

Project Summary

PROJ-SUM

2015 WSEC Compliance Forms for Commercial Buildings including R2, R3, & R4 over 3 stories and all R1

Revised Jun 2016

General Info <i>This PROJ-SUM form shall be provided as a cover sheet for all compliance form submittals. Project Title matches project plans title block.</i>	Project Title:	United Moving & Storage	Date	9/9/2019
	Project Street Address:	1740 NE Fuson Rd	For Building Department Use	
	Project City, County, Zip:	Bremerton, WA 98311		
	Project Owner or Rep:			
	Jurisdiction:			

Project Description <i>Select all that apply to the scope of project.</i> <i>Select Addition + Existing or Alteration + Existing if the existing building will be combined with the addition or alteration to demonstrate compliance per Section C502.1 or C503.1.</i>	New Construction and Additions <input type="checkbox"/> New Building <input type="checkbox"/> Building Addition <input type="checkbox"/> Addition + Existing		
	Existing Building Retrofit <input type="checkbox"/> Alteration <input checked="" type="checkbox"/> Alteration + Existing <input type="checkbox"/> Change in Space Conditioning		
	<input checked="" type="checkbox"/> Change of Occupancy <input type="checkbox"/> Historic Building		
	Building Elements Scope - Select all that apply <input type="checkbox"/> All <input checked="" type="checkbox"/> Building Envelope <input checked="" type="checkbox"/> Mechanical Systems <input type="checkbox"/> Service Hot Water Systems <input checked="" type="checkbox"/> Lighting Systems <input type="checkbox"/> Electrical Systems		

Occupancy Type	<input checked="" type="radio"/> All Commercial <input type="radio"/> Group R - R2, R3, & R4 over 3 stories and all R1 <input type="radio"/>		
	Mixed Use - Building is greater than three stories above grade and it has both Commercial and Group R occupancies.		
	Mixed Occupancy - Building is three stories or less above grade and it has both Commercial and Group R2, R3 or R4 occupancies. Select All Commercial to document compliance for the commercial areas of the building. The residential spaces shall comply with the WSEC Residential Provisions.		

Space Conditioning Categories	<i>Select all that apply to the scope of project</i> <input type="checkbox"/> Fully Conditioned <input type="checkbox"/> Semi-heated ² <input type="checkbox"/> Refrigerated Warehouse, Walk-in Cooler/Freezer, Refrigerated Display Case ¹ <input type="checkbox"/> Low Energy Space Category ³		
	Eligible Low Energy Spaces <input type="checkbox"/> Unconditioned <input type="checkbox"/> Low energy heating/cooling capacity <input type="checkbox"/> Wireless service equipment shelter <input type="checkbox"/> Greenhouse ⁴ <input type="checkbox"/> Equipment building		

Floor Area and Stories	Floors Above Grade	Building Gross Conditioned Floor Area	Project Gross Conditioned Floor Area

General Compliance Path	<input checked="" type="radio"/> Prescriptive <input type="radio"/> Total Building Performance		
	Prescriptive - Projects complying prescriptively shall demonstrate compliance with all applicable mandatory and prescriptive requirements of this code. Refer to C401.2, Item 1 for more information. Compliance forms to include with a Prescriptive submittal: All applicable ENV, LTG, MECH and C406.		
	Total Building Performance - Projects complying via total building performance (TBP) shall include a summary of results from a whole building energy model per Section C407 and shall demonstrate compliance with all applicable mandatory provisions in this Code. Refer to Section C401.2, Item 2 for more information. Compliance forms to include with a TPB submittal: PROJ-SUM, C406-SUM & C406-DETAIL, ENV-CHK, LTG-EXT, LTG-CHK, and all MECH forms (except MECH-ECONO).		

Envelope Summary

ENV-SUM

2015 WSEC Compliance Forms for Commercial Buildings including R2, R3, & R4 over 3 stories and all R1

Revised Jun 2016

Project Info <i>Compliance forms do not require a password to use. Instructional and calculating cells are write-protected.</i>	Project Title: United Moving & Storage	Date: 09/09/2019
	<i>Applicant Information. Provide contact information for individual who can respond to inquiries about compliance form information provided.</i>	
	Company Name:	
	Company Address:	
	Applicant Name:	
	Applicant Phone:	
Applicant Email:		For Building Department Use

Project Description	<input type="checkbox"/> New Building <input type="checkbox"/> Addition <input type="checkbox"/> Alteration
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Occupancy Type <i>Selection required to enable forms.</i>	<input checked="" type="radio"/> All Commercial <input type="radio"/> Group R - All R1 and R2, R3, R4 over 3 stories <input type="radio"/>
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Envelope Compliance Path <i>Selection required to enable forms.</i>	<input checked="" type="radio"/> Prescriptive <input type="radio"/> Component Performance
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Component Performance Calculation Type <i>Selection required to enable ENV-UA and ENV-SHGC forms.</i>	<input type="radio"/> Standard <input checked="" type="radio"/> Change of Occupancy/Conditioning <input type="radio"/>
<input type="checkbox"/> Additional Efficiency Package Option - C406.8 Enhanced Envelope <i>To comply, demonstrate building thermal envelope performance is 15% lower than the Target UA.</i>	

Air Barrier Testing	<input type="checkbox"/> Air barrier testing per Section C402.5.1.2 included in project scope <input type="checkbox"/> Air barrier testing not required <input type="checkbox"/> Additional Efficiency Package Option - C406.9 Reduced Air Infiltration <i>To comply, demonstrate that measured air leakage of building envelope does not exceed 0.25 cfm/ft² (air barrier surface area) under test pressure of 0.3 inch w.g.</i>
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Vertical Fenestration and Skylight Area Calculation <i>Prescriptive Path - Enter values for vertical fenestration, skylights, gross walls and roof on this ENV-SUM worksheet.</i> <i>Component Performance - Enter values in ENV-UA and/or ENV-UA-GROUP-R worksheet. These values auto-fill from ENV-UA and are write-protected on ENV-</i>	Total Vertical Fenestration (rough opening) divided by Gross Exterior Above Grade Wall Area times 100 equals % Vertical Fenestration
	0.0 ÷ 5448.0 X 100 = 0.0%
	Total Skylight divided by Gross Exterior Roof Area times 100 equals % Skylight
	0.0 ÷ 22800.0 X 100 = 0.0%

Fenestration Area Compliance	Vertical Fenestration Area VERTICAL FENESTRATION AREA COMPLIES
	Skylight Area SKYLIGHT AREA COMPLIES

Vertical Fenestration Alternates <i>Show locations of qualifying daylight zone areas and ft² on project plans.</i> <i>For Daylight Zone Area Calculations -</i> a) Sidelight areas include primary + secondary daylight zone areas. b) Include overlapping toplight and sidelight daylight zone areas under Toplight. c) Refer to Chapter 2 for net floor area	<input type="radio"/> High performance fenestration U-factors and SHGC per C402.4.1.3 <input type="radio"/> Dedicated outdoor air system per C402.4.1.4 and C403.6 <input type="radio"/> In buildings ≥ 3 stories, 25% or more of NET floor area is in daylight zones per <input type="radio"/> In buildings < 3 stories, 50% or more of CONDITIONED floor area is within daylight zones per C402.4.1.1						
Daylight Zone Calculations							
Daylight Zone Fenestration Alternate Not Selected. No Calculations Required	<table border="1"> <tr> <th>Sidelight Daylight Zone Area</th> <th>Toplight Daylight Zone Area</th> <th>Percent Daylight Zone Area</th> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> </table>	Sidelight Daylight Zone Area	Toplight Daylight Zone Area	Percent Daylight Zone Area			
Sidelight Daylight Zone Area	Toplight Daylight Zone Area	Percent Daylight Zone Area					

Spaces in Single Story Building Requiring Skylights <i>Code requires a minimum of 50% of the floor area to be within a skylight daylight zone for specific space types. Refer to C402.4.2 for requirements.</i>	<i>List all enclosed spaces that exceed 2,500 ft², have ceiling height greater than 15 ft, and are space types required to comply with this provision.</i>															
<table border="1"> <tr> <th>Space</th> <th>Area (ft²)</th> <th>DLZ Area (ft²)</th> <th>SRR or Aperature</th> <th>Exception</th> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </table>	Space	Area (ft²)	DLZ Area (ft²)	SRR or Aperature	Exception											
Space	Area (ft²)	DLZ Area (ft²)	SRR or Aperature	Exception												

Permit Number: 19-04179

DLZ = Daylight zone,
SRR = Skylight to roof ratio

Indicate aperature with "AP" prefix (AP 1.1%)

Envelope Requirements Summary, pg 1

ENV-REQ

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Revised Jun 2016

Minimum Requirements for Prescriptive Compliance

This table summarizes prescriptive compliance requirements for opaque elements and fenestration. Refer to Tables C402.1.3, C402.1.4 and C402.4 in the 2015 WSEC for important footnotes that apply to these tables. Refer to Section C402 for all applicable requirements that apply for each envelope element type and applicable exceptions. Refer to Section C410 for all applicable information for refrigerated spaces.

Prescriptive Path	Table C402.1.3 Insulation Minimum R-Value		Table C402.1.4 Assembly Maximum U-factor	
	Notes 1,7		Notes 1,2	
Occupancy Group	All Other	Group R	All Other	Group R
Opaque Elements				
Roofs				
Insulation Entirely above Deck	R-38 c.i.	R-38 c.i.	U-0.027	U-0.027
Metal Building (with thermal spacer block) ^{Note 3}	R-25 + R-11 Ls	R-25 + R-11 Ls	U-0.031	U-0.031
Attic and Other	R-49	R-49	U-0.021	U-0.021
Joist or single rafter	R-49	R-49	U-0.027	U-0.027
Walls, Above-grade				
Mass	R-9.5 c.i. ^{Note 6}	R-13.3 c.i.	U-0.104 ^{Note 6}	U-0.078
Mass transfer deck slab edge	No R-Value for prescriptive compliance		U-0.200	U-0.200
Metal Building	R-19 c.i.	R-19 c.i.	U-0.052	U-0.052
Steel Framed	R-13 + R-10c.i.	R-19 + R-8.5 c.i.	U-0.055	U-0.055
Wood Framed and Other	R-21 w/ int. frame	R-21 w/ int. frame	U-0.054	U-0.054
Below Grade Wall ^{Note 4}	Same as above grade		Same as above grade	
Floors				
Mass	R-30 c.i.	R-30 c.i.	U-0.031	U-0.031
Steel Joist	R-38 + R-10 c.i.	R-38 + R-10 c.i.	U-0.029	U-0.029
Wood Framed and Other	R-30	R-30	U-0.029	U-0.029
Slab-On-Grade Floors				
Unheated	R-10 for 24 in. (from top of slab)		F-0.54	F-0.54
Heated ^{Note 5}	R-10 perimeter & under entire slab		F-0.55	F-0.55
Opaque Doors				
Swinging	No R-Value for prescriptive compliance		U-0.37	U-0.37
Nonswinging (Roll-up or sliding)	R-4.75	R-4.75	U-0.34	U-0.34
	Table C402.4 - 0-30% of wall area, or 30%-40% per Section C402.3.1.1 DLZ or Section C402.3.1.4 DOAS		Section C402.3.1.3 High Performance Fenestration Option - 0-40% of wall area	
Fenestration				
Notes 1,2				
Assembly Maximum U-factor				
Vertical Fenestration				
Nonmetal framing	U-0.30	U-0.30	U-0.28	U-0.28
Metal framing (fixed)	U-0.38	U-0.38	U-0.34	U-0.34
Metal framing (operable)	U-0.40	U-0.40	U-0.36	U-0.36
Entrance doors	U-0.60	U-0.60	U-0.60	U-0.60
Skylights				
Skylights	U-0.50	U-0.50	U-0.50	U-0.50
Fenestration				
Assembly Maximum SHGC Factor				
Vertical Fenestration	PF<0.2: north - SHGC=0.53; all other SHGC=0.4 0.2 ≤ PF < 0.5: north - SHGC=0.58; all other - SHGC=0.48 PF ≥ 0.5: all orientations - SHGC=0.64		PF<0.2: north - SHGC=0.46; all other SHGC=0.35 0.2 ≤ PF < 0.5: north - SHGC=0.51; all other - SHGC=0.42 PF ≥ 0.5: all orientations - SHGC=0.56	
Skylights	SHGC=0.35		SHGC=0.35	
C410.2 Refrigerated Spaces Insulation				
Insulation Minimum R-Value				
Assembly Maximum U-factor				
Freezers - Walk-in and Warehouse				
Roof / Ceiling	R-32		U-0.030	
Wall	R-32		U-0.030	
Door	R-32		U-0.030	
Door - transparent reach-in	triple-pane, heat-reflective treated or gas			
Floor	R-28		U-0.035	
Coolers - Walk-in and Warehouse				
Roof / Ceiling	R-25		U-0.039	
Wall	R-25		U-0.039	
Door	R-25		U-0.039	
Door - transparent reach-in	double-pane, heat-reflective treated & gas fill, or comply with freezer door req.			
Floor	No Requirement			

