

Appendix A

Compliance Forms and Worksheets

Certificate of Compliance					
Envelope	Mechanical	Lighting	Outdoor Lighting	Sign Lighting	Refrigerated Warehouse
ENV-1C Certificate of Compliance and Field Inspection Checklist	MECH-1C Certificate of Compliance and Field Inspection Checklist	LTG-1C Certificate of Compliance and Field Inspection Checklist	OLTG-1C Certificate of Compliance and Field Inspection Checklist	SLTG-1C Certificate of Compliance (Sign Lighting)	RWH-1C Certificate of Compliance
ENV-2C Envelope Component Approach	MECH-2C Air, Water Side System, Service Hot Water & Pool Requirements	LTG-2C Lighting Controls Credit Worksheet	OLTG-2C Outdoor Lighting Worksheet	-----	-----
ENV-3C Overall Envelope TDV Energy Approach	MECH-3C Mechanical Ventilation and Reheat	LTG-3C Indoor Lighting Power Allowance	-----	-----	-----
ENV-4C Skylight Area Support Worksheet	MECH-4C Fan Power Consumption	LTG-4C Tailored Method Worksheet	-----	-----	-----
FC-1 CEC Default U-factor and SHGC Label Certificate	-----	LTG-5C Line Voltage Track Lighting Worksheet	-----	-----	-----

Installation Certificate		
Component	Form Name	Standards Reference
Envelope	ENV-INST	10-103(a)3A
Mechanical	MECH-INST	10-103(a)3A
Lighting	LGT-INST	10-103(a)3A
Outdoor Lighting	OTLG-INST	10-103(a)3A
Sign Lighting	SLTG-INST	10-103(a)3A
Refrigerated Warehouse	RWH-INST	10-103(a)3A

Certificate of Acceptance

Component	Form Name	Standards Reference	Reference Nonresidential Appendix
	ENV-1A, LTG-1A, OTLG -1A, MECH-1A, <i>is no longer used and has been deleted.</i>	N/A	N/A
Envelope	ENV-2A – Fenestration Acceptance	10-111 & §116	NA7.4.1
Mechanical	MECH-2A - Ventilation Systems - Variable Air and Constant Volume Systems	10-103(b)4 & §121(b)2, §125(a)1	NA7.5.1.1 NA7.5.1.2
	MECH-3A – Constant-Volume, Single-Zone, Unitary A/C and Heat Pumps	§121(c)2, §122 & §125(a)2	NA7.5.2
	MECH-4A - Air Distribution Systems -	§125(a)3 & §144(k)	NA7.5.3
	MECH-5A – Air Economizer Controls	§125(a)4 & §144(e)	NA7.5.4
	MECH-6A - Demand Control Ventilation (DVC)	§121(c)4, §121(c)4E & §125(a)5	NA7.5.5
	MECH-7A - Supply Fan Variable Flow Controls (VFC)	§125(a)6 & §144(c)2C §144(c)2D	NA7.5.6
	MECH-8A – Valve Leakage Test	§125(a)8, §125(a)9 & §144(j)1, §144(j)5 §144(j)6	NA7.5.7
	MECH-9A - Supply Water Temperature Reset	§125(a)8 & 144(j)4	NA7.5.8
	MECH-10A - Hydronic System Variable Flow Control	§125(a)7 & §144(j), §144(j)1 §144(j)5, §144(j)6	NA7.5.9
	MECH-11A - Automatic Demand Shed Control Acceptance	§122(h) & 125(a)10	NA7.5.10
	MECH-12A - Fault Detection & Diagnostics for DX Units	§125(a)11	NA7.5.11
	MECH-13A - Automatic Fault Detection & Diagnostics for Air Handling & Zone Terminal Units	§125(a)12	NA7.5.12
	MECH-14A - Distributed Energy Storage DX AC Systems Test	§125(a)13	NA7.5.13
	MECH-15A - Thermal Energy Storage (TES) Systems	§125(a)14	NA7.5.14
	Indoor Lighting	LTG-2A and LTG-3A - Lighting Controls and Automatic Daylighting	§119(d), §119(e), §119(f) & §131(d)
Outdoor Lighting	OLTG-2A – Outdoor Motion Sensor and Lighting Shut-off Controls	§119(d), §132(a) & §132(c)	NA7.7.1 & NA7.7.2

Certificate of Field Verification and Diagnostic Testing

Component	Form Name	Standards Reference	Reference Nonresidential Appendix
Mechanical	MECH-4-HERS - Air Distribution System Leakage Diagnostic	10-103(a)5	NA1; NA2

2008 Compliance Forms

***2008 Compliance Forms
Envelope Forms***

**CERTIFICATE OF COMPLIANCE
AND FIELD INSPECTION ENERGY CHECKLIST**

**ENV-1C
(Page 1 of 4)**

Project Name:	Date:	Climate Zone:
Project Address:		Conditioned Floor Area:

General Information

Building Type: Nonresidential High-Rise Residential Hotel/Motel Guest Room

Schools (Public School) Relocatable Public School Bldg. Conditioned Spaces Unconditioned Spaces

Skylight Area for Large Enclosed Space ≥ 8000 ft² (If checked include the ENV-4C with submittal)

Phase of Construction: New Construction Addition Alteration

Approach of Compliance: Component Overall Envelope TDV Energy Unconditioned (file affidavit)

Front Orientation: N, E, S, W or in Degrees: _____⁰

FIELD INSPECTION ENERGY CHECKLIST

OPAQUE SURFACE DETAILS														
1	2	3	4	5	6	7	8	9	10	11	12	13	14	
Tag/ID	Assembly Type	Area	Orientation N, S, W, E	Standard U-Factor	Joint Appendix U-Factor	Joint Appendix Table	Cavity R-Value	Exterior R-Value	Interior R-Value	Exterior Furring	Interior Furring	Conditions Status	Pass	Fail ²
													<input type="checkbox"/>	<input type="checkbox"/>
													<input type="checkbox"/>	<input type="checkbox"/>
													<input type="checkbox"/>	<input type="checkbox"/>
													<input type="checkbox"/>	<input type="checkbox"/>
													<input type="checkbox"/>	<input type="checkbox"/>
													<input type="checkbox"/>	<input type="checkbox"/>
													<input type="checkbox"/>	<input type="checkbox"/>
													<input type="checkbox"/>	<input type="checkbox"/>
													<input type="checkbox"/>	<input type="checkbox"/>

1. See Instructions in the Nonresidential Compliance Manual, page 3-96.
 2. If Fail, then describe on Page 2 of the Inspection Checklist Form and take appropriate action to correct. A fail does not meet compliance.

FENESTRATION SURFACE DETAILS												
1	2	3	4	5	6	7	8	9	10	11	12	
Tag/ID	Fenestration Type	Surface Area	Orientation N, S, W, E	# of Panes	Max U-Factor	U-Factor Source	Max (R)SHGC	SHGC Source	Overhang	Conditions Status	Pass	Fail ²
									<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
									<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
									<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
									<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
									<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
									<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
									<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
									<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>

3. 1. See Instructions in the Nonresidential Compliance Manual, page 3-96.
 2. If Fail then describe on Page 2 of the Inspection Checklist Form and take appropriate action to correct. Verify building plans if necessary.

**CERTIFICATE OF COMPLIANCE
AND FIELD INSPECTION ENERGY CHECKLIST**

ENV-1C
(Page 3 of 4)

Project Name:	Date:	Climate Zone:
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Required Acceptance Tests

Designer:

This form is to be used by the designer and attached to the plans. Listed below is the acceptance test for Envelope Fenestrations system. The designer is required to check the acceptance tests and list all the fenestration products that require an acceptance test. If all the site-built fenestration of a certain type requires a test, list the different fenestration products and the number of systems. The NA7 Section in the Appendix of the Nonresidential Reference Appendices Manual describes the test. Since this form will be part of the plans, completion of this section will allow the responsible party to budget for the scope of work appropriately.

Enforcement Agency:

Systems Acceptance. Before Occupancy Permit is granted for a newly constructed building or space or when ever new fenestration is installed in the building or space shall be certified as meeting the Acceptance Requirements.

The ENV-2A form is not considered a complete form and is not to be accepted by the enforcement agency unless the boxes are checked and/or filled and signed. In addition, a Certificate of Acceptance forms shall be submitted to the enforcement agency that certifies plans, specifications, installation certificates, and operating and maintenance information meet the requirements of §10-103(b) of Title 24 Part 6. The field inspector must receive the properly filled out and signed forms before the building can receive final occupancy. A copy of the ENV-2A for each different fenestration product line must be provided to the owner of the building for their records.

Test Description		ENV-2A	Test Performed By:
Fenestration Products Name or ID Requiring Testing or Verification	Number of like Products	Building Envelope Acceptance Test	
		<input type="checkbox"/>	

**CERTIFICATE OF COMPLIANCE
AND FIELD INSPECTION ENERGY CHECKLIST**

**ENV-1C
(Page 4 of 4)**

Project Name:	Date:	Climate Zone:
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Documentation Author's Declaration Statement

- I certify that this Certificate of Compliance documentation is accurate and complete.

Name:	Signature:	
Company:	Date:	
Address:	If Applicable: CEA # CEPE #	
City/State/Zip:	Phone:	

Principal Designer's Declaration Statement

- I am eligible under Division 3 of the California Business and Professions Code to accept responsibility for the design.
- This Certificate of Compliance identifies the envelope features and performance specifications required for compliance with Title 24, Parts 1 and 6 of the California Code of Regulations.
- The design features represented on this Certificate of Compliance are consistent with the information provided to document this design on the other applicable compliance forms, worksheets, calculations, plans and specifications submitted to the enforcement agency for approval with this building permit application.

Name:	Signature:	
Company:	Date:	
Address:	License #	
City/State/Zip:	Phone:	

Envelope Mandatory Measures

Indicate location on building plans of Mandatory Envelope Measures Note Block: _____

INSTRUCTIONS TO APPLICANT ENVELOPE COMPLIANCE & WORKSHEETS (check box if worksheet are included)

For detailed instructions on the use of this and all Energy Efficiency Standards compliance forms, please refer to the Nonresidential Compliance Manual.

<input type="checkbox"/>	ENV-1C	Certificate of Compliance and Field Inspections Energy Checklist. Required on plans for all submittals.
<input type="checkbox"/>	ENV-2C	Use with the Envelope Component Approach. Optional on plans.
<input type="checkbox"/>	ENV-3C	Use with the Overall Envelope TDV Energy Approach. Optional on plans.
<input type="checkbox"/>	ENV-4C	Use when minimum skylight requirements for large enclosed spaces are required in climate zones 2 through 15. Optional on plans.

ENVELOPE COMPONENT APPROACH

Project Name:	Date:	Climate Zone:
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EXTERIOR ROOFING PRODUCT (COOL ROOFS) - See Section 3.3 in the Nonresidential Manual and §118(i) and §143(a)1A in the Energy Standards for further description about exterior roofs and mandatory requirements for Cool Roofs.

(Note if the roofing product is not CRRC certified, this compliance approach cannot be used). Go to Overall Envelope Approach or Performance Approach.

CHECK APPLICABLE BOX BELOW IF EXEMPT FROM ONE OF THE ROOFING PRODUCT MINIMUM PRESCRIPTIVE REQUIREMENTS:

- Roofing compliance not required in Climate Zones 1 and 16 with a Low-Sloped. 2:12 pitch or less.
- Roofing compliance Not Required in Climate Zone 1 with a Steep-Sloped with less than 5 lb/ft². Greater than 2:12 pitch.
- High-rise residential buildings and hotels and motels with low-sloped roofs in Climate Zones 1 through 9, 12 and 16 are exempted from the low-sloped roofing criteria.
- Low-sloped Wood framed roofs in Climate Zones 3 and 5 are exempted solar reflectance and thermal emittance or SRI that have a U-factor of 0.039 or lower. See Opaque Surface Details roof assembly below, Column H.
- Low-sloped Metal Building Roofs in Climate Zones 3 and 5 are exempted solar reflectance and thermal emittance or SRI that have a U-factor of 0.048 or lower. See Opaque Surface Details roof assembly below, Column H.
- The roof area covered by building integrated photovoltaic panels and building integrated solar thermal panels are exempted solar reflectance and thermal emittance or SRI.
- Roof constructions with thermal mass over the roof membrane with a weight of at least 25 lb/ft² is exempted from the Cool Roof criteria.

CRRC Product ID Number ¹	Roof Slope		Product Weight		Product Type ²	Aged Solar Reflectance ^{3,4}	Thermal Emittance	SRI ⁵
	≤ 2:12	> 2:12	< 5lb/ft ²	≥ 5lb/ft ²				
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/> ⁴		
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/> ⁴		
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/> ⁴		
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/> ⁴		
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/> ⁴		
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/> ⁴		

1. The CRRC Product ID Number can be obtained from the Cool Roof Rating Council's Rated Product Directory at www.coolroofs.org/products/search.php
2. Indicate the type of product is being used for the roof top, i.e. single-ply roof, asphalt roof, metal roof, etc.
3. If the Aged Reflectance is not available in the Cool Roof Rating Council's Rated Product Directory then use the Initial Reflectance value from the same directory and use the equation $(0.2 + 0.7(\rho_{initial} - 0.2))$ to obtain a calculated aged value. Where ρ is the Initial Solar Reflectance.
4. Check box if the Aged Reflectance is a calculated value using the equation above.
5. Calculate the SRI value by using the SRI- Worksheet at <http://www.energy.ca.gov/title24/> and enter the resulting value in the SRI Column above and attach acopy of the SRI- Worksheet to the ENV-1C.

To apply **Liquid Field Applied Coatings**, the coating must be applied across the entire roof surface and meet the dry mil thickness or coverage recommended by the coatings manufacturer and meet minimum performance requirements listed in §118(i)4. Select the applicable coating:

<input type="checkbox"/> Aluminum-Pigmented Asphalt Roof Coating	<input type="checkbox"/> Cement-Based Roof Coating	<input type="checkbox"/> Other _____
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ENVELOPE COMPONENT APPROACH

(Page 4 of 4) ENV-2C

Project Name:	Date:	Climate Zone:
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SKYLIGHT AREA CALCULATION See §143(a)6A in the Energy Standards

	ACTUAL GROSS ROOF AREA	STANDARD ALLOWED SKYLIGHT AREA	
A IF Atrium/Skylight Height is ≤ 55 ft; or		$ft^2 \times 0.05 =$	ft^2
B. IF Atrium/Skylight Height is > 55 ft		$ft^2 \times 0.10 =$	ft^2
C. Proposed Skylight Area		ft^2	
D. Skylight % = Proposed Skylight Area <u>Divided</u> by Actual Gross Roof Area =			%

If the PROPOSED SKYLIGHT AREA is greater than the STANDARD ALLOWED SKYLIGHT AREA then the Envelope Component Approach may not be used. The skylight percentage determines the appropriate row for the maximum U-factor allowed TO BE USED IN THE Skylight Details. See Table 143-A, B or C.

SKYLIGHTS DETAILS See §143(a)6 in the Energy Standards

A	SKYLIGHT GLAZING			U-FACTOR			SHGC			
	B	C	D	E	F	G	H	I	J	K
SKYLIGHT NAME (e.g., Sky-1, Sky-2)	Glass With Curb	Glass With No Curb	Plastic	Area ¹	Type ²	# Of Panes	Proposed	Allowed ³	Proposed	Allowed ⁴
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>							
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>							
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>							
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>							
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>							
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>							
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>							

Total Skylight Area

Enter above the Total Skylight Area in Window Details ENV-2C Page 3of 4.

1. Enter the area of each different skylight product.
2. Enter the type of skylight; M=Manufactured, SB=Site-built, and F=Fabricated.
3. The Allowed U-factor and SHGC values are from table 143-A, B or C. Use Row D Skylight % (from above) to select the allowed SHGC.
4. If the Proposed window does not use an overhang then fenestration SHGC is treated the same as RSHG.

RELOCATABLE PUBLIC SCHOOL BUILDINGS - See §143(a)8 in the Energy Standards

Option 1

<input type="checkbox"/> For Specific Climate Zone, use Table 143-A - Prescriptive Envelope Criteria.	<input type="checkbox"/> Specific Climate Zone Metal Identification Label – Place two labels on each relocatable school building and indicate on the building plans. Indicate location on the building plans:
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Option 2

<input type="checkbox"/> For Any (All) Climate Zone, use Table 143-C - Prescriptive Envelope Criteria.	<input type="checkbox"/> Any (All) Climate Zone Metal Identification Label - Place two labels on each relocatable school building and indicate on the building plans. Indicate location on the building plans:
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OVERALL ENVELOPE TDV ENERGY APPROACH

(Page 1 of 6)

ENV-3C

Project Name:

Date:

Climate Zone:

WINDOW RATIO CALCULATION §143(b)

A. TOTAL LINEAR DISPLAY PERIMETER	<input type="text"/>	FT × 6 FT =	<input type="text"/>	ft ²	DISPLAY AREA
B. TOTAL GROSS EXTERIOR WALL AREA	<input type="text"/>	ft ² × 0.40 =	<input type="text"/>	ft ²	40% of GROSS EXTERIOR WALL AREA
C. ENTER LARGER OF (A or B)			<input type="text"/>	ft ²	MAXIMUM STANDARD AREA
D. ENTER PROPOSED WINDOW AREA			<input type="text"/>	ft ²	PROPOSED AREA

If the Proposed Window Area is greater than the Maximum Standard Area, then go to Window Adjustment step below.

E. WINDOW WALL RATIO = (Row D) Divided by (Row B) = Must meet RSHG in Table 143-A, 143-B, or 143-C

WEST WINDOW RATIO CALCULATION

F. WEST LINEAR DISPLAY PERIMETER	<input type="text"/>	FT × 6 FT =	<input type="text"/>	ft ²	WEST DISPLAY AREA
G. WEST EXTERIOR WALL AREA	<input type="text"/>	ft ² × 0.40 =	<input type="text"/>	ft ²	40% of WEST EXTERIOR WALL AREA
H. ENTER LARGER OF (F or G)			<input type="text"/>	ft ²	MAXIMUM STANDARD WEST AREA
I. ENTER PROPOSED WEST WINDOW AREA			<input type="text"/>	ft ²	PROPOSED WEST WINDOW AREA

If the Proposed West Window Area is greater than the Maximum Standard West Area, then Go to Window Adjustment step below.

J. WINDOW WALL RATIO = (Row I) Divided by (Row G) = Must meet RSHG in Table 143-A, 143-B, or 143-C

Combined Area for North, East and South Walls

K. N/E/S DISPLAY PERIMETER (A Minus F)	<input type="text"/>	FT × 6 FT =	<input type="text"/>	ft ²	N/E/S of WEST EXTERIOR WALL AREA
L. N/E/S EXTERIOR WALL AREA (B Minus G)	<input type="text"/>	ft ² × 0.40 =	<input type="text"/>	ft ²	40% N/E/S AREA
M. ENTER LARGER OF K or L			<input type="text"/>	ft ²	MAXIMUM STANDARD N/E/S/ AREA
N. PROPOSED N/E/S/ WINDOW AREA (D Minus I)			<input type="text"/>	ft ²	PROPOSED N/E/S/ AREA

Window Adjustment

O. IF D>C and/or if I>H, Proceed to the calculation Step 1 for all walls or Step 2 for West wall. If not, go to the Skylight Area Test on ENV-3C Page 6, CALCULATE ADJUSTED AREAS.

1. IF D>C: Use the calculated Window Adjustment Factor (WAF) for all walls.

MAX. STANDARD AREA (from C)		PROPOSED WINDOW AREA (from D)		WINDOW ADJUSTMENT FACTOR
<input type="text"/>	÷	<input type="text"/>	=	<input type="text"/>

2. IF I>H: Calculate one Window Adjustment Factor (WAF) for the West wall.

MAX. STANDARD WEST AREA (from H)		PROPOSED WEST AREA (from I)		WEST WINDOW ADJUSTMENT FACTOR
<input type="text"/>	÷	<input type="text"/>	=	<input type="text"/>

MAX. STANDARD AREA (from C)		PROPOSED AREA (from D)		WEST WINDOW ADJUSTMENT FACTOR
<input type="text"/>	÷	<input type="text"/>	=	<input type="text"/>

OVERALL ENVELOPE TDV ENERGY APPROACH

(Page 2 of 6)

ENV-3C

Project Name:	Date:	Climate Zone:
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SKYLIGHT RATIO CALCULATION §143(b)			
	ACTUAL GROSS ROOF AREA		MAXIMUM ALLOWED STANDARD SKYLIGHT AREA
A. IF Atrium/Skylight Height is ≤ 55 ft; or		$\text{ft}^2 \times 0.05 =$	ft^2
B. IF Atrium/Skylight Height is > 55 ft		$\text{ft}^2 \times 0.10 =$	ft^2
C. Proposed Skylight Area		ft^2	
D. Skylight Ratio = Proposed Skylight Area (Row C) <u>Divided</u> by Actual Gross Roof Area =			% SRR _{Prop}
E. Maximum Allowed Skylight Roof Ratio = Maximum Allowed Standard Skylight Area (Row A or B) Divided by Total Gross Exterior Roof Area =			% SRR _{STD}
<i>IF THE PROPOSED SKYLIGHT AREA IS GREATER THAN THE STANDARD SKYLIGHT AREA PROCEED TO THE NEXT CALCULATION FOR THE SKYLIGHT AREA ADJUSTMENT. IF NOT GO TO PAGE 3 OF 6.</i>			

SKYLIGHT AREA ADJUSTMENT										
IF F>D, Proceed To Calculation Step 1										
Step 1. Calculated the Skylight Adjustment Factor (SAF).										
<table style="width: 100%; border: none;"> <tr> <td style="text-align: center; border: none;">STANDARD SKYLIGHT AREA</td> <td style="border: none;">÷</td> <td style="text-align: center; border: none;">PROPOSED SKYLIGHT AREA (IF E = 0 ENTER 1)</td> <td style="border: none;">=</td> <td style="text-align: center; border: none;">SKYLIGHT ADJUSTMENT FACTOR (SAF)</td> </tr> <tr> <td style="text-align: center; border: 1px solid black; width: 15%; height: 20px;"></td> <td style="border: none;"></td> <td style="text-align: center; border: 1px solid black; width: 15%; height: 20px;"></td> <td style="border: none;"></td> <td style="text-align: center; border: 1px solid black; width: 15%; height: 20px;"></td> </tr> </table>	STANDARD SKYLIGHT AREA	÷	PROPOSED SKYLIGHT AREA (IF E = 0 ENTER 1)	=	SKYLIGHT ADJUSTMENT FACTOR (SAF)					
STANDARD SKYLIGHT AREA	÷	PROPOSED SKYLIGHT AREA (IF E = 0 ENTER 1)	=	SKYLIGHT ADJUSTMENT FACTOR (SAF)						
CARRY THE WINDOW ADJUSTMENT FACTOR (SAF) TO PAGE 6 OF 6 TO CALCULATE THE ADJUSTED AREA										

Cool Roof Multiplier (M_{CR})

PROJECT NAME						DATE
Occupancy Type and Coefficients Tables		<input type="checkbox"/> Nonresidential, See Table NA5-3	<input type="checkbox"/> 24-Hour Use, See Table NA5-4	<input type="checkbox"/> Retail, See Table NA5-5		Climate Zone:
Coefficients of						Calculation
A	B	C	D	E	F	G
Reflectance	Emittance	Proposed Aged Solar Reflectance	Standard Aged Solar Reflectance ¹	Proposed Thermal Emittance	Standard Thermal Emittance	Cool Roof Multiplier ²
C _{Ref}	C _{Emit}	ρ _{aged prop}	ρ _{aged std}	ε _{prop}	ε _{std}	M _{CR,I}
Excerpt from Table NA5-2. Where: Standard design values for Solar Reflectance and Thermal Emittance.				Standard Aged Solar Reflectance (Column D)	Standard Thermal Emittance (Column F)	Enter multiplier in Page 4 of 6 Column L.
Low-Rise, Low-Sloped, CZ2 through CZ15				0.55	0.75	
Low-Rise, Low-Sloped, CZ1 and CZ16				0.10	0.75	
High-Rise, Low-Sloped, CZ10 through CZ15				0.55	0.75	
High-Rise, Low-Sloped, CZ1-9 and CZ16				0.10	0.75	
Steep-Sloped, CZ2 through CZ15				0.25	0.75	
Steep-Sloped, all other				0.10	0.75	
<p>1. <i>Proposed Aged Design Solar Reflectance</i>; ρ_{aged prop} = (0.7 x ρ_{init prop}) + 0.06, Where (ρ_{init prop}) reflectance value is found in the CRRC Directory. Enter results of the Cool Roof Multiplier equation in footnote 2.</p> <p>2. <i>Cool Roof Multiplier</i> M_{CR,I} = 1 + C_{Ref} x (ρ_{aged prop} - ρ_{aged std}) + C_{Emit} x (ε_{prop} - ε_{std}) or 1 + Col A x (Col C - Col D) + Col B x (Col E - Col F)</p>						

Overhang Multiplier (M_{OH})

Occupancy Type and Coefficients Tables		<input type="checkbox"/> Nonresidential, See Table NA5-3	<input type="checkbox"/> 24-Hour Use, See Table NA5-4	<input type="checkbox"/> Retail, See Table NA5-5		Climate Zone:
Coefficients of			Fenestration Overhang			Calculation
A	B	C	D	E	F	G
Overhang Orientation	1st Projection Factor ¹	2nd Projection Factor ¹	Horizontal Projection (ft ²)	Vertical Distance (ft ²)	Projection Factor ²	Overhang Multiplier ³
	a _i	b _i	H	V	PF	M _{OH,I}
<p>1. Where: a_i and b_i are the coefficients for the overhang projection factor (see tables) and is climate zone dependent.</p> <p>2. PF= H/V (Horizontal (H) projection of the overhang from the surface of the window in feet, but no greater than V and the Vertical (V) distance from the window sill to the bottom of the overhang, in feet.) Enter results in Column F.</p> <p>3. M_{OH,I} = 1 + (a_i x PF_i) + b_i x PF_i². Enter results in Column G.</p>						Enter multiplier in Page 4 of 6 Column M.

MINIMUM SKYLIGHT AREA WORKSHEET

(Page 1 of 3) ENV-4C

MINIMUM SKYLIGHT AREA FOR LARGE ENCLOSED SPACES (definitions in §131(c), requirements in §143c)

Project Name:

Date:

This worksheet applies to buildings with three or fewer stories, in climate zones 2 through 15, having an enclosed space > 8,000ft² that is directly under a roof, with a ceiling height > 15 ft and the exception below does not apply. **Go to Step 1.**

- Name or reference of Large Enclosed Space on building plans _____.
- Proposed daylight area is indicated on page _____ of the building plans.

Skylights not required as fully designed lighting system as shown on page _____ of building plans has general lighting power density of _____ W/ft², which is less than 0.5 W/ft². **Note:** this exemption applies only to buildings with a fully designed lighting system. This exception does not apply to core & shell buildings.

STOP HERE IF THIS BOX IS CHECKED. Space is exempt from minimum skylight area requirement.

NOTE: The minimum skylight area requirements can be met using skylit daylight areas, primary sidelit daylight areas, or a combination of both. Use Step 1 below if using skylit daylight areas for compliance. Use Step 2 below if using sidelit daylight areas for compliance. Use Step 3 below to add together skylit daylight and primary sidelit daylight areas.

Step 1 Calculate if Proposed Skylit Daylight Area is greater than or equal to Minimum Daylight Area.

