

PANEL H1W											
VOLTAGE: 480/277				AMP: 400							
PHASE: 2				MAIN: MLO							
DESCRIPTION	KW	BKR	CK	PH	CK	BKR	KW	DESCRIPTION			
WAREHOUSE LTS	2.16	20/1	1	A	2	20/1	0.128	ELEC/PUMP LTS			
WAREHOUSE LTS	2.16	20/1	3	B	4	20/1	2.058	BLDG LTS			
WAREHOUSE LTS	2.16	20/1	5	C	6	20/1	1.029	BLDG LTS			
WAREHOUSE LTS	2.16	20/1	7	A	8	20/1	1.715	SITE LTS			
WAREHOUSE LTS	2.16	20/1	9	B	10	20/1	1.372	SITE LTS			
WAREHOUSE LTS	2.16	20/1	11	C	12	20/1	2.401	SITE LTS			
WAREHOUSE LTS	2.16	20/1	13	A	14	20/1	---	SPARE			
WAREHOUSE LTS	2.16	20/1	15	B	16	20/1	---	SPARE			
WAREHOUSE LTS	2.16	20/1	17	C	18	20/1	---	SPARE			
SPARE	20/1	19	A	20	20/1	---	---	SPARE			
SPARE	20/1	21	B	22	20/1	---	---	SPARE			
SPARE	20/1	23	C	24	20/1	---	---	SPARE			
MUA-1 (H8)	4	25/3	25	A	26	15/3	1.7	EUH-1 ELEC RM			
---	4	---	27	B	28	---	1.7	---			
---	4	---	29	C	30	---	1.7	---			
EF-A (F5)	2.1	15/3	37	A	32	15/3	2.1	EF-A (F9)			
---	2.1	---	39	B	34	---	2.1	---			
---	2.1	---	41	C	42	---	2.1	---			
MUA-1 (C8)	4	25/3	37	A	39	15/3	2.1	EF-A (E9)			
---	4	---	39	B	40	---	2.1	---			
---	4	---	41	C	42	---	2.1	---			
EUH-1 PUMP RM	1.7	15/3	43	A	44	15/3	2.1	EF-A (E5)			
---	1.7	---	45	B	46	---	2.1	---			
---	1.7	---	47	C	48	---	2.1	---			
XFMR "TL1W"	1.08	30/3	49	A	50	15/3	2.1	JOCKEY PUMP			
---	1.56	---	51	B	52	---	2.1	---			
---	0.54	---	53	C	54	---	2.1	---			
FEED-THRU LUGS											
A TOTAL	31.3										
B TOTAL	33.37										
C TOTAL	32.95										
CONN. kw	97.02										
CONN. amps	116.8										

A TOTAL	31.3	VLL	PH
B TOTAL	33.37	480	3
C TOTAL	32.95		
CONN. kw	97.02		
CONN. amps	116.8		

PANEL H1E											
VOLTAGE: 480/277				AMP: 400							
PHASE: 3				MAIN: MLO							
DESCRIPTION	KW	BKR	CK	PH	CK	BKR	KW	DESCRIPTION			
WAREHOUSE LTS	2.16	20/1	1	A	2	20/1	---	SPARE			
WAREHOUSE LTS	2.16	20/1	3	B	4	20/1	1.715	BLDG LTS			
WAREHOUSE LTS	2.16	20/1	5	C	6	20/1	1.372	BLDG LTS			
WAREHOUSE LTS	2.16	20/1	7	A	8	20/1	2.401	SITE LTS			
WAREHOUSE LTS	2.16	20/1	9	B	10	20/1	1.715	SITE LTS			
WAREHOUSE LTS	2.16	20/1	11	C	12	20/1	1.715	SITE LTS			
WAREHOUSE LTS	2.16	20/1	13	A	14	20/1	2.058	SITE LTS			
WAREHOUSE LTS	2.16	20/1	15	B	16	20/1	---	SPARE			
WAREHOUSE LTS	2.16	20/1	17	C	18	20/1	---	SPARE			
SPARE	20/1	19	A	20	20/1	---	---	SPARE			
SPARE	20/1	21	B	22	20/1	---	---	SPARE			
SPARE	20/1	23	C	24	20/1	---	---	SPARE			
SPARE	20/1	25	A	26	20/1	---	---	SPARE			
SPARE	20/1	27	B	28	20/1	---	---	SPARE			
SPARE	20/1	29	C	30	20/1	---	---	SPARE			
MUA-1 (H12)	4	25/3	37	A	32	15/3	2.1	EF-A (F13)			
---	4	---	39	B	34	---	2.1	---			
---	4	---	41	C	42	---	2.1	---			
MUA-1 (C12)	4	25/3	37	A	39	15/3	2.1	EF-A (E13)			
---	4	---	39	B	40	---	2.1	---			
---	4	---	41	C	42	---	2.1	---			
EF-A (E17)	2.1	15/3	43	A	44	15/3	2.1	EF-A (F17)			
---	2.1	---	45	B	46	---	2.1	---			
---	2.1	---	47	C	48	---	2.1	---			
XFMR "TL1E"	0.72	30/3	49	A	50	15/3	1.7	EUH-1 ELEC RM			
---	0.54	---	51	B	52	---	1.7	---			
---	0.38	---	53	C	54	---	1.7	---			
FEED-THRU LUGS											
A TOTAL	29.76										
B TOTAL	28.55										
C TOTAL	26.33										
CONN. kw	84.84										
CONN. amps	101.9										

A TOTAL	29.76	VLL	PH
B TOTAL	28.55	480	3
C TOTAL	26.33		
CONN. kw	84.84		
CONN. amps	101.9		

PROVIDE UL LISTED HANDLE TIES BETWEEN 1-POLE CIRCUIT BREAKERS SHOWN SEPARATED BY DASHED LINES AS REQUIRED TO SIMULTANEOUSLY DISCONNECT ALL PHASE CONDUCTORS ("MOT") SHARING A NEUTRAL.

PANEL L1W											
VOLTAGE: 208/120				AMP: 60							
PHASE: 3				MAIN: MCB							
DESCRIPTION	KW	BKR	CK	PH	CK	BKR	KW	DESCRIPTION			
RECEPTS	0.72	20/1	1	A	2	20/1	0.18	FIRE ALARM			
TELE QUAD	0.36	20/1	3	B	4	20/1	1.2	EF-1			
TELE QUAD	0.36	20/1	5	C	6	20/1	0.18	ROOF RECEPT			
ROOF RECEPT	0.18	20/1	7	A	8	---	---	SPARE			
SPARE	20/1	9	B	10	---	---	---	SPARE			
SPARE	20/1	11	C	12	---	---	---	SPARE			
SPARE	20/1	13	A	14	---	---	---	SPARE			
SPARE	20/1	15	B	16	---	---	---	SPARE			
SPARE	20/1	17	C	18	---	---	---	SPARE			
SPARE	20/1	19	A	20	---	---	---	SPARE			
SPARE	20/1	21	B	22	---	---	---	SPARE			
SPARE	20/1	23	C	24	---	---	---	SPARE			
SPARE	20/1	25	A	26	---	---	---	SPARE			
SPARE	20/1	27	B	28	---	---	---	SPARE			
SPARE	20/1	29	C	30	---	---	---	SPARE			
SPARE	20/1	31	A	32	---	---	---	SPARE			
SPARE	20/1	33	B	34	---	---	---	SPARE			
SPARE	20/1	35	C	36	---	---	---	SPARE			
SPARE	20/1	37	A	38	---	---	---	SPARE			
SPARE	20/1	39	B	40	---	---	---	SPARE			
SPARE	20/1	41	C	42	---	---	---	SPARE			
FEED-THRU LUGS											
A TOTAL	1.08										
B TOTAL	1.56										
C TOTAL	0.54										
CONN. kw	3.18										
CONN. amps	3.829										

A TOTAL	1.08	VLL	PH
B TOTAL	1.56	480	3
C TOTAL	0.54		
CONN. kw	3.18		
CONN. amps	3.829		

PANEL L1E											
VOLTAGE: 208/120				AMP: 60							
PHASE: 3				MAIN: MCB							
DESCRIPTION	KW	BKR	CK	PH	CK	BKR	KW	DESCRIPTION			
RECEPTS	0.54	20/1	1	A	2	20/1	0.18	ROOF RECEPT			
TELE QUAD	0.36	20/1	3	B	4	20/1	0.18	ROOF RECEPT			
TELE QUAD	0.36	20/1	5	C	6	20/1	0.06	ELEC RM LTG			
SPARE	20/1	7	A	8	20/1	---	---	SPARE			
SPARE	20/1	9	B	10	20/1	---	---	SPARE			
SPARE	20/1	11	C	12	20/1	---	---	SPARE			
SPARE	20/1	13	A	14	20/1	---	---	SPARE			
SPARE	20/1	15	B	16	---	---	---	SPARE			
SPARE	20/1	17	C	18	---	---	---	SPARE			
SPARE	20/1	19	A	20	---	---	---	SPARE			
SPARE	20/1	21	B	22	---	---	---	SPARE			
SPARE	20/1	23	C	24	---	---	---	SPARE			
SPARE	20/1	25	A	26	---	---	---	SPARE			
SPARE	20/1	27	B	28	---	---	---	SPARE			
SPARE	20/1	29	C	30	---	---	---	SPARE			
SPARE	20/1	31	A	32	---	---	---	SPARE			
SPARE	20/1	33	B	34	---	---	---	SPARE			
SPARE	20/1	35	C	36	---	---	---	SPARE			
SPARE	20/1	37	A	38	---	---	---	SPARE			
SPARE	20/1	39	B	40	---	---	---	SPARE			
SPARE	20/1	41	C	42	---	---	---	SPARE			
FEED-THRU LUGS											
A TOTAL	0.72										
B TOTAL	0.54										
C TOTAL	0.42										
CONN. kw	1.68										
CONN. amps	2.023										

A TOTAL	0.72	VLL	PH
B TOTAL	0.54	480	3
C TOTAL	0.42		
CONN. kw	1.68		
CONN. amps	2.023		

COMcheck Software Version 4.0.7.2 Review

Interior Lighting Compliance Certificate

Project Information
 Energy Code: 2014 Florida Building Code, Energy Conservation
 Project Title: WESTLAKE 3 DUNAL COUNTY
 Project Type: New Construction

Construction Site: _____ **Owner/Agent:** _____ **Designer/Contractor:** _____

Additional Efficiency Package
 High efficiency HVAC. Systems that do not meet the performance requirement will be identified in the mechanical requirements checklist report.

Area Category	Floor Area (ft2)	Allowed Watts / ft2	Actual Watts / ft2	Allowed Watts (B X C)
Warehouse	48910	6.88	29954	29954
			Total Allowed Watts =	29954

Fixture ID : Description / Lamp / Wattage Per Lamp / Ballast	Lamps / Fixture	# of Fixtures	Fixture Watt.	(C X D)
Warehouse LED 1: A: Other	1	182	240	38880
LED 2: B: Other	1	6	34	204
			Total Proposed Watts =	39084

Interior Lighting PASSES: Design 87% better than code

Interior Lighting Compliance Statement
 Compliance Statement: The proposed interior lighting design represented in this document is consistent with the building plans, specifications, and other calculations submitted with this permit application. The proposed interior lighting systems have been designed to meet the 2014 Florida Building Code, Energy Conservation requirements in COMcheck Version 4.0.7.2 Review and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

Name: R. Williams Signature: [Signature] Date: 1/4/19

Project Title: WESTLAKE 3 DUNAL COUNTY
 Data Filename: T:\181002-Westlake Site 3\COMCHECK.cck Report date: 01/09/19
 Page: 1 of 7

COMcheck Software Version 4.0.7.2 Review

Exterior Lighting Compliance Certificate

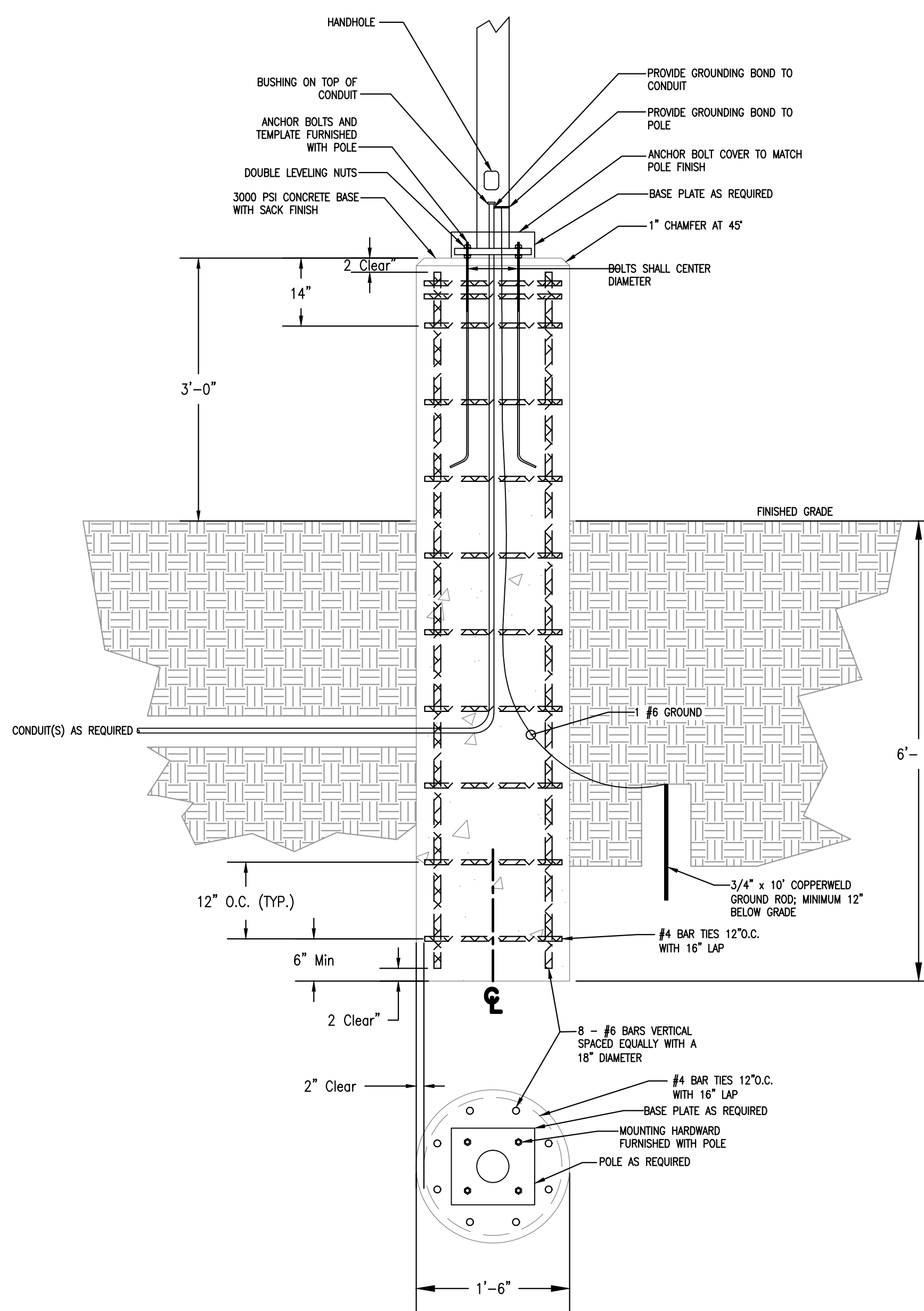
Project Information
 Energy Code: 2014 Florida Building Code, Energy Conservation
 Project Title: WESTLAKE 3 DUNAL COUNTY
 Project Type: New Construction
 Exterior Lighting Zone: 2 (Light-Industrial area with limited nighttime use)

Construction Site: _____ **Owner/Agent:** _____ **Designer/Contractor:** _____

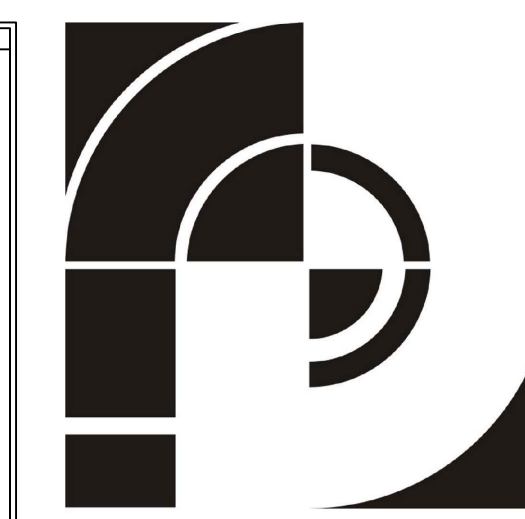
Area/Surface Category	Quantity	Allowed Watts / Unit	Tradable Wattage	Allowed Watts (B X C)
Parking area	49910 ft2	0.66	Yes	29954

LIGHTING FIXTURE SCHEDULE

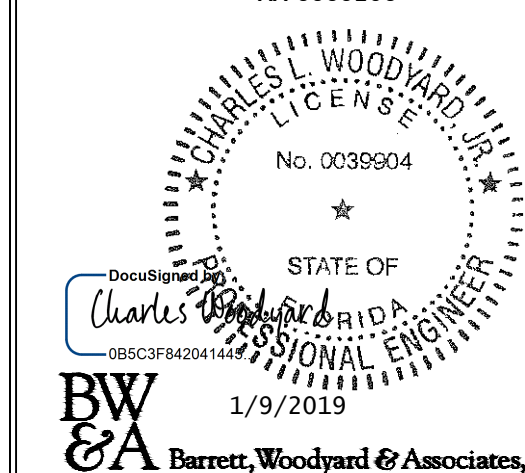
TYPE	SYMBOL	DESCRIPTION
A		2'W x 4'L, LED HIGH-BAY INDUSTRIAL LIGHTING FIXTURE. GENERAL DISTRIBUTION. OPEN REFLECTOR. STEEL CHANNEL WITH END CAPS AND WHITE FINISH. 120-277V DRIVER. CONNECT AT 277V. STANDARD EFFICIENCY. PROVIDE WITH INTEGRAL 360° HIGH-MOUNT MOTION SENSOR. SUPPORT FIXTURE FROM UNISTRUTS BRACED TO JOISTS SUPPORTING ROOF DECK BY USING A PAIR OF ADJUSTABLE #2 AIRCRAFT CABLE WITH Y-FIT HANGERS. PROVIDE ALL HARDWARE REQUIRED FOR COMPLETE INSTALLATION. MOUNT AT 36'A.F.F. UNLESS NOTED OTHERWISE IN OPEN AREAS OF THE WAREHOUSE. DLC CERTIFIED. LAMPING: 36000 NOMINAL LUMENS, 4000K CCT, >80 CRI, >88% LUMEN MAINTENANCE AT 60,000 HOURS, 240WATT INPUT MANUFACTURER: LITHONIA I8GN 36000LM SERIES WITH HALEON HIGH MOUNT 360 OCCUPANCY SENSOR AND OPTIONS INDICATED HEREIN. EQUALS BY EATON (COOPER), PHILIPS, OR HUBBELL.
AE		SAME AS TYPE 'A' EXCEPT PROVIDE 30-WATT EMERGENCY BATTERY PACK WITH 90 MINUTES OF OPERATION (LITHONIA OPTION PS30250) AND DELETE MOTION SENSOR OPTION. FIXTURE TO BE CONNECTED AS NIGHT LIGHT ("NL"), AND IS INTENDED FOR 24/7 OPERATION. LASER GUIDED TEST SWITCH. PROVIDE WITH UNSWITCHED HOT.
B		4' LINEAR LED STRIP LIGHTING FIXTURE. STEEL HOUSING WITH BAKED WHITE ENAMEL FINISH. DIFFUSE LENS. 120-277V. PROVIDE HARDWARE TO SUPPORT WITH CHAIN. DLC CERTIFIED. PROVIDE WITH EMERGENCY BATTERY PACK WITH 90 MINUTES OF OPERATION. PROVIDE WITH SWITCH AND UNSWITCHED HOT. LAMPING: 5000 NOMINAL LUMENS, 3500K CCT, 80 CRI, >70% LUMEN MAINTENANCE AT 60,000 HOURS, 34 WATT INPUT MANUFACTURER: LITHONIA ZL1N SERIES WITH OPTIONS INDICATED HEREIN EQUALS BY EATON (COOPER), PHILIPS, OR HUBBELL.
X		WALL MOUNTED UNIVERSAL LED COMBINATION EXIT SIGN AND EMERGENCY LIGHT WITH CONTINUOUS ILLUMINATION. RED LETTERS STENCIL FACE(S) WITH WHITE THERMOPLASTIC HOUSING. PROVIDE WITH "BUG-EYE" EMERGENCY LIGHTING HEADS. PROVIDE DIRECTIONAL ARROWS (CHEVRONS). DOUBLE OR SINGLE FACE AS SHOWN. SELF-POWERED WITH INTEGRAL NICKEL CADMIUM BATTERY. UL924 LISTED. 120-277V UNIVERSAL VOLTAGE. PROVIDE CHEVRON KNOCKOUTS TO OWNER FOR FUTURE USE. PROVIDE WITH UNSWITCHED HOT. MANUFACTURER: LITHONIA LHQM SERIES WITH OPTIONS INDICATED IN DESCRIPTION. EQUALS BY EATON (COOPER), PHILIPS, OR HUBBELL.
WX		18.5"W x 10"D ARCHITECTURAL SITE LIGHTING FIXTURE WITH LED LAMPS. WALL-MOUNTED AT EACH EXIT DOOR. LOW PROFILE DIE-CAST HOUSING. DARK BRONZE FINISH. 120-277V INPUT TO LED DRIVERS CONNECTED AT 277V. FULL CUTOFF OPTICS AND FORWARD THROW MEDIUM DISTRIBUTION WITH SHARP SPILL CONTROL. UL WET LOCATION LISTED. PROVIDE BRACKETS AND HARDWARE TO MOUNT FLUSH ON EXTERIOR WALL AT 9'-0" A.F.F. VERIFY EXACT LOCATION WITH ARCHITECT. PROVIDE WITH INTEGRAL NICKEL CADMIUM BATTERY. PROVIDE NEMA TWIST-EXACT PHOTOCELL RECEPTACLE WITH UL-LISTED FAIL-ON PHOTOCELL ENABLED AT 1.5FC. DLC CERTIFIED AND IDA DARK SKY APPROVED. LAMPING: 30 LED'S, 11,000 NOMINAL LUMENS, 1000mA DRIVE CURRENT, 4000K CCT, 70CRI, 85% LUMEN MAINTENANCE AT 100,000 HOURS, 109 WATT INPUT MANUFACTURER: LUMINAIRE: LITHONIA D-SERIES SIZE 2 DSX2 LED WITH 1A DRIVE CURRENT, WITH OPTIONS INDICATED HEREIN. EQUALS BY EATON (COOPER), PHILIPS, HUBBELL WITH PHOTOMETRICS SHOWN TO MATCH TO SHEET E200
PA		TWO (2) ARCHITECTURAL SITE LIGHTING FIXTURE WITH LED LAMPS MOUNTED WITH 90 DEGREE SEPERATION. POLE-MOUNTED. LOW PROFILE DIE-CAST HOUSING WITH MOUNTING ARM. COORDINATE FINISH WITH ARCH. 120-277V INPUT TO LED DRIVERS CONNECTED AT 277V. FORWARD THROW MEDIUM DISTRIBUTION WITH SHARP SPILL CONTROL. UL WET LOCATION LISTED. DOUBLE LUMINAIRE SIDE-MOUNTED TO 35'HIGH/5" SQUARE STRAIGHT STEEL POLE WITH 0.18" WALL THICKNESS. 1.0 SQ.FT EPA. MANUFACTURER TO CONFIRM MAXIMUM EPA RATING OF POLE BASED ON WIND LOAD AT 125 MPH BASIC WIND SPEED (3-SECOND GUSTS.) PER ASCE/SEI 7-10 RISK CATEGORY II. WIND EXPOSURE C (2012 IBC SECTION 1609) WILL EXCEED TOTAL EPA OF THE LUMINAIRE WITH ARM. PROVIDE ANCHOR BOLTS TO MOUNT POLE ATOP 3' CONCRETE BASE (28'A.F.G.). PROVIDE INTEGRAL CONTROLS WITH PHOTOCELL (ENABLED AT 1.5FC), PART NIGHT (6 HOUR) SCHEDULED DIMMING TO 40% OF OUTPUT WITH INTEGRAL MOTION SENSOR OVERRIDE TO 100% (5MIN DWELL TIME). DLC CERTIFIED AND IDA DARK SKY APPROVED. LAMPING: 100 LED'S, 40,789 NOMINAL LUMENS, 1050mA DRIVE CURRENT, 4000K CCT, 70CRI, 85% LUMEN MAINTENANCE AT 100,000 HOURS, 343 WATT TOTAL MANUFACTURER: LUMINAIRE: LITHONIA D-SERIES SIZE 2 DSX2 LED WITH P6 POWER PACKAGE WITH OPTIONS INDICATED HEREIN. POLE: LITHONIA SSS SERIES EQUALS BY EATON (COOPER), PHILIPS, HUBBELL WITH PHOTOMETRICS SHOWN TO MATCH TO SHEET E-101
PB		TWO (2) ARCHITECTURAL SITE LIGHTING FIXTURE WITH LED LAMPS MOUNTED WITH 180 DEGREE SEPERATION. POLE-MOUNTED. LOW PROFILE DIE-CAST HOUSING WITH MOUNTING ARM. COORDINATE FINISH WITH ARCH. 120-277V INPUT TO LED DRIVERS CONNECTED AT 277V. TYPE II MEDIUM DISTRIBUTION WITH SHARP SPILL CONTROL. UL WET LOCATION LISTED. DOUBLE LUMINAIRE SIDE-MOUNTED TO 35'HIGH/5" SQUARE STRAIGHT STEEL POLE WITH 0.18" WALL THICKNESS. 1.0 SQ.FT EPA. MANUFACTURER TO CONFIRM MAXIMUM EPA RATING OF POLE BASED ON WIND LOAD AT 125 MPH BASIC WIND SPEED (3-SECOND GUSTS.) PER ASCE/SEI 7-10 RISK CATEGORY II. WIND EXPOSURE C (2012 IBC SECTION 1609) WILL EXCEED TOTAL EPA OF THE LUMINAIRE WITH ARM. PROVIDE ANCHOR BOLTS TO MOUNT POLE ATOP 3' CONCRETE BASE (28'A.F.G.). PROVIDE INTEGRAL CONTROLS WITH PHOTOCELL (ENABLED AT 1.5FC), PART NIGHT (6 HOUR) SCHEDULED DIMMING TO 40% OF OUTPUT WITH INTEGRAL MOTION SENSOR OVERRIDE TO 100% (5MIN DWELL TIME). DLC CERTIFIED AND IDA DARK SKY APPROVED. LAMPING: 100 LED'S, 42,349 NOMINAL LUMENS, 1050mA DRIVE CURRENT, 4000K CCT, 70CRI, 85% LUMEN MAINTENANCE AT 100,000 HOURS, 343 WATT TOTAL MANUFACTURER: LUMINAIRE: LITHONIA D-SERIES SIZE 2 DSX2 LED WITH P6 POWER PACKAGE WITH OPTIONS INDICATED HEREIN. POLE: LITHONIA SSS SERIES EQUALS BY EATON (COOPER), PHILIPS, HUBBELL WITH PHOTOMETRICS SHOWN TO MATCH TO SHEET E-101
PC		ONE (1) ARCHITECTURAL SITE LIGHTING FIXTURE WITH LED LAMPS MOUNTED WITH 180 DEGREE SEPERATION. POLE-MOUNTED. LOW PROFILE DIE-CAST HOUSING WITH MOUNTING ARM. COORDINATE FINISH WITH ARCH. 120-277V INPUT TO LED DRIVERS CONNECTED AT 277V. TYPE II MEDIUM DISTRIBUTION WITH SHARP SPILL CONTROL. UL WET LOCATION LISTED. DOUBLE LUMINAIRE SIDE-MOUNTED TO 35'HIGH/5" SQUARE STRAIGHT STEEL POLE WITH 0.18" WALL THICKNESS. 1.0 SQ.FT EPA. MANUFACTURER TO CONFIRM MAXIMUM EPA RATING OF POLE BASED ON WIND LOAD AT 125 MPH BASIC WIND SPEED (3-SECOND GUSTS.) PER ASCE/SEI 7-10 RISK CATEGORY II. WIND EXPOSURE C (2012 IBC SECTION 1609) WILL EXCEED TOTAL EPA OF THE LUMINAIRE WITH ARM. PROVIDE ANCHOR BOLTS TO MOUNT POLE ATOP 3' CONCRETE BASE (28'A.F.G.). PROVIDE INTEGRAL CONTROLS WITH PHOTOCELL (ENABLED AT 1.5FC), PART NIGHT (6 HOUR) SCHEDULED DIMMING TO 40% OF OUTPUT WITH INTEGRAL MOTION SENSOR OVERRIDE TO 100% (5MIN DWELL TIME). DLC CERTIFIED AND IDA DARK SKY APPROVED. LAMPING: 100 LED'S, 40,814 NOMINAL LUMENS, 1050mA DRIVE CURRENT, 4000K CCT, 70CRI, 85% LUMEN MAINTENANCE AT 100,000 HOURS, 343 WATT INPUT MANUFACTURER: LUMINAIRE: LITHONIA D-SERIES SIZE 2 DSX2 LED WITH P6 POWER PACKAGE WITH OPTIONS INDICATED HEREIN. POLE: LITHONIA SSS SERIES EQUALS BY EATON (COOPER), PHILIPS, HUBBELL WITH PHOTOMETRICS SHOWN TO MATCH TO SHEET E-101
WA		ONE (1) ARCHITECTURAL SITE LIGHTING FIXTURE WITH LED LAMPS MOUNTED WITH 180 DEGREE SEPERATION. BUILDING MOUNTED AT 30' AFF. LOW PROFILE DIE-CAST HOUSING WITH MOUNTING ARM. COORDINATE FINISH WITH ARCH. 120-277V INPUT TO LED DRIVERS CONNECTED AT 277V. FORWARD THROW MEDIUM DISTRIBUTION WITH SHARP SPILL CONTROL. UL WET LOCATION LISTED. PROVIDE INTEGRAL CONTROLS WITH PHOTOCELL (ENABLED AT 1.5FC), PART NIGHT (6 HOUR) SCHEDULED DIMMING TO 40% OF OUTPUT WITH INTEGRAL MOTION SENSOR OVERRIDE TO 100% (5MIN DWELL TIME). DLC CERTIFIED AND IDA DARK SKY APPROVED. LAMPING: 100 LED'S, 40,789 NOMINAL LUMENS, 1050MA DRIVE CURRENT, 4000K CCT, 70CRI, 85% LUMEN MAINTENANCE AT 100,000 HOURS, 343 WATT INPUT MANUFACTURER: LUMINAIRE: LITHONIA D-SERIES SIZE 2 DSX2 LED WITH P6 POWER PACKAGE WITH OPTIONS INDICATED HEREIN. EQUALS BY EATON (COOPER), PHILIPS, HUBBELL WITH PHOTOMETRICS SHOWN TO MATCH TO SHEET E-101



2 LIGHTING POLE BASE DETAIL - 3' HIGH
E-002 N.T.S.



RANDALL
PAULSON
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STATE OF FLORIDA REGISTRATION NUMBER
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Job #181002

STATE OF FLORIDA
CERTIFICATE OF AUTHORIZATION
No. 27936
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A
SPECULATIVE
WAREHOUSE
AT
WESTLAKE 3
DEVELOPED
BY
PATTILLO
Industrial Real Estate
Duval County, Florida

Print Record

DATE	BY	REVISION
08 DECEMBER 2018	WHL/REYER/ST	
08 JANUARY 2019	SSS/DR PERFORM	

Revision Record

NO.	DATE	DESCRIPTION

Date: 09 JANUARY 2019 Project No.: 2018245.00
Sheet Title: LIGHTING FIXTURE SCHEDULE AND DETAILS
Sheet No.: E001
Released for Construction
Not Released for Construction

SECTION 26-05-05
ELECTRICAL GENERAL
PART 1 - GENERAL
1.01 SCOPE
A. Division 26 includes all Specifications in the 26-00-00 Series and the accompanying Electrical Drawings. Provide all labor, materials and equipment, and all necessary operations to provide the complete scope of the electrical systems intended under this Division. Division 26 is not a standalone document, but a part of the complete Project Documents.

B. Attention is called to the fact that there are many interfaces between the work required in this Division and the work required in other Divisions. Provide the necessary interface and coordination with other Divisions to provide a complete project.

C. Refer to section 26-00-00 for additional information.

1.02 CODES AND REGULATIONS
A. All work under this Division shall comply with all local building codes, laws, regulations, ordinances and the requirements of the 2011 National Electrical Code.

B. Where conflicts of installation requirements occur between the aforementioned codes, regulations or the Contract Documents, the most restrictive shall govern.

C. Obtain all permits and licenses and pay all fees required by local authorities. Arrange for all necessary inspections required by the authorities having jurisdiction and provide written certificates of approval to the project Owner of his designated representative.

1.03 DEFINITIONS
A. Contract Documents: The complete set of project Drawings and Specifications.

B. Provide: Furnish, install and connect.

C. Work: All materials installed, including all labor to provide complete system.

D. Wiring or wired: All wire or cable installed in conduit from panelboard to equipment and connected at both ends with all required boxes, connectors, couplings, etc.

E. Conduit: Rigid steel conduit, intermediate metal conduit (IMC), electrical metallic tubing (EMT) plastic conduit (PVC), or flexible steel conduit.

1.04 DRAWINGS AND SPECIFICATIONS
A. The Drawings and Specifications together are to be considered as the Contract Documents. Any work shown in one and not shown in the other, or implied by either, shall be provided to give a complete project.

B. Should any conflicts exist between the Drawings and Specifications or there is an item shown/calculated for which is not clearly defined, immediately submit a request for clarification. No additional notices will be granted later when a conflict is resolved or an item is more clearly defined.

C. The implied and stated intent of the drawings and specifications is to establish minimum acceptable standards for materials, equipment and workmanship, and to provide operable electrical systems complete in every respect.

D. The Drawings are schematic and are not intended to show the exact location outlets, etc. or the routing of conduit. The engineering drawings are diagrammatic, intended to show general arrangement and sizes of system components, and shall not be scaled. Rather, the architectural and structural drawings shall govern space constraints, dimensions and finishes. All offsets and fittings which will be necessary to accomplish the finished installation shall be provided at no additional cost or increase in the Contract.

E. The exact location of equipment requiring electrical connections (mechanical equipment, elevators, lights, etc.) shall be as located by other Divisions of the Contract Documents. Refer to the Architectural, Structural and Mechanical Documents for dimensions and details of building construction and provide work described in this Division so that it conforms to the details of the project. The right is reserved to relocate any receptacle, switch or other outlet a maximum of 10'-0" before it is permanently installed without incurring additions to the Contract amount.

1.05 SITE VISIT
A. Visit the site and become familiar with all aspects of the site and existing conditions before submitting Contract price.

B. No allowance will be made for lack of knowledge of existing conditions.

1.06 DEVIATIONS
A. No deviations from the Contract Documents shall be made without the full knowledge and written consent of the Architect.

B. If the existing conditions make it desirable to modify the Contract Documents in regard to any item, provide a written request to the Architect.