Definitions:

Ls = Liner system -- A continuous membrane installed below the purlins and uninterrupted by framing members. Uncompressed, unfaced insulation rests on top of the membrane between the purlins. Refer to Section A102.2.5.4.

c.i. = Continuous insulation -- Insulation that is continuous across all structural members without thermal bridges other than service openings and penetrations by metal fasteners with a x-sectional area of less than 0.04% of the opaque surface area of the assembly. Components with more than 0.04% metal penetrations may be eligible to follow the alternate CI values below.

int = Intermediate framing -- Includes insulated headers, corners and interior partition wall to exterior wall intersections. Refer to Section A103.2 for framing definitions.

Footnote Summary:

Each table in the 2015 WSEC has footnotes applicable to specific information provided in the table. This footnote summary provides only abbreviated details from these footnotes. **Refer to 2015 WSEC for complete footnote information.**

Note 1 - Assembly descriptions can be found in Chapter 2 and Appendix A.

Note 2 - Use of assembly U-factors, C-fanomial ctors and F-factors from Appendix A and Chapter 3 are required unless otherwise allowed by the provisions of this Code.

Note 3 - For metal building roofs where using R-value compliance method, a thermal spacer block is required. Otherwise use the U-factor compliance method.

Note 4 - Where heated slabs are below-grade, below-grade walls shall comply with the exterior insulation requirements for heated slabs.

Note 5 - Heated slab F-factors shall be determined specifically for heated slabs. Unheated slab F-factors shall not be used.

Note 6 - CMU walls in all occupancies other than Group R may be eligible for reduced insulation if all provisions stated in applicable footnote are met. Refer to Footnote D in Table C402.1.4 or Footnote C in Table C402.1.3 for eligibility requirements.

Note 7 - Components with continuous insulation but with metal penetrations / connections may be eligible for alternate continuous insulation R-values if all provisions in applicable footnote are met. Refer to alternate prescriptive R-values in table below and Footnote F in Table C402.1.3 for eligibility requirements.

Alternate continuous insulation nominal R-values

This alternate nominal R-value compliance option is allowed for projects complying with all of the following:

1. The ratio of the cross-sectional area, as measured in the plane of the surface, of metal penetrations of otherwise continuous insulation to the opaque surface area of the assembly is greater than 0.0004 (0.04%), but less than 0.0012 (0.12%).
2. The metal penetrations of otherwise continuous insulation are isolated or discontinuous (e.g., brick ties or other discontinuous metal attachments, offset brackets supporting shelf angles that allow insulation to go between the shelf angle and the primary portions of the wall structure). No continuous metal elements (e.g., metal studs, z-girts, z-channels, shelf angles) penetrate the otherwise continuous portion of the insulation.
3. Building permit drawings shall contain details showing the locations and dimensions of all the metal penetrations (e.g., brick ties or other discontinuous metal attachments, offset brackets, etc.) of otherwise continuous insulation. In addition, calculations shall be provided showing the ratio of the cross-sectional area of metal penetrations of otherwise continuous insulation to the overall opaque wall area.

Assemblies with continuous insulation (see definition)	Alternate option for assemblies with metal penetrations, greater than 0.04% but less than 0.08%	Alternate option for assemblies with metal penetrations, greater than or equal to 0.08% but less than 0.12%
R-9.5ci	R-11.9ci	R-13ci
R-11.4ci	R-14.3ci	R-15.7ci
R-13.3ci	R-16.6ci	R-18.3ci
R-15.2ci	R-19.0ci	R-21ci
R-30ci	R-38ci	R-42ci
R-38ci	R-48ci	R-53ci
R-13 + R-7.5ci	R-13 + R-9.4ci	R-13 + R-10.3ci
R-13 + R-10ci	R-13 + R-12.5ci	R-13 + R-13.8ci
R-13 + R-12.5ci	R-13 + R-15.6ci	R-13 + R-17.2ci
R-13 + R-13ci	R-13 + R-16.3ci	R-13 + R-17.9ci
R-19 + R-8.5ci	R-19 + R-10.6ci	R-19 + R-11.7ci
R-19 + R-14ci	R-19 + R-17.5ci	R-19 + R-19.2ci
R-19 + R-16ci	R-19 + R-20ci	R-19 + R-22ci
R-20 + R-3.8ci	R-20 + R-4.8ci	R-20 + R-5.3ci
R-21 + R-5ci	R-21 + R-6.3ci	R-21 + R-6.9ci

End of Envelope Requirements Summary

Prescriptive Path, pg. 1

ENV-PRESCRIPTIVE

2015 WSEC Compliance Forms for Commercial Buildings including R2, R3, & R4 over 3 stories and all R1

Revised Jun 2016

Project Title:		United Moving & Storage	Date	09/09/2019
Fenestration Area as % gross above-grade wall area		Max. Target:	30.0%	
Skylight Area as % gross roof area		Max. Target:	3.0%	
Vertical Fenestration Alternates:		None Selected on ENV-SUM		

Prescriptive compliance of envelope assemblies may be accomplished by providing insulation R-values per Table C402.1.3 or U-factors/F-factors per Tables C-402.1.4 and C-402.4. A single project may comply via R-values for some envelope assemblies and U-factors/F-factors for others. Note compliance method taken for each assembly in spaces provided.

Building Component		R-Value Method for Prescriptive Compliance			U-Factor/F-Factor Method for Prescriptive Compliance	
		Cavity Ins. R-Value	Continuous Ins. (CI) R-Value ¹	% Area of Metal Penetrations in CI ²	Assembly U-Factor	U-Factor Source ³
Roofs	Deck					
	Mtl Bld ⁴					
	Joist/Rtr					
	Attic/Oth					
Walls - Above Grade ¹⁵	Steel					
	Mtl Bld.					
	Wood/Oth ⁵					
	Mass ⁶					
Group R Walls ¹⁵	Transfer ⁷					
	Steel					
	Mass					
	Comm					
Below Grade Walls	Group R					
	Mass					
Floors	Framed ⁸					
	Mass					

Prescriptive Path, pg. 2

ENV-PRESCRIPTIVE

2015 WSEC Compliance Forms for Commercial Buildings including R2, R3, & R4 over 3 stories and all R1

Revised Jun 2016

Project Title: United Moving & Storage				Date: 09/09/2019	
Fenestration Area as % gross above-grade wall area Max. Target: 30.0%				For Building Department Use	
Skylight Area as % gross roof area Max. Target: 3.0%					
<i>If vertical fenestration or skylight area exceeds maximum allowed per C402.4.1, then the project must comply via Component Performance and provide ENV-UA and ENV-SHGC forms.</i>					
Building Component Provide plan/detail # of assembly and description		R-Value Method for Prescriptive Compliance		U-Factor/F-Factor Method for Prescriptive Compliance	
		Perim. Ins. R-Value	Full Slab CI R-Value		F-Factor
Slab-on-grade ⁹ Unheated Heated					
Provide ID from door schedule and description		Ins. R-Value			Assembly U-Factor U-Factor Source ¹¹
Opaque Doors Swingin Other					
	Vehicle Doors	R-19			
		Solar Heat Gain Coefficient (SHGC)		U-Factor for Prescriptive Compliance	
Provide ID from window schedule and description		Projection Factor (PF) if applicable ¹²	Orientation (N or SEW) ¹³	Assembly SHGC ¹⁴	Assembly U-Factor U-Factor Source ¹⁴
Vertical Fenestration Non-Metal Metal, fixed Metal Mtl entry					
Skylights All Types					

Note 1 - Insulation that is continuous except for fasteners may be entered here if the cross-sectional area of metal penetration through otherwise continuous insulation is less than 0.12%.

Note 2 - Alternate prescriptive continuous insulation R-values per Table C402.1.4, Footnote F may be used if the cross sectional area of metal penetrations exceeds 0.04% but is less than 0.12%. Calculations are required to use these alternate R-values.

Note 3 - Opaque assembly U-factors shall come from Appendix A or calculated per approved method as specified in C402.1.5.1. Specify the table number or calculation page number.

Note 4 - Thermal spacer blocking and liner system are required for prescriptive R-Value compliance in metal building roof assemblies.

Note 5 - Intermediate framing is required for prescriptive R-Value compliance in wood-framed wall assemblies.

Note 6 - Proposed CMU mass walls in non-Group R that meet Table C402.1.4 Footnote D requirements can enter the target prescriptive U-value of 0.104.

Note 7 - Mass transfer slab edges must be covered with an assembly having an overall U-factor of 0.2.

Note 8 - Refer to Table C402.1.3, Footnote E for prescriptive R-Value requirement for steel floor joist assemblies.

Note 9 - Prescriptive slab-on-grade insulation shall extend from top of slab to minimum length per an approved method as defined in C402.2.6.

Note 10 - Slab-on-grade F-Factors shall come from Appendix A or calculated per approved method as specified in C402.1.5.1.

Note 11 - Opaque door U-factors shall come from Appendix A or calculated per approved method as specified in C402.1.5.1. A door is defined as opaque if less than 50% of the door area has glazing.

Note 12 - Refer to Equation C4-6 Projection Factor Calculation.

Note 13 - N = Oriented within 45 degrees of true north, SEW = All other orientations.

Note 14 - Fenestration assembly U-Factor and SHGC shall be the manufacturer's NFRC product rating, which includes the glazing and frame, or shall be the default value per Section C303.1.3.

