DIVISION 8 – DOORS AND WINDOWS

This division contains the following elements:

1.1 General
1.2 Aluminum Storefronts and Related Entrances.
1.3 Doors and Frames.
1.4 Windows.
1.5 Door Hardware.
1.6 Glazing.

1.1 GENERAL

A. Wind loading design shall comply with the FBC edition designated for the project. Submit to the Building Code Consultant (BCC) calculations, signed and sealed by a Florida registered professional engineer, establishing wind velocity pressure values in accordance with FBC - ASCE-7.

B. Integrate doors and windows into the design of the facility to provide access, egress, light and ventilation.

C. Doors and windows are subject to vandalism and heavy usage. Safety, security and maintenance are important criteria for designing and specifying doors, windows, and hardware.

D. Safety concerns shall always have priority over security during the selection of doors and windows.

E. Fire resistance ratings for exterior doors, windows and other opening protectives shall meet FBC.

1.2 ALUMINUM STOREFRONTS AND RELATED ENTRANCES

A. The use of aluminum storefronts, whether interior or exterior, require prior written approval from M-DCPS Facilities Design and Standards on a per condition basis. When approved, storefronts and their related entrance(s) shall meet the following minimum requirements:
   1. Aluminum storefront components shall be heavy-duty, and framing member thickness shall be no less than 0.125 inch.
   2. Storefront doors and door-frames shall be steel, whether they are part of an interior or exterior storefront assembly. Storefront doors shall be provided with M-DCPS approved surface mounted hardware and may contain glass-lites or vision-panels as determined by use or location.
   3. Exterior storefront assemblies shall comply with the following:
      a. Meet wind load requirements per FBC and ASCE 7.
      b. Have current Miami-Dade Notice of Acceptance (NOA), or a State of Florida Product Approval, for use in a High Velocity Hurricane Zone (HVHZ).
      c. Comply with the design pressures indicated on the drawings, but no less than 100 PSF for both negative and positive pressures.
      d. Comply with large and small missile impact rating per FBC.

e. Shall have no water intrusion at 15.0 PSF as per ASTM E331.
f. A/E shall specify that all steel framing on exterior storefront assemblies, shall have a factory-applied corrosion resistant coating applicable to the location of the project (distance from salt-water coastline).

4. Aluminum components shall have an anodized finish per National Association of Architectural Metal Manufacturers (NAAMM), AA-C2241, Class I, minimum 0.7 mils. If the facility is within one mile from a saltwater coastline, the finish shall be an AAMA 2605 PVDF (polyvinylidene fluoride) corrosion-resistant coating such as "Kynar" or "Hylar".

1.3 DOORS AND FRAMES

A. Before Phase III – 100 percent submittal, consult with personnel from M-DCPS Facilities Operations Maintenance - Capital Task Force, M-DCPS Facilities Operations Maintenance - Central Lock Dept., and M-DCPS School Police, to identify final locations to receive Access Control System, motion detectors and other security measures.

B. Submit plans, specifications, and preliminary hardware schedule to Central Lock Dept. at least four (4) weeks before Phase III – 100 percent. Resubmit a revised, corrected hardware schedule to Central Lock Dept. prior to issuance of the Final Phase III – 100% construction documents for bidding or for building permit review.

C. Doors, frames and their attachment/support system shall be designed to comply with the FBC designated for the project.
1. Submit to Building Code Consultant (BCC) calculations, signed and sealed by a Florida registered professional engineer, establishing wind velocity pressure values for the specific project in accordance with FBC ASCE-7.
2. Construction drawings shall indicate complete information for all new doors and frames (including doors and frames being replaced in renovation projects), and all doors and frames being altered, including, but not limited to the following:
   a. Doors receiving new hardware, such as the material, height, width, thickness, direction of swing and fire-rating in minutes/hours (if required by FBC Building, Table 715.3 - "Fire Door and Fire Shutter Fire Protection Ratings")
   b. All new hardware.
   c. Indicate installation details for new and replacement door frames (a detail for each frame type/profile and for each applicable wall/partition condition and interior and exterior finish condition), showing, at a minimum, the anchorage of the frame to the wall or partition framing (the type and minimum number of anchors per jamb), finishes extending around the wall opening and their termination at the frame, caulking around the door frame (both sides), and grouting of the frame in accordance with M-DCPS requirements of this Division.
   d. Indicate complete dimensions for masonry openings for new and replacement doors.
   e. A complete hardware schedule for new and replacement door hardware, or a reference for each door to its hardware set when such is noted in the specifications.
3. The Project Specifications shall include complete specifications for the new doors, frames and hardware, as well as for related conditions, such as partition framing and finishes that would be affected by the installation of new or replacement doors and frames.

D. Steel doors shall be provided at all locations unless otherwise specifically indicated in this Division, the Educational Specifications developed for the project or by M-DCPS Central Lock Dept.

E. Steel doors require hardware reinforcement. See Appendix – Doors and Hardware. Doors with dimensions larger than 3'-0" in width and 7'-0" in height require additional hinges and special closers.

F. The use of wood doors may be permitted only for staff interior offices located within the Administration and Student Services areas, and only on a per project basis with prior written approval from M-DCPS Office of Facilities Design and Standards. When approval for the use of wood doors is granted by M-DCPS, the A/E shall specify the following:
   1. Wood doors shall be solid core (without a cardboard layer between veneer and core). Particleboard, hardboard or fiberboard are not allowed in door construction or any other type of "In-Contract" building component.
   2. Frames shall be 16-gauge A60 hot-dip zinc-iron alloy coated steel.
   3. Doors shall have a painted finish, natural finish, or a plastic laminate, with exposed edges smoothed or rounded.
   4. Wood doors are not allowed as fire rated doors.