PART 2 - PRODUCTS
2.01 STANDARDS FOR MATERIALS AND WORKMANSHIP
A. All materials used shall be new and shall be stamped with the label of Underwriters Laboratories, Inc. (UL).

B. All materials shall meet the standards of the following associations and institutes where applicable:
1. National Fire Protection Association (NFPA)
2. American Society of Testing Materials (ASTM)
3. American National Standards Institute (ANSI)
4. National Electrical Manufacturer's Association (NEMA)
5. Institute of Electrical and Electronic Engineers (IEEE)

C. Manufacturer's names and catalog numbers specified herein are intended to describe the material and set the standard of quality. All bids shall be based on material specified. Requests for approval of material not specified shall be considered if the request is in written form and submitted to the Architect no later than fourteen (14) days before bid date. All requests shall conform with the provisions of the general and supplementary conditions.

D. Samples of materials requested to be substituted shall be furnished upon the request of the Architect.

2.02 SHOP DRAWINGS AND SUBMITTALS
A. The Engineer's review of shop drawings or submittals is a cursory review to check for general compliance of submittals with the design intent of the Contract Documents. The Engineer's review does not relieve the Contractor of his responsibility of complying with the Contract Documents. All coordination of the work in strict compliance with the Contract Documents is the sole responsibility of the Contractor.

B. The following items shall be submitted for review:
1. Conduit and wire
2. Grounding system
3. Devices
4. Coverplates
5. Metering equipment
6. Panelboards
7. Switchboards
8. Transformers
9. Fuses
10. Overcurrent devices
11. Ground fault system
12. Disconnect switches
13. Lighting fixtures
14. Lighting control system
15. Fire Alarm system
16. Engine Generator
17. Motor starters
18. Surge Protection Devices

C. All shop drawings and submittals shall be submitted in compliance with the requirements of the general and supplementary conditions. No more than four (4) copies of submittal data will be reviewed. Any additional copies will be returned unmarked. The responsibility of copying review comments on any additional copies will rest solely with the contractor.

D. All submittals shall bear the name of the manufacturer to be used.

E. All shop drawings and submittals shall include a stamped indication signifying that the submittal has been reviewed for compliance with the Contract Documents by the Contractor. This stamped indication also represents the fact that the Contractor has checked this submittal for its interaction with all other Divisions and certifies by his signature or initials that all coordination has taken place. The stamp shall include the date, name of the Contracting Firm, the signature of the Contractor, certification of compliance and approval. This stamp shall be on the submittal before the Engineer will review it.

F. The engineer will review an individual submittal not more than twice. If the submittal is rejected again on the second review, the contractor will bear all responsibility for paying for the engineer's time for additional reviews. Such payments to the engineer shall be withheld from the next monthly pay application.

2.03 RECORD (AS-BUILT) DRAWINGS AND MAINTENANCE MANUALS
A. At job completion, submit to the Architect, a set of prints showing all deviations from the Contract Documents. The Drawings shall also have dimensions locating all underground conduits.

B. At job completion, submit to the Architect, three (3) sets of maintenance and instruction manuals for all equipment furnished on the project.

PART 3 - EXECUTION
3.01 COORDINATION
A. Coordinate all space requirements with all other Divisions before installing any work. Install work that adequate space will be allotted for all other work from other Divisions to be installed and also will allow room for future access for repair and maintenance.

B. Any work installed without proper coordination shall be relocated at the Architect's direction without increasing the Contract price.

C. During the bidding process or the pricing for a guaranteed maximum price, coordinate with all other Divisions for the total amount of work required in Division 26. Any work shown or implied in another Division requiring work in Division 26 shall be included in the Contract price regardless of whether or not it is addressed in Division 26.

3.02 PROTECTION OF MATERIALS
A. All equipment shall have the original finish when the building is turned over to the Owner.

B. Protect equipment during construction from dirt, water, chemical, mechanical damage, etc. Protect all conduit openings so that no foreign material will enter the conduit.

3.03 CORING, CUTTING AND PATCHING
A. Set sleeves for conduit accurately before the concrete floors are poured, or set boxes on the forms so as to leave openings in the floors in which the required sleeves can be subsequently located. Fill in the voids around the sleeves with concrete.

B. Should the performance of this preliminary work be neglected and should cutting be required in order to install conduit, then the expense of the cutting and restoring of surfaces to their original conditions shall be accomplished without incurring additions to the Contract.

3.04 CONNECTION TO EQUIPMENT
A. Equipment furnished by the Owner or under other Sections, such as mechanical equipment, elevators, escalators, signs, kitchen equipment, etc., will be installed by others. Provide electrical service and make the electrical circuit connection to this equipment.

B. Provide PVC insulated flexible cord sets for all cord and plug connected building appliances and equipment. Cords shall be sized in accordance with electrical circuits indicated. Multiple conductor cords shall be "50" cable with PVC jacket and green insulated ground conductor.

3.05 EQUIPMENT ANCHORING
A. All items of electrical equipment, such as switchboards, motor control centers, transformers, standby generator, etc., shall be securely anchored to the building structure. The anchoring shall be accomplished by utilizing a minimum size of 3/8" steel anchor bolts in the structure and to the item of equipment. A minimum of two (2) anchor bolts shall be provided on each side of each item of equipment with the following exceptions:
Exception No. 1: If the equipment manufacturer includes more than two (2) anchor holes per side in the base or base frame of the equipment item, then there shall be one anchor for each anchor hole.
Exception No. 2: If the equipment manufacturer recommends a particular quantity greater than two (2) per side, then that quantity of anchors shall be provided.

3.06 TESTS, DEMONSTRATION AND INSTRUCTIONS
A. Test all systems described in this Division in the presence of the Owner or a designated representative upon completion of the work. Demonstrate that the installation is in accordance with Contract Documents.

B. Any work found not to be in compliance with the Contract Documents shall be repaired or replaced without incurring any additions to the Contract price.

C. Provide to the Owner, all instruction on maintenance and operation of all systems and equipment provided under this Division. Provide all necessary tools and personnel to thoroughly present these instructions.

3.07 GUARANTEE
A. All systems, equipment, components, work, etc. provided under this Division shall be covered by a one year guarantee starting at the time of final acceptance of the work by the Owner. Any defects in the work, systems, equipment or components found during this year shall be corrected at no charge. The guarantee shall include providing all necessary cutting, patchwork, repainting, etc. to make the work complete and new.

B. Present this guarantee and any additional warranties or guarantees on furnished equipment or systems to the Architect. All equipment or system guarantees are in addition to the general guarantee.

END OF SECTION

SECTION 26-05-13
LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES
PART 1 - GENERAL
1.01 DESCRIPTION
A. All work specified in this Section shall comply with the provisions of Section 26-05-00.
B. This Section describes the basic materials and installation methods that are acceptable and applicable to Division 26 for power conductors and cables (600V and less).

C. Refer to section 26-00-00 for additional information.

PART 2 - PRODUCTS
2.01 CONDUCTORS
A. Conductors shall be copper of 98% conductivity, 600 volt insulation. Sizes specified are AWG gauge for No. 4/0 and smaller and circular mils (CM) for all sizes larger than No. 4/0. Conductors No. 10 and smaller shall be solid and type "THHN/THUN-2" or "XHHW-2" insulation. No. 8 and larger shall be stranded and type "THHN/THUN-2" or "XHHW-2" insulation.

B. Copper conductors shall be used for feeders of 100Amps or more where the feeder is between panel and transformer, panel and panel, switchboard to panel, switchboard, and to transformer. Insulation shall match that indicated in part A. Ground wiring shall be copper. Branch circuits shall be copper.

PART 3 - EXECUTION
3.01 WIRING
A. All conductors shall be installed in conduit. No conductors shall be pulled into the conduit until the conduit system is complete and plaster had dried. Wire pulling lubricants shall be Gardner-Bender "Wirecote" or Ideal "Yellow T1".

B. Conductors shall be continuous from outlet to outlet and from outlet to junction box or pull box. All splices and joints shall be carefully and securely made to be mechanically and electrically solid with pressure type connectors. Gardner Bender "Wiggard" or Ideal "Wingnut". Tape shall be "Scotch" No. 33 for indoor and No. 88 for outdoor or Gardner Bender No. 95-661. Where connection is made to any terminals of more than 30 amperes capacity and where conductors larger than No. 10 are connected to any terminal, copper terminal lugs shall be bolted to the conductors. Where multiple connections are made to the same terminal, individual lugs for each conductor shall be used.

C. Aluminum conductors, if used for service conductors, shall be made with high compression lugs as manufactured by Square D, Ideal or MAC.

D. Each conduit shall have a minimum of two (2) conductors pulled in unless that particular conduit is noted as being for systems other than electrical circuiting and/or future use or unless noted otherwise.

E. Conductors for lighting and receptacle circuits shall have color coded jackets. The wiring shall be color coded with the same color used with its respective phase through the entire job as follows:

208/120 Volt System	480/277 Volt System
Phase A - Black	Phase A - Brown
Phase B - Red	Phase B - Orange
Phase C - Blue	Phase C - Yellow
Neutral - White	Neutral - Gray
Ground - Green	Ground - Green

F. The feeder and service entrance conductors shall be color coded by the use of colored plastic tape applied within 6" of each conductor end.

G. Branch circuit conductors shall not be smaller than No. 12 and where the home run from center of load exceeds 100'-0", the conductors from home run outlet to panel shall be No. 10 minimum.

H. For branch circuits terminating in outlet without device, leave minimum of 12" of slack wire called for connection of equipment. All conductors shall be identified with proper circuit numbers at terminals, junction boxes at panelboards within 6' of conductor ends.

END OF SECTION

SECTION 26-05-26
GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS
PART 1 - GENERAL
1.01 DESCRIPTION
A. All work specified in this Section shall comply with the provisions of Section 26-05-05.

B. This Section describes the basic grounding materials and installation methods that are acceptable and applicable to Division 26.

C. Refer to section 26-00-00 for additional information.

PART 2 - PRODUCTS
2.01 MANUFACTURERS
A. All ground connections in the building system ground shall be done with Cadweld.

PART 3 - EXECUTION
3.01 GROUNDING
A. Ground connections shall be in accordance with the 2011 National Electrical Code.
1. Provide a grounding electrode system consisting of a minimum of three (3) copperweld rods, 3/4" x 10'-0" driven 24" below grade a minimum of 12" apart in the form of an equilateral triangle bonded together with No. 4/0 conductors. Install rods a minimum of 36" clear of foundation walls to effect the building ground. If the resistance to ground exceeds 25 ohms, additional rods shall be driven and bonded together until a reading of 25 ohms or less to ground is obtained. After completion of the grounding system, measure the system ground resistance with a "Megger Earth Tester". Submit directly to the Architect two (2) copies of each test report, certified by the testing technician and the Owner's representative.
2. Extend from the electrodes to the main service disconnect with a No. 4/0 copper insulated ground conductor in a 1" conduit and connect to the neutral bar, housing and frame.
3. Provide a No. 4/0 copper insulated conductor across the water meter with the conductor attached with clamps to the water line on each side of the meter.
4. Provide a No. 4/0 copper insulated ground conductor in a 1" conduit from cold water entrance pipe ahead of first valve to the main service disconnect and connect to the neutral bar, housing and frame.
5. Where non-metallic insulating couplings or dielectric flanges are used in metallic water piping systems, provide a No. 4/0 copper insulated ground conductor across the couplings with the conductor attached with clamps to the water line on each side of the coupling.
6. All ground connections in the building system ground shall be done with Cadweld.
7. All ground clamps shall be equipped with compression type cable lugs independent of the compression device clamping the pipe or rod.
8. All steel conduit entering the main service disconnect shall have threaded conduit insulated grounding bushings. All bushings shall be bonded together and bonded to the main grounding bus with a No. 4 bare conductor.

B. Provide an insulated green bonding jumper from the grounding lug of all receptacles to a steel City "GEE" clip or a sheet metal screw in the outlet box. The ground wire installed behind the device mounting screws will not be acceptable.

C. Provide 1/2" - 3/4" conduit from the system ground to the telephone company main distribution frame or service cabinet and to each telephone backboard.

D. All ground wires shall have copper conductors.

END OF SECTION

SECTION 26-05-34
CONDUIT
PART 1 - GENERAL
1.01 DESCRIPTION
A. All work specified in this Section shall comply with the provisions of Section 26-05-05.

B. This Section describes the basic electrical materials and installation methods that are acceptable and applicable to Division 26.

PART 2 - PRODUCTS
2.01 MANUFACTURERS
A. Steel conduit approved manufacturers are Allied, Triangle and Republic.
B. PVC conduit approved manufacturers are Carlon and Triangle.

C. Conduit fittings approved manufacturers are Raco, Steel City, OZ, Gedney, Thomas & Betts and Applenton.

2.02 CONDUIT
A. Galvanized rigid steel conduit shall be low carbon, hot-dipped galvanized both inside and out with threaded joints.
B. Intermediate metal conduit (IMC) shall be steel, galvanized both inside and out with threaded joints.
C. Electrical metallic tubing (EMT) shall be steel, galvanized both inside and out.
D. Plastic conduit (PVC) shall be schedule 40 PVC heavy wall type. A grounding conductor shall be provided.
E. Flexible metal conduit shall be flexible steel conduit tubing and shall meet Underwriters Laboratories Standard for Flexible Steel Conduit.
F. Liquid-tight flexible metal conduit and liquid-tight non-metallic conduits shall be liquid-tight and sunlight resistant.

2.03 CONDUIT FITTINGS
A. Rigid conduit and IMC conduit fittings shall be zinc-coated, ferrous metal and taper threaded type.

B. EMT fittings shall be zinc-coated steel and hexnut compression or set-screw type. EMT connectors shall have insulated throats.

C. PVC fittings, elbows and cement shall be produced by the same manufacturer. All joints shall be solvent welded in accordance with the manufacturer's recommendations.

D. Conduit connections to switchboards, motor control centers, transformers, panel cabinets, and pull boxes shall have grounding wedge lugs between the bushing and the box or locknuts designed to bite into the metal.

E. Each conduit end shall be provided with either an insulated throat connector or separate locknut and insulated bushing. Bushing shall be installed before any wire is pulled.

F. Expansion fittings shall be provided in all conduit which crosses and expansion joint.

2.04 SMOKE AND FIRE STOP FITTINGS
A. Smoke and Fire Stop Fittings shall be UL listed for that purpose. The fittings used to seal conduit either on the outside of the conduit or internally shall have heat activated intumescent material, which expands to fill all voids.

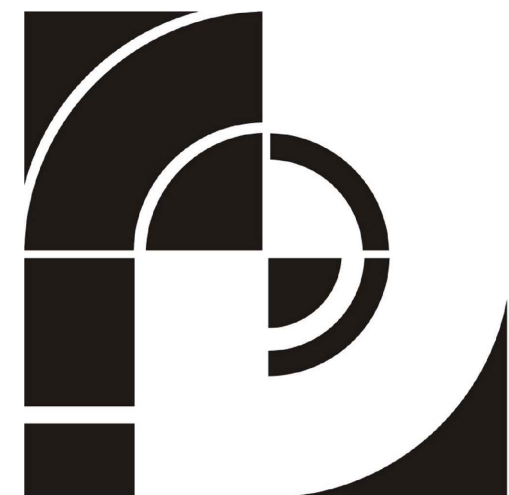
B. Smoke and fire stop fittings shall be OZ/Gedney "FIRE-SEAL" or Dow Corning silicone RTV foam with an hourly fire-rating equal to or higher than the rating of the floor, ceiling or wall through which the conduit passes. The seals for conduit shall be of the flanged type.

PART 3 - EXECUTION
3.01 CONDUIT
A. Rigid steel (or IMC) shall be used for service entrance and all feeders and branch circuits where exposed to damage.
B. EMT shall be used for branch circuits, fire alarm and telephone when not underground or in concrete in contact with the earth.
C. Schedule 40 PVC may be used for all underground feeders, service entrance conductors when encased in 4" of concrete on all sides, or under the lowest floor slab.
D. Conduit shall be continuous from outlet to outlet, from outlet to cabinet, junction box and pull box. Conduit shall enter and be secured to all boxes, etc., in such a manner that each system will be electrically continuous from service to all outlets such that a good ground is provided. All conduit from cabinets and junction boxes shall terminate in approved outlet boxes or conduit fittings. Conduit connections to any box which has no threaded hub shall be double locknuted.
E. Provide junction boxes or pull boxes where shown and where necessary to avoid excessive runs or too many bends between outlets. The conduit sizes shown may increase if desired to facilitate the pulling of cables.
F. All conduit shall be concealed unless indicated otherwise. Install exposed conduit parallel with or at right angles to the building walls and support from walls or ceilings at intervals required by Code with approved galvanized iron clamps or hangers. Concealed conduit above the ceiling shall be supported independent of ceiling construction, where ceilings of lay-in type are used, conduit must be installed high enough to permit removal of ceiling panels and lighting fixtures. Use threaded rods and hangers for supporting single conduit. Use trapeze hangers consisting of double-nutted threaded rods and "Unistrut" channels or angles of 12 gauge minimum steel for supporting multiple conduit.
G. Minimum size conduit for branch circuits shall not be smaller than 1/2". Home runs shall extend from outlets shown to panel designated. Home runs shown shall not be combined. Home run conduit shall not be smaller than 3/4".
H. At couplings, conduit ends shall be threaded so that they meet in the coupling. Right and left hand couplings shall not be used; conduit couplings of the Erikson Type shall be used at locations requiring such joints.
I. All conduit for future use, for telephone wires, or for data communication cable, shall be left with No. 16 gauge wire pulled in them or a pull line as manufactured by Ideal, and the ends securely corked or capped.
J. Expansion fittings shall be installed in all conduit which pass through the cross-sectional area of expansion joints.
K. Provide non-hardening elastic type duct seal compound, Neer No. DG, 3M Co. "Scotchfil" or Gardner Bender duct seal, for each conduit entering the building from outside and for each conduit passing from one space into another which is normally at a lower temperature.
L. Provide watertight conduit hubs on conduit terminating in a box or cabinet exposed to the weather.
M. Space in sleeves or around conduit that pass through fire resistive or fire rated walls, partitions, floors or ceilings shall be closed by packing with an unlabeled fire resistive material that will maintain the rating of the barrier penetrated.

3.02 FLEXIBLE CONDUIT
A. PVC extruded cover flexible conduit shall be used in making short flexible connections to rotating or vibrating machinery or equipment. The flexible conduit at these locations shall be as short as possible, but shall have a minimum length of 12".
B. A green stranded bonding jumper shall be installed outside of all flexible conduit that extends directly from a non-flex conduit to a rotating or vibrating machine. Where a junction box is used, the green stranded bonding jumper shall be installed inside the flexible conduit and attached to the junction box and to the machine. When the bonding jumper is installed outside of the flexible conduit, plastic wire straps shall be used 6" o.c. to secure the jumper to the flexible conduit.
C. Flexible metal (MC) conduit system may be utilized where concealed in walls and/or millwork only. MC Cable shall run from point of exit, from wall or millwork to nearest structurally support junction box. MC cable will not be permitted to be installed in the above ceiling space and shall not pass through fire rated partition. Conductor colors of the MC cable shall comply with 26-05-13, 3.01, D.

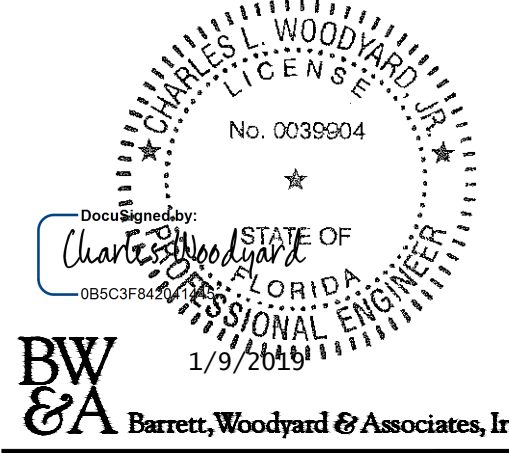
3.03 CONDUIT PROTECTION
A. All conduit installed in the ground outside the building exterior line (with the exception of exterior lighting circuits) shall be encased in 4" of concrete on all sides. Concrete shall be a minimum of 3000 PSI mix. All threaded joints in rigid conduit that is encased in concrete shall have a UL listed joint compound applied. Requirement for concrete encasement deleted per owner's direction. All conduit installed outside the building underground shall be buried a minimum of 30" below finished grade but in no case shall be buried deeper than 48". Where conduit is installed below the ground floor slab inside the building exterior line, the conduit shall be run between the floor slab and the vapor barrier. These conduits shall be installed in the slab itself where feasible. When a conduit duct bank must be installed then the entire duct bank shall be encased in concrete and installed per Appendix B of the NEC. Derating of conductors in the under-slab duct bank shall be the responsibility of the contractor. Conduit installed in any slab, where permitted above, shall be above the bottom steel and below the top steel.
B. Conduit shall be secured in place and protected where necessary to prevent damage to work during construction. The ends of all conduit shall be plugged to avoid filling with any foreign matter. All conduit shall be blown out and snubbed clear of water and trash prior to pulling wire.
C. Provide identifying marker tape the entire length of each conduit installed in the ground outside the building. The tape shall be constructed of inert polyethylene, resistant to acids, alkalis, etc. in the soil, and shall be a minimum 4 mil thickness. The tape shall be yellow, 6" wide, and shall have the words, "CAUTION - ELECTRICAL LINE BURIED BELOW" imprinted with contrasting permanent ink. The imprint shall repeat itself for the entire length of the tape. The tape shall be buried at a maximum of 18" below finished grade, above a portion of the earth fill shall be "Terra Tape" as manufactured by Reef Industries, Inc., P.O. Box 33148, Houston, Texas 77053 (1-800-331-6074).

3.04 TELEPHONE CONDUIT SYSTEM
A. Telephone service shall include wood backboards and equipment cabinets with service entrance conduit as shown.
B. Telephone service entrance cable, all branch cabling and telephone instruments shall be provided by the telephone equipment vendor.
C. Provide an outlet and conduit system for the telephones as shown and leave the same in readiness for wiring by others. Provide pull line in all telephone conduit. Terminate all conduit at a uniform height with smooth insulated bushings at the telephone wood backboards.
D. Telephone wall outlets shall be pressed steel sectional switch boxes, wall mounted at the locations indicated. Coverplate shall have a bushed hole.
E. Telephone floor outlets shall be floor boxes as specified at the locations indicated.



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STATE OF FLORIDA
CERTIFICATE OF AUTHORIZATION
NO. 27336

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A
SPECULATIVE
WAREHOUSE
AT

WESTLAKE 3

DEVELOPED
BY

Duval County, Florida

Print Record

NO. REVISION	DATE	BY	REVISION
01	08 JANUARY 2019	KS	ISSUE FOR PERMIT

Revision Record

Date 09 JANUARY 2019 Project No. 2018245-00

Sheet Title SPECIFICATIONS - ELECTRICAL

Sheet No. E002

Released for Construction
Not Released for Construction

END OF SECTION

SECTION 26-05-31

BOXES

PART 1 - GENERAL

1.01 DESCRIPTION

A. All work specified in this Section shall comply with the provisions of Section 26-05-05. B. This Section describes the basic electrical materials and installation methods that are acceptable and applicable to Division 26.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Outlet box approved manufacturers are Appleton, Raco, Steel City, or Crouse-Hinds.

2.02 OUTLET BOXES

A. Outlet boxes and covers shall be of such form and dimensions as to be adapted to their specified usage, locations, size and quantity of conduit, and size and quantity of conductors entering the boxes. In special "Fire Rated" partitions, outlets shall comply with ASTM No. E19.

B. Flush ceiling outlets for surface or pendant mounting lighting fixtures shall be one-piece 4" square or octagonal pressed steel boxes. Boxes for devices in unfinished masonry walls or stud walls shall be pressed steel, square corner, sectional switch boxes, or shall be 4" square box with a square cornered tile wall cover, set flush with masonry construction. Boxes in concrete ceiling slab shall be octagonal, shallow concrete boxes. Welded boxes are not acceptable.

C. All outlet boxes in plaster or masonry walls or ceiling shall be provided with plaster rings.

D. All junction boxes that are surface-mounted or exposed (not recessed in walls) inside building shall be cast iron alloy or copper-free aluminum type F5 or FD (deep).

E. Exterior junction boxes shall be minimum NEMA 3R.

2.03 COVERPLATES

A. Junction boxes and all outlets not indicated as containing wiring devices or lighting fixtures shall have covers. Covers for outlets in walls shall be as specified for wall switches and receptacles.

B. Outlet boxes exposed to the weather and outlet boxes for vaportight lighting fixtures and devices shall be of cast iron corrosion resistant type. Coverplates for exterior devices shall be weatherproof "in-use".

PART 3 - EXECUTION

3.01 INSTALLATION

A. Provide galvanized steel or cast type boxes for all outlets.

B. Where outlet boxes are used to support lighting fixtures, the outlet box shall be anchored to the structural members of the building per NEC 310-13.

C. Outlet boxes shall be flush mounted unless they are specifically shown as being used with exposed conduit or are located above a ceiling.

D. Where outlets are supplied from conduit run in or below floor slabs, the conduit shall be stubbed up at the location shown and the wall built up around the conduit.

E. Cuts for outlet boxes in masonry walls shall be made so that the coverplate will completely cover the cut. The mounting height of switch receptacles and other outlets may be varied slightly, with the Architects approval, so that the outlet box, top or bottom, will occur at a masonry joint.

F. The edge of all outlet boxes shall be flush with the surface in which they are recessed. The devices that fit into the outlet boxes shall be screwed tight before the coverplate is installed and the coverplate shall not be used as a means of tightening the devices in place.

G. Where outlets are shown as being adjacent and different mounting heights are specified for each, they shall be mounted one directly over the other, on the centerline of the group.

3.02 COVERPLATES

A. All junction boxes, outlet boxes, multi-gang switch boxes, utility boxes, etc., shall be covered with a coverplate. The coverplate shall be a finished plate as specified unless designated otherwise.

B. Coverplates shall be mounted vertically unless designated otherwise.

END OF SECTION

SECTION 26-05-53

IDENTIFICATION FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.01 DESCRIPTION

A. All work specified in this Section shall comply with the provisions of Section 26-05-05.

B. This Section describes the basic electrical materials and installation methods that are acceptable and applicable to Division 26.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Nameplates shall have 3/8" high engraved letters.

B. 120 or 208 volts: white core laminated bakelite with black finish.

C. 277 or 480 or higher volts: white core laminated bakelite with red finish.

D. All outlet boxes with devices shall be marked to indicate panel name and circuit number.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Provide specified nameplates on the main switchboard, distribution panels, feeder switches, feeder breakers, panelboards motor control centers, disconnect switches, contactors, starters, transformers, start-stop push buttons and motor switches.

B. Provide nameplates on every device in the main switchboard, distribution panels and motor control centers.

C. Nameplates for surface mounted equipment shall be installed on the exterior of equipment with sheetmetal screws. Nameplates for flush or recessed mounted equipment shall be installed on the inside of the panel door or cover with epoxy cement.

END OF SECTION

SECTION 26-05-13

POWER SYSTEM STUDIES

PART 1 - GENERAL

1.01 DESCRIPTION

A. All work specified in this Section shall comply with the provisions of Section 26-05-05.

B. Provide a coordination and short circuit study of the overcurrent protective devices for the complete electrical distribution system. The system shall include the service entrance, main switchboard, feeders, transformers, distribution panels, panelboards, busway, remote control switches, contactors, etc.

C. Provide Arc Flash Hazard Analysis Study per the requirements set forth in the current issue of NFPA 70E - Standard for Electrical Safety in the Workplace. The arc flash hazard analysis shall be performed according to the IEEE Standard 1584 - 2002, the IEEE Guide for Performing Arc-Flash Calculations.

D. Provide arc-flash warning labels on all panels and switchboards with results based on arc-flash study specific to equipment. Place label on front face of equipment. Label shall indicate work distance, 3-phase bolted current, flash protection boundary, incident energy at work distance, and level of PPE (personal protective equipment) required for personnel to safely work on equipment.

PART 2 - PRODUCTS

N/A

PART 3 - EXECUTION

3.01 COORDINATION STUDY

A. As a requirement for the project documents to be delivered by the contractor provide a complete short circuit and selective coordination study from the service entrance to all end devices. The study shall be provided by the switchgear manufacturer or their vendor and shall utilize time current curves that are developed by the gear manufacturer selected for use in the building. The study shall be made available for review by the engineer and local code enforcement authorities no later than the times they deem necessary for certification of occupancy to be issued. Obtain critical dates from the inspections department of the local code enforcement department during the inspection process to determine when presentation of the selective coordination study to the inspections department is necessary for timely issuance of the certificate of occupancy.

B. Perform short circuit analysis prior to installation of panel interiors and circuit breakers to verify equipment amp ratings are in excess corresponding short circuit values. Provide the engineer performing the study with accurate lengths, types, and sizes for all conductors.

C. The Contractor shall adjust relay and protective device settings according to the recommended settings table provided by the coordination study.

D. Provide the following:

- 1. Calculation methods and assumptions
2. Selected base per unit quantities
3. One-line diagram of the system being evaluated that clearly identifies individual equipment buses, bus numbers used in the short-circuit analysis, cable and bus connections between the equipment, calculated maximum short-circuit current at each bus location and other information pertinent to the computer analysis.
4. The study shall include input circuit data including electric utility system characteristics, source impedance data, conductor lengths, number of conductors per phase, conductor impedance values, insulation types, transformer impedances and X/R ratios, motor contributions, and other circuit information as related to the short-circuit calculations.
5. Tabulations of calculated quantities including short-circuit currents, X/R ratios, equipment short-circuit interrupting or withstand current ratings and notes regarding adequacy or inadequacy of the equipment rating.
6. Results, conclusions, and recommendations. A comprehensive discussion section evaluating the adequacy or inadequacy of the equipment must be provided and include recommendations as appropriate for improvements to the system.

E. For solidly-grounded systems, provide a bolted line-to-ground fault current study for applicable buses as determined by the engineer performing the study.

F. Protective Device Evaluation:

- 1. Evaluate equipment and protective devices and compare to short circuit ratings
2. Adequacy of switchgear, motor control centers, and panelboard bus bars to withstand short-circuit stresses

G. Protective device coordination time-current curves (TCC) shall be displayed on log-log scale graphs.

H. Include on each TCC graph, a complete title with descriptive device names.

I. Terminate device characteristic curves at a point reflecting maximum symmetrical or asymmetrical fault current to which the device is exposed.

J. Identify the device associated with each curve by manufacturer type, function, and, if applicable, tap, time delay, and instantaneous settings recommended.

K. Plot the following characteristics on the TCC graphs, where applicable.

- L. Electric utility's overcurrent protective device
1. Low voltage equipment circuit breaker trip devices, including manufacturer's tolerance bands.
2. Transformer full-load current, magnetizing inrush current, and ANSI through-fault protection curves
3. Ground fault protective device, as applicable
4. Pertinent motor starting characteristics and motor damage points, where applicable
5. Pertinent generator short-circuit decrement curve and generator damage point
6. The largest feeder circuit breaker in each motor control center and applicable panelboard.
M. Provide adequate time margins between device characteristics such that selective operation is provided, while providing proper protection.

N. Provide the following:

- 1. A one-line diagram shall be provided which clearly identifies individual equipment buses, bus numbers, device identification numbers and the maximum available short-circuit current at each bus when known.
2. A sufficient number of log-log plots shall be provided to indicate the degree of system protection and coordination by displaying the time-current characteristics of series connected overcurrent devices and other pertinent system parameters.
3. Computer printouts shall accompany the log-log plots and will contain descriptions for each of the devices shown, settings of the adjustable devices, and device identification numbers to aid in locating the devices on the log-log plots and the system one-line diagram.
4. The study shall include a separate, tabular printout containing the recommended settings of all adjustable overcurrent protective devices, the equipment designation where the device is located, and the device number corresponding to the device on the system one-line diagram.
5. A discussion section which evaluates the degree of system protection and service continuity with overcurrent devices, along with recommendations as required for addressing system protection or device coordination deficiencies.

3.02 ARC FLASH HAZARD ANALYSIS

A. The arc flash hazard analysis shall be performed according to the IEEE 1584 equations that are presented in NFPA 70E. The arc flash hazard analysis shall be performed in conjunction with the short circuit and selective coordination study indicated in part 3.01.

B. The flash protection boundary and the incident energy shall be calculated at significant locations in the electrical distribution system (switchboards, panelboards) where work could be performed on energized parts.

C. Working distances shall be based on IEEE 1584. The calculated arc flash protection boundary shall be determined using those working distances.

D. When appropriate, the short circuit calculations and the clearing times of the phase overcurrent devices will be retrieved from the short-circuit and coordination study model. Ground overcurrent relays should not be taken into consideration when determining the clearing time when performing incident energy calculations.

E. The incident energy calculations must consider the accumulation of energy over time when performing arc flash calculations on buses with multiple sources. Iterative calculations must take into account the changing current contributions, as the sources are interrupted or decremented with time.

F. When performing incident energy calculations on the line side of a main breaker (as required per above), the line side and load side contributions must be included in the fault calculation.

G. Arc Flash calculations shall be based on actual overcurrent protective device clearing time. A maximum clearing time of 2 seconds will be used based on IEEE 1584-2002 section B1.2. Where it is not physically possible to move outside of the flash protection boundary in less than 2 seconds during an arc flash event, a maximum clearing time based on the specific location shall be utilized.

H. Provide the following:

- 1. Results of the Arc-Flash Hazard Analysis shall be submitted in tabular form, and shall include device or bus name, bolted fault and arcing fault current levels, flash protection boundary distances, working distances, personal-protective equipment classes and AFlE (Arc Flash Incident Energy) levels.
2. The Arc-Flash Hazard Analysis shall report incident energy values based on recommended device settings for equipment within the scope of the study.
3. The Arc-Flash Hazard Analysis may include recommendations to reduce AFlE levels and enhance worker safety.

I. Switchgear manufacturer provide a 4.0 in. x 4.0 in. thermal transfer type label of high adhesion

polyester for each work location analyzed. The labels shall be designed according to the following standards:

- 1. UL 569 - Standard for Marking and Labeling Systems
2. ANSI Z535.4 - Product Safety Signs and Labels
3. NFPA 70 (National Electric Code) - Article 1016

J. The label shall include the following information:

- 1. System Voltage
2. Flash protection boundary
3. Personal Protective Equipment category
4. Arc Flash Incident energy value (cal/cm²)
5. Limited, restricted, and prohibited Approach Boundaries
6. Study report number and issue date

K. Labels shall be printed by a thermal transfer type printer, with no field markings.

L. Arc flash labels shall be provided for equipment as identified in the study and the respective equipment access areas per the following:

- 1. Floor Standing Equipment - Labels shall be provided on the front of each individual section. Equipment requiring rear and/or side access shall have labels provided on each individual section access area. Equipment line-ups containing sections with multiple incident energy and flash protection boundaries shall be labeled as identified in the Arc Flash Analysis table.
2. Wall Mounted Equipment - Labels shall be provided on the front cover or a nearby adjacent surface, depending upon equipment configuration.
3. General Use Safety labels shall be installed on equipment, in coordination with the Arc Flash Analysis table. The General Use Safety labels shall warn of general electrical hazards associated with shock, arc flash, and explosions, and instruct workers to turn off power prior to work.

