

## ENVIRONMENTAL ASSESSMENT CHECKLIST ASHLAWN ELEMENTARY SCHOOL

**ECS PROJECT NO. 01:20709** 

PREPARED FOR SHW GROUP, INC

FEBRUARY 19, 2013 REVISED: MARCH 8, 2013 & JANUARY 27, 2014

## ARLINGTON COUNTY ENVIRONMENTAL CHECKLIST INSTRUCTIONS

Arlington County Administration Regulation 4.4 calls for assessment of the environmental impacts of County projects. The attached environmental assessment guidelines are designed to help County staff carry out such assessments. It provides a checklist for identifying environmental and energy impacts of proposed projects and developing strategies to avoid or minimize them.

This form, or an environmental assessment, is not required for all projects. Admin Regulation 4.4 excludes such projects as road and sewer maintenance, and exempts others, such as those with no impacts at all on vegetation, noise, or other environmental concerns. To determine whether your project is excluded or exempt, please check sections 3.2 and 3.3 of the Regulation. If your project is exempt or excluded, please complete only page 1 of this form, through question A, and submit it to the Department of Environmental Services.

If your project is not excluded or exempt, you must either complete this form or provide a separate environmental assessment report to comply with Admin Reg. 4.4. If you choose to provide a separate report, please make sure it addresses all of the questions posed in the form. If you prefer to complete the form, please answer the questions briefly. If you have already prepared other documents providing information on specific questions, you are encouraged to attach them rather than rewriting the material on the form.

We encourage you to seek community input into project design prior to completing this form. You may want to solicit the views of civic associations, citizen commissions, and other groups as appropriate. For applicable projects, the Environment and Energy Conservation Commission (E2C2) will hold a public hearing on the project.

Please submit two (2) copies of the completed form with all attachments, printed double-sided, to the Environmental Planning Office in the Department of Environmental Services. The submission will be reviewed by DES staff and by the Environment and Energy Conservation Commission (E2C2). In rare instances, a proposed project may raise significant environmental questions not fully answered by this form. In such cases, DES or E2C2 may request additional information or analysis.

# ARLINGTON COUNTY ENVIRONMENTAL CHECKLIST

February 19, 2013 (Revised 3/8/13 -AMS)

Date: —
Project Name and Address: <u>Ashlawn Elementary School</u> 59501 8 <sup>th</sup> Road North, Arlington, Virginia 22205
Agency Name: Arlington Public Schools
Agency Point of Contact: John C. Chadwick
Fax: Phone: 703-228-6609 E-Mail: john.chadwick@apsva.us
Timeline for development process. On a separate page, please provide a checklist of the steps in the design and implementation of this project, indicating which have already been completed and when, and the schedule for completion of the rest. Your list might include planning, community input, compliance with siting guidelines, consultation with citizen commissions (including E2C2) or other boards, budget approvals, Site Plan review, Planning Commission Review, Board approvals, site design, Chesapeake Bay Preservation Ordinance review, granting of required permits, construction start, estimated completion date, and so on.
Architect/Design Engineer/Consultant (if any)SHW Group, Inc  Point of Contact:Mr. Doug Gehley  Fax:(571) 521-7511 Phone:(571) 521 7530 E-Mail:dgehley@shwgroup.com
Based on the criteria specified in sections 3.2 and 3.3 of Reg. 4.4, this project is:
A. BRIEF PROJECT DESCRIPTION (provide a brief description of the proposed project):
The Ashlawn Elementary School project site consists of approximately 7.13-acres of land located south of N. 8 <sup>th</sup> Road at its intersection with N. Manchester Street. The site is also identified by the physical
address 5950 N. 8 <sup>th</sup> Road and the Arlington County PID#: 12041033. The site is currently improved by
Ashlawn Elementary School and its associated outbuildings, driveways, parking lots, and athletic fields.
The remainder of the site is wooded or lawn. The purpose of the proposed project is the addition of a new
three-story wing to the east side of the existing elementary school building and renovations to the existing
building. Additionally, the site layout will be improved by the relocation of some of the existing parking
and the pick-up/drop-off area. The location for the proposed addition and renovations is currently
occupied by an asphalt recreational court, metal trailers, concrete walks, trees and lawn.

The revitalization planned for Ashlawn Elementary School is inherently sustainable by virtue of the planned re-use of both existing site and existing building. Through re-use a significant portion of the original schools materials – energy to manufacture, deliver to the site and construct – are maintained and their lifespan extended through refurbishment. Materials and aspects of the original design that no longer suit the building's use or are now considered sub-standard by today's energy efficiency standards are able to be removed and replaced. The result will be an energy efficient school that offers the highest and best use of the land it sits on and extends its positive effect into the community far beyond the limits of the site.

#### (Complete only to here if your project is excluded or exempt from Reg. 4.4

B. CURRENT CONDITION OF SITE (briefly describe topography, slopes, number and species of trees, extent and location of bushes, low ground cover, and impervious surface)

The topography of the project site ranges from 276 feet above mean sea level (MSL) in the northwestern portion of the site to 216 feet above MSL in the southeaster corner of the site. Ground elevation is at 266 feet above MSL on the western side of the existing school building, sloping to 252 feet above MSL on the east side. From the east side of the building a small hill slopes down to an elevation of 244 feet above MSL. A gravel path, trailers, and recreation court are located here in a level area. Elevation on the eastern boundary of the property slopes from 234 to 220 feet above MSL to meet the road elevation of N. Manchester Street. Mature trees and shrubs form a screen along N. Manchester Street and around the school building. Small landscaping trees are located in parking islands and around the existing metal trailers. Tree species include Northern Red Oak, Southern Red Oak, Willow Oak, Pin Oak, Red Maple, Sugar Maple, Black Cherry, Black Locust, White Pine, American Holly, and Crepe myrtle. Impervious (i.e. asphalt, school building) or semi-impervious (i.e. gravel, mulch play area) surface covers approximately 3.1 acres (43%) of the site. The remainder consists of trees or turf grass.

C. CHARACTER OF SURROUNDING AREA (provide a brief description of the surrounding area, including a description of the current property use, including whether the property is developed or undeveloped, adjacent land uses, topography, vegetation, etc).

To the east of the site, across N. Manchester Street, is Bluemont Park, which contains tennis courts, baseball diamonds, and other recreational areas, as well as a portion of the Washington and Old Dominion Trail and Four Mile Run. To the north and south of the site are residential neighborhoods, including single and multi family housing. To the west of the site is the Dominion Hills Area Recreation Association pool and Powhatan Springs Park. Portions of the parks and recreation areas are undeveloped and contain mature woods and streams. The residential areas are fully developed.

(1)	Will	the pro	ject disturb	soil or	subsurface conditions?
	X	_Yes		No	

SUBSURFACE CONDITIONS

D.

If yes, describe the extent of the disturbance (for example, how much soil will be disturbed, to what depth, will the soil be replaced, what is the nature of the soil to be disturbed, will the lot be regraded, will additional backfill be added and what type). What measures will be taken to minimize such disturbances?

This project will disturb soil and subsurface conditions on approximately 3.75 acres on the subject property. This project will employ several retaining walls and minimize the amount of cut to reduce the disturbance. The greatest amount of cut will be at the western portion of the new edition and at the first half of the entrance of the new driveway.

(2)	Will the project	et affect groundwater?
	Yes	<u>x</u> No

If yes, describe the effect(s) and the steps taken to minimize the effects:

Note: If yes, please contact DES/Environmental Planning staff if you have questions.

#### E. STORM WATER MANAGEMENT

(1) Describe the current water/storm water drainage at the site (e.g. location of storm drains, retention areas, streams, etc.):

Existing storm drainage for the site consists of sheet and/or channel flow to the existing underground closed conduit system. Three drainage sub-sheds exists on-site and outfalls at the southeast corner of the property: The existing 8th Road surface drainage is captured via inlets and conveyed east and south through the site via an 18" RCP pipe. The system connects to the pipe system that runs east along the southern property line with pipes ranging from 36-inch to 48-inch before leaving the site. Surface run-off from the staff parking lot is captured via existing inlets and conveyed to the existing underground storm water detention system with pipes ranging from 15-inch to 24-inch. The courtyard area, consisting of sidewalk and green space, drains to a single drainage inlet. The flow is conveyed by RCP pipes ranging from 15-inch to 18-inch, to the underground detention facility. An existing culvert opening with headwall located near the southwest corner of the school (existing structure #8B) captures off-site drainage and conveys it along the south property line before leaving the site. The rear of the school is mostly grass open space and sheet flows surface drainage to the existing yard inlet south of the gravel track (existing structure #13). The flow is conveyed to existing 48-inch pipes before leaving the site.

The school is within the 4-mile Run Upper Main Stem 2 watershed and storm water management is provided by an underground facility at the southwest corner of the school. The facility was constructed with plans prepared in 1994 and was designed only accommodate the building addition and parking lot expansion. The existing facility includes three (3) rows of 60" RCP pipes with manhole vaults for access. The facility discharges into the existing storm sewer.

(2) Storm water management - All projects should consider implementing innovative and environmentally beneficial stormwater management techniques such as bioretention or use of pervious paving. Describe the design for managing storm water or attach any stormwater flow or drainage plans prepared for the project.

The storm water management (water quality) will be designed in accordance to the Arlington Code Chapter 60-Storm Water Management and Chapter 61-Chesapeake Bay Preservation Ordinance. Using Arlington County Stormwater Detention Calculation Site Design Standard Worksheet, 126,302 square feet (71% of total site area), including 36,115 square feet of impervious surface (59% of total impervious surface) will be detained by the proposed facilities. Run-off from the new building addition roof, portions of proposed sidewalk and new parent drop-off driveway will be captured by storm inlets and directed to the bio-retention facility at the southeast corner of the property. The biofiltration basin or rain garden will provide 65% treatment efficiency of pollutants and will have a surface area of 2,750 square feet. The rain garden is designed to have 12-inches of ponding water which will filtrate through the planting media and into the PVC under drain. This flow will be captured and directed into the underground detention system. The rain garden will be designed in accordance to the Virginia Stormwater Management Handbook. Stormwater detention is required to detain the storm run-off of the 100-year storm at the allowable release rate of approximately 3.71 cubic feet per second (CFS) with the approximate storage volume required of 5,557 cubic feet. Stormwater detention will be accomplished using an underground facility at the southeast corner of the property. Approximately 283 linear feet of 60-inch corrugated metal pipe (CMP) will be required for detention. An outlet control structure will be place within the facility to control the discharge to not exceed the allowable release rate of 3.71 cfs. Manhole access from the surface will be required along the facility. The storm outfall structure (culvert 17B) located on the southeast corner of the property will remain and receive undetained flow through a swale along the southern portion of the site. The rain garden and underground detention facility will be designed connect to the pipe underground pipe associated with this outfall.

See Appendix I for additional details along with the completed Stormwater Requirements Worksheet.

(3) Describe your erosion and sediment control plan, or attach your E&S document.

Appropriate measures for erosion and sediment control during construction will be maintained. Perimeter controls will consist of a construction entrance along North Manchester Street, silt fence, super silt fence, diversions, inlet protection, tree protection and temporary silt traps. All vegetative and structural erosion and sediment control practices shall be constructed and maintained according the minimum standards and specifications.

See Appendix I for additional details.

F.	FLOODPLA	MNS, WET	LANDS, (	CHESAPEAKE BAY ISSUES	
(1)	Is the project in	the 100-yea	ır floodpla	nin? (as per Chapter 48. Floodplain Manageme	nt Ordinance)
	Yes	X	No		

If yes, describe how the project complies with the requirements of the Floodplain Management Ordinance.  (2) Is your site:
<u>x</u> within Resource Protection Area (RPA) as defined in the Chesapeake Bay Preservation Ordinance?
If yes, you must contact DES and DPW about compliance with the conditions set out in the Chesapeake Bay Preservation Ordinance.
_x_ within Resource Management Area (RMA) as defined in Chesapeake Bay Preservation Ordinance?
If your site is in RMA, describe the measures taken to comply with the criteria for such development under the Chesapeake Bay ordinance (minimize impervious cover, retain/maintain vegetation to the maximum extent practicable, minimize site disturbance).
To minimize site disturbance and impervious cover and maintain vegetation to the maximum extent
possible, the existing site will be revitalized through renovations and an addition rather than a complete
demolition and reconstruction. The majority of the area to be occupied by the proposed addition and
pick-up/drop-off area is existing impervious surface (trailers, parking, and recreation courts).
See Appendix II for RPA map.
exempt from compliance with the Chesapeake Bay Preservation Ordinance?
If your site is exempt, please specify the category of exemption:
G. WATER QUALITY (excluding stormwater)
(1) Will the project result in the discharge of pollutants directly into a surface water body, thus requiring a state discharge permit (Virginia Pollutant Discharge Elimination System, VPDES)?
<u>x</u> No (proceed to next question)
Yes (provide confirmation of compliance with VPDES requirements)
(2) Will the project discharge to the waste water treatment plant?
No (proceed to next question)
x_ Yes (provide confirmation of compliance with limits for discharge to local treatment plant)
The waste water from the building addition will discharge to the waste water treatment plant. The proposed use of the building addition is a permitted use under the Arlington County Zoning Ordinance Section 3. "S-3A" Special Districts. The sanitary sewer drainage shed should have incorporated the permitted use of the proposed building to account for future developments. The

building addition will not produce excessive waste water and will not overburden the waste water treatment plant.

H. AIR QUALITY
(1) Will the project cause increased air emissions? (for example, from vehicles, lawn mowers and other landscape maintenance equipment, generators, boilers, etc.)
No (proceed to next question) _ <u>x</u> _ Yes
Describe source and nature of emissions, and measures taken to reduce or minimize them:
We do no anticipate increased emissions from the existing electric generator, vehicles, or landscaping
equipment. We estimate that by replacing the existing natural gas-fired boilers (80% combustion.
efficiency) with new condensing-type boilers (est. 95% combustion efficiency), the gas combustion
emissions of the proposed building (including the existing building and the proposed addition) will
increase by about 8% from the current emissions of the existing building. The use of high-efficiency
boilers will minimize emissions to the greatest extent possible.
(2) Will the proposal create objectionable odors?  No (proceed to next question) Yes  Describe source and nature of emissions, and measures taken to reduce or minimize such them:
bestive source and nature of emissions, and measures taken to reduce of minimize such them.

#### I. FLORA AND FAUNA

(1) Please describe impacts on vegetation (for example, change in species diversity, removal of trees or other vegetation), how the project will minimize and mitigate such impacts, and how you will comply with the County's tree replacement policy. All vegetation planted on the site should be native species; contact the County's urban forester for more information.

Impacts to vegetation will be minimized by the location of the proposed addition and parking lot renovations. Species diversity will not be significantly impacted by the necessary removal of some trees onsite. Ninety-four (94) trees with a diameter at breast height greater than three (3) inches will be removed from the site according to the proposed design. These trees will be replaced with native vegetation, including eighty-three (83) deciduous overstory trees, one hundred and forty-one (141) evergreen and deciduous understory trees, and two hundred and seventy-eight (278) shrubs, as well as perennial herbaceous ground cover. Seven (7) trees are proposed to be removed from the RPA, and will be replaced by five (5) overstory and nine (9) understory trees. Overall, both canopy cover and species diversity will be improved by the proposed plantings. The removal of some mature trees cannot be

avoided as they are within the footprint of the proposed addition and site improvements.
See Appendix III for more details.
(2) Please describe impacts on fauna and wildlife habitat (e.g. butterflies, birds, small mammals) and how the project will minimize or mitigate such impacts. Consider both design and timing strategies to minimize impacts.  The project will have minimal affect on wildlife habitat. The location of the proposed addition and
parking lot renovations will minimize the impact to trees, which represent the most significant source of habitat onsite. Tree removal will be timed to avoid impacts to nesting/breeding wildlife to the
extent feasible.
extent reastore.
J. NOISE
Will the proposal result in increased noise levels?
_x_ No (proceed to next question) Yes
If yes, please describe your abatement procedures to comply with the County's Noise Control Ordinance, Chapter 15.
The proposed improvements will not result in a permanent increase in noise levels. Any temporary
Increase due to construction activities will be minimized in compliance with Arlington County
Code 15-6(F) and the Table of Maximum Permissible Noise Levels from Stationary Sources
K. LIGHT and GLARE
If the project involves outdoor lighting, describe how it has been designed to avoid nuisance light that disturbs neighbors, minimize glare, and protect dark skies.
Pole lights and/or path lights will be provided in parking areas and along pedestrian walkways for safety.
The selected lights will be Dark Sky Compliant to reduce light pollution and glare.
L. HAZARDOUS SUBSTANCES/WASTE
Will the project involve the generation, storage or management of hazardous substances or hazardous waste?
<u>x</u> No (proceed to next question)

Yes. Please provide a description of the measures taken to prevent the release of such substances/waste. Copies of plans or similar documents required by law may be provided in lieu of a description.
M. TRANSPORTATION/CIRCULATION
(1) Will the project:
generate additional traffic?  x add to existing parking facilities or create demand for new parking?  x have a substantial impact upon existing transportation systems or traffic flow?  create or increase a hazard to pedestrian or bicycle traffic?
If the answer to any of the above is yes, please describe the impacts and how they can be avoided or mitigated (for example, incentives for mass transit or pedestrian/bike use, design to avoid traffic flow problems, etc.). Please describe, summarize, or attach any traffic studies.
This project will not generate additional traffic and will improve the traffic circulation around the school.
The addition of the parent drop-off drive on North Manchester Street will improve the traffic during peak
hours by providing separate access to the school without conflicting with the bus-drop off traffic. The
removal of temporary trailers in the staff parking will create additional parking spaces. This project will
not create a pedestrian/bike traffic hazards and will address current safety issues raised by Arlington
Public Schools and the local community.
Please see Appendix IV for further details.
(2) Describe what you are doing to facilitate bicycle and pedestrian access to and within your site:
Several site features are proposed to improve the safety and access for pedestrians/bike traffic. New
sidewalks will connect areas of pedestrian access off-site to the school property. The intersection of 8th
Street and North Manchester Street will become a raised intersection and 3-way stop with a reduce road
width encourage slow vehicle speeds and pedestrian crossing.

