





Seminar Objectives

Upon completion of this seminar, participants will be better able to:

- Locate general topics in the 2009 IECC.
- Locate applicable tables in the 2009 IECC for specific situations.
- Apply code requirements to real-world situations.
- Explain the intent behind a code requirement.

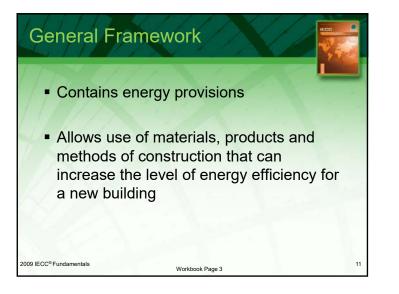
Seminar Objectives (cont.)

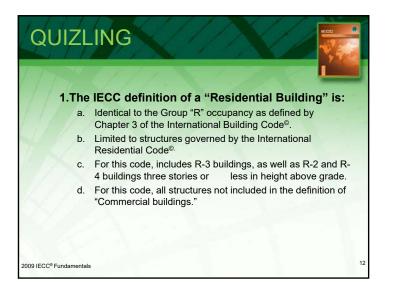
Upon completion of this seminar, participants will be better able to:

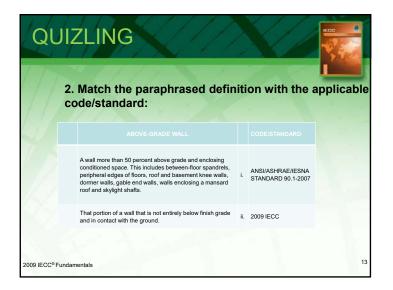
- Identify borderline scenarios as compliant or noncompliant
- Identify essential code components for designing energy-efficient building thermal envelopes, energy-efficient mechanical design principles and electrical power and lightning systems.

Workbook Page 1

2009 IECC[®] Fundamentals







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2009 IECC®					15

QUIZLING 5. When reviewing U-Factors, the allowable value is the a. Maximum b. Minimum b. Minimum

Building site location, Water utilization.b. Building orientation, HVAC, Electrical, Service water heating.

building systems:

c. Building thermal envelope, HVAC, Process electrical loads, Service water heating.

3. The 2009 IECC regulates the following

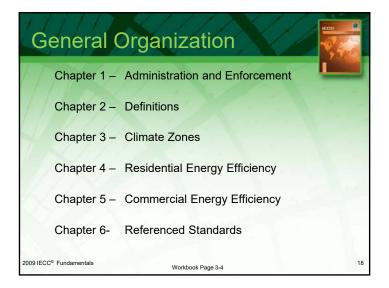
a. Building thermal envelope, Indoor air quality,

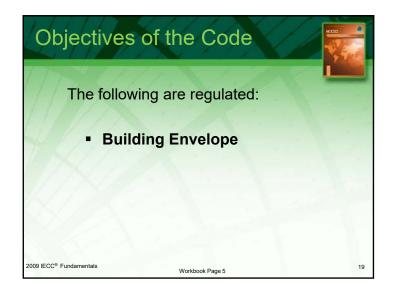
d. Building thermal envelope, HVAC, Electrical, Service water heating.

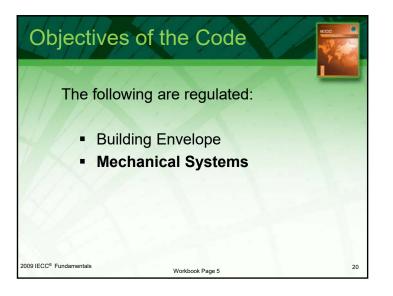
2009 IECC®

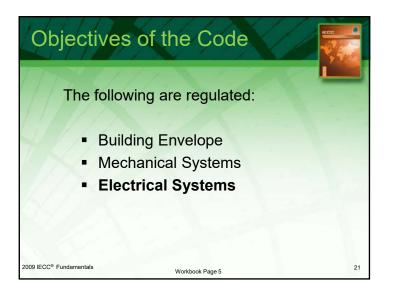
QUIZLING

QUIZLI	NG	Ņ		
177	6. Please identify the type that each of these paths	e(s) of co demonst	mpliance rates:	
116				
41/	Simulated Performance Alternative			
	R-value Computation			
	UAAlternative			
11-1	Total UA			1.0
1211	Energy Cost Budget			
(Y. /	RESCheck			
K 7.2	ERI Compliance Alternative			
	REM Rate			
	Component Performance Alternative			
2009 IEC	C®			17

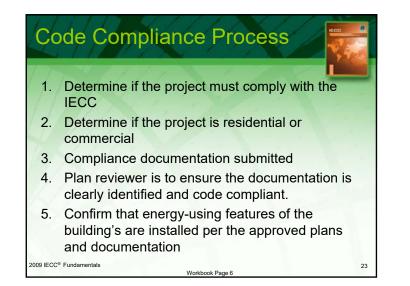


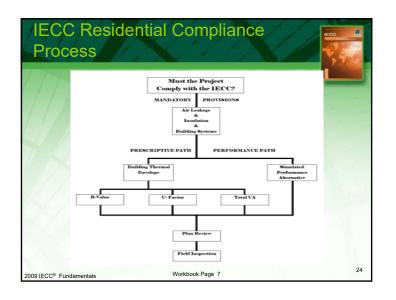


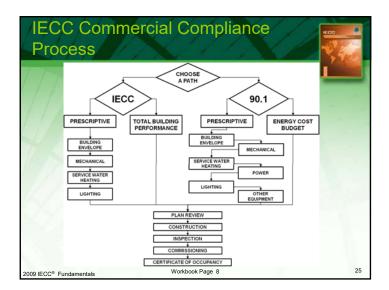


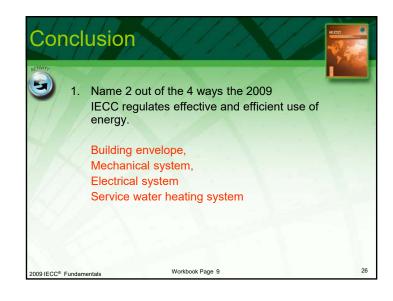


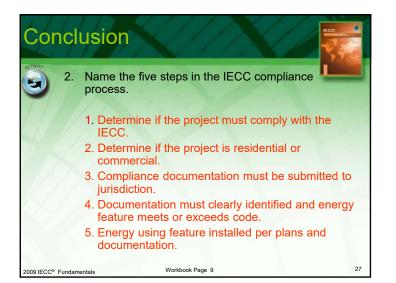


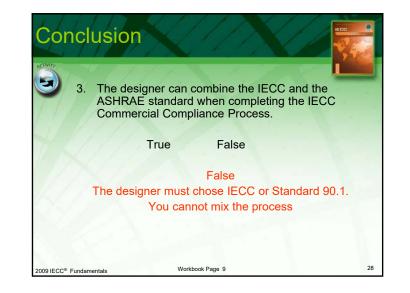


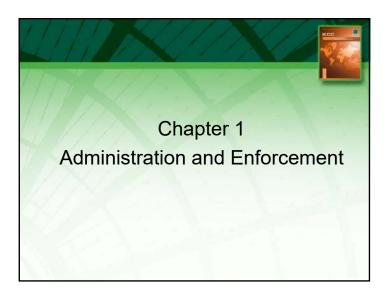




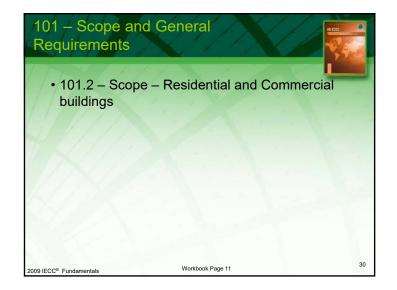


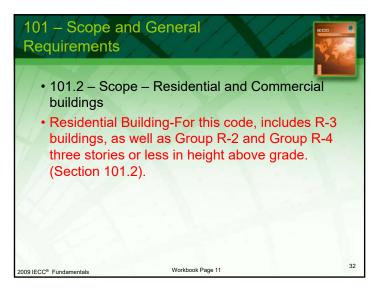


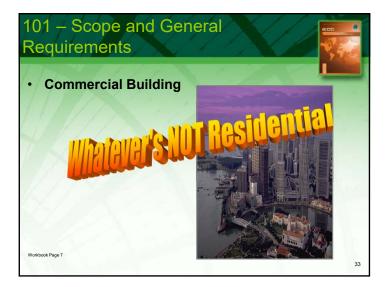














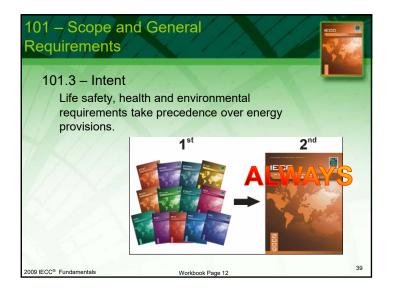
Workbook Page 19

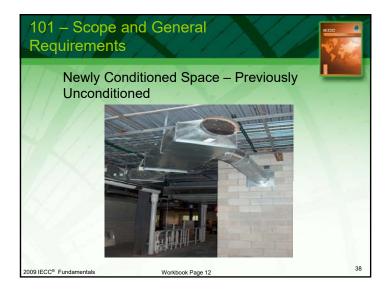
01 - Scope and General Requirements 101.5 Compliance. Residential buildings shall meet the provisions of Chapter 4. Commercial buildings shall meet the provisions of Chapter 5. Workbook Page 19 34

101 - Scope and General Requirements
101.2 - Scope
The provisions apply to several different project types:

Newly conditioned space
New construction in existing buildings
Additions, alterations and repairs to existing buildings
Mixed use buildings
Change in occupancy









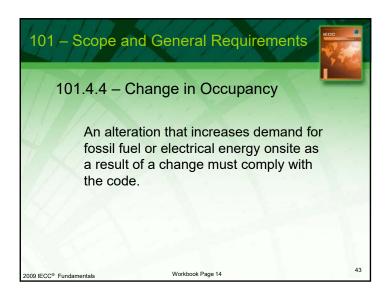


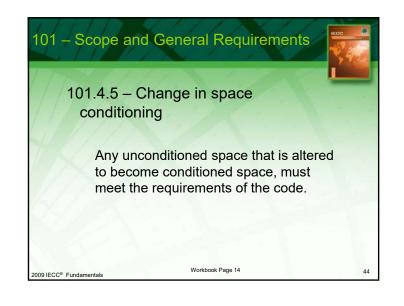
101 – Scope and General Requirements

101.4.3 – Additions, alterations, renovations or repairs (cont.)

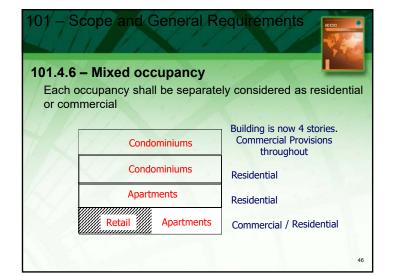
Exceptions

- Reroofing.
- Vestibules are not required to be added where replacing existing doors.
- Replacement of less than 50 percent of the luminares do not increase the lighting power.
- Replacement of only the bulb and ballast of the luminares provided they do not increase the lighting power
 Workbook Page 13

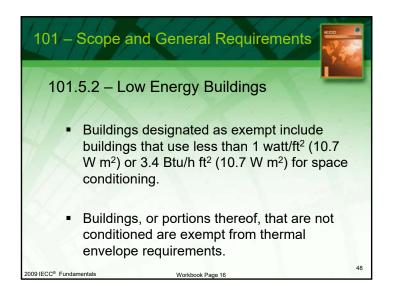


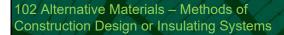












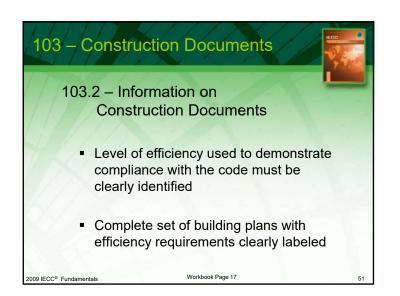
102.1.1 – Above code program

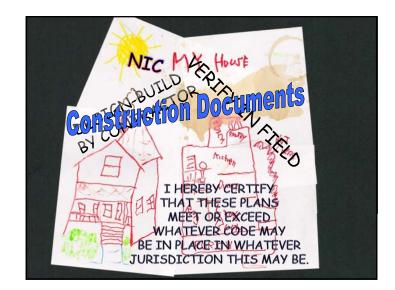
2009 IECC[®] Fundamentals

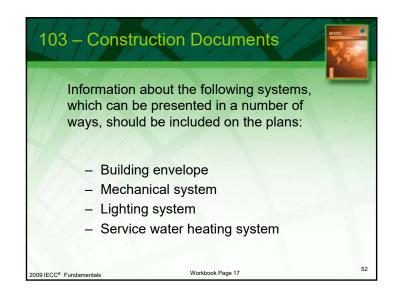
- Authority to approve "above code" program is vested in the code official.
- Language does not guarantee alternative programs exceed the performance required by IECC
- Burden of proof to establish equivalency is on the applicant.

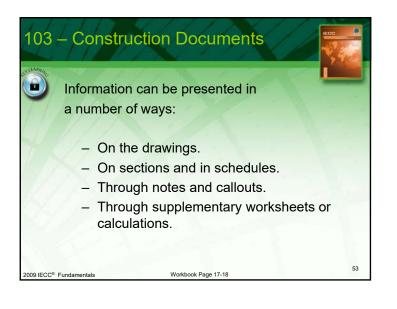
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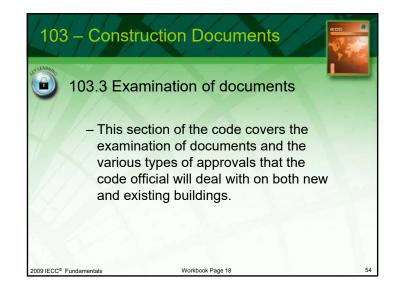
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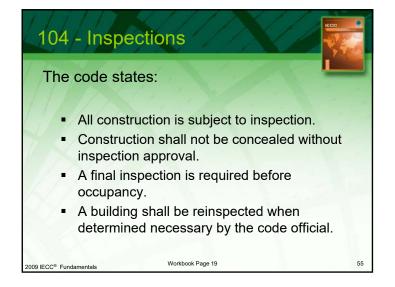




