

DIVISION 2 - SITE DESIGN GUIDELINES

PART 1 - REGULATORY COMPLIANCE (Permits, Codes and Standards)

1.1 Regulatory Compliance: Not all MCPS schools are subject to Montgomery County regulations. School site design for schools located in other jurisdictions such as The City of Rockville, The City of Gaithersburg, and The Town of Garrett Park, etc., shall comply with the most current applicable MCPS Site Design Criteria and/or the most current applicable federal, state and local laws, rules and regulations of those jurisdictions whichever are more stringent. It is the responsibility of the A/E to arrange for and attend meetings with the appropriate reviewing and approving agencies and determine or confirm all design criteria and constraints prior to developing designs. Reviewing and/or approving agencies for schools that are subject to Montgomery County regulations include, but are not limited to the following:

A. Montgomery County Department of Permitting Services):

1. Stormwater Management (waiver and/or approval)
2. Stormwater Management Concept (approval and permit)
3. Soil Erosion & Sediment Control (approval)
4. Wetlands (if applicable)
5. Flood Plain District Permit (approval and permit)
6. Special Protection Area (SPA) Preliminary and Final Water Quality Plans)

B. Montgomery County Department of Environmental Protection (DEP):

1. SPA – Water Quality Monitoring
2. Soil Erosion & Sediment Control
3. Stormwater Management
4. Wetlands (if applicable)

C. Montgomery County Department of Transportation (MCDOT):

1. Interim review and approval of traffic engineer
2. Final approval obtained thru the building permit
3. Traffic flow and site signage review by Chief of Traffic Operation Section. (see procedure section)
 - a. Site signage to be furnished by County DOT and paid for by MCPS.

D. Maryland National Capital Park & Planning Commission (MNCPPC):

1. Mandatory Referral
 - a. Approval recommendations are not binding but are suggestions only. However, it is MCPS policy to honor their suggestions if reasonably feasible.
2. Forest Conservation - Afforestation/Reforestation (Maryland Law 5-103)

E. Maryland Department of Transportation – State Highway Administration (SHA)

(If site abuts, or work is required within an SHA Right-Of-Way

1. Access Permits Division – review and permit for new, abandoned and/or

improved driveways acceleration and deceleration lanes on SHA roads.

2. SHA Hydraulics Section – review and approval of connections to existing SHA storm drain systems and/or discharges within SHA rights-of-way.
3. SHA Utilities Section Review – review and approval of connections to or other impacts upon existing utilities within SHA rights-of-way.
4. SHA Signalization Branch–review and approval of signal warrants and signalization of intersections.

F. Washington Suburban Sanitary Commission (WSSC)

1. On-Site Water and Sanitary Sewer Plans – (waiver and/or approval and permit)
2. Mainline Water and/or Sanitary Sewer Plans – (review and permit)
3. Water and Sewer Service Connection – (permit)
4. Water and Sewer Abandonment – (permit)

G. Maryland Department of the Environment (MDE)

1. Wetlands (if applicable)
2. N.O.I. (Notice of Intent to Disturb)
3. Construction within wetlands and waterways- (approval and permit)

H. U.S. Army Corps of Engineers

1. Wetlands if Applicable
2. Construction within wetlands and waterways – (permit)

I. Maryland State Forester

1. Street Tree Removal (permit)

J. U.S Green Building Council

1. LEED Compliance and Sustainable Site Design
2. LEED for Schools 2007 (LEED-S) Prerequisites and Credits – Certification

K. National Fire Protection Association (NFPA).

1. For existing flammable liquid storage tanks

L. Code of Maryland Regulations, Section 08.05.04; State of Maryland, Department of the Environment, Title 20, Subtitle 10, “Oil Pollution and Tank Management”.

1. Underground Tank removal and disposal

M. Most current applicable Federal, State and Local laws, rules, ordinances and regulations

1. Legal and environmentally proper disposal of all materials removed from the site.

N. ASTM Standards

1. Obtain and comply with ASTM E1527-05 and, if applicable, ASTM E1903-97.
2. If required Conduct a Phase I Environmental Site Assessment as described

in ASTM E1527-05 to determine if environmental contamination exists at the site.

- A. If contamination is suspected conduct a Phase II Environmental Site Assessment as described in ASTM E1903-97.
- B. Sites that are contaminated due to the past existence of a landfill on the site are prohibited. If the site is otherwise contaminated, then it must be remediated to meet local, state, or federal EPA region residential (unrestricted) standards whichever is most stringent. Documentation from the authority must be provided (such as EPA's "Ready for Reuse" document) to prove "safe" levels of contamination have been achieved.

PART 2 - SITE ACCESS, SAFE ON-SITE PEDESTRIAN AND VEHICULAR TRAFFIC CIRCULATION

2.1 Acknowledgement and Criteria

The following guidelines from the Montgomery County Public Schools, Division of Transportation publication "DESIGN ISSUES TO CONSIDER DURING SCHOOL CONSTRUCTION PROJECTS" by John L. Matthews and the most current applicable State, Local and Federal regulations governing School Zone Traffic Safety are to be respected in the design of all MCPS school and facilities projects including, but not limited to, new construction, renovation, modernization and/or Improved Access to Schools projects.

A. Basic Site Design Principles - The following basic principles are to be respected when designing a safely accessible MCPS school site.

1. Car, bus and service vehicle traffic should not merge or mix.
2. Student and/or /pedestrian traffic should not mix with cars, buses or service vehicles
3. Walkers will take the shortest route to their destination. Pedestrian walkways should be designed accordingly.
4. People, especially students, move with little regard for safety. Site designs should be forgiving.
5. Bus staging, loading and unloading areas (bus loop) and student and carpool drop-off/pick-up areas should be located in view of the school administrative offices.
6. Minimize, and if at all possible eliminate, co-mingling of traffic on site.

B. Bus Loading Area

1. Bus loading and unloading is to be on-site only.
2. Provide a separate bus loading area and driveway(s) for bus loading and unloading. Bus parking area should be located at maximum distance to classrooms and so that the buses reflective surfaces (windshields, etc.) will not transmit glare inside the building.
3. No pedestrian crosswalks should pass through a bus loop without prior approval from MCPS.

4. All other traffic should be restricted from the bus loop. With prior approval from MCPS allowance for other uses of this area such as mid-day and weekend parking or after-hours school event parking may be considered for non-peak hours and on non-school days.
5. The minimum face of curb-to-face of curb dimension required for an MCPS school bus to make a 180-degree (hairpin) turn in one forward motion is 110'.
6. Curved driveways and entrances for buses should incorporate no less than 50' inside face of curb radii.
7. All driveways must be designed so as to allow the safe one or two-directional passage of school buses at all times. On curves the width of the bus driveway should be widened to accommodate this traffic flow.
8. Bus lane width should be a minimum of 12' on straight drives and increased as required for the safe one or two-directional passage of school buses at all times.
9. Provide sufficient space to stage all buses needed to transport all students on a daily basis with consideration given to possible growth in population. Obtain information for stacking and queue requirements from MCPS. Bus loading is to be on site only.
10. For the purposes of site design, a standard bus space is to be considered to be 14' wide and 40' long.
11. Provide ample curb radii to accommodate forward-only motion of 40' buses, and WB-50 delivery vehicles with minimal directional changes.
12. Driveway inclines, longitudinal grades, are not to exceed 8% without prior approval of MCPS.
13. Bus loading/unloading areas should be as flat as reasonably possible, while maintaining adequate surface drainage, to prevent vehicles from drifting in the loading zone. (Refer to Section 3.2.E below)
14. Buses must be able to load and unload with their doors (passenger side) opening to the right curb. Students must be able to move directly to the curb and sidewalk without crossing any other traffic driveways or walking between buses.
15. Bus Loop traffic flow must always be maintained in a counter-clockwise direction.
16. There are to be no fixed objects within 4'-0" of the curb line along any bus route or loading/unloading area. Such objects include, but are not limited to, fire hydrants, canopies, canopy support columns, bollards, trees, limbs, signs etc.
17. Bus Staging – There are two (2) acceptable methods used to stage buses. In order of MCPS preference they are follows.
 - (a) Curbside/parallel/single file - the preferred and safest method
 - (b) Single-lane "chevron" pattern - may be used when necessary to maximize the use of available space.
18. Designs that require any bus to back up, turn around or encroach upon any parking

space at any time are PROHIBITED. Design patterns to maximize forward motion only of buses.

19. Provide a paved sidewalk, 12' minimum in width, along the entire bus loop.
20. Provide an additional paved waiting pad between the school building and adjacent to the bus loop sidewalk if required to accommodate the student body at dismissal time.
21. Fumes from idling buses need to be kept away from building entrances, windows and air intakes. Study and design with prevailing winds towards the building and avoid interior draft tunnels like continuous corridors that support fume contamination of the indoors.
22. Bus activity, loading and unloading of buses shall be supervised by the school administrators.
23. Staging areas and loops are not to be striped for after-hours parking.
24. Avoid locating crosswalks in bus circulation areas.

C. Student and Carpool Drop-Off/Pick-Up (SCDP Loop)

1. Provide sufficient area for on-site/off-street loading, unloading and stacking.
2. Design for ease of entry and exit – SCDP Loops must be inviting, convenient and efficient to facilitate their use.
3. The SCDP Loop must be separate from the Bus Loop and flow in a one-way counter clockwise direction so that car doors (passenger side) opening to the right curb. Students must be able to move directly to the curb and sidewalk without crossing any other traffic driveways or walking between other vehicles.
4. The SCDP loop can be incorporated with other parking areas for staff, faculty and students.
5. A dedicated driveway, separated from parking by a curbed island must be provided when the SCDP Loop is combined with any parking area.
6. The SCDP Loop should provide the maximum drop-off area and stacking in advance.
7. Stacking of Drop-Off/Pick Up vehicles in parking area drives should be avoided and requires MCPS approval in advance.
8. Direct ADA-compliant pedestrian access from the SCDP Loop to the school building without crossing other traffic or through other traffic/parking areas must be provided.

D. Staff/Student Parking Areas

1. Staff parking areas can be located with less concern for accessibility and safety than other areas because staff generally arrives before and leaves after students arrive and depart.
2. Walkways from staff parking must be designed to minimize the need to cross vehicular traffic areas and should never require anyone to cross, uncontrolled and/or

unprotected, through the Bus Loop.

