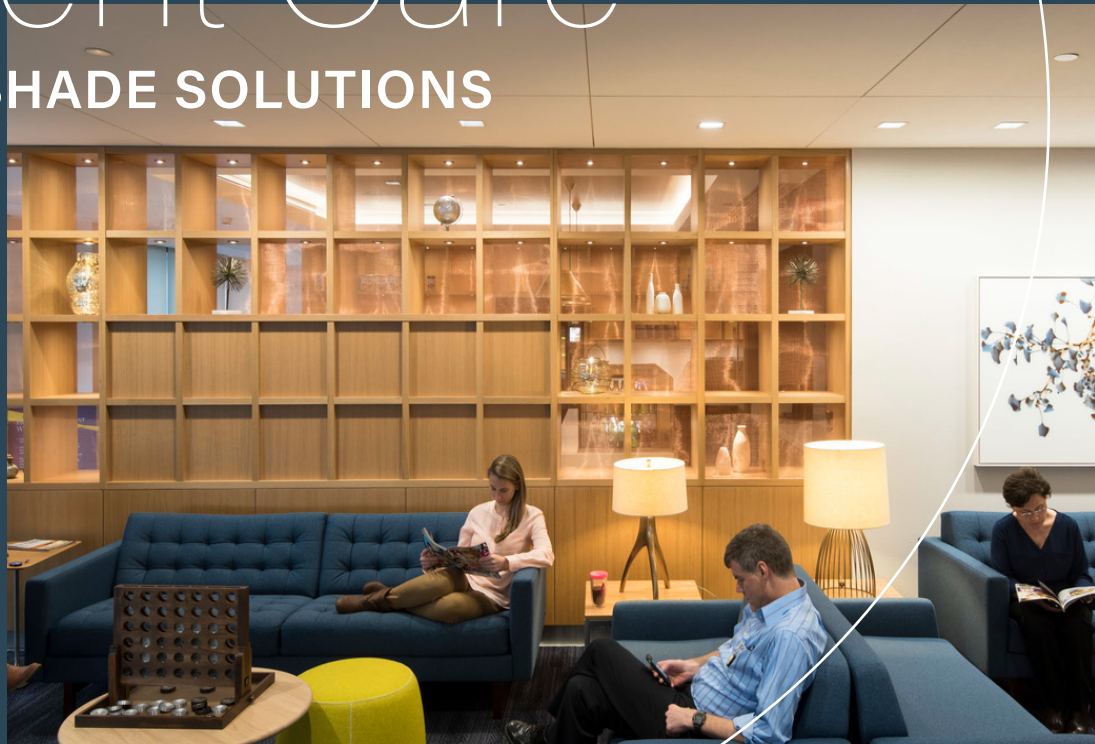




Optimizing Patient Care

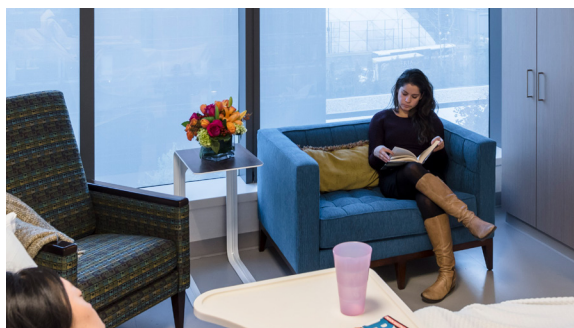
LIGHT & SHADE SOLUTIONS



HEALTHCARE
DESIGN GUIDE

designed to be better.

Designing Spaces to Optimize Patient Care



Patient Rooms

Flexible lighting controls and motorized shades provide patients with control over their environment that promotes comfort and healing.



Nurses' Stations

Make nurses a top priority so they can focus on their top priority: patients. Clearly marked zoned override switches and an intuitive user interface allow them to focus on what matters.



Exam Rooms

High-quality color tuning help support staff identify a subtle difference in a patient's coloring that allows for quick and accurate diagnosis.

