

DESIGN STANDARDS SUPPLEMENT

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Miami-Dade County Public Schools
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M-DCPS Design Standards 2008 Supplement

The purpose of this Supplement is to provide Architects, Engineers, Construction Managers, Executive Directors, Project Managers, etc. a list of new requirements and clarifications of existing requirements represented in the latest version of M-DCPS Master Specification Guidelines (2004), Design Criteria (2004), and Educational Specifications. These items shall be implemented in all projects that have not yet completed phase one design. For projects in phase two or three design or in construction, each item shall be reviewed and implemented at the discretion of the appropriate M-DCPS Capital Construction Region Executive Director. Questions should be directed to the Division of Facilities Design and Standards at (305) 995-4575.

General Considerations

1. Miami-Dade County Public Schools (M-DCPS) recognizes the importance of Green/Sustainable/High Performance Building initiatives such as Collaborative for High Performance Schools (CHPS) and Leadership in Energy and Environmental Design (LEED) established by the U.S. Green Building Council (USGBC). These initiatives serve as a guide and reference for building owners, designers and builders to ensure that future buildings increasingly incorporate the “best practices” that will in time, lead to a sustainable environment for all.

M-DCPS urges architects, engineers, design professionals, contractors and others to utilize these concepts in all M-DCPS facilities. M-DCPS expects the project team to propose Green/Sustainable/High Performance Building concepts; products, materials, equipment, construction methods, and other related factors for review and approval, even if they differ from the M-DCPS Design Standards. The Architect/Engineer (A/E) shall maintain a LEED score sheet for every project. Formal LEED certification will only be required if the A/E is commissioned for this activity on a per-project basis.

2. M-DCPS concern for recycling and other environmental matters applies to all building products and their manufacturing processes. Materials or manufacturing processes harmful to the environment should be avoided if possible. M-DCPS encourages the use of recycled materials and products. The A/E shall specify such items wherever feasible. Do not specify woods from endangered rain forests or other environmentally sensitive regions. Do not specify materials capable of releasing formaldehyde, mercury, mineral spirits, or any other toxins, irritants, or

- volatile organic compounds (VOC's). Laminated plastics shall not contain toxic adhesives.
3. Products that are Energy Star qualified may be evaluated and presented to M-DCPS Division of Facilities Design and Standards for consideration and possible approval. See www.energystar.gov for description of this EPA/DOE initiative that applies to some windows, doors, roofs, appliances, water coolers, and lighting items.
 4. The design of a facility shall make use of Frugal Construction Standards issued by SMART Schools Clearinghouse, except as noted in M-DCPS Design Standards.
 5. To the greatest extent possible the A/E shall develop a compact building footprint and provide the largest possible open/green areas for use as play fields and for future building expansion.
 6. In renovations and remodeling, consult with the school's Administrative Staff to consider retaining items having historic value.
 7. The (NIC) FF&E list identifies the furniture, fixtures and equipment supplied by M-DCPS. The A/E shall develop a comprehensive layout plan that contains all In-Contract (IC) and Not In-Contract (NIC) FF&E items. This layout shall provide and be coordinated with all utility requirements serving these items. A copy of the layout, at 1/4 inch = 1 foot scale, shall be provided to M-DCPS for their review and approval no later than at Phase II Design Review. All electrical, systems, and plumbing drawings shall be checked and coordinated with the FF&E Plans during the Phase Matrix Review Meetings.
 8. Deviations from M-DCPS Design Standards during design or construction require proper justification in writing to M-DCPS Facilities Design and Standards for review and possible written acceptance prior to implementation. The A/E shall submit to the M-DCPS Project Manager at each design Phase, a letter certifying that the design documents comply with M-DCPS Design Standards. Any previously approved deviation or substitution shall be identified in this letter from the A/E.
 9. All requests for substitutions, "approved equals", or deviations from M-DCPS Design Standards, shall first be reviewed by the Architect of Record and the Design Criteria Professional, when applicable. All requests shall include a detailed written justification, containing benefits to the District and the cost differential. All requests shall be submitted with the appropriate form to the M-DCPS Project Manager for review and possible written approval by the M-DCPS Maintenance - Facilities Operation and the Division of Facilities Design and Standards. The response shall be

generated within 14 days of the substitution request being delivered to the Division of Facilities Design and Standards.

10. Prior to beginning design, the Architect/Engineer (A/E) shall meet with M-DCPS Division of Facilities Design and Standards to obtain all updated Master Specification Guideline sections. These sections shall replace or complement the sections from the 2004 Master Specification Guideline.
11. The Project Architect/Engineer (A/E), and not M-DCPS, prepares the Specifications for each project. The A/E is required to edit the Master Specification Guidelines, (M-DCPS Spec Guide) provided to them by M-DCPS so that it is project specific. These guidelines contain requirements mandated by M-DCPS that are not found in commercial master specification texts or in specifications used in ordinary commercial and residential construction. M-DCPS specification guidelines contain numerous requirements that are essential to the M-DCPS instructional, administrative, maintenance and custodial operations. In editing the guidelines, it is incumbent upon the A/E to retain special M-DCPS requirements. When in doubt as to how to edit, contact M-DCPS Division of Facilities Design and Standards. The A/E shall clearly understand that these specification guidelines are only a starting point; they must be edited to describe each project's scope and quality of work without deviating from the inherent intent and essential practices of the specification guidelines, the Design Criteria, the project Educational Specifications, and the law. Because the guidelines provided by M-DCPS are rarely used in the same calendar year in which they were written or updated, it is the responsibility of each A/E design professional to conform to current code, laws and standards, and to update references to the governing year as needed. The number of listed products and manufacturers may be edited to no fewer than two. The inclusion of additional products or manufacturers requires written acceptance from M-DCPS Division of Facilities Design and Standards.
12. For schools that have areas that are designated as an "Enhanced Hurricane Protection Area" EHPA, the Architect/Engineer (A/E) shall comply with all requirements of FBC 2004 and Emergency Shelter Design Criteria for Educational facilities, by the University of Florida for DOE. The A/E shall also comply with the applicable requirements and details contained in the EHPA Design Criteria prepared for M-DCPS by Spillis Candela & Partners, Inc. dated October 1998.
13. Designated EHPA areas within a facility shall have a FBC required "main fire alarm panel" located in the EHPA manager's office, (FBC 423.25.3.5). The fire alarm panel in the EHPA manager's office is in addition to the fire alarm enunciator panel located in the main administration area, which is required by the M-DCPS Design Criteria. The fire alarm panel in the

administration area shall not be eliminated for schools that are designated as an EHPA.

14. For schools that have areas that are designated as an “Enhanced Hurricane Protection Area” EHPA, the Architect/Engineer (A/E) shall develop an “EHPA User Manual”. The User Manual shall be provided to the school administration and maintenance staff in a hard copy and power-point format. The Contractor shall provide training to M-DCPS Maintenance and School Administration Staff, on the proper use of all EHPA related systems. The training sessions shall be filmed and developed into a training video in digital format as part of the closeout documents. The manual and video shall describe and illustrate the available systems, valves, equipment, etc., their location, how to use them, as well as all of the maintenance requirements. The User Manual and the training video shall be kept in the designated office within the EHPA. A copy of the manual and video shall also be provided to M-DCPS Emergency Management and the appropriate Region Maintenance Center (RMaC) as part of the closeout documents.
15. For schools that are designated as an EHPA, the Architect/Engineer (A/E) shall specify that all switches, buttons and valves associated with the available systems shall be permanently labeled and documented in the “EHPA User Manual”.
16. For schools that are designated as a EHPA, the Architect/Engineer (A/E) shall specify that the contractor shall supply all of the required wrenches, hooks and tools to properly operate all of the available EHPA systems. All of the tools needed to operate the EHPA shall be accepted by the M-DCPS Project Manager and provided in a lockable cabinet that is kept in a secure location within the dedicated EHPA office.
17. Designated EHPA areas within a facility shall be identified on the F.I.S.H. drawings. The A/E shall outline the spaces within all buildings that are designated as EHPA areas for the required submittal to the M-DCPS FISH Department.
18. Exterior and interior stairs shall be cast-in-place sealed concrete with recessed full-length metal anti-slip nosing at least 3 in. wide, anchored the full-width of each tread and landing. The nosing shall be installed aligned with the finished edge of the concrete thread.
19. The requirements for concrete risers for Band and Vocal classrooms have been eliminated by M-DCPS. The electric and data outlets shall be properly located and provided as flush floor outlets.

