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, *is no longer used and has been deleted.*	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 - Lighting Controls and Automatic Daylighting	§119(d), §119(e),§119(f) & §131(d)	NA7.6.2, 6.3 and 6.4, NA7.6.1
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 ft^2 (If checked include the ENV-4C with submittal)

Phase of Construction: ☐ New Construction ☐ Addition ☐ Alteration

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

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

FIELD INSPECTION ENERGY CHECKLIST

OPAQUE SURFACE DETAILS

Tag/ ID	Assembly Name[1]	Frame Type[2]	Furring framing Material[3]	Surface Area	Surface Orientation N, S, W, E	Cavity R-Value	Continuous R-Value	Exterior Furring framing R-Value[4]	Interior Furring framing R-Value[4]	Conditions Status[5]	Special Feature[6]	Pass	Fail[7]
											☐	☐	☐
											☐	☐	☐
											☐	☐	☐
											☐	☐	☐
											☐	☐	☐
											☐	☐	☐

1. Indicate the identifying name of the Assembly name (i.e. Wall -1, Ceiling-1, Roof -1, and Floor- 1).
2. Indicate type of Assembly Type such as Wood 2x4 or LW CMU 8". For additional other assembly types see Reference Joint Appendix, JA4-1.
3. Enter the framing material type (wood or metal)and refer to ENV-2C Furring Strips Construction worksheet.
4. Indicate furring R-value when furred wall are being used.
5. Indicate Status of fenestration (New, Existing or Upgrade).
6. Indicate Special Feature on Page 2 of the Inspection Checklist Form below.
7. If Fail, then describe on Page 2 of the Inspection Checklist Form and take appropriate action to correct. Verify building plans if necessary.

FENESTRATION SURFACE DETAILS

Tag /ID[1]	Fenestration Type[2]	Surface Area	Surface Orientation N, S, W, E	# of Panes	Max U-Factor	Max (R)SHGC	Source[3]	Overhang	Conditions Status[4]	Special Feature[5]	Pass	Fail[6]
								☐		☐	☐	☐
								☐		☐	☐	☐
								☐		☐	☐	☐
								☐		☐	☐	☐
								☐		☐	☐	☐
								☐		☐	☐	☐

1. Indicate the identifying name of the frame type (i.e. Window #1).
2. Indicate type of construction Type such, Window, Glass Door, Curtain wall, Skylight, or other
3. Indicate if the efficiency values are from the NFRC Label Certificate or from the CEC Default Values. Enter NFRC or CEC (FC-1 and FC-2).
4. Indicate Status of fenestration (New, Existing or Upgrade).
5. Indicate Special Feature on Page 2 of the Inspection Checklist Form below.
6. If Fail then describe on Page 2 of the Inspection Checklist Form and take appropriate action to correct. Verify building plans if necessary.

Project Name:	Date:	Climate Zone:

ROOFING PRODUCT (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 THE ROOFING PRODUCT "COOL ROOF" REQUIREMENTS:	Pass	Fail[1]	NA
☐ Roofing compliance not required in Climate Zones 1 and16 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/ft^2. Greater than 2:12 pitch.			
☐ Low-sloped Wood framed roofs in Climate Zones 3 and 5 are exempted solar relectance and thermal emittance or SRI that have a U-factor of 0.039 or lower. See Opaque Surface Details roof assembly, Column H of ENV-2C.	☐	☐	☐
☐ Low-sloped Metal framed roofs in Climate Zones 3 and 5 are exempted solar relectance and thermal emittance or SRI that have a U-factor of 0.048 or lower. See Opaque Surface Details roof assembly below, Column H of ENV-2C.	☐	☐	☐
☐ The roof area covered by building integrated photovoltaic panels and building integrated solar thermal panels are exempted solar relectance and thermal emittance or SRI. *See spredsheet calculattor at* ***www.energy.ca.gov/title24/***	☐	☐	☐
☐ Roof constructions that have thermal mass over the roof membrane with a weight of at least 25 lb/ft^2 is exempt from the Cool Roof criteria below.	☐	☐	☐
☐ 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.			

1. If Fail then describe on this page of the Inspection Checklist Form and take appropriate action to correct. Verify building plans if necessary.

CRRC Product ID Number[1]	Roof Slope ≤ 2:12	Roof Slope > 2:12	Product Weight < 5lb/ft^2	Product Weight ≥ 5lb/ft^2	Product Type[2]	Aged Solar Reflectance[3]		Thermal Emmitance	SRI[5]	Special Feature[6]	Pass	Fail[7]
	☐	☐	☐	☐		☐[4]				☐	☐	☐
	☐	☐	☐	☐		☐[4]				☐	☐	☐
	☐	☐	☐	☐		☐[4]				☐	☐	☐
	☐	☐	☐	☐		☐[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. From the Cool Roof Rating Council's Rated Product Directory.
4. Check box if the Aged Reflectance is a calculated value using the equation above.
5. The SRI value needs to be calculated from a spredsheet calculattor at http://www.energy.ca.gov/title24/
6. Indicate Special Feature on Page 2 of the Inspection Checklist Form below.
7. If Fail then describe on this page of the Inspection Checklist Form and take appropriate action to correct. Verify building plans if necessary.

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:

☐ Aluminum-Pigmented Asphalt Roof Coating	☐ Cement-Based Roof Coating	☐ Other _____

SPECIAL FEATURES INSPECTION CHECKLIST

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.

Discrepancies:

Project Name:	Date:	Climate Zone:

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	
		☐	
		☐	
		☐	
		☐	
		☐	
		☐	
		☐	
		☐	
		☐	
		☐	

Project Name:	Date:	Climate Zone:

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.

☐	ENV-1C	Certificate of Compliance and Field Inspections Energy Checklist. Required on plans for all submittals.
☐	ENV-2C	Use with the Envelope Component Approach. Optional on plans.
☐	ENV-3C	Use with the Overall Envelope TDV Energy Approach. Optional on plans.
☐	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:

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 and16 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/ft^2. 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 relectance 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 framed roofs in Climate Zones 3 and 5 are exempted solar relectance 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 relectance and thermal emittance or SRI.

☐ Roof constructions with thermal mass over the roof membrane with a weight of at least 25 lb/ft^2 is exempted from the Cool Roof criteria.

CRRC Product ID Number[1]	Roof Slope ≤ 2:12	Roof Slope > 2:12	Product Weight < 5lb/ft^2	Product Weight ≥ 5lb/ft^2	Product Type[2]	Aged Solar Reflectance[3,4]		Thermal Emittance	SRI[5]
	☐	☐	☐	☐		☐[4]			
	☐	☐	☐	☐		☐[4]			
	☐	☐	☐	☐		☐[4]			
	☐	☐	☐	☐		☐[4]			
	☐	☐	☐	☐		☐[4]			
	☐	☐	☐	☐		☐[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:

☐ Aluminum-Pigmented Asphalt Roof Coating	☐ Cement-Based Roof Coating	☐ Other _____

ENVELOPE COMPONENT APPROACH (Page 2 of 4) ENV-2C

Project Name:	Date:	Climate Zone:

Opaque Surface Details

For the furred portioned of Mass Walls see Furring Strips Construction Table below.

A	B	C	D	E	F	G	H	I	J
Proposed See Note				**Standard**	Values From JA4 Table				
Tag/ ID[1]	Assembly Name or Type[1]	Framing Material and Size[2]	Thickness, Spacing, or Other[3]	U-factor[4]	JA4 Table Number[5]	Framed Cavity R-value[6]	Continuous Insulation R-Value[7]	JA4 Assembly Cell Value[8]	Proposed Assembly U-factor[9]

Note: For furred assemblies use the Mass and Furring Strips Construction Table below. See Page JA4-3 & Page JA4-5 for Equation 4-1 or 4-4.

1. *For Tag/ID indicate the identification name that matches the building plans.*
2. *Indicate the Assembly Name or type: Roof/Ceiling, Walls, Floors, Slabs, Crawl Space, Doors and etc…Indicate the Frame type and Size: For Wood, Metal, Metal Buildings, Mass, enter 2x4, 2x6, or etc… see JA4 for other possible frame type assemblies.*
3. *Enter the thickness for mass in inches or Spacing between framing members enter; 16"or 24"OC; or Other for all other assembly description such as Concrete Sandwich Panel, Spandrel Panel, Logs, Straw Bale Panel and etc….*
4. *Based on the Climate Zone; enter the Standard U-factor from Table 143-A, B or C for each different assembly Name or type.*
5. *Enter the Table number that closely resembles the proposed assembly.*
6. *Enter the R-value that is being installed in the wall cavity or between the framing; otherwise, enter "0".*
7. *Enter the Continuous Insulation R-value for the proposed assembly; otherwise, enter "0".*
8. *Enter the row and column of the U-factor value based on Column F Table Number and enter the Assembly U-factor in Column J.*
9. *The **Proposed** Assembly U-factor, Column J, must be equal to or less than the **Standard** U-factor in Column E to comply.*

