# Fire Station 10 Lighting Retrofit

	Sheetlist
Sheet Number	Sheet Name
G 01	Cover
EL 001	General Lighting & Demolition
EL 200	Lighting
EL 300	Details and Schedules

General Conditions:

EL - Electrical Lighting EP - Electrical Power

Α.	Gene	Tal Conditions.
	1.	All scheduled numbers and amounts of material and equipment are for contractor's convenience only. Contractor shall count and measure independently for bidding and ordering purposes. All scheduled numbers, lengths and other amounts may be incorrect and owner is not liable for mismatch.
	2.	Notes applied to single items may apply to all like items on view.
	3.	Before bidding contractor shall familiarize with existing conditions, scope of work and means and methods required. Contractor shall inquire about any missing or apparently incomplete details and specifications before bidding.
	4.	Entire contract includes all specifications, plan sheets and other documents issued by owner. Bid documents don't intend to detail which subcontractor is responsible for what type of work. Any trade shall be familiar with the entire contract. Division of work is responsibility of contractor.
	5.	UTILITY CONNECTIONS: where work indicated includes installation of utilities (Gas, Power, Water, Sewer, Phone etc.) provide all the required work that normally is not done by the Utility. Contractor shall inquire with Utilities to learn about the Scope of the Utility's work.
B.	Draw	ing Conventions
	1.	To be demolished items are shown in dashed line and/or colored. Some items necessary for removal may not be shown and removal is part of the contract.
	2.	Count of devices. lengths, areas and volumes are given for convenience only. Actually required numbers may be different and contractor is responsible to determine the actual need prior bidding.
	3.	Details will require items that will not be shown for every instance in the model. For example, a shut-off valve may be shown for a specific detail but the plans don't show this valve for every single instance - this valve will be required for each such device.
	4.	Sheet and view Naming:
		G - General
		H - Hazardous Material
		S - Structural
		AD - Architectural Demolition
		A - Architectural
		FA - Fire Detection and Alarm
		PD - Plumbing Demolition
		P - Plumbing
		MD - Mechanical Demolition
		M - Mechanical  M - Mechanical
		ED - Electrical Demolition

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A.	PROJECT DESCRIPTION:
	Replacement of all interior lighting systems and controls.
_	2. Demolition of one suspended acoustical ceiling system.
B.	SPECIAL SITE CONDITIONS:
	1. Fire Station is occupied and operational. Contractor shall schedule work to avoid disruption as much as possible.
_	2. No painting of <u>new conduit or boxes is required.</u>
C.	WORK HOURS
	1. Meet requirements of local ordinances, rules and laws.
	2. Hours of operation are limited to 7 a.m. to 7 p.m. Monday through Saturday and Sunday 10 a.m. through 7 p.m.
_	unless approved otherwise.
D.	WORK PROVIDED BY OWNER (DON'T INCLUDE IN BID PRICE):
	1. Owner will provide relay and dry-contact inside fire alarm panel.
	2. Owner will provide programming of FA panel. (Contractor is responsible for wiring to FA panel and connecting to
E.	FA panel terminals) EQUIPMENT PROVIDED BY OWNER (DON'T INCLUDE IN BID PRICE):
⊏.	1. NA
F.	SPECIAL WARRANTIES:
١.	1. NA
G.	PROVISIONS FOR FUTURE WORK
O.	1. NA
Н.	PERMIT REQUIREMENTS:
• • • •	Contractor is responsible to obtain all permits. See specification section 00 31 46 for details.
I.	UTILITIES:
	Contractor may use owner's power and water at no cost.
J.	CONTINUITY OF SERVICE:
	Minimize and schedule power outages for work.
K.	SEQUENCING REQUIREMENTS:
	1. NA

L. ALTERNATES: 1. NA

Designed by:
City of Madison
Facilites Management
City-County Building, Room 115
210 Martin Luther King Jr. Boulevard
Madison, WI 53703

Madison Fire Department

Fire Station 10 Lighting Retrofit

Location: 1517 Troy Drive Madison, WI 53704

Contract: 9280

	General Appreviations
AFF ACT	Above Finished Floor Acoustical Ceiling Tile
ADDL AFC	Additional Above Finished Counter
AFG	Above Finished Grade
ALUM APPD	Aluminum Approved
ASC BB	Above Suspended Ceiling Baseboard
BFF	Below Finished Floor
BFG BLDG	Below Finished Grade Building
BLW	Below Bottom of
BOC BOS	Bottom of Concrete Bottom of Steel
BPL	Base Plate
CB CBT	Catch Basin Ceramic Tile Base
CF/CI CF/OI	Contractor Furnished / Contractor Installed Contractor Furnished / Owner Installed
CG	Corner Guard
CIP CJ	Cast-In-Place Control Joint
CL CLG	Center Line Ceiling
CMU	Concrete Masonry Unit Cleanout
COL	Column
CONC	Concrete Continuous
CORR	Corridor Carpet
CSWK	Casework Ceramic Tile
CW	Cold Water
DEMO DF	Demolition Drinking Fountain
DIA DR	Diameter Door
DS	Downspout
DW DWG	Dishwasher Drawing
E EA	East Each
EJ	Expansion Joint Elevation
ELEV	Elevator
EPS EQ	Expanded Polystyrene Board  Equal (Distance)
EST EXP	Estimated Expand, Expansion
EXT	Exterior
FA FA	Female Fire Alarm
FAB FD	Fabric Floor Drain
FEC FHC	Fire Extinguisher Cabinet  Fire Hose Cabinet
FLR	Floor
FM FND	Floormat Foundation
FO FP	Finished Opening Fire Protection
FTG	Footing
GA GALV	Gauge Galvanized
GB GR	Grab Bar Grade
GT	Grout
GYP HB	Gypsum Board Hose Bib
HC HGT	Hollow Core Height
HM HM	Handicapped Hollow Metal
HVAC	Heating, Ventilation & Air Conditioning
HW ID	Hot Water Inside Diameter
JHA	Interior Jurisdiction Having Authority
LAV LL	Lavatory Live Load
М	Male
MAX MFR	Maimum Manufacturer
MIN MISC	Minimum Miscellaneous
MO N	Masonry Opening  North
NA	Not Applicable
NIC NM	Not in Contract Nominal
NTS OC	No to Scale on center
OD	Outside Diameter
OF / CI	Owner Furnished / Contractor Installed Owner Furnished / Owner Installed
OHD OPNG	Over Head Door Opening
OPP PERP	Opposite Perpendicular
POLYISO	Polyisocyanurate Board
PTN	Paint, Painted Partition
RCP RD	Reflected Ceiling Plan Roof Drain
REBAR REF	Reinforcing Steel Bars Reference
REV	Revision
RO S	Rough Opening South
SAN SST	Sanitary Stainless Steel
TEMP TFF	Temperature Top of Finsihed Floor
TO	Top of
TOB TOC	Top of Beam Top of Concrete
TOJ TYP	Top of Joist Typical
UNO	Unless Noted Otherwise
VIF W	Verified in Field West
W/ W/O	With Without
	VVIIIIOUT
WD	Water Closet
WC WD WH XPS	

