MC	Ivan Max	MAX INFINITY LLC	(904) 860-2313	MAXINFINITYPROGRAMS@GMAIL.COM



ROOF PLAN - CAFETERIA BLDG 8 AND OUTDOOR DINING AREA

- SCALE: 1/8" = 1'-0"
- NOTES:
- 3" 20/20 GALVANIZED NCA CELLULAR ACOUSTICAL METAL DECK.
 - 2" STRUCTURAL CEMENT FIBER DECK.
 - V-218 BULB TEES AT 32 7/8" OC (MIN I = 599 in⁴)
 - CORE DRILL HOLES IN EXISTING MASONRY AND SLEEVE WITH 6" MINIMUM BETWEEN HOLES WITH NO MORE THAN 4 HOLES IN A ROW. HOLES FOR MULTIPLE ROWS SO HOLES ALIGN VERTICALLY.



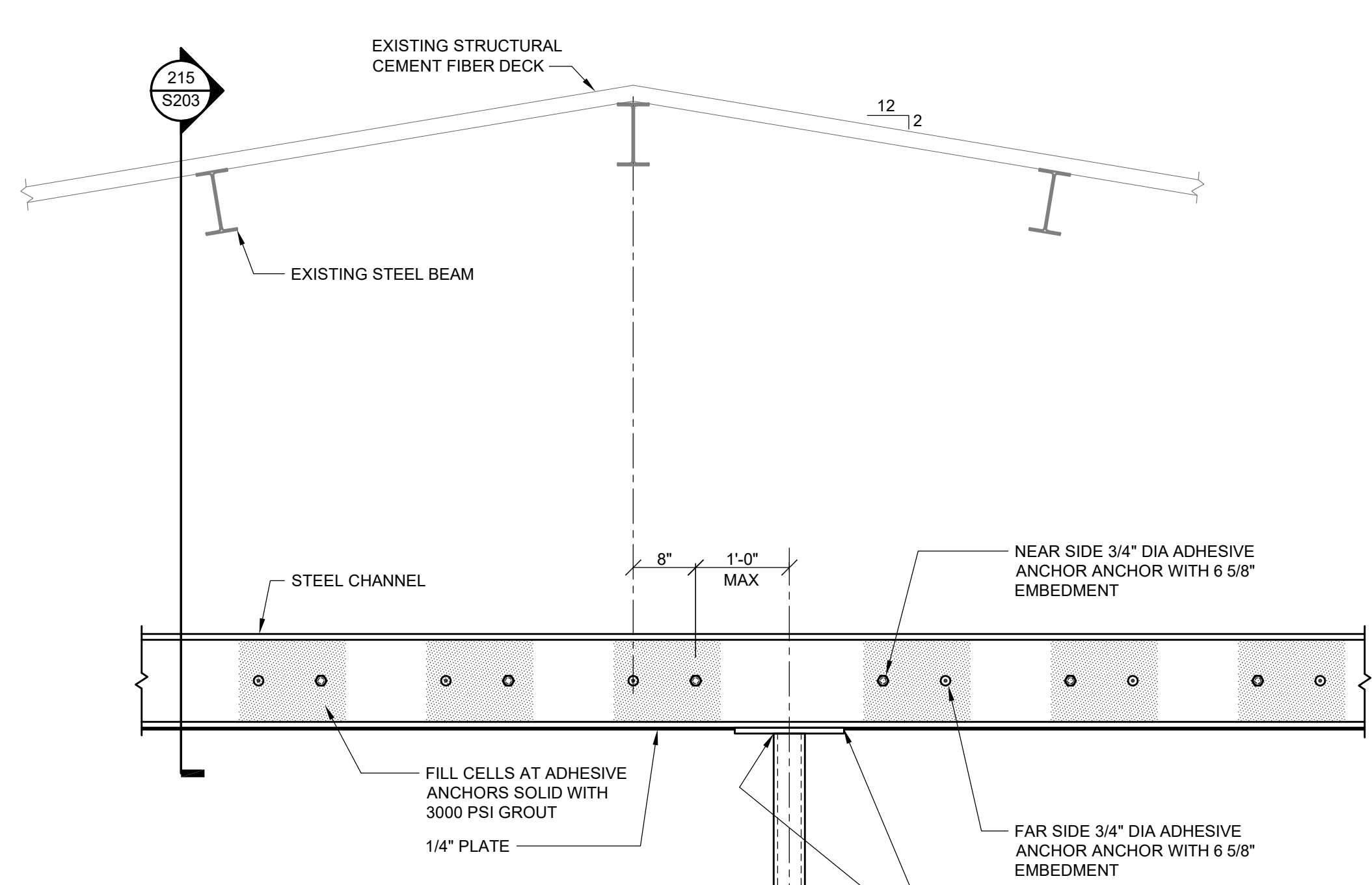
Engineer License No.
 Mark J. Keiser PE 37435

REVISIONS	DATE	NO.	DESCRIPTION
ADDENDUM NO. ONE	10-15-2018		

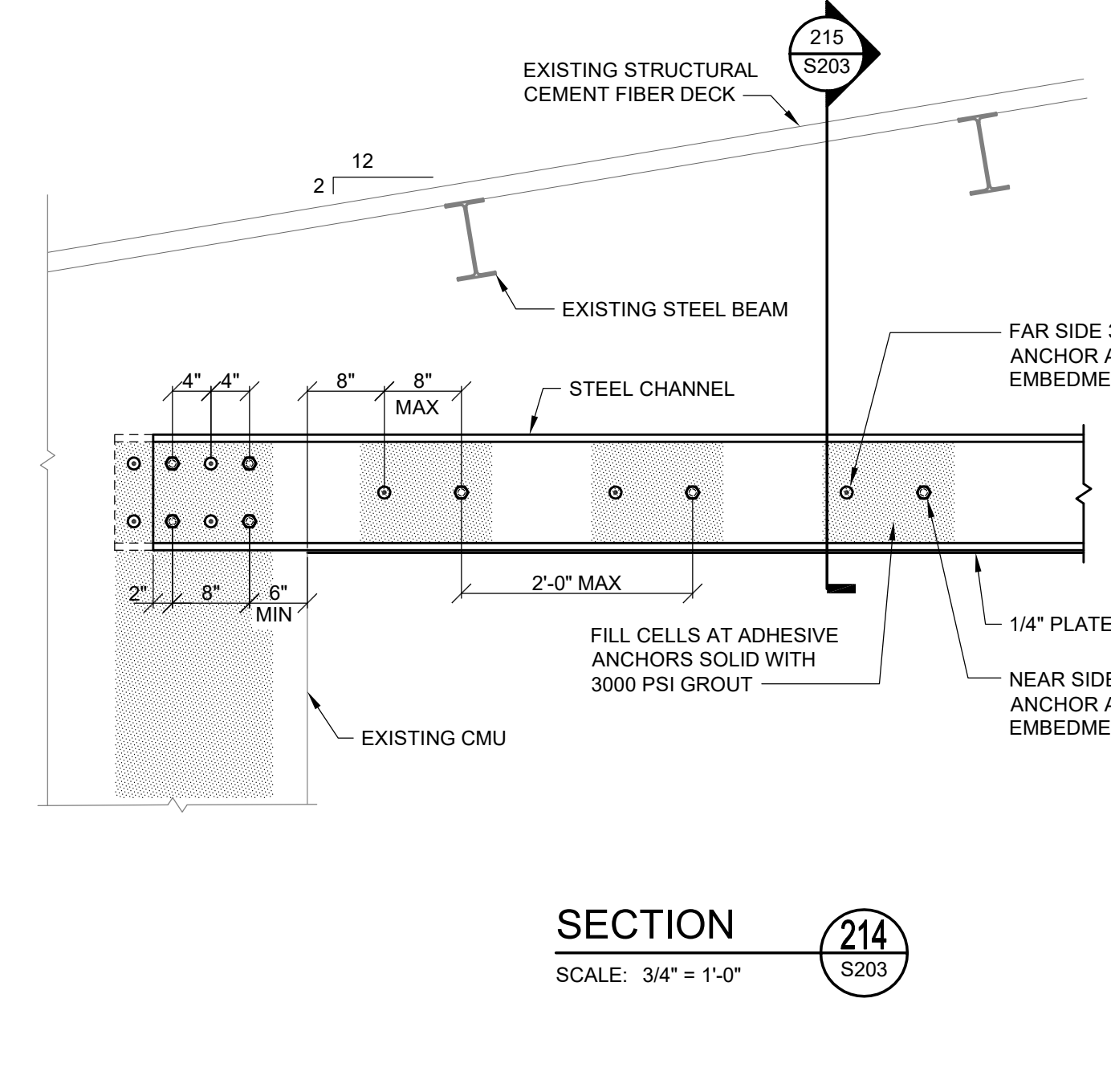
ROOF PLAN
 CAFETERIA BLDG 8
 AND OUTDOOR
 DINING AREA

DATE	BY	APP'D
9-25-2018	JEM	MJK

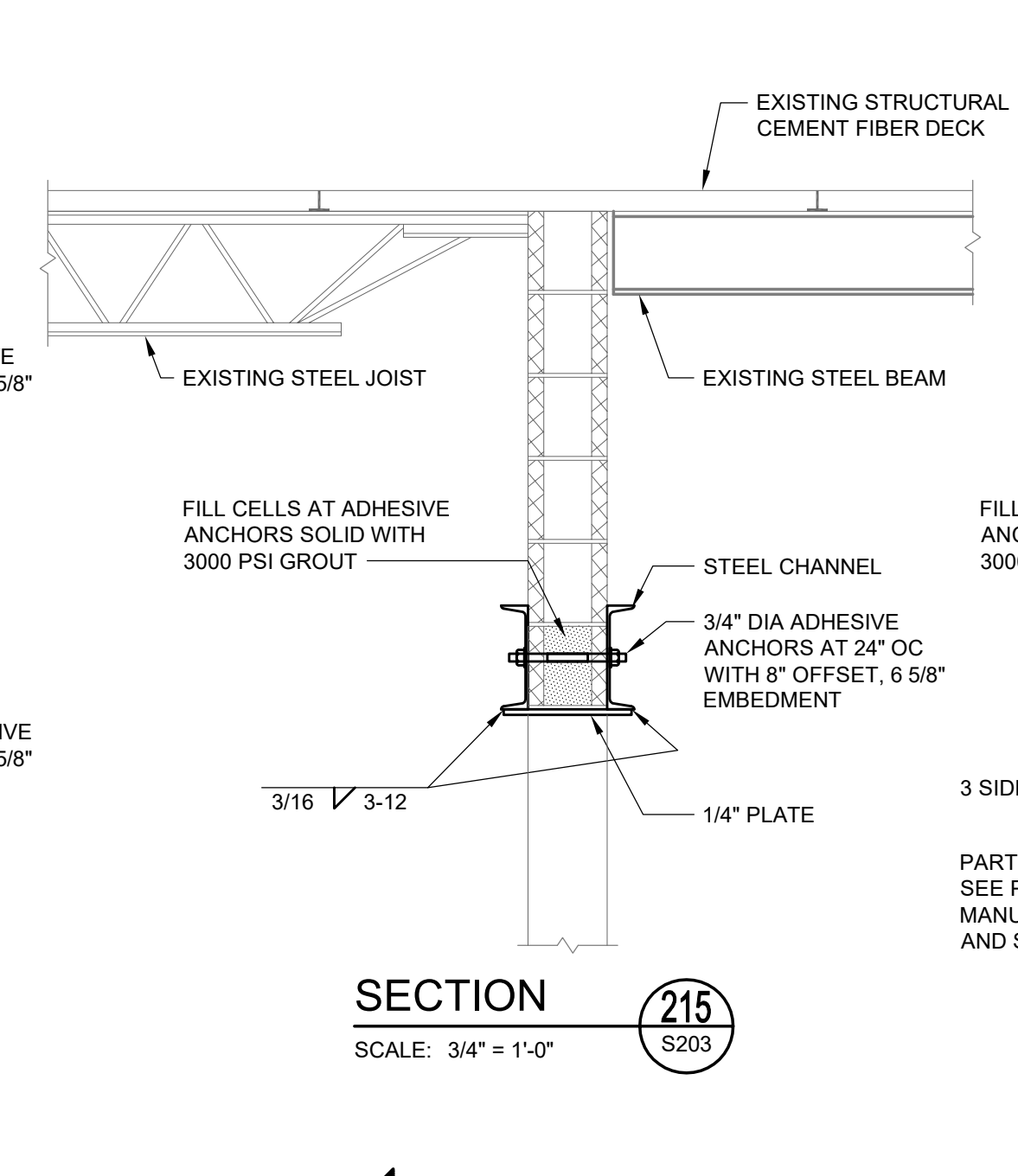
JOB NO. 18016



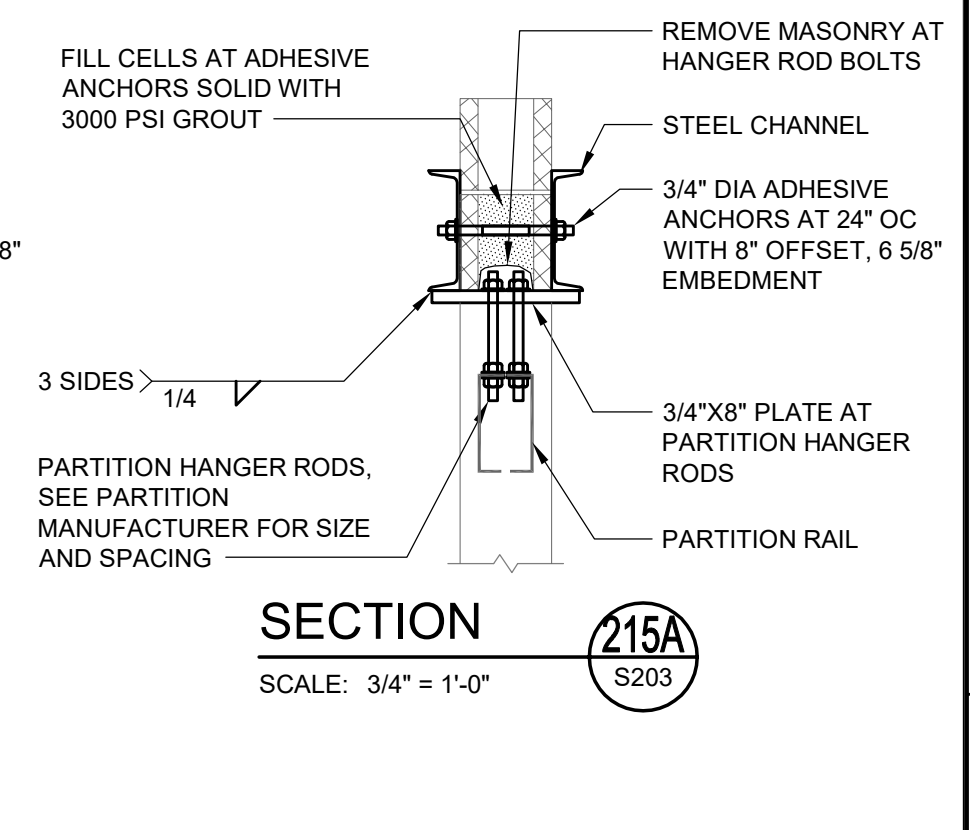
SECTION 213
SCALE: 3/4" = 1'-0"



