

**MA-CHPS Criteria 2009 Edition  
Project Checklist**

Project Name: Mountview Middle School  
Project Address: 270 Shrewsbury Street, Holden, MA  
Date Updated: 21-Jun-12

MA-CHPS Project Numbers (Must be consistent throughout the application)

Bldg Area:	
Parking:	
Site Area:	
FTE:	
Students:	
Visitors:	

0 0 0 TOTAL

0	0	0	Integration & Innovation	Points	Abridged Requirements	Respons. Party	Comments
			II.p1	Integrated Design	Required	Conduct a min of 2 integrated design team workshops (1 in SD, 1 prior to CD) that identify the project's high performance goals	
			II.p2	Educational Display	Required	Provide a permanent display on the school site that describes the high performance features that are part of the school's design.	
			II.c1	Demonstration Areas	1	Create demonstration areas for 3 out of the 5 major MACHPS categories: Site, Water, Energy, Materials & IAQ	
			II.c2	Innovation	1-4	Points are awarded for highly innovative or creative actions or measure that are not already contained in MACHPS OR exceptional performance in an existing credit.	
			II.c3	Life Cycle Cost Analysis	3	As part of the design process, perform a life cycle cost analysis showing net present value over 30 yrs of the major building systems considered for the project that are anticipated to consume significant amount of energy, water or other natural resources.	
			II.c4	School Garden	1	1) Provide a site on campus for one or more school gardens with a min of 100sf four every 4 classrooms. 2) Provide signage to designate the areas as a school garden. 3) Develop a long-term maintenance plan. 4) For existing sites the soil must be tested to ensure there are no contaminants.	
			II.c5	School Master Plan	1	Develop a School Master Plan for the site and facilities of an individual school in collaboration with school board members and community stakeholders that: 1) Supports the continued compliance with high performance strategies. 2) Assess and plan for future transportation impacts. 3) Assess and plan for possible change in student enrollment. 4) Assess using the school for emergency preparedness. 5) Assess and plan for future high performance upgrades and renovations by documenting the life cycle of major materials and systems.	

0	0	0	Indoor Environmental Quality	Points	Abridged Requirements	Respons. Party	Comments
			EQ.p1	HVAC Design - ASHRAE 62.1	Required	EQp1.1 Minimum OA Ventilation Requirement - Design all spaces to meet ASHRAE 62.1-2007 Section 6.2 outdoor air requirements. In areas having significant pollutants shall be exhausted directly to the outside and not re-circulated. HVAC systems and equipment shall meet the requirements of ASHRAE 62.1 Section 5. EQp1.2 To maintain clean ducts and avoid particulate accumulation and/or mold in the ductwork, duct liners must meet the ASTM standards C1071 or UL 181 for surface erosion resistance and ASTM standards C 1104 or C 209 for water vapor sorption.	
			EQ.p2	Construction IAQ Management	Required	EQp2.1 During construction meet the recommended Design Approaches of the SMACNA IAQ Guidelines for Occupied Building Under Construction, 2007, Chapter 3. EQp2.2 If installing a new duct system, follow SMACNA guidelines for "Duct Cleanliness for New Construction Guidelines" according to advanced levels of cleanliness. EQp2.3 Building Flush Out - Develop a plan and include it in the specification to flush out the building with OA	
			EQ.p3	Pollutant & Chemical Source Control	Required	EQp3.1 Off-Gassing - Where chemical use occurs use deck-to-deck partitions with dedicated outside exhaust at a rate of at least 0.50 cubic feet/min/sd. Doors to these areas must be secured with self-locking and closing mechanisms. EQp3.2 Walk off Mats - Provide a 2 part walk-off mat system for all high volume entryways. EQp3.3 Electric Ignitions for Gas-Fired Equipment - Specify electric ignitions for water heaters, boilers, AHUs and cooking stoves. EQp3.4 Air intake locations shall follow ASHRAE 62.1-2007. All intakes must be 6 ft above landscaped grade. EQp3.5 No Mobile Fossil-Fuel Power Equipment Indoors.	
			EQ.p4	Moisture Management	Required	EQp4.1 Drainage - Design surface grades to slope away from the building. Evaporation drip pans are prohibited for HVAC systems. EQp4.2 Lawn irrigation shall be designed to prevent spray on building. EQp4.3 Mold Prevention - Building materials shall be kept dry.	
			EQ.p5	Minimum Filtration	Required	Replace filtration media immediately prior to occupancy. Filtration media shall be MERV 10 or higher, excluding unit ventilators, which can have MERV 7.	
			EQ.p6	Thermal Comfort - ASHRAE 55	Required	Comply with the current ASHRAE 55 thermal comfort standards.	
			EQ.p7	View Windows, 70%	Required	Provide direct line of site to view glazing from 70% of the combined floor areas of classrooms, library and administration areas. View glazing area shall be >=7% of floor area.	
			EQ.p8	Eliminate Glare	Required	Design spaces to optimize daylight while preventing glare by controlling direct sunlight ingress. Unoccupied classrooms must meet: 1) Classroom and core learning spaces must reverberation time meets ANSI S12.60. 2) All walls, roof-ceiling and floor-ceiling assemblies must meet the STC ANSI S12.60-2002. 3) For enclosed core learning areas the exterior windows may comprise no more than 25% of the area of the partition. Floor-ceiling assemblies over classrooms must meet ICC of 50.	
			EQ.p9	Minimum Acoustical Performance	Required	EQp10.1 Paints & Coatings - All paints and architectural coatings totaling 90% or more of the total volume of such products applied shall meet SCAQMD Rule 1113 & comply with Safe Drinking Water & Toxic Enforcement Act of 1986. EQp10.2 Composite Wood - At least 90% by area of the composite wood shall meet either or both CARB ATCM Sections 93120-93120.12 and shall have no added formaldehyde.	
			EQ.p10	Minimum Low Emitting Materials	Required		