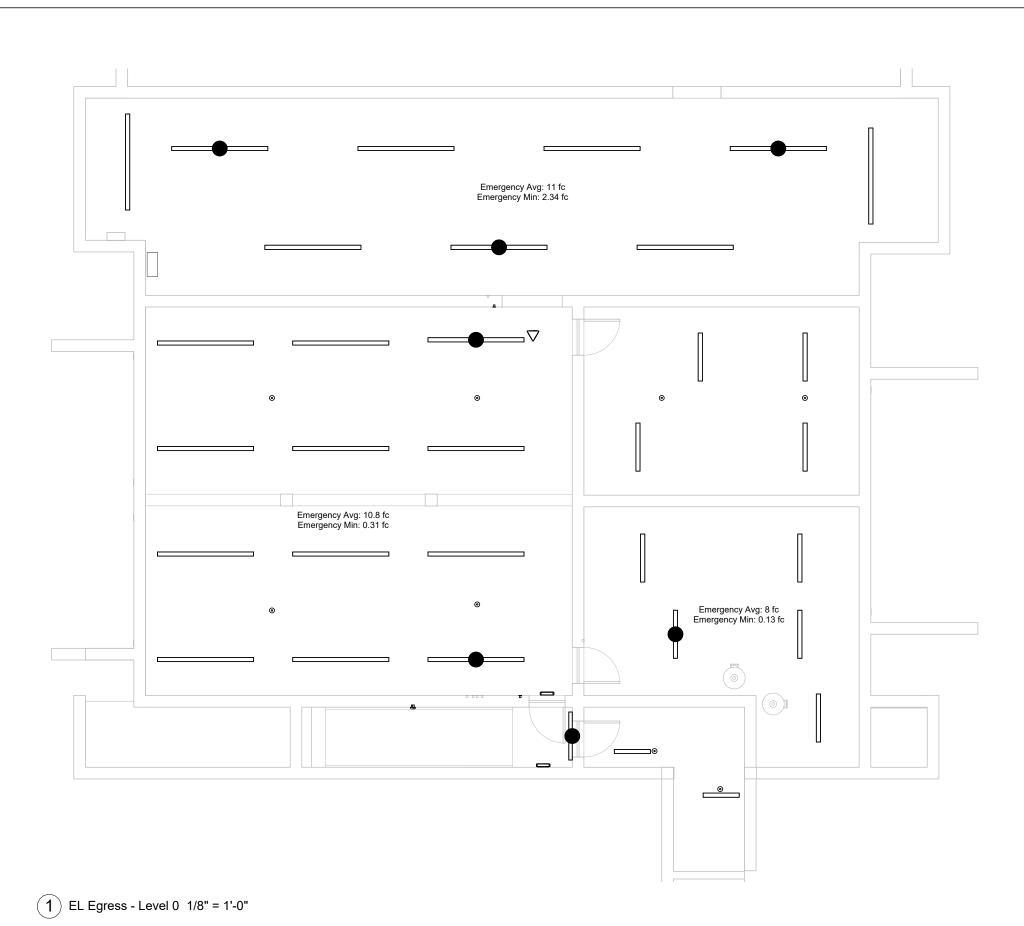
General Abbreviations

Cover

Revisions

G 01

Print Date: 1/12/2023 18:10:14 Print in color on 24" x 36"