20. For new schools and major additions an In-Contract (IC) Marquee sign shall be provided at the appropriate location. Underground electric and data conduit shall be installed for the IC school Marquee Sign. The data line for the sign shall terminate at a Telecommunication Closet so that it can be programmed from a secretary station in the Administration Office.
21. Provide a compact facility footprint and design to accommodate future expansion by building addition or by portable classrooms, according to program requirements and Division 13.
 - A. A specific area or areas next to the building shall be designated on the site plan for future buildings or portable classrooms. Keep this area clear of underground utilities, easements, circulation paths, and other encroachments.
 - B. Areas identified for future expansion shall incorporate a design solution with accessibility, security, utility servicing, and control/monitoring of these areas available from the permanent facility.
 - C. Provide utility stub outs for future expansion according to program requirements and Division 13, 15 and 16.
22. Classroom acoustics shall meet ANSI Standard S12.60-2002.
23. A maximum Reverberation Time (RT) of 2.0 seconds is now required for Gymnasiums. Reverberation time is measured in seconds (500/1000 Hz) per national average requirement in mid-range frequencies. A qualified acoustics professional, accepted by M-DCPS, shall design the acoustic treatment for the Gymnasiums according to all acoustical requirements.
24. Provide a 4' x 8' or 8' x 8' construction sign at all new schools and additions prior to the start of construction. Obtain the size requirements, sample layout and additional requirements from the M-DCPS Project Manager.
25. Low speed gunpowder-activated fasteners may be used for limited-uses on M-DCPS Construction Projects. They shall not be used as the main support for construction elements located over-head. They may be used to fastened electrical conduits up-to 1-1/4" in diameter and miscellaneous electrical fixtures and electrical panels. For any other usage, approval must be obtained from M-DCPS Facilities Design and Standards on a per project basis. In Remodeling Projects gun-powder-activated fasteners shall not be used when the public, staff and students are in the immediate area of construction.

Division 1 – General Requirements

1. Shop drawings for playground equipment shall be submitted to the M-DCPS Division of Safety and Emergency Management for their review and possible approval.

Division 2 – Site Work

1. Safety surfaces at primary play areas and all playground equipment areas shall be poured-in-place granulated, reclaimed rubber surface with a geotextile sheet beneath. Synthetic grass surface over geotextile and a poured-in-place granulated rubber bed are presently being evaluated and may also be considered in these areas. The A/E shall submit product type and the product specifications for review and possible approval by M-DCPS Division of Facilities Design and Standards. Do not use sand for the primary play area or the playground equipment area.
2. Racquetball courts are no longer required for new facilities.
3. The use of xeriscaping for all landscaped areas other than sodded playfields is now a mandatory requirement. The A/E is encouraged to develop a design that utilizes native plant-life whenever possible. Consult the M-DCPS Design Criteria (2004) for additional information about xeriscaping.
4. The following are the new requirements for the installation of sod for school facilities. Prior to beginning the landscape design the A/E shall meet with M-DCPS Division of Facilities Design and Standards to obtain the appropriate updated Master Specification Guideline sections.
 - A. Solid rolled sod with certified Bermuda Tifway 419, Bermuda "Celebration" shall be provided for the all purpose PE field, football field, soccer field, softball outfields, baseball infields and outfields for all Senior High Schools. It shall also be specified for other athletic specialty areas such as track and field and the areas in between the athletic fields so that it is continuous within the athletic field footprint. The fields shall be designed so that there are physical barriers between the Bermuda Tifway sod and other types of sod and landscaping so there is no migration into these areas.
 - B. Solid sodding of St. Augustine Floratam shall be provided for Senior High Schools at all non-Physical Education/Athletic fields. It shall be specified for all Elementary, ECC, K-8 and Middle School playfield areas. It also shall be specified for general irrigated landscape areas adjacent to buildings and parking lots for all schools.
 - C. Solid sodding of Bahia shall be provided at areas not considered part of the site-landscaped areas. It shall be specified for right-of-ways and anywhere that site maintenance is a major concern.

5. Royal palms and other palm trees that produce large falling fronds shall not be used in designated sitting and other student gathering areas.
6. The use of reclaimed water for irrigation purposes shall be evaluated by the designer and presented to M-DCPS Division of Facilities Design and Standards for consideration.
7. The A/E shall design the irrigation systems to have an automated central control station reporting to M-DCPS Facilities Operations – Landscape Maintenance. Communications between M-DCPS Landscape Maintenance and the control station shall occur on the IP Intra-network.
8. The A/E shall submit to the Landscape Maintenance staff, (305) 995-7849, the Landscape and Irrigation System construction documents for review and approval. The A/E shall incorporate all of the comments from the Landscape Maintenance staff into the Construction Documents prior to bidding the project.
9. The irrigation contractor shall request an inspection from M-DCPS Facilities Maintenance Operation staff, (305) 995-7849, before the system has been completed. The A/E shall request a Punch List Inspection from the Landscape Maintenance staff when the project has achieved Substantial Completion. The final operational tests for the irrigation equipment and all irrigation zones shall be performed by the contractor and witnessed by the A/E and the M-DCPS Landscape Maintenance staff.
10. When providing irrigation for any playfield or athletic field area at an existing facility the designer shall investigate with MDCPS Facilities Maintenance Operations to determine if an existing usable pump station is on site. This will avoid duplication of wells and pump stations. If there is no usable pump station, then utilize one of the specified pump stations from Hoover or approved equal for the area. The size of the pump station will be determined by the size of the area to be irrigated.
11. The A/E shall place fencing around the school site to utilize portions of the buildings as the perimeter barrier to minimize the fencing around the property. The A/E shall avoid situations where there is a double fence for athletic fields and the perimeter fence within a few feet of the property line.

Division 3 – Concrete

1. The use of stained or sealed concrete for interior circulation spaces shall be evaluated and presented to M-DCPS Division of Facilities Design and Standards for consideration and possible approval on a per project basis.
2. Concrete sidewalks, courtyards, exterior walkways and exterior dining areas shall always have a broom finish and be clear-sealed. Concrete that is not sealed is unacceptable for M-DCPS projects.

Division 4 – Masonry

Division 5 – Metals

1. Equipment supports for rooftop mechanical and electrical equipment shall require that the height, member sizing, and layout of each supporting structure be designed by the equipment producer, using a registered Florida professional engineer to calculate loads, including overturning moment of support and superimposed equipment following ASCE 7. Equipment producers will refer to the Master Specification Guidelines for basic steel, corrosion protection and fabrication requirements.
2. All handrails, posts and brackets for interior and exterior steps and stairs shall be aluminum with an integral satin clear anodized finish, (AA Architectural Class I, 0.7 mil or greater). Aluminum handrails shall not be painted or organic coated under any circumstances. All exterior handrails shall be attached to the building utilizing vandal resistant screws.

Division 6 – Wood and Plastics

1. The A/E shall design the “Classroom Service Center” base cabinets for the Primary Classrooms, Kindergarten Classrooms and Pre-Kindergarten Classrooms so that the counter top height is 2'-2" AFF. The “Classroom Service Center” base cabinets for the Intermediate Classrooms shall have a counter top height that is 2'-6" AFF. Consult the individual Educational Specification for additional information for the “Classroom Service Centers”.

Division 7 – Thermal and Moisture Protection

The new Design Criteria and Master Specification Guidelines will document radical changes in roof design and construction. The following paragraphs summarize many of these new requirements.

1. Scope of Roof Assembly - The A/E shall specify that the roof assembly is the responsibility of the roof membrane producer and the roof installer under a 20-year special warranty. The roof assembly is everything above the structural roof deck including the downspouts and rain-leaders.

2. All wood shall be eliminated from the roof assembly. Instead of wood all blocking shall be made of galvanized steel of constant thickness throughout. The galvanized steel blocking allows for torch application of the roofing instead of hot mopping. This will eliminate messy kettles, bitumen at temperatures that are too low and asphalt spills on new masonry and tilt-up walls.
3. Prior to issuance for bidding or negotiation, the roofing specifications and details shall be reviewed by the M-DCPS Division of Roofing for approval. All of the required submittals shall also be reviewed and approved by the Division of Roofing prior to acceptance by the A/E.
4. The insulation shall be lightweight insulating concrete. The lightweight concrete shall be made from cellular or lightweight aggregate over styrene board, held where possible to a uniform thickness that will give an R-value of at least 19.0. Isocyanurate or other board insulation assemblies will not be allowed. The insulation must slope at least $\frac{1}{4}$ in/ft to scuppers, with crickets at every impediment. The placement of the insulation must assure that there will be no ponding before the roofing installation proceeds. The approved lightweight insulating concrete manufacturers are:
 - A. Concrecel International (Concrecel)
 - B. Elastizell (Cellular and Hybrid)
 - C. Cellcore
 - D. Cellular Concrete (Mearlcrete)
 - E. Siplast (Insulcel, NVS, and Zonocel)
5. The perimeter of the lightweight insulating concrete on styrene roof insulation will be encapsulated in 16-gage galvanized steel, securely bolted to the structural deck against uplift.
6. The roofing membrane shall consist at a minimum of a base sheet and 2-ply, styrene butadiene styrene (SBS) modified bitumen roofing. Torched application will be used wherever possible for the SBS modified bitumen roofing for roof membrane and base flashings. Localized hot mopping will only be permitted with written approval from the MDCPS Division of Roofing. The full-modified bitumen surfacing of roof-level walls and the wrapping of parapet wall tops are mandatory. The manufacturer shall oversee the coordination, installation, corrections, perform periodic inspections and maintain and repair the entire roof assembly to give MDCPS a functioning roof assembly for 20 years. The current approved roofing manufacturers are:
 - A. Firestone
 - B. Siplast