Note 15 - List all above-grade Group R mass walls and steel frame walls in Group R Walls section. List commercial above grade walls and all other

Building Permit Plans Checklist, pg. 1

ENV-CHK

2015 WSEC Compliance Forms for Commercial Buildings including R2, R3, & R4 over 3 stories and all R1

Revised Jun 2016

Project Title: United Moving & Storage			Date: 09/09/2019		
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.					
Applicability (yes,no,na)	Code Section	Component	Compliance information required in permit documents	Location in Documents	Building Department Notes
SCOPE					
na	C402.1.1	Low energy spaces	Low energy spaces are identified on plans; include project information, and calculations if applicable, that demonstrate spaces are eligible for envelope provisions exemption		
na	C402.1.1.1	Semi-heated spaces	Semi-heated spaces are identified on plans, include calculations that demonstrate spaces are eligible for wall insulation exemption		
na	C402.1.2	Equipment Buildings	Provide building area, average wall and roof U-factor, and installed equipment information that demonstrates equipment building is eligible for envelope provision exemption		
na	C410.2	Walk-in and warehouse cooler and freezer spaces	Cooler and freezer spaces are identified on plans; C410 envelope compliance forms provided (pending)		
na	C101.4.1	Mixed occupancy	Spaces with different occupancy requirements are identified on plans		
na	C503.2	Change of space conditioning	Existing unconditioned spaces changing to semi-heated or conditioned space, and existing semi-heated spaces changing to conditioned space, are identified on plans. Include calculations that demonstrate baseline and final level of conditioning.		
yes	C505.1	Change of occupancy	Existing F, S and U-occupancy spaces undergoing a change in occupancy are indicated on plans; include calculations that demonstrate upgrade complies with the current WSEC. Pre-2002 Group R spaces undergoing a change to a commercial occupancy are indicated on plans; include calculations that demonstrate upgrade complies with the current WSEC. Non-Group R occupancy spaces undergoing a change to Group R are indicated on plans; include calculations that demonstrate upgrade complies with the current WSEC.	page 3 & 4	
ENVELOPE PROVISIONS					
yes	C103.2 C103.6.3	Compliance documentation	Indicate envelope insulation compliance path and provide applicable forms; ENV-PRESCRIPTIVE or ENV-UA / ENV-SHGC for component performance If complying via total building performance, provide a list of all proposed envelope component types, areas and U-values		
yes	C303.1.1 C303.1.2	Insulation identification	Indicate identification mark shall be applied to all insulation materials and insulation installed such that the mark is readily observable during inspection		
yes	C303.1.3 C402.4.3	Fenestration product rating	Fenestration products shall be labeled with rated U-factor, SHGC, VT, and leakage rating		
yes	C303.1.1 C402.2.1	General insulation installation	Indicate installation methods, thicknesses, densities and clearances to achieve the intended R-value of all insulation materials; Where two or more layers of rigid insulation will be used, indicate that edge joints between layers are staggered		
yes	C103.2 C402.2.2	Roof assembly insulation	Indicate R-value(s) of cavity/continuous insulation on roof sections; Indicate framing materials on roof sections; Indicate method of framing for ceilings below vented attics and vaulted ceilings per A102.2 (std, adv); Provide area weighted average U-factor calculation for insulation whose thickness varies by 1 inch or less; Indicate effective U-factors of tapered insulation entirely above deck per A102.2.6; include roof configuration and slope, maximum R-value at peak and minimum R-value at low point for all roof surfaces Indicate R-values for thermal spacers and each insulation layer, and liner system (LS) method for metal building roofs		
	C402.2.2	Skylight curb insulation	Indicate curb insulation R-value on roof section if not included in skylight NFRC rating		
	C103.2 C402.2.3 C402.2.4 C303.2.1	Above/below grade wall insulation	Indicate R-value(s) of cavity/continuous insulation on wall sections; Indicate framing materials on wall sections; Indicate method of framing for wood const per A103.2 (std, int, adv); Indicate material density category, wall weight and heat capacity for qualifying mass walls; For qualifying ASTM C90 masonry walls, indicate loose-fill core insulation material and percentage of cores filled including grouted cores, bond beams, vertical fills, headers and any other grouted cores; Indicate method of protection of exposed exterior basement/crawlspace wall insulation		

Permit Number: 19-04179

Building Permit Plans Checklist, pg. 2

ENV-CHK

2012 Washington State Energy Code Compliance Forms for Commercial Buildings including R2 & R3 over 3 stories and all R1

Project Title: United Moving & Storage				Date: 09/09/2019	
Applicability (yes,no,na)	Code Section	Component	Compliance information required in permit documents	Location in Documents	Building Department Notes
yes	C103.2 C402.4.4	Opaque doors	Indicate rated U-factor (swinging) or R-value (non-swinging - roll-up/sliding) on wall sections or in door schedules - applies to doors with less than 50% glazed area		
na	C402.2.5	Floor over outdoor or unconditioned space insulation	Indicate R-value(s) of cavity/continuous insulation on floor sections; Indicate framing material on floor sections; Indicate material density category and weight of qualifying mass floors		
na	C402.2.6 C303.2.1	Slab-on-grade floor insulation	Indicate R-value of continuous insulation on wall section or foundation detail; Indicate insulation extends down vertically and/or horizontally the required distance from top of slab; Indicate method of protection of exposed exterior slab edge insulation		
na	C402.2.6 C303.2.1	Radiantly heated slab-on-grade floor insulation	Indicate R-value of continuous insulation on wall section or foundation detail; Indicate insulation extends down vertically from top of slab and then horizontally under the entire slab; Indicate method of protection of exposed exterior slab edge insulation		
na	C402.2.8	Radiant heating system insulation	Indicate insulation R-value behind radiant panels, U-bend/headers and bottom surface of radiantly heated floors (other than radiantly heated slab-on-grade)		
na	C402.4.1 C502.2.1 C503.3.2	Vertical fenestration maximum area	Provide calculation for total vertical fenestration area as a percentage of gross above grade wall area (WWR) for new construction, additions and alterations In ENV-SUM		
na	C402.4.1.1 C405.2.4.1 C502.2.1 C503.3.2	Increased prescriptive maximum vertical fenestration area with daylight zones and controls	Provide calculations showing that the percentage of overall conditioned floor area within daylight zones is equal to or greater than 50% in 1 & 2 story buildings: OR Provide calculations showing that the percentage of overall net floor area within daylight zones is equal to or greater than 25% in buildings 3 stories or more; include the gross floor area and list of spaces omitted for the net floor area; Note in envelope plans that all lighting fixtures located within daylight zones shall be provided with daylight responsive controls per WSEC Section C405.2.4.1; indicate method of control in lighting fixture schedules Indicate that the VT of vertical fenestration is at least 1.1 times the rated SHGC		
no	C402.4.1.3 C502.2.1 C503.3.2	Increased prescriptive maximum vertical fenestration area with high-	Indicate high performance U-factors and SHGC values in fenestration schedules; If applicable, provide area-weighted U-factor calculation(s) used for multiple fenestration elements within the same fenestration category per Table C402.3		
no	C402.4.1.4 C403.6	Increased prescriptive maximum vertical fenestration area with DOAS mechanical systems	Indicate that for eligibility, all occupied, conditioned spaces will be served by a dedicated outside air system (DOAS) that delivers ventilation air without requiring operation of the heating/cooling system per Section C403.6		
no	C402.1.5	Wall/vertical fenestration target area adjustment	Indicate if component performance with target area adjustment will be used to account for vertical fenestration area in excess of the prescriptive maximum allowed		
	C402.4.1 C502.2.2 C503.3.3	Skylight maximum area	Provide calculation for total skylight area as a percentage of gross roof area (SRR) for new construction, additions and alterations in ENV-SUM		
	C402.1.5.2	Roof/skylight target area adjustment	Indicate if component performance with target area adjustment will be used to account for skylight area in excess of the prescriptive maximum		
	C402.4.3 C303.1.3	U-factors, SHGC and VT for all fenestration assemblies	Indicate U-factors, SHGC and VT values in fenestration schedules; If applicable, provide area-weighted U-factor calculation(s) used for multiple fenestration elements within the same fenestration category per Table C402.3 Indicate if values are NFRC or default; if default then specify frame type, glazing layers, gap width, low-e coatings, gas-fill		
	C402.4.3	Permanent shading devices	For windows with overhangs or permanent projection shading devices, provide projection factor calculations (Equation C4-6) and associated minimum SHGC for north and non-north orientations		

Permit Number: 19-04179

Building Permit Plans Checklist, pg. 3

ENV-CHK

2012 Washington State Energy Code Compliance Forms for Commercial Buildings including R2 & R3 over 3 stories and all R1

Project Title: United Moving & Storage				Date	
Applicability (yes,no,na)	Code Section	Component	Compliance information required in permit documents	Location in Documents	Building Department Notes
na	C402.4.2	Spaces in single story buildings requiring skylights	<p>In single story buildings, provide list of enclosed areas that exceed 2,500 sf, have ceiling height greater than 15 ft, and are space types required to comply with this provision. For each area identify space type, floor area, floor to ceiling height, and any exception taken;</p> <p>For each area provide calculations for percentage of conditioned floor area located within a daylight zone including skylight and eligible sidelight daylight zones;</p> <p>For each area provide calculations for percentage of skylight area, OR;</p> <p>Provide calculations for skylight effective aperture (Equation C4-5);</p> <p>Indicate haze factor of skylight glazing material or diffuser</p>		

AIR LEAKAGE

na	C402.5.1.1	Air barrier construction and sealing	<p>Indicate location of continuous air barrier on plans and sections;</p> <p>Provide details for all joints, transitions in materials, penetrations in air barrier and note method of sealing (caulked, gasketed, or other approved method)</p>		
na	C402.5.3	Rooms containing open combustion fuel burning appliances used for space conditioning	<p>Indicate that room(s) containing non-direct vent appliances is isolated from inside the thermal envelope with a sealed air barrier, including doorway gasketing and sealing around ductwork and piping penetrations;</p> <p>Indicate insulation provided in wall, floor and ceiling of the room envelope, and insulation required on combustion air ductwork</p>		
na	C402.5.4	Access openings and doors to shafts, chutes, stairways and doors	<p>Indicate locations of all access openings and doors to shafts, chutes, stairways and elevators;</p> <p>Indicate method of gasketing, weatherstripping and sealing of these openings</p>		
na	C402.5.5 C403.2.4.3	Outdoor air intakes, exhausts and relief openings	<p>Indicate locations of all stairway enclosure, elevator shaft and building pressurization relief openings, outside air intakes and exhaust openings;</p> <p>Note in envelope plans that all relief, outside air intake and exhaust openings shall be provided with dampers in accordance with Mechanical Section C403.2.4.3</p>		
na	C402.5.8	Recessed lighting in building envelope	<p>Indicate method of sealing between light fixture housing and wall or ceiling;</p> <p>Note in envelope plans that all recessed lighting fixtures shall be IC rated and have an air leakage rating not greater than 2 cfm per ASTM E283 test; include these requirements in lighting fixture schedules</p>		
yes	C402.5.6	Loading dock seals	Indicate weather seal at cargo and loading dock doors		
na	C402.5.7	Vestibules	<p>Indicate locations and dimensions of vestibules and air curtains;</p> <p>Indicate exception and criteria utilized for all building entrances and exits that do not have a vestibule or air curtain;</p> <p>Indicate required performance for air curtains installed per exception 7;</p> <p>For unconditioned vestibules, indicate which envelope assembly (interior or exterior) complies with the requirements for a conditioned space</p>		
na	C103.2 C402.5.1.2	Building air leakage test	<p>Indicate on plans the air barrier boundaries and area calculations on all six sides of the air barrier;</p> <p>Indicate air barrier test method in accordance with ASTM E779 or approved equivalent;</p> <p>Indicate required maximum leakage rate for compliance.</p> <p>Include the following requirements in project documents: (1) Submit air barrier test report to jurisdiction once test is completed; (2) If test results exceed 0.4 cfm/ft2 at 0.3 in. wg, then visually inspect air barrier and seal noted sources of leakage; (3) Submit a follow-up report to jurisdiction noting corrective measures taken; (4) Include air barrier test report in compliance documentation provided to owner.</p>		

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

End of Building Permit Plans Checklist

Permit Number: 19-04179

Lighting Summary

LGT-SUM

2015 Washington State Energy Code Compliance Forms for Commercial Buildings including R2, R3, R4 over 3 stories and all R1

