Building Envelope Requirements List, pg 1 of 13

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:
WSF-International Village - 2021 WSEC
110 9TH AVE SW
Puyallup, WA 98371

PRCNC20241090

Date: 2024-05-15

Applies	Code Section	Component	Compliance Information Required In Permit Documentation	Location in Documents	Building Department Notes
SCOPE					
NA	C103	Construction documents - General	For a tenant space (first build-out) project, indicate if there is no envelope scope included in the project.		
NA	C103	Construction documents - General	For an alteration project, indicate if there is no envelope scope included in the project.		
NA	C402.1.1.1	Low energy spaces	Identify low energy enclosed spaces on plans; include calculations if applicable that demonstrate eligibility for envelope provisions exemption.		
NA	C402.1.1.2	Semi-heated spaces	Identify semi-heated spaces on plans, include mechanical heating system type and capacity calculations that demonstrate eligibility for wall insulation exemption.		
NA	C402.1.1.3	Greenhouse spaces	Identify greenhouse spaces on plans; include vertical fenestration and glazed roof / skylight assembly information and mechanical heating system type if applicable, that demonstrates eligibility for envelope provisions exemption.		
NA	C402.1.2	Equipment buildings	Provide building sf area, average wall and roof U-factor, installed electric equipment power (W/sf); mechanical equipment type and capacity (btu/h*sf) and heating setpoint restriction (≤ 50ï¿½F) to demonstrate eligibility for envelope provisions exempt		
YES	C402.1.2.1	Standalone elevator hoistways	Identify elevator hoistway on plans and indicate it does not serve or open into conditioned or semi-heated space; indicate dedicated HVAC system includes heating and cooling setpoints restrictions (≤ 40ï¿½F and ≥ 95ï¿½F, respectively) to demonstrate	A2.1 & A2.2	
YES	C410.3	Walk-in cooler and freezer spaces	Identify locations and floor area of each walk-in cooler and freezer space on plans; including site assembled, site constructed and prefabricated units.	A2.1 & K Drawing	
NA			Identify locations and floor sf area of warehouse cooler and freezer spaces on plans.		
NA	C101.4.1	Mixed residential & commercial building	Identify spaces with different occupancy requirements on plans.		
NA	C502.1	Building additions	Indicate whether the building addition complies as a stand-alone project or if the addition and the existing building is combined into a single building to demonsrate compliance.		

NA	C505.2	Change in space conditioning alterations	Identify on plans existing unconditioned spaces changing to semi-heated or conditioned space, and existing semi-heated spaces changing to conditioned space; provide load calculations per Section C501.2.2 for new and existing to remain (if applicable) mech		
NA	C505.1	Change in space conditioning alterations	Indicate whether the area under-going a change in space conditioning complies as a stand-alone project or if the alteration area is combined with all existing equivalent space conditioning areas in the building to demonstrate compliance.		
NA	C505.3	Change in occupancy alterations	Identify on plans existing F, S and U-occupancy spaces undergoing a change in occupancy and final occupancy type.		
NA			Identify on plans existing Group R spaces permitted prior to July 1, 2002 that are undergoing a change to a commercial occupancy.		
NA			Identify on plans existing commercial (non-Group R) occupancy spaces undergoing a change to a Group R occupancy.		
NA	C505.1	Change in occupancy alterations	Indicate whether the area under-going a change in occupancy complies as a stand-alone project or if the alteration area is combined with all existing equivalent occupancy areas in the building (as defined per Section C505.3) to demonsrate compliance.		
ENVELOPE ASSEMBLIES					
YES	C103.6.3	Thermal envelope compliance path	Indicate envelope thermal performance compliance path taken (prescriptive or component performance) and provide corresponding WSEC envelope compliance reports in project documentation	In This Document	
NA			If complying prescriptively, demonstrate that each opaque envelope assembly complies via either the minimum prescriptive R-value per Table C402.1.3 or the maximum prescriptive U-factor/F-factor per Table C402.1.4; include U-factor/F-factor source in compl		
YES			If complying via component performance, demonstrate that the Proposed Total UxA is equal to or less than the Allowable Total UxA; also demonstrate that the Proposed Total SHGCxA is equal to or less than the Allowable SHGCxA.	In This Document	
NA			If complying via total building performance, provide a list of all proposed envelope component types, areas and U-values in energy model documentation.		

YES	C303.1.1	General insulation installation	Indicate installation methods, thicknesses, densities and clearances to achieve the intended R-value of all insulation materials	A4.1	
YES			Where two or more layers of rigid insulation will be used, indicate that edge joints between layers are staggered, or exception taken.	A4.1	
YES	C303.1.1 C303.1.2	Insulation identification	For insulation materials that are provided with a manufacturer's R-value identification mark, indicate that the insulation shall be installed such that the mark is readily observable during inspection.	G0.1	
NA	C303.1.1 C303.1.2	Insulation identification	For insulation materials that are not installed with an R-value identification mark, indicate that an insulation certificate per Section C303.1.1 shall be provided immediately after installation in a conspicuous location in the building so it is readily a		
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, if fenestration products do not have an NFRC rating, indicate applicable Chapter 3 default values.	A7.1	
YES	C103.2 C402.2.1	Roof assembly insulation	Indicate R-value(s) of cavity and / or continuous insulation on roof sections and WSEC envelope compliance reports	A4.1	
YES			Where insulation thickness varies by greater than 1 inch, provide area weighted average U-factor calculation	A2.14, A4.1	
YES			Indicate framing materials and framing depths on roof sections.	A4.1	
YES			For ceilings below vented attics and vaulted ceilings, indicate framing method (standard or advanced) per Section A102.2.	A4.1	
NA			For roof assemblies with insulation entirely above deck that is tapered, indicate effective U-factors of tapered insulation per Section A102.2.6; include roof configuration and slope, maximum R-value at peak and minimum R-value at low point for all roof s		
NA			For metal building roofs, indicate R-values for thermal spacers and each insulation layer, and liner system (LS) method.		
NA	C402.2.1.3	Skylight curb insulation	Indicate skylight curb insulation R-value on roof section, if not included in skylight NFRC rating.		
YES	C402.2.1.4	Rooftop HVAC equipment curbs	Indicate rooftop HVAC equipment curb insulation R-value on roof section.	Mech	
YES	C103.2 C402.2.2 C402.2.5	Above/below grade wall assembly insulation	Indicate R-value(s) of cavity and / or continuous insulation on wall sections and WSEC envelope compliance reports	A4.1	

NA			For mass walls, indicate material density category, wall thickness, weight and heat capacity.		
NA			For integral insulated ASTM C90 concrete masonry walls eligible for wall insulation exception, indicate loose-fill core insulation material and percentage of cores filled including grouted cores, bond beams, vertical fills, headers and any other grouted c		
NA			For wall assemblies that include wall furring, indicate the framing materials and framing depths on wall sections.		
NA			For exposed exterior basement / crawlspace walls, indicate method of protection of insulation.		
NA			For wood-framed wall assemblies, indicate on plans the framing depth and method (standard, intermediate or advanced) per Section A103.2.		
YES	C103.2 C402.2.2 C402.2.5	Above grade wall assembly insulation	For steel-framed and metal building wall assemblies, indicate framing depth on plans.	A4.1	
YES	C402.1.4.3 Table C402.1.4 Foot	Thermal resistance of mechanical equipment penetrations	Where mechanical systems include through-wall penetrations, indicate penetration locations on plans and provide calculation of the total percent sf area of mechanical penetrations		
NA	C402.1.4.3 Table C402.1.4 Foot	Thermal resistance of mechanical equipment penetrations	If total sf area of through-wall penetrations exceeds 1% of the above grade wall area, the proposed wall assembly U-factor shall be calculated by area-weighting the proposed wall assembly type U-factor with a default U-factor of U-0.50 for the mechanical		
NA	Table C402.1.3 Footnote h Tabl	Peripheral edges of intermediate concrete floorsï¿½	Indicate that the total sf area of the peripheral edges of intermediate concrete floors (slab thickness multiplied by perimeter length) is accounted for as a separate above grade mass wall assembly for prescriptive or component performance compliance: ref		
YES	C103.2 C402.4.4	Opaque doors	For solid opaque doors and doors with ≤ 50% integral glazed area, indicate rated U-factor for swinging (per NFRC-100) and non-swinging doors on wall sections or in door schedules, and WSEC envelope compliance reports.	A4.1	
YES	C103.2 C402.4.4	Garage doors	Indicate rated U-factor for opaque sectional, roll-up, tilt-up, metal coiling and sliding garage doors on wall sections or in door schedules, and WSEC envelope compliance reports.	In This Document	

Please provide dimensioned wall assembly details.
Marked-up document: Building Energy Requirements 4of13.
Reference: CONSTRUCTION PLAN SET, sheet A4.1

NA	C103.2 C303.1.3 C402.4.4 Tabl	Garage doors	For garage doors with ≤ 50% integral glazed area, indicate glazing configuration (single or multiple row), percentage of glazed area and rated U-factor (per NFRC 100, ANSI/DASMA 105 or eligibilty for exception) on wall sections or in door schedules, an		
NA	C103.2 C402.2.3	Floor assembly (over outdoor or unconditioned space) insulation	Indicate R-value(s) of cavity and/or continuous insulation on floor sections and WSEC envelope compliance reports		
NA			For floor joists, indicate framing material and framing depth on floor sections.		
NA			For mass floors, indicate material density category, floor thickness, weight and heat capacity.		
NA	C402.2.8	Above-grade exterior concrete slabs	Indicate on plans the locations of all decks, balconies and other above-grade concrete slabs that penetrate the building thermal envelope; indicate the total sf area (slab thickness multiplied by the perimeter length) is accounted for as a separate above		
NA	C402.2.8	Above-grade exterior concrete slabs	For prescriptive compliance, indicate a minimum R-10 thermal break at all above-grade exterior concrete slab locations (or applicable exception); for component performance compliance, indicate code target U-factor for a mass wall and proposed U-factor as		
YES			Indicate R-value of continuous insulation on wall section or foundation detail and WSEC envelope compliance reports	A4.1	
YES			Indicate method of protection of exposed exterior slab edge insulation	A4.1	
YES			For un-heated slab-on-grade floors, to comply prescriptively indicate insulation extends down vertically and / or horizontally the required distance from top of slab; for component performance provide effective F-factor.	A4.1	
NA			For heated slab-on-grade floors, to comply prescriptively indicate insulation extends down vertically from top of slab and then horizontally under the entire slab; for component performance provide effective F-factor for a heated slab.		
NA			Indicate on plans the locations and configuration of all mass transfer deck slabs; indicate the total sf area (slab thickness multiplied by the length of the edge condition) is accounted for as a separate above grade wall assembly; indicate compliance is		

NA	C402.2.6	Radiant heating system panels insulation	Indicate on plans the insulation R-value behind radiant panels, U-bend/headers and bottom surface of radiantly heated floors (other than heated slab-on-grade).		
YES	C402.4 C303.1.3	Vertical fenestration assembly performance factors	Indicate U-factors, SHGC and VT values in fenestration schedules and WSEC envelope compliance reports	A7.1	
NA			Indicate if an area-weighted U-factor is used for multiple fenestration types within the same fenestration category per Table C402.4; provide area-weighted U-factor calculation		
YES			Indicate if U-factor, SHGC and VT values are NFRC or default; if default then specify frame type, glazing layers, gap width, low-e coatings, gas-fill.	A7.1	
NA	C402.4.3.3	Dynamic glazing performance factors	Indicate U-factors, variable SHGCs and VT values for dynamic glazing products in fenestration schedules and WSEC envelope compliance reports; indicate automatic controls that modulate solar gain in multiple steps; dynamic glazing cannot be area-weighted w		
NA	C402.4.3	Permanent shading projection factor (PF)	For vertical fenestration shaded by building element overhangs or permanent external shading devices, provide projection factor calculations per Equation 4-6 for each fixed and operable vertical fenestration type with similar permanent shading geometry.		
NA	C402.2.9	Vertical fenestration intersection with opaque wallsï¿½	For vertical fenestration within wall assemblies with continuous insulation (CI), indicate in wall sections that the exterior glazing layer and thermal break are aligned laterally within 2-inches of the CI layer.		
YES	C402.2.9	Vertical fenestration intersection with opaque wallsï¿½	For vertical fenestration within wall assemblies without continuous insulation, indicate in wall sections that the exterior glazing layer and thermal break are aligned laterally within 2-inches of the exterior face of the outermost insulation layer.	A4.1	
NA	C402.2.9	Vertical fenestration intersection with opaque wallsï¿½	"For vertical fenestration that is inset from the exterior face of the opaque wall rough opening, indicate in wall sections that the exposed exterior portion of the rough opening is covered with a material with an R-value of at least R-3 (insulation, 1-1/		
YES	C402.4.1 C502.2.1	Vertical fenestration maximum area	For window-to-wall ratio (WWR) calculation, provide total net sf area of all above grade wall assemblies and total rough opening sf area of all vertical fenestration assemblies in the building; each space conditioning category in the building shall be cal	In This Doc	

NA	C402.4.1 C502.2.1	Vertical fenestration maximum area	If WWR exceeds the prescriptive maximum allowed, indicate alternate compliance method applied (component performance calculation with target area adjustment, vertical fenestration high performance prescriptive alternate, or both).		
NA	C402.1.5	Vertical fenestration maximum area	If component performance with target area adjustment (TAA) will be used to account for vertical fenestration area in excess of the prescriptive maximum allowed; include TAA calculation in WSEC envelope compliance reports.		
NA	C402.4.1.1 C402.4.1.1.1 C502.	Vertical fenestration prescriptive alternate - Optimized daylighting	Provide calculations that demonstrate at least 50% of the total conditioned floor area is within a daylight zone; demonstrate compliance for each space conditioning category in the building separately		
NA			Indicate in project 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 visible transmittance (VT) of all vertical fenestration in the building is at least 1.1 times the required SHGC per Table C402.4 or no less than VT-0.50, whichever is greater.		
NA	C402.4.1.1 C402.4.1.1.2 C502.	Vertical fenestration prescriptive alternate - High performance fenestration	Indicate high performance U-factors and SHGC values in fenestration schedules and WSEC envelope compliance reports		
NA			Indicate if an area-weighted U-factor is used for multiple high performance fenestration elements within the same fenestration category per Table C402.4; provide area-weighted U-factor calculation.		
NA	C402.4 C303.1.3	Skylight (horizontal fenestration) assembly performance factors	Indicate U-factors, SHGC and VT values in fenestration schedules and WSEC envelope compliance reports; indicate if values are NFRC or default		
NA	C402.4.3.4	Skylight (horizontal fenestration) assembly performance factors	Indicate if an area-weighted U-factor is used for multiple skylight types; provide area-weighted U-factor calculation.		
NA	C402.4.1 C502.2.2	Skylight maximum area	For skylight-to-roof ratio (SRR) calculation, provide total net sf area of roof and total rough opening sf area of all skylight assemblies in the building; each space conditioning category in the building shall be calculated separately; include SRR in WSE		
NA	C402.4.1 C402.1.5 C502.2.2	Skylight maximum area	If SRR exceeds the prescriptive maximum allowed, indicate compliance method applied is component performance calculation with target area adjustment.		

