Pre-Occupancy Commissioning Report

16a-38k-8

Ox Ridge Elementary School

Darien, CT

SES Project No. 19-161

July 23, 2024

Prepared by:

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SES

July 23, 2024

Mr. Gregg Bergmiller
Associate
The S/L/A/M Collaborative
80 Glastonbury Blvd.
Glastonbury, CT 06033

RE: Ox Ridge Elementary School
Pre-Occupancy Commissioning Report

Dear Mr. Bergmiller,

In accordance with the State of Connecticut regulation section 16a-38k-8(b), Reporting Requirements for the renovation of state funded projects per the High Performance Building Guidelines, we are submitting the following Pre-Occupancy Commissioning Report to the Town of Darien

The Pre-Occupancy Commissioning Report is required to identify that all design elements of the project that address each completed strategy in sections 16a-38k-3, 16a-38k-5, and 16a-38k-6 of the Regulations of Connecticut State Agencies; or alternatively, in sections 16a-38k-3, 16a-38k-5, and 16a-38k-7 of the Regulations of Connecticut State Agencies.

The compliance strategies were developed by the Owner, Design Team and Construction Manager. These strategies are listed in the report in the form of an expanded High Performance Building checklist, along with the responsible party and the methods used for implementation.

The checklist, originated by the Architect of Record, includes columns where compliance can be most easily found, whether on the drawings, in specifications, or through the design process.

To the best of our knowledge, based on our commissioning review of the compliance checklist, representations made in the enclosed Statements of Completion from all the responsible parties contributing to the checklist, the compliance strategies identified have been incorporated into the project design and construction.

As required by the regulation, section 16a-38k-8 (b) for schools, the project manager-facilitator must sign-off on the report indicating that "this report certifies that the material contained herein is true and correct" and submit this report to the commissioner and the secretary.

The project team for the Ox Ridge Elementary School Project included the following:

Owner
Town of Darien

Design Team
Architect: The S/L/A/M Collaborative
MEP Engineer: CES

Construction Manager
O&G / AP A Joint Venture

Commissioning Authority
Sustainable Engineering Solutions, LLC.

Please contact us should you have questions on this submission or the project.

Sincerely,
Sustainable Engineering Solutions, LLC

Ernest F. Lawas, P.E., CCP, CEM, LEED AP
Principal



Attachments

CC: File

Seal of the Commissioning Agent

The Commissioning Agent hereby affixes its Seal to this report. Pursuant to affixing this seal, the Commissioning Agent, based solely on those representations made in the enclosed Project Statements of Completion, hereby certifies that the Project has met all of the requirements contained in the contract documentation for this Project. The Commissioning Agent has not personally inspected every item contained on the checklist, but instead has relied solely on the Project Statements of Completion of those persons responsible for ensuring compliance and completion of said items. This sealed report must be furnished to the Commissioner and the Secretary and is for their use solely in connection with the Project; this report may not be relied on without prior written consent for any other purpose or by anyone else other than the Commissioner and the Secretary.

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SES

TAB 1

Expanded High Performance Building Checklist

CTHPBS Compliance Checklist-Schools

(see bottom of document for description of checklist format)

CTHPB Compliance Checklist- Schools
OX RIDGE ELEMENTARY SCHOOL - DARIEN, CT

Project # 19062.00
Updated: 4/4/2024
by: GJB

Y	?	??	N	Section Summary Description	Requirement Description	Strategy for Compliance	Resp.
				MANDATORY REQUIREMENTS - SCHOOLS			
				(all 18 to be met: 12 from 16a-38k-3 + 6 from 16a-38k-5)			
Y				16a-38k-3(a)Building Commissioning	Building commissioning shall be an integral part of the building project. Such commissioning shall be performed by an independent third-party, called a commissioning agent, who shall be certified as a commissioning agent by the Building Commissioning Association or the Association of Energy Engineers, and shall either be a Professional Engineer or have an S-1 license. This individual shall be included in the beginning stages of the building process through a post occupancy evaluation. The commissioning agent shall not be an employee of the architectural, engineering, or construction firm that implements the project, and shall be hired directly by the state, municipality, or regional school district. For state facility projects, the commissioning agent may be an employee of the Department of Public Works provided such person shall act independently of the other staff assigned to oversee the design and construction of the project. The commissioning agent shall report all findings and recommendations to the owner of the state facility or the municipal or regional school district. Coordination and oversight of the training of facility management and maintenance personnel on proper equipment operation as well as verification of proper development of systems manuals shall be overseen by the commissioning agent in cooperation with the project manager-facilitator and with the building owner, designer, contractor, and subcontractors who installed the systems. The commissioning process, at minimum, shall include the following energy related systems: (1) heating, ventilating, air conditioning, and refrigeration systems and associated controls, (2) lighting and day-lighting controls, (3) domestic hot water systems, (4) renewable energy systems. It is required that the commissioning process also include	SBS has been hired as the Commissioing agent	Owner
Y				16a-38k-3(b) Integrated Design Process	All building construction projects shall follow an integrated design process to set environmental and building performance goals. This process, at minimum, shall include at least one collaborative session of the design team consisting of the architect, mechanical engineer, electrical engineer, Benesch engineer, commissioning agent, a representative of the building owner, and representative(s) of the building tenant state agency prior to the preparation of contract documentation. The meeting shall include the owner's project requirements, the basis of design, commissioning plan, performance verification documentation, commissioning report, and post commissioning requirements. Prior to the start of the construction phase, at least one collaborative session among the designers, owner, and contractors, including the electrical, mechanical, and controls subcontractors shall be held to insure knowledge of design intent, required approval processes, and commissioning procedures. All records of decisions from the collaborative sessions shall be shared among the design team. The owner of the state facility or the municipal or regional school district shall have final decision making authority.	Collaborative sessions will be part of the design process.	Design team, Owner
Y				16a-38k-3(c) Base Energy Performance 21% Better Than Code (new requirement is to meet the current energy code as baseline)	The base minimum energy performance for all building projects shall be 21 percent better than the most current Connecticut State Building Code or ASHRAE 90.1-2004, whichever is more stringent. Base minimum energy performance shall be determined using approved building modeling software that is identified in the following sections. Revised code: No requirement to be 21% better than IECC 2013.	Project will meet the energy code requirement. Energy modeling will show potential for additional credit however very difficult to exceed with the new energy code requirement.	CES, SLAM, Energy modeler
Y				16a-38k-3(d) ENERGY STAR Products	Energy consuming products installed in the building shall be ENERGY STAR compliant if the product category has an ENERGY STAR specification.	Energy Star product will be specified	CES, SLAM, Owner