G. Door and Frame Types:
   1. All doors and frames shall be 16-gauge A60 hot-dip zinc-iron alloy coated steel unless otherwise indicated in this Division.
   2. Door frames for the following doors shall be securely anchored and grout filled in place by hand-troweling, using low-moisture grout. Grouting with slurry is not allowed:
      a. All exterior doors.
      b. All doorframes located in masonry, concrete and tilt-up concrete construction.
      c. Perimeter doors to Band room, Vocal Music room, Piano/Guitar Lab, CCTV rooms, Production Studio, Auditoriums, and other acoustically sensitive areas.
   3. Provide double metal studs around all doorframes located in drywall partitions.
   4. Provide steel picket gates with security grilles and protective guards to prevent access to activate exit device. See Appendix – Doors and Hardware for details. Provide with 24-inch minimum width side panels or other means to prevent access to locking devices.
   5. Doors to acoustically sensitive areas shall be constructed to meet the STC rating set forth by M-DCPS Design Standards. In addition, these doors shall be provided with the following:
      a. Sound seals and drop seals.
      b. When the Educational Specifications require a vision-panel be provided on a door to an acoustically sensitive area, the vision panel shall be double-glazed with 1/4" and 3/8" tempered glass and be resiliently mounted, except when other glazing is required to comply with fire rating requirements.
   6. Bi-fold doors shall not be used unless accepted by M-DCPS on a per condition basis.
   7. Full louvered doors shall have center rails. Exterior louvered doors shall be provided with insect screens and with security grille on interior side to prevent access to locking device.
   8. Access doors and panels shall be at least 12" x 12" where hand access is sufficient. Provide larger sizes as may be necessary to access equipment located beyond the finish surface.

9. Accordion folding doors shall be rated at least STC 40.
    a. Specify vinyl or fabric clad steel panel folding doors at student spaces. Panel coverings shall comply with the flame spread and smoke development class requirements of FBC.
    b. Accordion or non-steel panel folding doors may be used at administrative areas.
    c. Above ceiling tracks, provide an acoustical barrier having a sound transmission class equal to or greater than the accordion/ folding door.
10. At doors of food service areas, provide 6-inch high stainless steel spats at doorframes with or without stops.
11. Door frames shall be double rabbeted.
12. Provide steel doors at mechanical equipment rooms. Include sound seals and aluminum thresholds at mechanical room locations accessed by interior corridors or adjacent to sound sensitive spaces.
13. Fire and smoke doors shall have door closers.
14. Interior fire and smoke doors serving stairs and corridors shall be provided with electro-magnetic hold-open devices activated to release by the fire alarm. At these locations, provide adjacent to the hold-open device, a “fin-shaped” partition or recess, the full height of door, to protect occupants from the exposed edge of the door when the door is in the hold-opened position. Center mullions for double-leaf doors are not allowed.

H. Pedestrian doors shall be a minimum of 3'-0" wide, 7'-0" high and 1-3/4" thick or larger according to program requirements.

I. Doors shall accommodate the largest piece of equipment or furniture scheduled for the space.

J. Kitchen receiving door shall be 4'-0" wide, 7'-6" high, and 1-3/4" thick with a 180-degree out-swing.

K. Satellite wiring closets that are less than 3 feet in depth and more than 5 feet in width shall be provided with a pair of 3'-0" wide by 7'-0" high steel doors with head and foot bolts.

L. Flammable storage rooms used for the storage of lawn equipment shall have a pair of 3'-0" wide by 7'-0" steel doors with a key operated removable center mullion.

M. Security door contacts:
1. Provide all exterior doors, except the FPL transformer vault doors, a security door contact for connection to the Facility’s intrusion alarm.
2. Provide all interior and exterior doors controlled by the Access Control System (ACS) a security door contact for connection to the ACS. See Division 13 of M-DCPS Design Criteria for details on these door locations.
3. All doors that are both exterior and are controlled by the ACS shall be provided with two (2) independent door contact switches; one for the intrusion alarm and the other to the ACS.
4. Clearly identify on the Door Hardware Schedule, all doors requiring security switch preparation and how many switches are required at each location.

N. Door Swings and Recessed Doors:

1. Doors shall swing in the direction of exit travel. When permitted by Code, in-swing doors may be used at occupied spaces.
2. All doors to occupied spaces that swing into a corridor or covered walkway, shall be recessed the full width of the door leaf. There shall be no exceptions to this requirement. The depth of the recess shall not exceed the width of the widest door leaf and the width of the recess shall comply with ADA approach-to-door requirements.
3. Provide out-swing doors at mechanical rooms, electrical rooms, telecommunication rooms, satellite wiring closets, custodial closets and other service spaces with low traffic use. Doors shall be able to be held open against an adjacent wall without reducing the required corridor width or traffic pattern except by the door thickness and hardware. See Appendix – Doors and Hardware for details.
4. At double loaded corridors, stagger doors to instructional spaces by at least 8 feet.
5. Provide maneuvering clearances at doors to comply with accessibility requirements.
6. Exterior perimeter doors to EHPA area(s) shall be recessed the full width of the door leaf. Width of the recess shall comply with ADA approach-to-door requirements.

