

LEducation  
Trade Show and Conference

gottesmanassociates  
ALL FACETS OF LIGHT

## Light Me the Way Home!

### Residential Lighting Design



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### LEARNING OBJECTIVES

At the end of the seminar, attendees will:

1. understand the value of "lighting with intention",
2. recognize how residential project challenges and goals guide the development of a lighting design,
3. appreciate the challenges and opportunities that residential lighting controls present, and
4. see how designers can deeply affect perception through lighted effects.



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### AGENDA

1. Some Lighting Principles & Debunking Lighting Myths
2. Factors Affecting the Lighting Design
3. The Process
4. Lighting design for Kitchens, Bathrooms, and other areas of a residence
5. A brief discussion of lighting controls
6. Challenges with Residential Lighting Design



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A commitment and vision transforms this home from dump to dazzling

*“It was so dark and depressing.”*

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The couple added 650 recessed energy-efficient dimmable LED lights throughout the home.

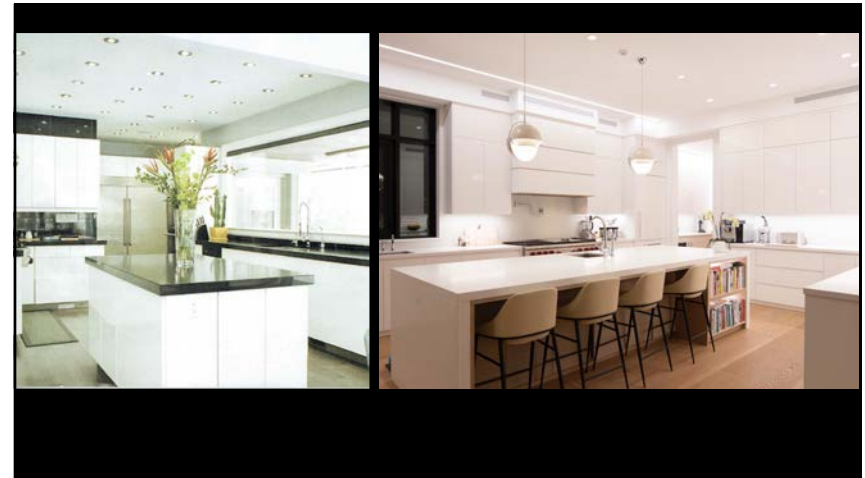
$7,000 \text{ sf} \div 650 \text{ lights} \approx 10 \text{ sf per luminaire}$

1 luminaire every 3' to 4'

6



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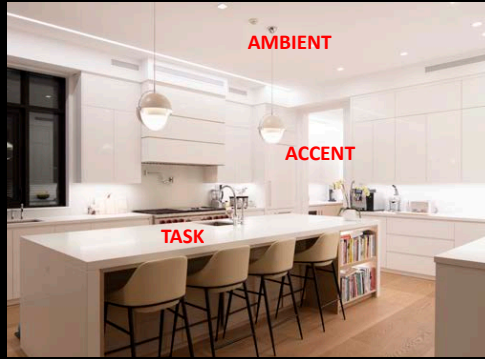


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### Lighting Design can help you:



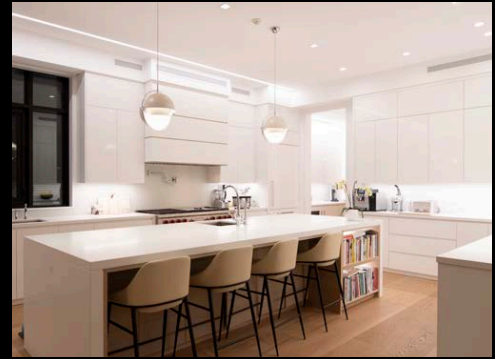
David Warfel  
Founding Designer at *Light Can Help You*  
IES Webcast "A Second Language of Light"



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### Lighting Design can help you:

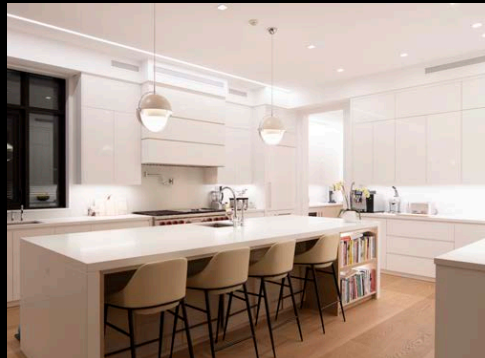
- perform better



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### Lighting Design can help you:

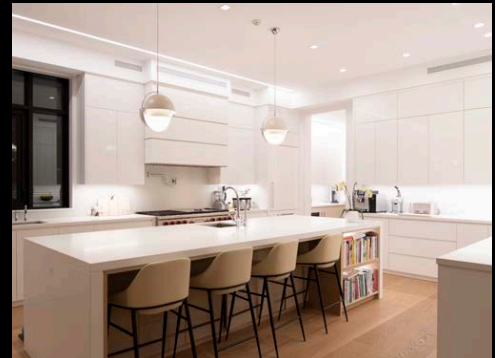
- perform better
- feel better



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### Lighting Design can help you:

- perform better
- feel better
- adapt to change easier



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# 1. Some Lighting Principles & Debunking Lighting Myths

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## i) What is Sustainable Lighting Design?

**Pacific Northwest**  
ARCHITECTURAL LIGHTING

### Role of Sustainability in Lighting

**What is sustainable lighting?**  
Sustainable lighting is more than just energy use reduction

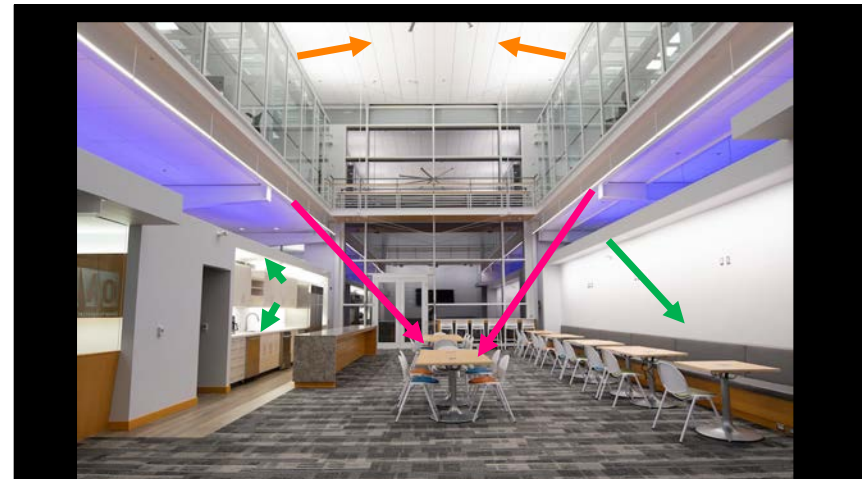
- At a high level, the goal should be to create/provide lighting that:
  - ✓ serves the visual needs of people
  - ✓ equitably benefits society
  - ✓ equitably benefits environment
  - ✓ used only when and where it is needed
- These should be considered at all stages of the lighting (cradle to cradle)



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## ii) How is Perceived Brightness Different than "Light Level" (fc/lux)?