END OF SECTION

SECTION 26-22-02

LOW-VOLTAGE TRANSFORMERS

PART 1 - GENERAL

1.01 DESCRIPTION

A. All work specified in this Section shall comply with the provisions of Section 26-05-05.

B. Shop drawings for equipment specified in this Section shall show that all specified requirements have been incorporated.

C. Refer to section 26-00-00 for additional information.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Transformers shall be as manufactured by Square-D (Schneider), General Electric, or Cutler-Hammer (Eaton), or Siemens.

B. All distribution switchgear (branch circuit panelboards, switchboard, distribution panelboards, transformers, busway, switches, etc.) shall be the unit responsibility of one manufacturer. All component parts of the above listed items shall be of the same manufacturer except where a written request for deviation from this requirement has been approved prior to bid date.

2.02 TRANSFORMERS

A. Branch circuit and distribution transformers shall be the dry type and shall have the ratings indicated.

B. Single phase transformers shall be 480 volt primary and 120/208 volt secondary. Three phase transformers shall be 480 volt delta primary and 120/208 volt grounded type secondary. Transformers 25 KVA and larger shall have a minimum of 4 1/2" full capacity primary taps.

C. Transformers shall have a UL recognized 220 degree insulation system and shall be designed so that under full load, the average conductor temperature rise does not exceed 15 degrees C. rise above a 40 degrees C. ambient and the enclosure does not exceed a 50 degree C. rise at any point.

D. Transformer coils shall be of the continuous wound construction and shall be impregnated with non-hydroscopic, thermosetting varnish. All cores to be constructed of high grade, non-aging silicon steel with high magnetic permeability and low hysteresis and eddy current losses. Magnetic flux densities shall be kept well below the saturation point. The core laminations shall be clamped together with structural steel angles. The completed core and coil shall then be bolted to the base of the enclosure but isolated therefrom by means of rubber, vibration-absorbing mounts. There shall be no metal-to-metal contact between the core and coil and the enclosure. On transformers 500 KVA and smaller, the vibration isolating system shall be designed to provide a permanent fastening of the core and coil to the enclosure. Sound isolating systems requiring the complete removal of all fastening devices will not be acceptable. Sound levels shall be guaranteed by the manufacturer not to exceed the following: 25 to 50 KVA - 45 DB; 51 to 150 KVA - 50 DB; 151 to 300 KVA - 55 DB; 301 to 500 KVA - 60 DB.

E. Transformers 24 KVA and larger shall be in a heavy gauge, sheet steel, ventilated enclosure. The ventilating openings shall be designed to prevent accidental access to live parts in accordance with UL, NEMA, and National Electrical Code standard for ventilated enclosures. Transformers 25 KVA through 125 KVA shall be designed so that they can be either floor or wall mounted. Above 125 KVA, they shall be floor-mounted design. The entire transformer enclosure shall be degreased, cleaned, phosphatized, primed and finished with gray, baked enamel.

F. Transformers shall be compliant with the 2016 DOE efficiency standards:

Table 16-Electrical Efficiencies for All Low-Voltage Dry-Type Distribution Transformer Equipment Classes

Table with 2 main columns: Equipment Class 3 (Single-Phase) and Equipment Class 4 (Three-Phase). Rows include kVA and efficiency percentages for various ratings.

G. Aluminum or copper windings are acceptable.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Provide all necessary hardware to level and secure the transformers as required by the manufacturer's instructions. Make all electrical connections for supply and load circuits and leave in operating condition.

B. Clean enclosures of all transformers of all foreign matter, including dust.

C. Remove all rust marks and repaint to leave transformers in new condition.

D. Transformers that are of the floor-mounted type shall be mounted on a 4" high concrete pad with Korfund Vibration Eliminators of the pad type.

END OF SECTION

SECTION 26-24-13

SWITCHBOARDS

PART 1 - GENERAL

1.01 DESCRIPTION

A. All work specified in this Section shall comply with the provisions of Section 26-05-05.

B. Provide a complete electrical distribution system. The system shall include the service entrance, main switchboard, feeders, transformers, distribution panels, panelboards, busway, remote control switches, contactors, etc. to provide a complete system. Provide multi-function power metering in each switchboard for main circuit breaker and each distribution circuit breaker in switchboard.

C. Shop drawings for equipment specified in this Section shall show that all specified requirements have been incorporated.

D. Refer to section 26-00-00 for additional information.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Main switchboards shall be as manufactured by Square-D (Schneider), General Electric, Cutler-Hammer (Eaton) or Siemens.

B. All distribution switchgear (branch circuit panelboards, switchboard, distribution panelboards, transformers, busway, etc.) shall be the unit responsibility of one manufacturer. All component parts of the above listed items shall be of the same manufacturer except where a written request for deviation from this requirement has been approved prior to bid date.

2.02 MAIN SWITCHBOARD

A. General

1. Provide where indicated, a front accessible dead front type, completely metal enclosed, self-supporting structure independent of wall supports. It shall consist of the required number of vertical sections bolted together to form one rigid sub-board approximately 30" high incorporating switching and protective devices of the number, ratings and type noted herein or shown with necessary interconnections, instrumentation and control wiring. The sides, top and rear shall be covered with removable screw-on plates. Front plates shall be sectionalized and removable. All covers shall be secured by self-tapping screws. Ventilation openings shall be provided where required. The switchboard shall be vermin proof.

2. All sections of the switchboard shall be 20 inches deep except service sections containing large ampacity main circuit breaker or pressure contact type main fusible switch which may be deeper. All section of the switchboard shall align so that the back of the complete structure may be placed flush against a wall. Construction shall allow maintenance of incoming line terminations, main device connections and all main bus bolted connections to be performed with front end access.

3. The feeder or branch devices shall be removable from the front and shall be panel mounted with the necessary device line and load connections front accessible.

4. All exterior and interior steel surfaces of the switchboard shall be cleaned and finished with gray hard dried enamel over a rust-inhibiting phosphatized coating.

5. Small wiring necessary fuse blocks and terminal blocks within the switchboard shall be furnished when required. All groups of control wires leaving the switchboard shall be provided with terminal blocks with numbering strips.

B. Bussing

1. The bus shall be tin plated aluminum adequately braced and supported to withstand mechanical forces exerted during short circuit conditions. The main horizontal bus bars shall be mounted on glass polyester insulators with all three phases arranged in the same vertical plane. The main bus shall be braced for short circuits up to the RMS ampere value as shown.

2. A ground bus shall be provided firmly secured to each vertical structure and shall extend the entire length of the switchboard. A ground lug shall be furnished attached to the ground bus in an accessible location.

3. Provide a removable link (solid bar) in the neutral bus where the main disconnect device is provided.

4. Provide a bonding strap from the neutral bus to the switchboard frame. The bonding strap shall be located on the line side of the removable neutral link.

C. Main Circuit Breaker

1. Acceptable manufacturers are Square D Masterpact or equal by GE, Siemens, or Eaton.

2. The case of the circuit breaker shall be a polyester thermostat material providing high dielectric strength.

3. Interrupting rating shall be available up to 200,000 amperes RMS symmetrical without fuses.

4. All circuit breaker operating mechanisms are to be two-step, fully-stored energy devices for quick-make, quick-break operation with a maximum of a five-cycle closing time. Open-close-open (O-C-O) cycle shall be possible without recharging. Motor operator shall automatically charge when circuit breaker is closed. Actuation of the operating handle or an operation cycle of the circuit breaker motor is to charge the closing springs (step one) and operation of a local "close" button is to close the circuit breaker contact (step two). Closing the circuit breaker contacts shall automatically charge the opening springs.

5. Current-carrying components shall be completely isolated from the accessory mounting area and double insulated from the operator with accessory cover in place.

6. Each phase inside the circuit breaker shall be completely isolated from other phases and ground by polyester thermostat material.

7. Padlocking provisions shall be furnished to receive up to three padlocks when circuit breaker is in the disconnected position, positively preventing unauthorized closing of the circuit breaker contacts.

8. Provisions for up to two key locks shall be furnished allowing locking in the disconnected position. Provisions for locking in the connected, test and disconnected positions by padlock or key lock shall be available as an option.

9. Located on the face of the circuit breaker shall be buttons, with optional lockable clear cover, to open and close the circuit breaker and indicators to show the position of the circuit breaker contacts, status of the closing springs, and circuit breaker position in the cell. An indicator shall show "charged-not OK to close" if closing springs are charged but circuit breaker is not ready to close. Circuit breaker racking system must have positive stops at the connected, test, disconnected and withdrawn positions.

10. Circuit breaker must be equipped with an interlock to discharge the stored energy spring before the circuit breaker can be withdrawn from its cell. Circuit breaker must provide a positive ground contact check between the circuit breaker and cell when the accessory cover is removed while the circuit breaker is in the connected, test or disconnected positions.

11. Primary connectors that can be rotated to provide flexible vertical or horizontal connections shall be available as an option. Front connections shall also be available for shallow depth equipment designs.

12. Ready-to-close contact must be available to indicate remotely that the circuit breaker is "ready to close". The circuit breaker is ready to close when it is open, spring mechanism is charged, a maintained closing order is not present, a maintained opening order is not present, and the circuit breaker is in an operational position.

13. Secondary wiring shall be front accessible and available in cage clamp or ring terminal connections. Secondary wiring must not be accessible when switchgear door is closed.

14. Circuit breaker shall provide long service life. The 3200 A circuit breaker frame and those of lower ratings shall be certified to perform a minimum of 10,000 operations without maintenance. The 4000 A and 5000 A frames shall be certified to 5,000 operations without maintenance.

15. Circuit breaker shall be equipped with a visual contact user indicator.

16. Low-voltage power circuit breaker arc chutes containing asbestos will NOT be accepted.

17. Circuit breaker trip system shall be an electronic trip unit.

18. All trip units shall be removable to allow for field upgrades.

19. Trip units shall incorporate "True RMS Sensing" and have LED long-time pickup indications.

20. Trip unit functions shall consist of adjustable long-time pickup and delay, optional short-time pickup and delay, instantaneous and ground-fault pickup and delay.

21. Adjustable long-time pickup (tr) and delay shall be available in an adjustable rating plug list UL listed as field-replaceable. Adjustable rating plug shall allow for nine long-time pickup settings from 0.4 to 10 times the sensor pickup (tr). Other adjustable rating plugs shall be available for more precise settings to match the application. Long-time delay settings shall be in nine bands from 0.5-24 seconds at six times tr.

22. Short-time pickup shall allow for nine settings from 15 to 100 times tr. Short-time delay shall be in nine bands from 0.1-0.4 1/2 tr ON and 0-0.4 1/2 tr OFF.

23. Instantaneous settings on the trip units with LSI protection shall be available in nine bands from 2 to 15 times tr. The instantaneous setting shall also have an OFF setting when short-time pickup-up is provided.

24. All trip units shall have the capability for the adjustments to be set and read locally by rotating a switch.

25. Trip unit shall provide local trip indication.

26. Ground-fault protection shall be available for solidly grounded three-phase, three-wire or three-phase, four-wire systems. Trip unit shall be capable of the following types of ground-fault protection: residual, source ground return, and modified differential. Ground-fault sensing systems may be changed in the field.

27. Ground-fault settings for circuit breaker sensor sizes 1200 A or below shall be in nine bands from 0.2 to 10 times tr. The ground-fault settings for circuit breakers above 1200 A shall be nine bands from 500 to 1200 A.

28. Trip units shall be available to provide real time metering. Metering functions include current, voltage, power and frequency. Metering accuracy shall be 15% current, 0.5% voltage, and 2% power. These accuracy shall be total system including CT and meter and shall be of reading not full scale in a range of 5 - 5000%.

29. Provide energy reducing active arc flash mitigation system to comply with NEC 240.81 for all breakers rated 1200 amps or can be adjusted to 1200 amps or higher.

D. Distribution Circuit Breakers
1. Electrical circuits shall be protected by molded case circuit breakers. Each pole shall provide inverse time delay and instantaneous circuit protection.
2. Circuit breakers shall be operated by a toggle type handle and shall have a quick-make, quick-break overcenter switching mechanism that is mechanically trip free from the handle so that the contacts cannot be held closed against short circuits and abnormal circuits. Tripping due to overload or short circuit shall be indicated by the handle automatically assuming a position midway between ON and OFF positions.
3. Breakers must be completely enclosed in a molded case. Non-interchangeable trip breakers shall

have the trip unit sealed to prevent tampering. Ampere ratings shall be clearly visible. Contacts shall be of the non-welding silver alloy. Arc extinction must be accomplished by means of arc chutes.

- 4. All circuit breakers with frame sized 400 amps and larger shall have solid state trip units that are insensitive to changes in ambient temperature and a push-to-trip button to mechanically check the trip mechanism...
5. The solid state trip breakers shall provide long delay and magnetic tripping similar to thermal magnetic breakers.

E. Ground Fault Protection
1. An adjustable ground fault protection system shall be provided as an integral part of the main circuit breaker or main fused switch...

F. The switchboard as a complete unit shall be given a single short circuit current by the manufacturer of the rating as shown...

G. Provide arc-flash labels on front face of equipment.
H. Provide main section of each switchboard with a Square-D FM820 or equal power meter with integrated LCD display...

- 1. Single Phase Protection
Provide Taylor Electronics Model FRND-3, 6, 9, 12 ADJ-REM LED's, or equal, single phase relay behind hinged panel in switchboard.
2. Provide shunt trip coils on all main devices, operated by the phase failure relay.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Provide a typewritten directory under plastic for all panelboards with spares marked in pencil.
B. Provide all necessary hardware to level and secure the switchgear as required by the manufacturer's instructions.

C. Clean enclosure of all switchgear of all foreign matter, including dust.

D. Remove all rust marks and repaint to leave switchgear in new condition.

E. Post engraved laminated operating instructions on the front of the switchboards.

F. All floor mounted distribution equipment shall be mounted on a 4" high concrete pad.

END OF SECTION

SECTION 26-24-16

PANELBOARDS

PART 1 - GENERAL

1.01 DESCRIPTION

- A. All work specified in this Section shall comply with the provisions of Section 26-05-05.
B. Provide a complete electrical distribution system. The system shall include the service entrance, main switchboard, feeders, transformers, distribution panels, panelboards, busway, remote control switches, contactors, etc., to provide a complete system.

2.02 BRANCH CIRCUIT PANELBOARDS

A. Panelboards (panels) shall be as manufactured by Square-D, General Electric, Eaton, or Siemens.
B. All distribution switchgear (branch circuit panelboards, switchboard, distribution panelboards, transformers, busway switches, etc.) shall be the unit responsibility of one manufacturer.

C. Shop drawings for equipment specified in this Section shall show that all specified requirements have been incorporated.

D. Refer to section 26-00-00 for additional information.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Panelboards shall be as manufactured by Square-D, General Electric, Eaton, or Siemens.
B. All distribution switchgear (branch circuit panelboards, switchboard, distribution panelboards, transformers, busway switches, etc.) shall be the unit responsibility of one manufacturer.

C. Hinged door covering all device handles shall be included in all panel trim.

D. Trims for flush panels shall overlap the box by at least 3/4" all around. Surface trims shall have the same width and height as the box.

E. All exterior and interior steel surfaces of the trim shall be cleaned and finished with gray paint over a rust-inhibiting phosphatized coating.

F. All interiors shall be completely factory assembled with protective devices, wire connectors, etc. All wire connectors, except screw terminals, shall be of the anti-turn solderless type and all shall be suitable for copper or aluminum wire.

G. Interiors shall be so designed that devices can be replaced without disturbing adjacent units and without removing the main bus connectors and shall be so designed that devices may be changed without machining, drilling or tapping.

H. Bus bars for the main shall be of tin-plated aluminum sized in accordance with UL standards. Full size bars shall be included.

I. Phase bussing shall be full height without reduction. Cross and center connectors shall be of the same material as the bus.

J. The neutral bus shall utilize setscrews to bond the neutral wire to the neutral bus through holes drilled in the neutral bar.

K. Spaces for future devices shall be included as indicated and shall be bussed for the maximum rated device that can be fitted into them.

L. All circuit breakers shall be manually operated, thermal-magnetic, automatic, of the ampacity and poles as indicated. They shall be quick-make, quick-break, both on manual and automatic operation. Breakers shall be over-the-center toggle operating type...

M. Panels having sub-feed lugs for feeding through shall have 8" minimum extra gutter space at the lug end and on one side.

N. Each panel as a complete unit shall have a short circuit current rating equal to or greater than the equipment rating indicated.

O. Provide arc-flash labels on front face of equipment.

P. Provide each panelboard with door within door (ringed trim) with inner door opening to circuit breakers only and outer door opening to panelboard interior (bussing, lugs, etc.).

Q. Refer to panelboard schedules for additional information. Verify 20% of pole spaces in each panelboard are reserved for future use.

2.03 DISTRIBUTION PANELBOARDS

A. Distribution panelboards (panels) shall be of the circuit breaker type, factory assembled by the manufacturer of the circuit breakers, complete with front door cover.

B. Panels shall be flush or surface mounted as indicated, with baked-on enamel trim, adjustable trim clamps and door with chromium plated combination cylinder lock and catch...

C. The neutral bus shall utilize setscrews to bond the neutral bus through holes drilled in the neutral bar.

D. All circuit breakers shall be manually operated, thermal-magnetic, automatic, of the ampacity and poles as indicated. They shall be quick-make, quick-break both on manual and automatic operation.

E. The interrupting capacity of the breakers furnished shall be 10,000 RMS symmetrical unless indicated otherwise.

F. All main circuit breakers shall be molded case and vertically mounted. All vertically mounted molded case circuit breakers shall be mounted so that the handle is up for "ON" and down for "OFF".

G. All circuit breakers, including any connectors to the main bus, shall be bolted and rigidly braced.

H. Spaces for future installation of molded case circuit breakers are specifically by range of trip rather than a single trip size or frame size. The spaces so scheduled shall be complete with all bus and required bus connectors such that future breakers can be installed without adding or changing bus connectors on the main bus and without using a larger (frame size) or more expensive breaker than the trip size and interrupting capacity would require.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Provide a typewritten directory under plastic for all panelboards with spares marked in pencil.

B. Provide all necessary hardware to level and secure the panelboards as required by the manufacturer's instructions. Make all electrical connections for supply and load circuits and leave in operating condition.

C. Clean enclosure of all panelboards of all foreign matter, including dust.

D. Remove all rust marks and repaint to leave panelboards in new condition.

E. All floor mounted distribution equipment shall be mounted on a 4" high concrete pad.

END OF SECTION

SECTION 26-27-01

ELECTRICAL SERVICE ENTRANCE

PART 1 - GENERAL

1.01 DESCRIPTION

A. All work specified in this Section shall comply with the provisions of Section 26-05-05.

B. Refer to section 26-00-00 for additional information.

1.02 ELECTRICAL SERVICE

A. The power company will provide the underground primary service and the pad mounted transformer. Provide conduits for primary and pads for transformers as required.

1.03 METERING

A. Metering equipment will be by the power company. Provide enclosures, conduits, and pedestals as required.

B. The power company will provide the control wires to the meter.

PART 2 - PRODUCTS

A. All service entrance equipment provided by the contractor shall comply with the local power standards and regulations.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Make all arrangements with the power company and pay all charges made by the power company for permanent electric service. In the event that the power company's charges are not available at the time the project is bid, the bids shall be qualified to notify the Owner that such charges are not included.

B. Provide the pad for the pad-mounted transformer in accordance with the power company specifications.

C. Provide all conduit and wire as specified from the secondary terminals of the transformer to the main switchboard(s).

END OF SECTION

SECTION 26-27-26

WIRING DEVICES

PART 1 - GENERAL

1.01 DESCRIPTION

A. All work specified in this Section shall comply with the provisions of Section 26-05-05.

B. This Section describes the basic electrical materials and installation methods that are acceptable and applicable to Division 26.

PART 2 - PRODUCTS

2.01 WALL SWITCHES

A. Wall switches shall be plastic, totally enclosed, quiet type, self-grounding, 277 volts and 20A rating and shall match existing if possible and equal the following:

- 1. Single Pole: Hubbell No. C5121, or equal by Leviton, F45, or Cooper.
2. Double Pole: Hubbell No. C5122, or equal by Leviton, F45, or Cooper.
3. Three-Way: Hubbell No. C5123, or equal by Leviton, F45, or Cooper.
4. Four-Way: Hubbell No. C5124, or equal by Leviton, F45, or Cooper.

B. Color shall be as selected by architect.

C. Flush motor switches with red pilot light and with overload protection for fractional horsepower motors shall be Hubbell No. HBL121PL or approved equal by F45, or Leviton.

2.02 WALL MOUNTED OCCUPANCY SWITCHES

A. The dual-technology (passive infrared and ultrasonic) sensor shall be a completely self-contained control system that replaces a standard toggle switch. Sensor shall have ground wire for switching mechanism shall be a latching air gap relay, compatible with electronic ballasts, compact fluorescent and inductive loads.

B. Each shall cover minimum area of room or area in which plans indicate lights as controlled by a wall switch.

C. Sensor shall have system which provides superior 180 degree coverage.

D. Sensor shall operate at 120 VAC or 277 VAC.

E. Sensor shall have no minimum load requirement and shall be capable of switching from 0 to 500 watt incandescent 0 to 820 watts fluorescent or 1/6 hp @ 120 VAC, 60 Hz and 0 to 1200 watts fluorescent or 1/3 hp @ 277 VAC, 60 Hz.

F. For accuracy and consistency, sensor shall have a DIP switch controlled, digital time delay adjustable from 15 seconds to 30 minutes.

G. Sensor shall have standard 5 year warranty and shall be UL and CUL listed.

H. Sensor shall be Wattstopper III Series, Leviton Decora Series, Greengate, or approved equal by engineer.

I. Refer to plans for additional information.

2.03 CEILING MOUNTED OCCUPANCY SENSOR SWITCHES

A. Provide dual-technology (passive infrared and ultrasonic) ceiling-mounted occupancy sensors in office areas.

B. Provide infrared occupancy sensors in warehouse suitable for high-bay (40ft) applications.

C. Each sensor shall cover minimum area of room or area in which plans indicate lights as designated for control by ceiling-mounted switch.

D. Refer to plans for additional information.

2.04 RECEPTACLES

A. Duplex receptacles shall be plastic, two-pole, three wire, self-grounding, side wired, 125 volts. Provide 20A (NEMA 5-20R) receptacles unless noted otherwise. Non-dedicated receptacles in office area (excluding break areas) may be 15A (NEMA 5-20R). Receptacles shall be equal to the following:

- 1. 20-Amp duplex receptacles shall be Hubbell No. CR5362 Series, or equal by Leviton, F45, or Cooper.
2. 15-Amp duplex receptacles shall be Hubbell No. CR5262 Series, or equal by Leviton, F45, or Cooper.
3. Isolated ground type shall be Hubbell No. CR5321G Series, or equal by Leviton, F45, or Cooper.

B. Single receptacles shall be two-pole, three wire, self-grounding, side wired, 125 volts and 20A rating and shall be equal to the following:

- 1. Single receptacles shall be Hubbell No. HBL5361 Series, or equal by Leviton, F45, or Cooper.
2. Isolated ground type to be Hubbell No. IG-5361 Series, or equal by Leviton, F45, or Cooper.

C. Ground fault circuit interrupt (GFI) receptacles shall be Hubbell GFR532, or equal by F45, Leviton, or Cooper.

D. Color shall be as selected by the Architect.

2.05 COVERPLATES

A. Coverplates for flush mounted devices shall be brushed finished stainless steel standard size, Hubbell "P" Series or equal by Leviton, F45, or Cooper.

B. Telephone outlet coverplates shall have same finish as adjacent device coverplates.

C. Coverplates for exterior devices shall be die cast aluminum weatherproof "while-in-use", Hubbell WFP26M or equal by Leviton, F45, or Cooper.

PART 3 - EXECUTION

3.01 WALL SWITCHES AND RECEPTACLES

A. Where more than one device is indicated at a location, the devices shall be gang-mounted in combined multi-gang boxes and covered jointly by a common coverplate. Provide barriers as required by the devices and voltages being used.

3.02 COVERPLATES

A. All junction boxes, outlet boxes, multi-gang switch boxes, utility boxes, etc., shall be covered with a coverplate. The coverplate shall be a finished plate as specified unless designated otherwise.

B. Coverplates shall be mounted vertically unless designated otherwise.

END OF SECTION

SECTION 26-28-18

ENCLOSED SWITCHES

PART 1 - GENERAL

1.01 DESCRIPTION

A. All work specified in this Section shall comply with the provisions of Section 26-05-05.

B. This Section describes the basic electrical materials and installation methods that are acceptable and applicable to Division 26.

1.02 RELATED SECTIONS

A. Section 26-28-13 - Fuses

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Enclosed switches shall be as manufactured by Square-D, General Electric, Eaton, or Siemens.

- 2.02 DISCONNECT SWITCHES
A. Disconnect switches shall be "heavy-duty" type, enclosed switches of quick-make, quick-break construction. Switches shall be horsepower rated for 600 volts AC as required. Lugs shall be UL listed for copper and aluminum.
B. Switches shall be furnished in NEMA 1 General purpose enclosure unless noted otherwise. Switches located on the exterior of the building or in "wet" locations shall have NEMA 3R enclosures.
C. Fused disconnect switches shall have rejection type fuse clips with dual element, current limiting fuses of rating shown.
PART 3 - EXECUTION
3.01 INSTALLATION
A. Disconnect switches shall be mounted to structure. Disconnect switches shall not be mounted to mechanical equipment or ductwork.
B. Padlocking provisions shall be provided for padlocking in the OFF position.
END OF SECTION

SECTION 26-51-00

INTERIOR LIGHTING

PART 1 - GENERAL

1.01 DESCRIPTION

A. All work in this Section shall comply with the provisions of Section 26-05-05.

B. Provide all lighting fixtures and lamps as specified herein and as shown on the drawings.

C. Confirm exact locations of all lighting fixtures by coordination with the Architect's Reflected Ceiling Plans and mechanical equipment above or on the ceiling.

D. Confirm all ceiling types before ordering lighting fixtures.

E. Each lighting fixture shall have been tested and certified for proper operation by the fixture manufacturer for the type mounting and ceiling orn, which it is installed.

PART 2 - PRODUCTS

2.01 LIGHTING FIXTURES

A. Each lighting fixture shall be as specified in the Lighting Fixture Schedule corresponding with its fixture type indication (letter).

B. Most lighting outlets are lettered or groups of outlets are indicated by a letter.

C. Each lighting fixture shall have a manufacturer's label affixed and shall comply with the requirements of all authorities having jurisdiction.

D. The lighting fixtures that are indicated by the letters shall be as indicated on the Lighting Fixture Schedule.

2.02 LAMPS

A. The type lamps shall be as specified for each lighting fixture in the lighting fixture schedule.

B. The lamp catalog number is the catalog number is generally for General Electric part numbers and is given as a standard of the quality and performance required. Equal lamps by Sylvania or Philips will be acceptable. When a lamp manufacturer's name is used along with the catalog number in the lighting fixture schedule, it is considered unequalled by any other lamp and shall not be substituted for. The lamp performance with energy conserving ballasts furnished under this Section shall be certified by a nationally recognized independent testing laboratory.

C. Fluorescent lamps shall be as specified in the Lighting Fixture Schedule.

2.03 BALLASTS

A. Fluorescent ballast shall be electronic type manufactured by Motorola, Magnetrak, or Advance.
B. Ballast shall operate lamps at a frequency of 25 KHz or higher with less than 2% lamp flicker.
C. Ballast shall operate at an input voltage of 108 - 132 Vac (120V line) or 249 - 305 Vac (277V line) at an input frequency of 60 Hz. Light output shall remain constant for line voltage fluctuation of + 5%.

D. Ballast shall comply with EMI and RFI limits set by the FCC (CFR 47 part 1B) for non-residential applications and not interfere with normal electrical equipment.

E. Ballast shall withstand transients as specified by ANSI C62.41 for location category A3 in the normal mode and location category. All in the common mode.

F. Ballast shall meet applicable ANSI standards.

G. Ballast shall have a minimum power factor of 0.99.

H. Ballast shall not be potted or weigh more than 13 pounds.

I. Ballast shall have less than 10% Total Harmonic Distortion.

J. Ballast shall have less than 6% Third Harmonic Distortion.

K. Ballast height shall be less than or equal to 15 inches.

L. Ballast shall have a poke-in wiretrap connector.

M. Ballast shall meet sound rating "A".

N. Ballast must be Underwriters Laboratories (UL) listed Class F, Type I Outdoor.

O. Ballast shall provide normal rated lamp life as stated by lamp manufacturers.

P. Rapid start ballast are series wired and shall maintain full cathode heat during operation.

Q. Rapid start ballast shall have less than a 15 Lamp Current Crest Factor (LCCF) and instant start ballasts have less than a 17 LCCF.

R. Instant start ballast shall have parallel lamp operation.

S. Ballast factor standard is 0.875-0.025 on all normal light output products.

T. Ballasts for "FL" fluorescent lamps shall be coordinated with lamps and 2-pin or 4-pin configuration ballasts shall be provided to match lamps. Manufacturer for "FL" fluorescent fixtures shall be Advance, Roberson, Lightolier or Lutron.

U. Ballasts for High Intensity Discharge (HID) lamps shall be Constant Wattage Autotransformer (CWA) type or equal type with minimum power factor of 0.9.

2.04 DIFFUSERS

A. Unless specified otherwise, all prismatic diffusers for fluorescent lighting fixtures shall be prismatic acrylic KSH K12 with a thickness of 0.025", measured from the back side to the peak of the prism.

B. All wraparound lenses shall be virgin acrylic, one-piece and injection molded.

2.05 EMERGENCY BATTERY LIGHTING

A. Lighting fixtures indicated on the drawings to be provided with an emergency battery ballast shall provide emergency lighting by using a standard fluorescent lamp or lamps and an emergency battery ballast. The ballast shall consist of a field replaceable high temperature, maintenance free nickel cadmium battery, charger and electronic circuitry contained in one metal case. Provide a solid state charging indicator light to monitor the charger and battery, double pole test switch and installation hardware. The battery ballast shall provide power to the fluorescent lamp upon failure of the normal supply to the fixture.

B. The test button and indicator light shall be integral in the fixture reflector and shall be positioned within or on the surface of the fixture so as to be accessible and identifiable.



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STATE OF FLORIDA REGISTRATION NUMBER AA-0002996



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STATE OF FLORIDA CERTIFICATE OF AUTHORIZATION NO. 27336

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A SPECULATIVE WAREHOUSE AT WESTLAKE 3 DEVELOPED BY PATILLO Industrial Real Estate Duval County, Florida

Print Record
NO. REVISION DATE DESCRIPTION
01 JANUARY 2019 ISSUED FOR PERMITS
Revision Record

Date 09 JANUARY 2019 Project No. 2018245.00
Sheet Title SPECIFICATIONS - ELECTRICAL

Released for Construction
Not Released for Construction

Sheet No. E004

- C. Under normal mode the battery ballast shall keep the batteries at full charge. Upon loss of normal power the battery ballast shall operate the fluorescent lamp or lamps for 90 minutes.
- D. Battery recharge time shall not exceed sixteen (16) hours to fully recharge and shall not exceed 225 milliamperes charging current.
- E. The lumen output of the lamp or lamps powered by battery unit shall be not less than 1100 lumens initially for a four-foot fluorescent lamp.
- F. The battery ballast shall meet or exceed all the requirements set forth in UL924 "Emergency Lighting and Power Equipment" and shall be UL listed for installation on top of or remote from the fixture. Emergency illumination shall meet or exceed the requirements set forth in the National Electric Code, Life Safety Code and UL 90-Minute Requirements.

2.06 LIGHT FIXTURE TRIM

- A. Each recessed lighting fixture shall have a trim to match the type of ceiling (plaster, exposed grid, concealed spine, exposed metal, etc.) in which it is being installed, regardless of catalog number given. Coordinate with the Architect's reflected ceiling plan to provide the right trim for the type of ceiling the fixture is to be installed in.
- B. Each lighting fixture recessed in a plastered ceiling of any type shall have a plaster frame.
- 2.07 FLUORESCENT FIXTURES
- A. All indoor fluorescent fixtures utilizing double ended lamps or that are supplied from multi-wire branch circuits, shall have a disconnecting means that complies with Article 410-13, G of the NEC.

PART 3 - EXECUTION

3.01 SUPPORT OF LIGHTING FIXTURES

- A. All lighting shall be supported from the building structure. The fixtures shall be supported in a manner that will insure the fixture weight being equally distributed from each support and the fixture remaining in a level position.
- B. Fluorescent fixtures installed recessed in a suspended ceiling system shall be supported from the building structure with two (2) 1/2 gauge wires on diagonal corners of the fixture. In addition, the fixture shall be clipped to members of the ceiling suspension system.
- C. Fluorescent fixtures installed in or on any ceiling other than a suspended ceiling system specifically mentioned above shall be supported with concealed steel rods. Rods shall be 1/4" diameter minimum and shall be located where recommended by the fixture manufacturer. Provide a minimum of two (2) supports for each 4' or 8' fixture chassis. Supports shall be maximum of 48" centers. For incandescent fixtures, steel hanging wire may be used by attaching the wire to the fixture mounting frame.
- D. Pendant mounted incandescent fixtures shall be stem supported by a fixture stud mounted in the outlet box. Suspended fluorescent fixtures shall have mounting stems located as per the manufacturer's recommendations, but in no case shall have less than two (2) stems per chassis.
- E. Provide safety chains on all pendant mounted (suspended from structure) in open bays in warehouse.

3.02 AIMING OF ADJUSTABLE LIGHT FIXTURES

- A. All fixtures with lamp position, tilt, shutters, rotation, or other types of adjustments during the final inspection. Fixtures serving areas where day lighting is predominant will be adjusted after sunset.

3.03 LIGHTING FIXTURES IN MILLWORK

- A. Special attention shall be given to lighting fixtures indicated to be mounted within, under, on or otherwise incorporated into millwork or cabinetry.
- B. Refer to the Architectural drawings and details for specific dimensions. This coordination shall occur prior to ordering fixtures to assure fixtures will fit the space limitations of the millwork.
- C. This requirement is intended to preclude incurring additions to the Contract due to fixtures being too small or too large for the space.

3.04 FINAL PREPARATION

- A. All plastic covers shall be removed from fluorescent fixtures.
- B. Clean all lens and reflectors from debris, fingerprints, dust, etc.

- C. All lamps shall be operating at the time of the final inspection and for a period of six (6) months after the final acceptance of the project by the Owner.

END OF SECTION

SECTION 26-56-00

EXTERIOR LIGHTING

PART 1 - GENERAL

1.01 DESCRIPTION

- A. All work in this Section shall comply with the provisions of Section 26-05-05.
- B. Provide all lighting fixtures and lamps as specified herein and as shown.
- C. Confirm all exterior ceiling types (where applicable) before ordering lighting fixtures.
- D. Each lighting fixture shall have been tested and certified for proper operation by the fixture manufacturer for the type mounting which it is installed.

PART 2 - PRODUCTS

2.01 LIGHTING FIXTURES

- A. Each lighting fixture shall be as specified in the Lighting Fixture Schedule corresponding with its fixture type indication (letter).
- B. Most lighting outlets are lettered or groups of outlets are indicated by a letter.
- C. Each lighting fixture shall have a manufacturer's label affixed and shall comply with the requirements of all authorities having jurisdiction.
- D. The lighting fixtures that are indicated by the letters shall be as indicated on the Lighting Fixture Schedule.