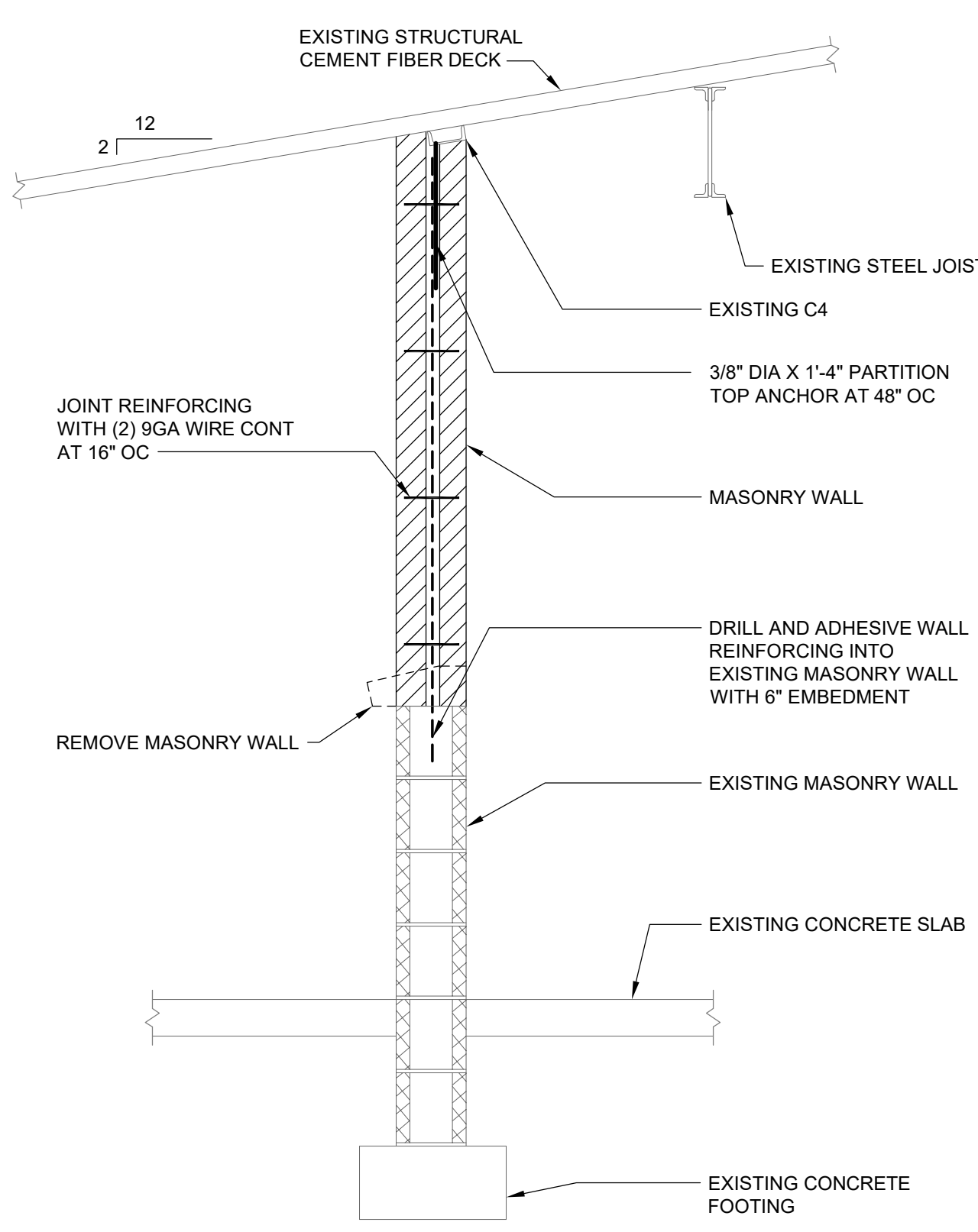
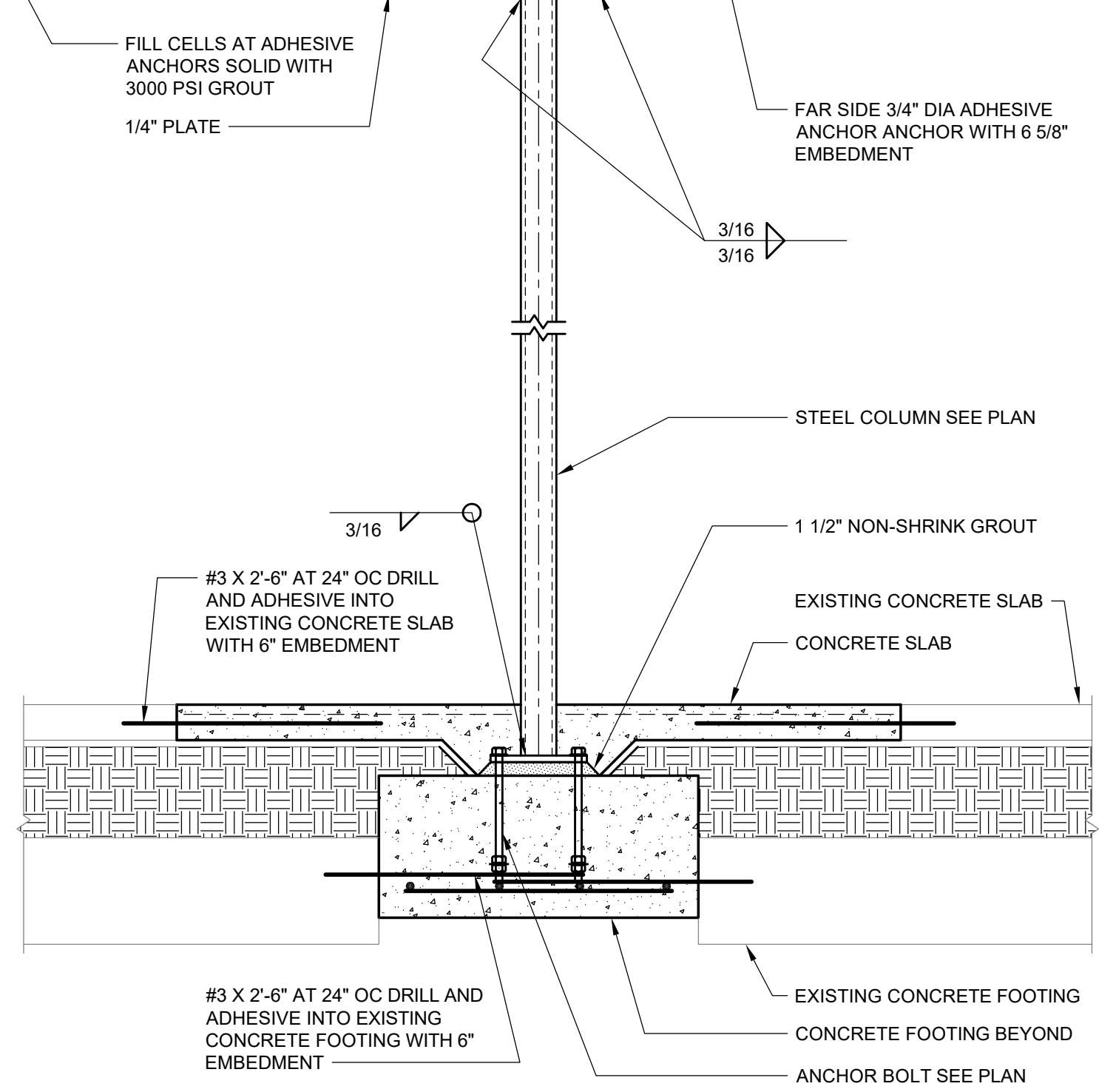
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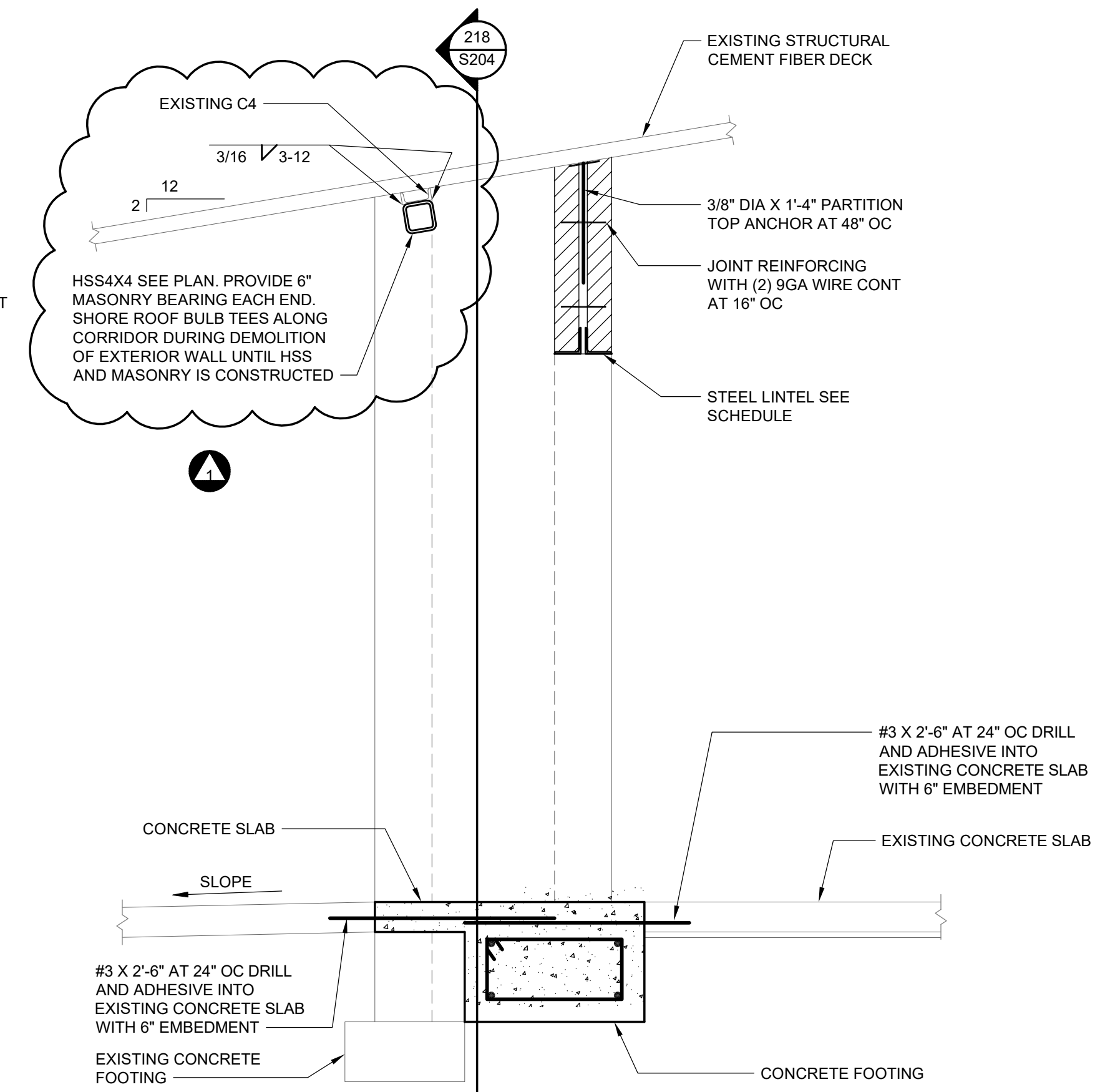
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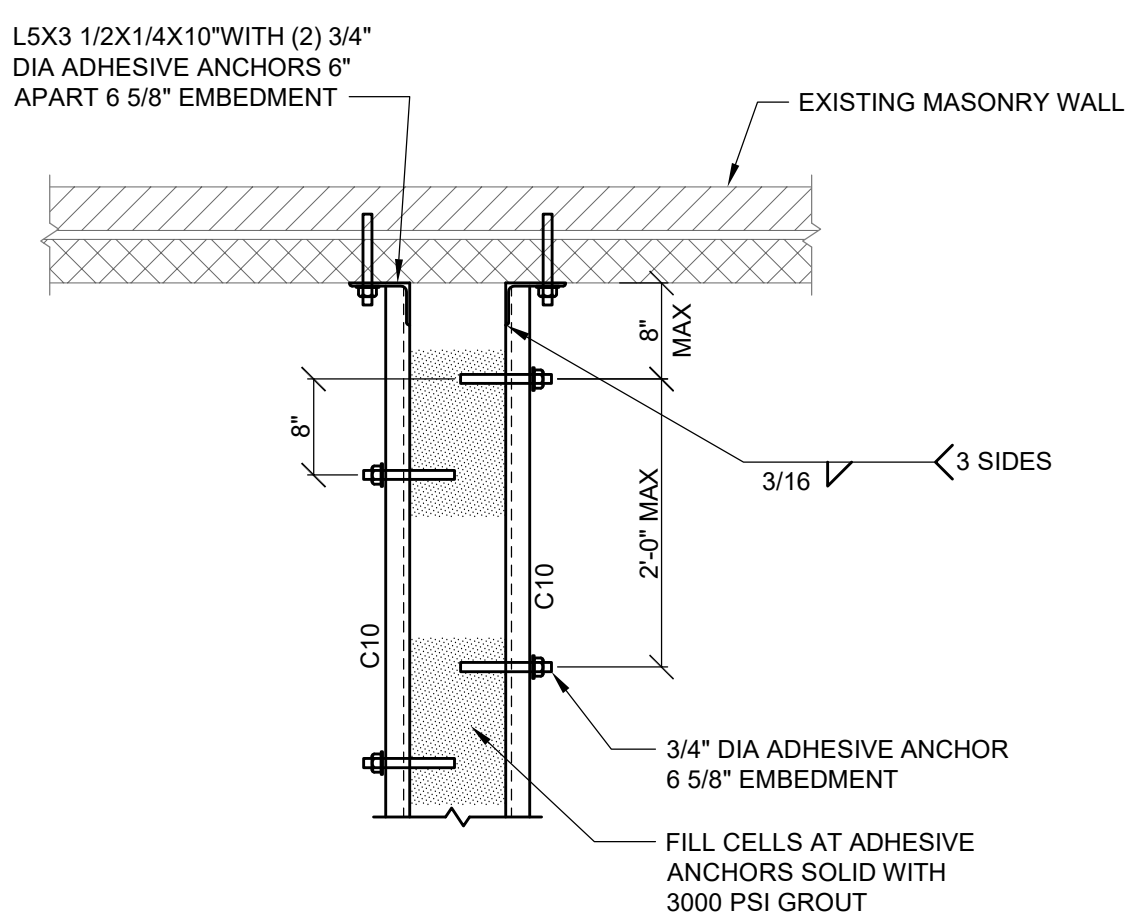
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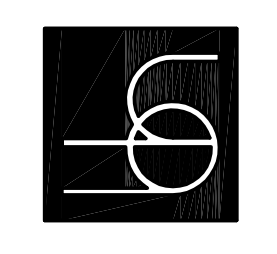
SECTION 216
SCALE: 3/4" = 1'-0"



SECTION 217
SCALE: 3/4" = 1'-0"



DETAIL A
SCALE: 3/4" = 1'-0"

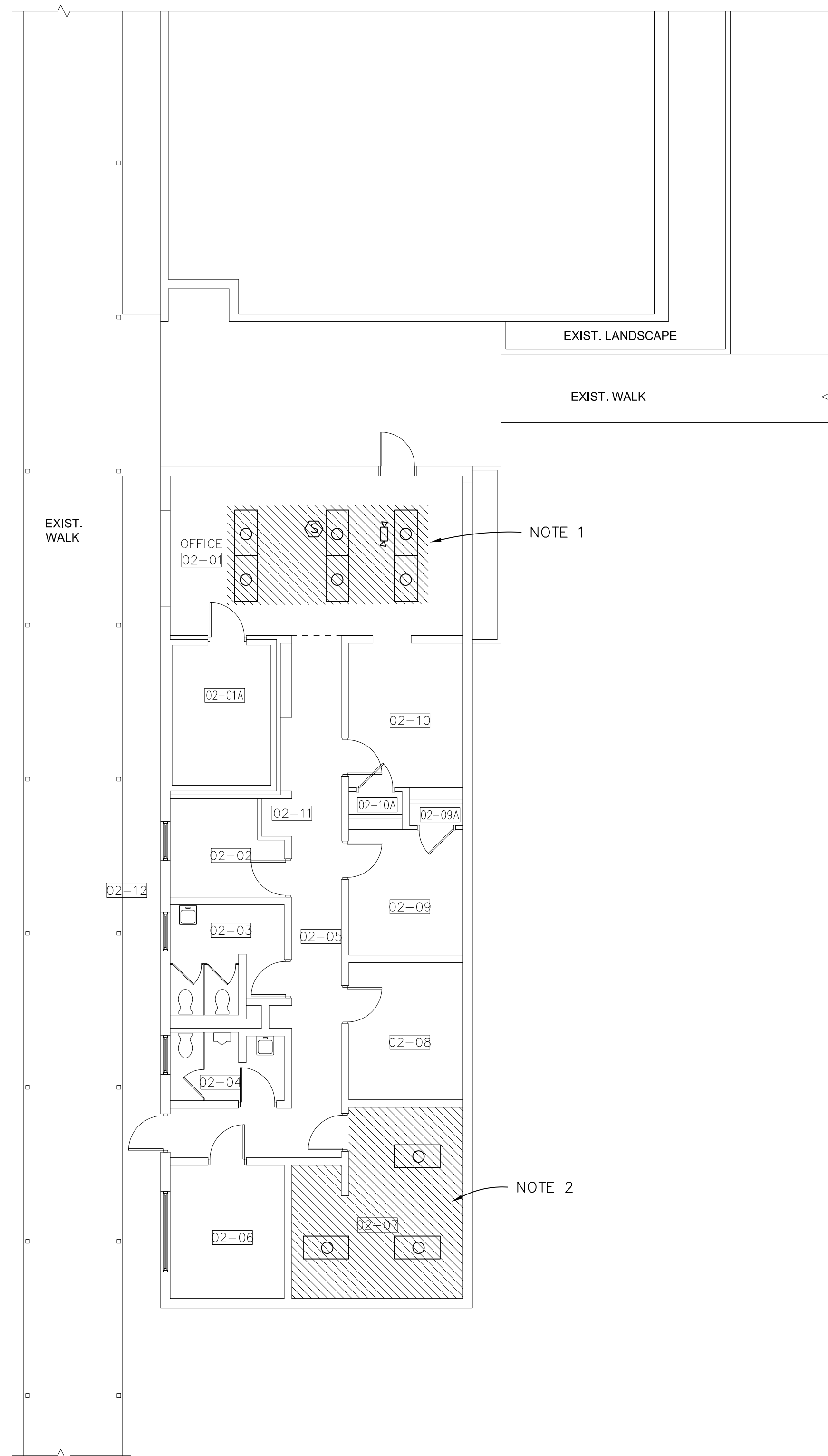


Engineer License No.
Mark J. Keiser PE 37435

REVISIONS	DATE	BY	CHKD
ADDENDUM NO. ONE	10-15-2018		

SECTIONS

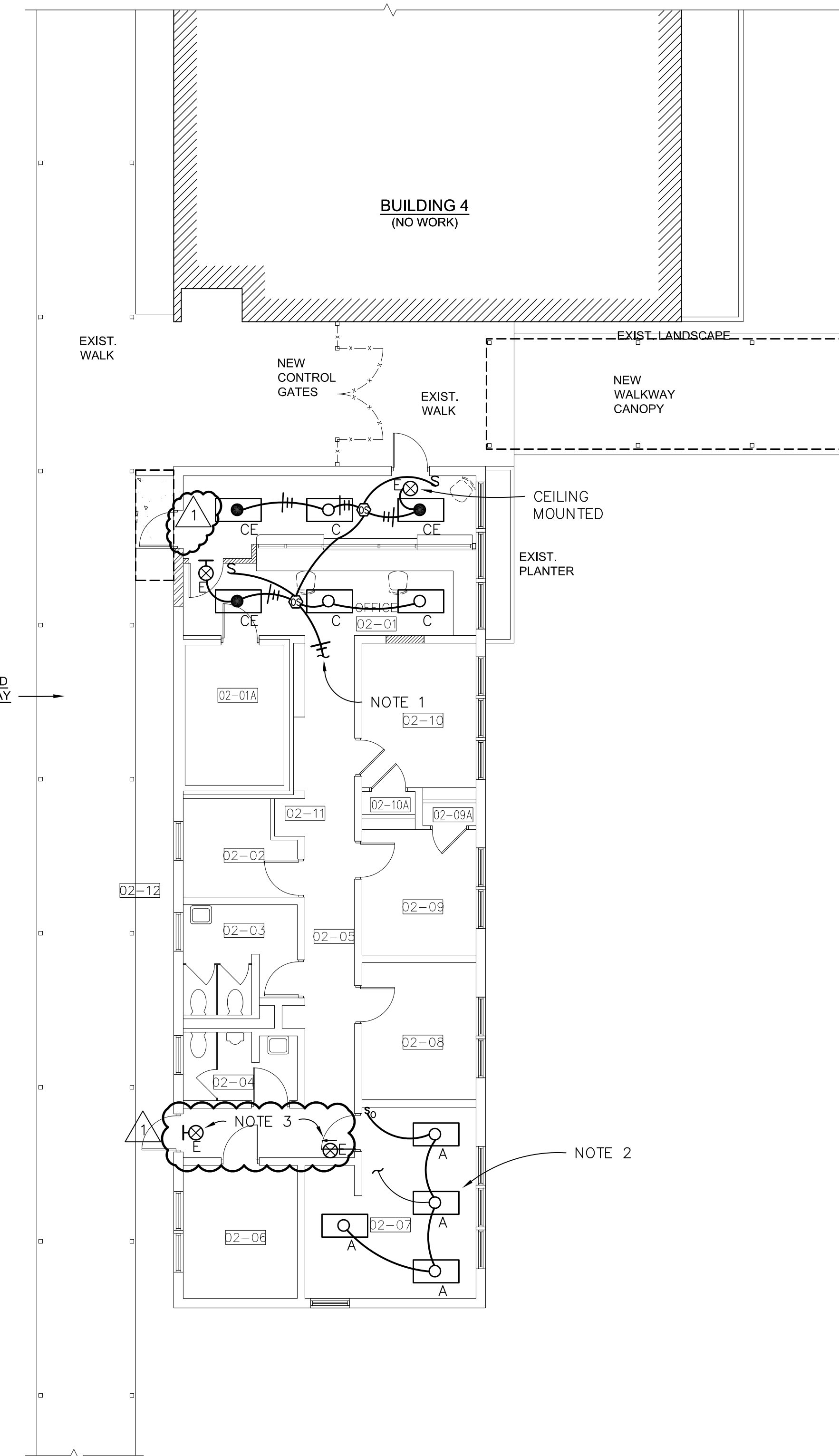
DATE	9-25-2018
D.R.	JEM
C.R.	MJK
JOB NO.	18016



DEMOLITION LIGHTING PLAN
SCALE: 1/8" = 1'-0"

DEMOLITION NOTES:

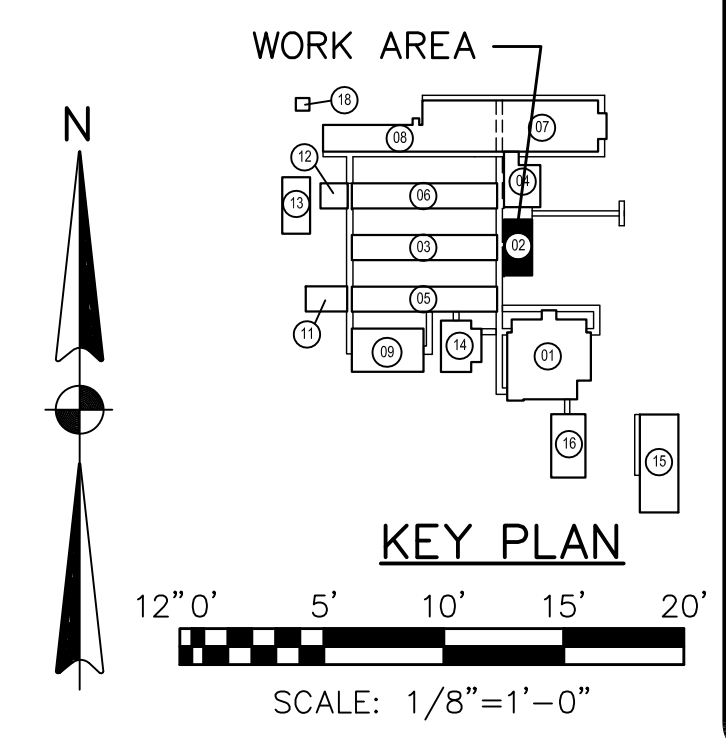
1. REMOVE ALL CEILING MOUNTED EQUIPMENT INCLUDING LIGHTS, EMERGENCY LIGHTS, SMOKE DETECTORS, SENSORS, ETC. AS REQUIRED FOR CEILING REPLACEMENT. SMOKE DETECTOR SHALL BE REINSTALLED.
2. REMOVE ALL EXISTING FLUORESCENT LIGHTS AS REQUIRED FOR CEILING REMOVAL.



NEW LIGHTING PLAN
SCALE: 1/8" = 1'-0"

NEW WORK NOTES:

1. CONNECT NEW LIGHTS AND EQUIPMENT TO EXISTING LIGHTING CIRCUIT.
2. PROVIDE NEW LED LIGHT FIXTURES AND CONNECT TO NEW OCCUPANCY SENSOR SWITCH. CONNECT NEW LIGHTS TO EXISTING HOMERUN CIRCUIT.
3. CONNECT NEW FIXTURES TO EXISTING HOMERUN BRANCH CIRCUIT OF COORIDOR LIGHTING.



