

# Building Envelope Requirements List, pg 1 of 9

2018 WSEC Requirements for Commercial Buildings including Group R2, R3 & R4 over 3 stories & all R1 -- Administered by ©2021 NEEA, All rights reserved

The following information is necessary to check a building permit application for compliance with the building envelope requirements in the Washington State Energy Code, Commercial Provisions.

For questions about this report, contact WSEC Commercial Technical Support at 360-539-5300 or via email at com.techsupport@waenergycodes.com

Project:  
 Sky Valley Transportation Center - 2018 WSEC  
 32nd Ave SE  
 Sultan, WA 98294

Date: 2021-05-14

Applies	Code Section	Component	Compliance Information Required In Permit Documentation	Location in Documents	Building Department Notes
<b>SCOPE</b>					
	C103.1	Construction documents - General	No envelope scope in project.		
	C402.1.1.1	Low energy spaces	Identify low energy spaces on plans; include calculations if applicable that demonstrate eligibility for envelope provisions exemption		
	C402.1.1.2	Semi-heated spaces	Identify semi-heated spaces on plans, include mechanical heating system type and calculations that demonstrate eligibility for wall insulation exemption		
	C402.1.1.3	Greenhouse spaces	Identify greenhouse spaces on plans; include non-opaque assembly information and mechanical heating system type if applicable, that demonstrates eligibility for envelope provisions exemption		
	C402.1.2	Equipment buildings	Provide building sf area, average wall and roof U-factor, installed electrical and mechanical equipment information and heating setpoint restriction, that demonstrates eligibility for envelope provisions exemption		
NA	C402.1.2.1	Standalone elevator hoistways	Provide building area, average wall and roof U-factor, installed mechanical equipment information and heating setpoint restriction, that demonstrates eligibility for envelope provisions exemption	Division 1 Contract Documents & Specifications	
	C410.2	Walk-in cooler and freezer spaces	Identify walk-in cooler and freezer spaces on plans; including site assembled, site constructed and prefabricated units		
			Identify warehouse cooler and freezer spaces on plans		
	C101.4.1	Mixed residential & commercial building	Identify spaces with different occupancy requirements on plans		
	C503.2	Change of space conditioning alteration	Identify on plans existing unconditioned spaces changing to semi-heated or conditioned space, and existing semi-heated spaces changing to conditioned space; provide calculations for existing and final level of space conditioning		
	C505.1	Change of occupancy alteration	Identify on plans existing F, S and U-occupancy spaces undergoing a change in occupancy and final occupancy type		
			Group R spaces permitted before July 1, 2002 that are undergoing a change to a commercial occupancy shall be identified on plans		

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		Non-Group R occupancy spaces undergoing a change to Group R shall be identified on plans			
<b>ENVELOPE PROVISIONS</b>					
YES	C103.2 C103.6.3 C402.1.3 C402.1.4 C402.1.5	Compliance documentation	Indicate envelope thermal performance compliance path (prescriptive or component performance) and provide WSEC envelope compliance reports	Division 1 Contract Documents & Specifications	
YES			If complying via component performance, demonstrate that the Proposed Total UA is equal to or less than the Allowable Total UA	Division 1 Contract Documents & Specifications	
			If complying via total building performance, provide a list of all proposed envelope component types, areas and U-values		
YES	C303.1.1 C303.1.2	Insulation identification	Indicate identification mark shall be applied to all insulation materials and insulation installed such that the mark is readily observable during inspection	Division 1 Contract Documents & Specifications	
YES	C303.1.3 C402.4.3	Fenestration product rating	Indicate fenestration products shall be labeled with NFRC U-factor, SHGC, VT and leakage rating, or if products do not have an NFRC rating, indicate applicable Chapter 3 default values	Division 1 Contract Documents & Specifications	
YES	C303.1.1 C402.2.1	General insulation installation	Indicate installation methods, thicknesses, densities and clearances to achieve the intended R-value of all insulation materials	Division 1 Contract Documents & Specifications	
YES			Where two or more layers of rigid insulation will be used, indicate that edge joints between layers are staggered, or exception taken	Division 1 Contract Documents & Specifications	
YES	C103.2 C402.2.1	Roof assembly insulation	Indicate R-value(s) of cavity/continuous insulation on roof sections	Division 1 Contract Documents & Specifications	
YES			Indicate framing materials on roof sections	Division 1 Contract Documents & Specifications	
YES			Indicate method of framing for ceilings below vented attics and vaulted ceilings per A102.2 (std, adv)	Division 1 Contract Documents & Specifications	
YES			Provide area weighted average U-factor calculation for insulation whose thickness varies by 1 inch or less	Division 1 Contract Documents & Specifications	
YES			Indicate effective U-factors of tapered insulation entirely above deck per A102.2.6; include roof configuration and slope, maximum R-value at peak and minimum R-value at low point for all roof surfaces	Division 1 Contract Documents & Specifications	
YES			Indicate R-values for thermal spacers and each insulation layer, and liner system (LS) method for metal building roofs	Division 1 Contract Documents & Specifications	

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NA	C402.2.1.1	Skylight curb insulation	Indicate skylight curb insulation R-value on roof section, if not included in skylight NFRC rating		
YES	C402.2.1.2	Rooftop HVAC equipment curbs	Indicate rooftop HVAC equipment curb insulation R-value on roof section	Division 1 Contract Documents & Specifications	
YES	C103.2 C402.2.3 C402.2.4 C303.2.1	Above/below grade wall insulation	Indicate R-value(s) of cavity/continuous insulation on wall sections	Division 1 Contract Documents & Specifications	
YES			Indicate framing materials on wall sections	Division 1 Contract Documents & Specifications	
YES			Indicate method of framing for wood construction per A103.2 (std, int, adv)	Division 1 Contract Documents & Specifications	
YES			Indicate material density category, wall weight and heat capacity for qualifying mass walls	Division 1 Contract Documents & Specifications	
YES			For qualifying ASTM C90 masonry walls, indicate loose-fill core insulation material and percentage of cores filled including grouted cores, bond beams, vertical fills, headers and any other grouted cores	Division 1 Contract Documents & Specifications	
YES			Indicate method of protection of exposed exterior basement/crawlspace wall insulation	Division 1 Contract Documents & Specifications	
YES			C103.2 C402.4.4	Opaque doors	Indicate rated U-factor or R-value (non-swinging) on wall sections or in door schedules - applies to doors with less than 50% glazed area
YES	C402.4.4	Garage doors	Indicate rated U-factor for sectional and tilt-up garage doors on wall sections or in door schedules - applies to garage doors with less than 14% glazed area; all other garage doors shall comply as opaque doors	Division 1 Contract Documents & Specifications	
NA	C402.2.5	Floor over outdoor or unconditioned space insulation	Indicate R-value(s) of cavity/continuous insulation on floor sections		
NA			Indicate framing material on floor sections		
NA			Indicate material density category and weight of qualifying mass floors		
YES	C402.2.6 C303.2.1	Slab-on-grade floor insulation	Indicate R-value of continuous insulation on wall section or foundation detail	Division 1 Contract Documents & Specifications	
YES			Indicate insulation extends down vertically and/or horizontally the required distance from top of slab	Division 1 Contract Documents & Specifications	
YES			Indicate method of protection of exposed exterior slab edge insulation	Division 1 Contract Documents & Specifications	