Furring Strips Construction Table for Mass Walls Only

A	B	C	D	E	F	G	H	I	J	K	L	M
Proposed Properties of Masonry and Concrete Walls From Reference Joint Appendix Table 4.3.5, 4.3.6, 4.3.7					**Added Interior or Exterior Insulation in Furring Space from Reference Joint Appendix Table 4.3.13**							
Mass Thickness[1]	Assembly Name or Type[2]	JA4 Table Number[3]	JA4 -Mass Cell Value[4]	Mass U-Factor[5]	Insulation Layer Thickness	Frame Thickness	Frame Type Wood or Metal	Furring Cavity R-value[3]	JA4 -Mass Cell Value[4]	Effective R-value[5]	Final Assembly U-factor[6,7]	Comment

1. *Indicate the Mass Thickness from Reference Joint Appendix JA.*
2. *Indicate the Assembly Name or type: Roof/Ceiling, Walls, Floors, Slabs, Crawl Space, Doors and etc…Indicate the Frame type and Size: For Wood, Metal, Metal Buildings, Mass, enter 2x4, 2x6, or etc… see JA4 for other possible frame type assemblies.*
3. *Enter the Table number that closely resembles the proposed assembly.*
4. *Enter the row and column of the U-factor value.*
5. *Enter the Effective R-value listed in the JA4 Table Number.*
6. *The Final Assembly is calculated by using Equation 4-1 or Equation 4-4 of the Reference Joint Appendix JA4. Enter the value in Column L.*
7. *Insert the Final Assembly U-factor value back on to the Opaque Surface Details table in Column J.*

ENVELOPE COMPONENT APPROACH

Project Name:	Date:	Climate Zone:

WEST WINDOW AREA CALCULATION See §143(a)5A in the Energy Standards or Section 3.2.2

A. **Gross West** Exterior Wall Area		**ft^2 × 0.40 =**	**ft^2**	40% Of **Gross West Facing** Exterior Wall Area; or
B. **West** Display Linear Perimeter		**FT × 6 ft =**	**ft^2**	**West** Display Perimeter Area
C. Enter Larger Of A Or B			**ft^2**	Maximum Standard **West** Area
D. Enter Proposed **West** Window Area			**ft^2**	Proposed **West** Window Area

*Note: If the PROPOSED **WEST** WINDOW AREA is greater than the MAXIMUM STANDARD **WEST** AREA then the envelope component approach may not be used.*

WINDOW AREA CALCULATION for all other orientations other than West - See §143(a)5A in the Energy Standards or Section 3.2.2

E. Gross Exterior Wall Area		**ft^2 × 0.40 =**	**ft^2**	40% Of Gross Exterior Wall Area or
F. Linear Display Perimeter		**FT × 6 ft =**	**ft^2**	Display Perimiter Area
G. Enter The Larger Of E or F			**ft^2**	Maximum Standard Area
H. Enter Proposed Window Area			**ft^2**	Proposed Window Area

Note: If the PROPOSED WINDOW AREA is greater than the MAXIMUM STANDARD AREA then the envelope component approach may not be used.

WINDOWS DETAILS *§143(a)5B and C*

NOTE: For all newly installed fenestration; must have either a certified NFRC Label Certificate or use the CEC default tables found in Table 116-A and Table 116B and documented by using CECs Fenestration Certificate (FC-1/ FC-2). For site-built fenestration and less than 10,000 ft^2 or more than or equal to10,000 ft^2 see options for compliance in the Nonresidential Manual in Section 3.1.

A	B	C	D	E	F	G	H	I	J	K	L	M	N
					Fenestration[4]				**Overhang**				
					U-Factor				Dimensions				
Window Name (e.g., Window-1)	Area[1]	Type[2]	Orientation	# of Panes	Proposed	Allowed[3]	SHGC Proposed	(R)SHGC Allowed[1,3]	H	V	H/V	(R)SHGC Proposed[5]	RSHGC[3,4] Allowed

Total Site-Built		*Note: Site-built area is the sum of Site-Built Window and Site-Built Skylight Areas.*
Total Skylight Area		*Enter Total Skylight Area from Skylight Details, Env-2C Page 4 of 4.*
Total Area		

1. Enter the area of each different fenestration product.
2. Enter the type of fenestration; M=Manufactured, SB=Site-built, and F=Field Fabricated.
3. The allowed U-factor and (R)SHGC values are from Table 143-A, B or C.
4. If the Proposed window does not use an overhang then fenestration SHGC is treated the same as RSHG. Do not fill the overhang columns.
5. For Relative SHGC; an overhang must extend beyond both sides of the window jamb a distance equal to the overhang projection.
6. Use Equation 143-A, Relative Solar Heat Gain to calculate the RSHG for overhangs.
7. Multiply the overhang factor (H/V) from RCM Table 3-6 with overhang SHGC, Column M, resulting the overhang RSHG value. Enter value in Max (R)SHGC on ENV-1C, Fenestration Surface, Page 1.

ENVELOPE COMPONENT APPROACH

Project Name:	Date:	Climate Zone:

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 Divided by Actual Gross Roof Area =			%

If the PROPOSD 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

	SKYLIGHT GLAZING						U-FACTOR		SHGC	
A	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]
	☐	☐	☐							
	☐	☐	☐							
	☐	☐	☐							
	☐	☐	☐							
	☐	☐	☐							
	☐	☐	☐							
	☐	☐	☐							
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

☐ For Specific Climate Zone, use Table 143-A - Prescriptive Envelope Criteria.	☐ 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:

Option 2

☐ For Any (All) Climate Zone, use Table 143-C - Prescriptive Envelope Criteria.	☐ 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:

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		FT × 6 FT =	ft^2	DISPLAY AREA
B. TOTAL GROSS EXTERIOR WALL AREA		ft^2 × 0.40 =	ft^2	40% of GROSS EXTERIOR WALL AREA
C. ENTER LARGER OF (A or B)			ft^2	MAXIMUM STANDARD AREA
D. ENTER PROPOSED WINDOW AREA			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		FT × 6 FT =	ft^2	WEST DISPLAY AREA
G. WEST EXTERIOR WALL AREA		ft^2 × 0.40 =	ft^2	40% of WEST EXTERIOR WALL AREA
H. ENTER LARGER OF (F or G)			ft^2	MAXIMUM STANDARD WEST AREA
I. ENTER PROPOSED WEST WINDOW AREA			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)		FT × 6 FT =	ft^2	N/E/S of WEST EXTERIOR WALL AREA
L. N/E/S EXTERIOR WALL AREA (B Minus G)		ft^2 × 0.40 =	ft^2	40% N/E/S AREA
M. ENTER LARGER OF K or L			ft^2	MAXIMUMN STANDARD N/E/S/ AREA
N. PROPOSED N/E/S/ WINDOW AREA (D Minus I)			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
	÷		=	

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
	÷		=	

MAX. STANDARD AREA (from C)		PROPOSED AREA (from D)		WEST WINDOW ADJUSTMENT FACTOR
	÷		=	

Project Name:	Date:	Climate Zone:

SKYLIGHT RATIO CALCULATION §143(b)

	ACTUAL GROSS ROOF AREA		MAXIMUM ALLOWED STANDARD SKYLIGHT AREA	
A IF Atrium/Skylight Height is ≤ 55 ft; **or**		ft2 × 0.05 =	ft^2	
B. IF Atrium/Skylight Height is > 55 ft		ft^2 × 0.10 =	ft^2	
C. Proposed Skylight Area		ft^2		
D. Skylight Ratio = Proposed Skylight Area (Row C) Divided 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}

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.

SKYLIGHT AREA ADJUSTMENT

IF F>D, Proceed To Calculation Step 1

Step 1. Calculated the 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

OVERALL ENVELOPE TDV ENERGY APPROACH

Project Name:	Date:	Climate Zone:

TDV for the Standard Design Building, See Reference Nonresidential Appendix NA5.2

Occupancy Type and Coefficients Tables ☐ Nonresidential, See Table NA5-3 ☐ 24-Hour Use, See Table NA5-4 ☐ Retail, See Table NA5-5

A	B	C	D	E	F	G	H	I	J	K	L	M
						Criteria			Coefficients for			
									U-factor[7]	SHGC[7]	VT[7]	
Assembly Type[1]	Orientation	Number Of Like Assembly Type[4]	Roofs or Floor Mass Type[5]	Exterior Surface Area	Fenetration Type	U-factor[6]	SHGC[7]	VT[8]	$Cs_{u,i}$	$Cs_{s,i}$	$Cs_{t,i}$	Standard TDV Energy[8]
											Sum of Total Standard Design	