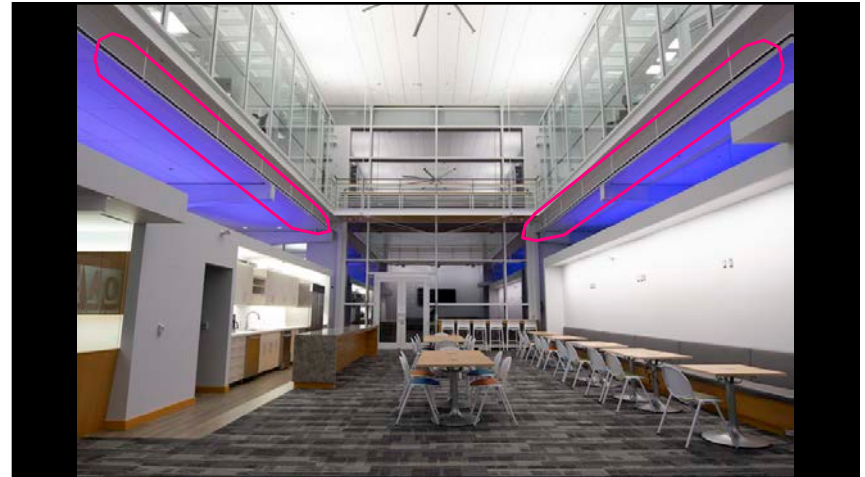
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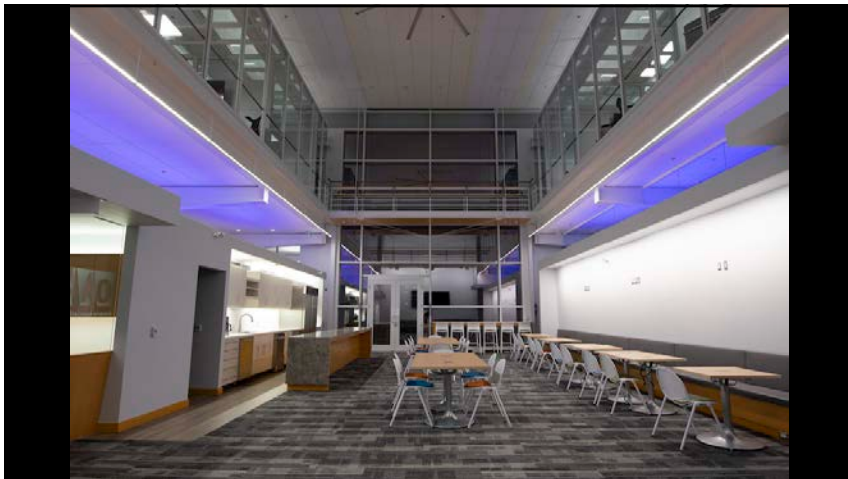
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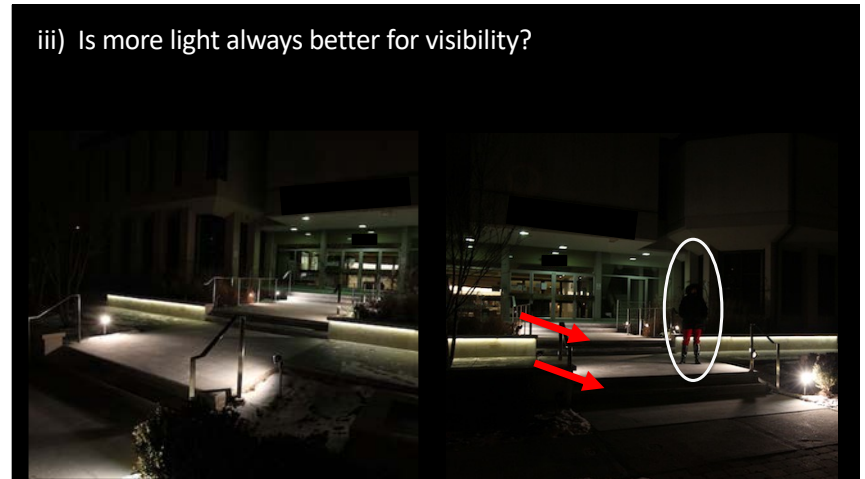
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iii) Is more light always better for visibility?

We can fix that. Add lights!!



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iii) Is more light always better for visibility?

More light can mean *less* visibility?



Photo courtesy of  
M.M. Morgan and IDA

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iii) Is more light always better for visibility?

More light can mean *less* visibility!



Photo courtesy of  
M.M. Morgan and IDA

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2) What Factors Affect a Residential Lighting Plan?

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2) What Factors Affect a Residential Lighting Plan?

- a. Space programming

Who  
What  
When  
Where  
Why  
How



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2) What Factors Affect a Residential Lighting Plan?

- a. Space programming
- b. Architectural and interior design elements



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2) What Factors Affect a Residential Lighting Plan?

- a. Space programming
- b. Architectural and interior design elements
- c. Function



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3) The Process

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### 3) The Process

- ✓ Collaborative



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### 3) The Process

- ✓ Collaborative
- ✓ Keepers of the lighted environment



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### 3) The Process

- ✓ Collaborative
- ✓ We are keepers of the lighted environment
- ✓ ID/Arch/Client determine vocabulary  
*form | finish | decorative fixtures*



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### 3) The Process

- Priorities / Scope of Work / Schedule



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### 3) The Process

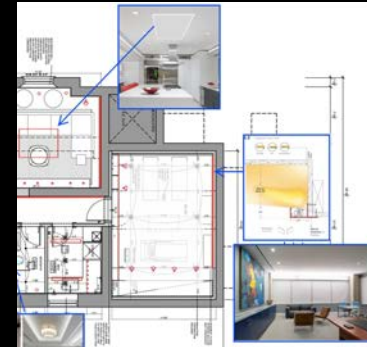
- Priorities / Scope of Work / Schedule
- Visual Programming – space by space  
*who what when where why how*



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### 3) The Process

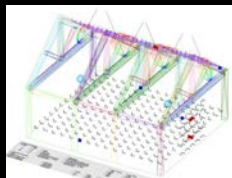
- Priorities / Scope of Work / Schedule
- Visual Programming – space by space  
*who what when where why*
- Lighting Concept



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### 3) The Process

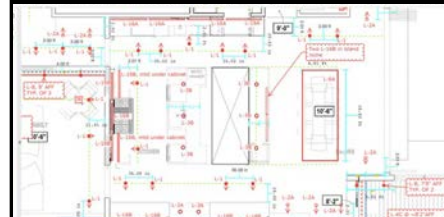
- Priorities / Scope of Work / Schedule
- Visual Programming – space by space  
*who what when where why*
- Lighting Concept
- Calculations & Renderings



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### 3) The Process

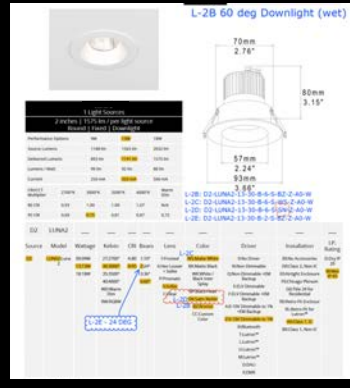
- Priorities / Scope of Work / Schedule
- Visual Programming – space by space  
*who what when where why*
- Lighting Concept
- Calculations & Renderings
- Drawing Markups  
*RCP | elevations | details | CAD/Revit*



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### 3) The Process

- Priorities / Scope of Work / Schedule
- Visual Programming – space by space  
*who what when where why*
- Lighting Concept
- Calculations & Renderings
- Drawing Markups  
*RCP | elevations | details | CAD/Revit?*
- Specifications  
*samples | mock-ups | budgetary pricing*



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### 3) The Process

- Priorities / Scope of Work / Schedule
- Visual Programming – space by space  
*who what when where why*
- Lighting Concept
- Calculations & Renderings
- Drawing Markups  
*RCP | elevations | details | CAD/Revit?*
- Specifications  
*samples | mock-ups | budgetary pricing*
- Lighting controls zoning



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### 3) The Process

- Priorities / Scope of Work / Schedule
- Visual Programming – space by space  
*who what when where why*
- Lighting Concept
- Calculations & Renderings
- Drawing Markups  
*RCP | elevations | details | CAD/Revit?*
- Specifications  
*samples | mock-ups | budgetary pricing*
- Lighting controls zoning
- Contract Administration / Construction  
*field review | shop drawing review | procurement assistance | aiming & adjustment*



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### What is the Best (Light Fixture) to Use in Residential?

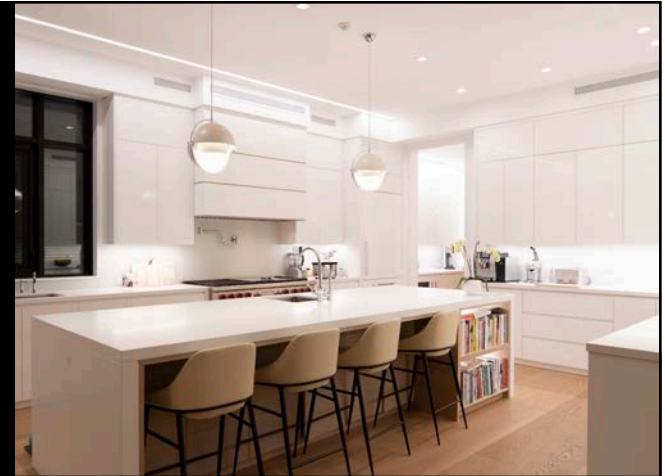


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4. Lighting design for Residential Spaces

