Fire Station 10 Lighting Retrofit (DD)

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

The above sheets were provided and certified by Kay Schindel, P.E.

General Abbreviations	
AFF	Above Finished Floor
ACT	Acoustical Ceiling Tile
ADDL	Additional
AFC	Above Finished Counter
AFG	Above Finished Grade
ALUM	Aluminum
APPD	Approved
ASC	Above Suspended Ceiling
BB	Basebaord
BFF	Below Finished Floor
BFG	Below Finished Grade
BLDG	Building
BLW	Below
BO	Bottom of
BOC	Bottom of Concrete
BOS	Bottom of Steel
BPL	Base Plate
CB	Catch Basin
CBT	Ceramic Tile Base
CF/CI	Contractor Furnished / Contractor Installed
CF/OI	Contractor Furnished / Owner Installed
CG	Corner Guard
CIP	Cast-In-Place
CJ	Control Joint
CL	Center Line
CLG	Ceiling
CMU	Concrete Masonry Unit
CO	Cleanout
COL	Column
CONC	Concrete
CONT	Continuous
CORR	Corridor
CPT	Carpet
CSWK	Casework
CT	Ceramic Tile
CW	Cold Water
DEMO	Demolition
DF	Drinking Fountain
DIA	Diameter
DR	Door
DS	Downspout
DW	Dishwasher
DWG	Drawing
E	East
EA	Each
EJ	Expansion Joint
EL	Elevation
ELEV	Elevator
EPS	Expanded Polystyrene Board
EQ	Equal (Distance)
EST	Estimated
EXP	Expand, Expansion
EXT	Exterior
F	Female
FA	Fire Alarm
FAB	Fabric
FD	Floor Drain
FEC	Fire Extinguisher Cabinet
FHC	Fire Hose Cabinet
FLR	Floor
FM	Floormat
FND	Foundation
FO	Finished Opening
FP	Fire Protection
FTG	Footing
GA	Gauge
GALV	Galvanized
GB	Grab Bar
GR	Grade
GT	Grout
GYP	Gypsum Board
HB	Hose Bib
HC	Hollow Core
HGT	Height
HM	Handicapped
HM	Hollow Metal
HVAC	Heating, Ventilation & Air Conditioning
HW	Hot Water
ID	Inside Diameter
INT	Interior
JHA	Jurisdiction Having Authority
LAV	Lavatory
LL	Live Load
M	Male
MAX	Maimum
MFR	Manufacturer
MIN	Minimum
MISC	Miscellaneous
MO	Masonry Opening
N	North
NA	Not Applicable
NIC	Not in Contract
NM	Nominal
NTS	No to Scale
OC	on center
OD	Outside Diameter
OF / CI	Owner Furnished / Contractor Installed
OF / OI	Owner Furnished / Owner Installed
OHD	Over Head Door
OPNG	Opening
OPP	Opposite
PERP	Perpendicular
POLYISO	Polyisocyanurate Board
PT	Paint, Painted
PTN	Partition
RCP	Reflected Ceiling Plan
RD	Roof Drain
REBAR	Reinforcing Steel Bars
REF	Reference
REV	Revision
RO	Rough Opening
S	South
SAN	Sanitary
SST	Stainless Steel
TEMP	Temperature
TFF	Top of Finsihed Floor
TO	Top of
TOB	Top of Beam
TOC	Top of Concrete
TOJ	Top of Joist
TYP	Typical
UNO	Unless Noted Otherwise
VIF	Verified in Field
W	West
W	With
W/O	Without
WC	Water Closet
WD	Wood
WH	Water Heater
XPS	Extruded Polystyrene
X-3	Existing

A. General 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. Drawing 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
   F - Fire Protection
   PD - Plumbing Demolition
   P - Plumbing
   MD - Mechanical Demolition
   M - Mechanical
   ED - Electrical Demolition
   EL - Electrical Lighting
   EP - Electrical Power

A. PROJECT DESCRIPTION:
1.
B. SPECIAL SITE CONDITIONS:
1. Fire Station is occupied and operational. Contractor shall schedule work to avoid disruption as much as possible.
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. NA
E. EQUIPMENT PROVIDED BY OWNER (DON'T INCLUDE IN BID PRICE):
1. NA
F. SPECIAL WARRANTIES:
1. NA
G. PROVISIONS FOR FUTURE WORK
1. NA
H. PERMIT REQUIREMENTS:
1. Contractor is responsible to obtain all permits. See specification section 00 31 46 for details.
I. UTILITIES:
1. Contractor may use owner's power and water at no cost.
J. CONTINUITY OF SERVICE:
1. Minimize and schedule power outages for work.
K. SEQUENCING REQUIREMENTS:
1. NA
L. ALTERNATES:
1. N

