

## Designers Light Forum

### Lighting and WELL Building Standard

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Credit(s) earned on completion of this course will be reported to **AIA CES** for AIA members. Certificates of Completion for both AIA members and non-AIA members are available upon request.

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Questions related to specific materials, methods, and services will be addressed at the conclusion of this presentation.

## Learning Objectives

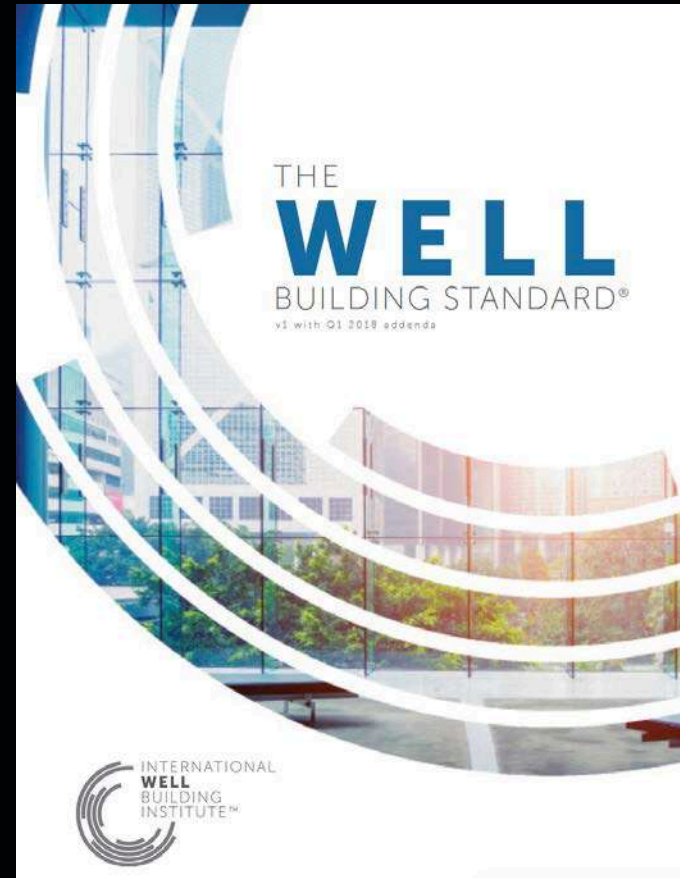
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At the end of the this course, participants will learn:

1. Overview WELL Building Standard™
2. WELL Building Standard™ Lighting Features
3. Certification and Verification Process
4. Overview of COOKFOX Office WELL Certification



# WELL BUILDING STANDARD™



# WELL BUILDING STANDARD™

- Buildings



Courtesy of Alexandria Real Estate Equities, Inc.

# WELL BUILDING STANDARD™

- Interiors



Photography by Eric Laignel | Image courtesy of COOKFOX Architects



# WELL BUILDING STANDARD™

- Core and Shell



Photography by James Ewing

# WELL BUILDING STANDARD™

- Pilot Programs



(c) Related Companies



(c) Jeff Goldberg/Esto



# WELL BUILDING STANDARD™

- Pilot Programs



(c) John Bartelstone Photography



Courtesy of Alexandria Real Estate Equities, Inc.

# WELL FEATURES



# WELL FEATURES



# WELL FEATURES



# WELL FEATURES





# WELL FEATURES



# WELL FEATURES



# WELL FEATURES



# WELL FEATURES



# WELL FEATURES

## WELL Building Standard v1: New and Existing Interiors

Project:   
 Location:   
 Updated By:   
 Date:

## Certification Matrix



AIR			
Y	?	N	
Y			P 01 Air Quality Standards*
			P 02 Smoking Ban*
			P 03 Ventilation Effectiveness
			P 04 VOC Reduction
			P 05 Air Filtration*
			P 06 Microbe And Mold Control*
			P 07 Construction Pollution Management
			O 08 Healthy Entrance*
			P 09 Cleaning Protocol
			n/a 10 Pesticide Management
			P 11 Fundamental Material Safety
			n/a 12 Moisture Management
			O 13 Air Flush
			O 14 Air Infiltration Management
			O 15 Increased Ventilation
			O 16 Humidity Control*
			O 17 Direct Source Ventilation*
			O 18 Air Quality Monitoring And Feedback*
			O 19 Operable Windows*
			O 20 Outdoor Air Systems
			O 21 Displacement Ventilation
			O 22 Pest Control*
			O 23 Advanced Air Purification*
			O 24 Combustion Minimization*
			O 25 Toxic Material Reduction
			O 26 Enhanced Material Safety
			O 27 Antimicrobial Activity for Surfaces
			O 28 Cleanable Environment*
			O 29 Cleaning Equipment*
1	0	0	TOTAL