			EQ.c1	View Windows, 80-90%	1-2	Provide direct line of site to view glazing for at least 80% of the combined floor area of the classrooms and admin areas.		
			EQ.c2	Daylighting in Classrooms	1-6	For all classroom spaces choose Multiple Point in Time Approach average 1c requirements OR Daylight Autonomy Approach (1-4points). For support spaces choose Multiple Point in Time Approach average 1c requirements OR Daylight Autonomy Approach (1-2points)		
			EQ.c3	Advanced Low-Emitting Materials	1-4	<b>EQc3.1</b> (1 point) All adhesives and sealants used in quantities of 2.5 gal or more and totaling 90% or more of the total shall meet SCAQMD Rule 1168 or CDPH Standard Practice. <b>EQc3.2</b> (1 point) Flooring Systems totaling 90% or more of the total floor area shall be tested following CDPH Standard Practice. <b>EQc3.3</b> (1 point) Ceiling and Wall Systems totaling 90% or more of the total area of such systems shall be tested following CDPH Standard Practice. <b>EQc3.4</b> Furniture and Furnishings totaling 90% or more of the total shall meet ANSI/BIFMA M7 1-2007		
			EQ.c4	Ducted Returns	1	Install ducted HVAC returns throughout the school in occupied spaces to avoid dirt and microbial growth issues.		
			EQ.c5	Enhanced Filtration	1	Design HVAC system with particle arrestance filtration rate MERV 13.		
			EQ.c6	Post-Construction IAQ	1	<b>EQc6.1</b> Vacuum carpeted and soft surfaces with a HEPA filter vacuum that meets CR1 Seal of Approval/Green Label Vacuum. <b>EQc6.2</b> Prior to flushout, filters must be replaced with MERV 10.		
			EQ.c7	Enhanced Acoustical Performance	1-4	<b>EQc7.1</b> (1 point) Classrooms and core learning spaces with volumes greater than 20,000 cubic feet must have a 1.5 second reverberation time max. <b>EQc7.2</b> (2 points) Unoccupied classrooms must have a max background noise level of no more than 35 dBA Leq. <b>EQc7.3</b> (1 point) Add to school commissioning requirements (in EEP2) that background HVAC noise is tested to reqs of EQ.p9 and EQc7.2		
			EQ.c8	Controllability of Systems	1-2	<b>EQc8.1</b> (1 point) 90% of all classrooms shall have a minimum of one operable window that is accessible to occupants. <b>EQc8.2</b> (1 point) Provide separate temperature and ventilation controls for each classroom or provide each classroom with an independent temp sensor that automatically adjust to the conditions. And provide lighting controls for each classroom.		
			EQ.c9	Duct Access & Cleaning	1	Provide access doors for cleaning all supply and return ductwork and execute a plan for cleaning ductwork prior to occupancy.		
			EQ.c10	Electric Lighting	1	<b>EQc10.1</b> Provide multi-scene indirect/direct lighting systems for all classrooms. <b>EQc10.2</b> The lighting system shall operate in general illumination and A/V modes. <b>EQc10.3</b> In general illumination mode, achieve an avg illumination at desk level of 35 to 50 fc w/ min of 25fc at any point more than 3ft from any wall. <b>EQc10.4</b> In A/V mode achieve an avg illumination at desk level of between 10 and 20 fc. <b>EQc10.5</b> In indirect mode, controls shall provide at least two levels of uniform lighting both at night and when daylight is available.		