Y	?	??	N	Section Summary Description	Requirement Description	Strategy for Compliance	Resp.
Y				16a-38k-3(e) Indoor Air Quality Management Plan	The project manager-facilitator shall develop an indoor air quality management plan for the construction phase of the project. As part of the plan, the following shall be addressed: (1) Periodic inspections of materials stored on-site to ensure that all installed or stored absorptive materials are protected from moisture and mold damage. If resting on the ground, spacers shall be provided to allow air to circulate between the ground and the materials. All water damaged materials shall be removed from the site and disposed of properly. (2) Surface grades, drainage systems, and heating, ventilating and air conditioning condensate drainage systems shall be designed so as to prevent accumulation of water under, in, or near the building. Irrigation systems shall be designed so as to prevent spraying of the building. (3) Ductwork shall be sealed from outside elements during transport and storage, and interior surfaces shall be wiped down immediately prior to installation. During installation, open ends of ductwork shall be temporarily sealed and ductwork shall be protected with surface wrapping. No installed ductwork shall contain internal porous insulation materials or lining. (4) Heating, ventilation, and air conditioning (HVAC) equipment shall be covered and protected from moisture during transportation and onsite storage. For permanently installed air handlers used during construction, use filtration media in air handlers with a Minimum Efficiency Reporting Value (MERV) of ten, except for unit ventilator systems which shall have a minimum MERV of seven. All filtration media shall be replaced immediately prior to building occupancy with media having a MERV rating of equal or greater value to existing media. (5) Materials that off-gas toxic or potentially toxic fumes shall be preconditioned for at least seventy-two hours prior to installation within the building. Such materials shall also be installed prior to the installation of porous building materials to reduce absorption and adsorption of those toxins by the porous materials. Prior to installation of porous materials and materials vulnerable to mold, the building enclosure shall be watertight. (6) In the event that any portion of the building is occupied during construction or renovation activities, the Sheet Metal and Air Conditioning Contractor's National Association (SMACNA) Indoor Air Quality Guidelines for Occupied Buildings Under Construction shall be followed.	Requirements will be included in the proposed design.	CES & SLAM
Y				16a-38k-3(f) Water Efficiency	Use low-flow fixtures to consume twenty percent less water in aggregate as compared to base levels calculated by meeting the Federal Energy Policy Act of 1992 fixture performance requirements. Calculations shall be based on estimates of occupant usage and shall include the following building fixtures only: showers, urinals, toilets, bathroom sink faucets, and kitchen sink faucets.	Low flow fixture will be incorporated in the design.	CES
Y				16a-38k-3(g) Recycling of Materials	The building or building site shall contain convenient areas to serve as collection points for recyclable materials and shall include an area for the sorting and storage of such materials for pick-up by recyclers.	Need to incorperate recycling areas through building	SLAM, Owner
Y				16a-38k-3(h) Erosion and Sedimentation Control	All construction shall include a plan for erosion and sediment control, as required by sections 22a-325 through 22a-329 of the Connecticut General Statutes.	Will be incorperated into the Construction Documents	Benesch
Y				16a-38k-3(i) No Smoking Policy	No smoking shall be permitted in any building or portion of a building owned and operated or leased and operated by the state or any political subdivision thereof as mandated by section 19a-342 of the Connecticut General Statutes. All exterior designated smoking areas shall be located at least twenty-five feet away from outdoor air intakes, operable windows, and building entrances.	Will designated smoking areas be created or will this be a no-smoking campus?	Owner
Y				16a-38k-3(j) Integrated Pest Management Plan	A plan for integrated pest management as defined in section 22a-47 of the Connecticut General Statutes, shall be established as required under section 22a-66l for general pest control in state buildings. Schools shall comply with sections 10-231 and 22a-66l of the Connecticut General Statutes.	Does the school system already have a contract in place? Yes	CM, Owner
Y				16a-38k-3(k) CFC Refrigerant Ban or Phase-out Plan	Chlorofluorocarbon (CFC)-based refrigerants shall not be utilized for energy systems in new construction. For renovation projects where existing HVAC-R equipment is reused, a CFC phase-out conversion shall be undertaken.	Proposed systems pending. However typically little to no CFC's will be utilized for mechanical and refrigeration systems	CES
Y				16a-38k-3(l) Minimum Ventilation	Buildings shall be designed to meet the minimum ventilation requirements of the current ASHRAE Standard 62.1 using the Ventilation Rate Procedure for mechanical systems. If the current Connecticut State Building Code contains more stringent requirements, it shall be used to meet minimum ventilation requirements.	Minimum ventilation requirements have been incorporated into the current design	CES