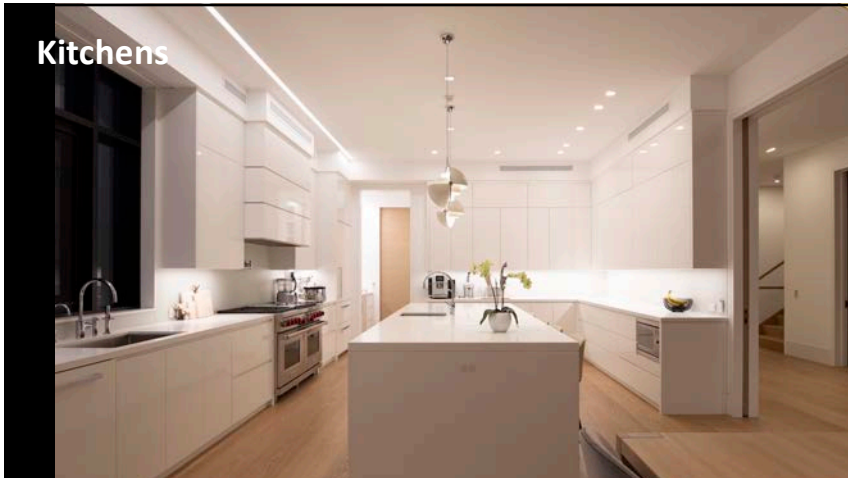
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Kitchens