WATER			
Y	?	N	
Y			P 30 Fundamental Water Quality*
Y			P 31 Inorganic Contaminants*
Y			P 32 Organic Contaminants*
Y			P 33 Agricultural Contaminants*
Y			P 34 Public Water Additives*
			O 35 Periodic Water Quality Testing
			O 36 Water Treatment*
			O 37 Drinking Water Promotion*
5	0	0	TOTAL

NOURISHMENT			
Y	?	N	
			P 38 Fruits And Vegetables*
			P 39 Processed Foods*
			P 40 Food Allergies*
			P 41 Hand Washing*
			P 42 Food Contamination*
			P 43 Artificial Ingredients*
Y			P 44 Nutritional Information*
Y			P 45 Food Advertising*
			O 46 Safe Food Preparation Materials*
			O 47 Serving Sizes*
			O 48 Special Diets
			O 49 Responsible Food Production
			O 50 Food Storage*
			O 51 Food Production*
			O 52 Mindful Eating
2	0	0	TOTAL

LIGHT			
Y	?	N	
			P 53 Visual Lighting Design*
			P 54 Circadian Lighting Design*
			P 55 Electric Light Glare Control
			P 56 Solar Glare Control*
			O 57 Low-Glare Workstation Design*
			O 58 Color Quality
			O 59 Surface Design
			O 60 Automated Shading And Dimming Controls
			O 61 Right To Light*
			O 62 Daylight Modeling
			O 63 Daylighting Fenestration*
0	0	0	TOTAL

FITNESS			
Y	?	N	
			O 64 Interior Fitness Circulation*
			P 65 Activity Incentive Programs
			O 66 Structured Fitness Opportunities
			O 67 Exterior Active Design*
			O 68 Physical Activity Spaces
			O 69 Active Transportation Support*
			O 70 Fitness Equipment*
			O 71 Active Furnishings*
0	0	0	TOTAL

COMFORT			
Y	?	N	
			P 72 Accessible Design
			P 73 Ergonomics: Visual And Physical*
			O 74 Exterior Noise Intrusion*
			P 75 Internally Generated Noise*
			P 76 Thermal Comfort*
			O 77 Olfactory Comfort*
			O 78 Reverberation Time*
			O 79 Sound Masking*
			O 80 Sound Reducing Surfaces
			O 81 Sound Barriers
			O 82 Individual Thermal Control*
			O 83 Radiant Thermal Comfort
0	0	0	TOTAL

MIND			
Y	?	N	
Y			P 84 Health And Wellness Awareness*
			P 85 Integrative Design
			P 86 Post-Occupancy Surveys
			P 87 Beauty And Design I*
			P 88 Biophilia I - Qualitative*
			O 89 Adaptable Spaces*
			O 90 Healthy Sleep Policy
			O 91 Business Travel
			O 92 Building Health Policy
			O 93 Workplace Family Support
			O 94 Self-Monitoring
			O 95 Stress And Addiction Treatment
			O 96 Altruism
			O 97 Material Transparency*
			O 98 Organizational Transparency*
			O 99 Beauty And Design II*
			O 100 Biophilia II - Quantitative*
			O 101 Innovation Feature I
			O 102 Innovation Feature II
			O 103 Innovation Feature III
			O 104 Innovation Feature IV
			O 105 Innovation Feature V
1	0	0	TOTAL

SUMMARY			
Y	?	N	
9	0	0	Preconditions (36 possible)
0	0	0	Optimizations (12 possible)

Requirements		Results	
Preconditions	Must meet all preconditions.	27 preconditions not yet met.	
Optimizations	0 needed for Silver, 25 for gold, 50 for platinum	Current status: Silver (pending preconditions)	

\* Pending onsite post-occupancy Performance Verification testing.