Y	?	??	N	Section Summary Description	Requirement Description	Strategy for Compliance	Resp.
Y				16a-38k-5(a) Acoustical Standards	All classrooms, including art rooms, music rooms, science rooms, computer rooms, and special needs, remedial and library space shall meet the acoustical standards as required under section 10-285g of the Connecticut General Statutes.	Acoustical consultant will be reviewing current design for compliance	CES & SLAM, Acoustic consultant
Y				16a-38k-5(b) Properly Locate Outside Air Intakes	Outside air intakes shall be located a minimum of twenty-five feet from any hazard or noxious contaminants such as vents, chimneys, plumbing vents, exhaust fans, cooling towers, street alleys, parking lots, loading docks, dumpster areas, bus loops, or any area where vehicle idling occurs. If locating an air intake within twenty-five feet of a contaminant source is unavoidable, the intake must be located a minimum of ten feet horizontal distance and two feet lower than the contaminant source.	Bus drop-off location may have conflict with AHU intake, coordination of enclosure and intake locations to be studied.	CES
Y				16a-38k-5(c) Electronic Ignition on Natural Gas Equipment	Only electronic ignitions shall be specified for gas-fired water heaters, boilers, furnaces, air handling units, and stovetops/ovens.	All gas fired equipment will have electronic ignition	CES
Y				16a-38k-5(d) Use of Low VOC Products	The following materials shall be certified for low emissions of volatile organic compounds (VOCs) using specifications or certification programs listed in the Connecticut Building Standard Guidelines Compliance Manual for High Performance Buildings: (1) 50% of adhesives and sealants used in the interior of the building; (2) Acoustic ceiling tiles and wall panels; (3) Interior paints; (4) Wall coverings; (5) Carpet systems and associated adhesives; (6) Composite and solid wood flooring; (7) Resilient flooring and associated adhesives.	Low VOC products will be incorporated into the Construction Documents	SLAM
Y				16a-38k-5(e) Environmental Site Assessment	The town or regional board of education and the building committee of such town or district, shall provide for a Phase I environmental site assessment in accordance with the American Society for Testing and Materials Standard #1527, Standard Practice for Environmental Site Assessments: Phase I Site Assessment Process, or similar subsequent standards, as required pursuant to Section 10-291 of the Connecticut General Statutes. If a town, regional board of education or the building committee of such town or district suspect contamination, a Phase II Environmental Site Assessment shall be undertaken as described in American Society for Testing and Materials Standard E1903-97 or similar subsequent standards. Any contamination found shall be remedied.	Has a Phase I environmental site assessment been completed?	Owner, Benesch
Y				16a-38k-5(f) HEPA Vacuuming	Prior to substantial completion of the building, vacuum all carpeted and soft surfaces with a high-efficiency particulate arrestor (HEPA) vacuum, HEPA vacuum the carpet daily in occupied areas. ***Only for phased or occupied renovations***		CM

BUILDING STANDARD OPTIONS

(A minimum of 27of the following strategies must be implemented.)

Y	?	??	N	Section Summary Description	Requirement Description		
6	***3***	*2*	*0*	**ENERGY**			
				At least one measure in subsection (a) must be selected	The options use the same compliance methodologies and tools as the requirements outlined in Section 16a-38k-3, and they may be used cumulatively. For example, complying with option 3 also puts you in compliance with options 1 and 2 and thus provides 3 (as opposed to just 1) of the 25 total strategies needed for project compliance.	Exploration of building envelop, building fenestration, menchanical systems and lighting design will be evaluated through Energy modeling to confirm final percentage achieved.	CES, SLAM, Energy modeler
1				16a-38k-6(a)(1) Energy Performance 3.5% Better Than Code			
1				16a-38k-6(a)(2) Energy Performance 7% Better Than Code			
1				16a-38k-6(a)(3) Energy Performance 10.5% Better Than Code			
1				16a-38k-6(a)(4) Energy Performance 14% Better Than Code			
1				16a-38k-6(a)(5) Energy Performance 17.5% Better Than Code			
1				16a-38k-6(a)(6) Energy Performance 21% Better Than Code			