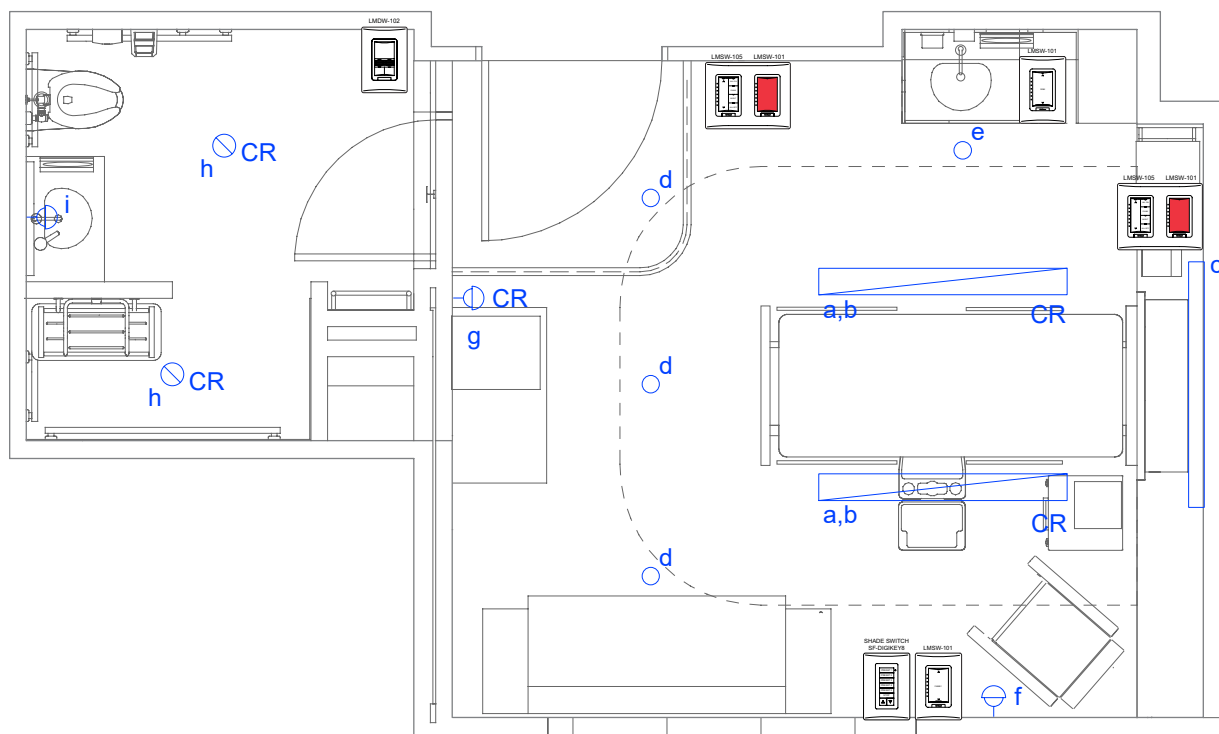


Post-Anesthesia Care Unit (PACU)

Variable lighting levels, achieved via multi-level switching or continuous dimming, allow for flexibility and comfort in post-op rooms while touch-less occupancy sensors help reduce the risk of infection.

LIGHTING AND SHADE CONTROLS

Patient Room: Lighting and Shade Design



Sequence of Operations

Room

1. Lighting loads (a,b,g,h) are on critical (CR) circuit and will be controllable when normal power fails but will not be forced on to 100%.
2. All loads are 0-10V dimmable.
3. Each load will be manually controlled as shown in the DLM switch control schedule (next page).
4. Pressing the LMSW-101-R (red) nurse override switch will force lights to 100% until the button is depressed which will relinquish controlled loads to previous state.
5. The LMIN-104 for lighting control receives a contact input from the patient pillow speaker to override the current light level to a preset lighting scene.
6. The LMOR-102 shall send a signal to the shade motor to raise or lower the shades based on an input from the pillow speaker.
7. The network bridge reports light level status, occupancy status, and actual current used back to a network controller. The network controller may be used to program and schedule any room devices and monitor the current usage.

Pillow Speaker

Lighting Button #1:

1. Single momentary press shall turn load (b) on.
2. Second press shall turn load (b) off.
3. A sustained press shall dim up or down load (b).

Lighting Button #2:

4. A single momentary press shall turn load (c) on.
5. Second press shall turn load (c) off.
6. A sustained press shall dim up or down, load (c)

Shade Button:

Successive 'shade' button presses will result in the following:

1st press – the shade motor will start moving the shades

2nd press – the shade stops in the current position

3rd press – the shade motor will start moving the shade in the reverse direction from the 1st press.