3. Handicap parking spaces and an ADA-compliant access route from the staff parking area to the school building must be provided. Under no circumstances is such an access route to cross behind a parked vehicle.
4. Separate student parking from staff and faculty parking
5. Where possible, student parking areas should be separated from other areas of the school.

E. Loading Dock/Receiving Areas/Dumpsters

1. Locate loading docks/receiving areas for kitchen, building maintenance and supplies away from all pedestrian and play areas.
2. Driveways to loading docks and areas may pass through the bus loading, parking and SDPU areas. However, loading docks and areas must not be located in the immediate vicinity of any of these areas.
3. Service and delivery vehicles must not have to back-up into, or within, or turn around across sidewalks, crosswalks or within the bus loading, parking and SDPU areas.
4. Provide a drain or drains within the service area/dumpster area pavement to accommodate wash-down drainage.
5. Verify that, an area in front of the rear of the dumpster fifty (50') long by fifteen (15') feet wide by twenty-five (25') high is free of any overhead obstructions such as canopies, tree limbs, electrical power lines, telecommunications lines etc.
6. Provide a forty (40') unobstructed approach to the dumpster or dumpster enclosure
7. Confirm with the MCPS project manager what design vehicle should be used to develop designs to provide adequate area for truck turning and maneuvering within loading, service and dumpster areas.
8. Provide sufficient room in front of all loading docks/areas to ensure that service vehicles do not project into and block sidewalks and/or driveways.
9. Provide ADA-compliant access from loading and service areas into buildings.
10. Do not assume that all schools are to be provided with elevated loading docks. Confirm loading dock requirements with the MCPS Project Manager prior to proceeding with site design and grading.

F. Pedestrian Walkways/Crosswalks

1. Avoid crossing existing or proposed driveways
2. Refer to Section 3.3 of this Division for grading requirements
3. Pedestrian walkways should cross where there is limited room for vehicular traffic and at locations where traffic volumes are the lowest.

4. Walkways should be designed so as to provide access to the school building without crossing through parking, SCPD, bus loop and/or loading areas. Preclude student and pedestrian traffic from crossing any vehicular traffic areas to get to school entrances.
5. Connect all areas around the school with paved ADA-compliant walkways. All walkways where students and staff access the school should be connected with paved walkways that approach the building from the sides and the rear.
6. Student access from building to play fields must be designed so as to be free from vehicular traffic and accessible for the physically handicapped.
7. Under no circumstances shall sidewalks and pedestrian routes cross through or within loading and service areas.
8. Under no circumstances is such an access route to cross behind a parked vehicle.

G. Driveway Aprons/Entrances

1. Site entrances and exits shall be designed and constructed in accordance with the most current applicable federal, state and local requirements specific to the jurisdiction in which they are located.
2. Minimize the number of driveway entrances on any given street frontage. If at all feasible limit the number of entrances to three (3).
3. Locate entrances so as to ensure adequate stopping sight distance. The design speed for calculating stopping sight distance should be 10 mph over the posted school zone speed limit.
4. Align the outbound lanes of entrances so that the headlamps from vehicles leaving the school site do not shine directly into residences or other occupied buildings confronting the school on opposite side of the street.
5. Confirm local requirements for locations of entrances with respect to existing and proposed entrances, driveways and/or intersections prior to design.
6. Minimize the number of entrances and exits.
7. Where the width of any driveway exceeds 30', install an 8' wide ADA compliant pedestrian safety island.
8. Locate driveways and entrances so that ingress/egress traffic patterns do not conflict on or off site. Provide maximum separation between driveway entrances to eliminate conflicting outbound turning movements.
9. Where possible, align driveways with opposing streets to create a standard intersection.

H. Fire Access Lanes

1. All access lanes for fire and rescue equipment are to be code-compliant (twenty (20) feet wide, a minimum of 10' away from the building and paved to provide all-weather access).

2. If "NO PARKING" traffic signs are installed in an arrangement acceptable to the Fire Marshal, curbs at fire lanes are no longer required to be painted yellow.
3. Fire lanes must extend be extended to provide access to primary entrances to the building.
4. Fire lanes can be constructed using GRASSPAVE 2 provided the system is fully-buried, covered in grass and the lane is clearly delineated on the ground surface in a manner acceptable to MCPS. The use of concrete curb edging flush to the ground's surface is not permitted. The use of markers or delineators that protrude above the ground surface is not permitted anywhere on school sites.

PART 3 - SITE ASPHALT AND CONCRETE PAVING AND GRADING

3.1 General Site Paving and Surfacing

- A. All thicknesses indicated on plans and specifications are to be compacted thicknesses.
- B. Thicknesses shown are minimum thicknesses and are to be adjusted as necessary in accordance with the recommendation of the project geotechnical soils report.
- C. In the event that a geotechnical report is unavailable, traffic bearing pavement should be designed based upon a California Bearing Ratio (CBR) Value of 3.0 to accommodate HS20 loading.
- D. Paved play areas used for fire access routes and vehicular turn-around or overflow parking areas are to be designed with the same pavement section used for driveways and parking lots.
- E. The maximum grade in any direction across a paved play area or court shall be 1%.
- F. To reduce impervious surfaces, the use of alternate paving systems such as GrassPave 2 for overflow parking and low traffic areas is encouraged. The use and type of such system(s) employed are to be coordinated with and approved by the MCPS project manager.
- G. All curbs to be concrete curb and gutter. NO asphalt curbs are allowed.
- H. Sidewalks to be 4" thick, reinforced with wire mesh. Broom finish. Provide 6 mil polyethylene vapor barrier to retain moisture in the slab.
- I. Retaining walls to be appropriate material. Railroad ties to be avoided. Structural retaining walls shall be reinforced concrete.
- J. Exterior reinforced slabs at exterior doors shall be integral with the foundation for a distance of 4'-0" from the door or doweled and placed on 2'-0" depth of gravel for a width 2'-0" wider than the door width.

Provide a minimum 6" concrete pad at loading docks placed over compacted fill and a minimum of 6" stone sub base. Concrete pads are to be structurally designed to accommodate HS20 loading and shall be designed and constructed with appropriate construction, expansion and control joints. Size to be approximately 40'x40'

minimum.

- K.** Provide a minimum 6" concrete pad at dumpster placed over compacted fill and a minimum of 6" stone sub base. Concrete pads are to be structurally designed to accommodate HS20 loading and shall be constructed with appropriate construction, expansion and control joints. Pad shall extend a minimum of two (2'-6") feet beyond the rear and sides of the dumpster and shall extend for its full width a distance of ten (10') beyond the front of the dumpster.
- L.** General Contractor shall provide a sample of 8'-0" l.f. of typical sidewalk and curb with a control joint for MCPS approval.
- M.** Provide asphalt or light duty concrete paving under exterior grand stand, bleachers, mechanical chiller, and cooling tower units. Where possible in these locations, use pervious concrete or asphalt.
- N.** Under no circumstances are v-channels/swales to be constructed in asphalt paving. Where such drainage is required, the v-channel/swale shall be constructed of concrete

MINIMUM ASPHALT PAVEMENT THICKNESS					
Area	Stone Sub-Base	Base Course	Surface Course	Topping	Acceptable Systems
Play Areas / Basketball Courts	4"	2½"	1½"	None	
Tennis Courts	4"	2½"	1½"	Yes	1. Latex-ite by American Tennis Courts, Inc. Baltimore, MD 2. Nova by Nova Sports, Framingham, Mass. 3. Courtmaster by Sealmasters, Inc., Sandusky, Ohio
All Parking Lots All Driveways	8"	4"	2"	NOTE: No prime coats needed	
Running Track	8"	4"	2"	3/8" Black Rubberized, 4-layer surface system (color upgrade shall be paid by the school)	1. Reflex-1 by American Tennis Courts, Inc. Baltimore, MD 2. Maxflex 3. Granuflex

3.2 Paving Materials and Accessories

- A.** Regional Materials: Provide products manufactured and of primary materials extracted/recovered within a 500-mile radius of the project site.
- B.** Recycled Content, as follows:
 - 1. Cement Concrete paving shall contain minimum 50% ground granulated blast furnace (GGBF) slag replacement for Portland cement in cement mixture (obtain any necessary approvals, and use if Project scheduling will permit extended set time from use of GGBF slag in cement mixture).

2. Concrete unit pavers shall contain minimum 20% fly ash replacement for Portland cement in cement mixture (obtain any necessary approvals, and use if Project scheduling will permit extended set time from use of fly ash in cement mixture).
 3. Reinforcing bars shall contain at least 95% total recycled-content including at least 60% post-consumer material.
- C.** Porous/Pervious Paving shall not be used in the following locations on school property:
1. On paved play areas, basketball courts, sprint tracks and/or tennis courts.
 2. On sidewalks or patios within 25' of buildings. (to prevent stormwater from saturating foundation walls, foundations and footings and to minimize mold)
 3. Dumpster Pads and heavy equipment pads.
- D.** Where porous paving is used for site sidewalks they are to be designed to accommodate HS-20 loading to support maintenance vehicles and periodic emergency equipment.

3.3 General Site Grading

- A.** Grassed or vegetated, site slopes shall not exceed 3:1.
- B.** Site grading at the building face to be coordinated and designed in harmony with architectural features such as brick drains, windows etc. Maintain a minimum drop of 0'-3" from brick drains down to grade at the building.
- C.** Slope Ground away from buildings at a minimum grade of 4% for a minimum distance of 5-feet
- D.** Site grading shall be designed to preclude damage to or flooding of adjacent properties.
- E.** Site grading shall be designed to provide safe conveyance of the runoff from the 100-year recurrence interval storm event stormwater runoff through the site and through adjacent properties.
- F.** Site grading shall be designed to minimize the need for on-site yard drains and inlets. Yard drains, inlets, manholes and cleanouts, where required shall not be located within 5' of any pedestrian sidewalk or path and/or in or around athletic fields.
- G.** Under no circumstances shall manholes, inlets, yard drains cleanouts and the like be located in or around hard and soft-surfaced play areas and/or play equipment.