2.02 LAMPS

- A. The type lamps shall be as specified for each lighting fixture in the lighting fixture schedule.
- B. The lamp catalog number is the catalog number is generally for Sylvania Lighting and is given as a standard of the quality and performance required. Equal lamps by General Electric or Philips will be acceptable. When a lamp manufacturer's name is used along with the catalog number in the lighting fixture schedule, it is considered unequal by any other lamp and shall not be substituted for. The lamp performance with energy conserving ballasts furnished under this Section shall be certified by a nationally recognized independent testing laboratory.
- C. Fluorescent lamps shall be as specified in the Lighting Fixture Schedule.
- D. High Intensity Discharge (HID) lamps shall be as specified in the Lighting Fixture Schedule.
- E. Provide lamps and ballasts with matching manufacturers.
- 2.03 BALLASTS
- A. Fluorescent ballast shall be electronic type manufactured by Motorola, Magnetek or Advance.
- B. Ballast shall operate lamps at a frequency or 25 KHz or higher with less than 2% lamp flicker.
- C. Ballast shall operate at an input voltage of 108 - 132 Vac (120V line) or 249 - 305 Vac (277V line) at an input frequency of 60 Hz. Light output shall remain constant for line voltage fluctuation of + 5%.
- D. Ballast shall comply with EMI and RFI limits set by the FCC (CFR 47 part 18) for non-residential applications and not interfere with normal electrical equipment.

- E. Ballast shall withstand transients as specified by ANSI C62.41 for location category A3 in the normal mode and location category A1 in the common mode.
- F. Ballast shall meet applicable ANSI standards.
- G. Ballast shall have a minimum power factor of 0.99.
- H. Ballast shall not be potted or weigh more than 13 pounds.
- I. Ballast shall have less than 10% Total Harmonic Distortion.
- J. Ballast shall have less than 6% Third Harmonic Distortion.
- K. Ballast height shall be less than or equal to 15 inches.
- L. Ballast shall have a poke-in wiretrap connector.
- M. Ballast shall meet sound rating "A".
- N. Ballast must be Underwriters Laboratories (UL) listed Class P, Type I Outdoor.
- O. Ballast shall provide normal rated lamp life as stated by lamp manufacturers.
- F. Rapid start ballast are series wired and shall maintain full cathode heat during operation.
- Q. Rapid start ballast shall have less than a 15 Lamp Current Crest Factor (LCCF) and instant start ballasts have less than a 17 LCCF.
- R. Instant start ballast shall have parallel lamp operation.
- S. Ballast factor standard is 0.875-0.925 on all normal light output products.
- U. Ballasts for High Intensity Discharge (HID) lamps shall be Constant Wattage Autotransformer (CWA) type or equal type with minimum power factor of 0.9.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Provide circuiting to allow evenly reduced security lighting at night.
- B. Provide lighting around equipment for maintenance. Lighting around equipment shall be circuitied to the suite the equipment serves. Provide local switching.
- C. Lighting for general purposes shall be circuitied to the house panel via time clock and photocell.
- D. Luminaire height shall be optimized for even coverage while not spilling light beyond the property line.

3.02 AIMING OF ADJUSTABLE LIGHT FIXTURES

- A. All fixtures with lamp position, tilt, shutters, rotation, or other types of adjustments during the final inspection. Fixtures serving areas where day lighting is predominant will be adjusted after sunset.

3.03 FINAL PREPARATION

- A. All plastic covers shall be removed from fixtures.
- B. Clean all lens and reflectors from debris, fingerprints, dust, etc.

- C. All lamps shall be operating at the time of the final inspection and for a period of six (6) months after the final acceptance of the project by the Owner.

END OF SECTION

1 SECTION 28-31-00

FIRE DETECTION AND ALARM

PART 1 - GENERAL

1.01 DESCRIPTION

- A. All work specified in this Section shall comply with the provisions of Section 26-05-05.
- B. This section of the specifications serves as a design and performance guidelines and represents minimum requirements for the furnishing, installation, connection and testing of the microprocessor controlled, intelligent reporting fire alarm equipment required to form a complete, operative, and coordinated system. A qualified fire alarm contractor shall be responsible for the final design of a complete fire alarm system and the production of drawings for the permit submittal to the authority having jurisdiction and make any necessary provisions hereafter to obtain the permit. Fire alarm devices indicated on the electrical drawings represent preferred locations of junction boxes in an effort to avoid conflicts and aid the architect and the electrical contractor in the period prior to permit. Submit a request for approval to the architectural/engineering where it is necessary to alter or add to the fire alarm layout indicated on the electrical plans.
- C. The fire alarm system shall comply with requirements of the NFPA Standard 72 for Protected Premises Signaling Systems and all local codes and regulations. The system shall be electrically supervised and monitor the integrity of all conductors.
- D. Alarm, trouble and supervisory signals from all intelligent reporting devices shall be encoded onto the Signaling Line Circuits.
- E. The system shall be an active/interrogative type system where each transponder is repetitively scanned, causing a signal to be transmitted to the local fire alarm control panel/node indicating that the transponder and its associated initiating device and notification appliance circuit wiring is functional. Loss of this signal at the local FACP shall result in a trouble indication on both the FACP display and at the network display, as specified hereinafter for the particular input.
- F. The system shall be arranged such that not less than 20 percent additional transponders may be inserted into any network communication loop.
- G. The FACP and peripheral devices shall be manufactured by Notifier, Edwards, or Stiem.
- H. The installing company shall employ NICET (minimum Level II Fire Alarm Technology) technicians on site. To guide the final checkout and to ensure the systems integrity, the submitting company shall employ NICET Level IV minimum managers and engineers. Proof of NICET level training shall be included as part of submittal package and kept on site with personnel.
- I. The installing company shall be UL listed for fire alarm installations. UL certificate shall accompany submittal package. The certification listing category shall be UL101 and shall be indicated in the project submittal.
- J. The Contractor shall make arrangements and pay all fees in connection with the testing of the Life Safety System. All system devices shall be tested for their correct operation except non-restorable type heat detectors which shall be sample tested. All tests carried out shall meet the requirements of the local authority having jurisdiction.
- K. The system shall have proper listing and/or approval from the following nationally recognized agencies:

1. Factory Mutual Systems
2. Underwriters Laboratories
3. Provide voice evacuation features including speaker/strobes throughout the building. This includes the large training rooms (assembly spaces), warehouse, office, and freezer/cooler.
4. Provide pendant-mounting of speaker/strobes throughout the high-bay areas to support devices from structure at 30' AFF.
5. Provide fire alarm devices in freezer/cooler area suitable for outdoor use and operating temperature to -40°F.

1.02 SCOPE

- A. A new intelligent reporting, microprocessor controlled fire detection system shall be installed in accordance to the project specifications and drawings.
- B. Basic Performance
1. Each SLC loop shall be wired NFPA 72 Style 4 (Class B).
 2. Initiation Device Circuits (IDC) shall be wired (NFPA Style B) as part of an addressable device connected by the SLC circuit.
 3. Notification Appliance Circuits (NAC) shall be wired (NFPA Style Y) as part of an addressable

- device connected by the SLC circuit or a panel circuit.
1. NAC speaker circuits shall be arranged such that there is a minimum of one speaker circuit per floor of the building or smoke zone, whichever is greater.
 2. NAC speaker circuits and control equipment shall be arranged such that loss of any one (1) speaker circuit will not cause the loss of any other speaker circuit in the system.
 3. Two-way telephone communication circuits shall be supervised for open and short circuit conditions. Phone circuits shall be wire (NFPA Style Y) and wired so that each vertical riser is a single circuit.

- C. Basic System Functional Operation
1. As part of the fire alarm when a fire alarm condition is detected and reported by one of the system initiating devices, the following functions shall immediately occur:
 - a. FACP will sound and display the alarm condition showing the device address, location, zone information, time/date, and device type.
 - b. The remote annunciator will sound and display the same information as shown on the FACP display unit.
 - c. The speaker outputs for the floor of the alarm, floor above, floor below, elevator cabs and stairwells shall be activated for alarm evacuation message until silenced. All speakers shall sound the fire alerting tone followed by an evacuation message. When the message ends, the alerting tone shall resume. Other sequences for alarm evacuation messaging may be directed by drawings.
 - d. All strobes on floors with activated speaker outputs shall flash in a synchronized pattern until silenced from the FACP panel.
 - e. Operation of the fire alarm microphone must immediately override either the message or the fire alerting tone without moving any switches except the one on the microphone. The voice communication system shall also function as a public address communication system and shall operate on a selective and general basis from the Fire Alarm Control Panel.
 - f. Automatic functions including, but not limited to: elevator(s) recall, smoke evacuation, smoke door release and supply/return fan shutdown shall be activated via system programming as directed by codes and/or drawings.
 - g. Release all magnetically held smoke doors.
 - h. Provide signals to the mechanical controls including smoke dampers to shut down or reroute air-handling systems to prevent the recirculation of smoke.
 - i. Provide a DACT (Digital Alarm Communicator Transmitter) and a signal via DACT for connection to a central station or local municipal fire department (connection and leased line, if required, shall be provided by building owner).
 - j. Initiate a preprogrammed timing sequence.
 - k. Additionally, activation of a lobby elevator smoke detector shall cause immediate non-stop return of all automatic elevator served by that lobby to the primary discharge level; except that, when the alarm has been initiated on the primary discharge level, the elevator shall be returned to the designated alternate discharge level per the requirements of ANSI ASME A17.1.
 - l. Additionally, activation of any elevator equipment room or shaft smoke detector shall cause immediate non-stop return of all automatic elevators served by that equipment room or shaft, to the primary discharge level per the requirements of ANSI ASME A17.1. Provide all required signals from FACP to elevator controls for smoke detector in elevator machine room per the requirements of ANSI ASME A17.1.
 - m. Additionally, activation of any smoke detector located in the air handling units and/or equipment rooms shall activate signals to the mechanical controls indicating the floor of occurrence.
 - n. It shall be possible to silence the alarm signals by operating the signal silence switch. However, the activation of another zone shall repeat the entire alarm process, thus causing the signals to resound.
 - o. Silencing the alarm shall cause all speakers to silence. Firelights will continue to flash.
 - p. Fire pump(s) normal power availability, fire pump(s) phase reversal and fire pump(s) run status shall be monitored. Loss of normal power, phase reversal shall annunciate as supervisory alarms and pump running shall annunciate as an alarm.
 - q. Provide a signal to activate the elevator shut trip breaker upon activation of the heat detector(s) in the elevator shaft or elevator machine room.

2. General Operation
 - a. Power failures, opens, grounds or any disarrangement of the system wiring or components shall be indicated by a visual and audible trouble signal. The audible trouble signal may be silenced; however, the trouble LED shall remain lit until the system has been returned to normal operating condition.
3. SUBMITTALS
 - A. General
 1. Copies of all submittals shall be submitted to the Architect/Engineer for review prior to acceptance of system.
 2. All references to manufacturer's model numbers and other pertinent information herein is intended to establish minimum standards of performance, function and quality.
 3. The authority having jurisdiction shall be notified prior to installation of equipment and wiring. Complete information regarding the system including specifications, wiring diagrams, battery and power supply calculations, floor plans and graphics shall be submitted for approval.
 4. If submittals, upon review by the Owner and/or the Owners Representative, are found not to conform with the performance, type and quality of products as well as all other requirements of these specifications, the Contractor shall be required to resubmit. The Contractor shall be responsible for the Owner's extra expenses for subsequent review(s) of rejected submittals. Such extra fees shall be deducted from payments by the Owner to the Contractor. Approval of the submittals by the Owner shall, in no case, relieve the Contractor of the responsibility to meet the requirements of this specification.
 - B. Shop Drawings
 1. Drawings shall include the following minimum requirements for submittal:
 - a. Point-to-point wiring/conduit layout for all devices on 10' scale plans.
 - b. Device placement showing all addresses and device ID.
 - c. All panel and equipment terminations.
 - d. All circuit voltage drop and current calculations spread sheets.
 - e. All battery calculation spreadsheets.
 - f. Legend reflecting device description, manufacturer, model number, and backbox requirement.
 - g. Wiring legend reflecting wire function, type, and recommended manufacturer's part number.
 - h. Full sequence of operations.
 - i. Power supply and amplifier calculations.
 - j. Specification data sheets on each individual system component.
 - C. Data Sheets
 1. Submit simultaneously with the shop drawings, complete manufacturer's technical data sheets showing product description, listings, and specs.
 2. Copies of NICET II and IV certifications.
 3. Copy of company UL listing certificate.

4.04 APPLICABLE STANDARDS AND SPECIFICATIONS

- A. The specifications and standards listed below form a part of this specification. The system shall comply with the latest standards.
1. National Fire Protection Association (NFPA), USA:
 - a. No. 13 Sprinkler Systems
 - b. No. 15A Halon 1301 Extinguishing Systems
 - c. No. 17 Dry Chemical Extinguishing Systems
 - d. No. 17A Wet Chemical Extinguishing Systems
 - e. Clean Agent Extinguishing Systems
 - f. National Electrical Code
 - g. No. 70 (Specifically Article 760)
 - h. No. 72 National Fire Alarm Code
 - i. No. 101 Life Safety Code
 2. International Building Code
 3. International Fire Code
 4. American National Standard A17.1
 5. Underwriter's Laboratories Fire Resistance Directory
 6. All other Local and State Building Codes
 7. ADA Public Law 101-336
 8. All requirements of the Authority Having Jurisdiction (AHJ)

1.05 APPROVALS

- A. The system shall have proper listing, approval and labeling from the following nationally recognized agencies:
1. FM Factory Mutual Systems
 2. UL Underwriters Laboratories
- 1.06 SYSTEM FEATURES
1. The system shall include the following features as a minimum:
 - a. During an alarm condition, the LCD annunciator shall display the activated alarm until acknowledged. This shall allow determination of where the last alarm has taken place.
 2. Ground fault detection in wiring on either plus or minus side.
 3. Separate alarm and trouble shall be displayed on the LCD annunciator.
 4. Remote trouble.
 5. Dead front design control panel with all LED alarm trouble and power on indicators and all switches located behind a locked tempered glass door.
 6. Solid state construction.

7. All alarm initiating circuit wiring, signal circuit wiring, speaker circuit wiring shall be supervised.
8. Automatic transfer to standby batteries upon power failure.
9. Lightning and surge protection.

PART 2 - PRODUCTS

2.01 CONDUIT AND WIRE

- A. All fire alarm wiring shall be installed in conduit. Conduit and wiring shall be installed as required by specification sections 26 05 19 and 26 05 34.
1. Wiring shall be in accordance with local, state and National codes (eg. NEC Article 760) and as recommended by the manufacturer of the fire alarm system.
 2. All wire and cable shall be listed and/or approved by a recognized testing agency for use with a protective signaling system.
 3. The fire alarm control panel shall be connected to a separate dedicated branch circuit, maximum 20 amperes from the 120 volt normal power source or from a generator powered source if available.

2.02 MAIN FIRE ALARM CONTROL PANEL

- A. The FACP shall be completely microprocessor based.
- B. System Capacity and General Operation:
 1. Configure size of panel to operate number of SLC circuits in a fashion so that each circuit handles no greater than 10% load of capacity or a maximum of 5 floors per circuit.
 2. The fire alarm control panel shall include a full-featured operator interface and backlit 20-character Liquid Crystal Display (LCD).
 3. The system shall be fully field programmable from the display panel. Panels requiring the use of external keypads for programming and changes are not acceptable.
 4. The FACP shall provide the minimum following features:
 - a. Drift compensation to extend detector accuracy over life.
 - b. Detector sensitivity test, per NFPA 72, Crpt 7.
 - c. Maintenance alert, to warn of excessive smoke detector dirt or dust accumulation.
 - d. Multiple sensitivity levels for alarm, selected by detector.
 - e. System status reports to display and printer. Provide printer.
 - f. Alarm verification, with verification counters.
 - g. Cross zoning with the capability of counting two detectors in alarm.
 - h. Walk test.
 - i. UL-1076 security monitor points.
 - j. Control-by-time with holiday schedules.
 - k. Day/night automatic adjustment of detector sensitivity.
 - l. Device blink control for sleeping areas.
 - m. Releasing capability.
 - n. Fire-Alarm.
 - o. Selectable sensitivity levels, three minimum.
 - p. History storage, with a minimum of 400 events.
 - q. Point Enable/Disable.
 - r. Point Read (status and level of obscuration).
 - s. Output point for connection to any building EMS.
 5. Signaling Line Circuits (SLC)
 1. Each SLC interface shall provide power to communicate with 99 intelligent detectors (ionization, photoelectric or thermal) and 99 intelligent modules (monitor or control).
 2. Each SLC circuit shall not exceed 10% load capacity or cover more than 5 floors.
 6. Serial Interface
 1. The system shall include two serial EIA-232 interfaces. Each interface shall be a means of connecting UL listed Electronic Data Processing (EDP) peripherals.
 - a. One serial port shall support a serial printer.
 - b. One serial port shall support a CRT/ART device.
 - c. The system shall include an EIA-485 port for the serial connection of annunciators and remote LCD displays.
 7. Voice Telephone Command Center (VTCC)
 1. The Voice Telephone Command Center (VTCC) shall contain equipment required for all audio control, telephone system control, signaling and supervisory functions. This shall include:
 - a. Tone generators.
 - b. Digital voice units.
 - c. Microphone for manual paging/all call.
 - d. Main telephone handset.
 2. Speaker/phone circuit annunciation and control modules for manual activation of each individual speaker circuit and each individual microphones/annunciator circuit.
 3. Integral Digital Message Generator with a capacity of up to 60 seconds. The Digital Message Generator shall be capable of primary and secondary messages (30 seconds each). These messages shall be field programmable without the use of additional equipment.
 4. Built in alert tone generators with steady, slow whoop, high/low and chime tone field programmable.
 5. Provide list of evacuation pre-recorded messages and pre-alert tones to owner before ordering for selection.

1. The Voice Control Panel shall have the ability to transmit up to 4 simultaneous evacuation message channels.
2. The one-way voice communications system shall be comprised of a local microphone, single channel audio control microphone generator/digital message player and, if shown on the plans up to eight (8) remote microphones/annunciator panels.
3. Provide individual selector switches and indicator lights for each speaker circuit at the fire command center and at each remote microphone/annunciator.
4. Provide amplifiers. Size the amplifiers to accommodate each speaker being set at a one-watt tap with twenty watts reserve per floor.
5. The two-way telephone system shall be comprised of a master telephone at the main fire alarm panel and remote master telephone as shown on the plans.
6. Provide switch and LED modules for control of individual telephone circuits at the main fire alarm control panel and at any remote locations.
7. Field Charging Power Supply (FCPS): The FCPS is a device designed for use as either a remote 24-volt power supply or used to power Notification Appliances.

1. The FCPS shall offer up to 60 amps (4.0 amps continuous) of regulated 24-volt power. It shall include an integral charger designed to charge 70 amp hour batteries. Provide batteries to support 60-hour standby with ten minutes of alarm indication at the end of this period. Battery charger shall be capable of recharging all batteries to seventy percent capacity in twelve hours.
2. The Field Charging Power Supply shall have four outputs (two Style Y/Z and two Style Y) shall be available for connection to the Notification devices.
3. Provide 20-watt spare capacity in each electrical room on each floor for tenant audible circuits. Locate in a junction box clearly labeled "tenant fire alarm audible circuits."
4. Provide 1 each Field Charging Power Supply (DC) per floor to allow for tenant build-out expansion of NAC devices. At no time shall there exceed 10% load capacity of any FCPS on any of the common levels. Provide power capacity as follows:

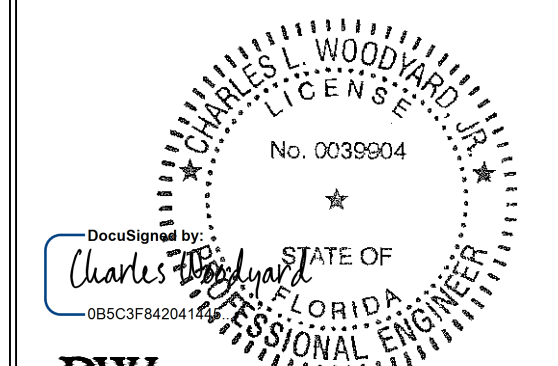
Floor Size	Capacity
425,000 gross sq. ft.	6 amps DC
25,000 to 35,000 gross sq. ft.	10 amps DC
35,000 gross sq. ft. and greater	consult engineer

5. Locate audible (where required) and visual power supplies adjacent to one another and in a location within each room approved by the engineer.
6. Provide battery capacity and amplifier capacity in the main fire control panel for addition of tenant devices described above.
7. Audio Amplifiers
 1. The audio amplifiers will provide audio power (8 25 volts RMS) for distribution to the speaker circuits.
 2. The amplifier shall include audio input and amplified output, supervisor's back up input, and automatic switchover to back up (if primary amplifier should fail).



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A
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BY

PATTILLO
Industrial Real Estate

Duval County, Florida

DATE	DESCRIPTION
09 JANUARY 2019	ISSUED FOR PERMIT
09 JANUARY 2019	ISSUED FOR PERMIT

DATE	DESCRIPTION

Date Project No.
09 JANUARY 2019 2018245.00

Sheet Title
SPECIFICATIONS - ELECTRICAL

Sheet No.
E005

Released for Construction
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- 3. Amplifiers shall be available in 30, 100, and 120-watt versions.
- 4. Provide amplifiers sized to accommodate each speaker being set at a one-watt tap with twenty watts reserve per floor.
- 5. Hardwired indicating appliance circuits (fire lights and speakers) shall be Style Y per NFPA 72. Provide one light circuit per floor and provide one speaker circuit per floor, one speaker circuit per stairwell and, one speaker circuit per elevator cab.
- 6. Hardwired telephone circuits shall be Style Y per NFPA 72. Provide one fire fighters telephone circuit per elevator, one per elevator lobby, one per stairwell and, one for the fire pump room.
- 7. Provide at least two on board relays to operate door holders etc.
- 8. Provide necessary modules to operate remote supervised relays for fan control, elevator control, etc.
- H. Provide and install ceiling mounted smoke detector within 5 horizontal feet of FACP.

2.03 SYSTEM COMPONENTS

- A. Speakers
 - 1. All speakers shall operate on 25 VRF's or with field selectable output taps from 0.25 to 2.0 Watts.
 - 2. Speakers in corridors and public spaces shall produce a nominal sound output of 84 dBA at 10 feet (3m) when set at one watt as measured per UL Standard 1480.
 - 3. Frequency response shall be a minimum of 400 HZ to 4000 HZ.
 - 4. The back of each speaker shall be sealed to protect the speaker cone from damage and dust.
 - 5. Speakers shall be bone white in color.
 - 6. Provide a unit cost to add two speakers per 25,000 sq.ft. This unit cost shall be applied to additional speakers that may be required at the request of the fire marshal during field inspections.
- B. Strobe Lights
 - 1. All Strobe Lights shall meet the requirements of the ADA, UL Standard 1971.
 - 2. Strobe intensity and flash rate shall meet the requirements of UL 1971, ADA and NFPA 72.
 - 3. Combination Horn/Strobe devices shall meet all above requirements as well as horn/bell requirements listed herein.
 - 4. Strobes unit shall mount to a four inch square electrical outlet box. The strobe light shall have a white lens with red "FIRE" imprinted on it. When the unit is combination speaker/strobe, the speaker portion shall comply with the requirements stated in A. above.
 - 5. All strobes shall have selectable output intensities from 15 to 110 cd. The intensity selected shall meet NFPA 72 requirements for the layout shown on the drawings.
 - 6. Strobe spacing shall be as follows:
 - a. Strobes shall be spaced a maximum of 100'-0" apart in corridors and within 15'-0" of the end of every corridor to comply with the requirements of NFPA 72.
 - b. Strobes in open areas shall be provided to comply with NFPA 72.
 - c. Provide strobes in public spaces such as restrooms, kitchens, breakrooms, cafeterias, conference rooms, training rooms and any other space where six or more people are likely to gather.
 - 7. Provide a unit cost to add 5 strobes including required signal circuits per 25,000 s.f. This unit cost shall be applied to additional strobes that may be required at the request of the fire marshal during field inspections.

- B. Manual Fire Alarm Stations
 - 1. Manual fire alarm stations shall be dual-action, non-coded, non-break glass type, equipped with key lock so that they may be tested without operating the handle.
 - 2. Stations must be designed such that after an actual activation, they cannot be restored to normal except by key reset. Units shall be master keyed with control equipment.
 - 3. An operated station shall automatically condition itself so as to be visually detected, as operated, at a minimum distance of 100 feet (30.5 m) front or side. This shall be achieved with the pull lever remaining at a right angle to the station body until reset.
 - 4. The station body shall be constructed so that chips and scratches will not expose metal.
 - 5. Manual fire alarm stations shall be located as required by NFPA 101 and the Building Code.

- C. Duct Smoke Detectors
 - 1. Duct smoke detectors shall be addressable type with visual alarm and power indicators. Provide remote LED/test stations where duct detectors are mounted in non-visible areas such as above ceiling.
 - 2. Each detector shall be installed upon the composite supply/return air duct(s) with properly sized air sampling tubes where required. Provide smoke detectors in each return air path of any mechanical equipment that moves air in excess of 1000 CFM to meet the requirements of NFPA 72 and 90A. Provide smoke detectors in each supply and return air path of any mechanical equipment that moves air in excess of 15,000 CFM to meet the requirements of NFPA 72 and 90A. Confirm quantities of smoke detectors required for mechanical equipment with Division 23. Room detectors may be used to accomplish smoke detection in the supply/return air paths if the application permits.
 - 3. Each duct detector shall be installed along with addressable control module as needed for fan shutdown and/or smoke control. Detectors zoned with other devices shall be capable of operating its control module even if all other devices on their circuit have gone into alarm.
 - 4. Duct detectors shall be provided by this division, installed by the mechanical contractor and electrically connected to the fire alarm system by the electrical contractor.
- D. Smoke Dampers
 - 1. Smoke dampers shall be provided by Division 23.
 - 2. Provide a smoke detector at each smoke damper location to meet the requirements of NFPA 72. Confirm quantities and locations of smoke detectors required for smoke dampers with Division 23. Provide 120 volt power as required for operation of smoke dampers.

- E. LCD Alphanumeric Display Remote Annunciator
 - 1. The alphanumeric display annunciator shall be a supervised, backlit LCD display containing a minimum of eighty (80) characters for alarm annunciation in clear English text. Annunciator shall be located as shown on the drawings or at the location selected by the local fire department.
 - 2. The LCD annunciator shall display all alarm, supervisory, and trouble conditions from the FACP via the serial card.

2.04 SYSTEM COMPONENTS - ADDRESSABLE DEVICES

- A. Addressable Devices - General
 - 1. Detectors shall be intelligent (analog) and addressable, and shall connect with two wires to the fire alarm control panel signaling line circuits.
 - 2. Addressable photoelectric smoke and thermal detectors shall provide alarm and power/polling LEDs. LED(s) shall flash under normal conditions and LED(s) shall be placed into steady illumination by the control panel, indicating an alarm condition.
 - 3. The fire alarm control panel shall permit detector sensitivity adjustment through field programming of the system.
 - 4. Detectors will operate in an analog fashion, where the detector simply measures its designed environment variable and transmits an analog value to the FACP based on real-time measured values. The FACP software, not the detector, shall make the alarm/normal decision, thereby allowing the sensitivity of each detector to be set in the FACP program and allowing the system operator to view the current analog value of each detector.
 - 5. All field wiring is to be terminated on the detector base, not on the sensor head. Addressing of detectors shall be via integral decade switches built into sensor. Devices requiring separate addressing means will not be accepted.
 - 6. Any additional equipment required to program devices are not acceptable.

- B. Intelligent Photoelectric Smoke Detector
 - 1. The detectors shall use the photoelectric (light-scattering) principal to measure smoke density and shall, on command from the control panel, send data to the panel representing the analog level of smoke density.
 - 2. Provide photoelectric smoke detector heads with bases as required. Detectors shall be of the solid state photoelectric type utilizing a stable LED light source and a silicone photo diode as the receiving element to form a highly accurate means of smoke detection. Internal detector circuits shall be shielded against electrical interference and resistant to transients, noise and RF interference. Detector shall be low profile, the complete unit including base shall not exceed 10 1/2 inches in depth. Detector shall have a dual purpose red LED that flashes continuously to show that the device is operating and, that comes on steady to show that the device is in alarm.
 - 3. Nominal detector sensitivity shall be 14% per foot obscuration with a range of 1% to 184%. Regardless of sensitivity settings, the detector's stability shall be unaffected by high air velocity. No radioactive materials shall be used.
 - 4. Provide smoke detectors in elevator lobbies, at stairwell doors, in telephone rooms, electrical rooms, mechanical rooms, elevator pits, the top of the elevator shaft, adjacent to the fire alarm control panel, fire pump room, computer rooms as defined by NFPA 90, pump rooms, UFB rooms and elevator machine rooms.

- C. Linear Beam Smoke Detector
 - 1. Each beam shall be comprised of a solid state infrared (IR) transmitter, photodiode receiver and microprocessor based control module. Should IR output be attenuated below the desired alarm

obscuration level as a result of smoke interference an alarm will be annunciated. Total obscuration of the beam is annunciated as a beam blockage trouble signal. All wiring from the control module to the transmitter and receiver heads is supervised.

- 2. The projected beam smoke detector system shall have an operating range of 10M (33 ft.) to 100M (330 ft.) and be listed for spacing the beam 30 ft. from a wall and 60 ft. on center. The transmitter and receiver optical elements shall be adjustable +/- 90 degrees horizontally and +/- 30 degrees vertically. The sensitivity shall be field selectable from 1% to 50% obscuration.

- D. Intelligent Thermal Detectors
 - 1. Thermal detectors shall be intelligent addressable devices rated at 135 degrees Fahrenheit (58 degrees Celsius) and have a rate-of-rise element rated at 15 degrees F (3.4 degrees C) per minute. It shall connect via two wires to the fire alarm control panel signaling line circuit.

- E. Addressable Dry Contact Monitor Module
 - 1. Addressable monitor modules shall be provided to connect one supervised IDC zone of conventional alarm initiating devices (any N.O. dry contact device such as flow, tamper, release systems, etc.) to one of the fire alarm control panel 8LCs.
 - 2. The IDC zone shall be suitable for Style D or Style B operation. An LED shall be provided that shall flash under normal conditions, indicating that the monitor module is operational and in regular communication with the control panel.
 - 3. For difficult to reach areas, the monitor module shall be available in a miniature package and shall be no larger than 2-3/4 inch (70 mm) x 1-1/4 inch (31.7 mm) x 1/2 inch (12.7 mm). This version need not include Style D or an LED.
 - 4. Monitor module shall be provided for all sprinkler flow and tamper switches. Switches are furnished and installed by others and electrically connected to the fire alarm system by the electrical contractor. Verify quantities and locations and coordinate installation of devices required with fire protection shop drawings. Provide connections to devices per fire protection shop drawings.

- F. Addressable Control Module:
 - 1. Addressable control modules shall be provided to supervise and control the operation of one conventional NACs of compatible, 24 VDC powered, polarized audio/visual notification appliances. For fan shutdown and other auxiliary control functions, the control module may be set to operate as a dry contact relay. Each relay shall have a red LED mounted on its cover to indicate if that relay has been activated.
 - 2. The control module NAC may be wired for Style Z or Style Y (Class A/B) with up to 1 amp of inductive A/V signal, or 2 amps of resistive A/V signal operation, or as a dry contact (Form-C) relay. The relay coil shall be magnetically latched to reduce wiring connection requirements, and to insure that 100% of all auxiliary relay or NACs may be energized at the same time on the same pair of wires.

- G. Door Holders
 - 1. Provide door holders for wall mounting and for floor mounting. Door holders shall operate on 24 volt dc power and each holder shall not draw more than 70 millamps of power.
 - 2. Coordinate quantities of door holders required with architect's door schedule.

2.05 BATTERIES

- A. The batteries shall be sealed, 12 volt nominal (two required).
- B. The battery shall have sufficient capacity to power the fire alarm system for the time required in NFPA 72. This time shall be based on the type of system installed. At the end of this period the system shall be capable of operating all alarm notification appliances used for evacuation or to direct aid to the location of an emergency for 5 minutes upon a normal AC power failure.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Provide all equipment, wiring, conduit and outlet boxes required for the erection of a complete and operating system in accordance with applicable local, state and national codes, the manufacturer's recommendations, these plans and specifications. Color code shall be used throughout.

3.02 TEST

- A. The manufacturer's authorized representative shall provide supervision of final system panel connections, perform a complete functional test of the system and submit a written report to the contractor attesting to the proper operation of the system.

3.03 FINAL INSPECTION

- A. Upon completion of the installation, the electrical contractor shall provide to the architect, with a copy to the manufacturer's representative, a signed written statement attesting that all system equipment was installed in accordance with these specifications and in accordance with wiring diagrams, instructions and directions provided to the contractor by the manufacturer.

3.04 INSTRUCTION

- A. Instruction shall be provided as required for operating the system. Hands-on demonstrations of the operation of all system components shall be provided and shall include one session for a period of 8 hours. Additional time that may be required for end-user training will be at added cost to owner.

3.05 GUARANTEE

- A. All equipment and wiring shall be guaranteed against defects in materials and workmanship for a two year period from the start up and beneficial use of the system. Warranty service for the equipment shall be provided by the manufacturer's factory trained representative during normal working hours, Monday through Friday excluding holidays. Emergency service provided at times other than as stipulated above shall be available from the same source at additional cost to the owner.