#### N. ENERGY CONSUMPTION/CONSERVATION

Describe energy consumption and measures to promote energy efficiency in your project (e.g., measures to reduce heating and cooling energy loads, minimize lighting power density, harvest daylight, use solar technologies, or meet EPA Energy Star or Consortium for Energy Efficiency performance levels):

The building addition will utilize energy efficient HVAC and lighting systems such as a Dedicated Outdoor Air (Ventilation) Unit equipped with Heat Recovery, a Water-Source Heat Pump System for building heating and cooling and LED lighting fixtures equipped with daylighting and occupancy/vacancy controls, where applicable. Water efficient plumbing fixtures will also reduce both water consumption

and energy required for the production of hot water. Replacement of the existing boilers and the rooftop HVAC units serving the multi-purpose room with higher-efficiency equipment will also reduce energy consumption. Finally, retro-commissioning of the existing building will identify the energy savings opportunities of low-cost and no-cost measures, including repair and/or tuning of existing systems (including air and water testing and balancing) as well as enhanced control strategies.

The overall goal of 25% energy savings post-construction should be met based on the proposed schematic design. Further, the applicant is proposing dedicated outdoor air systems with energy recovery. Two stage water source heat pumps will also be incorporated into the proposed design.

#### O. GREEN BUILDING

Describe your compliance with the US Green Building Council's LEED standards or submit your LEED checklist and related descriptive materials:

This project will utilize the U.S. Green Building Council's LEED (Leadership in Energy and Environmental Design) system for identifying and documenting sustainable aspects of the design approach. Although this project will be designed utilizing this system the project will not be submitted for USGBC certification due to current inefficiencies in the LEED system that make achieving certification for a renovation of an existing building impractical. This LEED system offers a useful framework for evaluating green building features. The LEED 2009 version for New Construction and Major Renovations offers 7 categories of sustainable design for documentation: Sustainable Site, Water Efficiency, Energy & Atmosphere, Materials & Resources, Interior Environmental Environment, Innovation & Design Process and Priority Regional Credits. Appendix V identifies options that are available to this project by virtue of its location, size, use and budget. Full documentation of LEED exploration and compliance has not been completed and is outside of the APS team's contract.

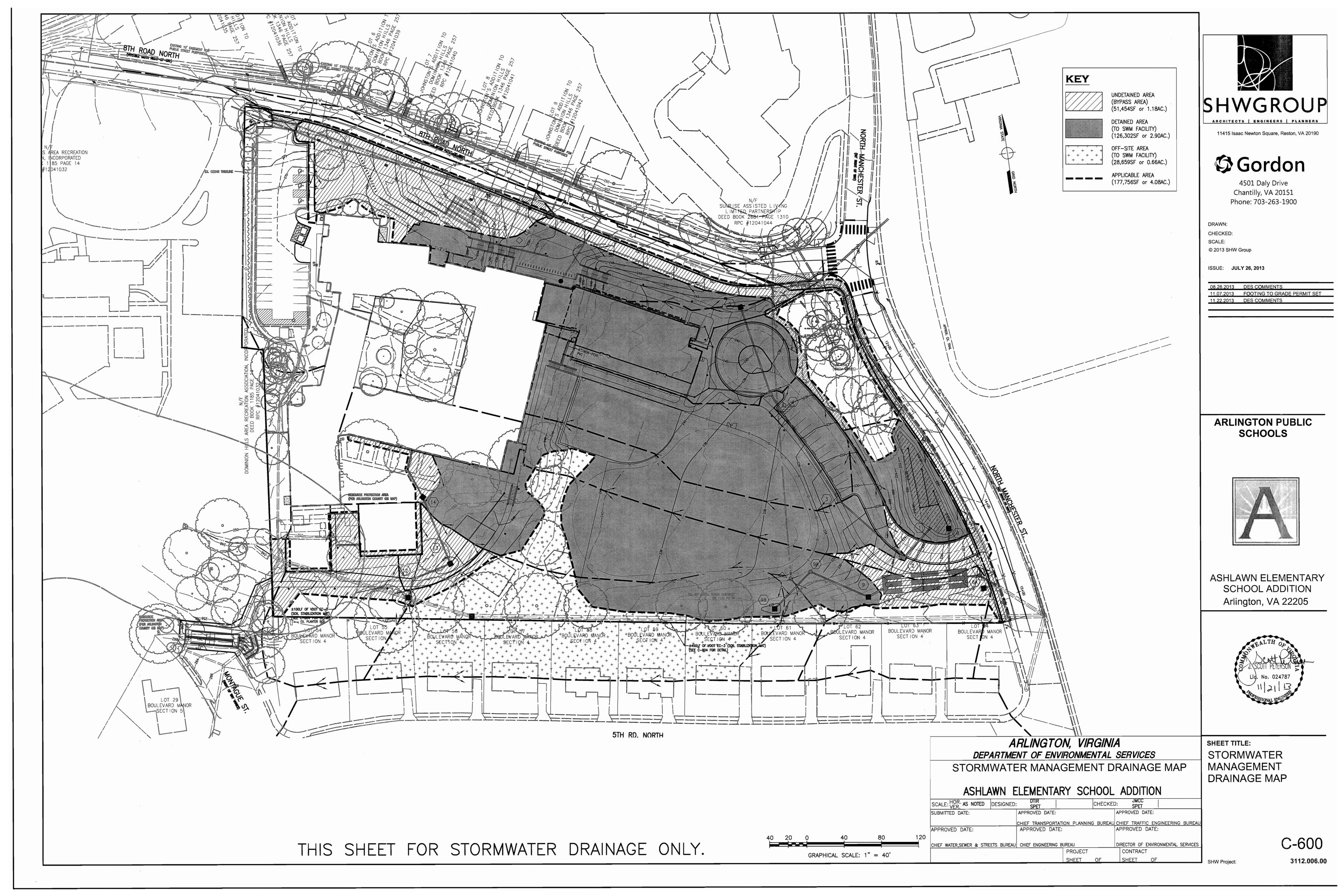
#### P. CULTURAL/HISTORIC RESOURCES

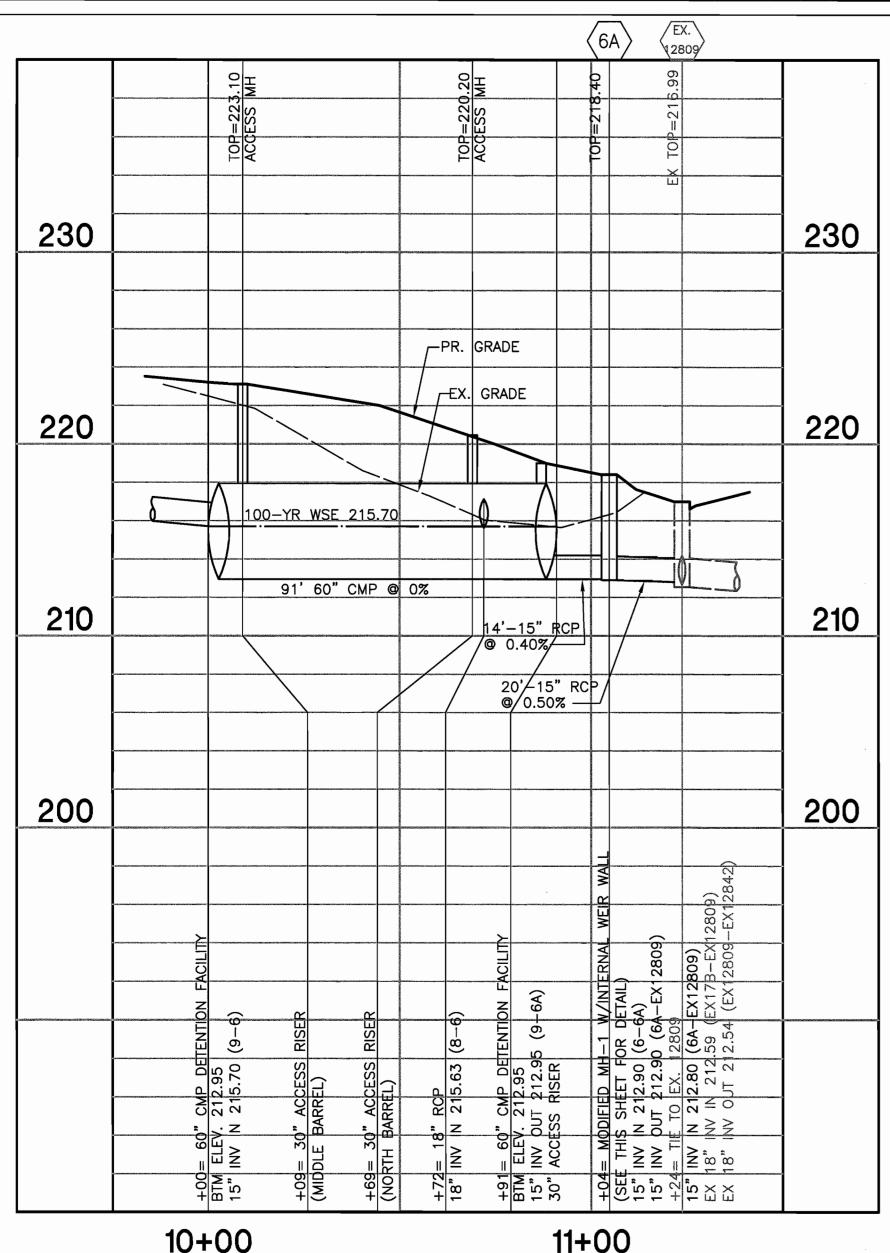
Will the proposal
result in the alteration or destruction of a prehistoric or historic archaeological site? result in adverse physical or aesthetic effects to a historic building, structure, or object? have the potential to cause physical change that would affect unique cultural or historic values?
If yes, please describe or attach related documents.
This project will not alter or destroy cultural/historic resources. See Appendix VI containing a map of
nearby historic resources for reference.

#### Q. GENERAL QUESTIONS

Beyond the specific areas identified above, do you anticipate that the proposal individually or in association with similar projects or other projects within the same area has the potential to cause significant adverse impacts on the environment, either short-term or long-term?
If the answer is yes, and your response has not already been addressed above, please describe such impacts and how they will be minimized or mitigated.

# APPENDIX I: SECTION E - STORMWATER MANAGEMENT

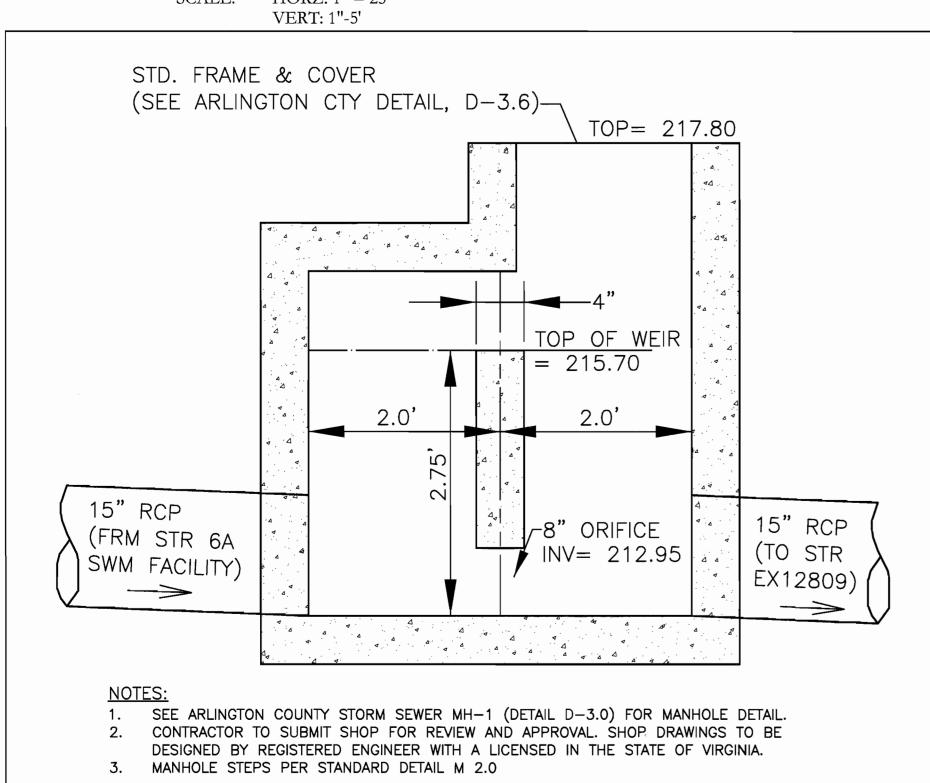




10+00

## **SWM 60" CMP DETENTION PROFILE**

SCALE: HORZ: 1" = 25"



## WATER QUANTITY CONTROL NARRATIVE

STORM WATER CONTROL FOR THIS DEVELOPMENT IS BEING PROVIDED BY UNDERGROUND DETENTION. PER THE ARLINGTON COUNTY CODE, CHAPTER 60, THE SITE IS WITHIN THE FOUR MILE RUN MAIN STEM 2 WATERSHED AND THE SITE SHALL PROVIDE STORMWATER DETENTION CAPACITY SUFFICIENT TO ACCOMMODATE THE MAXIMUM STORAGE REQUIRED FOR A 100-YEAR STORM AT THE RUNOFF RATE ON THE DEVELOPED SITE AND A RELEASE RATE WHICH WOULD BE EQUIVALENT TO THE 10-YEAR STORM USING AN ASSUMED RUNOFF COEFFICIENT OF 0.30.

THE APPLICABLE AREA (LIMITS OF DISTURBANCE) IS 4.08 AC (177,756 SF). COMPUTATIONS CALCULATE THE PRE-DEVELOPED RUNOFF FOR THE SITE TO BE 8.31 CFS WITH AN ASSUMED COEFFICIENT OF 0.30 AND COMPOSITE C-VALUE OF 0.43. THERE IS AN UNDETAINED AREA OF 1.18 AC OR 6.40 CFS. THE FLOW OFF-SITE (SOUTH OF THE APPLICABLE AREA) IS 1.80 CFS FROM 0.66 AC. THE ALLOWABLE RELEASE RATE IS 3.71 CFS WITH THE STORAGE VOLUME REQUIRED OF 5,421 CF.

AN UNDERGROUND DETENTION FACILITY COMPOSED OF 283LF OF 60" CMP WITH A TOTAL VOLUME OF 5,557 CF AND IS LOCATED AT THE SOUTHEAST CORNER OF THE SITE, SOUTH OF THE NEW NORTH MANCHESTER STREET ENTRANCE. DISCHARGE FROM THE FACILITY IS LOCATED AT SOUTHEAST END OF THE CMP PIPES AT STRUCTURE 6A. STRUCTURE 6A IS A MODIFIED MH-1 MANHOLE WITH AN INTERNAL WEIR AND 8" ORIFICE OPENING. THE TOP OF THE WEIR ELEVATION PROVIDES OVERFLOW FOR LARGER STORM EVENTS. THE 8" DIAMETER ORIFICE AT THE STRUCTURE IS USED AS AN OUTLET ORIFICE FOR THE WATER QUANTITY AND RELEASES THE FLOW BELOW THE ALLOWABLE RELEASE RATE OF 3.71 CFS.

IT IS THE ENGINEER'S OPINION THAT THE IMPROVEMENTS PROPOSED WITH THIS APPLICATION HAS NO ADVERSE IMPACT TO THE ADJACENT PROPERTIES.

