

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



Location:  
421 Grand Canyon Dr.  
Madison, WI 53719

General Abbreviations	
ACC	Above Finished Floor
AFF	Acoustical Ceiling Tile
ADD	Additional
AFG	Above Finished Counter
AFG	Above Finished Grade
AL	Aluminum
APP	Approved
ASCO	Above Suspended Ceiling
BS	Baseboard
BFB	Below Finished Floor
BFG	Below Finished Grade
Bldg	Building
BLW	Below
BL	Bottom of
BSC	Bottom of Concrete
BSP	Bottom of Steel
BLS	Base Plate
CB	Cabin Basin
CBE	Ceramic Tile Base
CE	Ceiling
CF	Contractor Furnished / Contractor Installed
CF/CI	Contractor Furnished / Owner Installed
CG	Corner Guard
CGP	Cast-in-Place
CJ	Control Joint
CL	Center Line
CLG	Ceiling
CMU	Concrete Masonry Unit
CN	Cleanout
CO	Column
CONC	Concrete
CONT	Continuous
CORR	Corridor
CPT	Garpet
CS	Casework
CT	Ceramic Tile
CW	Cold Water
DEMO	Demolition
DF	Drinking Fountain
DI	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
FDR	Floor Drain
FEC	Fire Extinguisher Cabinet
FL	Fire Hose Cabinet
FLR	Floor
FM	Floormat
FO	Foundation
FO	Finished Opening
FP	Fire Protection
FTG	Footing
GA	Gauge
GALV	Galvanized
GB	Grid Bar
GR	Grade
GR	Grout
GYP	Gypsum Board
HB	Hose Bib
HC	Hollow Core
HGT	Height
HM	Hollow Metal
HM	Hollow Metal
HVAC	Heating, Ventilation & Air Conditioning
HW	Hot Water
INT	Inside Diameter
INT	Interior
JHA	Jurisdiction Having Authority
LAV	Lavatory
LL	Live Load
M	Male
MAX	Maximum
MFR	Manufacturer
MIN	Minimum
MS	Miscellaneous
MO	Masonry Opening
N	North
NA	Not Applicable
NC	Not in Contract
NM	Normal
NYS	Not to Scale
ON	on center
OD	Outside Diameter
OF / CI	Owner Furnished / Contractor Installed
OF / CI	Owner Furnished / Owner Installed
OH	Open Door
OPG	Opening
OPP	Opposite
PP	Perpendicular
PCT	Paint, Painted
PTN	Partition
RCP	Reflected Ceiling Plan
RD	Roof Drain
REBAR	Reinforced Steel Bars
REF	Reference
REV	Revision
RO	Rough Opening
S	South
SAN	Sanitary
SS	Stainless Steel
TEMP	Temperature
TF	Top of Finished Floor
TO	Top of
TOB	Top of Beam
TOC	Top of Concrete
TOJ	Top of Joint
TOP	Top
UNO	Unless Stated Otherwise
VF	Verified in Field
W	West
W	With
WO	Without
WC	Water Closet
WD	Wood
WH	Water Header
XPS	Extruded Polystyrene Board
Z	Zoning

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**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 demolded 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
  - ED - Electrical Demolition
  - EL - Electrical Lighting
  - EP - Electrical Power