# CERTIFICATION LEVELS

**PLATINUM**



**GOLD**



**SILVER**



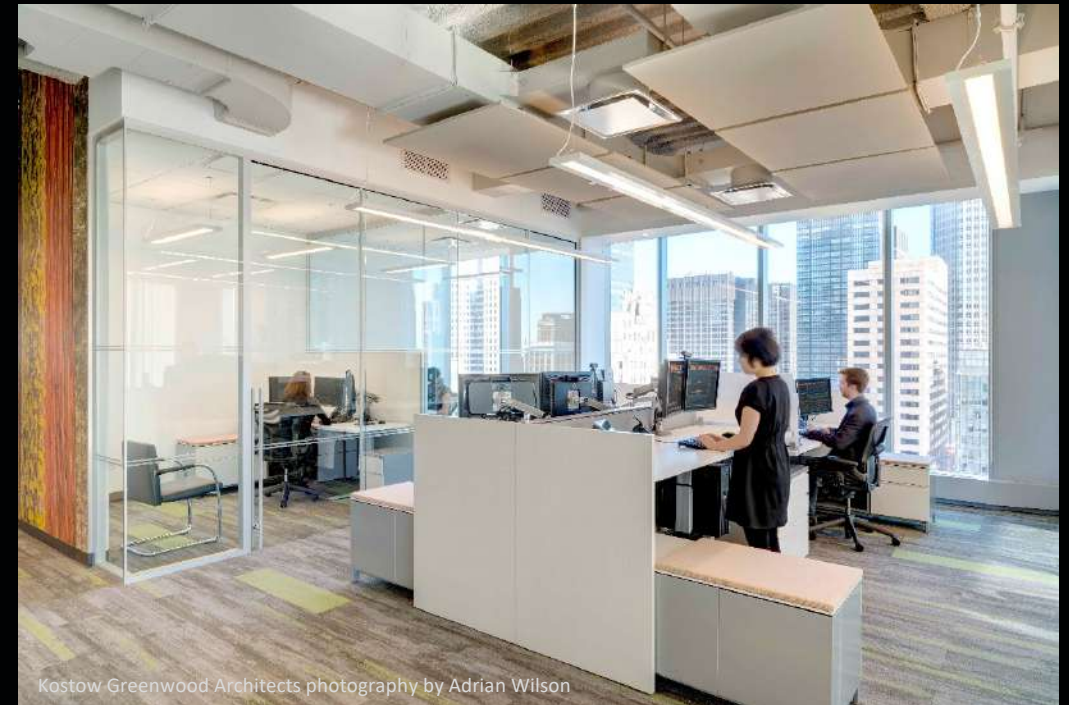
# LIGHT FEATURES

- (4) Preconditions Features
- (7) Optimization Features

# LIGHT FEATURES

## Feature 53 – Visual Lighting Design (P)

### Part 1: Visual Acuity For Focus



Kostow Greenwood Architects photography by Adrian Wilson

# LIGHT FEATURES

## Feature 53 – Visual Lighting Design (P)

### Part 2: Brightness Management Strategies

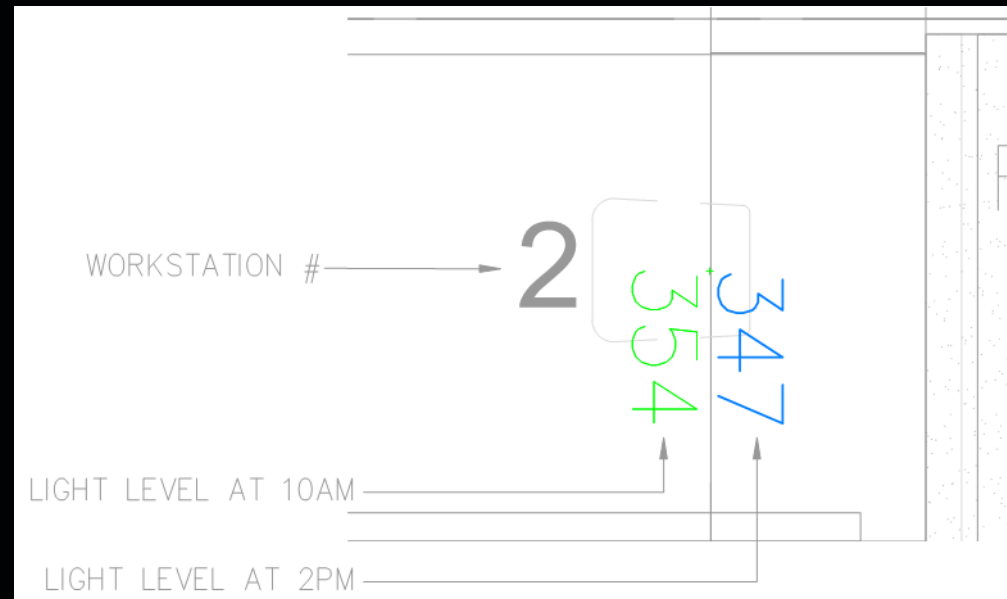


Photography by Eric Laignel | Image courtesy of COOKFOX Architects

# LIGHT FEATURES

## Feature 54 – Circadian Lighting Design (P)

### Part 1: Melanopic Light Intensity For Work Areas





# LIGHT FEATURES

## Feature 55 – Electric Light Glare Control (P)

### Part 1: Lamp Shielding

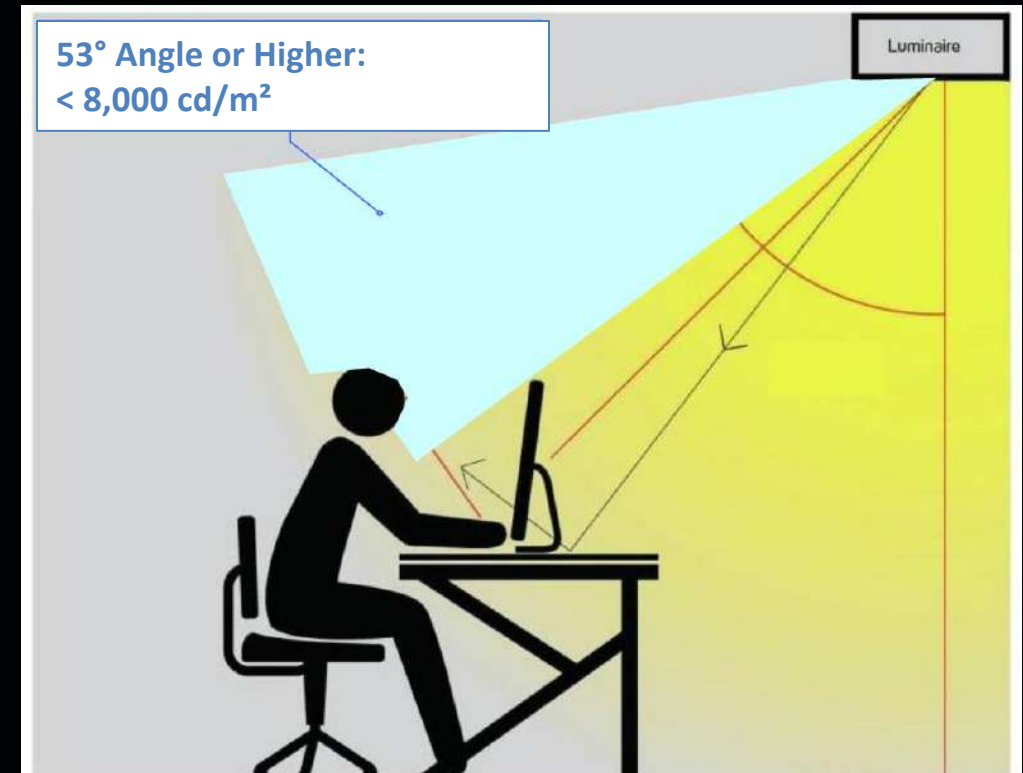


Photography by Eric Laignel | Image courtesy of COOKFOX Architects

# LIGHT FEATURES

## Feature 55 – Electric Light Glare Control (P)

### Part 2: Glare Minimization



# LIGHT FEATURES

## Feature 56 – Solar Glare Control (P)

Part 1: View Window Shading

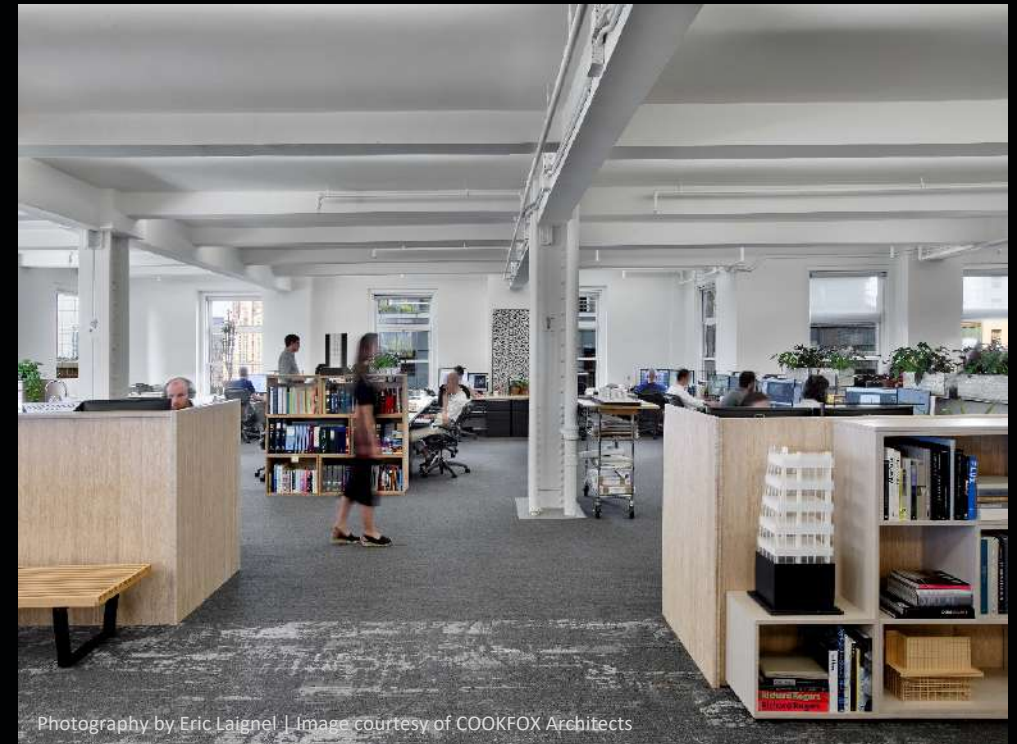
Part 2: Daylight Management



# LIGHT FEATURES

## Feature 57 – Low Glare Workstation Design (O)

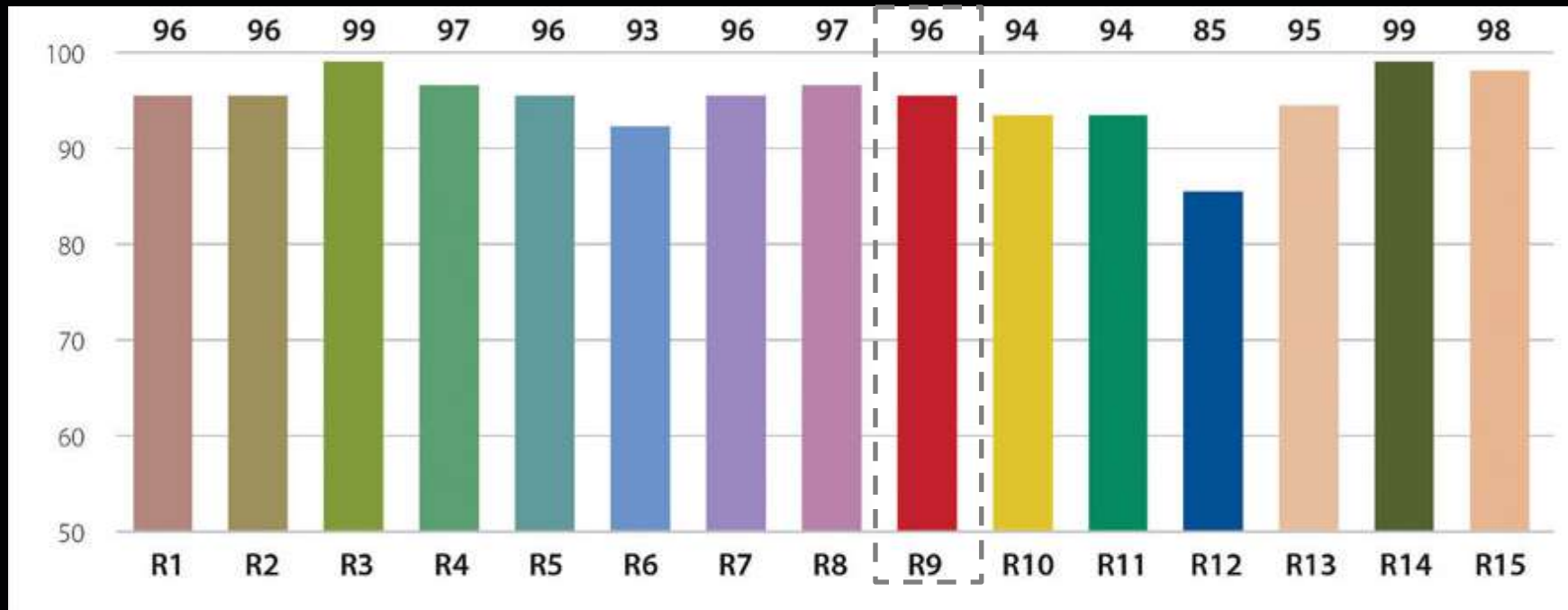