Emergency Avg: 4.3 fc Emergency Min: 0.21 fc

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Emergency Avg: 9.9 fc

Emergency Min: 0.1 fc

Emergency Avg: 6.8 fc Emergency Min: 3.07 fc

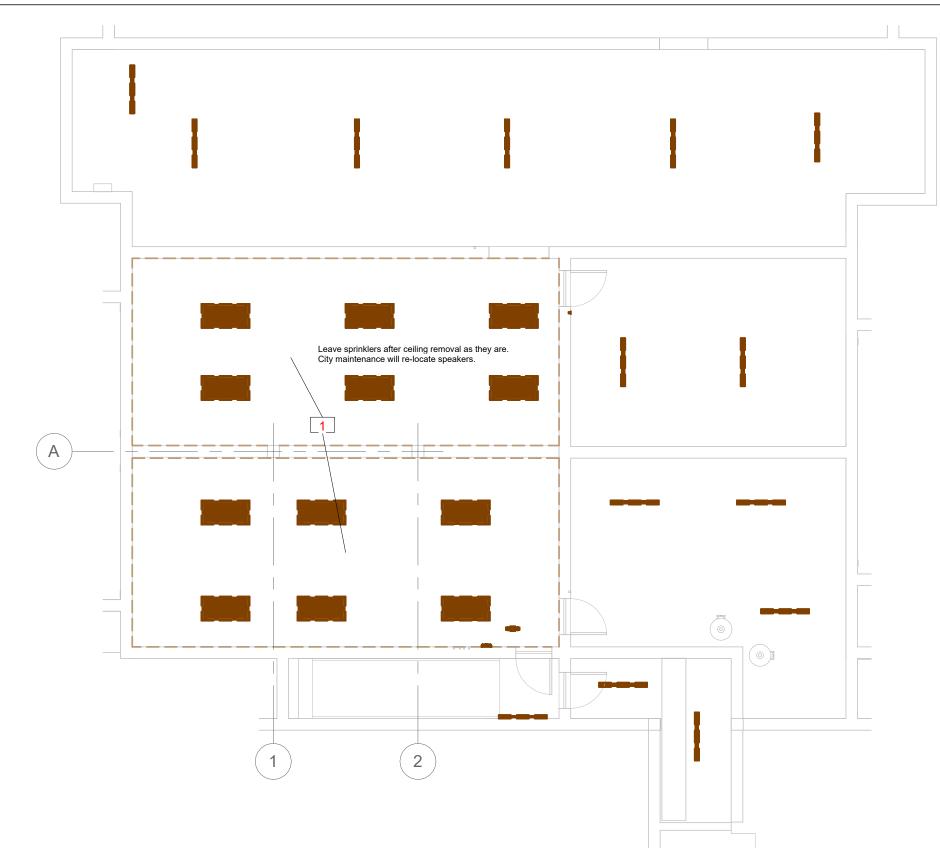


merge	ncy Lighting Lo	ad	Keynote Legend
Space:			Key Value Keynote Text
Number	Space: Name	Apparent Load	1 Remove entire suspended ceiling. Include all elements. No wall or ceiling repair required.
102	Storage	4 VA	
100	Garage	4 VA	
100	Garage	4 VA	
100	Garage	4 VA	
001	Gym	4 VA	
107	Corridor	4 VA	
106	Corridor	4 VA	
001	Gym	1 VA	
006	Stairs	1 VA	
102	Storage	1 VA	
106	Corridor	1 VA	
107	Corridor	1 VA	
104A	Kitchen	1 VA	
113	Passage	1 VA	
112	Passage	1 VA	
114	Dorm	1 VA	
114	Dorm	1 VA	
103	Watch	72 VA	
105	TV	16 VA	
104A	Kitchen	27 VA	
115A	Private Bedroom Office	27 VA	
112	Passage	17 VA	
444	D	42.1/4	

			iloo	2013 L	ighting L	.cvci3						
Space Number	Space Name	Area	Space Type	Workplane Height	Min. Required  Avgerage  Illumination	Actual Average Illumination	Illumination Goal	Max. Allowed Power Density IECC 2015	Actual Power Density	Actual Power Density compared to Code	Allowed Lighting Load	Act Ligh
001	Gym	1,147 ft <sup>2</sup>	Fitness Exercise Area	2' - 6"	30 fc	44.1 fc	147%	0.72 W/ft <sup>2</sup>	0.372 W/ft <sup>2</sup>	52%	826 VA	426
002	Mechanical 1	411 ft²	Electrical / Mechanical	2' - 6"	30 fc	30.9 fc	103%	0.95 W/ft <sup>2</sup>	0.335 W/ft <sup>2</sup>	35%	391 VA	138
003	Mechanical 2	1,114 ft <sup>2</sup>	Electrical / Mechanical	2' - 6"	30 fc	32.1 fc	107%	0.95 W/ft <sup>2</sup>	0.287 W/ft <sup>2</sup>	30%	1,058 VA	320
004	Storage	359 ft <sup>2</sup>	Warehouse - bulky Items palletized	2' - 6"	20 fc	25.5 fc	128%	0.58 W/ft <sup>2</sup>	0.276 W/ft <sup>2</sup>	48%	208 VA	99
005	Storage	118 ft²	Storage	2' - 6"	10 fc	22.1 fc	221%	0.63 W/ft <sup>2</sup>	0.339 W/ft <sup>2</sup>	54%	74 VA	40
006	Stairs	113 ft²	Stairwell	0' - 0"	10 fc	20.3 fc	203%	0.69 W/ft <sup>2</sup>	0.529 W/ft <sup>2</sup>	77%	78 VA	60
100	Garage	2,013 ft <sup>2</sup>	Emergency Vehicle Garage	2' - 6"	30 fc	32.2 fc	107%	0.56 W/ft <sup>2</sup>	0.392 W/ft <sup>2</sup>	70%	1,128 VA	790
101	Storage	110 ft <sup>2</sup>	Storage	2' - 6"	10 fc	24 fc	240%	0.63 W/ft <sup>2</sup>	0.548 W/ft <sup>2</sup>	87%	69 VA	60
102	Storage	94 ft²	Storage	2' - 6"	10 fc	18.1 fc	181%	0.63 W/ft <sup>2</sup>	0.263 W/ft <sup>2</sup>	42%	59 VA	25
103	Watch	229 ft <sup>2</sup>	Office - open	2' - 6"	40 fc	43.8 fc	110%	0.98 W/ft <sup>2</sup>	0.833 W/ft <sup>2</sup>	85%	225 VA	191
104A	Kitchen	290 ft <sup>2</sup>	Food Preparation	2' - 6"	50 fc	56.1 fc	112%	1.21 W/ft <sup>2</sup>	0.662 W/ft <sup>2</sup>	55%	351 VA	192
104B	Dining Area	162 ft²	Dining Area	2' - 6"	30 fc	37.9 fc	126%	0.96 W/ft <sup>2</sup>	0.481 W/ft <sup>2</sup>	50%	156 VA	78
105	TV	264 ft²	Lounge / Breakroom	2' - 6"	20 fc	22.2 fc	111%	0.73 W/ft <sup>2</sup>	0.295 W/ft <sup>2</sup>	40%	193 VA	78
106	Corridor	51 ft²	Corridor - otherwise	0' - 0"	10 fc	21.2 fc	212%	0.66 W/ft <sup>2</sup>	0.394 W/ft <sup>2</sup>	60%	33 VA	20
107	Corridor	48 ft²	Corridor - otherwise	0' - 0"	10 fc	10.8 fc	108%	0.66 W/ft <sup>2</sup>	0.418 W/ft <sup>2</sup>	63%	32 VA	20
112	Passage	36 ft²	Corridor - otherwise	0' - 0"	10 fc	11 fc	110%	0.66 W/ft <sup>2</sup>	0.536 W/ft <sup>2</sup>	81%	24 VA	19
113	Passage	27 ft²	Corridor - otherwise	0' - 0"	10 fc	10.2 fc	102%	0.66 W/ft <sup>2</sup>	0.565 W/ft <sup>2</sup>	86%	18 VA	15
114	Dorm	1,210 ft <sup>2</sup>	Dormitory - Living Quarters	2' - 6"	20 fc	23.2 fc	116%	0.38 W/ft <sup>2</sup>	0.272 W/ft <sup>2</sup>	72%	460 VA	329
115A	Private Bedroom Office	123 ft²	Office - enclosed	2' - 6"	40 fc	46 fc	115%	1.11 W/ft <sup>2</sup>	0.646 W/ft <sup>2</sup>	58%	137 VA	80
115B	Private Bedroom Sleeping	139 ft²	Dormitory - Living Quarters	2' - 6"	20 fc	21.6 fc	108%	0.38 W/ft <sup>2</sup>	0.237 W/ft <sup>2</sup>	62%	53 VA	33
116	Shed	23 ft <sup>2</sup>	Storage	2' - 6"	10 fc	10.3 fc	103%	0.63 W/ft <sup>2</sup>	0.442 W/ft <sup>2</sup>	70%	15 VA	10