0	0	0	Energy	Points	Abridged Requirements	Response Party	Comments
			EE.p1	Minimum Energy Performance, 20%	Required	Follow the current MA Stretch Energy Code (780 CMR Appendix 120 AA, Chapter 5) to achieve energy savings either through the Performance based approach (20% better than the current ASHRAE 90.1 on an energy cost basis) OR the Prescriptive based approach as explained in the reference guide.	
			EE.p2	Commissioning	Required	Implement ALL of the fundamental best practice commissioning procedures, as described in the reference guide and contained in the Massachusetts School Building Authority's Standard Scope of Commissioning Services.	
			EE.p3	Facility Staff & Occupant Training	Required	<b>EE.P3.1</b> Facility Staff Training: Facility staff must receive training and operation and maintenance documentation on all building systems included in the commissioning scope of work. <b>EE.P3.2</b> Teacher/Administrative Staff Training: Teachers, administrators, and support staff must be offered training on operations of lighting, heating, and cooling systems in classrooms, offices, gyms, auditoriums etc. A User's Guide, explaining basic systems operations, should be developed and posted in each room of the school.	
			EE.c1(A)	Superior Energy Performance (Performance)	2-15	Performance approach: Utilize the Performance Approach from Energy Prerequisite EE.P1 for quantifying energy cost savings. Points are awarded according the percentage saved over a baseline building.	
			EE.c1(B)	Superior Energy Performance (Prescriptive)	2-4	Prescriptive approach: Meet the requirements of EQ.C2, Daylighting in Classrooms AND ensure that 40% of the installed electrical lighting wattage throughout the school is dimmed or turned off when sufficient natural light is present. (2 points) Install an energy recovery ventilation (ERV) system to recover waste heat into the incoming fresh air stream. (2 points)	
			EE.c2	Minimize Air Conditioning	1-3	1 Point: Design and install a dehumidification system, which tempers air but does not act as a full air conditioning system. Spaces such as computer classrooms and server rooms are exempt. 2 Points: Design 80% of permanent classrooms without air conditioning. 3 Points: Design 90% of permanent classrooms without air conditioning	
			EE.c3	Renewable Energy	1-12	<b>EE.C3.1</b> : Use renewable energy sources for electricity production that are on-site or allocated to the school facility through net metering. <b>EE.C3.2</b> : Use on-site renewable energy sources for heating/cooling.	
			EE.c4	Plug Load Reduction & ENERGYSTAR Equipment	1	Pass a resolution to require ENERGY STAR equipment and appliances, where available, for all new purchases for the school and to prohibit the purchase of low efficiency products. Develop a plug load reduction plan that identifies all potential plug loads in the school. Plug loads identified should be incorporated into the energy model in EE.P1 Minimum Energy Performance, if the performance option is followed.	

			EE.c5	Energy Management System & Sub metering	1-3	<u>EE.C5.1:</u> Install an energy management system (EMS) to monitor and trend the energy consumed by the following systems throughout the school: Lighting (interior and exterior), HVAC, and Domestic hot water systems. Meter all energy sources provided by utility sources and trend the data against outside air temperature. Provide a plan addressing trendlogging, operator training, and data analysis. <u>EE.C5.2:</u> During design, circuit the electric loads to designated lighting and general power panels so that a true energy measurement of these systems can be achieved. Take either approach for two points: Submeter Major Electrical Equipment Loads OR Boiler System.		
			EE.c6	Flex Energy	1-2	Design the school so that the following technologies can be easily incorporated: 1) Photovoltaic electricity systems, 2) Solar thermal systems, 3) Electric vehicles. 1 Point: Identify the locations where one or more of these technologies can be incorporated and what steps must be taken to make them possible. 2 Points: Identify the locations that will be constructed to be ready for one or more of these technologies.		