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

Client:
Madison Fire Department

Fire Station 10 Lighting Retrofit (DD)

Location:
1517 Troy Drive
Madison, WI 53704

Contract: 9230
Project: 14246

Revisions

No.	Description

Cover

G 01

Print Date:
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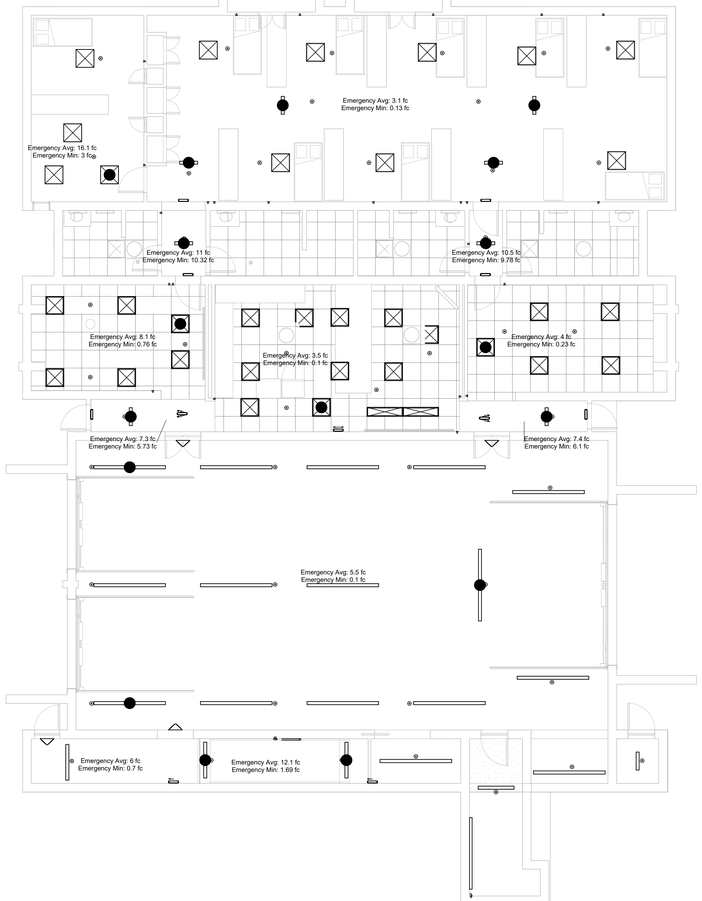
1 EL Egress - Level 0 1/8" = 1'-0"



2 EL Egress - Level 1 1/8" = 1'-0"

Emergency Lighting Load

Type Mark	Space: Number	Space: Name	Apparent Load
EX-3-AC	102	Storage	4 VA
EX-3-AC	100	Garage	4 VA
EX-3-AC	100	Garage	4 VA
EX-3-AC	100	Garage	4 VA
EX-AC	001	Gym	1 VA
EX-AC	001	Gym	1 VA
EX-AC	006	Stairs	1 VA
EX-AC	102	Storage	1 VA
EX-AC	106	Corridor	1 VA
EX-AC	107	Corridor	1 VA
EX-AC	107	Corridor	1 VA
EX-AC	106	Corridor	1 VA
EX-AC	104A	Kitchen	1 VA
EX-AC	113	Passage	1 VA
EX-AC	112	Passage	1 VA
EX-AC	114	Dorm	1 VA
EX-AC	114	Dorm	1 VA
PR22-2K	105	TV	16 VA
PR22-2K	104A	Kitchen	16 VA
PR22-3.4K	103	Watch	27 VA
PS22-3.4K	115A	Private Bedroom Office	27 VA
S2-1.5K	114	Dorm	10 VA
S2-1.5K	114	Dorm	10 VA
S2-1.5K	114	Dorm	10 VA
S2-1.5K	114	Dorm	10 VA
S2-2.5K	112	Passage	17 VA
S2-2K	113	Passage	13 VA
S2-2K	106	Corridor	13 VA
S2-2K	107	Corridor	13 VA
S4-4K	006	Stairs	25 VA
S4-4K	006	Stairs	25 VA
S4-5K	002	Mechanical 1	32 VA
S8-6K	003	Mechanical 2	36 VA
S8-6K	003	Mechanical 2	36 VA
S8-6K	003	Mechanical 2	36 VA
S8-6K	001	Gym	36 VA
S8-6K	001	Gym	36 VA
S8-8K	100	Garage	49 VA
S8-8K	100	Garage	49 VA
S8-10K	100	Garage	61 VA
			627 VA

Keynote Legend

Key Value	Keynote Text
1	Remove entire suspended ceiling. Include all elements. No wall or ceiling repair required.