A. PROJECT DESCRIPTION:  
1. NA

B. SPECIAL SITE CONDITIONS:  
1. NA

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. PROVISIONS FOR RETROFIT INSTALLATIONS  
1. NA

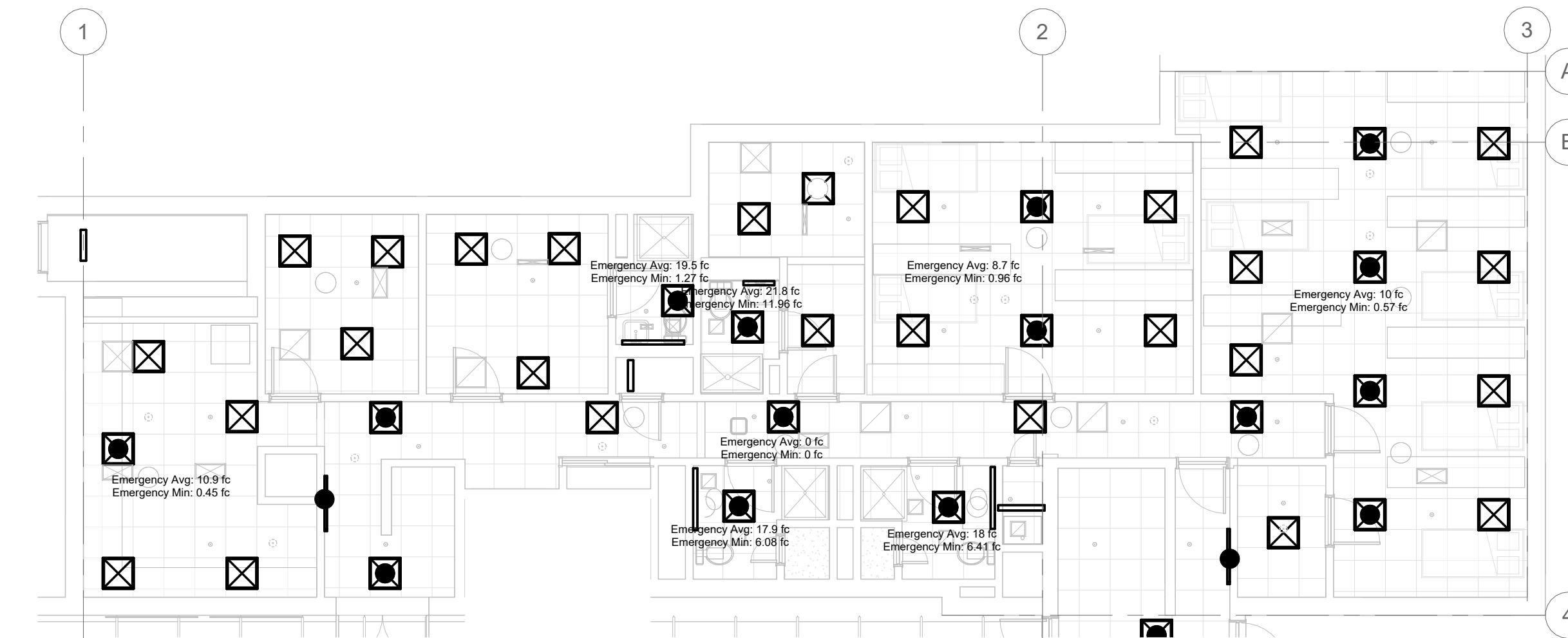
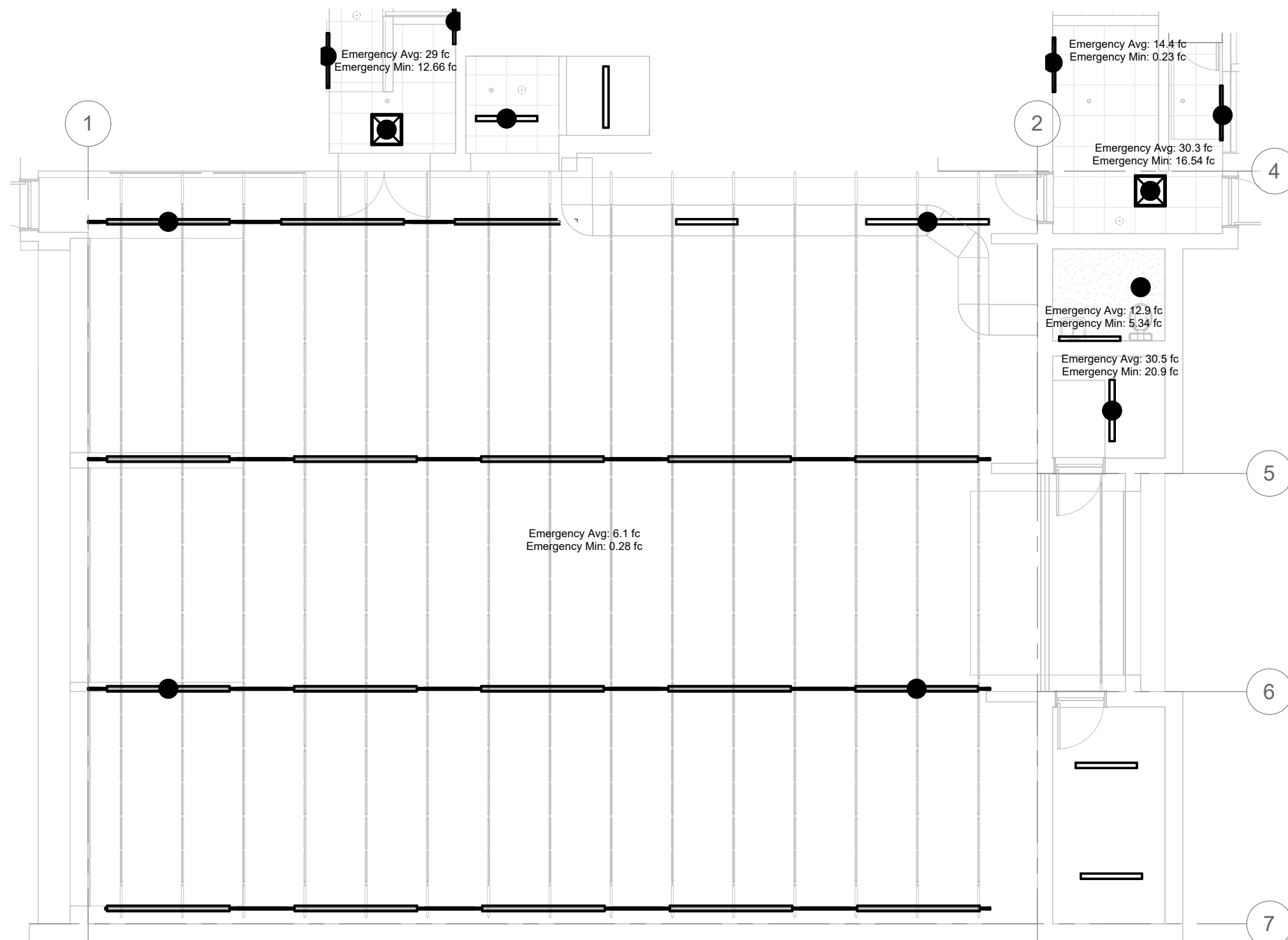
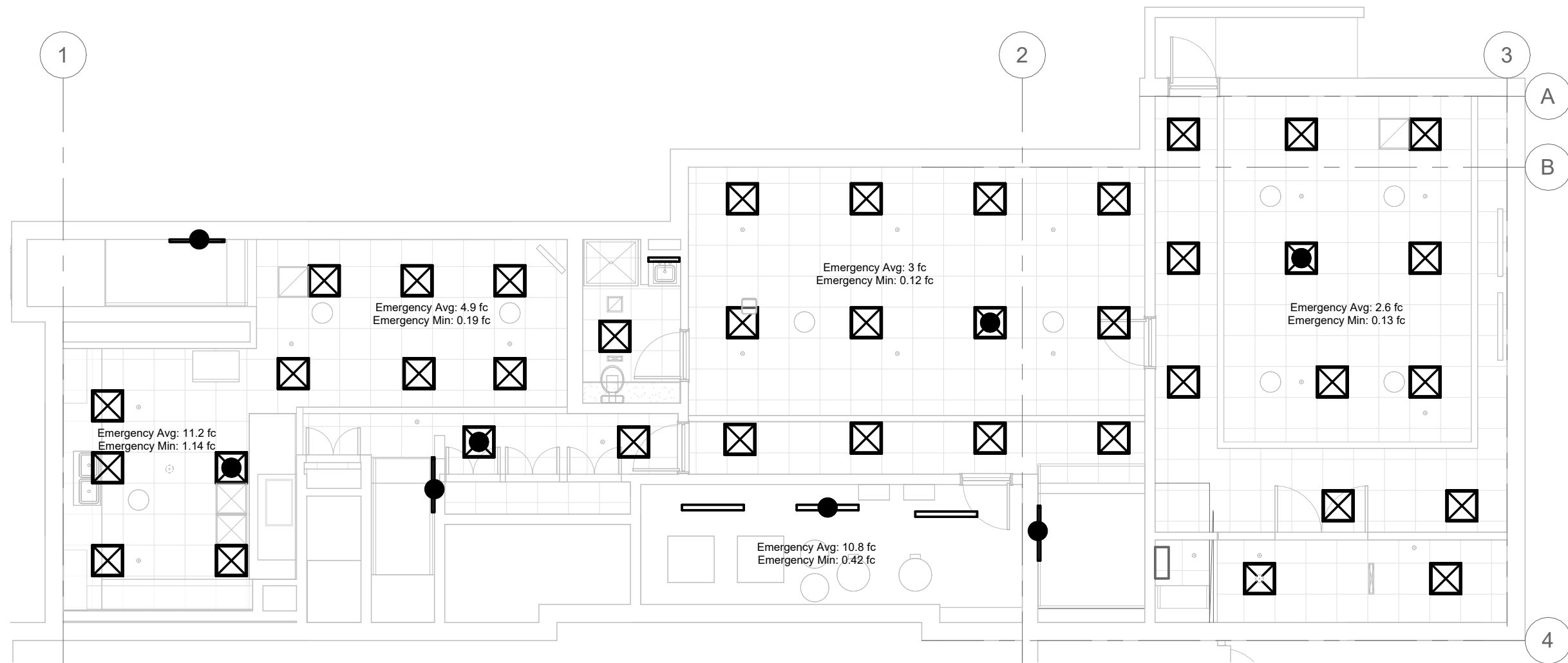
I. PERMIT REQUIREMENTS:  
1. Contractor is responsible to obtain all permits. See specification section 00 31 46 for details.

J. UTILITIES:  
1. Contractor may use owner's power and water at no cost.

K. CONTINUITY OF SERVICE:  
1. NA

L. SEQUENCING REQUIREMENTS:  
1. NA

M. ALTERNATES:  
1. NA



Emergency Lighting Load				
Type Mark	Space Number	Space Name	Apparent Load	Estimated Qty, R24 Relays required
P-26-2.2-0K	004A	Dim	14 VA	1
P-26-2.2-0K	001	Garage	14 VA	1
P-26-2.2-0K	204	Bathroom	14 VA	1
P-26-2.2-0K	207	Bathroom	14 VA	1
P-26-2.2-0K	205	Bathroom	14 VA	1
P-26-2.2-0K	206	Bathroom	14 VA	1
P-26-2.2-0K	210	Dormitory	14 VA	1
P-26-2.2-0K	210	Dormitory	14 VA	1
P-26-2.2-0K	211	Dormitory	14 VA	1
P-26-2.2-0K	211	Dormitory	14 VA	1
P-26-2.2-0K	211	Dormitory	14 VA	1
P-26-2.2-0K	211	Dormitory	14 VA	1
P-26-2.2-0K	213	Corridor	14 VA	1
P-26-2.2-0K	213	Corridor	14 VA	1
P-26-2.2-0K	213	Corridor	14 VA	1
P-26-2.2-0K	213	Corridor	14 VA	1
P-26-2.2-0K	105	Star West	14 VA	1
P-26-2.2-0K	104	Corridor	14 VA	1
P-26-2.2-0K	002A	Dry Room	28 VA	1
P-26-4.0K	004B	Kitchen	28 VA	1
P-26-4.0K	201	Watch	28 VA	1
S-4-5.0K	005	Mechanical	30 VA	1
S-4-5.0K	103	Storage	30 VA	1
S-4-5.0K	101	Garage	30 VA	1
S-4-5.0K	200	AT&T	48 VA	1
S-8-8.0K	101	Garage	48 VA	1
S-8-8.0K	101	Garage	48 VA	1
S-8-8.0K	101	Garage	48 VA	1
S-8-8.0K	101	Garage	48 VA	1
SS-10.1K	102	Bathroom	16 VA	1
WW-4.2K	105	Star West	16 VA	1
WW-4.2K	006	Star East Down	16 VA	1
WW-4.2K	104	Corridor	16 VA	1
WW-4.2K	106	Star North	16 VA	1