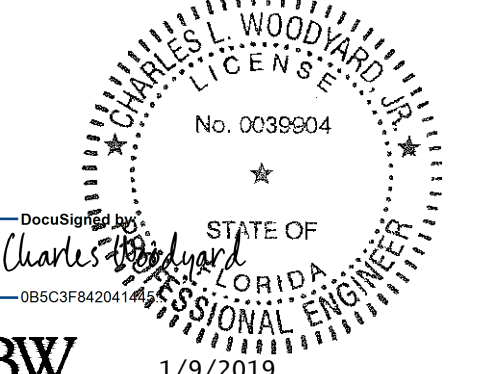
3.06 INSPECTIONS

- A. Upon satisfactory completion of the system test, the manufacturer's representative shall present for the owner's consideration, a proposal to provide semi-annual inspection and tests of the system. END OF SECTION



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Duval County, Florida

Print Record

NO.	REVISION	DATE	BY	APP. REVIEW BY
01	ISSUE FOR PERMIT	09 JANUARY 2019		

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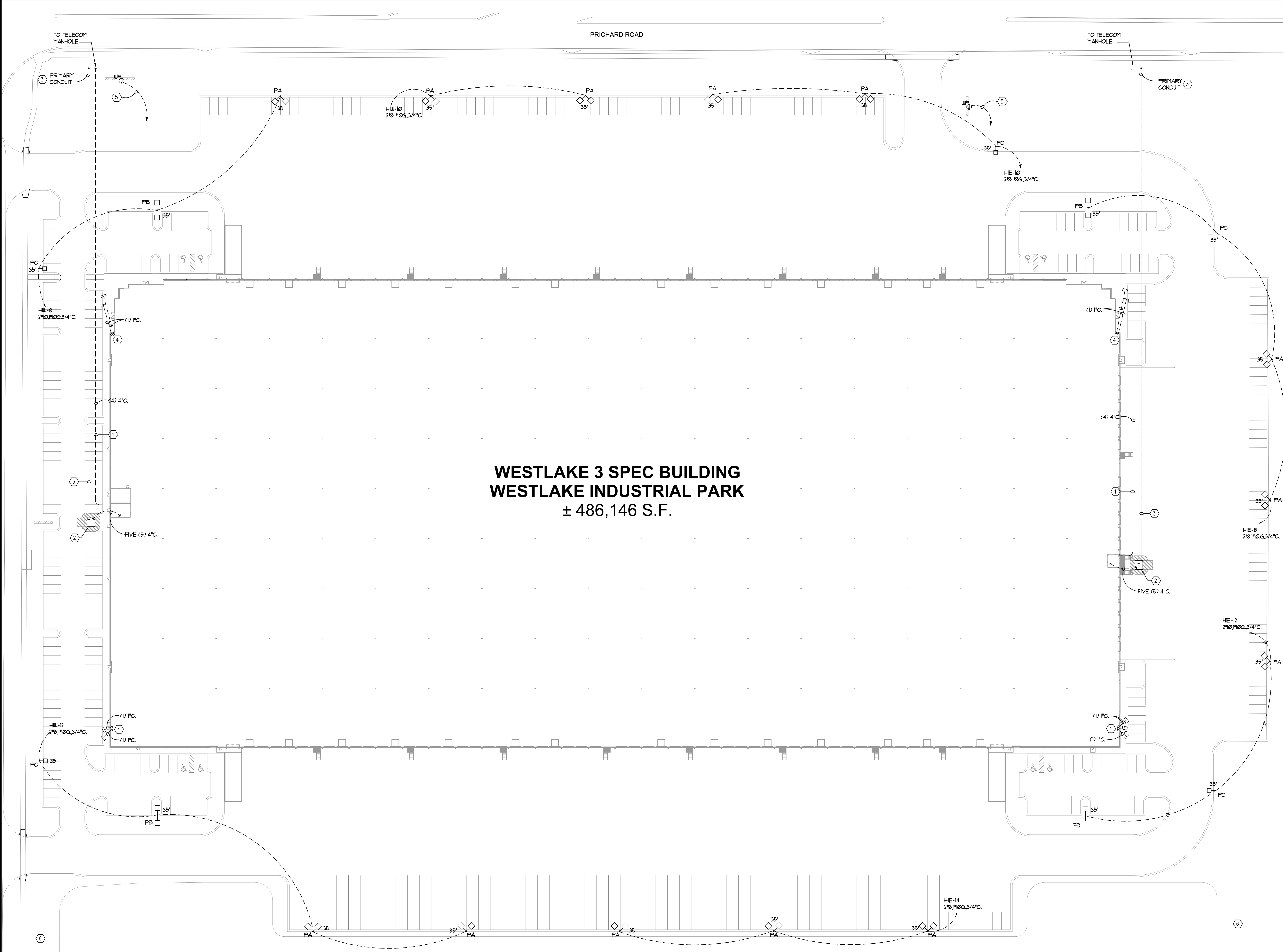
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Date 09 JANUARY 2019 Project No. 2018245.00

Sheet Title SPECIFICATIONS - ELECTRICAL

Sheet No. E006

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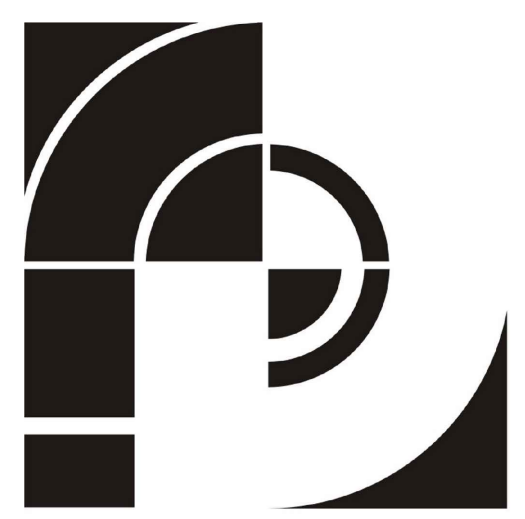
**WESTLAKE 3 SPEC BUILDING
WESTLAKE INDUSTRIAL PARK
± 486,146 S.F.**

1 SITE PLAN - ELECTRICAL
E100
1" = 40'

- GENERAL NOTES**
(APPLY THIS SHEET ONLY)
- COORDINATE ROUTING OF ALL UNDERGROUND CONDUIT WITH CIVIL ENGINEER AND UTILITIES.
 - LIGHTING FIXTURES ARE NOT DRAWN TO SCALE FOR VISIBILITY. DIMENSIONS INDICATED ADJACENT POLE-MOUNTED FIXTURES ARE THE MOUNTING HEIGHT ABOVE SURFACE LEVEL. REFER TO SHEET E001 FOR LIGHTING FIXTURE SCHEDULE.
 - COORDINATE INSTALLATION OF CONDUITS FOR SECURITY DEVICES INCLUDING CAMERAS AND EMERGENCY CONTROL STATIONS WITH SECURITY AND ACCESS CONTROL CONTRACTOR PRIOR TO INSTALLATION.
 - PROVIDE PULL-STRINGS FOR ALL EMPTY CONDUITS.
 - REFER TO THE E-500 SERIES SHEETS FOR ELECTRICAL RISER DIAGRAMS AND PROVIDE UNDERGROUND CONDUITS FOR EQUIPMENT AS INDICATED.

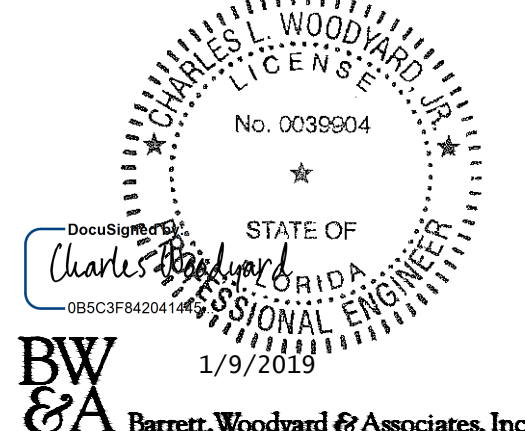
- LEGEND NOTES**
(APPLY TO THIS SHEET ONLY)
- PROVIDE FOUR (4) 4" C. UNDERGROUND TO PROPERTY LINE FOR INCOMING TELECOMMUNICATIONS CABLEING. STUB-UP WITHIN TELECOM ROOM ON FIRST FLOOR. PROVIDE THREE (3) 1" INNER-DUCT IN EACH CONDUIT. COORDINATE INSTALLATION WITH TELEPHONE SERVICE PROVIDER AND VERIFY TERMINATION POINTS. PROVIDE LONG SWEEPING EL'S, PULL BOXES, HANDHOLES, PULL STRINGS, DEPTH, ETC. PER TELEPHONE SERVICE PROVIDER'S SPECIFICATIONS. ALLOW FOR NO MORE THAN 180° OF BENDS BETWEEN HANDHOLES. SLOPE AND SEAL CONDUITS TO PREVENT CONDENSATION AND INTRUSION WATER AND GASES INTO THE BUILDING.
 - PROVIDE REINFORCED CONCRETE PAD FOR POWER CO. TRANSFORMER. CONSTRUCT ON LEVEL SURFACE PAD PER POWER CO. SPECIFICATIONS AND MAINTAIN REQUIRED WORKING CLEARANCES. COORDINATE WITH POWER COMPANY FOR EXACT LOCATION AND DIMENSIONS INCLUDING WINDOWS FOR CONDUIT STUB-UPS, AND CLEARANCES.
 - COORDINATE WITH POWER CO. FOR CONDUITS REQUIRED FOR PRIMARY CONDUCTORS SERVING PAD-MOUNTED TRANSFORMERS AND PROVIDE QUANTITY AND SIZE AS REQUIRED. ROUTE AND INSTALL PER POWER CO. SPECIFICATIONS.
 - PROVIDE ONE (1) 1" C. UNDERGROUND TO EACH FUTURE ELECTRIC VEHICLE CHARGING LOCATION AS SHOWN. STUB UP TIGHT TO INSIDE OF WALL AT LOCATION SHOWN ON PLAN. PROVIDE PULLSTRING IN ALL EMPTY CONDUITS. CAP WITH TEMPORARY SEALS TO PREVENT INTRUSION OF DIRT AND DEBRIS. COORDINATE EXACT TERMINATION LOCATION WITH ARCH.
 - PROVIDE WEATHER PROOF JUNCTION BOX AND ONE (1) 1" C. UNDERGROUND FOR POWER TO MONUMENT SIGN. CAP WITH TEMPORARY SEALS TO PREVENT INTRUSION OF DIRT AND DEBRIS.
 - PROVIDE GROUNDING FOR 6' TALL CHAIN LINK FENCE IN JEA EASEMENT. COORDINATE EXACT LENGTH OF FENCE TO BE GROUNDED WITH CIVIL AND JEA. REFER TO GROUNDING NOTES BELOW.

- GROUNDING NOTES:**
- PROVIDE AN COMPLETE ELECTRICAL GROUNDING SYSTEM FOR THE PORTION OF THE CHAIN LINK FENCE IN THE JEA (CITY ELECTRIC COOP) EASEMENT (~500FT) WITH A MEASURED GROUND RESISTANCE OF 5 OHMS OR LESS. SYSTEM IS SEPARATE FROM THE BUILDING GROUNDING SYSTEM.
 - PROVIDE A MINIMUM OF FIVE (5) GROUND RODS SPACED EVENLY OVER THE SPAN OF THE FENCE AT A DISTANCE NO MORE THAN 36' AWAY FROM THE FENCE. DRIVE GROUND RODS TO A MINIMUM OF 60FT. GROUND RODS SHALL BE 3/4" DIAMETER, 10' LONG, COPPER CLAD 3-1/8" O.D. DRUM CARBON STEEL LISTED TO UL 467 WITH ELECTROLYTIC OR MOLTEN WELD BOND AND CONICAL TAPER ON PENETRATING END. PROVIDE EACH GROUND ROD WITH A TEST WELL WITH A PRECAST CONCRETE HANDHOLE AND CAST IRON COVER (BROOKS PRODUCTS SERIES 36 - 10" X 17" OR EQUAL) LABELED FOR "GROUND TEST WELL".
 - CONNECT GROUND RODS WITH BARE #2/DWG GROUND CONDUCTOR BURIED AT 24 TO 36 INCHES BELOW BASE WITHIN 36" OF THE FENCE. PROVIDE EXOTHERMIC CONNECTIONS AND THE MOST DIRECT PATH POSSIBLE FOR GROUND CONDUCTOR BETWEEN GROUND RODS.
 - PROVIDE BAR #2AWG BONDING JUMPERS BETWEEN FENCE POSTS AND BURIED #2/DWG GROUND CONDUCTOR AT A MAXIMUM SPACING OF 50'; INCLUDE BONDING JUMPER AT EACH END, EACH GATE POST (BOTH SIDES), AND EACH CORNER. PROVIDE BURINY TYPE C68 COPPER ALLOY GROUNDING CLAMP FOR THE FENCE POSTS AND EXOTHERMIC CONNECTION BETWEEN #2AWG BONDING JUMPERS AND THE #2/DWG GROUNDING CONDUCTOR. PROVIDE PVC SLEEVES AND SEALANT AS REQUIRED.
 - PROVIDE AN UNDERGROUND BONDING JUMPER (#2/DWG) TO COVER THE SWING OF GATES AT SIDES PLUS 4'. THE BONDING JUMPER SHOULD FORM A LOOP WITH THE #2/DWG MAIN GROUNDING CONDUCTOR TO THE INSIDE. THE LENGTH OF THE JUMPER LOOP SHALL BE FOR A DISTANCE EQUAL TO THE SWING OF THE GATES OPEN AT 180DEG PLUS 4' ON EACH SIDE.
 - PROVIDE SPLIT-BOLTS FOR EACH STRAND OF BARBED WIRE AND CONNECT A #2AWG JUMPER TO THE GROUND CLAMP FOR EACH FENCE POST REQUIRED TO BE DIRECTLY BONDED TO THE MAIN GROUNDING CONDUCTOR.
 - PROVIDE A MINIMUM #2AWG FLEXIBLE BONDING JUMPER BETWEEN EACH GATE POST AND GATE. MINIMUM 12" IN LENGTH AS REQUIRED TO OPEN THE GATES.
 - GROUND CONDUCTORS SHALL BE SOFT DRAWN, TIN-PLATED STRANDED COPPER.
 - PROVIDE GROUND RESISTANCE TEST USING THE 3-POINT FALL OF POTENTIAL METHOD TO SHOW A MAXIMUM AT 50HMS AT EACH TEST WELL WITH DOCUMENTATION FROM AN INDEPENDENT CERTIFIED TESTING AGENCY. THE 50HM MAXIMUM SHALL BE GUARANTEED BY THE CONTRACTOR FOR 3 YEARS. PROVIDE ADDITIONAL GROUND RODS WHERE REQUIRED TO LOWER THE RESISTANCE. GROUND ENHANCEMENT MATERIALS MAY BE USED TO LOWER THE RESISTANCE WHERE APPROVED BY JEA.
 - REFER JEA STANDARDS FOR ADDITIONAL GROUNDING NOTES AND DETAILS (ATTACHED) AND COORDINATE WITH JEA FOR AN APPROVED INSTALLATION.



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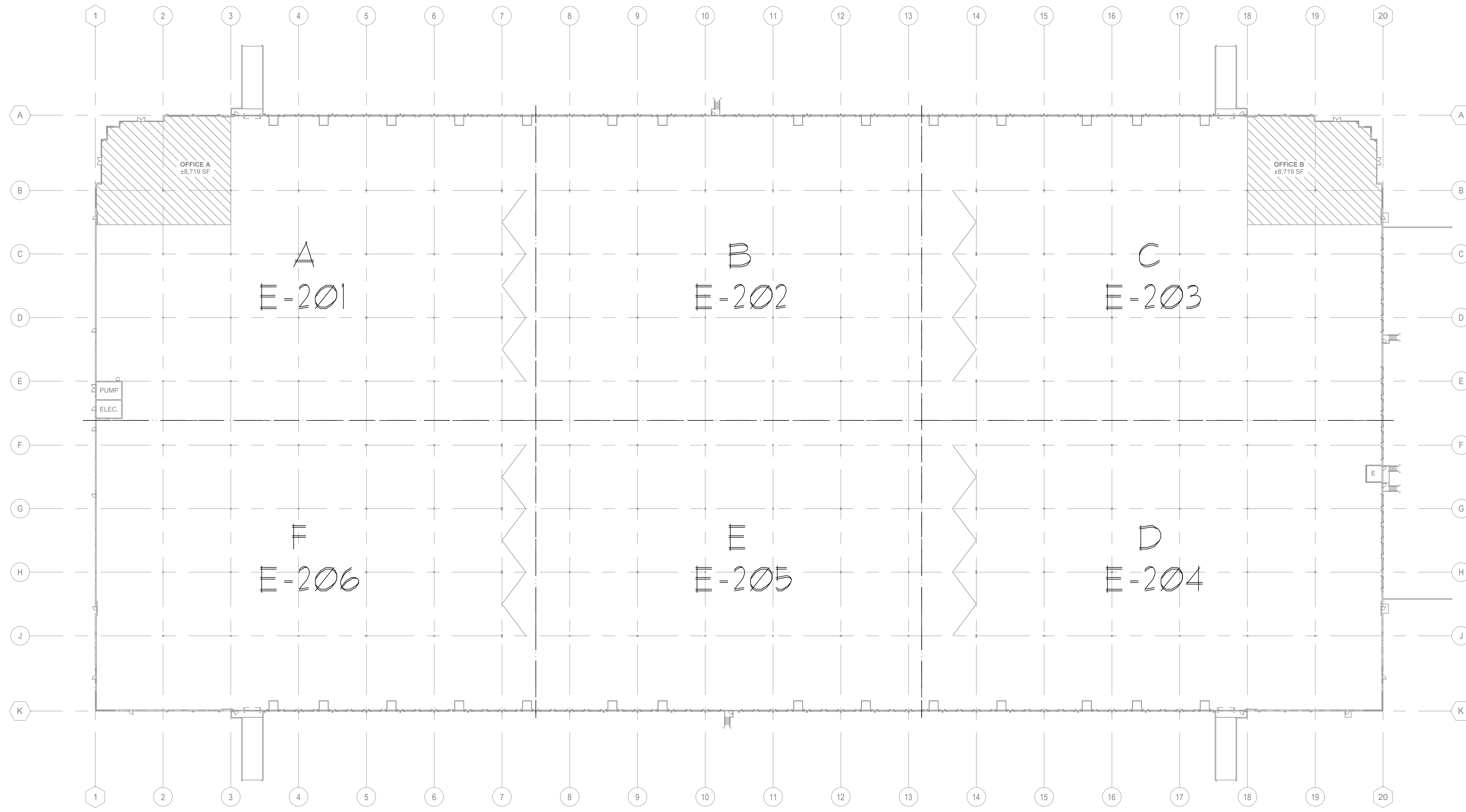
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01	ISSUED FOR PERMIT	09 JANUARY 2019		

Revision Record

NO.	REVISION	DATE	BY	REVISION

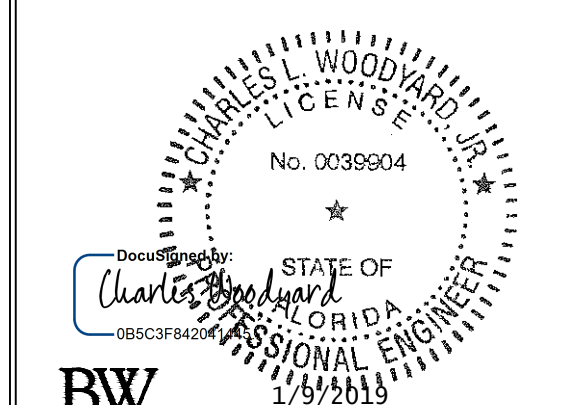
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Sheet Title: **SITE PLAN - ELECTRICAL**
Sheet No.: **E100**
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1 OVERALL FLOOR PLAN - ELECTRICAL
E200 1" = 40'-0"



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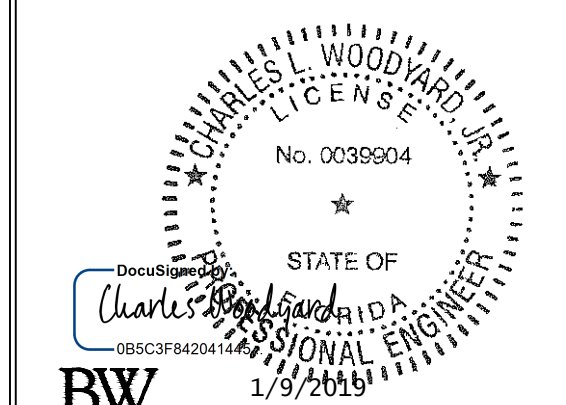
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Sheet Title: OVERALL FLOOR PLAN - ELECTRICAL
Sheet No.: **E200**
 Released for Construction
 Not Released for Construction



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Job #181002

STATE OF FLORIDA
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A
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WAREHOUSE
AT
WESTLAKE 3

DEVELOPED
BY
PATTILLO
Industrial Real Estate

Duval County, Florida

Print Record

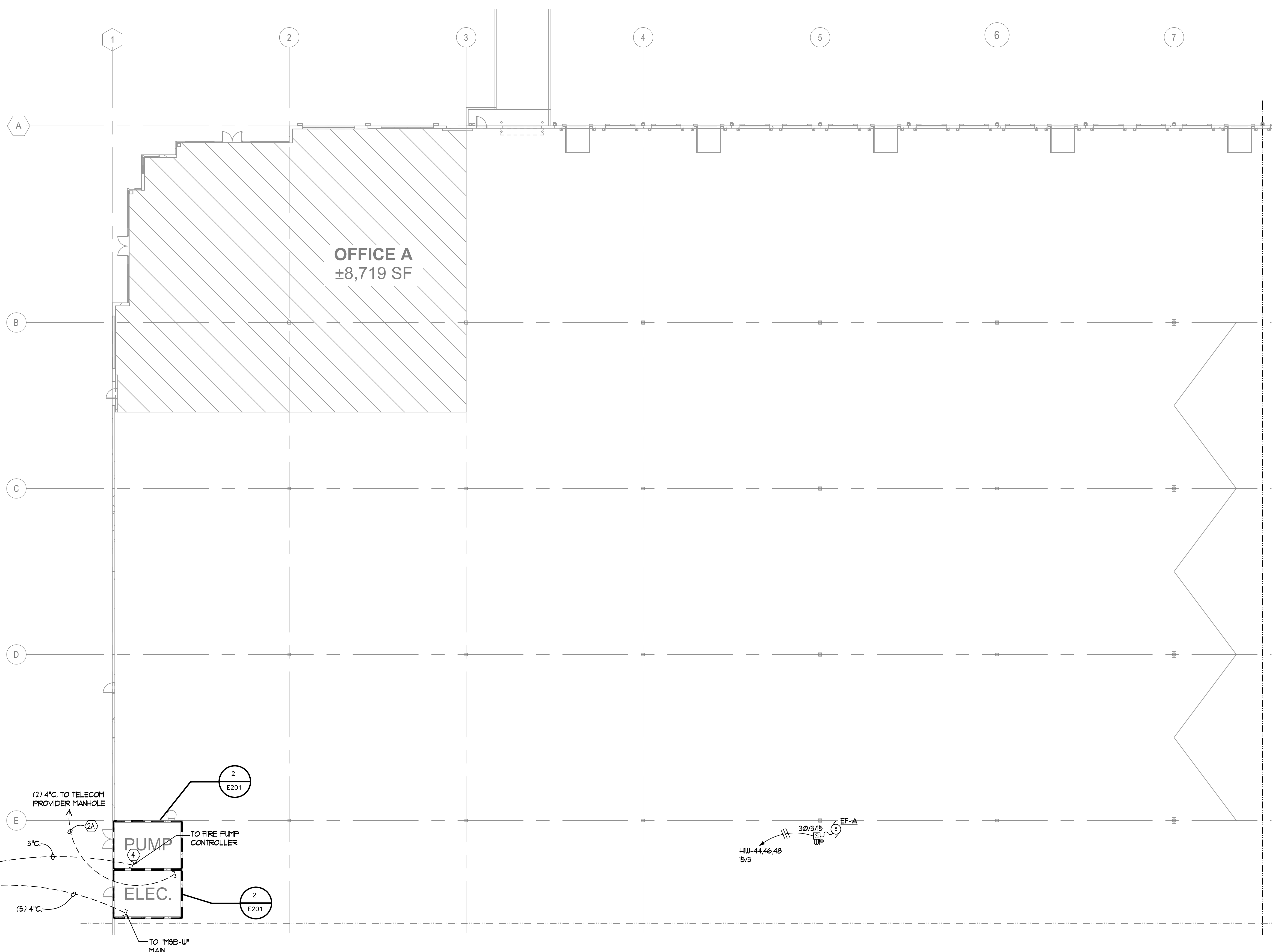
NO.	REVISION	DATE	BY	REVISION
01	REVISION 2019	09 JANUARY 2019	2018245.00	
02				
03				

Revision Record

NO.	REVISION	DATE	BY	REVISION

Date: 09 JANUARY 2019 Project No.: 2018245.00
Sheet Title: FLOOR PLAN - PART A - ELECTRICAL
Sheet No.:

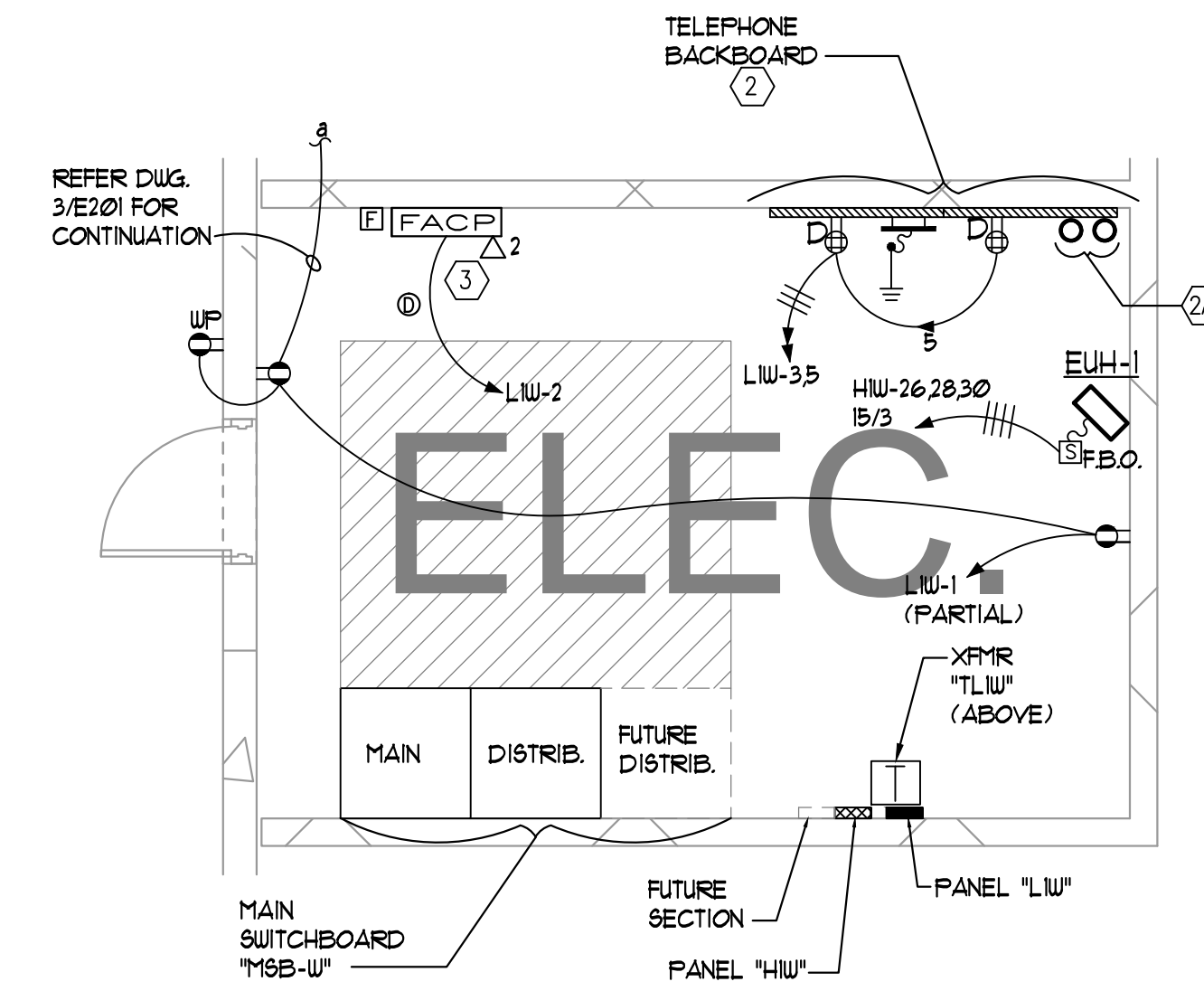
E201
 Released for Construction
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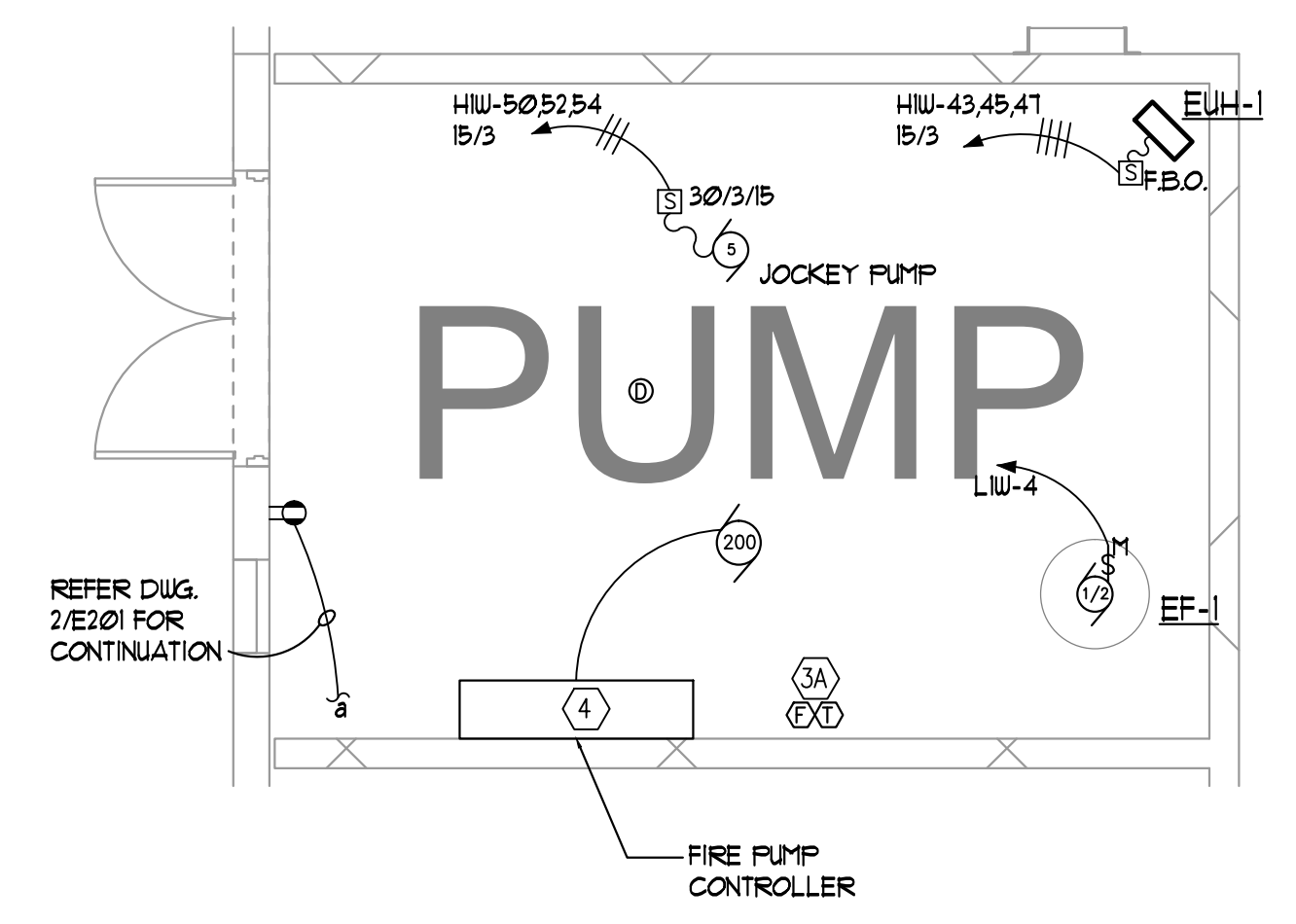
- GENERAL NOTES**
(APPLY THIS SHEET ONLY)
- PROVIDE UL-LISTED HANDLE-TIES BETWEEN 1-POLE CIRCUIT BREAKERS SERVING PHASE CONDUCTORS "HOTS" WHICH SHARE A NEUTRAL CONDUCTOR IN ORDER TO SIMULTANEOUSLY DISCONNECT POWER TO EACH CIRCUIT IN GROUPS OF 2 OR 3.
 - VERIFY CONNECTION REQUIREMENTS TO HVAC, PLUMBING, AND FIRE PROTECTION EQUIPMENT REQUIRING POWER WITH ASSOCIATED SUBCONTRACTOR PRIOR TO INSTALLATION. EQUIPMENT DIFFERING FROM BASIS OF DESIGN MAY VARY. MODIFY CONNECTIONS SHOWN ON PLANS TO MATCH MANUFACTURER'S REQUIREMENTS ACCORDINGLY. DISCONNECTS LABELED F.B.O. ARE FURNISHED BY OTHERS.

- LEGEND NOTES**
(APPLY THIS SHEET ONLY)
- PAD-MOUNTED TRANSFORMER PROVIDED THE POWER COMPANY. REFER TO POWER COMPANY'S GUIDELINES AND SPECIFICATIONS AND DETERMINE CONTRACTOR'S RESPONSIBILITIES AND PROVIDE ALL LABOR, COMPONENTS, AND MATERIALS ACCORDINGLY. PROVIDE REINFORCED CONCRETE PAD APPROVED BY THE POWER COMPANY. EXCAVATE, FILL, AND COMPACT EARTH TO ESTABLISH A SECURE AND LEVEL FOUNDATION WHILE MAINTAINING WORKING CLEARANCES. VERIFY LOCATION, ORIENTATION, AND SIZE AND PLACEMENT OF PRIMARY AND SECONDARY WINDOWS WITH THE POWER COMPANY PRIOR TO INSTALLATION. PROVIDE GROUND ROD AND PROTECTIVE BOLLARDS AS REQUIRED BY THE POWER COMPANY. COORDINATE WITH NOVEC FOR ROUTING OF PRIMARY FEEDER.
 - PROVIDE 4' X 8' SHEETS OF 3/4" THICK FIRE-RATED PLYWOOD OVER WALL AS INDICATED FOR TELECOM BACKBOARD. PAINT TO MATCH WALLS. PROVIDE 12-PORT GROUND BAR (PANDUIT UG82/0 SERIES OR EQUAL) WITH 1#2AWG INSULATED COPPER GROUND WIRE TO BUILDING SERVICE GROUNDING ELECTRODE SYSTEM.
 - PROVIDE TWO (2) 4" C. UNDERGROUND TO PROPERTY LINE FOR INCOMING TELECOMMUNICATIONS CABLEING. STUB-UP AT TELECOM BACKBOARD. COORDINATE INSTALLATION WITH TELEPHONE SERVICE PROVIDER AND DETERMINE TERMINATION POINT. PROVIDE LONG SWEEPING EL'S, PULL BOXES, HANDHOLES, PULL STRINGS, DEPTH, ETC. PER TELEPHONE SERVICE PROVIDER'S SPECIFICATIONS. ALLOW FOR NO MORE THAN 180° OF BENDS BETWEEN HANDHOLES. SLOPE AND SEAL CONDUITS TO PREVENT CONDENSATION AND INTRUSION WATER AND GASES INTO THE BUILDING. VERIFY ROUTING WITH SITE CONTRACTOR.
 - PROVIDE HONEYWELL SILENT KNIGHT 6820 FIRE ALARM CONTROL PANEL AS REQUIRED BY OWNER. TWO (2) ANALOG PHONE LINES ARE REQUIRED FOR FIRE DEPARTMENT DIALER. PROVIDE LOCKING MECHANISM TO LOCK CIRCUIT BREAKER SERVING FIRE ALARM CONTROL PANEL (FACP) IN CLOSED (ON) POSITION.
 - COORDINATE WITH FIRE PROTECTION CONTRACTOR FOR QUANTITY AND INSTALLATION OF FLOW AND TAMPER SWITCHES AND PROVIDE CONNECTIONS AS REQUIRED TO FIRE ALARM CONTROL PANEL.
 - REFER TO SHEET E500 FOR CONNECTION REQUIREMENTS TO FIRE PUMP. COORDINATE INSTALLATION OF FIRE PUMP CONTROLLER WITH FIRE PROTECTION CONTRACTOR. COORDINATE WITH FIRE PROTECTION CONTRACTOR FOR LOCATION OF THE FIRE PUMP CONTROLLER AND STUB-UP CONDUIT FOR SERVICE FEEDER NEAREST THE REQUIRED CONNECTION POINT. PROVIDE FINAL CONNECTION TO FIRE PUMP AS REQUIRED.
 - ONLY THOSE CONNECTIONS REQUIRED FOR EQUIPMENT AND DEVICES IN LOCATED IN THE FIRE PUMP ROOM SHALL ENTER THE ROOM. CONNECTIONS REQUIRED FOR DEVICES AND EQUIPMENT LOCATED OUTSIDE THE FIRE ROOM SHALL BE ROUTED OUTSIDE OF THE ROOM AND NOT PASS THROUGH.

