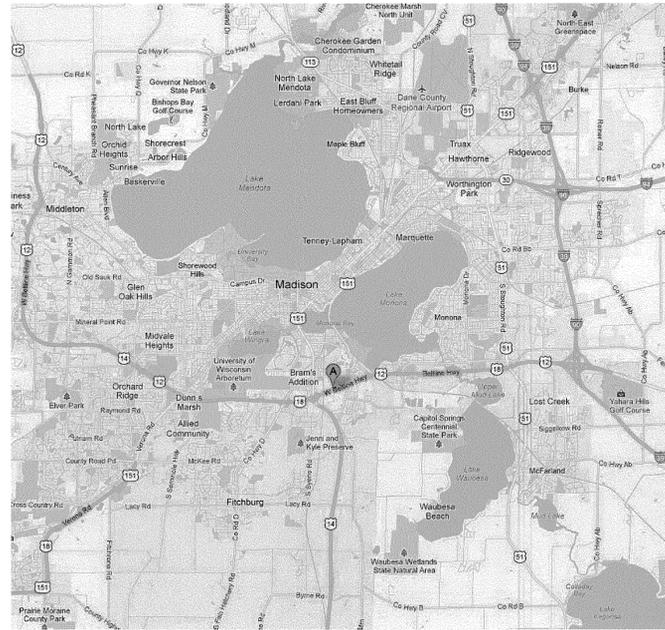


# West Streets Lighting Retrofit - 2013

Contract: 6946  
Project: 53W1523

Sheet List	
Sheet Number	Sheet Name
001	Cover
E 101	Demolition Lighting
E 201	Schedules
E 202	Lighting



City of Madison

Facilities and Sustainability Management  
210 Martin Luther King Jr. Blvd. Rm 115



Design prepared for:  
City of Madison -  
Streets Division

## West Streets Lighting Retrofit - 2013

Location:  
1501 W. Badger Rd.  
Madison, WI 53713  
Contract: 6946  
Project: 53W1523  
Approved by Common Council: 9/4/2012

Lighting Design:  
Kay Schindel, P.E.  
kschindel@cityofmadison.com  
608-266-4668