C. Soprema

7. Energy Star roofing that complies with M-DCPS Master Specifications Guidelines and Design Criteria shall be evaluated by the A/E and presented to M-DCPS Division of Facilities Design and Standards for consideration and possible approval.
8. The installed roof system shall have a minimum slope of ¼-inch per foot. No ponding water is allowed on any roof system.
9. Expansion joints will be properly flashed 16 gage assemblies that extend at least 16 inches above the roof level. Galvanized steel 16-gage cant strips will be used instead of wood or fiberglass. Where blocking and other roof steel is visible, it shall be covered with 28 gage stainless steel fascias, copings and other trim fabricated in the same shop that fabricates the base metal for a good fit.
10. Pitch pans and chem-curbs are not permitted. Stainless Steel Flashing for Vent Stacks, extensions, and caps by SBC Industries, North Miami, FL or approved equal shall be used for all penetration flashings.
11. All roof penetrations shall extend a minimum of 14 inches (18 inches minimum for mechanical supports) above the finished roof surface, even at crickets.
12. Scupper, gutters and downspouts shall be made of stainless steel. Copper flashing shall be used at roof drain flanges and no lead will be permitted anywhere. Fasteners must be removable for ease of maintenance.
13. All base-flashing shall consist, at a minimum, of a 2-ply polyester reinforced styrene butadiene styrene (SBS) system compatible with the field membrane being used.
14. Wrap and cap all parapet walls with a 2-ply, torch grade, polyester reinforced, styrene butadiene styrene (SBS) modified system compatible with the field membrane being used. The parapet wall shall be primed prior to installation of the wall flashing.
15. Picture frame the inside and outside of all working and overflow scuppers. Install sealant throughout prior to installing the collector head. At tilt-up wall construction, no roof scupper shall be placed at a tilt-wall panel joint.
16. Gutters shall have rollover straps installed at 30-inches on center. Joints shall be soldered. Liquid gutter seal is not allowed.

17. Wood nailers are not allowed in the roof assembly at perimeter edge, expansion joints, coping, curbs, cants, etc. Use Alternative Roof Blocking (ARBS), 16-gauge galvanized metal or approved equal.
18. Tilt-up walls along low to high roof transition shall not have the decorative reveal. The tilt-wall panel joints shall be covered with a stainless steel metal plate.
19. All fasteners used shall be removable – exposed fasteners shall have grommetted washers.
20. Traffic pads shall be installed at all ladder landings, all sides of all equipment, three sides of all roof hatches and any other item that may require maintenance.
21. Ensure equipment (pipes, curbs, stands, roof jacks, lightning protection penetrations, hatches) maintain a minimum 24-inch distance from walls and other penetrations.
22. Roof assembly edge guards shall be provided at rooftop equipment that is closer than 10 feet from the edge of the roof. Whenever possible the roof top equipment should be placed more than 10 feet from the edge of the roof to avoid the edge guards. The edge guards must be engineered by the A/E of record firmly anchored to the structural and flashed. The edge guards should be anchored to the structure at the building fascia in lieu of anchoring through the roof membrane whenever possible.
23. Penetrations through the roof shall be kept at a minimum wherever possible. Lightning protection penetrations shall be placed in the wall through the parapet flashing and not in the field of the roof.
24. Equipment curbs shall be prefabricated and installed on the structural deck so as to meet the minimum height above the finished roof surface required by the Florida Building Code (FBC) and M-DCPS Division of Roofing requirements.
25. Use of lead flashing is not allowed anywhere in the roof system assembly. At the drains, use 16 ounce, 30-inch by 30-inch, malleable copper flashing. At penetrations, use stainless steel SBC flashing or equal.
26. Roof hatches shall be installed so the lift handle is located on the ladder side of the hatch.
27. All curbs shall have a ½-inch per foot cricket on the upside slope of the curb.

28. Provide downspouts for rainwater disposal from the roof. Provide gutters and downspouts at the edge of the roof perimeter. Built-in gutters behind parapets and parapet top gutters are not allowed. Interior drains are not permitted unless approved by M-DCPS Division of Facilities Design and Standards on a per project basis.
29. For multistory buildings downspouts shall be stainless steel from the roof down to 9 feet above grade. The stainless steel downspouts shall enter into schedule 80 PVC downspouts 9 feet above grade. The downspout shall be connected to an underground drainage system sized to meet the rainwater requirements from all of the roof decks. Clean-out provisions shall be provided at the location where the downspout is connected to the underground drainage system. Offset the downspout a minimum of 12-inches from any vertical joint which may require maintenance. The downspouts are to be held to the building by bolted stainless steel straps at 4'-0" on center. The downspouts shall receive an elastomeric coating that matches the wall color of the building. The downspout is only permitted to discharge onto the ground surface at existing facilities that have no existing underground drainage system. If there is no underground system the downspout shall have a 45-degree angle at the bottom and it shall discharge to a poured in-place concrete pad. Should it discharge to another roof surface, it shall discharge to a pre-cast splash block set on a traffic pad or salvage sheet. Do not use ductile iron for the downspouts.
30. Fixed external transfer ladders are allowed between roof decks only when approved on a per condition basis by M-DCPS Division of Facilities Design and Standards. They shall not be anchored to the roof deck nor shall they rest on the roof surface. The lowest ladder anchor shall be at least 18 inches above the roof surface. The transfer ladders shall extend down both sides of the parapet that separates the two roofs whether the roofs are at different levels or the same. The ladder shall terminate 1 foot above the roof surface. At the roof surface below the termination of each ladder, a walkway pad shall be provided that is large enough for setting down tools and allow the user to get on or off the ladder. The transfer ladder shall have a platform at the point of transfer over the top of the parapet large enough to set down tools and allow the user to pass over unencumbered to the opposite side.

Division 8 – Doors and Windows

1. Vision panels shall be provided in classroom doors only when required by code or special programs as identified by M-DCPS. Do not provide vision panels in classroom doors if they are not required.

2. Doorframes for masonry, concrete and tilt-wall construction shall be bolted and grout filled in-place. This applies to all doorframes except those at metal stud partitions. Doorframes at metal stud partitions shall be grout filled but are not required to be filled in place. Double metal studs shall be installed around the opening for all drywall partitions to secure the door.
3. Exterior door transoms and sidelights are now allowed for all projects. The transoms and sidelights shall be impact-resistant glass units that meet all of the requirements for impact-resistant windows. When exterior door transoms and sidelights are utilized, the A/E shall submit the proposed manufacturer/window type, with specifications, for review and possible approval by M-DCPS Division of Facilities Design and Standards.
4. All doors to occupied spaces that swing into a circulation corridor shall be recessed the full width of the door panel. There shall be no exceptions to this requirement.
5. Provide surface mounted exit devices at locations as defined in the M-DCPS Design Criteria.
6. Provide Cylinder Dogging (CD) on non-fire rated exit devices. Cylinder dogging uses a regular key cylinder keyed to the school master key system instead of the common hex dogging key.
7. Heavy-duty aluminum storefront and entrances are now allowed for all M-DCPS projects. The locations for the aluminum storefront and entrances must be approved by M-DCPS Division of Facilities Design and Standards on a per situation basis. The following are mandatory requirements for lites and doors up to 3x9 feet, 4x7 feet or 25-30 SF with frames no less than 4-1/2 inch deep:
 - A. The aluminum thickness for framing members shall be no less than 0.125 inch.
 - B. The aluminum finish shall be AAMA 2605 PVDF coating, not powdercoat or anodized.
 - C. The entrance doors shall swing out with a gasketed threshold, not a saddle.
 - D. Storefront and entrance assembly with current Miami-Dade BCCO NOA shall be used.
 - E. The storefront and entrance assembly shall have wind pressure resistance at least 100 PSF ± both negative and positive pressure.
 - F. The storefront and entrance assembly shall have large and small missile impact rating.
 - G. The entrance doors shall have an air intrusion less than 0.8 cf/min/ft² @ 6.24 PSF.

- H. The storefront and entrance doors shall have no water intrusion at 15.0 PSF as per ASTM E331.
 - I. All entrance doors must pass AAMA 1302.5 forced entry test as well as the Miami-Dade test.
 - J. The entrance door hardware shall be selected from sources acceptable to MDCPS Lock Division, with 3-point door locking, closers with proven long service life, and solid brass or stainless steel hinges.
 - K. Impact-resistant glazing shall be used equal to or of higher quality than the quality specified for impact-resistant windows in the project.
8. Impact-resistant glazed window units are now permitted for all projects. Metal louvered windows may still be specified for schools when appropriate. The use of either window type needs to be studied by the A/E and approved by M-DCPS Division of Facilities Design and Standards on a per situation basis. The A/E shall submit the proposed impact-resistant window unit manufacturer and window type, with specifications, for review and possible approval by M-DCPS Division of Facilities Design and Standards. The A/E should strive to design window units that are standard architectural sizes for ease of replacement whenever possible. The A/E should minimize the use of decorative, unusually shaped, fixed units such as octagon shaped and porthole windows. The following are mandatory requirements for the impact-resistant glazed window units:
- A. The impact-resistant windows shall be aluminum with a minimum $\frac{3}{4}$ inch wide aluminum flange that runs around 100% of the perimeter. It is mandatory that the unit shall be set in a full bed of sealant against the $\frac{3}{4}$ " lip in the concrete or masonry opening, (See the window sill detail contained in the M-DCPS Design Criteria Appendix).
 - B. The aluminum finish shall be AAMA 2605 PVDF coating, not powdercoat or anodized finished.
 - C. The window unit shall be glazed and assembled in a factory; not built on site. All fastening holes shall be shop-drilled to follow the NOA; not measured in the field.
 - D. Impact-resistant windows with current Miami-Dade BCCO NOA shall be used.
 - E. The window unit shall have wind pressure resistance at least 100 PSF \pm both negative and positive pressure.
 - F. Impact-resistant windows shall have large and small missile impact rating.
 - G. Impact-resistant windows shall have an air intrusion less than 0.8 cf/min/ft² @ 6.24 PSF.
 - H. Impact-resistant windows must pass AAMA 1302.5 forced entry test as well as the Miami-Dade test.