IECC 2015 Lighting Levels

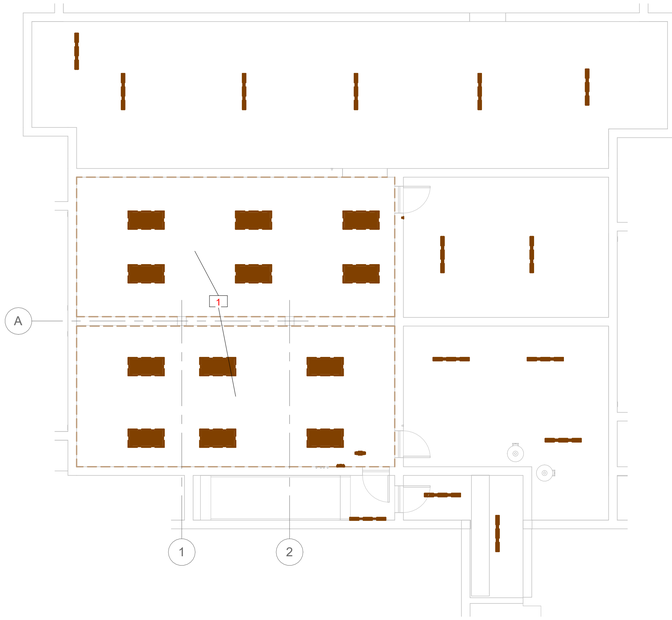
Space Number	Space Name	Area	Space Type	Workplane Height	Min. Required Avgerage Illumination	Actual Average Illumination	Illumination Goal	Max. Allowed Power Density IECC 2015	Actual Power Density	Actual Power Density compared to Code	Allowed Lighting Load	Actual Lighting Load
001	Gym	1,147 ft²	Fitness Exercise Area	2' - 6"	30 fc	44.1 fc	147%	0.72 W/ft²	0.372 W/ft²	52%	826 VA	426 VA
002	Mechanical 1	411 ft²	Electrical / Mechanical	2' - 6"	30 fc	30.9 fc	103%	0.95 W/ft²	0.335 W/ft²	35%	391 VA	138 VA
003	Mechanical 2	1,114 ft²	Electrical / Mechanical	2' - 6"	30 fc	32.1 fc	107%	0.95 W/ft²	0.287 W/ft²	30%	1,058 VA	320 VA
004	Storage	359 ft²	Warehouse - bulky items palletized	2' - 6"	20 fc	25.5 fc	128%	0.58 W/ft²	0.276 W/ft²	48%	208 VA	99 VA
005	Storage	118 ft²	Storage	2' - 6"	10 fc	30 fc	300%	0.63 W/ft²	0.425 W/ft²	67%	74 VA	50 VA
006	Stairs	113 ft²	Stairwell	0' - 0"	10 fc	22.3 fc	223%	0.69 W/ft²	0.529 W/ft²	77%	78 VA	60 VA
100	Garage	1,973 ft²	Emergency Vehicle Garage	2' - 6"	30 fc	31.3 fc	104%	0.56 W/ft²	0.381 W/ft²	68%	1,105 VA	752 VA
101	Storage	110 ft²	Storage	2' - 6"	10 fc	24 fc	240%	0.63 W/ft²	0.548 W/ft²	87%	69 VA	60 VA
102	Storage	94 ft²	Storage	2' - 6"	10 fc	18.1 fc	181%	0.63 W/ft²	0.263 W/ft²	42%	59 VA	25 VA
103	Watch	229 ft²	Office - open	2' - 6"	40 fc	45.7 fc	114%	0.98 W/ft²	0.75 W/ft²	76%	225 VA	172 VA
104A	Kitchen	452 ft²	Food Preparation	2' - 6"	50 fc	51.4 fc	103%	1.21 W/ft²	0.63 W/ft²	52%	547 VA	285 VA
105	TV	267 ft²	Lounge / Breakroom	2' - 6"	20 fc	21.7 fc	109%	0.73 W/ft²	0.292 W/ft²	40%	195 VA	78 VA
106	Corridor	51 ft²	Corridor - otherwise	0' - 0"	10 fc	15.8 fc	158%	0.66 W/ft²	0.265 W/ft²	40%	33 VA	13 VA
107	Corridor	51 ft²	Corridor - otherwise	0' - 0"	10 fc	13.1 fc	131%	0.66 W/ft²	0.266 W/ft²	40%	33 VA	13 VA
112	Passage	36 ft²	Corridor - otherwise	0' - 0"	10 fc	11 fc	110%	0.66 W/ft²	0.536 W/ft²	81%	24 VA	19 VA
113	Passage	27 ft²	Corridor - otherwise	0' - 0"	10 fc	10.2 fc	102%	0.66 W/ft²	0.565 W/ft²	86%	18 VA	15 VA
114	Dorm	1,177 ft²	Fire Station Sleeping Quarter	2' - 6"	10 fc	18.8 fc	188%	0.22 W/ft²	0.219 W/ft²	99%	259 VA	258 VA
115A	Private Bedroom Office	123 ft²	Office - enclosed	2' - 6"	40 fc	45.9 fc	115%	1.11 W/ft²	0.646 W/ft²	58%	137 VA	80 VA
115B	Private Bedroom Sleeping	139 ft²	Fire Station Sleeping Quarter	2' - 6"	10 fc	17.8 fc	178%	0.22 W/ft²	0.191 W/ft²	87%	31 VA	27 VA
116	Shed	23 ft²	Storage	2' - 6"	10 fc	10.3 fc	103%	0.63 W/ft²	0.442 W/ft²	70%	15 VA	10 VA
		8,015 ft²									5,385 VA	2,900 VA