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

BHIDE & HALL ARCHITECTS, P.A.
1329 KINGSLEY AVENUE, SUITE C ORANGE PARK, FLORIDA 32073 P.L. 0941264-1919 LIC. NO. AAC000569

M.V. CUMMINGS ENGINEERS, INC. CONSULTING ENGINEERS
650 ARLINGTON EXPRESSWAY, SUITE 101 JACKSONVILLE, FLORIDA 32211
LIC. NO. 18B-5403

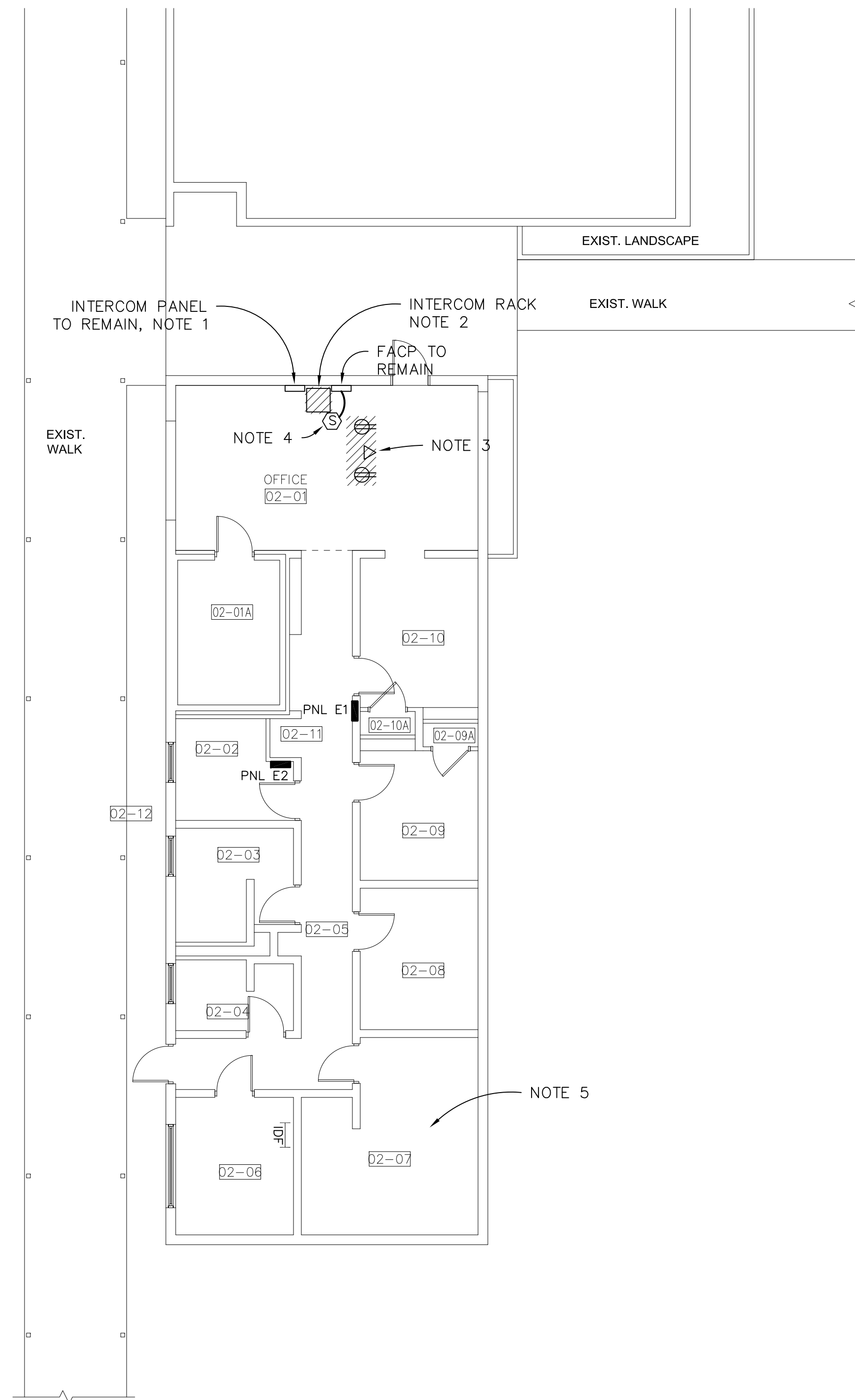
**FERNANDINA BEACH MIDDLE SCHOOL
KITCHEN/DINING REMODELING AND CAMPUS
ADDITIONS AND REMODELING**
315 Citrona Dr., Fernandina Beach, FL 32034

Engineer	License No.
Larry M. Carney	33624

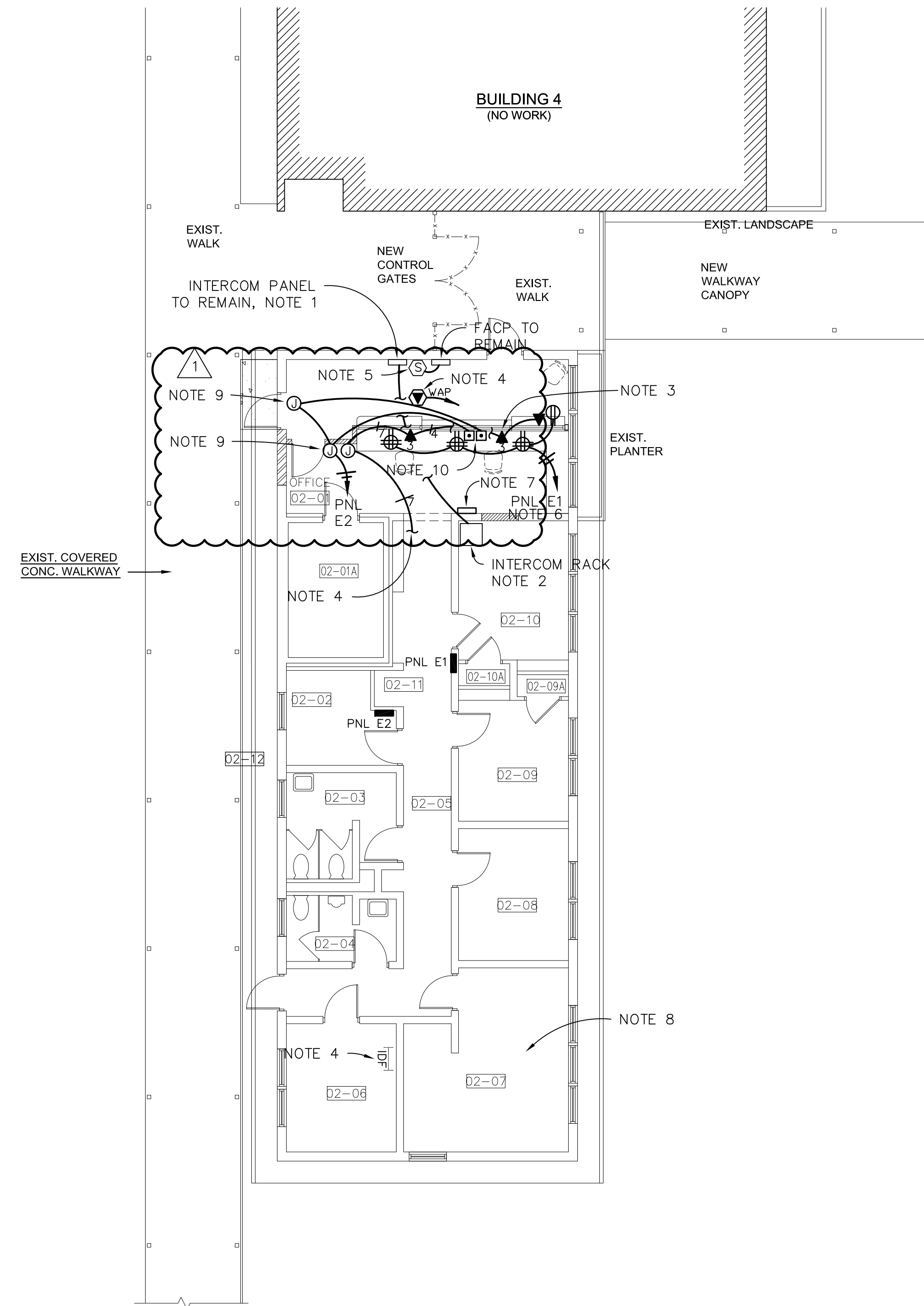
REVISIONS	DATE
ADDENDUM NO. 1	10-15-2018

BUILDING O2 DEMOLITION & NEW LIGHTING PLANS	DATE
	9-25-2018
	D.B.
	LMC
	C.B.
	LMC
	JOB NO.
	18016

E-2



DEMOLITION ELECTRICAL PLAN
SCALE: 1/8" = 1'-0"



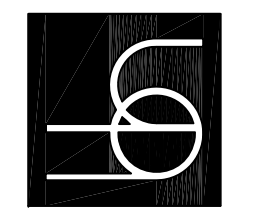
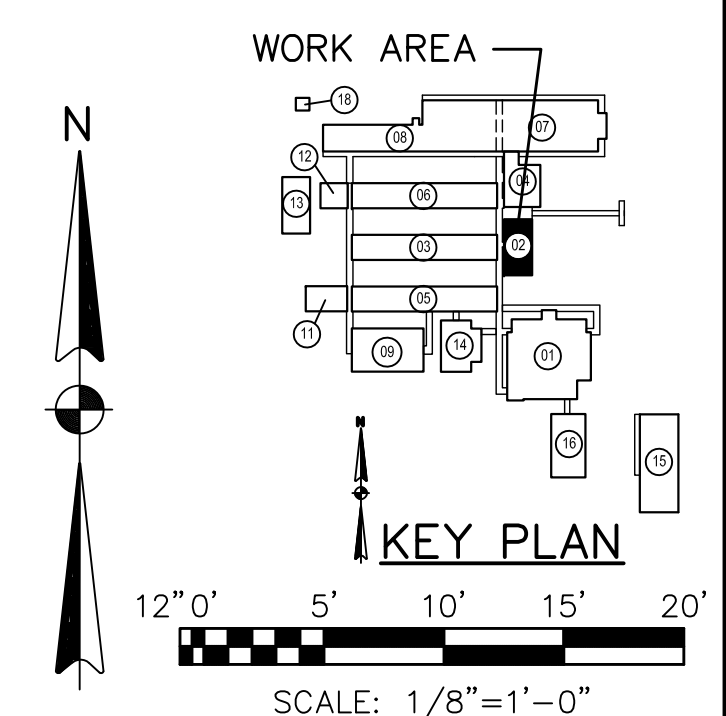
NEW ELECTRICAL PLAN
SCALE: 1/8" = 1'-0"

DEMOLITION NOTES:

1. INTERCOM PANEL WITH M66 PUNCH DOWN BLOCKS TO REMAIN. DISCONNECT CABLES TO INTERCOM RACK. ALL OTHER CABLING TO REMAIN.
2. DISCONNECT INTERCOM RACK FOR RELOCATION.
3. DISCONNECT AND REMOVE ALL RECEPTACLES AND TELE/DATA OUTLETS AND WIRING UNDER AND ON COUNTER TO BE REMOVED.
4. REMOVE AND REINSTALL EXISTING SMOKE DETECTOR IN NEW CEILING.
5. REMOVE ALL WALL MOUNTED OUTLETS AS REQUIRED TO PROVIDE NEW WALL FINISH.

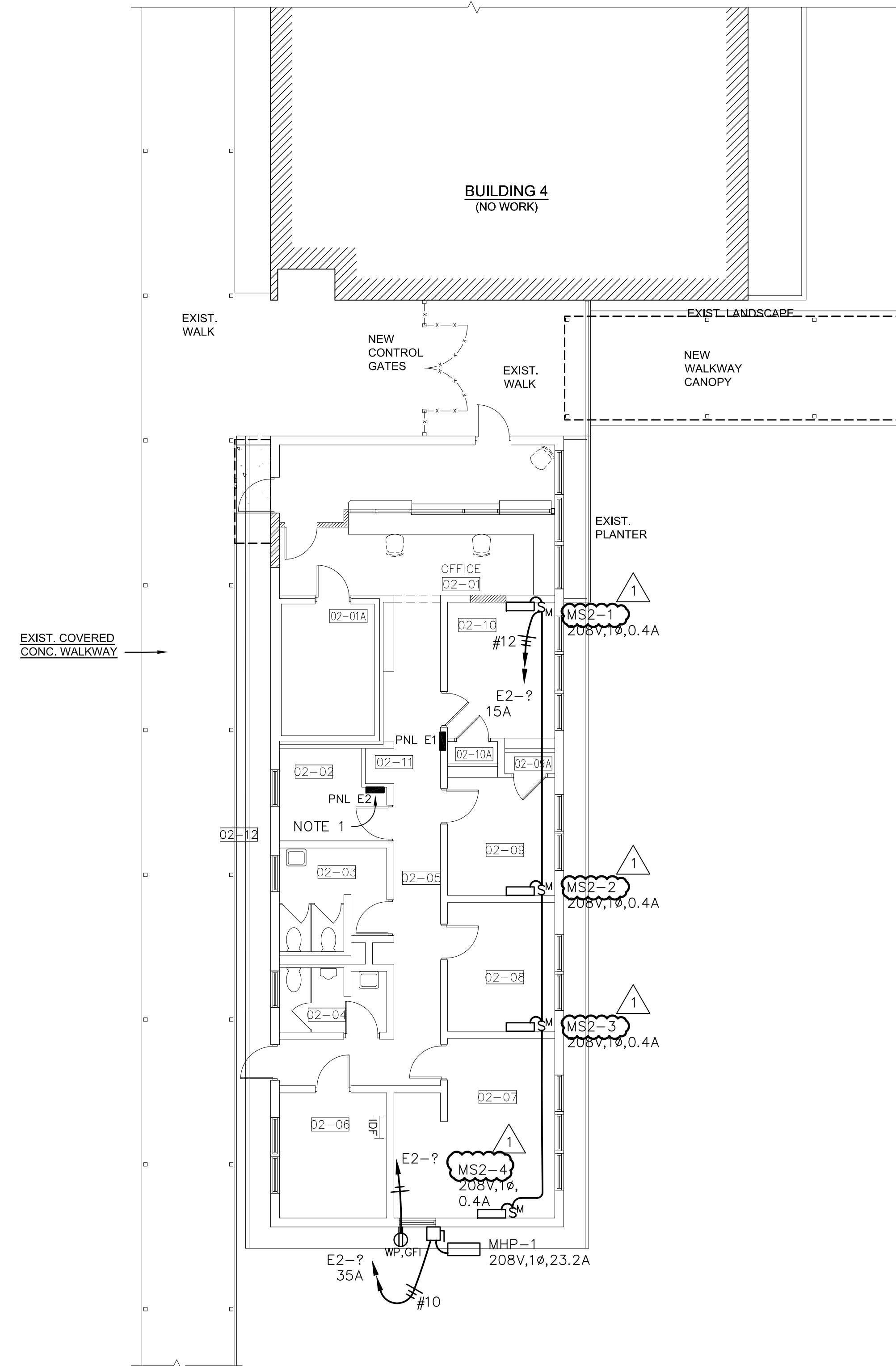
NEW WORK NOTES:

1. CONNECT NEW INTERCOM RACK WIRING AND NEW ADMINISTRATIVE INTERCOM TELEPHONE OUTLET CIRCUITS TO EXISTING M66 PUNCH DOWN BLOCKS.
2. RELOCATED INTERCOM RACK. PROVIDE WIRING TO EXISTING INTERCOM PANEL WITH M66 PUNCH DOWN BLOCKS. PROVIDE TWO(2) NEW DUKANE ADMINISTRATIVE INTERCOM TELEPHONE SETS TO OPERATE ON THE EXISTING DUKANE MCS 350 INTERCOM SYSTEM.
3. PROVIDE NEW TELE/DATA OUTLETS WITH 3 RJ-45, CAT. 6 JACKS FOR TELEPHONE, DATA AND INTERCOM EQUIPMENT CONNECTION.
4. PROVIDE NEW TELEPHONE AND DATA WIRING TO EXISTING IDF LOCATED IN ROOM 02-06.
5. REINSTALL EXISTING SMOKE DETECTOR INSIDE FIRE ALARM AND INTERCOM PANEL CLOSET ENCLOSURE AND CONNECT TO FACP.
6. CONNECT NEW COUNTER RECEPTACLE OUTLETS TO EXISTING CIRCUIT FROM PANEL E1 THAT SERVED OLD COUNTER.
7. PROVIDE NEW FIRE ALARM REMOTE ANNUNCIATOR, SILENT KNIGHT MODEL 5860, WITH REQUIRED WIRING TO EXISTING SILENT KNIGHT MODEL 5820XL FIRE ALARM CONTROL PANEL.
8. PROVIDE NEW RAISED PLASTER RINGS TO MATCH NEW WALL FINISH THICKNESS AND RE-INSTALL ALL WALL OUTLETS.
9. PROVIDE NEW 120V,20A POWER FOR DOOR CONTROL POWER SUPPLY TO OPERATE ELECTRIC STRIKE.
10. PROVIDE DOOR RELEASE MOMENTARY CONTACT SWITCHES AT RECEPTION DESK WITH WIRING TO DOOR CONTROL EQUIPMENT. LOCATE SWITCHES PER OWNER'S DIRECTION.



REVISIONS	DATE
ADDENDUM NO. 1	10-15-2018

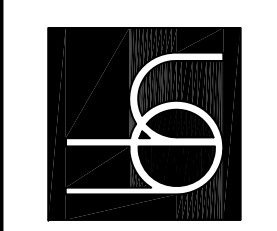
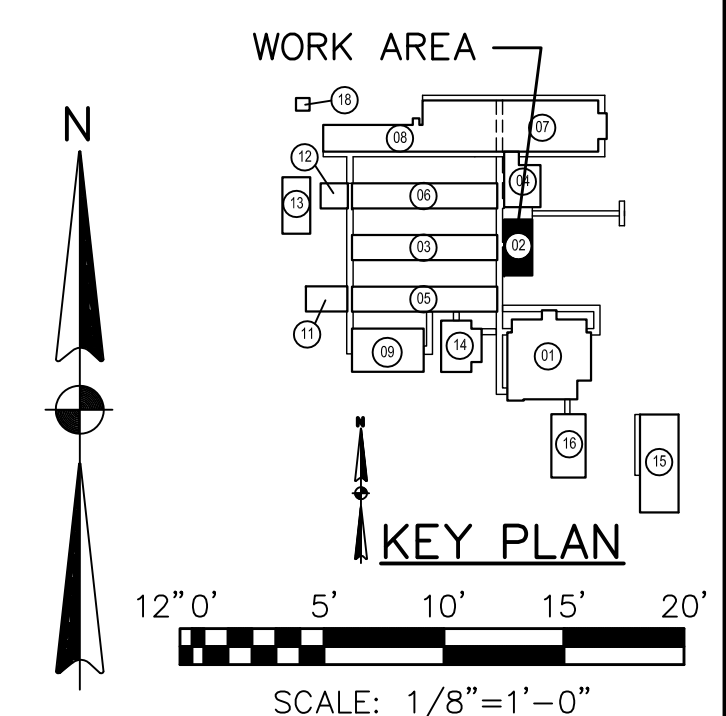
DATE	BY
9-25-2018	LMC
	LMC
	18016



NEW HVAC POWER PLAN
SCALE: 1/8" = 1'-0"

NEW WORK NOTES:

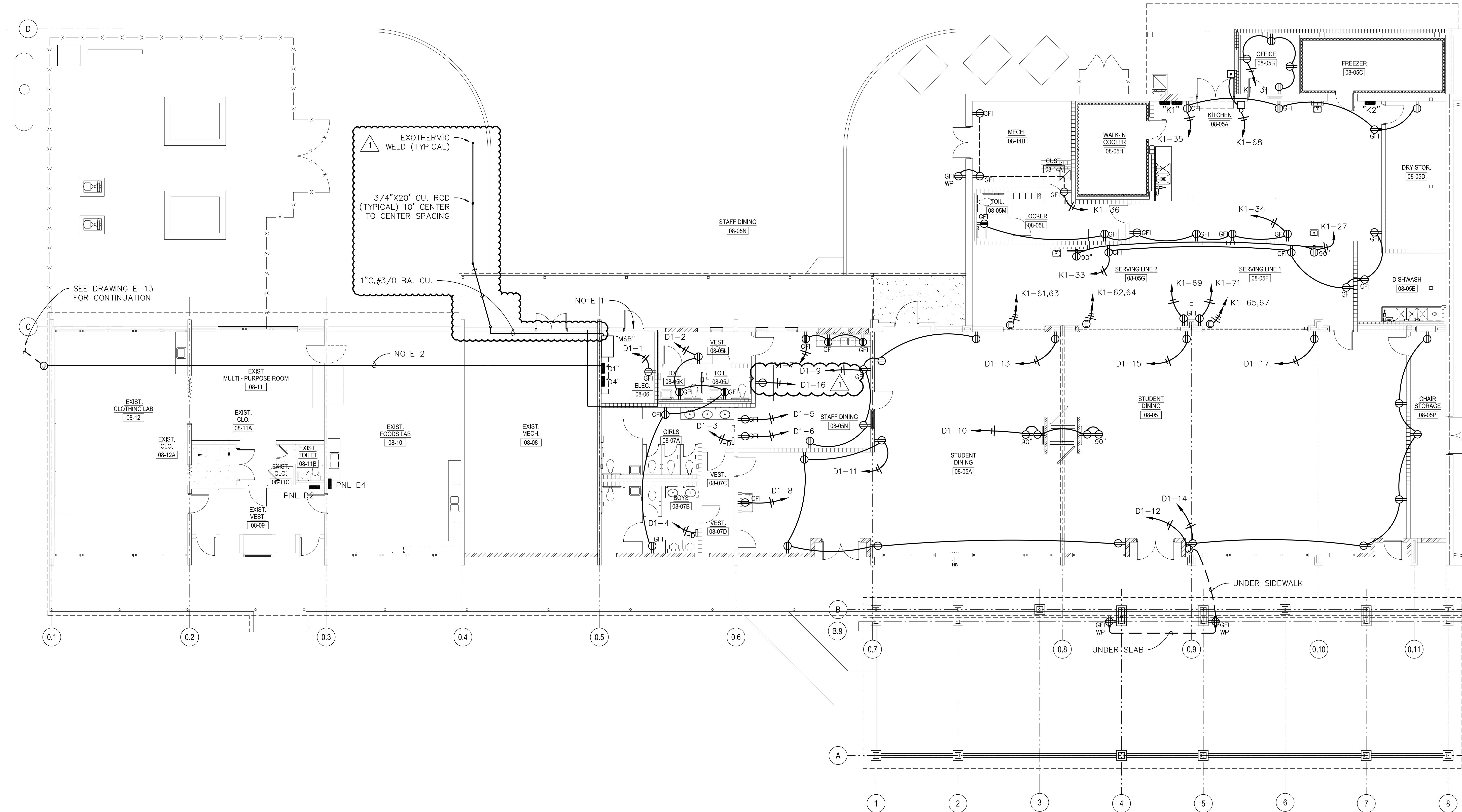
1. CONNECT NEW MINI-SPLIT EQUIPMENT TO EXISTING WINDOW AC CIRCUITS. LOCATE AND IDENTIFY EXISTING CIRCUITS IN PANEL E2. DISCONNECT AND REMOVE EXISTING WINDOW AC CIRCUIT WIRING. PROVIDE NEW 2 POLE CIRCUIT BREAKERS PROPERLY SIZED FOR NEW MINI-SPLITS AND REPLACE BREAKERS AS REQUIRED.