### Part 1: Glare Avoidance



# LIGHT FEATURES

## Feature 58 – Color Quality (O)

### Part 1: Color Rendering Index





# LIGHT FEATURES

## Feature 59 – Surface Design (O)

### Part 1: Working and Learning Area Surface Reflectivity



# LIGHT FEATURES

## Feature 60 – Automated Shading and Dimming Controls (O)

Part 1: Automated Sunlight Control

Part 2: Responsive Light Control



# LIGHT FEATURES

## Feature 61 – Right to Light (O)

Part 1: Lease Depth

Part 2: Window Access



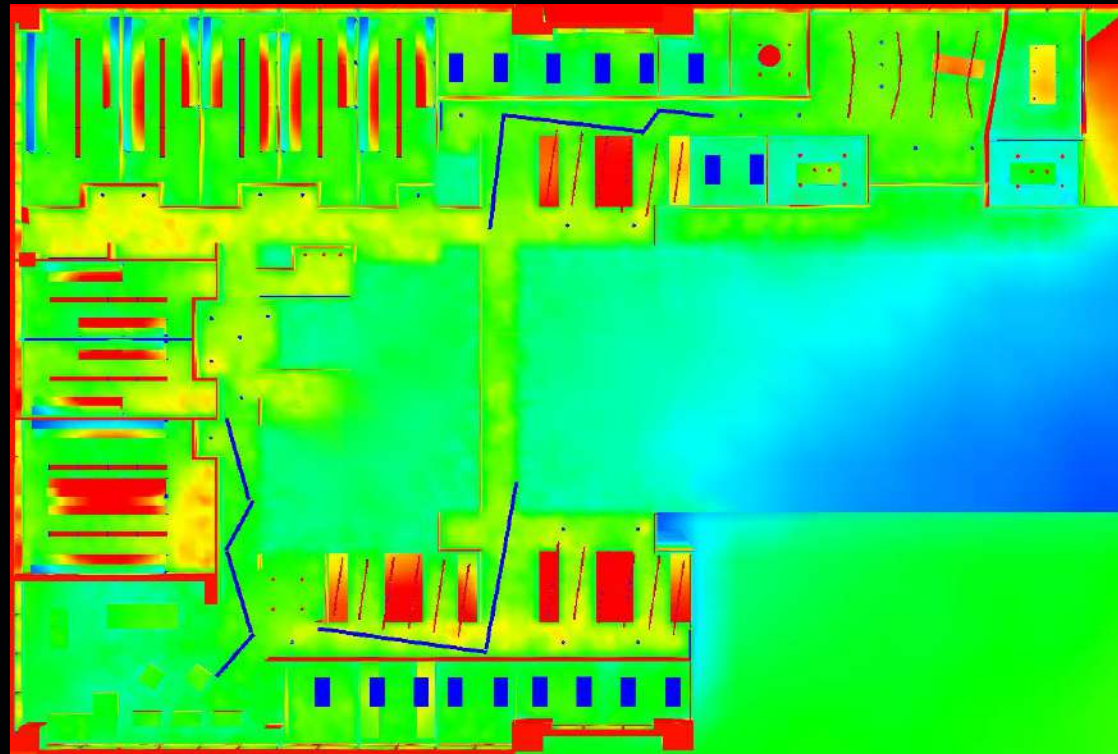
Photo Credit: Kostow Greenwood Architects photography by Adrian Wilson



# LIGHT FEATURES

## Feature 62 – Daylight Modeling (0)

### Part 1: Healthy Sunlight Exposure



# LIGHT FEATURES

## Feature 63 – Daylighting Fenestration (O)

Part 1: Window Size for Working and Learning Spaces

Part 2: Window Transmittance in Working and Learning Areas

Part 3: Uniform Color Transmittance





# CERTIFICATION PROCESS

Architect's Letter of Assurance		
<b>Instructions</b> <span style="float: right;">v1</span>		
<p>WELL Certification is determined by onsite Performance Verification and documentation, including Letters of Assurance from the appropriate professionals overseeing the implementation of a specific WELL feature and component parts during design, construction or operations. The template should be completed, signed and submitted as part of the documentation package.</p> <p>1. Place a checkmark at every part completed and leave blank those that are not being pursued or being completed by another team member.            