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NO			Indicate R-value of continuous insulation on wall section or foundation detail	Division 1 Contract Documents & Specifications	
NO			Indicate insulation extends down vertically from top of slab and then horizontally under the entire slab	Division 1 Contract Documents & Specifications	
NO			Indicate method of protection of exposed exterior slab edge insulation	Division 1 Contract Documents & Specifications	
NO	C402.2.8	Radiant heating system insulation	Indicate insulation R-value behind radiant panels, U-bend/headers and bottom surface of radiantly heated floors (other than heated slab-on-grade)	Division 1 Contract Documents & Specifications	
YES	C402.4.1 C502.2.1	Vertical fenestration maximum area	Provide total gross sf area of all above grade wall elements and rough opening sf area of all vertical fenestration elements in the building, for the prescriptive max allowed window-to-wall ratio (WWR) calculation in the WSEC envelope compliance reports; demonstrate compliance for each space conditioning category separately	Division 1 Contract Documents & Specifications	
NA	C402.4.1.1 C405.2.4.1 C502.2.1	Increased prescriptive maximum vertical fenestration area with daylight zones and controls	Provide calculations showing that not less than 50% of the total conditioned floor area is within a daylight zone; demonstrate compliance for each space conditioning category separately		
NA			Indicate in envelope plans that all lighting fixtures located within daylight zones shall be provided with daylight responsive controls per Section C405.2.4.1		
NA			Indicate that the VT of vertical fenestration is at least 1.1 times the rated SHGC or no less than VT-0.55, whichever is greater		
NA	C402.4.1.3 C502.2.1	Increased prescriptive maximum vertical fenestration area with high-performance glazing	Indicate high performance U-factors and SHGC values in fenestration schedules		
NA			Indicate if an area-weighted U-factor is used for multiple fenestration elements within the same fenestration category per Table C402.4; provide area-weighted U-factor calculation		
NA	C402.1.5	Wall/vertical fenestration target area adjustment	Indicate if component performance with target area adjustment will be used to account for vertical fenestration area in excess of the prescriptive maximum allowed; include target area adjustment in WSEC envelope compliance reports		
NA	C402.4.1 C502.2.2	Skylight maximum area	Provide total gross sf area of roof, and rough opening sf area of all skylight elements in the building, for the prescriptive max allowed skylight-to-roof ratio (SRR) calculation in the WSEC envelope compliance reports; demonstrate compliance for each space conditioning category separately		

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NA	C402.1.5.2	Roof/skylight target area adjustment	Indicate if component performance with target area adjustment will be used to account for skylight area in excess of the prescriptive maximum allowed; include target area adjustment in WSEC envelope compliance reports		
YES	C402.4 C402.4.3.4 C303.1.3	U-factors, SHGC and VT for all fenestration assemblies	Indicate U-factors, SHGC and VT values in fenestration schedules	Division 1 Contract Documents & Specifications	
YES			Indicate if an area-weighted U-factor is used for multiple fenestration elements within the same fenestration category per Table C402.4; provide area-weighted U-factor calculation	Division 1 Contract Documents & Specifications	
YES			Indicate if values are NFRC or default; if default then specify frame type, glazing layers, gap width, low-e coatings, gas-fill	Division 1 Contract Documents & Specifications	
YES	C402.4.3	Permanent shading devices	For each group of windows with similar orientation and overhang or permanent projection geometry, provide projection factor calculations (Equation C4-6) for north and non-north orientations	Division 1 Contract Documents & Specifications	
NA	C402.4.2	Single story spaces requiring skylights	Provide list of enclosed, single story spaces that exceed 2,500 sf; for each space identify the space use, floor area, floor to ceiling height, whether skylights are installed, and any exception taken	Division 1 Contract Documents & Specifications	
NA			Provide calculations for percentage of conditioned floor area located within a toplit daylight zone; if exception is taken for spaces where the total floor area minus the sidelit zone area is less than 2,500 sf, include percentage of conditioned floor area located within a sidelit daylight zone in calculations	Division 1 Contract Documents & Specifications	
NA			Provide calculations for percentage of skylight area in each space over 2,500 SF, OR	Division 1 Contract Documents & Specifications	
NA			Provide calculations for skylight effective aperture (Equation C4-5) for each space over 2,500 SF	Division 1 Contract Documents & Specifications	
NA			Indicate haze factor of skylight glazing material or diffuser	Division 1 Contract Documents & Specifications	
NA	C410.2	Walk-in and warehouse cooler and freezer envelope	Indicate insulation R-value in cooler and freezer wall and ceiling assemblies	Division 1 Contract Documents & Specifications	
NA			Indicate cooler and freezer door insulation R-value; indicate method of minimizing infiltration (strip doors, curtains, spring-hinged doors, etc); provide automatic door closure (or note exception taken)	Division 1 Contract Documents & Specifications	

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NA			For transparent reach-in doors and fixed windows, indicate number of glass panes (double or triple pane); identify whether the interstitial spaces between panes is filled with inert gas or if panes are heat-reflective treated glass	Division 1 Contract Documents & Specifications	
<b>ADDITIONAL EFFICIENCY CREDITS - ENHANCED ENVELOPE PERFORMANCE</b>					
NA	C406.8	Enhanced envelope performance	To comply with additional efficiency credit, demonstrate envelope thermal performance compliance via component performance; provide WSEC envelope compliance reports that demonstrate Proposed Total UA is 15% lower than the Allowable Total UA	Division 1 Contract Documents & Specifications	
<b>AIR LEAKAGE</b>					
NA	C402.5.1.1	Air barrier construction and sealing	Identify location and provide diagram of continuous air barrier in plans and sections	Division 1 Contract Documents & Specifications	
NA			Provide details for all joints, transitions in materials, penetrations in air barrier and note method of sealing (caulked, gasketed, or other approved method)	Division 1 Contract Documents & Specifications	
NA	C402.5.3 C402.1.3 C402.1.4	Rooms containing fuel burning space conditioning appliances	For room(s) located within the conditioned space that contain non-direct vent fuel-burning appliances that require outdoor air for combustion, indicate method of isolation from the conditioned space; include sealing of walls, floor and ceiling of room, doorway gasketing and sealing around ductwork and piping penetrations	Division 1 Contract Documents & Specifications	
NA			Indicate walls, floor and ceiling of the room envelope are insulated to the same level required for exterior envelope, and combustion air ductwork that passes thru conditioned space is insulated to at least R-8	Division 1 Contract Documents & Specifications	
NA	C402.5.4	Doors and access openings to shafts, chutes, stairways and elevator lobbies	Indicate locations of all doors and access openings to shafts, chutes, stairways and elevator lobbies	Division 1 Contract Documents & Specifications	
NA			Indicate method of sealing of these openings (gasketing, weatherstripping, other sealing method); or exception taken	Division 1 Contract Documents & Specifications	
YES	C402.5.5 C403.7.8	Outdoor air intakes, exhausts and relief openings	Indicate locations of all stairway enclosure, elevator shaft and building pressurization relief openings, outside air intakes and exhaust openings	Division 1 Contract Documents & Specifications	
YES			Note in envelope plans that all relief, outside air intake and exhaust openings shall be provided with dampers in accordance with Mechanical Section C403.7.8	Division 1 Contract Documents & Specifications	
	C402.5.8	Recessed lighting in building envelope	Indicate method of sealing between light fixture housing and wall or ceiling	Division 1 Contract Documents & Specifications	