O. Doors at Multiple Openings:
1. All exterior pairs of doors shall have a removable 2" x 3", 11-gauge steel center hardware mullion that is grout filled and has secured anchorage. Fixed mullions are not allowed.
2. Unless otherwise specified in the Educational Specifications, or is required by Code, pairs of doors serving interior mechanical or storage rooms shall not be provided with a center mullion.
3. Pairs of double egress doors with each leaf opening in opposite directions shall not be used at auditoriums, media centers, locker rooms, corridors, stairwells and any other areas restricting student access or requiring security.

P. Vision Panels.
1. Provide vision panels only at locations required by Code and at other locations as may be required by the Educational Specifications.
    a. Vision panel shall be at least 4 inches wide.
    b. Locate bottom of vision panels at 42 inches above the floor and top at 72 inches above the floor.
    c. Exterior door transoms and sidelights are allowed. 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.
2. For security purposes, vision panels shall not allow interior locking devices to be visible from the exterior.
3. Polycarbonates, such as “Lexan”, are not allowed for glazing materials.

Q. Peepholes.
1. Provide 1/2" diameter peepholes with 180-degree view, allowing for outward viewing from within a space in place of door vision panels at the following locations:
    a. Kitchen receiving door.
    b. Custodial receiving area.

2. Doors with peepholes shall comply with required fire ratings.

R. Door Ratings: Specify rating of doors according to FBC requirements.

S. Provide folding doors, "door-within-a-door," and overhead coiling doors or grilles, according to the Educational Specifications.
   1. Comply with NFPA 101 for secondary exit access requirements in rooms using folding or movable partitions.
   2. Folding doors shall not contain particleboard.
   3. Provide all overhead coiling door and grilles an easily accessible padlock device to secure the operation of the door when not in use.
   4. All electric operated overhead doors shall be provided with obstruction sensors to stop and automatically change direction of the door travel.
   5. Overhead coiling doors located between an air-conditioned space and the exterior or a non-air-conditioned area, shall be provided with insulated slats.
   6. All exterior overhead coiling doors shall be provided with door contacts connected to the Facility's intrusion alarm system.
   7. Dutch doors are not allowed. See Appendix – Doors and Hardware for "door-within-a-door" detail.

T. Toilet Rooms:
   1. Do not provide entrance doors to interior group toilet rooms. Provide a baffled partition at each entrance to restrict the view into the restroom.
   2. Group toilet rooms accessed from the exterior are not allowed at new construction, except on a per condition basis approved by M-DCPS.

U. Individual student toilets shall be accessible from instructional spaces or other staff controlled spaces and not from corridors or exterior areas.
   1. An individual student toilet room with exterior or corridor access requires M-DCPS acceptance on a per condition basis.

V. For special security systems at doors, see Divisions 13 and 16.

1.4 WINDOWS

A. Comply with FBC for areas required to have operable windows to provide natural ventilation.

B. Comply with FBC for areas required to have emergency egress windows.
   1. Screens, louvers or shutters mounted on emergency egress windows shall open with the same one movement opening of the egress window.
   2. Egress windows shall have a similar appearance to adjacent windows.
   3. Provide necessary identification signage for emergency access, emergency rescue and secondary means of egress windows. The paths of egress leading to them shall not be blocked or obstructed by fixtures, furnishings or equipment.

C. In-swing casement or in-swing hopper type windows are not allowed.

D. Accepted Windows:

1. Windows intended for use at M-DCPS facilities require M-DCPS evaluation and approval. The following windows types are acceptable for M-DCPS projects:
    a. Single hung.
    b. Casement (out-swing only).
    c. Fixed.
    d. Awning/Project-out (single-sash).
    e. Outward projecting window shall comply with FBC and shall not swing into any path of egress or circulation area.
2. Exterior Windows:
    a. The A/E shall specify impact-resistant windows with current Miami-Dade NOA or a State of Florida product approval for use in a High Velocity Hurricane Zone (HVHZ).
    b. Submit to the BCC calculations, signed and sealed by a Florida registered professional engineer, establishing wind velocity pressure values for the specific project in accordance with FBC ASCE-7.
    c. Windows shall be flanged at all sides to bed against the 3/4-inch lip all around the rough opening with appropriate sealants.
    d. The construction drawings shall show details covering the installation of each type of new or replacement window (a detail for the head, jamb and sill condition for each window type/profile at each applicable wall condition and interior and exterior finish condition), including but not limited to: the method of attachment of the window frame to the building structure, including the type, number and spacing of fasteners and required penetration into the structure; the exterior and interior finishes extending to and around the wall opening (including the stool) and their termination at the window frame; caulking at the joint around window frame (interior and exterior sides); and complete dimensions for masonry openings.
    e. In addition, impact resistant windows shall meet the following requirements:
        1) The impact-resistant windows shall be aluminum with a minimum 3/4-inch wide aluminum flange that runs around 100% of the perimeter. The unit shall be set in a full bed of sealant against the 3/4-inch lip in the concrete or masonry opening.
        2) The aluminum finish shall be per M-DCPS Design Standards. When the project is located within one mile from a saltwater coastline, new aluminum windows shall have an AAMA 2605 PVDF (polyvinylidene fluoride) corrosion resistant finish such as Kynar 500 or Hylar 5000.
        3) 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 Miami-Dade NOA or State of Florida product approval requirements.
        4) Impact-resistant windows must pass AAMA 1302.5 forced entry test as well as the FBC and Miami-Dade County test.
        5) Windows shall be self-weeping to the exterior.
    f. The A/E shall select windows of standard architectural sizes for ease of replacement. The A/E shall minimize the use of decorative, unusually shaped, fixed windows.