NA	C402.1.5	Wall / vertical fenestration and roof / skylight target area adjustment	If target area adjustment (TAA) will be used to account for vertical fenestration and/or skylight area in excess of the prescriptive maximum allowed, include TAA calculations in WSEC envelope compliance reports.		
NA	C402.4.2	Single story spaces requiring skylights	Provide list of enclosed, single story spaces located directly under a roof that exceed 2,500 sf floor area and have a ceiling height ≥ 15 ft for at least 75% of the ceiling area within the space; for each space identify the space use, floor area, floo		
NO			For each space required to comply with the skylight provision, provide calculations for percentage of conditioned floor area located within a toplit daylight zone (minimum is 50%); if exception is taken for spaces where the total floor area minus the side		
NA			Indicate compliance method applied to each space (minimum ratio of skylight area to toplit daylight zone area is ≥ 3%, OR minimum skylight effective aperture is ≥ 1% per Equation C4-5); provide compliance method calculations for each space		
NA			Indicate haze factor of skylight glazing material or diffuser.		
YES	C410.2	Walk-in and warehouse cooler and freezer envelope	Indicate insulation R-values for cooler and freezer wall and ceiling assemblies in plans and WSEC envelope compliance reports	Kitchen	
YES			Indicate cooler and freezer door insulation R-values in plans and WSEC envelope compliance reports; indicate method of minimizing air infiltration (strip doors, curtains, spring-hinged doors, etc); provide automatic door closure (or note exception taken)	Kitchen	
NA			For transparent reach-in doors and fixed windows, indicate number of glass panes (double or triple pane); indicate whether the interstitial spaces between panes is filled with inert gas or if panes are heat-reflective treated glass.		
ENVELOPE ASSEMBLIES - ADDITIONAL ENERGY EFFICIENCY MEASURE					
NA	C406.2.12	Enhanced thermal envelope performance	To comply with this additional efficiency measure, indicate thermal envelope compliance is via component performance; provide WSEC envelope compliance reports that demonstrate Proposed Total UxA is 15% lower than the Allowable (Code Target) Total UxA.		
ENVELOPE ASSEMBLIES - LOAD MANAGEMENT MEASURES					

NA	C406.3.3	Automated shading	To comply with this additional efficiency measure, provide calculations that demonstrate window-to-wall ratio (WWR) on south & west facing exposures exceed 20%; indicate method of shading (movable exterior shading or dynamic glazing) on plans for all sunl		
NA	C406.3.3	Automated shading	Indicate automatic controls are connected to a central DDC system having digital input capable of being activated by an external utility signal; where utility real-time demand or pricing program exists, indicate system configured to utilize this signal; o		
NA	C406.3.7	Building thermal mass	To comply with this additional efficiency measure, indicate building includes mass wall and floor assemblies with indoor facing mass surfaces that communicate directly with the conditioned indoor air (wall board and hard surface flooring are permitted wit		
NA	C406.3.7	Building thermal mass	Indicate HVAC systems serving areas with building thermal mass are configured with summer mode night flush sequence control of air economizers to pre-cool the building during unoccupied periods		
NA	C406.3.7	Building thermal mass	Indicate automatic controls are connected to a central DDC system having digital input capable of being activated by an external utility signal; where utility real-time demand or pricing program exists, indicate system configured to utilize this signal; o		
AIR BARRIER & AIR LEAKAGE TEST					
YES	C402.5.1.1	Air barrier construction and sealing	Identify location and provide diagram of continuous air barrier in plans and sections	A4.1	
YES			Provide details for all joints, transitions in materials, penetrations in air barrier and note method of sealing (caulked, gasketed, or other approved method)	G0.1	
NA	C402.5.5 C402.5.1.1	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, do		
NA			Indicate walls, floor and ceiling of the room envelope are insulated to the same level required for an exterior envelope; indicate combustion air ductwork that passes through conditioned space is provided with at minimum R-16 insulation.		
YES	C402.5.6	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 on plans	A2.11, A2.12	

YES			Indicate method of sealing of these openings (gasketing, weatherstripping, other sealing method); or exception taken.	A7.1 & G0.1	
YES	C402.5.7	Outdoor air intakes, exhaust and relief openings	Indicate locations of all stairway enclosure, elevator shaft and building pressurization relief openings, outside air intakes and exhaust openings on plans	A2.11, A2.12	
YES			Indicate in air barrier documentation and mechanical plans that all relief, outside air intake and exhaust openings shall be provided with dampers in accordance with Mechanical Section C403.7.8.	Mech	
YES	C402.5.10	Recessed lighting in building envelope	Indicate method of sealing between light fixture housing and wall or ceiling	G0.1	
YES			Indicate in air barrier documentation and lighting fixture schedules that all recessed lighting fixtures shall be IC rated and have an air leakage rating not greater than 2 cfm per ASTM E283 test.	G0.1	
NA	C402.5.8	Loading dock seals	Indicate weather seal at cargo and loading dock doors.		
NA	C402.5.9	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		
NA			Indicate locations of all building entrances and exit-only doors provided with an air curtain in lieu of a vestibule; indicate air curtain performance complies with requirements per C402.5.9 Exception 7		
NA			Indicate exception and criteria utilized for all building entrances and exit-only doors that do not have a vestibule or air curtain		
NA			For unconditioned vestibules, indicate which vestibule envelope assembly (interior or exterior) complies with the thermal envelope performance requirements for a conditioned space.		
YES	C103.2 C402.5.1.2C 402.5.1.2.1	Building enclosure air leakage test	Indicate in project documents that building enclosure air leakage testing is required for WSEC compliance	G0.1	
YES			Provide area calculations that account for all six sides of the air barrier boundaries	A4.1	
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/ft2 (1.5 L/s*m2) at 0.3 in. wg (75 Pa)	G0.1	

NA			For a commercial or Group R occupancy area weighted test, indicate that tested portions of the building shall include all spaces directly under the roof, all spaces that have a building entrance, exposed floor, loading dock or are below grade plane, and representative above-grade areas that total ≥ 25% of the building total above-grade wall area; indicate in project documents that the weighted average air leakage rate of the building thermal envelope shall not exceed 0.25 cfm/ft2 (1.27 L/s*m2) when measured at a pressure differential of 0.3 in. wg (75 Pa).		
NA			For a Group R occupancy building where dwelling units, sleeping units or other condition spaces are accessed directly from the outdoors, indicate that each testing unit, or a representative sampling of units, shall be tested separately via an un-guarded blower door test; indicate in project documents that the weighted average air leakage rate of all testing units combined shall not exceed 0.25 cfm/ft2 (1.27 L/s*m2) when measured at a pressure differential of 0.2 in. wg (50 Pa).		
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, i		
YES			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	G0.1	
AIR LEAKAGE TEST - ADDITIONAL ENERGY EFFICIENCY MEASURES					
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		
NA	C406.2.13 C406.2.13.2	Enhanced reduced air leakage	To comply with this additional efficiency measure, indicate in project documents that the measured air leakage rate of the building thermal envelope for the total conditioned floor area of the whole building or fully isolated building addition or tenant space, shall not exceed 0.0825 cfm/ft2 (0.419 L/s*m2) when measured at a pressure differential of 0.3 in. wg (75 Pa); all documentation requirements per C103.2 and C402.5.1.2 apply.		
ELEVATORS - ADDITIONAL ENERGY EFFICIENCY MEASURE					

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

NA	C406.2.18	Efficient elevator equipment	For buildings ≥ 3 stories above grade, to comply with this additional efficiency measure identify on plans which floors are served by elevators that are rated ISO 25745-2 Energy Efficiency Class A; if not all floors are served by this elevator class, p		
KITCHEN & LAUNDRY - ADDITIONAL ENERGY EFFICIENCY MEASURES					
NA	C406.2.14	ENERGY STAR commercial kitchen equipmentï¿½	Indicate building area that this additional efficiency measure is being applied to is Group A-2 or other occupancy where the primary business requires the use of commercial kitchen equipment; include kitchen equipment schedule on plans; indicate project i		
NA	C406.2.15	ENERGY STAR kitchen appliances serving Group R-1 & R-2	For Group R-1 & R-2 occupancies, to comply with this additional efficiency measure indicate ≥ 90% of all residential dishwashers, refrigerators and freezers specified are ENERGY STAR Most Efficient qualified models; include kitchen equipment schedule o		
NA	C406.2.16	ENERGY STAR in-unit laundry appliances serving Group R-2	For Group R-2 occupancies, to comply with this additional efficiency measure indicate ≥ 90% of all in-unit residential clothes washers and dryers specified are ENERGY STAR Most Efficient qualified models; include laundry equipment schedule on plans; if		
NA	C406.2.17	ENERGY STAR heat pump clothes dryers serving Group R-1 & R-2	For Group R-1 & R-2 occupancies, to comply with this additional efficiency measure indicate ≥ 90% of all clothes dryers specified are ENERGY STAR qualified heat pump dryers; includes dryers located in-unit and within central multi-family use laundry ro		
ENVELOPE ALTERATIONS					
NA	C503.1	Roof alteration - insulation	For a roof alteration where existing ceiling cavities are exposed, indicate cavities are insulated to full depth at a minimum nominal value of R-3.0 per inch.		
NA			For a roof covering replacement where insulation is installed entirely above the roof deck, or the existing roof contains no insulation, 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 a 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 tar		
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 a		
NA	C103.2 C103.6.3 C505.1 C505.4	Change in space conditioning or occupancy envelope compliance path	For areas under-going a change in space conditioning or occupancy, indicate envelope thermal performance compliance path applied to the building alteration area (prescriptive compliance or component performance with 110% target UxA allowance); provide cor		
NA	C103.2 C103.6.3 C505.1 C505.4	Change in space conditioning or occupancy envelope compliance path	If complying via total building performance with 110% allowance, provide a list of all proposed envelope component types, areas and U-values in energy model documentation.		
PROJECT CLOSE OUT					
YES	C103.6	Documentation and submittal requirements	Indicate in plans that project close out documentation is required including envelope record construction documents, applicable calculations, WSEC envelope compliance reports, and fenestration NFRC rating certificates.	G0.1	
YES	C401.3	Thermal envelope certificate	Indicate in plans that a thermal envelope certificate is required at project close out; indicate that information on this certificate shall include the rated R-values of all opaque assembly insulation, U-factors & SHGCs for all fenestration assemblies and	G0.1	
If "no" is selected for any question, provide explanation.					

Lighting, Motor and Electrical Requirements List, pg 1 of 13

The following information is necessary to check a permit application for compliance with the lighting systems, motors and electrical system 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:
WSF-International Village - 2021 WSEC
110 9TH AVE SW
Puyallup, WA 98371

Date: 2024-05-15

Applies	Code Section	Component	Compliance Information Required In Permit Documentation	Location in Documents	Building Department Notes
LIGHTING SCOPE					
	C103.1	Construction documents - General	For a shell & core or tenant space (first build-out) project, indicate if there is no lighting scope included in the project.		
	C103.1	Construction documents - General	For an alteration project, indicate if there is no lighting scope included in the project.		
NA	C405.1	Lighting in sleeping units	Indicate general compliance path for permanently installed luminaires in sleeping units - vacancy controls & luminaire efficacy; or lighting power allowance.	NA	
INTERIOR LIGHTING CONTROLS					
YES	C405.2	Interior lighting controls, general	For all interior lighting systems, indicate lighting control method (general lighting controls requirements or luminaire level lighting controls) on plans for all spaces and lighting zone(s) served; indicate exceptions applied to eligible spaces and light	SHEET E2.0 AND E2.1	
YES	C405.2.3	Manual controls	Indicate on plans the method of manual lighting control, location of manual control device and the area or specific application it serves.	SHEET E2.0 AND E2.1	
NA	C405.2.4 C405.2.4.1	Manual interior light reduction controls	For general lighting not controlled by occupancy sensors, indicate on plans which method of manual 50% lighting load reduction is provided, or indicate applicable exception.	NA	
YES	C405.2.1 C405.2.2	Method of automatic shut-off control	Indicate on plans the method of automatic shut-off control during unoccupied periods (occupancy sensor or time switch) for all lighting zones.	SHEET E2.0 AND E2.1	
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	SHEET E2.0 AND E2.1	
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	
NA	C405.2.1.2	Occupant sensor controls - warehouse storage areas & library stacks	Indicate each aisleway within a warehouse or library stack space designated as a separate zone that is independently controlled	NA	

NA			Indicate occupant sensors are configured to automatically reduce lighting power by ≥ 50% when 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 occupie	NA	
NA	C405.2.1.2	Occupant sensor controls - warehouse storage areas & library stacks	Indicate method of automatic 100% shut-off (occupancy sensor or time switch)	NA	
NA	C405.2.1.3	Occupant sensor controls - open plan office areas	For open plan office areas larger than 300 sf, indicate all general lighting control zones are ≤ 600 sf	NA	
NA	C405.2.1.3	Occupant sensor controls - open plan office areas	Indicate all general lighting control zones are provided with vacancy controls that are configured to reduce lighting power by not less than 80% when the zone is unoccupied and turn luminaires 100% off when the control zone is unoccupied; indicate unoccup	NA	
NA	C405.2.1.4	Occupant sensor controls - enclosed fire-rated stairwells	Indicate stairway lighting is provided with occupancy sensor controls that reduce lighting power by not less than 50% when the stairway in unoccupied and restore lighting to 100% when it is occupied.	NA	
NA	C405.2.1.5	Occupant sensor controls - corridors	Indicate corridor lighting is provided with occupancy sensor controls that reduce lighting power by not less than 50% when the corridor is unoccupied.	NA	
YES	C405.2.2.1	Automatic time switch controls	Indicate spaces on plans where time switch controls are configured to turn luminaires 100% off during unoccupied hours	SHEET E2.0 AND E2.1	
NA			Indicate spaces on plans where time switch controls are configured to turn on lighting to full power versus 50% power	NA	
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 exceed 5,000 sf.	NA	
YES	C405.2.5.2 C405.2.5.4	Daylight zones - Sidelit zones	Indicate primary and secondary sidelit daylight zone floor areas on plans	SHEET E2.0 AND E2.1	
YES			For small vertical fenestration assemblies (rough opening less than 10% of primary daylight zone floor area) where daylight responsive controls are not required, provide fenestration area to daylight zone floor area calculation(s).	SHEET E2.0 AND E2.1	
NA			Indicate toplit daylight zone floor areas on plans.	NA	
YES	C405.2.5 C405.2.5.1	Daylight responsive controls	Indicate on plans all lighting zone(s) served by daylight responsive controls; indicate that the area served by each control device does not exceed 2,500 SF	SHEET E2.0 AND E2.1	

YES			Identify sidelit and toplit daylight zones that are not provided with daylight responsive controls and the exception(s) that apply	SHEET E2.0 AND E2.1	
NA	C405.2.5.1	Daylight responsive controls	Indicate on plans that all daylight responsive controls provide continuous dimming to ≤15% full light output	NA	
YES	C405.2.5.1	Daylight responsive controls	Indicate that daylight responsive controls are configured to completely shut off all controlled lighting fixtures within the lighting zone.	SHEET E2.0 AND E2.1	
NA	C405.2.6	Additional controls - Specific application lighting controls	Identify spaces and lighting fixtures on plans that require specific application lighting controls per this section.	NA	
NA	C405.2.6, Items 1.1 thru 1.6	Additional lighting controls for display, accent & supplemental task lighting	Indicate on plans that all display, accent and supplemental task lighting fixtures are controlled independently from general area lighting	NA	
NA	C405.2.6, Items 1.1 and 1.2	Display and accent lighting	For display and accent lighting fixtures, including lighting fixtures added per the C405.2.2.1 additional interior lighting power allowance, indicate on plans the separate manual controls for these fixtures and the type of automatic off controls (occupanc	NA	
NA			For display case lighting fixtures, indicate on plans the separate manual controls for these fixtures and the type of automatic off controls (occupancy sensor or time-switch)	NA	
NA	C405.2.6, Item 1.4	Supplemental task lighting	For supplemental task lighting fixtures including under-shelf or under-cabinet lighting, indicate on plans the separate manual controls for these fixtures and the type of automatic off controls (occupancy sensor or time-switch)	NA	
YES	C405.2.6, Item 1.5	Lighting equipment for sale or demonstration	For lighting equipment for sale or demonstration, indicate on plans the separate manual controls for these fixtures and the type of automatic off controls (occupancy sensor or time-switch)	SHEET E2.0 AND E2.1	
NA			For exhibit lighting fixtures in galleries, museums and monuments, indicate on plans the separate manual controls for these fixtures and the type of automatic off controls (occupancy sensor or time-switch).	NA	
NA	C405.2.6, Item 2	Permanently installed lighting in sleeping units	Indicate method of automatic off control of all installed luminaires in sleeping units (vacancy or captive key card control); also refer to Receptacles.	NA	