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			Note in envelope plans that all recessed lighting fixtures shall be IC rated and have an air leakage rating not greater than 2 cfm per ASTM E283 test; include these requirements in lighting fixture schedules	Division 1 Contract Documents & Specifications	
NA	C402.5.6	Loading dock seals	Indicate weather seal at cargo and loading dock doors	Division 1 Contract Documents & Specifications	
YES	C402.5.7	Vestibules	Indicate locations and dimensions of vestibules for building entrances; also indicate vestibule information for exit-only doors in buildings where separate doors for entering and exiting are provided	Division 1 Contract Documents & Specifications	
YES			Indicate locations of all building entrances and exit-only doors provided with an air curtain in lieu of a vestibule	Division 1 Contract Documents & Specifications	
YES			Indicate exception and criteria utilized for all building entrances and exit-only doors that do not have a vestibule or air curtain	Division 1 Contract Documents & Specifications	
YES			Indicate required performance for air curtains installed per Exception 7	Division 1 Contract Documents & Specifications	
YES			For unconditioned vestibules, indicate which envelope assembly (interior or exterior) complies with the requirements for a conditioned space	Division 1 Contract Documents & Specifications	
YES			C103.2 C402.5.1.2C 402.5.1.2.1 R402.4.1.2	Building enclosure air leakage test	Indicate in project documents that building enclosure air leakage testing is required for WSEC compliance
YES	Provide area calculations that account for all six sides of the air barrier boundaries	Division 1 Contract Documents & Specifications			
YES	For commercial buildings, indicate that building enclosure air leakage testing shall be performed per ASTM C779 (or equivalent method approved by the code official) and the target leakage rate is 0.25 cfm/ft <sup>2</sup> (1.5 L/s*m <sup>2</sup> ) at 0.3 in. wg (75 Pa)	Division 1 Contract Documents & Specifications			
NA	If the building is mixed residential / commercial and three stories or less above grade plane, indicate which building enclosure air leakage test procedure will be used for the Group R-2 / R-3 areas (Section R402.4.1.2 or C402.5.1.2); if per R402.4.1.2, indicate that the target leakage rate is 5 air changes per hour at 0.2 in. wg (50 Pa)	Division 1 Contract Documents & Specifications			

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YES			<p>Include the following requirements in project documents: (1) Submit building enclosure air leakage test reports to jurisdiction and owner; (2) If initial test result exceeds 0.25 cfm/ft2 (1.5 L/s*m2), indicate that inspection and all practical corrective actions be completed and documented in the air leakage test report; (3) If initial test result exceeds 0.40 cfm/ft2 (2.0 L/s*m2), indicate that corrective actions shall also include re-testing; (4) Indicate that corrective measures and retesting must be repeated until the test result is 0.40 cfm/ft2 (2.0 L/s*m2) or less; (4) Include air barrier test report in project close out documentation provided to building owner.</p>	Division 1 Contract Documents & Specifications	
<b>ADDITIONAL EFFICIENCY CREDITS - REDUCED AIR INFILTRATION</b>					
NA	C406.9	Reduced air infiltration	To comply with additional efficiency credit, indicate in project documents that the building enclosure air leakage test results shall not exceed 0.17 cfm/ft2 at 0.3 in. wg (75 Pa); all documentation requirements per C103.2 and C402.5.1.2 apply	Division 1 Contract Documents & Specifications	
<b>ALTERATIONS</b>					
NA	C503.1 C503.3.1	Roof alteration - insulation	For a roof alteration where existing ceiling cavities are exposed, indicate cavities are insulated to full depth at minimum nominal value of R-3.0 per inch		
NA			For a roof covering replacement where insulation is installed entirely above the roof deck, indicate insulation complies with requirements for new construction per Tables C402.1.3 or C402.1.4		
NA	C503.1	Wall and floor alteration - insulation	For a wall or floor alteration (floor over outdoor or unconditioned space) where existing envelope cavities are exposed, indicate cavities are insulated to full depth at minimum nominal value of R-3.0 per inch		
NA	C503.3.2	Addition of vertical fenestration	Where the addition of new vertical fenestration results in a window-to-wall ratio (WWR) exceeding the prescriptive maximum allowed per C402.4.1, demonstrate method of compliance (prescriptive vertical fenestration alternate, component performance with target area adjustment for the alteration area and existing-to-remain areas combined, or total building performance per C407); demonstrate for each space conditioning category separately		



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NA	C503.3.3	Addition of skylights	Where the addition of new skylights results in a skylight-to-roof ratio (SRR) exceeding the prescriptive maximum allowed per C402.4.1, demonstrate method of compliance (component performance compliance with target area adjustment for the alteration area and existing-to-remain areas combined, or total building performance per C407), demonstrate for each space conditioning category separately		
NA	C103.2 C103.6.3 C503.2 C505.1	Change in space conditioning or occupancy compliance documentation	Indicate envelope alteration thermal performance compliance path (prescriptive or component performance with 110% allowance); provide WSEC envelope compliance reports	Division 1 Contract Documents & Specifications	
NA	C103.2 C103.6.3 C503.2C 505.1	Change in space conditioning or occupancy compliance documentation	If complying via total building performance with 110% allowance, provide a list of all proposed envelope component types, areas and U-values	Division 1 Contract Documents & Specifications	
<b>PROJECT CLOSE OUT DOCUMENTATION</b>					
YES	C103.6.3	Project close out documentation requirements	Indicate in plans that project close out documentation is required including applicable calculations, WSEC envelope compliance reports, and fenestration NFRC rating certificates	Division 1 Contract Documents & Specifications	

## ENVELOPE COMPLIANCE SUMMARY

2018 WSEC Compliance Forms for Commercial Buildings including Group R2, R3 &amp; R4 over 3 stories and all R1

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<b>Project &amp; Applicant Information</b>	<b>Project Title</b>	Sky Valley Transportation Center - 2018 WSEC	For Building Department Use:	<b>Date: Apr 02, 2021</b>
	<b>Project Address</b>	Sultan, WA 98294		
	<b>Applicant Name</b>	John Thies		
	<b>Applicant Phone</b>	503-892-1188		
	<b>Applicant Email</b>	johnth@mke-inc.com		

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<b>General Occupancy</b>	All Commercial	<b>General Building Use Type</b>	Parking, Vehicle Garage	<b>Building Cond. Floor Area</b>	10,545
<b>Project Scope</b>	New Building	<b>Space Conditioning Categories</b>	Fully Conditioned	<b>Project Cond. Floor Area</b>	10,545
				<b>Floors Above Grade</b>	2
				<b>Compliance Method</b>	Compliance Method 1 - General
<b>Envelope Project Description</b>	School Bus maintenance & repair facility with office & training spaces.				

Envelope Compliance Scope and Method	Scope	Space Conditioning Category	Compliance Method	WWR/SRR per Category	UA Calculation Adjustment	Fenestration Alternates	Compliance Verification
	New Building	Fully Conditioned	Component performance	6.30% / 0%	None selected	No alternates selected	<b>COMPLIES</b>

<b>Air Barrier Testing</b>	Air barrier testing included in project scope	<b>Air Barrier Comments</b>
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Project Title	Sky Valley Transportation Center - 2018 WSEC				Date	Apr 02, 2021
<b>Scope &amp; Space Conditioning</b>	<b>NEW BUILDING - FULLY CONDITIONED</b>				<b>Compliance Verification</b>	<b>COMPLIES</b>
<b>Window-to-wall Ratio</b>	6.30%	<b>Skylight-to-roof-ratio</b>	0%	<b>Vertical Fenestration Alternate</b>	No alternates selected	

Opaque Envelope Assemblies								
Roof/Ceiling	Location in Documents	Assembly ID	Assembly Location	Cavity	Insulation R-Values		U-Factor	Net Area (SF)
					Continuous (% penetration)	2nd Layer (MB Roof)		
Metal building (purlins)	A211	1	Exterior	R-28	(< 0.04%)	R-11	U-0.023	18,226
	Thermal Spacer Block R-Value: R-3.5			Is liner system included?: Yes				
	U-Factor Source: ASHRAE 90.1			U-Factor Source Description:				
	Is this assembly exterior or interior?: Exterior							
Walls	Location in Documents	Assembly ID	Assembly Location	Cavity	Continuous (% penetration)	Insulated Wall Furring	U-Factor	Net Area (SF)
Steel-framed - Commercial	A501	1	Exterior	R-15	R-10.5 (< 0.04%)		U-0.039	4,176
	U-Factor Source: ASHRAE 90.1			U-Factor Source Description:				
	Framing Depth: Other Framing Depth			Framing Spacing:				
	Is this assembly exterior or interior?: Exterior							
Slab-on-grade Floors	Location in Documents	Assembly ID	Assembly Location	Slab Edge	Under Slab		F-Factor	Perimeter Length (SF)
Unheated slab	1	4	At grade level	R-10			F-0.54	460
	F-Factor Source Description:			F-Factor Source: WSEC Appendix A				
	Slab Insulation Method: 2 ft vertical (from top of slab downward)							