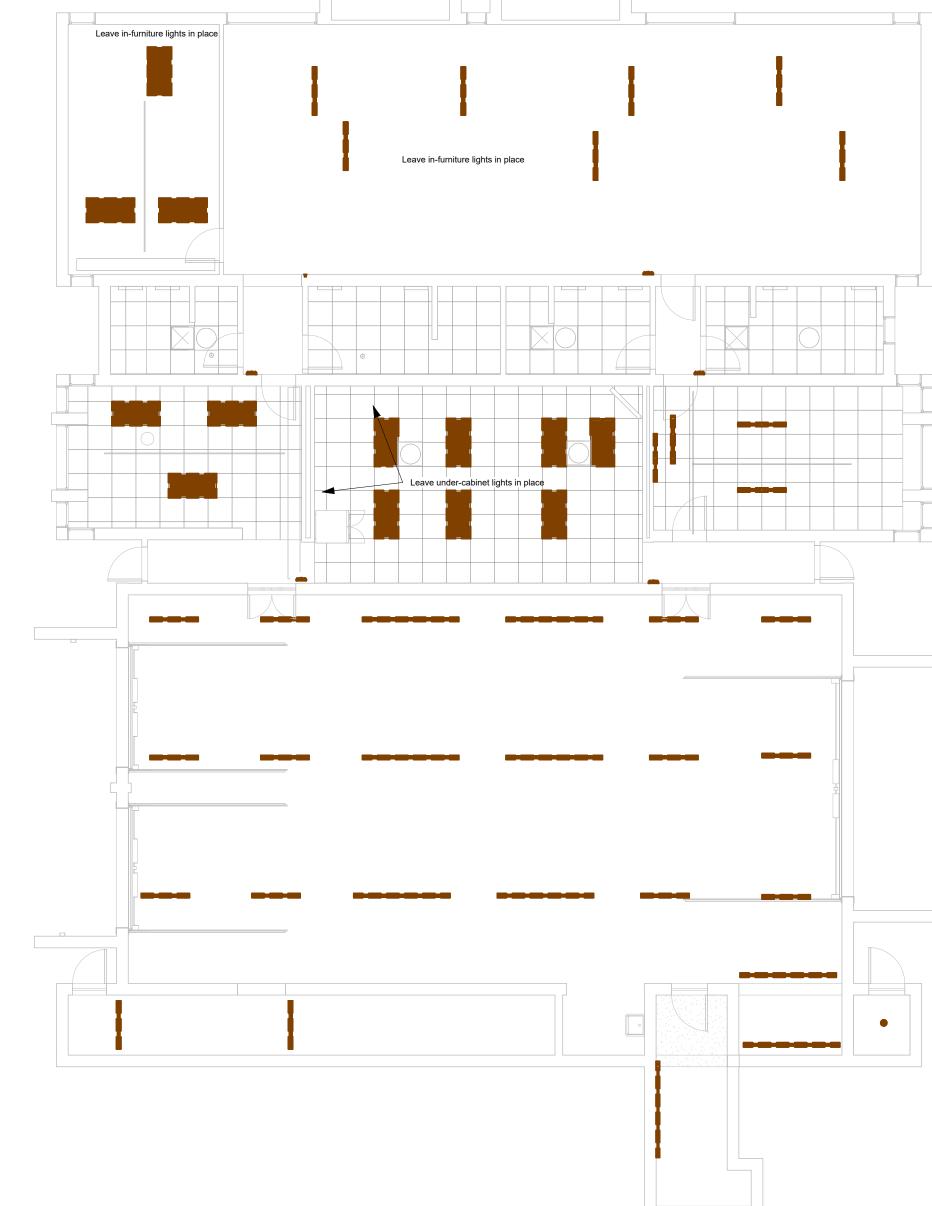
- - Demolish all existing lighting fixtures and controls. This includes all items not needed for new installation function. This includes, but is not limited to emergency, exit, track, architectural and spot lights, switches, sensors, inverters, batteries and control panels. Demolition drawings may not show all existing items.
- Remove all unused raceways, boxes, conduit and wiring Patch wall, ceiling and other surfaces damaged by removal. Use adjacent surface matching cover for electrical boxes.
- Installation: Install new raceways, boxes, conduit and wiring as required for new lighting fixtures and controls.
- Install conduit inside walls and above ceiling. Exception: in existing buildings with masonry walls or bare concrete ceiling, new conduit and
  - boxes can be surface-mounted. Modify Grid Ceiling to accommodate new fixtures. Fill in openings with new tiles of existing type. Contractor will provide grid elements and tiles. In some locations
  - Install in even pattern. Where sprinkler, diffuser or other permanent obstruction prevents even layout,
- relocate after consultation with engineer.
- Install fixtures at indicated height and provide required suspension. A height typically applies to all fixtures in a space, even if only a single fixture has an indicated height shown. If no height is provided, ceiling surface height can be assumed.
- Surface wiring raceway in finished areas is only allowed where the structure does not allow installation behind ceiling or wall. Raceway shall be neatly routed and hidden in corners to the greatest extend possible. Paint to match adjacent surface.
- - Lighting zones are indicated by wire annotations and/or switchleg (SL) numbering. Wire annotations are schematic only to indicate control relationships and don't necessarily equal actually required
    - Spaces with electrical panels shall have at least one light be controlled by a manual switch only (no automatic control) per code-requirement.
- at or below bottom of fixture.
- Emergency Lighting:
- Light fixtures with a black dot indicate emergency lights.