3.4 Pavement Grades/Slopes

- A.** Parking Areas and Drive Aisles - 5% maximum grade in any direction unless Otherwise pre-approved by

MCPS. 2% at exit and entrance points

- B. Handicap Parking Areas – 2% Maximum grade in any direction unless flatter slopes are otherwise required
- C. Site Roads with parking - 5% maximum longitudinal grade
4% maximum cross-sectional grade
- D. Site Roads without parking - 8% longitudinal grade
4% maximum cross-sectional grade
- E. Bus Drop Off Areas – 4% maximum grade in any direction unless flatter slopes are otherwise required. In areas where special needs/handicap equipped buses targe, load and/or unload the maximum grade shall be 1.5 % in any direction
- F. Paved Play Areas - The maximum grade allowed by MCPS across any paved play area or paved athletic courts is 1% in any direction.
- G. Sidewalks and Paths - Longitudinal sidewalk and/or path grades shall not exceed 5% on any sidewalk anywhere on school property without prior approval from MCPS. Maximum cross-slope on any site sidewalk or path to be 2%.
- H. Service Drives/Loading Areas - The maximum grade on any driveway serving a loading dock and/or materials loading and unloading area should be 2%. It is preferred that the driveway slope away from the loading dock/area.
- I. Athletic Fields – Unless otherwise directed or approved by MCPS, all athletic fields are to be graded in accordance with the “National Federation of State High School Associations’ Court and Field Diagram Guide.”

3.5 Site Sidewalks/Steps

- A. Maximum cross-slope on any site sidewalk to be 2%.
- B. Provide ADA compliant handicap ramps, curb cuts and, if required, handrails, along all convenient access routes and at all convenient access points including but not limited to bus loading areas, student drop-off, and visitor / faculty parking areas and public sidewalks.
- C. The typical riser height on MCPS site steps/stairs is to be 6”. Where site stairs/steps are required at elementary schools, the maximum riser height shall be 5”.
- D. Level landings shall be provided at all required doorways to schools unless specifically pre-approved otherwise by MCPS. Level landings are defined by MCPS or those landings not exceeding 2% (1/4” per foot) for a distance of no less than five (5’) feet outward from the face of the building or as otherwise required by ADA or the most current applicable building code whichever is the more stringent.

- E. Sidewalk widths, unless otherwise directed by MCPS, are as follows:
 - Along bus loops: 12'-0"
 - Along student drop off lanes: 8'-0"
 - School perimeter sidewalks: 5'-0"
 - Lead walks from doors to perimeter sidewalks: 5'-0"
 - In public space: As required by local jurisdiction
- F. Cheek walls along steps to be 12" minimum width. Posts are to be core-drilled and epoxied in place. Do not use sleeves for railing posts.

3.6 On-Site Parking/Bicycle Racks

- A. Parking spaces shall be 9'-0" wide x 18'-0" long, excluding overhang.
- B. Handicapped parking spaces shall be located near an accessible entrance. The required number of spaces shall be:

1-25	1 spaces	151-200	6 spaces
26-50	2 spaces	201-300	7 spaces
51-75	3 spaces	301-400	8 spaces
76-100	4 spaces	401-500	9 spaces
101-150	5 spaces		

- C. Preferred Parking shall be provided for 5% of the total capacity near the entrance of the building with "RESERVED FOR MCPS GREEN FLEET" signage for hybrids and other low-emitting and fuel-efficient vehicles and/or carpool participants.
- D. Parking lot striping to be in contract and white in color unless otherwise required by code. Green fleet parking spaces striping to be green in color.
- E. Provide barriers as required to keep vehicular traffic off of play fields and paved play areas.
- F. Provide secure bicycle racks and/or storage within 200 yards of the building entrance for a minimum of 5% of the staff and students above third grade (measured at peak periods). Divide the required bicycle racks in several clusters between the building entrances, playgrounds and athletic fields.
- G. Parking areas should be located at maximum distance from classrooms so that the buses' reflective surfaces (windshields, etc.) will not transmit glare into the building.

3.7 Pavement Marking and Signage

- A. All marking and striping to be in contract and white in color unless otherwise identified or required by code. Green fleet parking spaces striping to be green in color.
- B. Use yellow paint for the following areas:
 1. Curbs at loading areas
 2. Curbs at Fire Lanes and Fire Lane Markings
 3. Traffic lane markings

3.8 **Fire Lanes**

- A. All access lanes for fire and rescue equipment are to be code-compliant (twenty (20) feet wide, a minimum of ten (10) feet away from the building and paved to provide all-weather access).
- B. If "NO PARKING" traffic signs are installed in an arrangement acceptable to the Fire Marshal, curbs at fire lanes no longer need to be painted yellow.
- C. All access lanes for fire and rescue equipment shall be designed to be all-weather accessible, be capable of supporting HS-20 traffic loading and must be approved in writing by the fire marshal prior to inclusion into the design/construction documents

PART 4 – GENERAL SITE DESIGN GUIDELINES

4.1 **Future Building Additions/Possible Future Learning Cottages**

- A. Design and grade the site to accommodate the construction of future building additions and possible future temporary classrooms.
- B. Show future additions and possible future temporary classrooms on the site plans and in the projects schematic brochure.
- C. Grading for the required number of temporary classrooms shall be a part of the general contract and no playground equipment shall be located in the proposed area.
- D. Site utilities and services, including but not limited to water, sewer, storm drains, stormwater management facilities, gas, electric, telecommunications and electrical services, shall be sized for the anticipated loads, demands and requirements of building additions and possible future temporary classrooms.
- E. Site utilities shall be extended to and capped at the location of future building additions. Extend utilities to a location beyond the limits of any pavements.
- F. For future temporary units/learning cottages, provide and install two 4" diameter schedule 40 pvc conduits from the building to the site location designated for possible future temporary classrooms. Provide separate conduits with pull strings for electrical and telecommunications. Extend utilities to a location beyond the limits of any pavement and cap.
- G. Provide 3 dimensional ties to each utility cap from permanent site features such as the building, property corners, corners of site walls, etc.
- H. Temporary classrooms shall be located a minimum of 20' from the building and attention given to safe and ADA-compliant access.
- I. Site design should provide for a clear and accessible site route for delivery and installation or removal of the future temporary classrooms.
- J. Coordinate the locations of building roof drains and utilities with the proposed location of temporary classrooms so as to preclude future conflicts.

- K. If site conditions permit orient classrooms along E-W Axis and design for shade from existing buildings and trees.

4.2 Athletic Fields, Courts, Play Areas and other Site Improvements

- A. Refer to Project's Program or Education Specifications for types and numbers of Physical Education requirements for ball fields, play courts
- B. Unless otherwise approved by or directed by MCPS, design all athletic fields and courts in compliance with the latest edition of the "National Federation of State High School Associations' Court and Field Diagram Guide."
- C. The maximum grade allowed by MCPS across any paved play area or paved athletic courts is 1% in any direction.
- D. Provide high-efficiency irrigation systems for stadium fields. Coordinate with the MCPS project manager for proper advance direction.
 - 1. High-efficiency irrigation technologies may include:
 - a. Micro-irrigation systems
 - b. Moisture-sensors
 - c. Clock timers
 - d. Weather database controllers.
 - 2. Provide efficiency and potability data on irrigation technologies and water sources used.
- E. Provide student access from building to play fields free from vehicular traffic and accessible for the physically handicapped.
- F. Playground equipment shall not be placed or located in areas designated for future additions and temporary classrooms
- G. Prior to preparing project plans and specifications, document the following to MCPS:
 - 1. Location of manufacture of site improvement materials
 - 2. Recycled-content material, including pre and post-consumer and content for plastic component.
 - 3. Manufacturer certification that all pressure treated wood timbers and wood components use one of the approved non-CCA wood treatment products.

4.3 Landscaping

- A. Submit to Maryland National Capital Park and Planning the final landscape plan for their review. Landscape suggestions at the Mandatory Referral Hearing are to be evaluated and included if feasible.
- B. All nursery stock shall be in accordance with "American Standard for Nursery Stock" No. Z60-1-1986, by American Association of Nurserymen, Inc., and no substitutions will be permitted without written approval of the Architect and/or Owner.

- C.** Obtain approval of the landscape plan by the MCPS Safety Office.
- D.** Whenever possible prepare the Landscape in harmony with the Final Forest Conservation Plan to gain as many landscape credits for forest conservation as is possible.
- E.** Specify native/adapted plant and tree species. Native/adapted plants are plants indigenous to a locality or cultivars of native plants that are adapted to the local climate.
- F.** Provide a complete list of all plants include botanic and common names, quantity, caliper, and quality of all plants to be included in the project.
- G.** No trees should be planted between the school sidewalk and the school building.
- H.** Shade trees should be located > 20' from the building.
- I.** Shrubs should be located > 3' from the building or more to allow room for growth.
- J.** Fruit trees or trees/shrubs that produce berries are not permitted on MCPS property. Poisonous plants are not allowed on school grounds (See poisonous plant list included in these guidelines .
- K.** No flowering trees and/or shrubs that attract pests such as hornets, yellow-jackets, other aggressive bees are to be planted on MCPS property.
- L.** Trees that are prone to dripping sap should not be planted to so as to overhang cars parked on the site.
- M.** No trees should be planted along bus staging areas.
- N.** No trees should be planted along bus routes in and out of the site if the canopies will, at any time, conflict or hinder safe bus movement.
- O.** Coordinate the locations of plantings with the proposed locations of site lighting. Tree canopies should not block the dispersion of light.
- P.** Only thornless plants are allowed on school grounds.
- Q.** Do not plant pine-needle producing species in and around the areas of mechanical equipment, tennis and/or basketball courts, in courtyards or other paved play areas used for school activities.
- R.** Do not plant pollen-producing plants near outside air intakes.
- S.** Coordinate planting locations and species to ensure that there will be no conflicts or damage to existing or proposed on-site and off site property and improvements such as paving, sidewalks, and site utilities. Tree roots should not interfere with adjacent paving.
- T.** The maximum height of bushes/shrubs should be 2'-0" at the time of planting. Specify bushes and shrubs that typically don't grow above a mature height of 3'-0".