Fenestration & Opaque Door Assemblies								
Opaque Doors	Location in Documents	Assembly ID	Assembly Location	Door Insulation	Insulation R-Values		U-Factor	Rough Opening (SF)
Swinging	A511	1	Exterior	R-2.78			U-0.36	175
	What percentage of this opaque door is glazing?: 50% or less			U-Factor Source: Computed				

	U-Factor Source Description:			Is this assembly exterior or interior?: Exterior				
	Is this a public entrance door?: No							
Garage, Sectional	A511	1	Exterior	R-14.86			U-0.07	1,152
	What percentage of this opaque door is glazing?: 50% or less			U-Factor Source: Computed				
	U-Factor Source Description:			Is this assembly exterior or interior?: Exterior				
<b>Vertical Fenestration</b>	<b>Location in Documents</b>	<b>Assembly ID</b>	<b>Assembly Location</b>	<b>Orientation</b>	<b>Shading (PF)</b>	<b>Fenestration SHGC</b>	<b>Fenestration U-Factor</b>	<b>Rough Opening (SF)</b>
Fixed	1	4	Exterior	North Facing	PF < 0.2	SHGC-0.51	U-0.4	370
	U-Factor & SHGC Source: WSEC Appendix A			U-Factor Source Description:				
	Is this assembly exterior or interior?: Exterior							

Project Title	Sky Valley Transportation Center - 2018 WSEC					Date	Apr 02, 2021	
<b>U x A Calculation</b>		<b>NEW BUILDING - FULLY CONDITIONED</b>				<b>COMPLIES</b>		
<b>Opaque Envelope Assemblies</b>			<b>PROPOSED</b>			<b>TARGET</b>		
<b>Roof/Ceiling</b>	<b>Assembly ID</b>	<b>Roof/Ceiling Assembly U-Factor</b>	<b>Net Area (SF)</b>	<b>U x A</b>	<b>Roof/Ceiling Assembly U-Factor</b>	<b>Net Area (SF)</b>	<b>U x A</b>	
Metal building (purlins)	1	0.023	18,226.0	419.2	0.031	18,226.0 (1)	565.0	
<b>Walls</b>	<b>Assembly ID</b>	<b>Wall Assembly U-factor</b>	<b>Net Area (SF)</b>	<b>U x A</b>	<b>Wall Assembly U-factor</b>	<b>Net Area (SF)</b>	<b>U x A</b>	
Steel-framed - Commercial	1	0.039	4,176.0	162.9	0.055	4,176.0 (1)	229.7	
<b>Slab on Grade Floors</b>			<b>PROPOSED</b>			<b>TARGET</b>		
<b>Slab-on-grade Floors</b>	<b>Assembly ID</b>	<b>F-Factor</b>	<b>Perimeter Length (LF)</b>	<b>U x A</b>	<b>F-Factor</b>	<b>Perimeter Length (LF)</b>	<b>U x A</b>	
Unheated slab	4	0.54	460.0	248.4	0.54	460.0 (1)	248.4	
<b>Fenestration and Opaque Door Assemblies</b>			<b>PROPOSED</b>			<b>TARGET</b>		
<b>Opaque Doors</b>	<b>Assembly ID</b>	<b>Door Assembly U-Factor</b>	<b>Rough Opening (SF)</b>	<b>U x A</b>	<b>Door Assembly U-Factor</b>	<b>Rough Opening (SF)</b>	<b>U x A</b>	
Swinging	1	0.36	175.0	63.0	0.37	175.0 (1)	64.8	
Garage, Sectional	1	0.07	1,152.0	80.6	0.31	1,152.0 (1)	357.1	
<b>Vertical Fenestration</b>	<b>Assembly ID</b>	<b>Fenestration Assembly U-Factor</b>	<b>Rough Opening (SF)</b>	<b>U x A</b>	<b>Fenestration Assembly U-Factor</b>	<b>Rough Opening (SF)</b>	<b>U x A</b>	
Fixed	4	0.4	370.0	148.0	0.38	370.0 (1)	140.6	
<b>Project Totals</b>		<b>Proposed Area</b>	<b>Proposed UxA</b>	<b>Target Area</b>	<b>Target UxA</b>			
<b>Project Totals</b>		<b>24,559</b>	<b>1,122</b>	<b>24,559</b>	<b>1,606</b>			

Project Title		Sky Valley Transportation Center - 2018 WSEC					Date	Apr 02, 2021	
SHGC x A Calculation		NEW BUILDING - FULLY CONDITIONED					COMPLIES		
Fenestration and Opaque Door Assemblies				PROPOSED			TARGET		
Vertical Fenestration - North Facing		Assembly ID	PF	Fenestration SHGC	Rough Opening (SF)	SHGC x A	Fenestration SHGC	Rough Opening (SF)	SHGC x A
Fixed		4	PF < 0.2	0.51	370.0	188.7	0.51	370.0 (1)	188.7
		Proposed Area			Proposed SHGC x A		Target Area		Target SHGC x A
Project Totals		370			189		370		189

## MECHANICAL COMPLIANCE SUMMARY

2018 WSEC Compliance Forms for Commercial Buildings including Group R2, R3 &amp; R4 over 3 stories and all R1

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<b>Project &amp; Applicant Information</b>	<b>Project Title</b>	Sky Valley Transportation Center - 2018 WSEC	For Building Department Use:	<b>Date: May 14, 2021</b>
	<b>Project Address</b>	32901 Cascade View Drive Sultan, WA 98294		
	<b>Applicant Name</b>			
	<b>Applicant Phone</b>			
	<b>Applicant Email</b>			
For questions about this report, contact WSEC Commercial Technical Support at 360-539-5300 or via email at com.techsupport@waenergycodes.com				

<b>General Occupancy</b>	All Commercial		<b>General Building Use Type</b>	Services, Vehicle Maintenance	<b>Building Cond. Floor Area</b>	10,545
<b>General Project Types</b>	New Building	<b>New Building or Addition Mechanical Scope</b>	Single Zone Systems & Equipment	<b>Alteration Mechanical Scope</b>	<b>Project Cond. Floor Area</b>	10,545
					<b>Floors Above Grade</b>	2
					<b>Compliance Method</b>	Compliance Method 1 - General
<b>Mechanical Project Description</b>						

Mechanical Compliance Scope and Method	Project Type	Mechanical Scope	Economizer Exception(s) Applied?	DOAS Ventilation Provided?	Higher Equipment Efficiency Option Applied?	Equipment Efficiency Compliance Verification
		New Building	Single Zone Systems & Equipment	No	Yes	NA
<b>Additional Efficiency Credits Included (AEC)</b>	Dedicated outside air system (DOAS) option					
<b>Does building include occupancy classifications requiring DOAS?</b>	Yes		<b>Does project include DOAS equipment?</b>			Yes
<b>Based on project scope do TSPR requirements apply?</b>	Yes		<b>Do all systems comply with Appendix D standard reference design or qualify for an exception to TSPR?</b>			Yes