Revised August 2016

Project Info Compliance forms do not require a password to use. <i>Instructional and calculating cells are write-protected.</i>	Project Title: United Moving & Storage	Date: 9/9/2019																																	
	Applicant Information. <i>Provide contact information for individual who can respond to inquiries about compliance form information provided.</i>	For Building Department Use																																	
	Company Name:																																		
	Company Address:																																		
	Applicant Name:																																		
	Applicant Phone:																																		
Applicant Email:																																			
Project Description		<input type="checkbox"/> New Building <input type="checkbox"/> Addition <input checked="" type="checkbox"/> Alteration <input type="checkbox"/> Plans Included <i>Include PROJ-SUM form (included in envelope forms workbook) with lighting compliance forms.</i>																																	
Building Additions <i>Refer to Section C502.2.6 for additional requirements.</i>	<table border="1"> <thead> <tr> <th>Compliance Method</th> <th>Interior lighting</th> <th>Exterior lighting</th> </tr> </thead> <tbody> <tr> <td>Lighting systems in addition area comply with all applicable provisions as a stand alone new construction project</td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td>Lighting systems in addition are combined with existing building lighting systems to demonstrate compliance</td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> </tbody> </table> <p>Addition is combined with existing: <i>For interior lighting projects, include new + existing interior lighting fixture wattage in Proposed Lighting Wattage table in LTG-INT-BLD or LTG-INT-SPACE form.</i> <i>For exterior lighting projects, include new + existing exterior lighting fixture wattage in Proposed Tradable and Proposed Non-Tradable Lighting Wattage tables in LTG-EXT form.</i></p>			Compliance Method	Interior lighting	Exterior lighting	Lighting systems in addition area comply with all applicable provisions as a stand alone new construction project	<input type="checkbox"/>	<input type="checkbox"/>	Lighting systems in addition are combined with existing building lighting systems to demonstrate compliance	<input type="checkbox"/>	<input type="checkbox"/>																							
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Interior and Exterior Lighting Alterations <i>Select all Lighting Power and Lighting Control elements that apply to the scope of the retrofit project. If project includes a combination of spaces where less than 50% of the existing fixtures are replaced in some spaces, and 50% or more of the fixtures are replaced in others, then provide separate lighting power compliance forms for the two retrofit conditions. Spaces undergoing the same type of retrofit may be combined into one lighting power compliance form.</i> <i>Refer to Section C503.6 for additional requirements.</i> <i>All alteration lighting controls shall be commissioned per C408.3.</i>	<table border="1"> <thead> <tr> <th>Lighting Power</th> <th>Interior lighting</th> <th>Parking garage</th> <th>Exterior lighting</th> </tr> </thead> <tbody> <tr> <td>50% or more of existing are replaced</td> <td><input checked="" type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td>Less than 50% of existing are replaced</td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td>Lamp and/or ballast replacement only – existing total wattage not increased</td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> </tbody> </table> <p>50% or more replaced - Total lighting power of new + existing-to-remain fixtures shall comply with total LPA per Sections C405.4.2 and C405.5.2. Include new + existing-to-remain fixtures in Proposed Lighting Wattage table in LTG-INT-BLD, LTG-INT-SPACE or LTG-EXT form. Less than 50% replaced - Total lighting power of new + existing-to-remain fixtures shall not exceed the total lighting power prior to alteration. Include new + existing-to-remain fixtures in the Proposed Lighting Wattage table in LTG-INT-BLD, LTG-INT-SPACE or LTG-EXT form. 50% threshold applies to number of luminaires for interior spaces and parking garages, and total installed wattage for exterior luminaires.</p> <table border="1"> <thead> <tr> <th>Lighting Controls</th> <th>Interior lighting</th> <th>Parking garage</th> <th>Exterior lighting</th> </tr> </thead> <tbody> <tr> <td>New wiring installed to serve added fixtures and/or fixtures relocated to new circuit(s)</td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td>New or moved lighting panel</td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> <tr> <td>Interior space is reconfigured - luminaires unchanged or relocated</td> <td><input type="checkbox"/></td> <td></td> <td></td> </tr> </tbody> </table> <p>New wiring or circuit - For interior lighting, provide required manual controls per C405.2.3, occupancy sensor controls per C405.2.1, daylight responsive controls per C405.2.4 and application specific lighting controls per C405.2.5. For exterior lighting, provide required controls per C405.2.7. New or moved panel - Provide all applicable lighting controls as noted for New Wiring and automatic time switch controls per C405.2.2. Reconfigured interior space - Provide all required lighting controls that apply to a new interior space. Application specific lighting control provisions per C405.2.5 do not apply to reconfigured</p>			Lighting Power	Interior lighting	Parking garage	Exterior lighting	50% or more of existing are replaced	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Less than 50% of existing are replaced	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Lamp and/or ballast replacement only – existing total wattage not increased	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Lighting Controls	Interior lighting	Parking garage	Exterior lighting	New wiring installed to serve added fixtures and/or fixtures relocated to new circuit(s)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	New or moved lighting panel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Interior space is reconfigured - luminaires unchanged or relocated	<input type="checkbox"/>		
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<input checked="" type="checkbox"/> No changes are being made to the interior or exterior lighting systems and existing space uses and configuration are not changed.																																			
Change of Space Use	<input checked="" type="checkbox"/> Existing interior lighting systems in areas under-going a change in space use are upgraded to comply with LPAs for the new space types per Tables C405.4.2(1) or C405.4.2(2). <i>Identify interior spaces requiring LPD upgrade to the current Code in Proposed Lighting Wattage table in LTG-INT-BLD or LTG-INT-SPACE form.</i>																																		

Permit Number: 19-04179

Lighting Summary, cont.

LGT-SUM

2015 Washington State Energy Code Compliance Forms for Commercial Buildings including R2, R3, R4 over 3 stories and all R1

Revised August 2016

Project Title: United Moving & Storage		Date: 9/9/2019
Interior Lighting System Description	High Bay LED fixtures	
Interior Lighting Power Allowance Method	<input checked="" type="checkbox"/> Building Area Method <input type="checkbox"/> Space-by-space Method <i>Select method used in project.</i>	
Interior Lighting Controls	<input checked="" type="checkbox"/> All C405.2.1 - C405.2.8 Controls <input type="checkbox"/> C405.2 Exception 5 Luminaire Level Lighting Control (LLLC) <input type="checkbox"/> Additional Efficiency Package Option C406.4 Enhanced digital lighting controls <i>To comply with C406.4, no less than 90% of the total installed interior lighting power shall comply with required controls per C406.4.</i>	
Dwelling Unit Interior Lighting	Permanently installed interior lighting fixtures in dwelling units comply with: <input checked="" type="checkbox"/> C405.2 thru C405.5 Commercial Lighting Controls and LPA <input checked="" type="checkbox"/> C406.3 High Efficacy Lighting <input type="checkbox"/>	
Exterior Lighting System Description		

Interior Lighting - Building Area Method

LTG-INT-BLD

2015 Washington State Energy Code Compliance Forms for Commercial Buildings including R2, R3, R4 over 3 stories and all R1

Revised August 2016

Project Title: United Moving & Storage			Date: 9/9/2019		
Calculation Area <small>NOTE 8</small>	<input type="radio"/> Addition - stand alone <input type="radio"/> Addition + existing <input type="radio"/> Spaces where < 50% of luminaires are replaced <input type="radio"/> Spaces where ≥ 50% of luminaires are replaced <input type="radio"/>				For Building Department Use
	LPA Calculation Type <input checked="" type="radio"/> Standard <input type="radio"/> Additional Efficiency Package Option C406.3 Reduced Interior Lighting Power <input type="radio"/> <i>To comply with C406.3, the Proposed LPD shall be 25% lower than the Target LPA. Refer to C406.3 for additional requirements.</i>				

Maximum Allowed Lighting Wattage NOTE 1

Building Area	Location (plan #, room #, or ALL)	Area Description	Gross Interior Area in ft ²	Allowed Watts per ft ²	Watts Allowed (watts/ft ² x area)
Warehouse	ALL	Warehouse	22648	0.40	9060
Warehouse	Restroom	Restroom	152	0.40	61
Total			22800		

Proposed Lighting Wattage

Building Area	Location (plan #, room #)	Fixture Description <small>NOTE 2, 3, 4, 5</small>	Number of Fixtures	Watts per Fixture <small>NOTE 6</small>	Watts Proposed
Warehouse	All	Lithonia IBE	48	107	5136
Warehouse	Restroom	Lithonia FMLWL	2	80	160

Compliance by Building Area NOTE 7

Building Area	Warnings	Total Allowed Watts	Total Proposed Watts	Interior Lighting Power Allowance
Warehouse	Confirm all fixtures are reported under proposed lighting - low watts relative to maximum allowed.	9121	5296	COMPLIES

Note 1 - List all unique building areas per Table C405.4.2(1) that occur in the project scope. Select building area category from drop down menu.

Note 2 - Proposed fixtures must be listed in the building area in which they occur. List all proposed lighting fixtures including exempt lighting equipment and existing-to-remain fixtures.

Note 3 - For proposed Fixture Description, indicate fixture type, lamp type (e.g. T-8), number of lamps in the fixture, and ballast type (if included).

For track lighting, list the length of the track (in feet) in addition to the fixture, lamp, and ballast information.

Note 4 - For lighting equipment eligible for exemption per C405.4.1, note exception number and leave Watts/Fixture blank.

Note 5 - Existing-to-remain fixtures shall be included in the Proposed Lighting Wattage table in the same manner as new fixtures. Identify as existing in fixture description.

Note 6 - For proposed Watts/Fixture enter the luminaire wattage for installed lamp and ballast using manufacturer or other approved source. For

Totals

9121	5296
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Permit Number: 19-04179

luminaires with screw-in lamps, enter the manufacturer's listed maximum input wattage of the fixture (not the lamp wattage). For low voltage lighting, enter the wattage of the transformer. For line voltage track/busway systems, enter the larger of the attached luminaire wattage or

50 watts/lineal foot, or enter the wattage limit of permanent current limiting device.

Note 7 - Proposed Wattage for each Building Area type shall not exceed the Allowed Wattage for that Building Area type. Trading wattage between Building Area types is not allowed under the Building Area Method compliance path.

Note 8 - Calculation Area Details:

a. Lighting fixtures in a building addition may comply as a stand alone project, or they may be combined with the overall existing building

lighting systems to demonstrate compliance. Refer to C502.1.

b. For alterations and building additions, provide Building Area types and gross interior areas in the Maximum Allowed Lighting

Lighting, Motor, and Electrical Permit Checklist, Pg. 1

LTG-CHK

2015 Washington State Energy Code Compliance Forms for Commercial Buildings including R2, R3, R4 over 3 stories and all R1