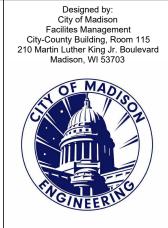
  Control fixtures from central inverter or generator. Provide all wiring to emergency power source.



3 ED - Level 0 - Basement 1/8" = 1'-0"

4 ED - Level 1 - Ground Floor 1/8" = 1'-0"





Madison Fire Department

Fire Station 10 Lighting Retrofit

Location: 1517 Troy Drive Madison, WI 53704

Contract: 9280 Project: 14246

> General Lighting & Demolition

Revisions

EL 001

Print Date: 1/12/2023 18:10:17 Print in color on 24" x 36"



© Emergency Avg: 6.1 fc Emergency Min: 0.79 fc

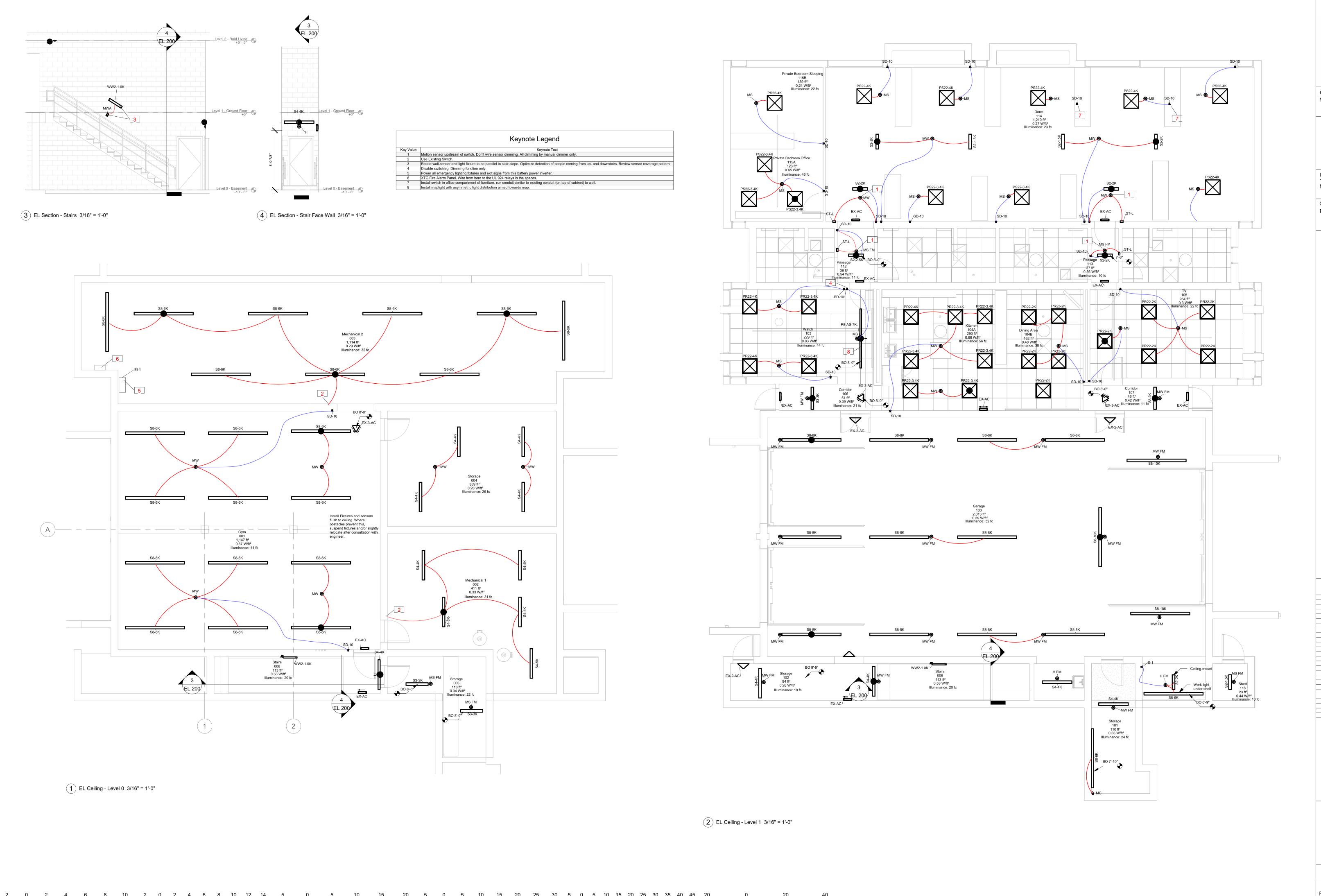
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Emergency Avg: 16.1 fc Emergency Min: 3 fc<sub>©</sub>

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Emergency Avg: 13.5 fc Emergency Min: 0.52 fc

Emergency Avg: 15.3 fc / Emergency Min: 9.9 fc



1/16" = 1'-0" FEET

3/32" = 1'-0"

1" = 20'-0"

1/4" = 1'-0"

Designed by:
City of Madison
Facilites Management
City-County Building, Room 115
210 Martin Luther King Jr. Boulevard
Madison, WI 53703