Criterion 1: Check if Total Proposed Skylit Daylight Area is greater than or equal to Minimum Daylit Area. (C ≥ B)

If Criterion 1 is checked, skip step 2. Go to Step 3.

Floor Area of proposed design large enclosed space	A	ft ²	Space floor area
Minimum Daylight Area = 0.5 x Floor Area (A)	B	ft ²	Minimum Daylight Area = 0.5 x (A)
Proposed design skylit daylight area in accordance with §131(c)1D and as shown on the plans.	C	ft ²	Proposed Skylit Daylight Area

Step 2 Calculate if Proposed Primary Sidelit Daylight Area is greater than or equal to Minimum Daylight Area

Criterion 2: Check if Total Proposed Sidelit Daylight Area is equal to or greater than Minimum Daylit Area (D ≥ B)

Primary sidelit daylit area determined in accordance with §131(c)1B and as shown on the plans	D	ft ²	Proposed Primary Sidelit Daylight Area
---	---	-----------------	--

Step 3 Confirm that Proposed Primary Sidelit + Skylit Daylight Area is greater than or equal to Minimum Daylight Area

Criterion 3: Check if Total Proposed Daylight Area is greater than or equal to Minimum Daylit Area (E ≥ B)

Total Proposed Daylight Area = Skylit Area + Primary Sidelit Area Add C + D and enter into E	E	ft ²	Total Proposed Daylit Area
--	---	-----------------	----------------------------

If Criterion 3 is checked complete both Steps 4 & 5 on Page 2

If Criterion 3 is unchecked. Space FAILS, insufficient daylight area, do not continue.

MINIMUM SKYLIGHT AREA WORKSHEET

(Page 2 of 3)

ENV-4C

SKYLIGHT AREA FOR LARGE ENCLOSED SPACES (§ 143c)

Project Name:

Date:

Step 4 – If using SKYLIGHT to comply with the minimum skylight area requirements, calculate compliance with minimum skylight area using Step 4a, or compliance with minimum effective aperture using Step 4b. Also verify compliance with skylight haze criteria is met in Step 4c.

Step 4a – If complying with minimum skylight area:

Criterion 4a: Check if Proposed Skylight Area is equal to or greater than Minimum Skylight Area ($H \geq G$)

Proposed Skylit Daylight Area from cell (C), Step 1, on ENV-4C (Page 1 of 3)	F	ft ²	Proposed Skylit Daylight Area
Minimum Skylight Area = Skylit Daylight Area (F) x 0.033	G	ft ²	Minimum Skylight Area
Total Proposed Skylight Area = Sum of the areas (rough opening) of each individual skylight	H	ft ²	Total Proposed Skylight Area

Step 4b – If complying with minimum effective aperture:

Criterion 4b: Check if Proposed Skylight Effective Aperture is equal to or greater than Minimum Skylight Effective Aperture ($J \geq I$). If this criterion checked, shall also fill out ENV 4C (Page 3 of 3)

Minimum Skylight Effective Aperture	I	0.011	Minimum Skylight Effective Aperture
Proposed Skylight Effective Aperture. Shall be taken from ENV-4C (Page 3 of 3) Cell (AB)	J		Proposed Skylight Effective Aperture

Step 4c Required

Criterion 4c: Check if Proposed Skylight glazing or diffuser haze rating is equal or greater than 90% ($K \geq 0.9$).

Skylight glazing or diffuser haze rating according to ASTM D1003	K		Haze rating
Haze rating is indicated on page _____			of plans

Complies with all of Criterion 4 if either Criterion 4a or Criterion 4b is checked, AND Criterion 4c is checked.

Step 5 – If using PRIMARY SIDELIGHT to comply with the minimum skylight area requirements:

Criterion 5: Check if Proposed Primary Sidelit Effective Aperture is greater than or equal to Minimum Sidelit Effective Aperture ($M \geq L$). Fill out remaining questions on Step 6 below.

Minimum Sidelit Effective Aperture	L	0.1	Minimum Sidelit Effective Aperture
Enter Proposed Primary Sidelit Effective Aperture from Equation 146-A- cell (Q) below	M		Proposed Primary Sidelit Effective Aperture

EQUATION 146-A: Determine Effective Aperture for Primary Sidelit Area

Rough opening of windows adjacent to the sidelit are in square feet	N		Total window area
Visible light transmittance of window	O		Average VLT
Primary sidelit daylight area determined according to §131(c)1 from cell (D), Step 2, on ENV-4C (Page 1 of 3)	P		Primary Sidelit Area
Primary Sidelit Effective Aperture = (N x O) / (P) Enter results for Primary Sidelit Effective Aperture from cell (Q) into cell (M) in Step 5	Q		Primary Sidelit EA

Step 6

- Space PASSES:** Check if Criterion 1 and 3 (page 1); and, Criterion 4 (page 2) are checked.
- Space PASSES:** Check if Criterion 2 and 3 (page 1); and, Criterion 5 (page 2) are checked.
- Space PASSES:** Check only if Criterion 1 through 5 are all checked

Calculate Skylight Effective Aperture

Project Name:

Date:

Calculate Skylight Effective Aperture (EQUATION 146-C) if using minimum effective aperture in Step 4b to comply with the minimum skylight area requirements.

1. Determine Well Cavity Ratio or L/D ratio. Select one of the well types (Rectangular or Non-Rectangular), fill in well dimensions and calculate the Wall Cavity Ratio (WCR) with the appropriate equation below.

Rectangular. Wells: <input type="checkbox"/>	a. Well Height	b. Well Length	c. Well Width		
$WCR = \left(\frac{5 \times \text{well height} (\text{well length} + \text{well width})}{\text{well length} \times \text{well width}} \right)$				R.	Rectangular WCR

Non-Rectangular Wells: <input type="checkbox"/>	a. Well Height	b. Well Perimeter	c. Well Area		
$WCR = \left(\frac{2.5 \times \text{well height} \times \text{well perimeter}}{\text{well area}} \right)$				S.	Non-rectangular WCR

If using Tubular Specular Light Well provide the following information:

T. Tube Length (ft)	T		Tube Height
U. Tube Diameter (ft)	U		Tube Diameter
V. Divide Tube Length (Height) by Tube Diameter	V		L/D Ratio = (T/U)

2. Determine Well Efficiency

W. Weighted Average Well Wall Reflectance (%)	W.		Wall reflectance
X. Well Efficiency	X.		Well Efficiency
<input checked="" type="checkbox"/> From Table 146-A for non-specular or non-tubular light wells <input checked="" type="checkbox"/> From Equation 146-F or Table 146-B for specular tubular light wells			

3. Calculate Skylight Effective Aperture

Y. Total skylight area	Y.		Total Skylight Area
Z. Visible transmittance in accordance with description in §146(a)2, Equation 146-C	Z.		VT
AA. Proposed Skylit Daylight Area from cell (C) on ENV-4C (Page 1 of 3)	AA.		Skylit Daylight Area
AB. Skylit EA = 0.85 x (Y x Z x X) / AA	AB.		Skylight EA

$$\text{Skylight Effective Aperture} = \left(\frac{0.85 \times \sum \text{SkylightArea} \times \text{VT} \times \text{WellEfficiency}}{\text{Skylight Daylight Area}} \right)$$

4. Enter ratio from cell (AB) into ENV-4C (Page 1 of 3) Step 4b cell (J)

U-FACTOR AND SHGC FENESTRATION CERTIFICATE LABEL FC-1/FC-2

PROJECT INFORMATION Form 1 of

PROJECT NAME:	DATE:
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PROJECT ADDRESS:	CLIMATE ZONE:
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Option 1: For buildings with less than 10,000 ft² of site-built fenestration may optionally use either CEC Default Tables 116-A and 116-B, Method 1, or the Alternative Calculation Nonresidential Reference Appendix NA6, Method 2.

Option 2: For buildings with greater 10,000 ft² of site-built fenestration only one option is available; use CEC Default Tables 116-A and 116-B. Use Method 1 only.

A separate (FC-1/FC-2) Label Certificate Form is required for each different fenestration product line. Unlabeled manufactured fenestration products including skylights and exterior doors shall meet the air infiltration requirements of §116(a)1 of the 2008 California Energy Efficiency Standards applicable to Residential and Nonresidential Buildings.

Enter the U-factor_t and SHGC_t in the following boxes after completing Method 1 or 2 below.

U-factor_t =	SHGC_t =
-------------------------------	---------------------------

PRODUCT LINE INFORMATION (Complete a separate Label Certificate for each fenestration product line is required)

Total Number of units for the same product line:	Total square footage of this product line:
Schedule location on the building plans – Reference page:	Total Fenestration Area (ft ²) on project:
Location(s) on building: S, N, E, W	

Method 1 (For fenestration either less than or greater than or equal to 10,000 ft²)

U-FACTOR INFORMATION FROM DEFAULT See TABLE 116-A:

Frame Type	<input type="checkbox"/> Metal	<input type="checkbox"/> Metal With Thermal Break	<input type="checkbox"/> Nonmetal
Product Type	<input type="checkbox"/> Operable	<input type="checkbox"/> Fixed	<input type="checkbox"/> Greenhouse/ Garden Window
Glazing Type	<input type="checkbox"/> Single Pane	<input type="checkbox"/> Double Pane	<input type="checkbox"/> Glass Block
			Insert value in the default U-factor gray box above

SOLAR HEAT GAIN INFORMATION FROM DEFAULT See TABLE 116-B:

Product Type	<input type="checkbox"/> Operable	<input type="checkbox"/> Fixed	
Glazing:	<input type="checkbox"/> Clear	<input type="checkbox"/> Tinted	Insert value in the default SHGC _t gray box above

Method 2 (For fenestration less than 10,000 ft²) **Reference Nonresidential Appendix NA6**

GLAZING INFORMATION: Alternative Calculation < less than 10,000 ft²

STEP 1: Determine U-Factor:	Enter U-factor from Equation NA6-1 above in the gray box next to U-factor
STEP 2: Determine SHGC_t:	Use Center of Glass, SHGC _c , in the equation below to determine the solar heat gain coefficient with frame
Enter Center of Glass, COG, from Manufacturer's Documentation, SHGC _c	Insert Center of Glass value here
Calculate the new SHGC _t of the frame.	SHGC _t = 0.08 + (0.86 x SHGC _c) =
	Insert calculated result value here and in above gray box next to SHGC _t

STEP 3: ATTACHED MANUFACTURER'S LITERATURE:

Manufacturer's literature must be attached showing the Product Type, Frame Type, Glazing, Center Of Glass(COG) U-factor, and SHGC_c information needed to determine the Default U-factor_t and SHGC_t.

PARTY TAKING RESPONSIBILITY FOR FENESTRATION COMPLIANCE:

CONTACT PERSON:	
COMPANY NAME and ADDRESS:	
PHONE:	FAX:
SIGNATURE:	LICENSE # (if Applicable)

***2008 Compliance
Mechanical Forms***

CERTIFICATE OF COMPLIANCE		MECH-1C-ALT-HVAC
Prescriptive HVAC Alterations		(Page 1 of 2)
Project Name/Address:	Date:	

Enforcement Agency:	Permit Number:	Climate Zone
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NOTE: This form may be used only for single zone constant volume systems. This form shall not be used for newly constructed buildings, additions, or VAV multi-zone systems.

Select one "Existing Building Project Type" and complete the corresponding steps listed in the "Complete Steps" column below. Note: After installation of HVAC units and/or ducts, the Installation and the applicable Acceptance Forms are required to be submitted for verification by the field inspector and a copy shall be made available to building owner.

Existing Building Project Type (select one):	Complete Steps:
<input type="checkbox"/> New or Replacement HVAC unit	1, 4, 5 and 6 (If criteria is met), 7 (When economizer is installed)
<input type="checkbox"/> New or Replacement ducts	1, 4, 5 and 6 (If criteria is met)
<input type="checkbox"/> New Space Conditioning System (HVAC and ducts)	1, 2, 3, 4, 5 and 6 (If criteria is met), 7 (When economizer is installed), 8 (DCV)

Step 1 – Ducts and HVAC Equipment

Equipment Type, Efficiency and Capacity ¹	Floor Area Served ²	Distribution Type and Location ³	Duct Insulation R-Value ⁴	Thermostat Type ⁵	Configuration (Central, Split, Package)

1. Indicate Equipment Type; Air Handler, Condenser, Heat Pump, Evap. Cooling, Boiler, Electric Resistance, etc. & HVAC Capacity; or Ducts (new or replaced).
2. If the Floor Area Served (per duct system) exceeds 5,000 square feet, skip Steps 5 and 6.
3. Indicate Type and Location (Ducts on roof, ducts in conditioned space, ducts in attic, etc.)
4. Newly installed or replaced duct insulation: R-8 in unconditioned space or in buried concrete slab; R-4.2 in indirectly conditioned space; and R-0 for conditioned space.
5. Existing non-setback thermostats shall be replaced with setback thermostats for all altered units, and all newly installed space conditioning systems requiring a thermostat shall be equipped with a setback thermostat. Setback thermostats shall meet the requirements of Section 112(c).

Step 2 – Mechanical Ventilation Calculations

Both options (Area and Occupancy Basis) shall be completed to determine the minimum mechanical ventilation rates and Column I must be the greater of either Column E or H.

A	B	AREA BASIS			OCCUPANCY BASIS			I
		C	D	E	F	G	H	
Zone/System	Type of Use	Condition Area (ft ²)	CFM ¹ Per ft ²	Min CFM ² C x D	Num of People ²	CFM per Person	Min CFM ³ F x G	Design Vent. CFM Larger of E or H
						15		
						15		
						15		

- AREA BASIS**
1. Minimum ventilation rate (CFM/ ft²) for the Type of Use in the Table below.
 2. The conditioned floor area of the space multiplied by the applicable minimum ventilation rate from Table 4-1 CFM/ft² Column below. For additional ventilation rates, see Table 4-3 and use the values listed in the *Required Ventilation Column* in the Nonresidential Compliance Manual. This provides dilution for the building-borne contaminants like off-gassing of paints and carpets.

- OCCUPANCY BASIS**
2. For spaces with fixed seating such as a theater or auditorium, the expected number of occupants is the number of fixed seats.
 3. The expected number of occupants or people multiplied by 15 cfm per person.

Type of Use	CFM per ft ²	Type of Use	CFM per ft ²
Auto repair workshops	1.50	High-rise residential	Ventilation Rates Specified by the CBC
Barber shops	0.40	Hotel guest rooms (less than 500 ft ²)	30 cfm/guest room
Bars, cocktail lounges, and casinos	0.20	Hotel guest rooms (500 ft ² or greater)	0.15
Beauty shops	0.40	Retail stores	0.20
Coin-operated dry cleaning	0.30	All Others ¹	0.15
Commercial dry cleaning	0.45		

1. For additional ventilation rates, see Table 4-3 in the Nonresidential Compliance Manual

CERTIFICATE OF COMPLIANCE	MECH-1C-ALT-HVAC
Prescriptive HVAC Alterations	(Page 2 of 2)
Project Name/Address:	Date:

Installation Certificate requirement: *The installing contractor shall complete and sign an Installation Certificate (MECH-INST) to certify that the installed HVAC features, materials, components, or manufactured devices (the installation) conforms to all applicable codes and regulations, and the installation is consistent with any required plans and specifications approved by the enforcement agency*

Certificate of Acceptance requirement: *After completing the installation, all required acceptance testing shall be completed, and all applicable Certificate of Acceptance forms are required to be filled out completely, signed, and made available to the enforcement agency at final inspection. Copies of the completed, signed Certificate of Acceptance forms shall also be made available to the building owner.*

- Step 3 - MECH-2A - Outdoor Air Acceptance** – *This test is required for newly installed or replacement HVAC Systems (HVAC equipment and ducts) to verify minimum outside air is provided in accordance with Section 125 of the Energy Standards.*
- Step 4 – MECH-3A - Constant Volume, Single Zone Unitary A/C and HP Controls Acceptance**– *This test is required for new or replaced constant volume, single-zone unitary air conditioners and heat pumps to verify controls function, including: thermostat installation and programming, supply fan, heating, cooling, and damper operation in accordance with Section 125 of the Energy Standards.*
- Step 5 – MECH-4A - Air Distribution Systems Acceptance** – *This test is required when the new or altered system is a single zone, constant volume system serving 5,000 ft² or less, and 25% or more of the duct surface area is located in the outdoors, unconditioned space, or a ventilated attic in accordance with Section 125 of the Energy Standards.*
- Step 6 - MECH-4-HERS - Air Distribution System Leakage Diagnostic** – *This test is required to be completed by a HERS Rater when the new or altered system meets the criteria in Step 5 to verify duct leakage in accordance with Section 125 of the Energy Standards. The HERS Rater shall register the MECH-4-HERS Form with an approved HERS Provider.*
- Step 7 - MECH-5A - Economizer Testing Acceptance** - *This test is required for newly installed or replacement HVAC equipment when an economizer is installed in accordance with Section 125 of the Energy Standards.*
- Step 8 - MECH-6A - Demand Control Ventilation Systems (DCV) Acceptance** - *This test is required for newly installed DCV systems or replacement of HVAC equipment with the following characteristics to verify controls and sensors function in accordance with 125 of the Energy Standards. : A. They have an air economizer; and B. They serve a space with a design occupant density, or a maximum occupant load factor for egress purposes greater than or equal to 25 people per 1000 ft² (40 square foot per person); and C. They are either:
i. Single zone systems with any controls; or
ii. Multiple zone systems with Direct Digital Controls (DDC) to the zone level.*

Documentation Author's Declaration Statement	
<ul style="list-style-type: none"> • I certify that this Certificate of Compliance documentation is accurate and complete. 	
Name:	Signature:
Company:	Date:
Address:	If Applicable CEA # CEPE #
City/State/Zip	Phone:

Principal Mechanical Designer's Declaration Statement	
<ul style="list-style-type: none"> • I am eligible under Division 3 of the California Business and Professions Code to accept responsibility for the mechanical design. • This Certificate of Compliance identifies the mechanical features and performance specifications required for compliance with Title 24, Parts 1 and 6 of the California Code of Regulations. • The design features represented on this Certificate of Compliance are consistent with the information provided to document this design on the other applicable compliance forms, worksheets, calculations, plans and specifications submitted to the enforcement agency for approval with this building permit application. 	
Name:	Signature:
Company Name:	Date:
Address:	License #
City/State/Zip:	Phone:

**CERTIFICATE OF COMPLIANCE and
FIELD INSPECTION ENERGY CHECKLIST**

Project Name:	Date:	Climate Zone:
Project Address:		Conditioned Floor Area:

General Information

Building Type: Nonresidential High-Rise Residential Hotel/Motel Guest Room

Schools (Public School) Relocatable Public School Bldg. Conditioned Spaces Unconditioned Spaces

Phase of Construction: New Construction Addition Alteration

Approach of Compliance: Component Unconditioned (file affidavit)

Front Orientation: N, E, S, W or in Degrees:

HVAC SYSTEM DETAILS		FIELD INSPECTION ENERGY CHECKLIST	
Equipment	Inspection Criteria	Meets Criteria or Requirements	
		Pass	Fail - Describe Reason ²
Item or System Tags (i.e. AC-1, RTU-1, HP-1)		<input type="checkbox"/>	<input type="checkbox"/>
Equipment Type ³ :		<input type="checkbox"/>	<input type="checkbox"/>
No of Systems		<input type="checkbox"/>	<input type="checkbox"/>
Max Allowed Heating Capacity ¹		<input type="checkbox"/>	<input type="checkbox"/>
Minimum Heating Efficiency ¹		<input type="checkbox"/>	<input type="checkbox"/>
Max Allowed Cooling Capacity ¹		<input type="checkbox"/>	<input type="checkbox"/>
Cooling Efficiency ¹		<input type="checkbox"/>	<input type="checkbox"/>
Duct Location/ R-Value		<input type="checkbox"/>	<input type="checkbox"/>
When duct testing is required, submit MECH-4A & MECH-4-HERS		<input type="checkbox"/>	<input type="checkbox"/>
Economizer		<input type="checkbox"/>	<input type="checkbox"/>
Thermostat		<input type="checkbox"/>	<input type="checkbox"/>
Fan Control		<input type="checkbox"/>	<input type="checkbox"/>

HVAC SYSTEM DETAILS		FIELD INSPECTION ENERGY CHECKLIST	
Equipment	Inspection Criteria	Meets Criteria or Requirements	
		Pass	Fail - Describe Reason ²
Item or System Tags (i.e. AC-1, RTU-1, HP-1)		<input type="checkbox"/>	<input type="checkbox"/>
Equipment Type ³ :		<input type="checkbox"/>	<input type="checkbox"/>
No of Systems		<input type="checkbox"/>	<input type="checkbox"/>
Max Allowed Heating Capacity ¹		<input type="checkbox"/>	<input type="checkbox"/>
Minimum Heating Efficiency ¹		<input type="checkbox"/>	<input type="checkbox"/>
Max Allowed Cooling Capacity ¹		<input type="checkbox"/>	<input type="checkbox"/>
Cooling Efficiency ¹		<input type="checkbox"/>	<input type="checkbox"/>
Duct Location/ R-Value		<input type="checkbox"/>	<input type="checkbox"/>
When duct testing is required, submit MECH-4A & MECH-4-HERS		<input type="checkbox"/>	<input type="checkbox"/>
Economizer		<input type="checkbox"/>	<input type="checkbox"/>
Thermostat		<input type="checkbox"/>	<input type="checkbox"/>
Fan Control		<input type="checkbox"/>	<input type="checkbox"/>

1. If the Actual installed equipment performance efficiency and capacity is less than the Proposed (from the energy compliance submittal or from the building plans) the responsible party shall resubmit energy compliance to include the new changes.
2. For additional detailed discrepancy use Page 2 of the Inspection Checklist Form. Compliance fails if a Fail box is checked.
3. Indicate Equipment Type: Gas(Pkg or, Split), VAV, HP (Pkg or split), Hydronic, PTAC, or other

CERTIFICATE OF COMPLIANCE and FIELD INSPECTION ENERGY CHECKLIST

(Part 3 of 5)

MECH-1C

Project Name

Date

Required Acceptance Tests

Designer:

This form is to be used by the designer and attached to the plans. Listed below are all the acceptance tests for mechanical systems. The designer is required to check the applicable boxes by all acceptance tests that apply and list all equipment that requires an acceptance test. If all equipment of a certain type requires a test, list the equipment description and the number of systems. The NA number designates the Section in the Appendix of the Nonresidential Reference Appendices Manual that describes the test. Since this form will be part of the plans, completion of this section will allow the responsible party to budget for the scope of work appropriately.

Enforcement Agency:

Systems Acceptance. Before occupancy permit is granted for a newly constructed building or space, or a new space-conditioning system serving a building or space is operated for normal use, all control devices serving the building or space shall be certified as meeting the Acceptance Requirements for Code Compliance.

Systems Acceptance. Before occupancy permit is granted. All newly installed HVAC equipment must be tested using the Acceptance Requirements.

The MECH-1C form is not considered a completed form and is not to be accepted by the building department unless the correct boxes are checked. The equipment requiring testing, person performing the test (Example: HVAC installer, TAB contractor, controls contractor, PE in charge of project) and what Acceptance test must be conducted. The following checked-off forms are required for ALL newly installed and replaced equipment. In addition a Certificate of Acceptance forms shall be submitted to the building department that certifies plans, specifications, installation certificates, and operating and maintenance information meet the requirements of §10-103(b) and Title 24 Part 6. The building inspector must receive the properly filled out and signed forms before the building can receive final occupancy.

Test Description		MECH-2A	MECH-3A	MECH-4A	MECH-5A	MECH-6A	MECH-7A	MECH-8A	MECH-9A	MECH-10A	MECH-11A
Equipment Requiring Testing or Verification	# of units	Outdoor Ventilation for VAV & CAV	Constant Volume & Single-Zone Unitary	Air Distribution Ducts	Economizer Controls	Demand Control Ventilation DCV	Supply Fan VAV	Valve Leakage Test	Supply Water Temp. Reset	Hydronic System Variable Flow Control	Automatic Demand Shed Control
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**CERTIFICATE OF COMPLIANCE and
FIELD INSPECTION ENERGY CHECKLIST**

(Part 5 of 5) **MECH-1C**

Project Name:	Date:
---------------	-------

Documentation Author's Declaration Statement

- I certify that this Certificate of Compliance documentation is accurate and complete.

Name:	Signature:
Company:	Date:
Address:	If Applicable CEA # CEPE #
City/State/Zip	Phone:

Principal Mechanical Designer's Declaration Statement

- I am eligible under Division 3 of the California Business and Professions Code to accept responsibility for the mechanical design.
- This Certificate of Compliance identifies the mechanical features and performance specifications required for compliance with Title 24, Parts 1 and 6 of the California Code of Regulations.
- The design features represented on this Certificate of Compliance are consistent with the information provided to document this design on the other applicable compliance forms, worksheets, calculations, plans and specifications submitted to the enforcement agency for approval with this building permit application.

Name:	Signature:
Company Name:	Date:
Address:	License #
City/State/Zip	Phone:

Mandatory Measures

Indicate location on building plans of Note Block for Mandatory Measures _____

MECHANICAL COMPLIANCE FORMS & WORKSHEETS (check box if worksheet is included)

For detailed instructions on the use of this and all Energy Efficiency Standards compliance forms, refer to the 2008 Nonresidential Manual Note: The Enforcement Agency may require all forms to be incorporated onto the building plans.

<input type="checkbox"/>	MECH-1C	Certificate of Compliance. Required on plans for all submittals.
<input type="checkbox"/>	MECH-2C	Mechanical Equipment Summary is required for all submittals.
<input type="checkbox"/>	MECH-3C	Mechanical Ventilation and Reheat is required for all submittals with mechanical ventilation.
<input type="checkbox"/>	MECH-4C	Fan Power Consumption is required when for all prescriptive submittals.

AIR SYSTEM REQUIREMENTS		(Part 1 of 3)		MECH-2C	
PROJECT NAME:				DATE:	
		<i>Indicate Air Systems Type (Central, Single Zone, Package, VAV or etc...)</i>			
Item or System Tags (i.e. AC-1, RTU-1, HP-1)					
No. of Systems					
		<i>Indicate Page Reference on the Plans or Schedule list or list information below</i>			
MANDATORY MEASURES		T-24 Sections			
Heating Equipment Efficiency		112(a)			
Cooling Equipment Efficiency		112(a)			
HVAC or Heat Pump Thermostats		112(b), 112(c)			
Furnace Controls/Thermostat		112(c), 115(a)			
Natural Ventilation		121(b)			
Mechanical Ventilation		121(b)			
VAV Minimum Position Control		121(c)			
Demand Control Ventilation		121(c)			
Time Control		122(e)			
Setback and Setup Control		122(e)			
Outdoor Damper Control		122(f)			
Isolation Zones		122(g)			
Pipe Insulation		123			
Duct Insulation		124			
PRESCRIPTIVE MEASURES					
Calculated Design Heating Load		144(a & b)			
Calculated Design Cooling Load		144(a & b)			
Fan Control		144(c)			
DP Sensor Location		144(c)			
Supply Pressure Reset (DDC only)		144(c)			
Simultaneous Heat/Cool		144(d)			
Economizer		144(e)			
Heat and Cool Air Supply Reset		144(f)			
Electric Resistance Heating ¹		144(g)			
Heat Rejection System		§144 (h)			
Air Cooled Chiller Limitation		§144 (i)			
Duct Leakage Sealing. If Yes, a MECH-4-A must be submitted		144(k)			
<i>1. Total installed capacity (MBtu/hr) of all electric heat on this project exclusive of electric auxiliary heat for heat pumps. If electric heat is used explain which exception(s) to §144(g) apply.</i>					

WATER SIDE SYSTEM REQUIREMENTS

(Part 2 of 3) MECH-2C

PROJECT NAME:	DATE:
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		<i>WATER² SIDE SYSTEMS: Chillers, Towers, Boilers, Hydronic Loops</i>				
Item or System Tags (i.e. AC-1, RTU-1, HP-1, CT-1, etc...)¹						
No. of Systems						
<i>Indicate Page Reference on Plans or Specification²</i>						
MANDATORY MEASURES	<i>T-24 Sections</i>					
Equipment Efficiency	112(a)					
Pipe Insulation	123					
PRESCRIPTIVE MEASURES						
Cooling Tower Fan Controls	144(h)					
Cooling Tower Flow Controls	144(h)					
Variable Flow System Design	144(j)					
Chiller and Boiler Isolation	144(j)					
CHW and HHW Reset Controls	144(j)					
WLHP Isolation Valves	144(j)					
VSD on CHW, CW & WLHP Pumps >5HP	144(j)					
DP Sensor Location	144(j)					

1. The Proposed equipment need to match the building plans schedule or specifications. If a requirement is not applicable, put "N/A" in the column next to applicable section.
 2. For each chiller, cooling tower, boiler, and hydronic loop (or groups of similar equipment) fill in the reference to sheet number and/or specification section and paragraph number where the required features are documented. If a requirement is not applicable, put "N/A" in the column next to applicable section.