IECC 2015 Lighting Levels															
Space Number	Space Name	Area (ft <sup>2</sup> )	Space Type	Average Footcandle	Workplane Illumination (fc)	Min. Required Illumination (fc)	Actual Average Illumination (fc)	Illumination Goal (fc)	Max. Allowed Power (Watt)	Actual Power Consumed (Watt)	Actual Power Density (Watt/ft <sup>2</sup> )	Density Compared to Code	Allowed Lighting Load (Watt)	Actual Lighting Load (Watt)	Space Lighting Load Coefficient (Watt/ft <sup>2</sup> )
001	Bar	30.0	Bar	30.0	53	53	421	122	0.38 W/ft <sup>2</sup>	421	122	53	4.21	122	0.38 W/ft <sup>2</sup>
002A	Day Room	641	Living / Breakroom	2'-6"	20	32.6	1633	0.73 W/ft <sup>2</sup>	0.3 W/ft <sup>2</sup>	599	78	41%	468	190	0.26 W/ft <sup>2</sup>
002B	Storage	123	Storage	2'-6"	10	27.6	2763	0.63 W/ft <sup>2</sup>	0.37 W/ft <sup>2</sup>	599	78	59%	78	46	0.61 W/ft <sup>2</sup>
003	Bath	63	Bath - Restroom	2'-6"	20	14.6	0.65 W/ft <sup>2</sup>	0.55 W/ft <sup>2</sup>	599	78	93%	46	18	0.52 W/ft <sup>2</sup>	
004A	Dining	309	Dining Area (Family)	2'-6"	30	38.6	1272	0.69 W/ft <sup>2</sup>	0.42 W/ft <sup>2</sup>	479	276	130	130	0.61 W/ft <sup>2</sup>	
004B	Kitchen	243	Kitchen	2'-6"	30	53.6	1272	0.69 W/ft <sup>2</sup>	0.42 W/ft <sup>2</sup>	479	276	130	130	0.61 W/ft <sup>2</sup>	
005	Kitchen	197	Food Preparation	2'-6"	30	34.1	1144	0.59 W/ft <sup>2</sup>	0.36 W/ft <sup>2</sup>	389	189	71	71	0.61 W/ft <sup>2</sup>	
006	Star Exit Down	66	Stairwell	0'-0"	10	14.6	14.6	0.69 W/ft <sup>2</sup>	0.24 W/ft <sup>2</sup>	359	46	18	18	0.61 W/ft <sup>2</sup>	
007	Star Exit	66	Warehouse - Items hand-carried	0'-0"	10	32.6	32.6	0.69 W/ft <sup>2</sup>	0.38 W/ft <sup>2</sup>	469	46	18	18	0.61 W/ft <sup>2</sup>	
101	Garage	3,240	Emergency Vehicle Garage	2'-6"	30	30.4	10.6	0.56 W/ft <sup>2</sup>	0.31 W/ft <sup>2</sup>	599	1,815	56%	1,815	897	0.12 W/ft <sup>2</sup>
102	Garage	44	Restroom - otherwise	2'-6"	20	26.7	134	0.88 W/ft <sup>2</sup>	0.88 W/ft <sup>2</sup>	909	43	30	30	0.61 W/ft <sup>2</sup>	
103	Garage	183	Warehouse - Items hand-carried	2'-6"	30	30.4	30.4	0.56 W/ft <sup>2</sup>	0.31 W/ft <sup>2</sup>	599	46	18	18	0.61 W/ft <sup>2</sup>	
104	Corridor	96	Stairwell	0'-0"	10	31.3	3033	0.69 W/ft <sup>2</sup>	0.31 W/ft <sup>2</sup>	459	66	30	30	0.61 W/ft <sup>2</sup>	
105	Star Vest	87	Stairwell	0'-0"	10	31.3	323	0.69 W/ft <sup>2</sup>	0.53 W/ft <sup>2</sup>	779	60	46	46	0.61 W/ft <sup>2</sup>	
106	Star North	110	Stairwell	0'-0"	10	23.7	237	0.47 W/ft <sup>2</sup>	0.47 W/ft <sup>2</sup>	689	43	30	30	0.61 W/ft <sup>2</sup>	
200	AHU	100	Electrical / Mechanical	2'-6"	30	41.4	1056	0.95 W/ft <sup>2</sup>	0.95 W/ft <sup>2</sup>	649	95	61	61	0.61 W/ft <sup>2</sup>	
201	Star West	234	Office - enclosed	2'-6"	30	34.1	1144	0.59 W/ft <sup>2</sup>	0.36 W/ft <sup>2</sup>	389	189	71	71	0.61 W/ft <sup>2</sup>	
202	Office	114	Office - enclosed	2'-6"	30	34.2	1169	1.11 W/ft <sup>2</sup>	0.65 W/ft <sup>2</sup>	589	127	74	74	0.61 W/ft <sup>2</sup>	
203	Office	136	Dormitory - Living Quarters	2'-6"	20	29.1	1466	0.38 W/ft <sup>2</sup>	0.37 W/ft <sup>2</sup>	989	52	51	51	0.61 W/ft <sup>2</sup>	
204	Bathroom	38	Bath - Restroom	2'-6"	20	14.6	0.65 W/ft <sup>2</sup>	0.55 W/ft <sup>2</sup>	599	78	93%	46	18	0.52 W/ft <sup>2</sup>	
205	Bathroom	52	Restroom - otherwise	2'-6"	20	28.3	1429	0.68 W/ft <sup>2</sup>	0.73 W/ft <sup>2</sup>	749	50	38	38	0.61 W/ft <sup>2</sup>	
206	Bathroom	53	Restroom - otherwise	2'-6"	20	28.3	1429	0.68 W/ft <sup>2</sup>	0.71 W/ft <sup>2</sup>	729	52	38	38	0.61 W/ft <sup>2</sup>	
207	Bathroom	207	Restroom - otherwise	2'-6"	20	27.1	893	0.84 W/ft <sup>2</sup>	0.84 W/ft <sup>2</sup>	909	43	30	30	0.61 W/ft <sup>2</sup>	
208	Office	119	Dormitory - Living Quarters	2'-6"	20	24.2	1216	0.38 W/ft <sup>2</sup>	0.35 W/ft <sup>2</sup>	939	45	42	42	0.61 W/ft <sup>2</sup>	
209	Storage	12	Storage	2'-6"	10	7.6	0.63 W/ft <sup>2</sup>	0.48 W/ft <sup>2</sup>	749	7	17	17	0.61 W/ft <sup>2</sup>		
210	Dormitory	338	Dormitory - Living Quarters	2'-6"	20	31.1	1559	0.38 W/ft <sup>2</sup>	0.38 W/ft <sup>2</sup>	949	128	120	120	0.61 W/ft <sup>2</sup>	
211	Dormitory	611	Dormitory - Living Quarters	2'-6"	20	29.3	1473	0.38 W/ft <sup>2</sup>	0.36 W/ft <sup>2</sup>	939	232	217	217	0.61 W/ft <sup>2</sup>	
212	Laundry	49	Warehouse - small items hand-carried	2'-6"	30	34.1	1144	0.59 W/ft <sup>2</sup>	0.47 W/ft <sup>2</sup>	579	23	23	23	0.61 W/ft <sup>2</sup>	
213	Corridor	246	Corridor - otherwise	0'-0"	10	11.5	115	0.16 W/ft <sup>2</sup>	0.16 W/ft <sup>2</sup>	439	103	10	10	0.61 W/ft <sup>2</sup>	
214	Map Closet	8.06	Electrical / Mechanical	2'-6"	30	0	0	0.95 W/ft <sup>2</sup>	1.28 W/ft <sup>2</sup>	12	12	12	12	0.61 W/ft <sup>2</sup>	
													5,545	3,032	0.58 W/ft <sup>2</sup>