- I. Outward projecting window types cannot swing out into any circulation path. Inward projecting hopper units are not to be used.
9. When non-louvered windows are used, commercial grade roller shades shall be provided for all units. The shades shall be vinyl-coated fiberglass reinforced, room darkening shade with clutch. The A/E shall submit product type and the specification for review and possible approval by M-DCPS Facilities Design and Standards.
 10. A "Window Field Leak Test" shall be conducted at no cost to M-DCPS, by the Contractor and window installer with the A/E and the M-DCPS Project Manager present. The "Window Field Leak Test" sequence that shall be conducted as follows:
 - A. The test shall be performed after the first factory-glazed operable window assembly has been installed at the site. The window assembly shall follow all of the requirements in the Contract Documents. After the assembly has been approved and met all of the requirements for the "Window Field Leak Test", it shall be used as the "standard" window mock-up".
 - B. The goal is to determine, as early as possible, if the installation is being done correctly and to let the installer apply what is learned to succeeding window installations. The test will identify leaking within the window and leaking between the window and the surrounding construction. An outside consultant or an M-DCPS Test Lab is not required to conduct the test. The contractor and the installer shall conduct the Window Field Leak Test. The A/E and M-DCPS Project Manager will witness and report the test results. A hose and a nozzle shall be utilized to conduct the test.
 - C. The contractor shall conduct the test and as many re-tests of the initial window assembly as needed, until a leak-free installation is attained. After the 2nd failed test, the contractor may be back-charged for all tests, at the discretion of M-DCPS Project Manager.
 - D. At the start of the test the glazed window assembly shall have been shimmed and fastened in the opening over blocking bedded in sealant as required by the window specifications. The flange at the perimeter of the window frame shall be set in a full bed of sealant. All interior finishes, such as the gypsum board and window stool, shall not yet have been installed against the window frame so that all water intrusions can be identified
 - E. A representative from the Contractor, window installer, window producer, M-DCPS Project Manager, and the A/E shall be present during the testing. The Contractor or window installer shall operate the hose nozzle for the testing.
 - F. The test will be performed in two 5-minute phases with a brief conference between phases. A 5/8-inch garden hose and straight,

adjustable brass nozzle shall be used for the test. Set the nozzle to produce an 8 in. to 10 in. diameter pattern at an 8 ft to 10 ft distance from the window. Ascertain and note the water pressure where water from a public source enters the hose, preferably 45 PSI to 55 PSI. If a permanent water source is not available at the time that the test needs to be conducted the contractor shall supply equipment to achieve the required 45 PSI to 55 PSI. The contractor shall spray water against the window while the M-DCPS PM instructs the nozzle holder. The A/E shall observe and note any leaks or other signs of water intrusion at the interior side of the window. Other parties may observe the testing.

- For two minutes, spray the perimeter of the window opening, moving slowly, for 2 circuits, directing slightly more than half of the hose stream just within the window perimeter.
- For one minute, spray the joints within the window opening, moving slowly along the vent joints, and the mullion or muntin joints.
- For one minute make another circuit around the perimeter and along all joints.
- Shut off the nozzle while the MDCPS PM and the A/E confer in presence of other parties to review what the test has revealed. If the test is inconclusive it shall be repeated.

- G. The test shall be adjusted to meet the actual window size. The test procedure above is designed for window assemblies/units that are 24 ft² to 40 ft². When the window is less than 24 ft², reduce the 2 minutes to 1-1/2 minutes, and 1 minute to 45 seconds. If the window is 40 ft² to 70 ft², expand 2 minutes to 3 minutes, and 1 minute to 1-1/2 minutes. If the window is 70 ft² to 120 ft², expand the time to 3-1/2 minutes, and 1-3/4 minutes.
- H. If the mock-up window unit allows any water penetration the contractor shall remove the unit completely and re-install the entire window assembly again at no cost to M-DCPS. The Window Field Leak Test shall be repeated as many times as required to produce a water intrusion free result as determined by all parties.
- I. The mock-up must prevent any and all water intrusion before the installation of the remaining windows is permitted to continue. The "Window Field Leak Test" shall continue when all of the window installations have been completed for a building elevation or section of a building. The A/E shall select 10% of the total window area from each building section or elevation to conduct the Window Field Leak Test. The 10% selected shall represent window assemblies from all of the floors and locations within the test zone. All of the procedures detailed above shall be followed when testing each window assembly selected by the A/E.

Division 9 – Finishes

1. Utilize carpet tiles such as Interface “Academic” or approved equal in lieu of broadloom carpet in spaces where carpet is required. The A/E shall submit product type and the specification for review and possible approval by M-DCPS Division of Facilities Design and Standards.
2. When existing carpeting is being replaced the installer shall send all of the old carpeting materials to a recycling plant. Do not send the old carpet to a landfill.
3. Linoleum tile and linoleum sheet flooring are acceptable in lieu of vinyl composite tile in spaces where VCT is required. The A/E shall submit product type and the specification for review and possible approval by M-DCPS Division of Facilities Design and Standards.
4. Quartz tile flooring such as Rikett quart tile by Knight Premium or approved equal is acceptable in lieu of vinyl composite tile in spaces where VCT is required. The A/E shall submit product type and the specification for review and possible approval by M-DCPS Division of Facilities Design and Standards.
5. In all group toilet rooms and Cafeteria kitchens, ceramic wall tile shall extend from the floor to the finished ceiling.
6. Provide all interior student corridors with a porcelain tile wainscot from the floor to a minimum height of 4'-4" AFF
7. Paperless gypsum board with glass fiber or other inorganic, mold-resistant facings shall be specified. Do not use paper-faced gypsum board.
8. Provide a 5/8" impact/abuse-resistant, mold/moisture-resistant gypsum board in all student-occupied spaces and student occupied interior corridors. Non-impact/resistant gypsum board may be used for interior partitions in non-student occupied spaces. These areas include the administration area, student services area, teachers lounge, and the media center.
9. It is acceptable to utilize metal stud partitions with 5/8" impact/abuse-resistant, mold/moisture-resistant gypsum board for communications and electrical rooms. Concrete masonry unit (CMU) or tilt-wall partitions shall be used for all mechanical rooms since they contain noise producing equipment and water and moisture is present.

10. Prefabricated metal or plastic stucco reveals are not allowed. Strike only the final stucco coat to achieve score patterns. Do not strike through the first stucco coat. Horizontal reveals should be minimized. Slope the bottom edge of horizontal score lines at least 5% to shed water.
11. The use of an exposed-structure as a ceiling for instructional areas is not allowed without prior written approval from M-DCPS Division of Facilities Design and Standards.
12. The use of low VOC paint shall be evaluated and considered for all interior spaces. The product specifications shall be submitted to the M-DCPS Paint Department for review and approval at Maintenance Operations - Paint Department, 12525 NW 28th Avenue, Miami, FL 33167.

Division 10 – Specialties

1. The A/E shall specify the mounting heights (above finish floor) for all instructional boards, so that the writing surface, not the bottom of the frame, meets the following requirements:
 - A. 2'-4" at pre-K through 3rd grade
 - B. 2'-6" at 4th grade and 5th grade
 - C. 2'-9" at middle school and high school
 - D. 3'-0" at staff areas
2. For Postal Service (USPS) deliveries, provide a drop box for all new facilities with an embedded base anchorage and with components, installation, and location complying with USPS requirements. The drop box shall be purchased from "Postal Products Unlimited", (Division of American Postal Manufacturing, Inc.), "Relay Collection Box with pedestal – Model N1014184". The USPS does not accept any other drop box so there shall not be any substitutions allowed. The mailbox shall not have any slots. The access to the mailbox shall be gained through key operation only. Two types of lock hardware shall be required:
 - A. Arrow lock hardware for Post Office use.
 - B. Other lock hardware for use by the school administration.

Division 11 – Equipment

All of the requirements listed below in Division 11 are associated with the Cafeteria Kitchen and the supporting spaces for the kitchen. Many of the requirements are not actually equipment but are included in this division for the purpose of grouping related items.