E. Windows shall be metal framed except as follows:
1. Renovation, remodeling or new additions projects at designated historical buildings where metal window frames would not be aesthetically acceptable. Prior approval from

M-DCPS Facilities Design and Standards is required for the type of window frame material to be used at these locations.
2. M-DCPS specific directive to use another window frame material.

F. Windows with tempered glass and manually-operated certified missile impact resistant metal louvers may only be used on a per condition basis when approved by M-DCPS Facilities Design and Standards.

G. Steel windows with fire rated glass, fusible links and manually-operated louvers may only be used at fire rated wall locations and shall be certified missile impact resistant.

H. Indicate fixed and operable window panels on construction document building elevations.

I. Window Hardware:
1. Window opening lever hardware protrusions shall be limited to 2-1/2" and shall not be a safety hazard as determined by M-DCPS.
2. Louver operating devices and locks shall be a rotary crank or a lever handle with a cam-type latch.
3. Window hardware, other than the above-mentioned lever hardware, shall not protrude more than 1/2 inch.
4. Hardware shall be non-removable or secured by tamperproof fasteners.
5. Provide concealed hinges. Use of exposed hinges may be accepted on a per condition basis if tamperproof and for windows over 90 pounds, when guaranteed in writing by the manufacturer.
6. Exposed fasteners, when the window is in a closed or opened position, shall be tamperproof.
7. Aluminum window exposed fasteners and hardware shall match finish of adjoining metal where possible.

J. Windows shall be provided proper security to prevent intruder access. For special security systems at windows, see Divisions 13 and 16.

K. Maximum head height of windows shall not exceed required ceiling elevations as indicated in the Educational Specifications.

L. Clerestory windows require M-DCPS Facilities Design and Standards acceptance on a per condition basis. Clerestory windows shall have sills at least 10 inches above adjacent roof surface.

M. Do not provide windows in auditorium, stage, storage rooms, custodial rooms, restrooms, telecommunication rooms and electrical/mechanical equipment rooms.

N. All windows shall be provided with devices to control sunlight and darken room during audiovisual presentations. Refer to “Window Treatment and Window Shades” section of Division 12 of these Design Criteria for details.

O. Windowsills (at exterior of windows):
1. Use precast or cast-in-place concrete sills at masonry construction. The innermost portion shall be level with a dimension of at least 4 inches and have a 3/4-inch plumb

lip going down to the outermost portion with a slope down to the exterior. Bucks and jambs and head shall align with lip. See Appendix for windowsill detail.

2. At tilt-up wall construction, windowsills shall be cast integral with the wall panel, using a sill profile similar to the one used for masonry construction. The remaining three sides of the window opening shall have a 3/4-inch lip. See Appendix for windowsill detail.

P. Window stools (at interior of windows): Use non-flammable, non-decaying materials such as marble, slate, quarry tile or laboratory epoxy counter material. Window stools shall not be located below abutting built-ins.

Q. Muntins, if used may be flat or 3-Dimensional and properly adhered to glass surface. When utilizing muntins in historical buildings, the designer shall specify the placement/pattern of muntins and the cross-section profile that most closely resembles the original historical window.

R. Storage rooms, telecommunication rooms and electric closets, mechanical equipment rooms, new toilet rooms, custodial closets and other similar spaces shall be windowless.

S. Screens are not required on windows except at kitchen and food preparation areas, cafeterias, home economics rooms, existing toilet rooms and other locations according to program requirements.

T. 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:

1. The initial test series shall be performed after the first factory-glazed operable window assembly has been installed at the site. The window assembly and its installation shall follow all of the requirements in the Contract Documents. After the assembly and installation have met all of the requirements for the "Window Field Leak Test" and been approved, it shall be used as the "standard" window mock-up.
2. The goal shall be 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 are 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.
3. The Contractor shall conduct the initial test and as many re-tests of the initial window assembly as needed, until a leak-free assembly and installation are attained. After the second failed test, the Contractor may be back-charged for all M-DCPS expenses generated by further tests, at the discretion of M-DCPS Project Manager.
4. At the start of the initial 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.

5. Representatives from the Contractor, window installer, window producer, M-DCPS Project Manager and the A/E shall be present during the initial and all later testing. The Contractor or window installer shall operate the hose nozzle for the testing.
6. Initial and later tests will be performed in two 5-minute phases with a brief interval 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 inch to 10-inch diameter pattern at an 8 feet to 10 feet 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 A/E monitors for leaks or other signs of water intrusion at the interior side of the window.
    a. 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.
    b. For one minute, spray the joints within the window opening, moving slowly along the vent joints, and the mullion or muntin joints.
    c. For one minute make another circuit around the perimeter and along all joints.
    d. Shut off the nozzle while the M-DCPS Project Manager and the A/E review what the test has revealed. If the test is inconclusive, it shall be repeated.
7. Initial and later tests shall be adjusted to meet the actual window size. The test procedure above is designed for window assemblies/units that are 24 square feet to 40 square feet. When the window is less than 24 square feet, reduce the 2 minutes to 1-1/2 minutes, and 1 minute to 45 seconds. If the window is 40 square feet to 70 square feet, expand 2 minutes to 3 minutes, and 1 minute to 1-1/2 minutes. If the window is 70 square feet to 120 square feet, expand the time to 3-1/2 minutes, and 1-3/4 minutes.
8. If the mock-up window unit in the initial test allows any water penetration the Contractor shall remove the unit completely and re-install the entire window assembly 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.
9. The initial series of mock-up tests must prevent all water intrusion before the installation of the remaining windows is permitted.
10. The "Window Field Leak Test" shall be repeated when all 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 on which to conduct the Window Field Leak Test. The 10% selected shall represent window assembles 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.