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Kitchens



44

Kitchens



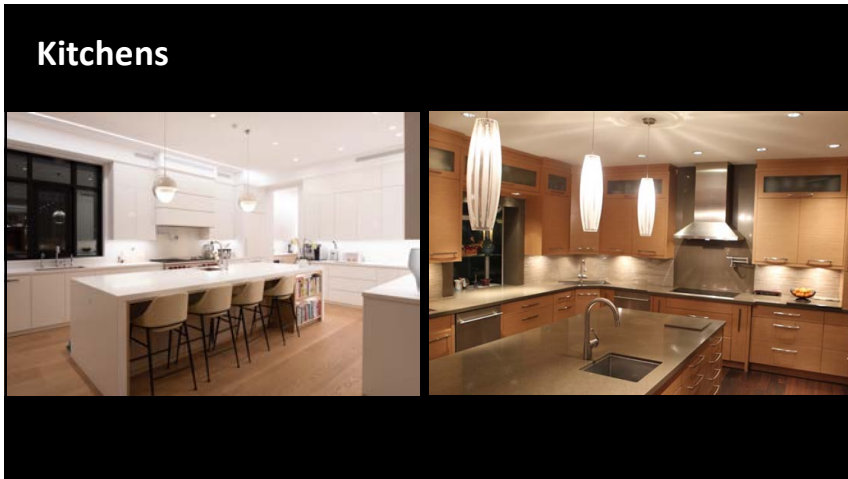
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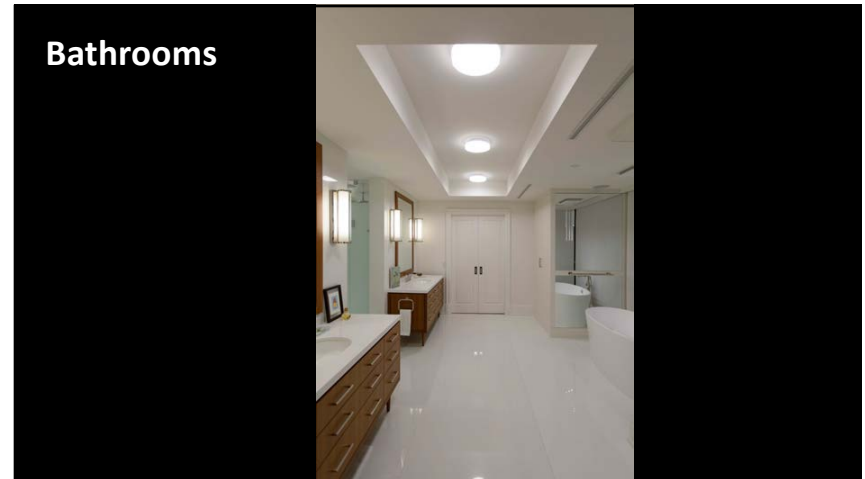
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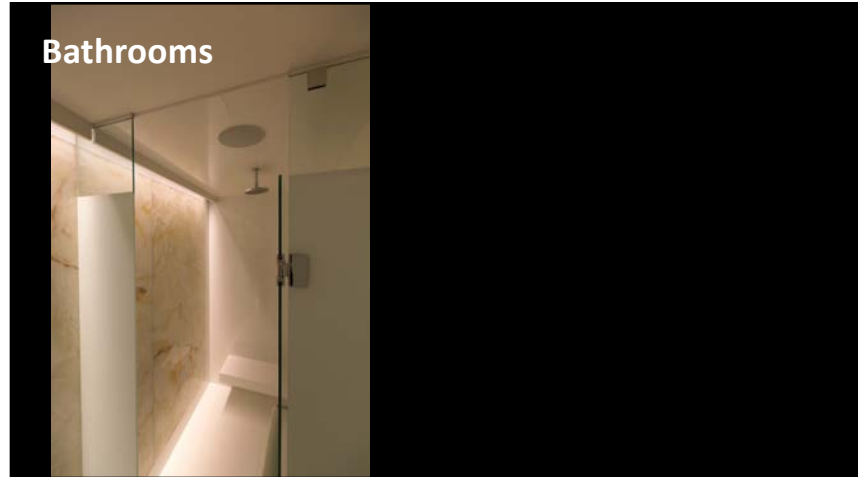
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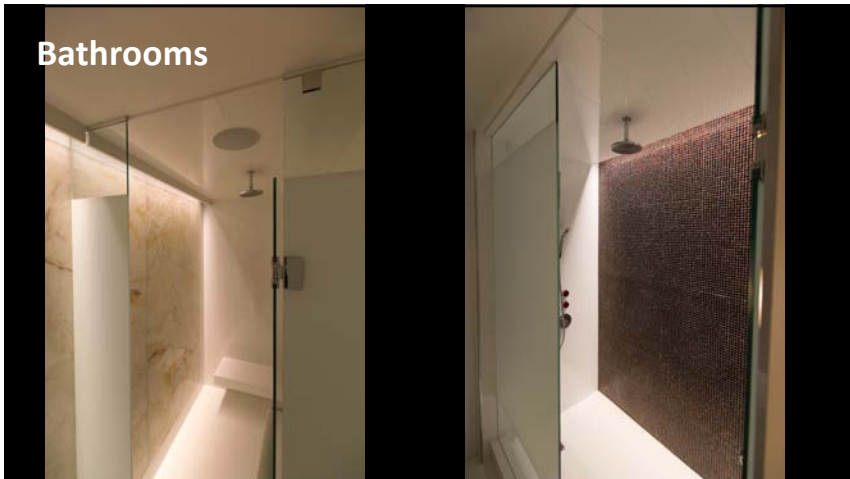
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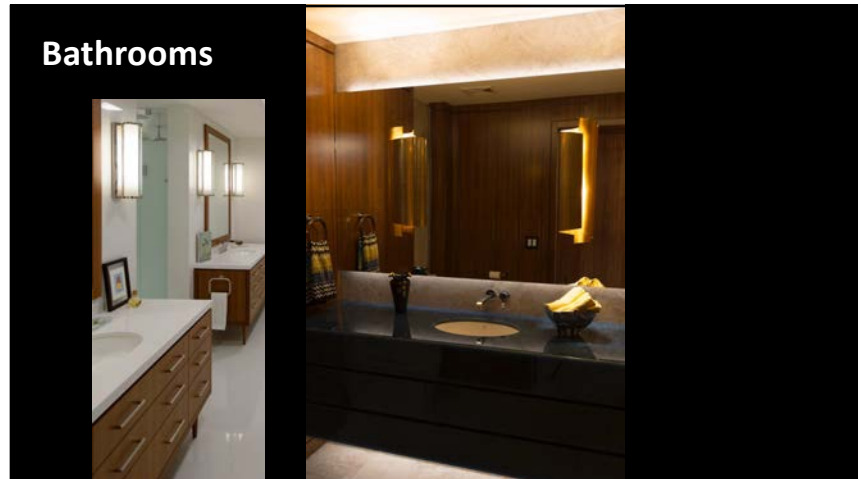
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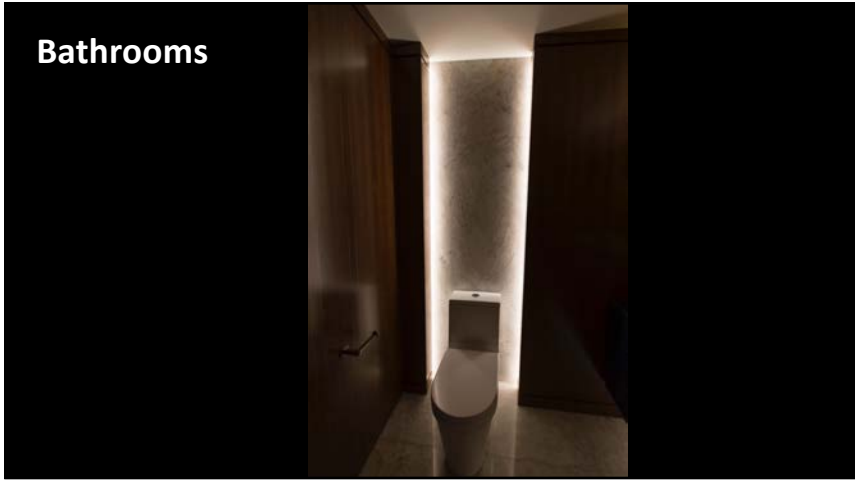
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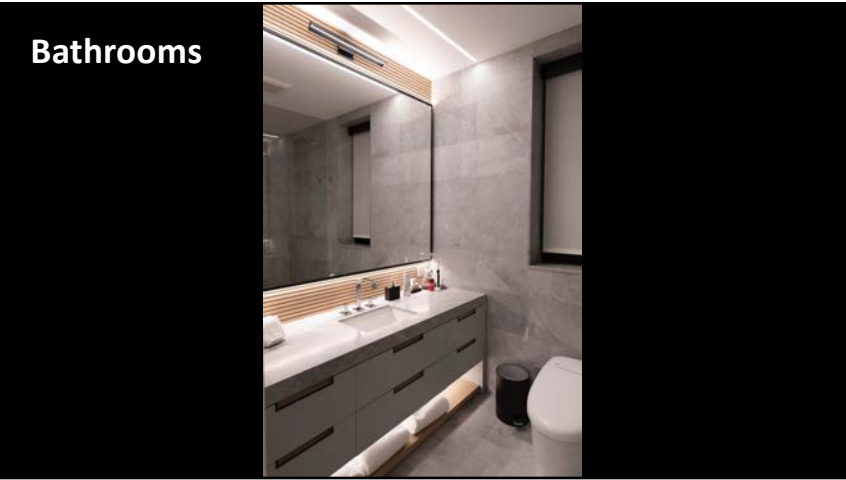
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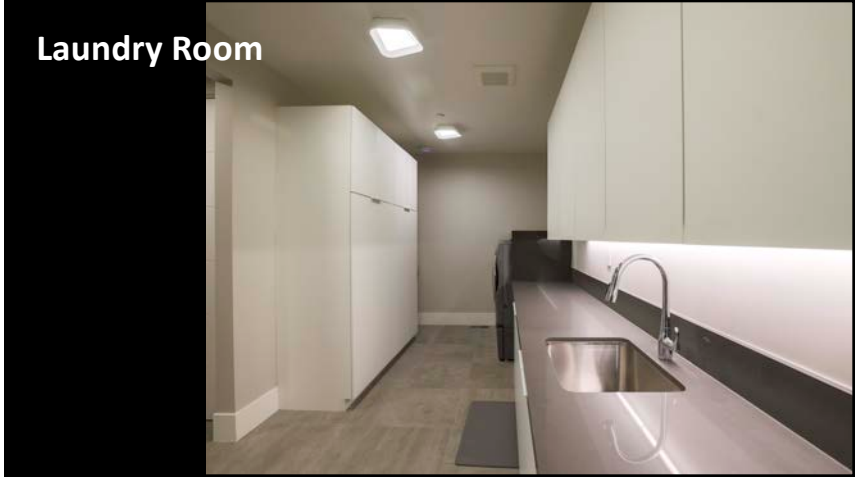
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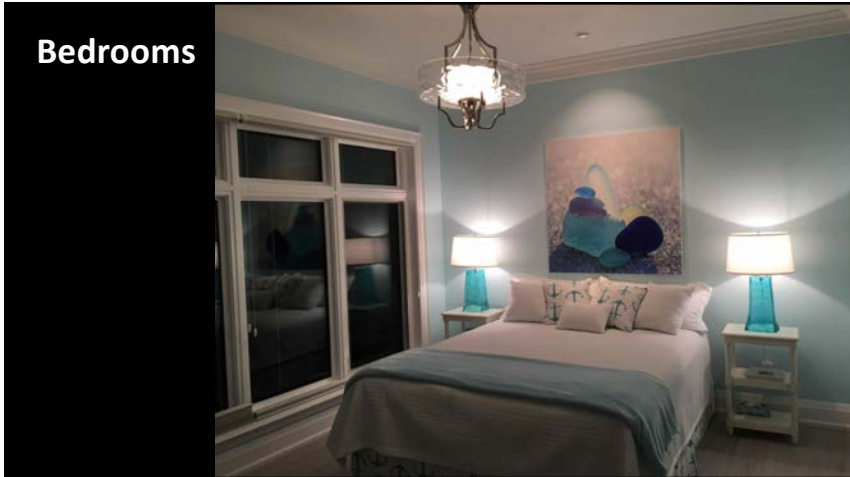
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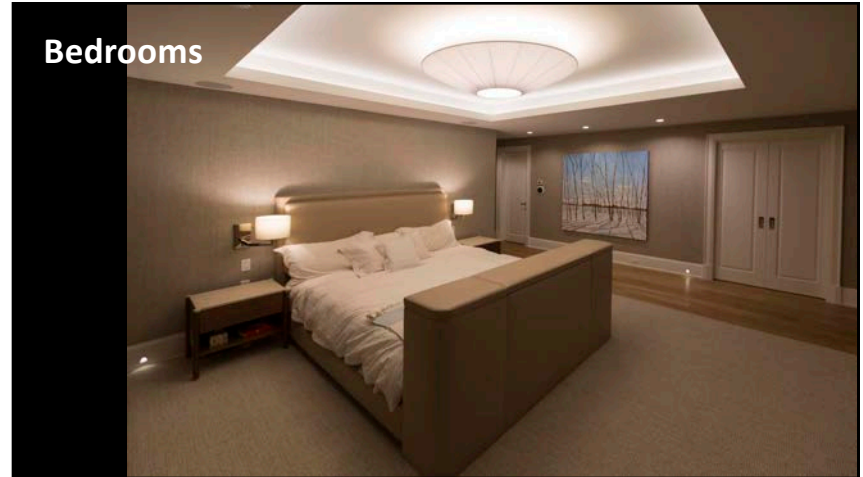
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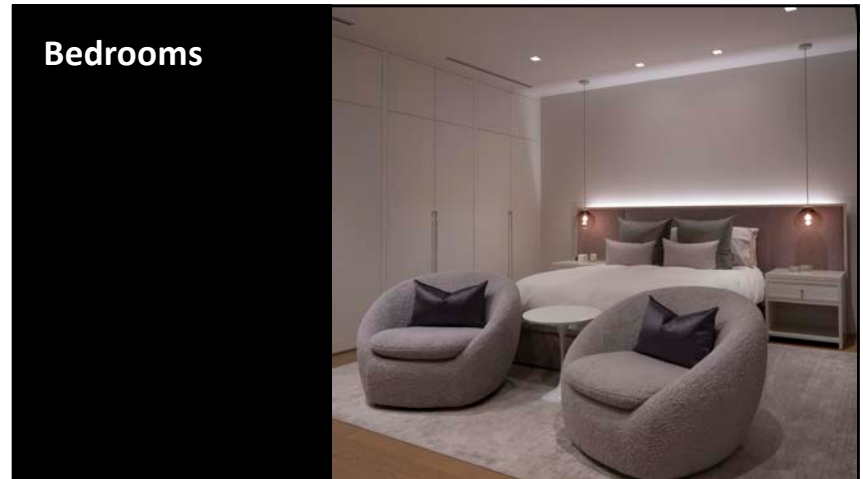
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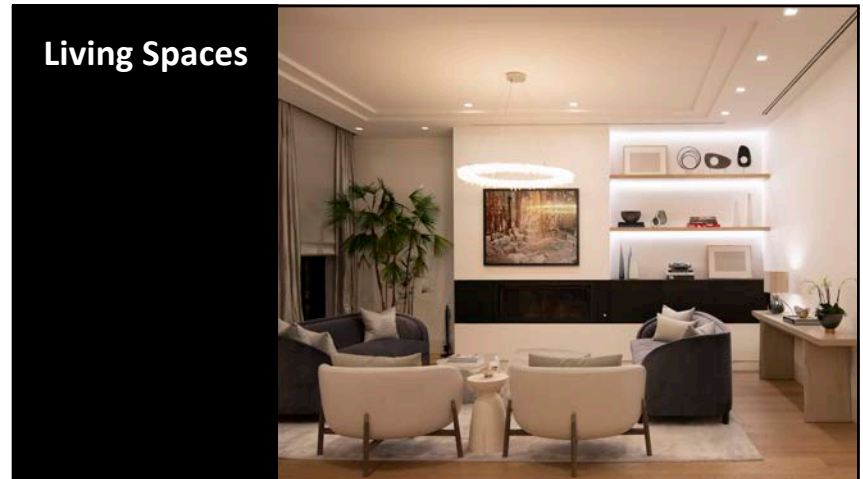
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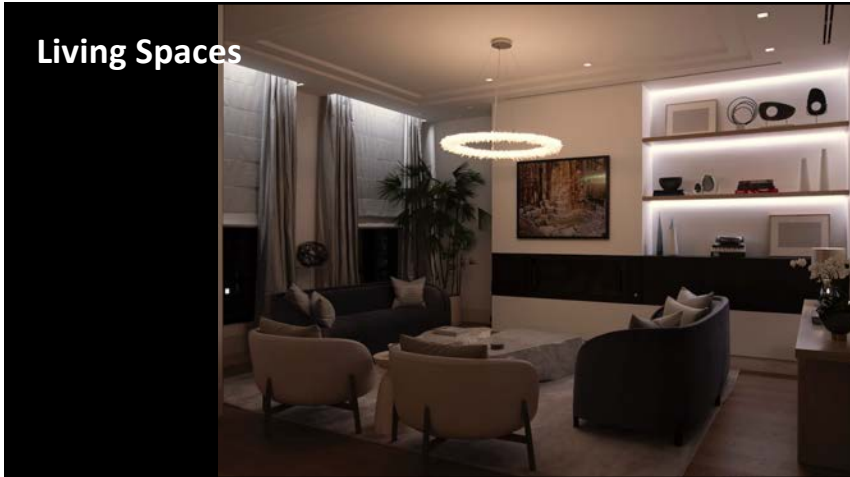