Revised August 2016

Project Title:			United Moving & Storage	Date	9/9/2019
The following information is necessary to check a permit application for compliance with the lighting, motor, and electrical requirements in the Washington State Energy Code, Commercial Provisions.					
Applicability (yes,no,na)	Code Section	Component	Compliance information required in permit documents	Location in Documents	Building Department Notes
LIGHTING CONTROLS					
Yes	C405.2	Lighting controls, general	For all lighting fixtures, indicate lighting control method on plans for spaces and lighting zone(s) served, or exception taken		
NA	C405.2	Luminaire level lighting controls (LLLC)	Indicate on plans all fixtures provided with LLLC in lieu of C405.2 lighting controls; provide description of control capabilities and performance parameters		
NA	C405.1	Lighting in dwelling units	For permanently installed lighting fixtures in dwelling units, indicate lighting control method on plans for spaces and lighting zone(s) served, or demonstrate compliance with high efficacy exception		
Yes	C405.2.3 C405.2.1.1 C405.2.2.2 C405.2.4 C405.2.5	Manual controls	Indicate on plans the method of manual lighting control (whether combined with occupancy sensor, automatic light reduction, daylight responsive or specific application controls), location of manual control device and area or specific application it serves		
NA	C405.2.2.1 C405.2.2.2 C405.2.3	Manual interior lighting controls	Indicate on plans which method of manual 50% lighting load reduction is provided, or whether lighting load is reduced via occupancy sensors or daylight responsive controls		
Yes	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; Indicate locations where automatic shutoff is provided by other methods (occupancy sensor or digital timer switch) or which time switch control exception applies		
Yes	C405.2.1 C405.2.1.1	Occupancy sensor controls	Indicate on plans the spaces served by occupancy sensors; Indicate whether occupancy sensor controls are configured to be manual-on, automatic 50%-on, or serve a space eligible for automatic 100%-on per exception		
Yes	C405.2.1.2	Occupancy sensor controls - warehouses	Indicate aiseways and open areas in warehouse spaces provided with occupancy sensor controls that reduce lighting power by 50%		
NA	C405.2.6	Digital timer switch	Indicate required digital timer switch control function when control is used		
	C405.2.2.1	Automatic time switch controls	Indicate locations of override switches on plans and the lighting zone(s) served, include area sq. ft.		
NA	C405.2.4.2 C405.2.4.3	Daylight zones - Sidelight and toplight	Indicate primary and secondary sidelight daylight zone areas on plans, include sq. ft.; Indicate toplight daylight zone areas on plans, include sq. ft.; For small vertical fenestration assemblies (rough opening less than 10 percent of primary daylight zone) where daylight responsive controls are not required, provide fenestration area to daylight zone calculation(s)		
NA	C405.2.4	Daylight responsive controls	Indicate on plans lighting zone(s) served by daylight responsive controls; Identify sidelight and toplight daylight zones that are not provided with daylight sensing controls and the exception(s) that apply; Indicate on plans the lighting load reduction method - continuous dimming, or stepped dimming that provides at least two even steps between 0%-100% of rated power; Indicate that daylight sensing controls are configured to completely shut off all controlled lights in the lighting zone		
NA	C405.2.5	Additional controls - Specific application lighting controls	Identify spaces and lighting fixtures on plans that require specific application lighting controls per this section		
NA	C405.2.5 - Items 1&2	Display and accent lighting	Indicate on plans that display and accent lighting, and display case lighting are controlled independently from both general area lighting and other lighting applications within the same space; Indicate manual and automatic lighting control method		

Permit Number: 19-04179

Lighting, Motor, and Electrical Permit Checklist, Pg. 2

LTG-CHK

2015 Washington State Energy Code Compliance Forms for Commercial Buildings including R2, R3, R4 over 3 stories and all R1

Revised August 2016

Project Title: United Moving & Storage			Date: 9/9/2019		
The following information is necessary to check a permit application for compliance with the lighting, motor, and electrical requirements in the Washington State Energy Code, Commercial Provisions.					
Applicability (yes,no,na)	Code Section	Component	Compliance information required in permit documents	Location in Documents	Building Department Notes
NA	C405.2.5 - Item 3	Hotel/motel guest rooms	Indicate method of automatic control - vacancy or captive key control of all installed luminaires and switched receptacles in guest room		
NA	C405.2.5 - Item 4	Supplemental task lighting	Indicate method and location of automatic shut-off vacancy control for supplemental task lighting, including under-shelf or under-cabinet lighting		
NA	C405.2.5 - Item 5	Lighting for non-visual applications	Indicate on plans eligible non-visual lighting applications, include sq. ft. area of each lighting control zone; Indicate on plans that non-visual lighting are controlled independently from both general area lighting and other lighting applications within the same space; Indicate method of manual lighting control and applicable automatic lighting control		
NA	C405.2.5 - Item 6	Lighting equipment for sale or demonstration	Indicate on plans that lighting equipment for sale or demonstration are controlled independently from both general area lighting and other lighting applications within the same space; Indicate method of manual lighting control and applicable automatic lighting control		
Yes	C405.2.5 - Item 7	Means of egress lighting	Identify on plans egress fixtures that function as both normal and emergency means of egress illumination; Provide calculation of lighting power density of total egress lighting; If total egress lighting power density is greater than 0.02 W/sq. ft., indicate on plans egress fixtures requiring automatic shut-off during unoccupied periods; Indicate method of automatic shut-off control		
Yes	C405.2.7	Exterior lighting controls	Indicate on exterior lighting plans and fixture schedules the automatic lighting control method, control sequence, and locations served; For building façade and landscape lighting, indicate automatic controls shut off lighting as a function of dawn/dusk and fixed opening/closing time; For all other exterior lighting, indicate automatic controls shut off lighting as a function of available daylight; include control sequence that also reduces lighting power by at least 30% between 12am-6am, or from 1 hour after closing to 1 hour before opening, or based upon motion sensor		
	C405.5.1	Exterior building grounds lighting controls	For building grounds fixtures greater than 100 watts, indicate on plans whether fixtures have efficacy greater than 80 lumens or; are controlled by motion sensor, or are exempt lighting per C405.5.2		
NA	C405.2.5	Area controls - Master control switches and circuit power limit	Indicate location(s) of master control switch(es) intended to control multiple independent switches; circuit breaker may not be used as a master control switch; Verify that no 20 amp circuit controlled by a single switch or automatic control is loaded beyond 80%		
NA	C406.4	Enhanced digital lighting controls	To comply with additional efficiency package option, indicate on plans all interior lighting fixtures that are individually addressed and provided with continuous dimming, or exception taken; Include calculation of percent total installed interior lighting power that is configured with required enhanced lighting control functions (min 90% to comply with additional efficiency package option)		
NA	C405.13 C408.3	Lighting system functional testing	If claiming lighting system commissioning exemption provide supporting calculation; Identify applicable commissioning documentation requirements per Section C408 or eligibility for exception; Provide written procedures for functional testing of all automatic controls and describe the expected system response		

Permit Number: 19-04179

Lighting, Motor, and Electrical Permit Checklist, Pg. 3

LTG-CHK

2015 Washington State Energy Code Compliance Forms for Commercial Buildings including R2, R3, R4 over 3 stories and all R1

Revised August 2016

Project Title:	United Moving & Storage	Date	9/9/2019
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The following information is necessary to check a permit application for compliance with the lighting, motor, and electrical requirements in the Washington State Energy Code, Commercial Provisions.

Applicability (yes,no,na)	Code Section	Component	Compliance information required in permit documents	Location in Documents	Building Department Notes
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INTERIOR LIGHTING POWER & EFFICACY

Yes	C405.4.1 C405.4.1 C405.4.2	Total connected interior lighting power	Include all luminaires in lighting fixture schedule; indicate fixture types, lamps, ballasts, and manufacturer's rated watts per fixture; Identify spaces eligible for lighting power exemption on plans and in compliance forms; indicate the exception applied; Identify lighting equipment eligible for lighting power exemption in fixture schedule and in compliance forms; indicate the exception applied; Indicate that exempt lighting equipment is in addition to general area lighting and is controlled independently		
Yes	C405.3	Exit signs	Indicate location of exit signs on plans and rated watts per fixture in lighting fixture schedule (maximum 5 watts per fixture)		
NA	C405.1	Lighting in dwelling units - lamp efficacy	If high efficacy exception is applied to permanently installed lighting fixtures in dwelling units, indicate in lighting fixture schedule if lamps in fixtures are high efficacy per R404.1. Calculate percentage of fixtures with high efficacy lamps in project (min 75% to comply with exception).		
NA	C406.3	Reduced lighting power density - dwelling unit lamp efficacy	For project with dwelling units, to comply with additional efficiency package option indicate in lighting fixture schedule if lamps in fixtures have efficacy rating of 60 lumens per watt or more. Calculate percentage of fixtures with lamps that have this efficacy rating (min 95% to comply with option).		

Lighting Power Calculation - Indicate compliance path taken

Yes	C405.4.2.1	Building Area Method	Complete required compliance forms – proposed wattage per building area does not exceed maximum allowed wattage per building area. Identify locations of building areas on plans		
NA	C405.4.2.2	Space-By-Space Method	Complete required compliance forms – total proposed wattage does not exceed maximum allowed wattage. Identify locations of space types on plans, including retail display areas, lobby art & exhibit display areas, and ceiling heights as applicable		
NA	C406.3	Reduced lighting power density	To comply with additional efficiency package option, demonstrate in compliance forms that total connected interior lighting wattage is 75% less than the total maximum allowed lighting wattage via Building Area Method or Space-By-Space Method		

EXTERIOR LIGHTING POWER & EFFICACY

	C405.5.2	Total connected exterior lighting power	Include all luminaires in lighting fixture schedule; indicate fixture types, lamps, ballasts, and manufacturer's rated watts per fixture; Identify exterior applications eligible for lighting power exemption on plans and in compliance forms; indicate exception applied; Indicate that exempt exterior lighting is controlled independently from non-exempt exterior lighting; include exception claimed for each fixture or group of fixtures under exception category		
	Table C405.5.2(1)	Exterior lighting zone	Indicate building exterior lighting zone as defined by the AHJ		
	C405.5.1	Exterior building grounds lighting	For building grounds fixtures rated at greater than 100 watts that are complying based on efficacy, indicate rated lamp efficacy (in lumens per watt) in fixture schedule		
	C405.5.2	Exterior lighting power calculations	Complete required compliance form – proposed wattage for exterior lighting plus base site allowed does not exceed maximum allowed		

Permit Number: 19-04179

Lighting, Motor, and Electrical Permit Checklist, Pg. 4

LTG-CHK

2015 Washington State Energy Code Compliance Forms for Commercial Buildings including R2, R3, R4 over 3 stories and all R1

Revised August 2016

Project Title: United Moving & Storage			Date: 9/9/2019		
The following information is necessary to check a permit application for compliance with the lighting, motor, and electrical requirements in the Washington State Energy Code, Commercial Provisions.					
Applicability (yes,no,na)	Code Section	Component	Compliance information required in permit documents	Location in Documents	Building Department Notes
MOTORS & TRANSFORMERS					
NA	C405.6	Electrical transformers	Include electrical transformer schedule on electrical plans; indicate transformer size, efficiency, or exception taken		
NA	C405.7	Dwelling unit electrical energy consumption	Indicate on electrical plans that each dwelling unit in Group R-2 has a separate electrical energy meter		
NA	C405.8	Electric motor efficiency	Include all motors, including fractional hp motors, in electric motor schedule on electrical plans; indicate hp, rpm, rated efficiency, or exception applied		
NA	C405.9.1	Elevator cabs	For luminaires in each elevator cab, provide calculated average efficacy of combined fixtures that indicates efficacy is not less than 35 lumens per watt;		
			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		
NA	C405.9.2	Escalators and moving walks	Indicate escalators comply with ASME A17.1/CSA B44; automatic controls are configured to reduce operational speed to the minimum permitted when not in use		
NA	C405.9.3	Regenerative drive	Indicate all one-way down or reversible escalators are provided with a variable frequency regenerative drive		
NA	C405.10	Controlled receptacles	Identify all controlled and uncontrolled receptables on electrical plans in each space in which they are required; include receptacle configuration such as spacing between controlled and uncontrolled, duplex devices, etc; Indicate on plans whether the method of automatic control for each controlled receptable zone is by occupant sensor or programmable time-of-day control		