1.5 DOOR HARDWARE

A. Consult with M-DCPS Facilities Operations Maintenance – Central Lock Dept. before Phase III submittal for specific hardware requirements to include lock manufacturer, series, design and finish.

B. Submit plans, specifications and tentative door hardware schedule to Central Lock Dept. for review and comments at least four weeks before Phase III – 100 percent.

C. The Contractor's hardware schedule and related shop drawings shall also be submitted to M-DCPS Central Lock Dept. for review and comments during the shop drawing evaluation process. The A/E shall specify that door and lock hardware schedules must be approved by M-DCPS Central Lock Dept. prior to ordering materials.

D. It is the responsibility of the A/E to standardize locks and related door hardware between new and existing work.

E. Verify the existing lock hardware manufacturer and series with Central Lock Dept. at renovation or remodeling projects.

F. Verify with Central Lock Dept. the following:
   1. Use of cylinders and keyways of a different manufacturer than lockset manufacturers.
   2. Special restricted keyways required by written authorization by M-DCPS before ordering.
   3. Lock hardware manufacturer and lockset series.

G. Construction Master Keying (CMK) and Master Keying (MK) apply to all new facilities and additions. Contact Central Lock Dept. for information on keying requirements.

H. Specify that upon completion of the work, the Contractor through M-DCPS Project Manager shall contact the Central Lock Dept., to schedule a project acceptance rekey to permanently secure the facility.

I. The A/E shall specify that at Substantial Completion, the Contractor through the M-DCPS Project Manager shall notify the Central Lock Dept., to perform an inspection of the work and issue a door/lock hardware punch list. All punch list items shall be corrected prior to Final Completion.

J. Hardware shall comply with the following and have precedence over M-DCPS requirements:
   1. FBC
   2. Florida Fire Prevention Code

K. Hardware sets shall list the appropriate door marks and building numbers. The door schedule shall list the appropriate hardware set numbers. Hardware sets and the door schedule shall comply with the following:
   1. Each door or pair of doors shall receive a different numerical mark with hand of each door noted and space allocated for M-DCPS use for keying information.
   2. Door mark should be progressive and according to walk paths.
   3. Gates, roll-up grilles or other types of doors and any other openings requiring door hardware shall be assigned marks with a distinguishing prefix.
   4. Specified hardware schedule shall note M-DCPS project number.
   5. Include the fire resistance rating or need for UL-listing where applicable.

L. Provide door schedules for new and existing doors affected by scope of work. Indicate door schedules on the drawings and include the following:
   1. Door mark.
   2. Room number or space to be served by door.
   3. Width, height and thickness of door.

4. Pair of doors (double-leaf doors) noted.
5. Type of center hardware mullion (where applicable).
6. Each door type and frame type, referenced to type details that show the presence of such features as lites and louvers, and which reference head, jam and threshold details.
7. Door material (steel, solid core wood, etc.) and frame material.
8. Fire resistance label or rating.
9. Hardware set number as appears in hardware schedule.
10. Security switch preparation (where applicable).
11. Access Control System (where applicable).
12. Additional requirements column.
13. Schedule the marks of aluminum entrance doors, sliding pass doors, O.H. coiling doors and grilles, but refer to the specification section in which they are specified. For these doors, schedule only location, size, fire rating and locking requirements.

M. Door hardware locations shall be as follows:
1. Push-plates: 1 inch above push-pad and 1 inch from exit device head.
2. Push-plates with a Vision Panel: 1 inch above exit device between vision panel and edge of door.
3. Exit Device: 40 inches from door bottom, for adults as well as for children's accessibility.
4. Lever Lockset: 38 inches from door bottom, for adults as well as for children's accessibility.
5. Deadbolt: 48 inches from door bottom.
6. Kickplate: 1 inch from door bottom or 1/2" from top of surface mounted automatic door bottom.
7. Viewport: 60 inches from door bottom.

N. Note doors requiring security switch and Access Control System preparation, on the hardware schedules, door schedules and floor plans.

O. Locksets.
1. Lever locksets, exit devices, door closers, head and foot bolts shall be through bolted at wood and steel doors.
2. Provide knurled lever trim or knurled door pulls at doors for custodial, electrical, mechanical rooms and other hazardous areas according to accessibility requirements.
3. Provide surface mounted exit devices or Classroom Function locks at student occupied areas according to the FBC and program requirements. Provide mounting heights on the project door schedule.
4. Provide surface mounted exit devices at, but not limited to, the following locations:
    a. Cafeterias, auditoriums, media centers, gymnasium areas, and other student occupied spaces with 100 or more persons.
    b. Exterior doors at building perimeter, egress doors to courtyards and doors at covered walkways.
    c. Computer and business labs, music suites, administration areas, vocational shops, vaults, equipment and flammable storage rooms, physical education areas and other high security spaces containing high dollar items.
    d. Pair of doors with removable center hardware mullions.
5. The use of concealed vertical rods as a door-locking mechanism is not allowed.
6. Interior labeled doors with required exit devices shall receive:

a. Outside lever trim at single doors.
b. Outside lever trim at RHR door of a pair and LHR door, less trim, shall be exit only.