Electrical Design:  
NA

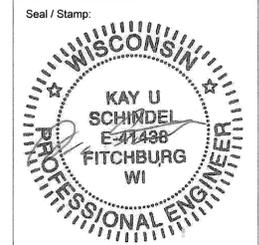
Plumbing Design:  
NA

HVAC Design:  
NA

Structural Design:  
NA

Architectural Design:  
NA

Cover



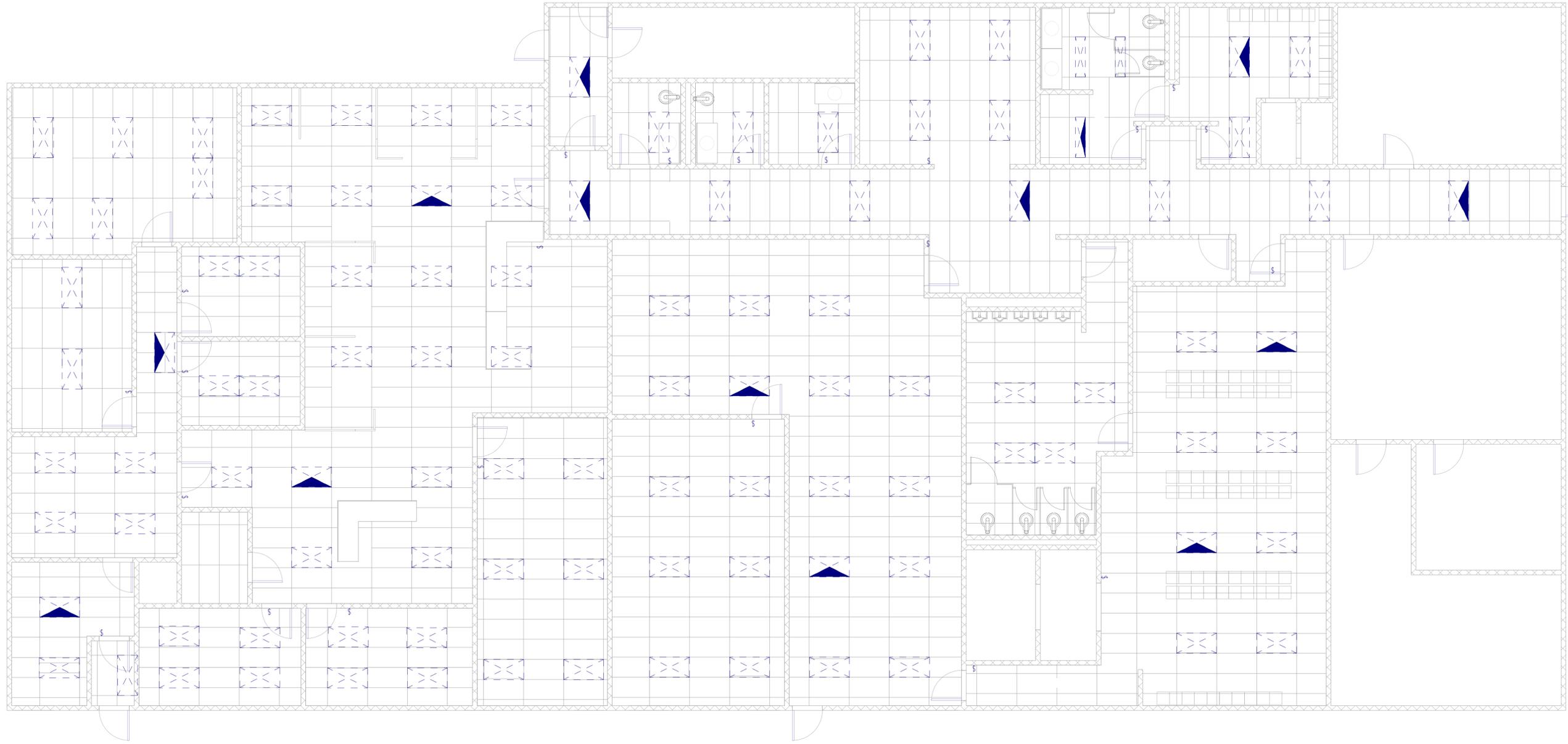
Date: 9/25/2012 4:29:12 PM

001

Approximate Scale:

Before Starting any Work:  
Call Diggers Hotline: 1-800 -242 -8511  
Obtain Permits: 608-266-4551

Approved by: Robert Phillips, P.E.  
City Engineer *[Signature]*



① Demolition Lighting  
 3/16" = 1'-0"

City of Madison

Facilities and Sustainability Management  
 210 Martin Luther King Jr. Blvd. Rm 115



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Electrical Design:  
 NA

Plumbing Design:  
 NA

HVAC Design:  
 NA

Structural Design:  
 NA

Architectural Design:  
 NA

**Demolition Lighting**

Date 9/25/2012 4:29:13 PM

**E 101**

Approximate Scale: 3/16" = 1'-0"



Design prepared for:

City of Madison -  
Streets Division

West Streets Lighting  
Retrofit - 2013

Location:

1501 W. Badger Rd.  
Madison, WI 53713

Contract: 6946

Project: 53W1523

Approved by Common Council: 9/4/2012

Lighting Design:

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kschindel@cityofmadison.com  
608-266-4668

Electrical Design:

NA

Plumbing Design:

NA

HVAC Design:

NA

Structural Design:

NA

Architectural Design:

NA

Schedules

Date 9/25/2012 4:29:13 PM

E 201

Approximate Scale: 1/4" = 1'-0"