RESOURCE PROTECTION AREAS ARE LOCATED ON THE SUBJECT PROPERTY PER ARLINGTON COUNTY GIS DATA.

### SWM FACILIES PRIVATE MAINTENANCE NOTES:

THE STORMWATER MANAGEMENT FACILITIES SHALL BE PRIVATELY INSPECTED AND MAINTAINED ACCORDING TO THE MAINTENANCE SCHEDULE SHOWN OR REFERENCED ON THE PLANS. A MAINTENANCE CERTIFICATION WILL BE SUBMITTED TO ARLINGTON COUNTY ANNUALLY.

PRIVATE INSPECTION AND MAINTENANCE CERTIFICATION FOR THE STORMWATER DETENTION FACILITIES SHALL BE DONE BY A REGISTERED ENGINEER, LICENSED LAND SURVEYOR, OR A MASTER PLUMBER IN ACCORDANCE WITH CHAPTER 60 OF THE ARLINGTON COUNTY CODE.

THE OWNER SHOULD CONTACT ARLINGTON COUNTY DEPARTMENT OF ENVIRONMENTAL SERVICES IF THERE ARE ANY QUESTIONS OR CONCERNS REGARDING THE STORMWATER MANAGEMENT FACILITY INSPECTION MAINTENANCE, AND ANNUAL CERTIFICATION REQUIREMENTS.

#### SWM CONSTRUCTION INSPECTION STATEMENT:

THE STORMWATER MANAGEMENT FACILITIES SHOWN ON THIS PLAN SHALL BE CONSTRUCTED UNDER THE SUPERVISION OF A LICENSED PROFESSIONAL ENGINEER, WHO WILL PROVIDE TO ARLINGTON COUNTY ALL APPLICABLE CONSTRUCTION INSPECTION LOGS AND TEST DOCUMENTATION FOR THE FACILITY AND PREPARE AND SUBMIT A WRITTEN STATEMENT CERTIFYING THE FACILITY WAS BUILT AS DESIGNED PER THE APPROVED PLANS.

ONLY THE FOLLOWING NON-STORMWATER DISCHARGES ARE AUTHORIZED BY ARLINGTON COUNTY'S MS4 PERMIT, UNLESS THE STATE WATER CONTROL BOARD, THE VIRGINIA SOIL AND WATER CONSERVATION BOARD (BOARD), OR ARLINGTON COUNTY DETERMINES THE DISCHARGE TO BE A SIGNIFICANT SOURCE OF POLLUTANTS TO SURFACE WATERS: WATER LINE FLUSHING; LANDSCAPE IRRIGATION; DIVERTED STREAM FLOWS; RISING GROUND WATERS; UNCONTAMINATED GROUND WATER INFILTRATION (AS DEFINED AT 40 CFR 35.2005(20)); UNCONTAMINATED PUMPED GROUND WATER; DISCHARGES FROM POTABLE WATER SOURCES; FOUNDATION DRAINS; AIR CONDITIONING CONDENSATION: IRRIGATION WATER; SPRINGS; WATER FROM CRAWL SPACE PUMPS; FOOTING DRAINS; LAWN WATERING; INDIVIDUAL RESIDENTIAL CAR WASHING; FLOWS FROM RIPARIAN HABITATS AND WETLANDS; DECHLORINATED SWIMMING POOL DISCHARGES; DISCHARGES OR FLOWS FROM FIRE FIGHTING; AND, OTHER ACTIVITIES GENERATING DISCHARGES IDENTIFIED BY THE DEPARTMENT OF ENVIRONMENTAL QUALITY AS NOT REQUIRING VPDES AUTHORIZATION. APPROPRIATE CONTROLS MUST BE IMPLEMENTED TO PREVENT ANY NON-STORMWATER DISCHARGES NOT INCLUDED ON THE ABOVE LIST (E.G., CONCRETE WASH WATER, PAINT WASH WATER, VEHICLE WASH WATER, DETERGENT WASH WATER, ETC.) FROM BEING DISCHARGED INTO ARLINGTON COUNTY'S MS4 SYSTEM, WHICH INCLUDES THE CURB AND GUTTER SYSTEM, AS WELL AS CATCH BASINS AND OTHER STORM DRAIN INLETS, OR STREAM NETWORK. PER CHAPTER 26 OF THE ARLINGTON COUNTY CODE, IT SHALL BE UNLAWFUL FOR ANY PERSON TO DISCHARGE DIRECTLY OR INDIRECTLY INTO THE STORM SEWER SYSTEM OR STATE WATERS, ANY SUBSTANCE LIKELY, IN THE OPINION OF THE COUNTY MANAGER, TO HAVE AN ADVERSE EFFECT ON THE STORM SEWER SYSTEM OR STATE WATERS.

## ORIFICE FOR SWM DETENTION FACILITY:

Required orifice area (A o)  $A_{o} = qo/C (2gh_{o})^{0.5}$  $A_{o} = qo/4.81 h_{o}^{0.5}$ From: 217.95 To: 212.95  $h_o = 3.55$  ft  $A_o = 0.41$  sq ft Required orifice diameter, do  $d_o = (4 A_o/p) 0.5$  $d_{o} = 0.72 \text{ ft}$  $d_{o} = 8.66$  in USE ORIFICE SIZE: 8 INCH DIA. @ 212.95 DETENTION Elevation = 217.95

Actual release rate = 3.17 cfs Qp = ACTUAL COMBINED RELEASE RATE = 3.17 cfs

Qp = ALLOWABLE COMBINED RELEASE RATE = 3.71 cfs

#### ARLINGTON COUNTY STORMWATER DETENTION CALCULATION SITE DESIGN STANDARD WORKSHEET

l. Sı	TE DESCRIPTION				
	LOCATION:	Four Mile	RUN WA	TERSHED	
	TOTAL SITE AREA A = (APPLICABLE AREA)	177756	SF	OR	4.08 AC
	EXISTING CONDITIONS				
	IMPERVIOUS AREA	39817	SF	OR	0.91 AC
	PERVIOUS AREA	137939	SF	OR	3.17 AC
	TOTAL	177756	SF	OR	4.08 AC
	PERCENT IMPERVIOUSNESS	22.4%	(1)		
	COMPOSITE C =	0.43			

(I) SINCE EXISTING IMPERVIOUSNESS IS LESS THAN 50% PREDEVELOPMENT FLOW CAN NOT UTILIZE PARTIAL WAIVER AVERAGE OPTION THEREFORE C-VALUE IS 0.30 FOR THE FOUR MILE RUN WATERSHED.

#### PROPOSED CONDITIONS

UNDETAINED

IMPERVIOUS AREA AIMP	= 25314	SF OR	0.58 AG
PERVIOUS AREA	26140	SF OR	0.60 AG
TOTAL	51454	SF OR	1.18 AG
COMPOSITE C =	0.60		
DETAINED			
IMPERVIOUS AREA AIMP	= 36115	SF OR	0.83 AG
PERVIOUS AREA	90187	SF OR	2.07 AG
TOTAL	126302	SF OR	2.90 AG
COMPOSITE C =	0.47		
TOTAL			
MPERVIOUS AREA AIMP	= 61429	SF OR	1.41 AC
PERVIOUS AREA	116327	SF OR	2.67 AG
TOTAL	177756	SF OR	4.08 A
COMPOSITE C =	0.51		
Tc =	5	MIN	
I <sub>10</sub> =	6.79	IN/HR	

#### 2. PREDEVELOPMENT RUNOFF

	C =	0.30	(SPECIF	TED BY ORDINA	(NCE)	
	Q <sub>10</sub> =	8.31	CFS	(SPECIFIED	BY ORDINANC	Œ
3A.	UNDETAINED FLOW					
	UNDETAINED AREA A =	51454	SF	OR	I.18 A	١,
	MPERVIOUS AREA A	25314	SF	OR	0.58 A	١,
	PERVIOUS AREA	26140	SF	OR	0.60 A	71
	C =	0.595				
	Q <sub>100</sub> =	6.40	CFS			
3B.	OFFSITE FLOW					
	OFFSITE AREA A =	28659	SF	OR	0.66 A	71
	IMPERVIOUS AREA AIMP =	0	SF	OR	0.00 A	7 (
	PERVIOUS AREA	28659	SF	OR	0.66 A	7 (
	C =	0.30				
	Q <sub>100</sub> =	1.80	CES			

### 4. ALLOWABLE RELEASE RATE

ALLOWABLE Q <sub>100</sub> =	PRE Q <sub>10</sub> - UNDETA	INED Q100 + OFFSITE FLOW Q100
ALLOWABLE Q <sub>100</sub> =	3.71 CFS	(SPECIFIED BY ORDINANCE)

#### 5. STORAGE VOLUME REQUIRED

DETAINED AREA COMPOSITE C = TOTAL A*C =	126302 0.51 1.471		OR	2.90	AC	
TIME	TIME	I <sub>100</sub>	IMP AC	Q <sub>10</sub> INFLOW	Vol. INFLOW	OU.

	TIME	Тіме	I <sub>100</sub>	IMP AC	Q <sub>10</sub> INFLOW	Vol. INFLOW	Q <sub>IO</sub> OUTFLOW RR	Vol. OUTFLOW RR	STORAGE
	(MIN)	(SEC)	(CFS)	(A*C)	(CFS)	(CF)	(CFS)	(CF)	(CF)
	5	300	9.10	1.471	13.387	4016	3.71	1113	2903
	10	600	7.28	1.471	10.709	6426	3.71	2227	4199
	15	900	6.22	1.471	9.150	8235	3.71	3340	4895
	20	1200	5.50	1.471	8.091	9709	3.71	4453	5256
	25	1500	4.97	1.471	7.311	10967	3.71	5566	5400
. STORAGE REQ'D———	30	1800	4.57	1.471	6.723	12101	3.71	6680	5421
	35	2100	4.25	1.471	6.252	13129	3.71	7793	5336
	40	2400	3.98	1.471	5.855	14052	3.71	8906	5145
	50	3000	3.56	1.471	5.237	15711	3.71	11133	4578
	60	3600	3.25	1.471	4.781	17211	3.71	13359	3852
	90	5400	2.64	1.471	3.884	20971	3.71	20039	933
	120	7200	2.27	1.471	3.339	24043	3.71	26718	(2675)
	180	10800	1.83	1.471	2.692	29074	3.71	40077	(11003)
	STORAGE V	LUME REQUIRED :	5421	CF	(SPECIFIED	BY ORDINAN	ICE)		

6. STORAGE VOLUME PROVIDED DETENTION FACILITY:

PROVIDED VOLUME:

283.00 LF OF 60" CMP 5**5**57 CF

## ARLINGTON, VIRGINIA DEPARTMENT OF ENVIRONMENTAL SERVICES STORMWATER MANAGEMENT COMPUTATIONS

#### ASHLAWN FLEMENTARY SCHOOL ADDITION

ASITEMIN L	LLMLMAN SCI	IOOL ADDITION
SCALE: HOR. AS NOTED DESIGNED	DTIR SPET	CHECKED: JMCC SPET
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APPROVED DATE:	APPROVED DATE:	APPROVED DATE:
CHIEF WATER, SEWER & STREETS BUREAU	CHIEF ENGINEERING BUREAU	DIRECTOR OF ENVIRONMENTAL SERVICES
	PROJECT	CONTRACT
	SHEET	OF SHEET OF

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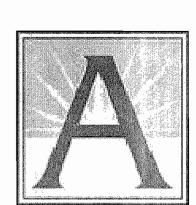
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ISSUE: **JULY 26, 2013** 

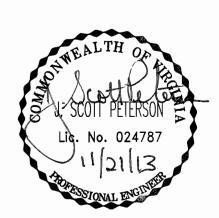
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08.26.2013 DES COMMENTS 11.07.2013 FOOTING TO GRADE PERMIT SET 11.22.2013 DES COMMENTS

### **ARLINGTON PUBLIC SCHOOLS**



**ASHLAWN ELEMENTARY** SCHOOL ADDITION Arlington, VA 22205

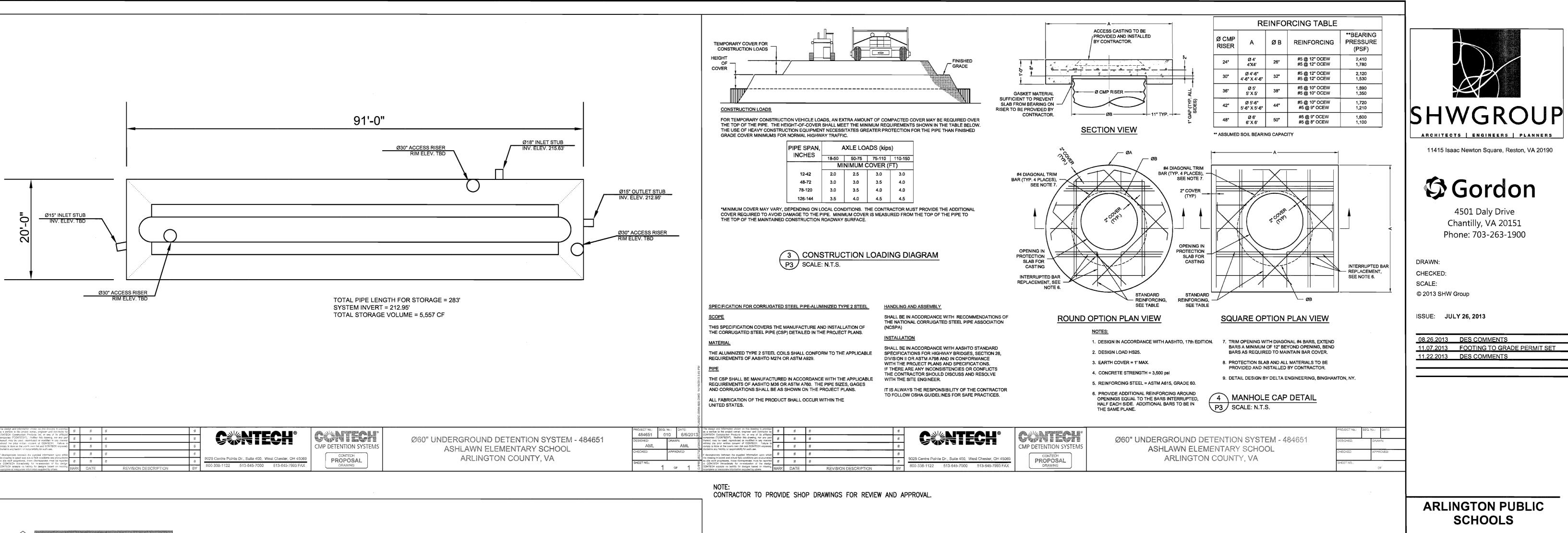


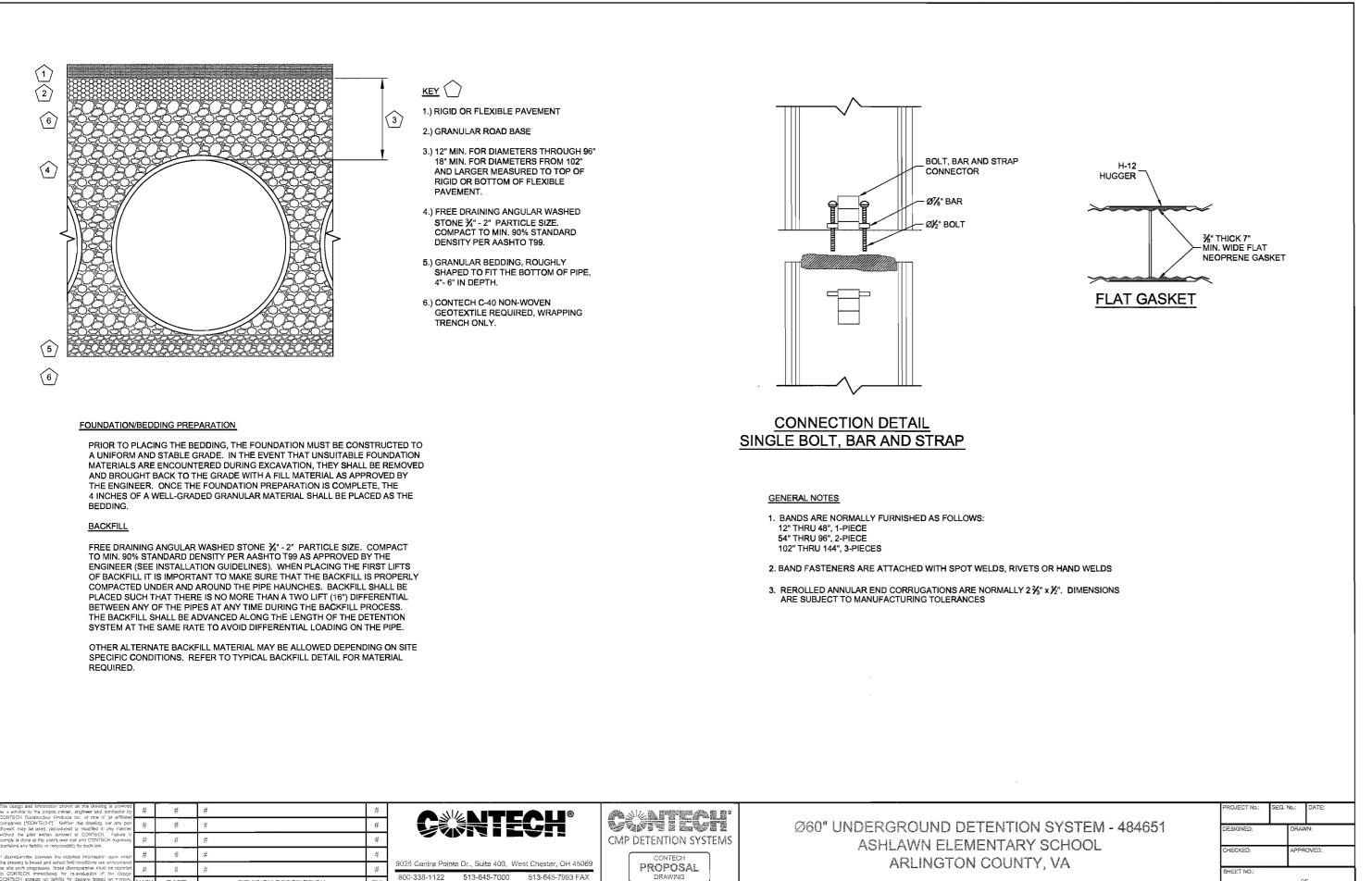
SHEET TITLE:

**STORMWATER MANAGEMENT COMPUTATIONS** 

> C-601 3112.006.00

**MODIFIED MH-1 - STRUCTURE 6A** SCALE: 1'' = 1'-0''





**ARLINGTON PUBLIC** 

**SCHOOLS** 

ARCHITECTS | ENGINEERS | PLANNERS

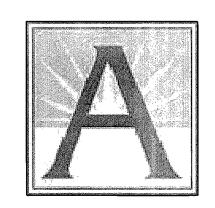
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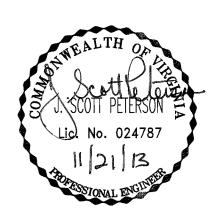
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Phone: 703-263-1900



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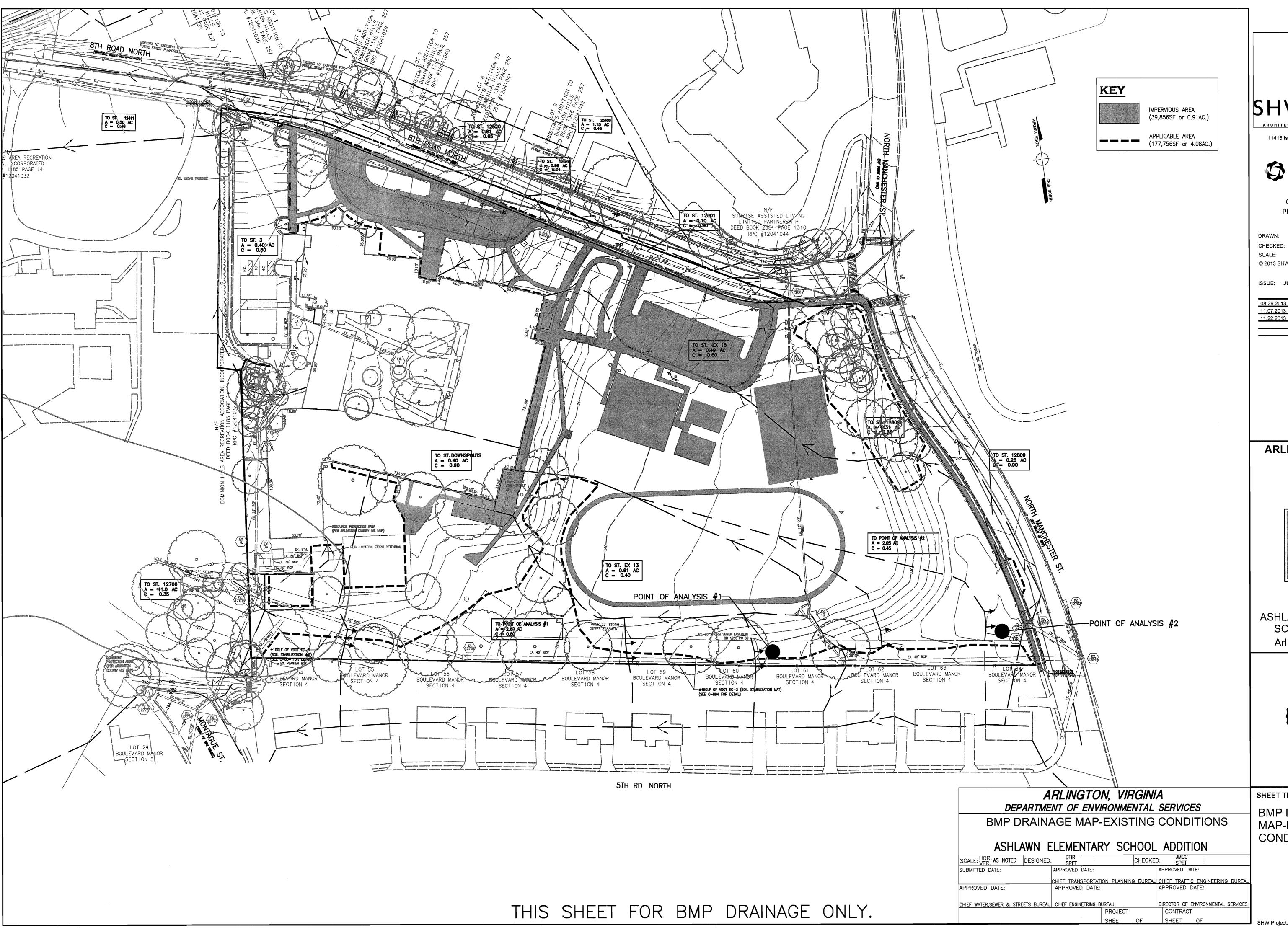
## ARLINGTON, VIRGINIA DEPARTMENT OF ENVIRONMENTAL SERVICES STORMWATER MANAGEMENT DETAILS

## ASHLAWN ELEMENTARY SCHOOL ADDITION

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SCALE: HOR. AS NOTED DESIGNED	: SPET	CHECKED	JMCC : SPET	
SUBMITTED DATE:	APPROVED DATE:		APPROVED DATE:	
	CHIEF TRANSPORTATION	I PLANNING BUREAU	CHIEF TRAFFIC EN	GINEERING BUREAL
APPROVED DATE:	APPROVED DATE:	]	APPROVED DATE:	
CHIEF WATER,SEWER & STREETS BUREAU	CHIEF ENGINEERING BURE	EAU	DIRECTOR OF ENVIRO	DNMENTAL SERVICES
	P	ROJECT	CONTRACT	
	S	HEET OF	SHEET OF	

SHEET TITLE: STORMWATER MANAGEMENT DETAILS

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 DES COMMENTS

## **ARLINGTON PUBLIC SCHOOLS**



ASHLAWN ELEMENTARY SCHOOL ADDITION Arlington, VA 22205

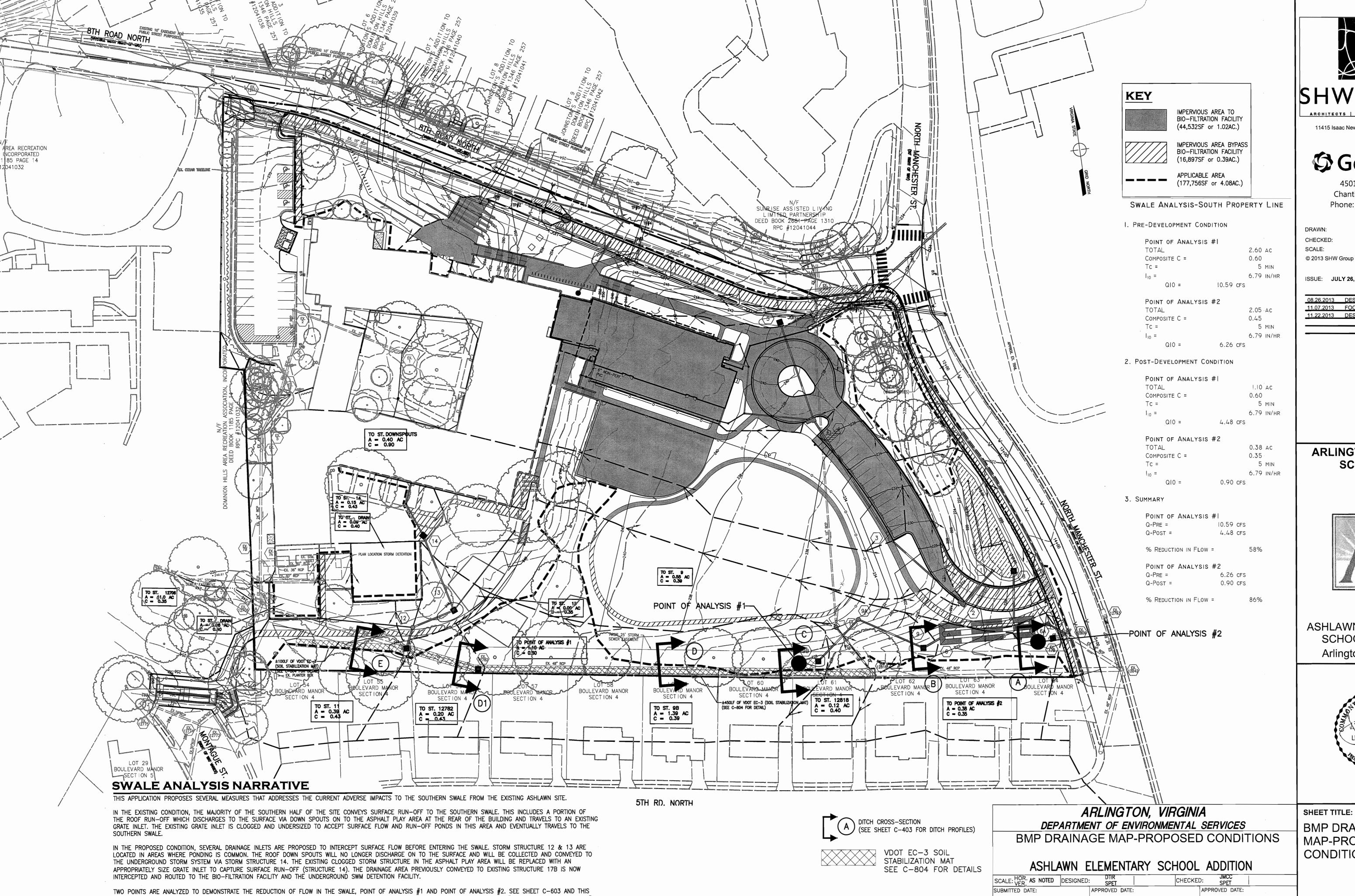


SHEET TITLE:

**BMP DRAINAGE** MAP-EXISTING CONDITIONS

C-603

3112.006.00



SHEET FOR LOCATION. THE PROPOSED IMPROVEMENTS TO THE ASHLAWN SITE HAS REDUCED THE AMOUNT OF FLOW FOR POINT OF ANALYSIS #1 AND POINT OF ANALYSIS #2

DITCH SECTIONS, SECTIONS A-A, B-B, C-C, D-D, D1-D1 AND E-E, HAVE BEEN PROVIDED TO DEMONSTRATE THAT THE PROPOSED SURFACE FLOW IS CONTAINED WITHIN THE

EXISTING/PROPOSED SWALE ALONG THE SOUTH PROPERTY LINE. SEE SHEET C-403B FOR DITCH PROFILES. VDOT EC-3 SOIL STABILIZATION MAT IS PROVIDED FROM STORM

STRUCTURE 9B UPSTREAM TO STORM STRUCTURE 11 TO PROVIDE STABILIZATION OF SOIL AND REDUCE EROSION WITHIN THE SWALE.

BY 58% AND 86% RESPECTIVELY. SEE SHEET THIS SHEET. THEREFORE; THE PROPOSED IMPROVEMENTS TO THE ASHLAWN SITE ADDRESSES THE CURRENT ADVERSE IMPACTS"

TO THE SWALE AS WELL AS DECREASED THE RUN-OFF IMPACTS.

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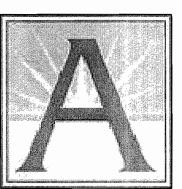


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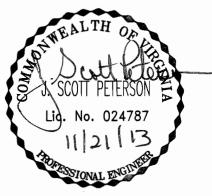
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**ARLINGTON PUBLIC SCHOOLS** 



**ASHLAWN ELEMENTARY** SCHOOL ADDITION Arlington, VA 22205



SHEET TITLE:

CHIEF TRANSPORTATION PLANNING BUREAU CHIEF TRAFFIC ENGINEERING BUREAU
APPROVED DATE:
APPROVED DATE:

PROJECT

IRECTOR OF ENVIRONMENTAL SERVICES

CONTRACT

APPROVED DATE:

CHIEF WATER, SEWER & STREETS BUREAU CHIEF ENGINEERING BUREAU

APPROVED DATE:

THIS SHEET FOR BMP DRAINAGE ONLY.

**BMP DRAINAGE** MAP-PROPOSED CONDITIONS

C-604

3112.006.00

### **BIORETENTION FILTER NOTES:**

SOIL MEDIA STRUCTURE AND TEXTURE:

TOPSOIL FOR BIORETENTION SHALL HAVE A SANDY LOAM, LOAMY SAND, OR LOAM TEXTURE PER USDA TEXTURAL TRIANGLE. MAX. CLAY CONTENT IS <5%; SOIL MIXTURE SHALL BE 85%-88% SAND, 8%-12% SOIL FINES AND 3%-5% ORGANIC MATTER. THE SOIL SHALL BE A UNIFORM MIX. FREE OF STONES, STUMPS, ROOTS, OR OTHER SIMILAR OBJECTS LARGER THAN TWO INCHES. NO OTHER MATERIALS OR SUBSTANCES SHALL BE MIXED OR DUMPED WITHIN THE BIORETENTION THAT MAY BE HARMFUL TO PLANT GROWTH, OR PROVE A HINDRANCE TO THE PLANTING OR MAINTENANCE OPERATIONS. THE PLANTING SOIL SHALL BE FREE OF BERMUDA GRASS, QUACKGRASS, JOHNSON GRASS, MUGWORT, NUTSEDGE, POISON IVY, CANADIAN THISTLE, TEARTHUB, OR OTHER NOXIOUS WEEDS.

SOIL TESTING:

PLANTING SOIL FOR BIORETENTION AREAS MUST BE TESTED PRIOR TO INSTALLATION FOR PH AND ORGANIC MATTER. THE SOIL SHOULD MEET THE FOLLOWING CRITERIA (LANDSCAPE CONTRACTORS ASSOCIATION, 1986).

CONTRACTOR SHALL SUBMIT FOR COUNTY APPROVAL SOIL SAMPLES PRIOR TO DELIVERY TO SITE. UPON DELIVERY TO SITE. COUNTY SHALL TEST SOIL AND INSPECT INSTALLATION.

PH RANGE: 5.5-6.5 ORGANIC MATTER: 1.5-3.0%

SOIL PLACEMENT: PLACEMENT OF THE PLANTING SOIL IN THE BIORETENTION AREA SHOULD BE IN LIFTS OF 12 TO 18 INCHES AND LIGHTLY COMPACTED. MINIMAL COMPACTION EFFORT CAN BE APPLIED TO THE SOIL BY TAMPING WITH A BUCKET FROM A DOZER OR A BACKHOE.

**MULCH SPECIFICATIONS:** 

INDIVIDUAL PLANTING SHALL BE MULCHED. ACCEPTABLE MULCH SHALL BE SHREDDED HARDWOOD ONLY. MULCH MUST BE WELL AGED, UNIFORM IN COLOR, AND FREE OF FOREIGN MATERIAL INCLUDING PLANT MATERIAL. WELL AGED MULCH IS DEFINED AS MULCH THAT HAS BEEN STOCKPILED OR STORED FOR AT LEAST TWELVE (12) MONTHS.

GEOTEXTILE (FILTER FABRIC) SPECIFICATIONS:

GEOTEXTILE FABRIC SHALL MEET ASTM D-751 (PUNCTURE STRENGTH - 125 LB)

ASTM D-1117 (MULLEN BURST STRENGTH - 400 PSI) ASTM D-1682 (TENSILE STRENGTH - 300 LB)

FABRIC SHALL HAVE 0.08" THICK E.O.S. OF #80 SIEVE, AND MAINTAIN 125 GPM PER SQ. FT. FLOW RATE.