NA	C405.2.6, Item 3	Lighting for non-visual applications	For lighting serving non-visual applications (food warming and lighting for life support of nonhuman life forms), indicate on plans that lighting fixtures are controlled independently from both general area lighting and other lighting applications within	NA	
NA			Indicate on plans separate manual controls for non-visual lighting application fixtures and applicable automatic lighting controls; indicate that the area served by each control device does not exceed 4,000 sf.	NA	
NA			For task lighting that serves medical & dental purposes, indicate on plans that lighting fixtures are provided with manual control that is independent from general area lighting.	NA	
YES	C405.2.6, Item 5	Means of egress lighting	Identify all means of egress lighting fixtures on plans including fixtures that function as both normal and emergency illumination	SHEET E2.0 AND E2.1 (SHADED FIXTURES AND BUG-EYES)	
YES			Provide calculation for total lighting power density (LPD) of all means of egress lighting fixtures; if total LPD is ≥ 0.01 Watts/SF, indicate on plans the method of automatic shut-off control during unoccupied periods (emergency relay & occupancy sens	E0.1	
NA	C405.2.8	Advanced lighting controls in open office areas	For open office areas ≥ 5,000 sf, indicate which advanced lighting control system is provided (luminaire level lighting controls or networked lighting controls).	NA	
NO	C405.2.8.1	Luminaire level lighting controls (LLLC)	Where LLLC are provided to comply with C405.2.8, or provided as the alternate lighting controls compliance method per C405.2, or to comply with C406.2.4.2 Enhanced digital interior lighting controls; provide sequence of operations that describes required	NA	
NO	C405.2.8.1 C405.2.8.3	Luminaire level lighting controls (LLLC)	Indicate on plans that each LLLC luminaire is configured with occupancy sensing control functions (including C405.2.1.3 requirements for open office areas) and continuous full range dimming controls to brighten or dim lights based on occupancy and availab	NA	
YES	C405.2.8.2	Networked lighting control (NLC)	Where NLC are provided to comply with C405.2.8, or to comply with C406.2.4.2 Enhanced digital interior lighting controls; provide sequence of operations that describes required NLC capabilities and performance parameters	GENERAL NOTES ON E0.2	
NO	C405.2.8.2 C405.2.8.3	Networked lighting control (NLC)	Indicate on plans that each NLC luminaire is individually addressable or document exception applied; Indicate on plans that each NLC luminaire is configured with occupancy sensing control functions (including C405.2.1.3 requirements for open office areas)		

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

NO	C405.8.3	High end trim	Where high end trim is required, luminaires shall be initially configured to limit maximum lumen output or lighting power to 85% or to the target design lighting power.		
INTERIOR LIGHTING CONTROLS - ADDITIONAL ENERGY EFFICIENCY MEASURE					
NA	C406.2.4.2	Enhanced digital interior lighting controls	To comply with the enhanced interior lighting controls measure, provide calculations that demonstrate that lighting in ≥ 50% of the project floor area is provided with LLLC (C405.2.8.1) or NLC (C405.2.8.2) controls with high end trim (C405.2.8.3)		
NA			Where LLLC is provided, indicate on plans that each LLLC controlled luminaire is configured with integral sensors; where NLC is provided, indicate on plans that each NLC controlled luminaire is configured to be independently addressable; provide sequence		
NA	C406.2.4.1	Enhanced lighting controls in Group R-2	In Group R-2 occupancies, indicate on plans a master control at the main entrance to each dwelling or sleeping unit that switches off all lights and switched receptacles (may be two controls, one for lights and the other for receptacles); indicate on plan		
INTERIOR LIGHTING CONTROLS - LIGHTING LOAD MANAGEMENT MEASURE					
NO	C406.3.1	Interior lighting DDC controls & real-time demand response	To comply with the interior lighting load management measure, indicate automatic lighting controls are connected to a central DDC system capable of activation by an external utility signal; where utility real-time demand or pricing program exists, indicat		
NO	C406.3.1	Interior lighting power reduction controls	Indicate lighting controls are configured to gradually reduce by continuous dimming the interior general area lighting power by ? 20% in response to a peak demand signal; calculate the percentage of total building floor area served by load management ligh		
NA	C406.3.1	Warehouse & retail storage interior lighting power reduction controls	For warehouse & retail storage areas, indicate method of interior general area lighting power reduction (continuous dimming by ? 20%; switching off ? 25% of lighting power).		
EXTERIOR LIGHTING CONTROLS					
YES	C405.2.9 C405.2.9.1 C405.2.9	Exterior lighting controls	For all exterior lighting, indicate on plans automatic controls (either daylight sensing or astronomic time clock) configured to turn lighting off when daylight is present; or indicate exception applied.	SHEET E2.0 AND E2.1	
NA			For exterior building facade & landscape lighting, indicate that controls are configured to turn this lighting off when daylight is present for a minimum of 6 hours per night, or from 1 hour after closing to 1 hour before opening per the occupancy schedul		

NA			For outdoor parking area (not parking garage) luminaires that are mounted ≤ 24 feet high and are rated at ≥ 40 watts, indicate that controls are configured to turn this lighting off when daylight is present; in addition, indicate controls are config		
NA			For exterior lighting other than building facade, landscape and outdoor parking area lighting, indicate controls are configured to reduce lighting power by at least 50% from 12am-6am, or 1 hour after closing to 1 hour before opening, or when no activity i		
NA	C405.2.10	Parking garage lighting control	Indicate all interior parking garage lighting fixtures are provided with time switch controls (per C405.2.2.1) or occupancy sensor controls (per C405.2.1.1); indicate controls are configured to reduce lighting power by at least 30% when no activity is det		
NA	C405.2.10	Parking garage lighting control - Perimeter lighting zones	For parking garage lighting fixtures located within 20 feet of perimeter wall openings, indicate on plans that daylight sensing controls are configured to reduce lighting power by at least 50%, or exception applied		
NA	C405.2.10	Parking garage lighting control - Eye adaptation lighting	For lighting fixtures at vehicle entrances & exits, indicate on plans that daylight sensing controls are configured to reduce lighting power by at least 50% from sunrise to sunset.		
NA	C405.3	Lighting for plant growth and maintenance	For permanently installed lighting fixtures used specifically for plant growth and maintenance, indicate that the photosynthetic photon efficacy measured at the lamp or luminaire is ≥ 1.7 ï¿½mol/J in greenhouses and ≥ 1.9 ï¿½mol/J in all other indoo		
NA	C405.5.4	Exterior gas-fired lighting appliances	Indicate ignition system is a method other then continuously burning pilot light.		
INTERIOR & EXTERIOR LIGHTING CONTROL CIRCUITS					
YES	C405.2.7	Area controls - Master control switches	Indicate location(s) of lighting master control switch(es) intended to control multiple independent switches; a circuit breaker may not be used as a lighting master control switch	SHEET E2.0 AND E2.1	
YES			Verify the maximum power controlled by any single lighting control switch or automatic control device is no more than a 20 amp circuit loaded to ? 80%.		
INTERIOR LIGHTING POWER & EFFICACY					
YES	C405.4.1	Total connected interior lighting power	Include all luminaires in interior lighting fixture schedule; indicate fixture types, lamps, ballasts and rated watts per fixture; include rated wattage of lamps for luminaires with lamps connected directly to building power; include wattage limit of tran	SHEET E0.1	

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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.		
NA	C405.1.1	Lighting in dwelling units	Include all permanently installed luminaires in dwelling units in interior lighting fixture schedule; include luminaire lighting power and efficacy (lumens)		
NA			Include all permanently installed luminaires in sleeping units in interior lighting fixture schedule; include luminaire lighting power or efficacy (lumens) depending on compliance path taken per C405.1		
NA			For all permenantly installed luminaires, indicate in interior lighting fixture schedule that rated lamp efficacy is ≥ 65 lumens/watt or luminaire efficacy is ≥ 45 lumens/watt.		
YES	C405.4.2	Interior lighting power allowance (LPA)	Indicate which interior LPA method is applied to the entire building (Building Area Method or Space-by-Space Method); indicate LPA applied is Space-by-Space Method for partial building projects and for buildings with unfinished spaces.	BUILDING AREA	
INTERIOR LIGHTING POWER CALCULATION - INDICATE COMPLIANCE PATH TAKEN					
YES	C405.4.2.1	Building Area Method	Demonstrate that total proposed interior lighting wattage per building does not exceed the sum of the maximum allowed wattages for all building area types; identify locations of building areas on plans; provide WSEC interior lighting compliance reports.	COMPLIES	
NO	C405.4.2.2	Space-By-Space Method	Demonstrate that total proposed interior lighting wattage does not exceed the maximum allowed wattage; identify locations of space types on plans, including additional allowance retail display areas and areas with display, highlight and decorative lightin		
INTERIOR LIGHTING POWER & EFFICACY - ADDITIONAL ENERGY EFFICIENCY MEASURES					
YES	C406.2.3.1 C406.2.3.2	Reduced interior lighting power density (LPD)	To comply with the reduced interior LPD additional energy efficiency measure, demonstrate that total proposed interior LPD wattage is 10% or 20% lower than the total interior LPA wattage for the area the reduced lighting power measure is being applied to	10% REDUCTION	

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NA	C406.2.3.3	Reduced interior LPD - Dwelling & sleeping unit lamp efficacy	To comply with reduced interior LPD additional energy efficiency measure for a building with dwelling units or sleeping units, indicate in interior lighting fixture schedule that all permenantly installed luminaires have a rated lamp efficacy ≥ 90 lume		
EXTERIOR LIGHTING POWER & EFFICACY					
YES	C405.5.2	Total connected exterior lighting power	Include all luminaires in exterior lighting fixture schedule; indicate fixture types, lamps, ballasts and rated watts per fixture; include rated wattage of lamps for luminaires with lamps connected directly to building power; include wattage limit of tran	E0.1	
NA			Identify exterior lighting applications eligible for lighting power exemption on plans and in WSEC exterior lighting compliance reports; indicate the exception applied.		
YES	TABLE C405.5.3(1)	Exterior lighting zone	Indicate the building exterior lighting zone as specified by the AHJ.		
YES	C405.5.1	Exterior building grounds lighting	For building grounds lighting fixtures rated at greater than 25 watts, indicate in exterior lighting fixture schedule that fixtures have a rated lamp efficacy ≥ 100 lumens/watt or indicate the exception applied.	E0.1	
EXTERIOR LIGHTING POWER CALCULATION					
YES	C405.5.3	Exterior lighting power allowance (LPA)	Demonstrate that total proposed exterior surface lighting wattage does not exceed the maximum allowed wattage (including base site allowance); identify locations of exterior surfaces on plans; provide WSEC exterior lighting compliance reports	COMPLIES	
NO			Demonstrate that total proposed wattage for each additional allowance exterior surface type does not exceed the LPA for the surface type (includes base site allowance remaining after C405.5.3 LPA calculation); identify locations of additional allowance ex		
LIGHTING SYSTEMS ALTERATIONS					
YES	C503.7.1	New lighting systems and controls	Where new interior or exterior lighting systems are installed within an existing building site, indicate new lighting controls comply with C405.2; indicate commissioning of lighting controls (C408.4) and lighting system energy end-use metering (C409.3) wi	SHEET E2.0 AND E2.1 AND E0.2	
NA	C503.7.2	Interior lighting & parking garage lighting alteration	Include all new luminaires in interior lighting fixture schedule in plans, provide same lighting fixture information as for new construction per C405.4.1 and C405.4.2		

NA			For alterations that add or replace ≥ 20% of luminaires within an interior space or parking garage, indicate which interior lighting power allowance (LPA) method is applied to the alteration project area (Space-by-Space Method for partial building alte		
NA			Demonstrate that total proposed interior lighting wattage (including existing-to-remain lighting wattage) within the alteration project area does not exceed the maximum allowed wattage (Space-by-Space Method) or the sum of the maximum allowed wattages for		
NA	C503.7.2	Interior lighting alterations (LPA) - Add/replace	For alterations that add or replace < 20% of luminaires in an interior space or parking garage, calculate total existing interior lighting wattage within the project area prior to the alteration		
NA	C503.7.2	Interior lighting alterations (LPD) - Add/replace	Demonstrate that total proposed interior lighting wattage (including existing-to-remain lighting wattage) within the alteration project area does not exceed the total existing interior lighting wattage prior to the alteration; provide WSEC interior lighti		
			Include all new luminaires in exterior lighting fixture schedule in plans, provide same lighting fixture information as for new construction per C405.5.2		
	C503.7.2	Exterior lighting alterations (LPA) - Add/replace &ge 20%	For alterations that add or replace ≥ 20% of exterior lighting wattage, indicate exterior lighting power allowance (LPA) calculated in the same manner as for new construction		
	C503.7.2	Exterior lighting alterations (LPD) - Add/replace &ge 20%	Demonstrate that total proposed exterior lighting wattage (including existing-to-remain lighting wattage) does not exceed the maximum allowed wattage; identify locations of surface types on plans, including additional allowance surfaces; provide WSEC exte		
	C503.7.2	Exterior lighting alterations (LPA) - Add/replace	For alterations that add or replace < 20% of exterior lighting wattage, calculate total existing exterior lighting wattage prior to the alteration		
	C503.7.2	Exterior lighting alterations (LPD) - Add/replace	Demonstrate that total proposed exterior lighting wattage (including existing-to-remain lighting wattage) does not exceed the total existing exterior lighting wattage prior to the alteration; identify locations of surface types on plans, including additio		
	C503.7.3	Interior lighting wiring & 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 & light reduction (C405.2.3 & C405.2.4); occupancy sens		

			Where new wiring is installed to serve new exterior luminaires and /or luminaires are relocated to a new circuit; indicate circuit power area controls (C405.2.7) are provided; indicate commissioning of exterior lighting controls (C408.4) will be provided,		
	C503.7.4	Lighting panel alterations	Where a new interior and/or exterior lighting panel is installed or an existing panel is moved (including all new raceway and conductor wiring), indicate all of the same interior lighting controls requirements as for wiring & circuiting alterations apply,		
	C503.7.5	Newly-created rooms	Where interior space(s) are reconfigured (permanently installed walls or ceiling-height partitions) to create new enclosed spaces, indicate the following manual and automatic lighting controls are provided (as applicable) - manual & light reduction (C405.		
	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) including additional allowance retail display areas and areas with display, highlight and decorative lighting		
			Demonstrate that total proposed interior lighting wattage (including existing-to-remain lighting wattage) within the alteration project area does not exceed the maximum allowed wattage (Space-by-Space Method) or the sum of maximum allowed wattage per each		
RECEPTACLES					
	C405.10	Automatic receptacle control	Provide schedule on electrical plans that lists the number of controlled and uncontrolled receptacles in each space where controlled receptacles are required - classrooms, enclosed offices, conference rooms, copy/print rooms, break rooms and individual wo		
			Identify all controlled and uncontrolled receptacles on electrical plans; indicate that ≥ 50% of all receptacles are provided with automatic controls in each space where they are required; include receptacle configuration such as spacing between contro		
			Indicate on plans the method of automatic control for each controlled receptacle zone (occupant sensor or programmable time-of-day control); indicate that the area served by each control device does not exceed 5,000 sf.		