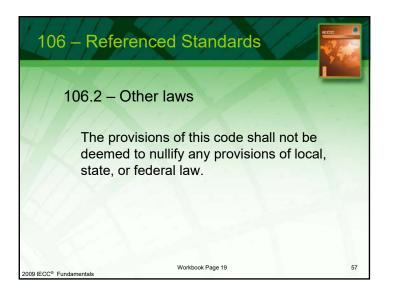


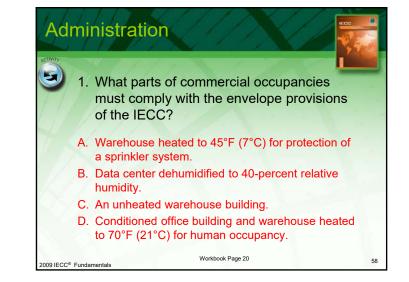




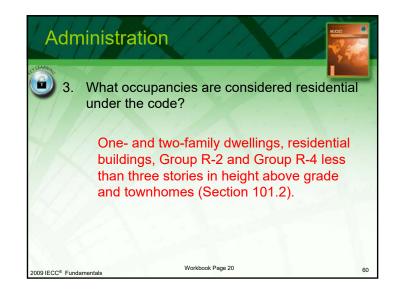




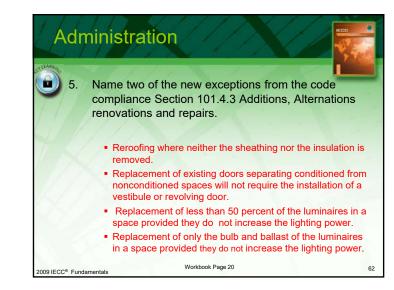


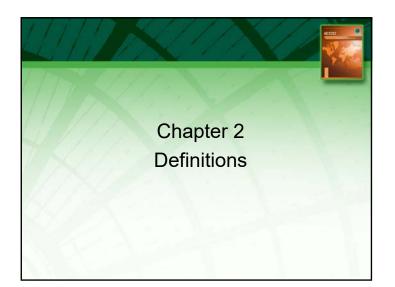




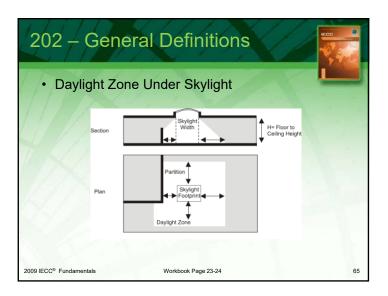


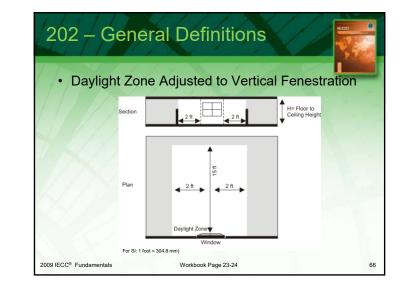


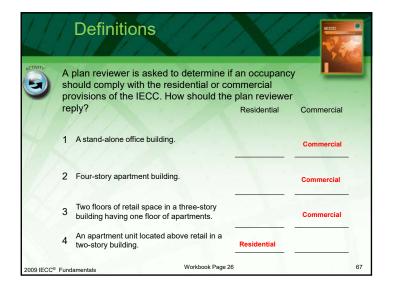


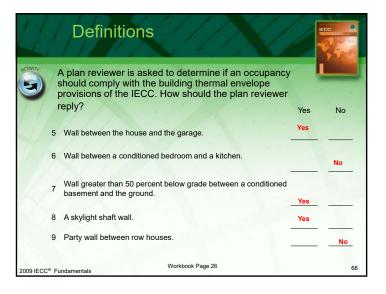


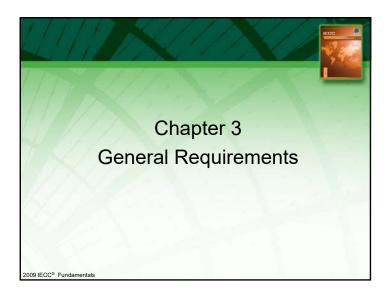
ons	
Exterior Wall/Basement Wall (Chapter 2)	
Heated Slab	
Residential Building	
Fenestration	
Mass Wall- Commercial (502.2.3)	64
	Exterior Wall/Basement Wall (Chapter 2) Heated Slab Residential Building Fenestration Mass Wall- Commercial

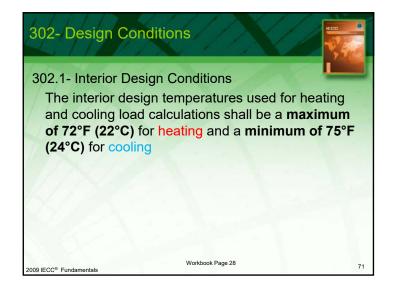


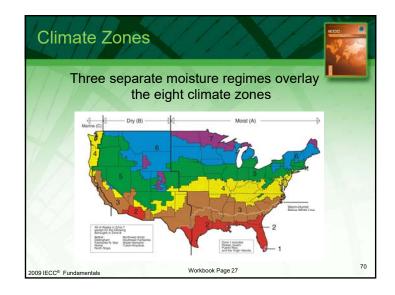








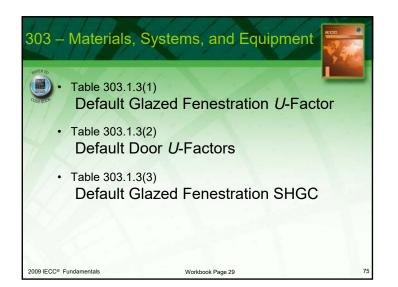












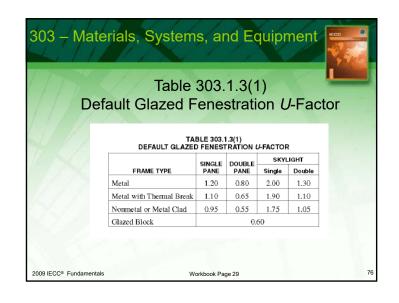
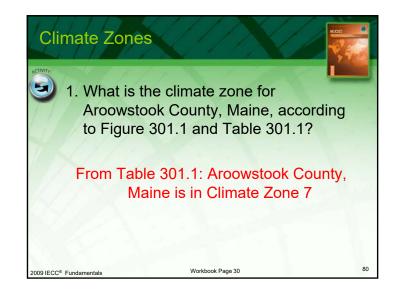
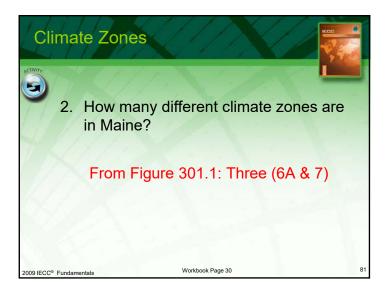


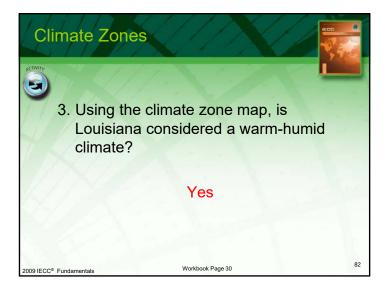
Table 303.1.3(2) Default Door <i>U</i> -Facto	ors
TABLE 303.1.3(2) DEFAULT DOOR U-FACTOR	s
DOOR TYPE	U-FACTOR
Uninsulated Metal	1.20
Insulated Metal	0.60
Wood	0.50
Insulated, nonmetal edge, max 45% glazing, any glazing double pane	0.35

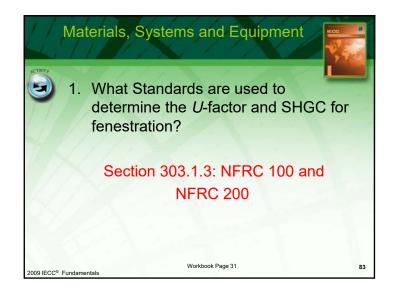
DY S		e 303.		
Defaul	t Glaze	d Fen	estratio	n SHGC
	DEFAULT		03.1.3(3) ENESTRATI(ON SHGC
	GLAZED		EGLAZED	
Clear 0.8	Tinted 0.7	Clear 0.7	Tinted 0.6	GLAZED BLOCK 0.6
010			010	010

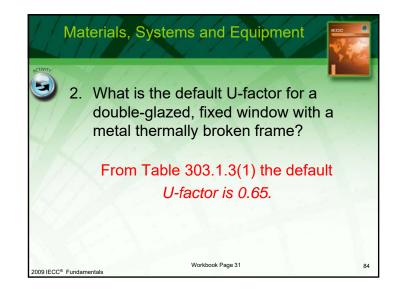


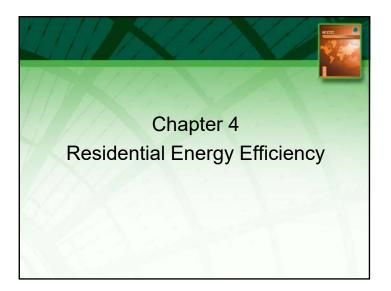


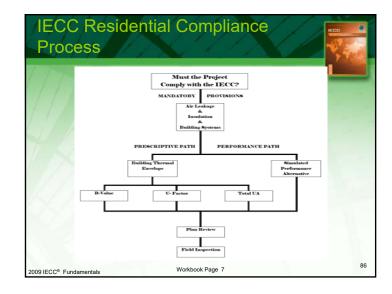


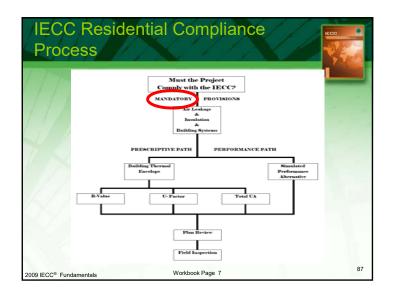


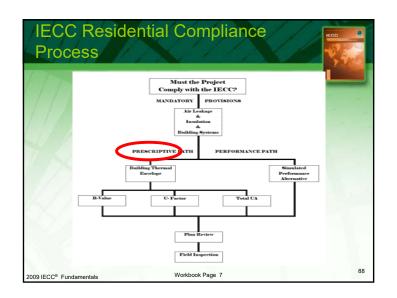


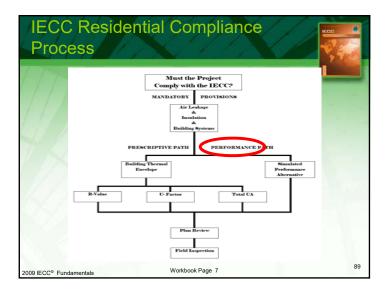


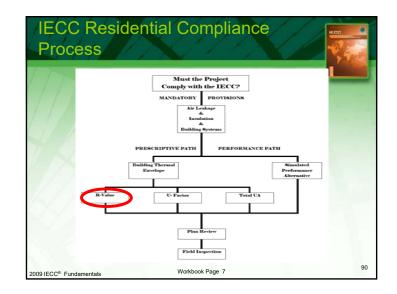


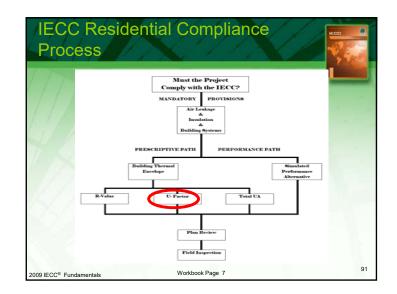


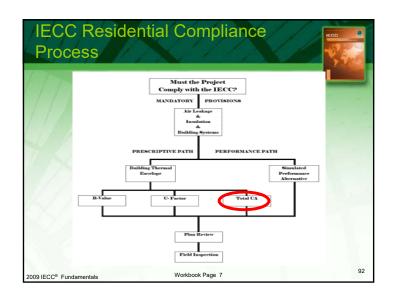














		INSULA	TION AND FENE		E 402.1.1 N REQUIREME	NTS BY C	OMPONEN	IT		
CLIMATE ZONE	FENESTRATION	SKYLIGHT ^b U-FACTOR	GLAZED FENESTRATION SHGC ^{6, •}	CEILING R-VALUE	WOOD FRAME WALL R-VALUE	MASS WALL <i>R</i> -VALUE	FLOOR R-VALUE	BASEMENT [®] WALL <i>R</i> -VALUE	SLAB ^d R-VALUE & DEPTH	CRAWL SPACE [®] WALL <i>R</i> -VALUE
1	1.2	0.75	0.30	30	13	3/4	13	0	0	0
2	0.65 ^j	0.75	0.30	30	13	4/6	13	0	0	0
3	0.50	0.65	0.30	30	13	5/8	19	5/13f	0	5/13
4 except Marine	0.35	0.60	NR	38	13	5/10	19	10/13	10, 2 ft	10/13
5 and Marine 4	0.35	0.60	NR	38	20 or 13+5 ^h	13/17	308	10/13	10, 2 ft	10/13
6	0.35	0.60	NR	49	20 or 13+5 ^h	15/19	308	15/19	10, 4 ft	10/13
7 and 8	0.35	0.60	NR	49	21	19/21	388	15/19	10, 4 ft	10/13
For SI: 1 fo	oot = 304.8 mm.									

For all in tool = 50-rooming to fractors and SHGC are maximums. R-19 batts compressed into a nominal 2×6 framing cavity such that the R-value is reduced by R-1 of more shall be marked with the compressed batt R-value in addition to the full thickness R-value.

c. "15/19" means R-15 continuous insulated sheathing on the interior or exterior of the home or R-19 cavity insulation at the interior of the basement wall. "15/19" shall be permitted to be met with R-13 cavity insulation on the interior of the basement wall. "15/19" home. "1017" means R-10 cavity insulation insulated sheathing on the interior of the basement wall."

through 3 for heated slabs.

c. There are no SHGC requirements in the Marine Zone. F. Bacareno and Insulation is not required in warm-humid locations as defined by Figure 301.1 and Table 301.1. g. Or insulation sufficient to fill the framing earlyin, R-19 minimum.

g. Or instances solution to in the naming circle, yet is minimum. In 1145° means 161 Cavely installand on blue & 5 installed sheathing. If structural sheathing covers 25 percent or less of the exterior, insulating sheathing is not need sheating of a less R-2.

in the second R-value applies when more than half the insulation is on the interior of the mass wall.
j. Forings tarket direstration complying with Section R201.2.1.20 the International Residential Code or Section 1608.1.20 the International Building Code, the maximum U-factor shall be 0.75 in Zone 2 and 0.65 in Zone 3.

		INSULA	TION AND FENE		E 402.1.1 NREQUIREME	NTS BY C	OMPONEN	IT•		
CLIMATE ZONE	FENESTRATION	SKYLIGHT ^b U-FACTOR	GLAZED FENESTRATION SHGC ^{6, e}	CEILING R-VALUE	WOOD FRAME WALL R-VALUE	MASS WALL <i>R</i> -VALUE	FLOOR R-VALUE	BASEMENT [®] WALL <i>R</i> -VALUE	SLAB ^d R-VALUE & DEPTH	CRAWL SPACE° WALL R-VALUE
1	1.2	0.75	0.30	30	13	3/4	13	0	0	0
2	0.65 ^j	0.75	0.30	30	13	4/6	13	0	0	0
3	0.50	0.65	0.30	30	13	5/8	19	5/13f	0	5/13
4 except Marine	0.35	0.60	NR	38	13	5/10	19	10/13	10, 2 ft	10/13
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7 and 8	0.35	0.60	NR	49	21	19/21	388	15/19	10, 4 ft	10/13

For St: 1 foot = 304.8 mm. a R-values are minimums. U-factors and SHGC are maximums. R-19 batts compressed into a nominal 2×6 framing cavity such that the R-value is reduced by R-1 or more shall be marked with the compressed Batt R-value in addition to the full thickness. R-value. In The frestration U-factor columns excludes skylights. The SHGC column pagies to all glazed fenestration. c. "15/19" means R-15 continuous insulted sheading on the interior or the basement wall lues. Formation at the interior or the basement wall. "15/19" shall be pendine to be net vith R-13 cavity insultation on the interior of the basement vall and R-5 continuous insultated sheating on the interior or the basement wall. d. R-5 shall be added to the required slab edge R-values for heated slabs. Insultation depth shall be the depth of the forcing or 2 feet, whichever is less in Zones 1 through 5 for heated slab.

There are no SHGC requirements in the Marine Zone.
 f. Basement wall insulation is not required in warm-humid locations as defined by Figure 301.1 and Table 301.1.

In particular wai instantion is not required in wain-inimize occurs as a centred by require 2011, and note 2011.
Q: rinsultion shifting the filt filter and filter daming covity, R10 minimum.
h: "1345" means R-13 covity insulation plus R-5 insulated sheathing If structural sheathing covers 25 percent or less of the exterior, insulating sheathing is not required where structural sheathing is such If structural sheathing is covers more than 25 percent or less of the exterior, insulating sheathing is not had sheathing of at least R-2.

inter shearing of at test K+2. The second K+auku splices when more than half the insulation is on the interior of the mass wall. For impact rated fenestration complying with Section R301.2.1.2 of the International Residential Code or Section 1608.1.2 of the International Building Code, the maximum U-fractor shalls 0.0.75 m. Zone 2 and 0.65 m. Zone 3.