1. *Indicate type of assembly for the Envelope* (e.g. Wall, Floor, Roof, Window, Skylight & Door). One assembly type for each row.
2. *Enter the area of each different assembly.*
3. *Enter the type of fenestration; M=Manufactured, SB=Site-built, SK= Skylight and F=Fabricated.*
4. *Grouping of like assemblies in the same orientation is allowed. Iindicate the number in column E.*
5. *Enter Roofs, Floors, Walls,and for Mass Walls the catergoies are light mass(HC<7), medium mass (7<=HC,15), and heavy mass (HC>=15).*
6. *Standard Design U-factor are from Table 143-A, B or C.*
7. *Standard Design SHGC are from Table 143-A, B or C. Enter "0" if not applicable. Note: Not all vertical windows have an overhang then assume SHGC as value entered.*
8. *To calculate the fenestration standard design VT in Column H. Multiply Column G by 1.2.*
9. *Coefficients for; U-factor (**$Cs_{u,i}$**), SHGC (**$Cs_{s,i}$**), and VT(**$Cs_{t,I}$**, can be found in Table NA5.2, through Table NA5.5 of the Reference Nonresidential Appendices NA5. The Coefficient for SHGC and VT are only enter for the **fenestration products**. Enter "0" when not applicable.*
10. *Calculate the TDV Standard Design for for each Envelope Aassembly Type: TDV_{Std} = Column C x [Column E x ((U-factor$_{Si}$ x C_{Sui}) + (SHGC$_{Si}$ x C_{Ssi}) + (VT$_{Si}$ x C_{Sti}))] for each Assembly Type. See Nonresidential Manual Examples in Section 3.7.1 for details.*

OVERALL ENVELOPE TDV ENERGY APPROACH

Project Name:	Date:	Climate Zone:

TDV for the Proposed Design Building, See Reference Nonresidential Apendix NA5.3

Occupancy Type and Coefficients Tables ☐ Nonresidential, See Table NA5-3 ☐ 24-Hour Use, See Table NA5-4 ☐ Retail, See Table NA5-5

A	B	C	D	E	F	G	H	I	J	K	L	M	N
					Criteria			Coefficients for					Proposed TDV Energy[11]
								U- factor[8]	SHGC[8]	VT[8]	Cool Roof[9]	Overhang[10]	
Assembly Type[1]	Orientation[2]	Number Of Like Assembly Type[2A]	Total Exterior Surface Area[3]	Fenestration Type[4]	U-factor[5]	SHGC[6]	VT[7]	$C_{su,i}$	$C_{Ss,i}$	$C_{t,i}$	M_{CR}	M_{OH}	
											Total Proposed Design[12]		
												Proposed ≤ Standard	

1. *Indicate type of assembly for the Envelope (e.g. Wall, Floor, Roof, Window, Skylight & Door). One assembly type for each row.*
2. *Indicate the orientation for walls, doors & windows. 2A. Note: Grouping of like assemblies in the same orientation is allowed. Enter the number in column C.*
3. *Indicate the Exterior Surface Area of the Assembly for that one assembly or if like assemblies then the total surface area of all assemblies in the same orientation.*
4. *Enter the type of fenestration; M=Manufactured, SB=Site-built, SK= Skylight and F=Fabricated.*
5. *Standard Design U-factor are from Table 143-A, B or C for the appropriate assembly type.*
6. *Standard Design SHGC are from Table 143-A, B or C. Enter "0" if not applicable. Note: Not all vertical windows have an overhang then assume SHGC as value entered.*
7. *To calculate the fenestration standard design VT in Column H. Multiply Column G by 1.2.*
8. *Coefficients for; U-factor ($Cs_{u,i}$), SHGC ($Cs_{s,i}$), and VT($Cs_{t,I}$, can be found in Table NA5.2, through Table NA5.5 of the Reference Nonresidential Appendices NA5. The Coefficient for SHGC and VT are only entered for the **fenestration products**. Enter "0" when not applicable.*
9. *Calculate the Cool Roof, M_{CR}, first by using the next page (Page 5 of 6). Enter the value in the Proposed Column L.*
10. *Calculate the Overhang M_{OH} on the next page (Page 5 of 6). Enter the value in the Proposed Column M.*
11. *The Proposed TDV energy use for all assemblies other than roofs must be equal to or less than Standard TDV in Page 3 of 6. Therfore; TDV_P = Column D x [(U factor x CSu) + (CRui x URi x MCRi) + (SHGCP x CSsi x MOH) + (VTP x CSt)] Enter the calculated value in Column N.*
12. *Sum up all the Proposed TDV Energy in Column N and enter value in the cell. Similarly enter the sum of all Standard TDV Energy and compare. Proposed must be ≤ to the Standard.*

Cool Roof Multiplier (M_{CR})

PROJECT NAME	DATE

Occupancy Type and Coefficients Tables	☐ Nonresidential, See Table NA5-3	☐ 24-Hour Use, See Table NA5-4	☐ 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}	$\rho_{aged\ prop}$	$\rho_{aged\ std}$	ε_{prop}	ε_{std}	$M_{CR,I}$	
							Enter multiplier in Page 4 of 6 Column L.

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)
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

1. *Proposed Aged Design Solar Reflectance;* $\rho_{aged\ prop} = (0.7\ x\ \rho_{init\ prop}) + 0.06$, Where ($\rho_{init\ prop}$) *reflectance value is found in the CRRC Directory. Enter results of the Cool Roof Multiplier equation in footnote 2.*

2. *Cool Roof Multiplier* $M_{cR,I} = 1 + C_{Ref}\ x\ (\rho_{aged\ prop} - \rho_{aged\ std}) + C_{Emit}\ x\ (\varepsilon_{prop} - \varepsilon_{std})$ **or** 1+ Col A *x* (Col C - Col D) + Col B *x* (Col E – Col F)

Overhang Multiplier (M_{OH})

Occupancy Type and Coefficients Tables	☐ Nonresidential, See Table NA5-3	☐ 24-Hour Use, See Table NA5-4	☐ 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	$M_{OH,I}$	
							Enter multiplier in Page 4 of 6 Column M.

1. Where: a_i *and* b_i *are the coefficients for the overhang projection factor (see tables) and is climate zone dependent.*

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.*

3. $M_{OH,I} = 1 + (a_i\ x\ PF_i) + b_i\ x\ PF_i^2$. *Enter results in Column G.*

OVERALL ENVELOPE TDV ENERGY APPROACH (Page 6 of 6) ENV-3C

PROJECT NAME	DATE

WINDOW AREA ADJUSTMENT CALCULATIONS

A		B	C	D	E	F	G
					WINDOW ADJUSTMENT	ADJUSTED WINDOW	ADJUSTED WALL
WALL NAME (e.g. Wall-1, Wall-2)	ORIENTATION N E S W	GROSS AREA	DOOR AREA	WINDOW AREA	FACTOR (From Page 1of 6)	AREA (D×E)	AREA B-(F+C)
	☐ ☐ ☐ ☐						
	☐ ☐ ☐ ☐						
	☐ ☐ ☐ ☐						
	☐ ☐ ☐ ☐						
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	☐ ☐ ☐ ☐						
TOTALS:							

SKYLIGHT AREA ADJUSTMENT CALCULATIONS

A	B	C	D	E	F
ROOF NAME (e.g. Roof-1, Roof-2)	GROSS AREA	SKYLIGHT AREA	SKYLIGHT ADJUSTMENT FACTOR (From Page 2 of 6)	ADJUSTED SKYLIGHT AREA (C×D)	ADJUSTED ROOF AREA (B - E)
TOTALS:					

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**	ft²	Space floor area
Minimum Daylight Area = 0.5 x Floor Area (A)	**B**	ft²	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**	ft²	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**	ft²	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**	ft²	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 ≥ 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 ≥ 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 ≥ 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 <u>or</u> 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 ≥ 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**

MINIMUM SKYLIGHT AREA WORKSHEET (Page 3 of 3) ENV- 4C

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: ❑

a. Well Height	b. Well Length	c. Well Width

$$WCR = \left(\frac{5 \times \text{well height} \left(\text{well length} + \text{well width}\right)}{\text{well length} \times \text{well width}} \right)$$

R. _____ **Rectangular WCR**

Non-Rectangular Wells: ❑

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**

✓ From Table 146-A for non-specular or non-tubular light wells

✓ 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**

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

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:
PROJECT ADDRESS:	CLIMATE ZONE:

Option 1: For buildings with less than 10,000 ft^2 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 ft^2 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 ft^2)

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

Frame Type	❑ Metal	❑ Metal With Thermal Break	❑ Nonmetal		
Product Type	❑ Operable	❑ Fixed	❑ Greenhouse/ Garden Window	❑ Doors	❑ Skylights
Glazing Type	❑ Single Pane	❑ Double Pane	❑ Glass Block		Insert value in the default U-factor gray box above

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

Product Type	❑ Operable	❑ Fixed		
Glazing:	❑ Clear	❑ Tinted		Insert value in the default SHGC$_t$ gray box above

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

GLAZING INFORMATION: Alternative Calculation < less than 10,000 ft^2

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, SHGCc, in the equation below to determine the solar heat gain coefficient with frame

Enter Center of Glass, COG, from Manufacturer's Documentation, SHGCc			Insert Center of Glass value here
Calculate the new SHGC$_t$ of the frame.	SHGC$_t$ = 0.08 + (0.86 x SHGCc) =		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 and FIELD INSPECTION ENERGY CHECKLIST

 MECH-1C

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 ☐ Overall Envelope TDV Energy ☐ Unconditioned (file affidavit)