	C405.2.6, 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	C405.7.1	Electric receptacles at dwelling unit gas appliances	In all designated appliance locations within dwelling units (kitchen cooking appliances, laundry and domestic water heating), indicate electric receptacles or junction box & circuit within 12 inches of the appliance location with sufficient capacity to se		
	C503.7.7	Electrical receptacle alerations	For alteration project areas ≥ 5,000 sf where electric receptacles are added or replaced, indicate receptacles are provided with automatic controls per C405.10, or exception applied.		
ELECTRIC MOTORS					
	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.		
ELEVATORS, ESCALATORS & MOVING WALKS					
	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 and moving walks comply with ASME A17.1/CSA B44 and are provided with automatic controls that are configured to reduce operational speed to the minimum permitted when not in use, or exception applied.		
	C405.9.3	Escalator energy recovery	Indicate escalators are designed to recover electrical energy when resisting overspeed in the down direction.		
RENEWABLE ENERGY					
NA	C411	Renewable Energy	For new construction, including additions, change of use, and change of occupancy, with floor area ≥ 10000sf; provide documentation of on-site renewable energy capacity; provide calculations supporting applicable exceptions; if qualifying by exception provide an accounting for the additional Additional Energy Efficiency Credits that will be required		

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RENEWABLE ENERGY - ADDITIONAL ENERGY EFFICIENCY MEASURE					
NA	C406.2.5	On-site and off-site renewable energy	To comply with the renewable energy measure, provide an accounting of on-site and any contracted off-site renewable energy capacity; for all off-site sources, indicate the C411.2 renewable energy source type, energy factor, and the rated capacity and calculated code credited kW; indicate on-site renewables used to comply with C411 or for a code exception elsewhere in the code; with the remaining renewable energy provide Equation 4-17 calculations showing the achieved credits and that the achieved credits are ? the base credits for the measure		
NA	C406.2.5	On-site and off-site renewable energy	Provide documentation that all off-site renewable energy systems comply with Sections C411.2.2 and C411.2.3 including all contracts, and the ownership and location of off-site generation		
ELECTRIC ENERGY STORAGE - LOAD MANAGMENT MEASURE					
NA	C406.3.4	Electric energy storage	To comply with the electrical energy storage load managment measure, indicate automatic controls shall store electricity in electric storage devices during nonpeak periods and use stored energy during peak periods; Document the total electric storage device capacity; indicate it is ? 5 Wh/sf (58 Wh/sm) of gross building area; for proration provide the proration calculations supporting the claimed credit		
GENERAL ELECTRICAL SYSTEMS					
	C405.6	Electrical transformers	Include electrical transformer schedule on electrical plans; indicate transformer type, size (kVA), efficiency, or exception applied.		
	C405.7	Dwelling unit electrical energy consumption	Indicate on electrical plans that each dwelling unit in a Group R-2 building has a separate electrical energy meter, or exception applied.		
YES	C405.11	Voltage drop	Indicate wire conductors are sized so that the maximum voltage drop from customer service conductors to branch circuit conductors is &le 5%.		
NA	C405.12	Alternating current-output uninterruptible power supplies (AC-output UPS)	Indicate in plans that AC-output UPS systems serving computer rooms meet or exceed the calculation and testing requirements identified in ENERGY STAR Program Requirements for Uninterruptible Power Supplies (UPS) ? Eligibility Criteria Version 2.0.		
COMMISSIONING (CX)					

	C408.4	Scope of electrical power & lighting systems commissioning	Indicate that all electrical systems (receptacles, transformers, motors, vertical & horizontal transportation) for which the WSEC requires control functions and/or configuration to perform specific functions are required to be commissioned; include docume		
			Where total building lighting load is ≥ 10 kW or the total lighting load of luminaires requiring daylight sensing and/or occupancy control is ≥ 5 kW, indicate that all automatic lighting control systems are required to be commissioned; or provide ca		
	C408.1.1	Commissioning requirements in construction documents	Indicate Cx requirements in plans and specifications for all applicable electrical and lighting control systems		
	C408.1.2 C103.6.3	Commissioning requirements in construction documents	General summary of Cx plan shall include the following: 1) Narrative description of activities; 2) Responsibilities of the Cx team; 3) Schedule of activities including verification of project close out documentation (C103.6); 4) Conflict of interest plan		
	C408.1.3 C408.1.4	Commissioning requirements in construction documents	Include in general summary that a Cx project report and Cx 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 electrical equipment and controls during all modes of operation, including interfacing between new and existing-to-remain systems.	SHEET E0.2	
PROJECT CLOSE OUT					
YES	C103.6.3	Documentation requirements	Indicate in plans that project close out documentation is required; indicate information shall include WSEC lighting compliance reports that document all interior lighting areas and space types, exterior lighting surface types, interior/exterior lighting	SHEET E0.2	

If "no" is selected for any question, provide explanation.

The following information is necessary to check a mechanical permit application for compliance with the mechanical systems and equipment 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:
International Village - 2021 WSEC
110 9th ave SW
Puyallup, WA 98371

Date: 2024-05-06

Applies	Code Section	Code Provision	Compliance Information Required In Permit Documentation	Location in Documents	Building Department Notes
SCOPE					
	C103.6.3	Construction documents - General	For a shell & core or tenant space (first build-out) project, indicate if there is no mechanical scope included in the project.		
	C103.1	Construction documents - General	For an alteration project, indicate if there is no mechanical scope included in the project.		
PERFORMANCE CRITERIA & SYSTEM DESIGN					
NA	C403.1	Exempt process equipment	Identify equipment used by manufacturing, industrial or commercial processes that are not for space conditioning or maintaining comfort and amenities for occupants; identify provisions applicable to this equipment per C403.1 exception		
	C403.1.1	HVAC total system performance ratio (TSPR)	For systems serving office (including medical office), retail, library, or education occupancies, or serving R-2 dwelling units or common areas, provide a TSPR report that demonstrates the proposed design ratio is equal to or greater than the standard reference design ratio, or exception applied		
YES	C403.1.2	Calculation of heating and cooling loads	Provide load calculations in accordance with ASHRAE Std 183 or equivalent, using design parameters per C302 and Appendix C; include load adjustments to account for energy recovery	Attached	
NA	C403.1.3	Data centers	Provide documentation that demonstrates that data center systems comply with the maximum allowed Design MLC and Annualized MLC per ASHRAE 90.4-2019.	MH101	
YES	C403.2.1 C403.4.2.2	Zone isolation	If there are HVAC zones that are intended to be occupied non-simultaneously, identify isolation zone areas on plans; if multiple zones intended to be occupied simultaneously will be combined into a single isolation zone, include on plans that the combined zone area does not exceed 25,000 sf and does not include more than one floor; or exception applied	MH101	
YES	C403.2.1 C403.4.2.2	Zone isolation	Indicate locations of associated zone isolation dampers in HVAC and DOAS distribution systems and exhaust systems	MH701	
YES	C403.2.1 C403.4.2.2	Zone isolation	Refer to HVAC Controls section in Requirements List for applicable automatic setback and shutdown controls requirements	MH701	
EQUIPMENT SELECTION & PERFORMANCE					

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NA	C403.3.2.6	Electric heating / cooling equipment	Verify all packaged and split electric equipment with > 6,000 Btu/h cooling capacity and any amount of heating is a heat pump with reverse-cycle defrost and operates in heat pump mode when outdoor air temperature is > 25 degree F; include in equipment schedules		
NA	C403.3.2.6	Electric heating / cooling equipment	Verify electric heat in the main supply duct before VAV boxes served by cooling only systems > 6,000 Btu/h is a heat pump with reverse-cycle defrost and operates in heat pump mode when outdoor air temperature is > 25 degree F; include in equipment schedules.		
NO	C401.3 C403.1.4	HVAC Heating Fuel	For all heating equipment, identify whether it qualifies for the C403.1.4 general prescriptive path, a C403.1.4 exception, or for the C401.3 Fossil Fuel Heating path; for equipment qualifying for the C403.1.4 general prescriptive path by exception, document the exception and provide supporting information	Please describe compliance path. Marked-up document: Building Energy requirements, pg 28 of 58.	
NA	C401.3 C403.1.4 C406.1	HVAC Heating Fuel	For projects with equipment utilizing the C401.3 Fossil Fuel Heating path, provide an accounting of the total heating capacity and the C401.3 equipment heating capacity for each distinct area utilized in the C406 calculation.		
NA	C403.1.4	HVAC Heating Fuel, exception 2 Dwelling and sleeping units	To qualify for exception 2, provide a list of each separate space in the dwelling or sleeping unit, indicate the number of exterior walls the space has, the presence of fenestration, and the allowed watts; document the heat provided in each space is below the allowed capacity in the space		
NA	C403.1.4	HVAC Heating Fuel, exception 5 Air-to-air heat pumps	To qualify for exception 5, provide documentation that the heat pump is sized to meet the heating load at an outdoor air temperature ≤ 32°F and has a ratio of heating capacity at 47°F to supplemental resistance heat capacity ≥ 2.0 in zone 4 and ≥ 1.0 in zone 5; indicate unit control by either a thermostat designed for heat pump use, a multistage thermostat with an outdoor air temperature thermostat wired to energize supplemental heat only on the last stage or heating and when the outdoor air temperature is ≤32°F, or equipment is NAECA rated with integral control		

NA	C403.1.4	HVAC Heating Fuel, exception 6 Air-to-water heat pumps	To qualify for exception 6, provide documentation that building heating is provided by air-to-water heat pumps with a heating capacity ≥75% of the design heating load at 29°F; indicate controls configured to lock out supplemental heat when the outdoor air temperature is ≥36°F unless the hot water supply set point has not been maintained for 20 minutes; indicate controls configured to use the compressor as the first stage of heating down to the compressor minimum rated temperature except during start up and defrost		
NA	C403.1.4	HVAC Heating Fuel, exception 7 Ground source heat pumps	To qualify for exception 7, provide documentation building heating provided by ground source heat pumps; ; indicate controls configured to lock out supplemental resistance heat when the source-side entering water temperature is ≥42°F unless the hot water supply set point has not been maintained for 20 minutes; indicate controls configured to use the compressor as the first stage of heating; indicate the ground source heat exchanger shall be sized so heat pump annual output is ≥70% for the total annual heating output based upon the final year of a 30-year simulation using IGSHPA listed software		
NA	C403.1.4	HVAC Heating Fuel, exception 8 Small systems	To qualify for exception 8, document the capacity or area served for the electric resistance and fossil fuel systems and demonstrate that it is ≤ 5% of the building total heating capacity or area		
NA	C401.3.6	Electrification readiness	For all equipment following the fossil fuel path, indicate on plans that spare electrical branch circuit and service entrance conduit is installed and sized to support future conversion of fossil fuel heaters to heat pumps; indicate on plans additional room in the electric room and transformer rooms and vaults be provided and sized to accommodate future service upgrades for conversion of all fossil fuel equipment to heat pumps.		
YES	C403.3.1	Equipment and system sizing	Indicate that output capacities of heating and cooling equipment and systems are no greater than the smallest available equipment size that exceeds the calculated loads; note exceptions applied	MH601	
YES	C403.3.2 C403.9.1	HVAC equipment performance requirements (efficiency)	Provide equipment schedules on plans and in WSEC mechanical equipment compliance reports; indicate equipment type, calculated loads, capacity, rated and WSEC minimum efficiencies for all heating and cooling equipment; include supply and ventilation air cfms and operating hours for all air systems; identify heating and cooling equipment that does not have a corresponding WSEC minimum efficiency (manufacturer rated)	MH601	

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YES	C405.8	Electric motor efficiency	List all motors ≥ 1/12 hp (that are not integral to a rated piece of equipment) in the mechanical or electrical equipment schedules on plans; indicate motor type and applicable efficiency table, hp, rpm, number of poles and rated efficiency, or exception applied	MH601	
NA	C403.3.2.1	Gas and oil-fired forced air furnace and unit heaters	For gas and oil fired forced air furnaces with capacity ≥ 225,000 Btu/h and all unit heaters, indicate in equipment schedule intermittent ignition or IID, flue or draft damper, and rated jacket loss		
NA	C403.3.3	Hot gas bypass limitation for DX cooling equipment	For cooling equipment with hot gas bypass, provide either multiple step unloading or continuous capacity modulation; indicate bypass capacity per Table C403.3.3		
NA	C403.3.2.7	Humidification	For cooling systems with humidification equipment that are also required to have air economizer, indicate humidifier is adiabatic (direct evaporative or fog atomization), or exception applied		
	C403.3.2	Hydronic equipment	Refer to Requirements List section Hydronic Systems - Equipment Selection & Performance for selection criteria specific to chillers and boilers		
NA	C403.9	Heat rejection equipment	Refer to Requirements List section Heat Rejection Systems - Equipment Selection & Performance for selection criteria specific to cooling towers, dry coolers and condensers (air-cooled and evaporative)		
NA	C403.13	Dehumidification in spaces for plant growth	Indicate dehumidification equipment serving plant growth spaces and which C403.13 compliance option is met		
EQUIPMENT SELECTION & PERFORMANCE - DEDICATED OUTSIDE AIR SYSTEMS (DOAS)					
NA	C403.3.5.5 C403.7.3	DOAS supplemental heating and cooling	If DOAS has heating capability, indicate heating controlled to limit supply air to ≤ 55°F. If heating is used for defrost control, indicate heat is to be locked out when outdoor air temperature is ≤ 35°F, modulates to 10% of peak capacity. Provide sizing calculations that show heating capacity sized at design temperatures to prevent damage to unit and heat supply air ≤ 55°F.		
NA	C403.3.5.5	DOAS supplemental heating and cooling	If DOAS has cooling capability, indicate cooling coil is used only for dehumidification only, is sized to meet the peak dehumidification requirement at design conditions, and is controlled to maintain supply air or zone relative humidity.		