FABRIC SHALL BE PLACED OVER AND BENEATH THE #57 STONE DRAINAGE LAYER AND EXTENDING 2' TO EITHER SIDE.

GRAVEL BLANKET SPECIFICATIONS:

THE GRAVEL BLANKET SHALL BE DOUBLE WASHED, #57 STONE, 1-1/2" IN SIZE.

#### **UNDERDRAIN SPECIFICATIONS:**

THE UNDERDRAIN MAIN TO BE 6" PERFORATED PVC, SURROUNDED BY A GRAVEL BLANKET, WITH ½" PERFORATIONS, 6" CENTER TO CENTER. THE LATERAL TO BE 6" PERFORATED PVC. PIPE JOINTS MUST BE ADEQUATELY SEALED TO AVOID PIPING CONDITIONS (WATER SEEPING THROUGH PIPE OR STRUCTURE JOINTS). PIPE SECTIONS SHALL BE COUPLED USING SUITABLE CONNECTION RINGS AND FLANGES. PERFORATIONS ARE PLACED CLOSEST TO THE INVERT OF THE PIPE TO ACHIEVE MAXIMUM POTENTIAL FOR DRAINING THE FACILITY.

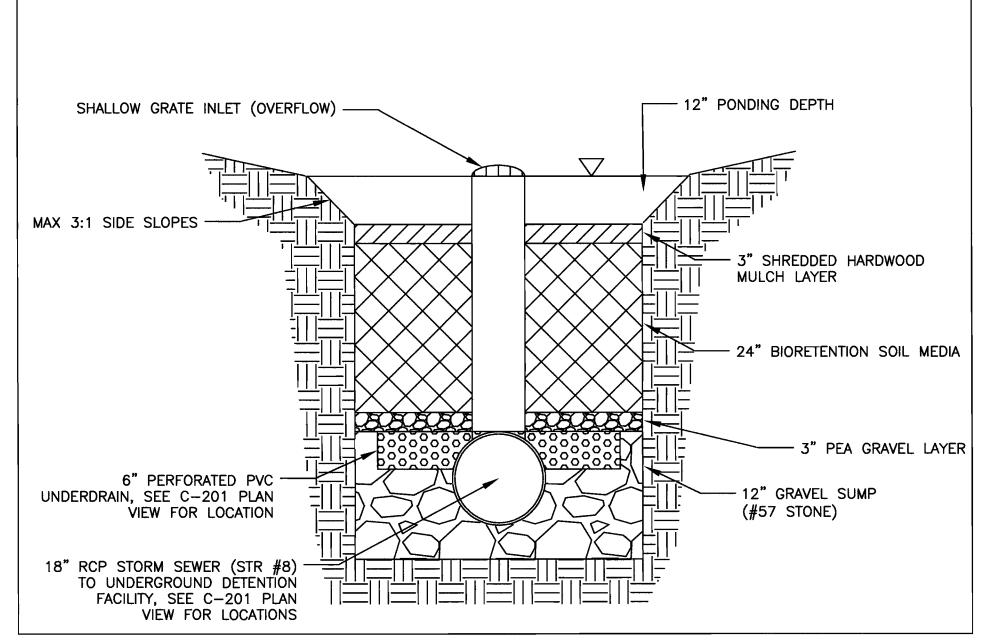
#### CLEANOUT/STANDPIPE/OBERVATION WELL SPECIFICATIONS:

THE STANDPIPE WILL INDICATE HOW QUICKLY THE BIORETENTION FACILITY DEWATERS FOLLOWING A STORM, PROVIDE MAINTENANCE CLEANOUT PORT, AND IT WILL BE CONNECTED TO THE UNDERDRAIN SYSTEM TO FACILITATE CLEANOUT. THE STANDPIPE/OBSERVATION WELL SHOULD CONSIST OF A RIGID NON-PERFORATED PVC PIPE, 6 INCHES IN DIAMETER. THE TOP OF THE WELL SHALL BE CAPPED WITH A SCREW. OR FLANGE TYPE COVER TO DISCOURAGE VANDALISM AND TAMPERING

#### INSPECTION REQUIREMENTS:

INSPECTIONS SHALL BE MADE AT THE FOLLOWING POINTS DURING CONSTRUCTION: AT THE COMPLETION OF EXCAVATION TO INSPECT SUB GRADE PREPARATION.

- DURING UNDERDRAIN AND FILTER INSTALLATION.
- BACK FILL OF SOIL INTO BIORETENTION AREAS. SOIL CERTIFICATIONS FOR BACK FILL ARE REQUIRED.
- THE FINAL TOPSOIL LAYERS SHOULD BE THOROUGHLY WETTED ACHIEVE THE DESIGN TOP SURFACE ELEVATIONS. ADDITIONAL SOIL BACKFILL SHOULD BE PLACED AS REQUIRED TO ACHIEVE THE DESIGN TOP SURFACE ELEVATIONS.
- THE WORK SHALL BE INSPECTED BY THE OWNER/ARCHITECT PRIOR TO FINAL STABILIZATION AND PLANTING.
- SEDIMENT & EROSION CONTROL PRACTICES MAY BE REMOVED UPON APPROVAL BY THE COUNTY INSPECTOR.



## **BIO-RETENTION BASIN DETAIL**

SCALE: N.T.S.

#### **NOTES**

THE BIO-RETENTION FACILITY SHALL BE INSTALLED AS ONE OF THE LAST DRAINAGE MEASURES AND ONLY AFTER THE ENTIRE SITE HAS BEEN STABILIZED UPSTREAM OF THE FACILITY.

### **WATER QUALITY CONTROL NARRATIVE**

THE TOTAL APPLICABLE AREA WITHIN THE LIMIT OF DISTURBANCE IS 177,756 SF. THE IMPERVIOUS AREA FOR THE EXISTING CONDITION IS 39.856 SF (22.4%) AND 61,429 SF (34.6%) IMPERVIOUS AREA FOR THE PROPOSED

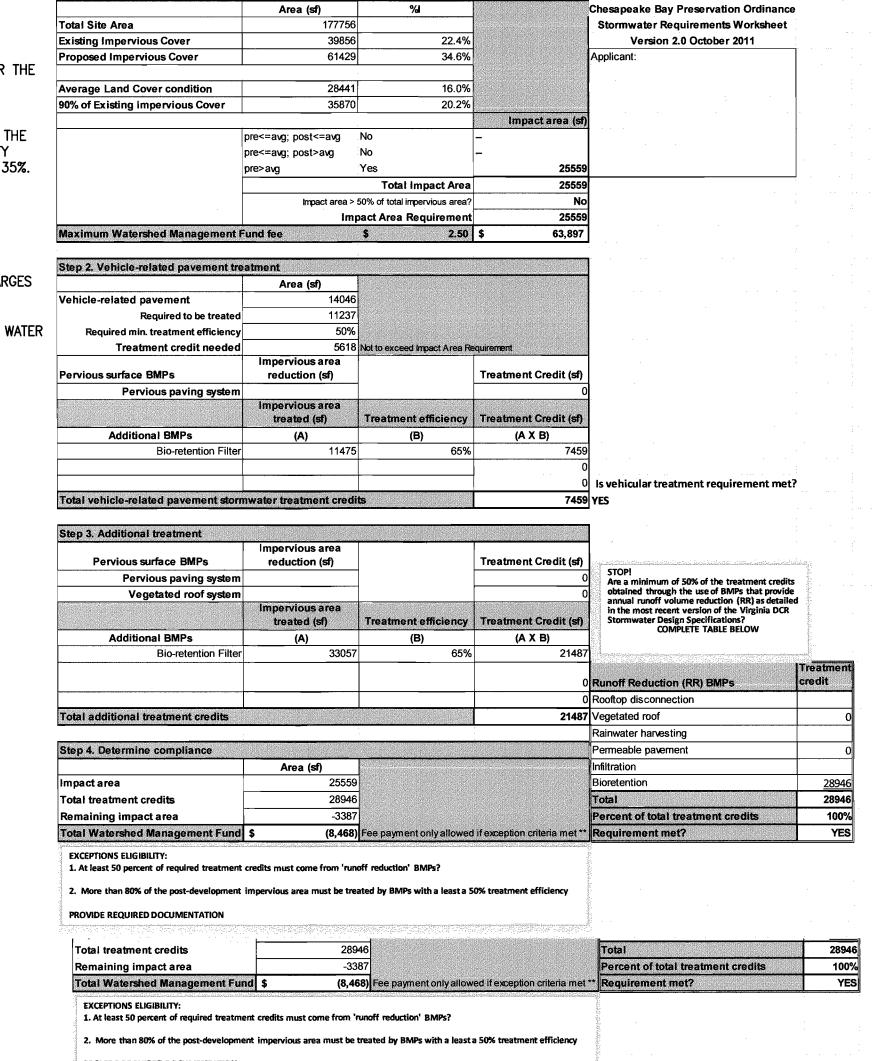
TO MEET COUNTY REQUIREMENTS FOR WATER QUALITY, THE SITE IS PROPOSING A BIORETENTION FILTER ON THE WEST SIDE OF THE SITE, BETWEEN THE PROPOSED DRIVEWAY AND NORTH MANCHESTER STREET. THE FACILITY EXCEEDS THE MINIMUM REQUIRED TREATMENT BY 13% AND EXCEEDS THE MINIMUM WQV REQUIREMENTS BY 35%.

TREATMENT RUN-OFF: 1.0 IN. PROVIDED 1.35 IN. 2,750 SQ.FT SURFACE AREA: 1,924 SQ.FT. 4,482 CF. 6,051 CF.

THE FACILITY WILL HAVE A REMOVAL EFFICIENCY OF 65%, A MAXIMUM PONDING DEPTH OF 1.0' AND DISCHARGES TO THE 60" CMP UNDERGROUND DETENTION SYSTEM TO THE SOUTH VIA 18" RCP PIPE.

PER THE ARLINGTON COUNTY STORMWATER REQUIREMENTS WORKSHEET, THE PROVIDED FACILITIES MEET THE WATER QUALITY REQUIREMENTS.

Description	Method	Frequecny	Time of the year
STRUCTURES			
WQv Inlet	Visual	Yearly	Spring
SOIL			
Inspect and Repair Erosion	Visual	Monthly	Monthly
ORGANIC LAYER			
Remulch any void areas	By hand	whenever needed	Whenever needed
Remove previous mulch	By hand	Once every two to	Spring
layer before applying new		three years	
layer (optional)			
Any additional mulch added	By hand	Once a year	Spring
(optional)			
PLANTS			
Removal and replacement	See planting specifications	Twice a year	3/15 to 4/30 and 10/1 to
of all dead and diseased			11/30
vegetation considered			
beyond treatment			
	Mechanical or by hand	N/A	Varies, depends on
Treat all diseased trees and			insect or disease
shrubs			infestation
Watering of plant material	By hand	Immediately after	N/A
shall take place at the end		completion of project	
of each day for fourteen			
consecutive days after			
planting has been			
completed			
Replace stakes after one	By hand	Once a year	Only remove stakes in
year			the spring
Replace deficient stakes or	By hand	N/A	Whenever needed
wires			
Check for accumulated	Visual	Monthly	Monthly
sediments			



**Arlington County** 

Arlington County Chesapeake Bay Preservation Ordinance Stormwater Requirements Worksheet

Step 1. Enter site characteristics and determine impact area

PROVIDE REQUIRED DOCUMENTATION

### November 2012. Sizing spreadsheet for bioretention and SW planters for compliance with Arlington County Chesapeake Bay Preservation Ordinance (CORRECTION FOR VOLUME COMPUTATIONS)

Facility name/type	Drainage Area	%IC	%Turf	P	Rv	Target storage (WQv)	Width	Length	Ponding Depth	Filter depth	Gravel depth	Top Surface Area	Bottom Surface Area (3:1 slopes for bioretention)	Ponding Volume	Soil Storage Volume (0.25 void)	Gravel Storage Volume (0.4 void)	Available Storage	% Water Quality Volume
	(acre)			(in)		(CF)	(ft)	(ft)	(in)	(in)	in	(SF)	(SF)	(CF)	(CF)	(CF)	(CF)	
Ashlawn Bioretention (min. req'd)	2.22	46%	54%	1	0.56	4482	32	80	12	36	12	2560	1924	2242	1443	770	4455	99%
Ashlawn Bioretention (proposed)	2.22	46%	54%	1.35	0.56	6051	31	98	12	36	12	3038	2750	2894	2063	1100	6057	100%

http://vwrrc.vt.edu/swc/NonPBMPSpecsMarch11/DCR%20BMP%20Spec%20No%209 BIORETENTION FinalDraft v1-9 03012011.pdf

See Section 6.1 for more information about sizing methods and void ratios.

50% for 0.5" WQV 65% for 1" WQV

Bioretention soil storage volume and gravel storage volume computations assume planting soil and gravel layer widths are same as top width; adjust as needed for different design

#### Phosphorus removal efficiencies are those credited in DCR 'Blue Book': IMPERVIOUS AREA TO BIOFILTRATION FACILITY AREA (SF) BLDG ADDITION 12,008

## TREE PLANTINGS REQUIREMENTS FOR BIO-RETENTION FACILITY

10 TREES AND SHRUBS PER 1000 S.F. OF BASIN AREA. USE A 3:1 RATIO OF SHRUBS TO TREES.

AREA = 2,750 S.F.TREES AND SHRUBS REQUIRED = 28 TREES AND SHRUBS PROVIDED = 28 TREES PROVIDED = 7

SHRUBS PROVIDED = 21

SEE LANDSCAPE DRAWINGS FOR PLANTING SCHEDULE AND SPECIES.

THERE SHALL BE THREE (3) SPECIES OF HERBACEOUS COVER, THREE (3) SPECIES OF TREES AND THREE (3) SPECIES OF SHRUBS PROVIDED IN EACH BASIN. PLEASE REFER TO THE LIST BELOW FOR OF VEGETATION RECOMMENDED FOR USE IN A BIORETENTION AREA. TREES SHALL BE PLACED ALONG THE PERIMETER OF THE BASINS. SHRUBS SHALL BE 3 TO 4 FEET IN HEIGHT OR 18 TO 24 INCHES IN SPREAD AT INSTALLATION. MIXED TREES AND SHRUBS MAY BE PLANTED AS CLOSE AS 7 FEET; AND SHRUBS ALONE FROM 4 TO 7 FEET

BALLED AND BURLAPPED AND CONTAINERIZED TREES AND SHRUBS SHOULD BE PLANTED MARCH 15 THROUGH JUNE 30 AND SEPTEMBER 15 THROUGH NOVEMBER 15. GROUND COVER EXCLUDING GRASSES AND LEGUMES CAN FOLLOW TREE AND SHRUB PLANTING DATES.

AREA (SF) AREA (AC.) PROPOSED IMPERVIOUS AREA AREA (AC.)