Engineer License No.
Larry M. Carney 33624

REVISIONS	DATE	BY	DESCRIPTION
ADDENDUM NO. 1	10-15-2018		

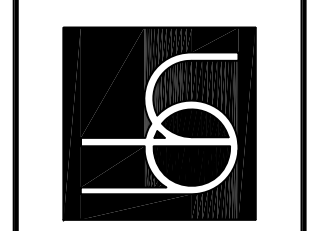
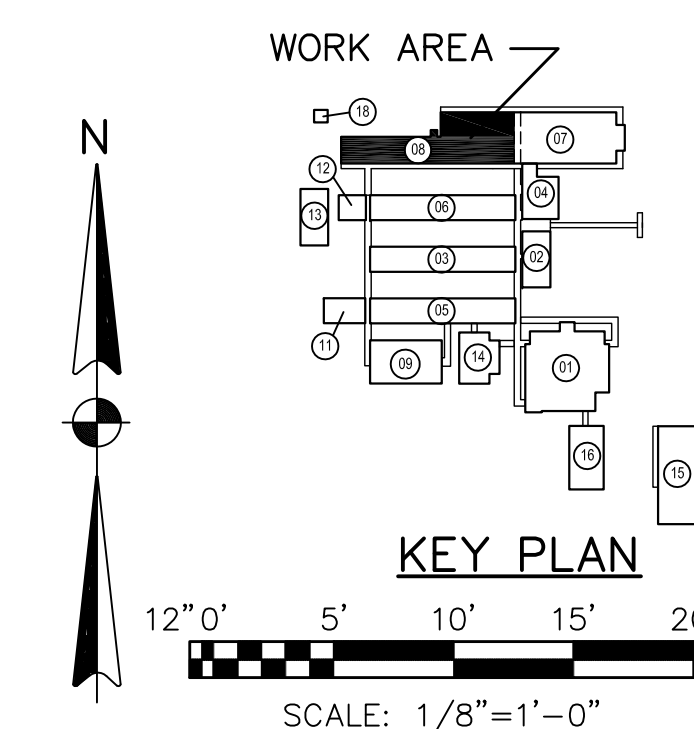
BUILDING 02 NEW HVAC POWER PLAN	
DATE	9-25-2018
D.B.	LMC
C.B.	LMC
JOB NO.	18016



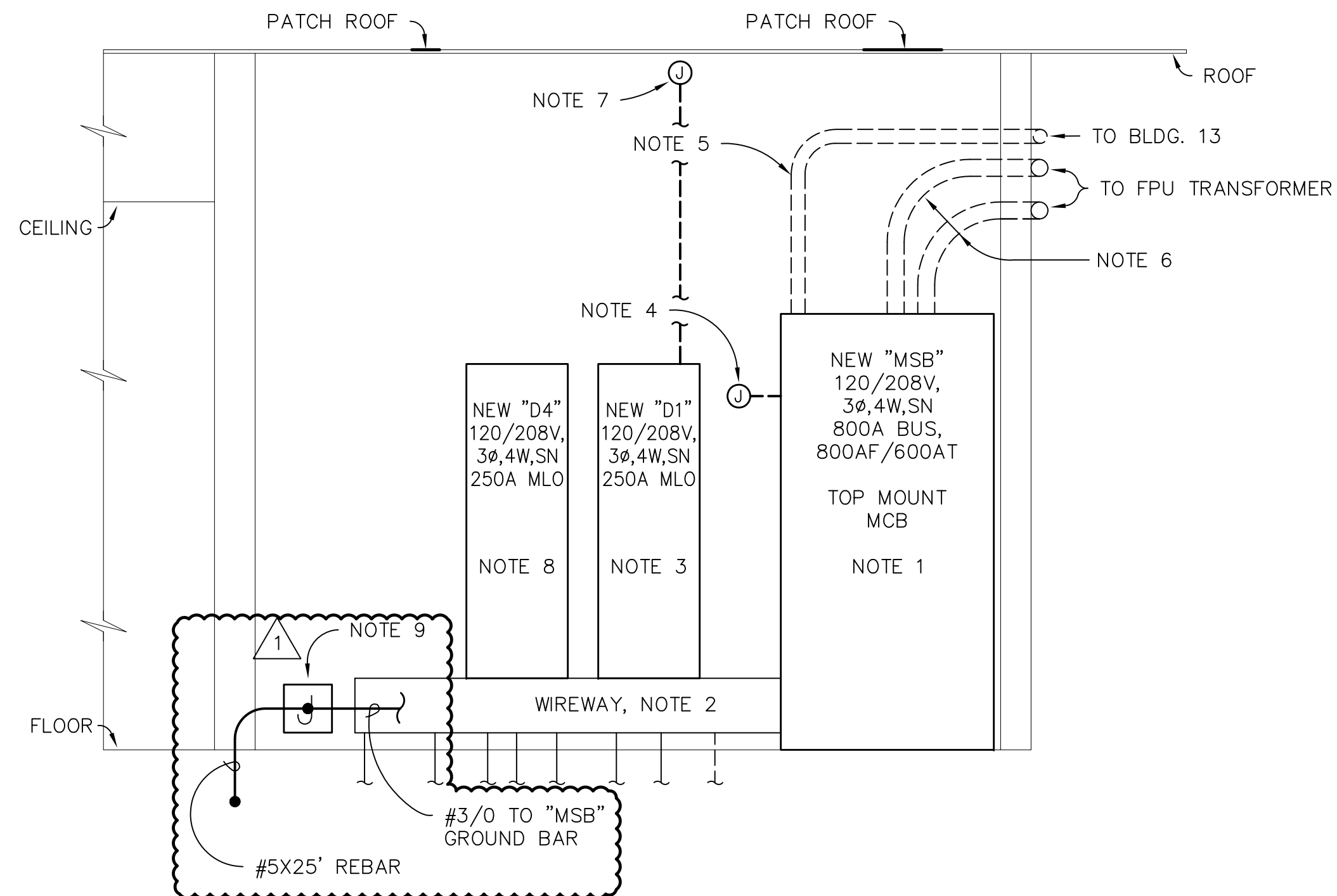
NOTES:

1. PROVIDE NEW MAIN SWITCHBOARD. SEE LARGE SCALE PLAN AND ELEVATION FOR DETAILS, SHEET E-12.
2. PROVIDE NEW SERVICE TO BUILDING 18. INSTALL CONDUIT ABOVE CEILINGS, 3/4" C, 4#10 & 1#10G.
3. PROVIDE A DELIVERY DOOR BELL AND PUSH BUTTON AT EXTERIOR DOOR, WITH LOW VOLTAGE TRANSFORMER AS REQUIRED, EDWARDS SIGNALLING 55 SERIES OR EQUAL, TO OPERATE FROM 120V, 15A.

NEW FLOOR PLAN
SCALE: 1/8" = 1'-0"



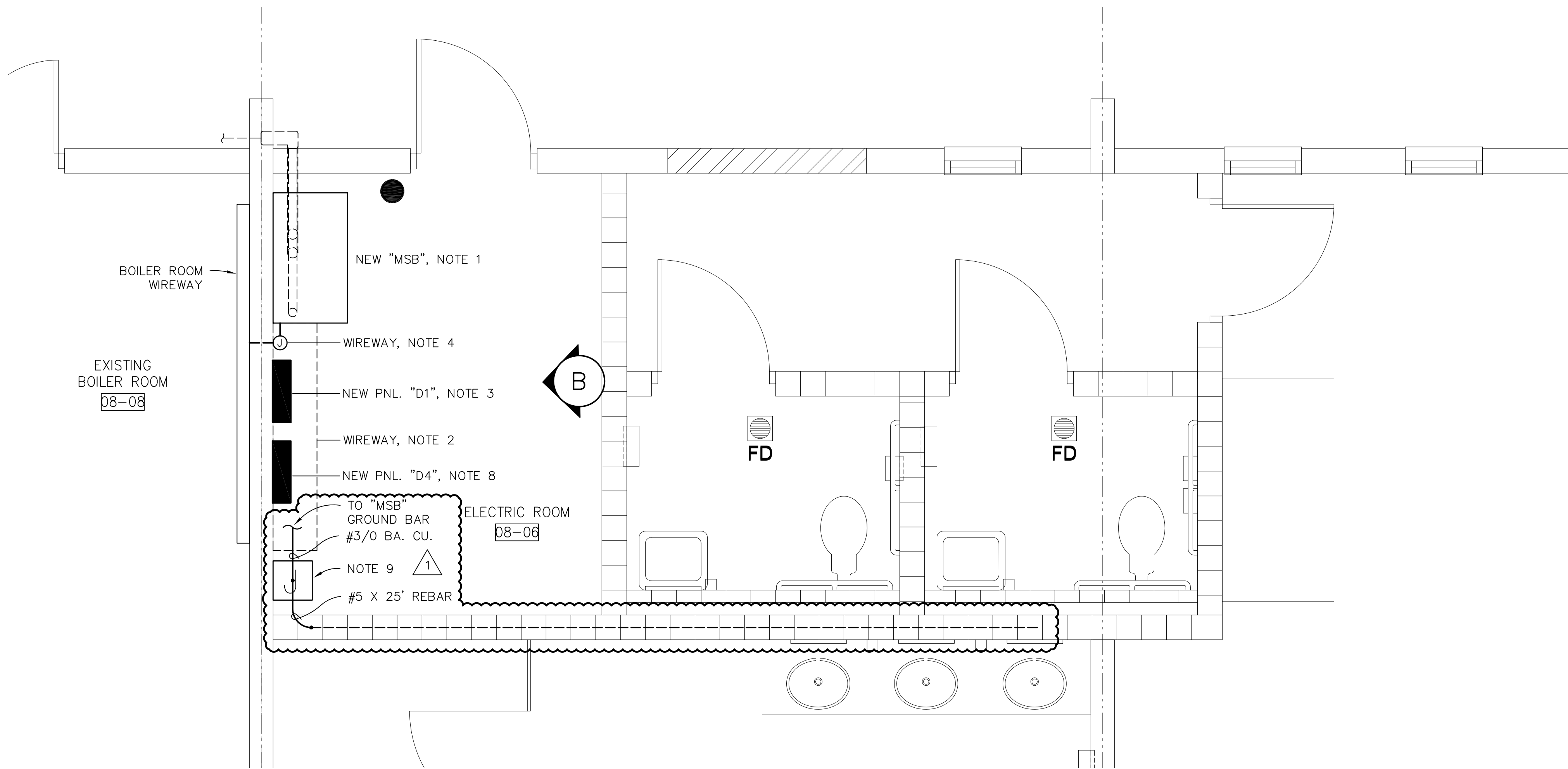
REVISIONS	DATE	BY	CHKD
ADDENDUM NO. 1	10-15-2018		



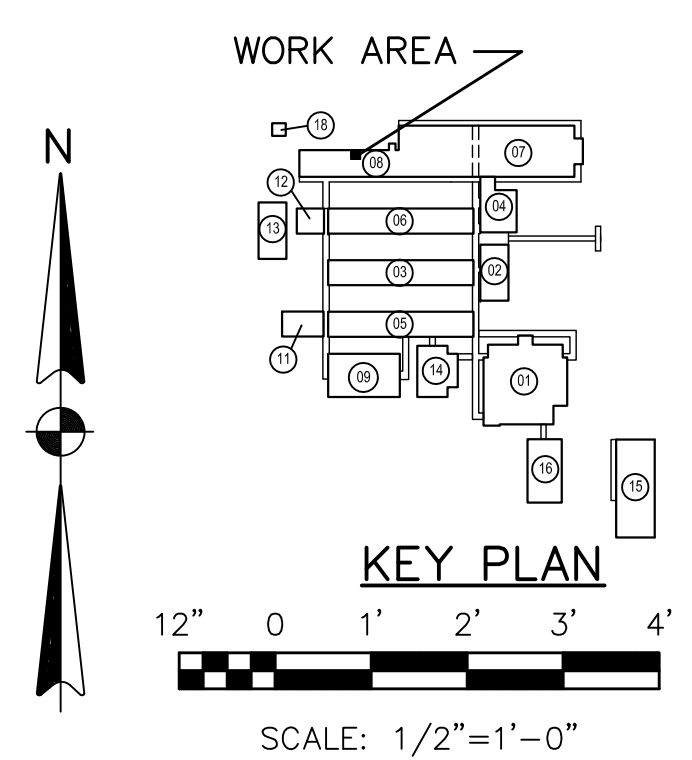
NOTES:

1. PROVIDE NEW MAIN SWITCHBOARD "MSB". FLOOR MOUNTED, 120/208V, 3Ø, 4W, SN. 800 A FRAME/600 A TRIP MCB, 65,000 AIC. SWITCHBOARD SHALL BE TOP FEED WITH TOP MOUNTED MAIN CIRCUIT BREAKER AND SEPARATE GROUND BUS.
2. EXISTING WIREWAY SHALL REMAIN AND BE SHORTENED AND CONNECTED TO NEW SWITCHBOARD. MAXIMIZE OPENING IN SWITCHBOARD. SPLICE AND EXTEND ALL EXISTING FEEDERS IN WIREWAY TO REACH NEW SWITCHBOARD BREAKERS.
3. PROVIDE NEW PANEL "D1". 120/208V, 3Ø, 4W, SN, 250A MLO.
4. PROVIDE NEW FEEDER FROM "MSB" TO EXISTING BOILER ROOM WIREWAY AND SPLICE TO EXISTING WAREWAY FEEDER.
5. REMOVE EXISTING BLDG. 13 FEEDER CONDUCTORS TO OUTSIDE OF BLDG. 8 AS REQUIRED TO SHORTEN EXISTING CONDUIT AND RECONNECT TO NEW SWITCHBOARD. RECONNECT CONDUCTORS TO NEW BREAKER.
6. REMOVE EXISTING SERVICE ENTRANCE CONDUCTORS TO EXTERIOR OF BLDG. AS REQUIRED TO INSTALL NEW 3" RGC TO NEW SWITCHBOARD. REINSTALL EXISTING CONDUCTORS.
7. PROVIDE NEW FEEDER FROM "D1" TO BLDG. 18. 3/4"C, 3#10 & 1#10G AND CONNECT TO EXISTING 120V, 1Ø CIRCUITS. SEE NEW OVERALL POWER PLAN.
8. PROVIDE NEW PANEL "D4". 120/208V, 3Ø, 4W, SN, 250A MLO.
9. PROVIDE A #5X25' REBAR ENCASED IN THE NEW WALL CONCRETE FOOTER AND ADJACENT TO FOOTER REBAR. PROVIDE EXOTHERMIC WELDED CONNECTION INSIDE JUNCTION BOX ON INTERIOR WALL. PROVIDE #3/0 BARE COPPER GROUND CONDUCTOR TO "MSB" GROUND BAR. SEE ADDITIONAL GROUNDING REQUIREMENTS ON DRAWING E-21.

NEW SERVICE WALL ELEVATION (B)
SCALE: 1/2" = 1'-0"

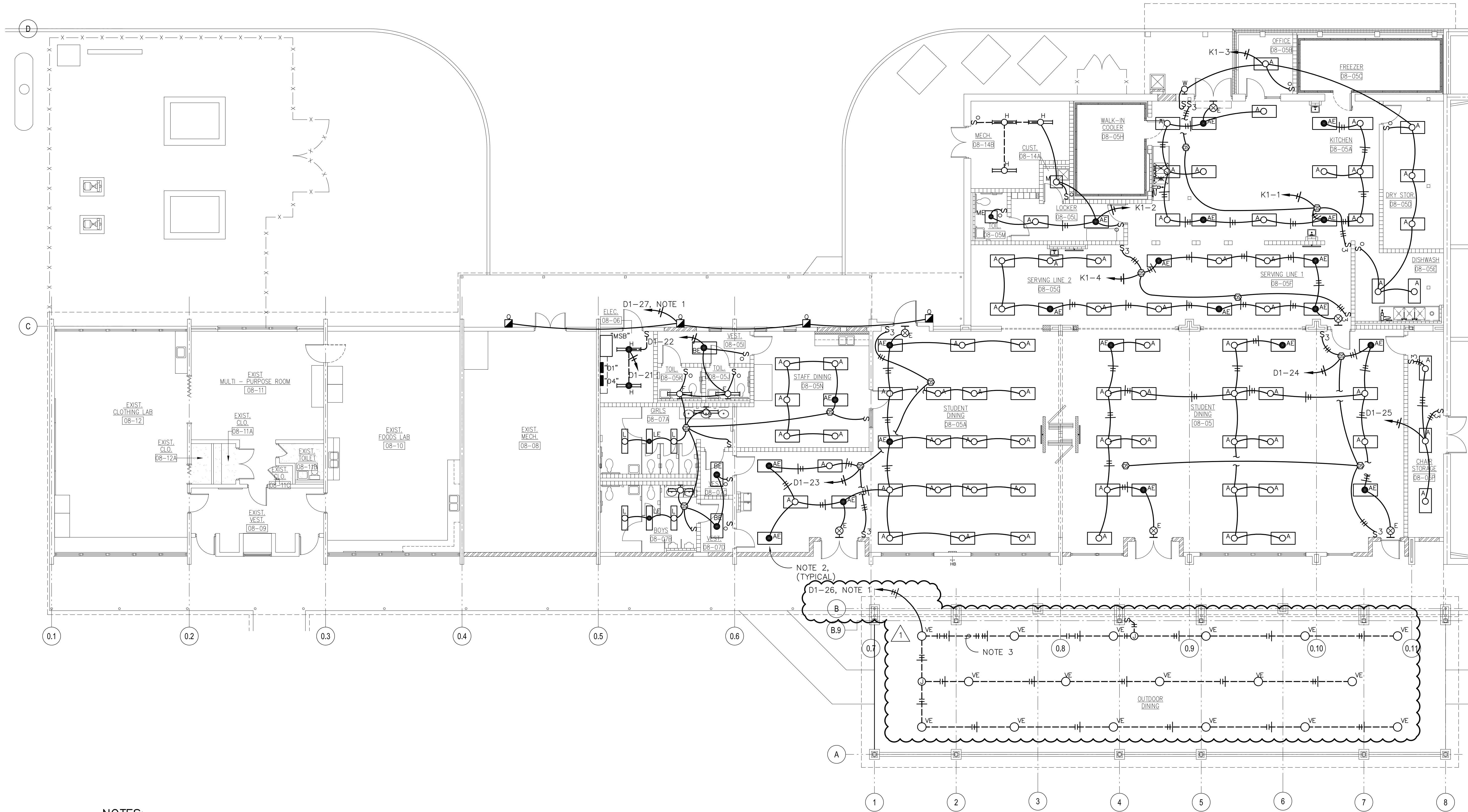


NEW ELECTRIC ROOM POWER PLAN (B)
SCALE: 1/2" = 1'-0"



REVISIONS	DATE	BY	CHKD.
ADDENDUM NO. 1	10-15-2018		

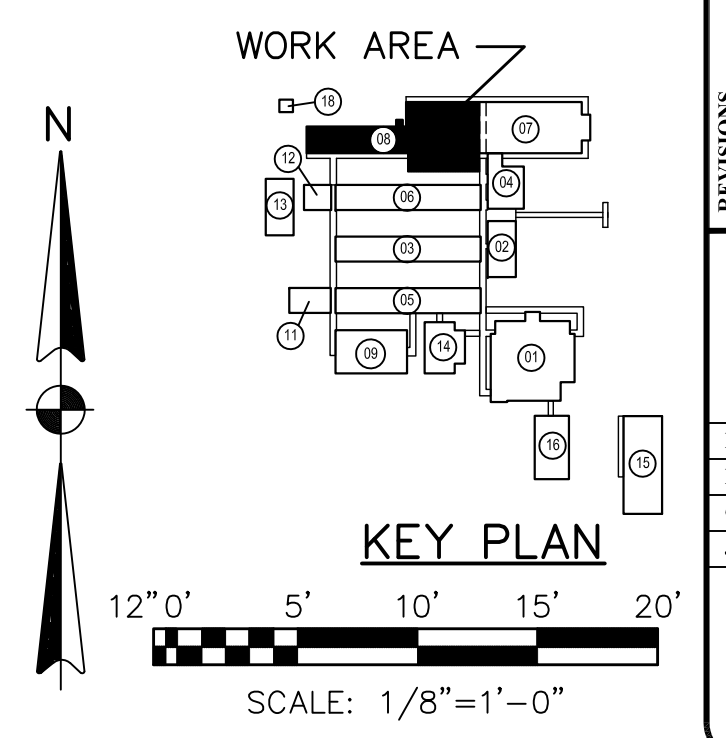
DATE	9-25-2018
D.B.	LMC
C.B.	LMC
JOB NO.	18016



NOTES:

1. EXTERIOR LIGHTING SHALL BE CONTROLLED BY EMCS LIGHTING CONTROL MODULE THROUGH LIGHTING CONTACTOR WITH HOA SWITCH LOCATED IN ELECTRIC ROOM 08-06. SEE EXTERIOR LIGHTING CONTROL DIAGRAM ON SHEET E-23.
2. SEE EMERGENCY LIGHTING CONTROL DIAGRAM ON SHEET E-23.
3. ALL EXPOSED CONDUIT AT OUTDOOR DINING AREA SHALL BE THREADED ALUMINUM, UNPAINTED.