Y	?	??	N	Section Summary Description	Requirement Description	Strategy for Compliance	Resp.
	1			16a-38k-6(a)(7) On-Site Renewable Energy – 3%	The installation of on-site renewable energy shall provide at least 3 percent of the building energy needs based upon the U. S. Department of Energy Commercial Buildings Energy Consumption Survey for estimated electricity usage or by using the same modeling software used to demonstrate compliance with the energy efficiency section of this document. Any facility that installs renewable energy systems must retain associated RECs for a period of two years.	Owner to direct us if PV system will be designed as part of the proposed building. Another posiblitiy would be accomodations for future installation is being incorporated into the current design.Will existing panels be reused?, Can existing PPA contract be renegotiated to restart with new panels?	Owner, CES & SLAM
	1			16a-38k-6(a)(8) On-Site Renewable Energy – 7%			
		1		16a-38k-6(a)(9) On-Site Renewable Energy – 10%			
		1		16a-38k-6(a)(10) Purchase Renewable Energy	The facility shall have a two-year contract to purchase at least 35 percent of the building's annual electricity consumption from a Class I renewable energy source.	Need to discuss with the owner	Owner
	1			16a-38k-6(a)(11) Energy Measurement and Verification Plan	Develop a measurement and verification plan for energy usage, to cover a period of at least one year after occupancy	Need confirmation if this has been incorporated into commisioning agents scope of work. Cx agent will provide a postoccupancy report	CES & Cx
11	***0***	*0*	*2*	**INDOOR ENVIRONMENT**			
				At least <u>two</u> measures in subsection (b) must be selected			
1				16a-38k-6(b)(1) Install Permanent Indoor Air Monitoring Systems	Install permanent indoor air monitoring systems to provide performance feedback on ventilation systems. Such monitoring systems, at minimum, shall include devices to measure temperature, relative humidity, carbon dioxide, and dew point. Carbon dioxide measurement sensors shall measure both interior and exterior levels of CO2.	Need to confirm this can be incorporated into the specifications, systems and controls.	CES
			1	16a-38k-6(b)(2) Provide Increased Outdoor Ventilation	Provide increased outdoor ventilation by designing mechanical ventilation systems to exceed the minimum rates required by the current Connecticut State Building Code or the most recent version of the ASHRAE Standard 62.1 , whichever is more stringent, by thirty percent.	Typically not pursued as it contradicts energy performance.	CES
			1	16a-38k-6(b)(3) Building Flushout	After construction ends and with all interior finishes installed but prior to building occupancy, flush the building continuously for at least ten days with outside air while maintaining an internal temperature between 60°F and 78°F and relative humidity no higher than 60%. Do not "bake out" the building by increasing the temperature of the space. Alternatively, use the following strategy: Flush out each space separately until 3,500 cubic feet of outside air per square foot of floor space has been delivered to that space. The space shall then be ventilated at the rate of 0.3 cubic feet per minute per square foot of floor space or the design minimum outside air rate, whichever is greater. This shall be performed for a minimum of three hours prior to occupancy and then during occupancy until a total of 14,000 cubic feet of outside air per square foot of floor area has been delivered to that space.	Will be required and incorporated into specifications. Anticipated timeframe for completion will not allow for the flushout period.	CM, CES, SLAM
1				16a-38k-6(b)(4) Composite Wood and Agrifiber Products	All composite wood and agrifiber products used within the shell of the building shall meet the testing and product requirements of the California Department of Health Services Standard Practice for the Testing of Volatile Organic Emissions From Various Sources Using Small-Scale Environmental Chambers, including 2004 Addenda.	Will be required and incorporated into specifications.	SLAM
1				16a-38k-6(b)(5) Individual Lighting Control	For administrative offices and other regularly occupied spaces, allow for individual lighting control for ninety percent or more of the building occupants in workspaces to allow for adjustments to suit individual tasks and preferences. For classroom and core learning spaces, with the exception of chemistry laboratories, art and music rooms, shops, and gyms, install two modes of illumination: general illumination and audio visual illumination. General illumination mode shall achieve desk level illumination of 30-50 foot-candles; audio visual mode shall achieve a desk level illumination of 10 to 20 foot-candles while limiting vertical illumination at a projection screen of no more than seven foot-candles. All lighting fixtures shall include glare control features.	CES to send proposed lighting controls for Owner review.	CES
1				16a-38k-6(b)(6) Individual Thermal Comfort Control	Using conditions for thermal comfort described in the current version of the ASHRAE Standard 55, allow for individual thermal comfort control for fifty percent or more of the building occupants to allow for adjustments to suit individual tasks and preferences and provide thermal system comfort controllability for all shared multi-occupant spaces to enable adjustment that meets group needs and preferences.	Need to confirm if this can be incorporated into the current design. Multi purpose spaces need special consideration.	CES
1				16a-38k-6(b)(7) Building Occupant Survey	Building facility personnel, under direction of the building owner, shall administer an anonymous survey for building occupants within the first twelve months after initial occupancy to assess occupant satisfaction and implement corrective actions for recurrent issues. At minimum, the survey shall cover thermal building comfort, lighting, security issues, indoor air quality, functionality of space, and acoustics. If greater than 20% of the respondents express dissatisfaction with any specific issue, the building owner shall prepare a plan for remedial action.		Owner

Y	?	??	N	Section Summary Description	Requirement Description	Strategy for Compliance	Resp.
1				16a-38k-6(b)(8) Daylight Contribution	Demonstrate through computer software simulations or through recording of indoor light measurements that a minimum illumination level of twenty-five foot-candles has been achieved from daylight in at least 75% of all regularly occupied areas.	Project goal will need to confirm as design progresses	SLAM
1				16a-38k-6(b)(9) Visual Gazing – Views to the Outdoor Environment	There shall be a direct line of sight to the outdoor environment with window glazing between 2 1/2 and 7 1/2 feet above the finished floor for 70% of all regularly occupied areas.	Project goal will need to confirm as design progresses	SLAM
1				16a-38k-6(b)(10) Mold Prevention	To prevent mold, heating, ventilating and air conditioning systems (HVAC) shall be designed to limit space relative humidity to 60% or less during load conditions whether the building is occupied or non-occupied; an ongoing indoor air quality management plan shall be implemented as required under section 10-220 of the Connecticut General Statutes, using the U. S. Environmental Protection Agency's (EPA) Indoor Air Quality Tools for Schools Program; and the criteria of sections 16a-38k-6(b)(6) and 16a-38k-6(b)(7) of the Regulations of Connecticut State Agencies shall be met.	Incorporated into current design but confirmation of implementation of occupied operation will include utilizing the U. S. Environmental Protection Agency's (EPA) Indoor Air Quality Tools for Schools Program	Owner, CES
1				16a-38k-6(b)(11) Low VOC Furniture	Student and teacher classroom chairs, desks, and tables manufactured, refurbished or refinished within one year prior to building occupancy and used within the building interior shall be certified for low chemical emissions by the certifying organization listed in the Connecticut Building Standard Guidelines Compliance Manual for High Performance Buildings.	Project goal	Owner, SLAM
1				16a-38k-6(b)(12) Isolation of Chemical Use Areas	Where chemical use occurs, including housekeeping areas, chemical storage and mixing areas, and copy/print rooms, use dedicated exhaust to ventilate the space at a minimum of 0.5 cubic feet per minute per square foot with adequate make-up air. No recirculation is permitted and such spaces shall have a negative air pressure of at least five pascal (.02 inches of water gauge) to a minimum of one pascal (0.004 inches of water gauge) when the doors are closed.	Will be incorporated into proposed design	CES & SLAM
1				16a-38k-6(b)(13) Control of Particulates at Pedestrian Entryways	Building design shall control entry of pollutants and excess moisture into buildings and later cross-contamination of regularly occupied areas at all high volume entryways and those adjacent to playing fields and locker rooms through the use of three-part walk-off systems and the proper placement of outside air intakes. Walk-off systems shall include a grate or grill outside the entryway for removing dirt and snow, a drop through mat system within the vestibule, and a fifteen foot interior walk-off mat.	Will be incorporated into proposed design	SLAM
2	***0***	*0*	*2*	**WATER**			
				At least one measure in subsection (c) must be selected			
1				16a-38k-6(c)(1) Reduce Total Potable Water Usage by 30%	Same as in Section 16a-38k-3(g), except that the conserving strategies use 30 percent less water in aggregate.	Stated goal but need to confirm that proposed fixture selection complies	CES
			1	16a-38k-6(c)(2) Reduce Water Consumption for Landscaping 50%	Reduce by 50 percent the amount of water required for landscaping from a mid-summer baseline usage case. Reductions may be attributed to the use of captured rainwater, recycled waste (grey) water, efficiency of irrigation strategies, and use of drought resistant plant species. ***This strategy only applies to renovation projects.***	N/A	N/A
1				16a-38k-6(c)(3) Eliminate Potable Water Usage for Landscaping	Use landscaping that does not require a permanent irrigation system or uses non-potable water for irrigation. Any system installed for irrigation using potable water shall only be utilized for plant establishment and be removed prior to one year of building occupancy. Confirm playing field can be excluded.	No permenant irrigation or use of non-potable water typically stromwater run-off. (Would need to determine size of storage tank required)	SLAM LA, Benesch
			1	16a-38k-6(c)(4) Reduce Total Potable Water Usage by 50%	Reduce potable water use by half through water conserving fixtures and/or use of non-potable water using methodologies stated in the Connecticut Building Standard Guidelines Compliance Manual for High Performance Buildings. ***This strategy only applies to renovation projects*** .	N/A	N/A