11,184

11,475

9.865

25,314

IMPERVIOUS AREA CALCULATIONS

44,532 IMPERVIOUS AREA BYPASS BIOFILTRATION FACILITY AREA (AC.) AREA (SF) **BLDG ADDITION** 13,578 SIDEWALK DRIVE/PARKING 10,392 PLAY AREA/TRACK 1,344

## ARLINGTON, VIRGINIA DEPARTMENT OF ENVIRONMENTAL SERVICES **BMP COMPUTATIONS**

SIDEWALK

DRIVE/PARKING

PLAY AREA/TRACK

## ASHLAWN FLEMENTARY SCHOOL ADDITION

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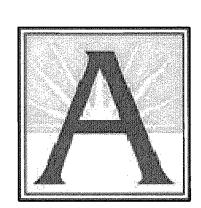
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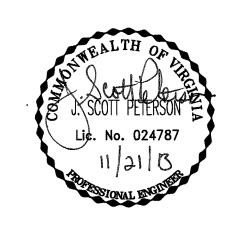
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### **ARLINGTON PUBLIC SCHOOLS**



**ASHLAWN ELEMENTARY SCHOOL ADDITION** Arlington, VA 22205



SHEET TITLE:

BMP COMPUTATIONS

C-605

3112.006.00

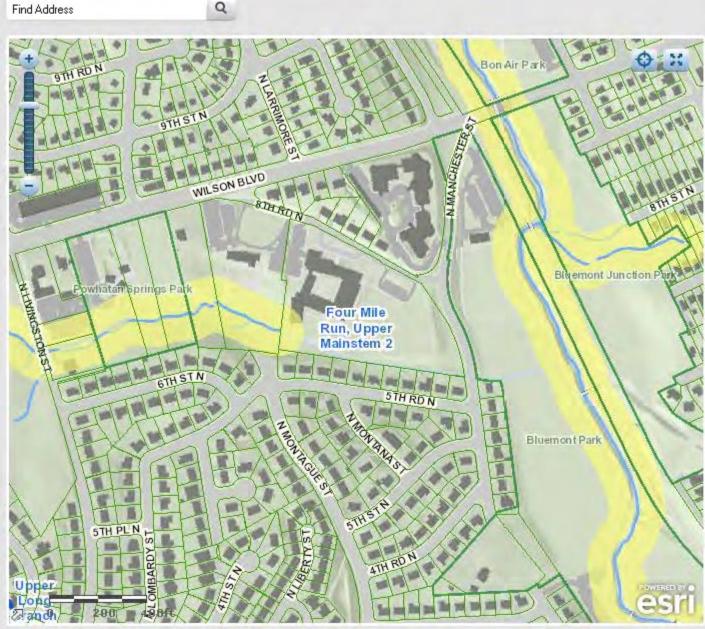
SHW Project:

#### **APPENDIX II:**

## SECTION F – FLOODPLAINS, WETLANDS, CHESAPEAKE BAY ISSUES

#### Watershed & Resource Protection Areas

Watershed boundaries for Arlington County, VA









Legend

About

#### Layers

- ☑ Parcels
- Street Names
- ▼ Watershed Boundary
- V

Parks\_Natural\_Resource

☐ 2011 Aerial Image

#### Legend

Parcels Parcels



Street Names Street Names

Watershed Boundary Watersheds

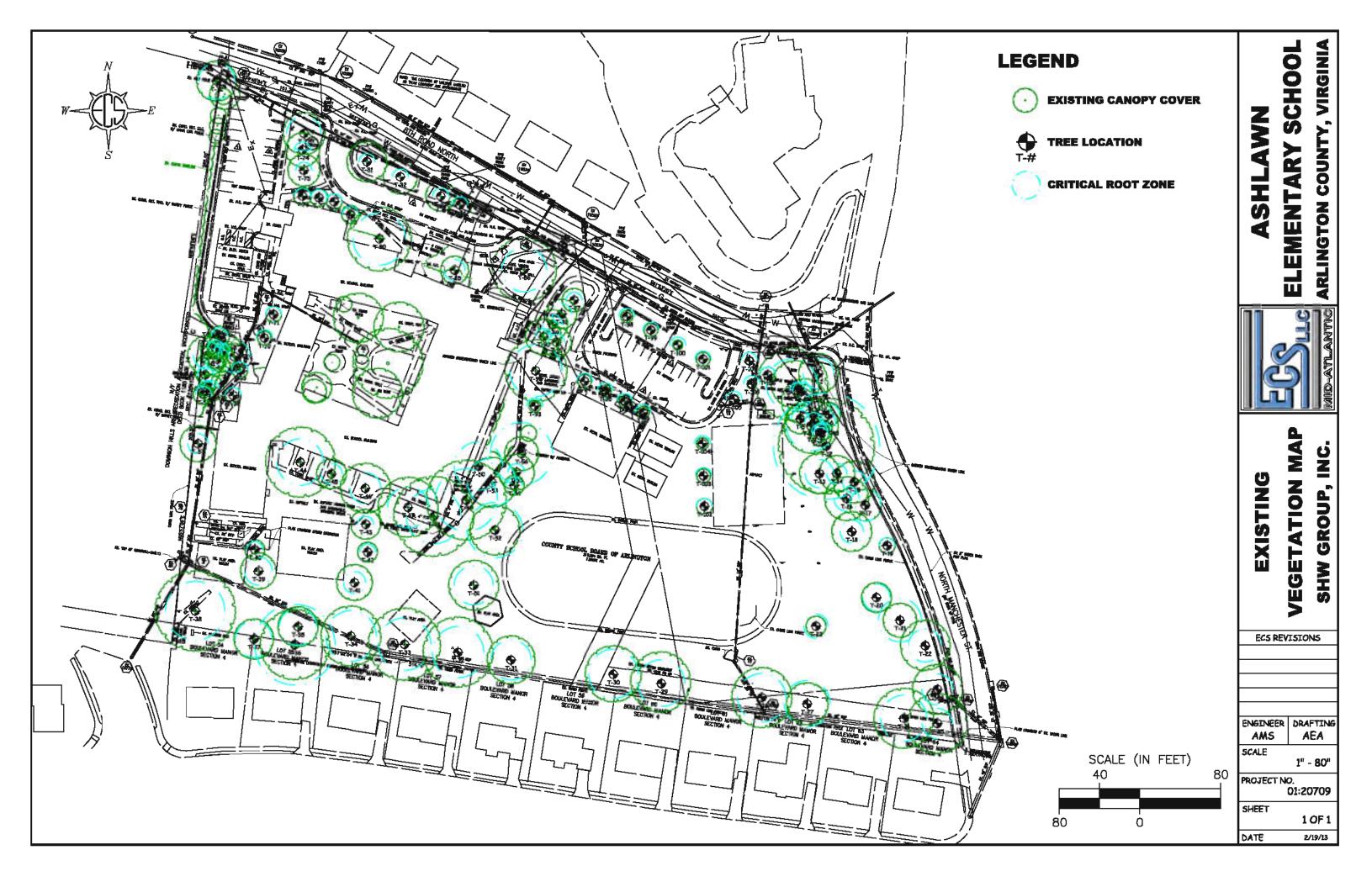


Parks\_Natural\_Resource Arlington Parks



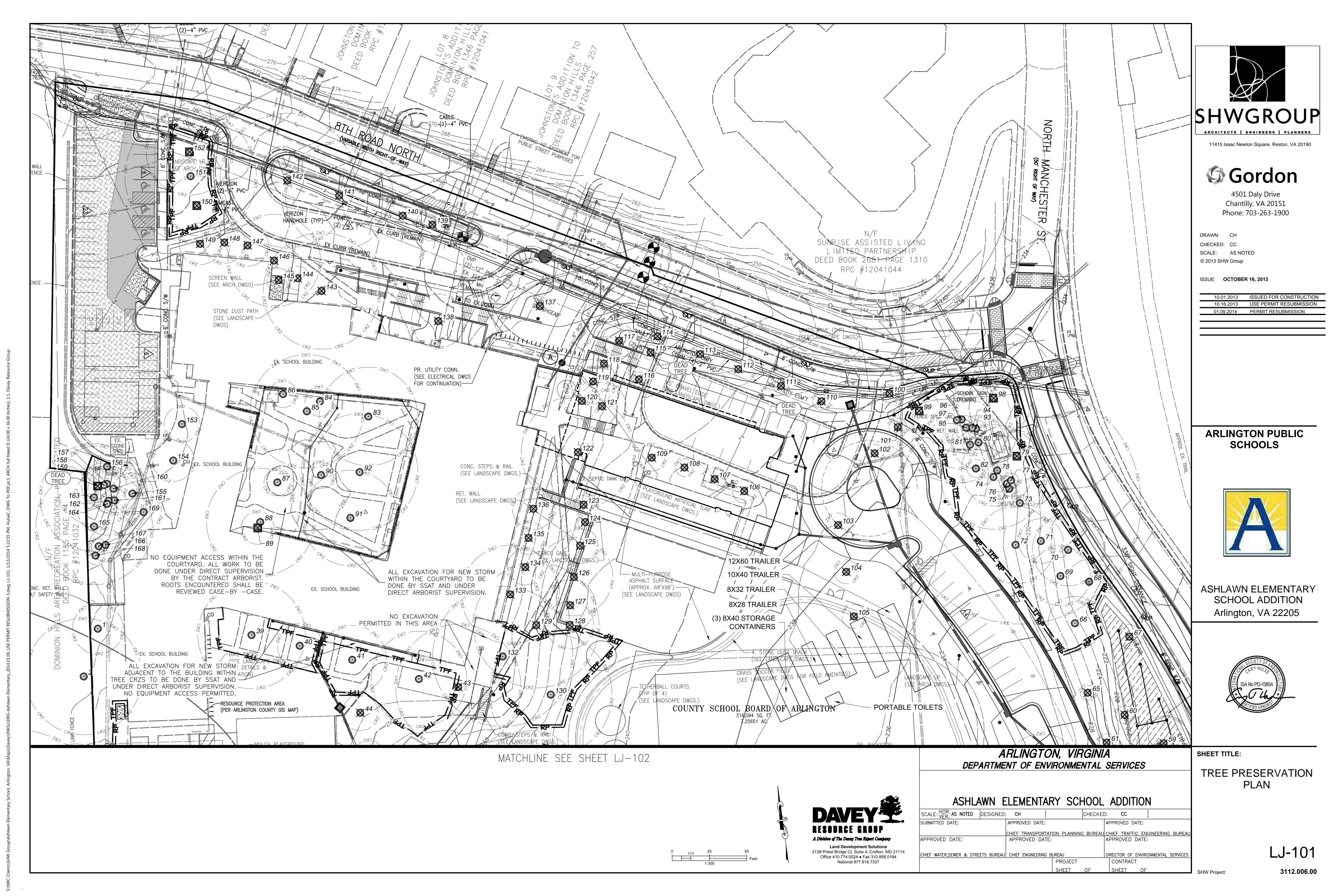
Resource Protection Buffer

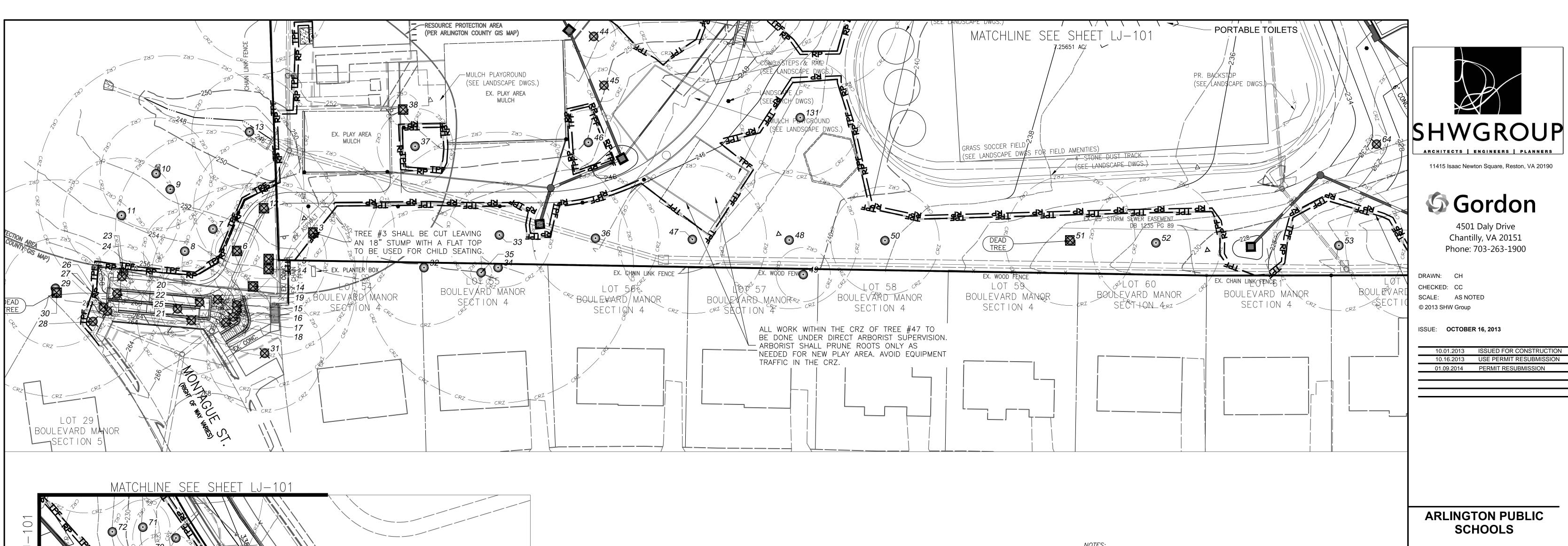
# APPENDIX III: SECTION I - FLORA AND FAUNA



Tree Number	Common Name	Scientific Name	Size (inches DBH)	Critical Root Zone (feet)	Condition	Remove	Notes
1	Red Maple	Acer rubrum	15.4	15.4	Poor		Dead leader, dead wood at base
2	Pin Oak	Quercus palustris	25.5/18	25.5	Fair		Vines
3	Pin Oak Pin Oak	Quercus palustris	5.5 9.3	8.0 9.3	Fair Fair		
5	Black Cherry	Quercus palustris Prunus serotina	9.3	9.3	Fair		
6	Sugar Maple	Acer saccharum	10.5	10.5	Fair		Some dead limbs
7	Black Cherry	Prunus serotina	9.5	9.5	Fair		Come adda iimise
8	Black Locust	Robinia pseudoacacia	24.5	24.5	Fair		
9	Black Cherry	Prunus serotina	5.0	8.0	Fair		
10	Black Cherry	Prunus serotina	5.5	8.0	Fair		
11	Black Cherry	Prunus serotina	6.5	8.0	Fair		
12	Southern Red Oak	Quercus falcata	52.8	52.8	Fair		Large dead limbs
13 14	Pin Oak Pin Oak	Quercus palustris Quercus palustris	14.2 10.0	14.2 10.0	Good Good		
15	Sugar Maple	Acer saccharum	11.5	11.5	Good		
16	Sugar Maple	Acer saccharum	12.5	12.5	Good		
17	Sugar Maple	Acer saccharum	16.0	16.0	Good		
18	Hawthorn	Crataegus spp.	11.5	11.5	Fair		
19	Golden Rain Tree	Koelreuteria paniculata	6.0	8.0	Good	_	Double Trunk
20	Golden Rain Tree	Koelreuteria paniculata	13.5	13.5	Good	Х	
21	Red Maple	Acer rubrum	21.5	21.5	Good	Х	Double trunk
22	Red Maple	Acer rubrum	16.5	16.5	Good	X	Dood wood in trunk
23 24	Blue Spruce Red Maple	Picea pungens Acer rubrum	12.0 15.4	12.0 15.4	Fair Fair	Х	Dead wood in trunk
25	Red Maple	Acer rubrum	15.4	15.4	Fair		Exposed, girdling roots Exposed, girdling roots
26	Sugar Maple	Acer saccharum	23.0	23.0	Fair		Exposed, girding roots
27	Sugar Maple	Acer saccharum	23.0	23.0	Fair		
28	Sugar Maple	Acer saccharum	24.0	24.0	Fair		Exposed, girdling roots
29	Sugar Maple	Acer saccharum	23.2	23.2	Fair		Exposed, girdling roots
30	Sugar Maple	Acer saccharum	24.5	24.5	Fair		Trunk damage, exposed, girdling roots
31	Sugar Maple	Acer saccharum	20.0	20.0	Fair		
32	Sugar Maple	Acer saccharum	25.5	25.5	Fair		Exposed, girdling roots
33 34	Sugar Maple	Acer saccharum	26.2 25.2	26.2 25.2	Fair Fair		Exposed, girdling roots
35	Sugar Maple Pin Oak	Acer saccharum  Quercus palustris	18.5	18.5	Fair		Large dead limbs, exposed, girdling roots  Exposed, girdling roots
36	Silver Maple	Acer saccharinum	40.0	40.0	Fair		Offsite tree, double trunk
37	Tulip Poplar	Liriodendron tulipifera	18.3	18.3	Fair		Offsite tree
38	Red Maple	Acer rubrum	29.3	29.3	Fair		Leaning
39	Willow Oak	Quercus phellos	14.0	14.0	Good		_
40	Willow Oak	Quercus phellos	7.0	8.0	Good	Х	
41	Black Cherry	Prunus serotina	11.0	11.0	Fair		Trunk damage
42	Black Cherry	Prunus serotina	5.5	8.0	Fair	Х	
43 44	Willow Oak Willow Oak	Quercus phellos Quercus phellos	7.3 23.0	8.0 23.0	Fair Good	Х	
45	Northern Red Oak	Quercus priellos Quercus rubra	10.5	10.5	Fair		
46	Silver Maple	Acer saccharinum	15.5	15.5	Fair		
47	Sugar Maple	Acer saccharum	20.5	20.5	Fair		Prune dead limbs
48	Sugar Maple	Acer saccharum	27.3	27.3	Fair		Exposed roots
49	Red Maple	Acer rubrum	31.0	31.0	Fair		Exposed roots
50	Red Maple	Acer rubrum	24.0	24.0	Fair		- · · · · ·
51	Red Maple	Acer rubrum	19.4	19.4	Fair		Exposed, girdling roots
52 53	Willow Oak Southern Red Oak	Quercus phellos Quercus falcata	27.5 24.0	27.5 24.0	Good Good		
54	American Holly	llex opaca	6.0	8.0	Good	Х	Double trunk
55	American Sycamore	Platanus occidentalis	8.5	8.5	Good	X	2000 0000
56	Southern Red Oak	Quercus falcata	30.9	30.9	Good	X	Double trunk
57	Pin Oak	Quercus palustris	10.0	10.0	Good		
58	Ornamental Viburnum	Viburnum spp.	3.0	8.0	Good	_	Multi trunk
59	Black Locust	Robinia pseudoacacia	4.6	8.0	Fair		
60	Eastern Hemlock	Tsuga canadensis	3.0	8.0	Fair		Multi-trunk
61	Black Locust	Robinia pseudoacacia	6.3	8.0	Fair		Covered in vines
62 63	Unknown spp. White Pine	- Pinus strobus	5.0 7.0	8.0	Poor Good		Covered in vines
64	White Pine	Pinus strobus Pinus strobus	12.0	8.0 12.0	Fair		Vines
65	White Pine	Pinus strobus	14.0	14.0	Fair		Vines
66	White Pine	Pinus strobus	16.0	16.0	Fair		Vines
		Prunus serotina	8.0	8.0	Fair		Vines