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YES	C403.3.5 C403.3.5.4	Dedicated outdoor air systems	For buildings with occupancies required to comply with the DOAS provisions per Table C403.3.5, identify on plans all occupancies in the building and indicate which occupied spaces are required to have ventilation air delivered by a DOAS; or exception applied	MH101	
NA	C403.3.5 C403.3.5.4	Dedicated outdoor air systems	If natural ventilation exception is applied, identify these spaces on plans; indicate operable window area complies with IMC Section 402; provide documentation describing how required ventilation will be provided during all occupied hours, including during inclement weather		
NA	C403.3.5 C403.3.5.4	Dedicated outdoor air systems	If high efficiency VAV exception is applied, identify these spaces on plans; refer to Single Zone VAV section for Groups A-1, A-2 and A-3 occupancy classifications, or Multiple Zone VAV for other than Groups A-1, A-2 and A-3 (per Table C403.3.5)		
NA	C403.3.5 C403.3.5.6	Dedicated outdoor air systems	If compliance with the DOAS provisions is deemed to be impractical, provide documentation that demonstrates the alternate design strategy applied that achieves a comparable level of energy efficiency, as pre-approved by the AHJ		
NA	C403.3.5	Dedicated outdoor air systems	Refer to Requirements List section after Multiple-Zone Air Systems for High Efficiency Multiple-Zone VAV Systems exception to C403.3.5 DOAS		
NA	C403.3.5	Dedicated outdoor air systems	Refer to Requirements List section after High Efficiency Multiple-Zone Air Systems for High Efficiency Single-Zone VAV Systems exception to C403.3.5 DOAS		
NA	C403.3.5.1	DOAS energy recovery method and effectiveness	For all DOAS systems, indicate exhaust air ER method and basis of rated effectiveness (sensible or latent); indicate ≥ 68% sensible or ≥ 60% enthalpy recovery ratio at design conditions; or exception applied	EXCEPTION 1	
YES	C403.3.5.2	DOAS fan power	For DOAS with no fans or fan arrays with input power ≥ 1kW, indicate total system fan power does not exceed 1 watt per cfm	MH601	
NA	C403.3.5.2	DOAS fan power	For DOAS with any fans or fan arrays with input power ≥ 1kW, indicate total system fan power complies with fan power limitation per Section C403.8.1		
NA	C403.3.5.3	Heating / cooling system fan controls with DOAS	Indicate systems and equipment associated with the delivery of zone level heating and cooling (fans, hydronic pumps, primary air dampers, etc.) are configured to shut off, and central equipment is configured to turn down, when there is no call for heating or cooling in the zone they serve		

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YES	C403.3.5.3	Heating / cooling system fan controls with DOAS	If applying Exception to heating / cooling fans used for air mixing in the space during deadband periods, include fan watts per cfm in equipment schedule	MH601	
YES	C403.3.5.4	Decoupled DOAS supply air	Indicate method of delivery of DOAS supply air to the occupied space (directly into space, downstream of terminal heating / cooling coils); or exception applied	MH101	
NA	C403.6.5	Multiple zone DOAS	For DOAS serving multiple zones with DDC controls, indicate controls configured to reduce the volume of outdoor air in each zone independently when the zone is unoccupied; or exception applied		
ADDITIONAL ENERGY EFFICIENCY MEASURE - DEDICATED OUTSIDE AIR SYSTEMS (DOAS)					
	C406.2.2.6	High performance DOAS - Energy recovery effectiveness and fan power	For all building occupancies, to comply with this additional efficiency credit, demonstrate compliance withC403.3.5		
	C406.2.2.6	High performance DOAS - Energy recovery effectiveness and fan power	Indicate energy recovery sensible effectiveness of all DOAS is ≥ 80%		
	C406.2.2.6	High performance DOAS - Energy recovery effectiveness and fan power	For each system, indicate that total system fan power does not exceed 0.769 watts per cfm or is ≤ 80% of the fan power allowance for a constant volume system calculated per C403.8.1		
FANS AND FAN CONTROLS					
NA	C403.8.1.2	Fan power limitation	For all HVAC fan systems associated with conditioned space and containing 1 or more fans with electrical input ≥ 1 kW shall provide the total nameplate hp and the fan system electrical input power calculated per C403.8.1.2 in equipment schedules on project plans		
NA	C403.8.1.1	Fan power limitation	For all HVAC and DOAS systems associated with conditioned space with 1 or more fans with electrical input power ≥ 1 kW, provide fan system electrical input power calculations per Section C403.8.1.2 to verify it complies with fan power budget per Section C403.8.1.1		
NA	C403.8.2	Motor nameplate hp	For HVAC systems with total fan motor nameplate hp > 5hp, indicate fan motors specified are the smallest available motor hp size greater than fan bhp, note exceptions applied		

YES	C405.8	Fractional hp fan motors	For all fractional hp fan motors (1/12 - < 1 hp), indicate that motors comply with applicable WSEC efficiency tables; if motor type is not listed in an efficiency table, indicate whether fan has an electronically commutated motor, has motor rated efficiency of at least 70%, or exception applied	MH601	
NA	C403.8.3	Fan efficiency	For individual fans or fan arrays, indicate in equipment schedule that rated FEI for all applicable fans part of a variable-air volume system is ≥ 0.95 and ≥ 1.0 in all other systems, or exception applied; indicate these fans are sized at the design point of operation		
	C403.8.4	Low-capacity ventilation fans	For all ventilation system fans with motors ≤ 1/12 hp, indicate in equipment schedule the fan flow rate and efficacy (cfm/watt), or exception applied; refer to Table C403.8.4		
NA	C403.2.4	Variable flow capacity - fans	For fan motors ≥ 5 hp, indicate method of variable flow control (VSD or equivalent method) in equipment schedule, or exception applied		
NA	C403.8.5.1	Fan airflow control	For DX air handling units with cooling capacity ≥ 42,000 Btu/h and evaporative and chilled water air handling units with fan ≥ 0.25 hp, indicate whether system is single zone or multiple zone and related control method (cooling capacity controlled in response to space temperature, space temperature is controlled by modulating supply airflow, or both)		
NA	C403.8.5.1	Fan airflow control	For mechanical cooling systems (includes DX and chilled water coils) that control cooling capacity in response to space temperature - Provide a minimum of two stages of fan control; indicate minimum fan speed is ≤ 66% of full speed drawing ≤ 40% of full speed fan power during periods of low cooling or ventilation only		
NA	C403.8.5.1	Fan airflow control	For other mechanical cooling systems (includes DX and chilled water coils) that control space temperature by modulating airflow (in lieu of, or in addition to, controlling capacity in response to space temperature) - Provide fan controls for modulating supply airflow; indicate minimum fan speed is ≤ 50% of full speed drawing ≤ 30% of full speed fan power during periods of low cooling or ventilation only; or exception applied		
NA	C403.8.6	Large-diameter ceiling fans	Where provided, indicate large-diameter ceiling fans to be tested and labeled in accordance with AMCA 230.		
ADDITIONAL ENERGY EFFICIENCY MEASURE - IMPROVED HVAC TSPR					

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	C406.2.2.1	Improved HVAC TSPR	To comply with this additional efficiency credit, indicate systems are required to provide a TSPR report per C403.1.1; demonstrate that the proposed design ratio is at minimum 5% higher than the standard reference design ratio; for projects prorating the credit the TSPR report must show the proposed design exceeds the claimed increase used for proration		
ADDITIONAL ENERGY EFFICIENCY MEASURE - MORE EFFICIENT HVAC EQUIPMENT COOLING AND FAN PERFORMANCE					
	C406.2.2.2	More efficient cooling and fan performance	To comply with this additional efficiency credit, provide a list of all cooling equipment in the building or credit area and calculations that demonstrate (based on cooling output capacity) that 90% or more of all HVAC cooling equipment serving conditioned floor areas are listed in the tables of Section C403.3.2		
NA	C406.2.2.2 C406.2.2.2.1	More efficient cooling and fan performance	In addition to system selection requirement, demonstrate that 90% or more of all HVAC cooling capacity serving conditioned floor areas in the building or credit area is delivered by equipment at least 5% better than the listed WSEC efficiency, seasonal or annualized where available other wise use full load efficiency		
	C406.2.2.2 C406.2.2.2.1	More efficient cooling and fan performance	For projects prorating the credit in accordance with Equation 4-15 include calculations for equipment representing at least 90% of the cooling capacity in the building or credit area that demonstrate the capacity weighted average better than code efficiency; for equipment with multiple requirements the seasonal or annualized efficiency shall be used		
	C406.2.2.2 C406.2.2.2.3	More efficient cooling and fan performance	In addition to system selection and efficiency requirements, if fan energy is not included in equipment rating or if it is but the fan has been upsized from rated conditions, demonstrate fan power is ≤ 95% of the allowed fan power in Section C403.8.1.		
ADDITIONAL ENERGY EFFICIENCY MEASURE - MORE EFFICIENT HVAC EQUIPMENT HEATING PERFORMANCE					
NA	C406.2.2.3	More efficient HVAC equipment heating performance	To comply with this additional efficiency credit, provide a list of all heating equipment in the building or credit area and calculations that demonstrate that 90% or more of all HVAC heating capacity serving conditioned floor area is delivered by equipment listed in the tables of Section C403.3.2		

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NA	C406.2.2,3 C406.2.2.3.2	More efficient HVAC equipment heating performance	In addition to system selection requirement, demonstrate that 90% or more of all HVAC heating capacity serving the building or credit area is delivered by equipment at least 5% better than the listed WSEC efficiency, seasonal or annualized where available other wise use full load efficiency		
NA	C406.2.2.3 C406.2.2.3.2	More efficient HVAC equipment heating performance	For projects prorating the credit in accordance per Equation 4-16 include calculations for equipment representing at least 90% of the heating capacity serving the building or credit area that demonstrate the capacity weighted average better than code efficiency; for equipment with multiple code requirements the seasonal or annualized efficiency shall be used		
NA	C406.2.2.3 C406.2.2.3.2	More efficient HVAC equipment heating performance	In C402.1.1 low energy and C402.1.1.2 semi-heated spaces demonstrate that 90% of the heating capacity in the building or area is provided by electric infrared or gas-fired radiant equipment for localized heating applications.		
VENTILATION, EXHAUST & ENERGY RECOVERY					
NA	C403.7.1.2	Demand control ventilation design	For each required demand control ventilation system, indicate outdoor air automatically changes in response to a CO2 sensor and utilizes a variable speed fan control to reduce systems flow; or exception applied		
YES	C403.2.2.1	Ventilation	If mechanically delivered, indicate that ventilation systems are configured to provide not more than 150% of, but at least the minimum required volume of outdoor air to each zone per IMC, ASHRAE 62.1 or other applicable code (WAC, OSHA, etc.); or exception applied	MH101, MH601	
	C403.2.2.1	Ventilation	If delivered via natural ventilation, identify required elements per IMC including: minimum openable area to the outdoors or qualifying adjoining spaces; criteria for ensuring required ventilation is provided during all occupied hours of the year (including during inclement outdoor conditions)		
YES	C403.2.2.2	Exhaust	Indicate that exhaust systems are configured to provide not more than 150% of, but at least the minimum required volume from each zone per IMC, or other applicable code (WAC, OSHA, etc.); or exception applied	MH101,MH601	
YES	C403.4.2.4	Exhaust system off-hour controls	Refer to Requirements List section HVAC Controls for off-hour controls requirements for exhaust systems	MH701	

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	C403.7.6.1	Balanced ventilation for Group R-2 occupancy	For Group R-2 dwelling and sleeping units, indicate that each habitable space is provided with a balanced ventilation system; indicate system is provided with energy recovery with ≥ 60% sensible recovery effectiveness		
NA	C403.7.1.1	Demand control ventilation	Identify spaces with ventilation provided by single zone system with air economizer; for each space indicate controls are configured to provide demand controlled ventilation or provide supporting documentation for applied exception		
NA	C403.7.1.1	Demand control ventilation	Provide list of spaces with IMC ventilation occupant load and the occupant outdoor airflow rate listed; for spaces with occupant load ≥ 15 people/1,000 sf per IMC or occupant air flow rate ≥ 15 cfm / person indicate controls are configured to provide demand controlled ventilation or provide supporting documentation for applied exception		
NA	C403.7.2	Occupancy sensors	For gyms, classrooms, auditoriums, conference rooms and other spaces with occupant load ≥ 25 people/1,000 sf per IMC, that have an area > 500 sf, indicate occupancy-based ventilation air control when space is unoccupied and method (closes outdoor air damper or shuts-off equipment); or alternate means provided to automatically reduce ventilation air when space is partially occupied; or exception applied		
YES	C403.7.3	Ventilation air heating control	For ventilation air systems with supplemental heating capacity that operate in conjunction with heating and cooling systems, indicate that ventilation air is tempered (via heating or heat recovery) to no greater than 55° F when the space conditioning system is in cooling mode	MH701	
	C403.7.4.2	Ventilation controls for Group R-1 guestrooms	Indicate method of ventilation and exhaust isolation for each guest room and automatic controls that are configured to turn off ventilation and exhaust airflow when each room is unoccupied		
	C403.8.4	Group R occupancy exhaust fan efficacy	Refer to Requirements List section Fans & Fan Controls		
	C403.7.5 C403.7.5.1	Enclosed loading dock ventilation	For enclosed loading docks, indicate ventilation / exhaust system method of activation (gas detection system for CO and NO2, or occupancy sensors), and control method (staged or modulating); if total ventilation system fan motor nameplate horsepower is > 5 hp, indicate VSD or equivalent motor drives		

	C403.7.5 C403.7.5.2	Enclosed parking garage ventilation	For enclosed parking garages, indicate ventilation / exhaust system activated by gas detection system for CO and NO2, and control method (staged or modulating); or exception applied; if total ventilation system fan motor nameplate horsepower is > 5 hp, indicate VSD or equivalent motor drives		
NA	C403.7.6.2	Ventilation / exhaust systems energy recovery	For systems with design ventilation air > 5,000 cfm, or design supply air cfm and % ventilation air exceeding the values in Tables C403.7.6(1) or (2), indicate exhaust air energy recovery method; or exception applied with supporting calculations		
NA	C403.7.6.2	Ventilation / exhaust systems energy recovery	For rooms served by multiple systems with aggregate design ventilation air > 5,000 cfm, or aggregate design supply air cfm and % ventilation air exceeding the values in Tables C403.7.6(1) or (2), indicate exhaust air energy recovery method; or exception applied with supporting calculations		
NA	C403.7.6.2	Ventilation / exhaust systems energy recovery	Indicate energy recovery rated sensible recovery effectiveness ≥ 68% or a enthalpy recovery ratio ≥ 60%		
YES	C403.7.7.1.1 C403.7.7.1.2 C403.7.7.1.3	Kitchen exhaust hood system	Indicate on plans the type, duty, UL rating and exhaust airflow rate of each kitchen hood	MH101,MH601,MH701,MH801	
YES	C403.7.7.1.1 C403.7.7.1.2 C403.7.7.1.3	Kitchen exhaust hood system	Provide calculations that show a balanced accounting of total kitchen exhaust (include all hoods) with % of: supply air, transfer air from adjacent spaces, and make-up air	MH101,MH601,MH701,MH801	
YES	C403.7.7.1.1 C403.7.7.1.2 C403.7.7.1.3	Kitchen exhaust hood system	For hoods with make-up air drawn directly into the exhaust air cavity of each hood, indicate that replacement air does not exceed 10% of hood exhaust airflow rate	MH101,MH601,MH701,MH801	
YES	C403.7.7.1.1 C403.7.7.1.2 C403.7.7.1.3	Kitchen exhaust hood system	For kitchens with total hood exhaust exceeding 2,000 cfm, indicate that each hood is UL 710 rated and maximum exhaust airflow rate of each hood is per Table C403.7.7.1.2; or exception applied	MH101,MH601,MH701,MH801	
YES	C403.7.7.1.1 C403.7.7.1.2 C403.7.7.1.3	Kitchen exhaust hood system	For kitchens with total hood exhaust exceeding 2,000 cfm, indicate demand control kitchen ventilation configured to a minimum 50% reduction in exhaust and replacement air system flows in response to alliance operation; or exception applied	MH101,MH601,MH701,MH801	
	C403.7.7.2	Laboratory exhaust systems energy recovery	For buildings with total lab exhaust > 5,000 cfm, indicate method of energy recovery used to pre-condition laboratory make-up air; energy recovery effectiveness (min 25°F increase in outside air temperature); or alternative method per exception (VAV exhaust, semi-conditioned makeup, or CERM calculation)		