Y	?	??	N	Section Summary Description	Requirement Description	Strategy for Compliance	Resp.
6	*0*	*0*	*7*	**MATERIALS**			
				At least two measures in subsection (d) must be selected			
			1	16a-38k-6(d)(1) Maintain 75% of an Existing Building Structure	Retain at least 75 percent, by surface area, of an existing building structure, including structural floor and roof decking, exterior framing, and envelope surface, but excluding window assemblies and non-structural roofing material. This strategy only applies to renovation projects.	Currently not in project scope	N/A
			1	16a-38k-6(d)(2) Maintain 95% of an Existing Building Structure	Same as subsection (d)(1) above, except that a total of 95 percent of the building structure is retained. This strategy only applies to renovation projects.	Currently not in project scope	N/A
			1	16a-38k-6(d)(3) Re-use Existing Non-Structural Building Elements	Use existing non-structural elements such as interior walls, doors, floor coverings and ceiling systems in at least half (by square footage) of the completed building. This strategy only applies to renovation projects.	Currently not in project scope	N/A
1				16a-38k-6(d)(4) Recycle or Salvage 50% of Construction and Demolition Debris	Recycle or salvage at least half of non-hazardous construction and demolition debris.	Requirents will be included in Construction Documents and tracked through construction	CM
			1	16a-38k-6(d)(5) Recycle or Salvage 75% of Construction and Demolition Debris	Same as subsection (d)(4) above, except that a total of 75 percent of non-hazardous construction and demolition debris is recycled or salvaged.	Requirents will be included in Construction Documents and tracked through construction	CM
			1	16a-38k-6(d)(6) Use 5% Refurbished, Salvaged, or Reused materials	Use 5 percent of refurbished, salvaged, or reused materials, based on cost of the total value of materials on the project. Only permanently installed materials can be used in calculations.	No savageable material for reuse, complications with project phasing schedule	N/A
			1	16a-38k-6(d)(7) Use 10% Refurbished, Salvaged, or Reused materials	Same as subsection (d)(6) above, except that a total of 10 percent of refurbished, salvaged, or reused materials, based on cost of the total value of materials on the project shall be used.	No savageable material for reuse, complications with project phasing schedule	N/A
1				16a-38k-6(d)(8) Use 10% Recycled Content Materials	Use materials where the weighted average of recycled materials content is 10 percent, based on cost, of the total value of the materials in the project. Recycled content value of a material assembly shall be determined by weight. The weighted average shall be determined using the following formula: Weighted average of recycled materials= % post consumer content + 1/2(% of pre-consumer content).	Requirents will be included in Construction Documents and tracked through construction	CM
1				16a-38k-6(d)(9) Use 20% Recycled Content Materials	Same as subsection (d)(8) above, except that the weighted average of recycled materials must constitute at least 20 percent, based on cost, of the total value of the materials in the project.	Requirents will be included in Construction Documents and tracked through construction	CM
1				16a-38k-6(d)(10) Use 10% Local Materials	Use a minimum of 10 percent of building materials extracted **or** manufactured within a five-hundred mile radius of the building site.	Requirents will be included in Construction Documents and tracked through construction	CM
1				16a-38k-6(d)(11) Use 20% Local Materials	Same as (d)(10) above, except that a minimum of 20 percent of building materials extracted **or** manufactured within a five-hundred mile radius of the building site shall be used.	Requirents will be included in Construction Documents and tracked through construction	CM
			1	16a-38k-6(d)(12) Use Building Materials Made from Short Harvest Cycle Plants	Use building materials and products that are made from plants harvested in a ten-year or shorter cycle. Two and one-half percent of the total value of building materials and products, based on costs, must be used in the project.	Challenging to procure as product supply is intermittent.	CM
1				16a-38k-6(d)(13) Use Forest Stewardship Council (FSC) Certified Wood Products	At least half of permanently installed wood and wood-based products shall be certified in accordance with the current Forest Stewardship Council (FSC) principles and criteria.	Project goal but need to confirm budget availability as typically has a cost premium as not only material needs to be FSC but shop also need to be certified. Strongly recommended	CM, Owner