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

HVAC SYSTEM DETAILS / FIELD INSPECTION ENERGY CHECKLIST

Equipment[2]	Inspection Criteria	Meets Criteria or Requirements: Special Feature[1]	Pass	Fail - Describe Reason[3]
Item or System Tags (i.e. AC-1, RTU-1, HP-1)		☐	☐	☐
Equipment Type[4]:		☐	☐	☐
No of Systems		☐	☐	☐
Max Allowed Heating Capacity		☐	☐	☐
Minimum Heating Efficiency		☐	☐	☐
Max Allowed Cooling Capacity		☐	☐	☐
Cooling Efficiency		☐	☐	☐
Duct Location/ R-Value		☐	☐	☐
Duct Leakage Testing - If Yes, a **MECH-4A** must be submitted		☐	☐	☐
Economizer		☐	☐	☐
Thermostat		☐	☐	☐
Fan Control		☐	☐	☐

FIELD INSPECTION ENERGY CHECKLIST

Equipment[2]	Inspection Criteria	Special Feature[1]	Pass	Fail - Describe Reason[3]
Item or System Tags (i.e. AC-1, RTU-1, HP-1)		☐	☐	☐
Equipment Type[4]:		☐	☐	☐
No of Systems		☐	☐	☐
Max Allowed Heating Capacity		☐	☐	☐
Minimum Heating Efficiency		☐	☐	☐
Max Allowed Cooling Capacity		☐	☐	☐
Cooling Efficiency		☐	☐	☐
Duct Location/ R-Value		☐	☐	☐
Duct Leakage Testing - If Yes, a **MECH-4-A** must be submitted		☐	☐	☐
Economizer		☐	☐	☐
Thermostat		☐	☐	☐
Fan Control		☐	☐	☐

1. Indicate special feature DETAILS on Page 2 of the Inspection Checklist Form.

2. 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.

3. For additional detailed discrepancy use Page 2 of the Inspection Checklist Form.

4. Indicate Equipment Type: Gas(Pkg or, Split), VAV, HP (Pkg or split), Hydronic, PTAC, or other

Project Name:	Date:

SPECIAL FEATURES INSPECTION CHECKLIST

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.

Discrepancies:

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 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
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CERTIFICATE OF COMPLIANCE and FIELD INSPECTION ENERGY CHECKLIST (Part 4 of 5) MECH-1C

Project Name	Date

Test Description		MECH-12A	MECH-13A	MECH-14A	MECH-15A	
Equipment Requiring Testing	# of	Fault Detection & Diagnostics for DX Units	Automatic Fault Detection & Diagnostics for Air & Zone	Distributed Energy Storage DX AC Systems	Thermal Energy Storage (TES) Systems	Test Performed By:
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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.

☐	MECH-1C	Certificate of Compliance. Required on plans for all submittals.
☐	MECH-2C	Mechanical Equipment Summary is required for all submittals.
☐	MECH-3C	Mechanical Ventilation and Reheat is required for all submittals with mechanical ventilation.
☐	MECH-4C	Fan Power Consumption is required when for all prescriptive submittals.

AIR SYSTEM REQUIREMENTS			(Part 1 of 3)	MECH-2C
PROJECT NAME:				**DATE:**
	Indicate Air Systems Type (Central, Single Zone, Package, VAV or etc…)			
Item or System Tags (i.e. AC-1, RTU-1, HP-1)				
No. of Systems				
		Indicate Page Reference on the Plans or Schedule list or list information below		
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)			

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.

WATER SIDE SYSTEM REQUIREMENTS (Part 2 of 3) MECH-2C

PROJECT NAME:	DATE:

		WATER[2] SIDE SYSTEMS: Chillers, Towers, Boilers, Hydronic Loops					
Item or System Tags (i.e. AC-1, RTU-1, HP-1, CT-1, etc…)[1]							
No. of Systems							
	Indicate Page Reference on Plans or Specification[2]						
MANDATORY MEASURES	*T-24 Sections*						
Equipment Efficiency	112(a)						
Pipe Insulation	123						
PRESCRIPTIVE MEASURES							
Cooling Tower Fan Controls	144(a & b)						
Cooling Tower Flow Controls	144(h)						
Variable Flow System Design	144(h)						
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:

		Service Hot Water, Pool Heating					
Item or System Tags (i.e. WH-1, WHP, DHW, etc…)[1]							
No. of Systems							
	Indicate Page Reference on Plans or Schedule[2]						
MANDATORY MEASURES	***T-24 Section***						
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

	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 (ft²)	CFM per ft²	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/ft²	Max of Columns H, J, K, 30 cfm	Design minimum Air setpoint	Transfer Air
					15								
					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

FILTER PRESSURE ADJUSTMENT Equation 144-A in §144(c) of the Energy Standards.	1) TOTAL FAN SYSTEM POWER (WATTS, SUM COLUMN F)	
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.	2) SUPPLY DESIGN AIRFLOW (CFM)	
	3) TOTAL FAN SYSTEM POWER INDEX (Row 1 / Row 2)[1]	W/CFM
	4) SP_a	
B) Calculate Fan Adjustment and enter on line 6.	5) SP_f	
C) Calculate Adjusted Fan Power Index and enter on Row 7	6) Fan Adjustment = $1-(SP_a - 1)/SP_f$	
	7) ADJUSTED FAN POWER INDEX (Line 3 x Line 6)[1]	W/CFM

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.

2008 Compliance Forms
Lighting Forms

CERTIFICATE OF COMPLIANCE

 LTG-1C

Project Name:		Date:
Project Address:	Climate Zone:	Building CFA : Unconditioned Floor Area :

General Information

Building Type:	☐ Nonresidential	☐ High-Rise Residential	☐ Hotel/Motel
☐ Schools	☐ Relocatable Public Schools	☐ Conditioned Spaces	☐ Unconditioned Spaces
Phase of Construction:	☐ New Construction	☐ Addition	☐ Alteration
Method of Compliance:	☐ Complete Building	☐ Area Category	☐ Tailored

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:

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.

☐	LTG-1C Pages 1 through 4	Certificate of Compliance. All Pages required on plans for all submittals.
☐	LTG-2C	Lighting Controls Credit Worksheet
☐	LTG-3C	Indoor Lighting Power Allowance
☐	LTG-4C Pages 1 through 4	Tailored Method Worksheet
☐	LTG-5C Pages 1 and 2	Line Voltage Track Lighting Worksheet

CERTIFICATE OF COMPLIANCE (Page 2 of 4) LTG-1C

INDOOR LIGHTING SCHEDULE and FIELD INSPECTION ENERGY CHECKLIST

Project Name:	Date:

Installation Certificate, LTG-1-INST (Retain a copy and verify form is completed and signed.)	**Field Inspector** ☐
Certificate of Acceptance, LTG-2A (Retain a copy and verify form is completed and signed.)	**Field Inspector** ☐

A separate Lighting Schedule Must Be Filled Out for Conditioned and Unconditioned Spaces Installed Lighting Power listed on this Lighting Schedule is only for: ☐ **CONDITIONED SPACE** ☐ **UNCONDITIONED SPACE**

☐ *The actual indoor lighting power listed below includes all installed permanent and portable lighting systems in accordance with §146(a)*

☐ *Only for offices: Up to the first 0.2 watts per square foot of portable lighting shall not be required to be included in the calculation of actual indoor lighting power density in accordance with the Exception to §146(a). All portable lighting in excess of 0.2 watts per square foot is totaled below.*

	Luminaire Schedule (Type, Lamps, Ballasts)		**Installed Watts**						
A	**B**	**C**	**D**	**E**		**F**	**G**	**H**	
				How wattage was determined				Field Inspector [2]	
Name or Item Tag	Complete Luminaire Description (i.e, 3 lamp fluorescent troffer, F32T8, one dimmable electronic ballast)	Special Features	Watts per Luminaire [1]	CEC Default from NA8	According to §130 (d or e)	Number of Luminaires	Installed Watts (D x F)	Pass	Fail
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		☐		☐	☐			☐	☐
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		☐		☐	☐			☐	☐
					INSTALLED WATTS PAGE TOTAL:				

Building total number of pages		Installed Watts Building Total (Sum of all pages)	

Enter into LTG-1C Page 4 of 4

1. Wattage shall be determined according to Section 130(d and e). Wattage shall be rating of light fixture, not rating of bulb.
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 (Page 3 of 4) LTG-1C

Project Name:	Date:

INDOOR LIGHTING SCHEDULE and FIELD INSPECTION ENERGY CHECKLIST

Fill in controls for all spaces: a) area controls, b) multi-level controls, c) manual daylighting controls for daylit areas > 250 ft^2, automatic daylighting controls for daylit areas > 2,500 ft^2, 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 ft^2, in accordance with Section 131.