YES	C403.7.7.3	Transfer air	For spaces where conditioned supply air is utilized as transfer air to balance mechanical exhaust, indicate basis of transfer airflow (supply required to meet loads, health/safety requirement, air that would normally be exhausted); or exception applied	MH101,MH601,MH701,MH801	
YES	C403.7.8.1 C403.7.8.3	Shutoff dampers for building isolation	Indicate locations of outdoor air intake, exhaust and relief outlet dampers on plans; indicate whether dampers are Class 1 motorized, or gravity and exception applied (include leakage rating, cfm/sf)	MH101,MH601,MH701,MH801	
	C403.7.8.1 C403.7.8.3	Shutoff dampers for stairway and elevator hoistway shaft vents	Indicate location of stairway and elevator hoistway shaft vent dampers on plans; verify dampers are Class 1 motorized; or exception applied		
	C403.7.8.2 C403.7.8.3	Shutoff dampers for return air	Indicate locations of return air dampers that are integral to airside economizer operation; verify dampers are motorized; indicate whether dampers are Class 1, or within packaged equipment eligible for leakage rating exception (include leakage rating, cfm/sf)		
YES	C403.7.8.4	Damper actuation	Indicate automatic controls configured to close outdoor air intake, exhaust and relief outlet dampers during unoccupied equipment operation; not including economizer cooling, night flush or IMC required outdoor air / exhaust	MH101,MH601,MH701,MH801	
	C403.7.8.4	Damper actuation	Indicate method of activation of stairway and elevator hoistway shaft vent dampers (fire alarm or interruption of power)		
	C404.11.4	Exhaust system energy recovery for heated indoor pools and permanent spas	For buildings with pools or spas with water surface area > 200 sf, indicate exhaust air energy recovery method and use of waste heat (preheat ventilation air, pool water or service hot water); or exception applied		
	C404.11.4	Exhaust system energy recovery for heated indoor pools and permanent spas	Indicate energy recovery system has the rated effectiveness and is configured to decrease the exhaust air temperature at design conditions by ≥ 36°F		
HVAC CONTROLS					
YES	C403.4.1	Thermostatic controls (thermostats and humidistats)	Indicate locations of thermostatic and humidity control devices and the zones they serve on plans, including perimeter system zones	MH101,MH601,MH701,MH801	

	C403.4.1	Thermostatic controls (thermostats and humidistats)	Where adjacent (neighboring) zones are controlled by separate thermostats (including perimeter systems used to offset heat gain or loss), and are connected by permanent openings > 10% of either zone sf area, indicate controls configured to prevent adjacent zones from operating in conflicting modes (one in heat, other in cool); applies to adjacent perimeter zones, adjacent nonperimeter zones, and adjacent perimeter and nonperimeter zones		
	C403.4.1	Thermostatic controls (thermostats and humidistats)	If applying Exception 2 to interior zones adjacent to perimeter zones, indicate that setpoints and deadband settings in these zones are coordinated so cooling in an interior zone does not occur until the temperature in that zone is 5°F higher than the adjacent perimeter zone temperature in heating		
NA	C403.4.1	Thermostatic controls(thermostats and humidistats)	If applying Exception 3 for DOAS, indicate supply air temperature heating setpoint is ≤ 65°F and cooling setpoint is ≥ 72°F, or method of supply air temperature reset		
NA	C403.4.1.1	Heat pump supplementary heat	Indicate staged heating operation with compression as the first stage of heating and supplemental heating controlled with outdoor lock-out temperature set to 40°F or less, or indicate exception applied and specify equipment meeting the exception requirements		
	C403.4.1.2	Deadband	Indicate zone thermostatic controls configured with 5°F minimum deadband for systems that control both heating and cooling		
	C403.4.1.3	Setpoint overlap restriction (thermostats)	If separate heating and cooling thermostatic control devices are used to serve a zone, indicate locations of both thermostatic control devices and the zone they serve on plans		
	C403.4.1.3	Setpoint overlap restriction (thermostats)	Indicate a limit switch, mechanical stop or DDC control with programming to prevent simultaneous heating and cooling		
NA	C403.4.1.4	Heated or cooled vestibules	Indicate thermostatic controls within heating or cooled vestibules with a heating setpoint ≤ 60°F and cooling setpoint ≥ 85°F; indicate controls are configured to turn off heating when outdoor temperature is > 45°F; or note exception applied		
NA	C403.4.1.4	Heated air curtains	Indicate controls are configured to turn off air curtain heating when outdoor temperature is > 45°F		

NA	C403.4.1.6	Door switches for HVAC system thermostatic control	Doors required to have opening switches for HVAC thermostatic control to the outdoors from a conditioned space and are > 48 sf, indicate automatic controls configured to setback the HVAC system(s) when the door is open for > 5 minutes; indicate method of HVAC system setback control (turns off the HVAC system or resets the heating setpoint to 55°F and cooling setpoint to 85°F), or exception applied (either C402.5.11 or C403.4.1.6)		
YES	C403.4.2 C403.4.2.1 C403.4.2.2	Automatic setback and shutdown	Indicate zone thermostatic controls configured with required automatic setback and manual override functions, setback temperatures, and control method (automatic time clock or 7 day programmable controls); note exceptions applied	MH701	
NA	C403.4.2.3	Automatic (optimum) start and stop	Indicate all HVAC systems are provided with automatic start and stop controls; indicate start controls are configured to adjust the equipment start time as required to bring each area served up to design temperature just prior to scheduled occupancy; indicate stop controls are configured to reduce heating setpoint and increase cooling setpoint by at least 2°F prior to scheduled unoccupied periods		
YES	C403.4.2.4	Exhaust system off-hour controls	For exhaust systems serving conditioned spaces in all occupancies other than Group R, indicate method of control and that controls are configured to turn exhaust systems on and off in concert with the ventilation air systems providing their make-up air, or exception applied	MH701	
YES	C403.4.2.5	Transfer and destratification fan system off-hour controls	For transfer fan or mixing fan systems serving conditioned spaces in all occupancies other than Group R, indicate method of control and that controls are configured to turn fans on and off in concert with the associated HVAC systems, or exception applied	MH701	
YES	C403.4.7	Combustion heating equipment	For combustion heating equipment other than boilers or radiant heaters with output capacity > 225,000 Btu/h, indicate modulating or staged combustion control	MH601	
NA	C403.4.7.1	Combustion decorative vented appliance, combustion fireplace and fire pit controls	Indicate controls that are configured to limit operation of combustion appliance, fireplace and fire pit to ≤ 1 hour without override, or that occupancy sensor controls are provided		

	C403.7.4.1	Temperature setpoint controls for Group R-1 guestrooms	For hotels / motels with over 50 guest rooms, indicate automatic controls for HVAC equipment serving guest rooms are configured to setback (heating) and set-up (cooling) temperature setpoint by at least 4°F when room is rented and unoccupied, and adjust setpoint to 60°F (heating) and 80°F (cooling) when room is unrented / vacated; indicate control method - activated by room entry, occupancy sensor or networked guestroom control system		
	C403.7.4.2	Ventilation controls for Group R-1 guestrooms	Refer to Requirements List section Ventilation, Exhaust & Energy Recovery		
	C403.4.9 C403.4.10	Thermostatic controls for Group R2 / R3 dwelling units and Group R2 sleeping units	For primary space conditioning systems, indicate 5-2 programmable thermostats capable of two setback periods per day; indicate each non-primary system is provided with at minimum an adjustable thermostat, or exception applied. For all thermostats indicate purpose (heating only, cooling only, or both) and required temperature range; indicate thermostats are configured for at minimum a 5°F deadband		
NA	C403.5.1	DX air handler variable cooling control(Located under Integrated Economizer Control)	For DX air handlers with cooling capacity ≥ 65,000 Btu/h, indicate number of cooling stages provided and method (multiple compressors and / or variable speed compressors); indicate minimum displacement (capacity reduction) as % of full load; indicate thermostats are configured with the same number of cooling stages and displacement		
NA	C403.5.1	DX air handler variable cooling control (Located under Integrated Economizer Control)	Indicate control method (cooling capacity controlled in response to space temperature, space temperature controlled by modulating supply airflow, or both)		
NA	C403.4.11.1 C403.4.11.2 C403.4.11.3	DDC system applications, controls and display	Provide central and zone level DDC controls as required based on system application, capacity or size thresholds and other qualification per Table C403.4.11.1		
NA	C403.4.11.1 C403.4.11.2 C403.4.11.3	DDC system applications, controls and display	Identify all DDC system input / output control points in project documents		
NA	C403.4.11.1 C403.4.11.2 C403.4.11.3	DDC system applications, controls and display	Indicate control capability includes monitoring zone and system level demand for fan pressure, pump pressure, heating and cooling; indicate capability to transfer demand information from zones to air / hydronic distribution system controllers, and to central plant systems and equipment controllers		

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NA	C403.4.11.1 C403.4.11.2 C403.4.11.3	DDC system applications, controls and display	Indicate system has the capability and is configured for trending and graphically displaying input / output points		
NA	C403.4.11.4	DDC demand response setpoint adjustment	For buildings with ≥ 780,000 Btu/h of mechanical cooling, indicate controls are configured to automatically increase the cooling setpoint and decrease the heating setpoint ≥ 2°F based upon a binary input to the control system approved by the utility		
NA	C403.4.1.7	Demand responsive controls	Indicate thermostatic controls for heating or cooling systems are provided with demand response controls are capable of increasing the cooling setpoint and decreasing the heating setpoint ≤ 4°F; indicate the controls are capable of receiving and responding automatically to a demand response signal.		
NA	C403.2.3	HVAC System Fault detection and diagnostics	For buildings ≥ 100,000 square feet, indicate HVAC systems have fault detection and diagnostics with sensors and communications to automatically identify HVAC system faults, provide prioritized recommendations for repair, and communicate faults and recommendations to remotely located authorized personnel.		
ADDITIONAL ENERGY EFFICIENCY MEASURE - DWELLING UNIT HVAC CONTROLS					
NA	C406.2.1	Dwelling unit HVAC controls	To comply with this additional efficiency credit, provide control design for a manual main control or occupancy sensor based controls, or provide control specification and product cut sheets demonstrating compliance with learning thermostat or geographic sensing options.		
ADDITIONAL EFFICIENCY CREDIT - FAULT DETECTION AND DIAGNOSTICS					
NA	C406.2.2.7	Fault detection and diagnostics	To comply with this additional efficiency credit, demonstrate HVAC controls comply with items 1 through 6 in Section C403.2.3; only buildings not required to comply with Section C403.2.3 or C403.6.10(16) can use this credit		
LOAD MANAGEMENT MEASURE - HVAC LOAD MANAGEMENT					
NA	C406.3.2	HVAC load management	To comply with this additional efficiency credit, indicate automatic controls connected to central DDC having digital input capable of being activated by external utility signal; where utility real-time demand or pricing program exists indicate system configured to utilize this signal; otherwise indicate building demand monitoring installed and controls configured to utilize demand signals		

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NA	C406.3.2	HVAC load management	Indicate electric cooling controls configured to gradually increase the cooling setpoint by at least 3°F over 3 hours during summer peak periods; , indicate electric heating controls configured to gradually decrease the heating setpoint by at least 3°F over 3 hours during winter peak periods		
DUCTWORK, SHAFTS AND PLENUMS					
YES	C403.10.1.1 C403.10.2	Duct construction	Indicate on plans that all ductwork is constructed and sealed per IMC	MH001	
YES	C403.10.1.1 C403.10.2	Duct construction	For outdoor air ductwork, also indicate on plans that ductwork meets air leakage requirements per C402.5 and vapor retarder requirements per the IBC	MH001	
YES	C403.10.2.1 C403.10.2.2 C403.10.2.3	Duct pressure classifications	Identify location of low, medium and high pressure ductwork on plans		
NA	C403.10.2.3	High pressure duct leakage test	Indicate high pressure duct leakage testing requirements on plans; provide test results to jurisdiction when completed		
YES	C403.10.1.1 C403.10.1.2	Duct insulation	For outdoor air ductwork located within conditioned space (upstream or downstream of shutoff damper), identify climate zone, duct airflow, and indicate ductwork insulation R-value per Table C403.10.1.1 on plans; or exception applied	MH701, MH001	
YES	C403.10.1.1 C403.10.1.2	Duct insulation	For supply and return air ductwork located within unconditioned space or outdoors, identify climate zone and indicate ductwork insulation R-value per Table C403.10.1.2 on plans; or exception applied	MH701,MH001	
YES	C403.10.1.1 C403.10.1.2	Duct insulation	For supply air ductwork located within conditioned space, identify on plans if design supply air temperature is < 55°F or > 105°F; indicate ductwork insulation R-value per Table C403.10.1.2 on plans; or exception applied	MH001,MH701	
YES	C403.10.1.1 C403.10.1.2	Duct insulation	For return and exhaust air ductwork located within conditioned space (upstream of the shutoff damper) and downstream of an energy recovery media, indicate ductwork insulation R-value per Table C403.10.1.2; or exception applied	MH001, MH701	
YES	C403.10.1.1 C403.10.1.2	Duct insulation	For exhaust and relief air ductwork located within conditioned space and downstream of the shutoff damper, indicate ductwork insulation R-value per Table C403.10.1.2; or exception applied	MH001,MH701	
NA	C403.10.1.1 C402.1.3	Shaft and plenum insulation	For outdoor air shafts and plenums, indicate on plans that the R-value of insulation on these elements complies with Table C402.1.3 for steel-framed walls		

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PIPING					
	C403.10.3	Piping insulation	Indicate design temperature range of fluid conveyed in piping and thickness of insulation (in inches) on hydronic piping plans; or exception applied		
	C403.10.3.1	Protection of piping insulation	Indicate method of protection of pipe insulation from damage / degradation on hydronic piping plans		
YES	C403.10.4	HVAC refrigerant piping insulation	Indicate refrigerant piping insulation to be installed on all hot gas lines and on some liquid lines per C403.10.4; indicate insulation conductivity ≤ 0.26 Btu × in/(h × ft2 × °F)	MH701,MH801	
ECONOMIZERS					
	C403.5	Air economizer required	Identify all cooling systems requiring air economizer controls in equipment schedules on plans and in WSEC mechanical equipment compliance reports		
	C403.5	Air economizer exceptions	Indicate all systems utilizing air economizer exceptions in WSEC mechanical equipment compliance report, including those with water-side economizer in lieu of air economizer; indicate on plans and in WSEC mechanical equipment compliance reports all eligible exception(s) taken and measures to comply with exception(s)		
	C403.4.1 C403.5.1	Integrated economizer operation - air and water	Indicate air and water-side economizers are configured for partial cooling operation even where additional mechanical cooling is required to meet the load		
	C403.4.1 C403.5.1	Integrated economizer operation - air and water	For DX air handlers with single or multiple stages of mechanical cooling; indicate controls are configured with air economizer as the first stage of cooling		
	C403.4.1 C403.5.1	Integrated economizer operation - air and water	Refer to Requirements List section HVAC Controls for additional requirements for DX air handlers		
	C403.5.2	Economizer heating system impact - air and water	Verify control method of HVAC systems with economizers does not increase building heating energy usage during normal operation		
	C403.5.3.1	Air economizer capacity	Indicate modulating outdoor air and return air dampers are configured to provide up to 100% outdoor air for cooling		
	C403.5.1 C403.5.3.2	Air economizer controls and integrated operation	Indicate that economizer controls are configured to provide partial economizer cooling when additional mechanical cooling is also required to meet the cooling load		
	C403.5.1 C403.5.3.2	Air economizer controls and integrated operation	Indicate that control of economizer dampers is not based only on mixed air temperature; or exception applied for systems with cooling capacity ≤ 65,000 Btu/h		