6	**2**	0	7	**SITE**			
				At least two measures in subsection (e) must be selected			
			1	16a-38k-6(e)(1) Re-develop a Local Site	Construct or renovate the building on a previously developed site and within one-half mile of a residential zone/neighborhood with an average density of ten units per acre net and within one half mile of a minimum of ten basic services as described in the State Facilities Building Standard Guidelines Compliance Manual for High Performance Buildings (this document) and with pedestrian access between the building and the services.	Residential density is below requirements and 10 local services available	SLAM LA
			1	16a-38k-6(e)(2) Select a Site with Public Transportation Access	Select a site that has access to public transportation. Public transportation is considered accessible if the site is located within one-third of a mile to an existing commuter rail station or located within one quarter mile of a public commuter bus line.	May not have public transportation. School buses do not count unless teachers are allowed to access them.	SLAM LA
			1	16a-38k-6(e)(3) Encourage Bicycle Transportation	Encourage bicycle transportation by providing secure bicycle racks or storage within five-hundred feet of a building entrance for a minimum of 5 percent of building users at peak times and shower and changing facilities must be provided in the building or within five-hundred feet of the building.	No showers in current project scope.	SLAM, SLAM LA

Y	?	??	N	Section Summary Description	Requirement Description	Strategy for Compliance	Resp.
	1			16a-38k-6(e)(4) Encourage Low-Emission Vehicle Use with Preferred Parking	Encourage the use of low-emitting and fuel efficient vehicles by providing preferred parking for low-emitting and fuel efficient vehicles for 5 percent of the total parking capacity at the site.	Project goal	SLAM
	1			16a-38k-6(e)(5) Encourage Car and Van-pooling	Reduce pollution from single occupancy vehicle use by sizing parking capacity to meet, but not exceed minimum local zoning requirements; provide designated preferred parking for carpools or vanpools for 5 percent of the total provided parking spaces; and provide infrastructure and support programs to facilitate shared vehicle usage such as ride sharing bulletin boards and shuttle services to mass transit.	Project goal	SLAM
			1	16a-38k-6(e)(6) Protect Natural Areas at the Construction Site	Protect existing natural areas or restore damaged areas to promote biodiversity. Any site disturbances shall be limited to no more than forty feet beyond the building perimeter; ten feet beyond surface walkways, patios, surface parking and utilities less than twelve inches in diameter; fifteen feet beyond primary roadway curbs and main utility branch trenches; and twenty-five feet beyond constructed areas with permeable surfaces, such as playing fields, that require additional staging areas in order to limit compaction in the constructed area. For previously developed or graded sites, restore or protect to a minimum of 50 percent of the site area, excluding the building footprint, to plant species indigenous to the locality or to cultivars of native plants adapted to the local climate conditions and not considered invasive species or noxious weeds. Except for playing fields and picnic areas, minimize lawn areas to less than 10 percent of the building site landscape.	Project site coverage will not provide sufficient area to restore	SLAM LA
			1	16a-38k-6(e)(7) Maximize Open Space	Maximize open space at the site. Provide vegetated open space within the project boundary to exceed the local zoning's open space requirement by 25 percent; where there is no local zoning requirement, provide vegetated open space adjacent to the building that, at minimum, is equal to the building footprint.	Project site coverage will not provide sufficient area.	SLAM LA
			1	16a-38k-6(e)(8) Implement a Stormwater Management Plan Reducing Run-off by 25%	Design the site to minimize storm water runoff. Implement a storm water management plan that results in a 25 percent reduction in peak run-off rate for a two year, twenty-four hour design storm from pre-construction to developed conditions; and implement a storm water management plan that results in a 25 percent decrease in run-off volume of stormwater runoff from the one hundred-year, twenty-four hour design storm from existing to developed conditions.	Project goal but will need to verify site allocation	Benesch
1				16a-38k-6(e)(9) Implement a Stormwater Management Plan that Treats 90% of Annual Rainfall	Design the site to minimize pollutants in storm water runoff by implementing a storm water management plan that reduces impervious cover, promotes infiltration, redirects water to pervious areas or storage reservoirs that treats storm water runoff from 90 percent of the average annual rainfall.	Project goal but will need to verify site allocation, utilize rain garden and/or under parking lot retention.	Benesch
			1	16a-38k-6(e)(10) Reduce Heat Island Effect Through Landscaping Strategies	Reduce heat island effect at the site by utilizing any combination of the use of native shade species, paving materials with a solar reflectance index of at least twenty-nine, and/or an open grid pavement system for 50 percent or more of the site parking, sidewalk and road areas; or place at least 50 percent of parking spaces under a covering, such as the a deck, a roof, underground or the building itself. Any roof used to cover parking spaces must have a solar reflectance index of at least twenty-nine.	Concrete paving complies but has a cost premium. Bitumonous concrete pave does not meet the reflectance and emissivity requirements	SLAM LA
1				16a-38k-6(e)(11) Select Roofing Materials to Reduce Heat Island Effect	Reduce heat-island effect through roofing selection by either installing native vegetation on at least 50% of the roof area, or by using a roofing material that has a solar reflectance index(SRI) equal to or greater than 78 on low sloped roofs or 29 on steep sloped roofs (>2/12) for 75% of roof area.	Project goal	SLAM