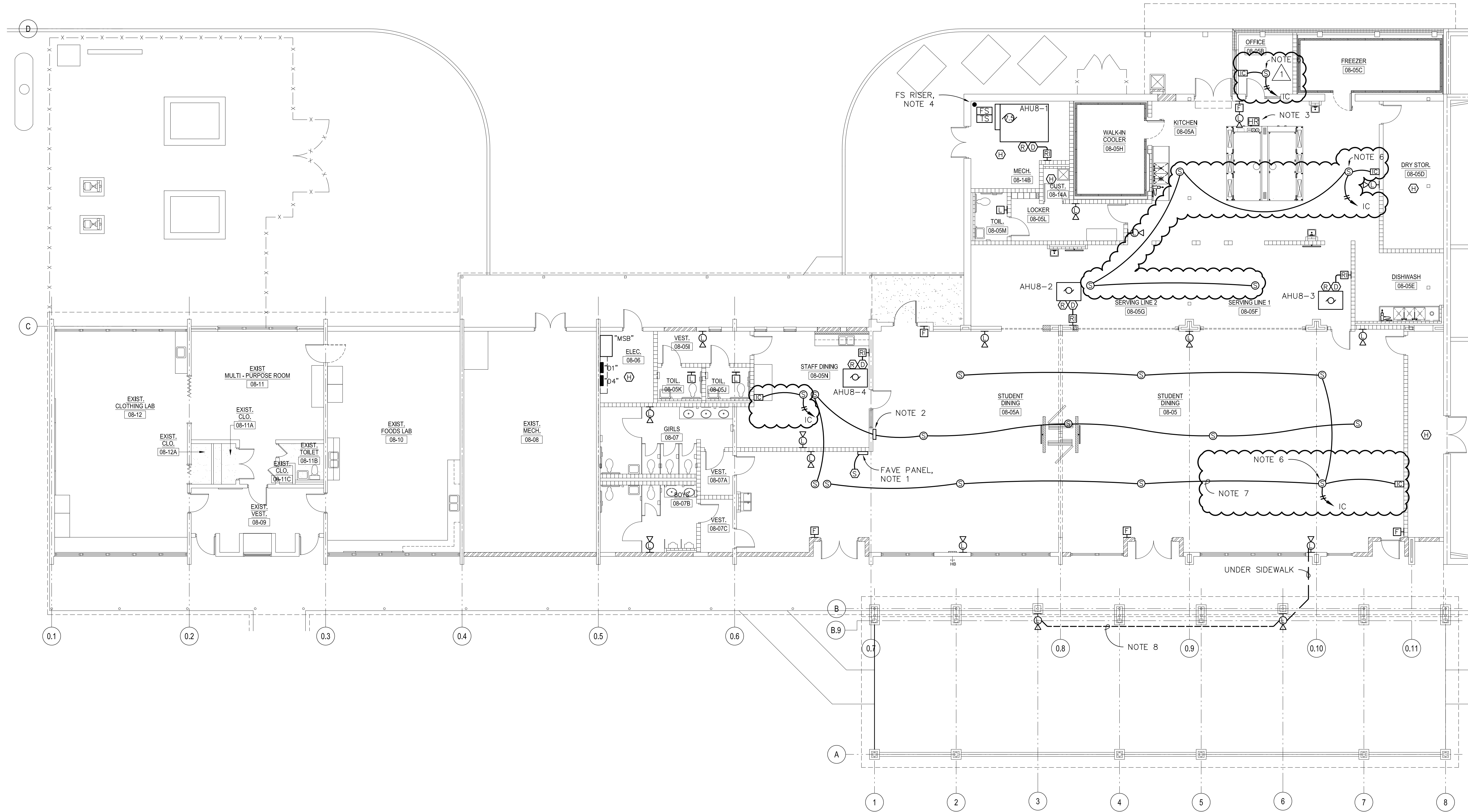
NEW FLOOR PLAN
SCALE: 1/8" = 1'-0"



Engineer License No.
Larry M. Carney 33624

REVISIONS	DATE	BY	CHKD.

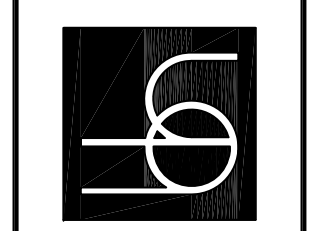
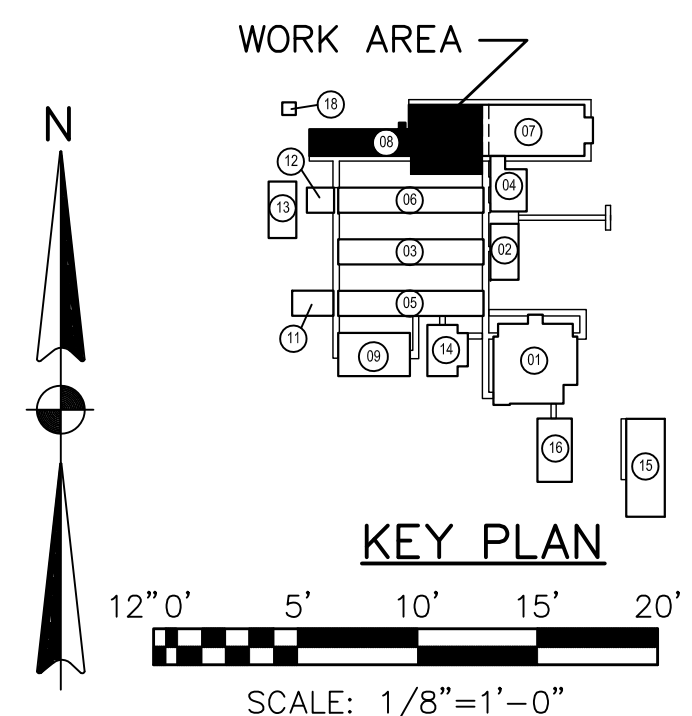
BUILDING 08 LIGHTING PLAN	
DATE	9-25-2018
D.B.	LMC
C.B.	LMC
JOB NO.	18016



NOTES:

1. PROVIDE NEW SILENT KNIGHT FIRE ALARM VOICE EVACUATION PANEL COMPATIBLE WITH EXISTING SCHOOL FIRE ALARM CONTROL PANEL. CONNECT PANEL TO EXISTING BUILDING 08 NOTIFICATION AND SIGNAL CIRCUITS.
2. PROVIDE NEW WALL MOUNTED PUBLIC ADDRESS PANEL WITH HANDSET MICROPHONE AND WIRELESS MICROPHONE CONNECTED TO SEPARATE PA CEILING SPEAKERS. PANEL SHALL BE LOCKABLE AND SHALL ENCLOSE BOTH MICROPHONES WHEN NOT IN USE. AMPLIFIER SHALL HAVE ON/OFF SWITCH LOCATED INSIDE PANEL. PROVIDE ALL WIRING IN CONDUIT.
3. CONNECT ADDRESSABLE MONITOR MODULE TO MONITOR HOOD FIRE SUPPRESSION SYSTEM.
4. CONNECT FLOW AND TAMPER SWITCHES AT FIRE SPRINKLER RISER.
5. INSTALL ALL FIRE ALARM WIRING IN CONDUIT, AS RECOMMENDED BY FIRE ALARM MANUFACTURER. WIRING NOT SHOWN PROVIDE WIRING SHOP DRAWINGS.
6. PROVIDE NEW INTERCOM CEILING SPEAKERS CONNECTED TO NEW WIRING FROM BUILDING 02 INTERCOM RACK.
7. PROVIDE NEW WIRING INSIDE BUILDING FOR ALL NEW SPEAKERS. INSTALL ALL INTERCOM WIRING IN CONDUIT.
8. ALL EXPOSED CONDUIT AT OUTDOOR DINING AREA SHALL BE THREADED ALUMINUM, UNPAINTED.

NEW FLOOR PLAN
SCALE: 1/8" = 1'-0"

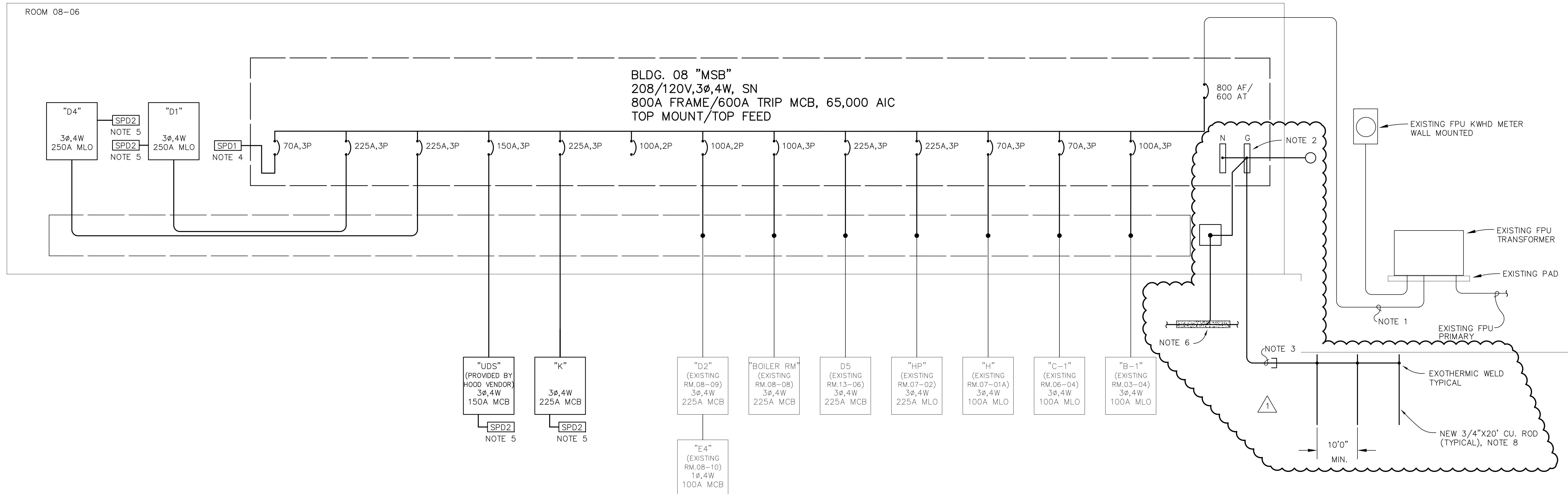


Engineer License No.
Larry M. Carney 33624

REVISIONS	DATE	BY	CHKD.
ADDENDUM NO. 1	10-15-2018		

BUILDING 08
FIRE ALARM,
INTERCOM & PUBLIC
ADDRESS SYSTEMS

DATE 9-25-2018
D.B. LMC
C.B. LMC
JOB NO. 18016



BLDG. 08 SINGLE LINE DIAGRAM

NO SCALE

MAIN SWITCH BOARD								
120/208V, 3Ø, 4W, SN 800A FRAME/600A TRIP MCB, 65,000 AIC							FLOOR MOUNTED BOLT-ON BREAKERS	
CKT. NO.	POLE	TRIP	VOLT AMP	WIRE SIZE	COND. SIZE	GND. SIZE	SERVES	REMARKS
1	3	100	-	4#2	1-1/2"	#8	PNL. B-1	EXISTING PNL.
2	3	70	-	4#4	1-1/2"	#8	PNL. C-1	EXISTING PNL.
3	3	70	-	4#4	1-1/2"	#8	PNL. H	EXISTING PNL.
4	3	225	-	4#4/0	2-1/2"	#4	PNL. HP	EXISTING PNL.
5	3	225	-	4#4/0	2-1/2"	#4	PNL. D5	EXISTING PNL.
6	3	100	-	4#3	1-1/2"	#8	BOILER RM. WIREWAY	-
7	2	100	-	3#2/0	2-1/2"	#8	PNL. D2	EXISTING PNL.
8	2	100	-				SPACE	-
9	3	225	75886	4#4/0	2-1/2"	#4	PNL. K	-
10	3	150	14296	4#2/0	2"	#6	PNL. UDS	-
11	3	225	17098	4#4/0	W/W	#4	PNL. D1	-
12	3	225	63013	4#4/0	W/W	#4	PNL. D4	-
13	3	70	1	4#4	1-1/2"	#4	SPD1	-
14	-	-	-	-	-	-	-	-
15	-	-	-	-	-	-	-	-
16	-	-	-	-	-	-	-	-
17	-	-	-	-	-	-	-	-
18	-	-	-	-	-	-	-	-

TOTAL CONNECTED LOAD = _____ VOLT AMPS

- NOTES:**
- EXISTING SERVICE ENTRANCE FEEDER TO REMAIN.
 - MAKE NEUTRAL TO GROUND BOND CONNECTION AT MAIN SWITCH BOARD ONLY.
 - 1"Ø, 1 # 3/0 BARE COPPER
 - SPD1 SHALL BE A 10 MODE SUPPRESSION SYSTEM RATED 100 KA PER MODE, 200 KA PER PHASE WITH 200K AIC FUSING, 208/120 VOLT, WITH STATUS INDICATION, ALARMS, TEST AND SILENCE SWITCH AND FIVE YEAR WARRANTY. SEE SPECIFICATONS.
 - SPD2 SHALL BE A 10 MODE SUPPRESSION SYSTEM RATED 80 KA PER MODE, 160 KA PER PHASE WITH 200K AIC FUSING, 208/120 VOLT, WITH STATUS INDICATION, ALARMS, TEST AND SILENCE SWITCH AND FIVE YEAR WARRANTY. SEE SPECIFICATONS.
 - PROVIDE A #5X25' REBAR ENCASED IN THE NEW WALL CONCRETE FOOTER AND ADJACENT TO FOOTER REBAR. PROVIDE EXOTHERMIC WELDED CONNECTION INSIDE JUNCTION BOX ON INTERIOR WALL. PROVIDE #3/0 BARE COPPER GROUND CONDUCTOR TO "MSB" GROUND BAR.
 - BOND METAL WATER AND GAS PIPING.
 - PROVIDE TESTING OF GROUNDING ELECTRODE SYSTEM USING THREE POINT FALL OF POTENTIAL METHOD PRIOR TO FINAL CONNECTION TO PANEL. ADVISE OWNER OF TEST RESULTS IN WRITTEN REPORT.

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 1329 KINGSLEY AVENUE, SUITE C ORANGE PARK, FLORIDA 32073 PH: (904) 264-9191 LIC. NO. AA000669

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 650 ARLINGTON EXPRESSWAY, SUITE B-211 JACKSONVILLE, FLORIDA 32211
 TELEPHONE: (904) 724-0660

**FERNANDINA BEACH MIDDLE SCHOOL
 KITCHEN/DINING REMODELING AND CAMPUS
 ADDITIONS AND REMODELING**
 315 Citrona Dr., Fernandina Beach, FL 32034

Engineer License No. **13634**
 Werra/C. Cleary

REVISIONS
 ADDENDUM NO. 1 10-15-2018

BUILDING 08
 SINGLE LINE
 DIAGRAM AND
 SCHEDULE

DATE 9-25-2018
 D.B. LMC
 C.B. LMC
 JOB NO. 18016

E-21

PANEL "K1 SECT. 1"										
120/208V, 3Ø, 4W, SN 225 AMP, MCB WITH FEED THRU LUGS, 10,000 A.I.C.					SURFACE MOUNTED WITH BOLT-ON BREAKERS					
CKT. NO.	POLE	TRIP	VOLT AMP	REMARKS	CKT. NO.	POLE	TRIP	VOLT AMP	REMARKS	
1	1	20	966	LTG. KITCHEN RMS. 08-05A	2	1	20	408	LTG. RMS. 08-05L,05M,14A,14B	
3	1	20	431	LTG. RMS 08-05B,05C,05E	4	1	20	976	LTG. SL RMS. 08-05F,05G	
5	1	20	372	SL#1 MILK BOX	4	6	1	20	372	SL#2 MILK BOX
7	1	20	1164	ICE MACHINE	1	8	1	20	1500	PASS THRU COOLER
9	1	20	1032	PASS THRU WARMER	5	10	1	20	1344	REACH IN FREEZER
11						12	1	20	960	HOBART MIXER
13	2	30	5100	MICROWAVE	25	14	1	20	672	HOBART EAT SLICER
15						16	1	20	1200	CASH REGISTERS
17	1	20	900	SL#1 FROST TOP ABOVE CW	22A	18	1	20	900	SL#2 FROST TOP ABOVE CW
19	1	25	2000	SL#1 DROP IN HOT WELLS	20	20	1	25	2000	SL#2 HOT WELLS
21	1	20	948	SL#1 HEATED SHELF	21	22	1	20	948	SL#2 HEATED SHELF
23	1	15	900	SL#1 DROP IN COLD WELL	22	24	1	20	900	SL#2 DROP IN FROST TOP
25	1	15	1092	SL#1 MERCHANDISER	24	26	1	20	1092	SL#2 MERCHANDISER
27	1	20	360	RECPTS. SERVING LINE TVS		28	1	20	1500	RECPT. KITCHEN CORD REEL
29	1	15	1500	WASHER	31	30	2	30	5000	DRYER
31	1	20	720	RECPTS. OFFICE		32				
33	1	20	900	RECPTS. SERVING LINES/DW		34	1	20	1080	RECPTS. KITCHEN/LOCKER/TOIL.
35	1	20	720	RECPTS. KITCHEN/DRY STOR.		36	1	20	720	RECPTS. MECH. RM./CUST.
37	2	25	4000	TEACH. DROP IN HOT WELLS	54	38	1			PREPARED SPACE
39						40	1			PREPARED SPACE
41	1	20	444	TEACH. DROP IN COLD PANS	55	42	1			PREPARED SPACE
TOTAL CONNECTED LOAD = SEE SECT 2										

