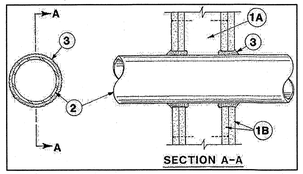
System No. W-L-1001

F Ratings — 1, 2, 3 and 4 Hr (See Items 2 and 3)

T Ratings — 0, 1, 2, 3, and 4 Hr (See Item 3)

L Rating At Ambient — less than 1 CFM/sq ft

L Rating At 400 F — less than 1 CFM/sq ft



1. **Wall Assembly** — The 1, 2, 3 or 4 hr fire-rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner described in the individual U300 or U400 Series Wall or Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:

   A. **Studs** — Wall framing may consist of either wood studs (max 2 h fire rated assemblies) or steel channel studs. Wood studs to consist of nom 2 by 4 in. lumber spaced 16 in. OC with nom 2 by 4 in. lumber end plates and cross braces. Steel studs to be min 3-5/8 in. wide by 1-3/8 in. deep channels spaced max 24 in. OC.

   B. **Gypsum Board*** — Nom 1/2 or 5/8 in. thick, 4 ft. wide with square or tapered edges. The gypsum wallboard type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual U300 or U400 Series Design in the UL Fire Resistance Directory. Max diam of opening is 26 in.

2. **Through-Penetrant** — One metallic pipe, conduit or tubing installed either concentrically or eccentrically within the firestop system. The annular space between pipe, conduit, or tubing and periphery of opening shall be min of 0 in. (point contact) to max 2 in. Pipe, conduit or tubing to be rigidly supported on both sides of wall assembly. The following types and sizes of metallic pipes, conduits or tubing may be used:

   A. **Steel Pipe** — Nom 24 in. diam (or smaller) Schedule 10 (or heavier) steel pipe.

   B. **Iron Pipe** — Nom 24 in. diam (or smaller) service weight (or heavier) cast iron soil pipe, nom 12 in. diam (or smaller) or Class 50 (or heavier) ductile iron pressure pipe.

   C. **Conduit** — Nom 6 in. diam (or smaller) steel conduit or nom 4 in. diam (or smaller) steel electrical metallic tubing.

   D. **Copper Tubing** — Nom 6 in. diam (or smaller) Type L (or heavier) copper tubing.

   E. **Copper Pipe** — Nom 6 in. diam (or smaller) Regular (or heavier) copper pipe.

   F. **Through Penetrating Product* — Flexible Metal Piping —** The following types of steel flexible metal gas piping may be used:

   1. Nom 2 in. diam (or smaller) steel flexible metal gas piping. Plastic covering on piping may or may not be removed on both sides of floor or wall assembly.

   OMEGA FLEX INC

   2. Nom 1 in. diam (or smaller) steel flexible metal gas piping. Plastic covering on piping may or may not be removed on both sides of floor or wall assembly.

   GASTITE, DIV OF TITEFLEX

   3. Nom 1 in. diam (or smaller) steel flexible metal gas piping. Plastic covering on piping may or may not be removed on both sides of floor or wall assembly.

   WARD MFG LLC

Fill, Void or Cavity Material* — Caulk or Sealant — Min 5/8, 1-1/4, 1-7/8 and 2-1/2 in. thickness of caulk for 1, 2, 3 and 4 hr rated assemblies, respectively, applied within annulus, flush with both surfaces of wall. Min 1/4 in. diam bead of caulk applied to gypsum board/penetrant interface at point contact location on both sides of wall. The hourly F Rating of the firestop system is dependent upon the hourly fire rating of the wall assembly in which it is installed, as shown in the following table. The hourly T Rating of the firestop system is dependent upon the type or size of the pipe or conduit and the hourly fire rating of the wall assembly in which it is installed, as tabulated below:

Max Pipe or Conduit Diam In	F RATING Hr	T RATING Hr
1	1 or 2	0+, 1 or 2
1	3 or 4	3 or 4
4	1 or 2	0
6	3 or 4	0
12	1 or 2	0

+When copper pipe is used, T Rating is 0 hr.

3M COMPANY — CP 25WB+ or FB-3000 WT.

*Bearing the UL Classification Mark

DIVISION 16 — ELECTRICAL

PART 1 — GENERAL

1.1 DESCRIPTION OF THE WORK

A. Work under this section includes, but is not necessarily limited to, furnishing and installing the following:
   1. Electrical service and service equipment.
   2. Lighting and power distribution system.
   3. Provide lighting fixtures selected by owner with lamps to match.
   4. Wiring devices, boxes, cover plates, etc.
   5. Source of power for all items of equipment.
   6. Grounding.
   7. Other requirements and/or systems where shown.

B. All work shall be complete and items, equipment, etc., shall be electrically connected for proper and correct operation.

C. All work under this contract shall be installed in accordance with the latest edition of the following codes and standards insofar as they apply:
   1. The 2017 National Electrical Code.
   2. The National Electrical Safety Code.
   3. Underwriter's Laboratories, Inc., Standards and approved listings.
   4. Electrical Testing Labatories standards.
   5. North Carolina Building Code, Latest Edition and Revisions.
   6. All local codes and ordinances.

D. The Electrical Contractor shall be licensed in the State of North Carolina and have all local licenses required for the work.

E. Obtain all permits, licenses, inspections, etc., required for the work and pay for the same. Furnish final certificate of inspection and approval from the electrical inspector having jurisdiction prior to acceptance of the work.

F. All work shall be done by skilled mechanics and shall present a neat, trim, workmanlike condition when complete.

1.2 INTENT

A. The intent of these specifications and the accompanying drawings is to convey as reasonably as possible the requirements for a complete job ready for the building to operate. The Electrical Contractor shall take this into consideration and include in his base bid allowance for contingencies as will allow him to provide minor pieces of equipment and labor not specifically indicated but required for the job to operate properly, at no additional cost to the Owner.

1.3 COORDINATION

A. Coordinate work with other contractors. Notify Architect of apparent conflicts early to expedite construction. If structural damage appears imminent, stop work and notify Architect for a decision before resuming operations.