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

End of Lighting, Motor & Transformer Permit Documents Checklist

Permit Number: 19-04179

Mechanical Summary**MECH-SUM**

2015 Washington State Energy Code Compliance Forms for Commercial Buildings including R2 & R3 over 3 stories and all R1

Revised January 2017

Project Information	Project Title: United Moving and Storage	Date: 9/9/2019	
	Applicant Information. Provide contact information for individual who can respond to inquiries about compliance form information provided.		
	Company Name:		
	Company Address:		
	Applicant Name:		
Applicant Phone:		For Building Dept. Use	
Project Description Briefly describe mechanical systems in the text box provided <input type="checkbox"/> Total Bldg Performance (TBP) This path includes all mandatory provisions per C401.2 Option 2. MECH-SUM, MECH-CHK, and C407 Energy Analysis forms required.	<input type="checkbox"/> New Building <input type="checkbox"/> Building Addition <input type="checkbox"/> Tenant Improvement <input type="checkbox"/> System Retrofit <input checked="" type="checkbox"/> No System Changes		
Design Load Calculations	<input type="checkbox"/> Load calculation summary <input type="checkbox"/> MECH-LOAD-CALC Form Provide design load calculations for all mechanical systems and equipment serving the building heating, cooling or ventilating needs. If a load calculation summary is provided with the permit documents that includes all applicable compliance information then the MECH-LOAD-CALC form is not required.		
Mechanical Schedules	<input type="checkbox"/> Mechanical Plans <input type="checkbox"/> MECH-EQ Forms (TBD) Indicate location of equipment compliance information. If provided on plans then MECH-EQ forms are not required, however, include on plans all applicable compliance information listed in MECH-EQ tables.		
Dedicated Outdoor Air System Requirements and High Efficiency VAV Alternate	<input type="checkbox"/> DOAS is required per C403.6 effective July 1, 2017 (office, retail, education, library and fire station occupancies) All occupied, conditioned areas shall be served by a DOAS that delivers required ventilation air in a manner that does not require space conditioning fan operation. Space conditioning fans cycled off when no heating or cooling is required. <input checked="" type="checkbox"/> Ventilation provided via natural ventilation per 2015 IMC in lieu of DOAS (C403.6, Exception 1) <input type="checkbox"/> Ventilation and space conditioning provided by a HEVAV system per C403.7 in lieu of DOAS (C403.6, Exception 2) <input type="checkbox"/> DOAS included in project, although not required (occupancy not office, retail, education, library or fire station) <input type="checkbox"/> DOAS related allowances included in project: <input type="checkbox"/> Prescriptive vertical fenestration maximum area allowance increased to 40% per C402.4.1.4 with 100% of conditioned floor area in building served by DOAS. <input type="checkbox"/> Exception to air economizer per C403.3 Exception 1, include MECH-ECONO form.		
Fan Power	<input type="checkbox"/> Project includes HVAC air distribution systems that provide heating and/or cooling If yes, provide a MECH-FANSYS -SUM form. <input type="checkbox"/> For one or more systems, the total fan motor nameplate hp of all fans in HVAC system exceeds 5hp. If yes, provide a separate MECH-FANSYS form for each HVAC system exceeding the 5 horsepower threshold. Refer to Section C403.2.11 and MECH-FANSYS-DOC for requirements and exceptions.		
HVAC Hydronic Systems	<input type="checkbox"/> Hydronic chilled water <input type="checkbox"/> Water-loop heat pump <input checked="" type="checkbox"/> No hydronic systems <input type="checkbox"/> Hydronic heating water <input type="checkbox"/> Geothermal		
C406 Additional Efficiency Options - Mechanical	<input type="checkbox"/> C406.2 More efficient HVAC equipment and fan systems Requires 90% of heating and cooling capacity to be equipment listed in tables C403.2.3(1)-(9) or air-to-water heat pumps and heat recovery chillers. All equipment listed in tables C403.2.3(1)-(7) must be 15% more efficient than minimum requirements. All stand alone supply, return, and exhaust fans over 1hp must have FEQ ≥ 71 and must be selected within 10% of maximum total or static pressure. <input type="checkbox"/> C406.6 Dedicated outdoor air system (DOAS) Requires 90% of conditioned floor area to be served by a DOAS per C403.6 that delivers required ventilation air in a manner that does not require space conditioning fan operation. <input type="checkbox"/> C406.7 Reduced energy in service water heating Requires 90% of floor area be in occupancy types listed in C406.7.1 and that 60% of annual hot water energy use be provided by heat pump, waste heat recovery or solar water-heating systems.		

Mechanical Summary, pg. 2**MECH-SUM**

2015 Washington State Energy Code Compliance Forms for Commercial Buildings including R2 & R3 over 3 stories and all R1

Revised January 2017

Service Water Heating Systems	Equipment Type (s)
	<input type="checkbox"/> Hot water heating tank(s) <input type="checkbox"/> Instantaneous <input type="checkbox"/> No service water systems <input type="checkbox"/> Dedicated boiler <input type="checkbox"/> Heat exchange from space heat boiler or central hot water/steam Distribution Type (s) <input type="checkbox"/> Circulation System <input type="checkbox"/> On-demand
Commissioning	Commissioning is required for: <input type="checkbox"/> Mechanical systems per C408.2 <input type="checkbox"/> Service water heating systems per C408.4 <i>If required, commissioning shall be performed for all applicable systems regardless of individual equipment capacity.</i> Exceptions to commissioning requirements: <input type="checkbox"/> Total output capacity of all mechanical space conditioning systems in the building do not exceed 240,000 Btu/h cooling or 300,000 Btu/h heating. Mechanical systems commissioning not required. <input type="checkbox"/> Capacity of largest service water heating system in building does not exceed 200,000 Btu/h. Service water heating systems commissioning not required.

Low Energy and Semi-Heated Spaces

(Note 6 and 7)

Space Type	Location in Plan(s)	Space(s) Served	Area Served, square feet	Heating Capacity, Btu/h (Note 4)	Cooling Capacity, Btu/h (Note 5)	Peak Space Conditioning Capacity, Btu/h-sf	Compliance Check	Notes

Note 4 - Provide total installed heating output capacity of systems serving Low Energy or Semi-Heated space(s) in btuh.

Note 5 - Provide total installed cooling capacity of system serving Low Energy space(s) in Btu/h. Not allowed for semi-heated spaces. Enter 0 if no cooling.

Note 6 - Refer to Section C402.1.1 Low Energy Building. Installed peak space conditioning capacity, heating or cooling, may not exceed 3.4 Btu/h*sf.

Note 7 - Refer to Section C402.1.1.1 and Semi-Heated Space definition in Chapter 2. Total heating output capacity may not exceed 8 Btu/h*sf. Only systems without electric resistance heating and no cooling are eligible for the wall insulation exception under semi-heated.

Mechanical Permit Plans Checklist**MECH-CHK**

2015 Washington State Energy Code Compliance Forms for Commercial Buildings including R2 & R3 over 3 stories and all R1

Revised January 2017

Project Title: United Moving and Storage**Date:** 9/9/2019

The following information is necessary to check a permit application for compliance with the mechanical systems and equipment requirements of the Washington State Energy Code, Commercial Provisions.

Applicable (yes,no,na)	Code Section	Code Provision	Information Required - <i>Must be in permit documents</i>	Location in Documents	Building Department Notes
Equipment - Sizing, Performance and Type					
NA	C403.1	Exempt process equipment	Identify equipment to be used in manufacturing, industrial or commercial processes that do not provide space conditioning; identify provisions applicable to this equipment per C403.1 exception		
NA	C403.2.1	Load calculations	Provide load calculations performed per ASHRAE Std 183 or equivalent, using design parameters per C302 and Appendix C; include load adjustments to account for energy recovery		
NA	C403.2.2	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 taken		
NA	C403.2.3 C403.2.3.2 C403.2.13.1	HVAC equipment performance requirements (efficiency)	Provide equipment schedules on plans or complete MECH-EQ forms indicating type, capacity, rated and WSEC minimum efficiencies for all heating and cooling equipment; include supply and OSA cfm's and operating hours for all air systems; identify heating and cooling equipment that does not have a corresponding WSEC minimum efficiency (manufacturer rated)		
NA	C405.8 C403.2.14	Electric motor efficiency	List all motors $\geq 1/12$ hp (that are not integral to a rated piece of equipment) in the mechanical or electrical equipment schedules on plans; indicate hp, rpm, number of poles and rated efficiency, or exception applied For fractional hp motors ($1/12 - 1$ hp), indicate whether they are an electronically commutated motor, have rated efficiency of at least 70%, or exception taken		
NA	C403.2.11.1	Fan power limitation	For all HVAC fan systems that provide heating and / or cooling, provide system total nameplate hp in MECH-FANSYS-SUM form For all applicable HVAC systems with total fan motor hp > 5hp, verify fan system motor hp or bhp complies with fan power limits per equations in Table C403.2.11.1(1), provide MECH-FANSYS form for each system		
NA	C403.2.11.2	Motor nameplate hp	For all applicable HVAC systems with total fan motor hp > 5hp, indicate fan motors specified are the smallest available motor hp size greater than fan bhp, note exceptions taken		
NA	C403.2.11.3	Fan efficiency	For all applicable HVAC systems with total fan motor hp > 5hp, identify in equipment schedule all fans required to comply with fan efficiency grade and indicate rated FEG is ≥ 67 , or exception taken; indicate these fans are sized so total efficiency is within 15% of the fan maximum total efficiency		
NA	C403.2.11.4	Group R occupancy exhaust fan efficacy	For all exhaust fans < 400 cfm in Group R occupancies, indicate in equipment schedule the fan flow rate and efficacy (cfm/watt), or exception taken; refer to Table C403.2.11.4 (CE-57)		
NA	C403.2.13	Variable flow capacity - fans	For fan motors ≥ 7.5 hp, indicate method of variable flow control (VSD or equivalent method) in equipment schedule, or exception taken; for equivalent method for an HVAC system refer to HVAC System Controls for additional requirements		
NA	C403.2.3	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 taken		
NA	C403.4	Large capacity cooling systems	For buildings with ≥ 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 < 66% of the total)		
NA	C403.2.3.1	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		
NA	C403.2.13.1 C403.4.3.2	Centrifugal fan open-circuit cooling towers	For open-circuit centrifugal fan cooling towers with $\geq 1,100$ gpm capacity, indicate cooling towers comply with efficiency requirements for axial fan open circuit cooling towers		
NA	C403.4.2 C403.4.2.5	Large capacity boiler systems	For single boilers with > 500,000 Btu/h capacity, indicate multi-stage or modulating burner For boiler system (single or multiple) with > 1,000,000 Btu/h capacity, indicate turndown ratio per Table C403.4.2.5 and method (multiple single input boilers, modulating boilers, or combination)		
na	C403.2.13	Variable flow capacity - pumps	For pump motors ≥ 7.5 hp, indicate method of variable flow control (VSD or equivalent method) in equipment schedule, or exception taken; for equivalent method for a hydronic system refer to Hydronic System Controls for additional requirements		
NA	C403.2.3	Gas and oil-fired forced air furnace and unit heaters	For forced air furnaces with capacity $\geq 225,000$ Btu/h and all unit heaters, indicate in equipment schedule intermittent ignition or IID, flue or draft damper, and rated jacket loss		
NA	C403.2.4.8	Combustion heating equipment	For combustion heating equipment with output capacity > 225,000 Btu/h, indicate modulating or staged combustion control		
NA	C403.2.3.3	Packaged electric heating / cooling equipment	Verify all packaged electric equipment with > 6,000 Btu/h cooling capacity and any amount of heating is a heat pump; include in equipment schedules		
NA	C403.2.12	Heating outside a building	Indicate systems providing heating in non-enclosed outdoor occupied spaces are radiant systems; refer to HVAC System Controls for additional requirements		
NA	C403.2.7.1	Kitchen exhaust hoods	Indicate on plans the type, duty and exhaust air rate of each kitchen hood, refer to HVAC System Controls for additional requirements		
NA	C403.2.4.3	Outdoor supply air, exhaust and relief dampers	Indicate locations of OSA intake, and exhaust and relief outlet dampers on plans; indicate whether dampers are Class 1 motorized, or gravity and exception taken (include leakage rating, cfm/sf); refer to HVAC System Controls for additional requirements for OSA dampers		
NA	C403.2.4.3	Return air dampers	Indicate locations of return air dampers that are integral to 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)		
NA	C403.2.4.3	Stairway and shaft vent dampers	Indicate location of stairway and shaft vent dampers on plans; verify dampers are Class 1 motorized; refer to HVAC System Controls for additional requirements		
NA	C403.2.4.4	Zone isolation dampers	For systems serving areas > 25,000 sf or spanning more than one floor, that include areas that are expected to be occupied non-simultaneously; identify isolation zone areas on plans and locations of associated isolation dampers in HVAC distribution system; refer to HVAC System Controls for additional requirements		
NA	C403.2.3.4	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 taken		