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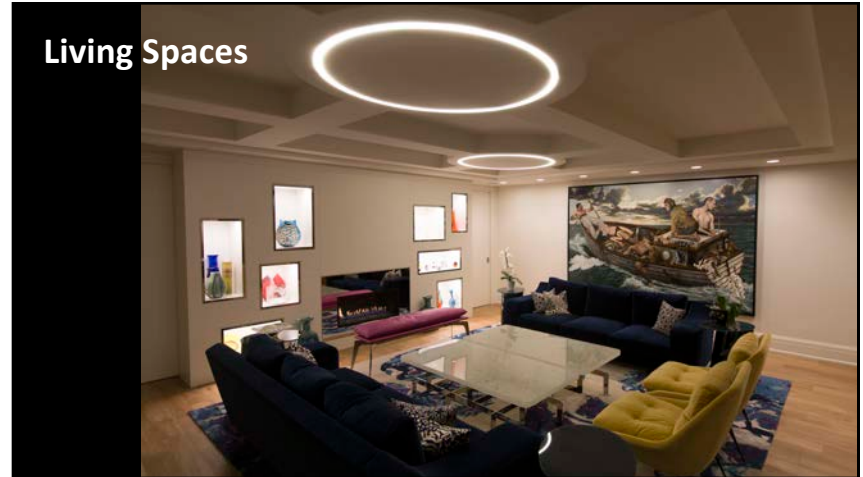


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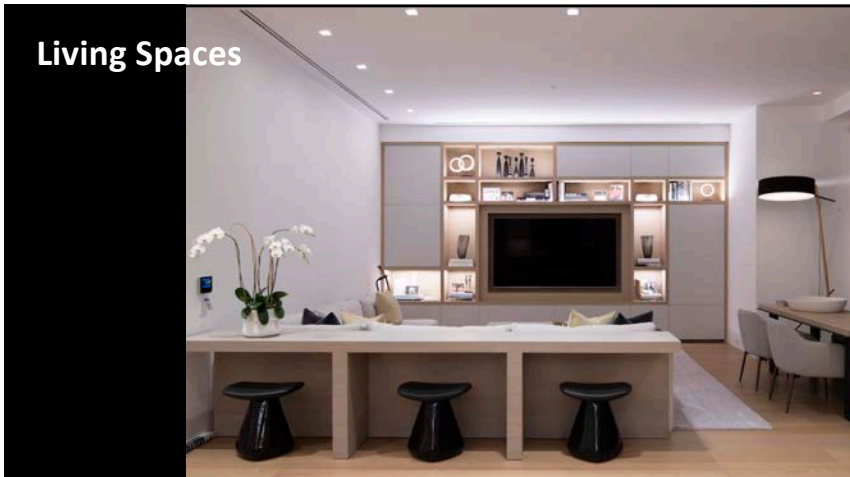