B. Locations shown are approximate. The drawings do not give exact details as to elevations and locations of various pipes, fittings, ducts, conduit, etc., and do not show all offsets and other installation details which may be required. Coordinate all locations with architect before any rough-in.

1.4 SHOP DRAWINGS

A. Shop drawings shall be submitted for panels and service equipment, lighting, wiring devices, and cover plates. These may consist of the manufacturer's standard catalog or tear sheets and shall have the exact items being offered clearly identified.

PART 2 — PRODUCTS AND MATERIALS

2.1 GENERAL

A. All material shall be new and shall bear the manufacturer's name, trade name, and UL label where such standard has been established for the particular material. Materials shall be the standard products of manufacturer's regularly engaged in the manufacturer of the required type of equipment and the manufacturer's latest approved design.
   1. Boxes installed in concealed locations shall be set flush with the finished surfaces.
   2. Provide rated boxes in all fire barriers & walls installed per code.

2.2 NOT USED

2.3 CONDUCTORS

A. Conductors shall be color coded, sizes #8 and larger may be color taped on the job. Color coding shall be: Standard Practice.

B. Conductors shall be manufactured by Dodge, Southwire or approved equal. Conductors shall meet the latest requirements of NEMA and IPCEA and shall be UL approved.

C. Metallic sheathed "MC" cable may be used where allowed by N.E.C.

D. Conductors shall be spliced and taped as follows:
   1. Size #10 and #12, use Ideal "Wing Nuts" or T&B "Piggy" connectors. Connectors shall be rated for 150 degrees C for use in recessed lighting fixtures.
   2. Size #8 and larger shall be solderless screw and screw-clamping type, smoothly covered and shaped with rubber gum type with final cover vinyl plastic electrical type. In lieu of rubber gum and vinyl plastic type, factory fabricated approved preformed insulating covers may be used. All connectors shall be UL approved.
   3. No split-bolt type connectors may be used.

E. All branch wire and connections shall be copper and sized per National Electric Code.

F. All conductors shall be continuous without splice between junction, outlet, device boxes, etc. No splicing will be permitted in panelboard cabinets, safety switches, etc.

G. All wiring in mechanical spaces shall be plenum rated.

H. Provide GFI protection within 6'-0" of any sink.

I. All multi-wire branch circuits shall comply with 2017 NEC, 210.4(B).

J. All wiring at medical facilities shall comply with 2017 NEC, 517.1.

2.4 PANELBOARDS, SAFETY SWITCHES

A. Panelboards shall comply with NEMA Standard PB 1 — Latest Edition and as manufactured by Square D or ITE-Siemens.

B. The contractor shall be responsible for correctly phasing the circuits in the panelboards.

C. Safety switches shall be general duty type, size and rating as required for load service. Safety switches shall be fused or unfused as shown and/or as required. Safety switches serving motor loads shall be horsepower rated for load served.

2.5 NOT USED

2.6 WIRING DEVICES

A. Wiring devices shall be commercial grade by Bryant, Leviton, or approved equal. With matching cover. Color by Architect.

B. Wiring devices installed under a Kitchen Hood shall have stainless steel covers.

C. Wiring devices installed over counters shall comply with ANSI A117.1.

2.7 NOT USED

2.8 CONDUIT

A. PVC conduit will be allowed where N.E.C. approved.

B. All service conduit shall be rigid where exposed below 8'-0" AFF or exposed to the elements or hazardous conditions.

PART 3 — EXECUTION

3.1 CIRCUIT GROUNDING

A. All circuits shall contain an insulated, green, copper grounding conductor, sized in accordance with Table 250-95 of the NEC. Grounding conductors shall be connected to equipment grounding bus in panelboard and securely attached and grounded to the device or enclosure at the other end.

3.2 GROUNDING TYPE CONVENIENCE OUTLETS AND SWITCHES

A. Outlets and switches shall be solidly grounded to equipment grounding system with a green colored insulated conductor. Electrical connections shall be continuous from equipment ground bus in panelboard to the hex nut on the convenience outlet or switch.

3.3 MOTORS

A. All motors shall be connected to conduit system with short length (minimum length 24" and maximum length 36") of flexible liquidtight conduit.

3.4 NOT USED

3.5 EQUIPMENT LABELING

A. Provide permanent name plates for all panelboards, safety switches, wiring troughs, etc., for identification of equipment controlled, services, etc. Nameplates shall be securely and permanently attached to equipment with stainless steel screws. Nameplates shall include the name of the equipment and where it is fed from.

B. All switch plates, receptacle plates and outlet covers shall be labeled with machine printed vinyl labels identifying the circuit(s) within.

C. All empty conduit runs shall be identified and indicated where they terminate.

D. Provide typewritten directory in each panelboard to clearly identify each circuit, service, etc.

3.6 NOT USED

3.7 NOT USED

3.8 JUNCTION AND/OR PULL BOXES

A. Boxes shall be installed where necessary to avoid excessive runs and/or too many bends between outlets.

3.9 PULL WIRE

A. Leave pull wire in each empty conduit run.

3.10 NOT USED

3.11 GROUNDING

A. All grounding shall be in accordance with Article 250 of the NEC. In addition, the following requirements shall be met:
   1. Grounding conductors shall be installed as to permit the shortest and most direct path from equipment to ground. All connections to grounding conductors shall be accessible.
   2. Equipment ground continuity shall be maintained through flexible metal conduit.
   3. All wiring devices equipped with grounding connection shall be solidly grounded to ground system with grounding conductors.
   4. The frame of all lighting fixtures shall be securely grounded to the equipment ground system with grounding conductors.
   5. All equipment enclosures, and non-current-carrying metallic parts of electrical equipment, raceway systems, etc., shall be effectively and adequately bonded to ground.
   6. All equipment enclosures, and non-current-carrying metallic parts of electrical equipment, raceway systems, etc., shall be effectively and adequately bonded to ground.

3.12 ELECTRICAL WORK IN CONNECTION WITH OTHER WORK

A. PLUMBING WORK: The Electrical Contractor shall furnish and install switches and devices as shown and electrically connect electric water heaters, etc. All other electrical work required will be performed by the PLUMBING CONTRACTOR.