- Demolition:**
1. Demolish all existing lighting fixtures and controls. This includes all items not needed for new installation to 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 of XTG elements. Use adjacent surface matching cover for electrical boxes that remain.
- B. Installation:**
1. Install new raceways, boxes, conduit and wiring as required for new lighting fixtures and controls.
  2. Locations shown are approximate only. Install as required to coordinate with tile patterns, architectural features, sprinklers, mechanical equipment and other obstacles. Center Fixtures and provide even grid wherever possible. Review deviations from plan with designer prior installation.
  3. Install fixtures at indicated height. Provide required suspension. A noted height typically applies to all fixtures in a space, even if only a single fixture has an indicated height shown. If no height is given, ceiling surface mounting or mounting at bottom of fixture can be assumed. Installation in between trusses or beams also is an option. Consult with engineer before determining mounting height.
  4. Surface wiring raceway in finished areas is only allowed where the structure does not allow installation inside ceiling or wall. Raceway shall be neatly routed and hidden in corners to the greatest extend possible. In finished spaces use surface wire molding instead of conduit. Wiremold shall be factory painted to match wall surface. Where matching facade paint is not available, use field-painting.
  5. Support all lighting fixtures adequately and provide all extra support.
  6. All conduit except at fixture entrance shall be 3/4" or larger. Turns between access boxes should not be more than 270°.
  7. Grid Ceilings:
    - a. use flexible metal conduit from a J-box in enough length to allow lifting and Z lateral move of fixture
    - b. Move flexible head sprinklers where required for even layout pattern.
  8. Suspended Strip Light Fixtures: use rigid type hangers every 4' or less. Mount multiple fixtures in a row on a uni-struct structure.
  9. Cord & Plug Fixtures: Mount on hook for easy replacement and install safety wire. Provide plug within reach of fixture
- C. Retrofit Installation:**
1. Maintain all fire ratings while penetrating plenums, walls or ceilings.
  2. Install all wiring inside ceiling and wall. If wiring cannot be fished through, provide surface mounted conduit or wire molding in finished spaces.
  3. Modify Grid Ceiling to accommodate new fixtures. Fill in openings with new tiles of existing type. Contractor shall provide tiles and grid elements. Review Special site conditions for information on type of tile. Where sprinkler, diffuser or other permanent obstruction prevents even layout, relocate after consultation with engineer.
  4. Prevent dirt and dust polluting occupied areas and take special care while working in occupied areas and cover equipment and furniture as needed.
  5. Canopy: Provide retrofit version of fixtures and/or all retrofit accessories for installing over existing fixture locations. Ensure existing opening is fully covered. Build cover matching surrounding surface.
- D. 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.
- E. 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. Re-wire fixture internals if fixture has integrated sensor and/or other lighting control.
  4. Install UL924 relay in accessible location near controlled fixture. Verify location with engineer.
    - a. Drywall Ceiling: If no easily accessible location is available, install relay above grid ceiling in adjacent area
    - b. Outdoor fixtures: Install relay inside above a grid ceiling or other accessible location
  5. Retrofit of XTG fixtures: Re-arrange wiring and existing control to allow emergency fixture operation like for new fixtures. Note that schedules that show number of relays required only account for relays of NEW fixtures.



Client:  
Madison Fire Department

Fire Station 2  
Lighting Retrofit  
(BPW Set)

Location:  
421 Grand Canyon Dr.  
Madison, WI 53719

Contract: 9322  
Project: 14530

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## General Lighting

EL 001

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7/5/2023 15:26:29  
Print in color on 24" x 36"



Fire Station 2  
Lighting Retrofit  
(BPW Set)

Contract: 9322  
Project: 14530

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EL 200

This architectural floor plan shows a rectangular room with a central open area and a service area on the right. Numbered markers indicate the following locations:

- 1:** Four small rectangular tables along the left wall.
- 2:** A long rectangular table in the center of the room.
- 3:** A long rectangular table in the center of the room, below marker 2.
- 4:** A small table in the top right corner.
- 5:** A long rectangular table in the center of the room, below marker 3.
- 6:** A long rectangular table in the center of the room, below marker 5.
- 7:** Two small rectangular tables in the bottom right corner.