Lighting Fixture Schedule											
Type	Description	Manufacturer	Efficiency	Model	Count	URL	Ballast	Apparent Load	Lamp Lumens	Mercury pg/lm hour	Keynote
W-14-H	Wraparound Fixture 1-lamp 4'	Lamar	82 lm/W	WC-1-32-E8-RW-RFWC	3	www.Lamarlighting.com	GE 132-MVPS-N	39 VA	Sylvania FO32/841XPS/ECO	3100	67
R-W	Recessed CAN for shower	Thomas Lighting	60 lm/W	IC fixture with TSH12	1	www.Thomaslighting.com		14 VA	TCP LED14E26P3030KFL	850	0
R-24-D	Recessed 2x4 Dimming	Lithonia	87 lm/W	2RT5-28T5-OS1C-L841XP	3	www.Lithonia.com	Sylvania QTP2x28T5/UNV DIM	64 VA	Sylvania FP28/841/PM/XP/ECO	2800	48
R-24-BL	Recessed 2x4 Step-Dimming	Lithonia	91 lm/W	2RT5-28T5-GE890S-L841XP	58	www.Lithonia.com	Sylvania QHES2x28T5/UNV PS 90SC	55 VA	Sylvania FP28/841/PM/XP/ECO	2800	48
R-24	Recessed 2x4	Lithonia	91 lm/W	2RT5-28T5-GE890-L841XP	16	www.Lithonia.com	Sylvania QHE2x28T5/UNV PS 90SC	55 VA	Sylvania FP28/841/PM/XP/ECO	2800	48
R-14	Recessed 1x4	Lithonia	85 lm/W	RT5-1-28T5-GE890-L841XP	13	www.Lithonia.com	Sylvania QTP1x28/UNV PSN	32 VA	Sylvania FP28/841/PM/XP/ECO	2800	48
I-24	Shop Fixture 2-lamp 4' Wireguard	Lithonia	80 lm/W	L-2-32-SSR-WGL	1	www.Lithonia.com	GE 232-MVPS-N	59 VA	Sylvania FO32/841XPS/ECO	3100	67
EX-EM-HO	EXIT - Emergency Combo w/ remote head	Lithonia		LHQM-LED-R-HO-SD-ELA-T-QWP-L0309	3	www.Lithonia.com		4 VA	LED		Wall-mount if possible; remote-heads outdoor
EX-EM	EXIT - Emergency Combo	Lithonia		LHQM-LED-R-SD	11	www.Lithonia.com		4 VA	LED		Wall-mount if possible; remote-heads outdoor