PANEL "K1 SECT. 2"										
120/208V, 3Ø, 4W, SN 225 AMP, MCB, 10,000 A.I.C.					SURFACE MOUNTED WITH BOLT-ON BREAKERS					
CKT. NO.	POLE	TRIP	VOLT AMP	REMARKS	CKT. NO.	POLE	TRIP	VOLT AMP	REMARKS	
43	1	20	276	WALK IN COOLER	2	44	2	20	2434	WALK IN FREEZER
45						46				
47	3	20	1976	COOLER CONDENSER	2A	48				
49						50	3	20	3099	FREEZER CONDENSER
51	1	20	1800	COOLER HEATER	2	52				
53	1	20	100	COOLER LIGHTS	2	54	1	20	1800	FREEZER HEATER
55						56	1	20	150	FREEZER LIGHTS
57	3	15	1627	DISPOSER	10A	58	2	15	2039	AIR CURTAIN FAN FF-1
59						60				
61	2	20	1000	SL SECURITY GRILLE		62	2	20	1000	SL SECURITY GRILLE
63						64				
65	2	20	1000	SL SECURITY GRILLE		66	1	20	360	RECPTS. SERVING LINE TVS
67						68	1	20	100	DOOR BELL
69	1	20	180	RECPT. SERVING LINE		70	1	20	350	EF8-3
71	1	20	180	RECPT. SERVING LINE		72	1	20	1207	EF8-4
73						74				
75	3	35	6300	KEF-1	44A	76	3	20	3960	KRTU-1
77						78				
79						80	1	20		SPARE
81	3	15	1627	DISPOSER	11A	82	1	20		SPARE
83						84	1	20		SPARE
TOTAL CONNECTED LOAD = 77,686 VOLT AMPS										

PANEL "UDS" (PROVIDED BY HOOD VENDOR)										
120/208V, 3Ø, 4W, SN 150 AMP, MCB WITH SHUNT TRIP, 10,000 A.I.C. (PROVIDED BY UDS VENDOR)					SURFACE MOUNTED WITH BOLT-ON BREAKERS					
CKT. NO.	POLE	TRIP	VOLT AMP	REMARKS	CKT. NO.	POLE	TRIP	VOLT AMP	REMARKS	
1	1	20	1440	DOUBLE OVEN, GAS	15	2	1	20	816	COMBI-OVEN, GAS
3	1	20	1440	DOUBLE OVEN, GAS	15	4	2	30	5000	INDUCTION COOK TOP
5	1	15	600	TILT SKILLETM GAS	17	6				
7	2	30	5000	INDUCTION COOK TOP	18	8	1			
9						10	1			
11	1					12	1			
13	1					14	1			
15	1					16	1			
17	1					18	1			
19	1					20	1			
21	1					22	1			
23	1					24	1			
TOTAL CONNECTED LOAD = 14,296 VOLT AMPS										

PANEL "D1"									
120/208V, 3Ø, 4W, SN 250 AMP, MLO, 22,000 A.I.C.					SURFACE MOUNTED WITH BOLT-ON BREAKERS				
CKT. NO.	POLE	TRIP	VOLT AMP	REMARKS	CKT. NO.	POLE	TRIP	VOLT AMP	REMARKS
1	1	20	180	RECPTS. RM. 08-06	2	1	20	900	RECPTS. RM. 05I,05J,05K,07,07B
3	1	15	500	HAND DRYER RM. 07	4	1	15	500	HAND DRYER RM. 07B
5	1	20	1000	VENDING MACH. 05N	6	1	20	1000	VENDING MACH.05N
7	1	20	540	RECPTS. RM. 05N	8	1	20	1200	EWCS RM. 05A
9	1	20	900	RECPTS. RM. 05A,05N	10	1	20	720	RECPTS. RM. 05A
11	1	20	900	RECPTS. RM. 05,05A	12	1	20	720	RECPTS. OUTDOOR DINING
13	1	20	1000	RECPT. RM. 05A SLUSHIE MACH.	14	1	20	1080	RECPTS. RM. 05,05P
15	1	20	1000	RECPT. RM. 05 SLUSHIE MACH.	16	1	20	180	RECPT. RM. 05N
17	1	20	1000	RECPT. RM. 05 SLUSHIE MACH.	18	1	20		SPARE
19	1	20		SPARE	20	1	20		SPARE
21	1	20	124	LTG. RM. 08-06	22	1	20	1090	LTG. REST ROOMS
23	1	20	1572	LTG. RM 08-05A	24	1	20	1574	LTG. RM. 08-05
25	1	20	198	LTG. CHAIR STORAGE	26	1	20	680	LTG. RM. OUTDOOR DINING
27	1	20	100	LTG. EXTERIOR NORTH	28	1	20		PREPARED SPACE
29	1	20		PREPARED SPACE	30	1	20		PREPARED SPACE
31	1	20		PREPARED SPACE	32	1	20		PREPARED SPACE
33	1	20		PREPARED SPACE	34	1	20		PREPARED SPACE
35	1	20		PREPARED SPACE	36	1	20		PREPARED SPACE
37	1	20		SPARE	38	1	20		SPARE
39	1	20		SPARE	40	1	20		SPARE
41	1	20		SPARE	42	1	20		SPARE
TOTAL CONNECTED LOAD = 17,098 VOLT AMPS									

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**FERNANDINA BEACH MIDDLE SCHOOL
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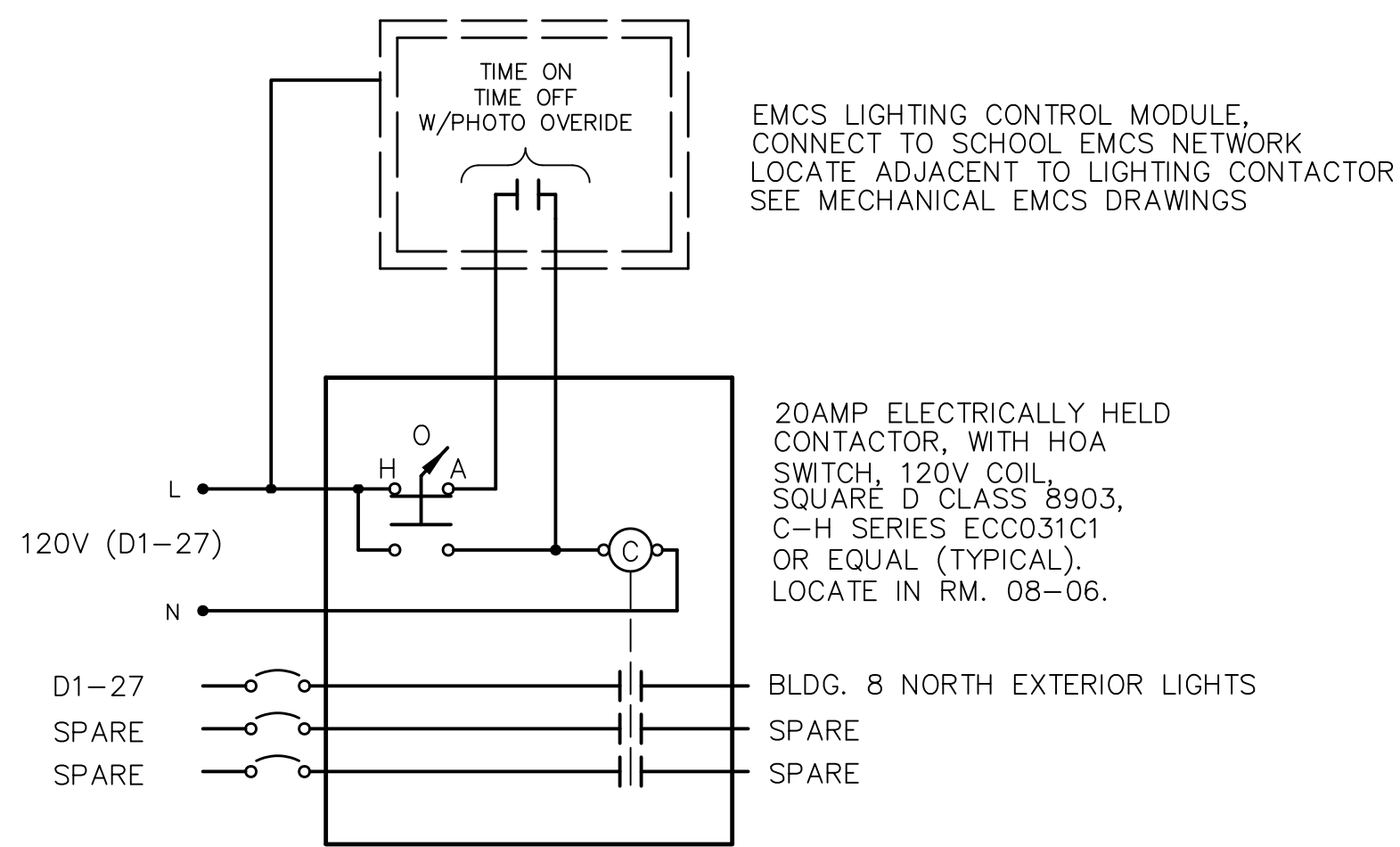
Engineer License No. 13634
Ways&C/Oleby

REVISIONS
ADDENDUM NO. 1
10-15-2018

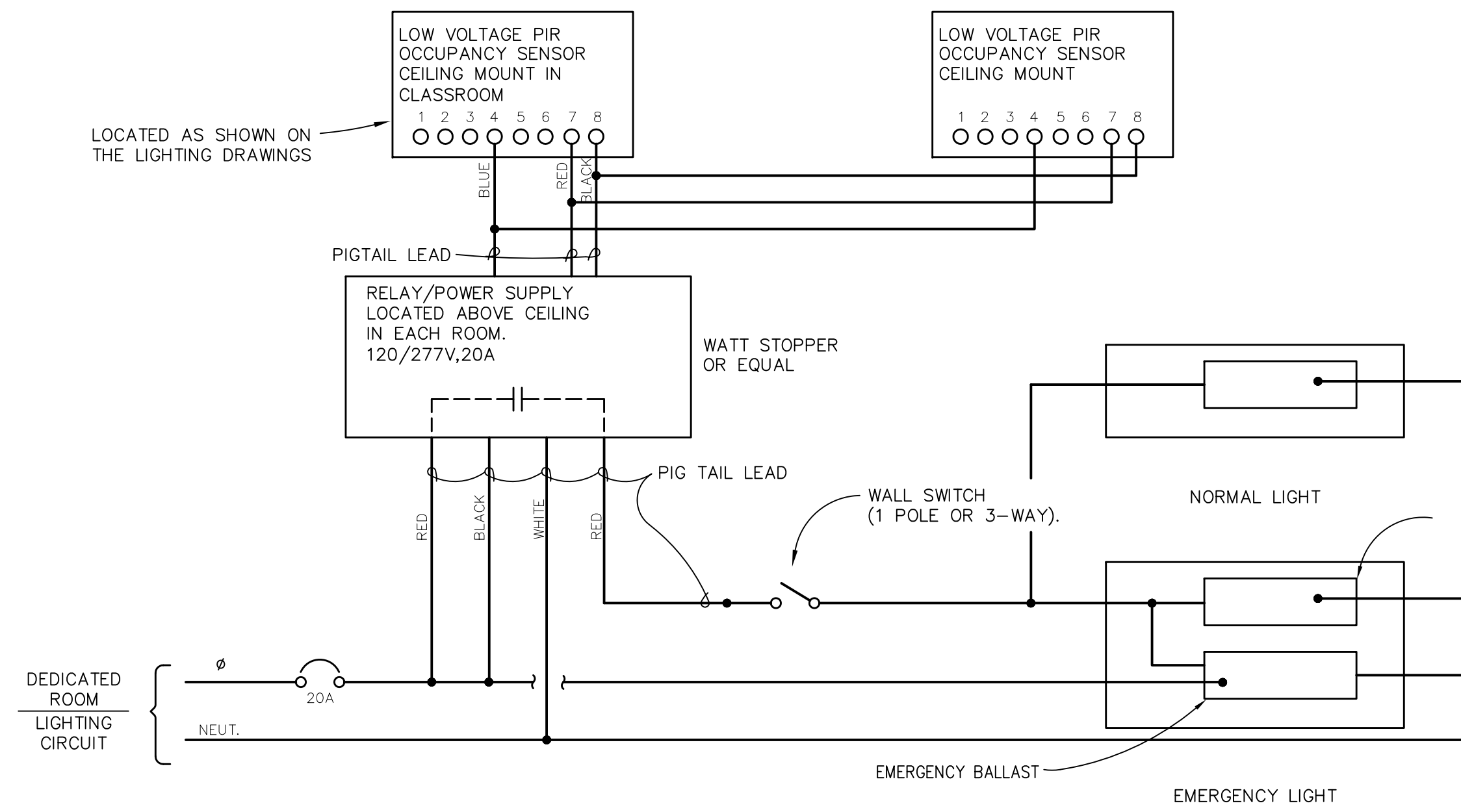
ELECTRICAL SCHEDULES

DATE 9-25-2018
D.B. LMC
C.B. LMC
JOB NO. 18016

E-22



BLDG. 08 EXTERIOR LIGHTING CONTROL DIAGRAM
NOT TO SCALE

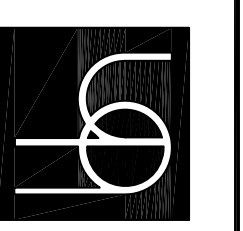


EMERGENCY LIGHTING CONTROL DIAGRAM
NO SCALE

LIGHTING FIXTURE SCHEDULE						
TYPE	MANUFACTURER	CAT. NO.	LAMP	MOUNTING	VOLTS/WATTS	REMARKS
A	H.E. WILLIAMS	LPT-24-L67/840-A12125-DRV-UNV	LED	GRID	277/66	
AE	H.E. WILLIAMS	LPT-24-L67/840-A12125-EM/10W-DRV-UNV	LED	GRID	277/66	EMERGENCY FIXTURE W/BATTERY
B	H.E. WILLIAMS	LPT-24-L42/840-A12125-DIM-UNV	LED	GRID	277/38	
BE	H.E. WILLIAMS	LPT-24-L42/840-A12125-EM/10W-DIM-UNV	LED	GRID	277/48	EMERGENCY FIXTURE W/BATTERY
C	H.E. WILLIAMS	LT-24-L73/840-AF-DRV-UNV	LED	GRID	277/71	
CE	H.E. WILLIAMS	LT-24-L73/840-AF-EM/10W-DRV-UNV	LED	GRID	277/71	EMERGENCY FIXTURE W/BATTERY
D	H.E. WILLIAMS	LPT-22-L42/840-A12125-DIM-UNV	LED	GRID	277/50	
E	BEGHELLI	ATX HT LR 1 U	LED	WALL/CEILING	277/2	
F	H.E. WILLIAMS	WMAUD-4-L32/840U/L32/840D-AF-UNV	LED	WALL	277/79	
G	H.E. WILLIAMS	AVX-4-LED*PH60/840-WPC-UNV	LED	SURFACE	277/75	
H	H.E. WILLIAMS	80-4-L63/840-WG-8011-VBY-2-DRV-UNV	LED	CHAIN/SURFACE	277/52	
HE	H.E. WILLIAMS	80-4-L63/840-WG-8011-VBY-2-EM/10W-DRV-UNV	LED	CHAIN/SURFACE	277/62	EMERGENCY FIXTURE W/BATTERY
L	H.E. WILLIAMS	50F-S14-L45/840-F-A12125-WET-DRV-UNV	LED	RECESSED	277/34	
LE	H.E. WILLIAMS	50F-S14-L45/840-F-A12125-EM/10W-WET-DRV-UNV	LED	RECESSED	277/44	EMERGENCY FIXTURE W/BATTERY
M	H.E. WILLIAMS	LPT-22-L42/840-A12125-DIM-UNV-DFK2424W	LED	RECESSED	277/50	
ME	H.E. WILLIAMS	LPT-22-L42/840-A12125-EM/10W-DIM-UNV-DFK2424W	LED	RECESSED	277/50	EMERGENCY FIXTURE W/BATTERY
N	H.E. WILLIAMS	LPT-24-L42/840-A12125-DIM-UNV-DFK2448W	LED	RECESSED	277/38	
Q	LUMINAIRE	LPL1212-25W-4000K-120-277-OP-GRY-A/B-WET	LED	SURFACE	120/25	
VE	LUMINAIRE	ARV17-50W-LED-4000K-120-OP-GRY-A/B-WET-EMB310	LED	SURFACE	120/56	EMERGENCY FIXTURE W/BATTERY
W	LUMINAIRE	BRV13HO OCC-LED-4000K-120-CP-GRY-A/B-WET	LED	WALL	120/50	VERIFY SELECTION WITH MANUFACTURER

CLASSROOM LIGHTING SEQUENCE OF OPERATION:

- NORMAL POWER**
- ALL CLASSROOM LIGHTS SHALL BE SERVED FROM NORMAL POWER THROUGH VACANCY SENSOR AND CLASSROOM WALL SWITCHES.
 - ALL LIGHTS SHALL TURN OFF 25 MINUTES AFTER ROOM IS VACATED. LIGHTS MUST BE TURNED ON MANUALLY.
 - EMERGENCY LIGHTS SHALL BE SERVED FROM WALL SWITCH THROUGH EMERGENCY RELAY NORMALLY OPEN CONTACTS HELD CLOSED BY NORMAL POWER CIRCUIT.
 - DAY LIGHT SENSOR SHALL AUTOMATICALLY DIM THE TWO ROWS OF FIXTURES CLOSEST TO THE WINDOW TO MAINTAIN AN AVERAGE LEVEL OF 50 FOOTCANDLES.
- EMERGENCY POWER**
- UPON LOSS OF NORMAL POWER, EMERGENCY LIGHTS SHALL BE SERVED FROM EMERGENCY POWER THROUGH EMERGENCY RELAY NORMALLY CLOSED CONTACTS. LIGHTS SHALL COME ON REGARDLESS OF SWITCH POSITION. VACANCY AND DAY LIGHT SENSORS SHALL CEASE TO OPERATE UNTIL NORMAL POWER RESUMES.



REVISIONS	DATE	DESCRIPTION
1	10-15-2018	ADDENDUM NO. 1

DATE	BY	DESCRIPTION
9-25-2018	LMC	D.B.
	LMC	C.B.
18016		JOB NO.

SECTION 27 13 48

LOCAL AREA NETWORK PREMISE DISTRIBUTION SYSTEM

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions, Division 01 and Division 16 Specification Sections apply to this Section.
- B. Standards - Conform to the requirements of the following:
 - 1. TIA/EIA-568-B.1 "Commercial Building Telecommunications Cabling Standard", CSA T529.
 - 2. TIA/EIA-568-B.2-1 "Transmission Performance Specifications for 4-pair 100 Ohm Category 6 Cabling".
 - 3. TIA/EIA-569 "Commercial Building Standard for Telecommunications Pathways and Spaces", CSA T530.
 - 4. TIA/EIA-606 "Administration Standard for Telecommunications Infrastructure of Commercial Buildings", CSA T528.
 - 5. TIA/EIA-607 "Commercial Building Grounding/Bonding Requirements".
 - 6. TSB-67 "Transmission Performance Specification for Field Testing of Unshielded Twisted Pair Cabling Systems".
 - 7. TIA/EIA TSB-72 "Centralized Optical Fiber Cabling Guidelines".
 - 8. TIA/EIA PN-3398 TSB-75 "Additional Horizontal Cabling Practices for Open Offices".
 - 9. ANSI/NFPA 70 National Electrical Code, CSA C22.1.
 - 10. BICSI Telecommunications Distribution Methods Manuals
 - 11. BICSI Telecommunications Installation Manuals
 - 12. County Codes and Regulations.
 - 13. Underwriters Laboratories (UL)
 - 14. FCC -Federal Communications Commission
 - 15. ADA Requirements
 - 16. Occupational Safety and Health Regulations (OSHA)
 - 17. National Fire Protection Association (NFPA)
 - 18. Florida Statutes and Administrative Rules
 - 19. Cabling System Certified Cabling Catalog

20. American Society for Testing and Materials (ASTM)
21. EIA/TIA-492AAAA - Detail Specification for 62.5 Micrometer Core Diameter/125 Micrometer Cladding Diameter Class 1a Multimode, Graded Index Optical Waveguide Fibers.
22. EIA/TIA TSB-36 - Technical Systems Bulletin, Additional Transmission Specifications for Unshielded Twisted Pair Cables.
23. EIA/TIA TSB-40-A - Technical Systems Bulletin, Additional Transmission Specifications for Unshielded Twisted Pair Connecting Hardware.
24. Florida DMS/DOC - General Facility Requirements for Telecommunications Systems
25. LPC - Lightning Protection Code (NFPA-780).
26. UL Certified - UL's LAN Cable Certification Program. UL 910 - Test for Flame Propagation and Smoke Density Values for Electrical and Optical Fiber Cables Used in Spaces Transporting Environmental Air.
27. UL 1666 - Test for Flame Propagation Height of Electrical and Optical Fiber Cables Installed Vertically in Shafts.
28. UL 1449, 3rd Edition – Standard for Safety for Surge Protective Devices
29. UL 497, UL 497A, UL 497B
30. ANSI - American National Standards Institute
31. NEMA - National Electrical Manufacturers Association
32. Furnish products listed and classified by Underwriters Laboratories, Inc. as suitable for purpose specified and indicated.