- U. Bushes and shrubs shall be planted so as not to obscure sight-lines and so that ultimate growth will not create security and safety problems.
- V. No shrubs are to be planted within 3' of fences.
- W. Avoid using ground cover anywhere on MCPS grounds to deter harborage of rodents and pests.
- X. Plants should be low maintenance.
- Y. No plants should be planted in areas with obvious poor drainage.
- Z. On previously developed or graded sites, restore or protect a minimum of 50 % of the site area (excluding the building footprint and the athletic fields) with native or adaptive vegetation. Native/adapted plants are plants indigenous to a locality or cultivars of native plants that are adapted to the local climate and are not considered invasive species or noxious weeds.

4.4 Recommended Plant Lists

- A. **General:** Plant materials shall be drought-tolerant and well-adapted to the project location.
 - a. Subject to compliance with requirements, give preference to plant materials that are native to the project location.
 - b. Provide plants that are grown within a 500-mile radius of the project site.

B. SHADE TREES (Locate > 20' from building):

<u>Botanic Name</u>	<u>Common Name</u>	<u>Comments</u>
Acer rubrum cultivars	Red maple	native
Fraxinus pensylvanica	Marshall's Seedless Green Ash	native
Liquidambar styraciflus	Sweetgum	native
Nyssa Sylvatica	Black Gum or Black Tupelo	native
Platanus acerifolia "Bloodgood"	Bloodgood London Planetree	use native platanus
Quercus coccinea	Scarlet Oak	native
Quercus falcata	Southern Red Oak	native
Quercus palustris	Pin Oak	native, Cultivars w/out dropping branches
Quercus phellos	Willow Oak	native
Quercus rubra (borealis)	Red Oak	native
Quercus velutina	Black Oak	native
Tilia americana	American Linden	native

C. MINOR TREES:

<u>Botanic Name</u>	<u>Common Name</u>	<u>Comments</u>
Acer campestre	Hedge Maple	native
Betula nigra	River Birch	native
Ostrya virginiana	Ironwood	native

D. ORNAMENTAL TREES:

<u>Botanic Name</u>	<u>Common Name</u>	<u>Comments</u>
Amelanchier canadensis	Serviceberry	native
Carpinus caroliniana	American Hornbeam	native
Cercis canadensis	Redbud	native
Cornus florida cultivars	Dogwood	native
Crataegus phaenopyrum	Washington Hawthorne	native, thornless
Crataegus viridis "Winter King"	Winter King 'Green Hawthorne"	native
Magnolia virginiana	Magnolia	native, wet conditions
Malus spp. (improved varieties)	Crabapple	most non-native
Prunus spp.	Flowering Cherry and Plum	Americana, maritima
Prunus Cerasifera (Atropurpura)	Purple Plum	

E. EVERGREEN TREES:

<u>Botanic Name</u>	<u>Common Name</u>	<u>Comments</u>
Cedrus atlantica glauca	Atlas Blue Cedar	
Ilex opaca cultivars	American Holly	
Juniperus virginiana	Red Cedar	
Picea spp.	Omoriko Spruce	
Pinus spp.	Black & White Pine	
Pseudotsuga menziesii	Douglas Fir	
Thuja spp.	Arborvitae	
Tsuga canadensis	Canadian Hemlock	

F. SHRUBS (All shrubs located >2'-6" from building):

<u>Botanic Name</u>	<u>Common Name</u>	<u>Comments</u>
Abelia grandiflora	Glossy Abelia	
Azalea spp.	Azalea (in variety)	In protected areas
Clethra alnifolia	Summersweet	
Cornus alba cultivars	Siberian Dogwood	
Cornus stolonifera	Red-Osier Dogwood	
Cotoneaster spp.	Cotoneaster (in variety)	
Ilex cornuta rotunda	Dwarf Chinese Holly	
Ilex cornuta helleri	Dwarf Japanese Holly	
Ilex spp. (excl. above)	Holly (in variety)	
Jasminum nudiflorum	Spreading or Dwarf Junipers	
(conferta, horizontalis, var.)	(in variety)	
Juniperus spp. (excl. above)	Junipers (in variety)	
Mahonia bealei	Leatherleaf Mahonia	
Myrica cerifera	Southern Bayberry	
Myrica pensylvanica	Northern Bayberry	
Prunus laurocerasus schipkaensis	Cherry Laurel	
Rhododendron spp.	Rhododendron	Protected areas only
Taxus spp.	Yew (in variety)	
Viburnum spp.	Viburnum (in variety, use natives)	

4.5 Plants Not Recommended For Use On School Grounds

A. TREES (by common name)

Boxelder	Chinese Elm
Norway Maple	Fringetree
Sycamore Maple	English Holly
Silver Maple	Japanese Snowbell
Tree of Heaven	Sourwood
Mimosa, Silk Tree	Goldenchain Tree
Paper Birch	Mongolian Linden
European White Birch	Hardy Rubber Tree
Female Ginkgo	Yellowwood
Thorny Honeylocust	Katsura Tree
Osage Orange	Groenveldt Elm
Mulberry	Baldeypress
Popular	Japanese Pagoda Tree
White Oak	Black Gum
Mountain Ash	Dawn Redwood
Black Walnut	Kentucky Coffee Tree
Black Cherry	Male Ginlego
American Elm (cultivars ok)	Blue Ash
Siberian Elm	Autumn Purple White A
American Beech	European Beech

B. SHRUBS (by Common name)

Mountain Laurel	Lilac
Leucothoe	Weigela
Fragrant Honeysuckle	Firethorn (Pyracantha)
Oregon Grape Holly	
Japanese Andromeda	

4.6 Poisonous Plants Not Allowed On School Grounds

*Nightshade	Berries
Oleander	Leaves
*Peach Tree (when steamed as tea)	Leaves
*Pimpernel	Any Part
Pinks	Seeds
Poinsettia	Leaves
*Poison Hemlock	All Parts
Pokeweed	Berries
*Potato	Seeds, Sprouts
*Nightshade	Berries
Oleander	Leaves
*Peach Tree (when steamed as tea)	Leaves
*Pimpernel	Any Part
Pinks	Seeds
Poinsettia	Leaves
*Poison Hemlock	All Parts
Pokeweed	Berries
*Potato	Seeds, Sprouts
Red Elderberry	Scarlet
* Rhododendron	Any Part
*Scotch Broom	Seed
Skimmia (Skimmia Japonica thumb)	Entire Plant
*Spanish Bayonet	Seeds, sprouts
Scarlet berry	Any part
Spider Lily	Bulb
Sweet Peas	Seed and stem

Tomato	Leaves
*Tulip	Bulb
*Water Hemlock	Roots
*Yellow Jessamine	Nectar and Blossom
Zinnia	Leaves

Note: Plants indicated in bold lettering and marked with an asterisk (*) can be fatal if consumed in sufficient quantities

4.7 Planting Seasons and Acceptance Date:

A. Elementary, Middle, and High Schools Opening in September

1. Deciduous trees and shrubs and plants.
 - a. March 1 - May 15 (Beyond 50' from building)
 - b. July 15- August 15 (Within 50' of building)
 - c. September 1 (\pm) Acceptance and beginning of one year guarantee and maintenance.

2. Evergreen trees and shrubs
 - a. March 15 - May 15 (Beyond 50' from building)
 - b. Same as 1b above.
 - c. Same as 1c above.

3. Lawns and Sod
 - a. Elementary School (opening in September)
 - 1) March 15 - May 15 (Playfields and beyond 25' from building. Areas not seeded by May 15 shall be sodded and must be irrigated)
 - 2) Aug 1 – Sept 1 (within 25' +/- of the building – Sod Only)

 - b. Middle School (opening in September)
 - 1) August 12 – October 15 Year prior to opening (Playfields and beyond 25' from building. Areas not seeded by May 15 shall be sodded and must be irrigated)
 - 2) August 1 – Sept 1 Year of opening (within 25' +/- of the building – Sod Only)

 - c. High Schools (2-year construction – opening in September)
 - 1) March 1 - May 15 (16 mos \pm prior to opening). (Playfields, football field, and beyond 50' from building).
 - 2) Aug 1 - Sept 1 Year of opening (within 50' (\pm) from building (Sod only)

 - d. Adjustments to the above planting periods may be considered if approved by the Architect/ Owner.

B. All Schools Opening Other Than September:

1. Deciduous trees and shrubs and plants
 - a. March 1 - May 15 or October 1 - December 2
 - b) (Planting to be in the period preceding opening date)

2. Evergreen trees, shrubs and plants
 - a. March 15 - May 15 or September 1 to November 15 (Planting to be in the period preceding the opening date)
 - b. One year guarantee and maintenance period to commence when work is accepted which would be approximately the date the school is occupied.

3. Adjustments to the planting periods may be considered if approved by the architect for particular areas around the building.

4.8 Seed and Sod

A. Limits of Seed and Sod

1. Sod all swales
2. Sod all slopes 4:1 or steeper (Base Bid)
3. Vegetated slopes steeper than 3:1 are prohibited.
4. Sod grass areas 25' +/- from the building or extend sod to a physical limit such as a sidewalk, driveway, curb, or other paved area. (Base Bid)
5. Hydro-seed all play fields and grassed areas beyond the sodded area around the building. Show limits of sod on the construction drawings.

B. Seeding and Sodding Planting Schedules

1. Elementary School (opening in September)
 - a. March 15 - May 15 (Playfields and beyond 25' from building. Areas not seeded by May 15 shall be sodded and must be irrigated)
 - b. Aug 1 – Sept 1 (within 25' +/- of the building – Sod Only)

2. Middle School (opening in September)
 - a. August 12 – October 15 Year prior to opening (Playfields and beyond 25' from building. Areas not seeded by May 15 shall be sodded and must be irrigated)
 - b. August 1 – Sept 1 Year of opening (within 25' +/- of the building – Sod Only)

3. High Schools (2-year construction – opening in September)
 - a. March 1 - May 15 (16 mos \pm prior to opening). (Playfields, football field, and beyond 50' from building).
 - b. Aug 1 - Sept 1 Year of opening (within 50' (\pm) from building (Sod only)

4. Adjustments to the above planting periods may be considered if approved by the Architect/ Owner.
- C.** Acceptance Date - All Schools:
1. September 1 (\pm) or on or about the date students occupy the building. Contractor shall submit request for inspection at least 10 days prior to anticipated date of acceptance. The architect in writing will notify the contractor when approved and accepted. Date of this notice establishes the beginning date of the one year guarantee and maintenance agreement.