Permit Number: 19-04179

Mechanical Permit Plans Checklist**MECH-CHK**

2015 Washington State Energy Code Compliance Forms for Commercial Buildings including R2 & R3 over 3 stories and all R1

Revised January 2017

Project Title: United Moving and Storage				Date	9/9/2019
The following information is necessary to check a permit application for compliance with the mechanical systems and equipment requirements of the Washington State Energy Code, Commercial Provisions.					
Applicable (yes,no,na)	Code Section	Code Provision	Information Required - Must be in permit documents		Location in Documents Building Department Notes

Additional Efficiency Package Option, More Efficient HVAC Equipment & Fan Performance -**Must comply with all 3 provisions to be eligible**

NA	C406.2.1 C403.2.3	HVAC system selection	To comply with additional efficiency package option, calculate the percentage of heating and cooling equipment in the project (based on output capacity) that do not have a corresponding WSEC listed efficiency; shall be less than 10% to comply		
NA	C406.2.2 C403.2.3	Minimum equipment efficiency	To comply with additional efficiency package option, indicate that all listed heating and cooling equipment have a rated efficiency that exceeds WSEC listed efficiency by at least 15%		
NA	C406.2.3 C403.2.11.3	Minimum fan efficiency	To comply with additional efficiency package option, indicate rated FEG of stand alone fans is ≥ 71; indicate these fans are sized so the fan efficiency at design conditions is within 10% of the maximum total or static efficiency		

HVAC System Controls

NA	C403.2.4.1	Thermostatic controls (thermostats and humidistats)	Indicate locations of thermostatic and humidity control devices and the zones they serve on plans, including perimeter system zones 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 If applying Exception 2 to nonperimeter zones adjacent to perimeter zones, indicate that setpoints and deadband settings in these zones are coordinated so cooling in a nonperimeter zone does not occur until the temperature in that zone is 5°F higher than the adjacent perimeter zone temperature in heating		
NA	C403.2.4.1.1	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		
NA	C403.2.4.1.2	Deadband	Indicate zone thermostatic controls configured with 5°F minimum deadband for systems that control both heating and cooling		
NA	C403.2.4.1.3	Setpoint overlap restriction (thermostats)	If separate heating and cooling systems with separate thermostatic control devices are used to serve a zone, indicate locations of both thermostatic control devices and the zone they serve on plans Indicate a limit switch, mechanical stop or DDC control with programming to prevent simultaneous heating and cooling		
NA	C403.2.4.2 C403.2.4.2.1 C403.2.4.2.2	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 programmable controls); note exceptions taken		
NA	C403.2.4.2.3	Automatic (optimum) start	Indicate system controls that adjust equipment start time required to bring each area served up to design temperature just prior to scheduled occupancy		
NA	C403.2.4.3	Outdoor supply air dampers	Indicate automatic controls configured to close OSA damper during unoccupied equipment operation; not including economizer cooling, night flush or IMC required OSA / exhaust		
NA	C403.2.4.3	Stairway and shaft vent dampers	Indicate method of activation of stairway and shaft vent dampers (fire alarm or interruption of power)		
NA	C403.2.4.4	Zone isolation controls	For systems serving areas > 25,000 sf or spanning more than one floor, that include areas that are expected to be occupied non-simultaneously; indicate controls that allow for independent space conditioning of isolation zones; or exception taken		
NA	C403.2.12	Heating outside a building	Indicate occupancy sensing or timer switch controls configured to automatically shut off heating system when area served is unoccupied		
NA	C403.2.4.5	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		
NA	C403.2.4.6	Freeze protection system controls	Indicate automatic controls to shut off system when outdoor temperature exceeds 40°F, or conditions protect fluid from freezing		
NA	C403.2.4.9	Group R1 hotel / motel guest rooms	For hotels and motels with over 50 guest rooms, indicate automatic controls serving guest rooms that are capable of setback (heating) and set-up (cooling) of temperature setpoint by at least 5°F; indicate control method - activated by room entry or occupancy sensor		

Mechanical Permit Plans Checklist**MECH-CHK**

2015 Washington State Energy Code Compliance Forms for Commercial Buildings including R2 & R3 over 3 stories and all R1

Revised January 2017

Project Title: United Moving and Storage**Date:** 9/9/2019

The following information is necessary to check a permit application for compliance with the mechanical systems and equipment requirements of the Washington State Energy Code, Commercial Provisions.

Applicable (yes,no,na)	Code Section	Code Provision	Information Required - <i>Must be in permit documents</i>	Location in Documents	Building Department Notes
NA	C403.2.4.10 C403.2.4.11	Group R2 / R3 dwelling units, Group R2 sleeping units	For primary space conditioning system, indicate 5-2 programmable thermostats capable of two setback periods per day; for all thermostats indicate purpose (heating only, cooling only, or both), required temperature range and at minimum a 10°F deadband; or exception taken		
NA	C403.2.6 C403.2.11.4	Ventilation	Indicate method of ventilation air delivery (natural or mechanical) for each zone If mechanically delivered, indicate that 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 taken If delivered via natural ventilation, identify required elements per IMC including minimum openable area to the outdoors or qualifying adjoining spaces		
NA	C403.2.6.2	Demand controlled ventilation	Identify spaces > 500 sf with occupant load > 25 people/1,000 sf per IMC; for each space indicate whether it is served by an HVAC system with total design OSA > 3,000 cfm, and / or the system has airside economizer or automatic modulating OSA damper; indicate OSA controls are configured to provide demand controlled ventilation or provide supporting documentation for applied exception		
NA	C403.2.6.3	Occupancy sensors	For gyms, classrooms, auditoriums and conference rooms > 500 sf, indicate occupancy-based OSA control when space is unoccupied and method (closes OSA damper or shuts-off equipment); or alternate means provided to automatically reduce OSA when space is partially occupied		
NA	C403.2.6.4 C403.2.6.4.1	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)		
NA	C403.2.6.4 C403.2.6.4.2	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 taken		
NA	C403.2.7.1	Kitchen exhaust hoods	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; if applicable, indicate that direct make-up air to each hood does not exceed 10% of hood exhaust For kitchens with total hood exhaust exceeding 2,000 cfm, indicate exhaust air rate per Table C403.2.7.1 and compliance method (DCV, energy recovery, or transfer air that would otherwise be exhausted)		
NA	C403.2.7.2	Laboratory exhaust systems	Refer to Systems Requiring Energy Recovery for requirements		
NA	C403.2.13	Variable flow capacity - HVAC system fans	For HVAC fan motors ≥ 7.5 hp, indicate method of variable flow control (VSD, or equivalent control method that reduces design air volume by 50% at 1/3 static design pressure); note exception taken		
NA	C403.3.1	DX air handler variable cooling control (Under Integrated Economizer)	For DX air handlers with economizer and 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 control method (cooling capacity controlled in response to space temperature, space temperature controlled by modulating supply airflow, or both)		
NA	C403.2.11.5	Fan airflow control	For DX air handling units with cooling capacity ≥ 65,000 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) 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 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 taken		
NA	C403.2.4.12	DDC system capabilities	Provide central and zone level DDC controls as required based on system application, capacity or size thresholds and other qualification per Table C403.2.4.12.1 Identify all DDC system input / output control points; indicate capability for trending and graphical display		

Ducting Systems

NA	C403.2.8.1 C403.2.8.3	Duct construction	Indicate on plans that all ductwork is constructed and sealed per IMC For OSA ductwork, also indicate on plans that ductwork meets air leakage requirements per C402.5 and vapor retarder requirements per the IBC		
NA	C403.2.8.3	Duct pressure classifications	Identify location of low, medium and high pressure ductwork on plans		
NA	C403.2.8.3.3	High pressure duct leakage test	Indicate high pressure duct leakage testing requirements on plans; provide test results to jurisdiction when completed		

Permit Number: 19-04179

Mechanical Permit Plans Checklist**MECH-CHK**

2015 Washington State Energy Code Compliance Forms for Commercial Buildings including R2 & R3 over 3 stories and all R1

Revised January 2017

Project Title: United Moving and Storage			Date: 9/9/2019		
The following information is necessary to check a permit application for compliance with the mechanical systems and equipment requirements of the Washington State Energy Code, Commercial Provisions.					
Applicable (yes,no,na)	Code Section	Code Provision	Information Required - <i>Must be in permit documents</i>	Location in Documents	Building Department Notes
NA	C403.2.8.1 C403.2.8.2	Duct insulation	For supply and return ductwork located in unconditioned space or outdoors, indicate R-value of insulation on ductwork on plans; identify climate zone; note exceptions taken		
			For supply ductwork located in conditioned space, identify if design supply temperature is < 55°F or > 105°F and indicate R-value of insulation on this ductwork on plans; note exception taken		
			For OSA ductwork, shafts and plenums, indicate R-value of insulation on these elements on plans per Table C402.1.3 for steel-framed walls; note exception taken		
Piping Systems					
NA	C403.2.9	Piping insulation	Indicate design temperature range of fluid conveyed in piping and thickness of insulation (in inches) on hydronic piping plans; or exception taken		
NA	C403.2.9.1	Piping insulation exposed to weather	Indicate method of protection of pipe insulation from damage / degradation on hydronic piping plans		
Economizers					
NA	C403.3	Air economizer required	Identify in equipment schedules on plans or in MECH-EQ forms all cooling systems requiring air economizer controls		
			Provide MECH-ECONO form indicating systems utilizing air economizer exceptions, including those with water-side economizer in lieu of air economizer; indicate on plans eligible exception(s) taken and measures to comply with exception(s)		
NA	C403.3.1	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		
NA	C403.3.2	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		
NA	C403.3.3.1	Air economizer capacity	Indicate modulating OSA and return air dampers are configured to provide up to 100% OSA for cooling		
NA	C403.3.1 C403.3.3.2	Integrated air economizer	Verify mechanical cooling controls are interlocked with air economizer controls so the outside air damper remains in 100% open position when mechanical cooling is also required to meet the cooling load, until the leaving air temperature is < 45°F		
			For systems with cooling capacity ≥ 65,000 Btu/h, verify that control of economizer dampers is not based only on mixed air temperature; or exception taken		
NA	C403.3.3.3	Air economizer high limit controls	Indicate high limit shut-off control method and required high limit per Table C403.3.3.3		
NA	C403.3.4.1	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 OSA temperatures		
NA	C403.3.4.2	Water economizer maximum pressure drop	Indicate pressure drop across precooling coils and heat exchangers in water economizer system do not exceed pressure drop limit		
NA	C403.3.1	DX air handling equipment control	For DX air handlers with economizer and cooling capacity ≥ 65,000 Btu/h, refer to HVAC System Controls for requirements		
NA	C403.2.4.7	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		
Systems Requiring Energy Recovery					
na	C403.5.1	Energy recovery (ER) - ventilation / exhaust systems	For systems with design OSA > 5,000 cfm, or design supply air cfm and % OSA exceeding the values in Tables C403.5.1(1) or (2), indicate exhaust air ER method; or exception taken with supporting calculations		
			For rooms served by multiple systems with aggregate design OSA > 5,000 cfm, or aggregate design supply air cfm and % OSA exceeding the values in Tables C403.5.1(1) or (2), indicate exhaust air ER method; or exception taken with supporting calculations		
			Indicate ER rated effectiveness that increases OSA enthalpy by ≥ 50% based on delta between OSA and return air enthalpies at design conditions		
NA	C403.2.7.2	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; ER effectiveness (min 25°F); or alternative method per exception (VAV exhaust, semi-conditioned makeup, or CERM calculation)		
NA	C404.10.4 (under C404.11)	Pools and permanent spas exhaust systems (energy recovery)	For buildings with pools or spas with water surface area > 200 sf, indicate exhaust air ER method and use of waste heat (preheat ventilation air, pool water or service hot water); or exception taken		
NA	C403.5.2	Energy recovery - steam condensate systems	Indicate ER system has the rated effectiveness and is configured to decrease the exhaust air temperature at design conditions by ≥ 36°F		
			For buildings with on-site steam heating systems, indicate condensate water ER		
			For buildings that use off-site generated steam where condensate is not returned to the source, indicate on-site condensate water ER		

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NA	C403.5.3	Energy recovery - cooler / freezer condensers	For buildings with food service, meat or deli departments that have $\geq 500,000$ Btu/h of remote refrigeration capacity for coolers / freezers, indicate condenser ER and use of captured energy (service water heating, space heating, or dehumidification reheating) For buildings with $\geq 40,000$ sf conditioned floor area and with $\geq 1,000,000$ Btu/h of remote refrigeration capacity for coolers / freezers, indicate condenser ER and use of captured energy for service water heating and also for space heating, or dehumidification reheating		
NA	C403.5.4	Energy recovery - condenser systems	For buildings with 24-hour operation and with $> 1,500,000$ Btu/h of heat rejection capacity and design service hot water load $> 250,000$ Btu/h, indicate condenser ER to pre-heat service water; or exception taken. 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).		