SERVICE HOT WATER & POOL/SPA REQUIREMENTS

(Part 3 of 3)

MECH-2C

PROJECT NAME:	DATE:
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		<i>Service Hot Water, Pool Heating</i>					
Item or System Tags (i.e. WH-1, WHP, DHW, etc...) ¹							
No. of Systems							
<i>Indicate Page Reference on Plans or Schedule²</i>							
MANDATORY MEASURES	<i>T-24 Section</i>						

SERVICE HOT WATER

Certified Water Heater	§111, §113 (a)					
Water Heater Efficiency	§113 (b)					
Service Water Heating Installation	§113 (c)					
Pipe Insulation	§123					

POOL AND SPA

Pool and Spa Efficiency and Control	§114 (a)					
Pool and Spa Electric Resisting Heating	§114 (b) Exception					
Pool and Spa Installation	§114 (b)					
Pool Heater – No Pilot Light	§115 (c)					
Spa Heater – No Pilot Light	§115 (d)					
Pipe Insulation	§123					

1: The Proposed equipment need to match the building plans schedule or specifications. If a requirement is not applicable, put "N/A" in the column next to the measure.
 2: For each water heater, pool heat and domestic water loop (or groups of similar equipment) fill in the reference to sheet number and/or specification section and paragraph number where the required features are documented. If a requirement is not applicable, put "N/A" in the column.

MECHANICAL VENTILATION AND REHEAT

MECH-3C

PROJECT NAME	DATE
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MECHANICAL VENTILATION §121(b)2								REHEAT LIMITATION §144(d)					
AREA BASIS				OCCUPANCY BASIS				VAV Minimum					
A	B	C	D	E	F	G	H	I	J	K	L	M	N
Zone/ System	Condition Area (ft ²)	CFM per ft ²	Min CFM by Area B x C	Num of People	CFM per Person	Min CFM by Occupant E x F	REQ'D V.A. Max of D or G	Design Ventilation Air cfm	50% of Design Zone Supply cfm	B x 0.4 cfm/ft ²	Max of Columns H, J, K, 300 cfm	Design minimum Air setpoint	Transfer Air
					15								
					15								
					15								
					15								
					15								
					15								
					15								
					15								
					15								
					15								
					15								
					15								
Totals									Column I Total Design Ventilation Air				

- C *Minimum ventilation rate per Section §121, Table 121-A.*
- E *Based on fixed seat or the greater of the expected number of occupants and 50% of the CBC occupant load for egress purposes for spaces without fixed seating.*
- H *Required Ventilation Air (REQ'D V.A.) is the larger of the ventilation rates calculated on an AREA BASIS or OCCUPANCY BASIS (Column D or G).*
- I *Must be greater than or equal to H, or use Transfer Air (column N) to make up the difference.*
- J *Design fan supply cfm (Fan CFM) x 50%; or the design zone outdoor airflow rate per §121.*
- K *Condition area (ft²) x 0.4 cfm/ft²; or*
- L *Maximum of Columns H, J, K, or 300 cfm*
- M *This must be less than or equal to Column L and greater than or equal to the sum of Columns H plus N.*
- N *Transfer Air must be provided where the Required Ventilation Air (Column H) is greater than the Design Minimum Air (Column M). Where required, transfer air must be greater than or equal to the difference between the Required Ventilation Air (Column H) and the Design Minimum Air (Column M), Column H minus M.*

FAN POWER CONSUMPTION

MECH-4C

PROJECT NAME:

DATE:

NOTE: Provide one copy of this worksheet for each fan system with a total fan system horsepower greater than 25 hp for Constant Air Volume (CAV) Fan Systems or Variable Air Volume (VAV) Systems when using the Prescriptive Approach. See **Power Consumption of fans §144(c)**.

A	B	C	D	E	F
FAN DESCRIPTION	DESIGN BRAKE HP	EFFICIENCY		NUMBER OF FANS	PEAK WATTS B x E x 746 / (C x D)
		MOTOR	DRIVE		

Totals and Adjustments

<p>FILTER PRESSURE ADJUSTMENT Equation 144-A in §144(c) of the Energy Standards.</p> <p>A) If filter pressure drop (SP_a) is greater than 1 inch W. C. or 245 Pascal then enter SP_a on line 4. Enter Total Fan pressure drop across the fan (SP_f) on Line 5.</p> <p>B) Calculate Fan Adjustment and enter on line 6.</p> <p>C) Calculate Adjusted Fan Power Index and enter on Row 7</p>	1) TOTAL FAN SYSTEM POWER (WATTS, SUM COLUMN F)	
	2) SUPPLY DESIGN AIRFLOW (CFM)	
	3) TOTAL FAN SYSTEM POWER INDEX (Row 1 / Row 2) ¹	W/CFM
	4) SP _a	
	5) SP _f	
	6) Fan Adjustment = 1-(SP _a - 1)/SP _f	
	7) ADJUSTED FAN POWER INDEX (Line 3 x Line 6) ¹	W/CFM
<p>1. TOTAL FAN SYSTEM POWER INDEX or ADJUSTED FAN POWER INDEX must not exceed 0.8 w/cfm for Constant Volume systems or 1.25 w/cfm for VAV systems.</p>		

2008 Compliance Forms
Lighting Forms

CERTIFICATE OF COMPLIANCE		(Page 1 of 4)	LTG-1C
Project Name:		Date:	
Project Address:	Climate Zone:	Building CFA :	
		Unconditioned Floor Area :	
General Information			
Building Type:	<input type="checkbox"/> Nonresidential	<input type="checkbox"/> High-Rise Residential	<input type="checkbox"/> Hotel/Motel
<input type="checkbox"/> Schools	<input type="checkbox"/> Relocatable Public Schools	<input type="checkbox"/> Conditioned Spaces	<input type="checkbox"/> Unconditioned Spaces
Phase of Construction:	<input type="checkbox"/> New Construction	<input type="checkbox"/> Addition	<input type="checkbox"/> Alteration
Method of Compliance:	<input type="checkbox"/> Complete Building	<input type="checkbox"/> Area Category	<input type="checkbox"/> Tailored
Documentation Author's Declaration Statement			
<ul style="list-style-type: none"> • I certify that this Certificate of Compliance documentation is accurate and complete. 			
Name:		Signature:	
Company:		Date :	
Address:		If applicable: CEA # CEPE #	
City/State/Zip		Phone:	
Principal Lighting Designer's Declaration Statement			
<ul style="list-style-type: none"> • I am eligible under Division 3 of the California Business and Professions Code to accept responsibility for the lighting design. • This Certificate of Compliance identifies the lighting features and performance specifications required for compliance with Title 24, Pages 1 and 6 of the California Code of Regulations. • The design features represented on this Certificate of Compliance are consistent with the information provided to document this design on the other applicable compliance forms, worksheets, calculations, plans and specifications submitted to the enforcement agency for approval with this building permit application. 			
Name:		Signature:	
Company :		Phone:	
Address:		License #	
City/State/Zip:		Date:	
Lighting Mandatory Measures			
Indicate location on building plans of Mandatory Measures Note Block: _____			
LIGHTING COMPLIANCE FORMS & WORKSHEETS (check box if worksheet is included)			
<i>For detailed instructions on the use of this and all Energy Efficiency Standards compliance forms, please refer to the Nonresidential Manual published by the California Energy Commission.</i>			
<input type="checkbox"/>	LTG-1C Pages 1 through 4	Certificate of Compliance. All Pages required on plans for all submittals.	
<input type="checkbox"/>	LTG-2C	Lighting Controls Credit Worksheet	
<input type="checkbox"/>	LTG-3C	Indoor Lighting Power Allowance	
<input type="checkbox"/>	LTG-4C Pages 1 through 4	Tailored Method Worksheet	
<input type="checkbox"/>	LTG-5C Pages 1 and 2	Line Voltage Track Lighting Worksheet	

CERTIFICATE OF COMPLIANCE		(Page 3 of 4)	LTG-1C
Project Name:		Date:	
INDOOR LIGHTING SCHEDULE and FIELD INSPECTION ENERGY CHECKLIST			
<i>Fill in controls for all spaces: a) area controls, b) multi-level controls, c) manual daylighting controls for daylit areas > 250 ft², automatic daylighting controls for daylit areas > 2,500 ft², d) shut-off controls, e) display lighting controls, f) tailored lighting controls - general lighting controlled separately from display, ornamental and display case lighting and g) demand responsive automatic controls for retail stores > 50,000 ft², in accordance with Section 131.</i>			

MANDATORY LIGHTING CONTROLS - FIELD INSPECTION ENERGY CHECKLIST				Field Inspector	
Type / Description	Number of Units	Location in Building	Special Features	Pass	Fail
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

SPECIAL FEATURES INSPECTION CHECKLIST (See Page 2 of 4 of LTG-1C)
<i>The local enforcement agency should pay special attention to the items specified in this checklist. These items require special written justification and documentation, and special verification. The local enforcement agency determines the adequacy of the justification, and may reject a building or design that otherwise complies based on the adequacy of the special justification and documentation submitted.</i>
Field Inspector's Notes or Discrepancies:

LIGHTING CONTROLS CREDIT WORKSHEET

(Page 2 of 2)

LTG-2C

Project Name:

Date:

POWER ADJUSTMENT FACTORS (PAF) FOR DAYLIGHT CONTROLS

A Separate PAF Worksheet Must Be Filled Out for Conditioned and Unconditioned Spaces. Daylight Control Credits listed on this schedule are only for:

CONDITIONED SPACES

UNCONDITIONED SPACES

A Room # Zone ID Areas	B Type Daylight Controlled ¹ <input checked="" type="checkbox"/> only one			C Plan Reference	D Daylight Area ²	E VT ³	F For Skylights ⁴			G Effective Aperture ⁵	H General Lighting Power Density (w/ft ²)	I Watts of controlled lighting	J Power Adjustments Factor ⁶	K Control Credit Watts (I x J)
	Skylit	Primary Sidelit	Secondary Sidelit				Well Efficiency	Well Cavity Ratio	Skylit Area					
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>											
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>											
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>											
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>											
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>											
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>											
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>											
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>											
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>											

PAGE TOTAL

CONDITIONED AND UNCONDITIONED SPACES SHALL BE SEPARATELY TOTALED	Number of Pages of LTG-2C Page 2 of 2
	Building total for daylight control credit watts for all pages of LTG-2C Page 2 of 2 Enter in bottom of LTG-2C Page 1 of 2 for building total of all daylight controls credit from LTG-2C Page 2 of 2

1. If Primary sidelit and secondary sidelit daylight areas are controlled together, the PAF is determined based on the secondary sidelit effective aperture for both the primary and secondary sidelit daylight areas.
 2. Daylight Areas determined in accordance to Section 131(c)
 3. VT = Visible lighting transmittance of windows or skylights determined in accordance with Section 146(a)2E
 4. Well Efficiency, Well Cavity Ratio, and Skylit Area determined in accordance with Section 146(a)2E(iii)
 5. Effective Aperture determined in accordance with Section 146(a)2E
 6. Power Adjustment Factor determined in accordance with Table 146-C

TAILORED METHOD WORKSHEET		(Page 2 of 4) LTG-4C
Project Name:	Date:	
<input type="checkbox"/> CONDITIONED SPACES		<input type="checkbox"/> UNCONDITIONED SPACES

DISPLAY LIGHTING WALLS										
<input type="checkbox"/> Qualifying wall display lighting systems shall be mounted within 10 ft to a wall, See §146(c)3B.										
A	B	C	D	E	F	G	H	I	J	K
Luminaire Description	Mounting Height	Mount Height Factor ¹	ALLOTTED WATTS			DESIGN WATTS				Allowed Watts (Min. F or J)
			Wall Display Length in (Linear Feet)	Wall Display ² Power (W / foot)	Allowed Watts (C x D x E)	Lumin Code	Lumin QTY	WATTS per LUMIN.	Design Watts (H x I)	
TOTAL LENGTH OF DISPLAY WALLS				Linear feet		TOTAL WATTS Enter on Line 2, Page 1 of LTG-4C				

1. From Table 146-H.
2. From Table 146-G Column 3.

DISPLAY LIGHTING; FLOORS										
<input checked="" type="checkbox"/> Qualifying floor display lighting systems shall be mounted no closer than 2 ft to a wall, See §146(c)3B.										
A	B	C	D	E	F	G	H	I	J	K
Luminaire Description	MOUNTING HEIGHT	MOUNT HEIGHT FACTOR ³	ALLOTTED WATTS			DESIGN WATTS				ALLOWED WATTS (Min. F or J)
			FLOOR AREA ⁴ (ft ²)	FLOOR DISPLAY ⁵ Power in W/ft ²	ALLOTTED WATTS (C x D x E)	LUMIN. CODE	LUMIN QTY.	WATTS/LUMIN.	DESIGN WATTS (H x I)	
TOTAL AREA FLOOR DISPLAYS				ft ²		TOTAL WATTS Enter on Line 2, Page 1 of LTG-4C				

3. From Table 146-H as appropriate.
4. This shall be the floor area of the primary function in accordance with 146(c)3B(ii) and Table-146-G Column 1
5. From Table 146-G Column 4.

TAILORED METHOD WORKSHEET

(Page 3 of 4)

LTG-4C

Project Name:

Date:

CONDITIONED SPACES

UNCONDITIONED SPACES

DISPLAY LIGHTING: ORNAMENTAL / SPECIAL EFFECTS

A	B	C	D	E	F	G	H	I
LIGHTING DESCRIPTION	ALLOTTED WATTS			DESIGN WATTS				ALLOWED WATTS (Minimum of D or H)
	FLOOR AREA ¹ (ft ²)	Ornamental/ Special Effects Lighting ² W/ft ²	ALLOTTED WATTS (B x C)	LUMINAIRE CODE	QUANTITY	WATTS/ LUMIN.	DESIGN WATTS (F x G)	
Total floor Area		ft ²		Enter on Line 2, Page 1 of LTG-4C				TOTAL WATTS

1. This shall be the floor area of the primary function in accordance with 146(c)3B(iii) and Table-146-G Column 1

2. See Table 146-G Column 5.

DISPLAY LIGHTING: VERY VALUABLE MERCHANDISE OR OTHER VERY VALUABLE DISPLAY³

A	B	C	D	E	F	G	H	I	J	K	L
LUMINAIRE NAME OR LOCATION	ALLOTTED WATTS						DESIGN WATTS				ALLOWED WATTS (Minimum of D, G or K)
	FLOOR AREA ⁴ (ft ²)	VALUABLE DISPLAY POWER ⁵ W/ft ²	FUNCTION AREA WATTS (B x C)	DISPLAY CASE AREA ⁶ (ft ²)	WATTS PER (ft ²)	DISPLAY CASE AREA WATTS (E x F)	LUMINAIRE CODE	QUANTITY	WATTS / LUMINAIRE	DESIGN WATTS (I x J)	
		1.0									
		1.0									
		1.0									
		1.0									
Total Floor Area		ft ²	Total Display Case Area: ft ²				Enter on Line 2, Page 1 of LTG-4C				TOTAL WATTS

3. This allowance is available only for retail merchandise sales, museum, and religious worship in accordance with 146(c)3B(iv).

4. This shall be the floor area of the primary function in accordance with 146(c)3B(iv) and Table-146-G Column 1

5. See §146(c)3B(iv)(a)

6. This shall be the area of the top of the display case.

LINE VOLTAGE TRACK LIGHTING WORKSHEET

(Page 1 of 2)

LTG-5C

Project Name: _____

Date: _____

METHOD 1 – VOLT-AMPERE (VA) RATING OF THE BRANCH CIRCUIT(S)

- This is the only option available for determining wattage of line-voltage busway and track rated for more than 20 amperes
- One of four options available for determining wattage of line-voltage busway and track rated for 20 amperes or less

A	B
BRANCH CIRCUIT NAME OR ID	VOLT-AMPERE (VA) RATING OF THE BRANCH CIRCUIT
TOTAL: Enter total on the bottom of LTG-5C Page 2 of 2	

METHOD 2 – USE THE HIGHER OF: 45 WATTS / LINEAR FOOT OF TRACK – OR TOTAL RATED WATTAGE OF ALL LUMINAIRES

- One of four options available for determining wattage of line-voltage busway and track rated for 20 amperes or less

A	B	C	D	E	F
TRACK # OR NAME	LINEAR FEET OF TRACK	(W/LF)	B x C (W)	TOTAL RATED WATTAGE OF ALL LUMINAIRES	LARGER OF (D or E)
		45			
		45			
		45			
		45			
		45			
		45			
		45			
		45			
		45			
		45			
		45			
		45			
		45			
		45			
		45			
		45			
TOTAL Enter total on the bottom of LTG-5C Page 2 of 2					

LINE VOLTAGE TRACK LIGHTING WORKSHEET

(Page 2 of 2)

LTG-5C

Project Name:

Date:

✓ METHOD 3 – USE THE HIGHER OF: 12.5 WATTS / LINEAR FOOT OF TRACK – OR VA RATING OF INTEGRAL CURRENT LIMITER

- One of four options available for determining wattage of line-voltage busway and track rated for 20 amperes or less.
- Only integral current limiters which are certified to the Energy Commission use this method.

A	B	C	D	E	F
Track or Name #	Linear Feet of Track	(W/LF)	B x C (W)	VA Rating of Integral Current Limiter	Larger of (D or E)
		12.5			
		12.5			
		12.5			
		12.5			
		12.5			
		12.5			

TOTAL:
Enter total on the bottom of this page

✓ METHOD 4 - DEDICATED TRACK LIGHTING OVERCURRENT PROTECTION PANEL

- One of four options available for determining wattage of line-voltage busway and track rated for 20 amperes or less
- Overcurrent protection panel is listed as defined in §101 in accordance with §130(d)3B(iv)a.
- Overcurrent protection panel is used only with track lighting in accordance with §130(d)3B(iv)b.
- Overcurrent protection panel is permanently installed in an electrical equipment room or permanently installed adjacent to the lighting panel board providing supplementary overcurrent protection for the track lighting circuits served by the supplementary overcurrent protection panel in accordance with §130(d)3B(iv)c.
- Overcurrent protection panel is prominently labeled in accordance with §130(d)3B(iv)d.

OVERCURRENT PROTECTION PANEL

A	B	C	D	E
NAME OR ID	Voltage of the Branch Circuit	Complete list of Amperage Rating for Each Device Installed in the Panel	Sum of the Ampere Rating of all Devices	Sum of the Ampere Ratings of all of the Devices Times The Branch Circuit Voltage (B x D)

TOTAL:
Enter total on the bottom of this page

✓ TOTALS OF ALL METHODS USED TO DETERMINE THE WATTAGE OF LINE-VOLTAGE TRACK AND PLUG-IN BUSWAY

ENTER TOTAL FROM METHOD 1	
ENTER TOTAL FROM METHOD 2	
ENTER TOTAL FROM METHOD 3	
ENTER TOTAL FROM METHOD 4	
TOTAL TRACK / BUSWAY WATTAGE:	

***2008 Compliance Forms
Outdoor Lighting***

Certificate of Compliance**(Page 1 of 4) OLTG-1C**

Project Name:	Date:
Project Address:	Total Hardscape Illuminated Area:

General InformationPhase of Construction: New Construction Addition Alteration**Documentation Author's Declaration Statement**

- I certify that this Certificate of Compliance documentation is accurate and complete.

Name	Signature
Company	Date
Address	IF Applicable CEA # CEPE #
City/State/Zip	Phone:

Principal Lighting Designer's Declaration Statement

- I am eligible under Division 3 of the California Business and Professions Code to accept responsibility for the lighting design.
- This Certificate of Compliance identifies the lighting features and performance specifications required for compliance with Title 24, Pages 1 and 6 of the California Code of Regulations.
- The design features represented on this Certificate of Compliance are consistent with the information provided to document this design on the other applicable compliance forms, worksheets, calculations, plans and specifications submitted to the enforcement agency for approval with this building permit application.

Name:	Signature:
Company:	Phone:
Address:	License #
City/State/Zip:	Date:

Principal Lighting Designer's Declaration

I certify that this Certificate of Compliance documentation is accurate and complete, and accounts for all outdoor lighting power, including building mounted, pole mounted, as well as all other outdoor lighting designed for the site, and that Additional Lighting Power Allowances for Specific Applications or Additional Lighting Power Allowances for Ordinance Requirements have not been counted more than one time for the same area, in accordance with Section 147 of the Standards.

Outdoor Lighting Mandatory Measures**Indicate location on building plans of Mandatory Measures Note Block:** _____**LIGHTING COMPLIANCE FORMS & WORKSHEETS (check box if worksheet is included)**

For detailed instructions on the use of this and all Energy Efficiency Standards compliance forms, please refer to the Nonresidential Manual published by the California Energy Commission.

<input type="checkbox"/>	OLTG-1C	Certificate of Compliance. All 4 pages required on plans for all submittals.
<input type="checkbox"/>	OLTG-2C	(Page 1 of 3) Lighting Wattage Allowances for General Hardscape, Sales Frontage, or Ornamental Lighting. Optional on plans.
<input type="checkbox"/>	OLTG-2C	(Page 2 of 3) Lighting Wattage Allowances for Per Application or Per Area. Optional on plans.
<input type="checkbox"/>	OLTG-2C	(Page 3 of 3) Additional Lighting Power Allowance for Ordinance Requirements. Optional on plans.

Certificate of Compliance

COMPLIANCE FIXTURE / LIGHTING CONTROL SCHEDULE and FIELD INSPECTION CHECKLIST

Project Name:	Date:
---------------	-------

INSTALLATION CERTIFICATE, OLTG-1-INST (Retain a copy and verify form is completed and signed.) **Field Inspection**

CERTIFICATE OF ACCEPTANCE, OLTG-2A (Retain a copy and verify form is completed and signed.) **Field Inspection**

Luminaire Schedule			Installed Watts							
A	B	C	D	E	F		G	H	I	
Name Or Item Tag	Luminaire Description ¹ See footnote below (i.e.: 1 lamp pole-top shoe-box 400 watt metal halide)	Cutoff Designation	Watts per Luminaire	Special Features	How wattage was determined		Number of Luminaires	Installed Watts (D x G)	Field Inspector ²	
					Default from NA-8	According to §130 (d or e)			Pass	Fail
				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>
				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>
				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>
				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>
				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>
				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>
				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>
				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>
Enter total into OLTG-1C; Page 4 of 4; Row H; Total Installed Watts:										

1. Type of luminaire (i.e.: post top, wall pack, surface, shoe box); for non-incandescent luminaires, indicate nominal lamp wattage and lamp type (i.e.: fluorescent, incandescent, HID); ballast type (i.e.: electronic or magnetic); number of lamps and number of ballasts per luminaire. For incandescent luminaires, the luminaire wattage listed in column D shall be the maximum relamping rated wattage on a permanent factory-installed label on the luminaire, NOT the wattage of the lamp (bulb) used, in accordance with Section 130(d or e).
 2. If Fail then describe on Page 2 of the Inspection Checklist Form and take appropriate action to correct. Verify building plans if necessary.

EXEMPT LUMINAIRES **Field Inspection**

Name or Symbol	Description of exempt luminaires in accordance with §147

MANDATORY CONTROLS **Field Inspection**

#	Description	Location	#	Description	Location

SPECIAL FEATURES INSPECTION CHECKLIST (See Page 2 of 4 of OLTG-1C)

The local enforcement agency should pay special attention to the items specified in this checklist. These items require special written justification and documentation, and special verification. The local enforcement agency determines the adequacy of the justification, and may reject a building or design that otherwise complies based on the adequacy of the special justification and documentation submitted.

Field Inspector Notes or Discrepancies:

Certificate of Compliance

(Page 3 of 4)

OLTG-1C

Project Name:

Date:

A. OUTDOOR LIGHTING ZONE

OUTDOOR LIGHTING ZONE: OLZ 1 OLZ 2 OLZ 3 OLZ 4

Is the Outdoor Lighting Zone: Default in accordance with §10-114, or Amended by JHA

Complete the information below if the default Outdoor Lighting Zone has been amended by the local jurisdiction having authority (JHA):

- The site is a government designated park, recreation area, wildlife preserve, or portion thereof, and has been designated as LZ2 or LZ3, in accordance with Table 10-114-A, because the site is contained within such a zone.
- The local jurisdiction having authority has officially adopted a change to the State Default Lighting Zone and has notified the Energy Commission by providing the materials required in §10-114(d) to the Executive Director.
- The adopted change is posted on the Energy Commission website.

B. ADDITIONAL LIGHTING POWER ALLOWANCE FOR ORDINANCE REQUIREMENTS

Are additional lighting power allowances for ordinance in Table 147-C used? Yes No

Complete the information below if additional lighting power allowances for ordinance requirements are used:

- The local jurisdiction having authority has officially adopted specific outdoor light levels, which are expressed as average or minimum footcandle levels, by following a public process that allowed for formal public notification, review, and comment about the proposed change.
- The local jurisdiction having authority which adopted specific outdoor light levels and has notified the Commission by providing the following materials required §10-114(f) to the Executive Director.

C. ACCEPTANCE FORMS

Required Acceptance Tests

Designer:

This form is to be used by the designer and attached to the plans. Listed below is the acceptance test for the Lighting system, OLTG-2A. The designer is required to check the acceptance tests and list all control devices serving the building or space shall be certified as meeting the Acceptance Requirements for Code Compliance. If all the lighting system or control of a certain type requires a test, list the different lighting and the number of systems. The NA7 Section in the Appendix of the Nonresidential Reference Appendices Manual describes the test. Since this form will be part of the plans, completion of this section will allow the responsible party to budget for the scope of work appropriately. Forms can be grouped by type of Luminaire controlled.

Enforcement Agency:

Systems Acceptance. Before Occupancy Permit is granted for a newly constructed building or space or when ever new lighting system with controls is installed in the building or space shall be certified as meeting the Acceptance Requirements. The OLTG-2A form is not considered a complete form and is not to be accepted by the enforcement agency unless the boxes are checked and/or filled and signed. In addition, a Certificate of Acceptance forms shall be submitted to the enforcement agency that certifies plans, specifications, installation certificates, and operating and maintenance information meet the requirements of §10-103(b) of Title 24 Part 6. The field inspector must receive the properly filled out and signed forms before the building can receive final occupancy. A copy of the OLTG-2A for each different lighting luminaire control(s) must be provided to the owner of the building for their records.