		INSULA	TION AND FENE		E 402.1.1 N REQUIREME	NTS BY C	OMPONEN	IT		
CLIMATE ZONE	FENESTRATION	SKYLIGHT ^b U-FACTOR	GLAZED FENESTRATION SHGC ^{5, •}	CEILING R-VALUE	WOOD FRAME WALL R-VALUE	MASS WALL <i>R</i> -VALUE	FLOOR R-VALUE	BASEMENT [®] WALL <i>R</i> -VALUE	SLAB ^d R-VALUE & DEPTH	CRAWL SPACE [®] WALL <i>R</i> -VALUE
1	1.2	0.75	0.30	30	13	3/4	13	0	0	0
2	0.65 ^j	0.75	0.30	30	13	4/6	13	0	0	0
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7 and 8	0.35	0.60	NR	49	21	19/21	388	15/19	10, 4 ft	10/13
more shal The fenes (15/19" n shall be pe R-5 shall through 3	the minimums. U-factor colu- tration U-factor colu- neans R-15 continuo- emitted to be met wi be added to the requ for heated slabs.	e compressed t amn excludes s us insulated sh th R-13 cavity i nired slab edge	watt R-value in addi kylights. The SHG eathing on the inter nsulation on the inter R-values for heated	tion to the fu C column ap ior or exterio rrior of the ba	Il thickness R-va oplies to all glaze of the home or l sement wall plus	lue. d fenestratic R-19 cavity i R-5 continu	n. nsulation at ous insulated	the interior of t I sheathing on t	he basement ne interior or (wall. "15/1 exterior of t
 Basement g. Or insulat "13+5" m required v lated sheat The second For impact 	wall insulation is n ion sufficient to fill eans R-13 cavity in where structural shee thing of at least R-2 d R-value applies w trated fenestration c U-factor shall be 0	ot required in ' the framing ca sulation plus R athing is used. I b when more than complying with	warm-humid locatio vity, R-19 minimur 2-5 insulated sheath f structural sheathin half the insulation Section R301.2.1.2	n. ing. If struct ag covers mo is on the int	ural sheathing co re than 25 percen erior of the mass	wers 25 perc t of exterior, wall.	ent or less structural s	neathing shall b	e supplemen	ted with ins

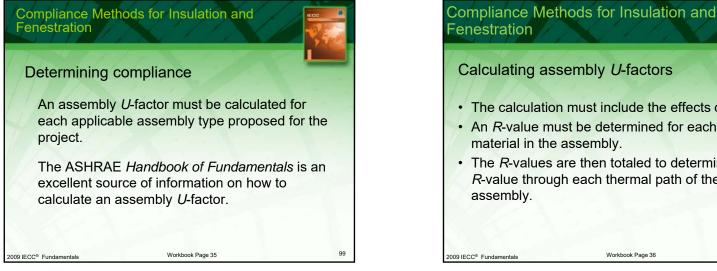
		INSUL	TION AND FENE		E 402.1.1 I REQUIREME	NTS BY C	OMPONEN	П°		
CLIMATE ZONE	FENESTRATION	SKYLIGHT ^b U-FACTOR	GLAZED FENESTRATION SHGC ^{6, e}	CEILING R-VALUE	WOOD FRAME WALL R-VALUE	MASS WALL R-VALUE	FLOOR R-VALUE	BASEMENT [®] WALL <i>R</i> -VALUE	SLAB ^d R-VALUE & DEPTH	CRAWL SPACE° WALL R-VALUE
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2	0.65 ^j	0.75	0.30	30	13	4/6	13	0	0	0
3	0.50	0.65	0.30	30	13	5/8	19	5/13f	0	5/13
4 except Marine	0.35	0.60	NR	38	13	5/10	19	10/13	10, 2 ft	10/13
5 and Marine 4	0.35	0.60	NR	38	20 or 13+5 ^h	13/17	308	10/13	10, 2 ft	10/13
6	0.35	0.60	NR	49	20 or 13+5 ^h	15/19	308	15/19	10, 4 ft	10/13
7 and 8	0.35	0.60	NR	49	21	19/21	388	15/19	10, 4 ft	10/13
 R-values a more shall The feness "15/19" m shall be pe home. "10 	oot = 304.8 mm. are minimums. U-fac 1 be marked with the tration U-factor colu- teams R-15 continuo emitted to be met wi 1/13" means R-10 con- be added to the requ	e compressed b umn excludes s us insulated sh th R-13 cavity i ntinuous insula	att R-value in addi kylights. The SHG eathing on the inter nsulation on the inte ted sheathing on the	tion to the fu C column ap ior or exterio rrior of the ba interior or ext	II thickness R-val plies to all glaze r of the home or F sement wall plus tterior of the hom	lue. d fenestratio R-19 cavity i R-5 continu e or R-13 cav	n. nsulation at ous insulated	the interior of t I sheathing on the in at the interior	he basement the interior or of of the baseme	wall. "15/1 exterior of t ent wall.

b. "1345" means R-13 cavity insulation plus R-5 insulated sheathing. If structural sheathing covers 25 percent or less of the exterior, insulating sheathing is need. If structural sheathing covers more than 25 percent of exterior, structural sheathing shall be supplemented with ins lated sheathing of at least R-2. For impact rated fenestration complying with Section R301.2.1.2 of the International Residential Code or Section 1608.1.2 of the International Building Code, th maximum U-factor shall be 0.7 m Zone 2 and 0.65 in Zone 3.

There are no SHGC requirements in the Marine Zone.
 f. Basement wall insulation is not required in warm-humid locations as defined by Figure 301.1 and Table 301.1.

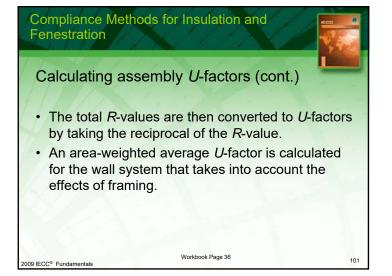
through 3 for heated slabs.

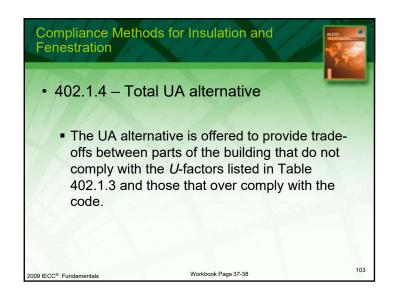
				LE 402.1.3 NT U-FACTOR	RS*			
CLIMATE ZONE	FENESTRATION U-FACTOR	SKYLIGHT U-FACTOR	CEILING U-FACTOR	FRAME WALL U-FACTOR	MASS WALL U-FACTOR ^B	FLOOR U-FACTOR	BASEMENT WALL U-FACTOR	CRAWL SPACE WALL U-FACTOR
1	1.20	0.75	0.035	0.082	0.197	0.064	0.360	0.477
2	0.65	0.75	0.035	0.082	0.165	0.064	0.360	0.477
3	0.50	0.65	0.035	0.082	0.141	0.047	0.091°	0.136
4 except Marine	0.35	0.60	0.030	0.082	0.141	0.047	0.059	0.065
5 and Marine 4	0.35	0.60	0.030	0.057	0.082	0.033	0.059	0.065
6	0.35	0.60	0.026	0.057	0.060	0.033	0.050	0.065
7 and 8	0.35	0.60	0.026	0.057	0.057	0.028	0.050	0.065



culation must include the effects of framing.
lue must be determined for each different
in the assembly.

• The *R*-values are then totaled to determine the total R-value through each thermal path of the





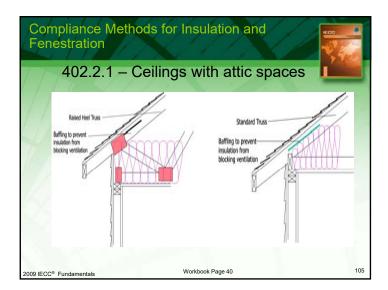
Compliance Methods for Insulation and Fenestration 402.1.4 – Total UA alternative

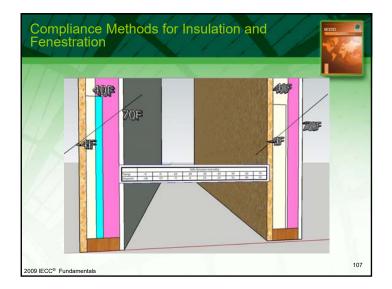
 The building envelope design is permitted to deviate from *R*-values or *U*-factors in Tables 402.1.1 or 402.1.3, respectively, provided the total thermal transmittance (*UA*) is the same or less as the very same building envelope geometry designed to code.

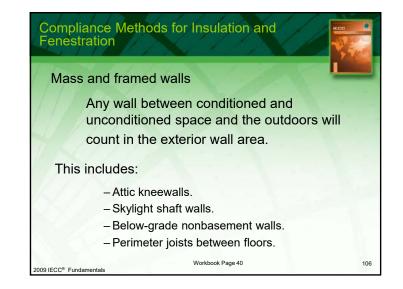
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2009 IECC[®] Fundamentals

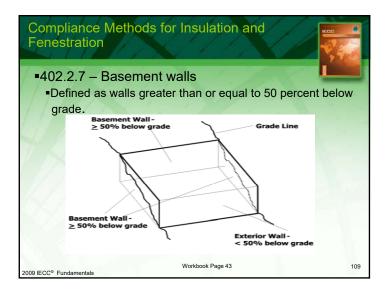


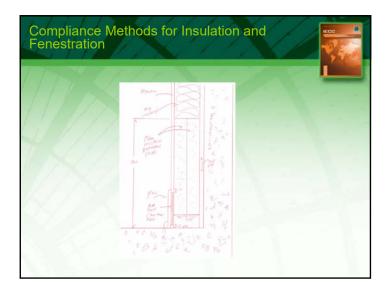


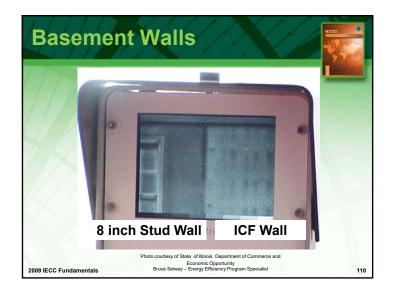


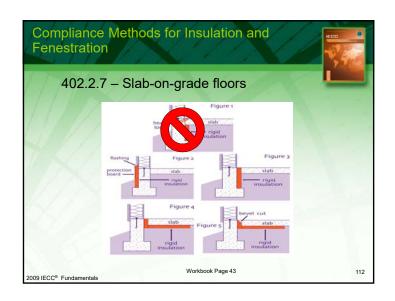


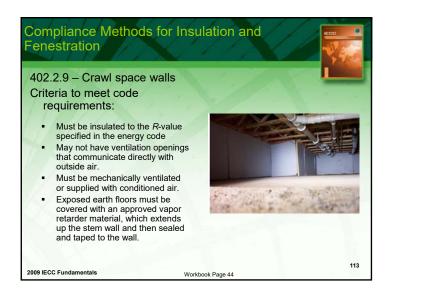


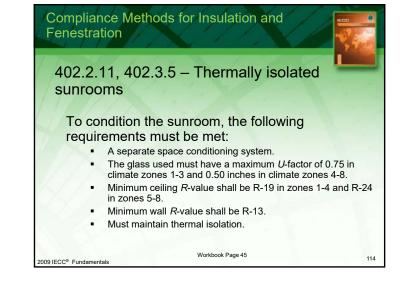


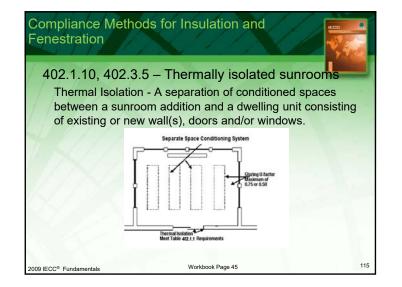


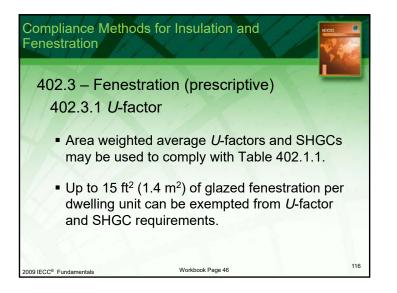












Compliance Methods for Insulation and Fenestration

402.3.2 – Glazed fenestration SHGC

2009 IECC® Fundamentals

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The SHGC measures how well a window or translucent product blocks heat caused by sunlight. SHGC is expressed as a number between 0 and 1. The lower the number, the lower the amount of heat that passes into the building through the glazing.

Fenestration must be rated using NFRC 200 or a default SHGC value is to be assigned from Table 303.1.3(3).

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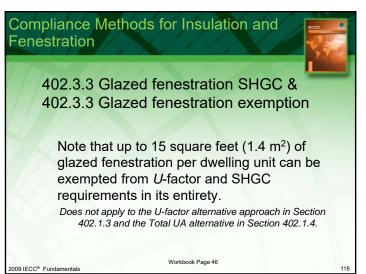
Compliance Methods for Insulation and Fenestration

402.3.4 Opaque door exemption:

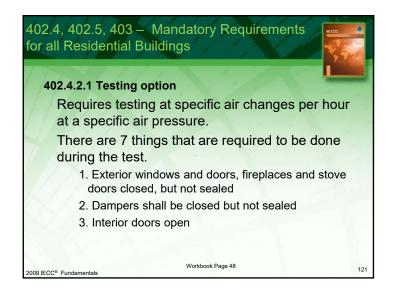
- One hinged opaque door up to 24 square feet (2.22m²) is also exempt from the code.
 - Does not apply to the U-factor alternative approach in Section 402.1.3 and the Total UA alternative in Section 402.1.4.
- 402.3.6 Replacement fenestration
 - Replacement windows and skylights must comply with the fenestration *U*-factor requirements of Table 402.1.1.

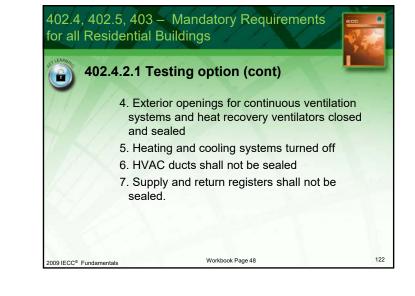
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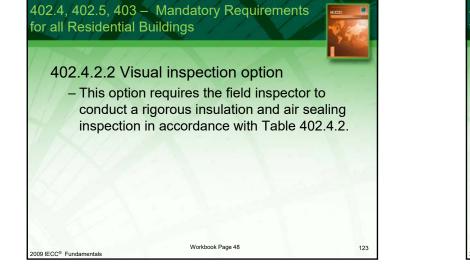
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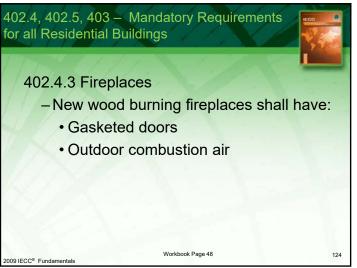