68	Virginia Pine	Pinus virginiana	5.0	8.0	Fair		Vines
69	Black Locust	Robinia pseudoacacia	6.0	8.0	Fair		Vines
70	American Holly	llex opaca	8.5	8.5	Good		7.1100
71	Pin Oak	Quercus palustris	6.3	8.0	Good		
72	Black Locust	Robinia pseudoacacia	18.0	18.0	Poor		Nearly dead
73	White Pine	Pinus strobus	17.2	17.2	Fair		Trouily dodd
74	Crepe Myrtle	Laegerstroemia indica	3.0	8.0	Good		Multi-trunk
75	Flowering Dogwood	Cornus florida	7.0	8.0	Poor		Multi-trunk, dead trunks
76	Black Cherry	Prunus serotina	8.0	8.0	Good		
77	Black Cherry	Prunus serotina	8.0	8.0	Good		
78	Black Cherry	Prunus serotina	8.0	8.0	Good		
79	Red Cedar	Juniperus virginiana	8.0	8.0	Good		Triple trunk
80	White Pine	Pinus strobus	26.0	26.0	Fair	Х	Large broken, poorly pruned limbs
81	Crepe Myrtle	Laegerstroemia indica	3.0	8.0	Good		Multi-trunk
82	Red Maple	Acer rubrum	5.0	8.0	Fair		Multi-trunk
83	Unk. Ornamental	-	5.9	8.0	Good		
84	Unk. Ornamental	-	5.5	8.0	Good		
85	Flowering Dogwood	Cornus florida	10.5	10.5	Fair	х	Dead trunk
86	Red Maple	Acer rubrum	22.0	22.0	Fair	х	Girdling roots
87	Red Maple	Acer rubrum	6.0	8.0	Good	х	
88	Black Cherry	Prunus serotina	10.0	10.0	Good	х	
89	Black Cherry	Prunus serotina	10.0	10.0	Good	х	
90	Crepe Myrtle	Laegerstroemia indica	3.0	8.0	Good	х	Multi-trunk
91	Crepe Myrtle	Laegerstroemia indica	3.0	8.0	Good	х	Multi-trunk
92	Red Maple	Acer rubrum	26.0	26.0	Fair	х	Trunk knots, dead wood
93	Northern Red Oak	Quercus rubra	3.5	8.0	Good	х	
94	Willow Oak	Quercus phellos	5.0	8.0	Fair	Х	
95	Willow Oak	Quercus phellos	4.0	8.0	Fair	х	
96	Willow Oak	Quercus phellos	4.5	8.0	Fair	х	
97	Willow Oak	Quercus phellos	4.5	8.0	Fair	Х	
98	Sugar Maple	Acer saccharum	4.0	8.0	Good	х	
99	Sugar Maple	Acer saccharum	6.0	8.0	Fair	х	
100	Sugar Maple	Acer saccharum	3.0	8.0	Good	Х	
101	Sugar Maple	Acer saccharum	5.0	8.0	Good	Х	
102	Willow Oak	Quercus phellos	5.0	8.0	Fair	Х	
103	Willow Oak	Quercus phellos	5.0	8.0	Fair	Х	
104	Willow Oak	Quercus phellos	5.0	8.0	Fair	Х	
105	Sugar Maple	Acer saccharum	4.0	8.0	Good	х	
106	Sugar Maple	Acer saccharum	4.0	8.0	Good	Х	
107	Sugar Maple	Acer saccharum	4.0	8.0	Good	Х	
108	Norway Spruce	Picea abies	5.0	8.0	Good	х	





- 1. TREE LOCATIONS MAY BE APPROXIMATE. OWNER AND CONTRACT ARBORIST SHALL VERIFY ALL TREE LOCATIONS AND CONDITIONS PRIOR TO CONSTRUCTION AND/OR TREATMENT OR REMOVAL.
- 2. PRE-CONSTRUCTION MEETING SHALL BE HELD PRIOR TO COMMENCEMENT OF DEMOLITION/CONSTRUCTION ACTIVITY. ARLINGTON COUNTY, OWNER, DESIGN TEAM MEMBERS (PROJECT ARBORIST, LANDSCAPE ARCHITECT, ENGINEER AND ARCHITECT), CONTRACT ARBORIST, SITE AND LANDSCAPE CONTRACTORS SHALL ATTEND.
- 3. THE INSPECTION OF THESE TREES CONSISTED SOLELY OF A VISUAL INSPECTION FROM THE GROUND. WHILE MORE THOROUGH TECHNIQUES ARE AVAILABLE FOR INSPECTION AND EVALUATION, THEY WERE NEITHER REQUESTED NOR CONSIDERED NECESSARY OR APPROPRIATE AT THIS TIME.
- 4. TREES RATED "POOR" OR "DEAD" THAT ARE NOT RECOMMENDED FOR REMOVAL DUE TO CONSTRUCTION IMPACT MAY WARRANT FURTHER EVALUATION AND/OR TREATMENT OR REMOVAL.

## **ARLINGTON PUBLIC SCHOOLS**



ASHLAWN ELEMENTARY SCHOOL ADDITION Arlington, VA 22205



## ARLINGTON, VIRGINIA DEPARTMENT OF ENVIRONMENTAL SERVICES

#### ACHIAWNI FI EMENTARY SCHOOL ADDITION

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	CHIEF TRANSPORTATION PL	ANNING BUREAU CH	HEF TRAFFIC ENC	SINEERING BUREAU							
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CHIEF WATER, SEWER & STREETS BUR	CAU CHIEF ENGINEERING BUREAU	DIF	RECTOR OF ENVIRO	NMENTAL SERVICES							
	PRO	JECT	CONTRACT								
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SHEET TITLE:

TREE PRESERVATION PLAN

LJ-102

3112.006.00

BOULEVARD MANORO BOULENARD MANOR

LEGEND EXISTING TREE WITH CRITICAL ROOT ZONE (CRZ) EXISTING TREE TO BE REMOVED EXISTING TREE TO BE REMOVED BY ARBORIST (SEE SPECIFICATIONS) PROPOSED TREE PROTECTION FENCE (SEE DETAIL & SPECIFICATIONS) PROPOSED ROOT PRUNING (SEE DETAIL & SPECIFICATIONS) PROPOSED LOD

RESOURCE GROUP

A Division of The Davey Tree Expert Company Land Development Solutions 2138 Priest Bridge Ct, Suite 4, Crofton, MD 21114 Office 410.774.0024 • Fax 310.858.0184 National 877.818.7337

#### 1. GENERAL

- 1.1. ALL MEASURES WILL BE REVIEWED AFTER INSTALLATION AND APPROVED BY OWNER AND ARLINGTON
- 1.2. SUBSTITUTIONS OR ALTERNATIVE METHODS OR MATERIALS SHALL BE REVIEWED AND APPROVED BY ARLINGTON COUNTY.
- 1.3. ALL TREE PROTECTION MEASURES MUST BE IN PLACE PRIOR TO COMMENCEMENT OF DEMOLITION, SITE CLEARING OR CONSTRUCTION AND MAINTAINED THROUGHOUT CONSTRUCTION. TREE PROTECTION
- 1.4. REFER TO THE TREE PROTECTION ACTION KEY (TPAK) FOR SPECIFIC RECOMMENDATIONS FOR EACH

#### 2. <u>REMOVAL BY ARBORIST</u>

- 2.1. TREES DESIGNATED AS "REMOVAL BY ARBORIST" SHALL BE REMOVED BY A QUALIFIED ARBORIST "BY HAND", TO MINIMIZE POTENTIAL FOR DAMAGE TO REMAINING TREES AND ROOTS.
- 2.2. CREWS SHALL BE DIRECTLY SUPERVISED BY A CERTIFIED ARBORIST.

MEASURES MAY ONLY BE REMOVED WITH ARLINGTON COUNTY APPROVAL.

- 2.3. TRUCKS AND MECHANIZED EQUIPMENT SHALL NOT ENTER THE FENCED TREE PROTECTION AREAS.
- 2.4. STUMPS SHALL BE LEFT IN PLACE OR GROUND OUT AT THE OWNERS DISCRETION. STUMPS IN TURF/LANDSCAPE AREAS OR WITHIN ROOT AERATION MATTING AREAS SHALL BE GROUND.
- 2.5. STUMP GRINDING SHALL BE WITH SMALL MACHINES SPECIFICALLY DESIGNED FOR THAT PURPOSE. NO STUMPS SHALL BE EXCAVATED EXCEPT AS DESCRIBED HEREIN. STUMPS SHALL BE GROUND NOT MORE THAN 8" BELOW GRADE AND CARE MUST BE TAKEN TO MINIMIZE DAMAGE TO ROOTS OF RETAINED TREES.

#### 3. TREE PROTECTION FENCE

- 3.1. TYPICALLY, INSTALL AFTER ROOT PRUNING AND PRIOR TO CLEARING & GRADING.
- 3.2. FENCE SHALL BE ONE OF THE FOLLOWING: (SEE DETAIL)
- 3.2.1. 4' HIGH, 14 GAUGE WELDED WIRE FENCE MOUNTED ON 6' STEEL "T" POSTS SPACED NOT MORE THAN 10' APART. FENCE SHALL BE ATTACHED TO POSTS USING GALVANIZED STEEL CLIPS OR ALUMINUM TIES. PLASTIC "ZIP" TIES SHALL NOT BE USED.
- 3.2.2. 6' HIGH CHAIN LINK FENCE FABRIC MOUNTED ON 8', 1.5"Ø GALVANIZED STEEL PIPE LINE POSTS. CORNER POSTS SHALL BE 2"Ø. FENCE SHALL BE ATTACHED TO POSTS USING ALUMINUM TIES. PLASTIC "ZIP" TIES SHALL NOT BE USED.
- 3.2.3. SUPER SILT FENCE INSTALLED AS SPECIFIED IN THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK.
- 3.3. TREE PROTECTION AREA SIGNS SHALL BE AFFIXED TO ALL TREE PROTECTION FENCE AT 30' SPACING AVERAGE. SIGNS SHALL BE BILINGUAL (ENGLISH AND SPANISH). SIGNS SHALL NOT BE AFFIXED DIRECTLY TO TREES. SEE DETAIL.
- 3.4. SILT FENCE SHALL BE COORDINATED FOR INSTALLATION TO ENHANCE PROTECTION AND AVOID UNNECESSARY ROOT CUTS BY SILT FENCE INSTALLATION.
- 3.5. FENCE MAY BE REMOVED ONLY AFTER ALL CONSTRUCTION AND FINAL LANDSCAPING IS COMPLETE AND WITH ARLINGTON COUNTY APPROVAL.

#### AND WITH ARLING

- 4. <u>ROOT PRUNE</u>
   4.1. THE EXACT LOCATION AND DEPTH WILL BE DETERMINED DURING THE PRE-CONSTRUCTION MEETING. SPECIFIC EQUIPMENT & METHODS WILL BE DETERMINED BY ARLINGTON COUNTY BASED UPON DEPTH
- & TREE IMPACT. (SEE DETAIL)

  4.2. HAND PRUNE ROOTS OVER 1" DIAMETER WITHIN CRZS OF SIGNIFICANT TREES. STEEP SLOPES, DEEP EXCAVATIONS AND PAVEMENT/CURB REMOVAL WILL BE REVIEWED WHEN OPEN FOR HAND ROOT
- PRUNING DURING CONSTRUCTION.
- 4.3. COORDINATE WITH SILT FENCE INSTALLATION TO MINIMIZE UNNECESSARY ROOT DAMAGE. 4.4. ROOT PRUNING SHALL BE PERFORMED BY A CERTIFIED ARBORIST.

#### 5. <u>WOOD CHIP MULCH</u>

- 5.1. INSTALL MULCH BED RINGS FOR DESIGNATED SIGNIFICANT TREES OR PROVIDE CONTINUOUS MULCH STRIP 10' TO 15' WIDE ALONG LOD WITHIN PRESERVED CRZ AREAS.
- 5.2. MULCH SHALL BE INSTALLED TO A DEPTH OF 4".
- 5.3. MULCH SHALL BE DOUBLE GROUND SHREDDED HARDWOOD, AGED FOR AT LEAST 6 MONTHS FROM AN APPROVED SOURCE. INSUFFICIENTLY OR IMPROPERLY AGED MULCH CONTAINING HIGH BACTERIAL COUNTS OR HIGH LEVELS OF BARK OR OTHER MATERIALS RESISTANT TO DECOMPOSITION SHALL NOT BE USED. MULCH SHALL NOT CONTACT TRUNK OF TREES.
- 5.4. EDGING IS NEITHER NECESSARY NOR DESIRABLE FOR THIS OPERATION.

#### 6. CONSTRUCTION MONITORING/INSPECTIONS

6.1. A CERTIFIED ARBORIST SHALL MAKE REGULAR WEEKLY INSPECTIONS DURING ACTIVE CONSTRUCTION AND DEMOLITION AND PROVIDE REPORTS TO THE OWNER AND ARLINGTON COUNTY. REPORTS SHALL DOCUMENT CONDITION OF TREE PROTECTION DEVICES AND PROVIDE RECOMMENDATIONS FOR MAINTENANCE AND/OR ADDITIONAL CARE.

#### 7. MISCELLANEOUS TREE PROTECTION REQUIREMENTS

- 7.1. NO TOXIC MATERIALS SHALL BE STORED WITHIN 100' OF TREE PROTECTION AREAS.
- 7.2. ALL WORK IN OR NEAR TREE PROTECTION AREAS SHALL BE PERFORMED IN A MANNER TO MINIMIZE DAMAGE TO TREES, SHRUBS, GROUND COVER, SOIL AND ROOT SYSTEMS.
- 7.3. MECHANIZED EQUIPMENT SHALL NOT BE PERMITTED TO ENTER ANY TREE PROTECTION AREAS.
  8. CANOPY PRUNING & SUPPORT CABLES
- 8.1. CANOPY PRUNING SHALL BE CLEANING PRUNING AND/OR RESTORATION PRUNING AND SHALL BE IN
- CONFORMANCE WITH CURRENT ANSI A300 STANDARDS AND ISA BEST MANAGEMENT PRACTICES.
- 8.2. PRUNING SHALL REMOVE ONLY DEAD, DYING, DAMAGED OR BROKEN BRANCHES GREATER THAN 1" IN DIAMETER. PRUNING OF SMALL TREES MAY INCLUDE REMOVAL OF LIMBS TO IMPROVE STRUCTURE.
- 8.3. FOLIAGE REMOVAL SHALL NOT BE MORE THAN 25% OF THE TOTAL LIVE CANOPY VOLUME OF ANY TREE IN ANY ONE SEASON. PRUNING SHALL NOT REMOVE INTERIOR BRANCHING EXCEPT AS OTHERWISE STATED.
- 8.4. PRUNING FOR SPECIFIC CLEARANCE (FOR CONSTRUCTION ACCESS OR PROPOSED IMPROVEMENTS) SHALL BE REVIEWED AND APPROVED BY THE OWNER AND ARLINGTON COUNTY.
- 8.5. SUPPORT CABLES SHALL BE INSTALLED IN CONFORMANCE WITH CURRENT ANSI A300 STANDARDS AND ISA BEST MANAGEMENT PRACTICES.
- 9. CONSTRUCTION STRATEGIES FOR TREE PROTECTION
- 9.1. CONSTRUCTION STAGING, STOCKPILING EQUIPMENT STORAGE, ETC. SHALL BE LIMITED TO AREAS OF EXISTING PAVEMENT AND AREAS WITHIN THE LOD EXCEPT AS OTHERWISE NOTED.
- 9.2. CONSTRUCTION EQUIPMENT ACCESS BETWEEN VARIOUS WORK AREAS SHALL REMAIN ON EXISTING PAVEMENT/IMPROVED SURFACES TO THE GREATEST EXTENT POSSIBLE. WHERE THIS IS NOT POSSIBLE AND WITHIN THE CRITICAL ROOT ZONE (CRZ) OF ANY TREE TO REMAIN, ACCESS SHALL BE MADE ON ROOT PROTECTION MATTING (RPM)(SEE DETAIL) OR APPROVED ALTERNATIVE. CONTRACTOR TO DETERMINE ACCESS NEEDS AND COORDINATE RPM INSTALLATION WITH THE CONTRACT ARBORIST AT THE PRE-CONSTRUCTION MEETING OR BEFORE.
- 9.3. PROPOSED LANDSCAPE PLANTINGS OUTSIDE THE LOD SHALL BE INSTALLED BY HAND. MECHANIZED EQUIPMENT SHALL NOT BE USED OUTSIDE THE LOD OR OFF OF EXISTING PAVED AREAS TO EXCAVATE FOR PLANTINGS OR FOR STAGING PLANT MATERIAL.
- 9.4. COORDINATE PLANTING LOCATIONS WITHIN CRZS WITH THE CONTRACT ARBORIST TO AVOID UNNECESSARY ROOT DAMAGE. PLANTING PITS WITHIN CRZS SHOULD BE DUG BY HAND. ROOTS GREATER THAN 1.5" SHOULD NOT BE CUT.