MANDATORY LIGHTING CONTROLS - FIELD INSPECTION ENERGY CHECKLIST

Type / Description	Number of Units	Location in Building	Special Features	Field Inspector Pass	Field Inspector Fail
			☐	☐	☐
			☐	☐	☐
			☐	☐	☐
			☐	☐	☐
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			☐	☐	☐
			☐	☐	☐
			☐	☐	☐
			☐	☐	☐
			☐	☐	☐
			☐	☐	☐

SPECIAL FEATURES INSPECTION CHECKLIST (See Page 2 of 4 of LTG-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's Notes or Discrepancies:

CERTIFICATE OF COMPLIANCE

Project Name:	Date:

Conditioned and Unconditioned space Lighting must not be combined for compliance

Indoor Lighting Power for Conditioned Spaces			Indoor Lighting Power for Unconditioned Spaces		
	Watts			Watts	
Installed Lighting (from Conditioned LTG-1C Page 2)			**Installed** Lighting (from Unconditioned LTG-1C Page 2)		
Lighting Control Credit Conditioned Spaces (from LTG-2C)	-		Lighting Control Credit Unconditioned Spaces (from LTG-2C)	-	
Adjusted **Installed** Lighting Power	=		Adjusted **Installed** Lighting Power	=	
Complies if **Installed** ≤ **Allowed**		↕	Complies if **Installed** ≤ **Allowed**		↕
Allowed Lighting Power Conditioned Spaces (from LTG-3C)			**Allowed** Lighting Power Unconditioned Spaces (from LTG-3C)		

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, ***LTG-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 ***LTG-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* ***LTG-2A*** *for each different lighting luminaire control(s) must be provided to the owner of the building for their records.*

Luminaires Controlled				LTG-2A
Equipment Requiring Testing	**Description**	**Number of like Controls**	**Location**	**Controls and Sensors and Automatic Daylighting Controls Acceptance**
				☐
				☐
				☐
				☐
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				☐
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				☐
				☐

LIGHTING CONTROLS CREDIT WORKSHEET (Page 1 of 2) LTG-2C

Project Name:	Date:

POWER ADJUSTMENT FACTORS (PAF) FOR NON-DAYLIGHT CONTROLS

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

☐ **CONDITIONED SPACES** ☐ **UNCONDITIONED SPACES**

A	B	C	D	E	F	G
Room # Zone ID Areas	Lighting Control Description[1]	Plan Reference	Room Area (ft^2)	Watts of Control Lighting	Power Adjustments Factor[2]	Control Credit Watts (E x F)
					PAGE TOTAL	

Note: Conditioned and Unconditioned Spaces Shall Be Separately Totaled	Number of Pages of LTG-2C Page 1 of 2	
	Building total of non-daylight control credit watts for all pages of LTG-2C Page 1 of 2	
	Enter building total of all daylight controls credit watts from LTG-2C Page 2 of 2	
	BUILDING TOTAL OF ALL CONTROL CREDIT WATTS (FOR BOTH NON-DAYLIGHT AND DAYLIGHT CONTROL CREDITS) Enter in LTG-1C Page 4: Lighting Control Credit as appropriate for CONDITIONED or UNCONDITIONED Spaces	

1. Description shall be consistent with Type of Control defined in Table 146-C
2. Power Adjustment Factor taken from Table 146-C

LIGHTING CONTROLS CREDIT WORKSHEET

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	B			C	D	E	F			G	H	I	J	K
	Type Daylight Controlled [1] ☑ only one						For Skylights [4]							
Room # Zone ID Areas	Skylit	Primary Sidelit	Secondary Sidelit	Plan Reference	Daylight Area [2]	VT [3]	Well Efficiency	Well Cavity Ratio	Skylit Area	Effective Aperture [5]	General Lighting Power Density (w/ft2)	Watts of controlled lighting	Power Adjustments Factor [6]	Control Credit Watts (I x J)
	☐	☐	☐											
	☐	☐	☐											
	☐	☐	☐											
	☐	☐	☐											
	☐	☐	☐											
	☐	☐	☐											
	☐	☐	☐											
	☐	☐	☐											
													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

INDOOR LIGHTING POWER ALLOWANCE — LTG-3C

Project Name:	Date:

ALLOWED LIGHTING POWER (Chose One Method)

A Separate LTG-3C must be filled out for Conditioned and Unconditioned Spaces. Indoor Lighting Power Allowances listed on this page are only for: ☐ CONDITIONED spaces ☐ UNCONDITIONED spaces

COMPLETE BUILDING METHOD

BUILDING CATEGORY (From §146 Table 146-E)	**WATTS PER** (ft^2)	**X**	**COMPLETE BLDG. AREA**	**=**	**ALLOWED WATTS**
	TOTALS				
			AREA		WATTS

AREA CATEGORY METHOD – Part A

A	B		C		D
AREA CATEGORY (From §146 Table 146-F)	**WATTS PER** (ft^2)	**X**	**AREA** (ft^2)	**=**	**ALLOWED WATTS**
Sum of Additional Allowed Watts from Area Category Method – Part B (from table below)					
	TOTALS				
			AREA		WATTS

AREA CATEGORY METHOD – Part B Additional Wattage Allowance (from Table 146-F Footnotes)

A	B	C [1]	D	E	F	G
Primary Function	Sq Ft	Additional Watts Per ft^2 Allowed	Wattage Allowance (B x C)	Description(s) and Quantity of Special Luminaire [2] Types in each Primary Function Area	Total Design Watts	ALLOWED WATTS Smaller of D or F
				TOTALS – Enter into Area Category Method – Part A (table above)		

1. Additional watts available only when allowed according to the footnotes on bottom of Table 146-F for chandelier or sconce; art, craft, assembly or manufacturing specialized task work; precision commercial/ industrial work; or lab specialized task work.
2. Special luminaires are light fixtures described in the Table 146-F Footnotes that are subject to an additional wattage allowance.

TAILORED METHOD

Total Allowed Watts using the Tailored Method taken from LTG-4C (Page 1 of 4) Row 3	

The indoor lighting power allowance using the Tailored Method of compliance shall be determined using the LTG-4C set of forms. A separate set of LTG-4C forms shall be filled out for CONDITIONED and UNCONDITIONED spaces

TAILORED METHOD WORKSHEET (Page 1 of 4) LTG-4C

Project Name:	Date:

TAILORED METHOD SUMMARY – Separate Tailored Method Worksheets shall be filled out of Conditioned and Unconditioned Spaces ☐ **CONDITIONED SPACES** ☐ **UNCONDITIONED SPACES**

1. Allowed Watts for Illuminance Categories (Building Total from Column G from Tailored General Lighting Power Table below)	
	Watts

2. Watts for Display Lighting

Wall Display from LTG-4C Page 2 of 4	+	Floor Display from LTG-4C Page 2 of 4	+	Ornamental/ Special Effects Display from LTG-4C Page 3 of 4	+	Very Valuable Merchandise from LTG-4C Page 3 of 4	=	Total Watts

3. Total Allowed Watts (add lines 1 and 2)	
	Watts

TAILORED ALLOWED GENERAL LIGHTING POWER

A	B	C	D		E	F	G
ROOM NUMBER	PRIMARY FUNCTION TYPE [1]	ILLUMINANCE CATEGORY [2]	ROOM CAVITY RATIO [3]	**RCR** FROM LTG-4C Page 4 of 4? **Y**	**N**	FLOOR AREA FOR PRIMARY FUNCTION [4]	ALLOWED LPD [5]	ALLOWED WATTS (E x F)
				☐	☐			
				☐	☐			
				☐	☐			
				☐	☐			
				☐	☐			
				☐	☐			
				☐	☐			
				☐	☐			
				☐	☐			
				☐	☐			
				☐	☐			
				☐	☐			
				☐	☐			
				☐	☐			
				☐	☐			
				☐	☐			
						ft^2		**Watts**
					PAGE TOTAL			
					BUILDING TOTAL			

1. *From Table 146-G , Column1*
2. *From Table 146-G , Column 2 or IESNA Handbook*
3. *If Column D checked 'N' then enter <3.5 in this column.*
4. *Floor area must be for Primary Function type listed in Table 146-G Column 1. Floor area using the Area Category Method shall not be included*
5. *In accordance with Table 146-I*

TAILORED METHOD WORKSHEET (Page 2 of 4) LTG-4C

Project Name: | Date:

☐ **CONDITIONED SPACES** ☐ **UNCONDITIONED SPACES**

DISPLAY LIGHTING WALLS

☐ 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
			ALLOTTED WATTS			**DESIGN WATTS**				
Luminaire Description	Mounting Height	Mount Height Factor[1]	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)	Allowed Watts (Min. F or J)
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

✓ ☐ 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
			ALLOTTED WATTS			**DESIGN WATTS**				ALLOWED WATTS (Min. F or J)
Luminaire Description	MOUNTING HEIGHT	MOUNT HEIGHT FACTOR [3]	FLOOR AREA [4] (ft^2)	FLOOR DISPLAY [5] Power in W/ft^2	ALLOTED 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

Project Name:

Date:

☐ **CONDITIONED SPACES** ☐ **UNCONDITIONED SPACES**

DISPLAY LIGHTING: ORNAMENTAL / SPECIAL EFFECTS

A	B	C	D	E	F	G	H	I
	ALLOTTED WATTS			DESIGN WATTS				**ALLOWED WATTS** (Minimum of D or H)
LIGHTING DESCRIPTION	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 DISPLAY [3]

A	B	C	D	E	F	G	H	I	J	K	L
	ALLOTTED WATTS						DESIGN WATTS				**ALLOWED WATTS** (Minimum of D, G or K)
LUMINAIRE NAME OR LOCATION	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			16						
		1.0			16						
		1.0			16						
		1.0			16						
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.