<b>Scope &amp; Space Conditioning</b>	<b>NEW BUILDING - SINGLE ZONE SYSTEMS &amp; EQUIPMENT</b>	<b>Compliance Verification</b>	<b>COMPLIES</b>
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## LIGHTING COMPLIANCE SUMMARY

2018 WSEC Compliance Forms for Commercial Buildings including Group R2, R3 & R4 over 3 stories and all R1

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<b>Project &amp; Applicant Information</b>	<b>Project Title</b>	Sky Valley Transportation Center - 2018 WSEC	For Building Department Use:	<b>Date:</b> <span style="font-size: 1.2em; font-weight: bold;">May 14, 2021</span>
	<b>Project Address</b>	32901 Cascade View Drive Sultan, WA 98294		
	<b>Applicant Name</b>			
	<b>Applicant Phone</b>			
	<b>Applicant Email</b>			
For questions about this report, contact WSEC Commercial Technical Support at 360-539-5300 or via email at com.techsupport@waenergycodes.com				

<b>General Occupancy</b>	All Commercial	<b>General Building Use Type</b>	Services, Vehicle Maintenance	<b>Building Cond. Floor Area</b>	10,545	
<b>General Project Types</b>	New Building	<b>New Building or Addition Lighting Scope</b>	Interior Lighting Exterior Lighting	<b>Alteration Lighting Scope</b>	<b>Project Cond. Floor Area</b>	10,545
					<b>Floors Above Grade</b>	2
					<b>Compliance Method</b>	Compliance Method 1 - General
<b>Lighting Project Description</b>	This is a Transportation Maintenance and Repair Facility for Sultan School District. The building includes two floors of general office and support spaces ,a Vehicle Repair Shop and a Vehicle Maintenance Shop. The lighting will consist of all LED light fixtures with lighting controls per code.					

Lighting Compliance Scope and Method	Project Type	Interior / Exterior (Interior includes both interior & parking)	Luminaire Replacement Scope	Compliance Method	LPA Calculation Adjustment	Compliance Verification
	New Building	Interior Lighting		Building area	Reduced lighting power density option	COMPLIES
	New Building	Exterior Lighting			Not applicable to exterior	COMPLIES
<b>Additional Efficiency Options Included</b>	Reduced lighting power density credit					

<b>Project Title</b>	Sky Valley Transportation Center - 2018 WSEC	<b>Date</b>	May 14, 2021
<b>Lighting Power Calculation</b>	<b>NEW BUILDING - INTERIOR LIGHTING</b>	<b>Compliance Verification</b> <span style="float: right; font-weight: bold;">COMPLIES</span>	
<b>Compliance Method</b>	Building area	LPA Calculation Adjustment	LPA x 0.9

Interior Lighting Power Allowance - Building Area					
Building Areas	Gross Interior Area (SF)	LPA (Watts/SF)	Total Watts Allowed (SF x LPA x 0.9)	Total Proposed Watts By Building Area	Compliance Status by Building Area
Office	5,418	0.64	3,121	3,086	DOES NOT COMPLY
Workshop	5,972	0.91	4,892	4,320	DOES NOT COMPLY

Proposed Lighting Power Density								
Fixture Type/Application	Fixture ID	Building Area	New or Existing-to-Remain	Quantity of Fixtures, CLDs or Luminaires (#F)	Watts per Fixture, CLD or Luminaire (WpF)	Total Linear Feet (LF)	Watts per Linear Foot (WpLF)	Total Watts Proposed (#F x WpF) or (LF x WpLF)
<b>Individual Fixtures</b>								
Troffer	B	Office	New	28	32			896
Troffer	A	Office	New	4	30			120
Troffer	B1	Office	New	12	43			516
Troffer	A	Office	New	10	30			300
Troffer	C	Office	New	2	18			36
Troffer	B1	Office	New	19	43			817
Wall-mounted	G	Office	New	2	75			150
Wall-mounted	G1	Office	New	1	16			16
Wall-mounted	G1	Office	New	1	16			16
Other fixture type	F	Office	New	1	15			15
Other fixture type	H	Workshop	New	40	108			4,320

Other fixture type	D	Office	New	4	21		84
Other fixture type	F	Office	New	8	15		120

<b>Project Title</b>	<b>Sky Valley Transportation Center - 2018 WSEC</b>					<b>Date</b>	<b>May 14, 2021</b>
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<b>Proposed Fixtures Details</b>	<b>NEW BUILDING - INTERIOR LIGHTING</b>					
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Fixture Type/Application	Fixture ID	Location in Documents	Lamp Type	Building Area	New or Existing-to-Remain
<b>Individual Fixtures</b>					
Troffer	B	E211	LED	Office	New
	Fixture Description: 2X4 Troffer			Are these fixtures located within a daylight zone?: No	
	Do these fixtures require specific application lighting controls?: None required				
Troffer	A	E211	LED	Office	New
	Fixture Description: 2x2 LED Troffer			Are these fixtures located within a daylight zone?: No	
	Do these fixtures require specific application lighting controls?: None required				
Troffer	B1	E212	LED	Office	New
	Fixture Description: 2x4 Troffer			Are these fixtures located within a daylight zone?: No	
	Do these fixtures require specific application lighting controls?: None required				
Troffer	A	E212	LED	Office	New
	Fixture Description: 2x2 Troffer			Are these fixtures located within a daylight zone?: No	
	Do these fixtures require specific application lighting controls?: None required				
Troffer	C	E211	LED	Office	New
	Fixture Description: 2x2 Troffer			Are these fixtures located within a daylight zone?: No	
	Do these fixtures require specific application lighting controls?: None required				
Troffer	B1	E212	LED	Office	New
	Fixture Description: 2x4 Troffer			Are these fixtures located within a daylight zone?: No	
	Do these fixtures require specific application lighting controls?: None required				
Wall-mounted	G	E211	LED	Office	New
	Fixture Description: Wall Mount Linear			Are these fixtures located within a daylight zone?: No	
	Do these fixtures require specific application lighting controls?: None required				
Wall-mounted	G1	E211	LED	Office	New
	Fixture Description: Wall Mount Linear			Are these fixtures located within a daylight zone?: No	
	Do these fixtures require specific application lighting controls?: None required				
Wall-mounted	G1	E212	LED	Office	New
	Fixture Description: Wall Mount Linear			Are these fixtures located within a daylight zone?: No	
	Do these fixtures require specific application lighting controls?: None required				
Other fixture type	F	E212	LED	Office	New
	Fixture Description: Semi-Recessed Downlight			Are these fixtures located within a daylight zone?: No	
	Do these fixtures require specific application lighting controls?: None required				
Other fixture type	H	E211	LED	Workshop	New
	Fixture Description: High Bay			Are these fixtures located within a daylight zone?: No	
	Do these fixtures require specific application lighting controls?: None required				
Other fixture type	D	E211	LED	Office	New
	Fixture Description: Surface Strip			Are these fixtures located within a daylight zone?: No	
	Do these fixtures require specific application lighting controls?: None required				
Other fixture type	F	E211	LED	Office	New
	Fixture Description: Semi-recessed Downlight			Are these fixtures located within a daylight zone?: No	
	Do these fixtures require specific application lighting controls?: None required				