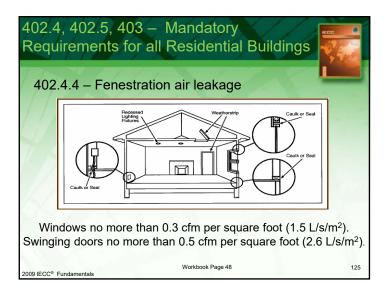


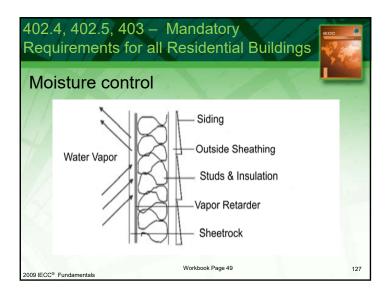






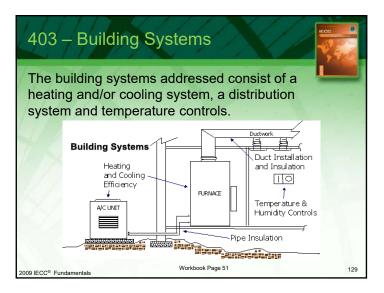


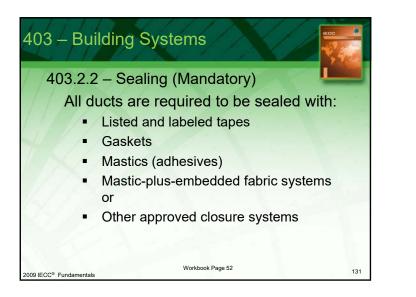




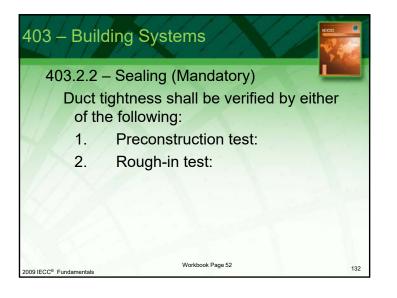


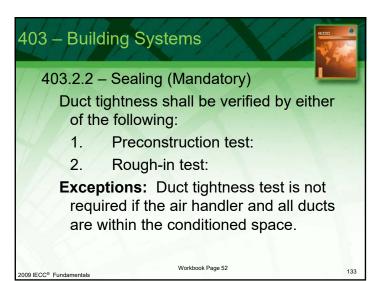


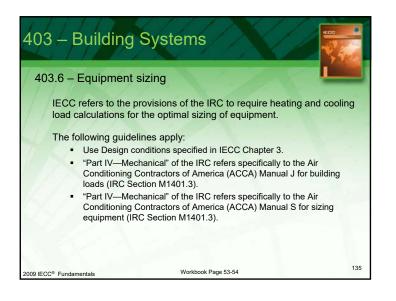




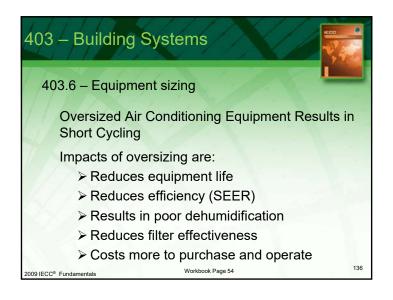


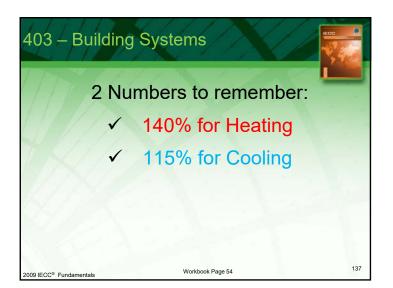


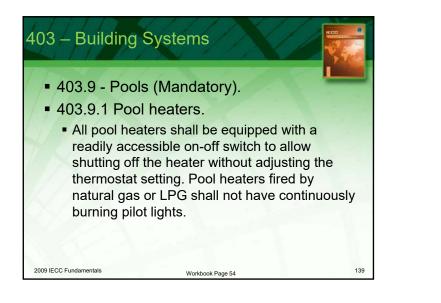


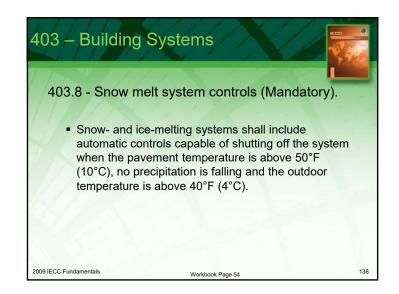


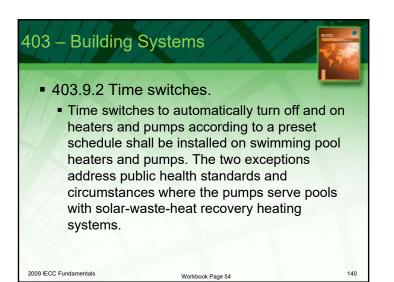










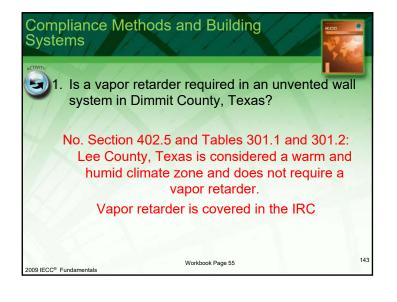


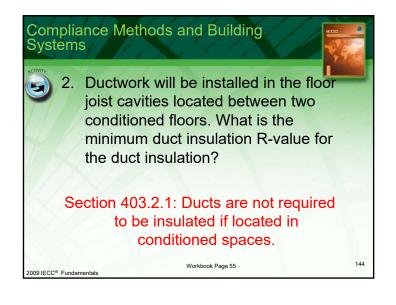
403 – Building Systems

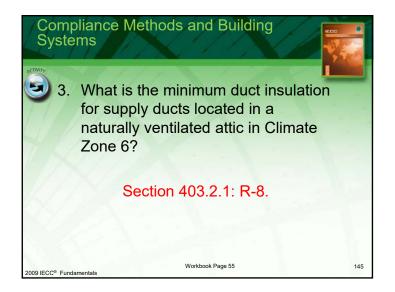
403.9.3 Pool covers.

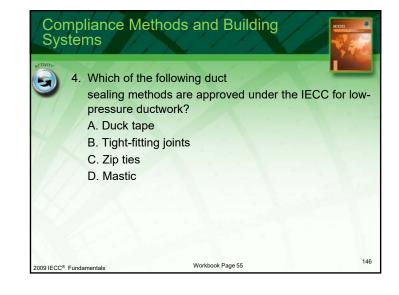
 Heated pools shall be equipped with a vapor-retardant pool cover on or at the water surface. Pools heated to more than 90°F (32°C) shall have a pool cover with a minimum insulation value of R-12.

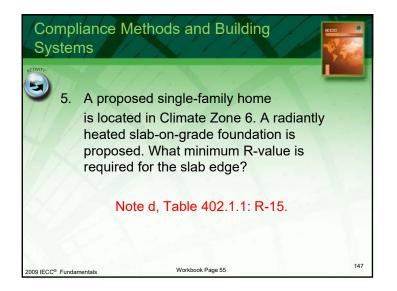
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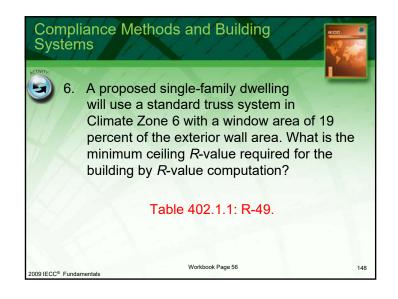


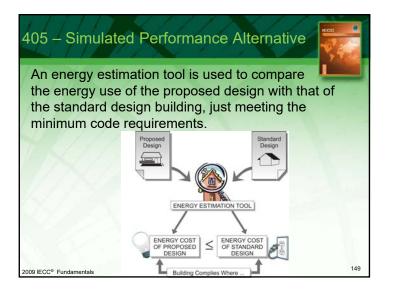


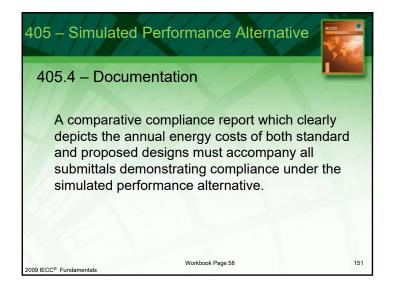








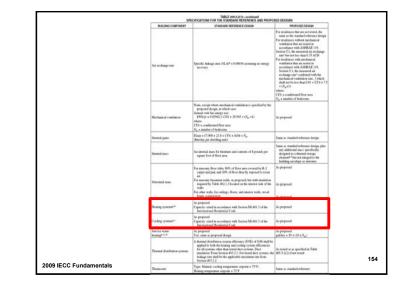




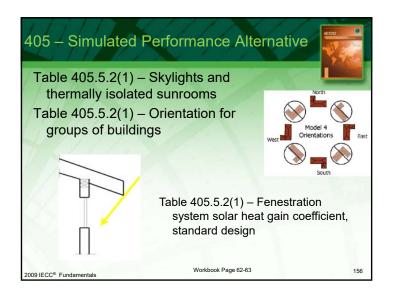


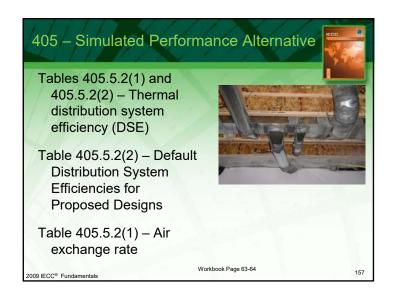


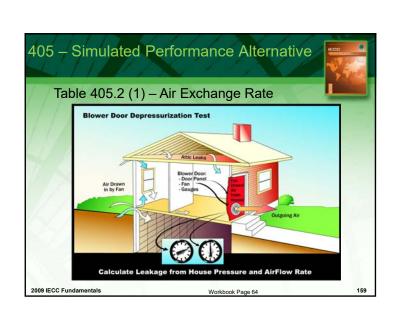
	BUILDING COMPONENT	STANDARD REFERENCE DESIGN	PROPOSED DESIGN	
	Above-grade walls	Type: mass wall if proposed wall is mass; otherwise wood frame. Gross area: same as proposed Udaster from Table #02.1.3 Solar absorptance = 0.75 Remittance = 0.90	As proposed As proposed As proposed As proposed As proposed	
	Basement and crawl space walls	Type: same as proposed Ganos arm: same as proposed U/Jacor: from Table 802.1.3, with insultation layer on interior side of walls.	As proposed As proposed As proposed	
	Above-grade floors	Type: wood frame Gooss area: rame as proposed Urfactor: from Table 402.1.3	As proposed As proposed As proposed	
	Ceiliago	Type: wood frame Gross area: came as proposed U-factor: from Table 402.1.3	As proposed As proposed As proposed	
	Rods	Type: composition shingle on wood sheathing Goost area: rame as preposed Solar absorptione on 0.75 Emittance = 0.90	As proposed As proposed As proposed As proposed	
	Attics	Type: vented with sperture = 1 B ² per 300 B ² oriling area	As proposed	
	Foundations	Type: same as proposed foundation wall area above and below grade and soil characteristics: same as proposed.	As proposed As proposed	
	Doon	Area: 40 ft ¹ Orientation: North U-factor: sume as fenestration from Table 402.1.3.	As proposed As proposed As proposed	
		Total area ⁸ = (x) The proposed glazing area, where proposed glazing area is less than 15% of the conditioned floor area.	As proposed	
	Glaring*	(b) 15% of the conditioned floor area, where the proposed gizing area in 15% or more of the conditional floor area. Orientation equally distributed to four cardinal company orientation (N, E, S & W). Unknown from Table 402.1.3 SHOC: From Table 402.1.4 scope that for classics with no requirement (NS) SHOC is 0.40 half be used.	As proposed As proposed Same as standard reference design	
2009 IECC Fundamentals		Interior shade fraction Summer (all hours when coding is required) = 0.70 Witter (all hours when heating is required) = 0.85° External shading: none	As proposed	
2000 i200 i andamentala	Skylights	None	As proposed	
	Thermally inslated suprocess	None	As proposed	





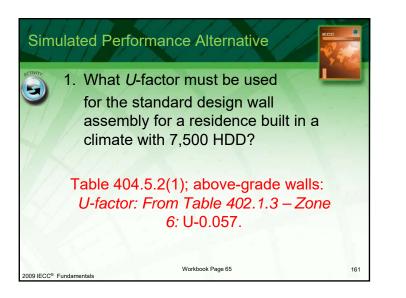






	able 405.5.2 (2)			
				_
7 D	efault Distribution System	encienci	es for	
P	roposed Design			
1	lopooda Doolgii			
	TABLE 405.5.2 DEFAULT DISTRIBUTION SYSTEM EFFICIEN		15*	
	DISTRIBUTION SYSTEM CONFIGURATION AND CONDITION:	FORCED AIR SYSTEMS	HYDRONIC SYSTEMS*	
	Distribution system components located in unconditioned space	-	0.95	
	Untested distribution systems entirely located in conditioned space	0.88	3	
	"Ductless" systems4	1		
	For S2 — Lenhic from per minute = 0.47 L/s; 1 square from = 0.003 m ² ; 1 pound per squ. a. Default values given by this table are for untested distribution systems, which must s b. Bydranic systems shall mean those systems that distribute heating and cooling operagy ing and that do not depend on device for each affects to maximize space transmissions.	till meet minimum requirements for directly to individual spaces using liq	duct system insulation.	





Simulated Performance Alternative

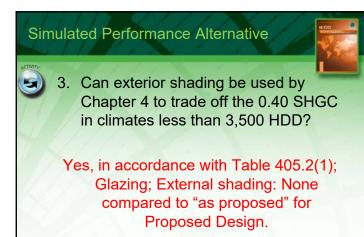
2009 IECC® Eundamentals

2. What orientation(s) must be used to demonstrate the worst-case condition for a group of proposed buildings with identical designs under the 2009 IECC?

Table 405.5.2(1); Glazing; Orientation: "Equally distributed to four cardinal compass orientations (N, E, S and W)."

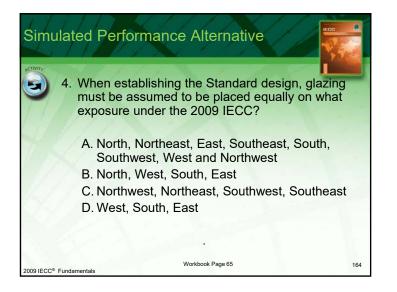
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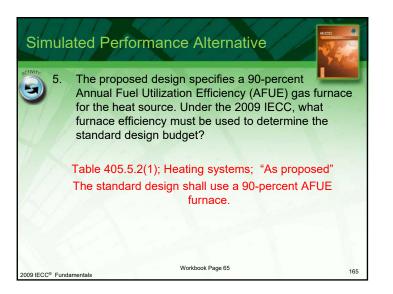
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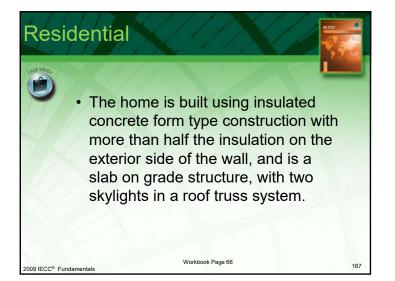
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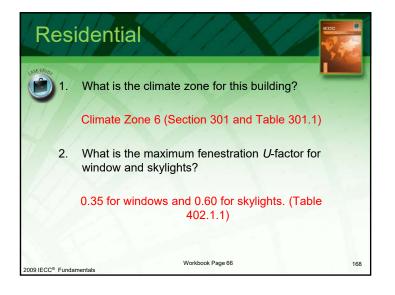
2009 IECC[®] Fundamentals