B. HEATING AND AIR CONDITIONING WORK: The Electrical Contractor shall provide all disconnect switches, starters, and associated hardware for the equipment furnished including all line and load side wiring and conduit. Final connections to the equipment will be by the HVAC contractor. All control wiring will be accomplished by the HVAC contractor. Coordinate all work associated with the HVAC contractor.

3.13 CLEAN UP

A. During construction, keep the site clean of debris. Upon completion, and before final inspection, clean up the premises to remove all evidence of work. In addition upon completion of construction leave equipment clean.

3.14 GUARANTEE

A. Guarantee all materials and labor included in the electrical work for a period of one year from date of final acceptance by the Owner. Any part or parts of the work or equipment which prove to be defective during the guarantee period shall be replaced at no additional cost to the Owner.

GENERAL NOTES

1 ALL ELECTRICAL WORK SHALL BE IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE AND ALL LOCAL CODES HAVING JURISDICTION.

2 ALL BRANCH CIRCUIT CONDUCTORS TO BE COPPER (SERVICE CONDUCTORS MAY BE ALUMINUM WITH SAME AMPACITY AS COPPER CONDUCTORS. RE-SIZE CONDUCTERS AND CONDUIT PER NEC.)

3 ALL CIRCUITS TO BE 2 #12, 1 #12 GND IN 1/2" EMT CONDUIT AS A MINIMUM. PROVIDE WIRING FOR LARGER CIRCUITS AS REQUIRED BY NEC. RIGID CONDUIT IS REQUIRED WHERE EXPOSED BELOW 8'-0" A.F.F.

4 ALL EMPTY CONDUIT RUNS IN EXCESS OF 10 FEET SHALL BE PROVIDED WITH A PULL WIRE OR FISH TAPE/CORD.

5 CONTRACTOR SHALL VERIFY THAT ALL DOOR SWINGS ARE CORRECT BEFORE INSTALLING LIGHT SWITCH OUTLETS.

6 ALL BRANCH CIRCUIT CONDUCTORS FROM THE PANEL TO THE FIRST OUTLET SHALL BE INCREASED TO THE NEXT LARGER SIZE WHERE THE LENGTH OF THE HOME RUN EXCEEDS 120 FEET ON 120V AND 208V CIRCUITS.

7 THE CORRECT NUMBER OF WIRES MAY NOT BE INDICATED FOR ALL CIRCUITS, ONLY THOSE WHERE CLARIFICATION IS NECESSARY. THE ELECTICAL CONTRACTOR SHALL PROVIDE ALL WIRES NECESSARY FOR THE PROPER FUNCTION OF THE SYSTEM WHETHER INDICATED ON DRAWINGS OR NOT.

8 THE CONTRACTOR SHALL BE RESPONSIBLE FOR CORRECTLY PHASING THE CIRCUITS IN THE PANELBOARDS.

9 THE ELECTRICAL CONTRACTOR SHALL VERIFY THE TYPE OF CEILING SYSTEM WITH THE GENERAL CONTRACTOR TO INSURE THAT ALL LIGHTING FIXTURES ARE COMPATIBLE WITH THE CEILING SYSTEM BEING INSTALLED. LIGHTING FIXTURES SHOULD NOT BE ORDERED UNTIL TYPE OF CEILING HAS BEEN VERIFIED.

10 ELECTRICAL REQUIREMENTS INDICATED ON DRAWINGS MAY DIFFER FROM ACTUAL EQUIPMENT FURNISHED. IF FURNISHED EQUIPMENT DIFFERS FROM RATINGS ON DRAWINGS CONTRACTOR SHALL NOTIFY ARCHITECT/ENGINEER FOR APPROPRIATE ACTION TO BE TAKEN.

11 IT SHALL BE THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR TO COORDINATE EXACT BREAKER REQUIREMENTS FOR ALL EQUIPMENT PRIOR TO ORDERING PANEL. ADJUST BREAKER AND WIRE SIZES AS REQUIRED.

12 PROVIDE BOXES, JACKS, WIRING AND CONDUIT FROM LOCATIONS SHOWN TO MTP LOCATION. VERIFY EXACT REQUIREMENTS WITH OWNER.

13 ELECTRICAL CONTRACTOR SHALL PROVIDE ALL DISCONNECTS FOR MECHANICAL & PLUMBING EQUIPMENT. DISCONNECTS SHALL BE PER MANUFACTURES RECOMMENDATIONS AND FUSED PER NAME PLATE. PROVIDE NEMA 3R ENCLOSURES ON EXTERIOR. COORDINATE FUSE SIZES.

14 THE EC SHALL MEET WITH THE ARCHITECT AND TENANT PRIOR TO INSTALLING OUTLET BOXES TO VERIFY LOCATIONS AND MOUNTING HEIGHTS OF RECEPTACLES AND TELEPHONE OUTLETS.

ELECTRICAL LEGEND

- X / O_X / X — LIGHT FIXTURE: LETTER DENOTES FIXTURE TYPE (REFER TO LIGHTING PLAN AND FIXTURE SCHEDULE). NL = NIGHT LIGHT (NOT SWITCHED/ALWAYS ON)
- U / WP/GFI — DUPLEX RECEPTACLE — 120V; MOUNT 18" TO CENTER AFF UNLESS NOTED OTHERWISE; "WP" INDICATES WEATHER PROOF, "GFI" INDICATES GROUND FAULT CURRENT INTERRUPT PROTECTED. "U" INDICATES RECEPTACLE WITH (2) USB PORTS.
- QUADRAPLEX RECEPTACLE — 120V
- FLOOR OR CEILING OUTLET (AS NOTED) — 120V
- SPECIAL PURPOSE RECEPTACLE — REFER TO POWER PLAN AND PANEL SCHEDULE
- S — LIGHT SWITCH
- S_M — SWITCH WITH INTEGRAL PIR/US MOTION SENSOR FOR AUTOMATIC SHUT-OFF WITH UP TO 2 HOUR ADJUSTABLE DELAY.
- S_D — DIMMABLE LIGHT SWITCH
- (S) — MOTOR RATED SWITCH
- (J) — JUNCTION BOX
- ▽ — TELE/DATA OUTLET — PROVIDE JUNCTION BOX WITH CONDUIT BACK TO MTP. PROVIDE (1) TELEPHONE JACK AND (1) CAT 5 DATA JACK
- SINGLE-POLE HOMERUN TO PANELBOARD
- TWO-POLE OR 3-POLE HOMERUN TO PANELBOARD
- EXIT — EXIT LIGHT
- EMERGENCY EGRESS FIXTURE
- PC — PHOTOCELL
- BRANCH CIRCUIT WIRING
- SWITCH LEG
- GROUND CONNECTION
- PANEL A — DISTRIBUTION PANELBOARD
- DISCONNECTING MEANS AS REQUIRED BY CODE
- 2 HOUR FIRE BARRIER