Certificate of Acceptance

Equipment Requiring Testing	Luminaires Controlled			OLTG-2A ¹
	Description	Number of Like Controls	Location	Outdoor Lighting Acceptance Tests

1. Insert: **OMS** for Outdoor Motion Sensor; **OLSC** for Outdoor Lighting Shutoff Controls; **OP** for Outdoor Photocontrol; **ATS** for Astronomical Time Switch; and, **STS** for Standard (non-astronomical) Time Switch acceptance.

CERTIFICATE OF COMPLIANCE**(Page 4 of 4)****OLTG-1C**

Project Name:

Date:

ALLOWED AND INSTALLED OUTDOOR LIGHTING POWER

		Lighting Wattage Power Allowance
A	Lighting power allowance for general hardscape (from OLTG-2C Page 1 of 3)	
B	Specific application lighting wattage allowance per unit length (from OLTG-2C Page 1 of 3)	
C	Specific application wattage allowance for ornamental lighting (from OLTG-2C Page 1 of 3)	
D	Specific application wattage allowance per application (from OLTG-2C Page 2 of 3)	
E	Specific application lighting wattage allowance per area (from OLTG-2C Page 2 of 3)	
F	Additional lighting power allowance for ordinance requirements (from OLTG-2C Page 3 of 3)	
G	Total Allowed Wattage = Sum of rows A through F:	
H	Total Installed Watts (from Luminaire Schedule, (from OLTG-1C (Page 2 of 4)	
Provided that the lighting wattage power allowances listed in rows A through F are identical to the lighting wattage power allowances taken from OLTG-2C Pages 1 through 3, complies if Installed Wattage in row H is less than or equal to the Total Installed Wattage in row G		<input type="checkbox"/> Yes <input type="checkbox"/> No

OUTDOOR LIGHTING WORKSHEET

Project Name: _____

Date: _____

A. LIGHTING POWER ALLOWANCE FOR GENERAL HARDSCAPE

AREA WATTAGE ALLOWANCE (AWA)			LINEAR WATTAGE ALLOWANCE (LWA)			INITIAL WATTAGE ALLOWANCE	TOTAL GENERAL HARDSCAPE LIGHTING ALLOWANCE
A	B	C	D	E	F	G	H
ILLUMINATED HARDSCAPE AREA	AWA PER SQUARE FOOT	AWA (A X B)	PERIMETER LENGTH OF GENERAL HARDSCAPE	LWA PER LINEAR FOOT	LWA (D X E)	IWA (WATTS)	C + F + G
Enter total into OLTG-1C; Page 4 of 4; Row A; Lighting Power Allowance for General Hardscape:							

Yes: AWA, LWA, and IWA from Table 147-A was used as appropriate for the Outdoor Lighting Zone

B. SPECIFIC APPLICATION LIGHTING WATTAGE ALLOWANCE PER UNIT LENGTH (Available only for sales frontage)

DETERMINE WATTAGE ALLOWANCE				LUMINAIRE TYPE		DESIGN WATTS			
A	B	C	D	E	F	G	H	I	J
Specific Lighting Application	Linear Feet of Frontage	Sales Frontage allowance for OLZ (watts per lf)	Wattage Allowance (B x C)	Name or Symbol	Luminaire Type	Luminaire Quantity	Watts per Luminaire	Design Watts (G x H)	Allowed Watts Minimum of D or I
Enter total into OLTG-1C; Page 4 of 4; Row B; Specific Application Lighting Wattage Allowance Per Unit Length									

C. SPECIFIC APPLICATION WATTAGE ALLOWANCE FOR ORNAMENTAL LIGHTING

DETERMINE WATTAGE ALLOWANCE				LUMINAIRE TYPE		DESIGN WATTS			
A	B	C	D	E	F	G	H	I	J
Specific Lighting Application	Square feet of Hardscape	Ornamental Lighting Allowance for OLZ (watts per ft ²)	Wattage Allowance (B x C)	Name or Symbol	Luminaire Type	Luminaire Quantity	Watts per Luminaire	Design Watts (G x H)	Allowed Watts Minimum of D or I
Enter total into OLTG-1C; Page 4 of 4; Row C: Specific Application Wattage Allowance for Ornamental Lighting									

*2008 Compliance Forms
Sign Lighting*

Certificate of Compliance (Sign Lighting)**(Page 1 of 4) SLTG-1C**

Project Name:		Date:	
Project Address:			
Location of Sign	<input type="checkbox"/> Outdoor Signs	<input type="checkbox"/> Indoor Signs	
Phase of Sign Construction	<input type="checkbox"/> New Signs	<input type="checkbox"/> Sign Alterations	
Type of Lighting Control	<input type="checkbox"/> New Lighting Controls	<input type="checkbox"/> Replaced Lighting Controls	<input type="checkbox"/> Not Installing Lighting Controls
This Certificate of Compliance includes the following components (check all that apply)			
<input type="checkbox"/> Mandatory Measures (Lighting Controls)	<input type="checkbox"/> Maximum Allowed Lighting Power	<input type="checkbox"/> Specific Lighting Sources	

1. Certificate of Compliance Declaration Statement (this may be a C10, C45 or other eligible person)

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am eligible under Division 3 of the California Business and Professions Code to accept responsibility for the lighting design.
- This Certificate of Compliance identifies the lighting features and performance specifications required for compliance with Title 24, Parts 1 and 6 of the California Code of Regulations.
- The design features represented on this Certificate of Compliance are consistent with the information provided to document this design on the other applicable compliance forms, worksheets, calculations, plans and specifications submitted to the enforcement agency for approval with this building permit application.

Name:	Signature	
Company:	Phone	
Address:	License number (may be contractor's lic #)	
City/State/Zip:	Date	

2. Installation Certificate (to be signed by responsible person after installation)

Permit number (Enforcement Agency Use)	Checked by/Date (Enforcement Agency Use)	
Installation Declaration statement		
<ul style="list-style-type: none"> • I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct. • I am eligible under Division 3 of the Business and Professions Code to accept responsibility for construction, or an authorized representative of the person responsible for construction. • I certify that the installed features, materials, components, or manufactured devices identified on this certificate conforms to all applicable codes and regulations, and the installation is consistent with the plans and specifications approved by the enforcement agency. • I certify that the requirements detailed on this Certificate of Compliance have been met. • I will ensure that a completed, signed copy of this Installation Certificate shall be posted, or made available with the building permit(s) issued for the building, and made available to the enforcement agency for all applicable inspections. I understand that a signed copy of this Installation Certificate is required to be included with the documentation the builder provides to the building owner at occupancy. 		
Company Name:		
Responsible Person's Name:	Responsible Person's Signature:	
License number (may be contractor's lic #)	Date Signed:	Position With Company:

Certificate of Compliance (Sign Lighting)

Project Name:

Date:

3. Mandatory Sign Lighting Controls

NOTES:

1. The same responsible person may install both the sign lighting power and the sign lighting controls, or a different responsible person may install the sign lighting controls than the responsible person installing the sign lighting power.
2. The Mandatory Measures (sign lighting controls) are required for compliance with the sign lighting Standards. If the person responsible for installing the sign lighting power is not also responsible for the sign lighting controls, then the owner of the sign, general contractor, or architect shall be responsible to have the sign lighting controls installed.
3. If more than one person has responsibility for compliance, each responsible person shall prepare and sign a Certificate of Compliance and an Installation Certificate applicable to the portion of construction for which they are responsible; alternatively, the person with chief responsibility for construction shall prepare and sign the Certificate of Compliance Declaration Statement for the entire construction.

3a. Statements of Responsibility: Any person signing the Certificate of Compliance Declaration Statement on page 1 of 4 on this SLTG-1C shall complete Part 3a. Check Yes or No for all of the following statements:

1	I have responsibility for installing the sign lighting controls <input type="checkbox"/> Yes, complete parts 3a and 3b of this form <input type="checkbox"/> No, complete part 3a of this form
2	There are no existing sign lighting controls and I will be installing compliant sign lighting controls <input type="checkbox"/> Yes <input type="checkbox"/> No
3	There are no existing sign lighting controls and someone else will be responsible to install compliant sign lighting controls <input type="checkbox"/> Yes <input type="checkbox"/> No
4	There are existing sign lighting controls that do not comply with the applicable provision of §119 and §133 and I will be installing compliant sign lighting controls <input type="checkbox"/> Yes <input type="checkbox"/> No
5	There are existing sign lighting controls that do not comply with the applicable provision of §119 and §133 and someone else will be responsible to install compliant sign lighting controls <input type="checkbox"/> Yes <input type="checkbox"/> No

3b. Mandatory Sign Lighting Controls

If the person signing the Certificate of Compliance Declaration Statement on page 1 of 4 of this SLTG-1C is responsible for complying with the sign lighting control requirements, that person shall answer all of the following questions:

If there are construction documents, indicate where on the building plans the mandatory measures (sign lighting control) note block can be located:

1	§133(a)1. All indoor sign lighting is controlled with an automatic time switch control that complies with the applicable requirements of §119.	Y <input type="checkbox"/>	N <input type="checkbox"/>	NA <input type="checkbox"/>
2	§133(a)1 and 2. All outdoor sign lighting is controlled with an automatic time switch control plus a photo control, or an outdoor astronomical time switch, that comply with the applicable requirements of §119.	Y <input type="checkbox"/>	N <input type="checkbox"/>	NA <input type="checkbox"/>
	Exception to §133(a)2. Outdoor signs in tunnels or large covered areas that require illumination during daylight hours.	Y <input type="checkbox"/>		NA <input type="checkbox"/>
3	§133(a)3. All outdoor signs are controlled with a dimmer that provides the ability to automatically reduce sign power by a minimum of 65 percent during nighttime hours.	Y <input type="checkbox"/>	N <input type="checkbox"/>	NA <input type="checkbox"/>
	Exception 1 to §133(a)3. Signs illuminated for less than one hour per day during daylight hours.	Y <input type="checkbox"/>		NA <input type="checkbox"/>
	Exception 2 to §133(a)3. Outdoor signs in tunnels or large covered areas that require illumination during daylight hours.	Y <input type="checkbox"/>		NA <input type="checkbox"/>
	Exception 3 to §133(a)3. Only metal halide, high pressure sodium, cold cathode, or neon lamps used for illuminating signs or parts of signs.	Y <input type="checkbox"/>		NA <input type="checkbox"/>
4	§133(a)4. An Electronic Message Center (EMC) having a new connected lighting power load greater than 15 kW has a control installed capable of reducing the lighting power by a minimum of 30 percent when receiving a demand response signal that is sent out by the local utility.	Y <input type="checkbox"/>	N <input type="checkbox"/>	N/A <input type="checkbox"/>
	Exception to §133(a)4. EMC required by a health or life safety statute, ordinance, or regulation, including but not limited to exit signs and traffic signs.	Y <input type="checkbox"/>		NA <input type="checkbox"/>

Field Inspector Notes:

Project Name:

Date:

4. Maximum Allowed Lighting Power Method of Compliance

Certificate of Compliance and Field Inspection Energy Checklist

Complete this part if there are signs using the maximum allowed lighting power method of compliance. (Complete part 5 of this Certificate of Compliance if there are signs using the Specific lighting sources method of compliance)

A	B	C	D	E	F	G	H	I	J	
Symbol or Code	Description	OPTIONAL - ENERGY VERIFIED label (see instructions below) <input checked="" type="checkbox"/>	Allowed Watts				Design Watts	Complies? Y/N	Complies if $H \leq G$	Field Inspector Check that Sign Complies <input checked="" type="checkbox"/>
			Sign Area (ft ²)	Internally (I) or Externally (E) Illuminated	Allowed LPD (I = 12 W/ft ²) (E = 2.3 W/ft ²)	Allowed Watts = D x F				
		<input type="checkbox"/>							<input type="checkbox"/>	
		<input type="checkbox"/>							<input type="checkbox"/>	
		<input type="checkbox"/>							<input type="checkbox"/>	
		<input type="checkbox"/>							<input type="checkbox"/>	
		<input type="checkbox"/>							<input type="checkbox"/>	
		<input type="checkbox"/>							<input type="checkbox"/>	

- A** Symbol or code used on the plans (when plans are required) and other documents.
- B** A narrative description of the sign, or location of sign on the building; and the location of sign on construction documents.
- C** OPTIONAL - Check this box only if this sign has a permanent, pre-printed, factory-installed, ENERGY VERIFIED label, confirming that the sign complies with the Section 148 of the California 2008 Title 24, Part 6 Standards, using the Maximum Allowed Lighting Power method of compliance. The only labels that will be recognized for this purpose are ENERGY VERIFIED Certification Marks authorized by Underwriters Laboratories (UL) or other Product Certification Body accredited to ISO/IEC Guide 65 by the American National Standards Institute in accordance with ISO/IEC 17011. Surveillance by the Accredited Certification Body shall be an ongoing annual inspection program carried out by a Type A Inspection body in accordance with ISO/IEC 17020. For signs with such an ENERGY VERIFIED label, columns 'D' through 'I' are not required to be filled out. Note: Using an ENERGY VERIFIED label is an optional method to validate compliance. An ENERGY VERIFIED label is not needed for compliance.
- D** The sign area in square feet.
- E** List "I" if the sign is internally illuminated. List "E" if the sign is externally illuminated.
- F** Allowed watts per square foot. Enter 12 if the sign is listed as "I" in column E. Enter 2.3 if sign is listed as "E" in column E.
- G** Multiply the square footage in column D times the allowed Lighting Power Density (LPD = watts) in column F.
- H** Show the total installed watts in the sign, as determined according to the applicable provisions of §130(d or e).
- I** Enter Y if the number in column H is less than or equal to the number in column G. Otherwise, the sign does not comply.
- J** This page doubles as a field inspection checklist.

Field Inspector Notes:

Project Name:

Date:

5. Specific Lighting Source Method of Compliance

Certificate of Compliance and Field Inspection Energy Checklist

Complete this part if there are signs using the Specific lighting source method of compliance. (Complete part 4 of this Certificate of Compliance if there are signs using the maximum allowed lighting power method of compliance)

A	B	C	D	E
Symbol or Code	Description	OPTIONAL ENERGY VERIFIED label (see instructions below) <input checked="" type="checkbox"/>	Specific light source used for compliance Shall include only lighting technologies listed below List all that apply	Field Inspector Check that Sign Complies <input checked="" type="checkbox"/>
		<input type="checkbox"/>		<input type="checkbox"/>
		<input type="checkbox"/>		<input type="checkbox"/>
		<input type="checkbox"/>		<input type="checkbox"/>
		<input type="checkbox"/>		<input type="checkbox"/>
		<input type="checkbox"/>		<input type="checkbox"/>

A Symbol or code used on the plans (when plans are required) and other documents.

B A narrative description of the sign, or location of sign on the building; and the location of sign on construction documents

C **OPTIONAL** - Check this box only if this sign has a permanent, pre-printed, factory-installed **ENERGY VERIFIED** label, confirming that this sign complies with the Section 148 of the California 2008 Title 24, Part 6 Standards, using the Specific Lighting Source Method of Compliance. **The only labels that will be recognized for this purpose are ENERGY VERIFIED Certification Marks authorized by Underwriters Laboratories (UL) or other Product Certification Body accredited to ISO/IEC Guide 65 by the American National Standards Institute in accordance with ISO/IEC 17011. Surveillance by the Accredited Certification Body shall be an ongoing annual inspection program carried out by a Type A Inspection body in accordance with ISO/IEC 17020.** For signs with such an ENERGY VERIFIED label, column 'D' is not required to be filled out. Note: Using an ENERGY VERIFIED label is an optional method to validate compliance. An ENERGY VERIFIED label is not needed for compliance.

Specific Light Source Compliance Method. The sign(s) identified above use only the following lighting technologies:
List all applicable numbers (1 through 10) that apply in column D above for each row.

1	High pressure sodium lamps
2	Pulse start or ceramic metal halide lamps served by a ballast with $\geq 88\%$ efficiency
3	Pulse start metal halide lamps that are ≤ 320 watts, are not 250 watt or 175 watt lamps, and are served by a ballast with $\geq 80\%$ efficiency
4	Neon or cold cathode lamps with transformer or power supply efficiency $\geq 75\%$ with rated output current < 50 mA
5	Neon or cold cathode lamps with transformer or power supply efficiency $\geq 68\%$ with rated output current ≥ 50 mA
6	Fluorescent lamps with a minimum color rendering index (CRI) of 80 (Note: when using electronic ballasts for compliance, lamps with a CRI < 80 may be used)
7	Light emitting diodes (LEDs) with a power supply with $\geq 80\%$ efficiency
8	Single voltage LED external power supplies designed to convert 120 volt AC input into lower voltage DC or AC output, having a nameplate output power less than or equal to 250 watts, and certified to the Energy Commission as complying with the applicable requirements of the Appliance Efficiency Regulations (Title 20)
9	Compact fluorescent lamps that do not contain a medium screw base sockets (E24/E26)
10	Electronic ballasts with a fundamental output frequency ≥ 20 kHz

E This page doubles as a field inspection checklist.

Field Inspector Notes:

***2008 Compliance Forms
Refrigerated Warehouse***

Certificate of Compliance		(Page 1 of 3) RWH-1C
Project Name:	Climate Zone:	Conditioned Floor Area:
Project Address:		Date:
General Information		
Building Type: <input type="checkbox"/> Refrigerated Warehouse \geq 3,000 ft ² <input type="checkbox"/> Refrigerated Warehouse $<$ 3,000 ft ² <i>(Note: If the Refrigerated Warehouse space is $<$ 3,000 ft² than it must meet Appliance Efficiency Regulations (Title 20) for walk-in refrigerators/freezers)</i>		
<input type="checkbox"/> Areas within refrigerated Warehouses: quick chill/freeze space with design cooling capacity $>$ 240 Btu/hr-ft ² (2 tons/100 ft ²) <input type="checkbox"/> Yes <input type="checkbox"/> No <i>Note: If yes, then the areas within refrigerated warehouse that are designed solely for the purpose of quick chilling or freeze with design cooling capacity of $>$ 240 Btu/hr-ft² (2 tons/100 ft²) need not to comply.</i>		
Phase of Construction: <input type="checkbox"/> New Construction <input type="checkbox"/> Addition <input type="checkbox"/> Alteration		
Documentation Author's Declaration Statement		
<ul style="list-style-type: none"> • I certify that this Certificate of Compliance documentation is accurate and complete. 		
Name:	Signature:	
Company:	Date:	
Address:	If applicable CEA # CEPE #	
City/State/Zip:	Phone:	
Principal Refrigerated Warehouse Designer's Declaration Statement		
<ul style="list-style-type: none"> • I am eligible under Division 3 of the California Business and Professions Code to accept responsibility for the refrigerated warehouse design. • This Certificate of Compliance identifies the mandatory envelope refrigerated warehouse specifications required for compliance with Title 24, Parts 1 and 6 of the California Code of Regulations. • The design features represented on this Certificate of Compliance are consistent with the information provided to document this design on the other applicable compliance forms, plans and specifications submitted to the enforcement agency for approval with this building permit application. 		
Name:	Signature:	
Company:	Date:	
Address:	License #	
City/State/Zip:	Phone:	
Refrigerated Warehouse Mandatory Measures		
<i>Indicate location on building plans of Mandatory Refrigerated Warehouse Measures, See page 3 of 3.</i>		

Certificate of Compliance

(Page 2 of 3) **RWH-1C**

Project Name:

Date:

ENVELOPE REQUIREMENTS

Insulation Details

Page No. on Plans	SPACE ¹		Assembly Type (Wall, Roof/Ceiling, Floor)	Installed Insulation R-value (°F·ft ² ·hr/Btu)	Minimum Required Insulation R-Value ² (°F·ft ² ·hr/Btu)	ASSEMBLY COMPLIANCE ³	
	Cold Storage	Frozen Storage				PASS	FAIL
	<input type="checkbox"/>	<input type="checkbox"/>				<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>				<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>				<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>				<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>				<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>				<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>				<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>				<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>				<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>				<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>				<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>				<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>				<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>				<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>				<input type="checkbox"/>	<input type="checkbox"/>

Documentation Author Footnotes:
 1. Indicate the type of storage space.
 2. This value can be obtained from §126, Table 126-A.
 3. Does the installed insulation R-value comply with the mandatory insulation requirements of §126, Table 126 required R-value?

Certificate of Compliance

(Page 3 of 3) **RWH-1C**

Project Name:

Date:

REFRIGERATION SYSTEM REQUIREMENTS

MANDATORY MEASURES	T-24 Sections	<i>Indicate Page Reference on Plans or Schedule and indicate the applicable exception(s)</i>		
Evaporator ID or tags (e.g. Evap-1)				
Evaporators: electronically commutated (brushless DC) motor on all single phase fan motors <1 hp and <460 V.	§ 126(c)1			
Evaporators: Continuously variable speed fans, controlled in response to space conditions.	§ 126(c)2			
Exempted constant speed evaporator fans served by single compressor with no unloading capability	EXCEPTION § 126(c)2			
ID of single compressor serving exempted evaporators	EXCEPTION § 126(c)2			
Compressor ID or tags (e.g. Comp-1)				
Compressors shall be designed to operate at a minimum condensing temperature of 70°F or less	§ 126(e)1			
Single screw compressor > 50 hp serving a suction group: variable compressor speed in response to the refrigeration load.	§ 126(e)2			
Single screw compressor > 50 hp serving a suction group: compressor input power ≤ 60% of full load input power when operated at 50% of full refrigeration capacity. Attach manufacturer's perform. data to form.	§ 126(e)2 Alternate			
Condenser ID or tags (e.g. Cond-1)				
Condensers: Evaporatively cooled condensers required for ammonia based systems	§ 126(d)1			
Condenser fan speed control: Continuously variable speed fans. Fan speed controlled in unison for all fans serving common condenser loop. Min. condensing temperature setpoint shall be less than or equal to 70°F or reset based on air temperature or system load. Identify page number on plans for condenser fan control sequence of operation or attach to form.	§ 126(d)4, 5			
Single phase condenser motors <1 hp and <460 V either permanent split capacitor or electronically commutated (brushless DC) motors	§ 126(d)6			
Evaporative condenser (Y/N) Fill out next 4 rows if Y	§ 126(d)2			
Design wetbulb temperature				
Installed condenser: condensing temperature under design conditions (°F) Page number on plans or schedule indicating condensing temperature				
Maximum allowed condensing temperature under design conditions (wb ≤ 76° Tc = wb + 20°, 76° < wb ≤ 78° Tc = wb + 19°, wb > 78° Tc = wb + 18°)	§ 126(d)2			
Is installed condensing temperature ≤ maximum allowed condensing temperature? If Yes enter PASS, If No enter FAIL				
Air-cooled condenser (Y/N) Fill out next 6 rows if Y	§ 126(d)3			
Unitary Condensing units? If yes then it is exempt. Skip 4 rows.	Exception § 126(d)3			
Design drybulb temperature (° F)				
Is condenser serving cold or frozen? (if both list frozen)				
Installed condenser: condensing temperature under design conditions (° F)				
Maximum allowed condensing temperature under design conditions (frozen = db + 10°, cold = db + 15°)				
Page number on plans or schedule indicating condensing temperature				
Is exempt as unitary condenser or is installed condensing temperature ≤ maximum allowed condensing temperature? If Yes enter PASS otherwise enter FAIL				

Installation Certificate

INSTALLATION CERTIFICATE	(Part 1 of 2)	ENV-INST
---------------------------------	---------------	-----------------

PROJECT NAME:	DATE:	_____ Building Permit _____ Checked by/Date Enforcement Agency Use
PROJECT ADDRESS:		

GENERAL INFORMATION

DATE OF BUILDING PERMIT	PERMIT #
BUILDING TYPE	<input type="checkbox"/> Nonresidential <input type="checkbox"/> High-Rise Residential <input type="checkbox"/> Hotel/Motel Guest Room
PHASE OF CONSTRUCTION	<input type="checkbox"/> New Construction <input type="checkbox"/> Addition <input type="checkbox"/> Alteration <input type="checkbox"/> Unconditioned

If more than one person has responsibility for building construction, each person shall prepare and sign an Installation Certificate document applicable to the portion of construction for which they are responsible; alternatively, the person with chief responsibility for construction shall prepare and sign the Installation Certificate document(s) for the entire construction.

DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am eligible under Division 3 of the Business and Professions Code to accept responsibility for construction, or an authorized representative of the person responsible for construction (responsible person).
- I certify that the installed features, materials, components, or manufactured devices identified on this certificate (the installation) conforms to all applicable codes and regulations, and the installation is consistent with the plans and specifications approved by the enforcement agency.
- I reviewed a copy of the Certificate of Compliance approved by the enforcement agency that identifies the specific requirements for the installation. I certify that the requirements detailed on the Certificate of Compliance that apply to the installation have been met.
- I will ensure that a completed, signed copy of this Installation Certificate shall be posted, or made available with the building permit(s) issued for the building, and made available to the enforcement agency for all applicable inspections. I understand that a signed copy of this Installation Certificate is required to be included with the documentation the builder provides to the building owner at occupancy.

Company Name:		
Responsible Person's Name:	Responsible Person's Signature:	
Lic.#	Date Signed:	Position With Company:

SCOPE OF RESPONSIBILITY

<i>Enter the date of approval by enforcement agency of the Certificate of Compliance that provides the specifications for the energy efficiency measures for the scope of responsibility for this Installation Certificate:</i>	Date:
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In the table below identify all applicable construction documents that specify the requirements for the scope of responsibility for this Installation Certificate.		
Document Title or Description	Applicable Sheets or Pages, Tables, Schedules, etc.	Date Approved By the Enforcement Agency

INSTALLATION CERTIFICATE	(Part 1 of 2)	MECH-INST
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PROJECT NAME:	DATE:	_____ Building Permit _____ Checked by/Date Enforcement Agency Use
PROJECT ADDRESS:		

GENERAL INFORMATION

DATE OF BUILDING PERMIT	PERMIT #
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BUILDING TYPE	<input type="checkbox"/> Nonresidential	<input type="checkbox"/> High-Rise Residential	<input type="checkbox"/> Hotel/Motel Guest Room	
PHASE OF CONSTRUCTION	<input type="checkbox"/> New Construction	<input type="checkbox"/> Addition	<input type="checkbox"/> Alteration	<input type="checkbox"/> Unconditioned

If more than one person has responsibility for building construction, each person shall prepare and sign an Installation Certificate document applicable to the portion of construction for which they are responsible; alternatively, the person with chief responsibility for construction shall prepare and sign the Installation Certificate document(s) for the entire construction.

DECLARATION STATEMENT

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Company Name:		
Responsible Person's Name:	Responsible Person's Signature:	
Lic.#	Date Signed:	Position With Company:

SCOPE OF RESPONSIBILITY

Enter the date of approval by enforcement agency of the Certificate of Compliance that provides the specifications for the energy efficiency measures for the scope of responsibility for this Installation Certificate:	Date:
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In the table below identify all applicable construction documents that specify the requirements for the scope of responsibility for this Installation Certificate.