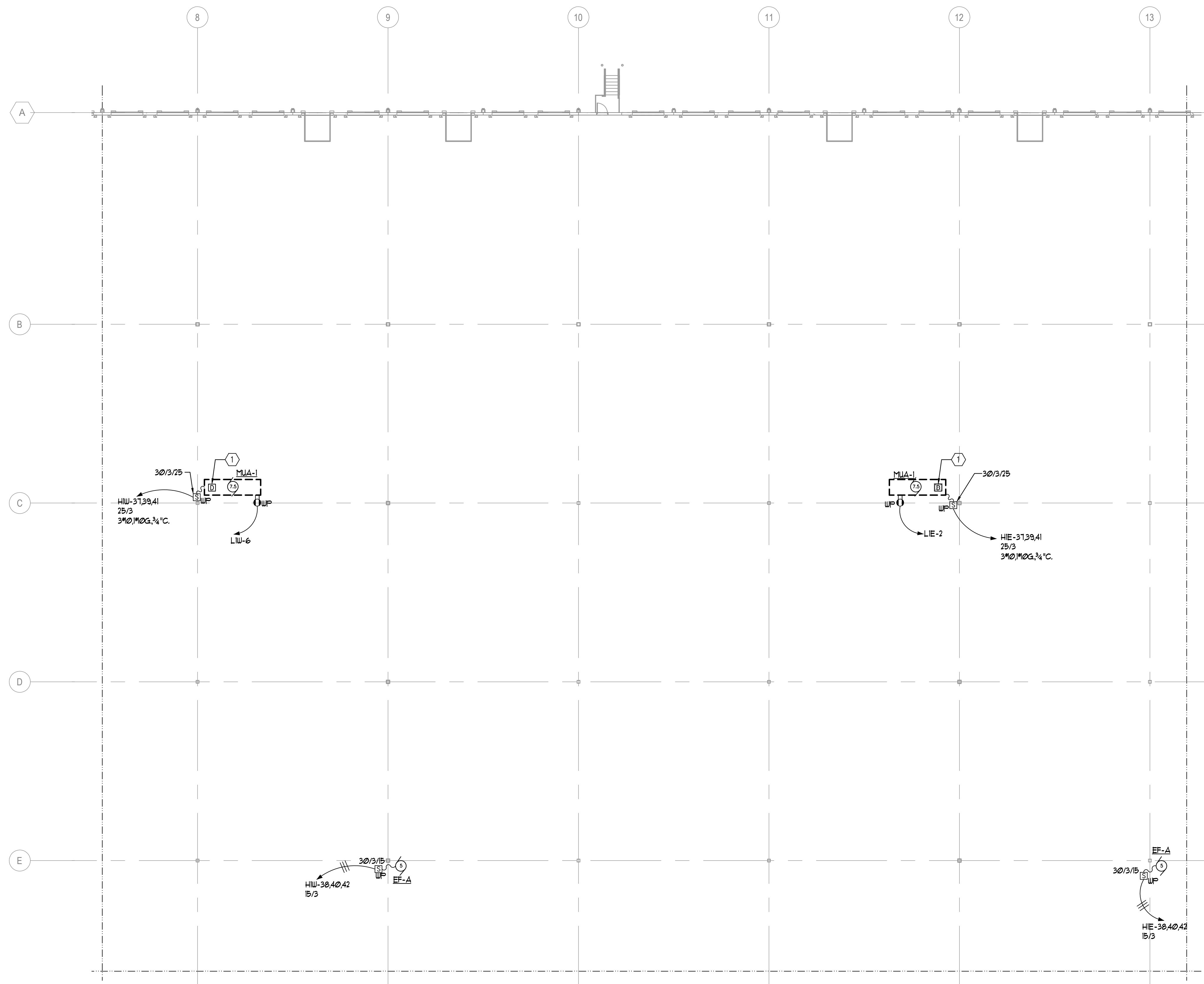
1 FLOOR PLAN - PART A - ELECTRICAL
E201 1/16" = 1'-0"



2 MAIN ELECTRICAL ROOM - WEST
E201 1/4" = 1'-0"



3 FIRE PUMP ROOM
E201 1/4" = 1'-0"



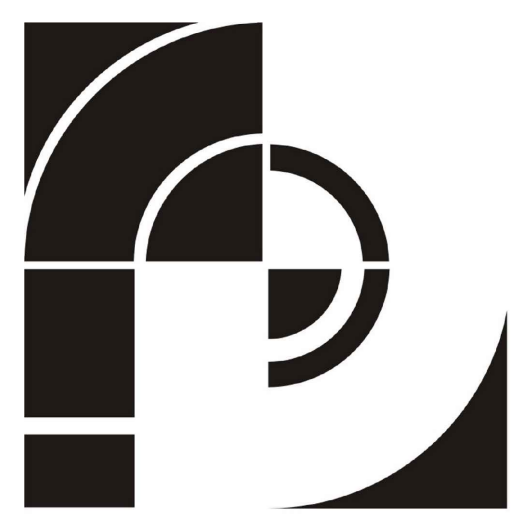
GENERAL NOTES
(APPLY THIS SHEET ONLY)

1. PROVIDE UL-LISTED HANDLE-TIES BETWEEN 1-POLE CIRCUIT BREAKERS SERVING PHASE CONDUCTORS "HOTS" WHICH SHARE A NEUTRAL CONDUCTOR IN ORDER TO SIMULTANEOUSLY DISCONNECT POWER TO EACH CIRCUIT IN GROUPS OF 2 OR 3.
2. VERIFY CONNECTION REQUIREMENTS TO HVAC, PLUMBING, AND FIRE PROTECTION EQUIPMENT REQUIRING POWER WITH ASSOCIATED SUBCONTRACTOR PRIOR TO INSTALLATION. EQUIPMENT DIFFERING FROM BASIS OF DESIGN MAY VARY. MODIFY CONNECTIONS SHOWN ON PLANS TO MATCH MANUFACTURER'S REQUIREMENTS ACCORDINGLY. DISCONNECTS LABELED F.B.O. ARE FURNISHED BY OTHERS.

LEGEND NOTES
(APPLY THIS SHEET ONLY)

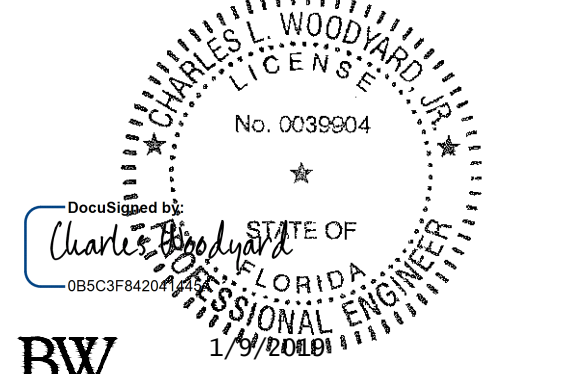
- ① COORDINATE WITH MECHANICAL CONTRACTOR FOR INSTALLATION OF DUCT-MOUNTED SMOKE DETECTOR. PROVIDE CONNECTION TO FIRE ALARM SYSTEM.

1 FLOOR PLAN - PART A - ELECTRICAL
E202 1/16" = 1'-0"



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08 NOVEMBER 2018	2018 REVIEW SET
09 JANUARY 2019	ISSUED FOR PERMIT

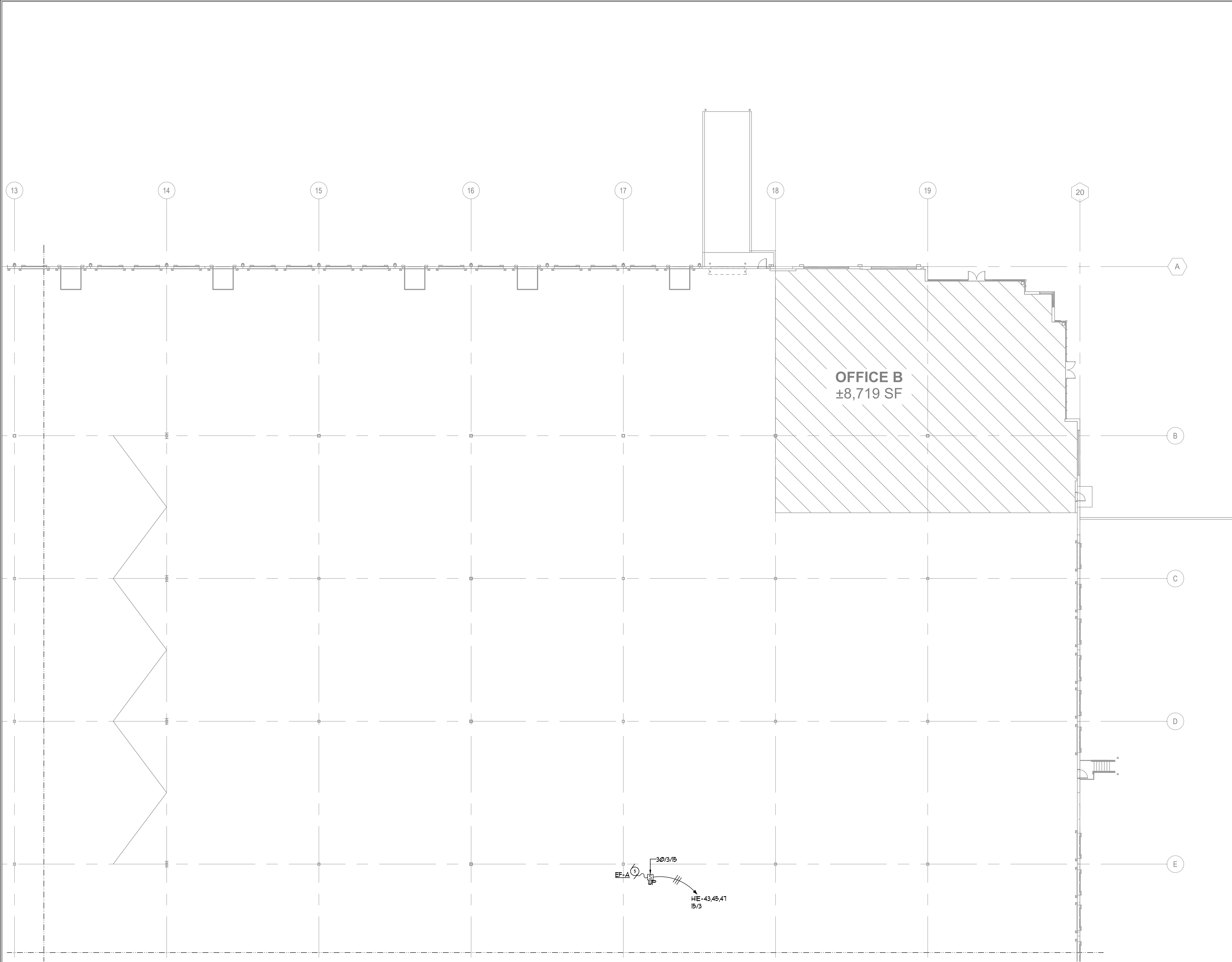
Revision Record

Date: 09 JANUARY 2019 Project No.: 2018245.00

Sheet Title:
**FLOOR PLAN -
PART B -
ELECTRICAL**

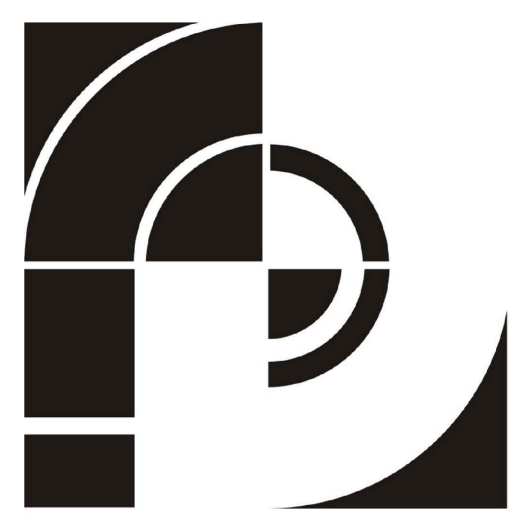
Sheet No.:
E202

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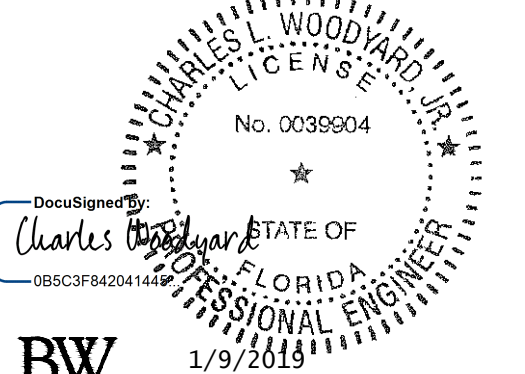


1 FLOOR PLAN - PART C - ELECTRICAL
E203 1/16" = 1'-0"

- GENERAL NOTES**
(APPLY THIS SHEET ONLY)
1. PROVIDE UL-LISTED HANDLE-TIES BETWEEN 1-POLE CIRCUIT BREAKERS SERVING PHASE CONDUCTORS "HOTS" WHICH SHARE A NEUTRAL CONDUCTOR IN ORDER TO SIMULTANEOUSLY DISCONNECT POWER TO EACH CIRCUIT IN GROUPS OF 2 OR 3.
 2. VERIFY CONNECTION REQUIREMENTS TO HVAC, PLUMBING, AND FIRE PROTECTION EQUIPMENT REQUIRING POWER WITH ASSOCIATED SUBCONTRACTOR PRIOR TO INSTALLATION. EQUIPMENT DIFFERING FROM BASIS OF DESIGN MAY VARY. MODIFY CONNECTIONS SHOWN ON PLANS TO MATCH MANUFACTURER'S REQUIREMENTS ACCORDINGLY. DISCONNECTS LABELED F.B.O. ARE FURNISHED BY OTHERS.



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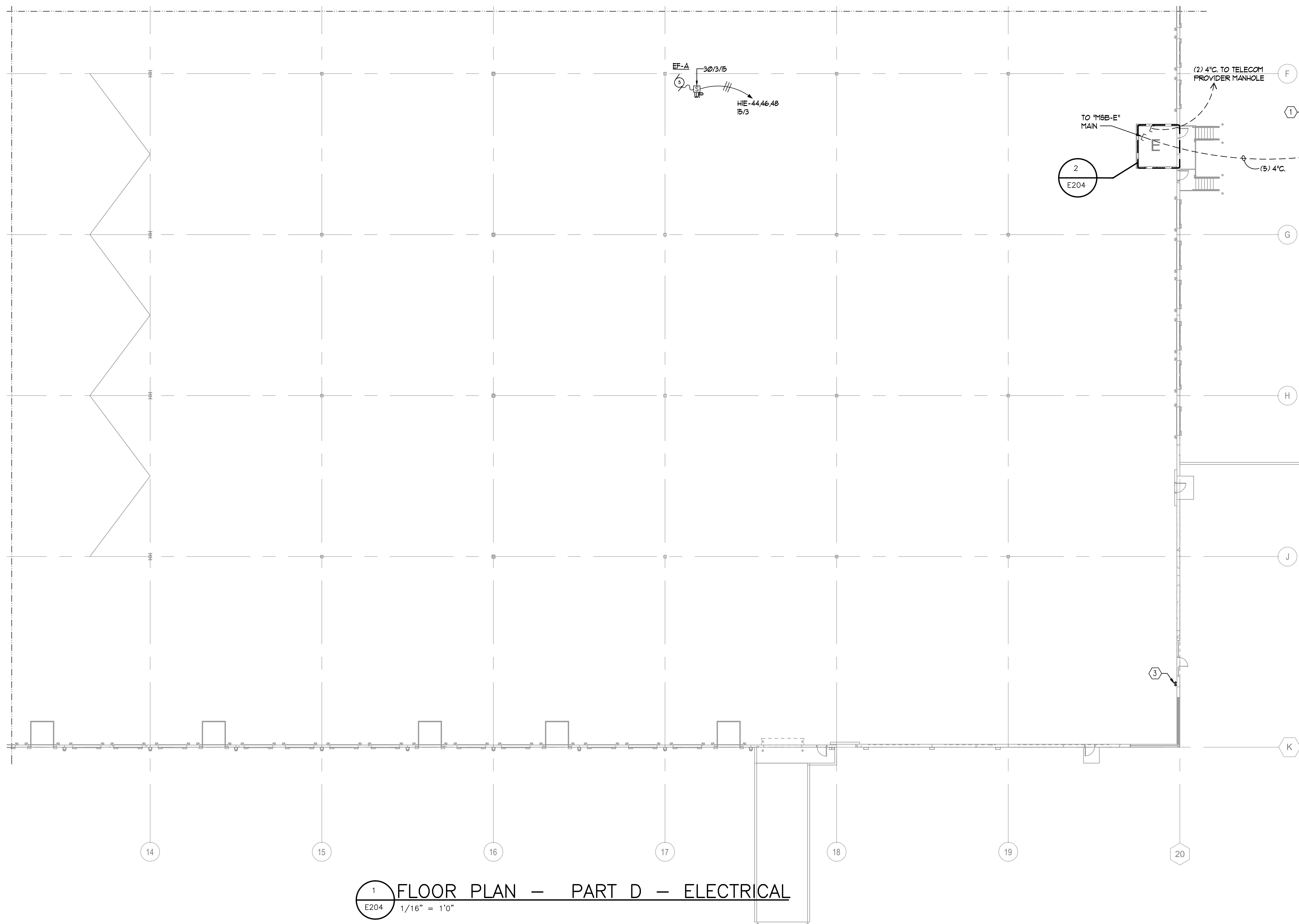
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DATE	BY	REVISION
09 NOVEMBER 2018	DAVE RYAN	21
09 JANUARY 2019	DAVE RYAN	22

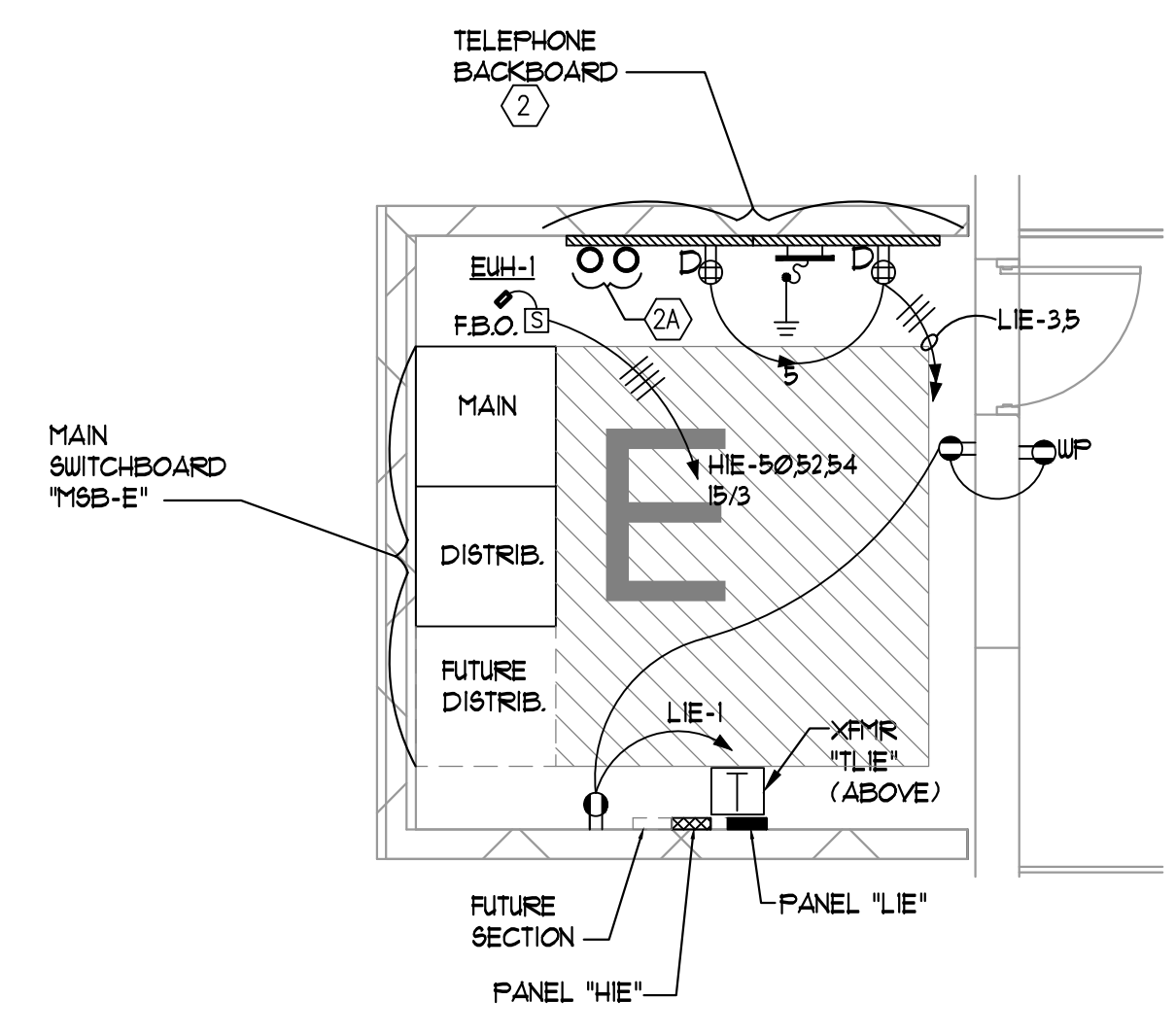
Revision Record

NO.	DATE	DESCRIPTION

Date: 09 JANUARY 2019 Project No.: 2018245.00
Sheet Title: FLOOR PLAN - PART C - ELECTRICAL
Sheet No.: **E203**
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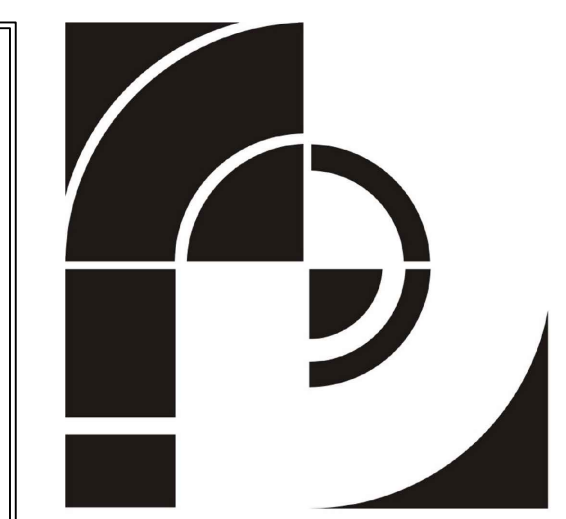


1 FLOOR PLAN - PART D - ELECTRICAL
E204 1/16" = 1'-0"

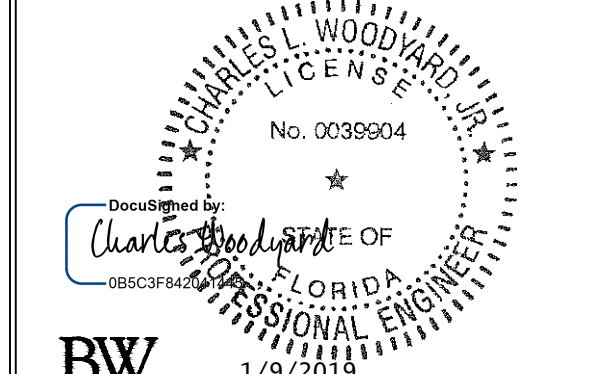


2 MAIN ELECTRICAL ROOM - EAST
E204 1/4" = 1'-0"

- GENERAL NOTES**
(APPLY THIS SHEET ONLY)
- PROVIDE UL-LISTED HANDLE-TIES BETWEEN 1-POLE CIRCUIT BREAKERS SERVING PHASE CONDUCTORS "HOTS" WHICH SHARE A NEUTRAL CONDUCTOR IN ORDER TO SIMULTANEOUSLY DISCONNECT POWER TO EACH CIRCUIT IN GROUPS OF 2 OR 3.
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- LEGEND NOTES**
(APPLY THIS SHEET ONLY)
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 - PROVIDE 4' X 8' SHEETS OF 3/4" THICK FIRE-RATED PLYWOOD OVER WALL AS INDICATED FOR TELECOM BACKBOARD. PAINT TO MATCH WALLS. PROVIDE 12-PORT GROUND BAR (PANDUIT UGB2/O SERIES OR EQUAL) WITH 1#2AWG INSULATED COPPER GROUND WIRE TO BUILDING SERVICE GROUNDING ELECTRODE SYSTEM.
 - PROVIDE TWO (2) 4" FC UNDERGROUND TO PROPERTY LINE FOR INCOMING TELECOMMUNICATIONS CABLING. STUB-UP AT TELECOM BACKBOARD. COORDINATE INSTALLATION WITH TELEPHONE SERVICE PROVIDER AND DETERMINE TERMINATION POINT. PROVIDE LONG SWEEPING EL'S, PULL BOXES, HANDHOLES, PULL STRINGS, DEPTH, ETC. PER TELEPHONE SERVICE PROVIDER'S SPECIFICATIONS. ALLOW FOR NO MORE THAN 180° OF BENDS BETWEEN HANDHOLES. SLOPE AND SEAL CONDUITS TO PREVENT CONDENSATION AND INTRUSION WATER AND GASES INTO THE BUILDING. VERIFY ROUTING WITH SITE CONTRACTOR.
 - LOCATION OF CONDUIT STUB-UP'S FOR FUTURE ELECTRIC VEHICLE CHARGERS. REFER TO SHEET E100.



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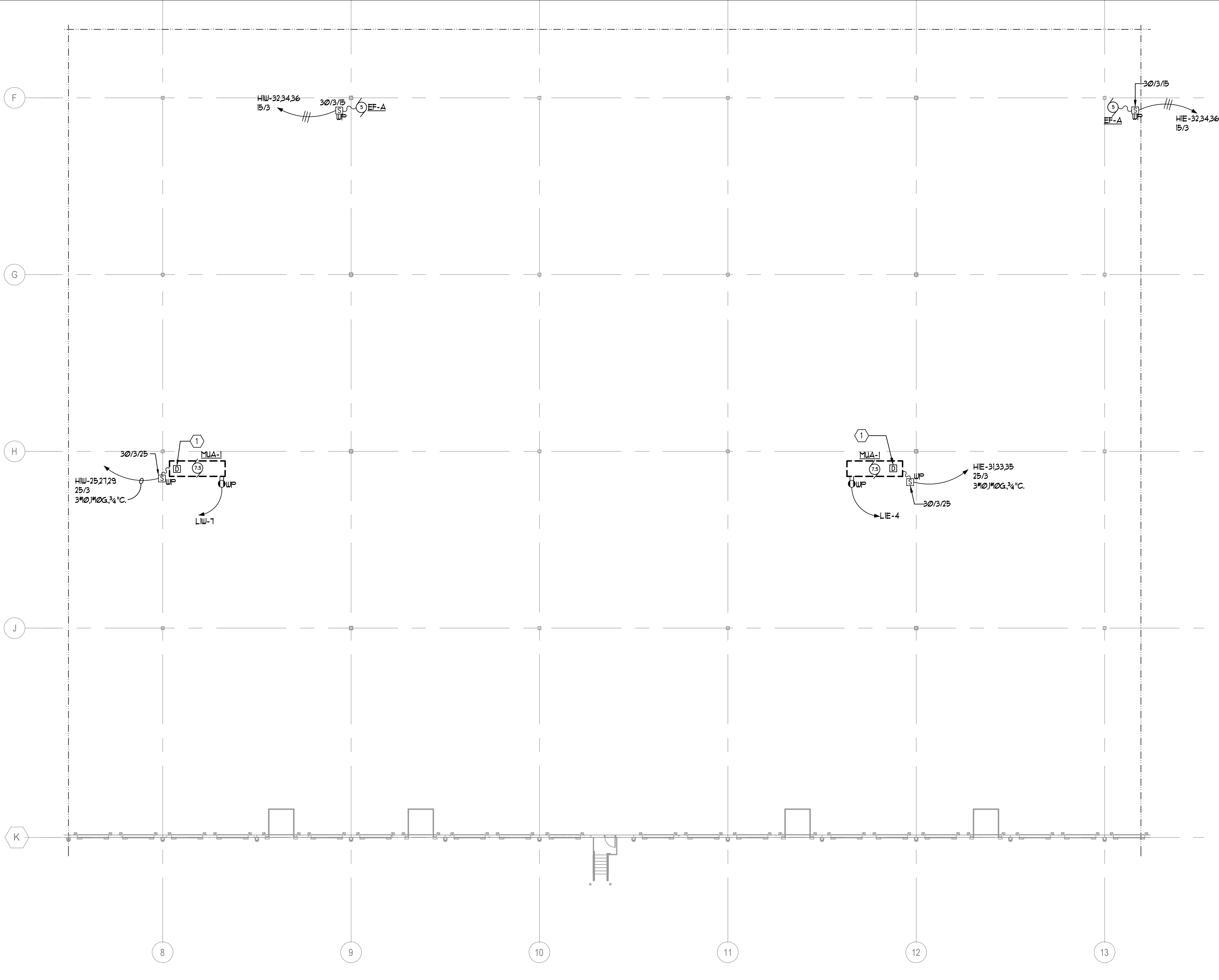
Print Record

NO.	REVISION	DATE	BY	APP. FOR PERM.
01	REVISION 2/10	09 JANUARY 2019		
02	ISSUE FOR PERM.			

Revision Record

NO.	REVISION	DATE	BY	APP. FOR PERM.

Date: 09 JANUARY 2019 Project No.: 2018245.00
Sheet Title: FLOOR PLAN - PART D - ELECTRICAL
Sheet No.: **E204**
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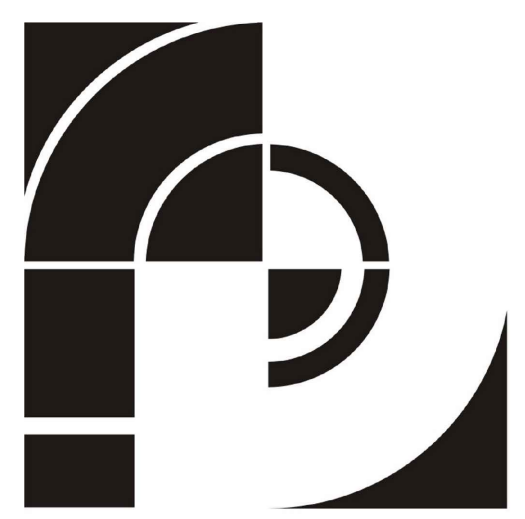
1 FLOOR PLAN - PART E - ELECTRICAL
 E205 1/16" = 1'0"

GENERAL NOTES
 (APPLY THIS SHEET ONLY)

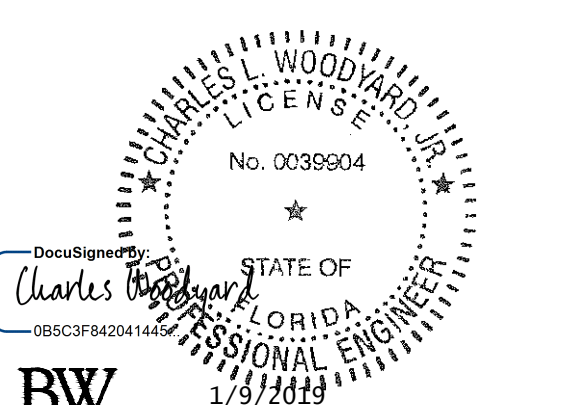
- PROVIDE UL-LISTED HANDLE-TIES BETWEEN 1-POLE CIRCUIT BREAKERS SERVING PHASE CONDUCTORS "HOTS" WHICH SHARE A NEUTRAL CONDUCTOR IN ORDER TO SIMULTANEOUSLY DISCONNECT POWER TO EACH CIRCUIT IN GROUPS OF 2 OR 3.
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LEGEND NOTES
 (APPLY THIS SHEET ONLY)

① COORDINATE WITH MECHANICAL CONTRACTOR FOR INSTALLATION OF DUCT-MOUNTED SMOKE DETECTOR. PROVIDE CONNECTION TO FIRE ALARM SYSTEM.