APPENDIX B

2018 BUILDING CODE SUMMARY FOR ALL COMMERCIAL PROJECTS

ELECTRICAL DESIGN
(PROVIDE ON THE ELECTRICAL SHEETS IF APPLICABLE)
ELECTRICAL SUMMARY

ELECTRICAL SYSTEM AND EQUIPMENT

Method of Compliance

Energy Code:	Prescriptive	[X]	Energy Cost Budget	[ ]
ASHRAE 90.1:	Prescriptive	[X]	Energy Cost Budget	[ ]

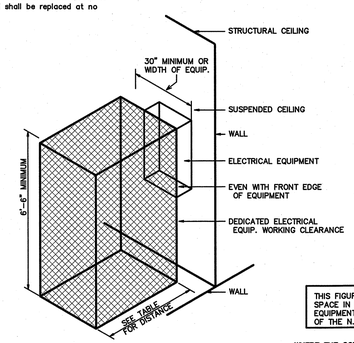
Lighting Schedule

lamp type required in fixture
number of lamps in fixture
ballast type used in fixture
number of ballasts in fixture
total wattage in fixture — See Light Fixture Schedule

total interior wattage specified vs. allowed	3160VA / 3820VA
total exterior wattage specified vs. allowed	228VA / 750VA

Additional Prescriptive Compliance

- [ ] 506.2.1 More Efficient Mechanical Equipment
- [ ] 506.2.2 Reduced Lighting Power Density
- [ ] 506.2.3 Energy Recovery Ventilation Systems
- [ ] 506.2.4 Higher Efficiency Service Water Heater
- [ ] 506.2.5 On-Site Supply of Renewable Energy
- [ ] 506.2.6 automatic Daylighting Control System



ELECTRICAL EQUIPMENT WORKING CLEARANCE PER ARTICLE 110-26 OF N.E.C.

WORKING CLEARANCES			
VOLTAGE TO GROUND NOMINAL	MIN. CLEAR DISTANCE IN FEET		
CONDITION:	1	2	3
0-150	3	3	3
151-600	3	3-1/2	4

THIS FIGURE ILLUSTRATES THE WORKING SPACE IN FRONT OF THE ELECTRICAL EQUIPMENT REQUIRED BY SECTION 110-16 OF THE N.E.C.

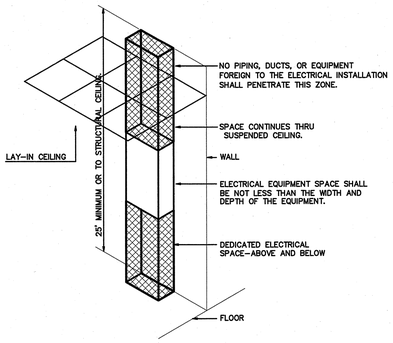
WHERE THE CONDITIONS ARE AS FOLLOWS:

1 EXPOSED LIVE PARTS ON ONE SIDE AND NO LIVE OR GROUNDED PARTS ON THE OTHER SIDE OF THE WORKING SPACE, OR EXPOSED LIVE PARTS ON BOTH SIDES EFFECTIVELY GUARDED BY SUITABLE WOOD OR INSULATED BUSBARS OPERATING AT NOT OVER 300V SHALL NOT BE CONSIDERED LIVE PARTS.

2 EXPOSED LIVE PARTS ON ONE SIDE AND GROUNDED PARTS ON THE OTHER SIDE.

3 EXPOSED LIVE PARTS ON BOTH SIDES OF THE WORK SPACE (NOT GUARDED AS PROVIDED IN CONDITION 1) WITH THE OPERATOR BETWEEN.

1 ELECTRICAL CLEARANCES
SCALE: NTS



ELECTRICAL EQUIPMENT DEDICATED SPACE PER ARTICLE 110.26.F.1 OF N.E.C.

2 DEDICATED SPACE
SCALE: NTS

WEEKS TURNER ARCHITECTURE

WEEKS TURNER ARCHITECTURE, PA
3305-109 Durham Drive
Raleigh, North Carolina 27603
919.779.9797 fax: 919.779.0826
www.weeksturner.com

ENGINEER
BURKE DESIGN GROUP, PA
CONSULTING ENGINEERS
3305-109 Durham Drive
Raleigh, North Carolina 27603
919.771.1916 fax: 919.779.0826
email: benburke@nc.rr.com
Corp. License # C-2652

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 22038 BENJAMIN E. BURKE
8/12/19