A. Demolition:
1. 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.
2. Remove all unused raceways, boxes, conduit and wiring
3. Patch wall, ceiling and other surfaces damaged by removal. Use adjacent surface matching cover for electrical boxes.

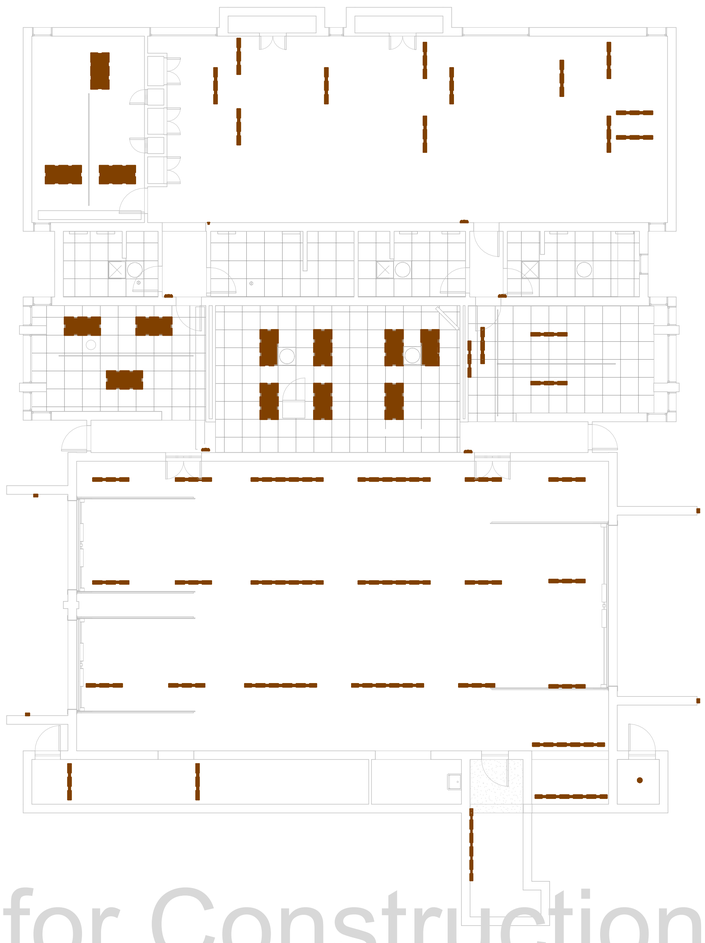
B. Installation:
1. Install new raceways, boxes, conduit and wiring as required for new lighting fixtures and controls. Install conduit inside walls and above ceiling.
2. Modify Grid Ceiling to accommodate new fixtures. Fill in openings with new tiles of existing type. Contractor will provide grid elements and tiles. In some locations
3. Install in even pattern. Where sprinkler, diffuser or other permanent obstruction prevents even layout, relocate after consultation with engineer.
4. 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.
5. 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.

C. Control:
1. Locate sensors to enable good detection within controlled zone and in between partitions. In enclosed rooms minimize detection of motion in adjacent rooms.
2. 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 physical wire runs. Lighting zones can be shown by proximity of sensor and light fixture without wire or switchleg annotation (for example, garage lighting where each fixture has one sensor)
3. Spaces with electrical panels shall have at least one light be controlled by a manual switch only (no automatic control) per code-requirement.
4. Fixture-mounted sensors shall be installed to allow 360° detection and bottom of sensor lens shall be at or below bottom of fixture.
5. Size analog 0-10V wiring to limit voltage drop. At 100% position the light fixture shall be 100% bright.