TAILORED METHOD WORKSHEET

Project Name:	Date:
Documentation Author	

☐ **CONDITIONED SPACES** ☐ **UNCONDITIONED SPACES**

ROOM CAVITY RATIO (RCR) WORKSHEET

☐ **RCR< 3.5** *Is assumed instead of using one of the calculation methods listed below. Note: Table 146-I provides the lowest lighting power density values for RCRs which are less than 3.5*

RECTANGULAR SPACES

A	B	C	D	E	F
Room Number	Task/Activity Description	Room Length (L) (ft)	Room Width (W) (ft)	Room Cavity Height (H) (ft)	RCR 5 x H x (L+W) / (L x W)

NON-RECTANGULAR SPACES

A	B	C	D	E	F
Room Number	Task/Activity Description	Room Area (A) (ft^2)	Room Perimeter (P) (ft)	Room Cavity Height (H) (ft)	RCR 2.5 x H x P / A

Use calculations from Column F of this RCR Worksheet to enter into Column C of LTG-4C, Page 1 of 4

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			
		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

 OLTG-1C

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

General Information

Phase 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.

☐	OLTG-1C	Certificate of Compliance. All 4 pages required on plans for all submittals.
☐	OLTG-2C	(Page 1 of 3) Lighting Wattage Allowances for General Hardscape, Sales Frontage, or Ornamental Lighting. Optional on plans.
☐	OLTG-2C	(Page 2 of 3) Lighting Wattage Allowances for Per Application or Per Area. Optional on plans.
☐	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: Default from NA-8	How wattage was determined: According to §130 (d or e)	Number of Luminaires	Installed Watts (D x G)	Field Inspector[2]: Pass	Field Inspector[2]: Fail
				☐	☐	☐			☐	☐
				☐	☐	☐			☐	☐
				☐	☐	☐			☐	☐
				☐	☐	☐			☐	☐
				☐	☐	☐			☐	☐
				☐	☐	☐			☐	☐
				☐	☐	☐			☐	☐
	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.

Filed Inspector Notes or Discrepancies:

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, ***LTG-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 ***LTG-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* ***LTG-2A*** *for each different lighting luminaire control(s) must be provided to the owner of the building for their records.*

	Luminaires Controlled			Certificate of Acceptance OLTG-2A[1]
Equipment Requiring Testing	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.*

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)		
Complies if Installed Wattage in row H is less than or equal to the Total Installed Wattage in row G		☐ Yes	☐ 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									

OUTDOOR LIGHTING WORKSHEET

Project Name:

Date:

D. SPECIFIC APPLICATION LIGHTING WATTAGE ALLOWANCE PER APPLICATION

DETERMINE WATTAGE ALLOWANCE				DESIGN WATTS					ALLOWANCE
A	B	C	D	E	F	G	H	I	J
Specific Lighting Application	Number of Luminaires	Specific Application Allowance (watts)	Wattage Allowance (B x C)	Luminaire 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 D; Specific Application Wattage Allowance Per Application									

E. SPECIFIC APPLICATION LIGHTING WATTAGE ALLOWANCE PER AREA

DETERMINE WATTAGE ALLOWANCE				LUMINAIRE TYPE		DESIGN WATTS			
A	B	C	D	E	F	G	H	I	J
Specific Lighting Application	Illuminated Area of Application	Specific Application Allowance (watts per ft^2)	Wattage Allowance (B x C)	Code for Luminaire Type	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 E; Specific Application Lighting Wattage Allowance Per Area									

OUTDOOR LIGHTING WORKSHEET

Project Name: | Date:

F. ADDITIONAL LIGHTING POWER ALLOWANCE FOR ORDINANCE REQUIREMENTS

Note: The additional lighting power allowance for ordinance requirements may be used only if the jurisdiction having authority has officially adopted specific outdoor light levels, which are expressed as average or minimum footcandle (fc) levels, by following a public process that allowed for formal public notification, review, and comment about the proposed change.

☐ Information in OLTG-1C; Page 3 of 4; Section B has been completed.

A	B	C	D	E	F
Hardscape Application Having Official Lighting Ordinance	Illuminated Hardscape Area (ft^2)	Avg. or Min. Ordinance	Number Horizontal Foot Candle required by Ordinance	Allowance (W/ft^2)	Wattage Allowance (B x E)

1.	Total additional lighting power allowance for ordinance requirements (sum of column F)	
2.	Enter actual additional incremental wattage used to meet local ordinance requirements	
3.	Enter smaller of row 1 or row 2	

Enter wattage from row 3 above into OLTG-1C; Page 4 of 4; Row F; Item: Additional lighting power allowance for ordinance requirements

2008 Compliance Forms
Sign Lighting

Certificate of Compliance (Sign Lighting) (Page 1 of 2) SLTG-1C

Project Name:	Phase of Construction Function Type	☐ **New Construction** ☐ **Addition** ☐ **Alteration** ☐ **Outdoor Signs** ☐ **Indoor Signs**
Project Address:	Date:	Compliance Method Used ☐ **Maximum Allowed Lighting Power** ☐ **Alternate Lighting Sources**

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

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

	Mandatory Sign Lighting Controls	Yes		No
1	**§133(a)1.** All signs with permanently connected lighting are controlled with an automatic time switch control that complies with the applicable requirements of §119.	☐		☐
2	**§133(a)2.** All outdoor signs are controlled with a photo control or outdoor astronomical time switch control.	☐		☐
	Exception to §133(a)2. Outdoor signs are in tunnels or large covered areas that require illumination during daylight hours.	☐		☐
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.	☐		☐
	Exception 1 to §133(a)3. Signs are illuminated for less than one hour per day during daylight hours.	☐		☐
	Exception 2 to §133(a)3. Outdoor signs are in tunnels or large covered areas that require illumination during daylight hours.	☐		☐
	Exception 3 to §133(a)3. Only metal halide, high pressure sodium, cold cathode, or neon lamps are used to illuminated signs or parts of signs.	☐		☐
4	**§133(a)4.** An Electronic Message Center (EMC) having a new connected lighting power load greater than 15 kW has a control installed is 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 ☐	N ☐	N/A ☐
	Exception to §133(a)4. The EMC is required by a health or life safety statue, ordinance, or regulation, including but not limited to exit signs and traffic signs.	Y ☐	N ☐	N/A ☐

Certificate of Compliance and Field Inspection Energy Checklist (Sign Lighting)

 SLTG-1C

Project Name:	Date:

		Compliance Method									
		Maximum Allowed Lighting Power									
A	B	C	D	E	F	G	H	I	J	K	
		Allowed Watts				Design Watts[1]	Complies? Y/N	Light Source		Field Inspector[2]	
Sign symbol or code	Description or location and plan location	Sign Area (ft^2)	Internally (I) or Externally (E) Illuminated	Allowed LPD (I = 12 W/ft2) (E = 2.3 W/ft2)	Allowed Watts = C x E	Total Installed watts for sign	Complies If G ≤ F	From List Below	Special Features	Pass	Fail
									☐	☐	☐
									☐	☐	☐
									☐	☐	☐
									☐	☐	☐
									☐	☐	☐
	Total Sign Area:										

1. *Design Watts = total connected lighting load installed in the sign, including power used by lamps, ballasts, transformers, power supplies, etc.*
2. *If Fail then describe on Page 2 of the Inspection Checklist Form and take appropriate action to correct. Verify building plans if necessary. Use additional sheets if necessary.*

The sign(s) identified above; use only one or more of the following technologies: (list all applicable numbers that apply in column I above)

1	*High pressure sodium lamps*
2	*Pulse start or ceramic metal halide lamps served by a ballast with ≥ 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 ≥ 80% efficiency*
4	*Neon or cold cathode lamps with transformer or power supply efficiency ≥ 75% with rated output current < 50 mA*
5	*Neon or cold cathode lamps with transformer or power supply efficiency ≥ 68% with rated output current ≥ 50 mA*
6	*Fluorescent lamps with a minimum color rendering index (CRI) of 80*
7	*Light emitting diodes (LEDs) with a power supply with ≥ 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*

Field Inspector Notes or Discrepancies

2008 Compliance Forms
Refrigerated Warehouse

Certificate of Compliance

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

General Information

Building Type: ☐ Refrigerated Warehouse ≥ 3,000 ft^2 ☐ Refrigerated Warehouse < 3,000 ft^2

(Note: If the Refrigerated Warehouse space is < 3,000 ft^2 than it must meet Appliance Efficiency Regulations (Title 20) for walk-in refrigerators/freezers)

☐ Areas within refrigerated Warehouses: quick chill/freeze space with design cooling capacity > 240 Btu/hr-ft^2 (2 tons/100 ft^2) ☐Yes ☐No

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-ft^2 (2 tons/100 ft^2) need not to comply.

Phase 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 Refrigerated Warehouse Designer's Declaration Statement

- 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

Indicate location on building plans of Mandatory Refrigerated Warehouse Measures, See page 3 of 3.