<b>Project Title</b>	<b>Sky Valley Transportation Center - 2018 WSEC</b>					<b>Date</b>	<b>May 14, 2021</b>
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<b>Lighting Power Calculation</b>	<b>NEW BUILDING - EXTERIOR LIGHTING</b>			<b>Compliance Verification</b>	<b>COMPLIES</b>
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Exterior Lighting Zone	ZONE 2	Base Site Allowance	400
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Exterior Tradable Lighting Power Allowance								
Tradable Surface	Tradable Surface Sub-Type	Surface Area (SF)	LPA (Watts/SF)	Linear Feet (LF)	LPA (Watts/LF)	Total Watts Allowed (LPA x SF) or (LPA x LF)	Total Tradable Proposed Watts	Tradable Compliance Status
Building grounds	Walkways < 10 feet wide			114	0.50	57		
Building grounds	Walkways 10 feet and wider	3,900	0.10			390		
Building entrances and exits	Pedestrian entrances & exits			27	14	378		
Uncovered parking areas and drives		117,300	0.04			4,692		
Base Site Allowance						400		
<b>Totals</b>						5,917	3,577	COMPLIES

Proposed Tradable Lighting Power Density							
Fixture Type	Fixture ID	Tradable Surface Type	Quantity of Fixtures (#F)	Watts or Wattage Limit per Fixture (WpF)	Total Linear Feet (LF)	Watts per Linear Foot (WpLF)	Total Watts Proposed (#F x WpF) or (LF x WpLF)
<b>Individual Fixtures</b>							
Pole-mounted	S3	Uncovered parking areas and drives -	8	204			1,632
Pole-mounted	S1	Uncovered parking areas and drives -	2	102			204
Pole-mounted	S2	Uncovered parking areas and drives -	7	54			378
Pole-mounted	S4	Uncovered parking areas and drives -	1	156			156
Wall-mounted	J	Building entrances and exits - Pedestrian entrances & exits	3	71			213
Wall-mounted	J	Building grounds - Walkways 10 feet and wider	9	71			639
Wall-mounted	J	Building grounds - Walkways < 10 feet wide	5	71			355
<b>Tradable Proposed Total</b>							<b>3577</b>

# Lighting, Motor and Electrical Requirements List, pg 1 of 10

2018 WSEC Requirements for Commercial Buildings including Group R2, R3 & R4 over 3 stories & all R1 -- Administered by ©2021 NEEA, All rights reserved

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Project:  
 Sky Valley Transportation Center - 2018 WSEC  
 Cascade View Dr & 329th Ave SE  
 Sultan, WA 98294

Date: 2021-05-14

Applies	Code Section	Component	Compliance Information Required In Permit Documentation	Location in Documents	Building Department Notes
<b>LIGHTING SCOPE</b>					
	C103.1	Construction documents - General	No lighting scope in project.		
<b>LIGHTING CONTROLS</b>					
YES	C405.2	Lighting controls, general	For all lighting fixtures, indicate lighting control method on plans for spaces and lighting zone(s) served, or exception taken	E211, E212	
NA	C405.2, Option 2	Luminaire level lighting controls (LLLC)	Indicate on plans all fixtures provided with LLLC in lieu of C405.2 lighting controls; provide description of control capabilities and performance parameters		
	C405.2.5 Item 3 C405.2.1.1 C405.2.3.1	Lighting in dwelling units (dormitory, hotel and all other than multifamily)	Indicate method of automatic control of all installed luminaires in dwelling units in buildings other than multifamily (occupancy or light reduction controls)		
	C405.2.5 Item 2	Lighting in sleeping units	Indicate method of automatic off control of all installed luminaires in sleeping units (vacancy or key card control); also refer to Receptacles		
YES	C405.2.3 C405.2.3.1 C405.2.5	Manual controls	Indicate on plans the method of manual lighting control, location of manual control device and the area or specific application it serves	E211, E212	
YES	C405.2.3.1 C405.2.1.1 C405.2.4	Manual interior light reduction controls	Indicate on plans which method of manual 50% lighting load reduction is provided, or indicate applicable exception	E211, E212	
YES	C405.2.1 C405.2.2.1 C405.2.1, Exception 3	Method of automatic shut-off control	Indicate on plans the method of automatic shut-off control during unoccupied periods (occupancy sensor, time switch or digital timer switch) for all lighting zones	E211, E212	
YES	C405.2.1	Occupant sensor controls	Indicate on plans all luminaires that are controlled by occupant sensor controls; indicate controls are configured to turn luminaires 100% off when the space is unoccupied	E211, E212	
NA	C405.2.1 C405.2.1.1	Occupant sensor controls	Indicate if occupant sensor controls are configured to be manual on or automatic on to not more than 50% power; indicate spaces eligible for exception that allows automatic on to 100% power		
NA	C405.2.1.2	Occupant sensor controls - warehouses spaces	Indicate each aisleway and corridor within a warehouse space are designated as separate zones that are independently controlled		

# Lighting, Motor and Electrical Requirements List, pg 2 of 10

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NA			Indicate occupant sensors are configured to automatically reduce lighting power by 50% when the zone is unoccupied and 100% off after the zone is unoccupied for over 20 minutes; indicate controls are configured to automatically restore lighting to full power when the zone or space is occupied		
NA	C405.2.1.3	Occupant sensor controls - open plan office areas	For open plan office areas larger than 300 sf, indicate general lighting is provided with vacancy controls that reduce lighting power by not less than 80% and are configured to turn luminaires 100% off when the space is unoccupied; indicate that no individual control zone area exceeds 600 sf		
NA	C405.2.1.4	Occupant sensor controls - parking garages	Indicate parking garage general lighting is provided with vacancy controls that reduce lighting power by not less than 30% and are configured to turn luminaires 100% off when no vehicles or pedestrians are present, unless eligible for an exception; indicate that no individual control zone area exceeds 3,600 sf		
NA	C405.2.1.5	Occupant sensor controls - enclosed fire-rated stairwells	Indicate stairway lighting is provided with vacancy controls that reduce lighting power by not less than 50% when the stairway is unoccupied		
YES	C405.2.2.1	Automatic time switch controls	Indicate spaces on plans where time switch controls turn luminaires 100% off during unoccupied hours	E211, E212	
NA			Indicate spaces on plans where time switch controls are configured to turn on lighting to full power versus 50% power		
NA			Indicate locations of override switches on plans and the lighting zone(s) served; indicate that the area(s) served by each override switch does not exceeds 5,000 sf		
NA	C405.2.1, Exception 3	Digital timer switch	Indicate digital timer switch control includes: manual on/off, time delay, audible and visual indication of impending time-out		
NA	C405.2.4.2 C405.2.4.3	Daylight zones - Sidelit and toplit	Indicate primary and secondary sidelit daylight zone floor areas on plans		
NA			Indicate toplit daylight zone floor areas on plans		
NA			For small vertical fenestration assemblies (rough opening less than 10 percent of primary daylight zone floor area) where daylight responsive controls are not required, provide fenestration area to daylight zone floor area calculation(s)		
NA	C405.2.4	Daylight responsive controls	Indicate on plans lighting zone(s) served by daylight responsive controls; indicate that the area served by each control device does not exceeds 2,500 sf		