4.9 Termite/Pest Control

- A.** The Maryland Department of Agriculture COMAR regulation 15.05.02 does not allow any treatment, chemical or otherwise for termite or other pest control to be applied on any school property. Such treatments are NOT to be incorporated into any designs or specifications for MCPS projects.

4.10 Permanent Fences and Gates

- A.** General: Subject to compliance with requirements, give preference to materials and products and primary raw materials extracted/recovered within a 500-mile radius of the project site.
- B.** Chain Link Fences and Gates: When used on MCPS property, chainlink fences and gates shall be designed to be installed according to the manufacturer's printed instruction and to conform to the following:
1. Coating color shall be black
 2. Provide continuous bottom rails at tennis court locations only
 3. Provide bottom tension wire at all locations with PVC coating
 4. Provide hinges per manufacturer's specifications.
 5. Provide butterfly-type latches
 6. Locations of gates from adjacent properties shall be determined by the Division of Construction and the school administrators.
 7. Heights:
 - a. Fencing around playgrounds shall be 6'-0" high.
 - b. Fencing around tennis courts shall be 10'-0" high.
 - c. Stadium closure fencing shall be 8'-0" high.
 - d. Kindergarten play areas and bleacher crowd control shall be 4'-0" high.
 - e. Separation from the track and bleachers shall be 3'-4" high fence and extend from 30 yard line to 30 yard line.
 8. Acceptable Manufacturers:
 - a. Anchor Fencing, Inc.

- b. SoncoFence
- c. P&H Tube Division/ Southwestern Pipe
- d. Allied Tube and Conduit Corporation
- e. Installation shall be per chain link fencing manufacturers standards (CLFMI)

4.11 Softball and Baseball Backstops:

- A. Wire mesh shall be 6 gauge.
- B. Provide 16" wide concrete mowing strips.
- C. Refer to Project Educational Specification for quantity.
- D. Backstops: BSN - #PBS3105X w/#6 gauge area mesh.
- E. Discus Cage: #2131A (Fixed) or #2131 (Movable)
- F. Batting Cage Nets:
 - 1. Baseball - 70' x 14' wide x 12' high
 - 2. Jugs Batting Cage #1 with #4000 Twine Net
 - 3. Softball - 55' x 14' wide x 12' high
 - 4. Jugs Batting Cage #2 w/#4000 Twine Net

4.12 Bike Racks:

- A. Litchfield Model 9500, 10'
- B. For bike racks at playground and athletic fields provide bench bike rack combination.

4.13 Basketball Backstops:

- A. Refer to Physical Education Department requirements for size and model numbers. All backstops shall have safety pin in post to prevent backstop slippage.

4.14 Goals:

- A. Field Hockey - 7' x 12' x 14' w/bottom board, 4 wheels and net.
 - 1. Dita USA #701
 - 2. KWIK Goal Ltd. #FH4000
- B. Practice Field Hockey - 7' x 12' x 4' w/net but w/o board and wheels.
- C. Soccer - 8' H x 24" W x 3' D x 8' B w/net.
 - 1. KWIK Goal Ltd. #0050
- D. Soccer/Football combination w/soccer net.
 - 1. Jaypro #FBSC-200
- E. Portable lacrosse Goals w/nets and straps (NIC)
 - 1. Jaypro#LG-20
 - 2. (Show locations for Contractor information)

4.15 Bleachers/Benches:

A. Softball/Baseball Field:

1. Portable unit 21'-0" wide - 10 rows high, aluminum seat and footboards with guard railing by Southern Bleacher Cop., Stadium Unlimited.

B. Field Hockey:

1. Portable 15'-0" wide x 3 rows high with aluminum seat and footboards by Souther Bleacher Co., Stadiums Unlimited, Fritz Sports Corp.

C. Benches:

1. 1 - 15' aluminum with back (permanently installed at tennis courts).
2. Players benches - aluminum 15' and portable.

4.16 Tennis Nets:

- A.** Woven metal by Flex-I-Link Co.

4.17 Bollards:

- A.** Bollards and guard rails may be used to keep vehicular traffic off of play fields.
- B.** No wood bollards.
- C.** Bollards should be no less than 6" diameter steel pipe filled with concrete. The concrete fill should be slightly raised above the top of the pipe and shall be rounded to facilitate water run-off.
- D.** Planting of trees may be considered for control, but smaller trees need intermediate protection.
- E.** Barriers shall not be less than 2'-0" in height.

4.18 Mulch Play Areas:

- A.** Mulched play areas
1. 6x8 non-CCA pressure treated (see acceptable alternatives below) timber on edge with #6 rebar min. 24" long stakes at 24" on center. Lap vertical joints and corners with a shiplap joint with stake through center. Smooth all rough edges.
- B.** Provide underground drainage system as part of the general contract.
- C.** Locate in spaces that drain naturally without ponding or eroding and out of the areas designated for future additions and temporary classrooms.
- D.** Grade the site of the playground at the location and configuration shown on the approved construction drawings.

- E. Grade soft play areas to allow for an 8" minimum depth and 2% drainage slope on the bottom of the excavation.. Grade area such that the final slope across the play surface does not exceed 1%.
- F. The grading and installation of the underdrain system shall be per the details on the approved plans.
- G. There are to be no storm drains, sanitary or any other utility access features anywhere within the designated soft play areas including the final borders.

4.19 Playground Equipment:

- A. All playground equipment is provided under a separate contract by MCPS specialty contractors and is not to be included in the contractor's bid. Refer to MCPS standard Soft-Surface (Mulched) Plat Area details for scope of contractor's work to be included.
- B. Plastic components shall contain a minimum of 90% post-consumer recycled-content material.
- C. Pressure treatment of wood components shall use one of the following approved systems products (CCA pressure treatment is prohibited):
 1. Chemical Specialties "ACQ Preserve"
 2. Arch Treatment Technologies "Wolmanized Natural Select Wood"
 3. Osmose Wood Preserving "NatureWood"

PART - SUBSURFACE/GEOTECHNICAL EXPLORATION

5.1 Scope

- A. The Architect/Engineer (A/E) and/or Geotechnical Engineer shall obtain and provide all exploratory geotechnical evaluation information required to prepare complete and correct designs and documents for the construction of the project. The scope of services required to achieve this shall be determined by the A/E and/or Geotechnical Engineer.
- B. The scope of investigation and testing shall be based on information furnished by the Owner and/or A/E, and by the existing site conditions. The Geotechnical Engineer is encouraged to visit the site prior to preparation of a proposal to determine site conditions and site accessibility constraints and to identify any obvious or suspected conditions that could preclude the development and/or construction of an educational or related facility on the subject property.
- C. The A/E and/or MCPS shall prepare and provide a site plan with boring and test locations and requested depths shown. If such a site plan is provided, it shall be used as a guide only to define the minimum number and depth of borings anticipated. The Geotechnical Engineer is responsible for adjusting the locations, depths and number of borings as required for providing a professional interpretation of the subsoil conditions.

- D. The scheduling of the geotechnical investigations shall be coordinated with both MCPS Division of Construction and the school principal to not interfere or interrupt scheduled school activities. It should be anticipated that the performance of this work may require weekday late afternoon and/or weekend activity.
- E. The following are minimum services required as part of the geotechnical evaluation of the proposed site. Analyses shall be adequate to render clear and knowledgeable information about the sub-surface conditions at the proposed site. Recommendations for amendments to the following services and/or for additional services above and beyond those listed below may be included by the Geotechnical Engineer if, in that engineer's professional judgment, they are required and/or are more appropriate to complete such the required evaluation.

5.2 **General Service Requirements**

- A. Provide geotechnical engineering services as follows:
 1. Review and evaluate boring and laboratory test data.
 2. Liaison with project designers.
 3. Preparation of a geotechnical evaluation report.
 4. Document exploration and test procedures.
 5. Review sub-surface soil conditions and provide recommendations on the suitability of site soils for the proposed development.
 6. Review project specifications for excavating, filling, grading and asphaltic concrete pavements to include frequency and types of testing required.
 7. Perform design review of earthwork, foundation and pavement recommendations.
 8. Fill all boring holes to original grade at completion of boring operations.
 9. Open test holes are hazardous to humans and animals. No test pit or boring shall remain open longer than absolutely necessary to complete the tests. Test holes must be filled immediately after tests are completed. Open test holes must be adequately protected at all times.
 10. Coordinate the information obtained in the exploratory geotechnical evaluation for consistency and agreement with other work in the project designs, drawings and specifications.
- B. Perform laboratory tests to determine specific properties of soil materials extracted from the site and serve as a basis for recommendations on the constructability of existing conditions. Minimum laboratory tests are to included, but are not limited to, the following:
 1. General evaluation
 2. Gradation

3. Moisture content
4. Atterberg limits
5. Specific gravity
6. Compaction (ASTM D-698)
7. Infiltration capacities
8. Standard proctor

5.3 Obtaining Information

- A. Services required to obtain and to provide the required exploratory geotechnical evaluation information, including survey stakeout and/or location of test locations, shall be provided by an appropriately licensed Maryland professional engineer mutually acceptable to the A/E and MCPS.
- B. Additional subsurface investigations may be made by the Geotechnical Engineer at no increase to the contract sum.
- C. Obtain from the project architect/ engineer, proposed building data to include finish floor elevation, column loads and anticipated vehicular traffic.

5.4 Responsibility of Data

- A. MCPS and Architect will not be responsible for interpretations or assumptions drawn or made by the Contractor based on the subsurface exploration data furnished. The data is made available for the Contractor's convenience. Opinions expressed in the report are the interpretation of the geotechnical engineer based on analysis and tests conducted by his firm.

5.5 Site Accessibility and Conduct

- A. Obtain written authorization from the MCPS before proceeding with Sub-surface investigations.
- B. Verify the locations of existing utilities prior to any field work. Contact Miss Utility as required by law, the Owner and all utility companies for record information and field-marking of buried utilities and structures. Take precautions required to prevent damage to person and/or property, both concealed and visible. Restore the site to the conditions existing prior to entry.
- C. Prior to entering upon any school property proceed directly to and check in with the School's main office. If for any reason entry upon the school property is denied, leave the property in a courteous manner and immediately notify the MCPS Project Manager.
- D. Obtain the consent of MCPS AND the private property OWNER the before entering upon any properties not owned by the Montgomery County Public Schools Board of Education. If for any reason entry upon such property is denied, leave the property and immediately notify the MCPS Division of Construction.
- E. Obtain the consent of MCPS before clearing any brush or natural under-story, removing, marking or marring any trees or shrubs, digging or causing any land disturbance or disturbance on or to improvements on MCPS property.