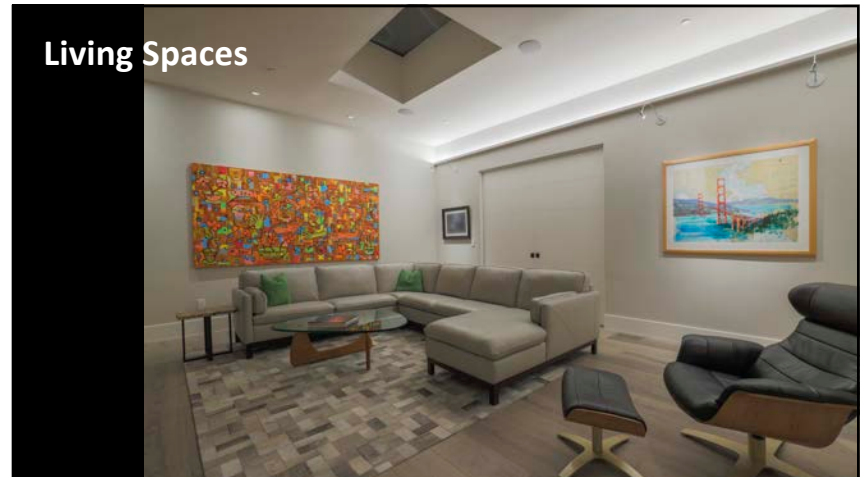
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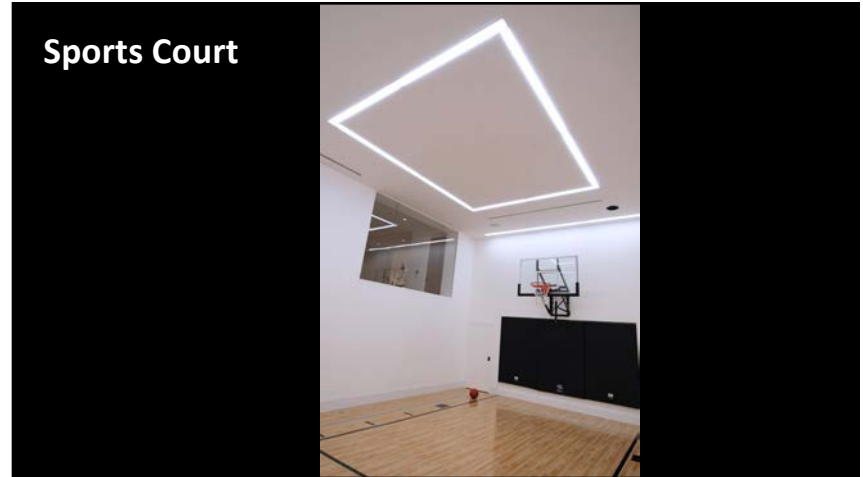
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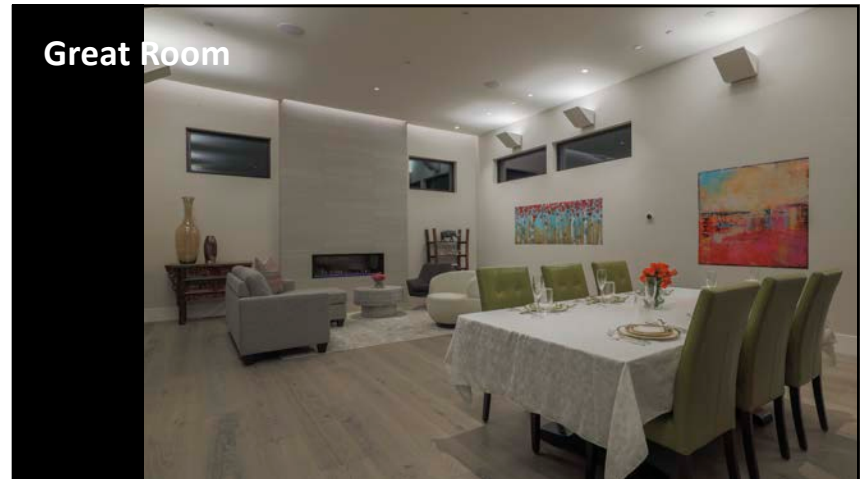
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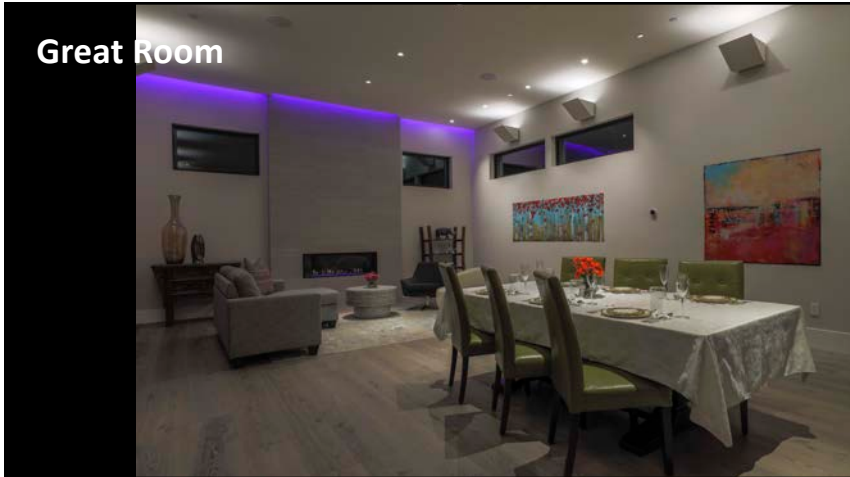
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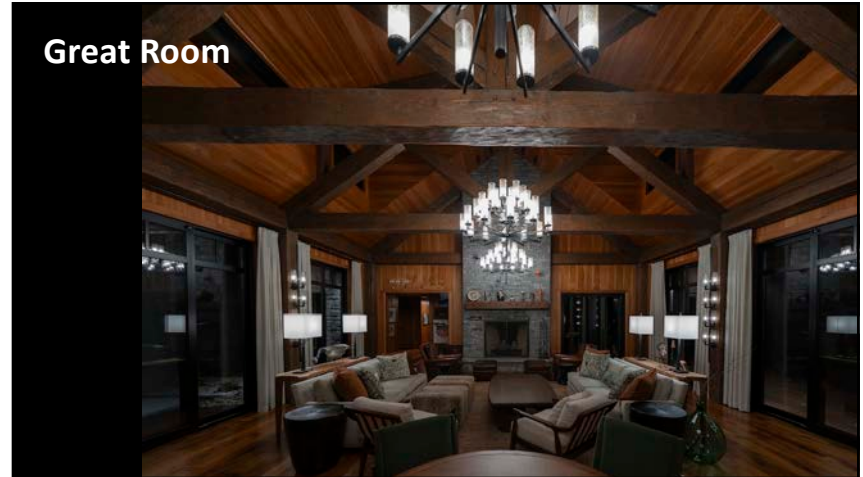
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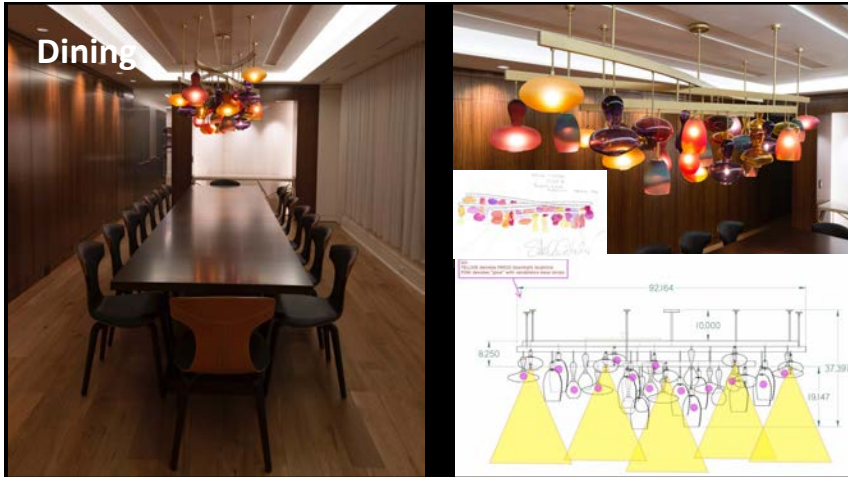
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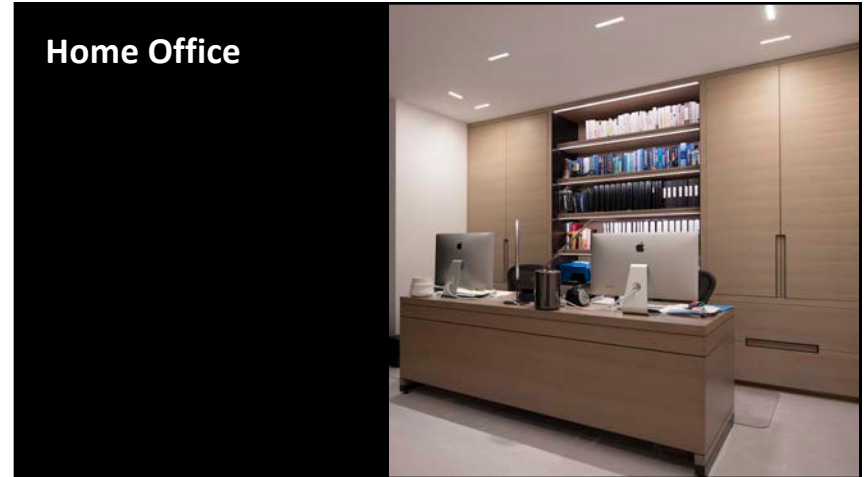
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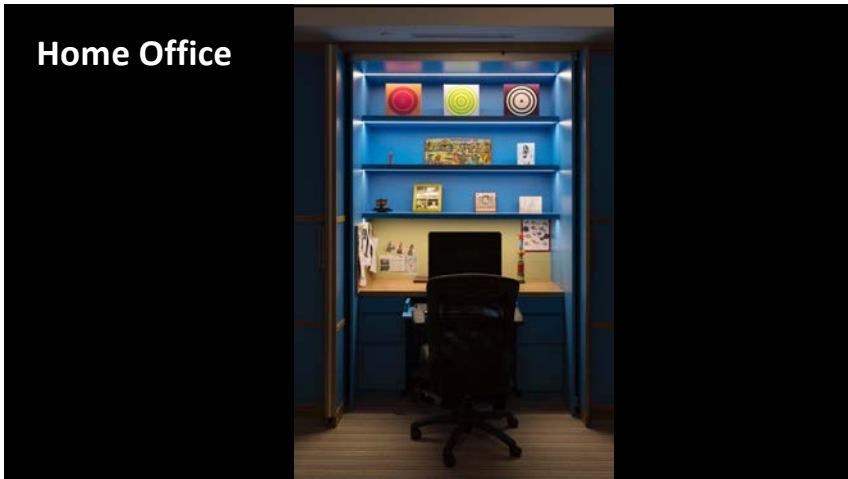
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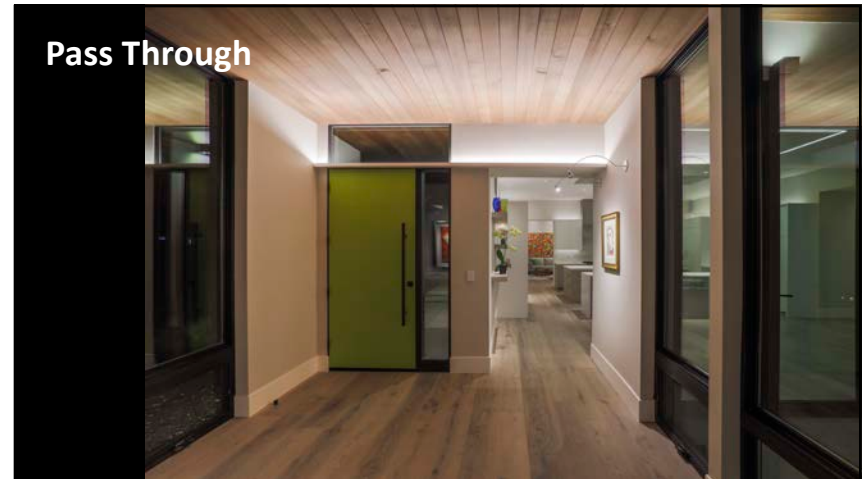