# Lighting, Motor and Electrical Requirements List, pg 3 of 10

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NA			Identify sidelit and toplit daylight zones that are not provided with daylight sensing controls and the exception(s) that apply		
NA	C405.2.4.1.1	Daylight responsive controls	Indicate on plans the lighting load reduction method (continuous dimming, or stepped dimming that provides at least two even steps between 0%-100% of rated power)		
NA	C405.2.4.1	Daylight responsive controls	Indicate that daylight sensing controls are configured to completely shut off all controlled lights in the lighting zone		
NA	C405.2.5	Additional controls - Specific application lighting controls	Identify spaces and lighting fixtures on plans that require specific application lighting controls per this section		
NA	C405.2.5 Item 1	Display and accent lighting	Indicate on plans that manual controls are provided that control display, accent lighting and display case lighting independently from both general area lighting and other lighting applications within the same space		
NA			Indicate manual and automatic (occupant sensor or time switch) lighting control methods		
	C405.2.5 - Item 3	Hotel/motel guest rooms	Indicate method of automatic control - vacancy or captive key control of all installed luminaires and switched receptacles in guest room		
NA	C405.2.5 Item 1	Supplemental task lighting	Indicate method and location of manual and automatic shut-off control (occupant sensor or time switch) for supplemental task lighting, including under-shelf or under-cabinet lighting		
NA	C405.2.5 Item 1	Lighting equipment for sale or demonstration	Indicate on plans that lighting equipment for sale or demonstration are controlled independently from both general area lighting and other lighting applications within the same space		
NA			Indicate manual and automatic (occupant sensor or time switch) lighting control methods		
NA	C405.2.5 Item 4	Lighting for non-visual applications	Identify all eligible non-visual lighting applications on plans; indicate that the area served by each control device does not exceeds 4,000 sf		
NA			Indicate on plans that non-visual lighting are controlled independently from both general area lighting and other lighting applications within the same space		
NA			Indicate method of manual lighting control and applicable automatic lighting control		
YES	C405.2.5 Item 5	Means of egress lighting	Identify on plans egress fixtures that function as both normal and emergency means of egress illumination	E211, E212	

# Lighting, Motor and Electrical Requirements List, pg 4 of 10

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NA			Provide calculation of lighting power density of total egress lighting		
NA			If total egress lighting power density is greater than 0.02 W/sq. ft., indicate on plans egress fixtures requiring automatic shut-off during unoccupied periods		
YES			Indicate method of automatic shut-off control	E211, E212	
NA	C405.4.1 C405.4.2	Lighting control of exempt interior lighting	Indicate that exempt interior lighting equipment and lighting located within spaces that are eligible for a lighting power exemption are controlled independently from non-exempt and general area lighting		
NA	C405.2.6	Exterior lighting controls	For decorative exterior lighting, indicate on plans automatic daylight shut-off controls, or exception taken		
YES			For exterior lighting that is not decorative, indicate on plans automatic daylight or time-switch shut-off controls and setback controls; or indicate exception taken	Project Specifications	
NA			For lighting requiring setback controls, include control sequence that reduces lighting power by at least 30% between 12am-6am, or from 1 hour after closing to 1 hour before opening, or based upon motion sensor		
NA			For building facade and landscape lighting, indicate control sequence for shut-off control is based on dawn-to-dusk and business opening/closing schedule; indicate whether automatic or time switch controls will be provided for this function		
NA	C405.5.2	Lighting control of exempt exterior lighting	Indicate that exempt exterior lighting and lighting located within exterior areas/surfaces that eligible for a lighting power exemption are controlled independently from non-exempt exterior lighting		
NA	C405.5.4	Exterior gas-fired lighting appliances	Indicate ignition system is a method other than continuously burning pilot light		
NA	C405.2.7	Area controls - Master control switches and circuit power limit	Indicate location(s) of master control switch(es) intended to control multiple independent switches; circuit breaker may not be used as a master control switch		
NA			Verify that no 20 amp circuit controlled by a single switch or automatic control is loaded beyond 80%		

## ADDITIONAL EFFICIENCY CREDIT - ENHANCED INTERIOR LIGHTING CONTROLS

# Lighting, Motor and Electrical Requirements List, pg 5 of 10

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	C406.4	Enhanced digital lighting controls	To comply with additional efficiency credit, indicate on plans that interior lighting fixtures are configured with all of the following control functions, as applicable: 1) Each fixture is individually addressed, or exception taken; 2) Fixtures are configured for continuous dimming; 3) No more than eight fixtures are controlled by a single daylight sensor; 4) In enclosed and open office areas, illumination levels of overhead general area lighting is configured to be individually adjusted by occupants		
			Include calculations that demonstrate the total lighting power of all interior lighting fixtures configured with enhanced lighting controls is no less than 90% of the total interior lighting power for the area the enhanced lighting controls credit is being applied to		

## INTERIOR LIGHTING POWER & EFFICACY

YES	C405.4.1 C405.4.2	Total connected interior lighting power	Include all luminaires in interior lighting fixture schedule; indicate fixture types, lamps, ballasts, and manufacturer's watts per fixture for the installed lamp	E001	
NA			Identify spaces eligible for lighting power exemption on plans and in WSEC interior lighting compliance reports; indicate the exception applied		
NA			Identify lighting equipment eligible for lighting power exemption in fixture schedule and in WSEC interior lighting compliance reports; indicate the exception applied		
	C405.1 C405.1.1	Lighting in dwelling units (multifamily)	For all installed luminaires, include lamp type and number of lamps in lighting fixture schedule; for lamps that are not LED, T-8 or small diameter fluorescent, indicate efficacy of other lamp types is 65 lumens per watt or greater		
NA			For all installed luminaires, indicate in lighting fixture schedule whether complying via lighting power density or by qualifying lamp type; if by lamp type, include number of lamps		
NA			For all installed luminaires, indicate in lighting fixture schedule whether complying via lighting power density or by qualifying lamp type; if by lamp type, include number of lamps		

## INTERIOR LIGHTING POWER CALCULATION - INDICATE COMPLIANCE PATH TAKEN

YES	C405.4.2.1	Building Area Method	Demonstrate that total proposed wattage per building area does not exceed maximum allowed wattage per building area; identify locations of building areas on plans; provide WSEC exterior lighting compliance reports	E211, E212	
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# Lighting, Motor and Electrical Requirements List, pg 6 of 10

2018 WSEC Requirements for Commercial Buildings including Group R2, R3 & R4 over 3 stories & all R1 -- Administered by ©2021 NEEA, All rights reserved

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NA	C405.4.2.2	Space-By-Space Method	Demonstrate that total proposed wattage does not exceed maximum allowed wattage; identify locations of space types on plans, including retail display areas and areas with display, highlight and decorative lighting; provide WSEC exterior lighting compliance reports		
<b>ADDITIONAL EFFICIENCY CREDITS - REDUCED INTERIOR LIGHTING POWER DENSITY</b>					
YES	C406.3.1 C406.3.2	Reduced interior lighting power density	To comply with additional efficiency credit, demonstrate that total connected interior lighting wattage is 10% or 20% less than the total maximum allowed lighting wattage for the area the reduced lighting power credit is being applied to; indicate whether lighting power allowance is based on the building area method or space-by-space method; provide WSEC exterior lighting compliance reports		
	C406.3	Reduced interior lighting power density - dwelling unit lamp efficacy	For project with dwelling units, to comply with additional efficiency credit indicate in lighting fixture schedule that lamps within installed interior luminaires have an efficacy rating of at least 65 lumens per watt; include number of lamps and provide calculations that demonstrate at least 95% of lamps have this efficacy rating		
<b>EXTERIOR LIGHTING POWER &amp; EFFICACY</b>					
YES	C405.5.2	Total connected exterior lighting power	Include all luminaires in exterior lighting fixture schedule; indicate fixture types, lamps, ballasts, and manufacturer's watts per fixture for the installed lamp	E001	
NA			Identify exterior applications eligible for lighting power exemption on plans and in WSEC exterior lighting compliance reports; indicate exception applied		
YES	C405.5.3(1)	Exterior lighting zone	Indicate building exterior lighting zone as specified by the AHJ		
YES	C405.5.1	Exterior building grounds lighting	For building grounds fixtures rated at greater than 50 watts, indicate rated lamp efficacy (in lumens per watt) in fixture schedule	E001	
<b>EXTERIOR LIGHTING POWER CALCULATION</b>					
YES	C405.5.3	Tradable allowances	Demonstrate that total proposed tradable surface wattage does not exceed maximum allowed tradable surface wattage (including base site allowance); identify locations of tradable surfaces on plans; provide WSEC exterior lighting compliance reports		