2. Initial every feature completed and leave blank those that are not being pursued or being completed by another team member.            3. Sign and date at the bottom of this letter.</p> <p>If an individual other than the Architect is responsible for any of the requirements contained in this Letter of Assurance, he/she is permitted to sign off on the respective requirements but must complete a separate Letter of Assurance for those specific requirements. This individual should submit a different copy of this form and check the boxes as it pertains to his/her own responsibility. On his/her own Letter of Assurance form(s), this individual should sign and complete the final page and include a description of his/her role on the project next to his/her signature.</p>		
AIR	Check	Initials
<b>04 VOC reduction</b>	<input type="checkbox"/>	
This project is designed to meet the parts selected below (reproduced from the WELL Building Standard):		
<b>PART 1: Interior Paints and Coatings</b> <input type="checkbox"/> <p>The VOC limits of newly applied interior paints and coatings meet one of the following requirements:</p> <p>a. 100% of installed products meet California Air Resources Board (CARB) 2007, Suggested Control Measure (SCM) for Architectural Coatings, or South Coast Air Quality Management District (SCAQMD) Rule 1113, effective June 3, 2011 for VOC content.</p> <p>b. At minimum 90%, by volume, meet the California Department of Public Health (CDPH) Standard Method v1.1-2010 for VOC emissions.</p> <p>c. Applicable national VOC content regulations or conduct testing of VOC content in accordance with ASTM D2369-10; ISO 11890, part 1; ASTM D6886-03; or ISO 11890-2.</p>		
<b>PART 2: Interior Adhesives and Sealants</b> <input type="checkbox"/> <p>The VOC limits of newly applied interior adhesives and sealants meet one of the following requirements:</p> <p>a. 100% of installed products meet South Coast Air Quality Management District (SCAQMD) Rule 1168 for VOC content. Volatile organic compound (VOC) limits correspond to an effective date of July 1, 2005 and rule amendment date of January 7, 2005.</p> <p>b. At minimum 90%, by volume, meet the California Department of Public Health (CDPH) Standard Method v1.1-2010 for VOC emissions.</p> <p>c. Applicable national VOC content regulations or conduct testing of VOC content in accordance with ASTM D2369-10; ISO 11890, part 1; ASTM D6886-03; or ISO 11890-2.</p>		
<b>PART 3: Flooring</b> <input type="checkbox"/> <p>The VOC emissions of all newly installed interior flooring must meet all limits set by the following, as applicable:</p> <p>a. California Department of Public Health (CDPH) Standard Method v1.1-2010.</p>		
↑ Architect's Letter of Assurance, Q1 2018		