Madison Fire Department

Fire Station 10 Lighting Retrofit

Location: 1517 Troy Drive Madison, WI 53704

Contract: 9280 Project: 14246

Revisions

Project North
TRUE

Lighting

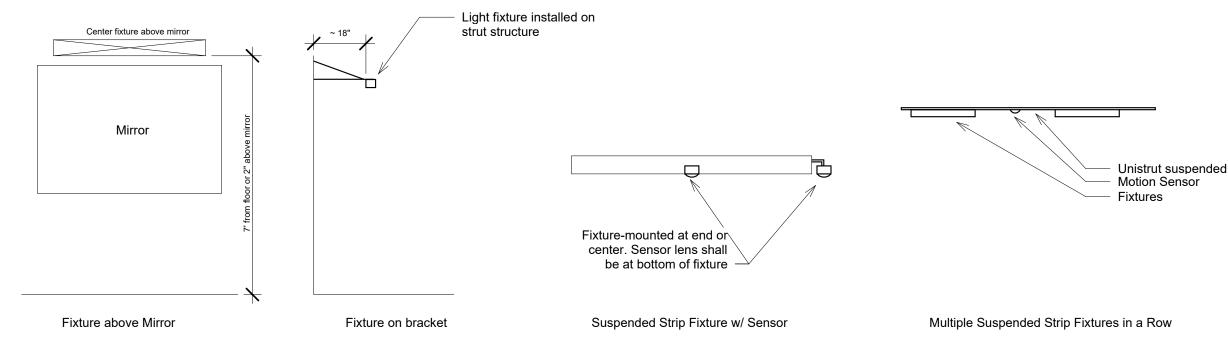
EL 200

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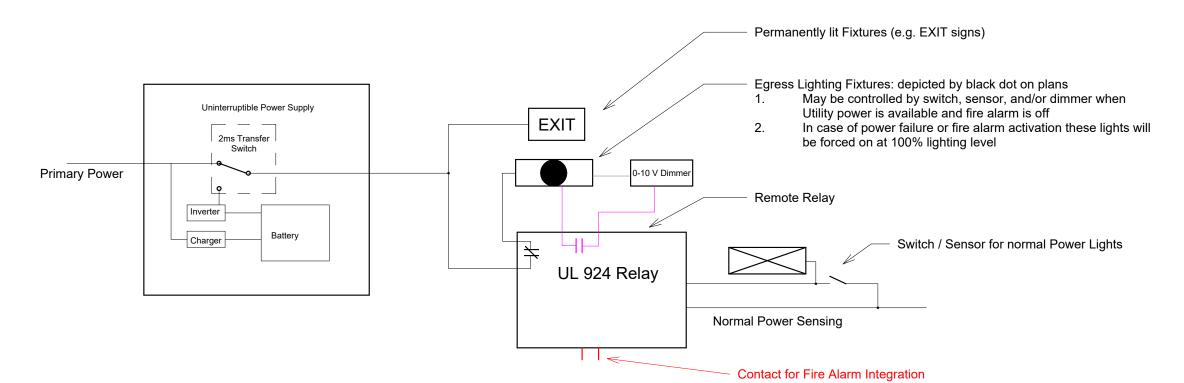
			Lighting Device Sc	hedule		
		Est.				
Type Mark	Description	Count	Model	URL	Type Remark	Specification
Н	Motion Sensor High Bay	1	Sensorswitch CMR-6-D-P-VLP	www.acuitybrands.com		26 09 23 – Lighting Control Devices
H FM	Motion Sensor High-Bay; Fixture-mount	2	Sensorswitch LSXR-6-ADC-VLP	www.acuitybrands.com		26 09 23 – Lighting Control Devices
MC	Motion Sensor Corner-mount w/ powerpack	1	Sensorswitch WV16-R-P-KIT-PP20	www.acuitybrands.com		26 09 23 – Lighting Control Devices
MS	Motion Sensor short Range	16	Sensorswitch CMR-9-PDT-ADC-VLP	www.acuitybrands.com		26 09 23 - Lighting Control Devices
MS FM	Motion Sensor short Range; Fixture-mount	5	Sensorswitch LSXR-9-ADC-VLP	www.acuitybrands.com		26 09 23 - Lighting Control Devices
MW	Motion Sensor wide Range	12	Sensorswitch CMR-10-PDT-ADC-VLP	www.acuitybrands.com		26 09 23 - Lighting Control Devices
MW FM	Motion Sensor wide Range; Fixture-mount	16	Sensorswitch LSXR-10-ADC-VLP	www.acuitybrands.com		26 09 23 - Lighting Control Devices
MWA	Motion Sensor Wall-mount 180° Coverage; 48" height	1	Sensorswitch LWS-WH	www.acuitybrands.com		26 09 23 - Lighting Control Devices
S-1	Single Switch	7				26 09 23 - Lighting Control Devices
SD-10	Switch w/ 0-10V Dimmer	24	Wattstopper RH4FBL3PW	www.legrand.us		26 09 23 - Lighting Control Devices

					Er	mergency P	ower Batter	y Invert	ers			
							Output Rating @ 90	In / Out				
Mark	Space Number	Space Name	Description	Manufacturer	Model	URL	Minutes	Voltage	Weight	Remark	Specific Remark	Specifications
EI-1	003	Mechanical 2	Emergency Lighting Battery Inverter	Myers	EM-2-S-B	www.myerseps.com	1600 VA	120 V	405 lbf	For floor mount: option -F. For wall-mount use option -W.	Floor-mount	26 52 00 - Safety Light