- F. Under no circumstances shall the A/E clear brush or natural under-story, remove, mark or mar any trees, dig or cause any land disturbance or disturbance on or to improvements and/or properties not owned by, Montgomery County Public Schools Board of Education.
- G. The A/E is responsible for providing, implementing and maintaining all measures required to ensure the health, safety and welfare of students, staff, and the general public as well as the A/E's own equipment and personnel.
- H. If asked to leave school property, do so courteously, and then contact the MCPS-DOC project manager.
- I. Test holes and/or boring holes are to be backfilled prior to leaving the site.

5.6 Project/Site Specific Information

A. PROPOSED STRUCTURAL SYSTEM - The following is a general description of the proposed structural system. If no description is provided below, contact the A/E and/or MCPS for that information.

Description:

B. ESTIMATED WORKING LOADS – The following are estimated working loads. If none are provided below, contact the A/E and the A/E will furnish the estimated working loads and other structural information as it becomes available.

Type	Load
Typical column service load	kips
Maximum column service load	kips
Wall line-load	kips/ft

5.7 Investigation and Testing

- A. Drilling, sampling and testing shall be performed in accordance with the most current applicable ASTM Standards.
- B. Conduct Sub-surface geotechnical exploration by drilling bore holes to appropriate depths and at a frequency as outlined on the attached drawings and requirements prepared by the project architect/ engineer and as included herein to evaluate the adequacy of sub-surface soil conditions for purposes described in the RFP.
- C. Borings are to be taken a minimum depth of 20'-0" below the proposed lowest floor line and a minimum of 20'-0" into virgin soil. The boring depth required must be sufficient to explore the zones that will be significantly stressed by the load of the new structure and the load of any new fill that may be place on site. If adequate bearing can be established within this region stressed, the borings may terminate at this depth. If compressible soils are found at this depth and adequate bearing is not

available, it may be necessary to extend the boring deeper to define the required length of deep foundations or to examine the soils that will be stressed beneath the foundations.

- D.** Identify if soil conditions require the use of monitoring wells to determine the groundwater table and the seasonal variation in groundwater.
- E.** If rock is encountered, core or drill to sufficient depths to evaluate quality and consistency of rock.
- F.** Provide all labor and materials for the performance of the test pits shown adjacent to existing buildings and structures. Determine the size and depth of the existing footing and the strength and consistency of the soils below the footing.
- G.** Identify the influence of adjacent buildings, other structures, utilities and streets on the proposed project foundation and its construction.
- H.** Identify the influence of the proposed project foundation and its construction on adjacent buildings, other structures, utilities and streets.
- I.** If in the Geotechnical Engineer's judgment, the encountered soil and conditions require additional drilling and/or sampling, contact MCPS and the A/E prior to demobilizing from the site.
- J.** Samples of the strata encountered shall be taken at a minimum of each change in stratum and not over 5'-0" intervals. Continuous sampling should be taken if there is any question of soil type, condition, etc.
- K.** All samples shall be taken with a 2" O.D. spoon driven by a 140 pound weight falling 30". Alternatively, the use of the Cone Penetration Test with pore pressure measurements (CPTU) in lieu of standard penetration testing will be acceptable. The CPTU testing shall be performed per requirements of ASTM D-3441.
- L.** Identify if soil conditions require the use of monitoring wells to determine the groundwater table and the seasonal variation on groundwater.
- M.** If the structure is to be on structural fill, samples and tests are to be performed of site samples to evaluate their suitability as controlled fill.
- N.** If necessary for the final analysis, Shelby tube or split barrel samples are to be retained for possible testing. If necessary, liquid and plastic limits shall also be furnished.
- O.** Percolation test: (percolation tests are only required to verify that water will infiltrate in the in-place soils. A percolation test is not required if the USDA soil classification, bedrock, or groundwater makes infiltration in feasible).
- P.** Percolation tests shall be conducted based on Maryland Department of the Environment Requirements.
- Q.** Other geotechnical analysis and recommendations as may be required by the Architect and Engineer to prepare complete design documents for the construction of the project.

5.8 Geotechnical Report

A. The investigation and report, and all copies provided, shall be completed, signed and sealed by a Geotechnical Engineer, registered in the State of Maryland, certifying that all data contained therein is correct and represents the nominal conditions at the location at which tests were conducted.

B. The report shall be provided to the Owner in 8.5x11 inch format as follows:

- 1 copy – unbound
- 5 copies – GBC bound
- 1 electronic copy – digital format, all text and graphics (PDF file format) compatible with Adobe™ Acrobat Reader 3.0 or higher.
- 1 electronic copy in Microsoft Word

C. The minimum requirements for the Geotechnical Report are as follows:

BORING AND TEST LOCATION SITE PLAN – Prepare and provide a site-specific, drawn-to-scale, Boring and Test Location Site Plan including, but not limited to the following information:

1. Project Name and Contract Identification
2. North Arrow, Graphic (Bar) Scale
3. Legend of Boring and Test Locations
4. Boring and Test Locations and ground surface elevations located dimensionally and referenced to a known horizontal and vertical benchmark on the same datum as the site plan.
 - **Boring Locations** (label consecutively starting with **B-1**)
 - **Test Pit Locations** (label consecutively starting with **TP-1**)
 - **Stormwater Infiltration Tests** (label consecutively starting with **SWM-1**)
 - **California Bearing Ratio Tests** (label consecutively starting with **CBR-1**)
 - **Soil Sample Locations** (number consecutively starting with **S-1**)
 - **Other site-specific tests** (include additional label numbered consecutively in legend)

REPORT - Prepare and provide a site-specific, analysis, narrative and design recommendations including, but not limited to the following information:

1. An Executive Summary with the project findings and recommendations.
2. A general description of the site including existing grades and the regional geological history.
3. A description of the proposed project including the building loadings and construction type, if known.
4. A description of the subsurface soil conditions including the ground water depth and conditions.

5. Identify if the onsite soils can be reused as structural backfill under the building. List acceptable and unacceptable backfill soil materials.
6. Surface drainage conditions.
7. Groundwater depth and conditions.
8. Suitability of soils infiltration based on test results.
9. Bedrock depth and conditions.
10. Horizon description.
11. Description of exploration and sampling methods.
12. Narrative of soil identification and classification (USDA and Unified Soil Classification).
13. Narrative of difficulties and/or obstruction encountered during exploration.
14. The Site Class Definition per table 1613.5.2 of the 2006 International Building Code.
15. Recommendations for site preparation, earthwork, foundations, utility trenches, and pavement design based on anticipated traffic loading. Discuss alternate solutions, if applicable.
16. Allowable soil bearing pressure values per unit of area.
17. Feasibility of slab on grade versus supported ground floor construction.
18. Use and treatment of in situ materials for controlled fill.
19. Discussion of expansive surface materials and recommended solution(s).
20. Design frost depth.
21. Removal, or treatment and disposal of objectionable material.
22. Controlled fill placement and compaction requirements.
23. Discussion of potential consolidation and/or differential settlements of substrata encountered.
24. Discussion of potential rock removal problems; assistance with specifications.
25. The foundation types that were considered for the project and the design capacities (e.g. bearing, side friction, uplift resistance, etc.) for the recommended foundation.
26. Magnitude of anticipated total and differential settlements for the recommended foundation type.

27. Design considerations for piles, caissons, mat footings or any other special foundation.
28. Slab on grade design recommendations including modulus of subgrade reaction.
29. Seismic recommendations, including seismic site class, spectral response accelerations at short period and 1-second period (S_s and S₁).
30. Lateral earth design pressures to be used behind basement and retaining walls.
31. Construction considerations including subgrade preparation, reuse of existing materials, rock excavation, groundwater effects, compaction and testing requirements, minimum footing depths and sizes, and other information necessary to construct the project.
32. Laboratory test results.
33. Logs or each boring or test pit, drawn to scale and including:
 - Project name and contract identification.
 - Test hole or pit number.
 - Name of driller and/or foreman in charge of field operation.
 - Surface elevation referenced to a known benchmark.
 - Elevation, thickness, description and classification of each soil stratum.
34. Location of soils samples taken with:
 - Sample number
 - Sampling method/ tool use
35. Other pertinent data deemed necessary by the Geotechnical Engineer for design recommendations such as, but not limited to:
 - Natural moisture content
 - Standard penetration values
 - Undefined compressive strength
 - Atterberg tests
 - Compaction tests
 - Consolidation tests
 - Location of water table.
 - Presence and location of rock (indicate soundness).
 - Location of sub-surface obstructions.
36. MCPS reserves the right to request revisions to the report when inconsistencies, errors or omissions are identified.

PART 6 - minimum BOUNDARY/TOPOGRAPHIC Survey requirements

6.1 General Requirements: The following general requirements are applicable to all surveys performed for the Montgomery County Public Schools Division of Construction (MCPS):

- A. Prior to initiating the survey, the successful field survey firm shall meet with the MCPS Division of Construction (MCPS).
- B. Unless otherwise directed in writing by MCPS, a full boundary and topographic survey is required for all MCPS projects. If MCPS determines that a field-run Boundary Survey is not required in conjunction with the topographic survey, property lines are to be plotted on the topographic survey from existing record documents and oriented for a best-fit relationship using any existing property corner monuments found during the survey.
- C. Field run topographic surveys are required. However, aerial mapping may be permitted, but only if authorized in writing by MCPS and, where necessary, supplemented by field-run surveys.
- D. MCPS will provide copies of known title abstracts and of available record records, easements, rights-of-way and other available information for the property(ies) to be surveyed.
- E. MCPS may or may not provide a current Title Report for the subject property(ies). In the event that a Title Report is not provided by MCPS, obtain and provide to MCPS, perform a title report, complete with legible copies of all easements, deeds, covenants, restrictions, rights-of-way, plats and surveys affecting the subject property used in the preparation of the boundary survey.
- F. Where by virtue of their nature of size or instrument, such easements, deeds, covenants, restrictions, rights-of-way, plats and surveys can not be graphically shown on the survey, they shall be noted in Title Notes shown on the survey describing, in detail, how they affect the subject property.
- G. Under no circumstances shall markers such as stakes, hubs, iron pins, rebar be used in or around any athletic fields, play areas that are to remain available for school or public use. Where used, such marker shall be driven so that they are fully-below grade so as not to interfere with lawn maintenance or pose a trip hazard or other danger.