Certificate of Compliance

Project Name:	Date:

ENVELOPE REQUIREMENTS

Insulation Details

Page No. on Plans	SPACE[1]		Assembly Type (Wall, Roof/Ceiling, Floor)	Installed Insulation R-value (ºF·ft²·hr/Btu)	Minimum Required Insulation R-Value[2] (ºF·ft²·hr/Btu)	ASSEMBLY COMPLIANCE[3]	
	Cold Storage	Frozen Storage				PASS	FAIL
	☐	☐				☐	☐
	☐	☐				☐	☐
	☐	☐				☐	☐
	☐	☐				☐	☐
	☐	☐				☐	☐
	☐	☐				☐	☐
	☐	☐				☐	☐
	☐	☐				☐	☐
	☐	☐				☐	☐
	☐	☐				☐	☐
	☐	☐				☐	☐
	☐	☐				☐	☐

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

Project Name:	Date:

REFRIGERATION SYSTEM REQUIREMENTS

MANDATORY MEASURES	*T-24 Sections*	*Indicate Page Reference on Plans or Schedule and indicate the applicable exception(s)*		
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 70ºF 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 70ºF 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≤76º Tc = wb+20º, 76º<wb≤78º Tc = wb+19º, wb > 78º Tc = wb + 18º)	§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 + 10º, cold = db + 15º)				
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
PROJECT ADDRESS:		_____ Checked by/Date Enforcement Agency Use

GENERAL INFORMATION

DATE OF BUILDING PERMIT	PERMIT #			
BUILDING TYPE	☐ Nonresidential	☐ High-Rise Residential	☐ Hotel/Motel Guest Room	
PHASE OF CONSTRUCTION	☐New Construction	☐ Addition	☐ Alteration	☐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

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:

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

In the table below identify all applicable construction documents that specify the requirements for the scope of responsibility reported by this Installation Certificate (continued).

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

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

GENERAL INFORMATION

DATE OF BUILDING PERMIT	PERMIT #			
BUILDING TYPE	☐ Nonresidential	☐ High-Rise Residential	☐ Hotel/Motel Guest Room	
PHASE OF CONSTRUCTION	☐ New Construction	☐ Addition	☐ Alteration	☐ 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

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:

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

In the table below identify all applicable construction documents that specify the requirements for the scope of responsibility reported by this Installation Certificate (continued).

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

INSTALLATION CERTIFICATE

 LTG-INST

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

GENERAL INFORMATION

DATE OF BUILDING PERMIT	PERMIT #			
BUILDING TYPE	☐ Nonresidential	☐ High-Rise Residential	☐ Hotel/Motel Guest Room	
PHASE OF CONSTRUCTION	☐ New Construction	☐ Addition	☐ Alteration	☐ 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

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:

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

In the table below identify all applicable construction documents that specify the requirements for the scope of responsibility reported by this Installation Certificate (continued).

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

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

GENERAL INFORMATION

DATE OF BUILDING PERMIT	PERMIT #		
BUILDING TYPE	☐ Nonresidential Outdoor Lighting		
PHASE OF CONSTRUCTION	☐New Construction	☐ Addition	☐ Alteration

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

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:

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 2 of 2) OLTG-INST

In the table below identify all applicable construction documents that specify the requirements for the scope of responsibility reported by this Installation Certificate (continued).

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

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

GENERAL INFORMATION

DATE OF BUILDING PERMIT	PERMIT #		
BUILDING TYPE	☐ Outdoor Sign	☐ Indoor Sign	
PHASE OF CONSTRUCTION	☐ New Construction	☐ Addition	☐ Alteration

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

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:

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 2 of 2) SLTG-INST

In the table below identify all applicable construction documents that specify the requirements for the scope of responsibility reported by this Installation Certificate (continued).

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

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

GENERAL INFORMATION

DATE OF BUILDING PERMIT	PERMIT #		
BUILDING TYPE	☐ Refrigerated Warehouse		
PHASE OF CONSTRUCTION	☐ New Construction	☐ Addition	☐ Alteration

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

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:

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

In the table below identify all applicable construction documents that specify the requirements for the scope of responsibility reported by this Installation Certificate (continued).

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:	☐ NONRESIDENTIAL/COMMERCIAL/SCHOOL	☐ HIGH RISE RESIDENTIAL	☐ HOTEL/MOTEL GUEST ROOM
PHASE OF CONSTRUCTION:	☐ NEW CONSTRUCTION	☐ ADDITION	☐ ALTERATION
LABEL CERTIFICATE:	☐ **NFRC CMA** LABEL CERTIFICATE ID #_____(*Attach an NFRC Label Certificate for each product listing and enter the Label Certificate ID in each column below*)	☐ **NA7** or **CEC** Default Values Use FC-1/FC-2 < 10,000 ft^2 (Attach FC-1/FC-2 and Enter information in *Row1 through 4*)	☐ **CEC** Default Values Use FC-1/FC-2 ≥ 10,000 ft^2 (Attach FC-1/FC-2 and Enter information in *Row1through 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	☐ Single ☐ Double ☐ Other	☐ Single ☐ Double ☐ Other	☐ Single ☐ Double ☐ Other	☐ Single ☐ Double ☐ Other
4	Verification (Verify each product with…)	☐ Delivery Receipt(s) ☐ Purchase Order or ☐ Detailed Receipt	☐ Delivery Receipt(s) ☐ Purchase Order or ☐ Detailed Receipt	☐ Delivery Receipt(s) ☐ Purchase Order or ☐ Detailed Receipt	☐ Delivery Receipt(s) ☐ Purchase Order or ☐ Detailed Receipt
		☐ Cross Reference and Matches Building Plans	☐ Cross Reference and Matches Building Plans	☐ Cross Reference and Matches Building Plans	☐ Cross Reference and Matches Building Plans

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.
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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):	

2008 Certificate of Acceptance Mechanical

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:		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 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.

NA7.5.2 Constant Volume Single Zone Unitary Air Conditioner and Heat Pump Systems

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:		Phone:
Responsible Person's Name:		Responsible Person's Signature:
License:	Date Signed:	Position With Company (Title):

NA7.5.2 Constant Volume Single Zone Unitary Air Conditioner and Heat Pump Systems

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	☐	☐			☐	☐	
b.	Supply fan turns off				☐			
c.	Supply fan cycles on and off			☐				☐
d.	System reverts to "occupied" mode to satisfy any condition					☐		
e.	System turns off when manual override time period expires					☐		
f.	Gas-fired furnace, heat pump, or electric heater stages on	☐		☐				
g.	Neither heating or cooling is provided by the unit		☐		☐			
h.	No heating is provided by the unit		☐		☐		☐	☐
i.	No cooling is provided by the unit	☐	☐	☐	☐			
j.	Compressor stages on						☐	☐
k.	Outside air damper is open to minimum position	☐	☐			☐	☐	
l.	Outside air damper closes completely				☐			
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:
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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RESPONSIBLE PERSON'S DECLARATION STATEMENT

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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)

☐	Stainless steel worm-drive hose clamps
☐	UV-resistant nylon duct ties

☐	b. Flexible ducts are not constricted in any way
☐	c. Duct leakage tests performed before access to ductwork and connections are blocked
☐	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.
☐	e. Duct R-values are verified R-8 per 124(a) in non-conditioned spaces.
☐	f. Ductwork located outdoors has insulation that is protected from damage and suitable for outdoor service
☐	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).

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%	%	☐ Pass ☐ 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%	%	☐ Pass ☐ 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%	%	☐ Pass ☐ 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)		☐ Pass ☐ Fail
	Pass if One of Lines # 7 through # 9 pass		☐ Pass ☐ 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

NA7.5.4 Air Economizer Controls 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:		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)		

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 **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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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 (CO_2) concentration setpoints*

Construction Inspection

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

a. Calibrated hand-held CO^2 analyzer

b. Manufacturer's calibration kit

c. Calibrated CO^2/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)	
	☐ 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 CO^2 setpoint or follow manufacturers recommended testing procedures.

☐ For single zone units, outdoor air damper modulates opens to satisfy the total ventilation air called for in the Certificate of Compliance.

☐ 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 CO^2 setpoint or follow manufacturers recommended procedures.

☐ For single zone units, outdoor air damper modulates to the design minimum value.

☐ 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)		

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 **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.
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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).
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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):	
☐	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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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: *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	Y / N	

B. Testing Results	**PASS**	**FAIL**
Step 1: Pressure measurement is within 5% of submittal data for all pumps	☐	☐
Step 2: Pressure measurements are within 5%	☐	☐

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.

NA7.5.8 Supply Water Temperature Reset Controls 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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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):	

NA7.5.8 Supply Water Temperature Reset Controls Acceptance

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	□	□

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

NA7.5.9 Hydronic System Variable Flow Control 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: *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

Project Name/Address:	
System Name or Identification/Tag:	System Location or Area Served:

B. Testing Results	PASS / FAIL	
Step 1: Select pass if either 1c or 1f are true	☐	☐
Step 2: Select pass if 2b, 2e, 2f and 2g are true	☐	☐

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

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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: *Ensure that the central demand shed sequences have been properly programmed into the DDC system*

Construction Inspection

1 Instrumentation to perform test includes, but not limited to:
   a. None
2 Installation
   ☐ The EMCS front end interface enables activation of the central demand shed controls

A Functional Testing		
Step 1: Engage the demand shed controls		
a.	Engage the central demand shed control signal	Y / N
b.	Verify that the current operating temperature setpoint in a sample of non-critical spaces increases by the proper amount.	Y / N
c.	Verify that the current operating temperature setpoint in a sample of critical spaces does not change.	Y / N
Step 2: Disengage the demand shed controls		
a.	Disengage the central demand shed control signal	Y / N
b.	Verify that the current operating temperature setpoint in the sample of non-critical spaces returns to their original value.	Y / N
c.	Verify that the current operating temperature setpoint in the sample of critical spaces does not change.	Y / N
Step 3: System returned to initial operating conditions		Y / N

B Testing Results	**PASS**	**FAIL**
Test passes if all answers are yes in Step 1 and Step 2	☐	☐

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.