				Lighting Fixture	e Sched	ule					
Town - Manda	Description.	Est.	N	LIDI	Apparent	Luminous	Color	F#	1 Marintan	Torr. Donnell	0
Type Mark	Description	Count	Model	URL	Load	Flux	Temperature	Efficacy	Lumen Maintenance	Type Remark	Specification
EX-2-AC	Exit Sign Triangular - no Battery	4	Big Beam TRXL-AC/LED-2-G-W	www.bigbeam.com	4 VA						26 50 00 - Lighting
EX-3-AC	Exit Sign Triangular - no Battery	3	Big Beam TRXL-AC/LED-3-G-W	www.bigbeam.com	4 VA						26 50 00 - Lighting
EX-AC	Exit Sign - no Battery	10	Lithonia LQM-S-W-3-G-MVOLT	www.acuitybrandslighting.com	1 VA						26 50 00 - Lighting
P8-AS-7K	Suspended / Surface	1	Focal Point FSM2ALS-875LF-40K-1C-UNV-L11-WH-8ft	www.focalpointlights.com	72 VA	7000 lm	4000 K	97 lm/W	L90 @ 128K hours	Choose surface or suspension kit as requried. Review plans and site for detail.	26 50 00 - Lighting
PR22-2K	Panel Recessed 2x2	10	Lithonia EPANL-2x2-2000LMHE-40K-80CRI-MIN1-ZT-MVOLT	www.acuitybrands.com	16 VA	1972 lm	4000 K	126 lm/W	L91 @ 60K hours		26 50 00 - Lighting
PR22-3.4K	Panel Recessed 2x2	8	Lithonia EPANL-2x2-3400LMHE-40K-80CRI-MIN1-ZT-MVOLT	www.acuitybrands.com	27 VA	3399 lm	4000 K	128 lm/W	L91 @ 60K hours		26 50 00 - Lighting
PR22-4K	Panel Recessed 2x2	3	Lithonia EPANL-2x2-4000LMHE-40K-80CRI-MIN1-ZT-MVOLT	www.acuitybrands.com	33 VA	4117 lm	4000 K	125 lm/W	L91 @ 60K hours		26 50 00 - Lighting
PS22-3.4K	Panel Surface 2x2	5	Lithonia EPANL-2x2-3400LMHE-40K-80CRI-MIN1-ZT-MVOLT-2x2SMKSH	www.acuitybrands.com	27 VA	3399 lm	4000 K	128 lm/W	L91 @ 60K hours		26 50 00 - Lighting
PS22-4K	Panel Surface 2x2	7	Lithonia EPANL-2x2-4000LMHE-40K-80CRI-MIN1-ZT-MVOLT-2x2SMKSH	www.acuitybrands.com	33 VA	4117 lm	4000 K	125 lm/W	L91 @ 60K hours		26 50 00 - Lighting
S2-1.5K	Strip 2'	3	Lithonia CLX-L24-1500LM-HEF-RDL-MVOLT-EZ1-40K-80CRI	www.acuitybrands.com	10 VA	1436 lm	4000 K	138 lm/W	L70 @ 100K hours		26 50 00 - Lighting
S2-2.5K	Strip 2'	1	Lithonia CLX-L24-2500LM-HEF-RDL-MVOLT-EZ1-40K-80CRI	www.acuitybrands.com	17 VA	2508 lm	4000 K	144 lm/W	L70 @ 100K hours		26 50 00 - Lighting
S2-2K	Strip 2'	6	Lithonia CLX-L24-2000LM-HEF-RDL-MVOLT-EZ1-40K-80CRI	www.acuitybrands.com	13 VA	1981 lm	4000 K	147 lm/W	L70 @ 100K hours		26 50 00 - Lighting
S3-3K	Strip 3'	4	Lithonia CLX-L36-3000LM-HEF-RDL-MVOLT-EZ1-40K-80CRI	www.acuitybrands.com	20 VA	3004 lm	4000 K	150 lm/W	L70 @ 100K hours		26 50 00 - Lighting
S4-4K	Strip 4'	12	Lithonia CLX-L48-4000LM-HEF-RDL-MVOLT-EZ1-40K-80CRI	www.acuitybrands.com	25 VA	3868 lm	4000 K	156 lm/W	L70 @ 100K hours		26 50 00 - Lighting
S4-5K	Strip 4'	2	Lithonia CLX-L48-5000LM-HEF-RDL-MVOLT-EZ1-40K-80CRI	www.acuitybrands.com	32 VA	4839 lm	4000 K	152 lm/W	L70 @ 100K hours		26 50 00 - Lighting
S8-6K	Strip 8'	23	Lithonia CLX-L96-6000LM-HEF-RDL-MVOLT-EZ1-40K-80CRI	www.acuitybrands.com	36 VA	5697 lm	4000 K	160 lm/W	L70 @ 100K hours		26 50 00 - Lighting
S8-8K	Strip 8'	11	Lithonia CLX-L96-8000LM-HEF-RDL-MVOLT-EZ1-40K-80CRI	www.acuitybrands.com	49 VA	7602 lm	4000 K	157 lm/W	L70 @ 100K hours		26 50 00 - Lighting
S8-10K	Strip 8'	3	Lithonia CLX-L96-10000LM-HEF-RDL-MVOLT-EZ1-40K-80CRI	www.acuitybrands.com	61 VA	9404 lm	4000 K	154 lm/W	L70 @ 100K hours		26 50 00 - Lighting
ST-L	Step Light w/ Lens; White	4	Contech STPL-AM-LS-P	www.contechlighting.com	2 VA	34 lm	1800 K	17 lm/W	50K hours		26 50 00 - Lighting
WW2-1.0K	Linear Wall-Wash LED Light Fixture	1	Focal Point FSM1W-AS-500-40K-1C-UNV-L11-WM-WH-2ft	www.focalpointlights.com	10 VA	1000 lm	4000 K	100 lm/W	L90 @ 115K hours		26 50 00 - Lighting