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

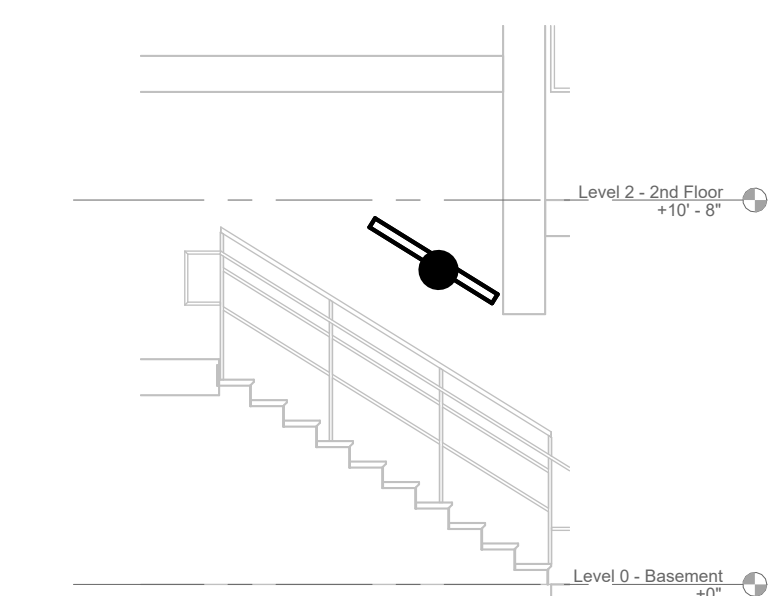
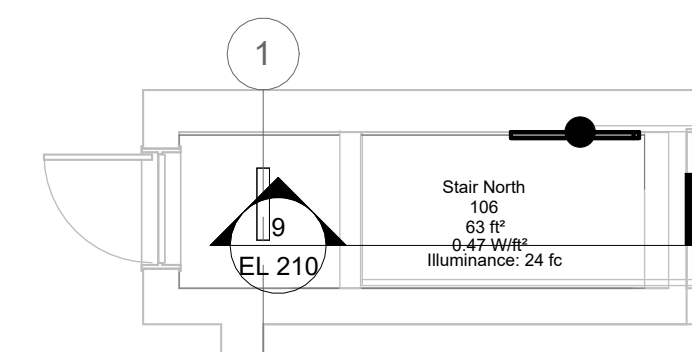
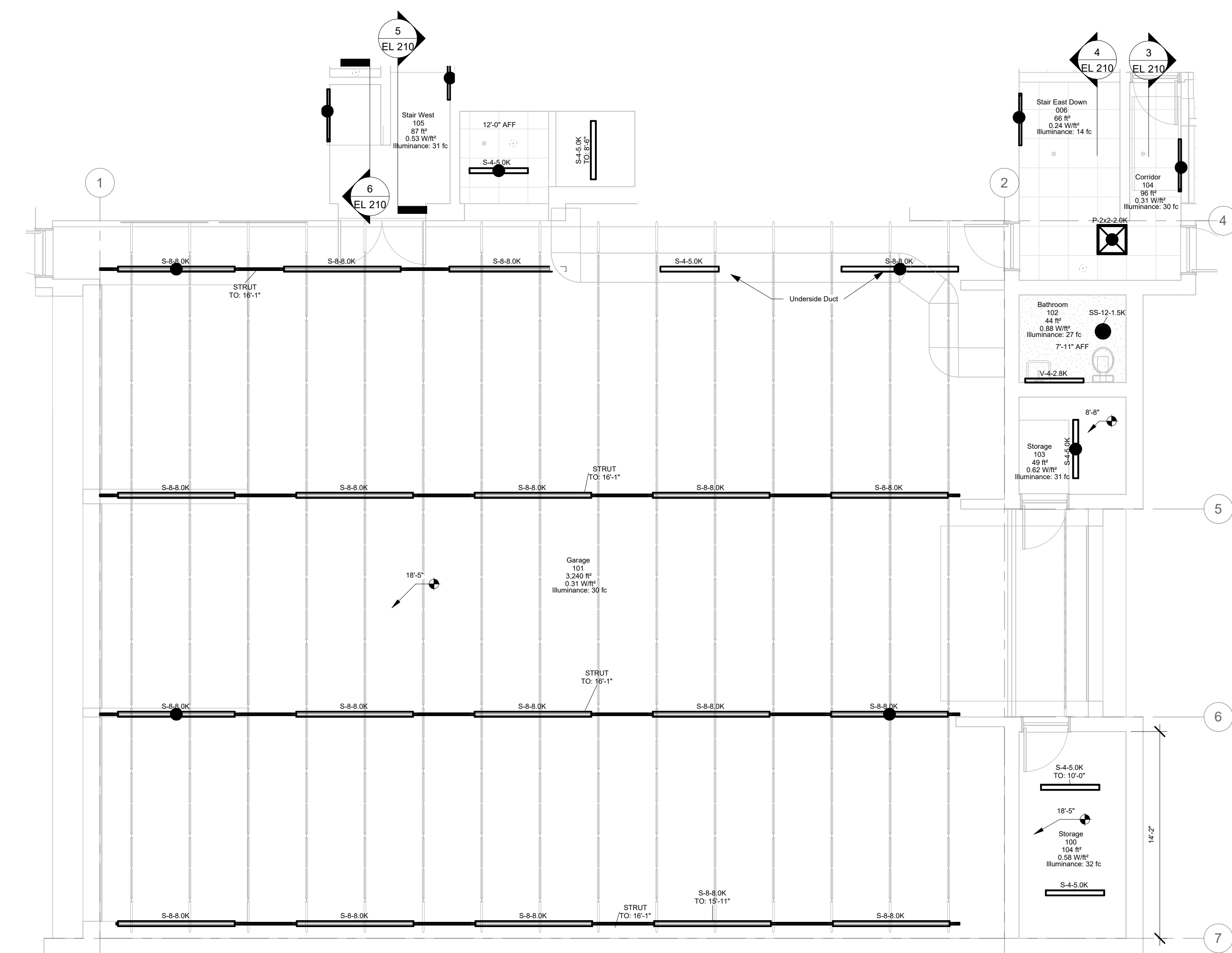
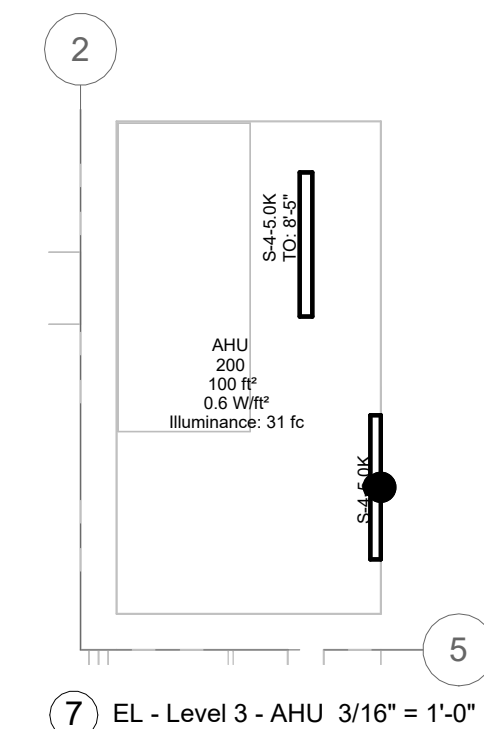
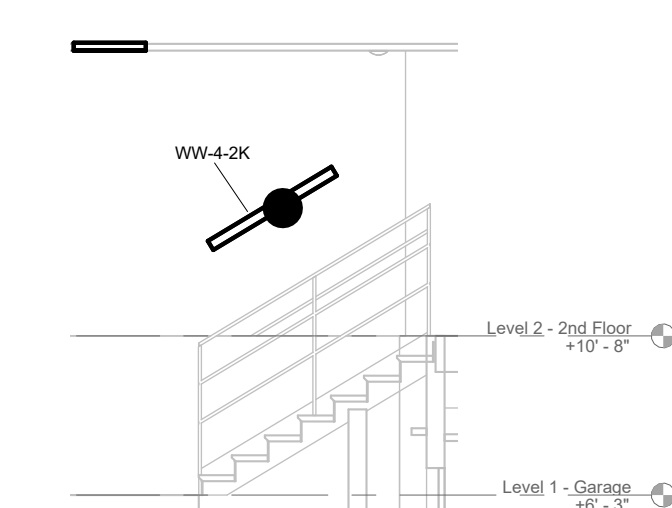
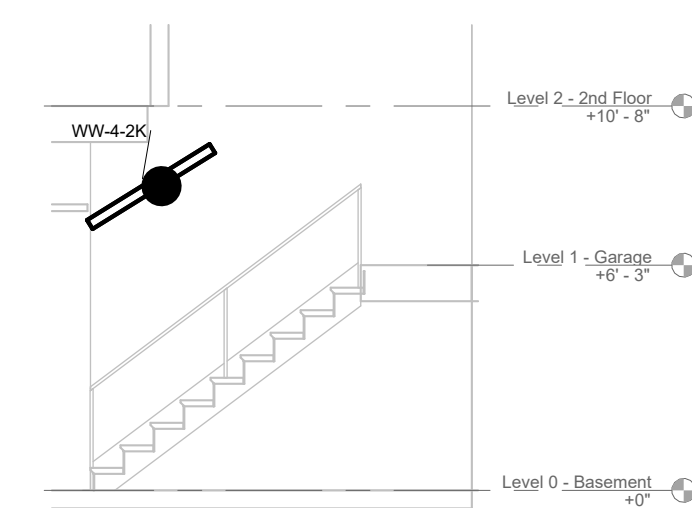
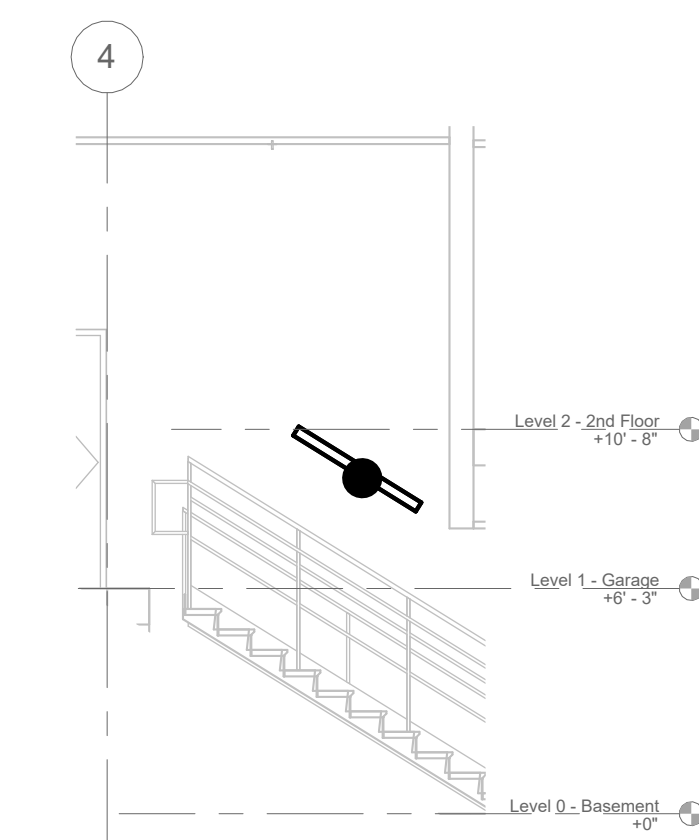
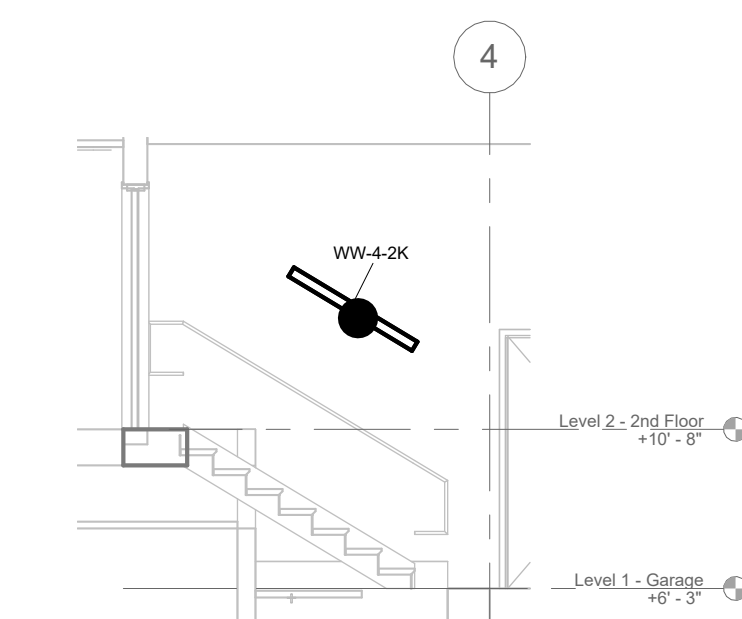
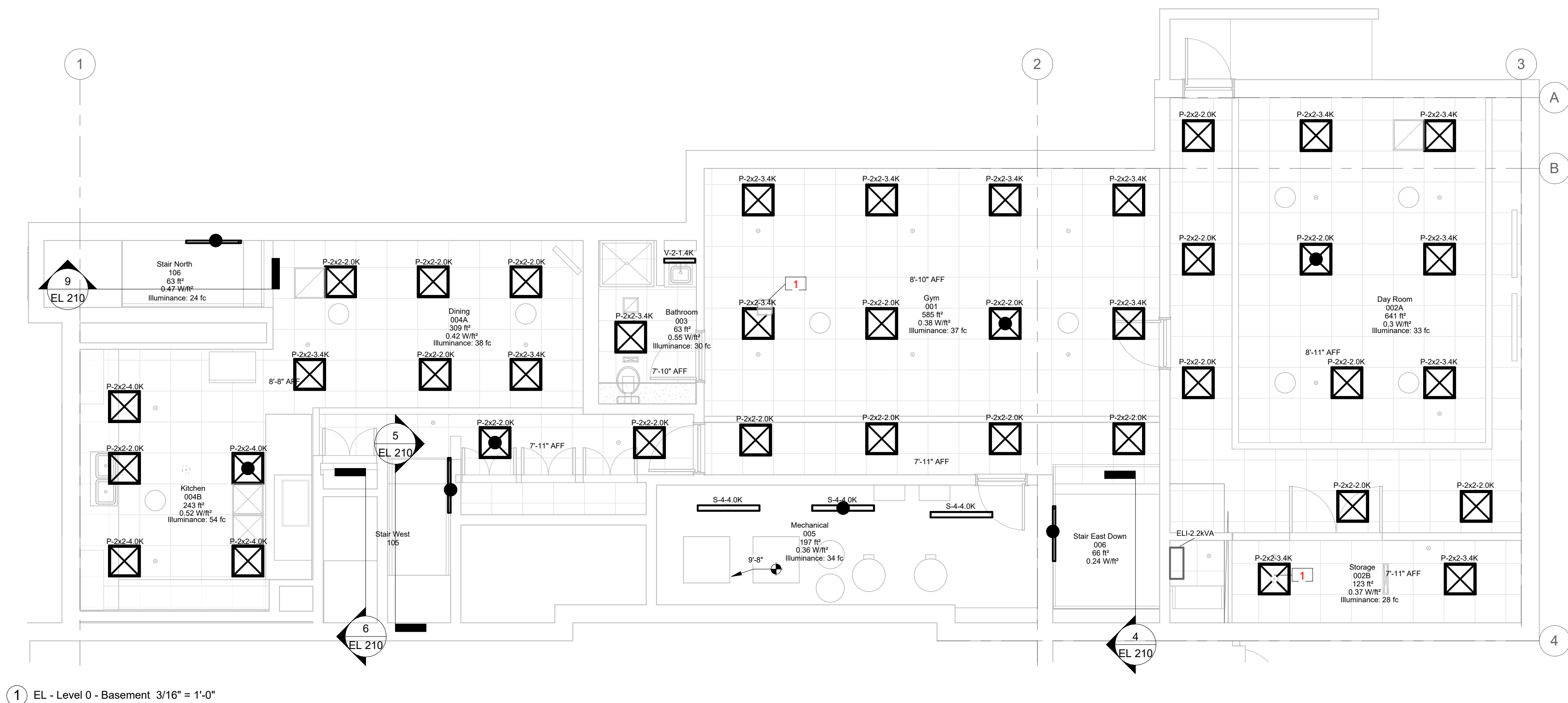
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3/16" = 1'-0" FEET