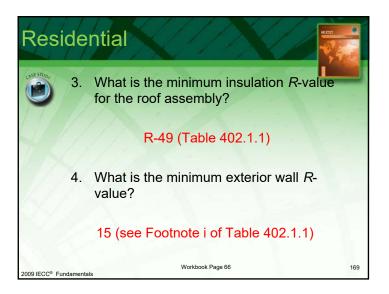


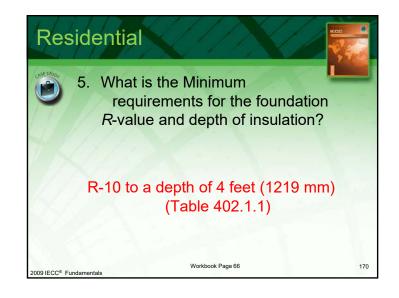


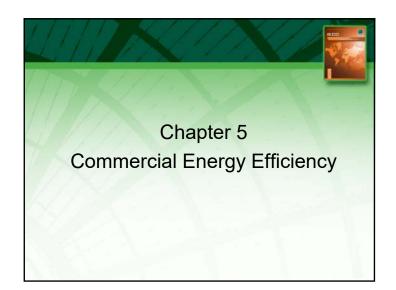


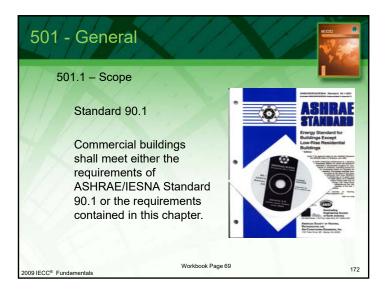


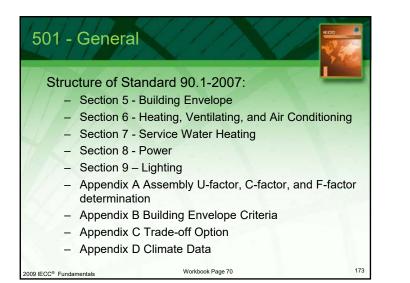


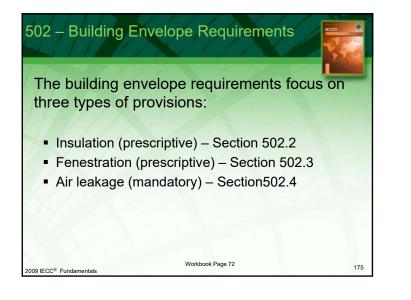


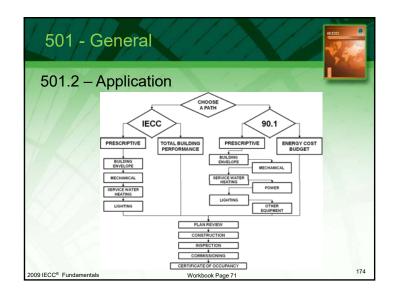


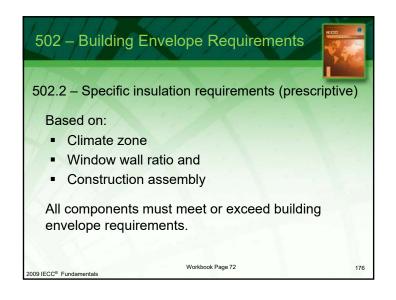


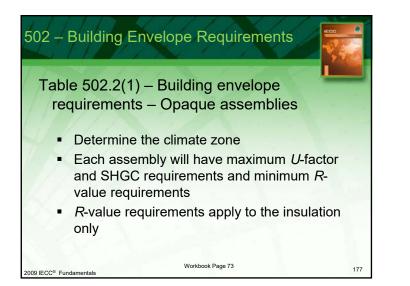






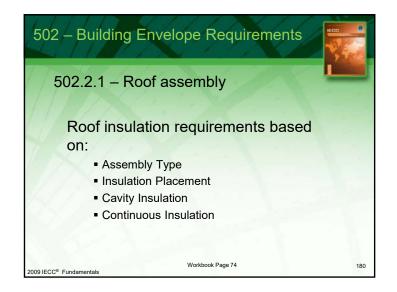


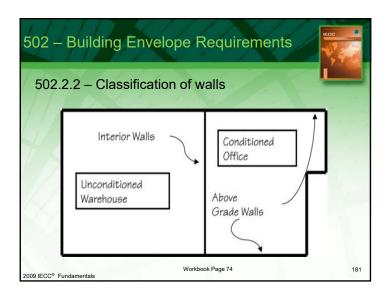


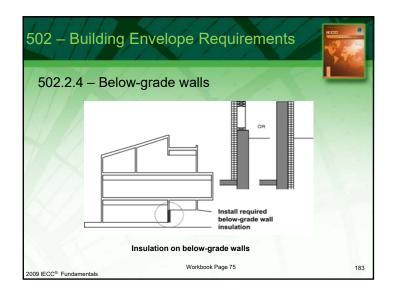


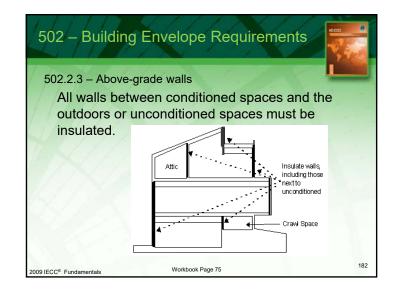
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0.00		1						Ree									
Developing de		10-0.065	U-0.046	0.0.048	0.0048	1-0.048	1-0.048	U-0.04R	U-0.04	£1-0.548	0.004	U-0.048	0.0048	0.0039	U-0.030	0.02%	1.00
Morial Ba		U-DOM	U.G.OMS	U.4.65	0.005	U.a.ms	11.4.055	0.0255	U.dott	U-645	U-0.055	Uaber	U-0.049	0.6649	0.0049	7-6-535	0.68
Apric and	Inder	ti-oni4	U-0.027	U-8/627	13-0.027	U-0.027	U-aatt	13-6427	U.0.027	£1-8427	\$1-6427	15-0.021	ti-east	U-6827	U-0.02?	146.027	0.66
								Walls, Abo	ce Grade								
Man		0.0298	U-0.151	U-0.151	0-0.129	U-0.125	U-0.104	U-0104	U-0.090	0.0.90	U-6.80	U-0.080	U-sets	0.6671	U-0.071	1-6-01s	0.60
Mend by	àñag	0-0.015	U-0.099	\$1-6-049	\$1-0.018	0.00%	\$10.004	0.0054	11-0.054	U-0.069	\$1.0.000	U-0.069	11-0.069	U-0.057	U-4.037	0.46187	U.O.O
Metal for	ned	66134	0.0134	0.0134	U-0.094	0.0164	U-0.064	U-0.054	\$1.0.064	U-0.064	0.0094	U-0.066	0.0.057	0.0094	U-0.052	0.094	0.68
Word for	and other	U-6189	U-0.089	U-GORF	U-0189	U-0.089	U-6.089	U-0.089	U-0.064	E-0044	U-0151	U-0.051	0.4451	0.4151	U-0.051	7-6.03%	0.68
	1000							Walls, Bel		-				-			1
Bim-p	ale sal?	C-L140	C-L140	C-L140	C-L140	C-1140	C-L10)	C-LIHI Flor	C-0.119	C-0.119	CALLIS	C-0119	C-0.119	C-0119	C-0-002	240.114	Cas
Man		11.0.322	0.4322	Cost	110.007	UANT	110007		114074	11.0274	\$1.0.044	11/0/064	110047	11.0.064	Uaats	0.6.647	Lan
hatte	ing .	U-0.282	0-0.282	U-8-052	U-0.052	-	U-6635		U-anti	U-8833		U-ants	U-Batt	U-BROS	U-BBU	0-8433	t-00
							1	tal in Gr	de Fluore								1
Understeil	I skills	F-0.730	E-6730	F-8.730	\$-0.730	F-6739	F-0.730	7-0.730	E-0.540	F-0.730	F-0.540	E-0.540	F-0.520	F-0.520	F-6.520	F-0.520	1-0.51
	de .	F-1.020	E.1020	F-1.020	F-1.029	1.0900	E-0.900		F-DAM	F-0.840	8-0.840	E-DAND	F-0.488	LOAN	F-0.488	7.0488	\$10.40

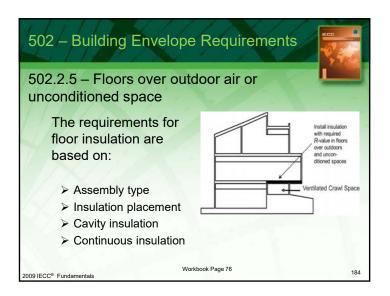
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	''	5	unit		9		IV C		ρu			141	10	IIC				Ju
					DING EN	NELOPE	EQUAR		PAGUE A	SSENS	-0.5							
CLANK TE JONE				,			0.001							,				
	All other	Onet	All other	Ormp 8	Al other	Onet	Al aller		All other	Orne1	Al other	Ormp 8	All other	One 1	1.00	Ormp 8		
instain existy	8.7M	8.004	8-2%	8-2%	8.754	8.7%	1.74	8.24	8.7%	8.04	8-2%	8-2%	8-254	8-014	1.754	8-254		
above ded. Metal buildings (with			8.01+	8-250	8.13+		8.01+	-	8.45+		8-01+		8.05+	8-29+	1.11+	8.09+		
8-3 thermal blocks* "	8.0	8.0	8,-13	8.43	8-13	8.0	8.43	8.0	8-0	8.0	8.19	8.0	8-29	8,00	8.19	8.10		
Atte and other	8.30	8.38	8.78	8.16	8.16	8.38	8.00	8.16	8. 18	8.38	8.16	8.36	8.38	8.08	1.0	1.0		
Man	NR	8.5%	8.5%	8.7.66	8.146	8.0.54	8.4.54	R-11-84	8-11-64	8.45.3	8-13 Ni	8.45.24	8-11-54	8-11.56	6.2%4	8.2%		
Med building?	8.16	8-14	8.04	8.16	8.19	8-19	8.07	8.0	8.13+ 8.164	8-13-1	8-13+ 8-5.64	8-13+ 8-164	8.15+ 8.16d	8-19+1	1.21+	8-10+ 8-1-64		
Molifund	8.0	8.0	8.13	8-13+ 7.54	8-13+ 8-1.84	8.45 +	8-0-	8-01-	R.43+	8-01-	8-13 -	R-13+	8.43+	8-13+	10.1	8-13 + 8-18.84		
Ward Strend and	8.0	8.0	8.13	8.45	8.13	8.13	8.13	8.0+	8.43 +	8.01	8-0.4	842+	8-01-	8.07	10.1	842+		
du				2.0	2.0		10.10	8.5.84	8.154	3.8	13	8.15	8-154	+1%	17.64	15.64		
Delaw gods well ⁴	14	18	38	18	18	58	38	1.756	8-254	8.1%	.18	8.14	8-154	8.154	2.94	8-12.54		
							-			- 10	8154		- 174	- 778			1	
Man	NB	108	8.4.3 <i>d</i>	8.436	8.4.34	8436	8.104	8.11.44	8.16	8-115	8-13.5ci	8.14.55	8.06	8-1676	1.254	8.16.16		
And Turning Tread Turned	18.	38.	8.0	8.00	8.0	8.30	8.00	8.10	8.10	8.31	8.00	1.11	8.30	3.11*	6.34"	$\mathbf{k}, \mathbf{N}^{p}$		
					_					_						_		
Universite data	18.	18.	38	18.	18.	18.	38	R.011 Ear 24 IR. Junior	38.	8.01 fb	8.11 far 24 it.	R-15 Ea 24 it.	8.47 dat 24 ki	211 fat 2118.	-125 far 24 iau	8.20 far 24 in.		
	8.13.64		8-7.5 fe		R-10 Ear	8.14	R-L1 for	R-12 fer	8.15.84	8-17.0	R-11 for	R-20 Ea	8.01.04	8-21-04	-21 for	Ballow R-21 for		
	E2 in.	12 in. ballow	12 in. Indow	12 in. Indone	34 in. Indone	24 in. Indow	Jilan. Indow	34 in. ballow	34 in. ballow	24 in. Indore	34 in. Indow	48 in. ballow	Ji in. Indone	All in. Indow	itia. Islow	48 in. Indow		
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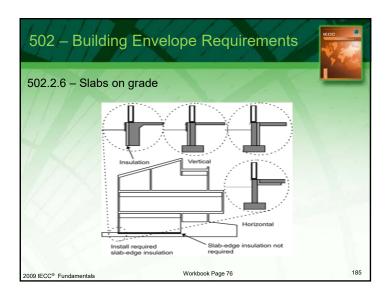




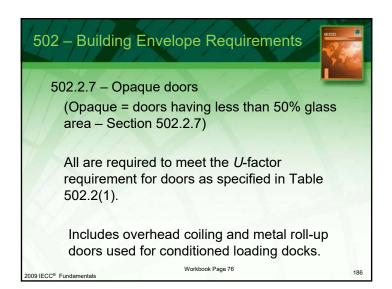










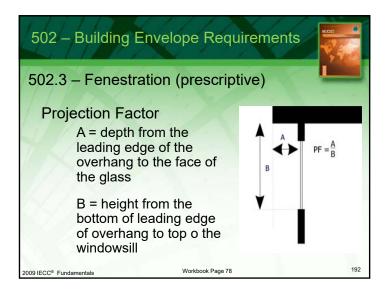


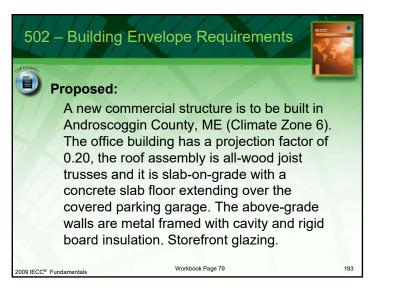
02.3 – Buildir	na F	nvel	ope	Requir	emen	ts:		
	.9 -		opo	rtoquii	omon			
ation								
	RU	LDING FNV		BLE 502.3 OUIREMENTS: FE	NESTRATION			
CLMATE ZONE		2				6	7	
Vertical fenestration (40% may			-	EXCEPT MANINE	AND MAJUNE		1	-
U-factor	CHINGEN OF 1	ioone-grau	e wang					-
Framing materials other than i	and a life	or without	modul rais	forcement or clad	line			-
U-factor	1.20	0.75	0.65	0.40	0.35	0.35	0.35	
Metal framing with or without			1 9.90	1 1.46			1 0.00	1
Curtain wall/storefront U-factor	1.0	0.70	0.60	0.50	0.45	0.45	0.40	
Entrance door U-factor	1.20	1.10	0.90	0.85	0.80	0.80	0.80	
All other U-factor*	1.20	0.75	0.65	0.55	0.55	0.55	0.45	
SHGC-all frame types				19 - Control (1		
SHGC: PF < 0.25	0.25	0.25	0.25	0.40	0.40	0.40	0.45	
SHGC: 0.25 ≤ PF < 0.5	0.33	0.33	0.33	NR	NR	NR	NR	
SHGC: PF 20.5	0.40	0.40	0.40	NR	NR	NR	NR	
Skylights (3% maximum)								
U-factor	0.75	0.75	0.65	0.60	0.60	0.60	0.60	
SHGC	0.35	0.35	0.35	0.40	0.40	0.40	NR	

	// E			Desirie				
02.3 – Buildir	1g E	nvei	ope	Requir	emen	S:		
ration								
			TA	RLF 502.3				
	BU	LDING ENV		QUIREMENTS: FI				
	100	1 32	-	EXCEPT MARINE	AND MAPINE 4	6	7	1
Vertical fenestration (40% may	inum of a	above-grad	e wall					
Constant.		_						
Framing materials other than a	octal with	or without	metal rein	forcement or clas	ding			
U-factor	1.20	0.75	0.65	0.40	0.35	0.35	0.35	0.
Metal framing with or without	thermal b	reak						
Curtain wall/storefront U-factor	1.0	0.70	0.60	0.50	0.45	0.45	0.40	0
Entrance door U-factor	1.20	1.10	0.90	0.85	0.80	0.89	0.80	0
All other U-factor*	1.20	0.75	0.65	0.55	0.55	0.55	0.45	0.
SHGC-all frame types				1				
SHGC: PF < 0.25	0.25	0.25	0.25	0.40	0.40	0.40	0.45	0
SHGC: 0.25 ≤ PF < 0.5	0.33	0.33	0.33	NR	NR	NR.	NR	2
SHGC: PF ≥ 0.5	0.40	0.40	0.40	NR	NR	NR	NR	. 1
Skylights (3% maximum)								
U-factor	0.75	0.75	0.65	0.60	0.60	0.60	0.60	0
	0.35	0.35	0.35	0.40	0.40	0.40	NR	N

	10			- × ·	-			
02.3 – Buildi	ng E	nvel	ope	Requir	ement	S:		
ation								
- 148 - 148 - 148 - 148 - 148 - 148 - 148 - 148 - 148 - 148 - 148 - 148 - 148 - 148 - 148 - 148 - 148 - 148 - 1			TA	BLE 502.3				
	BU	ILDING ENV	ELOPER	EQUIREMENTS: FE	NESTRATION		-	-
CLIMATE ZONE	1	2	3	EXCEPT MARINE	AND MARINE 4	6	7	
Vertical fenestration (40% ma	ximum of	above-grad	(llaw 9				· · · · · ·	
U-factor								
Framing materials other than	metal with	or without	metal rei	forcement or clad	ding			
U-factor	1.20	0.75	0.65	0.40	0.35	0.35	0.35	0
Metal framing with or without	t thermal b	reak						
Curtain wall/storefront U-factor	1.0	0.70	0.60	0.50	0.45	0.45	0.40	- 0
Entrance door U-factor	1.20	1.10	0.90	0.85	0.80	0.80	0.80	0
All other U-factor*	1.20	0.75	0.65	0.55	0.55	0.55	0.45	0
SHGC-all frame types		1						
SHGC: PF < 0.25	0.25	0.25	0.25	0.40	0.40	0.40	0.45	0
SHGC: 0.25 ≤ PF < 0.5	0.33	0.33	0.33	NR	NR	NR	NR	1
SHOC: PE >0.5	0.40	0.40	0.40	NR	NR	NR	NR	. 1
Skylights (3% maximum)								
U-factor	0.75	0.75	0.65	0.60	0.60	0.60	0.60	0
SHGC	0.35	0.35	0.35	0.40	0.40	0.40	NR	

		\sim	<u> </u>	<i>*</i> '	uirements	1996
502.3 -	- Fenes	tration	(pres	scriptiv	ve)	
Sola	r Heat C	Gain C	oeffic	ient (S	HGC)	
	- Hour c		como			
		DEFAULT	TABLE 3 BLAZED FI	03.1.3(3) ENESTRATI	ON SHGC	
	SINGLE	DEFAULT O	GLAZED FI		ON SHGC	
	SINGLE		GLAZED FI	ENESTRATI	ON SHGC	
		GLAZED	DOUBL	ENESTRATIO		
	Clear	GLAZED Tinted	DOUBLI Clear	ENESTRATIO E GLAZED Tinted	GLAZED BLOCK	







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It is determined that the total combined window and door area is less than 40 percent of the above-grade wall area. A review of Tables 502.2(1) and 502.3 determine the following insulation levels are required: • Slab Insulation – F-0.540 • Window and Glass Door – SHGC 0.4 • Window and Glass Door – U-Factor 0.8 • Window – U-Factor 0.45 • Roof Insulation between Framing Joists – R-13, Continuous

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- Insulation R-19 ci.
- Slab over Parking Garage Insulation R-12.5 ci.
- Above-Grade Wall Insulation R-13 + 7.5.