Document Title or Description	Applicable Sheets or Pages, Tables, Schedules, etc.	Date Approved By the Enforcement Agency

INSTALLATION CERTIFICATE (Page 1 of 2) **LTG-INST**

PROJECT NAME:	DATE:	_____ Building Permit _____ Checked by/Date Enforcement Agency Use
PROJECT ADDRESS:		

GENERAL INFORMATION

DATE OF BUILDING PERMIT	PERMIT #
BUILDING TYPE	<input type="checkbox"/> Nonresidential <input type="checkbox"/> High-Rise Residential <input type="checkbox"/> Hotel/Motel Guest Room
PHASE OF CONSTRUCTION	<input type="checkbox"/> New Construction <input type="checkbox"/> Addition <input type="checkbox"/> Alteration <input type="checkbox"/> Unconditioned

If more than one person has responsibility for building construction, each person shall prepare and sign an Installation Certificate document applicable to the portion of construction for which they are responsible; alternatively, the person with chief responsibility for construction shall prepare and sign the Installation Certificate document(s) for the entire construction.

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Company Name:		
Responsible Person's Name:		Responsible Person's Signature:
Lic.#	Date Signed:	Position With Company:

SCOPE OF RESPONSIBILITY

Enter the date of approval by enforcement agency of the Certificate of Compliance that provides the specifications for the energy efficiency measures for the scope of responsibility for this Installation Certificate:	Date:
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In the table below identify all applicable construction documents that specify the requirements for the scope of responsibility for this Installation Certificate.

Document Title or Description	Applicable Sheets or Pages, Tables, Schedules, etc.	Date Approved By the Enforcement Agency

INSTALLATION CERTIFICATE	(Part 1 of 2)	OLTG-INST
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PROJECT NAME:	DATE:	_____ Building Permit _____ Checked by/Date Enforcement Agency Use
PROJECT ADDRESS:		

GENERAL INFORMATION			
DATE OF BUILDING PERMIT	PERMIT #		
BUILDING TYPE	<input type="checkbox"/> Nonresidential Outdoor Lighting		
PHASE OF CONSTRUCTION	<input type="checkbox"/> New Construction	<input type="checkbox"/> Addition	<input type="checkbox"/> Alteration
<i>If more than one person has responsibility for building construction, each person shall prepare and sign an Installation Certificate document applicable to the portion of construction for which they are responsible; alternatively, the person with chief responsibility for construction shall prepare and sign the Installation Certificate document(s) for the entire construction.</i>			

DECLARATION STATEMENT

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Company Name:		
Responsible Person's Name:	Responsible Person's Signature:	
Lic.#	Date Signed:	Position With Company:

SCOPE OF RESPONSIBILITY

<i>Enter the date of approval by enforcement agency of the Certificate of Compliance that provides the specifications for the energy efficiency measures for the scope of responsibility for this Installation Certificate:</i>	Date:
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In the table below identify all applicable construction documents that specify the requirements for the scope of responsibility for this Installation Certificate.		
Document Title or Description	Applicable Sheets or Pages, Tables, Schedules, etc.	Date Approved By the Enforcement Agency

INSTALLATION CERTIFICATE	(Part 1 of 2)	SLTG-INST
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PROJECT NAME:	DATE:	_____ Building Permit _____ Checked by/Date Enforcement Agency Use
PROJECT ADDRESS:		

GENERAL INFORMATION

DATE OF BUILDING PERMIT	PERMIT #
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BUILDING TYPE	<input type="checkbox"/> Outdoor Sign	<input type="checkbox"/> Indoor Sign
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PHASE OF CONSTRUCTION	<input type="checkbox"/> New Construction	<input type="checkbox"/> Addition	<input type="checkbox"/> Alteration
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DECLARATION STATEMENT

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Company Name:		
Responsible Person's Name:	Responsible Person's Signature:	
Lic.#	Date Signed:	Position With Company:

SCOPE OF RESPONSIBILITY

<i>Enter the date of approval by enforcement agency of the Certificate of Compliance that provides the specifications for the energy efficiency measures for the scope of responsibility for this Installation Certificate:</i>	Date:
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In the table below identify all applicable construction documents that specify the requirements for the scope of responsibility for this Installation Certificate.

Document Title or Description	Applicable Sheets or Pages, Tables, Schedules, etc.	Date Approved By the Enforcement Agency

INSTALLATION CERTIFICATE	(Part 1 of 2)	RWH-INST
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PROJECT NAME:	DATE:	_____ Building Permit _____ Checked by/Date Enforcement Agency Use
PROJECT ADDRESS:		

GENERAL INFORMATION

DATE OF BUILDING PERMIT	PERMIT #
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BUILDING TYPE	<input type="checkbox"/> Refrigerated Warehouse
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PHASE OF CONSTRUCTION	<input type="checkbox"/> New Construction	<input type="checkbox"/> Addition	<input type="checkbox"/> Alteration
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If more than one person has responsibility for building construction, each person shall prepare and sign an Installation Certificate document applicable to the portion of construction for which they are responsible; alternatively, the person with chief responsibility for construction shall prepare and sign the Installation Certificate document(s) for the entire construction.

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Company Name:		
Responsible Person's Name:		Responsible Person's Signature:
Lic.#	Date Signed:	Position With Company:

SCOPE OF RESPONSIBILITY

Enter the date of approval by enforcement agency of the Certificate of Compliance that provides the specifications for the energy efficiency measures for the scope of responsibility for this Installation Certificate:	Date:
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In the table below identify all applicable construction documents that specify the requirements for the scope of responsibility for this Installation Certificate.

Document Title or Description	Applicable Sheets or Pages, Tables, Schedules, etc.	Date Approved By the Enforcement Agency

*2008 Certificate of Acceptance
Envelope*

CERTIFICATE OF ACCEPTANCE

ENV-2A

Fenestration Acceptance Certificate

(Page 1 of 2)

Project Name/Address:

System Name or Identification/Tag:

System Location or Area Served:

Note: A maximum of 4 NFRC Product Listings for each Certificate of Acceptance.

Enforcement Agency Use: Checked by/Date

Note: The Enforcement Agency may choose to verify the Fenestration Certified Products Directory number that matches the CPD-ID number at http://cpd.nfrc.org/search/search_cpdnum.aspx.

BUILDING INFORMATION

Date of Permit:	Building Permit #	Label Certificate Issuance Date:	Climate Zone:
BUILDING TYPE:	<input type="checkbox"/> NONRESIDENTIAL/COMMERCIAL/SCHOOL	<input type="checkbox"/> HIGH RISE RESIDENTIAL	<input type="checkbox"/> HOTEL/MOTEL GUEST ROOM
PHASE OF CONSTRUCTION:	<input type="checkbox"/> NEW CONSTRUCTION	<input type="checkbox"/> ADDITION	<input type="checkbox"/> ALTERATION
LABEL CERTIFICATE:	<input type="checkbox"/> NFRC CMA LABEL CERTIFICATE ID # _____ (Attach an NFRC Label Certificate for each product listing and enter the Label Certificate ID in each column below)	<input type="checkbox"/> NA7 or CEC Default Values Use FC-1/FC-2 < 10,000 ft ² (Attach FC-1/FC-2 and Enter information in Row 1 through 4)	<input type="checkbox"/> CEC Default Values Use FC-1/FC-2 ≥ 10,000 ft ² (Attach FC-1/FC-2 and Enter information in Row 1 through 4)

STATEMENT OF ACCEPTANCE

This Certificate of Acceptance summarizes the results of the Acceptance test related to building fenestration requirements as per Title 24, Part 6. Verify that each fenestration product meets the Reference Nonresidential Appendix, NA7.4. In accordance with Sections 10-103(a)3B, 10-111, 116(a)5 of the Energy Standards.

SUMMARY OF FENESTRATION VERIFICATION AND INSPECTION BY RESPONSIBLE PARTY

The Responsible Party shall verify the thermal performance (U-factor and SHGC) of each specified fenestration product being installed matches the fenestration label certificate, energy compliance documentation and building plans.

	1	2	3	4
NFRC Label Certificate ID #				

CEC Default Fenestration Information:					
1	Manufactured Fenestration Description (i.e. Bluegreen/air/clear-6mm)				
2	Manufactured Product ID #				
3	Glazing Layers	<input type="checkbox"/> Single <input type="checkbox"/> Double <input type="checkbox"/> Other	<input type="checkbox"/> Single <input type="checkbox"/> Double <input type="checkbox"/> Other	<input type="checkbox"/> Single <input type="checkbox"/> Double <input type="checkbox"/> Other	<input type="checkbox"/> Single <input type="checkbox"/> Double <input type="checkbox"/> Other
4	Verification (Verify each product with...)	<input type="checkbox"/> Delivery Receipt(s) <input type="checkbox"/> Purchase Order or <input type="checkbox"/> Detailed Receipt	<input type="checkbox"/> Delivery Receipt(s) <input type="checkbox"/> Purchase Order or <input type="checkbox"/> Detailed Receipt	<input type="checkbox"/> Delivery Receipt(s) <input type="checkbox"/> Purchase Order or <input type="checkbox"/> Detailed Receipt	<input type="checkbox"/> Delivery Receipt(s) <input type="checkbox"/> Purchase Order or <input type="checkbox"/> Detailed Receipt
		<input type="checkbox"/> Cross Reference and Matches Building Plans	<input type="checkbox"/> Cross Reference and Matches Building Plans	<input type="checkbox"/> Cross Reference and Matches Building Plans	<input type="checkbox"/> Cross Reference and Matches Building Plans

Fenestration Acceptance Certificate

Project Name/Address:

System Name or Identification/Tag:

System Location or Area Served:

FIELD TECHNICIAN'S DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the person who performed the acceptance requirements verification reported on this Certificate of Acceptance (Field Technician).
- I certify that the construction/installation identified on this form complies with the acceptance requirements indicated in the plans and specifications approved by the enforcement agency, and conforms to the applicable acceptance requirements and procedures specified in Reference Nonresidential Appendix NA7.
- I have confirmed that the Installation Certificate(s) for the construction/installation identified on this form has been completed and is posted or made available with the building permit(s) issued for the building.

Company Name:

Field Technician's Name:

Field Technician's Signature:

Date Signed:

Position With Company (Title):

RESPONSIBLE PERSON'S DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, that I am the Field Technician, or the Field Technician is acting on my behalf as my employee or my agent and I have reviewed the information provided on this form.
- I am a licensed contractor, architect, or engineer, who is eligible under Division 3 of the Business and Professions Code, in the applicable classification, to take responsibility for the scope of work specified on this document and attest to the declarations in this statement (responsible person).
- I certify that the information provided on this form substantiates that the construction/installation identified on this form complies with the acceptance requirements indicated in the plans and specifications approved by the enforcement agency, and conforms to the applicable acceptance requirements and procedures specified in Reference Nonresidential Appendix NA7.
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Company Name:

Phone:

Responsible Person's Name:

Responsible Person's Signature:

License:

Date Signed:

Position With Company (Title):

***2008 Certificate of Acceptance
Mechanical***

CERTIFICATE OF ACCEPTANCE**MECH-2A****NA7.5.1 Outdoor Air Acceptance****(Page 1 of 3)**

Project Name/Address:

System Name or Identification/Tag:

System Location or Area Served:

Enforcement Agency:

Permit Number:

Note: Submit one Certificate of Acceptance for each system that must demonstrate compliance.

Enforcement Agency Use: Checked by/Date

FIELD TECHNICIAN'S DECLARATION STATEMENT

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- I have confirmed that the Installation Certificate(s) for the construction/installation identified on this form has been completed and is posted or made available with the building permit(s) issued for the building.

Company Name:

Field Technician's Name:

Field Technician's Signature:

Date Signed:

Position With Company (Title):

RESPONSIBLE PERSON'S DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, that I am the Field Technician, or the Field Technician is acting on my behalf as my employee or my agent and I have reviewed the information provided on this form.
- I am a licensed contractor, architect, or engineer, who is eligible under Division 3 of the Business and Professions Code, in the applicable classification, to take responsibility for the scope of work specified on this document and attest to the declarations in this statement (responsible person).
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Company Name:

Phone:

Responsible Person's Name:

Responsible Person's Signature:

License:

Date Signed:

Position With Company (Title):

NA7.5.1 Outdoor Air Acceptance

Project Name/Address:

System Name or Identification/Tag:

System Location or Area Served:

Intent:

Verify measured outside airflow reading is within ± 10% of the total required outside airflow value found in the Standards Mechanical Plan (MECH-3C, Column H or Column I), per NA7.5.1.

Construction Inspection

- 1 Instrumentation to perform test includes, but not limited to:
 - a. Watch
 - b. Calibrated means to measure airflow
- 2 Check one of the following:
 - Variable Air Volume (VAV) - Check as appropriate:
 - a. Sensor used to control outdoor air flow must have calibration certificate or be field calibrated
 - Calibration certificate (attach calibration certification)
 - Field calibration (attach results)
 - Constant Air Volume (CAV) - Check as appropriate:
 - System is designed to provide a fixed minimum OSA when the unit is on

NA7.5.1.1 Outdoor Air Acceptance

A. Functional Testing (Check appropriate column)	CAV	VAV
a. Verify unit is not in economizer mode during test - check appropriate column		
Step 1: CAV and VAV testing at full supply airflow		
a. Adjust supply to achieve design airflow		
b. Measured outdoor airflow reading (cfm)		
c. Required outdoor airflow (cfm) (from MECH-3C, Column I)		
d. Time for outside air damper to stabilize after VAV boxes open (minutes)		
e. Return to initial conditions (check)		
Step 2: VAV testing at reduced supply airflow		
a. Adjust supply airflow to either the sum of the minimum zone airflows or 30% of the total design airflow		
b. Measured outdoor airflow reading (cfm)		
c. Required outdoor airflow (cfm) (from MECH-3C, Column I)		
d. Time for outside air damper to stabilize after VAV boxes open and minimum air flow achieved (minutes)		
e. Return to initial conditions (check)		
B. Testing Calculations & Results	CAV	VAV
Percent OSA at full supply airflow (%OA_{FA} for Step 1)		
a. %OA _{FA} = Measured outside air reading /Required outside air (Step1b/Step1c)	%	%
b. 90% ≤ %OA _{FA} ≤ 110%	Y / N	Y / N
c. Outside air damper position stabilizes within 15 minutes (Step 1d < 15 minutes)	Y / N	Y / N
Percent OSA at reduced supply airflow (%OA_{RA} for Step 2)		
a. %OA _{RA} = Measured outside air reading /Required outside air (Step2b/Step2c)	%	%
b. 90% ≤ %OA _{RA} ≤ 110%		Y / N
c. Outside air damper position stabilizes within 15 minutes (Step 2d < 15 minutes)		Y / N

Note: Shaded boxes do not apply for CAV systems

Project Name/Address:

System Name or Identification/Tag:

System Location or Area Served:

C. PASS / FAIL Evaluation (check one):

- PASS:** All **Construction Inspection** responses are complete and **Testing Calculations & Results** responses are positive (Y - yes)
- FAIL:** Any **Construction Inspection** responses are incomplete *OR* there is one or more negative (N - no) responses in **Testing Calculations & Results** section. Provide explanation below. Use and attach additional pages if necessary.

Project Name/Address:

System Name or Identification/Tag:

System Location or Area Served:

Enforcement Agency:

Permit Number:

Note: Submit one Certificate of Acceptance for each system that must demonstrate compliance.

Enforcement Agency Use: Checked by/Date

FIELD TECHNICIAN'S DECLARATION STATEMENT

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Company Name:

Field Technician's Name:

Field Technician's Signature:

Date Signed:

Position With Company (Title):

RESPONSIBLE PERSON'S DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, that I am the Field Technician, or the Field Technician is acting on my behalf as my employee or my agent and I have reviewed the information provided on this form.
- I am a licensed contractor, architect, or engineer, who is eligible under Division 3 of the Business and Professions Code, in the applicable classification, to take responsibility for the scope of work specified on this document and attest to the declarations in this statement (responsible person).
- I certify that the information provided on this form substantiates that the construction/installation identified on this form complies with the acceptance requirements indicated in the plans and specifications approved by the enforcement agency, and conforms to the applicable acceptance requirements and procedures specified in Reference Nonresidential Appendix NA7.
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Company Name:

Phone:

Responsible Person's Name:

Responsible Person's Signature:

License:

Date Signed:

Position With Company (Title):

Project Name/Address:

System Name or Identification/Tag:

System Location or Area Served:

Intent: *Verify the individual components of a constant volume, single-zone, unitary air conditioner and heat pump system function correctly, including: thermostat installation and programming, supply fan, heating, cooling, and damper operation per NA7.5.2*

Construction Inspection

1. Instrumentation to perform test includes, but not limited to:
 - a. None required
2. Installation
 - Thermostat is located within the space-conditioning zone that is served by the HVAC system.
3. Programming (check all of the following):
 - Thermostat meets the temperature adjustment and dead band requirements of 122(b)
 - Occupied, unoccupied, and holiday schedules have been programmed per the facility's schedule.
 - Pre-occupancy purge has been programmed to meet the requirements of Standards Section 121(c)2.

A. Functional Testing Requirements		Operating Modes						
		Cooling load during unoccupied condition						
		Cooling load during occupied condition						
		Manual override						
		No-load during unoccupied condition						
		Heating load during unoccupied condition						
		No-load during occupied condition						
		Heating load during occupied condition						
Step 1: Check and verify the following for each simulation mode required		A	B	C	D	E	F	G
a.	Supply fan operates continually	<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>	
b.	Supply fan turns off				<input type="checkbox"/>			
c.	Supply fan cycles on and off			<input type="checkbox"/>				<input type="checkbox"/>
d.	System reverts to "occupied" mode to satisfy any condition					<input type="checkbox"/>		
e.	System turns off when manual override time period expires					<input type="checkbox"/>		
f.	Gas-fired furnace, heat pump, or electric heater stages on	<input type="checkbox"/>		<input type="checkbox"/>				
g.	Neither heating or cooling is provided by the unit		<input type="checkbox"/>		<input type="checkbox"/>			
h.	No heating is provided by the unit		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
i.	No cooling is provided by the unit	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
j.	Compressor stages on						<input type="checkbox"/>	<input type="checkbox"/>
k.	Outside air damper is open to minimum position	<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>	
l.	Outside air damper closes completely				<input type="checkbox"/>			
m.	System returned to initial operating conditions after all tests have been completed:	Y / N						
B. Testing Results		A	B	C	D	E	F	G
Indicate if Passed (P), Failed (F), or N/A (X), fill in appropriate letter								

Project Name/Address:

System Name or Identification/Tag:

System Location or Area Served:

C. PASS / FAIL Evaluation (check one):

- PASS:** All **Construction Inspection** responses are complete and all applicable **Testing Results** responses are "Pass" (P)
- FAIL:** Any **Construction Inspection** responses are incomplete *OR* there is one or more "Fail" (F) responses in **Testing Results** section. Provide explanation below. Use and attach additional pages if necessary.

CERTIFICATE OF ACCEPTANCE		MECH-4A
Air Distribution Systems Acceptance		(Page 1 of 3)
Project Name/Address:		
System Name or Identification/Tag:	System Location or Area Served:	
Enforcement Agency:	Permit Number:	
<i>Note: Submit one Certificate of Acceptance for each system that must demonstrate compliance.</i>	Enforcement Agency Use: Checked by/Date	

FIELD TECHNICIAN'S DECLARATION STATEMENT

1. I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
2. I am the person who performed the acceptance requirements verification reported on this Certificate of Acceptance (Field Technician).
3. I certify that the construction/installation identified on this form complies with the acceptance requirements indicated in the plans and specifications approved by the enforcement agency, and conforms to the applicable acceptance requirements and procedures specified in Reference Nonresidential Appendix NA7.
4. I have confirmed that the Installation Certificate(s) for the construction/installation identified on this form has been completed and is posted or made available with the building permit(s) issued for the building.

Company Name:		
Field Technician's Name:	Field Technician's Signature:	
	Date Signed:	Position With Company (Title):

RESPONSIBLE PERSON'S DECLARATION STATEMENT

5. I certify under penalty of perjury, under the laws of the State of California, that I am the Field Technician, or the Field Technician is acting on my behalf as my employee or my agent and I have reviewed the information provided on this form.
6. I am a licensed contractor, architect, or engineer, who is eligible under Division 3 of the Business and Professions Code, in the applicable classification, to take responsibility for the scope of work specified on this document and attest to the declarations in this statement (responsible person).
7. I certify that the information provided on this form substantiates that the construction/installation identified on this form complies with the acceptance requirements indicated in the plans and specifications approved by the enforcement agency, and conforms to the applicable acceptance requirements and procedures specified in Reference Nonresidential Appendix NA7.
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Company Name:		Phone:
Responsible Person's Name:	Responsible Person's Signature:	
License:	Date Signed:	Position With Company (Title):

Project Name/Address:

System Name or Identification/Tag:

System Location or Area Served:

Intent:

New single zone supply ductwork must be less than 6% leakage rate per §144(k) or §149(b)Di, existing single zone ductwork must be less than 15% leakage or other compliance path per §149(b)Dii or §149(b)E.

Construction Inspection

1 Scope of test – New Buildings – this test required on New Buildings only if all checkboxes 1(a) through 1(c) are checked

Existing Buildings – this test required if 1(a) through 1(d) are checked

Ductwork conforms to the following (note if any of these are not checked, then this test is not required):

- 1a) Connected to a constant volume, single zone air conditioners, heat pumps, or furnaces
- 1b) Serves less than 5000 square feet of floor area
- 1c) Has more than 25% duct surface area located in one or more of the following spaces
 - Outdoors
 - A space directly under a roof where the U-factor of the roof is greater than U-factor of the ceiling
 - A space directly under a roof with fixed vents or openings to the outside or unconditioned spaces
 - An unconditioned crawlspace
 - Other unconditioned spaces
- 1d) A duct is extended or any of the following replaced: air handler, outdoor condensing unit of a split system, cooling or heating coil, or the furnace heat exchanger.

2 Instrumentation to perform test includes:

a. Duct Pressure Test

3 Material and Installation. Complying new duct systems shall have a checked box for all of the following categories a through f.

a. Choice of drawbands (check one of the following)

- | | |
|--------------------------|--|
| <input type="checkbox"/> | Stainless steel worm-drive hose clamps |
| <input type="checkbox"/> | UV-resistant nylon duct ties |

<input type="checkbox"/>	b. Flexible ducts are not constricted in any way
<input type="checkbox"/>	c. Duct leakage tests performed before access to ductwork and connections are blocked
<input type="checkbox"/>	d. Joints and seams are not sealed with cloth back rubber adhesive tape unless used in combination with Mastic and drawbands. Cloth backed tape may be used if tape has been approved by the CEC.
<input type="checkbox"/>	e. Duct R-values are verified R-8 per 124(a) in non-conditioned spaces.
<input type="checkbox"/>	f. Ductwork located outdoors has insulation that is protected from damage and suitable for outdoor service
<input type="checkbox"/>	g. A sticker has been affixed to the exterior surface of the air handler access door Per NA 2.3.8.5 (example located in Chapter 10 of the Nonresidential Compliance Manual).

CERTIFICATE OF ACCEPTANCE		MECH-4A
Air Distribution Systems Acceptance		(Page 3 of 3)
Project Name/Address:		
System Name or Identification/Tag:	System Location or Area Served:	

Nominal Rated Fan Flow Calculations		Enter Values
1	Determine Nominal Rated Fan Flow using one of the following two calculation methods:	
	a) Cooling system method: Nominal Cooling Capacity _____ (tons) x 400 (cfm/ton) = _____ (cfm)	
	b) Heating system method (for heating only units): Output Capacity _____ (kBtuh) x 21.7 (cfm/kBtuh) = _____ (cfm)	
2	Enter the rated fan flow value from calculations 1(a) or 1(b) (cfm)	

Completely New or Replacement Duct System:		
3	Duct Pressurization Test Results (CFM @ 25 Pa). Enter Tested Leakage Flow in CFM:	
4	Pass if Leakage Percentage <6%: [_____ (Line # 3) / _____ (Line # 2)] x 100%	% <input type="checkbox"/> Pass <input type="checkbox"/> Fail

Pre-existing Duct System with Duct Alteration and/or HVAC Equipment Change-Out:		
5	Enter Tested Leakage Flow in CFM: Pre-Test of Existing or Altered Duct System prior to Duct System Alteration and/or Equipment Change-Out.	
6	Enter Tested Leakage Flow in CFM: Final Test of New Duct System or Altered Duct System for Duct System Alteration and/or Equipment Change-Out.	
Use one of the following three tests or verification standards for compliance:		
7	Pass if Leakage Percentage <15% [_____ (Line # 6) / _____ (Line # 2)] x 100%	% <input type="checkbox"/> Pass <input type="checkbox"/> Fail
8	Pass if Leakage Reduction is >60% and all Accessible Leaks are sealed as confirmed by Visual Inspection and Verification*. Leakage reduction = {1 - [_____ (Line#6) / _____ (Line#5)]} x 100%	% <input type="checkbox"/> Pass <input type="checkbox"/> Fail
9	Pass if all Accessible Leaks are sealed as confirmed by Visual Inspection and Verification* by HERS rater (sampling rate 100% by HERS rater)	<input type="checkbox"/> Pass <input type="checkbox"/> Fail
	Pass if One of Lines # 7 through # 9 pass	<input type="checkbox"/> Pass <input type="checkbox"/> Fail

* Visual Inspection and Verification requirements

1. Visually inspect to verify that the following locations have been sealed:
 - Connections to plenums and other connections to the forced air unit
 - Refrigerant line and other penetrations into the forced air unit
 - Air handler door panel (do not use permanent sealing material, metal tape is acceptable)
 - Register boots sealed to surrounding material
 - Connections between lengths of duct, as well as connections to takeoffs, wyes, tees, and splitter boxes.
2. Visually inspect to verify that portions of the duct system that are excessively damaged have been replaced. Ducts that are considered to be excessively damaged are:
 - Flex ducts with the vapor barrier split or cracked with a total linear split or crack length greater than 12 inches
 - Crushed ducts where cross-sectional area is reduced by 30 percent or more
 - Metal ducts with rust or corrosion resulting in leaks greater than 2 inches in any dimension
 - Ducts that have been subject to animal infestation resulting in leaks greater than 2 inches in any dimension

CERTIFICATE OF ACCEPTANCE**MECH-5A****NA7.5.4 Air Economizer Controls Acceptance****(Page 1 of 3)**

Project Name/Address:

System Name or Identification/Tag:

System Location or Area Served:

Enforcement Agency:

Permit Number:

Note: Submit one Certificate of Acceptance for each system that must demonstrate compliance.