0	0	0	Water	Points	Abridged Requirements	Respons. Party	Comments
			WE.p1	Irrigation System Performance on Recreational Fields	Required	Any in-ground irrigation systems used for recreational fields must have soil moisture meters, weather station, or ET controllers.	
			WE.p2	Indoor Water Use Reduction, 20%	Required	Employ strategies that, in aggregate, reduce potable water use by 20% beyond the baseline calculated for the building after meeting EPA 1992 fixture requirements.	
			WE.c1	Indoor Water Use Reduction, 30-50%	1-3	Exceed the potable water use reduction beyond the calculated baseline determined in WE.p2	
			WE.c2	Reduce Potable Water Use for Sewage Conveyance	4	Reduce the use of potable water for building sewage conveyance by a minimum of 50% through the utilization of water-efficient fixtures, use of rainwater catchment systems, or both.	
			WE.c3	No Potable Water Use for Non-Recreational Landscaping Areas	3	Do not install permanent irrigation systems for watering non-playing field landscaped areas AND specify drought tolerant plants or grasses in these areas.	
			WE.c4	Reduce Potable Water Use for Recreational Landscaping Areas	2	Reduce the irrigation needs of athletic fields by specifying appropriate soils and drought tolerant grasses for all sports fields. Specify soils and seed mixes that meet requirements.	
			WE.c5	Irrigation System Commissioning	1	Create an irrigation commissioning plan and complete installation review during construction, performance testing after installation, and documentation for ongoing operations and maintenance.	
			WE.c6	Water Management System	1-3	WEc6 (1 point) Install a Water Management System to monitor water for any equipment or system that exceeds 20% of the total amount of water used. At a minimum submeter domestic water and exterior irrigation. WEc6.2 (3 points) Install a Water Management System to monitor water use of all indoor and outdoor water uses. Water meters should have a pulsed output for AMR. Submeter: all indoor water usage except gyms with showers, gyms with showers, landscaping irrigation, recreation irrigation, swimming pool, cooling tower.	

0	0	0	Site	Points	Abridged Requirements	Respons. Party	Comments
			SS.p1	Joint Use of Facilities & Parks	Required	Design, with community involvement on one or more spaces (2,500sf min) for use by community or other appropriate organization. Share park or recreation space with the community.	
			SS.c1	Sustainable Site Selection	1-5	SSc1.1 (1 point) Do not modify land with prior to project was public parkland, conservation land, or land acquired for water supply protection. SSc1.2 (1 point) Do not develop on land lower than 5' above the 100 yr flood elevation. SSc1.3 (1 point) Do not develop school site that are within wetland resource areas. SSc1.4 (1 point) Do not develop on greenfields.	
			SS.c2	Central Location/Smart Growth	1	Site the school with 1/2 mile of at least 8 basic services OR verify that municipality has a current Commonwealth Capital score	
			SS.c3	Reduced Building Footprint	1	Increase the FAR of the school to be at least 1.4.	
			SS.c4	Building Layout & Microclimates	1	Implement four of the following: 1) Orient the building to maximize daylighting 2) Consider prevailing winds. 3) Take advantage of existing formations to provide shelter from extreme weather. 4) Plant appropriate trees in appropriate areas. 5) Minimize importation of non-native soils. 6) Create physical connections to bike paths, natural features or adjacent buildings. 7) Site building to maximize opportunities for renewable technology.	
			SS.c5	Public Transportation	1	Locate building within 1/2 mile of a commuter rail, light rail or subway OR within 1/4 mile of one or more bus lines.	
			SS.c6	Pedestrian/Bike/Human Powered Transportation	2	SSc6.1 (1 point) Provide sidewalks and bike lanes that extend at least to the school entrance AND provide lanes that connect to residential areas at least 1/4 mile from the school entrance AND provide suitable means to secure bicycles for 5% or more of the building occupants. SSc6.2 (1 point) Provide bike lanes that extend at least 2 miles.	
			SS.c7	Parking Minimization	1	New Construction: Size parking capacity 1) To meet, but not exceed, local zoning OR 2) not to exceed a) HS - 2.25 spaces per classroom plus parking for 20% of students b) Elementary & Middle - 3 spaces per classroom. Major Renovations: Add no new parking AND provide preferred parking spaces for 52% of total parking for carpools and LEVE vehicles.	
			SS.c8	Post-Construction Stormwater Management	1	Exceed the MA Stormwater Standards by implementing a stormwater management plan that results in a 25% decrease in stormwater runoff volume for existing conditions.	
			SS.c9	Reduce Heat Islands - Landscaping	1	Provide shade (within 5 yrs) on at least 20% of non-roof, impervious surfaces on site OR use light colored (SRI 29) materials for 20% of the impervious area. OR use a combination.	
			SS.c10	Reduce Heat Islands - Cool Roofs	1	Use roofing materials that have a SRI of 78 low-sloped roof, 29 steep-sloped roof for a minimum of 75% of roof area.	
			SS.c11	Light Pollution Reduction	1	Meet the Uplight, light trespass and glare requirements as described in sections SSc11.2-11.3	