Grand total: 109

Lighting Space Schedule											
Number	Name	Space Type	Area	Wall Reflectance	Ceiling Reflectance	Floor Reflectance	Average Estimated Illumination	Code Lighting Load per Area	Actual Lighting Load per area	Code Lighting Load	Actual Lighting Load
1	Superintendent	Office - Enclosed	361 SF	50.00%	75.00%	20.00%	40 fc	1.00 W/ft²	0.81 W/ft²	361 W	293 W
2	Accounting	Office - Enclosed	207 SF	50.00%	75.00%	20.00%	0 fc	1.00 W/ft²	0.44 W/ft²	207 W	92 W
3	Recycling	Office - Enclosed	106 SF	50.00%	75.00%	20.00%	40 fc	1.00 W/ft²	1.04 W/ft²	106 W	110 W
4	Payroll	Office - Enclosed	99 SF	50.00%	75.00%	20.00%	42 fc	1.00 W/ft²	1.11 W/ft²	99 W	110 W
5	Hallway	Office - Enclosed	75 SF	50.00%	75.00%	20.00%	10 fc	1.00 W/ft²	0.42 W/ft²	75 W	32 W
6	Front Office	Office - Enclosed	200 SF	50.00%	75.00%	20.00%	40 fc	1.00 W/ft²	0.85 W/ft²	200 W	169 W
7	Lobby	Office - Enclosed	142 SF	50.00%	75.00%	20.00%	26 fc	1.00 W/ft²	0.70 W/ft²	142 W	100 W
8	Entrance	Office - Enclosed	28 SF	50.00%	75.00%	20.00%	9 fc	1.00 W/ft²	0.66 W/ft²	28 W	18 W
9	Supervisor 1	Office - Enclosed	157 SF	50.00%	75.00%	20.00%	45 fc	1.00 W/ft²	1.05 W/ft²	157 W	165 W
10	Supervisor 2	Office - Enclosed	162 SF	50.00%	75.00%	20.00%	44 fc	1.00 W/ft²	1.07 W/ft²	162 W	174 W
11	Conference Rm	Office - Enclosed	374 SF	50.00%	75.00%	20.00%	46 fc	1.00 W/ft²	0.88 W/ft²	374 W	330 W
12	Large Office	Office - Enclosed	1446 SF	50.00%	75.00%	20.00%	41 fc	1.00 W/ft²	0.65 W/ft²	1446 W	944 W
13	Lunch	Office - Enclosed	1088 SF	50.00%	75.00%	20.00%	29 fc	1.00 W/ft²	0.46 W/ft²	1088 W	504 W
14	Multiuse Storage	Office - Open Plan	492 SF	50.00%	75.00%	20.00%	38 fc	1.00 W/ft²	0.67 W/ft²	492 W	330 W
15	Bathroom Male	Office - Open Plan	363 SF	50.00%	75.00%	20.00%	23 fc	1.00 W/ft²	0.47 W/ft²	363 W	169 W
16	Locker Male	Office - Open Plan	1103 SF	50.00%	75.00%	20.00%	25 fc	1.00 W/ft²	0.44 W/ft²	1103 W	481 W
17	Hallway Back	<Building>	592 SF	50.00%	75.00%	20.00%	10 fc	1.00 W/ft²	0.28 W/ft²	592 W	164 W
18	Rear Entrance	<Building>	81 SF	50.00%	75.00%	20.00%	27 fc	1.00 W/ft²	0.73 W/ft²	81 W	59 W
19	Soda Room	<Building>	Not Placed	50.00%	75.00%	20.00%	0 fc	1.00 W/ft²	0.00 W/ft²	0 W	0 W
20	Bathroom Female	<Building>	182 SF	50.00%	75.00%	20.00%	32 fc	1.00 W/ft²	0.69 W/ft²	182 W	126 W
21	Locker Female	<Building>	Not Placed	50.00%	75.00%	20.00%	0 fc	1.00 W/ft²	0.00 W/ft²	0 W	0 W
22	Private Bathroom Male	<Building>	56 SF	50.00%	75.00%	20.00%	27 fc	1.00 W/ft²	0.70 W/ft²	56 W	39 W
23	Private Bathroom Male	<Building>	56 SF	50.00%	75.00%	20.00%	27 fc	1.00 W/ft²	0.70 W/ft²	56 W	39 W
24	Washroom	<Building>	70 SF	50.00%	75.00%	20.00%	27 fc	1.00 W/ft²	0.79 W/ft²	70 W	55 W
25	Utility Room	<Building>	41 SF	50.00%	75.00%	20.00%	39 fc	1.00 W/ft²	1.42 W/ft²	41 W	59 W
26	Soda Room	<Building>	279 SF	50.00%	75.00%	20.00%	30 fc	1.00 W/ft²	0.59 W/ft²	279 W	165 W
27	Locker Female	<Building>	184 SF	50.00%	75.00%	20.00%	30 fc	1.00 W/ft²	0.77 W/ft²	184 W	142 W
28	Hallway Front	<Building>	210 SF	50.00%	75.00%	20.00%	30 fc	1.00 W/ft²	0.72 W/ft²	210 W	151 W
										8153 W	5020 W

Switch Schedule						
Type	Manufacturer	Model	Count	Description	URL	Keynote
D-10	Hunt Dimming	PS-LED-12 0V	1	LED Dimmer 10V	www.huntdimming.com	Stainless Steel cover in hallways, bathrooms, lockers, shop areas and all other high-abuse areas. Ivory cover in finished offices; 20 A version
Four Way	Le Grand	Commercial Series	1	4-Way Switch	www.legrand.us	Stainless Steel cover in hallways, bathrooms, lockers, shop areas and all other high-abuse areas. Ivory cover in finished offices; 20 A version
Single Pole	Le Grand	Commercial Series	64	Single Pole Switch	www.legrand.us	Stainless Steel cover in hallways, bathrooms, lockers, shop areas and all other high-abuse areas. Ivory cover in finished offices; 20 A version
Three Way	Le Grand	Commercial Series	14	3-Way Switch	www.legrand.us	Stainless Steel cover in hallways, bathrooms, lockers, shop areas and all other high-abuse areas. Ivory cover in finished offices; 20 A version