PROJECT TITLE
DAWSON ELECTRIC

ADDRESS
CITY, NORTH CAROLINA

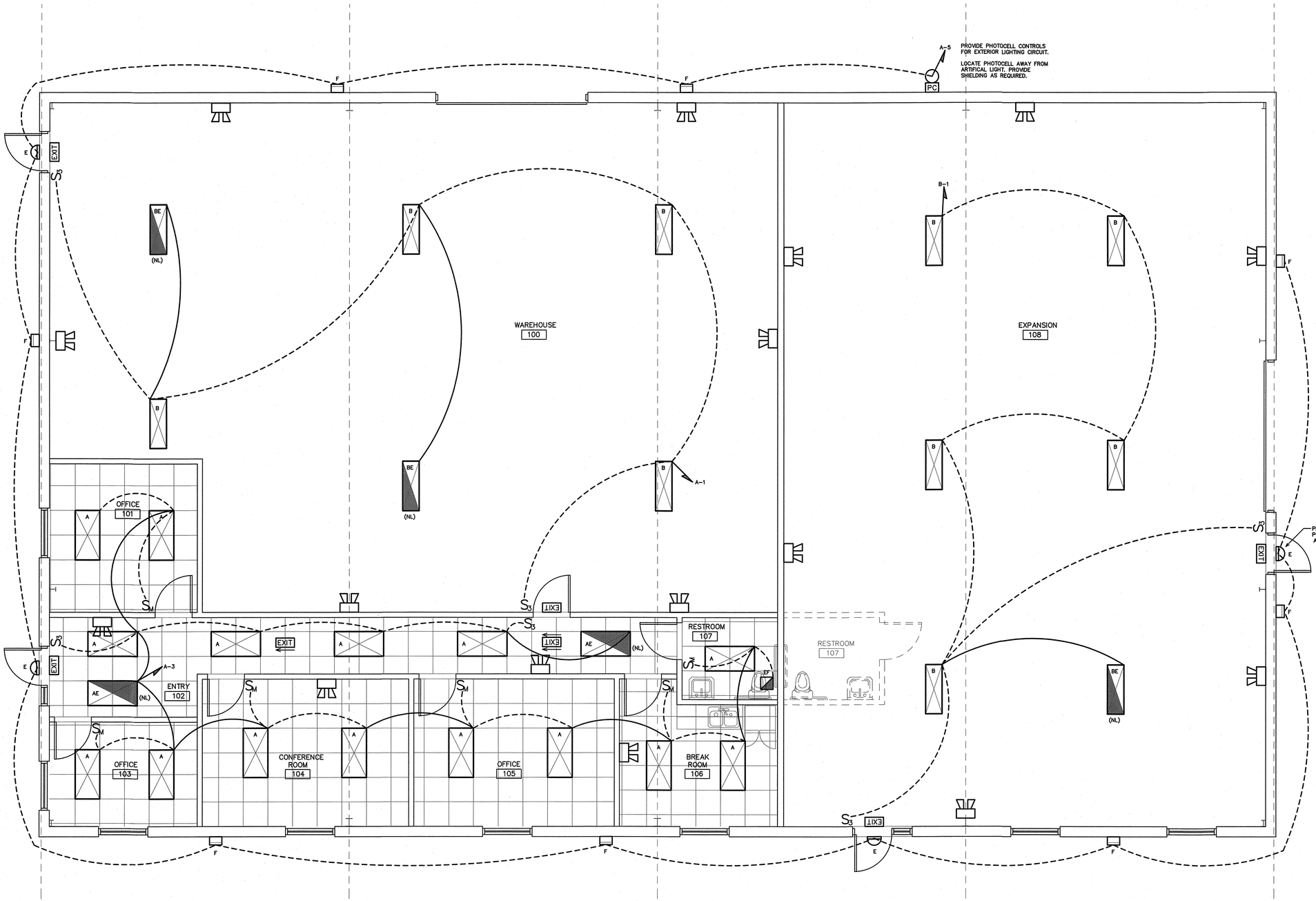
PROJECT NO.
1918

DRAWING TITLE
ELECTRICAL SPECIFICATIONS

E1

PLOT DATE 7/19/2019

This original sheet is 24" x 36"; other dimensions indicate it has been altered.



NOTE:
PROVIDE LABELING ON EACH SWITCH NOTING CIRCUIT SERVED.

AUTOMATIC LIGHTING SHUTOFF IS NOT SHOWN IN THE EGRESS PATH LIGHTING AS ALLOWED PER 505.2.2.2.1 EXCEPTION #3. WHERE AUTOMATIC SHUTOFF WOULD ENDANGER OCCUPANT SAFETY.

TIE ALL EXIT AND EMERGENCY LIGHTS TO NEAREST AVAILABLE UNSWITCHED LIGHTING CIRCUIT IN THE AREA SERVED.

VERIFY HEIGHT/LOCATION OF ALL SWITCHES AND DEVICES PRIOR TO INSTALLATION.

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

Dawson Electric E2

LIGHTING SCHEDULE *

MARK	MANUFACTURER	CATALOG NO.	VOLT.	LAMPS NO.	LAMPS TYPE	LAMPS W	BALLAST TYPE	W/ FIXTURE	REMARKS	
A	COLUMBIA	LJT24-35LWG-FSA12F-EDU	120	–	LED	34	–	34	2X4 LED ECONOMY TROFFER W/FROST ACRYLIC LENS (3000L)	*
AE	COLUMBIA	LJT24-35LWG-FSA12F-EDU	120	–	LED	34	–	34	2X4 LED ECONOMY TROFFER W/FROST ACRYLIC LENS (3000L), EMERGENCY BALLAST	*
B	LITHONIA	IBL-30L-WD-LP835-WGIBL	UNV	–	LED	–	–	245	LED HIGH BAY- W/ WIRE GUARD, STRUCTURE MOUNTED W/ CHAINS; COORD. W/ OWNER	*
B1	LITHONIA	IBL-30L-WD-LP835-DL1BL-SD125	UNV	–	LED	–	–	245	LED HIGH BAY – WITH LENS, STRUCTURE MOUNTED W/ CHAINS; COORD. W/ OWNER	*
BE	LITHONIA	IBL-30L-WD-LP835-WGIBL-12412	UNV	–	LED	–	–	245	LED HIGH BAY- WITH WIRE GUARD (EMERGENCY BACK-UP), MOUNTED TO STRUCTURE	*
E	DUAL LITE	PG	120	–	LED	–	–	17	EMERGENCY EGRESS FIXTURE – DUAL MODE, NORMAL/EMERGENCY OPERATION	*
F	HUBBELL	NRG-365-4K-U	120	–	LED	20	–	20	EXTERIOR LED WALL PACK, COLOR BY ARCH	*
EXIT	MULE	MXBRU	120	–	LED	–	–	–	EXIT LIGHT, ARCH TO SELECT COLOR/FINISH	*
EXIT E	MULE	SQRXU	120	–	LED	–	–	–	COMBINATION EMERGENCY/EXIT LIGHT, ARCH TO SELECT COLOR/FINISH	*
E	MULE	SQLED	120	–	LED	–	–	–	EMERGENCY LIGHT, ARCH TO SELECT COLOR/FINISH	*

** OR APPROVED EQUAL. PROVIDE CUT SHEETS FOR OWNER APPROVAL PRIOR TO ORDERING FIXTURES. FOR FLUORESCENT FIXTURES CONTROLLED BY MOTION SENSOR, PROVIDE "PROGRAMMED RAPID START" BALLASTS. CATALOG NUMBERS ARE FOR REFERENCE ONLY, ACTUAL NUMBERS MAY VARY. 'EB' DENOTES ELECTRONIC BALLAST. VERIFY FIXTURE HAS INTEGRAL LOCAL DISCONNECTING MEANS PER NEC 410.130 (G).