Enforcement Agency Use: Checked by/Date

FIELD TECHNICIAN'S DECLARATION STATEMENT

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Company Name:

Field Technician's Name:

Field Technician's Signature:

Date Signed:

Position With Company (Title):

RESPONSIBLE PERSON'S DECLARATION STATEMENT

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Company Name:

Phone:

Responsible Person's Name:

Responsible Person's Signature:

License:

Date Signed:

Position With Company (Title):

Project Name/Address:

System Name or Identification/Tag:

System Location or Area Served:

Intent: Verify that airside economizers function properly

Construction Inspection

- 1 Instrumentation to perform test includes, but not limited to:
 - a. Hand-held temperature probes Calibration
Date: _____ (must be within last year)
 - b. Multi-meter capable of measuring ohms and milliamps
- 2 Test method (check one of the following):
 - Economizer comes from HVAC system manufacturer installed by and has been factory calibrated and tested. Attach documentation and complete certification statement. No Functional Testing required.
 - Economizer field installed and field tested or factory installed and field tested.
- 3 Installation (check **all** of the following first level boxes)
 - Economizer lockout setpoint complies with Table 144-C per Standards Section 144(e)3.
 - Economizer lockout control sensor is located to prevent false readings.
 - System is designed to provide up to 100% outside air without over-pressurizing the building.
 - For systems with DDC controls lockout sensor(s) are either factory calibrated or field calibrated.
 - For systems with non-DDC controls, manufacturer's startup and testing procedures have been applied

A. Functional Testing

Step 1: Disable demand control ventilation systems (if applicable)

Step 2: Enable the economizer and simulate a cooling demand large enough to drive the economizer fully open (check and verify the following)

- Economizer damper modulates 100% open
- Return air damper modulates 100% closed.
- For systems that meet the criteria of 144(e)1, verify that the economizer remains 100% open when the cooling demand can no longer be met by the economizer alone.
- All applicable fans and dampers operate as intended to maintain building pressure.
- The unit heating is disabled

Step 3: Simulate a cooling load and disable the economizer (check and verify the following)

- Economizer damper closes to its minimum position.
- All applicable fans and dampers operate as intended to maintain building pressure.
- The unit heating is disabled

Step 4: Simulate a heating demand and enable the economizer (check and verify the following)

- Economizer damper closes to its minimum position.

Step 5: System returned to initial operating conditions

Y / N

B. Testing Results

PASS / FAIL

Step 1: Simulate cooling load and enable the economizer (all check boxes are complete)

Step 2: Simulate cooling load and disable the economizer (all check boxes are complete)

Step 3: Simulate heating demand and enable the economizer (all check boxes are complete)

NA7.5.5 Demand Control Ventilation Systems Acceptance

Project Name/Address:

System Name or Identification/Tag:

System Location or Area Served:

Enforcement Agency:

Permit Number:

Note: Submit one Certificate of Acceptance for each system that must demonstrate compliance.

Enforcement Agency Use: Checked by/Date

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Company Name:

Field Technician's Name:

Field Technician's Signature:

Date Signed:

Position With Company (Title):

RESPONSIBLE PERSON'S DECLARATION STATEMENT

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Company Name:

Phone:

Responsible Person's Name:

Responsible Person's Signature:

License:

Date Signed:

Position With Company (Title):

Project Name/Address:

System Name or Identification/Tag:

System Location or Area Served:

Intent:

Verify that systems required to employ demand Controlled ventilation (refer to §121(c)3) can vary outside ventilation flow rates based on maintaining interior carbon dioxide (CO₂) concentration setpoints

Construction Inspection

- 1 Instrumentation to perform test includes, but not limited to:
 - a. Calibrated hand-held CO² analyzer
 - b. Manufacturer's calibration kit
 - c. Calibrated CO²/air mixtures
- 2 Installation
 - The sensor is located in the high density space between 3ft and 6 ft above the floor or at the anticipated level of the occupants' heads.
- 3 Documentation of all carbon dioxide control sensors includes (check one of the following):
 - a. Calibration method
 - Factory-calibration certificate calibration cert must be attached
 - Field calibrated
 - b. Sensor accuracy
 - Certified by manufacturer to be no more than +/- 75 ppm calibration cert must be attached

A. Functional Testing		Results
a. Disable economizer controls		
b. Outside air CO ² concentration (select one of the following)		
<input type="checkbox"/> Measured dynamically using CO ² sensor		_____ ppm
c. Interior CO ² concentration setpoint (Outside CO ² concentration + 600 ppm)		_____ ppm
Step 1: Simulate a signal at or slightly above the CO² setpoint or follow manufacturers recommended testing procedures.		
<input type="checkbox"/> For single zone units, outdoor air damper modulates opens to satisfy the total ventilation air called for in the Certificate of Compliance.		
<input type="checkbox"/> For multiple zone units, either outdoor air damper or zone damper modulate open to satisfy the zone ventilation requirements.		
Step 2: Simulate signal well below the CO² setpoint or follow manufacturers recommended procedures.		
<input type="checkbox"/> For single zone units, outdoor air damper modulates to the design minimum value.		
<input type="checkbox"/> For multiple zone units, either outdoor air damper or zone damper modulate to satisfy the reduced zone ventilation requirements.		
Step 3: System returned to initial operating conditions		Y / N
B. Testing Results		PASS / FAIL
Step 1: Simulate a high CO ² load (check box complete)		
Step 2: Simulate a low CO ² load (check box complete)		

CERTIFICATE OF ACCEPTANCE**MECH-7A****NA7.5.6 Supply Fan VFD Acceptance****(Page 1 of 2)**

Project Name/Address:

System Name or Identification/Tag:

System Location or Area Served:

Enforcement Agency:

Permit Number:

Note: Submit one Certificate of Acceptance for each system that must demonstrate compliance.

Enforcement Agency Use: Checked by/Date

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Company Name:

Field Technician's Name:

Field Technician's Signature:

Date Signed:

Position With Company (Title):

RESPONSIBLE PERSON'S DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, that I am the Field Technician, or the Field Technician is acting on my behalf as my employee or my agent and I have reviewed the information provided on this form.
- I am a licensed contractor, architect, or engineer, who is eligible under Division 3 of the Business and Professions Code, in the applicable classification, to take responsibility for the scope of work specified on this document and attest to the declarations in this statement (responsible person).
- I certify that the information provided on this form substantiates that the construction/installation identified on this form complies with the acceptance requirements indicated in the plans and specifications approved by the enforcement agency, and conforms to the applicable acceptance requirements and procedures specified in Reference Nonresidential Appendix NA7.
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Company Name:

Phone:

Responsible Person's Name:

Responsible Person's Signature:

License:

Date Signed:

Position With Company (Title):

Project Name/Address:

System Name or Identification/Tag:

System Location or Area Served:

Intent:

Verify that the supply fan in a variable air volume application modulates to meet system airflow demand.

Construction Inspection

- 1 Instrumentation to perform test includes, but not limited to:
 - a. Calibrated differential pressure gauge
- 2 Installation
 - Discharge static pressure sensors are either factory calibrated or field-calibrated.
 - The static pressure location, setpoint, and reset control meets the requirements of Standards section 144(c)2C
- 3 Documentation of all discharge static pressure sensors including (check one of the following):
 - Field-calibrated
 - Calibration complete, all pressure sensors within 10% of calibrated reference sensor

A. Functional Testing	Results
Step 1: Drive all VAV boxes to achieve design airflow	
a. Supply fan controls modulate to increase capacity	Y / N
b. Supply fan maintains discharge static pressure within +/-10% of the current operating set point.	Y / N
c. Supply fan controls stabilize within a 5 minute period.	Y / N
Step 2: Drive all VAV boxes to minimum flow	
a. Supply fan controls modulate to decrease capacity.	Y / N
b. Current operating setpoint has decreased (for systems with DDC to the zone level).	Y / N
c. Supply fan maintains discharge static pressure within +/-10% of the current operating setpoint.	Y / N
d. Supply fan controls stabilize within a 5 minute period.	Y / N
Step 3: System returned to initial operating conditions	Y / N
B. Testing Results	PASS / FAIL
Step 1: Drive all VAV boxes to achieve design airflow	
Step 2: Drive all VAV boxes to minimum flow	
C. PASS / FAIL Evaluation (check one):	
<input type="checkbox"/>	PASS: All Construction Inspection responses are complete and all Testing Results responses are "Pass"
<input type="checkbox"/>	FAIL: Any Construction Inspection responses are incomplete <i>OR</i> there is one or more "Fail" responses in Testing Results section. Provide explanation below. Use and attach additional pages if necessary.

NA7.5.7 Valve Leakage Test

Project Name/Address:

System Name or Identification/Tag:

System Location or Area Served:

Enforcement Agency:

Permit Number:

Note: Submit one Certificate of Acceptance for each system that must demonstrate compliance.

Enforcement Agency Use: Checked by/Date

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Company Name:

Field Technician's Name:

Field Technician's Signature:

Date Signed:

Position With Company (Title):

RESPONSIBLE PERSON'S DECLARATION STATEMENT

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Company Name:

Phone:

Responsible Person's Name:

Responsible Person's Signature:

License:

Date Signed:

Position With Company (Title):

NA7.5.7 Valve Leakage Test

Project Name/Address:

System Name or Identification/Tag:

System Location or Area Served:

Intent:

Ensure that control valves serving variable flow systems are designed to withstand the pump pressure over the full range of operation.

Construction Inspection

- 1 Instrumentation to perform test includes, but not limited to:
 - a. Calibrated differential pressure gauge
 - b. Pump curve submittals showing the shut-off head
- 2 Installation
 - Valve and piping arrangements were installed per the design drawings

A. Functional Testing	Pump Tag (Id)	Results
------------------------------	----------------------	----------------

Step 1: Determine pump dead head pressure		
a. Close pump discharge isolation valve		Y / N
b. Measure and record the differential pump pressure	Ft. W.C. =	
c. Record the shut-off head from the submittal	Ft. W.C. =	
d. The measurement across the pump in step 1b is within 5% of the pump submittal in step 1c		Y / N
e. Open pump discharge isolation valve		Y / N

Step 2: Automatically close all valves on the systems being tested. If 3-way valves are present, close off the bypass line(s).

a. The 2 way valves automatically close		Y / N
b. Measure and record the differential pump pressure in feet of water column	Ft. W.C. =	
c. The measurement across the pump in step 2b is within 5% of the measurement in step 1b		Y / N

Step 3: System returned to initial operating conditions

B. Testing Results	Y / N	
	PASS / FAIL	
Step 1: Pressure measurement is within 5% of submittal data for all pumps	<input type="checkbox"/>	<input type="checkbox"/>
Step 2: Pressure measurements are within 5%	<input type="checkbox"/>	<input type="checkbox"/>

C. PASS / FAIL Evaluation (check one):

- PASS: All **Construction Inspection** responses are complete and all **Testing Results** responses are "Pass"
- FAIL: Any **Construction Inspection** responses are incomplete *OR* there is one or more "Fail" responses in **Testing Results** section. Provide explanation below. Use and attach additional pages if necessary.

Project Name/Address:

System Name or Identification/Tag:

System Location or Area Served:

Enforcement Agency:

Permit Number:

Note: Submit one Certificate of Acceptance for each system that must demonstrate compliance.

Enforcement Agency Use: Checked by/Date

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Date Signed:

Position With Company (Title):

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Company Name:

Phone:

Responsible Person's Name:

Responsible Person's Signature:

License:

Date Signed:

Position With Company (Title):

Project Name/Address:

System Name or Identification/Tag:

System Location or Area Served:

Intent:

Ensure that both the chilled water and hot water supply temperatures are automatically reset based on either building loads or outdoor air temperature, as indicated in the control sequences.

Construction Inspection

- 1 Instrumentation to perform test includes, but is not limited to:
 - a. Calibrated reference temperature sensor or drywell bath
- 2 Installation
 - Supply water temperature sensors have been either factory or field calibrated.
- 3 Documentation of hydronic system supply temperature sensors including (check one of the following):
 - Field-calibrated
 - Calibration complete, hydronic system supply temperature sensors within 1% of calibrated reference sensor or drywell bath

A Functional Testing	Results
-----------------------------	----------------

Step 1: Test Maximum Reset Value

a. Change reset control variable to its maximum value	Y / N
b. Verify that chilled or hot water temperature setpoint is reset to appropriate value	Y / N
c. Verify that actual system temperature changes to within 2% of the new setpoint	Y / N

Step 2: Test Minimum Reset Value

a. Change reset control variable to its minimum value	Y / N
b. Verify that chilled or hot water temperature setpoint is reset to appropriate value	Y / N
c. Verify that actual system temperature changes to within 2% of the new setpoint	Y / N

Step 3: Test Maximum Reset Value

a. Restore reset control variable to automatic control	Y / N
b. Verify that chilled or hot water temperature setpoint is reset to appropriate value	Y / N
c. Verify that actual supply temperature changes to meet setpoint	Y / N
d. Verify that actual supply temperature changes to within 2% of the new setpoint	Y / N

B Testing Results	PASS / FAIL	
--------------------------	--------------------	--

System passes criteria in 1c, 2c and 3d	<input type="checkbox"/>	<input type="checkbox"/>
---	--------------------------	--------------------------

C PASS / FAIL Evaluation (check one):

- PASS: All **Construction Inspection** responses are complete and all **Testing Results** responses are "Pass"
- FAIL: Any **Construction Inspection** responses are incomplete *OR* there is one or more "Fail" responses in **Testing Results** section. Provide explanation below. Use and attach additional pages if necessary

Project Name/Address:

System Name or Identification/Tag:

System Location or Area Served:

Enforcement Agency:

Permit Number:

Note: Submit one Certificate of Acceptance for each system that must demonstrate compliance.

Enforcement Agency Use: Checked by/Date

FIELD TECHNICIAN'S DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the person who performed the acceptance requirements verification reported on this Certificate of Acceptance (Field Technician).
- I certify that the construction/installation identified on this form complies with the acceptance requirements indicated in the plans and specifications approved by the enforcement agency, and conforms to the applicable acceptance requirements and procedures specified in Reference Nonresidential Appendix NA7.
- I have confirmed that the Installation Certificate(s) for the construction/installation identified on this form has been completed and is posted or made available with the building permit(s) issued for the building.

Company Name:

Field Technician's Name:

Field Technician's Signature:

Date Signed:

Position With Company (Title):

RESPONSIBLE PERSON'S DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, that I am the Field Technician, or the Field Technician is acting on my behalf as my employee or my agent and I have reviewed the information provided on this form.
- I am a licensed contractor, architect, or engineer, who is eligible under Division 3 of the Business and Professions Code, in the applicable classification, to take responsibility for the scope of work specified on this document and attest to the declarations in this statement (responsible person).
- I certify that the information provided on this form substantiates that the construction/installation identified on this form complies with the acceptance requirements indicated in the plans and specifications approved by the enforcement agency, and conforms to the applicable acceptance requirements and procedures specified in Reference Nonresidential Appendix NA7.
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Company Name:

Phone:

Responsible Person's Name:

Responsible Person's Signature:

License:

Date Signed:

Position With Company (Title):

Project Name/Address:

System Name or Identification/Tag:

System Location or Area Served:

Intent:

Ensure that when loads within the building fluctuate, control valves modulate the amount of water passing through each coil and add or remove the desired amount of energy from the air stream to satisfy the load.

Construction Inspection

- 1 Instrumentation to perform test includes, but not limited to:
 - a. Calibrated differential pressure gauge
- 2 Installation
 - Pressure sensors are either factory calibrated or field-calibrated.
 - Pressure sensor location, setpoint, and reset control meets the requirements of Standards section 144(j)6B
- 3 Documentation of all control pressure sensors including (check one of the following):
 - a. Factory-calibrated (proof required)
 - Factory-calibration certificate
 - b. Field-calibrated
 - Calibration complete, all pressure sensors within 10% of calibrated reference sensor

A. Functional Testing	Results
Step 1: Design flow test	
a. Open control valves to achieve a minimum of 90% of design flow	Y / N
b. Verify that the pump speed increases	Y / N
c. Are the pumps operating at 100% speed?	Y / N
d. Record the system pressure as measured at the control sensor	Ft. W.C. =
e. Record the system pressure setpoint	Ft. W.C. =
f. Is the pressure reading 1d within 5% of pressure setpoint 1e?	Y / N
g. Did the system operation stabilize within 5 minutes after completion of step 1a?	Y / N
Step 2: Low flow test	
a. Close coil control valves to achieve a maximum of 50% of design flow	Y / N
b. Verify that the current operating speed decreases (for systems with DDC to the zone level)	Y / N
c. Verify that the current operating speed has not increased (for all other systems that are not DDC)	Y / N
d. Record the system pressure as measured at the control sensor	Ft. W.C. =
e. Record the system pressure setpoint	Ft. W.C. =
f. Is the setpoint in 2e is less than the setpoint in 1d?	Y / N
g. Is the pressure reading 2d within 5% of pressure setpoint 2e?	Y / N
h. Did the system operation stabilize within 5 minutes after completion of step 2a?	Y / N
Step 3: System returned to initial operating conditions	Y / N

CERTIFICATE OF ACCEPTANCE**MECH-11A****NA7.5.10 Automatic Demand Shed Control Acceptance****(Page 1 of 2)**

Project Name/Address:

System Name or Identification/Tag:

System Location or Area Served:

Enforcement Agency:

Permit Number:

Note: Submit one Certificate of Acceptance for each system that must demonstrate compliance.

Enforcement Agency Use: Checked by/Date

FIELD TECHNICIAN'S DECLARATION STATEMENT

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Company Name:

Field Technician's Name:

Field Technician's Signature:

Date Signed:

Position With Company (Title):

RESPONSIBLE PERSON'S DECLARATION STATEMENT

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Company Name:

Phone:

Responsible Person's Name:

Responsible Person's Signature:

License:

Date Signed:

Position With Company (Title):

Project Name/Address:

System Name or Identification/Tag:

System Location or Area Served:

Enforcement Agency:

Permit Number:

Note: Submit one Certificate of Acceptance for each system that must demonstrate compliance.

Enforcement Agency Use: Checked by/Date

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Company Name:

Field Technician's Name:

Field Technician's Signature:

Date Signed:

Position With Company (Title):

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Company Name:

Phone:

Responsible Person's Name:

Responsible Person's Signature:

License:

Date Signed:

Position With Company (Title):

Project Name/Address:

System Name or Identification/Tag:

System Location or Area Served:

Intent:

The purpose of this test is to verify proper fault detection and reporting for automated fault detection and diagnostics systems for packaged units.

Construction Inspection

- 1 Instrumentation to perform test includes, but not limited to:
 - a List of instrumentation may be needed or included.
- 2 Installation
 - Verify that FDD hardware is installed on equipment by the manufacturer and that equipment make and model include factory-installed FDD hardware that matches the information indicated on copies of the manufacturer’s cut sheets and on the plans and specifications.
 -

A Eligibility Criteria	Results
a. A fault detection and diagnostics (FDD) system for direct-expansion packaged units shall contain the following features to be eligible for credit in the performance calculation method:	
b. The unit shall include a factory-installed economizer and shall limit the economizer deadband to no more than 2°F	Y / N
c. The unit shall include direct-drive actuators on outside air and return air dampers	Y / N
d. The unit shall include an integrated economizer with either differential dry-bulb or differential enthalpy control	Y / N
e. The unit shall include a low temperature lockout on the compressor to prevent coil freeze-up or comfort problems	Y / N
f. Outside air and return air dampers shall have maximum leakage rates conforming to ASHRAE 90.1- 2004	Y / N
g. The unit shall have an adjustable expansion control device such as a thermostatic expansion valve (TXV)	Y / N
h. To improve the ability to troubleshoot charge and compressor operation, a high-pressure refrigerant port will be located on the liquid line. A low-pressure refrigerant port will be located on the suction line	Y / N
i. The following sensors should be permanently installed to monitor system operation and the controller should have the capability of displaying the value of each parameter: <ul style="list-style-type: none"> <input type="checkbox"/> Refrigerant suction pressure <input type="checkbox"/> Supply air relative humidity <input type="checkbox"/> Return air temp. <input type="checkbox"/> Supply air relative humidity. <input type="checkbox"/> Refrigerant suction temp. <input type="checkbox"/> Outside air relative humidity <input type="checkbox"/> Supply air temp. <input type="checkbox"/> Liquid line pressure <input type="checkbox"/> Return air relative humidity <input type="checkbox"/> Outside air temp. 	Y / N
j. The controller will provide system status by indicating the following conditions: <ul style="list-style-type: none"> <input type="checkbox"/> Compressor enabled <input type="checkbox"/> Economizer enabled <input type="checkbox"/> Free cooling available <input type="checkbox"/> Heating enabled <input type="checkbox"/> Mixed air low limit cycle active 	Y / N
k. The unit controller shall have the capability to manually initiate each operating mode so that the operation of compressors, economizers, fans, and heating system can be independently tested and verified.	Y / N

Project Name/Address:

System Name or Identification/Tag:

System Location or Area Served:

B Functional Testing

Results

Step 1: Low Airflow Test

a. Test low airflow condition by replacing the existing filter with a dirty filter or appropriate obstruction

b. Verify that the fault detection and diagnostics system reports the fault

Y / N

c. Verify that the system is able to verify the correct refrigerant charge

Y / N

d. Verify that you are able to calibrate the following:

Y / N

- Outside Air Temp. Sensor
- Return Air Temp. Sensors
- Supply Air. Temp Sensors

C Testing Results

PASS / FAIL

Test passes if all answers are yes under **Eligibility Criteria** and **Functional Testing**.

PASS: All **Construction Inspection** responses are complete and all **Testing Results** responses are "Pass"

FAIL: Any **Construction Inspection** responses are incomplete *OR* there is one or more "Fail" responses in **Testing Results** section. Provide explanation below. Use and attach additional pages if necessary.

Terminal Units Acceptance

Project Name/Address:

System Name or Identification/Tag:

System Location or Area Served:

Enforcement Agency:

Permit Number:

Note: Submit one Certificate of Acceptance for each system that must demonstrate compliance.

Enforcement Agency Use: Checked by/Date

FIELD TECHNICIAN'S DECLARATION STATEMENT

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Company Name:

Field Technician's Name:

Field Technician's Signature:

Date Signed:

Position With Company (Title):

RESPONSIBLE PERSON'S DECLARATION STATEMENT

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Company Name:

Phone:

Responsible Person's Name:

Responsible Person's Signature:

License:

Date Signed:

Position With Company (Title):

Terminal Units Acceptance

Project Name/Address:

System Name or Identification/Tag:

System Location or Area Served:

Intent:

Verify that the system detects common faults in air handling units and zone terminal units.

Construction Inspection

- 1 Instrumentation to perform test includes, but not limited to:
 - a. No instrumentation is required – changes are implemented at the building automation system control station.
- 2 Installation
 - a. The functional testing verifies proper installation of the controls for FDD for air handling units and zone terminal units.
 - No additional installation checks are required.

A. Functional Testing for Air Handling Units

Results

Testing of each AHU with FDD controls shall include the following tests:

Step 1: Sensor Drift/Failure

- | | |
|---|-------|
| a. Disconnect outside air temperature sensor from unit controller | Y / N |
| b. Verify that the FDD system reports a fault | Y / N |
| c. Connect OAT sensor to the unit controller | Y / N |
| d. Verify that FDD indicates normal system operation | Y / N |

Step 2: Damper/Actuator Fault

- | | |
|---|-------|
| a. From the control system workstation, command the mixing box dampers to full open (100% outdoor air) | Y / N |
| b. Disconnect power to the actuator and verify that a fault is reported at the control workstation | Y / N |
| c. Reconnect power to the actuator and command the mixing box dampers to full open | Y / N |
| d. Verify that the control system does not report a fault | Y / N |
| e. From the control system workstation, command the mixing box dampers to a full-closed position (0% outdoor air) | Y / N |
| f. Disconnect power to the actuator and verify that a fault is reported at the control workstation | Y / N |
| g. Reconnect power to the actuator and command the dampers closed | Y / N |
| h. Verify that the control system does not report a fault during normal operation | Y / N |

Step 3: Valve/actuator fault

- | | |
|--|-------|
| a. From the control system workstation, command the heating and cooling coil valves to full open or closed, then disconnect power to the actuator and verify that a fault is reported at the control workstation | Y / N |
|--|-------|

Step 4: Inappropriate simultaneous heating, mechanical cooling, and/or economizing

- | | |
|--|-------|
| a. From the control system workstation, override the heating coil valve and verify that a fault is reported at the control workstation | Y / N |
| b. From the control system workstation, override the cooling coil valve and verify that a fault is reported at the control workstation | Y / N |
| c. From the control system workstation, override the mixing box dampers and verify that a fault is reported at the control workstation | Y / N |

CERTIFICATE OF ACCEPTANCE		MECH-13A
NA7.5.12 Automatic Fault Detection and Diagnostics (FDD) for Air Handling Units and Zone Terminal Units Acceptance		(Page 3 of 4)
Project Name/Address:		
System Name or Identification/Tag:	System Location or Area Served:	

B. Functional Testing for Zone Terminal Units	Results
Testing shall be performed on one of each type of terminal unit (VAV box) in the project. A minimum of 5% of the terminal boxes shall be tested.	
Step 1: Sensor drift/failure	
a. Disconnect the tubing to the differential pressure sensor of the VAV box	Y / N
b. Verify that control system detects and reports the fault	Y / N
c. Reconnect the sensor and verify proper sensor operation	Y / N
d. Verify that the control system does not report a fault	Y / N
Step 2: Damper/actuator fault	
If the Damper is stuck open:	
a. Command the damper to be fully open (room temperature above setpoint)	Y / N
b. Disconnect the actuator to the damper	Y / N
c. Adjust the cooling setpoint so that the room temperature is below the cooling setpoint to command the damper to the minimum position. Verify that the control system reports a fault	Y / N
d. Reconnect the actuator and restore to normal operation	Y / N
If the Damper is stuck Closed:	
a. Set the damper to the minimum position	Y / N
b. Disconnect the actuator to the damper	Y / N
c. Set the cooling setpoint below the room temperature to simulate a call for cooling. Verify that the control system reports a fault	Y / N
d. Reconnect the actuator and restore to normal operation	Y / N
Step 3: Valve/actuator fault (For systems with hydronic reheat)	
a. Command the reheat coil valve to (full) open	Y / N
b. Disconnect power to the actuator. Set the heating setpoint temperature to be lower than the current space temperature, to command the valve closed. Verify that the fault is reported at the control workstation	Y / N
c. Reconnect the actuator and restore normal operation	Y / N
Step 4: Feedback loop tuning fault (unstable airflow)	
a. Set the integral coefficient of the box controller to a value 50 times the current value. Lower the space cooling setpoint to simulate a call for cooling.	
b. The damper cycles continuously and airflow is unstable. Verify that the control system detects and reports the fault	Y / N
c. Reset the integral coefficient of the controller to the original value to restore normal operation	Y / N
Step 5: Disconnected inlet duct	
a. From the control system workstation, command the damper to full closed, then disconnect power to the actuator and verify that a fault is reported at the control workstation	Y / N

CERTIFICATE OF ACCEPTANCE

MECH-13A

NA7.5.12 Automatic Fault Detection and Diagnostics (FDD) for Air Handling Units and Zone Terminal Units Acceptance

(Page 4 of 4)

Project Name/Address:

System Name or Identification/Tag:

System Location or Area Served:

C. Testing Results

PASS / FAIL

Test passes if all applicable answers are yes under **Functional Testing Sections**.

D. PASS / FAIL Evaluation (check one):

PASS: All **Construction Inspection** responses are complete and all **Testing Results** responses are "Pass"

FAIL: Any **Construction Inspection** responses are incomplete *OR* there is one or more "Fail" responses in **Testing Results** section. Provide explanation below. Use and attach additional pages if necessary.

CERTIFICATE OF ACCEPTANCE**MECH-14A****NA7.5.13 Distributed Energy Storage DX AC Systems Acceptance****(Page 1 of 3)**

Project Name/Address:

System Name or Identification/Tag:

System Location or Area Served:

Enforcement Agency:

Permit Number:

Note: Submit one Certificate of Acceptance for each system that must demonstrate compliance.