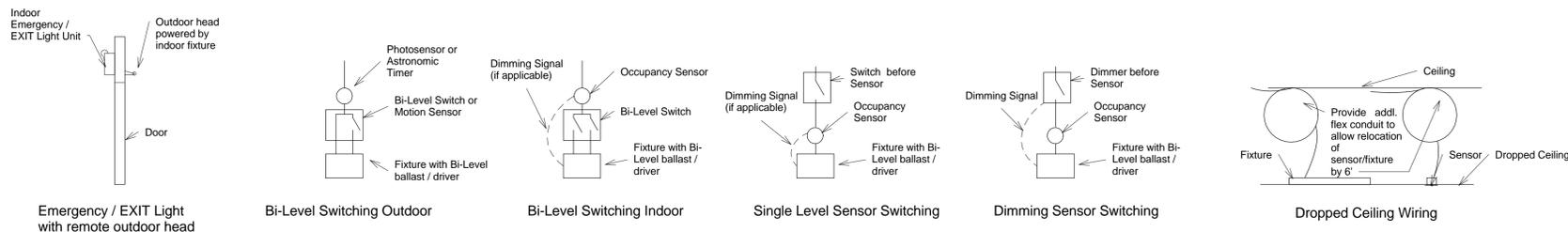
Grand total: 80

Sensor Schedule							
Type	Manufacturer	Model	Count	Coverage Area	Description	URL	Keynote
S	Sensorswitch	CMR-9-P-LT	30	450 SF	IR sensor, 12' range at 9' height, Photosensor	www.sensorswitch.com/	use CMRB if needed; use "2P" for 2-phase circuits
S-D	Sensorswitch	CMR-9-ADC-LT	2	450 SF	IR sensor, 12' range at 9' height, Photo-Dimming	www.sensorswitch.com/	use CMRB if needed; use "2P" for 2-phase circuits
S-DT	Sensorswitch	CMR-PDT-9-P-LT	4	450 SF	IR sensor, 12' range at 9' height, Photosensor, Dual-Technology	www.sensorswitch.com/	use CMRB if needed; use "2P" for 2-phase circuits
W	Sensorswitch	CMR-10-P-LT	20	2400 SF	IR sensor, 28' range at 9' height, Photosensor	www.sensorswitch.com/	use CMRB if needed; use "2P" for 2-phase circuits
W-DT	Sensorswitch	CMRB-PDT-10-P-LT	2	2400 SF	IR sensor, 28' range at 9' height, Photosensor, Dual-Technology	www.sensorswitch.com/	use CMRB if needed; use "2P" for 2-phase circuits