	C403.5.3.3	Air economizer high limit controls	Indicate high limit shut-off control method and required high limit per Table C403.5.3.3		
	C403.5.3.4	Relief of excess outdoor air	Refer to Requirements List section Ventilation, Exhaust & Energy Recovery		
NA	C403.5.3.4	Relief of excess outdoor air	Indicate relief air outlets are sized and configured to relieve excess building air during air economizer operation to prevent building over-pressurization	MH101	
YES	C403.5.3.4	Relief of excess outdoor air	Indicate relief air outlet are located to avoid recirculation into the building	MH101	
	C403.5.4.1	Water economizer capacity	For eligible systems where water-side economizer may be provided in lieu of air economizer, indicate system is capable of 100% design cooling capacity at 50°F db / 45°F wb outdoor air temperatures; indicate if threshold for 100% design cooling capacity via economizer must be lowered to 45°F db / 40°F wb due to dehumidification requirements		
	C403.5.4.2	Water economizer maximum pressure drop	Indicate that the pressure drop across precooling coils and heat exchangers in water economizer systems do not exceed 15 feet (4572 mm)		
	C403.5.5	DX equipment economizer fault detection and diagnostics	For DX air handlers with economizer and cooling capacity ≥ 54,000 Btu/h, provide a fault detection and diagnostics (FDD) system to monitor economizer system operation and report faults		
HYDRONIC SYSTEMS - EQUIPMENT SELECTION & PERFORMANCE					
	C403.3.2.3	Maximum air cooled chiller capacity	For chilled water plants and buildings with > 500 tons of cooling capacity, indicate air-cooled chiller capacity is ≤ 100 tons, or exception applied		
	C403.3.2.2	Large capacity cooling systems	For buildings ≥ 300 tons of cooling capacity, indicate method of multi-stage or variable capacity control (VSD, multiple staged compressors, or max capacity of any single unit		
	C403.3.2.4	Non-standard water-cooled centrifugal chillers	For water-cooled centrifugal chillers not designed for operation at standard conditions, provide calculations documenting maximum full load and part load rated equipment performance requirements		
	C403.3.3	Hot gas bypass limitation for chillers	For cooling equipment with hot gas bypass, provide either multiple step unloading or continuous capacity modulation; indicate bypass capacity per Table C403.3.3		
	C403.4.3 C403.3.4.4	Large capacity boiler systems	For hydronic systems with only a single boiler that has > 500,000 Btu/h input capacity, indicate multi-stage or modulating burner		

	C403.4.3 C403.3.4.4	Large capacity boiler systems	For boiler system (single or multiple) with > 1,000,000 Btu/h input capacity, indicate turndown ratio per Table C403.3.4.4 and method (multiple single input boilers, modulating boilers, or combination)		
NA	C403.3.4.1	Large capacity boiler systems	For all boiler systems with input capacity ≥ 2,500,000 Btu/h and all systems where one stack serves 2 or more boilers with a combined input capacity ≥ 2,500,000 Btu/h, indicate combustion air positive shut-off is provided to restrict airflow through the combustion chamber during standby (e.g. flue or vent damper).		
NA	C403.3.4.2	Large capacity boiler systems	For boiler systems with combustion air fans ≥ 10 hp, indicate variable speed fan		
NA	C403.3.4.3	Large capacity boiler systems	For boiler systems with input capacity ≥ 5,000,000 and a steady state full-load combustion efficiency <90 percent, indicate combustion air volume to be automatically controlled to limit stack-gas oxygen concentrations specified in Table C403.3.4.3. List exception if it applies.		
NA	C403.3.4.5 C403.3.4.5.1 C403.3.4.5.2	High capacity space heating gas boiler system (new buildings)	For gas hot water space heating systems with ≥ 1,000,000 Btu/h and ≤ 10,000,000 Btu/h capacity, indicate boiler thermal efficiency ≥ 90 percent; coils and heat exchangers sized at design conditions to have a boiler return water temperature ≤ 120°F; values and controls to ensure under all operating conditions the water temperature entering the boiler is ≤ 120°F or the supply water recirculating directly into the return system is ≤ 20 percent of design flow of the operating boilers.		
	C403.2.4	Variable flow capacity - pumps	For pump motors ≥ 5 hp, indicate method of variable flow control (VSD or equivalent method) in equipment schedule, or exception applied		
NA	C403.3.7	Hydronic system flow rate	Indicate chilled water and condenser water flow types and operating hours, and maximum flow rates in less than or equal to Table C403.3.7.		
NA	C403.3.8.1	Chilled-water coil selection	Indicate chilled-water coils sized to provide a 15°F difference between leaving and entering water temperature and a minimum 57°F leaving water temperature at design conditions., or exception applied		
NA	C403.3.8.2	Hot-water coil selection	Indicate hot-water coils sized to provide a 20°F difference between leaving and entering water temperature and a maximum 118°F entering water temperature at design conditions., or exception applied		

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NA	C403.4.12	Pressure independent control valves	For heating and cooling water coils with a design flow ≥ 5 gpm, indicate modulating pressure independent control values are provided		
HYDRONIC SYSTEMS - CONTROLS					
	C403.4.3	Boiler sequencing	Indicate automatic controls that sequence operation of multiple boilers		
	C403.4.3.2	Two-pipe changeover systems	Indicate changeover deadband is ≥ 15°F outdoor air temperature; indicate controls are configured so that heating / cooling modes are active for at minimum 4 hours before changeover and that the delta between heating / cooling supply temperatures at changeover point is		
	C403.4.1.5	Heating water temperature setback	For hot water boilers that provide building heating via one- or two-pipe systems, indicate controls that provide heating water temperature setback based on outdoor temperature		
	C403.4.4	Hydronic system part load controls and supply-water temperature reset	For heating and chilled water systems with ≥ 300,000 Btu/h output capacity, indicate system controls are configured to automatically reset supply water temperature based upon demand; or exception applied		
	C403.4.4	Hydronic system part load controls and supply-water temperature reset	Indicate automatic pump flow controls are configured to reduce system flow rate by ≥ 50%, or the maximum allowed by the equipment manufacturer, based upon the heating or cooling loads; or describe why not required		
	C403.4.4	Hydronic system part load controls and supply-water temperature reset	For hydronic systems with output capacity ≥ 300,000 Btu/h that serve heating water systems, chilled water systems and water-cooled unitary air conditioners, indicate that pumps are provided with a variable speed drive if one of the following conditions apply: 1) System pump motor hp is ≥ 2 hp and pumps are designed to operate continuously or per time schedule; 2) System pump motor hp is ≥ 7.5 hp and pumps are controlled by automatic DDC configured to only operate pumps when there is a call for zone heating or cooling		
	C403.4.4	Hydronic system part load controls and supply-water temperature reset	Where variable speed drives are required, indicate system is configured so that pump motor power is ≤ 30% of design wattage at 50% of design flow rate; indicate pump flow is controlled to maintain one control valve nearly wide open, or to maintain a minimum differential pressure; or exception applied		

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	C403.4.6	Hydronic system variable pump flow control	For individual pumps required to have variable speed controls, indicate manner of pump speed control (differential pressure, static pressure setpoint, zone heating or cooling demand, or based on the relationship between variable speed controller frequency and power)		
	C403.4.5	Chiller / boiler plant pump isolation	Indicate controls are configured to automatically reduce overall plant flow and shut-off flow through individual chillers and boilers when not in use		
	C403.4.3.3.1	Water loop heat pump - temperature deadband	Indicate method of water loop temperature control (central plant equipment controls are configured to provide ≥ 20°F water supply temperature deadband between heat rejection and heat addition modes, or controls are configured for system loop temperature optimization		
	C403.4.3.3.2	Water loop heat pump - heat rejection equipment	Indicate type of cooling tower (open- or closed-circuit) in equipment schedule; indicate whether the cooling tower is used directly in the heat pump loop or in conjunction with a separate heat exchanger; indicate method used to limit system heat loss when heat rejection is not needed		
	C403.4.3.3.3	Water loop heat pump - isolation valves	For hydronic heat pump systems with total system power > 10 hp, indicate 2-way isolation valves on each heat pump and variable flow system control		
HEAT REJECTION SYSTEMS - EQUIPMENT SELECTION & PERFORMANCE					
	C403.9.1.3	Centrifugal fan open-circuit cooling towers	For open-circuit centrifugal fan cooling towers with ≥ 1,100 gpm capacity, indicate cooling towers comply with efficiency requirements for axial fan open circuit cooling towers		
HEAT REJECTION & RECOVERY - CONTROLS					
	C403.9.1.1 C403.9.1.2	Fan speed control	For each fan powered by an individual motor or array of motors, with total connected fan power ≥ 5 hp (including motor service factor), indicate method of automatic fan speed control (adjusted based on leaving fluid temperature or condenser temperature / pressure of heat rejection device); verify fan selection provides ≤ 30% design wattage at 50% design airflow		
	C403.9.1.1 C403.9.1.2	Fan speed control	For multiple-cell heat rejection equipment with VSD, indicate controls are configured to ramp all fans in unison (not staged on / off operation)		

	C403.9.1.4	Cooling tower flow turndown	For open-circuit cooling towers configured with multiple- or variable-speed condenser water pumps, indicate system is designed so all cells can be run in parallel; indicate method of condenser pump turn down control		
	C403.9.2.1	Heat recovery for service water heating	For buildings with 24-hour operation and > 1,500,000 Btu/h of heat rejection capacity and design service hot water load > 250,000 Btu/h, indicate condenser heat recovery to pre-heat service water; or exception applied. Provide calculations showing the amount of recovered heat that is utilized (60% of peak heat rejection load or pre-heat service water to 85°F).		
	C403.9.2.2	Steam condensate systems heat recovery	For buildings with on-site steam heating systems, indicate condensate water heat recovery and use of recovered heat		
	C403.9.2.2	Steam condensate systems heat recovery	For buildings that use off-site generated steam where condensate is not returned to the source, indicate on-site condensate water heat recovery		
	C403.9.2.3	Refrigeration condenser heat recovery	For buildings with food service, meat or deli departments that have ≥ 500,000 Btu/h of remote refrigeration capacity for coolers / freezers, indicate condenser heat recovery and use of captured energy (service water heating, space heating, or dehumidification reheating)		
	C403.9.2.3	Refrigeration condenser heat recovery	For buildings with ≥ 40,000 sf conditioned floor area and ≥ 1,000,000 Btu/h of remote refrigeration capacity, indicate condenser heat recovery to pre-heat service water; indicate remaining recovered heat is applied to space heating or dehumidification reheating		
	C403.9.2.4	Condenser heat recovery for space heating	For buildings that operate > 70 hour per week, that are not served by a DOAS with energy recovery, and have > 1,500,000 Btu/h of heat rejection capacity and ≥ 0.45 cfm per sf of design minimum supply airflow with reheat, indicate condenser heat recovery is provided for space heating that complies with Sections C403.9.2.4.1 or C403.9.2.4.2 or C403.9.2.4.4		
	C403.9.2.4.1 C403.9.2.4.4	Water to water heat recovery	Indicate that 90% or more of the total building space heating and ventilation air design loads are served by heat energy rejected from either a heat recovery chiller or the cooling loop of water to water heat pump equipment		
	C403.9.2.4.2	Exhaust heat recovery	Indicate that waste heat is recovered from least 90% of the total building exhaust airflow such that leaving exhaust air temperature while in heat recovery mode is 55° F dry bulb; note exhaust air systems eligible for exception to this requirement		

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	C403.9.2.4.3	Process heat recovery	In spaces with 5 watts per sf year-round cooling loads from lights and equipment, indicate these spaces are served by water-cooled equipment configured for heat recovery		
	C403.9.2.4.3	Process heat recovery	If these spaces are served by economizer (air or water), indicate automatic controls are configured to disable economizer operation while system is in heat recovery mode		
ADDITIONAL ENERGY EFFICIENCY MEASURE - IMPROVED LOW CARBON DISTRICT ENERGY SYSTEMS (10%)					
NA	C406.2.2.4	Improved low-carbon district energy systems (10 percent better).	Provide calculations showing 90% or more of the annual service water and space heat energy use or 90% or more of the annual service water heat, space heat and space cooling energy use is met by a district energy exchange system complying with C406.2.2.4.1 or a district energy heating and/or cooling system complying with C406.2.2.4.2; provide documentation the system is operational and is in accordance with this section prior to the final inspection.		
NA	C406.2.2.4.1	Improved low-carbon district energy exchange systems (10 percent better)	Provide calculations and documentation that 45% of the annual district-system-net-load-met (sum of heating and cooling energy provided to attached buildings) comes from heat recovery between connected buildings, waste heat, or renewable energy resources; and no more than 25% of the annual heat input to the system comes from fossil fuel or electric-resistance sources.		
NA	C406.2.2.4.2	Improved low-carbon district energy heating and cooling or heating only systems (10 percent better)	Provide calculations and documentation that distribution losses are less than or equal to 5% of the annual load delivered to buildings served by the system; and that the system complies with one of the following: 1) 45% of the annual district-system-net-load-met (sum of heating and cooling energy provided to attached buildings) comes from heat recovery between connected buildings, waste heat, or renewable energy resources and no more than 25% of the annual heat input to the system comes from fossil fuel or electric-resistance sources, or, 2) 10% or less of the system annual heat input to the system comes from fossil fuels, electric-resistance sources, or heat pump sources with an annual COP < 3		
ADDITIONAL ENERGY EFFICIENCY MEASURE - IMPROVED LOW CARBON DISTRICT ENERGY SYSTEMS (20%)					

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NA	C406.2.2.5	Improved low-carbon district energy systems (20 percent better).	Provide calculations showing 90% or more of the annual service water and space heat energy use or 90% or more of the annual service water heat, space heat and space cooling energy use is met by a district energy exchange system complying with C406.2.2.4.1 or a district energy heating and/or cooling system complying with C406.2.2.4.2; provide documentation the system is operational and is in accordance with this section prior to the final inspection.		
NA	C406.2.2.5.1	Improved low-carbon district energy exchange systems (20 percent better)	Provide calculations and documentation that 50% of the annual district-system-net-load-met (sum of heating and cooling energy provided to attached buildings) comes from heat recovery between connected buildings, waste heat, or renewable energy resources; and no more than 10% of the annual heat input to the system comes from fossil fuel or electric-resistance sources.		
NA	C406.2.2.5.2	Improved low-carbon district energy heating and cooling or heating only systems (20 percent better)	Provide calculations and documentation that distribution losses are less than or equal to 5% of the annual load delivered to buildings served by the system; and that the system complies with one of the following: 1) 50% of the annual district-system-net-load-met (sum of heating and cooling energy provided to attached buildings) comes from heat recovery between connected buildings, waste heat, or renewable energy resources and no more than 25% of the annual heat input to the system comes from fossil fuel or electric-resistance sources, or, 2) 10% or less of the system annual heat input to the system comes from fossil fuels, electric-resistance sources, or heat pump sources with an annual COP < 4		
LOAD MANAGEMENT MEASURE - COOLING ENERGY STORAGE					
NA	C406.3. 5	Cooling energy storage	To comply with this additional efficiency credit, indicate automatic controls connected to central DDC having digital input capable of being activated by external utility signal; where utility real-time demand or pricing program exists indicate system configured to utilize this signal; otherwise indicate building demand monitoring installed and controls configured to utilize demand signals		
NA	C406.3. 5	Cooling energy storage	Provide calculation of ice or chilled water storage capacity with standby loss ≤ 1.5% per day; indicate automatic controls to activate storage to reduce peak period electric demand; provide calculation of storage capacity		
MULTIPLE ZONE AIR SYSTEMS					