1. In the Cafeteria Laundry Room, provide one (1) in-contract (IC) residential washing machine and electric clothes dryer (or stacked washing/dryer unit) in accordance with the Educational Specifications. Under the washer and dryer, provide a raised concrete housekeeping pad with the same floor finish, (including the sides) as the laundry room.
2. In the Cafeteria Laundry Room provide fully assembled multi-tier lockers with six compartments with catch door pull/pad locks. Each single unit to be approximately 12"W x 18"D x 78"H. Verify with the project's Educational Specifications for exact quantity of lockers required.
3. The walk-in cooler and freezer shall have an interior and exterior 0.040-inch aluminum skin, embossed to a stucco-like profile and finished with enamel on the finish side. Heat strips shall be furnished around the cooler and freezer doors. The cooler and freezer doors shall be provided with view windows and 30-inch high diamond-pattern aluminum kick-plate from side to side on both sides. An air-curtain shall be furnished at the cooler door. The cooler and freezer shall have a quarry tile floor installed on site, flush with the kitchen quarry tile flooring. The concrete slab shall be recessed to accomplish the flush quarry tile installation. The cooler and freezer shall have a heavy sheet of aluminum above the flooring insulation, appropriately recessed to receive the quarry tile.
4. Provide at all Point of Sale (POS) cash register locations the required electrical and data outlets (network drops). At all interior serving bays, the POS data and electrical outlets shall be supplied from the floor and must be "stubbed-up" at least one foot above the finished floor. Locate these data and electrical outlets underneath each cashier station so that students or employees cannot trip or kick them.
5. The Food Service Manager's office shall have a minimum of two network drops for a computer and printer in addition to the fax and phone lines. The network drops should be wired to the nearest telecommunications closet.
6. The A/E shall coordinate with M-DCPS ITS personnel, the design layout for all data conduits and boxes located within the food service area. Note that all data conduits and outlets are in-contract (IC) and all data wiring will be installed by M-DCPS. As a general guideline use the following specifications for data:
 - A. If the distance from the POS location to the Food Service Manager's office is 250 feet or less, the POS shall be wired directly to the Food Service Manager's office.

- B. If the distance from the POS location to the Food Service Manager's office is greater than 250 feet, the POS shall be wired to the nearest Telecommunications closet.
7. Provide a telephone bell in the Cafeteria Kitchen outside the Food Service Manager's office that is loud enough to be heard during the production and service periods.
 8. Provide the Food Service Manager's office one (1) pass-through sliding glass window 3'-0" wide x 3'-0" high 3'-6" AFF. The window shall open directly into the Dining area and shall be lockable from inside the office.
 9. The AC remote control shall be provided to the Food Service Manager for the independent, after-hours A/C unit for the Kitchen Dry Storage Room.
 10. Where Cafeteria Kitchen projects specify roll-thru heated and refrigerated equipment behind the serving area, the designer shall allow for adequate space to open the doors and remove pans without impeding the circulation and creating a potential safety hazard.
 11. A doorbell shall be provided adjacent to the exterior door into the Kitchen Receiving area that is loud enough to be heard during the production and service periods. The exterior door at the Receiving area shall also be provided with a peephole, door sweep and weather strip.
 12. The in-contract (IC) icemaker shall be equipped with a water filter. The ice maker production capacities for the Cafeteria Kitchens are as follow:
 - A. PLC/ECC - 200 lbs
 - B. MLC - 400 lbs
 - C. Elementary - 500 lbs
 - D. Middle, K-8 and Senior - 750 lbs
 13. The Cafeteria Kitchen designer shall replace the fryer units from the 2004 Design Criteria with moisture plus double stack ovens.
 14. In addition to a utensil rack, the Cafeteria Kitchen designer shall provide an "under" and "over" shelf on all stainless steel worktables that contain a sink.
 15. Channel mount the utensil/pot rack to the two-compartment and three-compartment sinks in lieu of wall mounting the rack. The utensil/pot rack shall be installed at a height that is practical for the average 5'-5" food service employee.

16. The Cafeteria Kitchen designer shall specify that the contractor is to keep all stainless steel equipment tables, sink tables and serving lines completely covered and protected to avoid scratches from tools and machinery during construction. The contractor shall buff out any scratches prior to Substantial Completion.
17. The Cafeteria Kitchen designer shall specify foot pedal operated hand sinks in lieu of electric or battery operated hand sinks.
18. The Cafeteria Kitchen designer shall specify paper towel and soap dispensers at all hand sinks.
19. The Cafeteria Kitchen designer shall specify that all paint, plaster and stains are to be removed from the quarry tile floors and baseboard in the food service areas prior to Substantial Completion.
20. The Cafeteria Kitchen designer shall specify that the floor area under the serving lines and roll-thru heated/refrigerated units shall be level.
21. The Cafeteria Kitchen designer shall specify that floor drains be placed so that water does not pond in any area. The designer shall require that a "flood test" be performed to assure that there is no ponding. All stub-ups and floor drains must be placed and installed so that they are not a trip hazard.
22. Proper curbing shall be specified around all stub ups and floor mounted electric and data boxes in the food service areas.
23. The Cafeteria Kitchen designer shall specify that the contractor is to provide all of the keys for the drawers and all the equipment manuals for the Food Service Manager when the project achieves Substantial Completion.
24. The Cafeteria Kitchen designer shall specify that the serving lines will contain heated sections under the hot wells and refrigerated sections under the frost top and cold pans. A dome cover with integral handle shall be installed for each hot well section.
25. The kitchen hood shall be designed so that the fresh air in-take does not blow directly onto the user when they are standing in front of the hood.

Division 12 – Furnishings

1. Provide four (4) permanently mounted 20'-0" long, 5-row aluminum bleachers at an appropriate location along the outside perimeter of the

track/football field. Provide a concrete pad for each bleacher and continuous sidewalks for ADA accessibility.

2. Auditorium seating shall have cast iron, aluminum, or 14 gauge steel stanchions. Seat shall have steel pan with dual hinge system. Tablet arms are only required in every other seat in the first five rows. A 5-year manufacturers warranty shall be provided.
3. Code required aisle lighting shall be provided in a cost-effective manner. The light source must be located at the aisle not in the ceiling. Strip lighting recessed into the concrete slab is not permitted.

Division 13 – Special Construction

1. Interactive whiteboards and ceiling mounted digital projectors will be provided in all instructional spaces. The A/E shall provide the necessary communications conduits and electrical outlets to support the installation of these not-in-contract (NIC) items. Prior to beginning design, the Architect/Engineer (A/E) shall meet with the M-DCPS Division of Facilities Design and Standards to obtain all of the current requirements for this installation.
2. When an interactive whiteboard and ceiling mounted projector is provided in an instructional space, the TV together with its supporting bracket and the electrical outlet serving this device shall be eliminated. The cable outlet shall remain, but it shall be relocated adjacent to the Instructor's Technology Center
3. In large Cafeteriums provide necessary power and data conduits to support the installation of two in-contract (IC) electric screens and two not-in-contract (NIC) ceiling mounted digital projectors. Confirm this requirement with M-DCPS Division Facilities Design and Standards on a per project basis.
4. The Antenna tower shall be of sufficient height to provide line of sight signals from the M-DCPS transmitter. Antenna requirements (height, type, location, design, etc.) shall be reviewed for acceptance by M-DCPS Media Programming - Field Engineering Office (786) 275-0808. The use of a metal monopole antenna tower may be used. In no case shall the height of the tower be less than 125' above grade.

The next group of items for Division 13 are requirements developed by M-DCPS Information Technology Services (ITS). The A/E shall comply with all of the new Design Standards for ITS. Prior to beginning the design the A/E shall meet with M-DCPS Division of Facilities Design and Standards to obtain the appropriate updated Master Specification Guideline sections.

5. The Main Communication Closet (MCC), which was previously labeled the Main Telephone/Communications Room, and all Satellite Wiring Closets shall be air-conditioned spaces. The MCC shall be provided with a supplemental HVAC system for regulating temperature and relative humidity requirements for after-hour use. The A/E shall consult the M-DCPS Design Standards for additional requirements for the communication closets.
6. The flooring for all Main Communications Closet (MCC) and Satellite Wiring Closets shall be finished prior to the installation of any equipment so that they are ready to receive all of the communications equipment. The floor shall be finished with pigmented concrete sealer or pigmented concrete stain. The floors for these rooms shall not be left as an unsealed concrete slab.
7. The Main Communications Closet (MCC) and Satellite Wiring Closets shall have clear unobstructed ceilings. Ductwork, piping, etc. for other rooms is not permitted to run through the closets.
8. An additional dedicated ground bar for the telephone system shall be provided in the MCC.
9. In addition to the dedicated 120V outlets for the voice/data systems in the MCC, two separate dedicated 240V 30 Amp circuits with L6-30 outlets (lockable) shall be provided. The exact location within the MCC shall be determined by M-DCPS Information Technology Services (ITS). Contact the ITS Department at (305) 995-3332 for additional information.
10. The conduits provided for AT&T/Bellsouth in the MCC shall be installed in the lower left corner of the wall selected by the A/E. The conduits shall terminate at the property line at a location that is agreed to by AT&T and A/E. The conduits shall end in a 24" x 36" x 30" traffic rated hand hole. The location and installation shall be coordinated with AT&T/Bellsouth.
11. All communication conduits shall be provided with properly identified pull-strings that are of adequate length.
12. Ground conductors shall utilize their own dedicated conduits and not share any of the telecommunication conduits, cable trays or raceways.
13. The A/E shall clearly identify the location of the dialer for all fire alarm, security and card access panels on the construction drawings.
14. The A/E shall provide a ¾" conduit homerun back to the nearest communication closet for each floor mounted data outlet. It is not

acceptable to “daisy-chain” the floor-mounted outlets, since the wiring will not fit in the conduits.