4th press – the shade stops in the current position

Any additional presses repeats the process at the 1st press.

LIGHTING AND SHADE CONTROLS








Patient Room: Lighting Schedule

DLM Room Controller Load Schedule					
Room Controller	Circuit	Load	Zone	Description	Load Type
<i>LMRC-112</i>	277V Critical	1	a	Exam	Dimmed (0-10V)
		2	b	Ambient	Dimmed (0-10V)
<i>LMRC-112</i>	277V Critical	1	c	Reading	Dimmed (0-10V)
		2	d	Downlights	Dimmed (0-10V)
<i>LMRC-112</i>	277V Critical	1	e	Sink	Dimmed (0-10V)
		2	f	Family Seating	Dimmed (0-10V)
<i>LMRC-112</i>	277V Critical	1	g	Nightlight	Switched
		2	h	Toilet	Switched
<i>LMRC-111</i>	277V Critical	1	i	Tlt. Mirror	Switched

DLM Switch Control Schedule			
Switch	Button	Description	Controlled Loads
<i>LMSW-105 ENTRY</i>	Rocker	Raise/Lower	Selected Loads - Raise/Lower
	1: Toggle	All On	Loads (a,b,c,d,e,f) - On Only
	2: Toggle	Exam	Load (a) - On / Off
	3: Toggle	Nightlight	Load (f) - On / Off
	4: Toggle	All Off	Loads (a,b,c,d,e,f) - Off Only
<i>LMSW-101-R CODE BLUE</i>	Toggle	Force On / Relinquish	Press 1: Loads (a,b,c,d,e) - 100% Press 2: Loads (a,b,c,d,e) - Return to normal operation
<i>LMDM-101</i>	Rocker	Sink	Load (e) - Raise/Lower
<i>LMSW-105 PAT HEADWALL</i>	Rocker	Raise/Lower	Selected Loads - Raise/Lower
	1: Toggle	All On	Loads (a,b,c,d,e,f) - On Only
	2: Toggle	Exam	Load (a) - On / Off
	3: Toggle	Nightlight	Load (f) - On / Off
	4: Toggle	All Off	Loads (a,b,c,d,e,f) - Off Only
<i>LMDM-101</i>	Rocker	Family Seating	Load (f) - Raise/Lower
<i>LMSW-101-R CODE BLUE</i>	Toggle	Force On / Relinquish	Press 1: Loads (a,b,c,d,e) - 100% Press 2: Loads (a,b,c,d,e) - Return to normal operation
<i>LMDW-102</i>	1: Load	Toggle	Load (h) - On/Off
	2: Load	Toggle	Load (i) - On/Off
		Occ. Sensor	Load (h,i) - Auto Off 15 minutes