WEEKS TURNER ARCHITECTURE

WEEKS TURNER ARCHITECTURE, PA
3305-109 Durham Drive
Raleigh, North Carolina 27603
919.779.9797 fax: 919.779.0826
www.weeksturner.com

ENGINEER
BURKE DESIGN GROUP, PA
CONSULTING ENGINEERS
3305-109 Durham Drive
Raleigh, North Carolina 27603
919.771.1916 fax: 919.779.0826
email: benburke@nc.rr.com
Corp. License # C-2652

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 22638 BENJAMIN E. BURKE
8/7/19

PROJECT TITLE
DAWSON ELECTRIC

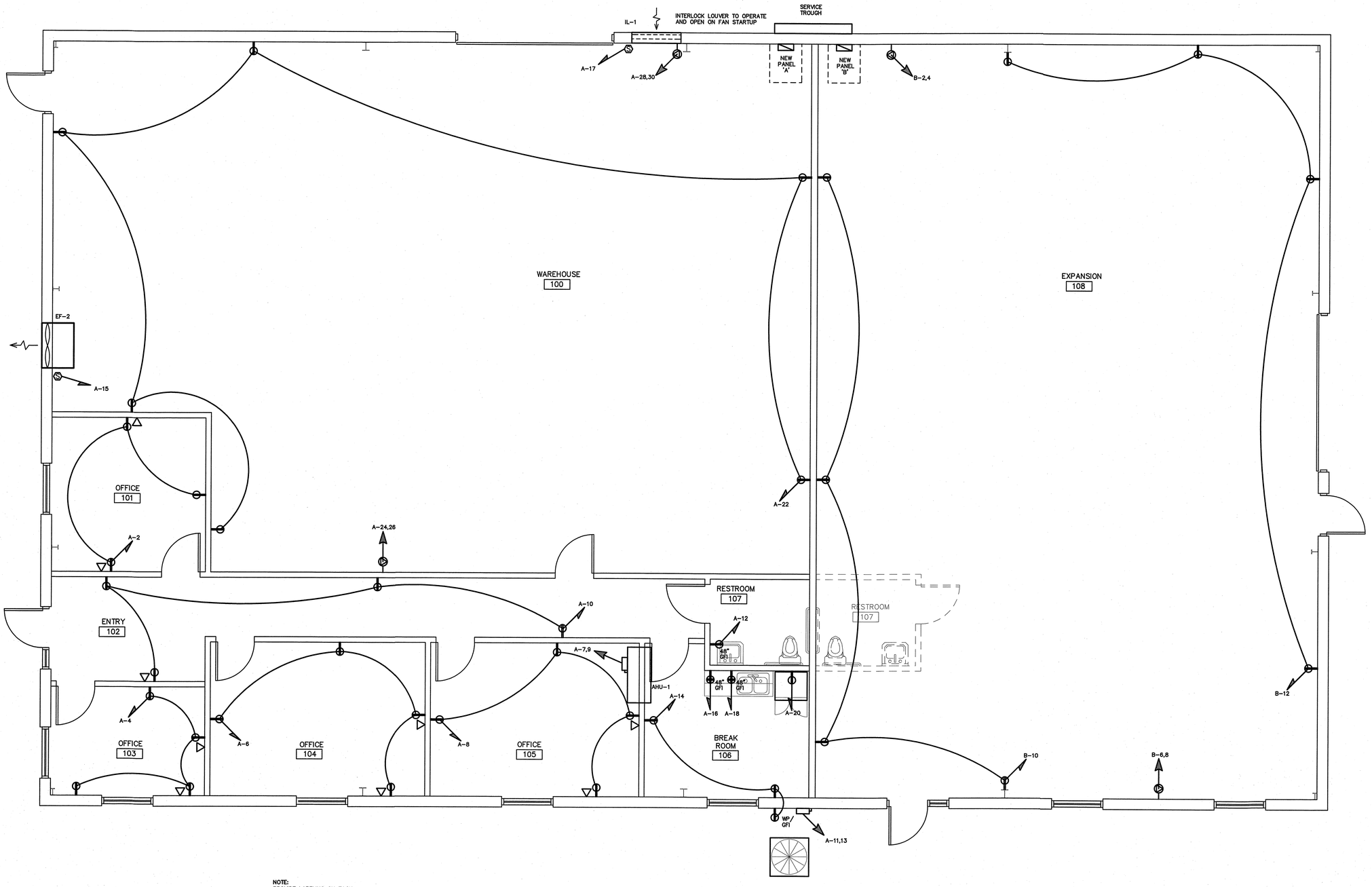
ADDRESS
CITY, NORTH CAROLINA

PROJECT NO.
1918

DRAWING TITLE
LIGHTING PLAN

E2

PLOT DATE 7/19/2019



NOTE:
PROVIDE LABELING ON EACH RECEPTACLE NOTING CIRCUIT SERVED.

VERIFY HEIGHT/LOCATION OF ALL DEVICES PRIOR TO INSTALLATION.