15. The A/E shall provide a system of “homerun” conduits (minimum ¾” diameter) to provide wireless connectivity throughout all buildings, including specific areas such as the Administration, Media Center, Cafeteria/Cafetorium, Auditorium and all open courtyard areas. The location of the raceways shall be determined by M-DCPS Information Technology Services (ITS) during Phase III of the design.
16. The A/E shall provide a dedicated cable tray for sole use by M-DCPS Information Technology Services (ITS). The dedicated cable tray shall be provided in each building leading from each communication closet and running the entire length of the corridors. Under no circumstances shall the Contractor use this cable tray for placement of in-contract wiring.

The next group of items for Division 13 is new requirements for the Security Camera System (SCS). The A/E shall comply with all of the new Design Standards for the SCS. Prior to beginning the design for the System the A/E shall meet with M-DCPS Division of Facilities Design and Standards to obtain the appropriate updated Master Specification Guideline sections.

17. Provide the required provisions for a not-in-contract (NIC) security camera system (SCS) with a minimum number of camera locations as follows:
 - A. Primary Learning Centers: 12
 - B. Early Childhood Centers: 20
 - C. Elementary Schools: 48
 - D. K-8 Centers: 64
 - E. Middle Schools: 64
 - F. Senior High Schools: 120
 - G. Additions & Modular Buildings: Quantities will vary depending on the projects scope

Note: Quantities indicated above are approximate and will vary depending on the scope of work and design solution for the facility. The location and camera quantities shall be coordinated with the M-DCPS Police, Region Office, Principal, and the M-DCPS Capital Task Force, prior to bidding. The location and camera quantities shall be reviewed and approved by M-DCPS during the Phase III review.

18. The SCS Control Room shall be a minimum of 8’ wide x 12’ long. The room finishes shall be the same as that of a typical Administration office. Designate an 8’-0” wide wall area, from floor to ceiling, to accommodate security camera racks, and other wall mounted equipment. The main distribution frame (MDF) shall be located in the SCS Control Room. The

SCS Control Room shall be a secure, lockable room with no windows or vision panels. It shall be provided with a supplemental HVAC system in order to maintain a temperature of 75 degrees F. and a relative humidity of 60 percent for after-hour use.

19. At each intermediate distribution frame (IDF) location, provide a 4'-0" wide dedicated wall area, from floor to ceiling, with a 5'-0" clearance to accommodate security camera racks and other wall mounted equipment. It is desirable but not mandatory to provide 24-hour A/C for the IDF.
20. One (1) 1-1/2 " diameter conduit shall be provided from the SCS Control Room/MDF to the School's Administration Server Room installed near the network equipment area; no condulets are to be used.
21. One (1) 1 1/2 " diameter conduit shall be provided from the SCS Control Room/MDF to the School's Main Server Room installed near the network equipment area; no condulets are to be used. Note: If the School's Administration Server Room is the Main Server Room, then one (1) 2" diameter conduit shall be provided.
22. A voice landline shall be provided for the SCS Control Room/MDF.
23. When a pole mounted camera is required, provide a minimum of two (2) 1" diameter conduits terminating at two (2) separate brooks boxes within 3'-0" of the pole. The conduits shall be run up the pole a minimum height of 14'-0" from the finished grade, and be terminated at two (2) 6"X 6" Nema-4R junction boxes.
24. Each electrical panel supplying voltage to the SCS shall be protected by a panel Transient Voltage Surge Suppression (TVSS), providing protection for each electrical phase.
25. At the SCS Control Room, provide two (2) 120V duplex (TVSS) 20 amp dedicated receptacles for each group of sixteen (16) security cameras allocated for the facility. All receptacles shall be installed on the same wall and group together.
26. At the SCS Control Room, provide three dedicated 20 amp circuits. Each circuit shall have two 120V duplex (TVSS) receptacles. One additional dedicated circuit shall be added for each additional group of thirty-two (32) security cameras allocated for the facility. All receptacles shall be installed on the same wall as the video display rack and grouped together.
27. All conduits for the SCS shall be a minimum of 3/4".

28. If cable trays are installed, a conduit path shall be provided to the cable tray for the SCS cabling for all non-plenum rated ceilings.

The next group of items for Division 13 are the new requirements for the Card Access Control System. The A/E shall comply with all of the new Design Standards for the Card Access System. Prior to beginning the design for the Card Access System the A/E shall meet with M-DCPS Division of Facilities Design and Standards to obtain the appropriate updated Master Specification Guideline sections.

29. Provide a microprocessor card access control system in all new construction and designated renovation projects to monitor and control access to specific "program areas" requiring frequent after-hours access. Coordinate the location for the card access entry point with the M-DCPS Project Manager and the M-DCPS Lock Shop.
30. Card access control system shall be separate from the intrusion detection system and shall interface with the fire alarm system.
31. Card access shall be provided for all new construction and designated renovation projects for the following program areas:
 - A. Administration
 - B. Media Center
 - C. Kitchen
32. Card access control system shall include:
 - A. A proximity card reader installed adjacent to the designated entrance into the program areas. An intrusion detection keypad shall also be located within 5 feet of each designated entrance door.
 - B. All perimeter doors (both interior and exterior) leading to each of the program areas shall be provided with magnetic locks controlled by the card access system. An LED display panel shall be located within 5 feet of the entrance door (designated with the intrusion detection keypad), into each program area to monitor the condition (open/closed) of all entrances controlled by magnetic locks within each of the program areas.
 - C. Install the magnetic locks as called for in the finish hardware specifications. The magnetic locks shall be mounted onto the doors and doorframes. Provide a signal switch in each exit device and a motion sensor to release the magnetic lock.
 - D. Provide a modem according to the manufacturer's requirements and compatible with DCOM.

33. The card access control system shall include all necessary components, wiring for power and control to sensors, card access controls, and door hardware items or devices required for a complete operable and fully integrated system.
34. Provide an uninterruptible power supply system (UPS) for the card access control system.
35. Refer to the door hardware sections in Division 8 for additional information regarding the card access system.

The remaining items in Division 13 are related to the new requirements for the Energy Management System (EMS). The A/E shall comply with all of the new Design Standards for the EMS. Prior to beginning the design the A/E shall meet with M-DCPS Division of Facilities Design and Standards to obtain the updated Master Specification Guideline section for the new EMS. The following only represents some of the new requirements, so it is imperative that the A/E obtain the new Master Specification Guideline section to receive all of the new information for the EMS.

36. The Energy Management System (EMS) shall facilitate compliance with the US Green Building Council (USGBC) LEED (Leadership in Energy and Environment Design) for new Construction and Major Renovations Approved 2007 Version.
37. The A/E shall submit to the M-DCPS Project Manager and the EMS Commissioning Engineer (EMS-CE) who will be designated by M-DCPS for approval, a proposed "EMS Commissioning Activities List". When the Commissioning Activities List has been approved by the EMS-CE it shall be incorporated into the construction documents.
38. M-DCPS will provide an independent EMS Commissioning Engineer (EMS-CE) to provide all of the commissioning services for the design and construction phases of the project. The A/E shall submit to M-DCPS and the EMS-CE the construction documents for review and approval. The A/E shall incorporate all of the comments from the EMS-CE into the Construction Documents prior to bidding the project.
39. If the project has already gone into construction phase the A/E shall submit for review a copy of the "Controls Submittal" to the EMS-CE as soon as it is submitted for review.
40. The controls contractor shall request a system inspection from the M-DCPS Energy Programs staff and the EMS Commissioning Engineer, before the EMS has been completed. The A/E shall request a Punch List Inspection for the EMS from the M-DCPS Energy Programs staff and the

EMS-CE when the project has achieved Substantial Completion. The final operational tests for the EMS equipment shall be performed by a certified, factory-trained technician employed by or under the direct supervision of the EMS equipment manufacturer, and the EMS-CE.