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

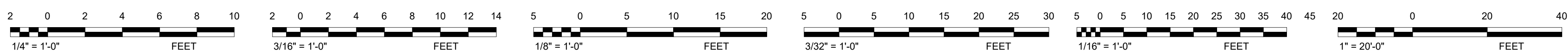
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3/32" = 1'-0" FEET

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

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



Keynote Legend	
Key Value	Keynote Text
1	Relocate existing device to allow new device installation. Install XTG device as close to original location as practical. Verify exact location with Engineer.



Client:  
Madison Fire Department

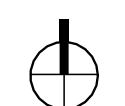
Fire Station 2  
Lighting Retrofit  
(BPW Set)

Location:  
421 Grand Canyon Dr.  
Medison, WI 53710

Contract: 9322
Project: 14530

[illegible]

Project North  
TRUE



## Lighting


EL 210

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7/5/2023 15:26:33  
Print in color on 24" x 36"

Fire Station 2  
Lighting Retrofit  
(BPW Set)

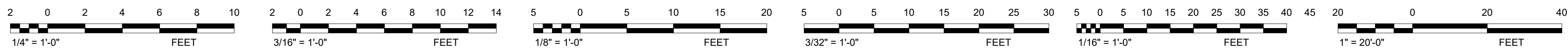
Contract: 9322
Project: 14530

Project North  
TRUE

A circular north arrow with a vertical line through the center. The top half of the vertical line is thicker and black, pointing upwards. The text 'Project North' and 'TRUE' is written above the circle.