# Lighting, Motor and Electrical Requirements List, pg 7 of 10

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NA			Demonstrate that proposed wattage per non-tradable surface type does not exceed maximum allowed wattage per non-tradable surface type (including base site allowance remaining after tradable allowance calculation); identify locations of non-tradable surfaces on plans; provide WSEC exterior lighting compliance reports		
<b>LIGHTING ALTERATIONS</b>					
	C503.6.1	Interior and parking garage lighting fixture alterations	Where $\geq 50\%$ of existing luminaires in an interior space or parking garage are replaced; indicate compliance path (building area or space-by-space method); include all new and existing-to-remain luminaires in WSEC interior lighting compliance reports; indicate proposed lighting wattage does not exceed maximum allowed per compliance path		
			Where $< 50\%$ of existing luminaires in an interior space or parking garage are replaced; indicate total existing lighting wattage in each space prior to alteration; include all new and existing-to-remain luminaires in WSEC interior lighting compliance reports; indicate proposed total lighting wattage in alteration area does not exceed total existing lighting wattage prior to alteration		
			Where $\geq 50\%$ of existing exterior lighting wattage is replaced; include all new and existing-to-remain luminaires in WSEC exterior lighting compliance reports; indicate proposed total exterior lighting wattage does not exceed maximum allowed		
			Where $< 50\%$ of existing exterior lighting wattage is replaced; indicate total existing lighting wattage prior to alteration; include all new and existing-to-remain luminaires in WSEC interior exterior compliance reports; indicate proposed total exterior lighting wattage does not exceed total existing wattage prior to alteration		
	C503.6.2	Interior lighting wiring and circuiting alterations	Where new wiring is installed to serve new interior luminaires and /or luminaires are relocated to a new circuit; indicate manual and automatic lighting controls are provided (as applicable) - manual (C405.2.3); occupancy sensor (C405.2.1); light reduction (C405.2.3); daylight responsive (C405.2.4); specific application (C405.2.5)		
			Where new wiring is installed to serve new exterior luminaires and /or luminaires are relocated to a new circuit; indicate automatic lighting controls are provided (C405.2.6)		



# Lighting, Motor and Electrical Requirements List, pg 8 of 10

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	C503.6.3	Lighting panel alterations	Where a new interior and/or exterior lighting panel is installed or an existing panel is moved (all new raceway and conductor wiring), indicate all applicable lighting controls requirements apply		
	C503.6.4	Newly-created rooms	Where interior space(s) is reconfigured (permanently installed walls or ceiling-height partitions) to create new enclosed spaces, indicate all applicable lighting controls requirements apply		
	C504.2	Lighting repairs	Identify existing luminaires being upgraded with bulb and / or ballast replacement; indicate fixture alteration does not increase existing fixture wattage		
	C505.1	Change of interior space use	Identify spaces on plans where the building area type or space use type is being changed from one type to another per Tables C405.4.2(1) or (2)		
			Indicate compliance method (building area or space-by-space); include all new and existing-to-remain luminaires in WSEC interior lighting compliance reports; indicate proposed lighting wattage does not exceed maximum allowed per compliance path		

## RECEPTACLES

YES	C405.10	Controlled receptacles	Identify all controlled and uncontrolled receptacles on electrical plans in each space in which they are required; include receptacle configuration such as spacing between controlled and uncontrolled, duplex devices, etc	E201, E202	
YES			Provide schedule that lists the number of controlled and uncontrolled receptacles in each space where controlled receptacles are required - classrooms, private offices, open office areas, conference rooms, copy rooms, break rooms and modular partitions/workstations	E201, E202	
YES			Indicate on plans the method of automatic control for each controlled receptacle zone (occupant sensor or programmable time-of-day control); indicate that each zone served by a single controller does not exceed 5,000 sf	E201, E202	
NA	C405.2.5 Item 2	Switched receptacles in sleeping units	Indicate method of automatic off control of all switched receptacles in sleeping units (vacancy or key card control)		
NA	C503.6.6	Electrical receptacle alterations	Where new receptacles are added or replaced within an alteration project that is 5,000 sf or larger, indicate receptacles are provided with automatic controls per C405.10, or exception taken		

## MOTORS, TRANSFORMERS, ELECTRIC METERS, INTERIOR TRANSPORTATION

# Lighting, Motor and Electrical Requirements List, pg 9 of 10

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	C405.6	Electrical transformers	Include electrical transformer schedule on electrical plans; indicate transformer type, size, efficiency, or exception taken		
YES	C405.11	Feeders and branch circuits	Provide documentation that demonstrates maximum voltage drop across feeders and branch circuits does not exceed 5%	E401	
	C405.7	Dwelling unit electrical energy consumption	Indicate on electrical plans that each dwelling unit in Group R-2 has a separate electrical energy meter		
	C405.8	Electric motor efficiency	Include all motors, including fractional hp motors, in electric motor schedule on electrical plans; indicate motor type, horsepower, rpm, rated efficiency, or exception applied		
	C405.9.1	Elevator cabs	For luminaires in each elevator cab, provide calculations that demonstrate average efficacy is not less than 35 lumens per watt		
			For elevators that do not have an integral air conditioning system, indicate rated watts per cfm for elevator cab ventilation fans do not exceed 0.33 watts per cfm		
			Indicate automatic controls that de-energize lighting and ventilation fans when elevator is stopped and unoccupied for a period of 15 minutes or more		
	C405.9.2	Escalators and moving walks	Indicate escalators comply with ASME A17.1/CSA B44; automatic controls are configured to reduce operational speed to the minimum permitted when not in use		
	C405.9.3	Regenerative drive	Indicate all one-way down or reversible escalators are provided with a variable frequency regenerative drive		

## DOCUMENTATION AND SYSTEM REQUIREMENTS TO SUPPORT COMMISSIONING (CX)

NA	C408.4	Scope of electrical power and lighting systems commissioning	Indicate that all electrical systems (receptacles, transformers, motors, vertical and horizontal transportation) for which the WSEC requires control functions and / or configuration to perform specific functions are required to be commissioned		
NA			Where total building lighting load is > 20 kW, or where total lighting load of luminaires requiring daylight sensing and / or occupancy control > 10 kW, indicate that all automatic lighting control systems are required to be commissioned; or provide building lighting power calculation demonstrating eligibility for exception		
NA	C405.13 C408.1.1 C408.1.2 C408.1.4.2 C103.6.3	Commissioning requirements in construction documents	Indicate Cx requirements in plans and specifications for all applicable electrical and lighting control systems per C408		

# Lighting, Motor and Electrical Requirements List, pg 10 of 10

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NA	C408.1.2 C408.1.2.1 C408.1.4 C103.6.3	Commissioning requirements in construction documents	Include general summary of Cx plan per C408.1.2 including: 1) Narrative description of activities; 2) Responsibilities of the Cx team; 3) Schedule of activities including verification of project close out documentation per C103.6; 4) Conflict of interest plan (if required)		
NA	C408.1.2 C408.1.4 C103.6.3	Commissioning requirements in construction documents	Include in general summary that a Cx project report and Compliance Checklist (Figure C408.1.4.1) shall be completed by the Certified Cx Professional and provided to the owner prior to the final electrical inspection		
YES	C408.4.1	Functional performance testing criteria	Identify in plans and specifications the intended operation of all equipment and controls during all modes of operation, including interfacing between new and existing-to-remain systems	E211, E212	

## PROJECT CLOSE OUT DOCUMENTATION

YES	C103.6.3	Project close out documentation requirements	Indicate in plans that project close out documentation is required including WSEC lighting compliance reports that document all interior and exterior lighting area and / or surface types, lighting power allowances and installed densities	E211, E212	
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If "no" is selected for any question, provide explanation.