41. The EMS shall be microprocessor based and include the following elements:
 - A. All hardware and software provided shall conform to BACnet ASHRAE standard 135-2004 to promote interoperability between all building subsystems. For each BACnet device, the device supplier must provide a PICS document showing the installed device's compliance level. The minimum compliance that is acceptable is Level 3; with the ability to support data read and write functionality. All BACnet products must be approved by BTL (BACnet Testing Lab). The physical connection of the BACnet devices shall be via Ethernet.
 - B. The control system shall be supplied with a complete web enabled package, hardware and software. The system shall support multiple users, using standard web browsers such as "Internet Explorer" and "Netscape". The web server software shall operate on standard industry PC servers. A manufacturer web-server/controller is also acceptable. Web browser software shall be manufactured by the control system manufacturer and shall have the same look and feel as the operating system. Third party web software is not acceptable. Interactive graphics shall be implemented. The web software shall have an Interactive Graphic Interface, including major system components and one "Virtual Override Panel" with a 3-hour timer at each zone, for after hours.
 - C. If an existing School has an existing Override Panel the EMS contractor shall provide all the material, programming, cabling and connections to upgrade and interface the new EMS with the existing Override Panel. If the existing School does not have an override panel the EMS contractor shall provide and install a new "Virtual Override Panel". The override panel provides 3 hours of mechanical cooling each time the zone is activated. Provide one zone per each floor for override purposes.
 - D. Provide an "Enhanced Hurricane Protection Area" (EHPA) Emergency Shelter Manual Override for use by authorized on-site staff to temporarily activate cooling, ventilation and lighting loads controlled by the EMS. One EHPA Emergency Shelter Manual Override shall be installed in all schools designated by MDCPS as a Public Shelter.
 - E. Provide one laptop computer and the necessary software cables interfaces and connectors to upload and download any and all type of controllers installed by the Controls Contractor as part of the

EMS system. They shall be delivered to the M-DCPS Energy Programs Staff for each EMS installation for all new facilities, new modular buildings, or EMS school system upgrades.

- F. The contractor shall install the CO₂ based demand-controlled ventilation for constant volume, and variable air volume system. When the Outside Air Unit (OAU) units are started after the optimum start/stop program has ended, (classroom occupied mode) the control system will start modulating the outside air damper from a minimum to a maximum CFM, to maintain maximum PPM in the AHU return air by reading the CO₂ sensor installed in the return for the AHU unit. At the end of the OAU time schedule the damper will close, and modulate to maintain the maximum CO₂ set-point. (The set-point levels shall comply with ASHRAE 62.1-2004).
- G. The contractor shall provide a KW monitoring meter for the school. The KW monitoring meter shall be located in the Administration Office. The KW monitoring meter shall have a BACnet interface device to provide KW real time consumption for monitoring and load shedding programs that are controlled by the EMS.
- H. The contractor shall provide two water consumption monitors for the schools domestic water meter and the irrigation system water meter. The water consumption monitors shall be located in the Administration Office. The Water consumption monitor shall have a BACnet interface.

- 42. MDCPS Network Services has reserved a group of IP addresses at each School for the Energy Management System interconnectivity as follows: The first 4 digits are the School IP address. All communication from the EMS system shall be done via MDCPS intranet. It is the controls contractor responsibility to provide the conduit, CAT5 wire and connections from the EMS controller to the network router or switch. Phone line interfaces are not allowed.

XXX.XXX.XXX.78	Main EMS Address
XXX.XXX.XXX.79	Spare
XXX.XXX.XXX.80	Chiller 1
XXX.XXX.XXX.81	Chiller 2
XXX.XXX.XXX.82	Chiller 3
XXX.XXX.XXX.83	Spare
XXX.XXX.XXX.84	Spare

- 43. Critical alarms shall be sent via e-mail to the appropriate Maintenance Regional Center, (RMaC) for the school, and to a designated maintenance printer. Critical alarms shall include the following:

- A. Chiller failure

- B. Pump failure
- C. AHU failure
- D. CO₂ over limit
- E. Variable Speed Drive Failure
- F. Cooling tower water Alarm
- G. EHPA activation

44. Critical energy savings related alarms shall be sent via e-mail to the Central Monitoring Station at the School Board Administration Building (SBAB) and to a designated printer located at the SBAB. The critical energy savings alarms shall include the following:

- A. Pump Manual Override
- B. AHU Manual Override
- C. CO₂ over Limit
- D. Outside Air CFM out of range
- E. Variable Speed Drive Failure
- F. Cooling tower water Alarm
- G. Lighting Control Panel Failure / Manual Override
- H. EHPA activation

45. Occupied/unoccupied - schedules and set-points: All installed systems shall have a programmed preliminary start/stop time schedule and, occupied and un-occupied set points for VAV boxes AHU units and all mechanical systems. The contractor shall not leave any mechanical systems permanently "ON" 24/7. Override temporarily the system 24/7 only after it is approved in writing, by the M-DCPS Energy Program staff or the M-DCPS Project Manager.

Chiller Plant Request is activated when at least one AHU unit is activated in the building, by regular schedule or by the override panel. The chiller manufacturer shall provide a BACnet protocol gateway to connect the EMS system.

Note: Flow safeties, condenser and chilled water pumps, start and stop by the internal chiller control panel.

46. System Schedule and Set-Points: Return air CO₂ maximum in all locations set point levels shall comply with ASHRAE 62.1-2004. Program and activate the following minimum schedules to start/stop mechanical equipment with active set-points as follows:

A. Occupied mode AHU Classrooms;

Supply air temperature occupied set point: 55°F

Monday	Start at	5:00 AM	8:00 PM
Tuesday- Friday	Start at	6:00 AM	8:00 PM
Saturday	none		
Sunday & Holiday	none		

B. Occupied mode VAV Classrooms; (OAU Schedule)

Classroom occupied cooling set point:	74°F
Classroom occupied heating set point:	68°F
Classroom unoccupied set point:	94°F

Monday –Friday	Start at	7:00 AM	4:00 PM
Saturday	none		
Sunday & Holiday	none		

C. Occupied mode office, common areas:

Office occupied cooling set point:	74°F
Office occupied heating set point:	68°F
Office unoccupied set point:	94°F

Monday – Friday	Start at	5:00 AM	8:00 PM
Saturday	none		
Sunday & Holiday	none		

D. Occupied mode Kitchen:

Occupied cooling set point:	74°F
Occupied heating set point:	68°F
Unoccupied set point:	94°F

Monday –Friday	Start at	5:00 AM	6:00 PM
Saturday	none		
Sunday & Holiday	none		

E. Emergency Shelter mode (EHPA):

Office occupied set point:	74°F
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Occupied mode Shelter
Monday – Sunday 24 hours & 7days

F. Central Control Station:

- At the M-DCPS Energy/Communications Center located at the SBAB for continuous monitoring and programming of HVAC,

alarms, lighting, power consumption, chiller upstart, and creating a historical database.

- PC computer with printer and color LCD monitor equal to Acer AL 1916WABD Wide 19" shall be upgraded to the latest hardware and software version.
- Provide all necessary software and hardware components for a fully integrated, functional system.

G. School Energy Control Station:

- PC computer with printer and color LCD monitor.
- For use by the authorized on-site staff with password access protection to temporarily monitor HVAC and lighting loads controlled by the EMS.
- To provide the "Real Time Energy" usage information on site via touch screen or display only. LCD display equal or larger than Acer AL2216WBD.

47. The control points shall include points as described in the Master Specification Guideline section and shall include at a minimum the following:
 - A. HVAC: chillers, pumps, cooling tower fans and ventilation and exhaust fans.
 - B. Boiler and water heaters.
 - C. Interior and exterior lighting.
 - D. Status of the fire and intrusion alarm systems.
48. Provide appropriate surge protection for all of the EMS equipment.
49. Communications between M-DCPS Energy/Communications and field/unitary control processors shall occur on the IP Intra-network.
50. Provide and install one CAT5 network cable from the EMS controller to the nearest communication closet.
51. Provide and install the school over-ride panel in the school administration area within view of the Principal's office. Installation shall be flush mounted with a temperature display only.
52. All ventilation fans shall be controlled through the EMS and software interlocked with corresponding air handling units.
53. All mechanical, electrical, janitors, storage and service rooms shall have a motion detector lighting control.

54. All exterior lighting shall follow USGBC Schools Reference Guide Light Pollution Credit 8 – 2007 and shall be controlled by the EMS.
- A. The lighting control system shall comply with USGBC Schools Reference Guide Lighting System Controllability – 2007.
 - B. The exterior corridor lighting circuits shall be controlled through the EMS to provide two levels of illumination.
 - Full illumination shall only be energized during periods of scheduled evening occupancy.
 - At all other evening hours provide reduced level of illumination for security purposes. The reduced level of illumination shall be in effect from sunset unless the facility is an Adult Education Center/Community School. The illumination level shall be the same as required for parking lots.
 - The exterior lighting shall be controlled with an additional photocell sensor in series with the EMS control point by hardware or software.

Division 14 – Conveying Systems

1. ThyssenKrupp Elevators are no longer an approved manufacturer to be used for M-DCPS projects.
2. The A/E shall require in the construction documents that the elevator manufacturer provide a separate proposal for a five-year maintenance contract for all of the elevators for the project, along with the bid. M-DCPS will evaluate the proposal when the project has achieved Substantial Completion.
3. Elevator pits shall be waterproof and designed to provide a dry pit area that includes the following:
 - A. A sump pit that is 18 in.x18 in.x24 in. deep.
 - B. A sump pump.
 - C. Sump pit grating shall be galvanized steel or heavy-duty fiberglass/polyester.
 - D. The floor shall be level.
 - E. Metal ladder, if pit is deeper than 3'0".
 - F. Two moisture-proof light fixtures per elevator pit.
 - G. One grounded duplex receptacle.
 - H. No PVC or plastic pipes in pit.