Grand total: 58

Lighting Notes

- Contractor shall verify device count in schedule. Schedule may be an estimate only.
- Contractor shall verify all existing voltages before bidding. If required voltage is not available, contractor shall provide wiring to nearest panel that has enough capacity and proper voltage. Contractor shall change design and material upon approval by engineer as needed to provide the intended function at no additional cost.
- New installation must match the drawn layout including circuit numbers, lighting control and type of mounting regardless of existing equipment and layout. Existing switches may be reused upon approval by owner. Abandoned switches need to be covered. Provide all switches necessary to enable intended control options including dimming, bi-level and second-level switching.
- Mount fixtures in same height as original fixtures unless noted otherwise. If fixtures are to be mounted at different location or did not exist before, clarify exact location and height with owner on site. Install fixtures in even grid, such as standard 10'x8' and in coordination with ceiling grid if available. Keep all fixtures and devices clear off pipes, ducts, radiators and other obstructions and coordinate exact location on site with project manager.
- Provide all mounting material needed. Suspended fixtures longer than 4' shall be backed by Uni-Strut. Mount suspended fixtures and rows of fixtures on Uni-Strut and attach Uni-Strut to ceiling with threaded rods. Install rods not more than 6 feet apart. Contractor shall provide stiffeners, bracing, backing plates and supporting brackets required for proper installation of all equipment. Where indicated, use existing mounting hardware and upgrade mounting to meet specifications for new mounting hardware.
- Place all sensors to perform properly (early detection, no false detection, correct lighting level). Location of sensors on drawing is not correct and has to be adjusted in the field to function properly. Sensors shall receive permanent label visible from space side indicating the model number.
- Provide fixtures with specified type of ballast and lamp. Provide all end caps, end gaskets etc. to enable installation as intended.
- For installation in dropped ceiling provide 6-foot additional length of cable and flexible conduit for fixtures and sensors mounted recessed in suspended ceiling in order to enable later relocation. Install fixtures located and turned as shown in drawings unless directed otherwise by owner or if existing ceiling grid does not allow the exact layout. Adjust and repair existing ceiling grid as needed. Install new ceiling tiles (provided by owner) in remaining openings. Adjust, replace and provide ceiling grid runners as needed to install new fixtures in existing grid.
- All openings caused by removal of old fixtures are to be patched by contractor with like material to match surroundings. Maintain all fire ratings while penetrating plenums, walls or ceilings. Provide sleeves if necessary to provide existing or specified fire rating. Painting is not necessary unless noted otherwise. Remove all abandoned material, equipment and cable. Properly dispose all removed material unless noted otherwise.
- In finished and occupied spaces install all wiring inside ceiling and wall unless wiring can not be fished through. Provide surface mounted raceway and/or conduit in surface mounted wiring with approval by owner. Surface mounted raceway or conduit shall be painted to match finishing in finished spaces. All cable and wire inside wall and ceiling shall be in metal conduit and up to electrical code. Unfinished spaces and unoccupied spaces (i.e. shops, garages) may have surface conduit. All conduit shall be 3/4" or large. Turns between access boxes should not be more than 270°. All low voltage cable shall be plenum rated. Connect receptacles and lighting to existing branch circuits where available and provide new circuits including all wiring and breakers from existing panel boards as needed. Light and receptacles shall be kept on separate circuits and branch and panel capacity must be confirmed. Provide wiring to generator circuit for emergency fixtures in case generator is on site, otherwise use battery-backup ballast from schedule. Mount EXIT and emergency light units on wall and provide all necessary wiring unless ceiling mounting is the only possible mounting method.
- Provide at least 5% spare parts for lamps, ballasts and sensors (at least 1 piece).
- Prevent dirt and dust polluting occupied areas and take special care while working in occupied areas and cover equipment and furniture as needed.
- Provide disconnect for service of ALL fixtures per NEC 410.130 (G). If fixture higher than 8' provide disconnect within reach of fixture. Provide means of disconnect that visibly show ON/OFF from location of fixture. Include lighting control equipment (i.e. powerpack, line-voltage sensor) in disconnected circuit. Cord & plug. Twist lock or separate switches are acceptable for disconnects as long as they are rated for location (i.e. wet). Manual switches in space may substitute as disconnects upon approval by owner.
- Switches marked BL (Bi-Level) require 2 separate switches per circuit to allow 2 lighting levels per circuit.
- Contractor shall furnish suspended ceiling material as needed in retrofit applications; owner will provide ceiling tiles
- Added switches shall have non-stacked switch levers. Contractor shall install wider or added box where needed. Switches shall be recessed where possible, regardless of original type of switch.
- Unless noted differently, install fixtures flush to surface. In case of obstacles suspend fixture or extend from wall minimally.