D. Emergency Lighting:
1. Light fixtures with a black dot indicate emergency lights.
2. 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"

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Facilities Management
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Madison, WI 53703

Client:
Madison Fire Department

Fire Station 10 Lighting Retrofit (DD)

Location:
1517 Troy Drive
Madison, WI 53704

Contract: 9230
Project: 14246

Revisions

No.	Description

General Lighting & Demolition

EL 001

Print Date:
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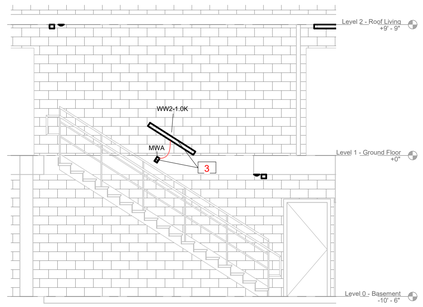
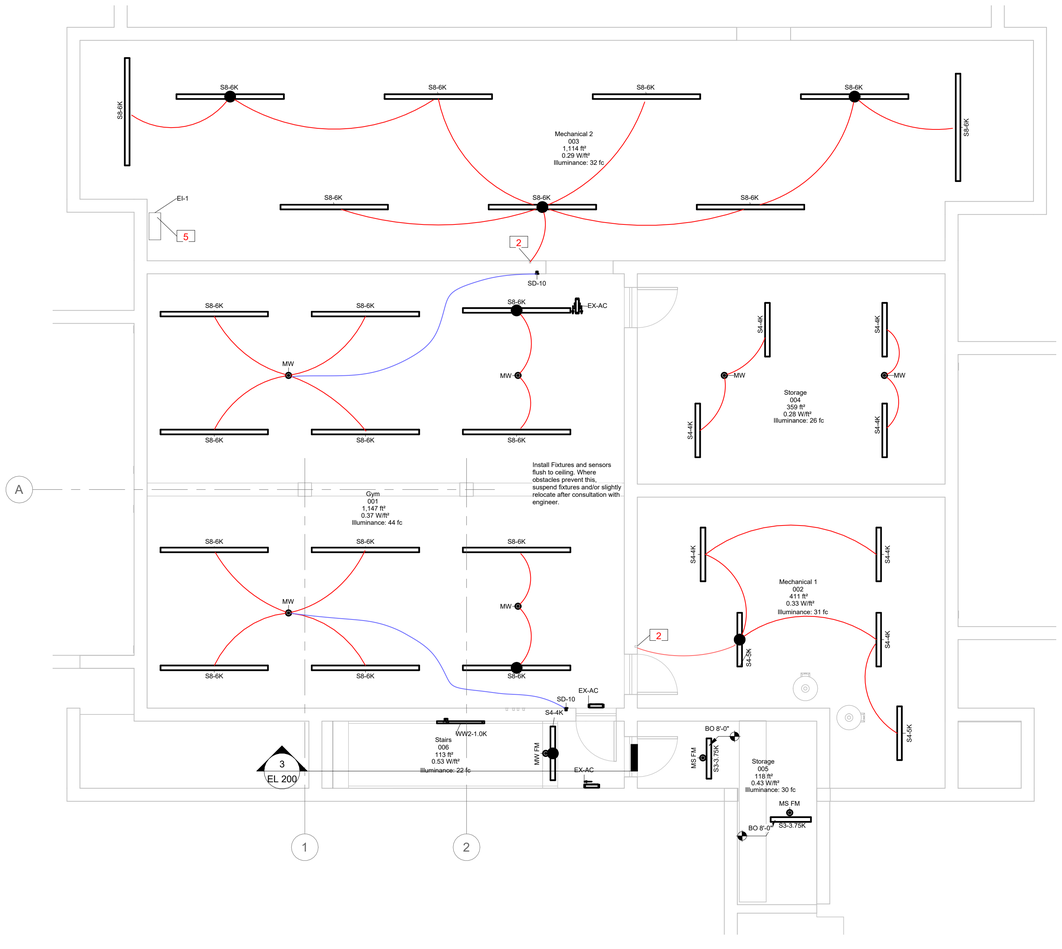