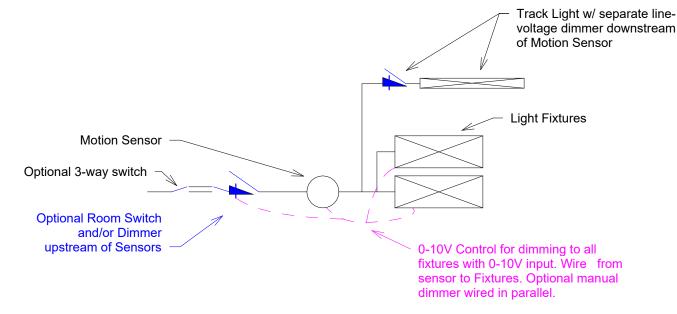






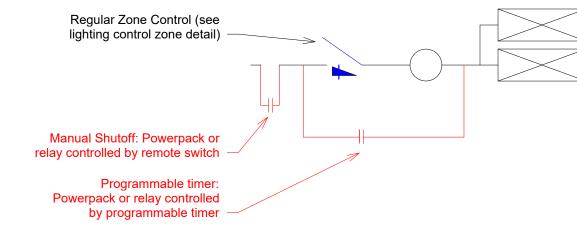
- Emergency light fixtures (indicated by a black dot) and Exit signs will be powered by the Uninterruptible AC Power Supply (UPS). Wiring has to be extended from UPS to all devices. When normal power is present and fire alarm is OFF, lighting will be controlled by lighting control system. Local switches, timers, dimmers and sensors control on/off and dimming. When normal power is not present, the emergency fixtures and exit signs will be powered by the battery for over 90 minutes. These fixtures will be forced on at 100% (no dimming)
- When fire alarm is active, all emergency light fixtures will be forced on at 100% (no dimming).
- Contractor shall verify availability of contacts in fire alarm panel and add relay(s) if required. Wiring shall meet NEC 700.10 requirements. This includes, but is not limited to:
- Separate emergency raceway. Raceway shall be marked.
- Any junctions shall be labeled "Warning 2 power sources" or as required by code
- Label indicates panel, circuit, and voltage Conduit for emergency lighting shall be color-coded as specified in Division 26
- When accessible installation of UL 924 relay is not possible (e.g. drywall, exterior), install the relay in near-by accessible location. Verify location with engineer. fixtures with built-in sensor shall be re-wired for UL 924 relay to bypass sensor (e.g. exterior fixture with included photocell)

- Test by applying emergency power and normal power. Turn off local switch and set local dimmer to lowest dimming level. If no local switch is available, disconnect the appropriate wire to simulate light being turned off.
- If no local dimmer is available and dimming by sensor is scheduled, program sensor to dim to low level.
- Disconnect normal sensing power and verify emergency light turns on to 100% Re-instate normal power and activate fire alarm and verify emergency light turns on to 100%
- (2) EL Egress Lighting Control w/ UPS and Fire Alarm Integration 1" = 1'-0"



- Lighting zones with lighting-devices and light-fixtures are indicated by wire lines and/or switch leg (SL) numbers. Where devices allow, dimming shall be accomplished by 0-10V wiring of all devices.
- Where shown on plans, a zone may have 3-way and 4-way switches. Enable 3-way function on dimmer switch and wire appropriately to enable control from all switch locations. Fixtures and devices in the same above zone are denoted by the same switchleg (SL) number.
- Motion sensor with local switch will be de-energized when switch is off (sensor downstream of switch): Light will be on upon activation of local switch regardless of actual motion detection (sensor is ON upon power-up)
- Sensors will not click when local switch is off (nuisance avoidance in quiet rooms)
- Line-voltage dimmers (i.e. track lighting) shall be downstream of local motion sensor. Notes on plans or switchleg naming will indicate exceptions. For example:
- Disable Switchleg: A dimmer will only dim the lighting level to the allowable minimum. The line voltage switch in the dimmer will not be used. This prevents lights turning off entirely. Hallways are an example.
- One light fixture shall be controlled by switch only: Switchleg parameters indicate that some lights are controlled by switch and sensor, and some lights by switch only. This prevents the latter lights from turning off upon loss of motion detection. Electrical or mechanical rooms are examples. Sensor Programming Instructions:
- 1. The below is based on Sensorswitch Instructions at the time of design. Amend if different sensors are used or if manufacturer changes procedure. Confirm any deviation with engineer. Sensorswitch support#: 1-800-535-2465
  If sensors are equipped with VLC programming option, a smartphone app shall be used. Note that sensors needs to be
  - initialized and set with a PIN within 45 minutes of powering up. Program is sent to sensor via flashlight. Lights will blink to
  - acknowledge successful programming. Verify settings with engineer prior programming. Certain settings may be different in certain zones.
  - Sensors shall be programmed depending on availability of daylight . Save presets to avoid deviations.
  - No daylight available: Enable "Time Delay" - Set to 15 minutes
  - Disable Trim
  - Enable "Dim to Off Delay" set to 5 minutes Disable Photocell
  - Daylight available (inc. spaces with overhead doors, skylights, windows within 20' of sensor)
  - Enable "Photocell" and set to "On/Off and Auto Dimming" Enable "Auto Set Point"
  - 7. After programming, all functions shall be tested to verify desired function. Adjust as required for intended function. Discuss problems with engineer.

3 EL Lighting Control Zone 1" = 1'-0"



- Local Lighting Control OverrideA. Plan will indicate which zones will be overriden. Manual shut-off:
- Staff can remotely turn off selected zones regardless of local lighting control. the remote switch is shown on plans (typically in a non-public
- Programmable timer: A central timer forces lights in zone on regardless of local control
- Wiring from programmable timer and remote switch can be accomplished in line-voltage wiring or with low-voltage wiring and power-pack near lighting





## **Turn off lights** when leaving room empty.

- A. Some spaces don't employ automatic lighting control and use manual switches only. These include but are not limited to mechanical, electrical, or crawl spaces.
- In these spaces, adhere a sign to the exit door
- indicating that lights shall be shut off upon leaving the space.
- Above sign is an example and similar signs can be used upon approval.

5 EL Manual Lighting Control 1" = 1'-0"



Madison Fire Department

Fire Station 10 Lighting Retrofit

1517 Troy Drive Madison, WI 53704

Contract: 9280 Project: 14246

Revisions

No. Description

Details and Schedules

EL 300

Print Date: 1/12/2023 18:10:20 Print in color on 24" x 36"