1.02 PERFORMANCE REQUIREMENTS

- A. General: Provide for a complete (furnish and install) EIA/TIA 568-B.2-1 Category 6 Premise Distribution System (PDS) with all accessories and a minimum 20-year LINK AND CHANNEL WARRANTY for the entire system. The goal is to provide an enhanced PDS system that will serve as a vehicle for transport of data, video and voice telephony signals throughout the building and from building to building from a designated demarcation point to outlets located at various desks, workstations and other locations.
- B. Support analog and digital voice applications, data, local area networks (LAN), video and low voltage devices for building controls and management on a common cabling platform. The applications supported include, but are not limited to:
 1. Data Processing – EIA-232-D, EIA-422A, EIA-43-A, RS-485, Star LAN, Fiber Distributed Data Interface (FDDI), Ethernet 10Base-T (IEEE 802.3i), 10Base-F (IEEE 802.3j), and TP-PMD. In addition, these links/channels shall be capable of supporting high-end applications such as 100Base-T (IEEE 802.3u), 1000Base-T (IEEE 802.3z, ab), and 1000 base TX.
 2. Voice Applications – Lucent, Northern Telecom, NEC, SIEMENS.

3. Video – Broadband and base band Analog Video, Digital Video, and Video Conferencing.
 4. WLAN applications, cabling for Wireless Access Points (WAP), shall be compliant with applicable EIA/TIA standards, as well as the IEEE 802.3af standard for providing PoE, (Power over Ethernet) for Data Terminal Equipment (DTE) over Category rated UTP cable.
 5. Other Applications: ISDN, ATM, ADSL, VoIP
- C. Provide a network of unshielded twisted pair cables (UTP) and fiber optic cables (FO) for horizontal cabling, backbone cabling, riser cabling, tie cabling, and patch cords. Provide and locate terminations and quantities on contract drawings. Terminate FO Cables on rack mounted Fiber Distribution Centers (FDC's), and UTP cables on rack mounted modular patch panels. Identify all cables and terminations in accordance with EIA/TIA 606 using an alphanumeric sequence.
- D. At a minimum provide all terminations and testing in accordance with EIA/TIA 568.2-1, Category 6, with at least a 20-year warranty.
1. Provide an installation that requires horizontal cable supporting data applications must meet at a minimum the Category 6 performance requirements as listed by EIA/TIA standards for the link and channel. (Field testing for LINK only, 100% factory patch cord testing required).
- E. Data communications is to originate at Owner provided switches and routers located at individual IDF'S.
- F. Wiring, terminations and patch bays between designated demarcation points and outlet locations is to be considered part of the contract. Outlets (jacks) shall be furnished, wired, and installed by the Structured Cable Systems (SCS) Contractor.
- G. Nassau County School District has standardized on the following color code for category 6 components.
1. All category 6 cable shall be green in color.

1.03 QUALITY ASSURANCE

- A. Installer Qualifications:
1. Any contractor who chooses to bid on this project must show current certification as an installer of the specified connectivity manufacturer.
 2. Provide that the Contractor responsible for the work is a "Premise Distribution Wiring Contractor" who is, and who has been, regularly engaged in the providing and installation of commercial and industrial telecommunications wiring systems of this type and size for at least the immediate past five years, holds a valid Florida Certified Limited Energy System Specialty license (ES 069) and possess either a Panduit Certified Installer or AMP Netconnect Design & Installation and Corning Extended Warranty Program Certifications in order to provide the level of warranty for the product sets required.. Also, any sub-Contractor, who will assist the PDW Contractor in performance of this work, is to have the same training and certification as the PDW Contractor. A copy of the sub-contractors

3. BICSI Accreditation: Provide that the Contractor's Project Manager be a member in good standing with and possess a current BICSI Registered Communications Distribution Designer (RCDD) certificate.
4. Experienced: Provide that the Contractor be experienced in all aspects of this work and shall be required to demonstrate direct experience on recent systems of similar type and size. The Contractor is to own and maintain tools and equipment necessary for successful installation and testing of optical fiber and Category 6 copper premise distribution systems and have personnel who are adequately trained in the use of such tools and equipment.

1.04 SUBMITTALS DURING CONSTRUCTION

- A. Adherence to Specifications: Manufacturers and/or products are listed in no order of preference and only referenced as acceptable. Single manufacturer names means that no other manufacturer's product is accepted without written approval from Nassau County School District and the Engineer. These manufacturers represent major components and are not intended to be comprehensive. Shop drawings and/or samples for all products not listed must be submitted to Nassau County School District for approval. Also, an explanation in detail giving the reason(s) why and how the proposed items will meet the specifications and will not be considered an exception, and submit adequate information to support this claim. Nassau County School District reserves the right to be the sole judge of what is equal or equivalent. These changes, if approved by the OWNER and the ENGINEER, must be issued in a WRITTEN ADDENDUM not later than seven (7) days prior to bid opening date.
- B. Required to be submitted with the bid:
 1. Copy of the Contractor's current Certification by the specific connectivity manufacturer.
- C. Submittals required prior to the commencement of work: Include manufacturers' cut sheets for all proposed equipment including, but not limited to, the following:
 1. All wire and cable as specified by the contract documents.
 2. All connectors and required tooling.
 3. All terminations system components for each cable type.
 4. All IDF equipment frame types, hardware and surge strips.
 5. All cable suspension J-hooks, cable fasteners, CAT 6 cable suspension components.
 6. All grounding and surge suppression system components for the system portion of the project.
 7. AC Grade, Plywood Backboards painted with UL Classified fire retardant paint.
 8. All CAT 6 patch cords.
- D. As-Built Documentation

1. Provide as-built documentation in accordance with Division 01.
 2. As part of the as-built documentation provide all cable routings (trunk lines) and elevations of each IDF or MDF indication outlet, tie, and riser cable terminations.
 3. Provide EXCEL software spreadsheet that defines the telecommunications outlet number, location, and number of voice, data and special jacks. This database is to also include outlet patch panel connection to the riser/inter-floor cable, equipment, and telephone company demarcation circuit pairs.
- E. Warranty Requirements:
1. Cabling system warranties are to be supplied by the manufacturer of the connectivity, (jacks, patch panels and patch cords). The warranty program shall include coverage for both Link and Channel configuration as specified in the connectivity manufacturer's warranty. The patch cords and workstations cords shall be manufactured by the same manufacturer as the jacks and patch panels. The patch cords shall be 100% factory tested for compliance to the Category 6 standard. The warranty shall provide for guaranteed system performance, provide for material replacement and the labor to re-install defective products.

PART 2 - PRODUCTS

2.01 MATERIALS, PRODUCTS, EQUIPMENT, MANUFACTURED UNITS

- A. Fiber Optic Cabling: See Section 271346 Local Area Network Fiber Optic Cabling.
- B. Category 6 Horizontal Cable
 1. General: Data pairs are to be extended between the outlet location and its associated IDF. The cable is to consist of 4 pair 23 gauge, solid copper conductors, certified to the Category 6 standards. ETL or UL verified for EIA/TIA electrical performance and comply with FCC part 68. Cables are to be terminated on each of the 8-position modular jacks provided at each outlet. Voice is to utilize this same cable type. Only virgin materials are to be used.
 - a) Cable selection is to be based upon meeting an end-to-end channel performance and be shown to have been tested with the proposed component manufacturer's products and warranted as a complete permanent link and channel solution by the connectivity Manufacturer.
 - b) The Cabling System Warranty shall be issued by the connectivity manufacturer. (Jacks, patch panels, patch cords, etc.). A Warranty from the cable manufacturer or the Contractor shall not be accepted.
 2. Cable Insulation and Jacket: Cable jacket is to comply with Article 800 of the NEC for the environment in which the cable will be installed. All cables are to bear the UL and NEC, CMR or MPR markings. (All cable is to be RISER rated unless otherwise specified or required by code). All PLENUM cables are to bear the UL and NEC, CMP or MPP markings.

4. Provide Additional Category 6 Modular Patch Cords for each work station outlet jack plus an additional 50% of the total workstation outlet jacks (total workstation jacks x 1.5).
5. Twenty-five percent (25%) of all workstation jack patch cords shall be 5'-0" in length. Fifty percent (50%) of all workstation jack patch cords shall be 7'-0" in length. Twenty-five percent (25%) of all workstation jack patch cords shall be 10'-0" in length.
6. All patch cords shall be green in color.

B. Copper Tie Cabling

1. Where required copper tie cabling is to be provided between IDF's and MDF. All voice grade wire and cable placed underground is to be solid twisted pair, multi-conductor, ASP-filled core cable. Cable jacket is to be aluminum steel polyethylene (ASP) dual insulated with foam skin and plastic, and surrounded by filling compound. Cable is to be resistant to mechanical damage, lightning damage or damage from wildlife.
2. Multi-pair backbone copper cables are to meet the following specifications:
 - a) Gauge: 24 AWG
 - b) DC Resistance: 27.3Ω/1000 ft (8.96Ω/100m), maximum
 - c) Mutual Capacitance (at 1khz)
 - d) Impedance: 100Ω (25pair)
 - e) Buried/Underground Cable Attenuation (dB/1000 ft [305m]): at 1.0MHz: 6.4 (25 pair), maximum
 - f) Aerial Cable Attenuation (dB/1000 ft [305m]): at 1.0 MHz: 6.7 (25 pair), maximum.
3. Design Selection:
 - a) Amp
 - b) Belden
 - c) Berk-Tek

C. Site Copper Cable Protection Units

1. Entrance Protection (Analog or Digital Phone Systems): All site copper circuits are to be provided with protection between each building with an entrance cable protector chassis. All building-to-building circuits are to be routed through this protector. Protector is to be connected with a #6 AWG copper bonding conductor between the protector ground lug and the IDF ground point. Each protector chassis is to be provided with 5-pin plug-in protector modules for each pair terminated on the chassis.
 - a) Design Selection:
 1. Porta Systems, #24100-1100-M110C w/1155CN-240 modules (Analog phones), or #1155CN-75 (75 volt) modules for (Digital phones).
 2. Or equal by Circa or Systimax.

2. VoIP Entrance Protection (Cisco or other VoIP Phones): All site copper circuits that are intended to distribute voice over IP (VoIP) are to be provided with protection between each building with data rated primary protectors. All copper data grade building-to-building circuits are to be routed through this protector.
 - a) Design Selection:
 1. Porta Systems #606-27 (non-PoE circuits)
 2. Porta Systems #606-65 (for circuits providing PoE power)
3. Portable Classrooms: Site Cat 6 copper circuits from building or portable (modular) IDF's to portables (modular) are to be provided protection on both ends. At the IDF rack, multi-port rack mounted protector patch panels are to be used for the outgoing Cat 6 cable. Cable is to be run in conduit to the portables where they will terminate in 3-port and 4-port Wall Plate protector units directly without splice.
 - a) Design Selection:
 1. CoreTEK Industries, Inc.: CTI-R12, CTI-W3, and CTII-W4 respectively. Requires "Red" CoreTEK protectors.

D. Equipment Racks

1. General: Each MTR and ITR is to be equipped with 19 inch EIA rack(s), floor mounted, to house owner-provided equipment and contractor provided termination bays for multiple cable types. Floor mounted racks are to be mounted on an isolation pad and utilize non-conductive washers to secure the rack to the floor. Floor mounted open racks are to be secured from the top rail to the backboard in the room with a length of cable tray to prevent movement. Wall racks are to be securely fastened to the wall studs with at least 1/4" hardware. All racks are to be bonded to the TR ground bar using a standard ground lug and #6 AWG insulated green cable.
2. Equipment Mounting Selections:
 - a) Floor Rack: Panduit # CMR19X84S; or owner approved equal
 - b) Isolation Pad: Chatsworth, Hubbell, B-Line, or Pathways & Spaces, Inc.
3. Rack Accessories: Each equipment rack is to be provided with the following accessories:
 - a) Horizontal Cable Organizer: Premise wiring Organizer, Front/rear 19" rack mount, 2U high, 3.5" tall, w/3.5" deep rings on the front (with cover), and 4.6" deep rings on the rear (no cover).
 1. Panduit #WMPH2E
 - b) Power Plug Strip: 120V, 15 Amp surge protected, 10 outlet, 19 inch rack mounted w/switch and 5-15P plug, 10 foot cord length, steel housing (black).
 1. Panduit #CMRPSH15

4. Cable Routing: Ensure that station cables will be routed into the rear station Cable Manager, neatly organized and terminated onto the patch panel following TIA/EIA-568-B, 569 termination guidelines. Require that a horizontal cable manager be installed above and below any patch panel installed on the rack. Patch panels and front/rear cable manages are to be installed in alternating order on the rack. Also, ensure that on 48 port patch panels, the cables terminated on the top 24 ports is neatly routed through the cable manager mounted above the patch panel and conversely those terminated on the lower 24 ports are routed through the cable manager mounted below the patch panel. This routing method allows easier moves, adds and changes at a later date.

5. Vertical Cable Management: Free standing relay racks are to have vertical cable management installed on each side of the rack. If more than one rack is installed then each rack will be separated by a vertical, duct style cable manager. Black, 6” channels with covers.
 - a) Panduit #WMPVHC45E

NOTE: This part number provides vertical cable management for one side of the rack only.

- E. Plywood Backboards: Backboards are to be installed in each MTR and ITR on all four (4) walls from 12” AFF to a height of 9’-0” AFF. Rooms are to have walls covered with ¾” A/C Grade plywood with the “A” side out. Imperfections and voids are to be filled, sealed and sanded prior to being primed and painted with two coats of UL Classified, fire retardant intumescent paint on the front, back and all four sides of the plywood. Fire retardant coating is to be tested to UL723, “Test for Surface Burning Characteristics of Building Materials”; backboards are to be clearly labeled with the name of the backboard manufacturer, UL Classification of the Fire Retardant Coating, NFPA 255 Coating Flame Spread Index Class and the APA Grade of the plywood.

- F. Category 6 Patch Panels
 1. General: Equipment Racks: Provide with 19” rack mount, 8-position modular jacks (RJ45), non-keyed, factory configured, patch panels for termination of all copper horizontal cables.
 2. Work Area Outlet Patch Panels: Test to meet the Category 6 standard for component and channel performance and are to be modular-to-110, wired for T568B pin outs for the cables serving the Work Area Outlets.
 - a) Category 6 patch panel component values:

1. NEXT (dB)	at 250 MHz	46.0 dB or exceed
2. Insertion Loss (dB)	at 250 MHz	0.32 dB or less
3. FEXT (dB)	at 250 MHz	35.1 dB or exceed
 - b) Patch panels are to be provided in 24 and 48 port configurations.
 1. Design Selection:

(a) Panduit #CPP24FMWBLY (24 port); #CPP48FMBLY (48 port)

(b) AMP #1116749-1 (24 port); #1375119-1 (48 port)

3. Voice Site Patch Panels: Provide for the distribution of the voice pairs to the work area patch panels via patch cords. Terminate the site copper tie cables, 25 or 50 pair, via the protector units to voice patch panels. These patch panes are to be configured with one voice pair per port (blue pair) via the 110-connector side of the panel. The panels are to be configured as 8-positon modular jack-to-110 termination panels in the required quantities.
4. Identification: Each jack on all patch panels is to be identified with permanent machine generated labels, meeting the EIA/TIA 606 requirements, matching the Nassau County School District numbering plan as shown (re: para. 2.1.M.6.3.(b)) on the faceplate. All labeling is to be permanent. All labeling is to be 12 point in size. Engineer is to approve labeling prior to fabrication.

G. Cable Support System

1. General: Horizontal cables are to be suspended by pre-manufactured CAT 6 rated J-hooks and Hilti "ECH" hangers in closets where J-hooks, ladder tray or rack management is not available. All supports are to be permanently attached to the structure using all-thread suspension, beam clamps, or wall mount to the structural metal or wooden members. The J-hooks are to feature a wide base loop with smooth curves to eliminate snag potential and cable deformation.
2. Use of cable ties within the Telecommunications room is strictly prohibited. Velcro cable ties or Velcro wraps are to be used instead of cable ties in all rooms where Category 6 cable and fiber optic cable is terminated. Including all Data Centers, MC's (MDF), TC's or IDF's.
3. J-hooks are to be in accordance with the NEC, EIA/TIA requirements for structured cabling systems. All cable supports are to be UL listed.
 - a) Design Selection:
 1. Erico Caddy
 2. Generic J-hook
4. Ladder Rack: Ladder Rack for equipment rack tie to wall is to be 12 inches wide with a 6 inch rung spacing, have a minimum of 24 square inches of cable pathway and minimum 24 inch radius. Adjustable splice connectors are acceptable where needed to accommodate non-standard vertical and horizontal bends. Each straight section, and fitting, is to be provided with two "heavy duty" splice connectors and appurtenant hardware. The splice, when bolted together to form a tray joint, is to be designed to have the same strength (or better) than the tray when placed mid-span. The tray system is to be capable of carrying 50 lb/linear foot without exceeding a 1.5 inch mid-span deflection (in accordance with NEMA Class 8A) when supported every 4 foot. Support the tray system from wall studs or suspend from the structure above the ceiling, do not suspend the tray system from the roof deck.

- a) Design Selection: Ladder Tray manufacturer is to be Chatsworth Products, Inc. Cable Runway[®] and Raddii Bends[®] or owner approved equal.

H. Outlets

1. General: Communications outlets that contain copper services are to be equipped with ANSI/TIA/EIA-568-B.2-1 Category 6, 8-position modular jacks (RJ45 type) utilizing T568B wiring. Terminate all outlet cabling on appropriate termination blocks at their associated IDF. Outlets are to be certified to operate at 1000 Mbps data speed with twisted pair horizontal cabling as verified by ETL or UL. Faceplates are to be able to accommodate up to 6, 8-position modular jacks each.
2. Wall Outlets: Wall outlets are to consist of single gang wall plates with blank module inserts for all unused module locations.
3. Modular Furniture Outlets: Furniture outlets are to consist of a modular furniture faceplate capable of housing up to four (4) 8-position modular connectors with blank module inserts for all unused module locations.
4. House Wall Phone: Wall phone outlets are to consist of a SE630 type wall plate with Category 6 minimum cable to each, terminating in an 8-position modular jack.

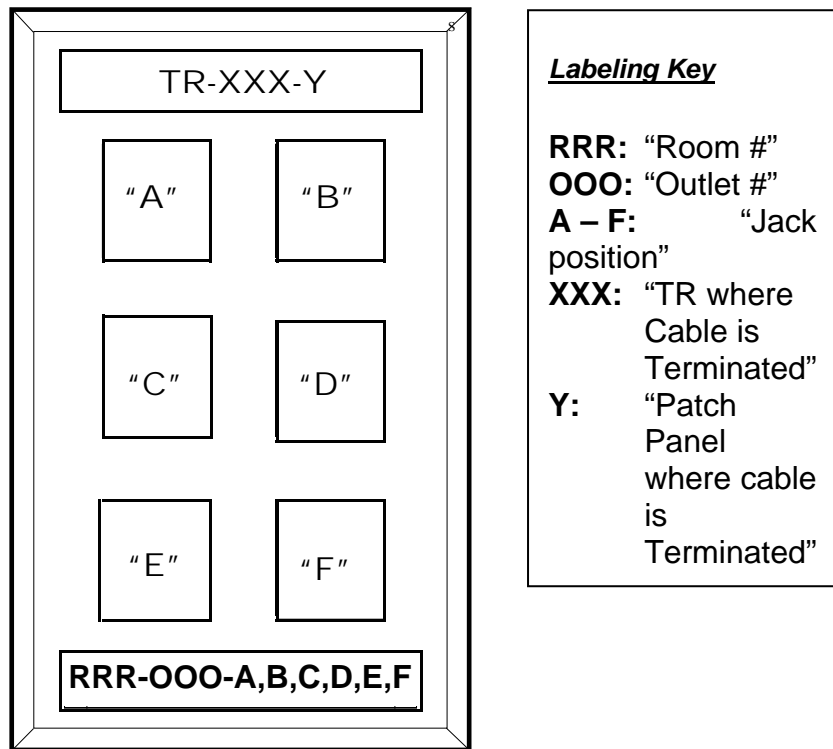
I. Outlet Placement:

1. Standard PDS Wall Plate locations shall be installed where shown on the project drawings.
2. Wireless LAN - (WAP) Wall Plates shall be as follows:
 - a) Classroom Placement: Ceiling mount, one (1) per classroom. The outlet shall be located on the ceiling close to the center of the room. Mounting of the low voltage faceplate shall comply with all applicable codes and standards.
 - b) Common Area Placement: (locations such as the Cafeteria, Library, Study Halls, etc.). Shall be designed to for higher density usage of the WLAN system. All areas designated as "WLAN Common Areas," shall have WAP Wall plates located on each wall (one per wall minimum). For larger rooms, the WAP wall plates shall be located no more than 10' to 12' from the floor.
 - c) Administration Area: (Areas such as the Teachers' Dining Room, Reception Area, etc.) one (1) outlet shall be wall mounted, between 10' to 12' high from the finished floor.
 - d) All WAP wall plates shall be compliant with IEEE 802.3af, PoE power for Data Terminal Equipment (DTE).
 - e) All WAP wall plates shall utilize the same wall boxes and conduit stub-up installation as standard PDS wall plates.
3. 8-position Modular Jack: Category 6 jacks are to meet or exceed the following electrical and mechanical specifications:
 - a) Electrical Specifications:

1. Insulation Resistance: 500 M minimum.
 2. Dielectric withstand voltage 1000 VAC RMS, 60 Hz minimum, contact-to-contact and 1500 VAC RMS, 60 Hz minimum from any contact to exposed conductive surface.
 3. Contact Resistance: 20 m maximum.
 4. Current Rating: 1.5 A at 68 F (20 C) per IEC Publication 512-3, Test 5b.