Enforcement Agency Use: Checked by/Date

FIELD TECHNICIAN'S DECLARATION STATEMENT

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Company Name:

Field Technician's Name:

Field Technician's Signature:

Date Signed:

Position With Company (Title):

RESPONSIBLE PERSON'S DECLARATION STATEMENT

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Company Name:

Phone:

Responsible Person's Name:

Responsible Person's Signature:

License:

Date Signed:

Position With Company (Title):

Project Name/Address:

System Name or Identification/Tag:

System Location or Area Served:

Intent: *Verify proper operation of distributed energy storage DX systems.*

Construction Inspection

- 1 Instrumentation to perform test includes, but not limited to:
 - a. No special instrumentation is required to perform these tests.
- 2 Installation
 Prior to Performance Testing, verify and document the following:
 - The water tank is filled to the proper level
 - The water tank is sitting on a foundation with adequate structural strength
 - The water tank is insulated and the top cover is in place
 - The DES/DXAC is installed correctly (refrigerant piping, etc.)
 - Verify that the correct model number is installed and configured

A. Functional Testing	Results
Step 1: Simulate no cooling load during a nighttime period by setting system time to between 9PM and 6AM. Raise the space temperature setpoint above the current space temperature. Verify and document the following:	
a. The system charges the tank.	Y / N
b. The system does not provide cooling to the building.	Y / N
Step 2: Simulate cooling load during daytime period (e.g. by setting time schedule to include actual time and placing thermostat cooling set-point below actual temperature). Verify and document the following:	
a. Supply fan operates continually during occupied hours.	Y / N
b. If the DES/DXAC has cooling capacity, DES/DXAC runs to meet the cooling demand (in ice melt mode)	Y / N / NA
c. If the DES/DXAC has no ice and there is a call for cooling, the DES/DXAC runs in direct cooling mode	Y / N / NA
Step 3: Simulate no cooling load during daytime condition. Verify and document the following:	
a. Supply fan operates as per the facility thermostat or control system	Y / N
b. The DES/DXAC and the condensing unit do not run	Y / N
Step 4: Simulate no cooling load during morning shoulder time period. Verify and document the following:	
a. The DES/DXAC is idle (the condensing unit and the refrigerant pumps remain off).	Y / N
Step 5: Simulate a cooling load during morning shoulder time period. Verify and document the following:	
a. The DES/DXAC runs in direct cooling mode (the compressor operates to cool the space).	Y / N
B. Calibrating Controls	Results
a. Verify that you are able to set the proper time and date, as per manufacturer's installation manual for approved installers	Y / N
C. Testing Results	PASS / FAIL
Test passes if all answers are yes under Functional Testing and Calibrating Controls .	<input type="checkbox"/> <input type="checkbox"/>

Project Name/Address:

System Name or Identification/Tag:

System Location or Area Served:

- PASS:** All **Construction Inspection** responses are complete and all **Testing Results** responses are "Pass"
- FAIL:** Any **Construction Inspection** responses are incomplete *OR* there is one or more "Fail" responses in **Testing Results** section. Provide explanation below. Use and attach additional pages if necessary.

NA7.5.14 Thermal Energy Storage (TES) System Acceptance

Project Name/Address:

System Name or Identification/Tag:

System Location or Area Served:

Enforcement Agency:

Permit Number:

Note: Submit one Certificate of Acceptance for each system that must demonstrate compliance.

Enforcement Agency Use: Checked by/Date

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Company Name:

Field Technician's Name:

Field Technician's Signature:

Date Signed:

Position With Company (Title):

RESPONSIBLE PERSON'S DECLARATION STATEMENT

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Company Name:

Phone:

Responsible Person's Name:

Responsible Person's Signature:

License:

Date Signed:

Position With Company (Title):

Project Name/Address:

System Name or Identification/Tag:

System Location or Area Served:

Intent: *Verify proper operation of distributed energy storage TES systems.*

Construction Inspection

1. Instrumentation to perform test includes, but not limited to:
 - a. No special instrumentation is required for the acceptance tests.

A. Certificate of Compliance Information

The following Certificate of Compliance information for both the chiller and the storage tank shall be provided on the plans to document the key TES System parameters and allow plan check comparison to the inputs used in the DOE-2 simulation. DOE-2 keywords are shown in ALL CAPITALS in parentheses.

a. Chiller	Brand and Model:			
	Type (Centrifugal, Reciprocating, etc):			
	Capacity (tons): (Size)			
	Starting Efficiency (kW/ton): (at beginning of ice production) (COMP-KW/TON-START)			
	Ending Efficiency (kW/ton): (at end of ice production) (COMP-KW/TON-END)			
	Capacity Reduction (% / F): (PER-COMP-REDUCT/F)			
b. Storage Tank	Storage Type (Check): (TES-TYPE)	<input type="checkbox"/> Chilled Water Storage	<input type="checkbox"/> Ice-on-Coil	<input type="checkbox"/> CHS
		<input type="checkbox"/> Ice Harvester	<input type="checkbox"/> Brine	
		<input type="checkbox"/> Ice-Slurry	<input type="checkbox"/> Eutectic Salt	
	Number of tanks (SIZE)			
	Storage Capacity per Tank (ton-hours)			
	Storage Rate (tons): (COOL-STORE-RATE)			
	Discharge Rate (tons): (COOL-SUPPLY-RATE)			
	Auxiliary Power (watts): (PUMP+AUX-KW)			
	Tank Area (sq ft): (CTANK-LOSS-COEFF)			
Tank Insulation (R-Value): (CTANK-LOSS-COEFF)				

Project Name/Address:

System Name or Identification/Tag:

System Location or Area Served:

B. Functional Testing **Results**

Step 1: TES System Design Verification

a. In the TES System Design Verification part, the installing contractor shall certify the following information, which verifies proper installation of the TES System consistent with system design expectations:	Y / N												
<table style="width: 100%; border: none;"> <tr> <td style="width: 33%; border: none;"><input type="checkbox"/> The TES system is one of the above eligible systems</td> <td style="width: 33%; border: none;"><input type="checkbox"/> Initial discharge rate of the storage tanks (tons)</td> <td style="width: 33%; border: none;"><input type="checkbox"/> Discharge test time (hrs).</td> </tr> <tr> <td style="border: none;"><input type="checkbox"/> Initial charge rate of the storage tanks (tons)</td> <td style="border: none;"><input type="checkbox"/> Final discharge rate of the storage tank (tons)</td> <td style="border: none;"><input type="checkbox"/> Tank storage capacity after charge (ton-hrs)</td> </tr> <tr> <td style="border: none;"><input type="checkbox"/> Final charge rate of the storage tank (tons)</td> <td style="border: none;"><input type="checkbox"/> Charge test time (hrs)</td> <td style="border: none;"><input type="checkbox"/> Tank storage capacity after discharge (ton-hrs)</td> </tr> <tr> <td style="border: none;"><input type="checkbox"/> Tank standby storage losses (UA)</td> <td style="border: none;"><input type="checkbox"/> Initial chiller efficiency (kW/ton) during charging</td> <td style="border: none;"><input type="checkbox"/> Final chiller efficiency (kW/ton) during charging</td> </tr> </table>	<input type="checkbox"/> The TES system is one of the above eligible systems	<input type="checkbox"/> Initial discharge rate of the storage tanks (tons)	<input type="checkbox"/> Discharge test time (hrs).	<input type="checkbox"/> Initial charge rate of the storage tanks (tons)	<input type="checkbox"/> Final discharge rate of the storage tank (tons)	<input type="checkbox"/> Tank storage capacity after charge (ton-hrs)	<input type="checkbox"/> Final charge rate of the storage tank (tons)	<input type="checkbox"/> Charge test time (hrs)	<input type="checkbox"/> Tank storage capacity after discharge (ton-hrs)	<input type="checkbox"/> Tank standby storage losses (UA)	<input type="checkbox"/> Initial chiller efficiency (kW/ton) during charging	<input type="checkbox"/> Final chiller efficiency (kW/ton) during charging	
<input type="checkbox"/> The TES system is one of the above eligible systems	<input type="checkbox"/> Initial discharge rate of the storage tanks (tons)	<input type="checkbox"/> Discharge test time (hrs).											
<input type="checkbox"/> Initial charge rate of the storage tanks (tons)	<input type="checkbox"/> Final discharge rate of the storage tank (tons)	<input type="checkbox"/> Tank storage capacity after charge (ton-hrs)											
<input type="checkbox"/> Final charge rate of the storage tank (tons)	<input type="checkbox"/> Charge test time (hrs)	<input type="checkbox"/> Tank storage capacity after discharge (ton-hrs)											
<input type="checkbox"/> Tank standby storage losses (UA)	<input type="checkbox"/> Initial chiller efficiency (kW/ton) during charging	<input type="checkbox"/> Final chiller efficiency (kW/ton) during charging											

Step 2: TES System Controls and Operation Verification

a. The TES system and the chilled water plant is controlled and monitored by an EMS.	<input type="checkbox"/> Pass <input type="checkbox"/> Fail
b. Force the time between 9:00 p.m. and 9:00 a.m. and simulate a partial or no charge of the tank and simulate no cooling load by setting the indoor temperature setpoint higher than the ambient temperature. Verify that the TES system starts charging (storing energy).	<input type="checkbox"/> Pass <input type="checkbox"/> Fail
c. Force the time to be between 6:00 p.m. and 9:00 p.m. and simulate a partial charge on the tank and simulate a cooling load by setting the indoor temperature set point lower than the ambient temperature. Verify that the TES system starts discharging.	<input type="checkbox"/> Pass <input type="checkbox"/> Fail
d. Force the time to be between noon and 6:00 p.m. and simulate a cooling load by lowering the indoor air temperature set point below the ambient temperature. Verify that the tank starts discharging and the compressor is off. For systems designed to meet partial loads the system should be run until the TES storage is fully depleted. The number of hours of operation must meet or exceed the designed operational hours for the system.	<input type="checkbox"/> Pass <input type="checkbox"/> Fail
e. Force the time to be between 9:00 a.m. to noon, and simulate a cooling load by lowering the indoor air temperature set point below the ambient temperature. Verify that the tank does not discharge and the cooling load is met by the compressor only.	<input type="checkbox"/> Pass <input type="checkbox"/> Fail
f. Force the time to be between 9:00 p.m. and 9:00 a.m. and simulate a full tank charge by changing the output of the sensor to the EMS. Verify that the tank charging is stopped.	<input type="checkbox"/> Pass <input type="checkbox"/> Fail
g. Force the time to be between noon and 6:00 p.m. and simulate no cooling load by setting the indoor temperature set point above the ambient temperature. Verify that the tank does not discharge and the compressor is off.	<input type="checkbox"/> Pass <input type="checkbox"/> Fail

C . PASS / FAIL Evaluation (check one):

<input type="checkbox"/>	PASS: Construction Inspection responses are complete and all tests in step 2 pass.
<input type="checkbox"/>	FAIL: Any Construction Inspection responses are incomplete <i>OR</i> there is one or more "Fail" responses in Testing Results section. Provide explanation below. Use and attach additional pages if necessary.

***2008 Certificate of Acceptance
Indoor Lighting***

Project Name/Address:

System Name or Identification/Tag:

System Location or Area Served:

Enforcement Agency:

Permit Number:

Note: Submit one Certificate of Acceptance for each system that must demonstrate compliance.

Enforcement Agency Use: Checked by/Date

FIELD TECHNICIAN'S DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the person who performed the acceptance requirements verification reported on this Certificate of Acceptance (Field Technician).
- I certify that the construction/installation identified on this form complies with the acceptance requirements indicated in the plans and specifications approved by the enforcement agency, and conforms to the applicable acceptance requirements and procedures specified in Reference Nonresidential Appendix NA7.
- I have confirmed that the Installation Certificate(s) for the construction/installation identified on this form has been completed and is posted or made available with the building permit(s) issued for the building.

Company Name:

Field Technician's Name:

Field Technician's Signature:

Date Signed:

Position With Company (Title):

RESPONSIBLE PERSON'S DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, that I am the Field Technician, or the Field Technician is acting on my behalf as my employee or my agent and I have reviewed the information provided on this form.
- I am a licensed contractor, architect, or engineer, who is eligible under Division 3 of the Business and Professions Code, in the applicable classification, to take responsibility for the scope of work specified on this document and attest to the declarations in this statement (responsible person).
- I certify that the information provided on this form substantiates that the construction/installation identified on this form complies with the acceptance requirements indicated in the plans and specifications approved by the enforcement agency, and conforms to the applicable acceptance requirements and procedures specified in Reference Nonresidential Appendix NA7.
- I have confirmed that the Installation Certificate(s) for the construction/installation identified on this form has been completed and is posted or made available with the building permit(s) issued for the building.
- I will ensure that a completed, signed copy of this Certificate of Acceptance shall be posted, or made available with the building permit(s) issued for the building, and made available to the enforcement agency for all applicable inspections. I understand that a signed copy of this Certificate of Acceptance is required to be included with the documentation the builder provides to the building owner at occupancy.

Company Name:

Phone:

Responsible Person's Name:

Responsible Person's Signature:

License:

Date Signed:

Position With Company (Title):

Occupant Sensor, Manual Daylighting Control, and Automatic Time Switch Control**Intent:** Lights are turned off when not needed per Section 119(d) & 131(d).**Construction Inspection**

1 Instrumentation to perform test includes, but not limited to:

a. Hand-held amperage and voltage meter

b. Power meter

continued on next page

Project Name/Address:

System Name or Identification/Tag:

System Location or Area Served:

2	Occupancy Sensor Construction Inspection	
	<input type="checkbox"/>	Occupancy sensor has been located to minimize false signals
	<input type="checkbox"/>	Light meter
	<input type="checkbox"/>	Ultrasonic occupancy sensors do not emit audible sound (119a) 5 feet from source
3	Manual Daylighting Controls Construction Inspection	
	<input type="checkbox"/>	If dimming ballasts are specified for light fixtures within the daylit area, make sure they meet all the Standards requirements, including "reduced flicker operation" for manual dimming control systems
4	Automatic Time Switch Controls Construction Inspection	
	a.	Automatic time switch control is programmed for (check all):
	<input type="checkbox"/>	Weekdays
	<input type="checkbox"/>	Weekend
	<input type="checkbox"/>	Holidays
	b.	Document for the owner automatic time switch programming (check all):
	<input type="checkbox"/>	Weekdays settings
	<input type="checkbox"/>	Weekend settings
	<input type="checkbox"/>	Holidays settings
	<input type="checkbox"/>	Set-up settings
	<input type="checkbox"/>	Preference program setting
	<input type="checkbox"/>	Verify the correct time and date is properly set in the time switch
	<input type="checkbox"/>	Verify the battery is installed and energized
	<input type="checkbox"/>	Override time limit is no more than 2 hours
	<input type="checkbox"/>	Occupant Sensors and Automatic Time Switch Controls have been certified to the Energy Commission in accordance with the applicable provision in Section 119 of the Standards, and model numbers for all such controls are listed on the Commission database as Certified Appliance and Control Devices

A. Select Acceptance Test (Indicate lighting control systems Names/Designations by the applicable tests below)

<input type="checkbox"/>	1	Occupancy Sensor
<input type="checkbox"/>	2	Manual Daylighting Controls
<input type="checkbox"/>	3	Automatic Time Switch Controls

B. Equipment Testing Requirements

Check and verify those items applicable to selected system:

Applicable Lighting Control Systems

Occupancy Sensor - Step 1: Simulate an unoccupied condition		1	2	3
a.	Lights controlled by occupancy sensors turn off within a maximum of 30 minutes from start of an unoccupied condition per Standard Section 119(d)	Y / N	Y / N	Y / N
b.	The occupant sensor does not trigger a false "on" from movement in an area adjacent to the controlled space or from HVAC operation	Y / N	Y / N	Y / N
c.	Signal sensitivity is adequate to achieve desired control	Y / N	Y / N	Y / N
Occupant Sensor - Step 2: Simulate an occupied condition				
a.	Status indicator or annunciator operates correctly	Y / N	Y / N	Y / N
b.	Lights controlled by occupancy sensors turn on when Immediately upon an occupied condition OR (this requirement is mutually exclusive with Step 2.c.)	Y / N	Y / N	Y / N
c.	Sensor indicates space is "occupied" and lights turn on manually	Y / N	Y / N	Y / N

continued on next page

Project Name/Address:

System Name or Identification/Tag:

System Location or Area Served:

Enforcement Agency:

Permit Number:

Note: Submit one Certificate of Acceptance for each system that must demonstrate compliance.

Enforcement Agency Use: Checked by/Date

FIELD TECHNICIAN'S DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the person who performed the acceptance requirements verification reported on this Certificate of Acceptance (Field Technician).
- I certify that the construction/installation identified on this form complies with the acceptance requirements indicated in the plans and specifications approved by the enforcement agency, and conforms to the applicable acceptance requirements and procedures specified in Reference Nonresidential Appendix NA7.
- I have confirmed that the Installation Certificate(s) for the construction/installation identified on this form has been completed and is posted or made available with the building permit(s) issued for the building.

Company Name:

Field Technician's Name:

Field Technician's Signature:

Date Signed:

Position With Company (Title):

RESPONSIBLE PERSON'S DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, that I am the Field Technician, or the Field Technician is acting on my behalf as my employee or my agent and I have reviewed the information provided on this form.
- I am a licensed contractor, architect, or engineer, who is eligible under Division 3 of the Business and Professions Code, in the applicable classification, to take responsibility for the scope of work specified on this document and attest to the declarations in this statement (responsible person).
- I certify that the information provided on this form substantiates that the construction/installation identified on this form complies with the acceptance requirements indicated in the plans and specifications approved by the enforcement agency, and conforms to the applicable acceptance requirements and procedures specified in Reference Nonresidential Appendix NA7.
- I have confirmed that the Installation Certificate(s) for the construction/installation identified on this form has been completed and is posted or made available with the building permit(s) issued for the building.
- I will ensure that a completed, signed copy of this Certificate of Acceptance shall be posted, or made available with the building permit(s) issued for the building, and made available to the enforcement agency for all applicable inspections. I understand that a signed copy of this Certificate of Acceptance is required to be included with the documentation the builder provides to the building owner at occupancy.

Company Name:

Phone:

Responsible Person's Name:

Responsible Person's Signature:

License:

Date Signed:

Position With Company (Title):

Check boxes for all pages of this LTG-3A completed and included in this submittal

- | | | |
|--------------------------|-------------------|---|
| <input type="checkbox"/> | LTG-3A Page 2 | Construction Inspection. This page required for all submittals. |
| <input type="checkbox"/> | LTG-3A Page3 & 4 | Continuous dimming control functional performance test – watt-meter or amp-meter measurement |
| <input type="checkbox"/> | LTG-3A Page5 & 6 | Stepped Switching/ Stepped Dimming functional performance test – watt-meter or amp-meter measurement |
| <input type="checkbox"/> | LTG-3A Page7 & 8 | Continuous dimming control functional performance test – light meter power measurement, and default look-up table of fraction of rated power versus fraction of rated light output. |
| <input type="checkbox"/> | LTG-3A Page9 & 10 | Stepped Switching/ Stepped Dimming functional performance test – based on light output |

Project Name/Address:

System Name or Identification/Tag:

System Location or Area Served:

I. Construction Inspection NA-7.6.1.1

1 Drawing of Daylit Area(s) must be shown on plans or attached to this form. Select one or both of the following:

Shown on plans page #'s _____

Daylit area(s) drawn in on as-built plans (attached) page #'s _____

Check box below if sampling method is used in accordance with NA7.6.1.2. If checked, attach a page with names of other controls in sample (only for buildings with > 5 daylight control systems, sample group glazing same orientation)

Control System	System Name	Plans Page Number	Check if Tested Control is Representative of Sample	Applicable Control System		
				A	B	C
A	_____		<input type="checkbox"/>			
B	_____		<input type="checkbox"/>			
C	_____		<input type="checkbox"/>			
2 System Information						
Zone Type: Skylit (Sky), Primary Sidelit (PS), or Secondary Sidelit (SS)						
Control Type: Continuous Dimming with more than 10 light levels (C), Stepped Dimming (SD), Switching (SW)						
Design Footcandles: (enter number or "Unknown")						
3 Sensor and Controls						
Control Loop Type: Open Loop (OL), Closed Loop (CL)						
Sensor Location: Outside (O), Inside Skylight (IS), Near Windows facing out (NW), In Controlled Zone (CZ)						
Sensor Location is Appropriate to Control Loop Type: (Y/N) If control loop type is Open Loop (OL): Enter yes (Y) if location = Outside (O), Inside Skylight (IS), or Near Windows facing out (NW); otherwise, enter no (N). If Control loop type is Closed Loop (CL): Enter yes (Y) if location = In Controlled Zone (CZ); otherwise, enter no (N).						
Control Adjustments are in Appropriate Location (Y/N): Yes, If Readily Accessible or Yes if in Ceiling ≤ 11 ft, No for all other.						
4 Has documentation been provided by the installer:						
Installation Manuals and Calibration Instructions Provided to Building Owner: (Y/N)						
Location of Light Sensor on Plans: (Y/N)						
Location of Light Sensor on Plans: (Page Number)						
5 Separate Controls of Luminaires in Daylit Areas:						
Are luminaires controlled by automatic daylighting controls only in daylit areas: (Y/N)						
Separately circuited for daylit areas by windows and daylit areas under skylights: (Y/N)						
6 Daylighting control device certification						
Daylighting control has been certified in accordance with §119: (Y/N)						
Construction Inspection PASS/FAIL. If all responses on this Construction Inspection page are complete and all Yes/No questions have a Yes (Y) response, the tests PASS; If any responses on this page are incomplete OR there are any no (N) responses, the tests FAIL						

Project Name/Address:

System Name or Identification/Tag:

System Location or Area Served:

II. Functional Performance Testing – Continuous Dimming Systems NA-7.6.1.2

Power estimation using amp-meter measurement, or alternate option – watt-meter measurement

Complete all tests on page 3 of 10 (No Daylight Test, Full Daylight Test, and Partial Daylight Test) and fill out Pass/Fail section on Page 4 of 10.

Applicable Control System		
A	B	C

System Information

a.	Control Loop Type: Open Loop or Closed Loop? (O or C)			
b.	Indicate if Mandatory control - M (required for skylit area or primary sidelit area > 2,500 sf); for Control Credit – CC; or Voluntary not for credit -V (M, CC, V)			
c.	If automatic daylighting controls are mandatory, are all general lighting luminaires in daylight areas controlled by automatic daylight controls? (Y/N)			
d.	Documented general lighting design footcandles . (Enter footcandle value or “Unknown” (U))			
e.	Power estimation method . Measured Amps Multiplied by Volts, Volt-Amps (VA), alternate option is Measured Watts (W),			

Step 1: Identify Reference Location (location where minimum daylight illuminance is measured in area served by the controlled lighting.)

f.	Method Used: Illuminance or Distance? (I or D)			
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Override daylight control system and drive electric lights to full light output for the following:

g.	Full load fc – enter measured footcandles (fc) from controlled electric lighting (does not include daylight illuminance)			
h.	Full load power . Enter measured Amps times Volts, Volt-Amps (VA) or measured Watts.			

Step 2: No Daylight Test controls enabled & daylight less than 1 fc at reference location

i.	Method Used: Night time manual measurement (Night) , Night Time Illuminance Logging (Log) , Cover Fenestration (CF) , Cover Open Loop Photosensor (COLP)			
j.	Reference Illuminance (footcandles) as measured at Reference Location (see Step 1) . Enter footcandles			
k.	Enter Y if either of the following statements are true: [Reference Illuminance (line j)] / [Full load fc (line g)] > 90%? or [Reference Illuminance (line j)] / [design footcandles (line d)] > 90%? (Y/ N)			

Step 3: Full Daylight Test conducted when daylight greater than reference illuminance (line j)

l.	Enter measured Amps Multiplied by Volts, Volt-Amps (VA) or measured Watts (W).			
m.	System power reduction enter $[1 - (\text{line l})/(\text{line h})]$ enter as percent.			
n.	Is System Power Reduction (line m) > 65% (Y/N)			
o.	With uncontrolled lights also on, no lamps are dimmed outside of daylit area by control (Y/N)			
p.	Dimmed lamps have stable output (no perceptible visual flicker) (Y/N)			

Step 4: Partial Daylight Test conducted when daylight between 60% and 95% of (line j)

q.	Daylight illuminance (light level without electric light) measured at Reference Location (fc)			
r.	Daylight illuminance divided by the Reference Illuminance = (line q) / (line j). Enter %.			
s.	Is Ratio of Daylight illuminance to Ref illuminance (line r) between 60% and 95%? (Y/N)			
t.	Total (daylight + electric light) illuminance measured at the Reference Location (fc)			
u.	Total illuminance divided by the Reference Illuminance = (line t) / (line j), Enter %			
v.	Is Total illuminance divided by the Reference illuminance (line u) between 100% and 150%? (Y/N)			

Project Name/Address:

System Name or Identification/Tag:

System Location or Area Served:

III. PASS/FAIL Evaluation (check one):

- PASS:** All applicable **Construction Inspection** responses on page 2 of 10 are complete and all applicable **Functional Performance Testing Requirements** responses are positive (**Y - yes**) (applicable questions on page 3 of 10 = c, k, n, o, p, s, v)
- FAIL:** Any applicable **Construction Inspection** responses on page 2 of 10 are incomplete OR there is one or more negative (N - no) responses in any applicable **Functional Performance Testing Requirements** section (applicable questions on page 3 of 10 = c, k, n, o, p, s, v). System does not pass and is NOT eligible for Certificate of Occupancy according to Section 10-103(a)3B. Fix problem(s) and retest until the system(s) passes all portions of this test before retesting and resubmitting LTG-3A with PASSED test to the enforcement agency. Describe below the failure mode and corrective action needed.

Project Name/Address:

System Name or Identification/Tag:

System Location or Area Served:

II. NA7.6.1.2 Functional Performance Testing – Stepped Switching/ Stepped Dimming Systems

Power estimation using watt-meter or amp-meter measurement

Complete all tests on pages 5 & 6 of 10 (No Daylight Test, Full Daylight Test, and Partial Daylight Test) and fill out Pass/Fail section on Page 6 of 10.

Applicable Control System

A	B	C
----------	----------	----------

System Information

- a. Control Loop Type. Open Loop or Closed Loop? (**O or C**)
- b. Indicate if Mandatory control - M (required for skylit area or primary sidelit area > 2,500 sf); for Control Credit – CC; or Voluntary not for credit -V (**M, CC, V**)
- c. If automatic daylighting controls are mandatory, are all general lighting luminaires in daylight areas controlled by automatic daylight controls? (**Y/N**)
- d. **Power estimation method.** Measured Watts (W), Measured Amps Multiplied by Volts, Volt-Amps (VA),

Step 1: Identify Reference Location (location where minimum daylight illuminance is measured in area served by the controlled lighting.)