Y	?	??	N	Section Summary Description	Requirement Description	Strategy for Compliance	Resp.
1				16a-38k-6(e)(12) Reduce Outdoor Light Pollution	Reduce light pollution from the site. In addition to requirements mandated in Section 4b-16 of the Connecticut General Statutes, automatic controls to turn off lights during non-business hours shall be installed on all non-emergency interior lighting. Manual override capability may be provided for after hours use. Exterior lighting shall be provided only in areas where lighting is required for safety and comfort. Light fixtures shall not be installed where the main purpose is to light building facades or landscape features. Exterior building-mounted lighting fixtures that are only needed during building operation shall be controlled by a time-clock with an easily accessible manual control. Lighting of flags, signs, and monuments shall be limited to fifty watts per fixture and shall incorporate shielding devices to minimize light pollution. No more than two fixtures may be used for each flag, sign or monument.	Design will comply with cutoff requiremnts and be time controlled. 3000K light color for exterior LED lighting suggested.	CES, SLAM LA
1				16a-38k-6(e)(13) Orient Building for Daylighting and Energy Performance	Building orientation shall be such that the east/west glazing exposure is minimized. South windows shall have an external overhang to entirely shade adjacent windows during the summer solstice or shall utilize glazing with a solar heat gain coefficient of less than or equal to 0.4. Shading mechanisms or glazing with a solar heat gain coefficient less than or equal to 0.4 shall be installed at eastern and western exposure windows to minimize solar heat gain early and late in the day respectively.	Project goal	SLAM
1				16a-38k-6(e)(14) No Building in Floodplain and Sustainable Site Development	Buildings shall not be constructed on land that is lower than five feet above the elevation of the 100 year flood as defined by the Federal Emergency Management Agency or its successor agency; and buildings, roads, parking areas, sidewalks, or other impervious surfaces shall not be built in any area that is inconsistent with the applicable municipal plan of conservation and development prepared in accordance with section 8-23 of the Connecticut General Statutes	Project is not in flood plain	SLAM LA
1				16a-38k-6(e)(15) Site Building away from External Sources of Excessive Noise	The school building shall be sited on land away from sources of unreasonable excess noise, such as highways, airport flight paths, and areas that are subject to unreasonable noise from agricultural or industrial equipment use.	Project site is in compliance	SLAM
2	**0**	0	1	***No minimum requirement for measures in subsection (f)***			
1				16a-38k-6(f)(1) Eliminate the use of CFCs, HCFCs and Halons	Do not install fire suppression systems that contain chlorofluorocarbons (CFCs), hydrochlorofluorocarbon (HCFCs), or halons. Select refrigerants and heating, ventilating, air conditioning, and refrigeration (HVAC&R) systems that minimize or eliminate compounds contributing to ozone layer depletion and global warming. If refrigerants are used, the mechanical room shall have leak detection equipment installed.	We will confirm proposed design complies	CES
1				16a-38k-6(f)(2) Building Innovation	Utilize innovative high performance features or technologies that greatly exceed any existing mandatory requirements as specified in sections 16a-38k-3 and 16a- 38k-5 or optional measures within Section 16a-38k-6.	Possibilities: Green cleaning, education outreach. Energy Dashboard, Carbon reduction stategies? Electrical charging stations	SLAM and Owner
			1	16a-38k-6(f)(3) Curriculum on Sustainable Building Features	Integrate the sustainable features of the school building into the educational curriculum within the first full year of school operation.		Owner
33	**5**	**2**	**19**	***Total Building Standard Optional Strategies (27 Needed for Compliance)***			

"CTHPB CHECKLIST" DOCUMENT DESCRIPTION

"CTHPB"	Connecticut High Performance Buildings Guidelines; based on Connecticut State Statute 16a-38k
"Section Summary"	Refers to specific Section within Statute.
"Requirement Summary	Description of requirements of specific Section of Statute. Wording taken directly from Statute.
"Strategy for Compliance"	Describes teams strategy to achieve requirements; may also list comments from team discussions.
"Resp."	Abbreviation for "Responsible Party" - refers to which team member(s) will take lead on specific Section
"Doc. Loc."	Abbreviation for "Document Location" - refers to specific drawing or specification section that will cover requirements for compliance of specific Statute Section.
"Y"	Refers to specific Section that is in compliance for project.
"?"	Refers to specific Section that is likely to be in compliance for project, but still needs further investigation.
"??"	Refers to specific Section that is not likely to be pursued for project, but still needs further investigation.
"N"	Refers to specific Section that will not be pursued for project.

SES

TAB 2

Statements of Completion

STATEMENT OF COMPLETION
OF CONSULTING ENGINEERING SERVICES
MECHANICAL, ELECTRICAL, PLUMBING ENGINEER OF RECORD

The undersigned being duly sworn does hereby depose and say:

1. I am over the age of 18 years and I believe in the obligation of the oath.

2. I, Michael B. Walsh, am a member of CES, Inc., the Mechanical, Electrical, Plumbing Engineer of Record for the Ox Ridge Elementary School, State Project Number 035-0117 N ("Project").

3. Pursuant to certain contract documents having to do with the project ("Project Documents") certain requirements had to be met in order to attain Project completion.

4. I hereby state to the best of my knowledge that all of the items which have been marked "resp." by "CES" on the Connecticut Compliance Manual Checklist dated 6/17/24, ("Checklist") have been:

   a. completed;

   b. inspected by me or another authorized agent of the Mechanical, Electrical, Plumbing Engineer of Record; and

   c. are in compliance with the Project Documents.