NA7.5.11 Fault Detection and Diagnostics (FDD) for Packaged Direct-Expansion Units

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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Field Technician's Name:		Field Technician's Signature:
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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: ☐ Refrigerant suction pressure ☐ Supply air relative humidity ☐ Return air temp. ☐ Supply air relative humidity. ☐ Refrigerant suction temp. ☐ Outside air relative humidity ☐ Supply air temp. ☐ Liquid line pressure ☐ Return air relative humidity ☐ Outside air temp.	Y / N
j.	The controller will provide system status by indicating the following conditions: ☐ Compressor enabled ☐ Economizer enabled ☐ Free cooling available ☐ Heating enabled ☐ 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.

CERTIFICATE OF ACCEPTANCE	MECH-13A
NA7.5.12 Automatic Fault Detection and Diagnostics (FDD) for Air Handling Units and Zone Terminal Units Acceptance	**(Page 1 of 4)**

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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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):

NA7.5.12 Automatic Fault Detection and Diagnostics (FDD) for Air Handling Units and Zone 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 **Testing of each AHU with FDD controls shall include the following tests:**	**Results**
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

Project Name/Address:	
System Name or Identification/Tag:	System Location or Area Served:

B. Functional Testing for Zone Terminal Units **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.**		**Results**
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

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

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.

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):

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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**.	☐	☐

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.

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 DX 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)	☐ Chilled Water Storage	☐ Ice-on-Coil	☐ CHS	
		☐ Ice Harvester	☐ Brine		
		☐ Ice-Slurry	☐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

☐ The TES system is one of the above eligible systems	☐ Initial discharge rate of the storage tanks (tons)	☐ Discharge test time (hrs).
☐ Initial charge rate of the storage tanks (tons)	☐ Final discharge rate of the storage tank (tons)	☐ Tank storage capacity after charge (ton-hrs)
☐ Final charge rate of the storage tank (tons)	☐ Charge test time (hrs)	☐ Tank storage capacity after discharge (ton-hrs)
☐ Tank standby storage losses (UA)	☐ Initial chiller efficiency (kW/ton) during charging	☐ 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.	☐ Pass ☐ 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).	☐ Pass ☐ 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.	☐ Pass ☐ 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.	☐ Pass ☐ 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.	☐ Pass ☐ 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.	☐ Pass ☐ 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.	☐ Pass ☐ Fail

C. PASS / FAIL Evaluation (check one):	
☐	PASS: Construction Inspection responses are complete and all tests in step 2 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.

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

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Field Technician's Name:		Field Technician's Signature:
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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		
	☐	Occupancy sensor has been located to minimize false signals	
	☐	Light meter	
	☐	Ultrasonic occupancy sensors do not emit audible sound (119a) 5 feet from source	
3	Manual Daylighting Controls Construction Inspection		
	☐	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):	
		☐	Weekdays
		☐	Weekend
		☐	Holidays
	b.	Document for the owner automatic time switch programming (check all):	
		☐	Weekdays settings
		☐	Weekend settings
		☐	Holidays settings
		☐	Set-up settings
		☐	Preference program setting
	☐	Verify the correct time and date is properly set in the time switch	
	☐	Verify the battery is installed and energized	
	☐	Override time limit is no more than 2 hours	
	☐	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)	
☐	1	Occupancy Sensor
☐	2	Manual Daylighting Controls
☐	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:

Occupant Sensor - Step 3: System returned to initial operating conditions		Y / N	Y / N	Y / N
Occupant Sensor - Step 4 - Sensor is also a multi-Level Occupant Sensor used to qualify for a Power Adjustment Factor in Section 146(a)2D of the Standards. If yes, then 'a,' 'b,' and 'c' must also be yes.		Y / N	Y / N	Y / N
a.	The first stage activates between 30 to 70% of the lighting either manually or automatically.	Y / N	Y / N	Y / N
b.	A reasonably uniform level of illuminance is achieved by dimming of all lamps or luminaires; or by switching alternate lamps in luminaires, alternate luminaires, or alternate rows of luminaires.	Y / N	Y / N	Y / N
c.	After the first stage occurs, manual switches have been provided to activate the alternate set of lights, activate 100% of the lighting power, and manually deactivate all of the lights.	Y / N	Y / N	Y / N
Manual Daylighting Controls - Step 1: Manual switching control				
a.	At least 50% of lighting power in daylit areas is separately controlled from other lights	Y / N	Y / N	Y / N
b.	The amount of light delivered to the space is uniformly reduced	Y / N	Y / N	Y / N
Manual Daylighting Controls - Step 2: System returned to initial operating conditions		Y / N	Y / N	Y / N
Automatic Time Switch Controls - Step 1: Simulate occupied condition				
a.	All lights can be turned on and off by their respective area control switch	Y / N	Y / N	Y / N
b.	Verify the switch only operates lighting in the ceiling-height partitioned area in which the switch is located	Y / N	Y / N	Y / N
Automatic Time Switch Controls - Step 2: Simulate unoccupied condition				
a.	All non-exempt lighting turn off per Section 131(d)1	Y / N	Y / N	Y / N
b.	Manual override switch allows only the lights in the selected ceiling height partitioned space where the override switch is located, to turn on or remain on until the next scheduled shut off occurs	Y / N	Y / N	Y / N
c.	All non-exempt lighting turns off	Y / N	Y / N	Y / N
Automatic Time Switch Controls - Step 3: System returned to initial operating conditions		Y / N	Y / N	Y / N
Note: Shaded areas do not apply for particular test procedure				

C.	**PASS / FAIL Evaluation (check one):**
☐	PASS: All applicable **Construction Inspection** responses are complete and all applicable **Equipment Testing Requirements** responses are positive (Y - yes)
☐	FAIL: Any applicable **Construction Inspection** responses are incomplete *OR* there is one or more negative (N - no) responses in any applicable **Equipment Testing Requirements** section. Provide explanation below. Use and attach additional pages if necessary.

2008 Certificate of Acceptance
Outdoor 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

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Field Technician's Name:		Field Technician's Signature:
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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	
	☐	Motion sensor has been located to minimize false signals
	☐	Sensor is not triggered by motion outside of adjacent area
	☐	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:	
	☐	Status indicator operates correctly.
	☐	Lights controlled by motion sensors turn on immediately upon entry into the area lit by the controlled lights near the motion sensor
	☐	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:	
	☐	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).
	☐	The occupant sensor does not trigger a false "on" from movement outside of the controlled area
	☐	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	
	☐	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."
	☐	Controls to turn off lights during daytime hours are installed
	☐	Astronomical and standard time switch control is programmed with acceptable weekday, weekend, and holiday (if applicable) schedules
	☐	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:	
	☐	A reduction in outdoor lighting power by 50 to 80%
	☐	Turning off all outdoor lighting covered by Section 132(c)2 of the Standards
	☐	Verify that the correct time and date is properly set in the standard and astronomical time switch.
	☐	Verify that the correct latitude, longitude and time zone are set in the astronomical time switch.
	☐	Verify the battery back-up (if applicable) is installed and energized in the standard and astronomical time switch.

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:	
	☐	Controlled lights turn on
2.	Sunrise test: Provide between 10 and 30 horizontal footcandles (fc) to photosensor. Verify and document the following	
	☐	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:	
	☐	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:	
	☐	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:	
	☐	Controlled lights turn off
4.	Sunrise test: Simulate or provide the programmed offset time after the time of local sunrise	
	☐	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:	
	☐	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:	
	☐	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:	
	☐	Controlled lights turn off

Certificate of Field Verification and Diagnostic Testing

Certificate of Field Verification and Diagnostic Testing	MECH-4-HERS
Air Distribution System Leakage Diagnostic	**(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 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: _____

SAMPLE FORM
FOR INFORMATION ONLY
NOT FOR SUBMITTAL

Certificate of Field Verification and Diagnostic Testing	**MECH-4-HERS**
Air Distribution System Leakage Diagnostic	**(Page 2 of 2)**
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%	%	☐ Pass ☐ 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%	%	☐ Pass ☐ 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%	%	☐ Pass ☐ Fail
9	Pass if all Accessible Leaks are sealed as confirmed by Visual Inspection and Verification by HERS rater (sampling rate 100%)		☐ Pass ☐ Fail
	Pass if One of Lines # 7 through # 9 pass		☐ Pass ☐ Fail

SAMPLE FORM
FOR INFORMATION ONLY
NOT FOR SUBMITTAL

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