LIGHTING AND SHADE CONTROLS

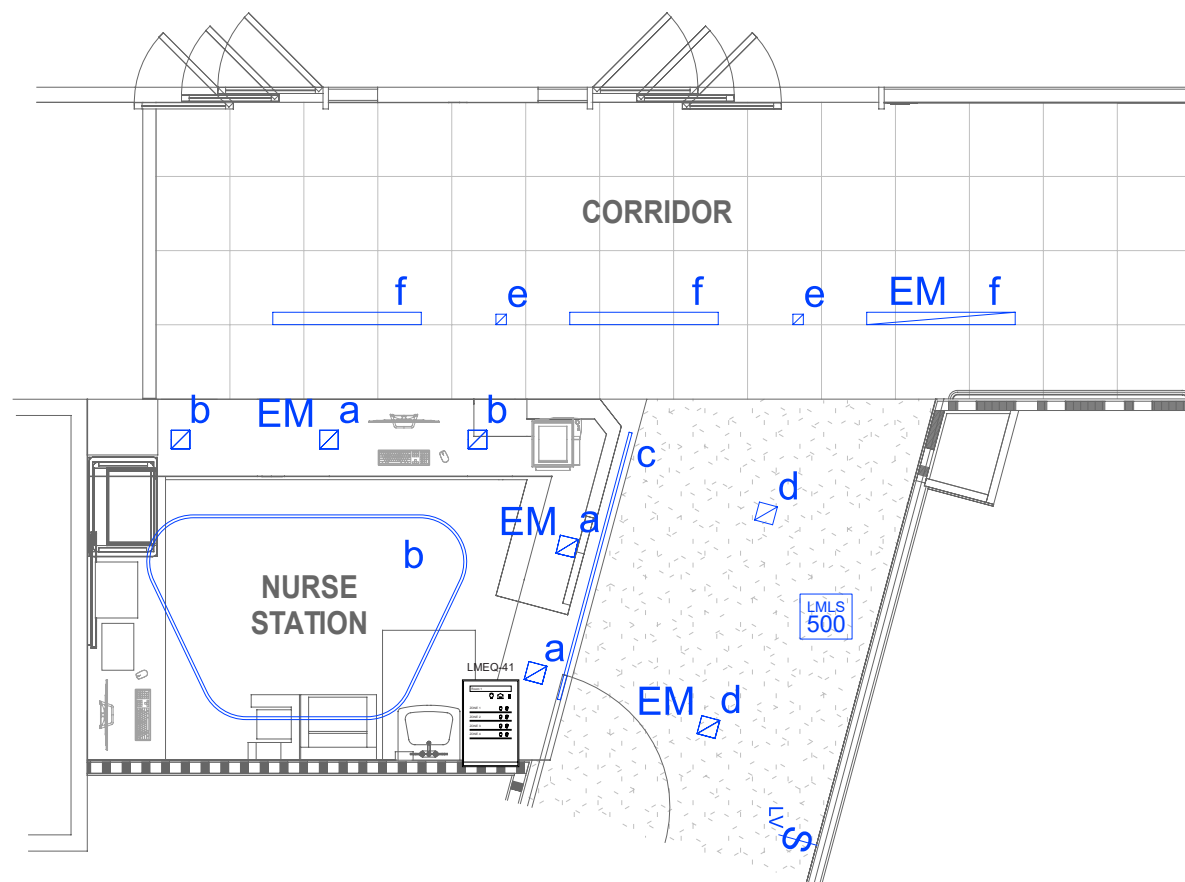
Patient Room: Bill of Materials

BILL OF MATERIALS			
	PART NO.	QTY	DESCRIPTION
	<u>LMBC-300</u>	1	Wired Network Bridge
	<u>LMRC-112</u>	4	DLM Room Controller, 2 Relay
	<u>LMRC-111</u>	1	DLM Room Controller, 1 Relay
	<u>LMIN-104</u>	1	Low Voltage DLM Input Interface
	<u>LMOR-102</u>	1	Digital Low Voltage Dual Relay Interface
	<u>LMDM-101</u>	2	Digital Dimming Wall Switch, 1 Paddle
	<u>LMSW-101-R</u>	2	Digital Switch, 1-button, Red
	<u>LMSW-105</u>	2	Digital Scene Switch, 5-Button
	<u>LMDW-102</u>	1	Digital Dual Tech 2 Button Wall Sensor



LIGHTING AND SHADE CONTROLS

Nurses' Station: Lighting and Shade Design









Sequence of Operations

Nurses' Station

1. Nurse stations and patient corridors shall be scheduled on during normal business hours to a preset illuminance (foot-candle) level.
2. During after hours, the corridors shall be set to a lower preset illuminance level.
3. Normal hours and afterhours time schedule to be determined by the owner.
4. The DLM touchscreen shall override the current scene until a schedule change between normal hours and afterhours or a different scene selection.
5. The LMLS-500 photosensor monitors the daylight contribution from the window and works with the room controller(s) to maintain design light levels. Up to 3 daylight zones with different setpoints may be assigned.
6. The ELCU-200 shall allow emergency (EM) lighting to be switched with normal lighting. When normal power sense feed is lost, the ELCU-200 will force emergency lights to full, regardless of the position of the switch.
7. The network bridge reports light level status and actual current used back to a network controller. The network controller may be used to program and schedule any room device setting based on normal hours/afterhours and monitor the current usage.