Lighting Details  
1/4" = 1'-0"



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**City of Madison - Streets Division**

**West Streets Lighting Retrofit - 2013**

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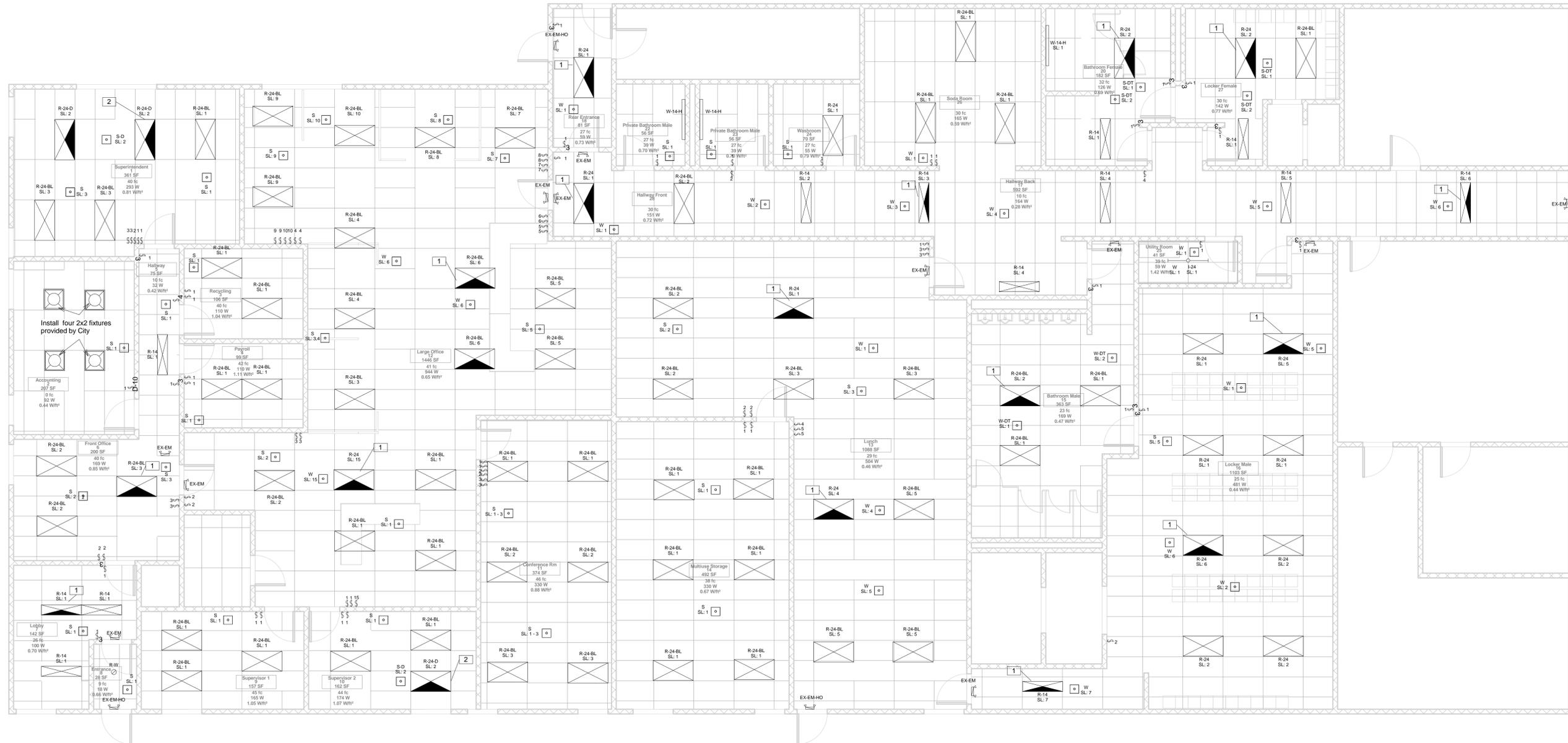
Electrical Design:  
NA

Plumbing Design:  
NA

HVAC Design:  
NA

Structural Design:  
NA

Architectural Design:  
NA



① P1 Lighting  
3/16" = 1'-0"

Lighting Notes	
Key Value	Keynote Text
1	CONNECT TO GENERATOR CIRCUIT (EXISTING IN SPACE)
2	CONNECT TO NEW GENERATOR CIRCUIT (NEW WIRE FROM GENERATOR)

**Lighting**

Date: 9/25/2012 4:29:14 PM

**E 202**

Approximate Scale: 3/16" = 1'-0"