## EL 220

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



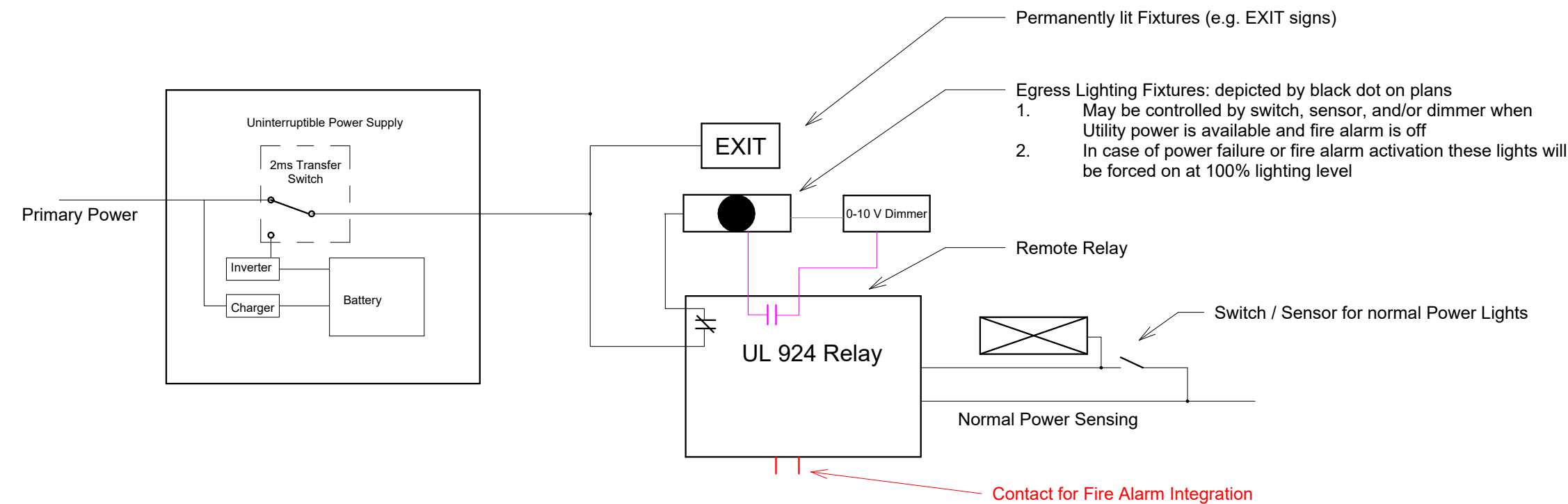


Emergency Lighting Inverters										
Type Mark	Specie Number	Space Name	Description	Manufacturer	Model	URL	Output Rating @ 90	In / Out Voltage	Weight	Remark
ELI-2-2kVA	002B	Storage	Emergency Lighting Inverter	Myers	EM-3-S-B-10-0-4-T-M(BFM)-1	<a href="http://www.myersspec.com">www.myersspec.com</a>	2200 VA	120 V	484 lb	Specifications 26 50 00 - Lighting

Lighting Fixture Schedule														Unified Glare Rating (Highest value)	Type Remark	Specific Remark	Specification
Type Mark	Type Comments	Description	Est. Count	Model	URL	Apparent Power	Luminous Flux	Color Temperature	Efficacy	Lumen Maintenance	Environmental Rating						
P-2-2-3-K	Light Fixture Interior	Panel 2x2	42	Lithonia SPX-2-2-3-K-40K-BFRLUGR-21-MVOLT-WH	<a href="http://www.aucitybrands.com">www.aucitybrands.com</a>	14 VA	2111 lm	4000 K	151 lm/W	L90 @ 50K hours	IPX5, NSF, Splash Zone	16.6				26 50 00 - Lighting	
P-2-2-3-K	Light Fixture Interior	Panel 2x2	32	Lithonia SPX-2-2-3-K-40K-BFRLUGR-21-MVOLT-WH	<a href="http://www.aucitybrands.com">www.aucitybrands.com</a>	23 VA	3438 lm	4000 K	149 lm/W	L90 @ 50K hours	IPX5, NSF, Splash Zone	17.1				26 50 00 - Lighting	
P-2-2-3-K	Light Fixture Interior	Panel 2x2	8	Lithonia SPX-2-2-3-K-40K-BFRLUGR-21-MVOLT-WH	<a href="http://www.aucitybrands.com">www.aucitybrands.com</a>	23 VA	4365 lm	4000 K	190 @ 50K hours	IPX5, NSF, T-20W		18.4				26 50 00 - Lighting	
S-2-2-K	Light Fixture Interior	Strip 2	1	Lithonia CLX-L2-2000LM-HEF-RD-MVOLT-E21-40K-80CRI	<a href="http://www.aucitybrands.com">www.aucitybrands.com</a>	13 VA	1811 lm	4000 K	147 lm/W	L70 @ 100K hours	Damp Location	26.2				26 50 00 - Lighting	
S-2-2-K	Light Fixture Interior	Strip 2	1	Lithonia CLX-L2-4000LM-HEF-RD-MVOLT-E21-40K-80CRI	<a href="http://www.aucitybrands.com">www.aucitybrands.com</a>	17 VA	2988 lm	4000 K	144 lm/W	L70 @ 100K hours	Damp Location	26.2				26 50 00 - Lighting	
S-3-3-K	Light Fixture Interior	Strip 3	1	Lithonia CLX-L3-3000LM-HEF-RD-MVOLT-E21-40K-80CRI	<a href="http://www.aucitybrands.com">www.aucitybrands.com</a>	17 VA	3004 lm	4000 K	170 lm/W	L70 @ 100K hours	Damp Location	27.3				26 50 00 - Lighting	
S-4-4-K	Light Fixture Interior	Strip 4	3	Lithonia CLX-L4-4000LM-HEF-RD-MVOLT-E21-40K-80CRI	<a href="http://www.aucitybrands.com">www.aucitybrands.com</a>	24 VA	4099 lm	4000 K	172 lm/W	L70 @ 100K hours	Damp Location	26.3				26 50 00 - Lighting	
S-4-5-K	Light Fixture Interior	Strip 4	3	Lithonia CLX-L4-5000LM-HEF-RD-MVOLT-E21-40K-80CRI	<a href="http://www.aucitybrands.com">www.aucitybrands.com</a>	26 VA	5010 lm	4000 K	166 lm/W	L70 @ 100K hours	Damp Location	26.7				26 50 00 - Lighting	
S-4-6-K	Light Fixture Interior	Strip 4	19	Lithonia CLX-L6-8000LM-HEF-RD-MVOLT-E21-40K-80CRI	<a href="http://www.aucitybrands.com">www.aucitybrands.com</a>	112 VA	11918 lm	4000 K	172 lm/W	L70 @ 100K hours	Damp Location	26.5				26 50 00 - Lighting	
SS-12-1-K	Light Fixture Interior	Sim Surface - Round - Wet Location	1	IES 66-1215-WH-TMC-C4000K-90CRI	<a href="http://www.lightingregulationsolutions.com">www.lightingregulationsolutions.com</a>	150 VA	1500 lm	4000 K	100 lm/W	60K hours	IP 44 - Wet Location					26 50 00 - Lighting	
V-4-2-1-K	Light Fixture Interior	Vanity	2	Birchwood NDL-LED-H-04-2-4-4MM-MVOLT-T1-D1-SM	<a href="http://www.birchwoodlighting.com">www.birchwoodlighting.com</a>	12 VA	1196 lm	4000 K	118 lm/W	L70 @ 50K hours	Damp Location	0				26 50 00 - Lighting	
V-4-2-8-K	Light Fixture Interior	Vanity 4	4	Birchwood NDL-LED-H-04-4-4MM-MVOLT-T1-D1-SM	<a href="http://www.birchwoodlighting.com">www.birchwoodlighting.com</a>	24 VA	2392 lm	4000 K	110 lm/W	L70 @ 50K hours	Damp Location	0				26 50 00 - Lighting	

Lighting Device Schedule						
Type Mark	Description	Est. Count	Model	URL	Type Remark	Specification

Light Fixture Support		
Type Mark	Estimated Total Length	Specification
STRUT	206'	26 05 00 - Common Work Results for Electrical