 502 – Building Envelope Requirements

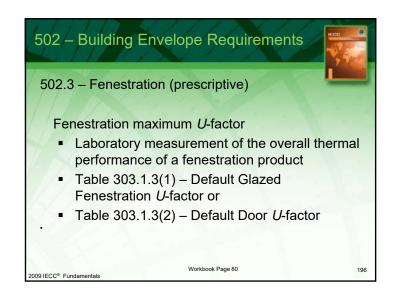
 Image: Solution of the projection factor of an overhang that extends 3 feet (914 mm) out and is 6 feet (1829 mm) above the windowsill?

 The projection factor is "A" divided by "B" (see Figure 48). If "A" is 3 feet (914 mm) and "B" is 6 feet (1829 mm), the projection factor is 3/6 or 0.5.

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502 – Buildin Table 303.1 <i>U</i> -factor	g Envelope .3(1) – Defau	+			Ľ	
	TA DEFAULT GLAZE	BLE 303.	1.3(1) TRATION /	FACTOR		
		SINGLE	DOUBLE	SKYL		
	FRAME TYPE Metal	PANE 1.20	0.80	Single 2.00	Double 1.30	
	Metal with Thermal Break	1.20	0.65	1.90	1.30	
	Nonmetal or Metal Clad	0.95	0.55	1.75	1.05	
	Glazed Block		0.	50		
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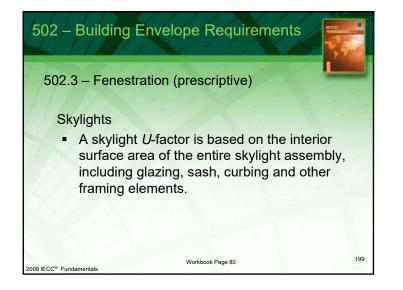
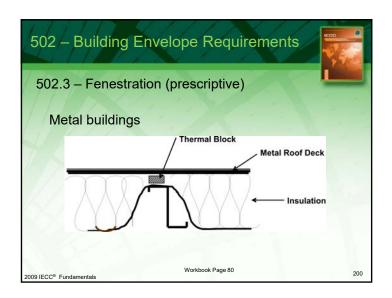
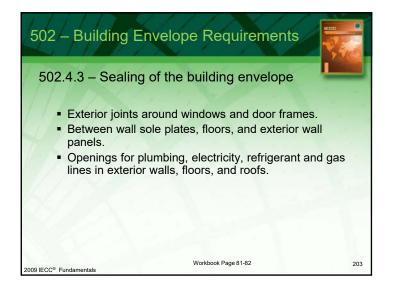
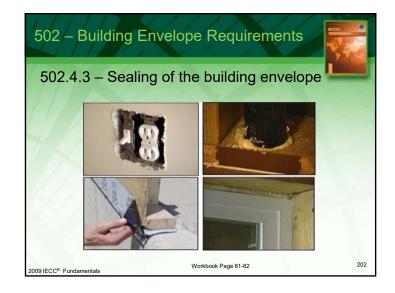


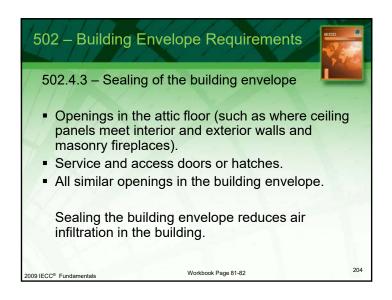
TABLE 30 DEFAULT DOOR	3.1.3(2) U-FACTORS	
DOOR TYPE	U-FACTOR	
Uninsulated Metal	1.20	
Insulated Metal	0.60	
Wood	0.50	
Insulated, nonmetal edge, max 45% any glazing double pane	glazing, 0.35	

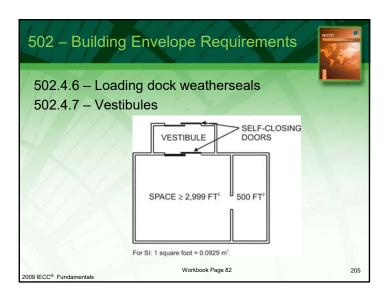


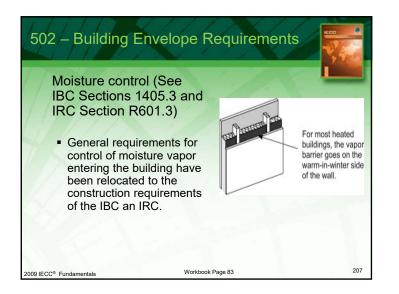


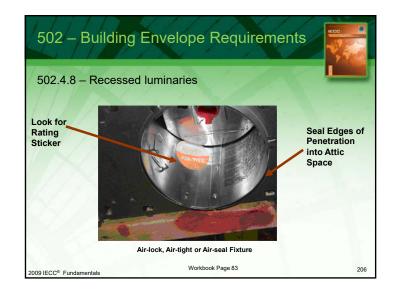


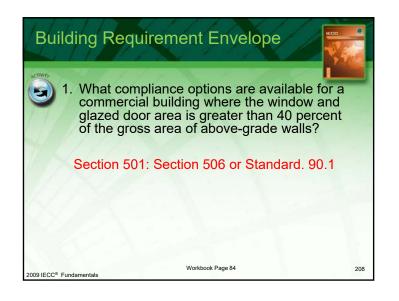


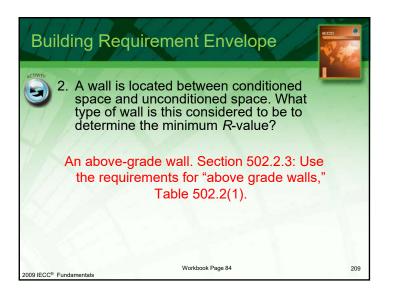


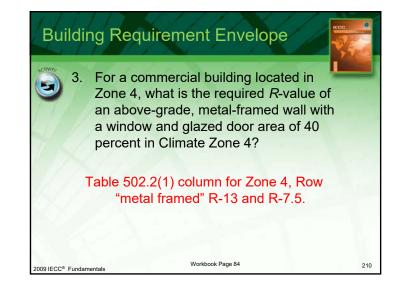


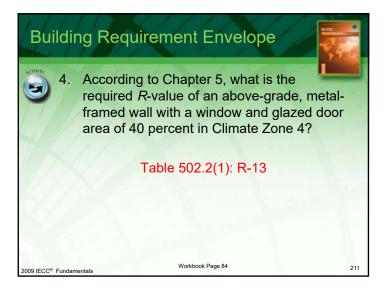


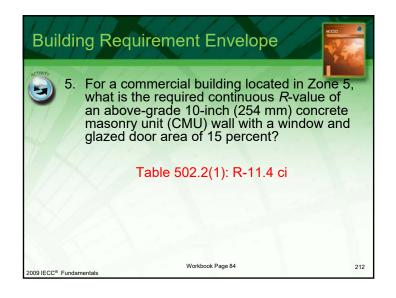


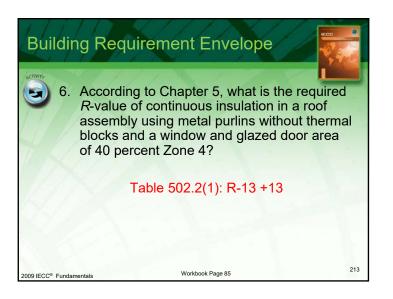


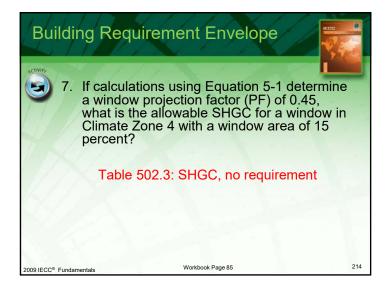


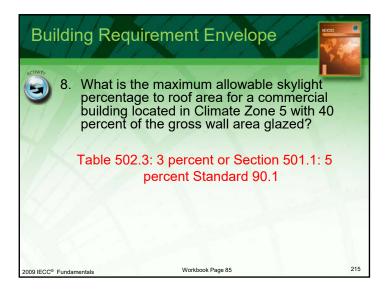


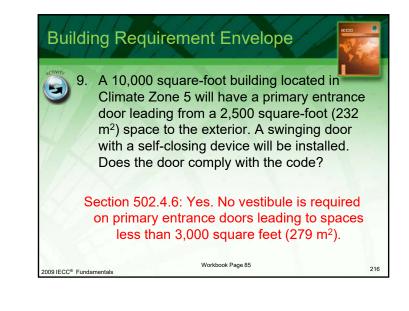












A metal building is proposed in Climate Consult ASHRAE 90.1 Appendix Table A2.3 for Metal Building will have 25 percent of the gross exterior wall area glazed and will use a metal purlin system without thermal blocks. R-30 insulation is proposed to be installed between the framing members. Does this installation comply with the IECC?

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503 – Building Mechanical Systems Seven key elements to ensure HVAC system design is efficient: Equipment efficiency Proper equipment sizing and selection Distribution losses Transmission losses Controls Free-cooling Heat recovery Equipment efficiency terminology

Simple and complex systems

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503 – Building Mechanical Systems
503.2.1 – Calculation of heating and cooling loads
Designers must perform heating and cooling load calculations before sizing and selecting HVAC
HVAC systems must be sized based on the heating and cooling loads calculated in Section 503.2.1.
When the cooling load is predominant the system must be sized to not exceed that load.

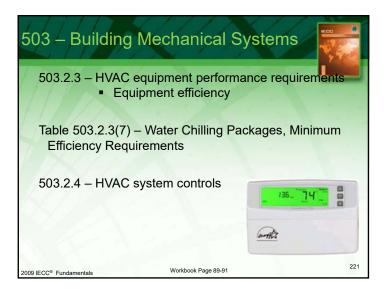
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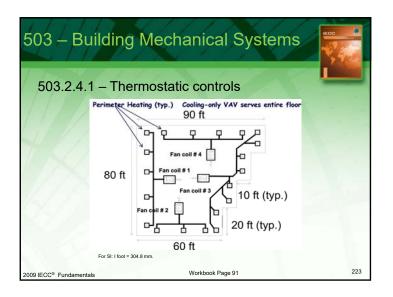
503 – Building Mechanical Systems
 503.2.2 – Equipment and system sizing
 "Shall not exceed the loads calculated."
 Equipment selected to meet space cooling loads must select capacity for heating based on smallest size within available equipment options.
 Standby equipment to have controls and devices to operate automatically when primary equipment is not operating.
 Multiple units with combined capacities that exceed design load shall have controls to sequence operation.

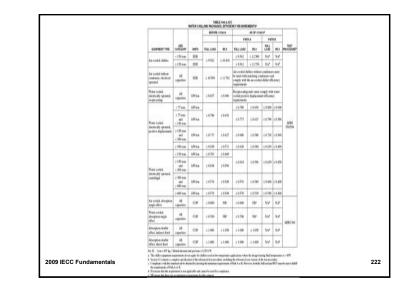
Workbook Page 88

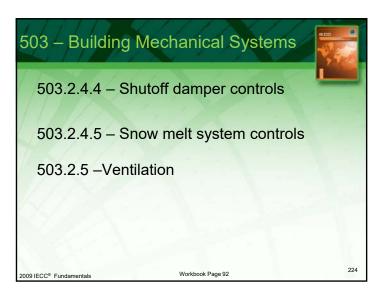
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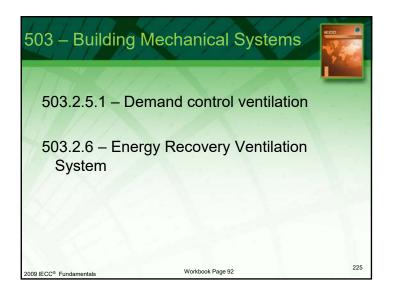
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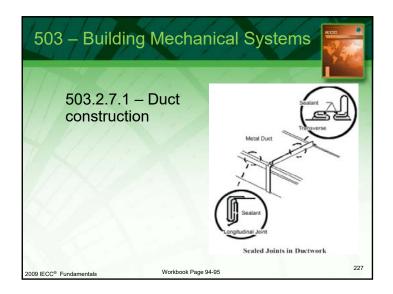


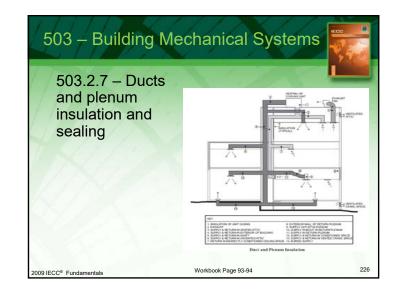


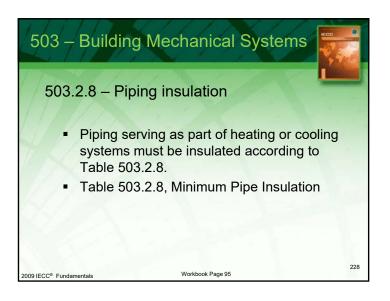




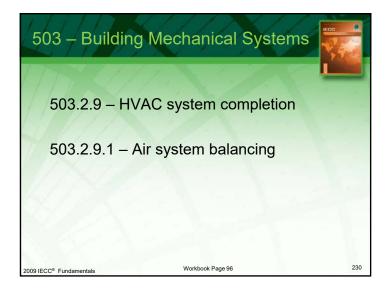


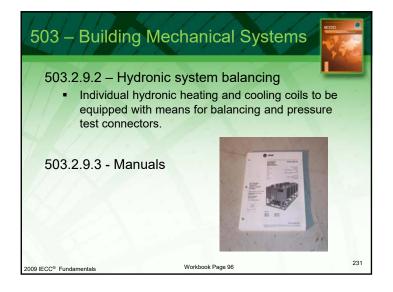




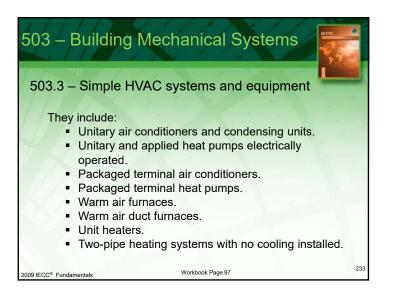


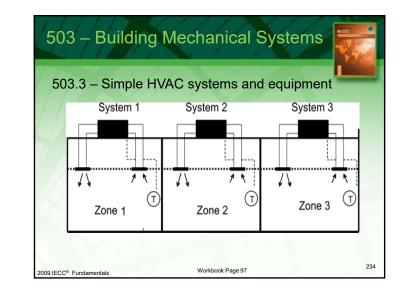
503 – Bui	ilding Mechar	nical	Syste	ems	ECC.
 Tab 	le 503.2.8, Minim	num P	ipe Ins	ulation	
	TABLE 50 MINIMUM PIPE II (thickness in	SULATION			
		NOMINAL PI	PE DIAMETER		
	FLUID	$\leq 1.5^{\prime\prime}$	> 1.5"		
	Steam	11/2	3		
	Hot water	11/2	2		
	Chilled water, brine or refrigerant	11/2	11/2		
	For SI: 1 inch = 25.4 mm.				
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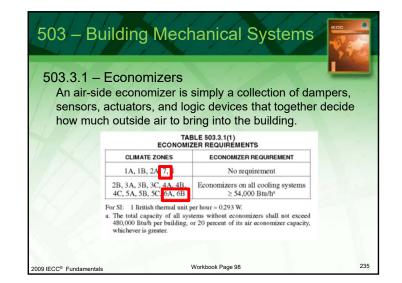