LIGHTING AND SHADE CONTROLS

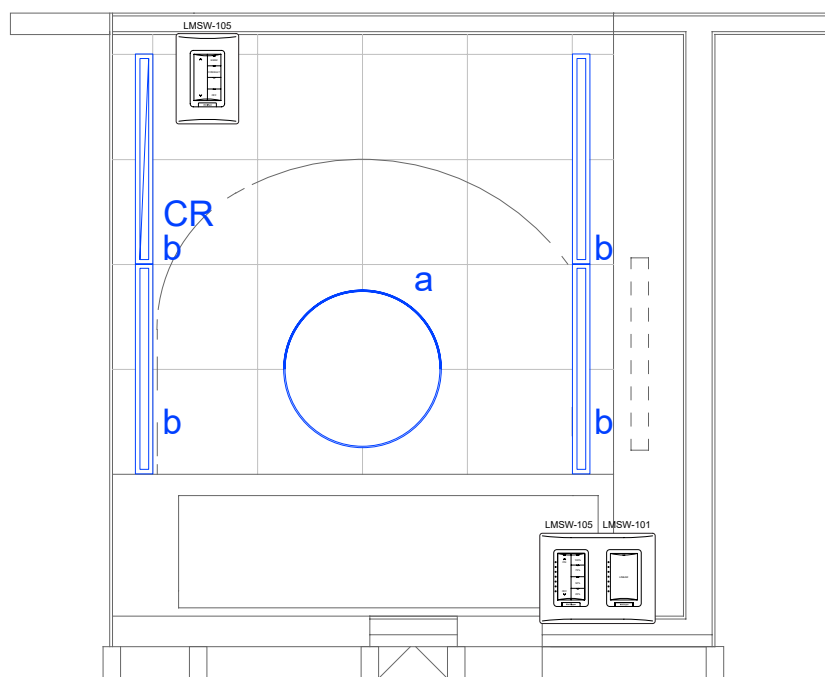
Nurses' Station: Bill of Materials

BILL OF MATERIALS			
	PART NO.	QTY	DESCRIPTION
	<u>LMBC-300</u>	1	Wired Network Bridge
	<u>LMRC-213</u>	2+	Triple Relay with 0-10V Dimming Room Controller
	<u>ELCU-200</u>	2+	Emergency Lighting Control Unit
	<u>LMLS-500</u>	1	Open Loop Multiple Zone Photosensor
	<u>LMTI-100-277</u>	1	DLM Touchscreen Injector
	<u>LMEQ-41</u>	1	DLM 4.3" Touchscreen



LIGHTING AND SHADE CONTROLS

Exam Room: Lighting and Shade Design



Sequence of Operations

Exam Room





1. Lighting load b is on a critical (CR) circuit and will be controllable when normal power fails but will not be forced to 100% on.
2. All lighting loads are 0-10V dimmable.
3. Each LMSW-105 digital scene selector switch has 1 rocker and 4 buttons each with a preset lighting scene. Pressing one of the 4 preset scene selection buttons will turn lights on in each zone to the illuminance level for that zone as shown in the DLM Switch Control Schedule (below).
4. The LMDM-101 digital dimmer will manually control the linear fixtures ON/OFF and RAISE/LOWER.
5. The network bridge reports light level status and actual current used back to a network controller. The network controller may be used to program and schedule any room devices and monitor the current usage.