7. Interior non-labeled doors with required exit devices shall receive the following:
   a. Outside door pull and cylinder at single doors.
   b. Outside door pull and cylinder at RHR door of a pair and LHR door, less trim, shall be exit only.
8. Exterior non-labeled doors with exit devices shall receive the following.
   a. Outside door pull and cylinder at single doors.
   b. Outside door pull and cylinder at RHR door of a pair and LHR door, less trim, shall be exit only.
9. At flammable storage rooms used for the storage of lawn equipment, provide labeled doors with exit devices and the following:
   a. Outside door pull and cylinder at the RHR door of a pair, and at LHR door with head and foot bolts and a key operated removable center mullion.
10. Interior electrical rooms, mechanical rooms, storage rooms, telecommunication equipment rooms and custodial rooms shall have Storeroom Function locksets. Entrance shall be by key only with inside always unlocked.
11. Exterior doors to mechanical and electrical rooms shall have Night-Latch (NL) Function exit device. Labeled pairs of doors shall use UL-listed head and foot bolts and removable center mullion.
12. Provide Cylinder Dogging (CD) on exit devices at non-fire rated exit doors. Cylinder dogging uses a regular key cylinder keyed to the school master key system instead of the common hex dogging key.
13. Provide an astragal at RHR of pairs of doors when a center mullion is not provided.
14. Classroom function shall only be used at exterior staff / single use restrooms doors with Hotel Function cylindrical locksets. Do not use deadbolt locks at any other locations without obtaining prior approval in writing from M-DCPS Central Lock Dept.

P. Controlling Hardware:
   1. Head bolts or foot bolts shall not be used on any door located in student occupied spaces.
   2. Door Closers shall be provided at all doors except interior staff office doors located within the Administration and Student Services areas.
   3. Hinges:
      a. Specify that all out-swinging exterior doors and all exterior gates shall be provided with heavy weight stainless steel hinges with five knuckle four ball-bearing non-removable stainless-steel pin, with button tip and plug.
      b. At interior doors specify heavy weight steel hinges with 5-knuckle four ball-bearings non-removable steel pin with button tip and plug.
   4. Doorstops:
      a. Wall-mounted doorstops: Specify wall-mounted doorstops for all doors unless otherwise indicated in this Division. Specify proper reinforcement and backing at all gypsum board or plaster wall applications.
      b. Floor-mounted doorstops shall be specified only when wall-mounted doorstops cannot be used. Such installation shall not create a trip-hazard or a maintenance issue.

c. Spring-cush closers shall be specified only if wall-mounted or floor-mounted doorstops cannot be effectively or safely used.

5. Doorstops and Holds:
   a. Specify wall mounted combination doorstop and holds at all custodial, electrical, and mechanical non-labeled spaces. At gypsum board or plaster wall applications specify proper backing.
   b. Door holds at labeled doors with closers shall be magnetic hold open devices connected to the fire alarm system.
6. Push Plates:
   a. Provide push plates at all non-labeled doors with exit devices and at toilet room doors without locksets.
   b. Omit push plates at doors with lever handle cylindrical locksets.
   c. Provide 2 push plates and 2 kick plates on double acting doors.
7. Kick Plates: Provide at all doors.
8. Door Armor: Provide a 48" high x 2" less-than-width-of-door x 16-gauge stainless steel armor plate at each side of doors in the food service area.
9. Specify surface mounted door closers and exit devices. Floor mounted or concealed overhead closers are not allowed.
10. Use special delayed action closers at doors serving children with disabilities.
11. Select removable center hardware mullion type based upon exit device and fire rating requirement.
12. Provide silencers or program-required door seals on steel door frames.

Q. Thresholds, Saddles, Door Bottoms and Weatherstrips:
1. Threshold:
   a. Provide marble thresholds at vestibule of group restrooms, at single-use toilet rooms and at custodial closets with a sink or mop receptor.
   b. Provide bumper design aluminum thresholds at all exterior doors to prevent water intrusion. Exception: At the kitchen receiving door do not provide any saddle.
   c. Provide bumper design aluminum thresholds at all mechanical rooms accessed from interior corridors to seal against sound transmission.
   d. Provide aluminum thresholds (saddle design) at interior doors requiring a carpet separation.
2. Weatherstrips (compressible bulb-design):
   a. Provide weatherstrips to the head and jambs of all exterior door frames to seal against water intrusion.
   b. Provide weatherstrips to the head and jambs of all mechanical rooms accessed from interior corridors to seal against sound transmission.
3. Sound Sensitive Rooms:
   a. All perimeter doors and doorframes to sound sensitive rooms shall be sealed against sound transmission by being provided with the following:
      1) Weatherstrips (compressible bulb design) to the head and jambs of doorframes.
      2) Aluminum thresholds (saddle design).
      3) Surface applied automatic operating drop seal door bottoms.
   b. Sound sensitive rooms shall include but are not limited to the following:
      1) Auditorium/Cafetorium seating and stage areas, including the lobby entrance to the Auditorium.