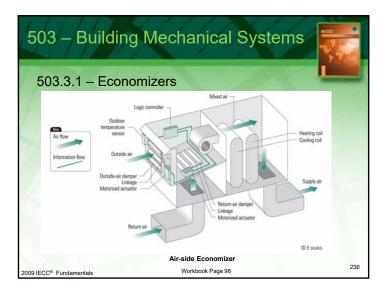




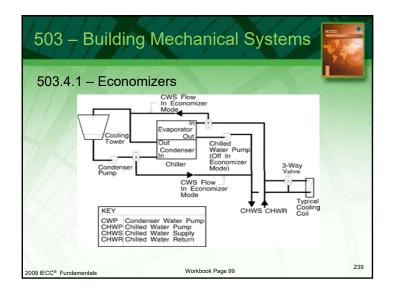


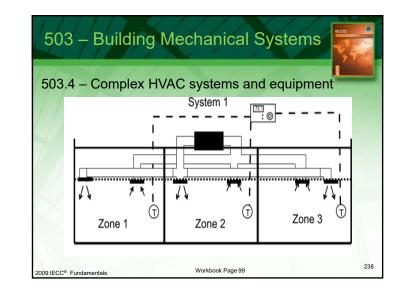


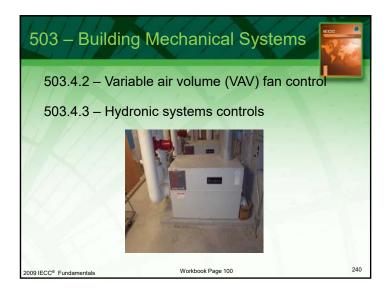


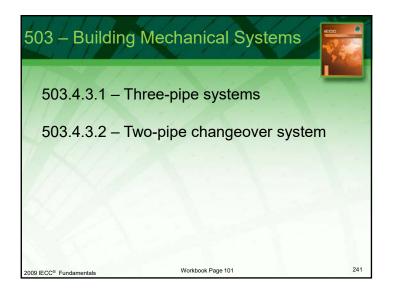


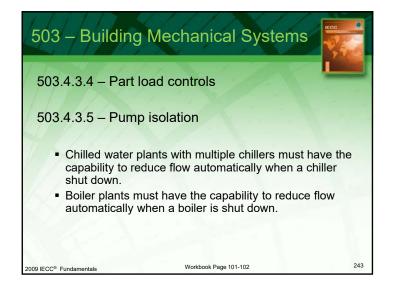


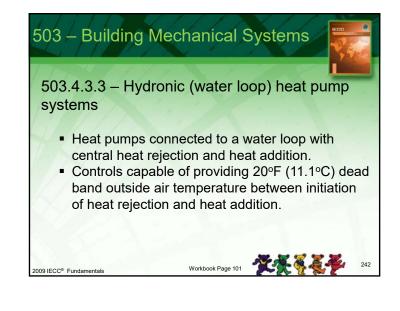


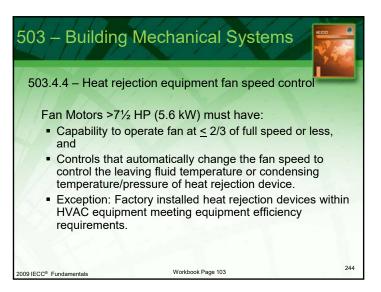






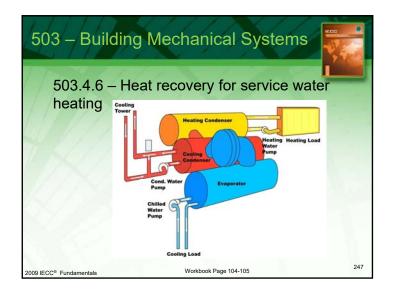


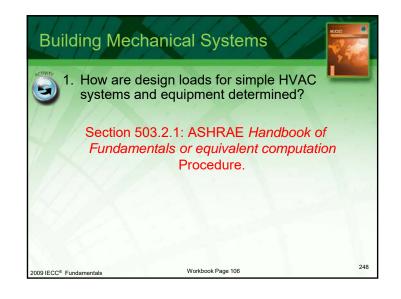




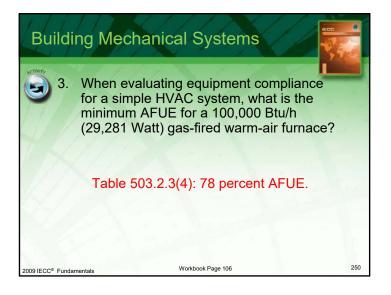


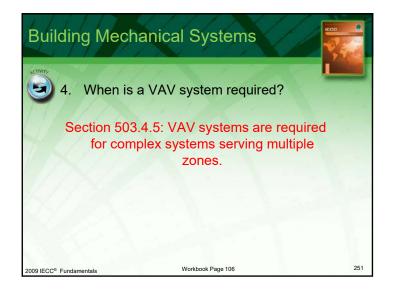
503 – Building Mechanical Systems 503.4.5 – Requirements for complex mechanical systems serving multiple zones 504.5 – Requirements for complex mechanical systems serving multiple zones The primary air supply must be reduced by one of the following means before reheating, recooling, or mixing takes place: 30% of the maximum supply air flow to each zone. 300 cfm (142 L/s) where maximum flow rate is less than 10% of total fan system supply airflow rate. Minimum ventilation requirements of the International Mechanical Code® (IMC®).

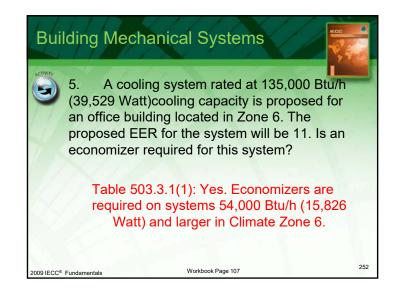


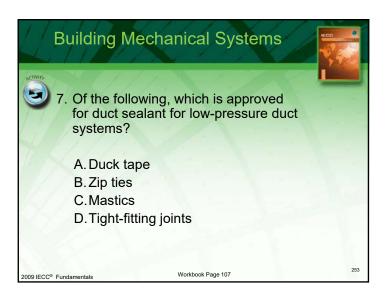


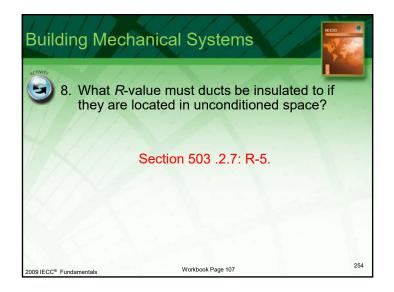


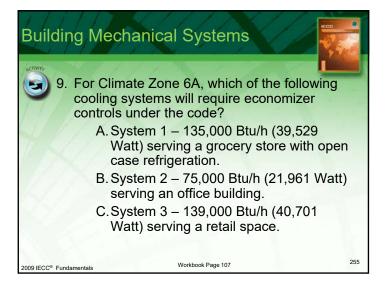




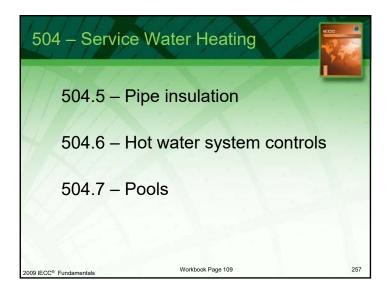




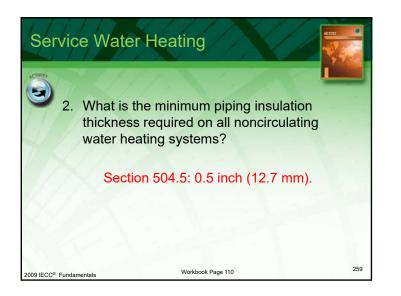


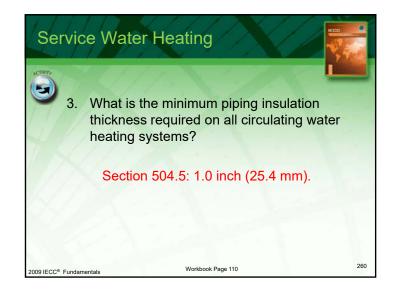












505 – Electrical Power and Lighting Systems

Interior lighting plays a major role in the energy usage of a commercial building. An increased lighting load increases the capacity requirements for the cooling system.

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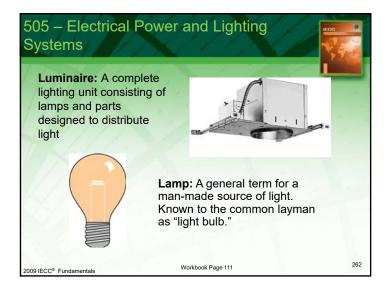
The lighting requirements focus on these elements:

Controls

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- Light reduction methods
- Tandem wiring
- Interior and exterior lighting power

505 - Electrical Power and Lighting Syste 505.1 - General 505.1 - General The lighting requirements apply to the design of: New lighting systems in conditioned or unconditioned spaces Altered components/systems as part of alteration Change in occupancy or use per Section 101.4



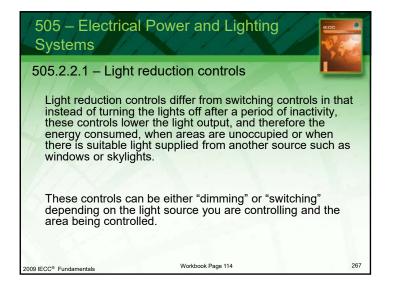
505 – Electrical Power and Lighting Systems

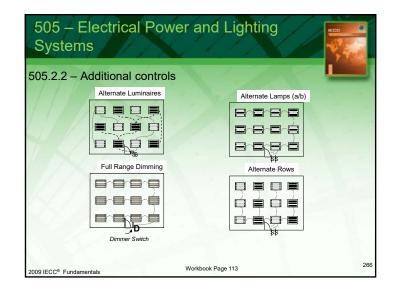
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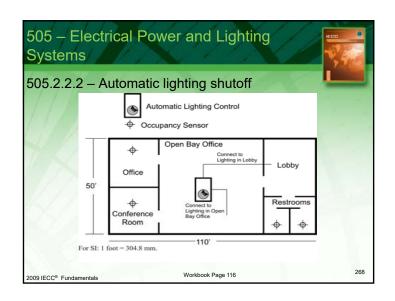
 505.2.1 Interior lighting controls. Each area enclosed by walls or floor-to-ceiling partitions shall have at least one manual control for the lighting serving that area. The required controls shall be located within the area served by the controls or be a remote switch that identifies the lights served and indicates their status.

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• 505.2.2.1 – Occupant override

If an automatic time switch control is installed, it must have an occupant override, be readily accessible, and have the following:

- Be in view of the lights.
- Manually operated.
- Two-hour override limit.
- Controls area less than 5,000 square feet (465 m²).

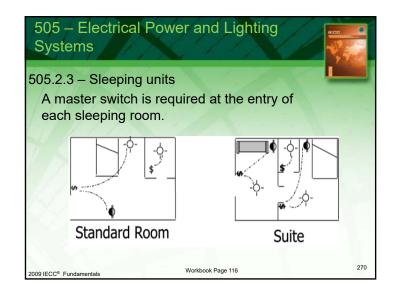
Workbook Page 116

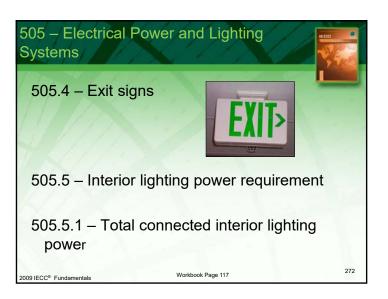
269

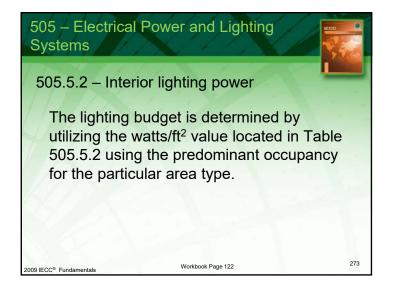
Holiday scheduling feature.

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505 – Electrical Power and Lighting **Systems** 505.2.4 - Exterior lighting controls BunnBunn Must be controlled so they are automatically shut off Phonlocell Centrol during daylight hours Seven day/seasonal daylight program Minimum 4-hour battery . backup 271 Workbook Page 117 2009 IECC[®] Fundamentals



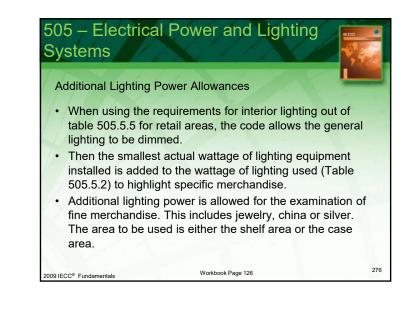


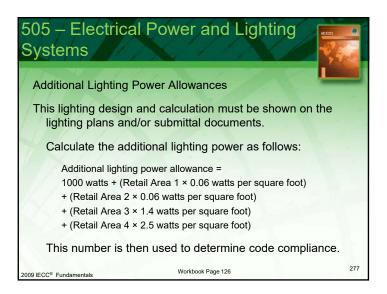


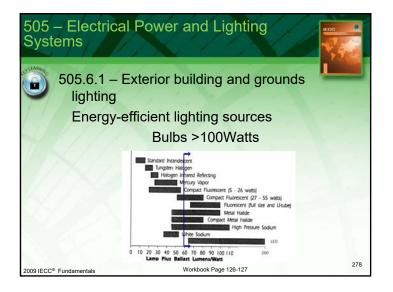


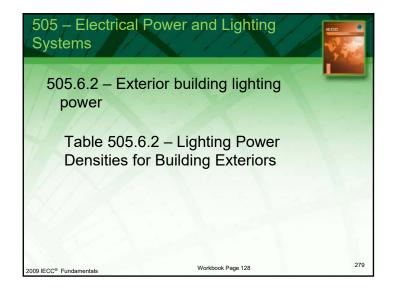
INTERIOR LIGHTING POWER		INTERIOR LIGHTING
Building Area Type ⁸	(W/R ²)	LIGHTING PO
tomotive Facility	0.9	
evention Center	1.2	Building Area Type ^a
art House	1.2	Transportation
ning: Bar Lounge/Leisure	1.3	
ning: Cafeteria/Fast Food	1.4	Warehouse
ning: Family	1.6	Workshop
emätory	1.0	
encise Center	1.0	For SI: 1 foot = 304.8 mm, 1 watt pe
mnasium	1.1	 In cases where both a general buildin area type are listed, the more specific
althcare-clinic	1.0	b. Where lighting equipment is specif
spital	1.2	merchandise in addition to lighting
sel	1.0	and is switched or dimmed on circuit
wary	1.3	lighting, the smaller of the actual wa specifically for merchandise, or ad
norfscturing Facility	13	below shall be added to the interior li
nel	1.0	with this line item.
otion Picture Theater	1.2	Calculate the additional lighting powe
dtifamily	0.7	Additional Interior Lighting Power All 0.6 W/ft ²) + (Retail Area 2×0.6W/ft
iseum	1.1	Area 4 x 2.5 W/ft ²).
fice	1.0	where:
rking Garage	0.3	Retail Area 1 = The floor area for
nitentiary	1.0	or 4.
rforming Arts Theater	1.6	Retail Area 2 = The floor area use
lice/Fire Station	1.0	and small electro
st Office	1.1	Retail Area 3 = The floor area use
ligious Building	1.3	metics and artwo
tail ⁵	1.5	Retail Area 4 = The floor area us china.
bool/University	1.2	
orts Arena	1.1	Exception: Other merchandise in Retail Areas 2 through 4 abov
wn Hall	1.1	ing the need for additional light
(continued)		contrast, or other critical displ jurisdiction.