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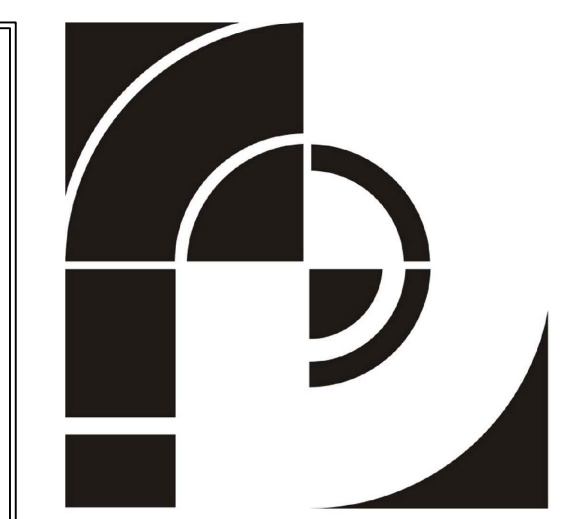
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09 NOVEMBER 2019	WHA	REVISION 02
09 JANUARY 2019	WHA	ISSUED FOR PERMIT

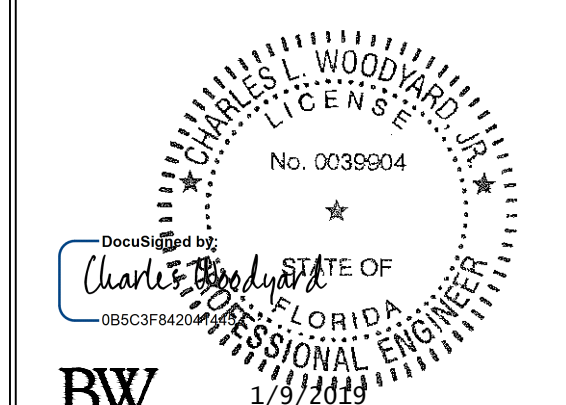
Revision Record

No.	Date	Description

Date: 09 JANUARY 2019 Project No.: 2018245.00
 Sheet Title: FLOOR PLAN - PART E - ELECTRICAL
 Sheet No.: **E205**
 Released for Construction
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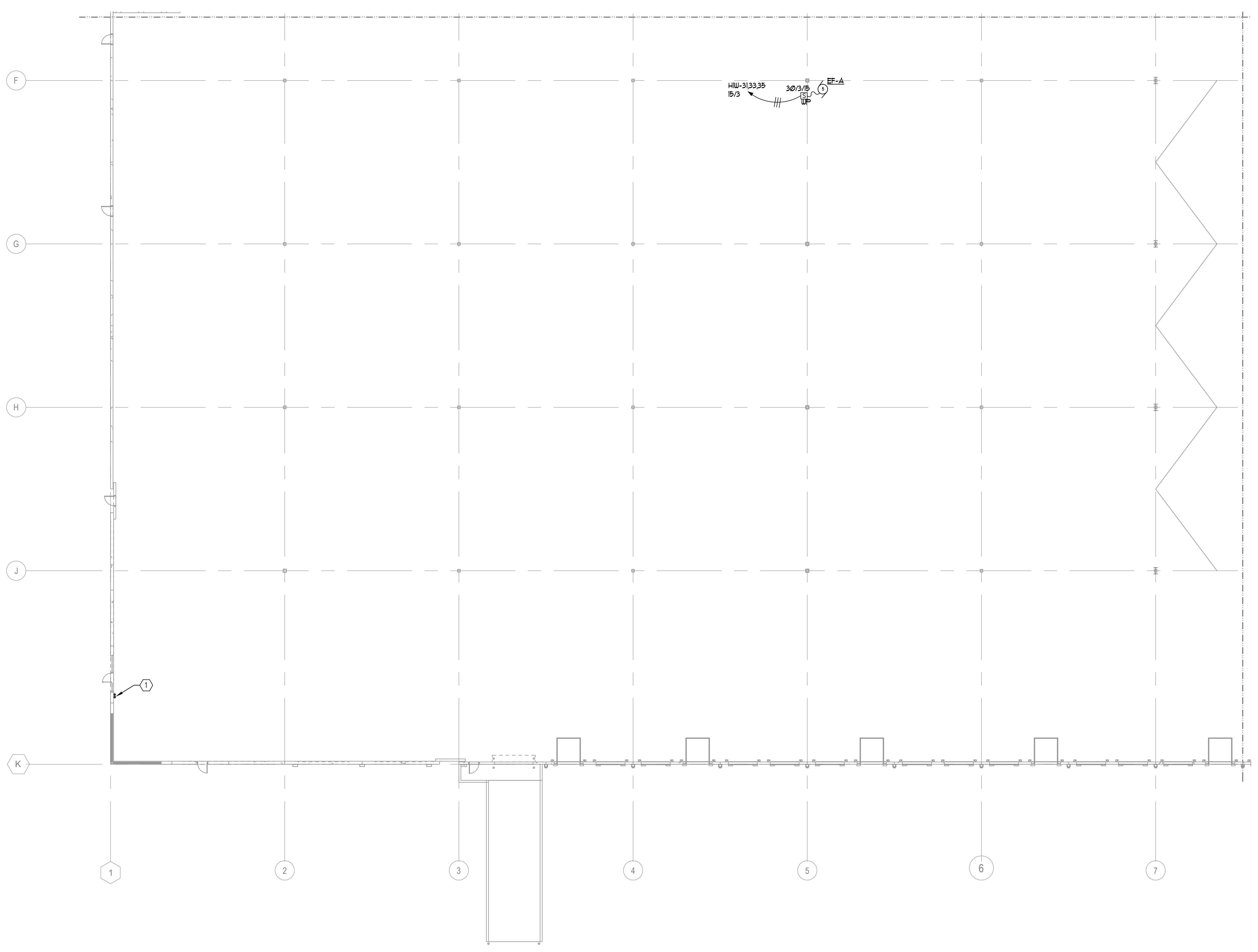
Print Record

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09 JANUARY 2019		ISSUED FOR PERMIT

Revision Record

NO.	DATE	DESCRIPTION

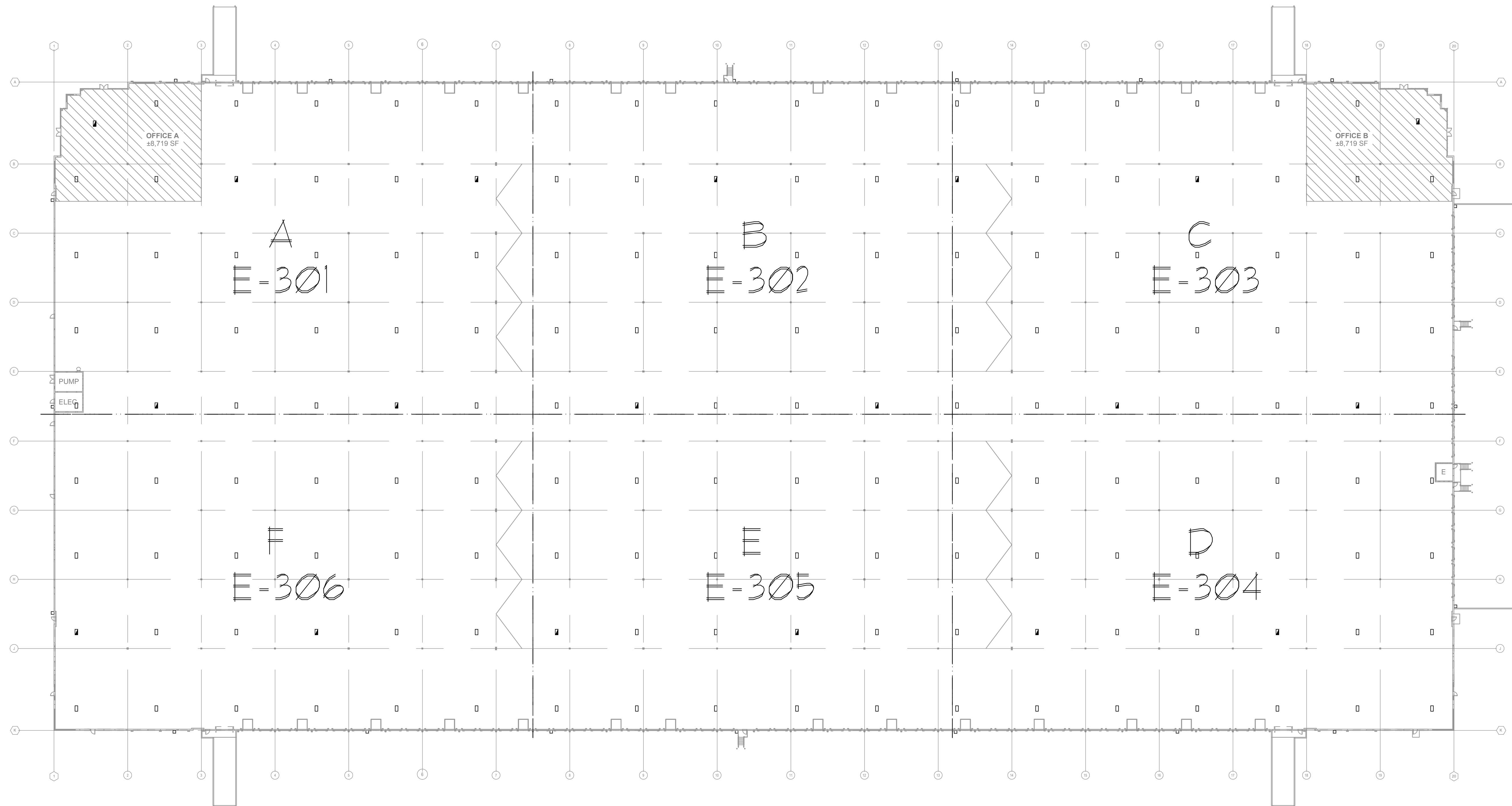
Date: 09 JANUARY 2019 Project No.: 2018245.00
Sheet Title:
**FLOOR PLAN -
PART F -
ELECTRICAL**
Sheet No.:
E206
 Released for Construction
 Not Released for Construction



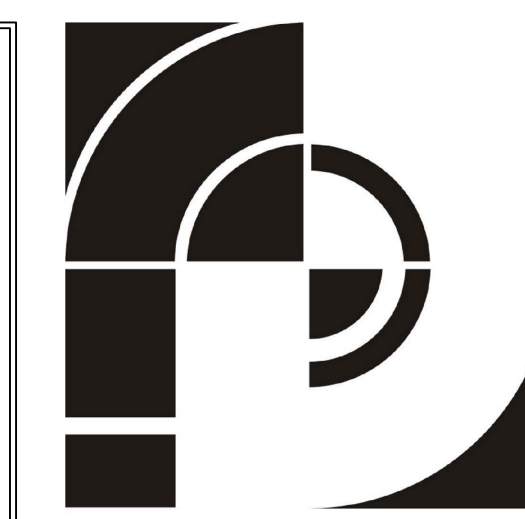
1 FLOOR PLAN - PART F - ELECTRICAL
E206 1/16" = 1'0"

- GENERAL NOTES**
(APPLY THIS SHEET ONLY)
- PROVIDE UL-LISTED HANDLE-TIES BETWEEN 1-POLE CIRCUIT BREAKERS SERVING PHASE CONDUCTORS "HOTS" WHICH SHARE A NEUTRAL CONDUCTOR IN ORDER TO SIMULTANEOUSLY DISCONNECT POWER TO EACH CIRCUIT IN GROUPS OF 2 OR 3.
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- LEGEND NOTES**
(APPLY THIS SHEET ONLY)
- ① LOCATION OF CONDUIT STUB-UP'S FOR FUTURE ELECTRIC VEHICLE CHARGERS. REFER TO SHEET E100.

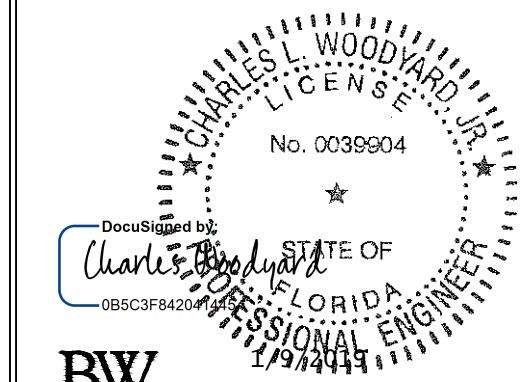


1 FLOOR PLAN - LIGHTING
E300 1" = 40'-0"



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09 JANUARY 2019	ISSUED FOR PERMIT

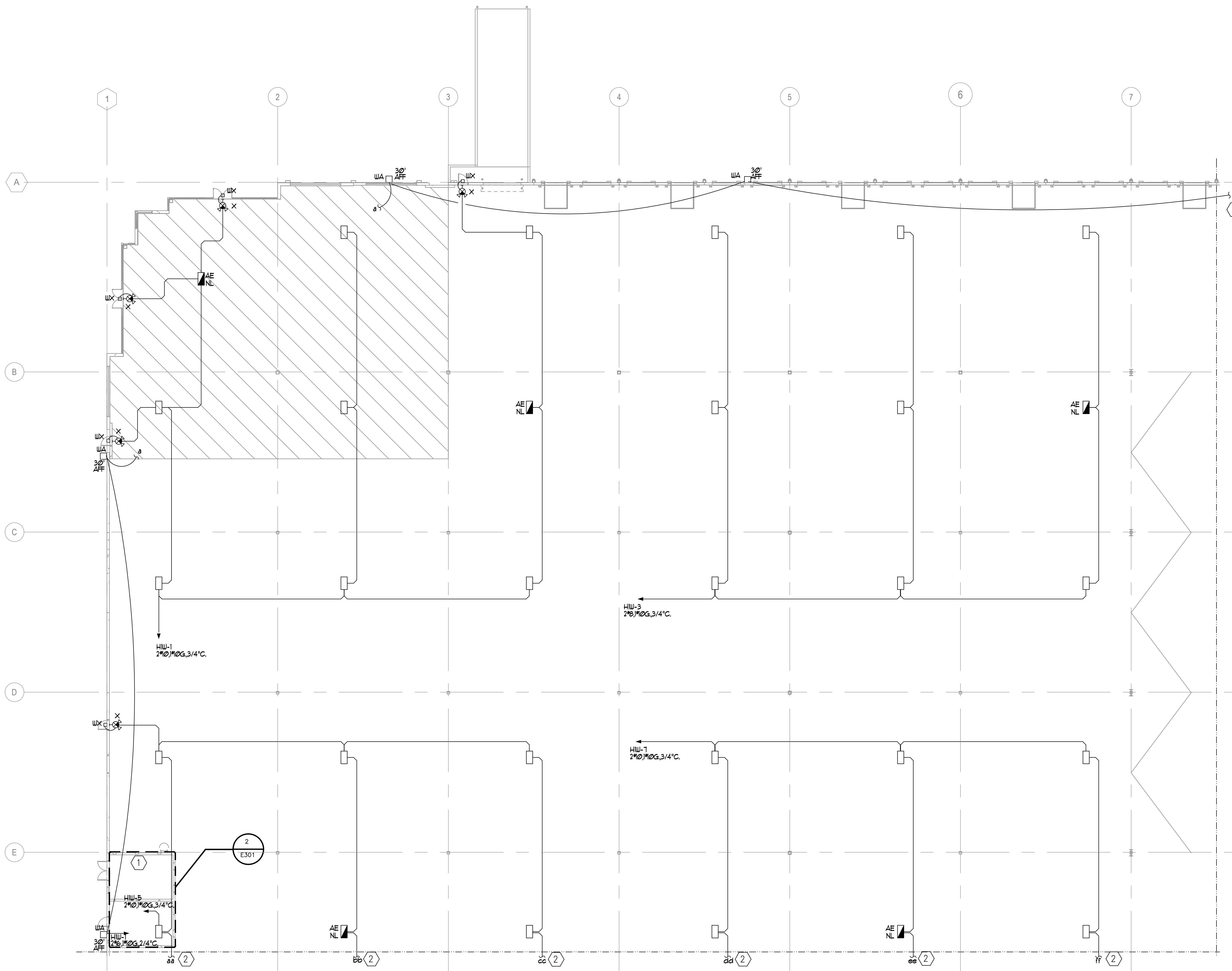
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Date: 09 JANUARY 2019 Project No.: 2018245.00

Sheet Title: OVERALL FLOOR PLAN - LIGHTING

Sheet No.: E300

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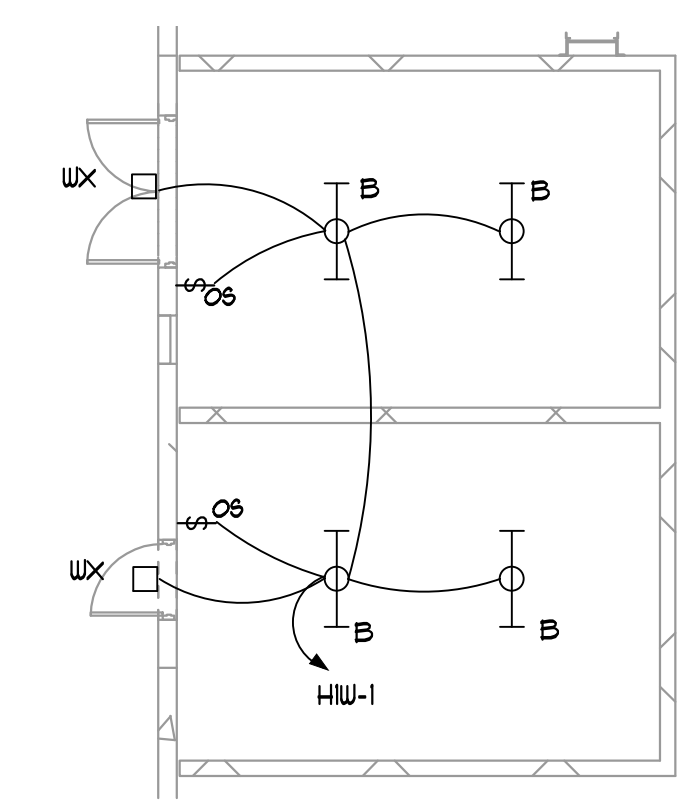
1 FLOOR PLAN - PART A - LIGHTING
E301 1/16" = 1'-0"

GENERAL NOTES
(APPLY THIS SHEET ONLY)

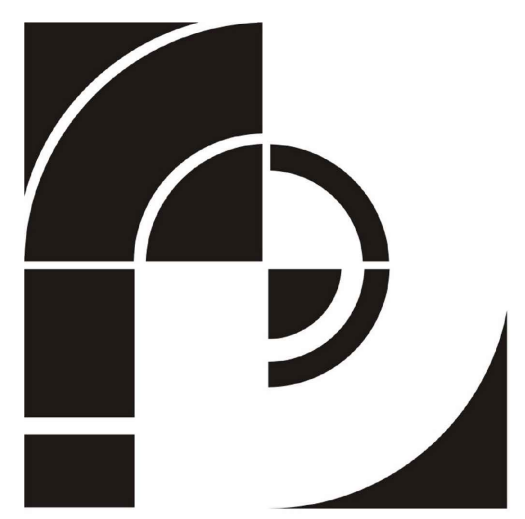
1. ALL FIXTURES ARE TYPE "A" UNLESS NOTED OTHERWISE.
2. ALL TYPE "A" SERIES FIXTURES TO BE MOUNTED AT 36" AFF.

LEGEND NOTES
(APPLY THIS SHEET ONLY)

- 1 DO NOT ROUTE CIRCUITS THROUGH THE FIRE PUMP ROOM OTHER THAN FOR LIGHTING LOCATED INSIDE THE ROOM.
- 2 REFER TO SHEET 1/E-306 FOR CONTINUATION.
- 3 REFER TO SHEET 1/E-302 FOR CONTINUATION.

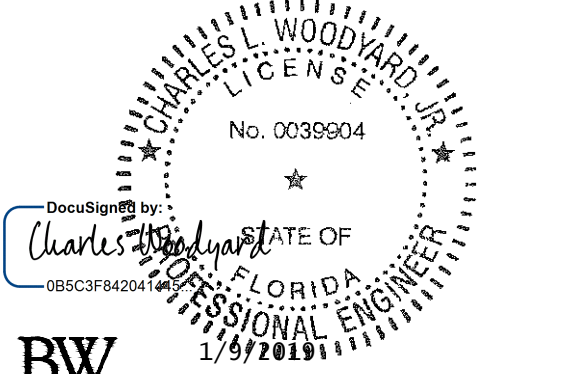


2 ELEC/PUMP ROOMS - LIGHTING
E301 1/8" = 1'-0"



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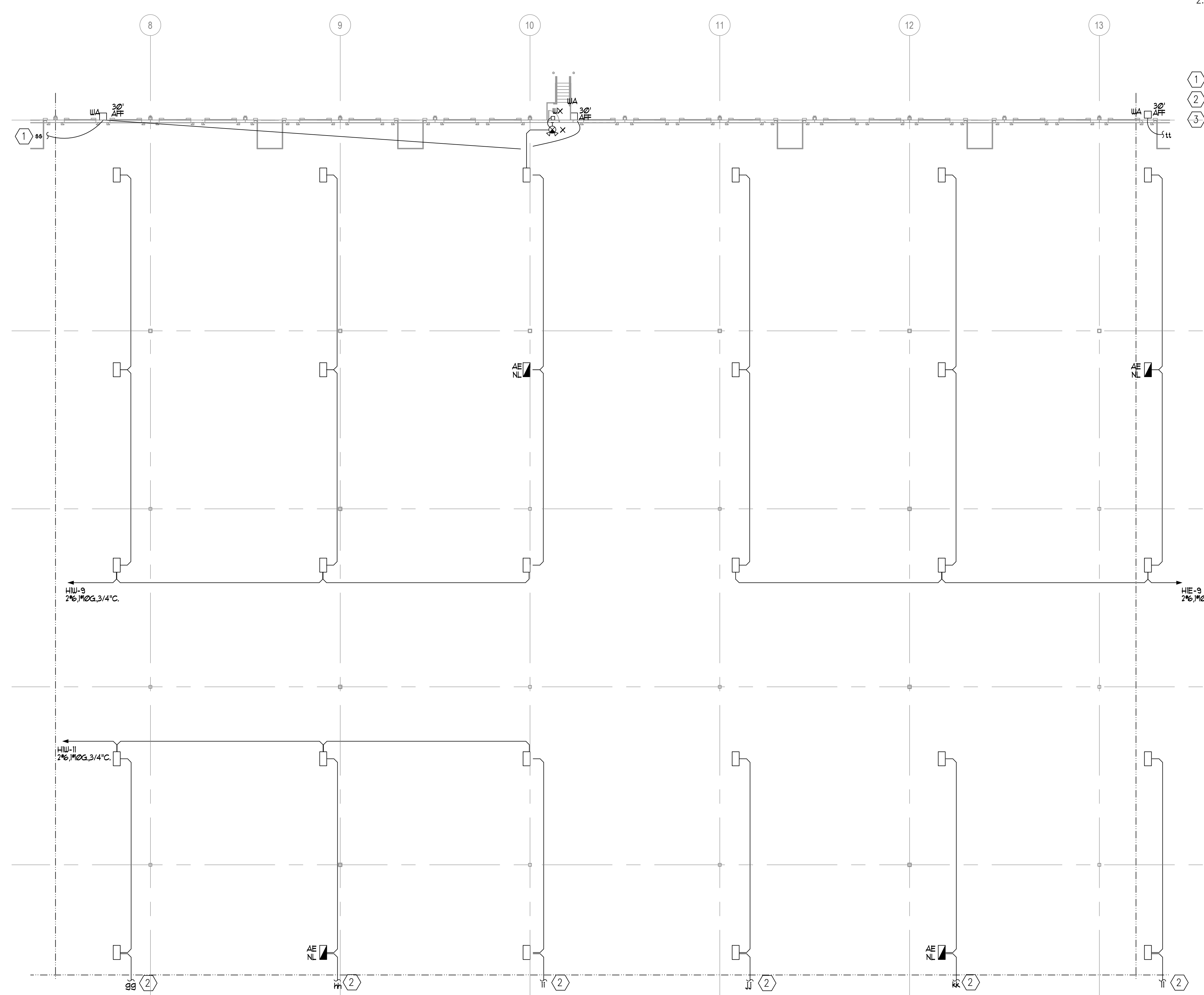
08 NOVEMBER 2019	DATE PLOTTED
09 JANUARY 2019	ISSUED FOR PERMIT

Revision Record

Date: 09 JANUARY 2019 Project No.: 2018245.00
Sheet Title: FLOOR PLAN - PART A - LIGHTING

Sheet No. E301

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Not Released for Construction



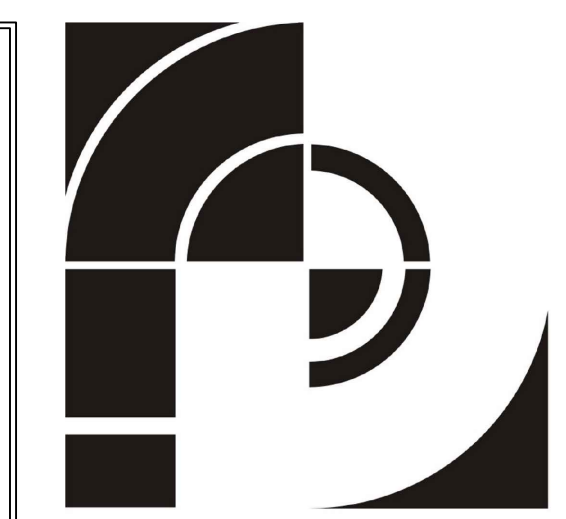
GENERAL NOTES
(APPLY THIS SHEET ONLY)

1. ALL FIXTURES ARE TYPE "A" UNLESS NOTED OTHERWISE.
2. ALL TYPE "A" SERIES FIXTURES TO BE MOUNTED AT 36" AFF.

LEGEND NOTES
(APPLY THIS SHEET ONLY)

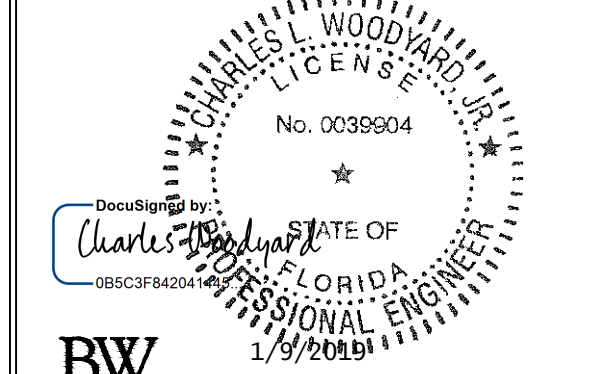
- 1 REFER TO SHEET 1/E-301 FOR CONTINUATION.
- 2 REFER TO SHEET 1/E-305 FOR CONTINUATION.
- 3 REFER TO SHEET 1/E-303 FOR CONTINUATION.

FLOOR PLAN - PART B - LIGHTING
E.302 1/16" = 1'-0"



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Job #181002

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Industrial Real Estate

Duval County, Florida

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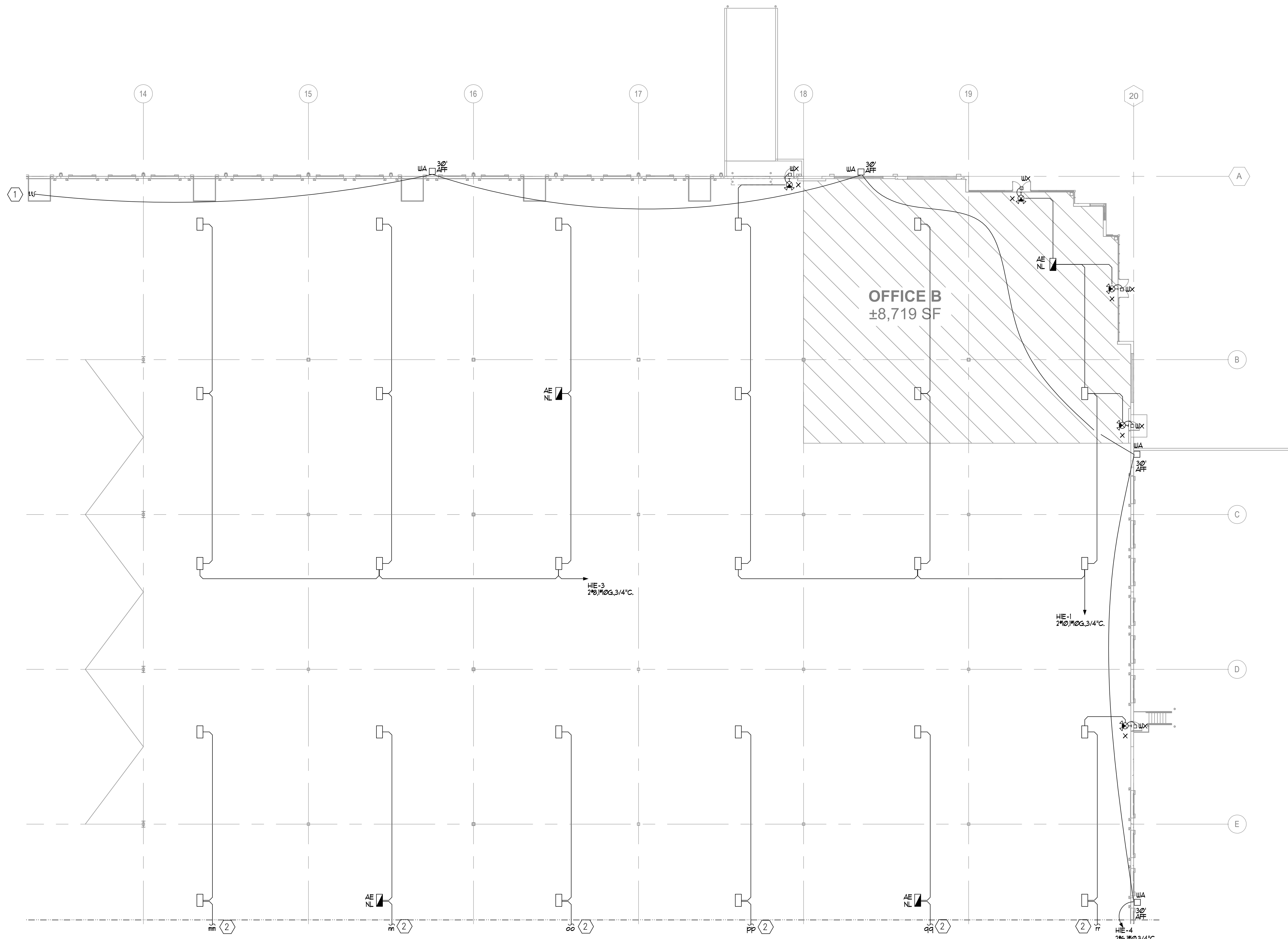
08 DECEMBER 2019	DATE PLOTTED
09 JANUARY 2019	ISSUED FOR PERMIT

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Date: 09 JANUARY 2019 Project No.: 2018245.00
Sheet Title: FLOOR PLAN - PART B - LIGHTING

Sheet No. **E302**

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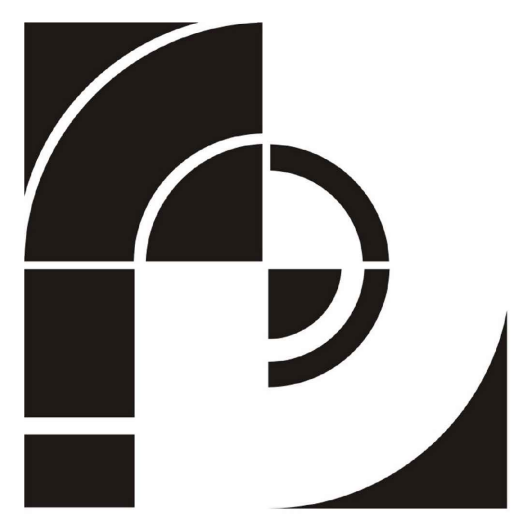
GENERAL NOTES
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LEGEND NOTES
(APPLY THIS SHEET ONLY)

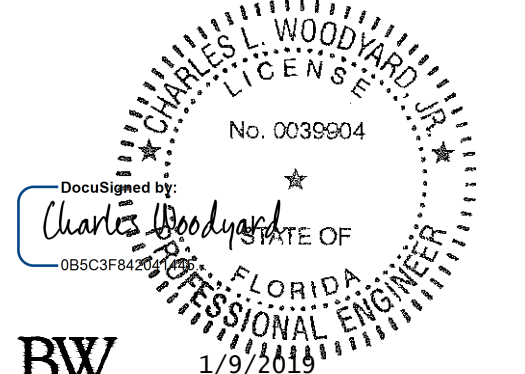
- 1 REFER TO SHEET 1/E-302 FOR CONTINUATION.
- 2 REFER TO SHEET 1/E-304 FOR CONTINUATION.

1 FLOOR PLAN - PART C - LIGHTING
E303 1/16" = 1'-0"



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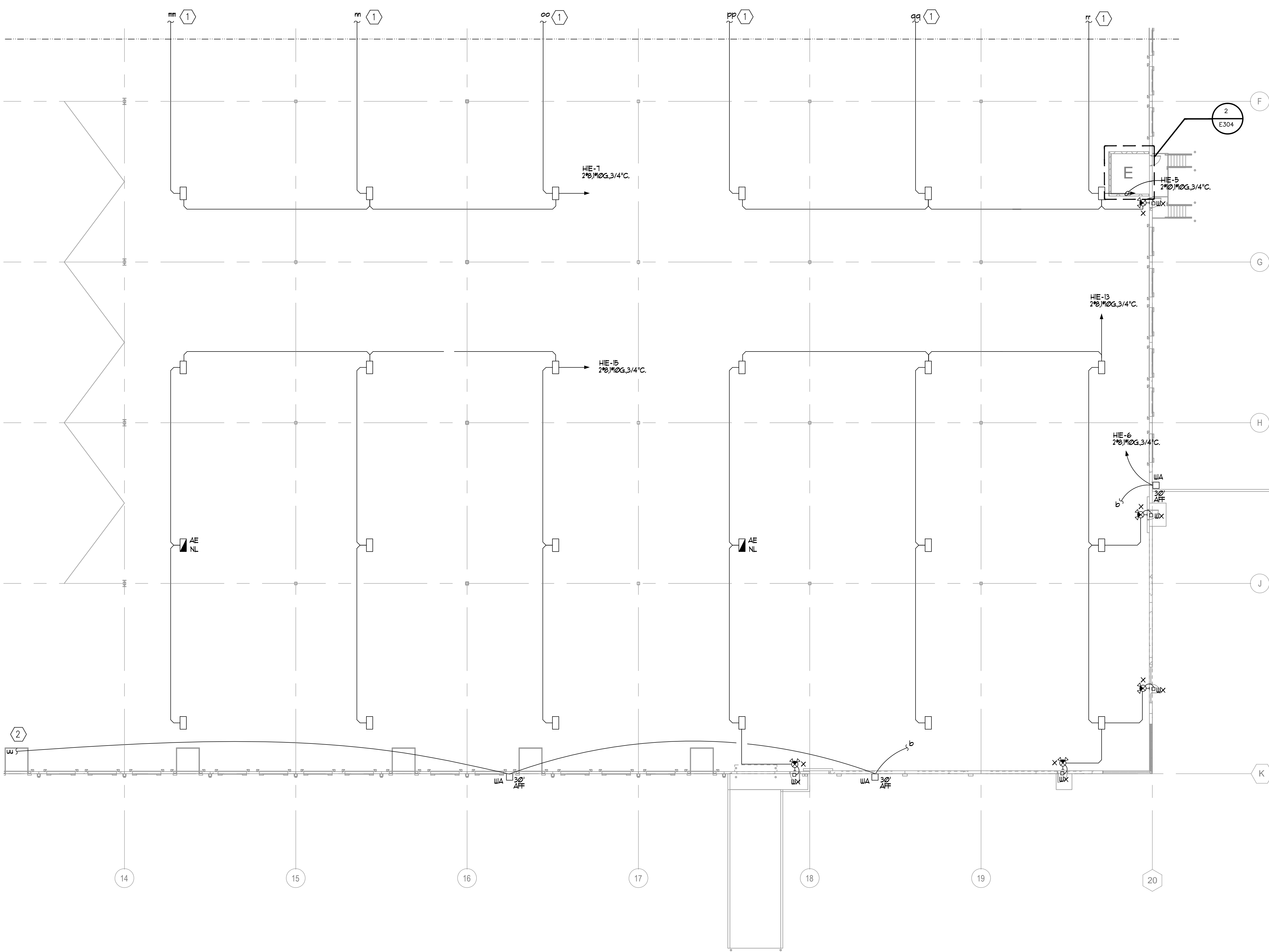
Revision Record

NO.	DATE	DESCRIPTION

Date: 09 JANUARY 2019 Project No.: 2018245.00
Sheet Title: FLOOR PLAN - PART C - LIGHTING

Sheet No. **E303**

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1 FLOOR PLAN — PART D — LIGHTING
E304 1/16" = 1'-0"

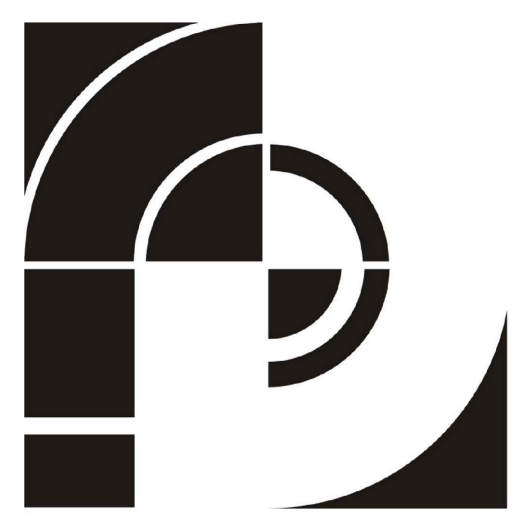
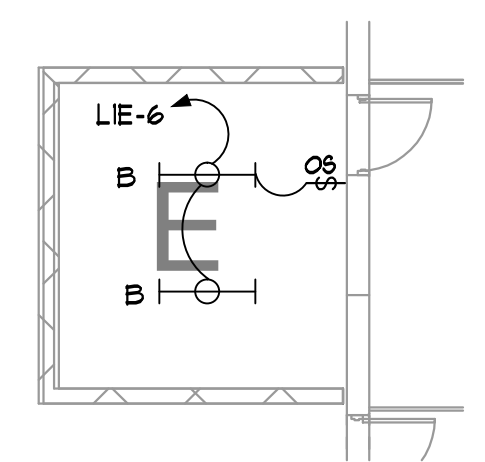
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(APPLY THIS SHEET ONLY)

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LEGEND NOTES
(APPLY THIS SHEET ONLY)

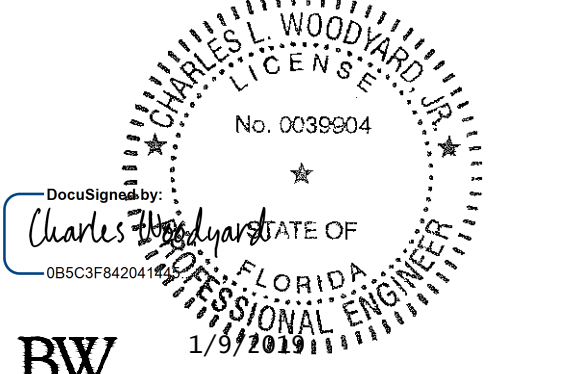
- 1 REFER TO SHEET 1/E-303 FOR CONTINUATION.
- 2 REFER TO SHEET 1/E-305 FOR CONTINUATION.