	C403.6.1	Air systems serving multiple zones	Identify supply air systems serving multiple zones and the zones they serve on plans; indicate whether system is VAV and method of primary air control; or provide supporting documentation for applied exception to VAV		
	C403.6.1	VAV air terminal primary supply airflow	Provide equipment schedules on plans that list all VAV air terminals and types (fan-powered series and parallel air terminals, single duct and dual duct air terminals, etc.)		
	C403.6.1	VAV air terminal primary supply airflow	For each air terminal include: maximum primary supply airflow rates during zone peak heating and zone peak cooling; maximum terminal airflow during reheating, recooling or mixing; minimum ventilation airflow rate, and the basis for these values; if IMC or ASHRAE 62.1 multiple zone equation is the basis for minimum flow rates, provide this calculation on plans		
	C403.6.2	Single duct VAV terminal units	Indicate single duct terminal units are configured to reduce primary supply air before reheating or recooling		
	C403.6.3	Dual duct systems - terminal units	For systems with separate warm air and cool air ducts, indicate terminal units are configured to reduce the flow from one duct to minimum before mixing with air from the other duct		
	C403.6.8 C403.6.9	VAV system static - pressure sensors and DDC set points	Indicate locations of duct static pressure sensors on plans; include at least one sensor per major duct branch; verify controller setpoint pressure at each sensor is ≤ 1.2 inch w.g.		
	C403.6.8 C403.6.9	VAV system static - pressure sensors and DDC set points	For systems with zone level DDC, indicate controls are configured to monitor zone damper positions and reset static pressure setpoint based on the zone requiring most pressure; include control logic that automatically detects and generates an alarm if any zone excessively drives reset logic, and allows building operators to exclude zones from reset logic		
	C403.6.4	VAV system supply air reset	Indicate controls automatically reset supply air temperature in response to building loads or outdoor air temperature; or exception applied		
NA	C403.6.4	VAV system supply air reset	Indicate zones expected to experience relatively constant loads and that maximum air flow is designed to deliver peak capacity at the fully reset supply air temperature.		
	C403.6.5	Multiple-zone VAV system ventilation optimization controls	For systems with zone level DDC controls, indicate controls are configured to automatically reduce outdoor airflow in response to changes in system ventilation efficiency; or exception applied		

	C403.6.6	Parallel fan powered VAV air terminals	Indicate controls automatically activate or shut off the air terminal fan based on call for heating and / or ventilation; indicate controls are configured to activate the terminal fan as the first stage of heating prior to activating the heating coil; indicate control method of primary air during warmup or temperature setback mode		
HIGH EFFICIENCY MULTIPLE-ZONE VAV SYSTEMS - EXCEPTION TO C403.3.5 DOAS, MUST COMPLY WITH ALL 15 PROVISIONS TO BE ELIGIBLE					
	C403.6.10, Item 1	Minimum area served and zoning	Indicate that each high efficiency multiple-zone VAV systems serves an area ≥ 3,000 sf and includes ≥ 5 zones		
	C403.6.10, Item 2	Air economizer	Indicate system is configured for 100% air economizer operation and complies with all related economizer requirements per C403.5 (without economizer exceptions)		
	C403.6.10, Item 3	Direct digital controls (DDC)	Provide DDC controls for all components of system per C403.4.11 (regardless of system size); identify all DDC system input / output control points; indicate capability for trending and graphical display		
	C403.6.10, Items 4 and 5	Supply and outdoor airflow measurement and control	For systems with minimum required outdoor air > 2,500 cfm, provide an airflow monitoring station that is configured to measure outdoor air intake under all load conditions; indicate control sequence that increases or reduces outdoor air cfm based on VAV terminal feedback of ventilation efficiency (per C403.6.5 without exceptions) or and DCV (per C403.7.1)		
	C403.6.10, Items 4 and 5	Supply and outdoor airflow measurement and control	Provide a supply airflow monitoring station that is configured to measure supply air delivered to VAV terminals under all load conditions		
	C403.6.10,Item 6	Zone isolation and maximum area served	Verify maximum area served by a single VAV system is ≤ 50,000 sf, or one entire floor, whichever is greater; in addition if a system serves > 25,000 sf, that includes areas that are expected to be occupied non-simultaneously, indicate zone isolation controls per C403.2.1		
	C403.6.10, Item 7	Interior / exterior zone design supply air temperature	Verify that VAV terminals serving interior cooling driven loads are sized per a design supply air temperature that is 5°F higher than VAV terminals serving exterior zones while in cooling mode		
	C403.6.10, Item 8	Maximum air terminal inlet velocity	Identify all air terminals with minimum primary airflow setpoints > 50% of maximum setpoint in mechanical equipment schedule for these air terminals indicate inlet velocity does not exceed 900 fpm		

	C403.6.10, Item 9	Maximum allowable system brake horsepower	For each fan system serving a multiple-zone VAV HVAC, provide calculations that verify fan system electrical input power is ≤ 90% of the fan power budget in accordance with Section C403.8.1.1		
	C403.6.10, Item 10	Fan-powered terminal unit motor and control	Indicate all series and parallel fan-powered terminals have electronically commutated motors (ECM); indicate DDC control system is configured to vary air terminal fan speed as a function of the load; indicate fan speed during periods of low heating, low cooling, or ventilation-only mode is ≤ 66% of peak design air flow, or provide supporting documentation for applied exception		
	C403.6.10, Item 11	Application of single duct and fan-powered terminal units	Indicate VAV terminal types on plans; verify fan-powered terminal units only serve perimeter zones with envelope loads and interior zones with high occupant density and DCV per C403.7.1; verify all other zones are served by single duct terminal units		
	C403.6.10, Item 12	Fan-powered terminal unit primary air reset	Indicate DDC controls are configured to automatically reset the primary supply air cfm setpoint of all fan-powered terminal units to the minimum required to maintain ventilation during occupied heating or deadband mode, based upon the VAV air handling unit minimum ventilation air fraction		
	C403.6.10, Item 13	Controls for high occupant density spaces	For zones > 150 sf with high occupant density (≥ 25 people / 1000 sf), indicate zone is served by a dedicated terminal unit with DCV control that resets terminal unit ventilation setpoint based on measured CO2; also indicate occupancy sensor control that automatically reduces minimum ventilation to zero and sets back room heating and cooling setpoints by ≥ 5°F when space in unoccupied		
	C403.6.10, Item 14	Dedicated cooling systems serving data centers and server, electronic equipment and telecom spaces	For data centers and server, electronic equipment, telecom or similar spaces with design cooling loads > 5 W/sf, indicate spaces are served by dedicated cooling systems that are independent of the HPVAV systems serving the rest of building		
	C403.6.10, Item 14	Dedicated cooling systems serving data centers and server, electronic equipment and telecom spaces	Indicate dedicated cooling systems are configured for 100% air economizer operation and comply with all related economizer requirements per C403.5 (without economizer exceptions), or heat recovery per C403.5, Exception 9		
	C403.6.10, Item 15	Central plant efficiency	Indicate whether systems are served by a high efficiency heating water plant, or a high efficiency chilled water plant		

	C403.6.10, Item 15	Central plant efficiency	If complying via high efficiency heating water plant: Indicate all VAV terminals have hydronic heating coils served by a heating water system with either gas-fired boiler(s) with thermal efficiency (Et) ≥ 92%, air-to-water heat pumps, or heat recovery chillers; indicate hydronic heating coils are sized per a maximum 120°F entering water temperature during peak demand		
	C403.6.10, Item 15	Central plant efficiency	If complying via high efficiency chilled water plant: Indicate all VAV air handlers have cooling coils served by chillers with rated IPLV efficiency that exceeds WSEC listed IPLV by at least 25% per Table C403.3.2(7) (note water-cooled IPLV is max, all others are min); indicate smallest chiller or compressor in plant is ≤ 20% of the total plant capacity, or provide thermal storage sized for ≥ 20% of total plant capacity		
	C403.6.10, Item 16	Fault detection and diagnostics	Indicate DDC system includes automatic fault detection and diagnostics (FDD) configured to monitor operation and provide fault reporting of all required parameters for all VAV air handlers and VAV air terminal units in the HPVAV system		
HIGH EFFICIENCY SINGLE-ZONE VAV SYSTEMS - EXCEPTION TO C403.3.5 DOAS, MUST COMPLY WITH ALL 8 PROVISIONS TO BE ELIGIBLE					
	C403.12, Item 1	Air economizer	Indicate system is configured for 100% air economizer operation and complies with all related economizer requirements per C403.5 (without economizer exceptions)		
	C403.12, Item 2	Direct digital controls (DDC)	Provide DDC controls for all components of system per C403.4.11 (regardless of system size); identify all DDC system input / output control points; indicate capability for trending and graphical display		
	C403.12, Item 3	Outdoor airflow measurement and control	For systems with minimum required outdoor air ≥ 1,000 cfm, provide an airflow monitoring station that is configured to measure outdoor air intake under all load conditions; indicate controls that adjust outdoor air cfm via DCV per C403.7.1		
	C403.12, Item 4	Maximum allowable fan power	For each fan system serving a single-zone VAV system, provide calculations that verify fan system electrical input power is ≤ 90% of the fan power budget in accordance withC403.8.1.1		
	C403.12, Item 5	Supply airflow control	Provide controls that adjust supply airflow based on the heating and cooling loads; indicate control sequence that limits minimum fan speed to 30% of peak design airflow or required ventilation during unoccupied mode, whichever is less		

The following information is necessary to check a mechanical permit application for compliance with the mechanical systems and equipment 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

	C403.12, Item 6	Controls for high occupant density spaces	For zones > 150 sf with high occupant density (≥ 25 people / 1000 sf), indicate DCV control that resets ventilation setpoint based on measured CO2; also indicate occupancy sensor control that automatically reduces minimum ventilation to zero and sets back room heating and cooling setpoints by ≥ 5°F when space in unoccupied		
	C403.12, Item 7	High efficiency system option	Indicate which system performance option is applied - high efficiency DX cooling and heat pump or high efficiency gas heating; or heating coils served by a high efficiency heating water plant; or cooling coils served by high efficiency chilled water plant		
	C403.12, Item 7	High efficiency system option	If complying via high efficiency DX: Indicate full load and part load rated cooling efficiency exceeds WSEC listed efficiency by at least 15%; if heating is supplied by a gas-fired furnace, indicate thermal efficiency (Et) is ≥ 90%; if system is a heat pump, indicate heating efficiency (HSPF or COP) exceeds WSEC listed efficiency by at least 10%; control of cooling and heating coil output shall be configured with a minimum of 2-stages or modulating		
	C403.12, Item 7	High efficiency system option	If complying via high efficiency heating water plant: Indicate hydronic heating coils are served by a heating water system with either gas-fired boiler(s) with thermal efficiency (Et) ≥ 92%, air-to-water heat pumps, or heat recovery chillers; indicate hydronic heating coils are sized per a maximum 120°F entering water temperature during peak demand		
	C403.12, Item 7	High efficiency system option	If complying via high efficiency chilled water plant: Indicate cooling coils are served by chillers with rated IPLV efficiency that exceeds WSEC listed IPLV by at least 25% per Table C403.3.2(7) (note water-cooled IPLV is max, all others are min); indicate smallest chiller or compressor in plant is ≤ 20% of the total plant capacity, or provide thermal storage sized for ≥ 20% of total plant capacity		
	C403.12, Item 8	Fault detection and diagnostics	Indicate DDC system includes automatic fault detection and diagnostics (FDD) configured to monitor operation and provide fault reporting of all required parameters for all HPVAV single-zone air systems		
EXTERIOR HEATING SYSTEMS					
YES	C403.11.1	Heating outside a building	Indicate systems providing heating in non-enclosed outdoor occupied spaces are radiant systems	MH101,PP101, MH601	

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YES	C403.11.1	Heating outside a building	Indicate occupancy sensing or timer switch controls configured to automatically shut off heating system when area served is unoccupied	MH701,PP801	
	C403.11.2	Snow melt systems	Indicate automatic controls configured to shut off system when pavement temperature exceeds 50°F and no precipitation is falling, and when outdoor air temperature exceeds 40°F		
	C403.11.3	Freeze protection system controls	Indicate automatic controls to shut off system when outdoor temperature exceeds 40°F, or conditions protect fluid from freezing		
HVAC EQUIPMENT ENERGY USE METERING					
	C409.3.1	HVAC equipment energy use metering	For new buildings and building additions > 25,000 sf, verify energy use metering of all equipment used to provide space heating and cooling, dehumidification and ventilation will be provided per C409; indicate equipment eligible for exception		
DOCUMENTATION AND SYSTEM SPECIFIC REQUIREMENT TO SUPPORT COMMISSIONING (CX)					
	C408.1	Scope of mechanical systems commissioning	For buildings with areas required to comply with C403.3.5 (DOAS) or with ≥ 180,000 Btu/h total output cooling capacity or ≥240,000 Btu/h total output heating capacity or energy recovery equipment ≥ 300 cfm, indicate that all mechanical systems regardless of individual capacity are required to be commissioned; or provide building heating / cooling capacity calculation demonstrating eligibility for exception		
	C408.1	Scope of mechanical systems commissioning	Indicate that all systems, equipment and controls for which the WSEC requires control functions and / or configuration to perform specific functions are included in the Cx scope		
	C408.1.1 C408.1.4.1	Commissioning requirements in construction documents	Indicate in plans and specifications that Cx per C408 is required for all applicable mechanical systems		
	C408.1.1 C408.1.4.1	Commissioning requirements in construction documents	Include general summary that includes at minimum: narrative description of activities, responsibilities of the Cx team, schedule of activities including verification of project close out documentation per C103.6, and conflict of interest plan (if required)		
	C408.1.1 C408.1.4.1	Commissioning requirements in construction documents	Include in general summary that a Cx project report or Compliance Checklist (Figure C408.1.4.1) shall be completed by the Certified Cx Professional and provided to the owner prior to the final mechanical inspection.		

	C408.1.2.2	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		
	C408.2.2	Air system and hydronic system balancing	Indicate in plans that air and fluid flow rates shall be tested and balanced within the tolerances defined in the specifications; indicate systems shall be balanced in a manner to first minimize throttling losses, then adjusted to meet design flow conditions		
	C408.2.2.1	Air system balancing devices	Indicate devices that provide the capability to balance all supply air outlets, zone terminals and air handling equipment requiring system balancing		
	C408.2.2.2	Hydronic system balancing devices	Indicate devices that provide the capability to isolate, balance and measure flow across all hydronic equipment requiring system balancing including heating and cooling coils and pumps; or exception applied		
PROJECT CLOSE OUT DOCUMENTATION					
YES	C103.6	Documentation and project close out submittal requirements	Indicate in plans that project close out documentation and training of building operations personnel is required for all mechanical components, equipment and systems governed by this code; indicate close out documentation shall include: record documents, O&M manuals, applicable WSEC mechanical equipment compliance reports and calculations	MH001	