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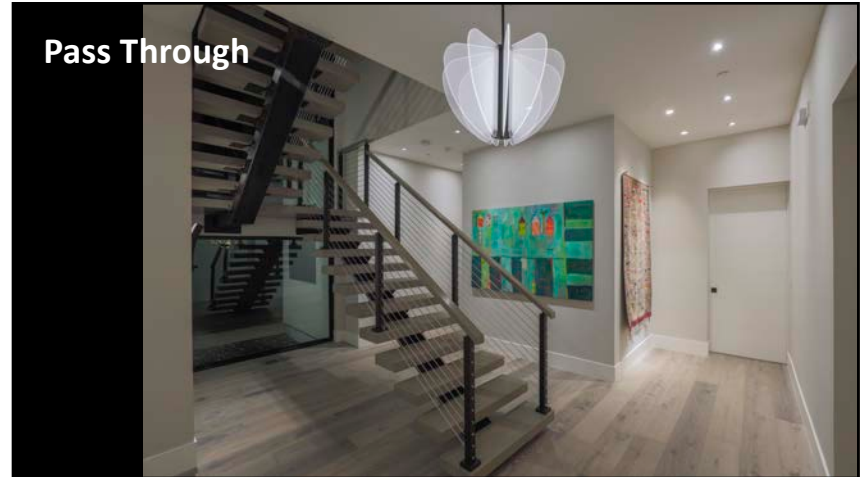
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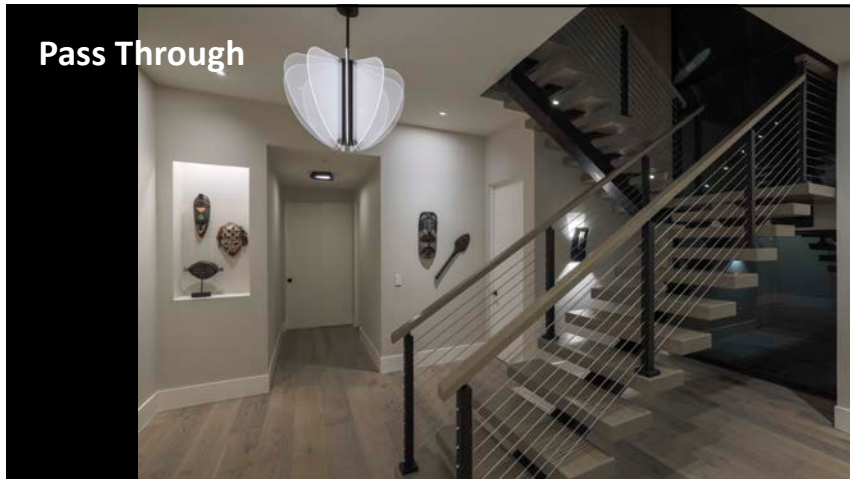
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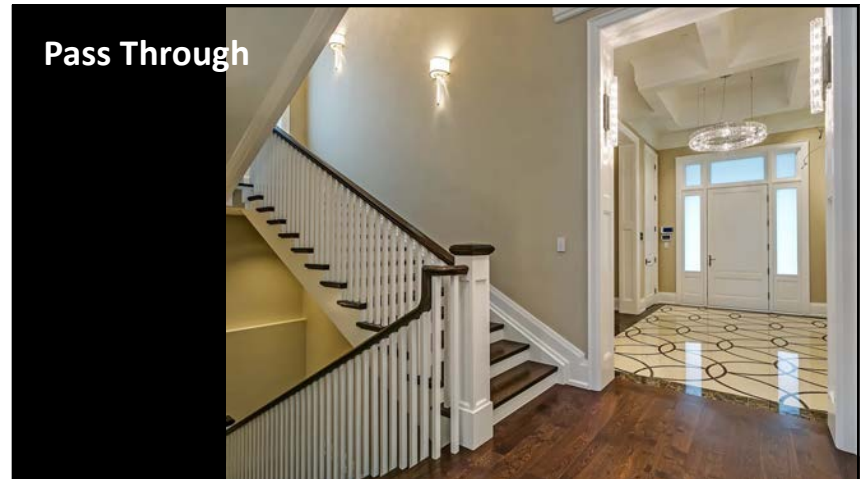
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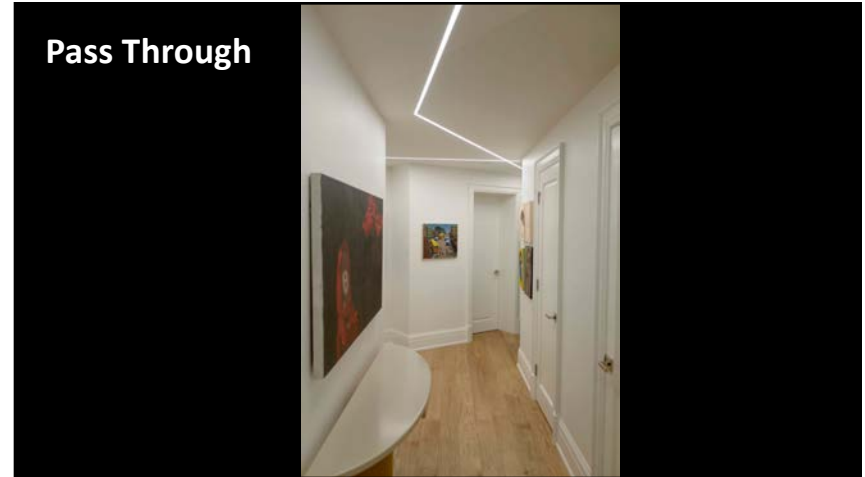
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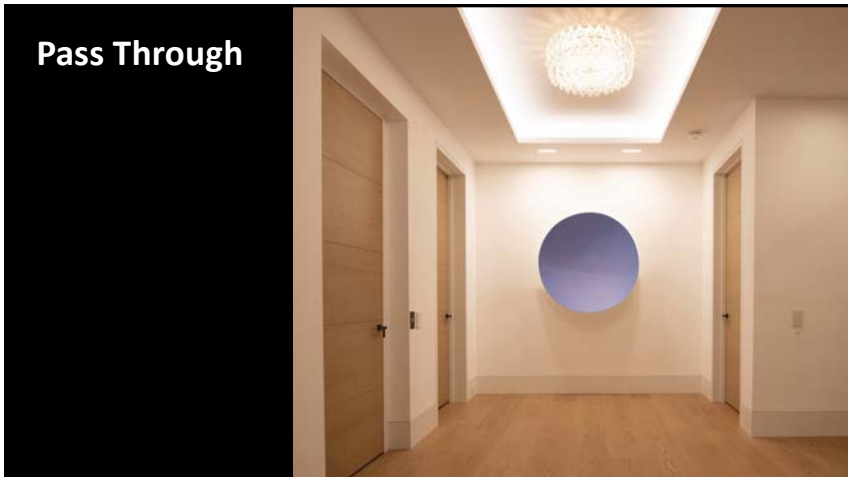
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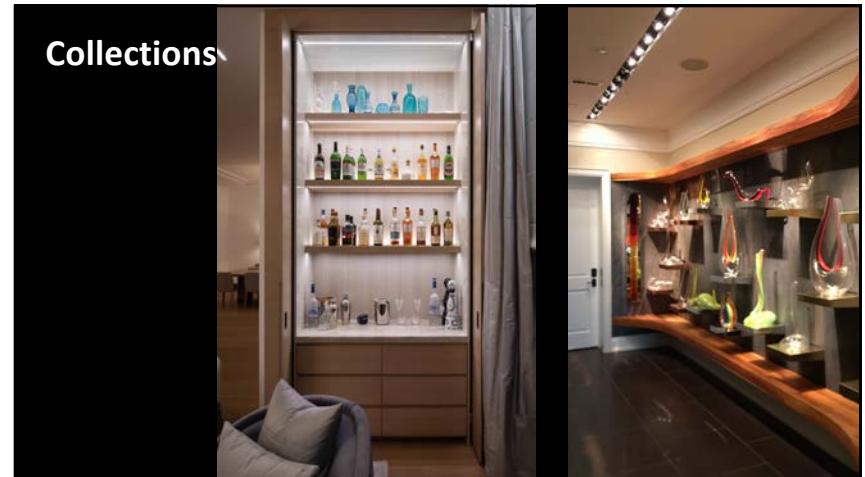
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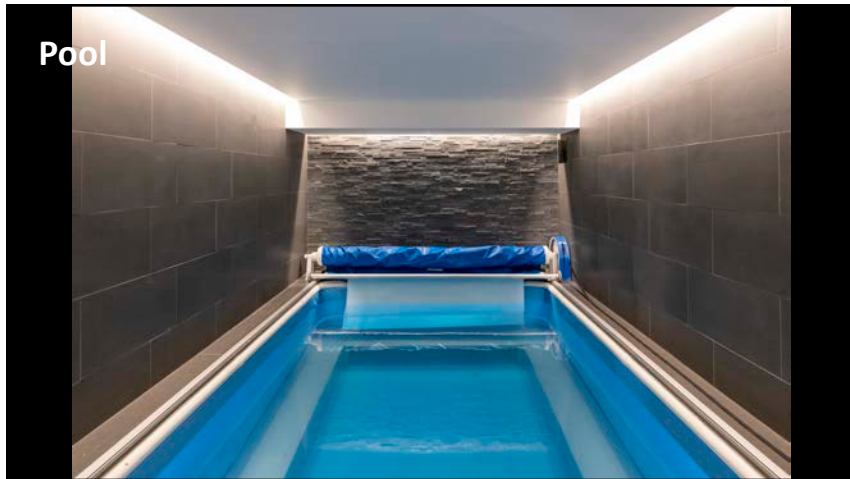
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5) A brief discussion of lighting controls