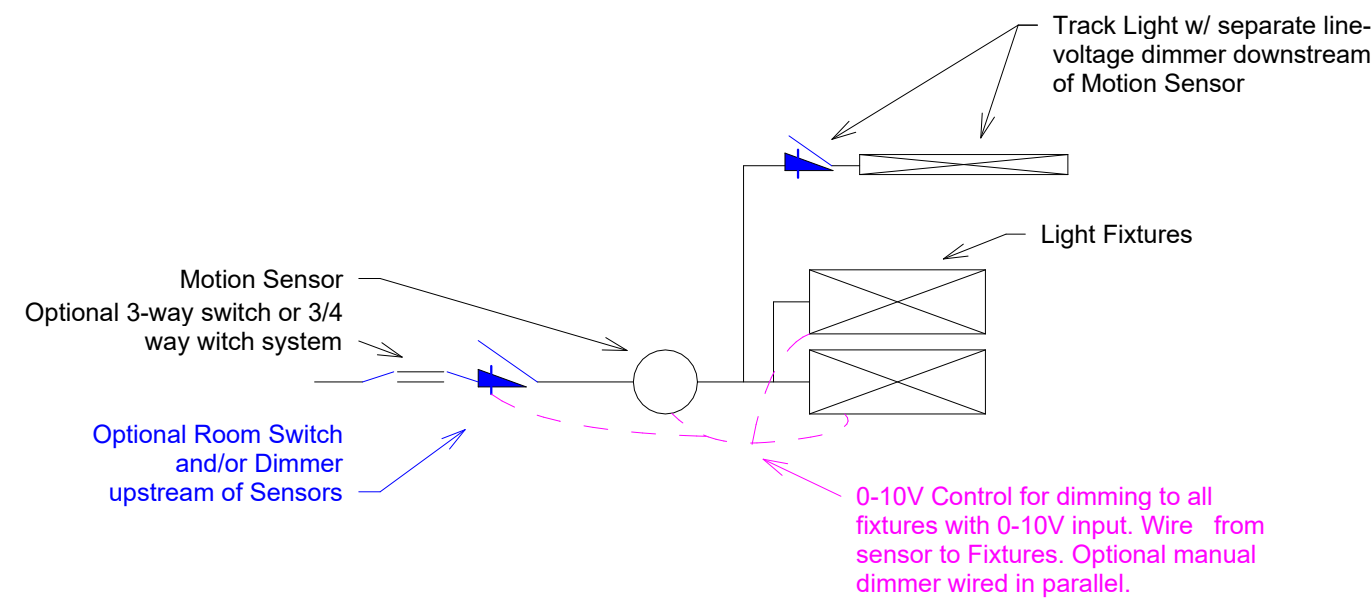
**Objective:**

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. Conduct 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 photo cell)
10. Contractor is responsible for all wiring from uninterruptible power supply and fire alarm panel to the zones.

## Testing

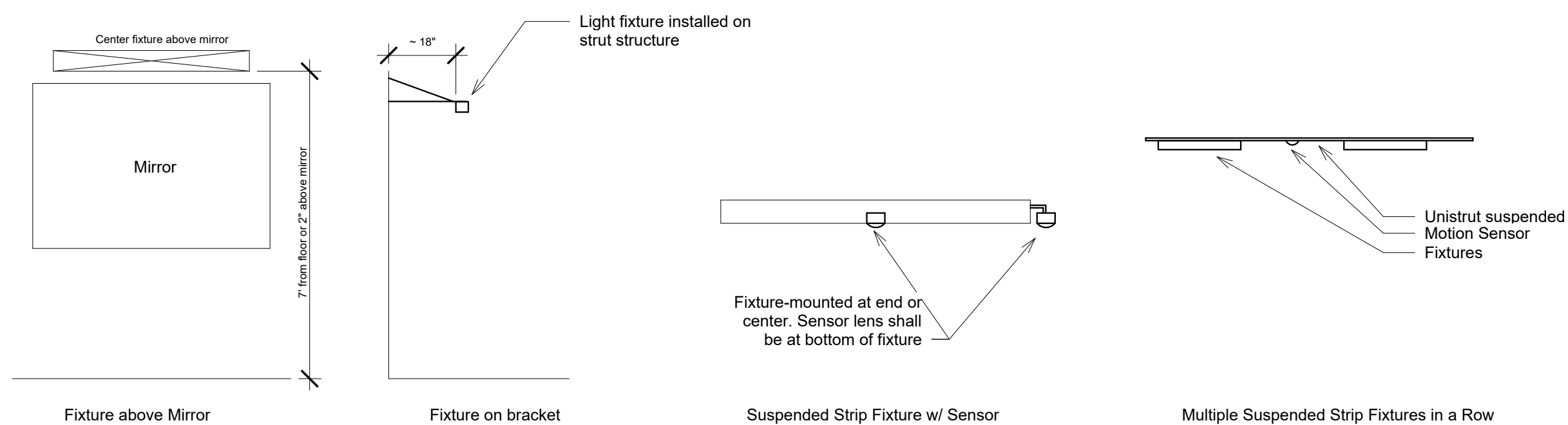
1. Test by applying emergency power and normal power. Turn off local switch and set local dimmer to lowest dimming level.
  - a. If no local switch is available, disconnect the appropriate wire to simulate light being turned off.
  - b. If no local dimmer is available and dimming by sensor is scheduled, 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%

① EL Egress Lighting Control w/ UPS and Fire Alarm Integration - Not to Scale



- |    |   |
|----|---|
| 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).  |
| E. | <ol style="list-style-type: none"> <li>1. Light will be on upon activation of local switch regardless of actual motion detection (sensor is ON upon power-up)</li> <li>2. Sensors will not click when local switch is off (nuisance avoidance in quiet rooms)</li> </ol>  |
| F. | Line-voltage dimmers (i.e. track lighting) shall be downstream of local motion sensor.  |
| G. | Notes on plans or switchleg naming will indicate exceptions. For example:   |
|    | <ol style="list-style-type: none"> <li>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.</li> <li>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.</li> </ol>   |
| G. | Sensoring Instructions:   |
|    | <ol style="list-style-type: none"> <li>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</li> <li>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 program.</li> <li>3. Verify settings with engineer prior programming. Certain settings may be different in certain zones.</li> <li>4. Sensors shall be programmed depending on availability of daylight. Save presets to avoid deviations.</li> </ol> |
|    | No daylight available:  |
|    | <ol style="list-style-type: none"> <li>a. Enable "Time Delay" - Set to 15 minutes</li> <li>b. Disable Trim</li> <li>c. Enable "Dim to Off Delay" - set to 5 minutes</li> <li>d. Disable Photocell</li> </ol>  |
|    | Daylight available (inc. spaces with overhead doors, skylights, windows within 20' of sensor)   |
|    | <ol style="list-style-type: none"> <li>a. Enable "Photocell" and set to "On/Off and Auto Dimming"</li> <li>b. Enable "Auto Set Point"</li> </ol>  |
|    | After programming, all functions shall be tested to verify desired function. Adjust as required for intended function. Discuss problems with engineer.  |

② EL Lighting Control Zone - Not to Scale

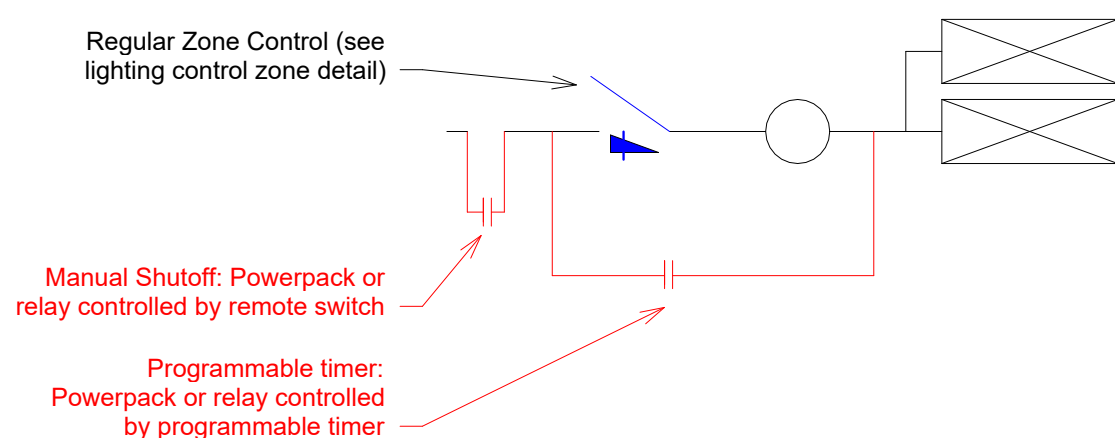


③ EL Typical Installation Details - Not to Scale



**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.
- 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.



### Local Lighting Control Override

- A. Plan will indicate which zones will be overridden.
- 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 - Not to Scale



Client:  
Madison Fire Department

## Fire Station 2 Lighting Retrofit (BPW Set)

Location:  
421 Grand Canyon Dr.  
Madison, WI 53719

Contract: 9322  
Project: 14530

[illegible]

## Details and Schedules

EL 300

Print Date:  
7/5/2023 15:26:34  
Print in color on 24" x 36"