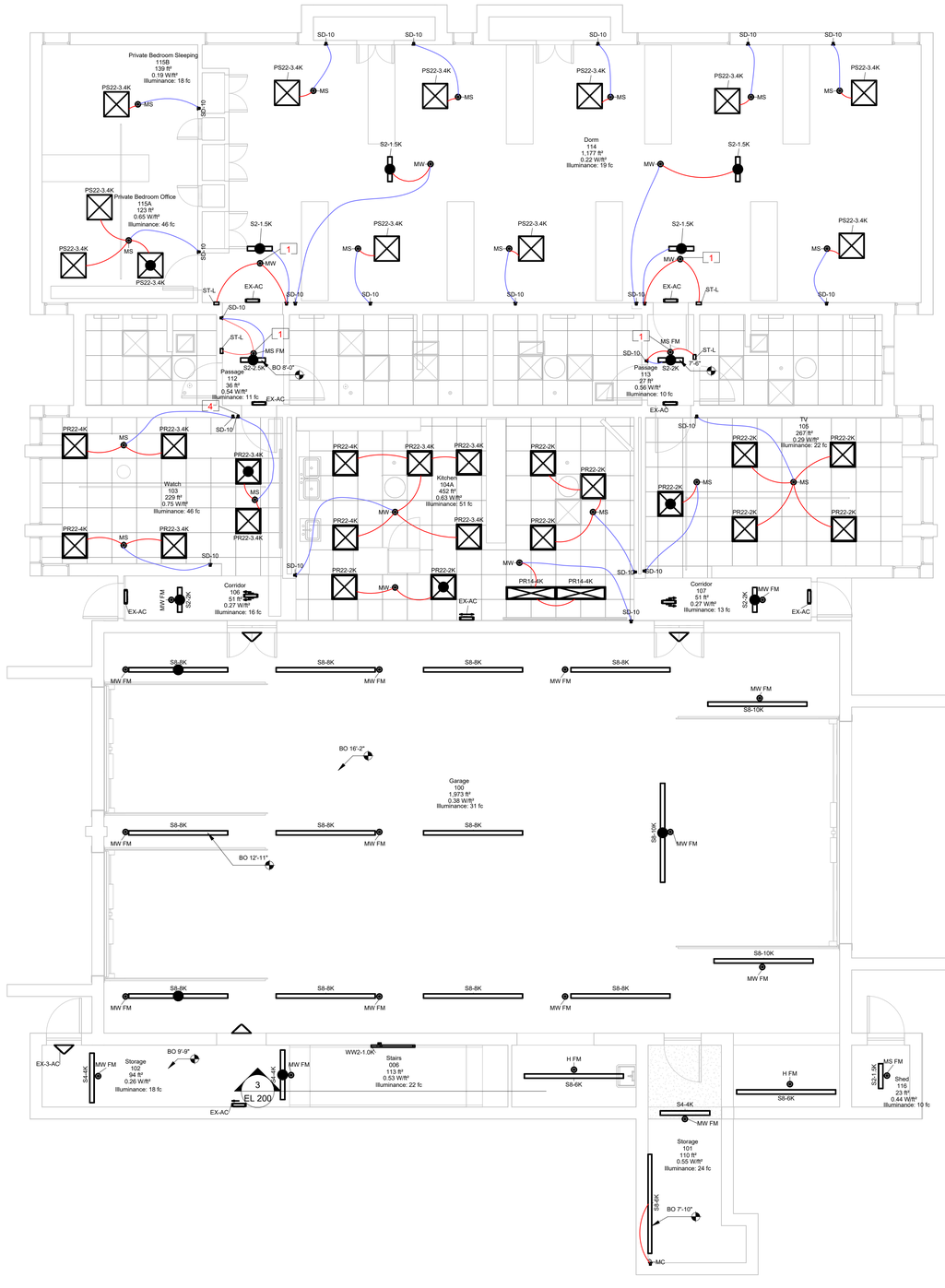
3 EL Section - Stairs 3/16" = 1'-0"

Keynote Legend

Key Value	Keynote Text
1	Motion sensor upstream of switch. Don't wire sensor dimming. All dimming by manual dimmer only.
2	Use Existing Switch.
3	Rotate wall-sensor and light fixture to be parallel to stair-slope. Optimize detection of people coming from up- and downstairs. Review sensor coverage pattern.
4	Disable switchleg. Dimming function only.
5	Power all emergency lighting fixtures and exit signs from this battery power inverter.