**Sustainable Lighting Strategy - Design with Intention**

*“right amount in the right place, at the right time”*

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5) A brief discussion of lighting controls

Ensure dimmer compatibility with luminaire

<b>No Additional Charge</b>	<b>UNV-D4H</b>	???
<b>UNV-D6E</b> EldoLED 0-10V, 1%	Lutron H ECO, 1% Fade	Forward Phase
<b>UNV-D6F</b> EldoLED 0-10V, 1%	<b>UNV-D6A</b> EldoLED 0-10V, 0.1%	Reverse Phase
<b>120V-D19</b>	<b>UNV-D6B</b> EldoLED 0-10V, 0.1%	0-10V
Phase 2-wire, 1%	<b>UNV-D7</b> EldoLED DALI, 0.1%	DALI
	<b>UNV-D28</b>	DMX
	EldoLED DMX, 0.1%	???

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5) A brief discussion of lighting controls

Keep different luminaires on separate zones!

Zone	Fixture Type	Description	Qty	Watts	Dim	Watts	Control	Notes
L-10	Recessed	Recessed	2	110	0	220	0-10V	
L-11	Recessed	Recessed	2	110	0	220	0-10V	
L-12	Recessed	Recessed	2	110	0	220	0-10V	
L-13	Recessed	Recessed	2	110	0	220	0-10V	
L-14	Recessed	Recessed	2	110	0	220	0-10V	
L-15	Recessed	Recessed	2	110	0	220	0-10V	
L-16	Recessed	Recessed	2	110	0	220	0-10V	
L-17	Recessed	Recessed	2	110	0	220	0-10V	
L-18	Recessed	Recessed	2	110	0	220	0-10V	
L-19	Recessed	Recessed	2	110	0	220	0-10V	
L-20	Recessed	Recessed	2	110	0	220	0-10V	
L-21	Recessed	Recessed	2	110	0	220	0-10V	
L-22	Recessed	Recessed	2	110	0	220	0-10V	
L-23	Recessed	Recessed	2	110	0	220	0-10V	
L-24	Recessed	Recessed	2	110	0	220	0-10V	
L-25	Recessed	Recessed	2	110	0	220	0-10V	
L-26	Recessed	Recessed	2	110	0	220	0-10V	
L-27	Recessed	Recessed	2	110	0	220	0-10V	
L-28	Recessed	Recessed	2	110	0	220	0-10V	
L-29	Recessed	Recessed	2	110	0	220	0-10V	
L-30	Recessed	Recessed	2	110	0	220	0-10V	
L-31	Recessed	Recessed	2	110	0	220	0-10V	
L-32	Recessed	Recessed	2	110	0	220	0-10V	
L-33	Recessed	Recessed	2	110	0	220	0-10V	
L-34	Recessed	Recessed	2	110	0	220	0-10V	
L-35	Recessed	Recessed	2	110	0	220	0-10V	
L-36	Recessed	Recessed	2	110	0	220	0-10V	
L-37	Recessed	Recessed	2	110	0	220	0-10V	
L-38	Recessed	Recessed	2	110	0	220	0-10V	
L-39	Recessed	Recessed	2	110	0	220	0-10V	
L-40	Recessed	Recessed	2	110	0	220	0-10V	
L-41	Recessed	Recessed	2	110	0	220	0-10V	
L-42	Recessed	Recessed	2	110	0	220	0-10V	
L-43	Recessed	Recessed	2	110	0	220	0-10V	
L-44	Recessed	Recessed	2	110	0	220	0-10V	
L-45	Recessed	Recessed	2	110	0	220	0-10V	
L-46	Recessed	Recessed	2	110	0	220	0-10V	
L-47	Recessed	Recessed	2	110	0	220	0-10V	
L-48	Recessed	Recessed	2	110	0	220	0-10V	
L-49	Recessed	Recessed	2	110	0	220	0-10V	
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L-51	Recessed	Recessed	2	110	0	220	0-10V	
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L-60	Recessed	Recessed	2	110	0	220	0-10V	
L-61	Recessed	Recessed	2	110	0	220	0-10V	
L-62	Recessed	Recessed	2	110	0	220	0-10V	
L-63	Recessed	Recessed	2	110	0	220	0-10V	
L-64	Recessed	Recessed	2	110	0	220	0-10V	
L-65	Recessed	Recessed	2	110	0	220	0-10V	
L-66	Recessed	Recessed	2	110	0	220	0-10V	
L-67	Recessed	Recessed	2	110	0	220	0-10V	
L-68	Recessed	Recessed	2	110	0	220	0-10V	
L-69	Recessed	Recessed	2	110	0	220	0-10V	
L-70	Recessed	Recessed	2	110	0	220	0-10V	
L-71	Recessed	Recessed	2	110	0	220	0-10V	
L-72	Recessed	Recessed	2	110	0	220	0-10V	
L-73	Recessed	Recessed	2	110	0	220	0-10V	
L-74	Recessed	Recessed	2	110	0	220	0-10V	
L-75	Recessed	Recessed	2	110	0	220	0-10V	
L-76	Recessed	Recessed	2	110	0	220	0-10V	
L-77	Recessed	Recessed	2	110	0	220	0-10V	
L-78	Recessed	Recessed	2	110	0	220	0-10V	
L-79	Recessed	Recessed	2	110	0	220	0-10V	
L-80	Recessed	Recessed	2	110	0	220	0-10V	
L-81	Recessed	Recessed	2	110	0	220	0-10V	
L-82	Recessed	Recessed	2	110	0	220	0-10V	
L-83	Recessed	Recessed	2	110	0	220	0-10V	
L-84	Recessed	Recessed	2	110	0	220	0-10V	
L-85	Recessed	Recessed	2	110	0	220	0-10V	
L-86	Recessed	Recessed	2	110	0	220	0-10V	
L-87	Recessed	Recessed	2	110	0	220	0-10V	
L-88	Recessed	Recessed	2	110	0	220	0-10V	
L-89	Recessed	Recessed	2	110	0	220	0-10V	
L-90	Recessed	Recessed	2	110	0	220	0-10V	
L-91	Recessed	Recessed	2	110	0	220	0-10V	
L-92	Recessed	Recessed	2	110	0	220	0-10V	
L-93	Recessed	Recessed	2	110	0	220	0-10V	
L-94	Recessed	Recessed	2	110	0	220	0-10V	
L-95	Recessed	Recessed	2	110	0	220	0-10V	
L-96	Recessed	Recessed	2	110	0	220	0-10V	
L-97	Recessed	Recessed	2	110	0	220	0-10V	
L-98	Recessed	Recessed	2	110	0	220	0-10V	
L-99	Recessed	Recessed	2	110	0	220	0-10V	
L-100	Recessed	Recessed	2	110	0	220	0-10V	

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### 5) A brief discussion of lighting controls

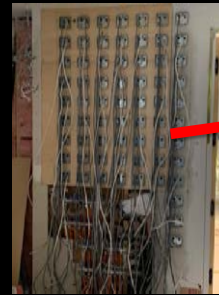
Wireless???



94

### 5) A brief discussion of lighting controls

Remote Drivers



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### 6) Challenges with Residential Lighting Design

Electrician Experience:

- Procurement



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### 6) Challenges with Residential Lighting Design

Electrician Experience:

- Procurement
- Installation



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### 6) Challenges with Residential Lighting Design

Electrician Experience:

- Procurement
- Installation

**Renovation vs New Construction**



98

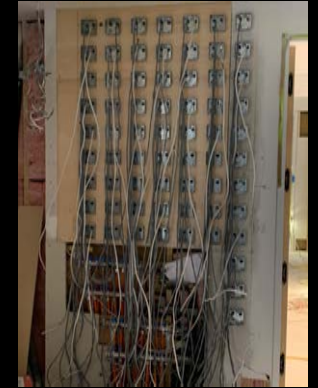
### 6) Challenges with Residential Lighting Design

Electrician Experience:

- Procurement
- Installation

Renovation vs New Construction

**Location for Remote Drivers**



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### Lighting Design can help you:

...feel better

...adapt better

...perform better



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7000 sf  
650 Recessed Lights

**Δ 500 Lights!**

11,000 sf  
150 Recessed Lights

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ALL FACETS OF LIGHT

# Light Me the Way Home!

## Residential Lighting Design



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This concludes The American Institute of Architects Continuing Education Systems Course



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