Hydronic System Controls

NA	C403.2.13 C403.4.2.7	Variable flow control - hydronic system pumps	For hydronic system pump motors ≥ 7.5 hp, indicate method of variable flow control (VSD or equivalent method that requires $\geq 30\%$ design wattage at 50% design fluid flow); note exception taken Identify whether hydronic coils have DDC controls and associated manner of pump speed control (differential pressure, zone hydronic demand, etc)		
NA	C403.2.5 C403.4.2.4	Hydronic system setback and part load controls	For boilers that provide building heating, indicate controls that provide heating water temperature setback based on outdoor temperature For heating and chilled water systems $\geq 300,000$ Btu/h, indicate systems are configured to automatically reset supply water temperature based upon demand; or exception taken. If system pump motor hp ≥ 3 hp, also indicate controls automatically reduce flow by $\geq 50\%$. For chilled water systems ($\geq 300,000$ Btu/h, pump motor hp ≥ 3 hp) that serve water-cooled unitary air conditioners, indicate VSD or staged pumps in chilled water system and heat rejection loop that reduce pump flow so that one control valve is nearly wide open, or to maintain a minimum differential pressure; or exception taken		
NA	C403.4.2	Boiler sequencing	Indicate automatic controls that sequence operation of multiple boilers		
NA	C403.4.6	Hot gas bypass limitation	For cooling equipment with hot gas bypass, provide either multiple step unloading or continuous capacity modulation; indicate bypass capacity per Table C403.4.6		
NA	C403.4.2.2	Two-pipe changeover systems	Indicate changeover deadband (min 15°F), heating / cooling mode scheduling and changeover temperature range (limit 30°F)		
NA	C403.4.2.6	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		
NA	C403.2.13.1.1 C403.4.3.1.1 C403.4.3.1.2	Heat rejection equipment - variable flow control	For cooling towers with fan motors ≥ 7.5 hp, indicate VSD and method to adjust fan speed (adjusted based on leaving fluid temperature or condenser temperature / pressure of heat rejection device) For multiple-cell heat rejection equipment with VSD, indicate controls that ramp all fans in unison		
NA	C403.4.3.3	Heat rejection equipment - cooling tower flow turndown	Indicate open-circuit cooling towers with multiple pumps or VSD control are designed so all cells can be run in parallel		
NA	C403.4.2.3.1	Water loop heat pump - deadband	Indicate capability of central equipment to provide minimum 20°F water supply temperature deadband between heat rejection and heat addition modes; or exception taken		
NA	C403.4.2.3.2.1	Water loop heat pump - heat rejection equipment, Zone 4	Indicate type of cooling tower (open- or closed-circuit) in equipment schedule; indicate method used to limit system heat loss when heat rejection is not needed		
NA	C403.4.2.3.2.2	Water loop heat pump - heat rejection equipment, Zone 5	For open- or closed-circuit cooling towers, provide a heat exchanger that separates the cooling tower and heat pump loop		
NA	C403.4.2.3.3	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		

Dedicated Outdoor Air Systems (DOAS) - Optional through 6/30/16, Prescriptive 7/1/2016

NA	C403.6 C403.6.3	Dedicated outdoor air systems	For buildings with office, retail, education, library and fire station spaces, identify these spaces on plans; indicate that ventilation air in each occupied space is provided via a DOAS system; or document compliance with C403.6.3 Impracticability; or exception taken (buildings complying with C402.4.1.4 or C406.6 may not utilize exceptions)		
NA	C403.6.1	Energy recovery ventilation with DOAS	For all DOAS systems, indicate exhaust air ER method; or exception taken with supporting calculations. Indicate ER rated effectiveness that increases OSA enthalpy by $\geq 50\%$ based on delta between OSA and return air enthalpies at design conditions.		
NA	C403.6.2	Heating / cooling system controls with DOAS	Indicate 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 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		

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NA	C402.4.1.4 C403.6	Increased prescriptive maximum vertical fenestration area with DOAS	Indicate that all occupied, conditioned spaces are served by a DOAS per C403.6		
Additional Efficiency Package Option, Dedicated Outside Air Systems (DOAS)					
NA	C406.6	Building provided with DOAS	To comply with additional efficiency package option, indicate that 90% or more of all occupied, conditioned spaces are served by a DOAS per C403.6		
Multiple Zone Air Systems					
NA	C403.4.4	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		
NA	C403.4.4	VAV systems serving multiple zones	Provide equipment schedules on plans or MECH-EQ form that list all VAV air terminals and types For each air terminal include: maximum airflow rates for primary supply air during zone peak heating and zone peak cooling; maximum airflow during reheating, recooling or mixing; minimum airflow rate to maintain required ventilation, and the basis for these values; if IMC or ASHRAE 62.1 multiple zone equation is basis for minimum flow rates, provide calculation on plans		
NA	C403.4.4.1	Single duct VAV terminal units	Indicate single duct terminal units are configured to reduce primary supply air before reheating or recooling		
NA	C403.4.4.2	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		
NA	C403.4.1.1 C403.4.1.2	VAV system static pressure sensors - 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. 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		
NA	C403.4.4.3	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 taken		
NA	C403.4.4.4	VAV system supply air reset	Indicate controls automatically reset supply air temperature in response to building loads or outdoor air temperature; or exception taken		
Multiple Zone HVAC Systems, High Efficiency VAV - Required for systems utilizing C403.6 DOAS Exception 2, must comply with all 16 provisions					
NA	C403.7, Item 1	Air economizer	Indicate system is configured for 100% air economizer operation and complies with all related economizer requirements per C403.3 (without economizer exceptions)		
NA	C403.7, Item 2	Direct digital controls (DDC)	Provide DDC controls for all components of system; identify all DDC system input / output control points; indicate capability for trending and graphical display		
NA	C403.7, Item 3	Outdoor airflow measurement and reduction	For systems with minimum OSA > 2,500 cfm, indicate outdoor airflow monitoring station that measures OSA intake under all load conditions; indicate control sequence that increases or reduces system OSA cfm based on VAV terminal feedback of ventilation efficiency (per C403.4.4.3 without exceptions) or DCV (per C403.2.6.2)		
NA	C403.7, Item 4	Supply airflow measurement	For systems with minimum OSA > 2,500 cfm, indicate supply airflow monitoring station capable of measuring supply air delivered to VAV terminals under all load conditions		
NA	C403.7, Item 5	Zone isolation and maximum area served	Verify maximum area served by a single HEVAV system is $\leq 50,000$ 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 C403.2.4.4		
NA	C403.7, Item 6	Interior / exterior zone design supply air temperature	Verify that VAV terminals serving interior cooling driven loads are sized per design supply air temperature that is 5°F higher than VAV terminals serving exterior zones		
NA	C403.7, Item 7	Maximum air terminal inlet velocity	Identify air terminals with minimum primary airflow setpoints > 50% of maximum setpoint in equipment schedule or MECH-EQ form; indicate air terminal inlet velocity does not exceed 900 fpm		
NA	C403.7, Item 8	Sequence of operation	Indicate DDC system sequences of operation are designed and configured per ASHRAE GPC 36		
NA	C403.7, Item 9	Maximum allowable system brake horsepower	Verify fan system bhp is $\leq 90\%$ of the bhp limit per Option 2 equation in Table C403.2.11.1(1), provide MECH-FANSYS form for each system		
NA	C403.7, Item 10	Fan-powered terminal unit motor and control	Indicate all series and parallel terminal fans have electronically commutated motors; 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 is $\leq 66\%$ of peak design air flow or provide supporting documentation for applied exception		

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NA	C403.7, 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; verify all other zones are served by single duct terminal units		
NA	C403.7, 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, based upon the VAV air handling unit OSA ventilation fraction		
NA	C403.7, Item 13	High occupancy space controls	For spaces > 150 sf with occupant density ≥ 25 people / 1000 sf, indicate space is served by a dedicated terminal unit with DCV control that resets terminal unit ventilation setpoint; also indicate occupancy sensor control that automatically reduces minimum ventilation to zero and sets back room heating and cooling setpoints by ≥ 5°F		
NA	C403.7, Item 14	Dedicated HVAC systems	For server, electronic equipment, telecom or similar spaces with cooling loads > 5 W/sf, indicate spaces are served by independent HVAC systems that are separate from HPVAV systems serving rest of building; indicate dedicated HVAC systems have air economizer controls or energy recovery per C403.3 Exception 9		
NA	C403.7, Item 15	Central plant efficiency	Indicate whether systems are served by a high efficiency heating water plant, or a high efficiency chilled water plant If complying via high efficiency heating water plant: Indicate all VAV terminals have hydronic heating coils served by heating water system with either gas-fired boiler(s) with thermal efficiency ≥ 90%, air-to-water heat pumps, or heat recovery chillers		
			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 C403.2.3(7) (note water-cooled IPLV is max, all others are min); indicate smallest chiller or compressor in plant is ≤ 20% of total plant capacity, or provide thermal storage sized for ≤ 20% of total plant capacity		
NA	C403.7, Item 16	Fault detection and diagnostics	Indicate DDC system includes a fault detection and diagnostics (FDD) system configured to monitor operation and provide fault reporting of required parameters for all VAV air handlers and VAV air terminal units in the HPVAV system		

HVAC Equipment Energy Use Metering

NA	C409.3.1	HVAC equipment energy use metering	For new buildings > 50,000 sf 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		
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Documentation and System Specific Requirement To Support Commissioning

NA	C408.2	Scope of mechanical systems commissioning	Indicate that all mechanical systems, equipment, and controls for which the WSEC requires control functions and / or configuration to perform specific functions are required to be commissioned; For buildings with ≥ 240,000 Btu/h total output cooling capacity or ≥ 300,000 Btu/h total output heating capacity, 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		
na	C403.2.10 C408.1.1 C408.1.2 C408.1.4.2 C103.6	Commissioning requirements in construction documents	Indicate in plans and specifications that Cx per C408 is required for all applicable mechanical systems; Include general summary with at a minimum of Items 1 thru 4 of the Cx plan per C408.1.2 including: 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); Include in general summary that a Cx project report or Compliance Checklist (Figure C408.1.4.2) shall be completed by the Certified Cx Professional and provided to the owner prior to the final mechanical inspection.		
NA	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		
NA	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		
NA	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		
NA	C408.2.3	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		

Project Close Out Documentation

NA	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 compliance forms and calculations		
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