1 EL Ceiling - Level 0 3/16" = 1'-0"



2 EL Ceiling - Level 1 3/16" = 1'-0"

2 0 2 4 6 8 10
1/4" = 1'-0" FEET

2 0 2 4 6 8 10 12 14
3/16" = 1'-0" FEET

5 0 5 10 15 20
1/8" = 1'-0" FEET

5 0 5 10 15 20 25 30
3/32" = 1'-0" FEET

5 0 5 10 15 20 25 30 35 40 45
1/16" = 1'-0" FEET

20 0 20 40
1" = 20'-0" FEET

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Revisions

No.	Description

Project North
TRUE

Lighting

EL 200

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Lighting Device Schedule

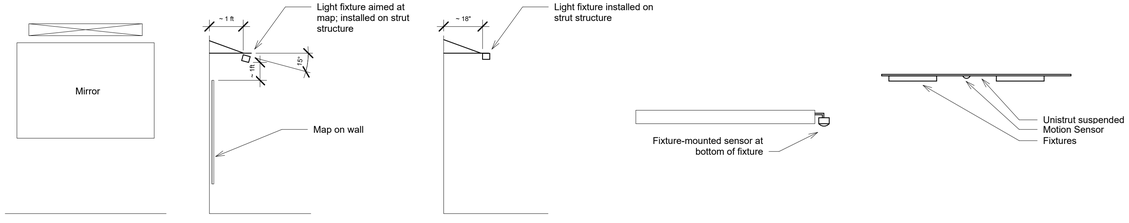
Type Mark	Description	Est. Count	Model	URL	Type Remark	Specification
H FM	Motion Sensor High-Bay; Fixture-mount	2	Sensorswitch LSXR-6-ADC-VLP	www.acuitybrands.com		26 09 23 – Lighting Control Devices
MC	Motion Sensor Corner-mount w/ powerpack	1	Sensorswitch WV16-R-P-KIT-PP20	www.acuitybrands.com		26 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	13	Sensorswitch CMR-10-PDT-ADC-VLP	www.acuitybrands.com		26 09 23 – Lighting Control Devices
MW FM	Motion Sensor wide Range; Fixture-mount	17	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	6				26 09 23 – Lighting Control Devices
SD-10	Switch w/ 0-10V Dimmer	26	Wattstopper RH4FBL3PW	www.legrand.us		26 09 23 – Lighting Control Devices

Emergency Power Battery Inverters

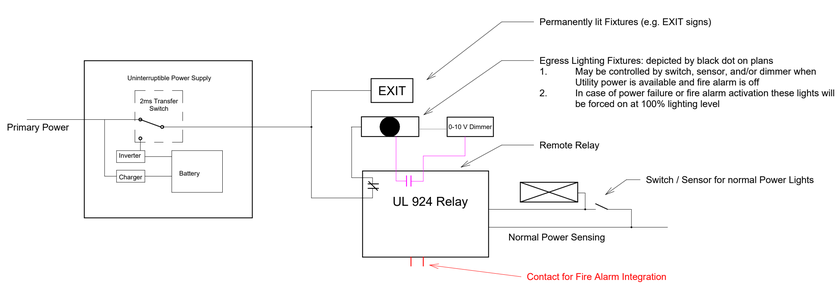
Mark	Space Number	Space Name	Description	Manufacturer	Model	URL	Output Rating @ 90 Minutes	In / Out Voltage	Weight	Remark	Specific Remark	Specifications
EI-1	003	Mechanical 2	Emergency Lighting Battery Inverter	Myers	EM-2-S-B	www.myerseps.com	1600 VA	120 V	405 lbf	For floor mount: option -F. For wall-mount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

Lighting Fixture Schedule

Type Mark	Description	Est. Count	Model	URL	Apparent Load	Luminous Flux	Color Temperature	Efficacy	Lumen Maintenance	Type Remark	Specification
		16			<varies>						
EX-3-AC	AC-powered triangular Exit Fixture	4	Big Beam TRXL-2-G-W-W	www.bigbeam.com	4 VA						26 52 00 – Safety Lighting
EX-AC	AC-powered Exit Fixture	13	Lithonia LQM-S-W-3-G-MVOLT	www.acuitybrandslighting.com	1 VA						26 52 00 – Safety Lighting
PR14-4K	Panel Recessed 1x4	2	Lithonia EPANL-1x4-4000LMHE-40K-80CRI-MIN1-ZT-MVOLT	www.acuitybrands.com	31 VA	3897 lm	4000 K	127 lm/W	L91 @ 60K hours		26 51 00 – Interior 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 51 00 – Interior Lighting
PR22-3.4K	Panel Recessed 2x2	7	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 51 00 – Interior Lighting
PR22-4K	Panel Recessed 2x2	4	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 51 00 – Interior Lighting
PS22-3.4K	Panel Surface 2x2	12	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 51 00 – Interior Lighting
S2-1.5K	Strip 2'	5	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 51 00 – Interior 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 51 00 – Interior Lighting
S2-2K	Strip 2'	3	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 51 00 – Interior Lighting
S3-3.75K	Strip 3'	2	Lithonia CLX-L36-3750LM-HEF-RDL-MVOLT-EZ1-40K-80CRI	www.acuitybrands.com	25 VA	3845 lm	4000 K	153 lm/W	L70 @ 100K hours		26 51 00 – Interior Lighting
S4-4K	Strip 4'	11	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 51 00 – Interior 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 51 00 – Interior Lighting
S8-6K	Strip 8'	24	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 51 00 – Interior 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 51 00 – Interior 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 51 00 – Interior 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 51 00 – Interior Lighting
WW2-1.0K	Linear Wall-Wash LED Light Fixture	1	Focal Point FSM1W-AS-500-40K-1C-UNV-L11-WM-WH-4ft	www.focalpointlights.com	10 VA	2000 lm	4000 K	200 lm/W	L90 @ 115K hours		26 51 00 – Interior Lighting
		135									