2) Control Rooms serving the Auditorium/Cafetorium and the Language Arts (Little Theater).
3) Media Center and other interior spaces such as the CCTV Studio, CCTV Control room, and Editing rooms.
4) Music Suite rooms including Band room, Vocal Music room, Piano Lab, Music Lab, Music Ensemble rooms, and Music Practice rooms.
5) Vocational Labs that may generate noise. (i.e. Auto Body, Auto Mechanics, Carpentry, Construction Trades, etc.)
6) Mechanical rooms accessed from within sound sensitive areas such as the Media Center or the Auditorium/Cafetorium.
7) Other areas as identified in the Educational Specifications.

4. At kitchen receiving door, provide a fixed sweep-type door bottom with no threshold. In addition, provide compressible (bulb-design) weather strips at head and jambs of doorframe.
5. See General Considerations for overhead weather protection at exterior doors.

R. Hardware Sets:
1. Hardware sets shall comply with the following, but not limited to, hardware set descriptions and locations:

#1. Student occupied spaces with less than 100 persons - labeled or non-labeled:

Classroom Function lock w/ closer. (Interior)
Exit Device, w/ closer. (Exterior)

#2. Student occupied spaces with less than 100 persons - interior, exit only, secondary means of egress:

Exit lock, w/ closer.

#3. Student occupied spaces with 100 or more persons - interior or exterior, non-labeled:

Exit device less outside trim, w/ pull, cylinder, w/ closer.

#4. Student occupied spaces with 100 or more persons - interior or exterior, labeled:

Exit device w/ lever trim, cylinder, w/ closer.

#5. Student occupied spaces with 100 or more persons - interior or exterior, non-labeled or labeled, exit only, secondary means of egress:

Exit device less outside trim, w/ closer.

#6. Student occupied spaces with 100 or more persons and corridor doors - interior or exterior, non-labeled pair:

RHR door - Exit device w/ pull, cylinder, w/ closer.
LHR door - Exit device less outside trim, w/ closer - exit only.
With removable center mullion.

#7. Student occupied spaces with 100 or more persons and corridor doors- interior or exterior, labeled pair:

RHD door - Exit device w/ lever trim, cylinder, w/closer.
LHR door - Exit device less outside trim, w/ closer - exit only.
With removable center mullion.

#8. Group toilet room - exterior:

Exit device, w/ cylinder dogging, cylinder, pull handle, w/ closer.

#9. Individual student toilet room accessed from instructional space or supervised area, no access from corridors or exterior:

Privacy Function lock, w/ closer.

#10. Individual staff toilet room accessed from exterior corridors:

Hotel Function lock, w/ closer and Classroom Function deadbolt.

#11. Individual staff toilet room accessible from office areas or interior corridors:

Hotel Function lock, w/ closer.

#12. Storage, mechanical, electrical, telecommunications equipment rooms, satellite wiring closet, elevator machine and custodial rooms:

Single door - exterior

Labeled exit device, cylinder, knurled door pull, w/ closer

Single door - interior:

Storage Function lock, knurled outside trim, w/ closer

Pair of Doors - exterior:

RHR door - Labeled exit device, cylinder, knurled door pull, w/ closer.
LHR door - Surface mounted head and foot bolts, w/ closer

Removable center mullion.

Pairs of Doors - interior:

RHR door - Storage Function lock, knurled, w/ closer and astragal.
LHR door - Flush sliding head and foot bolts, w/ closer.

#13. Toilet or kitchen vestibules - interior:

Classroom Function lock, w/ closer.

#14. Kitchen Manager's office and individual and group staff offices located outside of the administration and student services areas - labeled and non-labeled, interior:

Classroom Function lock, w/ closer.

#15. Individual and group staff offices located within the administration and student services areas - non-labeled, interior:

Classroom Function lock, w/ no closer.

#16. Dining from kitchen - interior:

See hardware for Access Control System areas under this Division for details.

#17. Kitchen receiving - Access Control System:

See hardware for Access Control System areas under this Division for details.

#18. Stairs from interior corridor - labeled:

Exit device w/lever trim, closer(s) and magnetic hold open.

#19. Corridor smoke stop separation - labeled, interior:

Pair - w/ closers, magnetic hold open, drop seal, astragal with seal and no center mullion.

#20. Connecting instructional spaces not required for access:

Institution Function lock, w/ closer.

#21. Connecting instructional spaces with required egress in both directions:

Passage Function set, w/ closer.

#22. Folding door partition:

2 cylinders compatible with facility's master key system.

#23. Lead lined door:

Pull and closer.

#24. Counter gate:

Secret gate latch, spring hinges and stop.

#25. Roof hatch: (Except at those locations with automatic smoke evacuation functions)

Padlock keyable to facility master key system.

#26. Door-within-a-door:

Door: Storeroom Function lock, w/ closer
At the pass-door panel: Single thumb deadbolt.

#27. Roof access from corridors or stairwell:

Institution Function lock knurled, w/closer.

#28. Flammable storage room w/single door, serving instructional spaces:

Labeled exit device w/knurled pull, cylinder, w/ closer.

#29. Flammable storage room for lawn equipment storage - labeled pair:

RHR door - Labeled exit device w/ knurled pull, cylinder, w/ closer.
LHR door - Labeled head and foot bolts, w/ closer.
With a key operated removable center mullion.

#30. Teacher planning rooms and individual offices between or within interior instructional spaces:

Storeroom Function lock, w/ closer.