# VERIFICATION PROCESS

Three (3) primary verification types:

1. **Performance tests:** physical measurements against the WELL requirement thresholds
2. **Visual verification:** visual verification of design and operational requirements
3. **Spot checks:** visual verification of a representative sample of design and operational requirements

## VERIFICATION PROCESS – PERFORMANCE TESTS

1. **Feature 53:** Visual Lighting Design, Part 1 Visual Acuity for Focus
2. **Feature 54:** Circadian Lighting Design, Parts 1A and 1B Melanopic Light intensity for Work Areas (daylight and electric lighting)

# VERIFICATION PROCESS – PERFORMANCE TESTS



## Feature 53: Visual Lighting Design, Part 1 Visual Acuity for Focus

Parameter	Measurement Range	Accuracy	Resolution	Duration	Equipment	Sampling
Illuminance	5-50,000 lux	+/- 5%	0.1 lux	Instantaneous	Lux meter	Workstations and Desks

The WELL Building Standard®: WELL Performance Verification Guidebook:  
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# VERIFICATION PROCESS – PERFORMANCE TESTS

## Feature 54: Circadian Lighting Design, Part 1A (250 Equivalent Melanopic Lux with Daylight)

Parameter	Measurement Range	Accuracy	Resolution	Duration	Equipment	Sampling
Spectral Power	380-780 nm	±5%	10 nm or less	Instantaneous	Optical spectrometer	Workstations

The WELL Building Standard®: WELL Performance Verification Guidebook:  
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# VERIFICATION PROCESS – PERFORMANCE TESTS

## Feature 54: Circadian Lighting Design, Part 1B (IES-ANSI RP-1-12 Method with Electric Lights Only)

Parameter	Measurement Range	Accuracy	Resolution	Duration	Equipment	Sampling
Spectral Power	380-780 nm	±5%	10 nm or less	Instantaneous	Optical spectrometer	Frequently Occupied Spaces

The WELL Building Standard®: WELL Performance Verification Guidebook:  
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## VERIFICATION PROCESS – VISUAL VERIFICATION & SPOT CHECKS

1. **Visual Verification:** Verified by the WELL Assessor in **ALL** spaces/locations where applicable
2. **Spot Checks:** Verified by the WELL Assessor in **at least one** part/location where applicable

# RECERTIFICATION PROCESS

**1. Continued Engagement** – Provide ongoing records of the following:

- Results of post-occupancy surveys
- Proof of maintenance
- Ongoing environmental parameter measurements

## **2. Recertification**

- Undergo Performance Verification by 3 year mark
- Submit recertification documentation and fees

# COOKFOX Office



## WELL Building Standard v1: New and Existing Interiors

Project:	COOKFOX Office
Location:	250 West 57th Street NY NY 10107
Updated By:	Z Craun
Date:	11/14/16

## Certification Matrix



AIR			
Y	?	N	
Y		P 01 Air Quality Standards*	
Y		P 02 Smoking Ban*	
Y		P 03 Ventilation Effectiveness	
Y		P 04 VOC Reduction	
Y		P 05 Air Filtration*	
Y		P 06 Microbe And Mold Control*	
Y		P 07 Construction Pollution Management	
Y		O 08 Healthy Entrance*	
Y		P 09 Cleaning Protocol	
		n/s 10 Pesticide Management	
Y		P 11 Fundamental Material Safety	
		n/s 12 Moisture Management	
	?	O 13 Air Flush	
		N O 14 Air Infiltration Management	
		N O 15 Increased Ventilation	
	?	O 16 Humidity Control*	
		N O 17 Direct Source Ventilation*	
	?	O 18 Air Quality Monitoring And Feedback*	
		N O 19 Operable Windows*	
Y		O 20 Outdoor Air Systems	
		N O 21 Displacement Ventilation	
Y		O 22 Pest Control*	
	?	O 23 Advanced Air Purification*	
Y		O 24 Combustion Minimization*	
		N O 25 Toxic Material Reduction	
	?	O 26 Enhanced Material Safety	
	?	O 27 Antimicrobial Activity for Surfaces	
	?	O 28 Cleanable Environment*	
Y		O 29 Cleaning Equipment*	
14	7	6	TOTAL