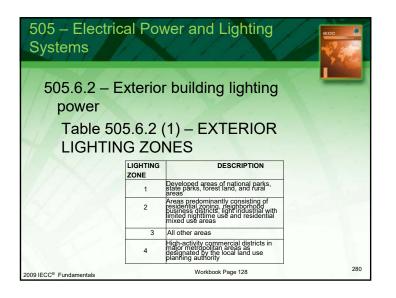
LIGHTING POWER DENSITY				
Building Area Type ^a	(W/#²)			
Transportation	1.0			
Warehouse	0.8			
Workshop	1.4			
and is writehol or dimmed on ciccuits difficulty lighting, the mailer of the actual watage or specifically for merchandise, or addition below shall be added to the interioritighting with this line item. Addotted the additional lighting power as for Addotted the additional lighting power as for additional lighting power and additional Addotted the additional lighting power as for additional lighting power and additional lighting additional lighting power and additional lighting power and Addotted the additional lighting power and additional Addotted the addotted the addotted the addotted the addotted the Addotted the addotted the addotted the addotted the addotted the Addotted the addotted the addotted the addotted the addotted the Addotted the addotted the addotted the addotted the addotted the Addotted the addotted the addotted the addotted the addotted the addotted the Addotted the addotted the addotted the addotted the addotted the Addotted the addotted the addotted the addotted the addotted the addotted the Addotted the addotted the addotted the addotted the addotted the Addotted the addotted the addotted the addotted the addotted the addotted the Addotted the addotted the Addotted the addotted the addotted the addotted the addott	fthe Lighting equipment in stalle al lighting power as determine power determined in accordanc llows: = 1000 watts + (Retail Area 1: etail Area 3 × 1.4 W/tr ²) + (Retail ducts not listed in Retail Area 2,			
Retail Area 2 = The floor area used for th and small electronics.	æ sale of vehicles, sporting good			
Retail Area 3 = The floor area used for the metics and artwork.	he sale of furniture, clothing, cos			
Retail Area 4 = The floor area used for china.	the sale of jewelry, crystal an			
Exception: Other merchandise catego in Retail Areas 2 through 4 above, pro- ing the need for additional lighting p contrast, or other critical display is a junisfiction.	vided that justification document ower based on visual inspection			



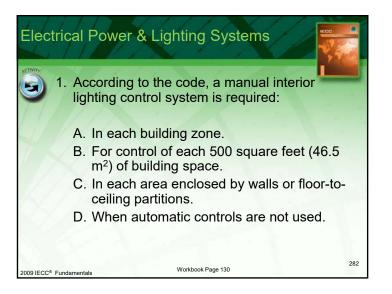


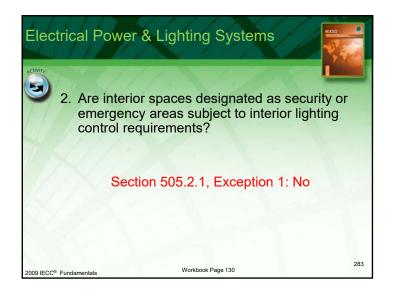


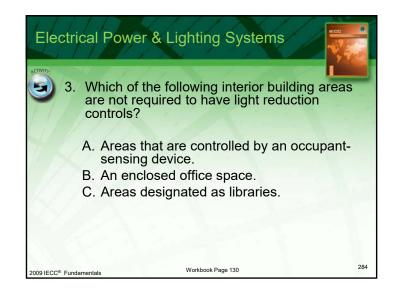


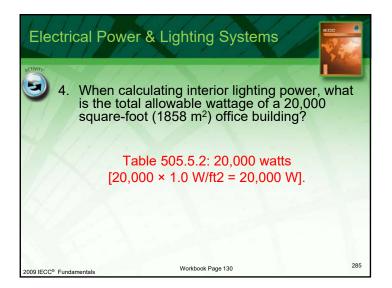


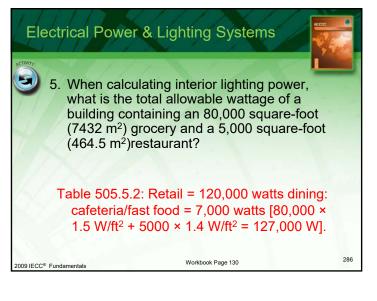
		Zone 1	Zone 2	Zone 3	Zone 4
Date Site Allowance (Base allowance may be used in tradable or nontradable surfaces.)		500 W	600 W	790 W	1300 %
Tradable Surfaces			Uncovered Parking Areas		
(Lighting power densities for uncovered perking west, building grounds, building antrancos and colls, comopies and eventuarys and establer sales areas may be tracked.)	Parking arous and drives	0.04 TK B ²	0.06 10(音)	0.39 36 202	0.13 W 8 ²
	Building Grounds				
	Walkways less than 14 dagt widg	0.7 Wilson foot	0.7 Wilsong first	0.8 Wilson foot	1.0 Willnew feet
	Walkways 10 fast wide or greater, plain areas special feature areas	0.34 30 \$	$0.34~50~\textrm{m}^2$	0.36 50 82	0.2 56.007
	Sairwaya	0.75 10 81	1.0 10 \$	1.0 % 87	1.0 56 \$
	Polotrian tannels	0.15 W B ²	0.15 W B ²	6.2 W M ²	0.3 W B ²
			alding Entrances and Ext	•	
	Main entries	20 Wilness first of door width	20 Wilness floot of door width	50 Wilness foot of door width	30 Willinger Sort of door width
	Other doors	20 Wilnear foot of door width	20 Willingst floot of door width	20 W finang floot of door width	20 Millinear foot of door width
	Entry campies	0.25 W B ²	0.25 W/B ¹	0.4 10 (2)	0.4 \$2.52
	Sales Canopies				
	Free-standing and attached	0.6WB ¹	0.6 10 \$	0.8 16 10 ¹	1.0 10 (10)
	Outloor Sales				
	Open areas (including valuele value lots)	0.25 10 \$1	0.25 W B ¹	0.5 10 10 ¹	0.7WB ²
	Street frontage for vehicle sales lots in addition to "open ares" allowance	Ne allowance	10 Willinger floot	10 Willingar floot	30 W linear foot
Ninetwahle Surfaces (Lighting power density obtainations for the following applications and be used only for the specific applications and counts be indeal between werfaces or with other counts of brinded between werfaces or with other discussing afforwances are discussed of the set and the set of the "Trablelo Surface" werface of this table.)	Duilding facades	No allowance	0.1 Will ² for each illuminated well or wethere or 2.5 Witness first for each illuminated well or surface length	0.15 WB ² for each illuminated wall or variface or 3.75 Willinger first for each illuminated wall or surface length	0.2 WB ² for each illuminated wall or surface or 5.0 Wilson foot for each illuminate wall or surface length
	Automated teller machines and night depositories	270 W per location plos 90 W per additional ATM per location	270 W per location plos 90 W per additional ATM per location	270 W per location plus 90 W per additional ATM per location	270 W per location plu 90 W per additional ATM per location
	Estrances and gatabourn impaction stations at gearled facilities	0.75 W B ² of coveral and uncoveral area	0.75 W B ² of coveral and uncoveral area	0.75 W/B ² of coveral and anorvarial area	0.75 W 8 ² of orveral and second area
	Loading areas for law enforcement, firs, ambulance and other emorganicy service solutions	6.5 WB ² of overal and uncoveral area	0.5 WB ² of orvered and uncovered arm	0.5 W# ² of orvered and uncovered area.	0.5 W# ² of orvered and uncovered arm
	Drive-up windowsidoors	400 W per drive-through	400 W per drive-through	400 W per drive-through	400 W per drive-throug
	Parking near 24-hour retail entrances	\$10 W per main unity	800 W per main entry	800 W per main entry	800 W per main entry

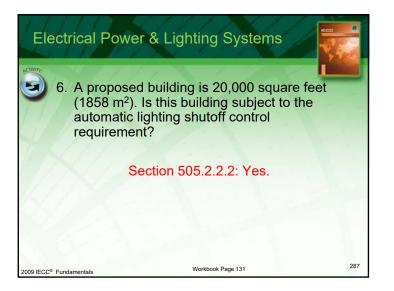


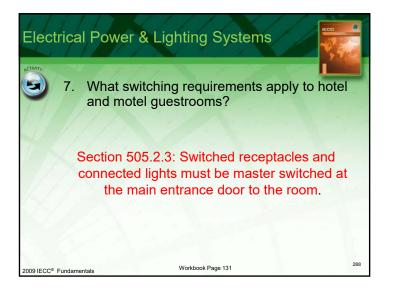


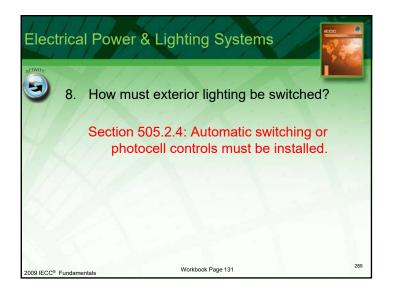


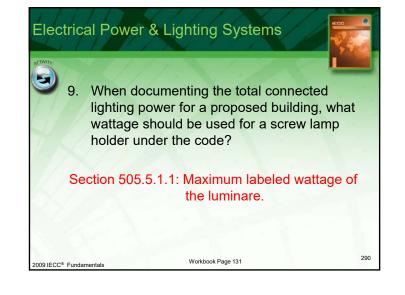


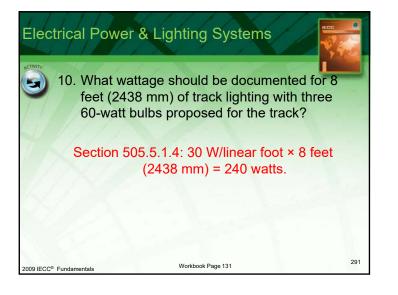


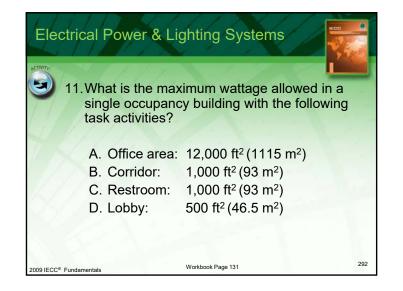


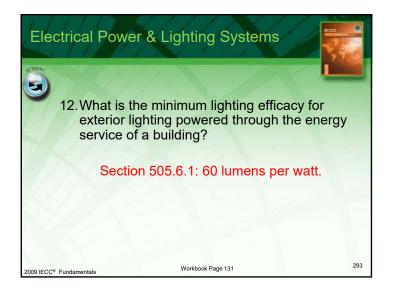


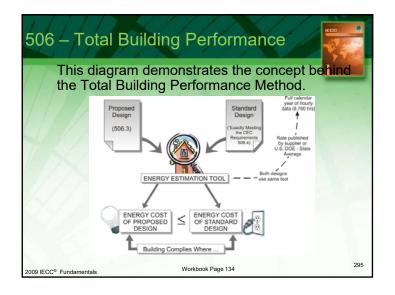


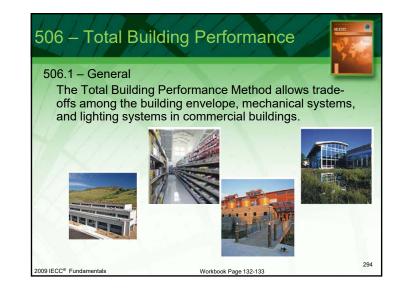


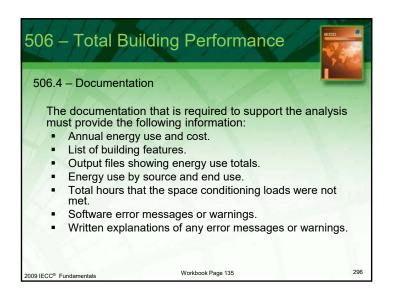


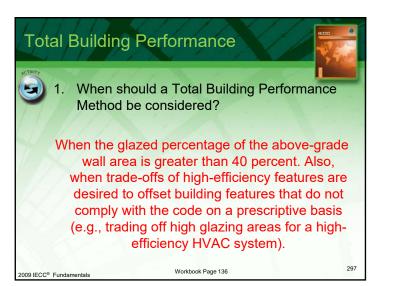


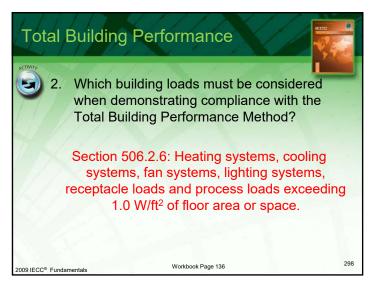


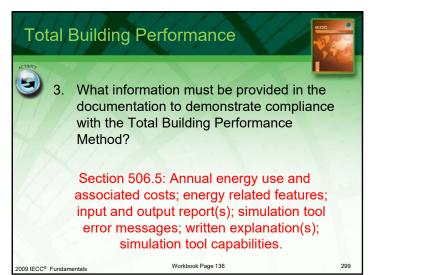


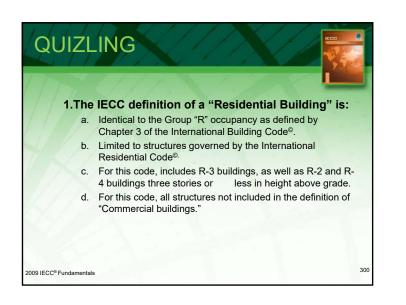


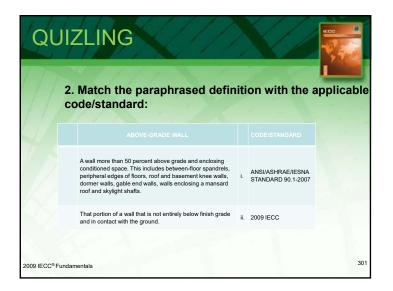












in Mai a. b. c.	hich of the following Climate Zones are found ine? 5A & 6A 6A & 6B 7A & 7B 6A & 7	
2009 IECC®		303

3. The 2009 IECC regulates the following building systems: a. Building thermal envelope, Indoor air quality, Building site location, Water utilization. b. Building orientation, HVAC, Electrical, Service water heating. c. Building thermal envelope, HVAC, Process electrical loads, Service water heating. d. Building thermal envelope, HVAC, Electrical, Service water heating.

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QUIZLING 5. When reviewing U-Factors, the allowable value is the a. Maximum b. Minimum 2009 IECC[®] 304

QUIZLI	NG	Ņ	
177	6. Please identify the type that each of these paths		
116			
41/	Simulated Performance Alternative		
	R-value Computation		
	UAAlternative		
17-1	Total UA		1.0
1211	Energy Cost Budget		
07.7	RESCheck		
$\mathbb{K} \setminus \mathbb{K}$	ERI Compliance Alternative		
	REM Rate		
	Component Performance Alternative		
2009 IEC	C®		305



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