6.2 Site Accessibility and Conduct

- A. Obtain written authorization from the MCPS before proceeding with Sub-surface investigations.
- B. Verify the locations of existing utilities prior to any field work. Contact Miss Utility as required by law, the Owner and all utility companies for record information and field-marking of buried utilities and structures. Take precautions required to prevent damage to person and/or property, both concealed and visible. Restore the site to the conditions existing prior to entry.
- C. Prior to entering upon any school property proceed directly to and check in with the School's main office. If for any reason entry upon the school property is denied, I

leave the property in a courteous manner and immediately notify the MCPS Project Manager.

- D. Obtain the consent of MCPS AND any private property OWNER before entering upon any properties not owned by the Montgomery County Public Schools Board of Education. If for any reason entry upon such property is denied, leave the property in a courteous manner and immediately notify the MCPS Division of Construction.
- E. Obtain the consent of MCPS before clearing any brush or natural under-story, removing, marking or marring any trees or shrubs, digging or causing any land disturbance or disturbance on or to improvements on MCPS property.
- F. Under no circumstances shall the A/E clear brush or natural under-story, remove, mark or mar any trees, dig or cause any land disturbance or disturbance on or to improvements and/or properties not owned by, Montgomery County Public Schools Board of Education.
- G. The A/E is responsible for providing, implementing and maintaining all measures required to ensure the health, safety and welfare of students, staff, and the general public as well as the A/E's own equipment and personnel.

6.3 Field-Run Topographic Survey:

- A. Establish a first-order, closed-loop survey control traverse in Maryland State Plane NAD 83 horizontal coordinates and NGVD 29 vertical datum. Under no circumstances shall an assumed vertical datum be used in the development of a topographic survey for MCPS-DOC.
- B. Prepare and provide two (2) copies of the topographic survey in hard-copy, stamped and signed (original stamp and signature required) by a Maryland licensed surveyor, and electronically on CD in AutoCAD release 2000 and Adobe PDF formats. The survey is to be provided three-dimensionally with X, Y and Z coordinates so that Z-coordinates can be used for grading and earthwork computations.
- C. Establish, and provide descriptions and coordinates for three (3) permanent Benchmarks/ Horizontal Control Points for maintaining both horizontal and vertical control during construction. Provide location and ties for each. Points to be located outside of the Limit of disturbance and in a location so as not to be disturbed during construction. One (1) of these benchmarks is to be located off property.
- D. Survey shall extend a minimum distance of 100 feet beyond all side and rear property lines, to the far sides of all adjacent road, street, and/or alley rights-of-way.
- E. Provide footprints and approximate locations from property lines of buildings on properties directly abutting the school property. Show and describe all encroachments (fences, walls etc.). The use of MNCPPC 200-Scale mapping, aerial photography or GIS mapping is acceptable provided that all building structures are shown.
- F. Provide 2-foot contours, (or 1 foot) intervals where grades are flat and tighter contour intervals are required, to define drainage patterns.

- G.** Locate all existing structures on the subject property and provide dimensions of each.
- H.** Provide elevations of each interior floor level of all habitable buildings.
- I.** Provide spot elevations at all building corners each exterior door, in and around window wells and areaways. Show locations of site electrical transformers, junction boxes, hand-holes and the like.
- J.** If a subsurface utility survey is not required by MCPS, coordinate directly with utility companies and the MCPS-DOC to obtain most current records and drawings for utilities in, around and along the subject property. Using that information, plot existing utilities on topographic survey and verify that information to the extent visibly possible in the field without subsurface exploration or electronic detection. Show above and below-ground utilities within twenty-five (25') feet of the property lines and within the total width of all abutting public rights-of-way. Show the size, depth and pressure, where appropriate, for all utilities. Where the size, depth and pressure are not available note as such on the survey.
- K.** Locate and identify surface features including but not limited to curb and gutter (including material type), sidewalks, pavement types, curb cuts, handicap ramps, utility poles, manholes, trees, shrubs, fencing, building faces, benches, fire hydrants, designated fire lanes water/gas valves/meters, street lights, storm drain inlets (size and type) traffic islands, vaults, bus stops, signs, etc. fences and retaining walls, wall heights and materials.
- L.** If fire hydrants are not available within the immediate vicinity of the property, show the nearest hydrants on the vicinity map that has been made part of the survey drawings.
- M.** Provide top and bottom of curb elevations at 50' intervals and at all grade breaks and points of curvature and tangency.
- N.** Show all existing on and off-site pavement markings, signage, street and traffic signals, flagpoles, play equipment and parking lot striping.
- O.** Locate and identify existing utility poles and their guys, including underground conduit and overhead wires. Provide Utility Pole numbers where available.
- P.** Provide top and bottom of curb elevations, tops of utility structures, stairs and entrances to buildings to the nearest one-hundredth of a foot.
- Q.** Document type, sizes, materials, inverts and top elevations of all utility piping systems.
- R.** Obtain top and invert elevations, grate and structure sizes for all storm drain and sanitary sewer structures including manholes, inlets, catch basins, trench drains.
- S.** Extend storm drain survey downgrade from the site as required to design outfalls and demonstrate suitable discharge characteristics.
- T.** Locate and define existing drainage features including man-made and natural drainage ways.

- U.** Provide bearings and distances, parcel/lot identifications to include deed book and page for the site and adjacent properties.
- V.** Provide a complete list of all adjoining property owners and their current addresses. Additionally show all adjoining, abutting and confronting properties, property lines and deed/record information.
- W.** Field-verify and document tree canopy overhang lines. Locate and identify, by type and caliper, individual trees 6" or larger in diameter. Locate trees of smaller calipers if required by other local, state and federal laws, rules and regulations. This information to be provided as a separate drawing layer on the topographic survey.
- X.** Show all existing driveways and streets that are adjacent to or confronting the site.
- Y.** Show locations and provide tabulation of existing parking spaces. Identify all standard and van accessible handicap spaces.
- Z.** Provide area of property in both Acres and Square Feet.
- AA.** Show flood zone designation with 100 year from acceptable federal, state and/or local governmental plans or mapping. State the source of designation on the survey.
- BB.** Show all building restriction lines around the entire MCPS property
Show all Montgomery County Master-Plan rights-of-way and associated building restriction lines.
- CC.** Extend topographic surveys as required and provide sufficient detail and information to define existing vehicular sight distance(s).
- DD.** Show the locations of all springs, streams, bodies of water, spillways, ditched, dams, embankments and other similar features. Provide water surface elevations, tops and inverts of swales and ditches.
- EE.** Show existing soils boundaries and types as plotted from the most current Montgomery County, Maryland Soil Survey and all subsequent updates.
- FF.** Provide topographic survey on 30" x 42" drawing media at a scale of 1"=30'. If multiple sheets are required, provide accurate Match Lines and a Drawing Key Plan on each sheet.
- GG.** If multiple sheets are required to show the survey, each sheet will be signed and sealed by the surveyor.
- HH.** All existing contours are to be shown as dashed lines with every fifth or index contour being a bolder line type.
- II.** All lettering must be of 1/8" minimum height and must be slanted sufficiently enough as to make it readily and easily discernable from vertical lettering.

6.4 Boundary Survey:

- A. Conduct and prepare a boundary survey in compliance these MCPS Standards and with the most current applicable federal, state and local laws and regulations governing property/boundary surveys.
- B. Establish a first-order, closed-loop survey control traverse in Maryland State Plane NAD 83 horizontal coordinates and NGVD 29 vertical datum.
- C. Prepare and provide two (2) copies of the boundary survey in hard-copy, stamped and signed (original stamp and signature) by a Maryland licensed surveyor, and in AutoCAD format and electronically on CD in AutoCAD release 2000 and Adobe PDF formats. The survey is to be provided three-dimensionally with X, Y and Z coordinates for incorporation into a Topographic Survey.
- D. Conduct all property research as required to complete the Boundary Survey. (See Item D, Title Report below)
- E. Show all existing easements and rights-of-way lines on the Survey.
- F. Show all prescribed environmental buffers and easements and associated buffers/setbacks.
- G. Provide a complete list of all adjoining property owners and their current addresses. Additionally show all adjoining, abutting and confronting properties, property lines and deed/record information.
- H. Provide area of property in both Acres and Square Feet.
- I. Stake all property corners by iron pipe and cap in Datum referenced in Item B.2 above. Provide coordinate values at all corners.
- J. Show partial property lines and provide names, addresses and property ownership information for all adjoining and confronting properties.
- K. Show and describe encroachments, and if not possible to show on the survey, show as part of the surveyor's certification. Provide accurate dimensions of all encroachments.
- L. Show the names of all adjacent streets and subdivisions.
- M. All lettering used to describe existing features, contours etc. must be of 1/8" minimum height and must be slanted sufficiently enough as to make it readily and easily discernable from vertical lettering.

6.5 Record Plat/Property Plat:

- A. A Record Plat may or may not be required by MCPS-DOC. If a Record Plat is required provide the following
 - 1. All services required for the preparation and approval of a Final Record Plat, including but not limited to preparation of applications for review, submittals and addressing agency comments.
 - 2. Record Plat prepared in accordance with all applicable federal, state and local laws and regulations governing the preparation of Record Plats.
 - 3. Recording of Record Plats will be performed by MCPS.

6.6 Future Easements/Rights-of-Way Etc., Plats of Abandonment:

- A. Future easements, rights-of-way and Plats of Abandonment may or may not be required. If required, prepare and provide all required documentation including sketches, plats and the like along with a written metes and bounds description for each document. All work shall be performed in accordance with all applicable federal, state and local laws and regulations governing the preparation of such documents.
- B. Recording of Easements/Rights-of-Way Etc. documents will be performed by MCPS.