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

WEEKS TURNER ARCHITECTU
3305-109 Durham Drive
Raleigh, North Carolina 27603
919.779.9797 fax: 919.779.082
www.weeksturner.com

ENGINEER
BURKE DESIGN GRO
CONSULTING ENGINEE
3305-109 Durham Drive
Raleigh, North Carolina
919.771.1916 fax: 919.7
email: benburke@nc.rr.
Corp. License # C-2652

NORTH CAROLINA PROFESSIONAL SEAL 22038 ENGINEER BENJAMIN E BURKE
8/7/19

PROJECT TITLE
DAWSON ELECTRIC

ADDRESS
CITY, NORTH CAROLINA

PROJECT NO.
1918

DRAWING TITLE
POWER PLAN

E3

PLOT DATE 7/19

Dawson Electric E4

NEW PANEL– 'A'

MAKE: CUTLER HAMMER
TYPE: PRL1a
OR APPROVED EQUAL

RATING: 208/120V 3 PHASE 4 WIRE
MOUNTING: SURFACE
MINIMUM AIC: VERIFY

MLO MAIN CIRCUIT BREAKER
EQUIPMENT GROUND BUS ____ ☒YES ☐NO
SERVICE ENTRY RATED ____ ☐YES ☒NO

LOAD SERVICE	CKT BRKR	WATTS PER PHASE A	B	C	CKT NO	NEUTRAL A B C	CKT NO	WATTS PER PHASE A	B	C	CKT BRKR	LOAD SERVICE
LTS: WAREHOUSE	20A	1470			1		2	540			20A	REC: OFFICE (101)
LTS: OFFICE, CONF, BREAK, BATH	20A		710		3		4		540		20A	REC: OFFICE (103)
LTS: EXTERIOR	20A			228	5		6			900	20A	REC: CONFERENCE (104)
AHU–1	30A	2309			7		8	540			20A	REC: OFFICE (105)
4.1A MOTOR, 18.1A HEAT			2309		9		10		720		20A	REC: ENTRY (102)
HP–1	30A			1591	11		12			180	20A	REC: RESTROOM (107)
14.1A COMP, 1.2A FAN		1591			13		14	360			20A	REC: BREAKROOM (106)
EF–2	20A		864		15		16		360		20A	REC: BREAKROOM – COUNTER
IL–1	20A			500	17		18			360	20A	REC: BREAKROOM – COUNTER
SPARE	20A	---			19		20	1800			20A	REC: BREAKROOM – REFRIGERATOR (G)
SPARE	20A		---		21		22		1080		20A	REC: WAREHOUSE (100)
SPARE	20A			---	23		24			500	20A	SPEC. REC: WAREHOUSE (100)
SPARE	20A	---			25		26	500				.
SPACE			---		27		28		500		20A	SPEC. REC: WAREHOUSE (100)
SPACE				---	29		30			500		.
SPACE		---			31		32	---			20A	SPARE
SPACE			---		33		34		---		20A	SPARE
SPACE				---	35		36			---	20A	SPARE
SPACE		---			37		38	---				SPACE
SPACE			---		39		40		---			SPACE
SPACE				---	41		42			---		SPACE
SUB–TOTALS 'B'		5370	3883	2319		200A BUS	3740	3200	2440		SUB–TOTALS 'A'	
						200A LUGS	5370	3883	2319		SUB–TOTALS 'B'	TOTAL CONNECTED LOAD
						200A FEED	9110	7083	4759		GRAND TOTAL	
						VERIFY SIZE	76A	59A	40A		AMPS/PHASE	

NOTES
(G) GFCI BREAKER

NEC ALLOWABLE DEMAND FACTORS

1. DEMAND FACTORS PER NEC 220
2. LARGEST OF: NEC TABLE 220.12 OR CONNECTED LOAD
3. NEC TABLE 220.56
4. NEC 220.51
5. NEC 220.43A, 200 VA/LINEAR FT
6. NON–COINCIDENT LOADS, LARGEST OF THE TWO LOADS IS COUNTED

DIVERSIFIED LOAD SUMMARY

LOAD TYPE	DEMAND FACTOR⑥	A	B	C	TOTAL DIVERSIFIED LOAD
GENERAL LIGHTING ②	125%	1838	888	285	3011
TRACK LIGHTING	125%	---	---	---	---
GENERAL USE RECEPTACLES	≤10KVA@100%	3740	3200	2440	9380
	>10KVA@50%	---	---	---	---
MOTORS AND EQUIPMENT — LARGEST	125%	1833	1080	1833	4746
MOTORS AND EQUIPMENT — ALL OTHERS	100%	551	426	625	1602
WATER HEATERS	125%	---	---	---	---
KITCHEN EQUIPMENT ④	100%	---	---	---	---
FIX. ELEC. SPACE HEAT. ④	100%	1882	1882	---	3764
SHOW WINDOW LIGHTS ⑤	125%	---	---	---	---
SIGN	125%	---	---	---	---
MISC	100%	---	---	---	---
PHASE (TOTAL VA)		9844	7476	5183	22503
TOTAL AMPS		82A	62A	43A	VOLT AMPS / VOLTS X 1.732 = 63A TOTAL AMPS

Dawson Electric E4

NEW PANEL– 'B'