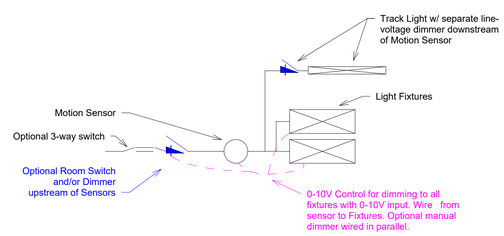
1 EL Typical Installation Details 1" = 1'-0"



Objective:
1. 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.
2. 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.
3. 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)
4. When fire alarm is active, all emergency light fixtures will be forced on at 100% (no dimming).
5. Contractor shall verify availability of contacts in fire alarm panel and add relay(s) if required.
6. Wiring shall meet NEC 700.10 requirements. This includes, but is not limited to:
   a. Separate emergency raceway. Raceway shall be marked.
   b. Any junctions shall be labeled "Warning - 2 power sources" or as required by code
   c. Label indicates panel, circuit, and voltage
7. Conduit for emergency lighting shall be color-coded as specified in Division 26
8. 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.
9. fixtures with built-in sensor shall be re-wired for UL 924 relay to bypass sensor (e.g. exterior fixture with included photocell)

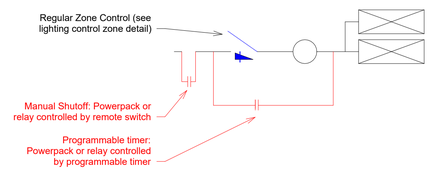
Testing:
1. Test by applying emergency power and normal power. Turn off local switch and set local dimmer to lowest dimming level.
   a. If no local switch is available, disconnect the appropriate wire to simulate light being turned off.
   b. If no local dimmer is available and dimming by sensor is scheduled, program sensor to dim to low level.
2. Disconnect normal sensing power and verify emergency light turns on to 100%
3. 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"



A. Lighting zones with lighting-devices and light-fixtures are indicated by wire lines and/or switch leg (SL) numbers.
B. Where devices allow, dimming shall be accomplished by 0-10V wiring of all devices.
C. 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.
D. Motion sensor with local switch will be de-energized when switch is off (sensor downstream of switch):
   1. Light will be on upon activation of local switch regardless of actual motion detection (sensor is ON upon power-up)
   2. Sensors will not click when local switch is off (nuisance avoidance in quiet rooms)
E. Line-voltage dimmers (i.e. track lighting) shall be downstream of local motion sensor.
F. Notes on plans or switchleg naming will indicate exceptions. For example:
   1. 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.
   2. 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.
G. 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
   2. 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.
   3. Verify settings with engineer prior programming. Certain settings may be different in certain zones.
   4. Sensors shall be programmed depending on availability of daylight . Save presets to avoid deviations.
   5. No daylight available:
      a. Enable "Time Delay" - Set to 15 minutes
      b. Disable Trim
      c. Enable "Dim to Off Delay" - set to 5 minutes
      d. Disable Photocell
   6. Daylight available (inc. spaces with overhead doors, skylights, windows within 20' of sensor)
      a. Enable "Photocell" and set to "On/Off and Auto Dimming"
      b. 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 Override
A. Plan will indicate which zones will be overriden.
B. Manual shut-off:
   1. Staff can remotely turn off selected zones regardless of local lighting control. the remote switch is shown on plans (typically in a non-public location)
C. Programmable timer:
   1. A central timer forces lights in zone on regardless of local control setting
D. Wiring from programmable timer and remote switch can be accomplished in line-voltage wiring or with low-voltage wiring and power-pack near lighting zone.

4 EL Local Lighting Control Overrides 1" = 1'-0"

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.
B. In these spaces, adhere a sign to the exit door indicating that lights shall be shut off upon leaving the space.
C. Above sign is an example and similar signs can be used upon approval.

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

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

Client:
Madison Fire Department

Fire Station 10 Lighting Retrofit (DD)

Location:
1517 Troy Drive
Madison, WI 53704

Contract: 9230
Project: 14246

Revisions

No.	Description

Details and Schedules

EL 300

Print Date:
10/26/2022 14:13:37
Print in color on 24" x 36"