LIGHTING AND SHADE CONTROLS

Exam Room: Lighting Schedule

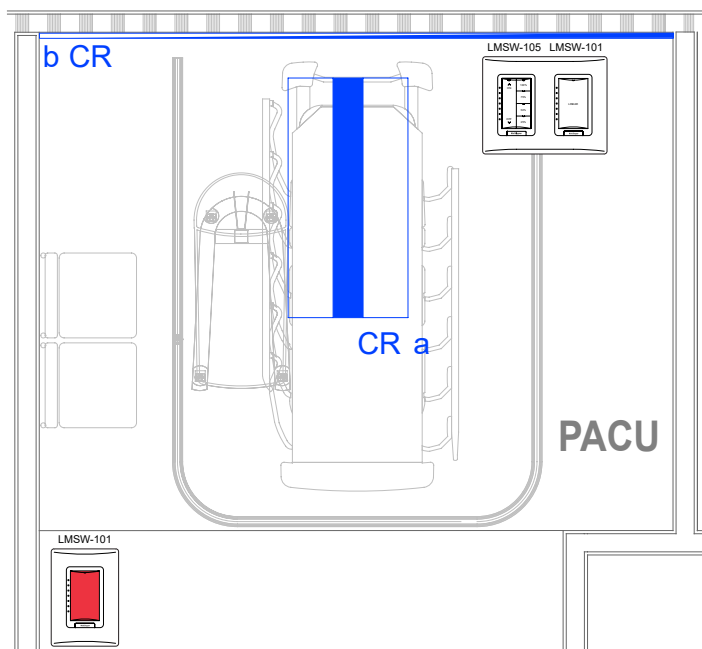
DLM Switch Control Schedule			
Switch	Button	Description	Controlled Loads
LMSW-105 ENTRY	Rocker	Raise/Lower	Selected Loads - Raise/Lower
	1: Scene	Exam	Loads (a,b) - 100%
	2: Scene	Consult	Load (a) - 0%; Load (b) - 100%
	3:		Unassigned
	4: Scene	Off	Load (a,b) - Off
LMDM-101	Rocker	Linear	Load (b) - On/Off & Raise/Lower
LMSW-105 UNDERCABINET ENTRY	Rocker	Raise/Lower	Selected Loads - Raise/Lower
	1: Scene	All On	Loads (a,b) - 100%
	2: Scene	Exam	Load (a) - 0%; Load (b) - 100%
	3:		Unassigned
	4: Scene	Off	Load (a,b) - Off

Bill of Materials

BILL OF MATERIALS			
	PART NO.	QTY	DESCRIPTION
	LMSW-105	2	Digital Scene Switch, 5-Button
	LMDM-101	1	Digital Low Voltage Switches, 2-Button
	LMRC-112	1	DLM Room Controller, 2 Relay
	LMRC-111	1	DLM Room Controller, 1 Relay
	LMBC-300	1	Wired Network Bridge

LIGHTING AND SHADE CONTROLS

Post-anesthesia Care Unit (PACU): Lighting and Shade Design



Sequence of Operations

Room

1. Lighting loads a,b are on a critical (CR) circuit and will be controllable when normal power fails but will not be forced on to 100%.
2. All lighting loads are 0-10V dimmable.
3. Each load will be manually controlled as shown in the DLM Switch Control Schedule.
4. Pressing the LMSW-101-R (red) nurse override switch will force lighting to 100% until the button is depressed, which will relinquish controlled loads to previous state.
5. The LMIN-104 for lighting control receives a contact input from the patient pillow speaker to override the current light level to a preset lighting scene.
6. The network bridge reports light level status and actual current used back to a network controller. The network controller may be used to program and schedule any room devices and monitor the current usage.

Pillow Speaker

Lighting Button #1:

1. Single Momentary press shall turn load 1 on
2. Second press shall turn load 1 off
3. A sustained press shall dim up or down, load 1

Lighting Button #2:







4. Single momentary press shall turn load 2 on
5. Second press shall turn load 2 off
6. A sustained press shall dim up or down, load 2

LIGHTING AND SHADE CONTROLS

PACU: Lighting Schedule

DLM Switch Control Schedule			
Switch	Button	Description	Controlled Loads
LMSW-101-R CODE BLUE	Toggle	Force On / Relinquish	Press 1: Loads (a,b) - 100% Press 2: Loads (a,b) - Return to normal operation
LMSW-105	Rocker	Raise/Lower	Selected Loads - Raise/Lower
	1: Toggle	100%	Load (a) - 100% Output
	2: Toggle	75%	Load (a) - 75% Output
	3: Toggle	50%	Load (a) - 50% Output
	4: Toggle	25%	Load (a) - 25% Output
LMDM-101	Rocker	Linear	Load (b) - On/Off & Raise/Lower

Bill of Materials

BILL OF MATERIALS			
	PART NO.	QTY	DESCRIPTION
	LMBC-300	1	Wired Network Bridge
	LMRC-212	1	Double Relay with 0-10V Dimming Room Controller
	LMIN-104	1	Low Voltage DLM Input Interface
	LMSW-101-R	1	Digital Switch, 1-button, Red
	LMDM-101	1	Digital Dimming Wall Switch, 1 Paddle
	LMSW-105	1	Digital Scene Switch, 5-Button



BUILDING CONTROL SYSTEMS

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