#31. Teacher planning room and Teachers' Lounge accessed from interior or exterior corridors:

Exit device less trim with pull, cylinder, w/ closer.

#32. Roll-up gates and grilles:

Keyed cylinder (padlock if required by the Educational Specifications) – keyable to master key system.

#33. Darkroom within an instructional space. Access door to corridor or to the exterior.

Exit device lock, w/ closer, light seals, and surface applied automatic door bottom.

#33. FPL transformer vault, pair:

RHR door - Passage latch, w/ closer.
LHR door - Surface bolts, w/ closer.
Padlock hasp (padlock by FPL).
With removable center mullion

#34. Auditorium stage dressing rooms:

Classroom Function lock, w/ closer

#35. Interior and Exterior steel storefront doors: Labeled, single door

Surface mounted fire rated rim exit device, lever trim, cylinder, w/ closer

Interior and Exterior steel storefront doors: Labeled, pairs of doors

RHR door - Surface mounted fire rated rim exit device, lever trim, cylinder, w/ closer.
Fire rated removable mullion.
LHR door - Surface mounted fire rated rim exit device, less trim exit only, w/ closer.

#36. Interior and Exterior steel storefront doors: Non-labeled, single door

Surface mounted rim exit device, cylinder dogging, cylinder, door pull, w/ closer.

Interior and Exterior steel storefront doors: Non-labeled, pair of doors

RHR door - Surface mounted rim exit device, cylinder dogging, cylinder, door pull, w/ closer.
Removable mullion.
LHR door - Surface mounted rim exit device, less trim exit only, w/ closer.

#37. Exterior Gates:

Exit device (with weather resistant coating), w/ cylinder dogging, door pull, cylinder, w/ closer (with rust inhibitor coating).

#38. Key cabinet(s) for all new facilities and new additions projects only, unless otherwise noted. Note model and manufacturer in door schedule.

2. Remaining hardware set information for (but not limited to) items listed below, shall be determined by program requirements or individual door criteria requirements:
   a. Hinges.
   b. Exit devices.
   c. Thresholds.
   d. Door top protection.
   e. Viewport.
   f. Closer.
   g. Stop and holds.
   h. Weatherstrip/soundseal/gasket.
   i. Drop seal/door bottoms.
   j. Brush weatherstrip.
   k. Push plate.
   l. Kick plate.
   m. Removable center hardware mullion.
   n. Silencers.
   o. Locksets.
   p. Latch guards.
   q. Cylinders.
   r. Dead bolts.
   s. Head and foot bolts.
   t. Raindrip, overhead.

S. Access Control System Hardware.
   1. Provide an Access Control System (ACS) in accordance with Division 13 of M-DCPS Design Criteria.
   2. At the perimeter of each ACS area, provide one (1) primary ACS entry door and at least one (1) emergency/backup entry door. (Exception: The Security Camera System Control Room shall be provided with only one (1) entry door. This door shall be provided an ACS and a high security cylinder to allow for emergency key entry.
   3. A/E shall coordinate with M-DCPS Central Lock Dept. and Maintenance Operations Capital Task Force personnel identification of all primary and emergency/backup entry points located at perimeter of all ACS controlled areas.
   4. Hardware on doors located at the perimeter of all ACS areas shall comply with, but not be limited to, the following:

#39. The primary entry door to each ACS controlled area shall have:

Card Reader, double cylinder rim exit device with lever trim and door closer and a surface mounted heavy-duty rim electric strike (fail-secured)

When a pair of labeled doors is provided as the primary entrance to an ACS controlled area, a labeled removable center hardware mullion shall be provided.

#40. All remaining perimeter entry doors into an ACS controlled area shall have:

Labeled doors: Double cylinder rim exit device with lever trim, w/closer.
Non-labeled doors: Exit device with cylinder dogging, rim cylinder, door pull and closer.

1.6 GLAZING

A. Exterior glazing shall be protected by one of the methods described in Division 8 – Windows.

B. Exterior glass shall be designed to comply with FBC. Submit to the BCC calculations, signed and sealed by a Florida registered professional engineer, establishing wind velocity pressure values for the specific project in accordance with FBC ASCE 7.

C. Glazing in M-DCPS buildings shall be tempered glass, laminated glass, fire rated glass or M-DCPS accepted glass block. Do not use wired glass or acrylic sheets.

D. Polycarbonate Glazing:
1. Polycarbonate glazing shall not be exposed to the interior of the building.
2. Polycarbonate glazing is not allowed in door view panels or display cases.

E. Mirrors:
1. Mirrors in faculty or staff spaces and toilet rooms shall be 1/4" tempered glass, electrolytically copper plated, in stainless steel frames with concealed theft-proof mountings.
2. Mirrors in public or student toilet rooms, or in non-supervised student accessible spaces shall be frameless, mirror polished, 20-gauge stainless steel laminated with 1/4" minimum tempered hardboard backing. Provide concealed theft-proof mountings and proper anchoring and wall backing sufficient to withstand impact and 200 lbs static force.
3. Mirrors in supervised student accessible spaces shall be 1/4" laminated safety glass with electrolytically copper plated backing. Mirrors shall provide distortion-free reflected images and shall be optically matched for distortion-free reflected images from panel to adjacent panel. Provide proper anchoring and plywood backing and install according to manufacturer's requirements.
4. See Division 10 – Toilet Accessories for additional mirror requirements.

END OF DIVISION