2 ELECTRICAL ROOM — LIGHTING
E304 1/8" = 1'-0"



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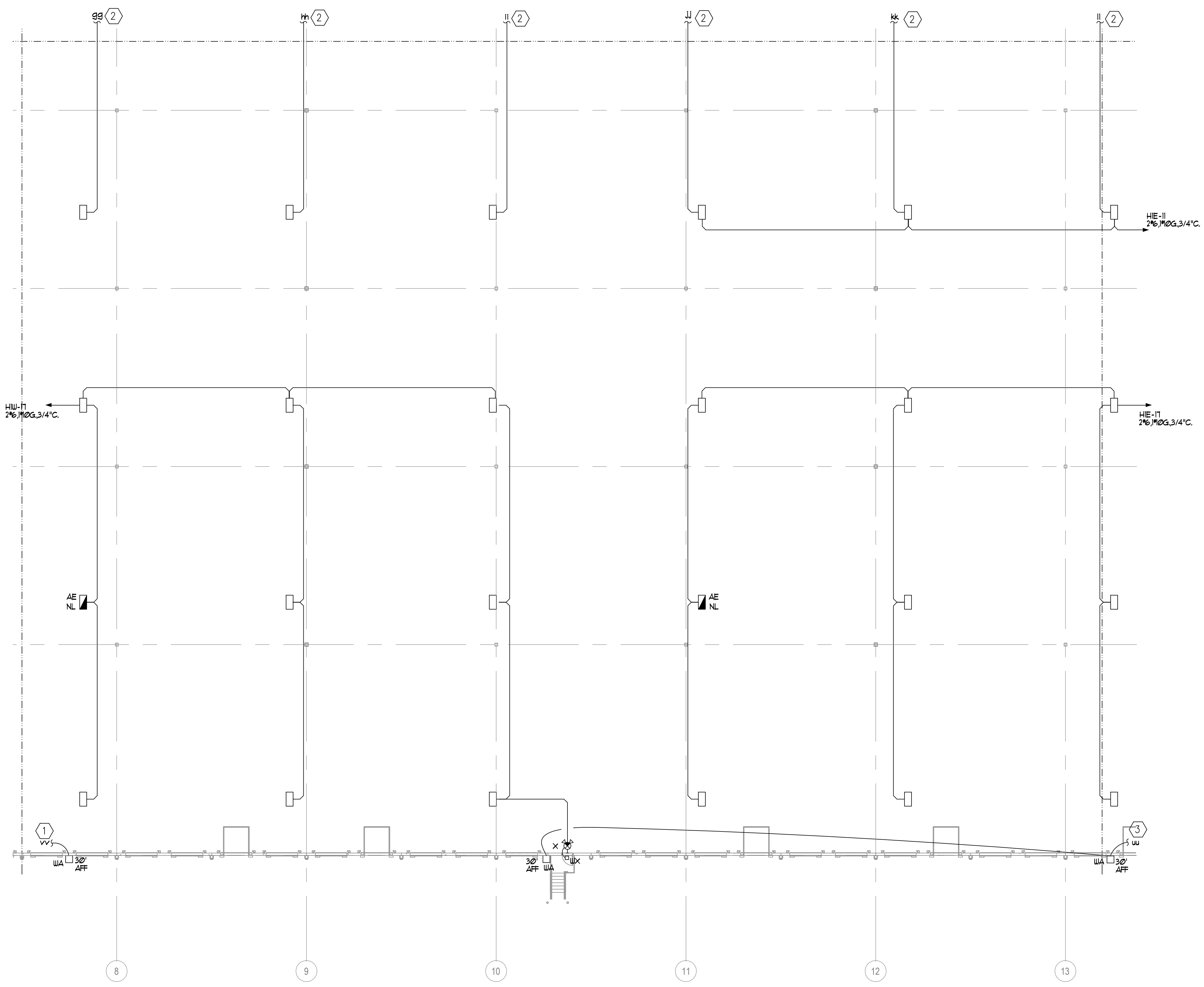
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Date: 09 JANUARY 2019 Project No.: 2018245.00
Sheet Title: FLOOR PLAN — PART D — LIGHTING

Sheet No. **E304**

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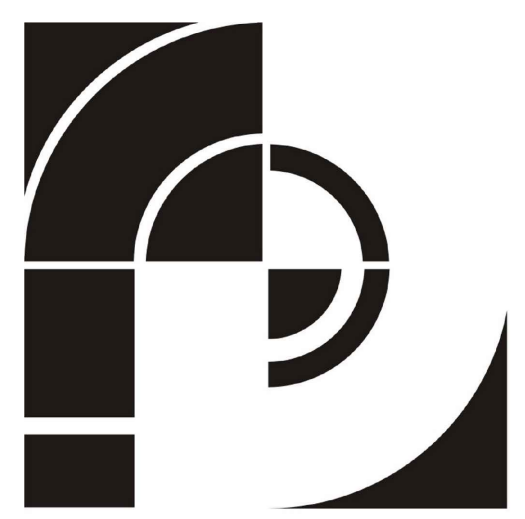
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LEGEND NOTES
(APPLY THIS SHEET ONLY)

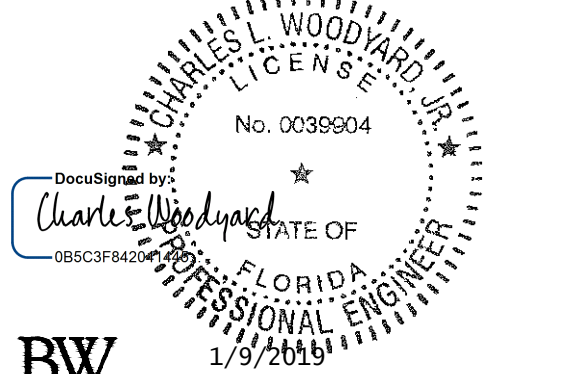
- ① REFER TO SHEET 1/E-306 FOR CONTINUATION.
- ② REFER TO SHEET 1/E-302 FOR CONTINUATION.
- ③ REFER TO SHEET 1/E-304 FOR CONTINUATION.

1 FLOOR PLAN - PART E - LIGHTING
E305 1/16" = 1'-0"



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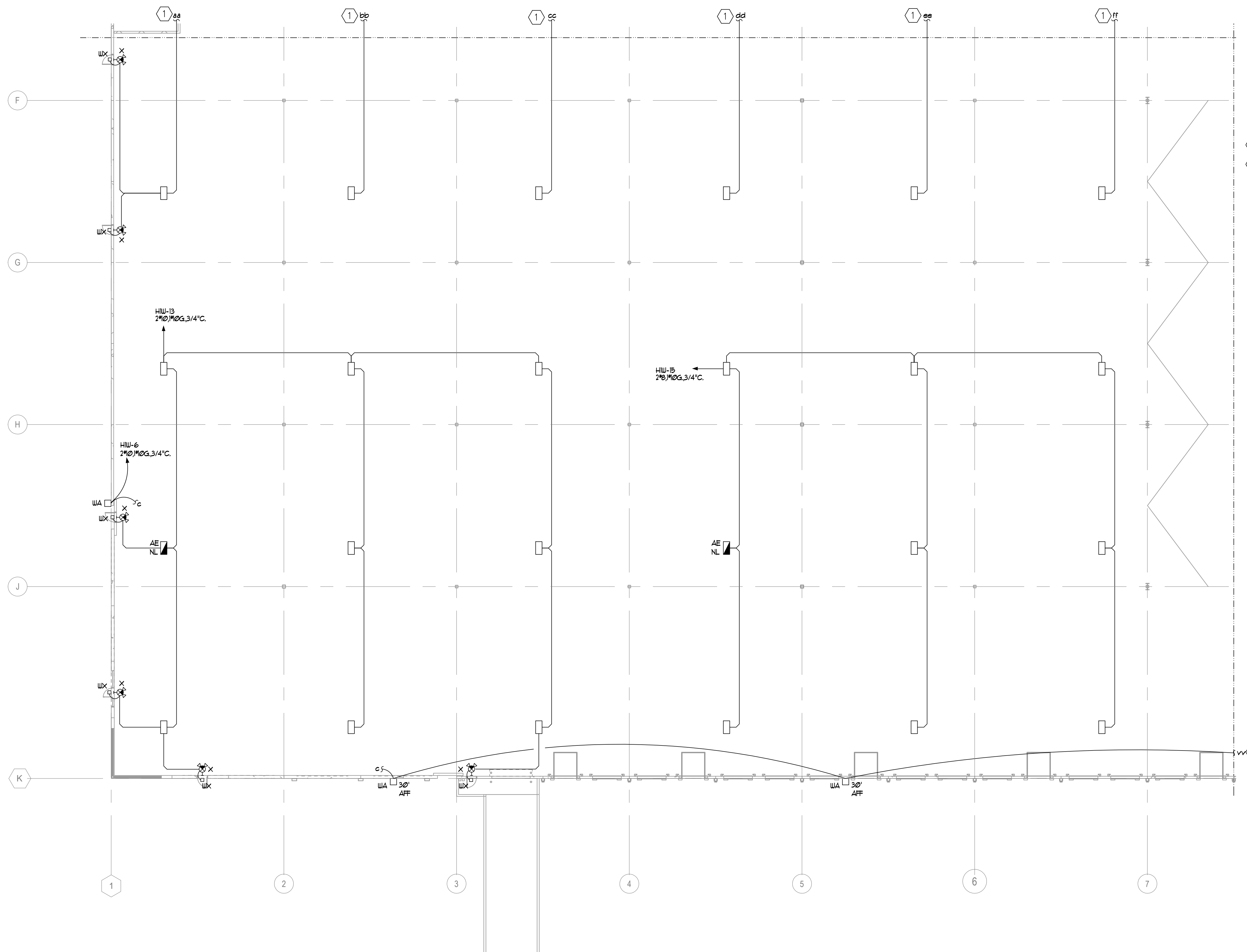
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Date: 09 JANUARY 2019 Project No.: 2018245.00
Sheet Title: FLOOR PLAN - PART E - LIGHTING

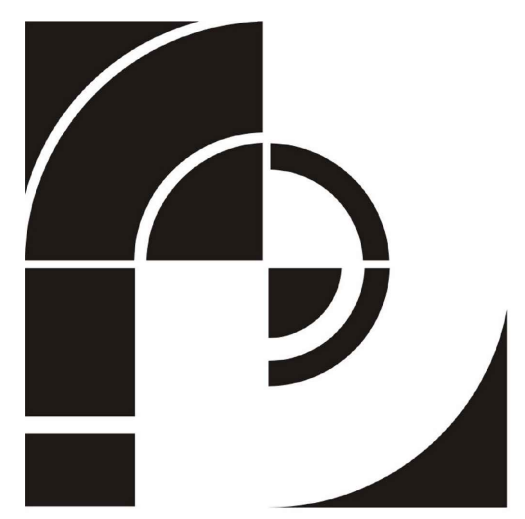
Sheet No. **E305**

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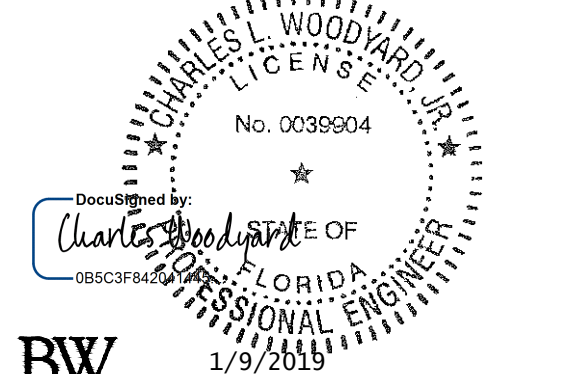
- GENERAL NOTES**
(APPLY THIS SHEET ONLY)
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- LEGEND NOTES**
(APPLY THIS SHEET ONLY)
- ① REFER TO SHEET 1/E-301 FOR CONTINUATION.
 - ② REFER TO SHEET 1/E-305 FOR CONTINUATION.

① FLOOR PLAN — PART F — LIGHTING
E306 1/16" = 1'-0"



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09 JANUARY 2019	WML	ISSUE FOR PERMIT

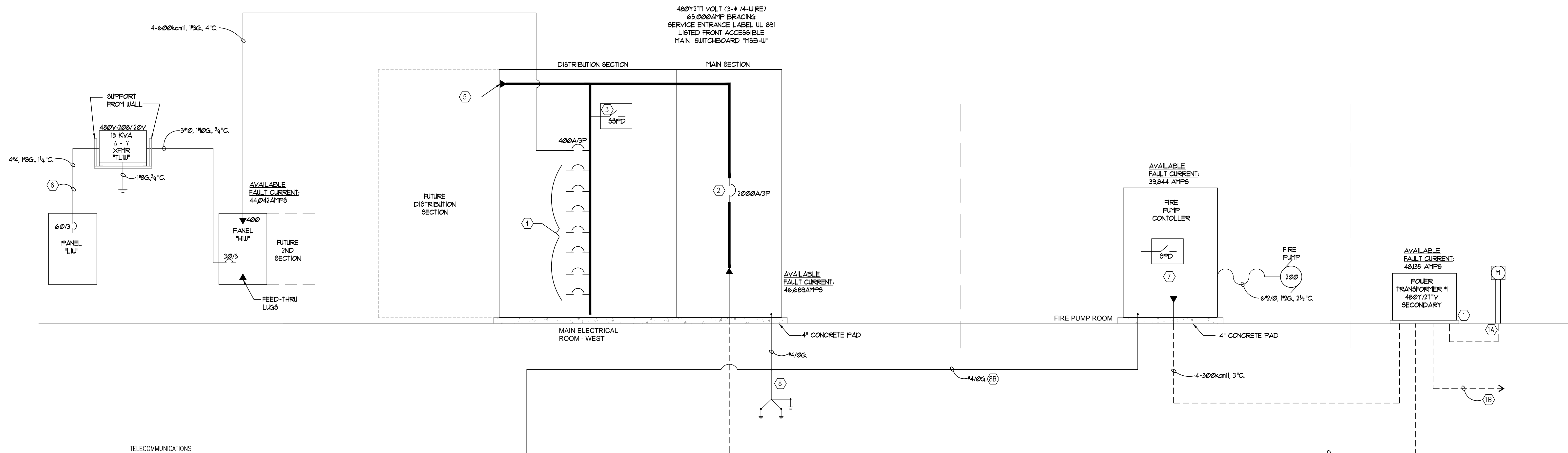
Revision Record

NO.	DATE	DESCRIPTION

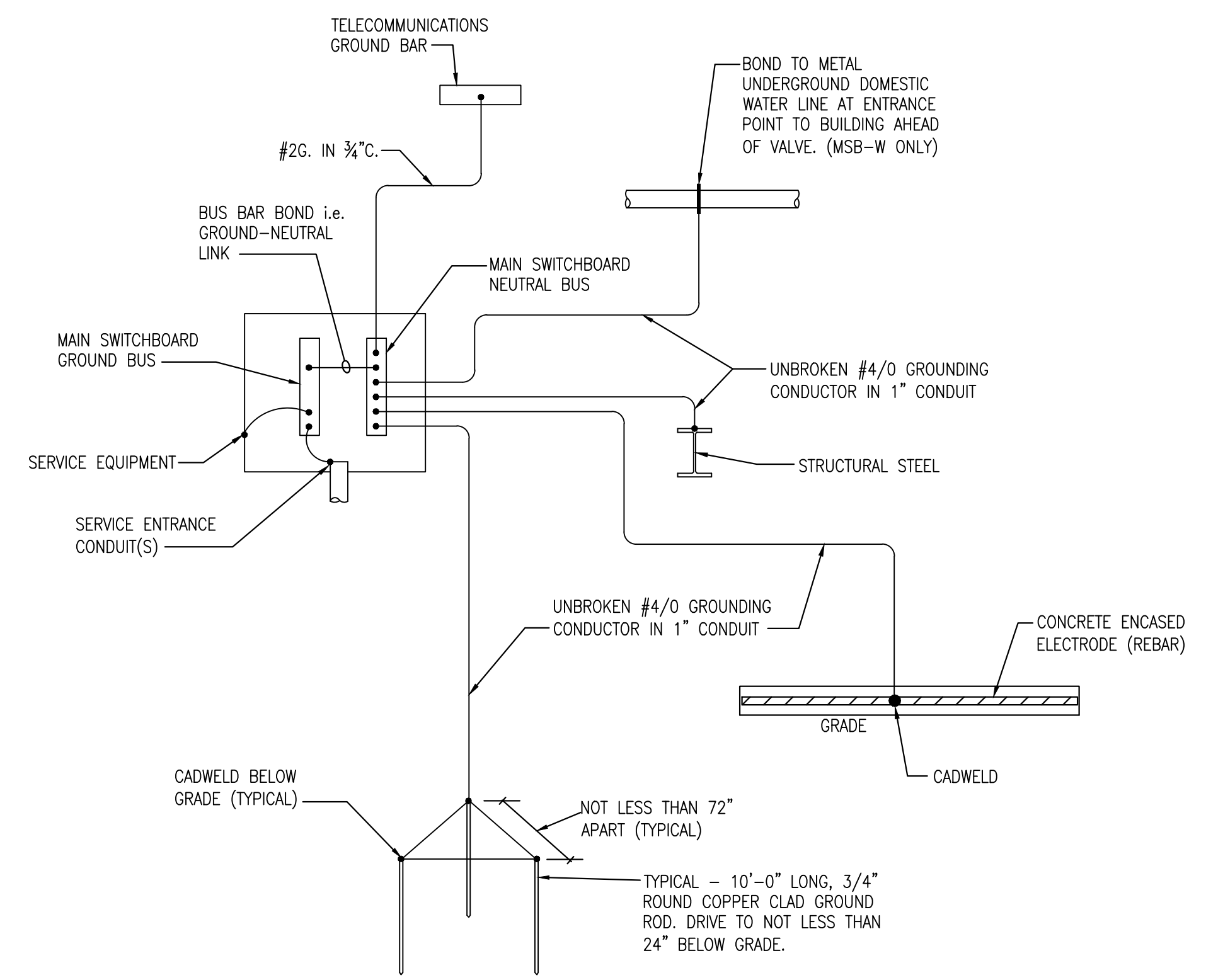
Date: 09 JANUARY 2019 Project No.: 2018245.00
Sheet Title: FLOOR PLAN — PART F — LIGHTING

Sheet No. **E306**

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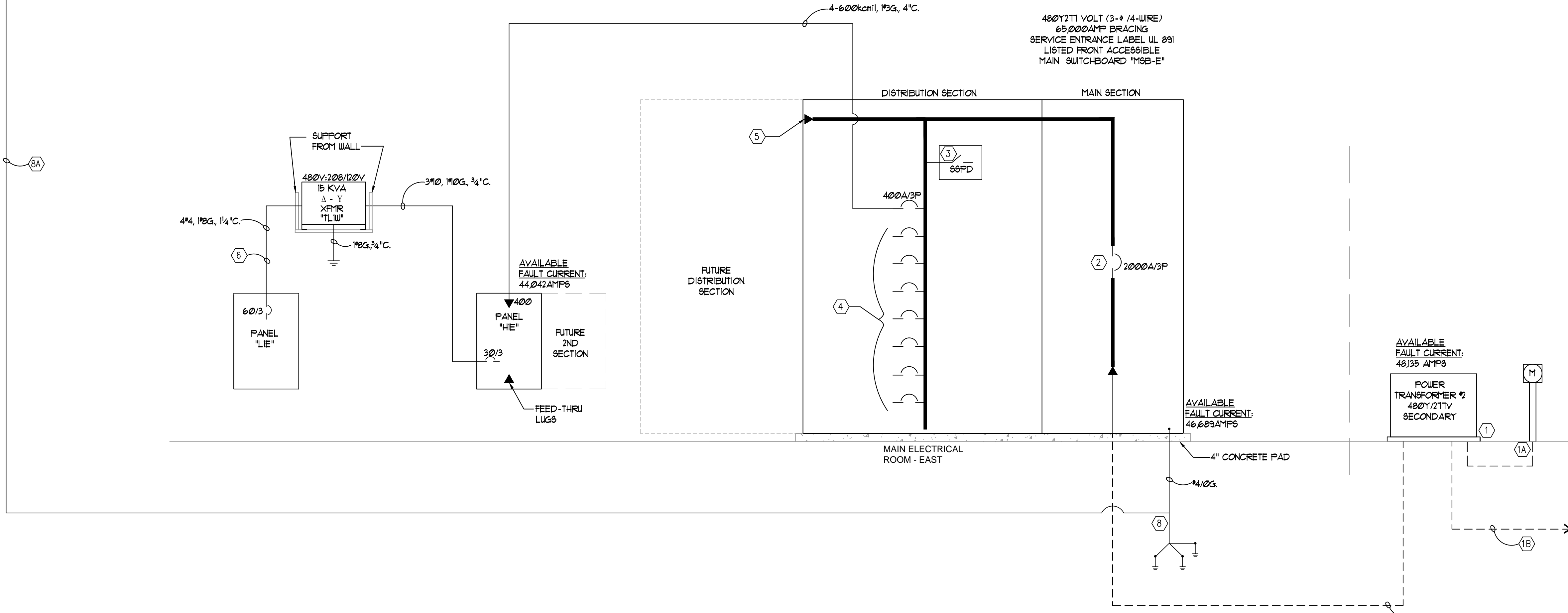


1 ELECTRICAL RISER DIAGRAM - MAIN SWITCHBOARD 'MSB-W' - WEST

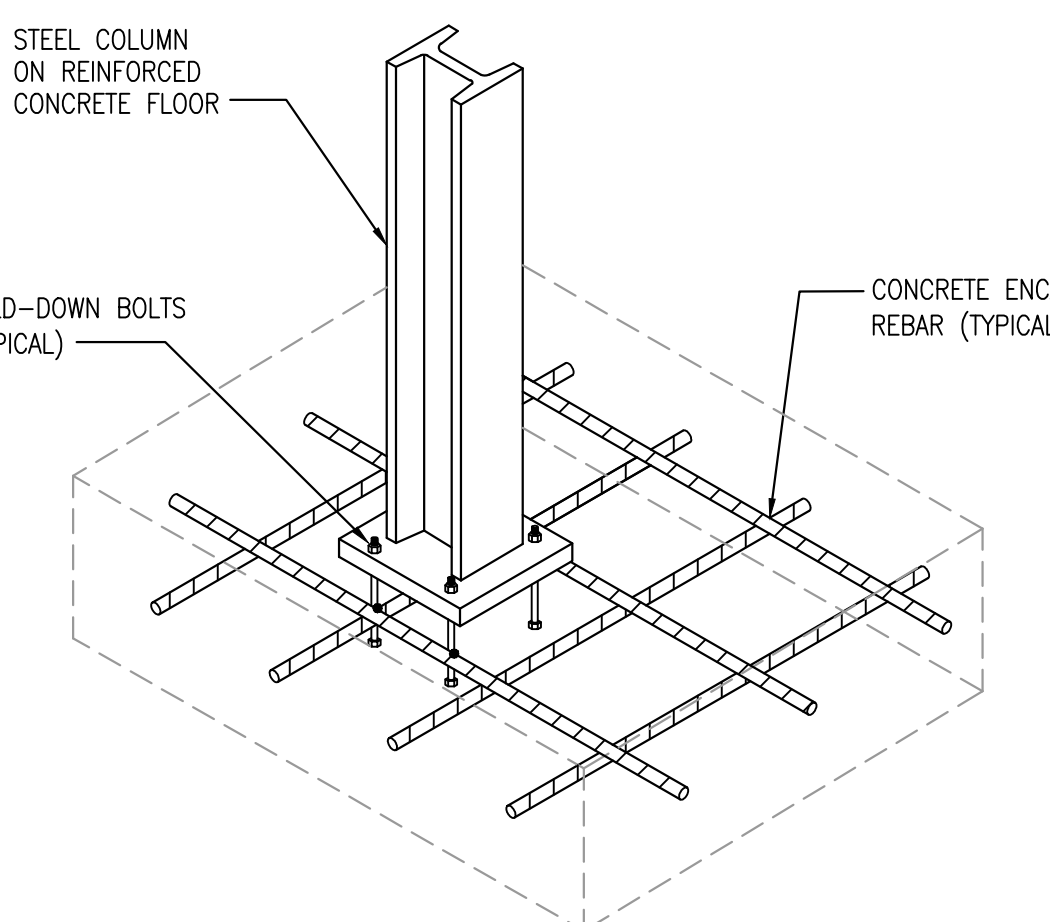


3 BUILDING GROUNDING DETAIL

- BUILDING GROUNDING NOTES:**
- DO NOT BRIDGE THE BUILDING GROUND SYSTEM WITH THE POWER COMPANY'S GROUNDING SYSTEM.
 - A WRITTEN RECORD OF THE GROUND FAULT PERFORMANCE TEST RESULTS SHALL BE MADE AVAILABLE EITHER TO THE CHIEF ELECTRICAL INSPECTOR OR THE ELECTRICAL PLANS EXAMINER PRIOR TO THE FINAL INSPECTION.
 - ALL GROUNDING SHALL BE IN ACCORDANCE WITH ARTICLE 250 OF THE NATIONAL ELECTRICAL CODE (N.E.C.).
 - ALL GROUNDING SHALL BE COPPER. GROUNDING ELECTRODE CONDUCTORS INDICATED BY G.E.C.
 - PROVIDE A MINIMUM OF THREE (3) GROUND RODS INTERCONNECTED WITH #4/0 COPPER WIRE. MEASURE RESISTANCE TO VERIFY NO MORE THE 25ohms TO GROUND. PROVIDE ADDITIONAL GROUND RODS AND/OR GROUND ENHANCEMENT MATERIAL (ERICO OR EQUAL) WHERE REQUIRED TO LOWER THE RESISTANCE TO 25ohms OR LESS.



2 ELECTRICAL RISER DIAGRAM - MAIN SWITCHBOARD 'MSB-E' - EAST



4 COLUMN GROUNDING DETAIL

- COLUMN GROUNDING NOTES:**
- CONNECT HOLD-DOWN BOLTS TO CONCRETE-ENCASED ELECTRODE (REBAR) PER N.E.C. 250.68(C)(2)

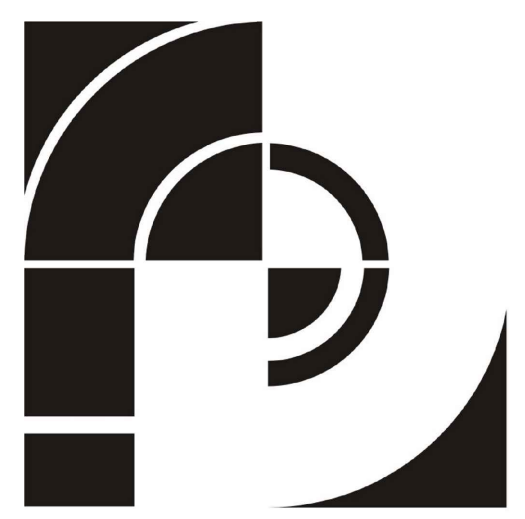
ELECTRICAL RISER DIAGRAM GENERAL NOTES (APPLY THIS SHEET ONLY)

- COORDINATE WITH POWER CO. FOR REQUIREMENTS NECESSARY FOR INSTALLATION OF SERVICE LATERAL CONDUIT/WIRING, UTILITY TRANSFORMER, AND METERING EQUIPMENT. DETERMINE CONTRACTOR'S RESPONSIBILITIES AND PROVIDE ALL LABOR, COMPONENTS, AND MATERIALS ACCORDINGLY. PROVIDE EQUIPMENT APPROVED AND REQUIRED BY THE POWER COMPANY. REFER TO POWER COMPANY METER INSTALLATION DETAILS. PROVIDE DISCONNECTS WHERE REQUIRED. PROVIDE GROUND AND GROUND ROD PER POWER COMPANY REQUIREMENTS. PROVIDE METER SUPPORT PER POWER COMPANY REQUIREMENTS.
- WIRE SIZES ARE FOR COPPER CONDUCTORS.
- PROVIDE ARC-FLASH WARNING LABELS ON ALL PANELS AND SWITCHBOARDS.
- PROVIDE ENGRAVED NAME PLATES FOR DISTRIBUTION BREAKERS, PANELBOARDS, TRANSFORMERS, AND DISCONNECTS.
- REFER TO PANELBOARD SCHEDULES FOR ADDITIONAL INFORMATION.
- PROVIDE 4\"/>

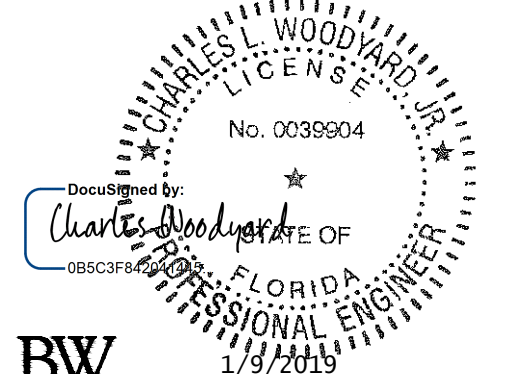
ELECTRICAL RISER DIAGRAM LEGEND NOTES (APPLY THIS SHEET ONLY)

- PAD-MOUNTED TRANSFORMER PROVIDED BY POWER CO. PROVIDE REINFORCED CONCRETE PAD PRIOR TO CONCRETE POUR, EXCAVATE, FILL, AND COMPACT EARTH TO ESTABLISH A SECURE AND LEVEL FOUNDATION WHILE MAINTAINING WORKING CLEARANCES.
- COORDINATE WITH POWER COMPANY FOR METERING AT THE PAD-MOUNTED TRANSFORMER. PROVIDE CONDUIT, MOUNTING PEDESTAL, AND ALL ACCESSORIES AS REQUIRED FOR COMPLETE INSTALLATION.
- COORDINATE WITH POWER CO. FOR CONDUITS REQUIRED FOR PRIMARY CONDUCTORS SERVING PAD-MOUNTED TRANSFORMERS AND PROVIDE QUANTITY AND SIZE AS REQUIRED. ROUTE AND INSTALL PER POWER CO. SPECIFICATIONS.
- PROVIDE SERVICE-RATED MAIN CIRCUIT BREAKER WITH ADJUSTABLE LONG TIME, SHORT TIME, INSTANTANEOUS, AND GROUND FAULT PROTECTION PER NEC 215.10 & 230.95. PROVIDE CIRCUIT BREAKER WITH MAINTENANCE SETTINGS TO OVERRIDE ANY INTENTIONAL DELAY OF THE INSTANTANEOUS SETTING OR OTHER METHOD OF ARC ENERGY REDUCTION INDICATED IN 2014 NEC 240.87. EQUIP CIRCUIT BREAKER WITH AN ADDITIONAL SHUNT-TRIP FOR EPD SWITCH.
- PROVIDE SURGE PROTECTION DEVICE (SPD) FACTORY INSTALLED INTO SWITCHBOARD WITH INTEGRAL DISCONNECT. PROVIDE MINIMUM 10 YEAR WARRANTY. SPD SHALL BE RATED FOR A MINIMUM OF 300KA PER PHASE AND 150KA PER MODE. SQUARE-D SURGELOGIC OR EQUAL MEETING UL 1449 3rd EDITION SEPT. 2009 REVISION.
- PROVIDE DISTRIBUTION SECTION WITH FULL HEIGHT BUSSING FOR MAXIMUM MOUNTING SPACE FOR CIRCUIT BREAKERS (MAXIMUM 1200AMP CIRCUIT BREAKERS).
- PROVIDE THRU-BUSS AND OTHER PROVISIONS REQUIRED FOR THE ADDITION OF A FUTURE DISTRIBUTION SECTION.
- LIMIT LENGTH OF SECONDARY CONDUCTORS TO 25FT PER N.E.C. SECTION 240.21(C).
- VERIFY FIRE PUMP SIZE AND REQUIREMENTS WITH FIRE PROTECTION CONTRACTOR. PROVIDE FINAL CONNECTION AS REQUIRED; CONNECTION INDICATED IS FOR A WYE-DELTA STARTER. VERIFY FIRE PUMP CONTROLLER IS EQUIPPED WITH SURGE PROTECTION. PER N.E.C. SECTION 695.15 AND PROVIDE AS REQUIRED.

- REFER TO DETAIL 3/E500 FOR GROUNDING REQUIREMENTS AT EACH SWITCHBOARD.
- VERIFY METAL FRAMING STRUCTURE PROVIDES A BOND (ELECTRICALLY CONTINUOUS AND CONDUCTIVE) AS REQUIRED TO INTERCONNECT THE GROUNDING ELECTRODES SYSTEMS FOR SWITCHBOARDS 'MSB-E' AND 'MSB-W' OR PROVIDE A #4/0 CONNECTION AS REQUIRED TO CONNECT BUILDING ELECTRICAL SERVICES TO A COMMON GROUNDING ELECTRODE SYSTEM PER N.E.C. 250.58. REFER TO DETAIL 4/E500.
- EXTEND A GROUNDING ELECTRODE CONDUCTOR TO SERVICE-RATED FIRE PUMP CONTROLLER



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Sheet Title: ELECTRICAL RISER DIAGRAM AND GROUNDING DETAILS
Sheet No: **E500**
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