- e. Method Used: Illuminance or Distance? (**I or D**)

Step 2: No Daylight Test (daylight less than 1 fc at reference location)

- f. Method Used: Night time manual measurement (**Night**), Night Time Illuminance Logging (**Log**) attach plot of fc or power, Cover Fenestration (**CF**), Cover Photosensor (**CP**)
- g. **Reference Illuminance** (foot-candles) measured at Reference Location
- h. Enter measured Watts (W), or Amps Multiplied by Volts, Volt-Amps (VA)
- i. All controlled lights turn on and are at top dimming step? (**Y/N**)

Step 3: Full Daylight Test conducted when daylight > reference illuminance (line g)

- j. Measured **Watts of Volt-Amps** - record system power
- k. System fraction of power reduction = $[1-(\text{line k}) / (\text{line h})]$,
- l. Is System Power Reduction (k) > 65% (**Y/N**)

Step 4: Partial Daylight Test

- m. Method Used: Light Logging (**Log**), Partially Cover Fenestration (**PCF**), Open Loop Setpoint Adjustment (**OLSA**)
- n. If the control has three steps of control or less, all steps of control are tested. If the control has more than three steps, testing three steps of control is sufficient for showing compliance. Tests have been conducted at various daylight levels that correspond to steps of electric lighting control. (**Y/N**)

Project Name/Address:

System Name or Identification/Tag:

System Location or Area Served:

**II.NA7.6.1.2 Functional Performance Testing – Stepped Switching/ Stepped Dimming Systems
(continued)**

		Applicable Control System		
		A	B	C
First Stage of Control				
F1	Total (daylight + electric light) illuminance measured at the Reference Location (foot-candles) when stage turns off or dims			
F2	Is the measured total illuminance between 100% and 150% of the Reference Illuminance (line g)? (Y/N)			
F3	With time delay disabled, control stage does not cycle (i.e. deadband is sufficient)? (Y/N)			
Second Stage of Control				
F4	Total (daylight + electric light) illuminance measured at the Reference Location (foot-candles) when stage turns off or dims			
F5	Is the measured total illuminance between 100% and 150% of the Reference Illuminance (line g)? (Y/N)			
F6	With time delay disabled, control stage does not cycle (i.e. deadband is sufficient)? (Y/N)			
Third Stage of Control				
F7	Total (daylight + electric light) illuminance measured at the Reference Location (foot-candles) when stage turns off or dims			
F8	Is the measured total illuminance between 100% and 150% of the Reference Illuminance (line g)? (Y/N)			
F9	With time delay disabled, control stage does not cycle (i.e. deadband is sufficient)? (Y/N)			
Step 5: Time Delay Test (conduct at least 60 minutes after overriding time delay)				
r.	After change of state from little daylight to full daylight, time in minutes before light output is reduced			
s.	Is the measured time delay (line r) greater than or equal to 3 minutes? (Y/N)			

III. PASS/FAIL Evaluation (check one):

PASS: All applicable **Construction Inspection** responses on page 2 of 10 are complete and all applicable **Functional Performance Testing Requirements** responses are positive (**Y - yes**) (applicable questions on pages 5 & 6 of 10 are on lines c, i, l, m, n, F2, F3, F5, F6, F8, F9, s)

FAIL: Any applicable **Construction Inspection** responses on page 2 of 10 are incomplete OR there is one or more negative (N - no) responses in any applicable **Functional Performance Testing Requirements** section (applicable questions on pages 5 & 6 of 10 are on lines c, i, l, m, n, F2, F3, F5, F6, F8, F9, s). System does not pass and is NOT eligible for Certificate of Occupancy according to Section 10-103(a)3B. Fix problem(s) and retest until the system(s) passes all portions of this test before retesting and resubmitting LTG-3A with PASSED test to the enforcement agency. Describe below the failure mode and corrective action needed.

Project Name/Address:

System Name or Identification/Tag:

System Location or Area Served:

II. Functional Performance Testing – Continuous Dimming Systems NA-7.6.1.2

Power estimation using light meter measurement

Complete all tests on page 7 & 8 of 10 (No Daylight Test, Full Daylight Test, and Partial Daylight Test) and fill out Pass/Fail section on Page 8 of 10.

Applicable Control System

A	B	C
----------	----------	----------

System Information

- | | | | | |
|----|---|--|--|--|
| a. | Control Loop Type: Open Loop or Closed Loop? (O or C) | | | |
| b. | Indicate if Mandatory control - M (required for skylit area or primary sidelit area > 2,500 sf); for Control Credit – CC; or Voluntary not for credit -V (M, CC, V) | | | |
| c. | If automatic daylighting controls are mandatory, are all general lighting luminaires in daylight areas controlled by automatic daylight controls? (Y/N) | | | |
| d. | Documented general lighting design footcandles . If design footcandles not documented leave blank (enter fc) | | | |
| e. | Power estimation method. (see line r) Default ratio of power to light (Dfc), cut-sheet ratio of power to light (CSfc) If CSfc – attach cut-sheet. Enter Dfc or CSfc , | | | |

Step 1: Identify Reference Location (location where minimum daylight illuminance is measured in area served by the controlled lighting.)

- | | | | | |
|----|---|--|--|--|
| f. | Method Used: Illuminance or Distance? (I or D) | | | |
|----|---|--|--|--|

Override daylight control system and drive electric lights to full light output for full load fc.:

- | | | | | |
|----|--|--|--|--|
| g. | Full load fc – enter measured controlled electric lighting footcandles (fc) | | | |
|----|--|--|--|--|

Step 2: No Daylight Test

- | | | | | |
|----|--|--|--|--|
| h. | Method Used: Night time manual measurement (Night), Night Time Illuminance Logging (Log), Cover Fenestration (CF), Cover Open Loop Photosensor (COLP) | | | |
| i. | Reference Illuminance (footcandles) measured at Reference Location (Illuminance of general lighting at the reference location) | | | |
| j. | Enter Y if either of the following statements are true:
[Reference Illuminance (line i)] / [Full Load fc (line g)] > 90%? or
[Reference Illuminance (line i)] / [design footcandles (line d)] > 90%? (Y/ N) | | | |

Step 3: Full Daylight Test conducted when daylight > reference illuminance (line i)

- | | | | | |
|----|--|--|--|--|
| k. | Daylight illuminance (light level with electric lighting turned off) measured at Reference Location (fc) | | | |
| l. | Daylight illuminance (line k) greater than Reference Illuminance (line i) ? (Y/N) | | | |
| m. | Fraction controlled wattage turned off. Enter %. | | | |
| n. | Fraction of controlled wattage dimmed [1 – (line m)] Enter %. | | | |

Fill out lines o through r only if fraction of controlled wattage turned off (line m) < 100%.

- | | | | | |
|----|---|--|--|--|
| o. | Total (daylight + electric light) illuminance measured at the Reference Location (fc) | | | |
| p. | Electric lighting illuminance at the Reference Location (fc) [(line o) – (line k)] | | | |
| q. | Electric lighting illuminance (line p) divided by Full load fc (line g). Enter % | | | |
| r. | Dimmed luminaire fraction of rated power. Attach manufacturer’s cut-sheet or use default graph of rated power to light output on bottom of page 8 of 10. Label applicable control system (column A, B or C) on cut-sheet or graph. Enter fraction of rated power in %. | | | |
| s. | System Power Reduction = [1 – (line n) * (line r)] | | | |
| t. | Is System Power Reduction (line s) > 65% (Y/N) | | | |
| u. | With uncontrolled lights also on, no lamps dimmed outside of daylit area by control (Y/N) | | | |
| v. | Dimmed lamps have stable output, no perceptible flicker (Y/N) | | | |

Project Name/Address:

System Name or Identification/Tag:

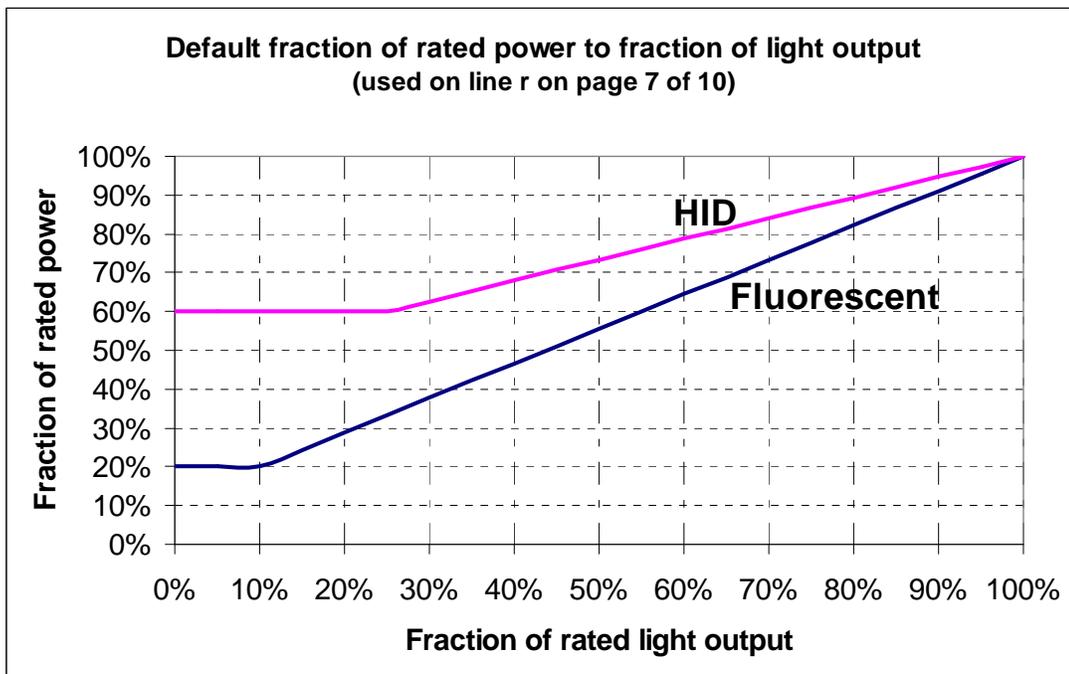
System Location or Area Served:

II. Functional Performance Testing – Continuous Dimming Systems NA-7.6.1.2 (continued)

		Applicable Control System		
		A	B	C
Step 4: Partial Daylight Test conducted when daylight between 60% and 95% of (line i)				
w.	Daylight illuminance (light level without electric light) measured at Reference Location (fc)			
x.	Daylight illuminance divided by the Reference Illuminance = (line w)/ (line i). Enter %			
y.	Is Ratio of Daylight illuminance to Ref illuminance (line x) between 60% and 95%? (Y/N)			
z.	Total (daylight + electric light) illuminance measured at the Reference Location (fc)			
aa.	Total illuminance divided by the Reference Illuminance = (line z) / (line i). Enter %			
ab.	Is Ratio of Total illum. to Reference illum. (line aa) between 100% and 150%? (Y/N)			

III. PASS/FAIL Evaluation (check one):

- PASS:** All applicable **Construction Inspection** responses on page 2 of 10 are complete and all applicable **Functional Performance Testing Requirements** responses are positive (**Y - yes**) (applicable questions on page 7 of 10 = c, j, l, t, u, v, y, ab)
- FAIL:** Any applicable **Construction Inspection** responses on page 2 of 10 are incomplete OR there is one or more negative (N - no) responses in any applicable **Functional Performance Testing Requirements** section (applicable questions on page 7 of 10 = c, j, l, t, u, v, y, ab). System does not pass and is NOT eligible for Certificate of Occupancy according to Section 10-103(a)3B. Fix problem(s) and retest until the system(s) passes all portions of this test before retesting and resubmitting LTG-3A with PASSED test to the enforcement agency. Describe below the failure mode and corrective action needed.



Project Name/Address:

System Name or Identification/Tag:

System Location or Area Served:

II. NA7.6.1.2 Functional Performance Testing – Stepped Switching/ Stepped Dimming Systems

Power estimation based on light output

Complete all tests on page 9 & 10 of 10 (No Daylight Test, Full Daylight Test, and Partial Daylight Test) and fill out Pass/Fail section on Page 10 of 10.

Applicable Control System		
A	B	C

System Information

a.	Open Loop or Closed Loop? (O or C)			
b.	Indicate if Mandatory control - M (skylit area or primary sidelit area > 2,500 sf); for Control Credit – CC; or Voluntary not for credit -V (M, CC, V)			
c.	If automatic daylighting controls are mandatory, are all general lighting luminaires in daylight areas controlled by automatic daylight controls? (Y/N)			
d.	Power estimation method. Counting (C) – not allowed for step dimming, Counting plus Cut Sheet (C+CS) attach ballast cut sheet with steps of power and light.			

Step 1: Identify Reference Location (location where minimum daylight illuminance is measured in area served by the controlled lighting.)

e.	Method Used: Illuminance or Distance? (I or D)			
----	---	--	--	--

Step 2: No Daylight Test

f.	Method Used: Night time manual measurement (Night) , Night Time Illuminance Logging (Log) attach plot of fc or power, Cover Fenestration (CF) , Cover Photosensor (CP)			
g.	Reference Illuminance (foot-candles) measured at Reference Location			
h.	All controlled lights turn on and are at top dimming step? (Y/N)			

Step 3: Full Daylight Test conducted when daylight > reference illuminance (line g)

i.	Fraction system wattage turned off			
j.	Fraction of system wattage dimmed			
k.	Step dimming level as a fraction of rated light output if applicable			
l.	Dimmed ballast fraction of rated power from cut-sheet			
m.	System Power Reduction = [1 – (line j)*(line l)]			
n.	Is System Power Reduction (line m) > 65% (Y/N)			
o.	With uncontrolled lights also on, no lamps controlled outside of daylit area (Y/N)			
p.	Dimmed lamps have stable output, no perceptible visual flicker (Y/N)			

Step 4: Partial Daylight Test

q.	Method Used: Light Logging (Log) , Partially Cover Fenestration (PCF) , Open Loop Setpoint Adjustment (OLSA)			
r.	If the control has three steps of control or less, all steps of control are tested. If the control has more than three steps, testing three steps of control is sufficient for showing compliance. Tests have been conducted at various daylight levels that correspond to steps of electric lighting control. (Y/N)			

Project Name/Address:

System Name or Identification/Tag:

System Location or Area Served:

**II.NA7.6.1.2 Functional Performance Testing – Stepped Switching/ Stepped Dimming Systems
(continued)**

		Applicable Control System		
		A	B	C
First Stage of Control				
F1	Total (daylight + electric light) illuminance measured at the Reference Location (foot-candles) when stage turns off or dims			
F2	Is the measured total illuminance between 100% and 150% of the Reference Illuminance (line g)? (Y/N)			
F3	With time delay disabled, control stage does not cycle (i.e. deadband is sufficient)? (Y/N)			
Second Stage of Control				
F4	Total (daylight + electric light) illuminance measured at the Reference Location (foot-candles) when stage turns off or dims			
F5	Is the measured total illuminance between 100% and 150% of the Reference Illuminance (line g)? (Y/N)			
F6	With time delay disabled, control stage does not cycle (i.e. deadband is sufficient)? (Y/N)			
Third Stage of Control				
F7	Total (daylight + electric light) illuminance measured at the Reference Location (foot-candles) when stage turns off or dims			
F8	Is the measured total illuminance between 100% and 150% of the Reference Illuminance (line g)? (Y/N)			
F9	With time delay disabled, control stage does not cycle (i.e. deadband is sufficient)? (Y/N)			
Step 5: Time Delay Test (conduct at least 60 minutes after overriding time delay)				
s.	After change of state from little daylight to full daylight, time in minutes before light output is reduced			
t.	Is the measured time delay (line s) greater than or equal to 3 minutes? (Y/N)			

III. PASS/FAIL Evaluation (check one):

PASS: All applicable **Construction Inspection** responses on page 2 of 10 are complete and all applicable **Functional Performance Testing Requirements** responses are positive (**Y - yes**) (applicable questions on pages 9 & 10 of 10 are on lines c, h, n, o, p, r, F2, F3, F5, F6, F8, F9, t)

FAIL: Any applicable **Construction Inspection** responses on page 2 of 10 are incomplete OR there is one or more negative (N - no) responses in any applicable **Functional Performance Testing Requirements** section (applicable questions on pages 9 & 10 of 10 are on lines c, h, h, o, p, r, F2, F3, F5, F6, F8, F9, t). System does not pass and is NOT eligible for Certificate of Occupancy according to Section 10-103(a)3B. Fix problem(s) and retest until the system(s) passes all portions of this test before retesting and resubmitting LTG-3A with PASSED test to the enforcement agency. Describe below the failure mode and corrective action needed.

***2008 Certificate of Acceptance
Outdoor Lighting***

CERTIFICATE OF ACCEPTANCE**OLTG-2A****NA7.7 Outdoor Lighting Acceptance Tests****(Page 1 of 3)**

Project Name/Address:

System Name or Identification/Tag:

System Location or Area Served:

Enforcement Agency:

Permit Number:

Note: Submit one Certificate of Acceptance for each system that must demonstrate compliance.

Enforcement Agency Use: Checked by/Date

FIELD TECHNICIAN'S DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the person who performed the acceptance requirements verification reported on this Certificate of Acceptance (Field Technician).
- I certify that the construction/installation identified on this form complies with the acceptance requirements indicated in the plans and specifications approved by the enforcement agency, and conforms to the applicable acceptance requirements and procedures specified in Reference Nonresidential Appendix NA7.
- I have confirmed that the Installation Certificate(s) for the construction/installation identified on this form has been completed and is posted or made available with the building permit(s) issued for the building.

Company Name:

Field Technician's Name:

Field Technician's Signature:

Date Signed:

Position With Company (Title):

RESPONSIBLE PERSON'S DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, that I am the Field Technician, or the Field Technician is acting on my behalf as my employee or my agent and I have reviewed the information provided on this form.
- I am a licensed contractor, architect, or engineer, who is eligible under Division 3 of the Business and Professions Code, in the applicable classification, to take responsibility for the scope of work specified on this document and attest to the declarations in this statement (responsible person).
- I certify that the information provided on this form substantiates that the construction/installation identified on this form complies with the acceptance requirements indicated in the plans and specifications approved by the enforcement agency, and conforms to the applicable acceptance requirements and procedures specified in Reference Nonresidential Appendix NA7.
- I have confirmed that the Installation Certificate(s) for the construction/installation identified on this form has been completed and is posted or made available with the building permit(s) issued for the building.
- I will ensure that a completed, signed copy of this Certificate of Acceptance shall be posted, or made available with the building permit(s) issued for the building, and made available to the enforcement agency for all applicable inspections. I understand that a signed copy of this Certificate of Acceptance is required to be included with the documentation the builder provides to the building owner at occupancy.

Company Name:

Phone:

Responsible Person's Name:

Responsible Person's Signature:

License:

Date Signed:

Position With Company (Title):

NA7.7 Outdoor Lighting Acceptance Tests

Project Name/Address:

System Name or Identification/Tag:

System Location or Area Served:

NA7.7.1 Outdoor Motion Sensor Acceptance

Intent: Lights are turned off when not needed per Section 119(d) & 132.

Construction Inspection

1.	Motion Sensor Construction Inspection
<input type="checkbox"/>	Motion sensor has been located to minimize false signals
<input type="checkbox"/>	Sensor is not triggered by motion outside of adjacent area
<input type="checkbox"/>	Desired motion sensor coverage is not blocked by obstruction that could adversely affect performance

Functional testing

1.	Simulate motion in area under lights controlled by the motion sensor. Verify and document the following:
<input type="checkbox"/>	Status indicator operates correctly.
<input type="checkbox"/>	Lights controlled by motion sensors turn on immediately upon entry into the area lit by the controlled lights near the motion sensor
<input type="checkbox"/>	Signal sensitivity is adequate to achieve desired control
2.	Simulate no motion in area with lighting controlled by the sensor but with motion adjacent to this area. Verify and document the following:
<input type="checkbox"/>	Lights controlled by motion sensors turn off within a maximum of 30 minutes from the start of an unoccupied condition per Standard Section 119(d).
<input type="checkbox"/>	The occupant sensor does not trigger a false “on” from movement outside of the controlled area
<input type="checkbox"/>	Signal sensitivity is adequate to achieve desired control.

NA7.7.2 Outdoor Lighting Shut-off Controls

Construction Inspection

1.	Outdoor Lighting Shut-off Controls Construction Inspection
<input type="checkbox"/>	Astronomical time switch controls and automatic time switch controls have been certified to the Energy Commission in accordance with the applicable provision in Standards Section 119. Verify that model numbers of all such controls are listed on the Energy Commission database as “Certified Appliances & Control Devices.”
<input type="checkbox"/>	Controls to turn off lights during daytime hours are installed
<input type="checkbox"/>	Astronomical and standard time switch control is programmed with acceptable weekday, weekend, and holiday (if applicable) schedules
<input type="checkbox"/>	Demonstrate and document for the owner time switch programming including weekday, weekend, holiday schedules as well as all set-up and preference program settings
2.	Lighting systems that meet the criteria of Section 132(c)2 of the Standards shall have a scheduling control (time switch) installed which is able to schedule separately:
<input type="checkbox"/>	A reduction in outdoor lighting power by 50 to 80%
<input type="checkbox"/>	Turning off all outdoor lighting covered by Section 132(c)2 of the Standards
<input type="checkbox"/>	Verify that the correct time and date is properly set in the standard and astronomical time switch.
<input type="checkbox"/>	Verify that the correct latitude, longitude and time zone are set in the astronomical time switch.
<input type="checkbox"/>	Verify the battery back-up (if applicable) is installed and energized in the standard and astronomical time switch.

NA7.7 Outdoor Lighting Acceptance Tests

Project Name/Address:

System Name or Identification/Tag:

System Location or Area Served:

NA7.7.2.2 Outdoor Photocontrol Functional testing

Note photocontrol must be used in conjunction with time switch or motion sensor to meet the requirements of Section 132(c)2 of the Standards.

1.	Nighttime test. Simulate or provide conditions without daylight. Verify and document:
	<input type="checkbox"/> Controlled lights turn on
2.	Sunrise test: Provide between 10 and 30 horizontal footcandles (fc) to photosensor. Verify and document the following
	<input type="checkbox"/> Controlled lights turn off

NA7.7.2.3 Astronomical Time Switch Functional testing

1.	Power off test. Program control with location information, local date and time, and schedules. Disconnect control from power source for at least 1 hour. Verify and document:
	<input type="checkbox"/> Control retains all programmed settings and local date and time
2.	Night schedule ON test. Simulate or provide times when the sun has set and lights are scheduled to be ON. Verify and document:
	<input type="checkbox"/> Controlled lights turn on
3.	Night schedule OFF test. Simulate or provide times when the sun has set and lights are scheduled to be OFF. Verify and document:
	<input type="checkbox"/> Controlled lights turn off
4.	Sunrise test: Simulate or provide the programmed offset time after the time of local sunrise
	<input type="checkbox"/> Controlled lights turn off

NA7.7.2.4 Standard (non-astronomical) Time Switch Functional Testing

Note: this control must be used in conjunction with a photocontrol to meet requirements of Section 132(c) of the Standards.

1.	Power off test. Program control with local date and time and schedules. Disconnect control from power source for at least 1 hour. Verify and document:
	<input type="checkbox"/> Control retains all programmed schedules and local date and time
2.	On schedule test. Simulate or provide times when lights are scheduled to be ON. Verify and document:
	<input type="checkbox"/> Controlled lights turn on
3.	Schedule test. Simulate or provide times when the sun has set and lights are scheduled to be OFF. Verify and document:
	<input type="checkbox"/> Controlled lights turn off

*Certificate of Field Verification and Diagnostic
Testing*

Air Distribution System Leakage Diagnostic

Project Name/Address:

System Name or Identification/Tag:

System Location or Area Served:

Enforcement Agency:

Permit Number:

Note: Submit one Certificate of Field Verification and Diagnostic Testing for each system that must demonstrate compliance.

Enforcement Agency Use: Checked by/Date

When HERS verification compliance is demonstrated utilizing group sampling:

For new buildings, the HERS rater must test and field verify the first individual single zone space conditioning unit of each building. After the first unit passes, the builder or the HERS rater shall identify a group of up to seven units in the building from which one sample will be selected for testing. If the first unit sampled fails the verification/diagnostic test, the HERS rater must pick another unit from the group for verification/testing. If the second unit in the group fails the verification/diagnostic test, the HERS rater is required to verify/test all package units in the group.

For existing buildings the HERS rater must verify/test at least one sample from each designated sample group of single-zone space conditioning units a contractor installs. The same rules for re-sampling as required for new buildings, must be followed if a sample test fails to comply with the HERS verification requirements.

- When group sampling is used to demonstrate compliance with HERS verification requirements, the installer must provide a completed copy of the applicable Installation Certificate(s), and a copy of the completed Certificate(s) of Acceptance (MECH-4A) for every system in the HERS sample group.
- In order to demonstrate compliance for new duct systems, where cloth-backed, rubber adhesive duct tape is installed, mastic and draw bands must used in combination with the cloth-backed, rubber adhesive duct tape to seal leaks at duct connections.

DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am the certified HERS rater who performed the verification services identified and reported on this certificate (responsible rater).
- The installed feature, material, component, or manufactured device requiring HERS verification that is identified on this certificate (the installation) complies with the applicable requirements in Reference Nonresidential Appendices NA1, NA2, NA7, and the requirements specified on the Certificate(s) of Compliance approved by the local enforcement agency.
- The information reported on applicable sections of the Installation Certificate(s) that were signed and submitted by the person(s) responsible for the installation, and on applicable sections of the Certificate(s) of Acceptance that were signed and submitted by the person(s) responsible for the acceptance testing, conforms to the requirements specified on the Certificate(s) of Compliance approved by the enforcement agency.

Installation Contractor information as shown on the Installation Certificate

Company Name: (Installing Subcontractor or General Contractor or Builder/Owner)

Name of responsible person for the installation:

CSLB License:

Acceptance Contractor information as shown on the Certificate of Acceptance

Company Name:

Name of responsible person for the acceptance verification :

CSLB License:

HERS Provider Data Registry Information

Sample Group # (if applicable):

tested/verified system

not-tested/verified system in a HERS sample group

HERS Rater Information

HERS Rater Company Name:

Responsible Rater's Name:

Responsible Rater's Signature:

Responsible Rater's Certification Number with this HERS Provider:

Date Signed:

Registration Number: _____ Registration Date/Time: _____ HERS Provider: _____

Air Distribution System Leakage Diagnostic

Project Name/Address:

System Name or Identification/Tag:

System Location or Area Served:

Nominal Rated Fan Flow Calculations		Enter Values
1	Determine Nominal Rated Fan Flow using one of the following two calculation methods:	
	a) Cooling system method: Nominal Cooling Capacity _____ (tons) x 400 (cfm/ton) = _____ (cfm)	
	b) Heating system method (for heating only units): Output Capacity _____ (kBtuh) x 21.7 (cfm/kBtuh) = _____ (cfm)	
2	Enter the rated fan flow value from calculations 1(a) or 1(b) (cfm)	

Completely New or Replacement Duct System:

3	Duct Pressurization Test Results (CFM @ 25 Pa). Enter Tested Leakage Flow in CFM:	
4	Pass if Leakage Percentage <6%: [_____ (Line # 3) / _____ (Line # 2)] x 100%	% <input type="checkbox"/> Pass <input type="checkbox"/> Fail

Pre-existing Duct System with Duct Alteration and/or HVAC Equipment Change-Out:

5	Enter Tested Leakage Flow in CFM: Pre-Test of Existing or Altered Duct System prior to Duct System Alteration and/or Equipment Change-Out.	
6	Enter Tested Leakage Flow in CFM: Final Test of New Duct System or Altered Duct System for Duct System Alteration and/or Equipment Change-Out.	

Use one of the following three tests or verification standards for compliance:

7	Pass if Leakage Percentage <15% [_____ (Line # 6) / _____ (Line # 2)] x 100%	% <input type="checkbox"/> Pass <input type="checkbox"/> Fail
8	For systems certified by the installer as reducing leakage, pass if Leakage Reduction is >60%. Leakage reduction = {1 - [_____ (Line#6) / _____ (Line#5)]} x 100%	% <input type="checkbox"/> Pass <input type="checkbox"/> Fail
9	Pass if all Accessible Leaks are sealed as confirmed by Visual Inspection and Verification by HERS rater (sampling rate 100%)	<input type="checkbox"/> Pass <input type="checkbox"/> Fail
	Pass if One of Lines # 7 through # 9 pass	<input type="checkbox"/> Pass <input type="checkbox"/> Fail

Registration Number: _____ Registration Date/Time: _____ HERS Provider: _____