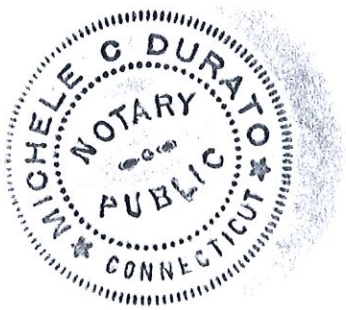


AFFIANT
MECHANICAL, ELECTRICAL, PLUMBING ENGINEER
OF RECORD
CES, Inc.
(Company Name)

BY _____
(Signature)
Michael B. Walsh
(print name)
Its Member, Duly Authorized

Subscribed and sworn to before me, this 18th day of June, 2024.

_____
Notary Public
My Commission Expires: 8/31/26



STATEMENT OF COMPLETION
OF SUSTAINABLE ENGINEERING SOLUTIONS, LLC
COMMISSIONING AGENT

The undersigned being duly sworn does hereby depose and say:

1. I am over the age of 18 years and I believe in the obligation of the oath.

2. I, Ernest Lawas, am a member of Sustainable Engineering Solutions, LLC, the Commissioning Agent for the Ox Ridge Elementary School, State Project Number 035-0117 N ("Project").

3. Pursuant to certain contract documents having to do with the project ("Project Documents") certain requirements had to be met in order to attain Project completion.

4. I hereby certify that all of the items which have marked "resp." by "CxA" on the Connecticut Compliance Manual Checklist dated 4/4/2024, ("Checklist") have been:

   a. completed;

   b. inspected by me or another authorized agent of the Commissioning Agent;

   c. are in compliance with the Project Documents.

AFFIANT
COMMISSIONING AGENT
SUSTAINABLE ENGINEERING SOLUTIONS, LLC

BY _____
Ernest Lawas
Its Member, Duly Authorized

Subscribed and sworn to before me, this 23 day of July, 2024.

MARISSA SUTERA
NOTARY PUBLIC
My Commission Expires Oct. 31, 2028

_____
Notary Public
My Commission Expires:

STATEMENT OF COMPLETION
TOWN OF DARIEN, CONNECTICUT
OWNER

The undersigned being duly sworn does hereby depose and say:

1. I am over the age of 18 years and I believe in the obligation of the oath.
2. I, KEVIN MUNRETT, am a member of DARIEN Public Schools, the Owner of the Ox Ridge Elementary School, State Project Number 035-0117 N ("Project").
3. Pursuant to certain contract documents having to do with the project ("Project Documents") certain requirements had to be met in order to attain Project completion.
4. I hereby state to the best of my knowledge that all of the items which have marked "resp." by "Owner" on the Connecticut Compliance Manual Checklist dated 7/19/24, ("Checklist") have been:
   a. completed;
   b. inspected by me or another authorized agent of the Owner;
   c. are in compliance with the Project Documents.

AFFIANT
OWNER
DARIEN PUBLIC SCHOOLS
(Company Name)
BY _____
(Signature)
KEVIN MUNRETT
(print name)
Its Member, Duly Authorized

Subscribed and sworn to before me, this 19th day of July, 2024.

Diane R. Sander
Notary Public
My Commission Expires: 3-31-2028

STATEMENT OF COMPLETION
OF SLAM COLLABORATIVE
ARCHITECT OF RECORD

The undersigned being duly sworn does hereby depose and say:

1. I am over the age of 18 years and I believe in the obligation of the oath.

2. I, Jeff LeMothe, am a member of The SLAM Collaborative, the Architect of Record for the Ox Ridge Elementary School, State Project Number 035-0117 N ("Project").

3. Pursuant to certain contract documents having to do with the project ("Project Documents") certain requirements had to be met in order to attain Project completion.

4. I hereby state to the best of my knowledge that all of the items to which have been marked as "resp." by "SLAM" on the Connecticut Compliance Manual Checklist dated 7/15/2024, ("Checklist") have been:

   a. completed;

   b. inspected by me or another authorized agent of the Architect of Record; and

   c. are in compliance with the Project Documents.

AFFIANT
ARCHITECT OF RECORD
The SLAM Collaborative
(Company Name)

BY Jeff LeMothe
(Signature)

(print name)
Its Member, Duly Authorized

Subscribed and sworn to before me, this 15th day of July, 2024

Kelly M. Beaulieu 7/25/2024

Notary Public
My Commission Expires:

KELLY M. BEAULIEU
NOTARY PUBLIC
My Commission Expires Jan. 31, 2027

KELLY M. BEAULIEU NOTARY PUBLIC EXPIRES CONNECTICUT

STATEMENT OF COMPLETEION
OF O&G / AP, A JOINT VENTURE
CONSTRUCTION MANAGER

The undersigned being duly sworn does hereby depose and say:

1. I am over the age of 18 years and I believe in the obligation of the oath.

2. I, DAVID GRANATELLI, am a member of O&G / AP, A Joint Venture, the Construction Manager for the Ox Ridge Elementary School, State Project Number 035-0117 N ("Project").

3. Pursuant to certain contract documents having to do with the project ("Project Documents") certain requirements had to be met in order to attain Project completion.

4. I hereby state to the best of my knowledge that all of the items to which I have marked "resp." by "CM" on the Connecticut Compliance Manual Checklist dated 4/4/24, ("Checklist") have been:

   a. completed;

   b. inspected by me or another authorized agent of the Construction Manager; and

   c. are in compliance with the Project Documents.

AFFIANT
CONSTRUCTION MANAGER
O&G / AP, A JOINT VENTURE
(Company Name)

BY _____
(Signature)
DAVID M. GRANATELLI
(print name)
Its Member, Duly Authorized

Subscribed and sworn to before me, this 17th day of July, 2024.

Danielle Albane

Notary Public
My Commission Expires:

Danielle Lynn Albane
NOTARY PUBLIC
State of Connecticut
My Commission Expires 5/31/2026