 5. ISO 9001 Certified Manufacturer.
 6. UL Verified for EIA/TIA electrical performance.
 7. Comply with FCC Part 68.
- b) Mechanical Performance:
1. Plug Insertion Life: 750 insertions
 2. Contact Force: 3.5 oz (99.2 g) minimum using FCC Approved modular plug.
 3. Plug Retention Force: 30 lb (133 N) minimum between modular plug and jack.
 4. Temperature Range: -40 °F to 150 °F (-40 °C to 66 °C).
4. Channel Performance: All Enhanced Category 6 jacks are to be utilized in a channel configuration meeting or exceeding the following specifications at 250 MHz:
- a) NEXT (dB) at 250 MHz 46.0 dB or exceed
 - b) Insertion Loss (dB) at 250 MHz 0.32 dB or less
 - c) FEXT (dB) at 250 MHz 35.1 dB or exceed
 - d) Return Loss (dB) at 250 MHz 16.0 dB or exceed
5. WLAN faceplates for Wireless Access Points (WAP) locations.
- a) Wall Faceplate (office white)
 - b) Data and Voice Jacks (blue): Panduit # CJ6E88TGBU; AMP # 1375187-6
6. Standard PDS Wall Plate Design Selection: these wall plates are to be located throughout each classroom or office location.
1. Wall Faceplate (office white) w/sloped modules: Panduit # CFPSE4EIY; AMP # [1339118-X](#)
 2. PDS Jacks (yellow): Panduit # CJ6E88TGYL; AMP # 1375187-8
 3. Miscellaneous Building Systems, security, fire, A/V, and BMS/EMS (white): Panduit # CJ6X88TGIW; AMP # 1375055-3
 4. Voice (green): Panduit # CJ6E88TGGR; AMP # 1375187-9

5. Blanks (office white)
 - (a) Provide blank module inserts for all unused module locations.
 - (b) Outlet Labeling: Each jack on all outlets is to be identified with permanent machine generated labels, meeting the EIA/TIA 606 requirements, matching the Nassau County School District numbering plan on the faceplate. All labeling is to be permanent. All labeling is to be 12 point in size. Engineer is to approve labeling prior to fabrication.
 - (c) xample labeling



- J. Unspecified Equipment and Materials
 1. Ensure that the Contractor understands that any item of equipment or material not specifically addressed on the contract drawings and required to provide a complete and functional SCS installation is to be provided at a level of quality consistent with other specified items.
- K. Grounding System and Conductors
 1. Communications bonding and grounding is to be in accordance with the National Electrical Code (NEC) and NFPA as well as EIA/TIA grounding and bonding

standards. Backbone and entrance cables are to be grounded in compliance with ANSI/NFPA 70 and local requirements and practices.

2. A #6 AWG stranded copper wire cable is to be extended between new ground bars located at each IDF and the building main electrical service ground point or secondary transformer ground point. The building steel, the equipment racks, and all surge suppressors, Protectors and metallic cabinets are to be bonded to the ground bar via a #6 AWG stranded copper cable and UL approved connecting hardware.

PART 3 - EXECUTION

3.01 INSTALLATION STANDARDS AND TOLERANCES

- A. General: Cable routing and Installation practices shall be in accordance with BICSI's Telecommunications Distribution Methods Manual (TDMM) and Telecommunications Installation Manual.
- B. T568B wiring pin out configuration is to be used for all jack and patch panel terminations. T568B is to be the standard for all twisted pair wiring.
- C. All cable runs are to contain a service slack prior to the termination point. Provide for a 12-inch service slack in the ceiling above each outlet. Service slack at IDF is to consist of a 10-foot slack section for all station cables located and placed neatly in the cable ladder above the equipment rack.
- D. Plenum Spaces and cable routing: The majority of PDW wiring is installed above ceilings. All communications cabling used throughout is to meet the requirements as outlined in the National Electrical Code (NEC) article 800. In ducted "air return" applications, and cable run in conduit the cable is to bear CMR, MPR or OFNR (RISER) and/or appropriate marking. In non-ducted return air applications or as required by local and/or state code requirements cable is to bear CMP, MPP or OFNP (plenum) markings. Verify with state and local code enforcement officers where plenum and non-plenum cables are required. All cables are to bear the appropriate markings of the environment in which they are installed.
- E. Cable Pathways:
 1. Above ceilings:
 - a) All primary cable pathways Utilize J-Hooks.
 - b) Use of ceiling tiles, grid or hanger wires for the support of PDW cables is to be prohibited.
 - c) Horizontal cables used in the system are to be installed within the ceiling spaces. Cables routed in these spaces are to be at right angles to electrical power circuits and supported only from the structure. Tie cables between MDF and IDF's are to utilize conduit.
- F. Category 6 Cable

1. Provide for Category 6 UTP cables are installed in accordance with EIA/TIA guidelines for Category 6. Contractor will replace cable installation and terminations that do not comply.
 - a) Maximum pulling tension is not to exceed 25 pounds.
 - b) Minimum bending radius of the cable is not to be less than 4 times the diameter of the cable.
 - c) The cable is to be installed without kinks or twists and the application of cable ties is not to deform the cable bundle.
 - d) Require the Contractor to only strip back only as much cable jacket as required to terminate the cable and the amount of untwisting in a pair as a result of the termination is not to exceed 0.5 inch.
- G. In suspended ceiling and raised floor areas where duct, cable trays, or conduits are not available, bundle Category 6 cables in bundles of 40 or less, horizontal wiring above the ceiling is to be secured with cable ties, the cable ties are to be installed loosely. Cables are to be loose enough to be rotated easily by hand. Cable ties used in plenum areas are to be plenum rated. Ensure ties are not tightened to a point where they will deform the cable geometry.
- H. Provide a minimum of two hangers at any corners or 90 degree turns. Attachment shall be to the building structure and framework at a maximum of five (5) foot intervals. Ceiling suspension wire or independent tie wires are not to be allowed for cable support. Where cable is routed above the ceiling in areas where there are no walls, all-thread is to be used (minimum 1/4", however sized to support the intended weight) with the appropriate CAT 6 hanger for cross-room support. Support rods are to be level and plumb after cable installation. Manufacturers' requirements for bending radius and pulling tension of all cables are to be adhered to.
- I. Fire Stopping Protection: All fire stopping of openings through rated fire and smoke walls existing or created by the premise wiring contractor are to be sealed under Division 7 Section Firestopping.
- J. Damage: Repair of surfaces including painting and ceiling tile replacement is to be the responsibility of the premise wiring contractor.
- K. Avoiding EMI: To avoid EMI provide clearances of at least four (4) feet (1.2 meters) from motors or transformers; 1 foot (12 inches) from conduit and cables used for electrical power distribution; and 1 foot (12 inches) from fluorescent lighting. Pathways are to cross fluorescent lighting and electrical power cables and conduit perpendicularly.
- L. Work External to the Building
 1. General: The same requirements are to apply to exterior installations as do those within the confines of the building, with code required adjustments.

3.02 FIELD QUALITY CONTROL

A. Field Testing:

1. Testing of Wiring Accuracy
 - a) Ensure the Premise Distribution Cabling Contractor tests wiring setting tester for channel configuration which includes the patch cord, patch panel, UTP Cable, work-area jack and work-area cord.
 - b) Testing Equipment: Agilent Technologies, Fluke, Microtest or Ideal are approved manufacturers of test equipment. Testers are to be 100% Level III compliant with TIA/EIS 568.2-1 specifications for testing of CAT 6 cabling. No testers will be approved without meeting these requirements.
 - c) Testing Guidelines: Each jack in each outlet is to be tested at a minimum of Category 6 compliance. Tests are to be done in a LINK configuration to verify the integrity of all conductors and correctness of the termination sequence. The manufacturer is to provide 100% factory testing of the patch cords. It is not acceptable practice for patch cords to be unpackaged for use in certification testing. The cords shall remain boxed and stored for installation by the owner or as otherwise indicated by the scope of work. Perform testing between the outlets and the patch panel at the equipment rack, prior to testing UTP runs the tester shall be calibrated per manufacturer's guidelines. The correct cable NVP shall be entered into the tester to assure proper length and attenuation readings.
 - d) The Contractor must verify that this testing method is acceptable to the manufacturer that will be providing the LINK AND CHANNEL warranty for the project.
 - 1) 250 MHz sweep tests, Wire map, Attenuation, NEXT, PSNEXT, ELFEXT, PSELFEXT, ACR, PSACR, Return Loss, Delay, Delay Skew, and the installed length for Category 6 cables.
 - 2) Cables not complying with ANSI.TIA.EIA-568-B.1 and B.2-1 Category 6 tests are to be identified to the engineer for corrective action which may include replacement at no additional expense to the Owner.
 - 3) Documentation of cable testing is required.

2. Testing of Fiber Optic Cable

- a) Provide that each strand in fiber optic cables is tested for correctness of termination, overall transmission loss, and defects using an approved Optical Time Domain Reflectometer (OTDR) and a power meter. The Engineer, with one week prior notice, is to be present for all tests.
- b) Testing Equipment: Agilent Technologies, Fluke, Microtest, Noyes or Ideal are acceptable manufacturers of test equipment.
- c) Testing of multimode fiber is to be in accordance with TIA/EIA-526-14 method B. System loss measurements (both calculated and measured) are to be provided at 850 and 1300 nanometers in both directions for multimode cables (1310 and 1550 nanometers for single-mode) for each strand. Per IEEE 802.3z, maximum fiber strand attenuation is not to exceed 2.38 dB @ 850 nm

with a modal bandwidth of 160 MHz/km and 2.35 dB @ 1310 nm with a modal bandwidth of 500 MHz/km. Test as follows:

- 1) Measure and record normalized fiber loss at operating wavelength in dB/km.
 - 2) Detect and record point faults or discontinuities.
 - 3) Measure and record overall length of cable.
- d) Certification report is to be provided listing both the calculated and measured loss for each fiber optic circuit and submitted with the test results as called for above.
- 1) Wavelength, fiber type, fiber manufacturer and cable model number, cable manufacturer's attenuation specifications, cable manufacturers' bandwidth specifications, measurement direction, test equipment and serial numbers (with last date of calibration), date of each test, reference setup, name of technician(s) performing testing.
 - 2) OTDR trace(s) is to be submitted with request for substantial completion

3.03 DEMONSTRATION

- A. Provide one 2-hour training session to familiarize the owner with the locations of all IDF's, cable and jack labeling and number systems, data and voice connections.

END OF SECTION 27 13 48

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SECTION 27 51 15

INTERCOM, PUBLIC ADDRESS AND MUSIC SYSTEM

PART 1 GENERAL

1.01 WORK INCLUDES

- A. Expansion of the existing Dukane MCS 350 intercom system and public address system to accommodate the new construction at Building 08. Include all ceiling speakers, call in buttons, raceways, outlet boxes and conductors. Connect all new devices and wiring to existing system in Building 02.

1.02 REFERENCES

- A. NFPA 70 - National Electrical Code.

1.03 SYSTEM DESCRIPTION

- A. The equipment specified herein shall as a system provide a modular communications system capable of two way communications between classrooms and the main office with public address or all call capability, music playback, and bell scheduling.

1.04 SUBMITTALS

- A. Submit under provisions of Section 26 03 05.
- B. Shop Drawings: Indicate electrical characteristics and connection requirements. Indicate layout of equipment mounted in racks and cabinets, component interconnecting wiring, and wiring diagrams of field wiring to speakers and remote input devices.
- C. Product Data: Provide specification data showing electrical characteristics and connection requirements for each component. Include data for the following:
 - 1. Classroom Speakers.
 - 2. Exterior Horn Speakers.
 - 3. Call Buttons.
 - 4. Wire and Cable.
- D. Test Reports: Indicate satisfactory completion of each test recommended by the manufacturer.
- E. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by Product testing agency. Include instructions for storage, handling, protection, examination, preparation, installation, and starting

of Product.

- F. Manufacturer's Certificate: Certify that Products meet or exceed specified requirements.

1.05 PROJECT RECORD DOCUMENTS

- A. Submit under provisions of Section 26 03 05.
- B. Record actual locations of speakers, control equipment, and outlets for input/output connectors.

1.06 OPERATION AND MAINTENANCE DATA

- A. Submit under provisions of Section 26 03 05.
- B. Operation Data: Include instructions for adjusting, operating, and extending the system.
- C. Maintenance Data: Include repair procedures and spare parts documentation.

1.07 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing the Products specified in this section with minimum three years experience, and with service facilities within a 2 hour response time of project.
- B. Supplier: Authorized distributor of specified manufacturer with minimum three years experience.
- C. Installer: Authorized installer of specified manufacturer with service facilities within a 2 hour response time of Project.

1.08 REGULATORY REQUIREMENTS

- A. Conform to requirements of NFPA 70.
- B. Furnish Products listed and classified by Underwriters Laboratories, Inc. as suitable for purpose specified and indicated.
- C. Conform to requirements of Federal Communications Commission.

1.09 MAINTENANCE SERVICE

- A. Furnish service and maintenance of public address and music system for five years from Date of Final Acceptance.

1.10 WARRANTY

- A. The Contractor shall warrant the equipment to be new and free from defects in material and workmanship and will, within three years from Date of Final Acceptance, repair or replace all or any part of the equipment found to be defective. Damage by lightning shall be included in the warranty. This warranty shall not apply if damage is caused by abuse, accident, improper operation, or negligence. Warranty maintenance shall be provided by the Contractor during his normal working hours at no expense to the Owner.

PART 2 PRODUCTS

2.01 MANUFACTURER

- A. All bids shall be based on the equipment as specified herein. The catalog numbers and model designations are that of the Dukane Corporation. Any substitutions shall be approved by the Architect/Engineer prior to bid.
- B. Bidders wishing to submit alternate equipment shall submit to the specifying authority, at least 15 days prior to bid opening, the equipment proposed to provide a precise functional equivalent system to meet specifications. Bidder shall provide adequate information prior to bid date such as specification sheets, working drawings, shop drawings, and a demonstration of the system. The bidder shall also provide the FCC registration number of the proposed system. Alternate supplier-contractor must also provide a list to include six installations of the identical system proposed which have been in operation for a period of two years.

2.02 INTERCOM COMPONENTS

- A. The existing school intercom system is a Dukane MCS 350 system located in Building 02 with auxiliary equipment located in Building 08.
- B. Provide room loudspeaker(s), and room call-in station buttons where designated on the electrical drawings.
- C. Eight (8) inch ceiling loudspeakers shall be provided in where indicated.
- D. Wall call-in button station buttons shall be provided where indicated.

2.03 LOUDSPEAKER

- A. Ceiling loudspeaker shall be Dukane model 5A606 furnished and installed as indicated on the plans.
 - 1. The loudspeaker shall be eight inch, seamless cone type. The ceramic

magnet shall weigh at least 4.8 ounces. The frequency range shall be from 90 to 15,000 Hz. The normal wattage rating shall be 8 watts with a program rating of 12 watts. The voice coil diameter shall be 3/4" and the impedance 8 ohms. The loudspeaker shall be equipped with a universal matching transformer suitable for use on a 25-volt output line with taps at 1/2, 1, 2 or 4 watts.

- B. The ceiling speaker flush baffles shall be Dukane model 6A328 or approved equal. It shall be constructed of steel, finished in flat white paint. The loudspeaker shall be mounted on a separate steel plate to conceal the mounting screws. The speaker mounting plate and the baffle shall be pre-drilled to mount on a Dukane Model 145-222 back box. The baffle shall be 12-1/2" square and 3/16" deep and weigh not more than 2-1/4 pounds.
- C. Weather-proof horn speaker shall be provided around the outside of the building and as designated on plans. Speakers shall be wide dispersion indoor/outdoor horn with driver. Power rating shall be 60 watts. Low frequency cutoff shall be 250 hz. Sound distribution shall be 20 x 50 degrees. Minimum sound pressure level shall be 120 dB at 4 feet with full range input. Material shall be cast aluminum.

2.04 CALL BUTTON

- A. Each designated room shall be provided with a room station call-in button.
- B. Room station call-in buttons shall be Dukane model 91176s or approved equal. Call-in buttons shall be programmable to call into any ACS. The system shall allow preselected coverage of calls from classroom to ACSs on a classroom basis. This feature shall provide over-lapping or distinct coverage of classrooms by ACSs. Functions of unattended ACSs may be transferred to attended ACSs at anytime. Systems not allowing flexibility of classroom coverage will not be acceptable.
 - 1. Room station numbers shall be user programmable for any combination of two (2) to five (5) numeric digits.
 - 2. Each room station call point shall be user programmable to any of the seven (7) call-in priority levels from the ACS. The priority levels are Emergency, Fire, Security, Handset, Normal, Remote Call Cancel and Program Toggle for channel a or b.
 - 3. Emergency calls may be originated from any call-in switch by pressing the call-in position two (2) times.
 - 4. The Call-in Station shall be a momentary button mounted on a jumbo stainless steel wall plate suitable for mounting on a single gang outlet box.

2.05 MATCHING TRANSFORMERS

- A. Description: Tapped at 1/2, 1 and 2 watts with primary/secondary ratio to match

amplifier to speaker impedances.

2.06 VOLUME PADS

- A. Description: Transformer type rated 10 watts.

2.07 WIRE AND CABLE

- A. Interior intercom cable: 4 conductor, 22 AWG tinned stranded copper conductors. 2 conductors shall be twisted pairs with a foil shield and 24 AWG drain wire for connection to the speakers. 2 conductors shall be unshielded for connection to the call-back switch. Conductor insulation shall be 300 volt PVC with an overall PVC jacket rated at 75 degrees C. West Penn No. 355 or equal.
- B. Speaker cable shall be a UL listed 18 AWG solid copper conductor with PVC insulation. Each cable shall be a twisted pair with an overall PVC jacket. The cable shall be West Penn 228 or equal.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Mounting Heights: Coordinate locations of outlet boxes specified in Section 26 05 33 to obtain mounting heights indicated.
- C. Call-in Switches: 4 feet above finished floor.
- D. Splice all cable only at terminal block enclosures and end use equipment. Do not splice conductors.
- E. Make cable shields continuous at splices and connect speaker circuit shield to equipment ground only at amplifier.
- F. Install input circuits in separate cables and raceways from output circuits.
- G. Leave 18 inches excess cable at each termination and other system outlet.
- H. Leave 6 feet excess cable at each termination at system cabinet
- I. Provide protection for exposed cables where subject to damage.
- J. Ground and bond equipment and circuits in accordance with Section 26 05 26.

- K. Install all wiring in conduit. Conduit shall be adequate size for cables installed therein.

3.02 ADJUSTING

- A. Adjust transformer taps for appropriate sound level.
- B. Adjust devices and wall plates to be flush and level.

3.03 TESTING

- A. Upon completion of the installation, the system must be tested by the manufacturer's representative and all necessary modifications and/or adjustments must be made to assure compliance with this specification.

3.04 DEMONSTRATION

- A. Conduct walking tour of Project. Briefly describe function, operation, and maintenance of each component.
- B. Use submitted operation and maintenance manual as reference during demonstration.

END OF SECTION