PART 7 - LEED COMPLIANCE AND SUSTAINABLE SITE DESIGN

- 7.1 **Design Requirements** - MCPS school site construction projects shall be designed to meet the LEED Pre-requisites and Credits set forth in the United States Green Building Council publication "LEED for Schools for New Construction and Major Renovations", approved 2007 Version, Dated April 200 and any subsequent revisions, amendments, and/or supplements thereto. These site pre-requisites and credits include:

Sustainable Sites:

Prerequisite 1: Construction Activity Pollution Prevention

Prerequisite 2: Environmental Site Assessment

Credit 1: Site Selection, if applicable

Credit 2: Development Density & Community Connectivity, if applicable

Credit 4.1: Public Transportation Access, if applicable

Credit 4.2: Bicycle Storage & Changing Rooms

Credit 4.3: Low-Emitting & Fuel Efficient Vehicles

Credit 4.4: Alternative Transportation, Parking Capacity, if applicable

Credit 5.1 Reduced Site Disturbance, Protect or Restore Open Space, if applicable

Credit 5.2 Reduced Site Disturbance, Maximize Open Space, if applicable

Credit 6.1 Stormwater Management, Quantity Control, if applicable

Credit 6.2: Stormwater Management, Quality Control

Credit 7.1: Heat Island Reduction, Non-roof

Credit 7.2 Heat Island Reduction, Roof

Credit 8: Light Pollution Reduction

Credit 9: Site Master Plan

Credit 10: Joint Use of Facilities

Water Efficiency:

Credit 1.1: Water Efficient Landscaping, Reduce by 50%

Credit 1.2: Water Efficient Landscaping, No potable Use or No Irrigation

Credit 2: Innovative Wastewater Technologies

PART 8 – DEMOLITION

8.1 Scope

- A. Design of and preparation of demolition plans and specifications directing the contractor requiring the contractor to obtain all required permits and to comply with all codes and standards in this section of the MCPS Design Guidelines.
- B. Obtain all approvals required for release of permits required for general and selective site demolition. Fees, if required, will be paid by MCPS

8.2 A/E Consultant Responsibilities

- A. Review MCPS record drawings and building plans to obtain additional site feature and utility information.
- B. Meet with utility companies and determine demolition and/or abandonment requirements including, but not limited to the following:
 - Service disconnect requirements, procedures and fees, if any.
 - Items, if any, that when removed must be returned to the utility company
 - Requirements and conditions for, and/or prohibitions of, temporary utility service outages.
 - Requirements and costs for utility relocations such as hydrants, utility poles, overhead and underground utilities.
 - Obtain available details from utility companies for their preferred method of cutting, capping, bulkheading and such.
 - Meet with MCPS to determine what, if any site items are to be removed, salvaged, relocated, refurbished and/or reused.
- C. Clearly identify the extent, assumed sized and locations of site demolition on the drawings including, but not limited to:
 - Trees, shrubs and other vegetation, etc. Clearly identify all vegetation to be removed by type. Trees over 6-inches in diameter shall be individually identified for removal (forested areas are the exception).
 - Paving, curbs, concrete pads/slabs, concrete sidewalks, etc.
 - Retaining walls, screen walls, fences, gates etc.
 - Utilities including, but not limited to; gas, electric, telephone, water, sewer, storm drain and telecommunications.
 - Site improvements
 - Septic Tanks, leeching pits. Fuel oil tanks, water storage tanks, etc.
 - All items to be salvaged, relocated, refurbished and/or reused by MCPS shall be clearly identified for the contractor to allow for their removal prior to proceeding with other selective demolition
- D. If any mature trees need to be cut down, contact www.citilogs.com or other similar company for a proposal to use wood for millwork in the new school as a teaching aid and coordinate this effort with the MCPS project manager.
- E. Stumps: Specify the disposal of tree stumps by chipping or hauling from site at no cost to the Owner. Burying or burning of stumps will not be permitted.

PART 9 – EROSION AND SEDIMENT CONTROL

9.1 General Design Guidelines for Erosion and Sediment Control

- A.** Perform all required services and obtain all approvals and permits required in connection with sediment control.
- B.** Develop designs and sequence construction to keep sedimentation or mud from entering public ways, adjacent properties or storm drains in accordance with applicable codes. Designs must minimize site disturbance and protect structures, utilities, curbs, paving, and trees which are indicated to remain, and other facilities in areas of Work.
- C.** Design sediment control plans and specify devices specific to the project site and for all construction activities associated with the project that conform to the 2003 EPA Construction General Permit (CGP) OR local erosion and sedimentation control standards and codes, whichever is more stringent.
- D.** Incorporate sediment control measures that meet the following MCPS objectives:
 - 1. Prevent loss of soil during construction by stormwater runoff and/or wind erosion, including protecting topsoil by stockpiling for reuse.
 - 2. Prevent sedimentation of storm sewer or receiving streams.
 - 3. Prevent polluting the air with dust and particulate matter.
- E.** Whenever possible on green-field sites, limit site disturbance, including earthwork and clearing of vegetation to:
 - 1. 40-feet beyond the building perimeter
 - 2. 10-feet beyond surface walkways, patios, surface parking and utilities less than 12-inches in diameter
 - 3. 15-feet beyond primary roadway and driveway curbs, main utility branch trenches
 - 4. 25-feet beyond construction areas with permeable surfaces (such as pervious paving areas, stormwater detention facilities and playing fields) that require additional staging areas in order to limit compaction in the construction area.
- F.** Do not locate sediment control basins, traps or ponds in areas proposed for building construction.
- G.** Wash racks are to be included on all school and facility construction projects. Whenever possible wash racks and washdown areas are to drain directly to an approved sediment control device. Under no circumstances should washdown water discharge directly off site or to an existing public storm drain system.
- H.** Sediment traps and basins shall be surrounded with safety fence at all times.
- I.** Develop designs to divert clean upstream runoff around and away from the construction area.
- J.** Where inlet protection is specified, develop designs that ensure that in the event that the inlet protection fails, unfiltered water does not discharge directly to the public storm drain system.

- K. All sediment control plans must include the following note/statement in bold lettering adjacent to the required certification of quantities:

“Quantities shown hereon are for sediment control purposes only and are not to be used by the contractor as a basis of bid. It is solely the contractor’s responsibility to determine quantities for bidding purposes.”
- L. Protection of downstream adjacent properties, drainageways, environmental buffers and forests and streams is of paramount importance to MCPS. Develop designs and plans accordingly.

PART 10 – STORMWATER MANAGEMENT/STORM DRAINAGE

10.1 General Design Guidelines for Stormwater Management/Storm Drainage

- A. Prior to proceeding with any stormwater management design, arrange and attend a stormwater management pre-concept meeting with the Montgomery County Department of Environmental Protection. Coordinate with the MCPS project manager as to whether such a meeting has been pre-scheduled.
- B. When designing any school facility, care should be taken to identify and correct any known drainage problems or deficiencies on school sites or caused by school runoff.
- C. Stormwater Management Ponds or Basins impounding water are not permitted on school grounds. Except where otherwise accommodated in bio-retention/biofiltration devices, Stormwater Water Quality Volume WQV and Channel Protection Volume CPV, if required are to be provided in below-grade detention structures including vaults and/or piping systems.
- D. Locate flow control structures, flow-splitters and below-grade stormwater management quality structures within 20-feet of driveways, parking lots or other paved routes to accommodate the maintenance vehicles used by the County Department of Environmental Protection (MCDEP) maintenance vehicles. Contact MCDEP for vehicle specifications and access requirements. Where such facilities can not be located within 20 feet of driveways, provide HS20 loading capable driveway access to such structures.
- E. Inlets, manholes and structures are not permitted within or immediately adjacent to athletic fields and/or play areas.
- F. Incorporate inlets and structures appropriate for the areas in which they are to be used. All inlet grates are to be pedestrian and/or bicycle safe and no depressed throat inlets or structures are allowed in and around any areas where there may be pedestrian traffic.
- G. V-channels/swales should not be constructed or graded into in asphalt paving. Where such drainage is required, the v-channel/swale shall be constructed of concrete
- H. Safe conveyance of all storm flows in excess of the design interval storm event must be provided. Develop site designs and grading to ensure that flows in excess of the peak storm event do not enter buildings, create hazardous conditions or otherwise have a negative impact on neighboring properties.

- I. Design all storm pipes to maintain self-cleansing velocities, and provide adequate trash guards/racks as required to prevent clogging or blocking of pipes and other facilities.

- J. Whenever feasible employ Low Impact Development (LID) measures for stormwater management practices on site.
 - 1. General design guidelines for Low Impact Development (LID) measures for MCPS Site Design are:
 - a. Preserve Open Space and Minimize Land Disturbance;
 - b. Protect Natural Systems and Processes (drainage ways, vegetation, soils, sensitive areas);
 - c. Minimize the use and sizing of traditional site infrastructure (lots, streets, curbs, gutters, sidewalks) and customize site design to each site;
 - d. Incorporate Natural Site Elements (wetlands, stream corridors, mature forests) as Design Elements
 - e. Decentralize and Micromanage Storm Water at its Source.

- K. Where feasible incorporate additional Low Impact Development Stormwater Management Practices that comply with the most current Maryland Stormwater Design Manual and/or Montgomery County Stormwater Management Requirements whichever are more stringent. These include, but are not limited to:
 - 1. Natural Area Conservation
 - 2. Disconnection of Rooftop Runoff
 - 3. Disconnection of Non Rooftop Runoff
 - 4. Sheet Flow to Buffers
 - 5. Open-channel Use
 - 6. Environmentally Sensitive Development

- L. Where feasible, employ approved low-impact device (LID) technologies that comply with Maryland Stormwater Design Manual, Volumes I & II (Effective. October 2000) Design Criteria and/or Montgomery County Stormwater Management Requirements whichever are more stringent. Such LID technologies include:
 - 1. Dry Wells
 - 2. Grass Channel
 - 3. Wet Swales
 - 4. Dry Swales
 - 5. Bio-retention
 - 6. Sand Filter Strips
 - 7. Constructed Wetlands
 - 8. Raingardens
 - 9. Bio-swales
 - 10. Meadows

M. Consideration should be given to incorporating the following innovative technologies and methodologies. Their use is strongly recommended and encouraged:

1. Green Roofs (up to a maximum of 5,000 sf) on 1 story building areas and outdoor features)
2. Limited Site Clearing
4. Vegetated Walls (green grids, stainless wires)
5. Vegetated Retaining Walls (gabion)
6. Cisterns and Rain Barrels