MAKE: CUTLER HAMMER
TYPE: PRL1a
OR APPROVED EQUAL

RATING: 208/120V 3 PHASE 4 WIRE
MOUNTING: SURFACE
MINIMUM AIC: VERIFY

MLO MAIN CIRCUIT BREAKER
EQUIPMENT GROUND BUS ____ ☒YES ☐NO
SERVICE ENTRY RATED ____ ☐YES ☒NO

LOAD SERVICE	CKT BRKR	WATTS PER PHASE A	B	C	CKT NO	NEUTRAL A B C	CKT NO	WATTS PER PHASE A	B	C	CKT BRKR	LOAD SERVICE
LTS: EXPANSION	20A	980			1		2	500			20A	SPEC. REC: EXPANSION (108)
SPARE	20A		---		3		4		500			.
SPARE	20A			---	5		6			500	20A	SPEC. REC: EXPANSION (108)
SPARE	20A	---			7		8	500				.
SPARE	20A		---		9		10		900		20A	REC: EXPANSION – GEN. USE (108)
SPARE	20A			---	11		12			900	20A	REC: EXPANSION – GEN. USE (108)
SPARE	20A	---			13		14	---			20A	SPARE
SPACE			---		15		16		---		20A	SPARE
SPACE				---	17		18			---	20A	SPARE
SPACE		---			19		20	---				SPACE
SPACE			---		21		22		---			SPACE
SPACE				---	23		24			---		SPACE
SPACE		---			25		26	---				SPACE
SPACE			---		27		28		---			SPACE
SPACE				---	29		30			---		SPACE
SPACE		---			31		32	---				SPACE
SPACE			---		33		34		---			SPACE
SPACE				---	35		36			---		SPACE
SPACE		---			37		38	---				SPACE
SPACE			---		39		40		---			SPACE
SPACE				---	41		42			---		SPACE
SUB–TOTALS 'B'		980	---	---		200A BUS	1000	1400	1400		SUB–TOTALS 'A'	
						200A LUGS	980	---	---		SUB–TOTALS 'B'	TOTAL CONNECTED LOAD
						200A FEED	1980	1400	1400		GRAND TOTAL	
						VERIFY SIZE	17A	12A	12A		AMPS/PHASE	

NEC ALLOWABLE DEMAND FACTORS

1. DEMAND FACTORS PER NEC 220
2. LARGEST OF: NEC TABLE 220.12 OR CONNECTED LOAD
3. NEC TABLE 220.56
4. NEC 220.51
5. NEC 220.43A, 200 VA/LINEAR FT
6. NON–COINCIDENT LOADS, LARGEST OF THE TWO LOADS IS COUNTED

DIVERSIFIED LOAD SUMMARY

LOAD TYPE	DEMAND FACTOR⑥	A	B	C	TOTAL DIVERSIFIED LOAD
GENERAL LIGHTING ②	125%	1225	---	---	1225
TRACK LIGHTING	125%	---	---	---	---
GENERAL USE RECEPTACLES	≤10KVA@100%	1000	1400	1400	3800
	>10KVA@50%	---	---	---	---
MOTORS AND EQUIPMENT — LARGEST	125%	---	---	---	---
MOTORS AND EQUIPMENT — ALL OTHERS	100%	---	---	---	---
WATER HEATERS	125%	---	---	---	---
KITCHEN EQUIPMENT ④	100%	---	---	---	---
FIX. ELEC. SPACE HEAT. ④	100%	---	---	---	---
SHOW WINDOW LIGHTS ⑤	125%	---	---	---	---
SIGN	125%	---	---	---	---
MISC	100%	---	---	---	---
PHASE (TOTAL VA)		2225	1400	1400	5025
TOTAL AMPS		19A	12A	12A	VOLT AMPS / VOLTS X 1.732 = 14A TOTAL AMPS

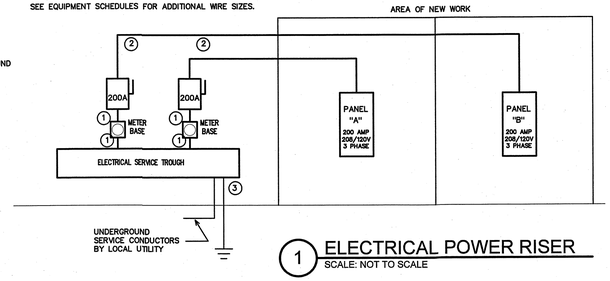
NOTE:
TIE ALL SERVICE GROUNDS AND TROUGH CASE GROUND TOGETHER (PER NEC 250–58)
THE TROUGH GROUND SHALL BE BONDED TO THE SERVICE NEUTRAL IN THE TROUGH. THREE SERVICE CONDUCTORS WITH ONE NEUTRAL SHALL BE RUN TO EACH SERVICE DISCONNECT. A BONDING STRAP SHALL BE PROVIDED IN EACH DISCONNECT TO BOND THE GROUND AND NEUTRAL BUSSES. A GROUND WIRE WILL BE RUN WITH THE BRANCH CONDUCTORS FROM THE SERVICE DISCONNECT TO THE INDIVIDUAL LOADS SERVED.

RISER WIRING SCHEDULE

① 200A: 4–#3/0 IN 2" CONDUIT
② 200A: 4–#3/0, 1–#6 CU GND, IN 2 1/2" CONDUIT
③ #3/0 CU GND TO BUILDING STEEL, FOUNDATION STEEL AND METALLIC WATER MAIN AND #6 CU GND TO 10' X 5/8" DRIVEN GROUND ROD

NOTE:
UNLESS OTHERWISE NOTED ALL OTHER CIRCUITS ARE 20A, 120VOLT.
PROVIDE 2–#12, 1–#12 CU GND IN 1/2" CONDUIT.
SEE EQUIPMENT SCHEDULES FOR ADDITIONAL WIRE SIZES.

VERIFY AVAILABLE FAULT CURRENT AT SERVICE LOCATION WITH LOCAL POWER COMPANY. PROVIDE INFORMATION TO ENGINEER TO CALCULATE MINIMUM PANEL AIC RATING PRIOR TO RELEASING GEAR. AIC RATING ON PANELS ARE FOR PERMIT REVIEW AND PRICING ONLY. EC SHALL PROVIDE LABELING INDICATING FAULT CURRENT AT SERVICE ENTRY AND ON ALL PANELS PRIOR TO ENERGIZING.



1 ELECTRICAL POWER RISER
SCALE: NOT TO SCALE

WEEKS TURNER ARCHITECTURE

WEEKS TURNER ARCHITECTURE, PA
3305-109 Durham Drive
Raleigh, North Carolina 27603
919.779.9797 fax: 919.779.0826
www.weeksturner.com

ENGINEER
BURKE DESIGN GROUP, PA
CONSULTING ENGINEERS
3305-109 Durham Drive
Raleigh, North Carolina 27603
919.771.1916 fax: 919.779.0826
email: benburke@nc.rr.com
Corp. License # C-2652

PROJECT TITLE
DAWSON ELECTRIC

ADDRESS
CITY, NORTH CAROLINA

PROJECT NO.
1918

DRAWING TITLE
PANELS & RISER

E4

PLOT DATE 7/19/2019