Division 15 – Mechanical

1. The use of solar water heating shall be evaluated and presented to M-DCPS Division of Facilities Design and Standards for consideration and possible approval.
2. The use of waterless urinals shall be evaluated and presented to M-DCPS Division of Facilities Design and Standards for consideration and possible approval. The A/E shall submit product type and the product specifications for review and possible approval by M-DCPS Division of Facilities Design and Standards. If waterless urinals are provided there still needs to be domestic water piping rough-in to the location.
3. HVAC shall be provided to all instructional spaces and to additional areas as required by M-DCPS Design Standards.
4. All custodial closets for new facilities shall be a minimum of 25 S.F. and receive a 24" x 24" floor sink. Do not use wall-mounted sinks except for an existing custodial closet that is too small to receive the floor sink.
5. Paint all above ground exposed fire sprinkler piping, fittings and valves located within mechanical and electric rooms with a minimum of 10 MIL rust proof fire protection red paint. Also paint the fire sprinkler piping, fittings and valves in any space that has high humidity or is not an air-conditioned space. Exposed fire sprinkler piping in all other occupied spaces without a ceiling shall be painted to match the adjacent color schemes, and shall be minimally identified as required by ANSI/ASME A13.1-1996. When the piping is installed in a concealed above the ceiling space, which is located over an air-conditioned room it shall not be painted. Under no circumstance should the sprinkler heads or cover plates be painted.
6. All natural-gas services shall be provided to each school site by means of one (1) common gas meter only.
7. When using screw set fittings, they shall be stainless steel. Compression fittings that comply with M-DCPS Design Standards shall be used when stainless steel screw set fittings are not provided.
8. Mechanical rooms that are adjacent to occupied spaces and that are subject to condensation and water leaks, etc. shall receive epoxy flooring with integral epoxy base. Do not install epoxy flooring when the Mechanical Room is in a separate stand-alone building such as a chiller building.
9. Prior to the completion of the mechanical design the A/E shall test the water source to be used for all water-based air conditioning systems. When the supply water has a hardness content of 180 PPM or higher the

A/E shall include a water softener system in the design. The water softener system will typically be required for facilities located in the southern portions of Miami-Dade County.

10. The A/E shall specify that all Air Handling Units with speed drives shall be installed with 3-phase monitors for protection of the motor with an automatic restart feature, such as ICM 450 or approved equal. The 3-phase monitor must monitor the main voltage and control voltage. The phase monitor shall trip due to phase loss, phase imbalance, under voltage and over voltage. The phase monitor safety cut off shall cut power to the main control transformer secondary in the drive. This will drop power to all controls and devices. They shall be set to auto-restart when the power comes back corrected within the parameters. The phase monitor shall automatically reset the secondary power of the control transformer and the speed drive will automatically restart.
11. As recommended by the cooling tower manufacturer, provide platforms with guardrails, ladders, and safety cages necessary to access tower for equipment maintenance, unless deletion is approved by M-DCPS Maintenance Operations on a per condition basis.
12. The sound generated by any outside chiller, air-cooled chiller, air-cooled condenser, or cooling tower shall not exceed 70 dbA at a distance of 30 feet and 55 dbA at any property line.
 - A. A sound barrier wall with chain-link and a 3 sided masonry wall shall surround the equipment if the dbA requirements above are exceeded. See Division 2 for additional fencing requirements.
 - B. The masonry wall height shall be as tall as the top of the fan deck.
 - C. Locate equipment as far as possible from school buildings as well as adjacent off-site construction.
13. Roof top Equipment - Overturning and uplift forces on rooftop equipment and curbs shall be calculated and designed following ASCE 7 and approved by the Florida registered structural engineer of record for each project. Design curbs, hold-downs and equipment casings to withstand forces stated or implied in Roof Wind Pressure diagrams in the Contract Documents.
14. Equipment Curbs - Add the following to each specification section for rooftop equipment:
 - A. Rooftop equipment overturning and uplift forces shall be calculated and designed for and fabricated in all equipment casings, equipment, hold-downs, and curbs (whether integral or loose) following ASCE 7 and approved by the Florida registered structural

engineer of record for each project. Design curbs, hold-downs and equipment casings to withstand forces stated or implied in Roof Wind Pressure diagrams in the Contract Documents.

- B. Curbs - Whether integral with the equipment or separately provided, following the requirements for properties such as height, material, insulation, fastenings, and hold-downs as stated in the new Master Specification Guideline for Roof Assembly Equipment Curbs in Division 07.

The following list of items for Division 15 are the new requirements for M-DCPS air conditioning "Cooling Sources". The A/E shall comply with all of the new Design Standards for the cooling sources. Prior to beginning the design the A/E shall meet with M-DCPS Division of Facilities Design and Standards to obtain the appropriate updated Division 15 Master Specification Guideline sections.

- 15. Cooling Sources - Alternative cooling sources shall be evaluated and determined by life cycle costs analysis with M-DCPS Division of Facilities Design and Standards approval.
- 16. An existing central refrigeration plant shall be used for a cooling source if available for present or future use.
- 17. Interconnect chillers if distance between new and existing is less than 100 feet.
- 18. Total system capacity for chillers and condensers shall comply with the following:
 - A. Up to 25 tons - Reciprocating or scroll, air-cooled
 - B. 25 tons to 200 tons - Rotary, scroll air-cooled
 - C. 100 tons to 800 tons - Rotary screw or centrifugal, water-cooled
 - D. 800 tons and above - Centrifugal, water-cooled
- 19. All chiller surfaces subject to condensation shall be provided with a premium insulation package. The package shall result in a minimum "Amarflex" insulation thickness of 1-1/2".
- 20. Reciprocating and scroll refrigeration compressors units shall be used for small loads.
- 21. Provide one propeller type flow measuring device per project. Provide taps at each chiller's chilled water and condenser side, and if not independently piped, at each cooling tower's condenser piping. Taps shall be provided with sufficiently large ball valve screwed fittings and caps to be able to introduce the flow measuring device without water spillage.

22. Provide each chiller with four liquid filled pressure gauges with pressure snubbers and gauge cocks graduated in feet of water. All pressure gauges shall be scaled to read at their midpoints. Maximum intervals shall not exceed 2 feet of water.
23. Packaged DX split systems with reheat coils, intertwined evaporator coils, thermostatic expansion valves and unloading compressors may be used for small buildings less than 10 Tons on a per condition basis when pre-approved by M-DCPS Division of Facilities Design and Standards.
24. Combination heater and refrigeration packaged units may be used at small buildings on a per condition basis when pre-approved by M-DCPS Division of Facilities Design and Standards.
25. Heat pumps shall be avoided, but may be used for small individual instructional spaces on a per condition basis when pre-approved by M-DCPS Division of Facilities Design and Standards.
26. The use of multiple individual classroom DX units is not allowed.
27. Packaged air-cooled chillers with at least 4 compressors each with independent refrigerant circuits shall be used for loads less than 200 tons. Each compressor shall be provided with individual factory installed breakers.
28. Manufactured packaged systems shall comply with the following consumption limitations:
 - A. 1.26 maximum KW per ton for units with less than 25 tons capacity
 - B. 1.20 maximum KW per ton for units with greater than 25 tons capacity
29. Water-cooled systems shall be used when the systems are over 200 tons. The A/E shall investigate FPL incentive programs.
30. All chillers, AHU's and fans shall be connected to the fire alarm system. All chillers, AHU's and outside air intake fans shall shutdown upon activation of the fire alarm system.

Division 16 – Electrical

1. The use of electric hand dryers in student, staff and public restrooms is not allowed.
2. Classroom lighting shall be capable of two lighting levels. One mode at full level lighting and one mode at reduced lighting level. The two levels of

- lighting shall be switched from front to back to allow for the darkening of the front of the Classroom for audiovisual presentations.
3. The use of pendent type lighting for classrooms and administration spaces is permitted only when approved by M-DCPS Division of Facilities Design and Standards on a per project basis. The A/E shall submit the proposed pendent light fixture manufacturer and specifications, for review and possible approval by M-DCPS Division of Facilities Design and Standards.
 4. The exterior corridor lighting circuits shall be controlled through the EMS to provide two levels of illumination. Full illumination shall only be energized during periods of scheduled evening occupancy. At all other evening hours provide reduced level of illumination for security purposes. The reduced level of illumination shall be in effect from sunset unless the facility is an Adult Education Center. The illumination level for the Corridors shall be the same as required for parking lots, (See 2007 Design Standards Supplement, Division 13 item #54 for additional information).
 5. The use of solar outdoor lighting products for parking lots, sidewalks and roadways shall be evaluated by the designer and presented to M-DCPS for consideration. The A/E shall submit product type and the specification to M-DCPS Division of Facilities Design and Standards for review and possible approval.
 6. The placement of outdoor lighting for parking lots, sidewalks and roadways shall be designed to avoid light pollution onto adjacent property. The A/E shall select outdoor light fixtures that shield the light from spilling beyond the area intended to be illuminated.
 7. Solar-powered school speed zone flashing lights system shall be incorporated into the design of facilities. The solar-powered flashers shall comply with all Miami-Dade County Public Works criteria and requirements.

END OF DESIGN STANDARDS 2008 SUPPLEMENT