0	0	0	Materials & Waste Management		Points	Abridged Requirements	Response Party	Comments
			MW.p1	Storage & Collection of Recyclables	Required	Meet local ordinances for recycling space, and provide both an easily accessible areas dedicated to the separation collection and storage of recyclables. Provide a plan for the removal of these recyclables.		
			MW.p2	Minimum Construction Site Waste Management, 75%	Required	Recycle, reuse, and/or salvage at least 75% (by weight) of non-hazardous construction and demolition waste, not including land clearing and associated debris.		
			MW.c1	Minimum Construction Site Waste Management, 90%	1	Recycle, reuse, and/or salvage an additional 15% for a total of 90% (by weight) of non-hazardous construction and demolition waste, not including land clearing and associated debris.		
			MW.c2	Single Attribute - Recycled Content Materials	1-2	Prescriptive: Specify and install at least four major materials from Table 15-Minimum Recycled Content Levels for 1 point, or eight major materials for 2 points. Performance: The weighted average recycled-content value is at least 10% (post-consumer + 1/2 secondary), or at least 20% for 2 points.		
			MW.c3	Single Attribute - Rapidly Renewable Materials	1	Use rapidly renewable materials, excluding wood fiber, for 2.5% of the total value of all products used in the project. OR Specify rapidly renewable materials for 502% of the major interior finishes or structural material listed in criteria.		
			MW.c4	Single Attribute - Certified Wood	1	Specify that a minimum of 50% of the wood-based materials are FSC Certified.		
			MW.c5	Single Attribute - Regional Materials	1-2	Specify that a minimum of 10% of building materials (based on cost) that are extracted, and manufactured regionally for 1 point. 2 points for 20%.		
			MW.c6	Materials Reuse	1	Performance: Specify re-used, salvaged or refurbished materials obtained off-site for 5% of building materials. Prescriptive: Specify re-used, salvaged or refurbished materials for 25% of one of the following major finish materials: Flooring, casework, acoustical ceiling tiles, wall finishes, tile, roofing materials.		
			MW.c7	Durable & Low Maintenance Flooring	1	Choose flooring products for 50% of the interior surface that are: Impermeable to moisture and air, 15 year non-prorated life time warranty. Provide documentation showing life cycle (15 year) initial costs and maintenance needs of all flooring in the project have been assessed.		
			MW.c8	Building Reuse - Exterior	1-4	Reuse large portions of existing structure during renovation or redevelopment projects. 50% - 1 point, 65% - 2 points, 80% - 3 points, 95% - 4 points.		
			MW.c9	Building Reuse - Interior	1	Maintain 50% non-structural elements (walls, floor coverings and ceiling systems)		

0	0	0	Operations & Maintenance		Points	Abridged Requirements	Response Party	Comments
			OM.p1	Maintenance Plan	Required	The district must create a school maintenance plan that includes an inventory of all equipment (electrical, mechanical, plumbing and envelope) in the school and its preventative and routine maintenance needs.		
			OM.p2	Anti-Idling Measures	Required	Adopt a no idling policy that applies to all school buses operating in the school district and all vehicles operating in the school zone.		
			OM.p3	Green Cleaning	Required	The school committee must pass a resolution adopting a comprehensive green cleaning policy that ensures only environmentally preferable cleaning products and practices are used.		
			OM.c1	Work Order & Maintenance Management System	1	The school district shall develop or purchase a work order and maintenance management system (MMS)		
			OM.c2	Indoor Environmental Management Plan	1-3	<b>Option 1</b> (3 points) Implement EPA's Tools for Schools Program or equivalent. <b>Option 2</b> (2 points) Custodial/Facility Staff Training using MA Facility Admin. Ass. Modules on IAQ, IPM, radon, drinking water and "Cleaning for Health". <b>Option 3</b> (1 point) Arrange a presentation on Tools for Schools or MA Healthy Schools Checklist to the school committee.		
			OM.c3	Green Power	1	Commit to purchasing RECs or a power through a PPA equivalent to 15% of the projected annual electricity needs.		
			OM.c4	Climate Change Action: Diesel Bus Retrofit	1	Retrofit buses by participating in the DEP MassCleanDiesel Initiative.		
			OM.c5	Carbon Footprint Reporting	1	Join the Climate Action Registry to commit to calculate, report and verify annual GHG emissions using The Climate Action Registry online tool.		
			OM.c6	Energy Benchmarking	3	OMc6.1 (2 points) The school must adopt a policy of benchmarking its energy use over time to track building performance. OMc6.2 (1 point) Commit to conduct a post-occupancy analysis of the building's performance after 1-2 yrs or recommissioning after 2-5 yrs.		

0	0	0	TOTAL		Points			
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#### Eligibility Levels

New Construction MA-CHPS Verified - 40 points

New Construction MA-CHPS Verified Leader - 50 points