WATER			
Y	?	N	
Y		P 30 Fundamental Water Quality*	
Y		P 31 Inorganic Contaminants*	
Y		P 32 Organic Contaminants*	
Y		P 33 Agricultural Contaminants*	
Y		P 34 Public Water Additives*	
	?	O 35 Periodic Water Quality Testing	
		N O 36 Water Treatment*	
	?	O 37 Drinking Water Promotion*	
5	2	1	TOTAL

NOURISHMENT			
Y	?	N	
Y		P 38 Fruits And Vegetables*	
Y		P 39 Processed Foods*	
Y		P 40 Food Allergies*	
Y		P 41 Hand Washing*	
Y		P 42 Food Contamination*	
Y		P 43 Artificial Ingredients*	
Y		P 44 Nutritional Information*	
Y		P 45 Food Advertising*	
Y		O 46 Safe Food Preparation Materials*	
Y		O 47 Serving Sizes*	
Y		O 48 Special Diets	
	?	O 49 Responsible Food Production	
	?	O 50 Food Storage*	
	?	O 51 Food Production*	
Y		O 52 Mindful Eating	
12	3	0	TOTAL

LIGHT			
Y	?	N	
Y		P 53 Visual Lighting Design*	
Y		P 54 Circadian Lighting Design*	
Y		P 55 Electric Light Glare Control	
Y		P 56 Solar Glare Control*	
Y		O 57 Low-Glare Workstation Design*	
	?	O 58 Color Quality	
Y		O 59 Surface Design	
		N O 60 Automated Shading And Dimming Control	
	?	O 61 Right To Light*	
	?	O 62 Daylight Modeling	
	?	O 63 Daylighting Fenestration*	
6	4	1	TOTAL

FITNESS			
Y	?	N	
Y		N O 64 Interior Fitness Circulation*	
Y		P 65 Activity Incentive Programs	
		N O 66 Structured Fitness Opportunities	
Y		O 67 Exterior Active Design*	
		N O 68 Physical Activity Spaces	
Y		O 69 Active Transportation Support*	
		N O 70 Fitness Equipment*	
		N O 71 Active Furnishings*	
3	0	5	TOTAL

COMFORT			
Y	?	N	
Y		P 72 ADA Accessible Design Standards	
Y		P 73 Ergonomics: Visual And Physical*	
	?	O 74 Exterior Noise Intrusion*	
Y		P 75 Internally Generated Noise*	
Y		P 76 Thermal Comfort*	
	?	O 77 Olfactory Comfort*	
	?	O 78 Reverberation Time*	
		N O 79 Sound Masking*	
		N O 80 Sound Reducing Surfaces	
		N O 81 Sound Barriers	
		N O 82 Individual Thermal Control*	
		N O 83 Radiant Thermal Comfort	
4	3	5	TOTAL

MIND			
Y	?	N	
Y		P 84 Health And Wellness Awareness*	
Y		P 85 Integrative Design	
Y		P 86 Post-Occupancy Surveys	
Y		P 87 Beauty And Design I*	
Y		P 88 Biophilia I - Qualitative*	
	?	O 89 Adaptable Spaces*	
	?	O 90 Healthy Sleep Policy	
	?	O 91 Business Travel	
	?	O 92 Building Health Policy	
	?	O 93 Workplace Family Support	
		N O 94 Self-Monitoring	
		N O 95 Stress And Addiction Treatment	
	?	O 96 Altruism	
	?	O 97 Material Transparency*	
	?	O 98 Organizational Transparency*	
	?	O 99 Beauty And Design II*	
Y		O 100 Biophilia II - Quantitative*	
	?	O 101 Innovation Feature I	
	?	O 102 Innovation Feature II	
		N O 103 Innovation Feature III	
		N O 104 Innovation Feature IV	
		N O 105 Innovation Feature V	
6	11	5	TOTAL

SUMMARY			
Y	?	N	
36	0	0	Preconditions (36 possible)
14	30	23	Optimizations (67 possible)

Requirements	Results
Preconditions: Must meet all preconditions.	All preconditions satisfied.
Optimizations: 0 needed for Silver, 25 for gold, 50 for platinum	Current status: Silver

\* Pending onsite post-occupancy Performance Verification testing.

# COOKFOX Office

LIGHT			
Y	?	N	
Y			P 53 Visual Lighting Design*
Y			P 54 Circadian Lighting Design*
Y			P 55 Electric Light Glare Control
Y			P 56 Solar Glare Control*
Y			O 57 Low-Glare Workstation Design*
	?		O 58 Color Quality
Y			O 59 Surface Design
		N	O 60 Automated Shading And Dimming Control
	?		O 61 Right To Light*
	?		O 62 Daylight Modeling
	?		O 63 Daylighting Fenestration*
6	4	1	TOTAL





# COOKFOX Office



Photography by Eric Laignel | Image courtesy of COOKFOX Architects



Photography by Eric Laignel | Image courtesy of COOKFOX Architects





This concludes The American Institute of Architects Continuing  
Education Systems Course



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