#### 10. ROOT PROTECTION MATTING

- 10.1. TEMPORARY MATTING TO PROTECT EXISTING ROOTS AND SOILS FROM PROPOSED SHORT TERM CONSTRUCTION TRAFFIC IMPACTS.
- 10.2. TO PREPARE SITE, REMOVE ANY DEBRIS BY HAND AND SPREAD AN EVEN LAYER OF WOOD CHIP MULCH 4—6" THICK OVER THE ENTIRE AREA TO RECEIVE MATTING.
- 10.3. MATTING SHALL BE INSTALLED IN A SINGLE LAYER ON MULCH.
- 10.4. TOPSOIL SHALL NOT BE DISTURBED OR REMOVED. NO GRUBBING, GRADING, EXCAVATION OR EQUIPMENT TRAFFIC SHALL BE ALLOWED IN THE AREA TO RECEIVE RPM. EQUIPMENT MAY TRAVEL ON RPM AFTER IT IS INSTALLED, BUT SHOULD BE MINIMIZED. TRACKED EQUIPMENT SHOULD NOT TURN ON RPM TO AVOID DAMAGE.
- 10.5. MATTING MATERIAL SHALL BE TENAX TENDRAIN 770/2 OR APPROVED EQUIVALENT.
- 10.6. RPM SHALL BE INSTALLED BY A CERTIFIED ARBORIST.

  10.7. RPM SHALL NOT BE REMOVED BY SITE CONTRACTORS.

#### 11. ROOT AERATION MATTING

- 11.1. PERMANENT MATTING TO PROTECT EXISTING ROOTS AND SOILS FROM PROPOSED GRADE FILLS AND
- 11.2. RAM INSTALLATION SHALL INCORPORATE GEOGRID LAYER BETWEEN RAM AND AGGREGATE FILL. REFER TO GEOGRID SECTION.
- 11.3. INSTALL A SINGLE LAYER OF MATTING ON EXISTING, UNDISTURBED GRADE. REMOVE DEBRIS BY HAND.
- 11.4. TEMPORARY FENCING (ORANGE PLASTIC OR OTHER) MUST BE INSTALLED IN THE AREAS TO RECEIVE

- RAM IF FILL IS NOT TO BE PLACED IMMEDIATELY AT THE BEGINNING OF CONSTRUCTION.
- 11.5. TOPSOIL SHALL NOT BE DISTURBED OR REMOVED. NO GRUBBING, GRADING, EXCAVATION OR EQUIPMENT TRAFFIC SHALL BE ALLOWED IN THE AREA TO RECEIVE RAM. EQUIPMENT MAY TRAVEL ON RAM AFTER IT IS INSTALLED AND FILL MATERIAL PLACED, BUT SHOULD BE MINIMIZED.
- 11.6. MATTING MATERIAL SHALL BE TENAX TENDRAIN 770/2 OR APPROVED EQUIVALENT.
- 11.7. RAM SHALL BE INSTALLED BY A CERTIFIED ARBORIST.
- 11.8. RAM IS PERMANENT AND SHALL NOT BE REMOVED BY SITE CONTRACTORS. FILL MATERIAL SHALL BE PLACED DIRECTLY ON RAM.
- 11.9. FILTER FABRIC (SILT FENCE FABRIC) SHALL BE INSTALLED IN 2 LAYERS AS SHOWN IN THE DETAIL (NOT TRENCHED) TO PROTECT THE RAM CORE FROM CONTAMINATION. INSTALLATION OF SILT FENCE FOR EROSION CONTROL SHALL BE COORDINATED WITH THE ARBORIST AND MUST BE PERFORMED BY THE ARBORIST TO PREVENT DAMAGE TO TREE ROOTS FROM TRENCHING OPERATIONS. EROSION CONTROL SOCKS MAY BE USED IN LIEU OF SILT FABRIC.

#### 12. GEOGRID AGGREGATE/SOIL REINFORCEMENT

- 12.1. FOR USE WITH ROOT AERATION MATTING (RAM) AS A MEANS TO MINIMIZE AGGREGATE FILL REQUIRED FOR ABOVE GRADE ROADWAY OR FILL APPLICATIONS. APPLICATION WILL MINIMIZE SOIL COMPACTION AND ROOT DAMAGE FROM FILL AND CONSTRUCTION ACTIVITY.
- 12.2. GEOGRID SHALL BE TENSAR® TRIAX® TX5 OR APPROVED PERFORMANCE EQUIVALENT.
- 12.3. GEOGRID PLACEMENT:
  12.3.1. GEOGRID SHALL BE INSTALLED DIRECTLY ON RAM PER MANUFACTURERS SPECIFICATIONS.
- 12.3.2. GEOGRID SHALL EXTEND JUST BEYOND TOE OF SLOPE OF FILL MATERIAL.
  12.4. AGGREGATE PLACEMENT:
- 12.4.1. AGGREGATE PLACEMENT SHALL BE IN A SINGLE LIFT, NOT LESS THAN 6" THICKNESS.
  12.4.2. AGGREGATE SHALL BE COMPACTED AS DIRECTED BY THE PROJECT ENGINEER. AGGREGATE FILL

MATERIAL SHALL BE PLACED, SPREAD, AND COMPACTED IN SUCH A MANNER THAT MINIMIZES THE

- DEVELOPMENT OF WRINKLES IN THE GEOGRID AND/OR MOVEMENT OF THE GEOGRID.

  12.4.3. COMPACTION SHALL BE MADE FIRST BY STATIC ROLLING THE ENTIRE PLACEMENT, THEN BY VIBRATION IF REQUIRED.
- 12.5. REFER TO RAM DETAIL.

#### 13. SPECIAL DEMOLITION PROCEDURES

- 13.1. DEMOLITION OF WALKS AND CURBS WITHIN TREE PROTECTION AREAS (TPAS) SHALL BE PERFORMED BY THE CONTRACT ARBORIST OR DIRECTLY SUPERVISED BY A CERTIFIED ARBORIST.
- 13.2. MECHANIZED EQUIPMENT SHALL NOT ENTER THE TPAS.
- 13.3. BACKFILL OF VOIDS FROM DEMOLITION WITHIN THE TPAS SHALL BE LOOSELY PLACED TOPSOIL. ONLY THE AMOUNT OF SOIL NECESSARY TO FILL THE VOID WITHOUT SPREADING OVER EXISTING ADJACENT GRADES SHALL BE ALLOWED.
- 13.4. ROOTS ENCOUNTERED DURING DEMOLITION SHALL BE REVIEWED ON A CASE—BY—CASE BASIS BY THE CONTRACT ARBORIST. THE ARBORIST SHALL PROVIDE APPROPRIATE TREATMENT OR PRUNING METHODS AS NEEDED AND IN GENERAL CONFORMANCE WITH ACCEPTED INDUSTRY STANDARDS AND THIS SECT
- 14. <u>SSAT EXCAVATION WITHIN CRZS</u>
  14.1. PROPOSED DRY UTILITIES, LIGHTING CONDUITS, HARDSCAP
- 14.1. PROPOSED DRY UTILITIES, LIGHTING CONDUITS, HARDSCAPE, OR SPRINKLERS WITHIN TREE PROTECTION AREAS (TPAS) SHALL BE EXCAVATED BY SUPERSONIC AIRTOOL (SSAT) TO MINIMIZE DAMAGE TO ROOT SYSTEMS.
- 14.2. OWNER, CONTRACTOR, CONTRACT ARBORIST, AND ARLINGTON COUNTY SHALL REVIEW THE PROPOSED LOCATION(S) DURING THE PRE—CONSRUCTION MEETING.
- 14.3. PRE-WATERING OF THE PROPOSED AREAS OF EXCAVATION DURING SUMMER AND FALL MONTHS IS
- RECOMMENDED TO MAINTAIN ROOT / SOIL MOISTURE.

  14.4. THE CONTRACT ARBORIST SHALL PROVIDE A QUALIFIED ARBORIST CREW EXPERIENCED WITH THE SSAT AND UTILITY EXCAVATION TO PROTECT ADJACENT TREES, OPEN THE EXCAVATION, HAND PRUNE MINOR ROOTS, AND IDENTIFY AND PROTECT PRIORITY ROOTS TO REMAIN. COORDINATION WITH THE APPROPRIATE SUB—CONTRACTOR SHALL BE MADE TO DETERMINE APPROPRIATE WIDTH, DEPTH & SEQUENCING, UTILITY INSTALLATION, BACKFILL, COMPLETION, AND COVER.

#### 15. SSAT LANDSCAPE PLANTING EXCAVATION

- 15.1. PROPOSED LANDSCAPE PLANTING OF B&B PLANTS WITHIN CRITICAL ROOT ZONES WITHIN TPAS SHALL BE REVIEWED BY THE CONTRACT ARBORIST, CONTRACTOR, AND ARLINGTON COUNTY IN THE FIELD TO DETERMINE POTENTIAL FOR DAMAGE TO PRIORITY ROOTS SYSTEMS OF SELECT TREES AND LAYOUT THE LIMIT OF WORK.
- 15.2. PRE-WATERING OF THE PROPOSED AREAS OF EXCAVATION DURING SUMMER AND FALL MONTHS IS RECOMMENDED TO MAINTAIN ROOT / SOIL MOISTURE.
- 15.3. THE CONTRACT ARBORIST SHALL PROVIDE A QUALIFIED ARBORIST CREW EXPERIENCED WITH THE SSAT AND LANDSCAPE PLANTING EXCAVATION TO PROTECT ADJACENT NATURAL RESOURCES AND CONSTRUCTION WORK, OPEN THE EXCAVATION, HAND PRUNE MINOR ROOTS, AND IDENTIFY AND PROTECT PRIORITY ROOTS TO REMAIN. COORDINATION WITH THE APPROPRIATE SUB—CONTRACTOR SHALL BE MADE TO DETERMINE APPROPRIATE WIDTH, DEPTH, SEQUENCING.

#### 16. <u>SOIL CARE/ FERTILIZATION</u>

- 16.1. INITIAL SOIL TESTING WITHIN TREE PROTECTION AREAS IS REQUIRED. CONDUCT INDIVIDUAL SOIL TESTS FOR SEPARATE TREE PROTECTION AREAS (SMALL ADJACENT AREAS MAY BE TESTED TOGETHER). SOIL TEST SHALL BE A REPRESENTATIVE SAMPLE FROM EACH AREA.
- 16.2. TREATMENTS TO THE TREE PROTECTION AREAS FOR SPECIFIED TREES (SEE TPAK) SHALL BE BASED ON THE RESULTS OF THE SOIL ANALYSIS. FERTILIZATION SHALL BE CONSISTENT WITH THE RECOMMENDATIONS OF THE ANSI A—300 (PART 2) TREE, SHRUB, AND OTHER WOODY PLANT MAINTENANCE STANDARD PRACTICES (FERTILIZATION) 2004.
- 16.3. APPLICATION RATES SHALL NOT EXCEED A RATE OF 1 POUND OF ACTUAL NITROGEN PER 1,000 SQUARE FEET ANNUALLY. FERTILIZER USED SHOULD INCLUDE HUMIC ACIDS, SOLUBLE SEAWEED

## EXTRACTS AND SOIL BIOLOGICAL INOCULANTS. 17. TREE CONDITION MONITORING INSPECTIONS

- 17.1. CONTRACT ARBORIST SHALL PROVIDE MONITORING OF THE CONDITION OF RETAINED TREES IN TREE PROTECTION AREAS, AND TREATMENT OF DETRIMENTAL CONDITIONS (INSECTS, DISEASES, NUTRIENT DEFICIENCIES, SOIL MOISTURE, ETC.), AS THEY OCCUR, OR AS APPROPRIATE FOR EFFECTIVE MANAGEMENT.
- 17.2. INSPECTIONS SHALL BE PERFORMED AT LEAST MONTHLY DURING THE GROWING SEASON, BEGINNING PRIOR TO CONSTRUCTION AND CONTINUING THROUGHOUT CONSTRUCTION AND FOR AT LEAST ONE YEAR SUBSEQUENT TO COMPLETION OF CONSTRUCTION ACTIVITIES.
- 17.3. A WRITTEN SUMMARY REPORT INCLUDING SPECIFIC TREATMENTS MADE AND RECOMMENDATIONS FOR ADDITIONAL TREATMENTS SHALL BE PROVIDED TO THE OWNER AND PROJECT ARBORIST SUBSEQUENT TO EACH INSPECTION.

#### 18. TREE GROWTH REGULATOR (TGR)

- 18.1. PACLOBUTRAZOL SOIL APPLIED TREE GROWTH REGULATOR (CAMBISTAT® OR EQUIVALENT) SHALL BE APPLIED TO INDICATED TREES. APPLICATIONS SHALL FOLLOW MANUFACTURER'S LABEL AND APPLICABLE LAWS.
- 18.2. TGR REDUCES CANOPY GROWTH WHICH CAN INCREASE FIBROUS ROOT SYSTEM GROWTH OVER 2-3 YEARS. THIS CAN INCREASE TOLERANCE TO DROUGHT STRESS AND IMPROVE ABSORPTION OF NUTRIENTS AND MOISTURE DURING THE STRESS RECOVERY PERIOD.
- 19. TREE TRUNK PROTECTION WRAP

  19.1. TRUNKS OF TREES IN CLOSE PROXIMITY TO CONSTRUCTION SHALL BE PROTECTED WITH A SINGLE WRAP OF GEOCOMPOSITE. GEOCOMPOSITE SHALL BE DOUBLE SIDED, GEONET CORE WITH NON-WOVEN COVERING (SUCH AS TENAX TENDRAIN 770/2) OR EQUIVALENT.
- 19.2. WRAP SHALL BE NOT LESS THAN 10' HIGH ON TRUNK OR UP TO THE LOWEST LIMB (WHICHEVER IS
- LESS). EXPOSED ROOT FLARE SHALL ALSO BE FULLY COVERED.

  19.3. WRAP SHALL BE TIED WITH ROPE OR WIRE. TIE MATERIAL SHALL NOT CONTACT TRUNK.
- 19.4. WRAP SHALL BE REMOVED PROMPTLY AFTER CONSTRUCTION.
- 20. <u>INVASIVE SPECIES CONTROL/HUMAN HEALTH RISK MANAGEMENT</u>
  20.1. A CERTIFIED ARBORIST SHALL INSPECT TREE PROTECTION AREAS FOR INVASIVE AND/OR EXOTIC
- PLANT SPECIES. FINDINGS SHALL BE DOCUMENTED AND SUBMITTED TO OWNER AND *ARLINGTON COUNTY*.

  20.2. ANY INVASIVE SPECIES FOUND SHALL BE REMOVED/TREATED BY THE CONTRACT ARBORIST TO MINIMIZE THE SPREAD OF NON-DESIREABLE SPECIES. TREATMENTS AND REMOVAL METHODS SHALL CONFORM TO LOCAL. STATE AND FEDERAL REGULATIONS AND ACCEPTED INDUSTRY STANDARDS.
- REFER TO ISA BEST MANAGEMENT PRACTICES. A TREATMENT PLAN SHALL BE DEVELOPED AND SUBMITTED TO OWNER AND *ARLINGTON COUNTY*.

  20.3. INVASIVE VINES SHALL BE HAND CUT AWAY FROM ALL RETAINED TREES.
- 20.4. OWNER SHALL REMOVE FROM TREE PROTECTION AREAS, ALL DEBRIS THAT MAY POSE A HUMAN HEALTH RISK (SUCH AS METAL, WIRE OR GLASS). ANY OTHER CONDITION FOUND TO BE A POTENTIAL RISK SHALL BE REPORTED TO THE OWNER FOR FURTHER MANAGEMENT.



11415 Isaac Newton Square, Reston, VA 20190



4501 Daly Drive

Chantilly, VA 20151 Phone: 703-263-1900

CHECKED: CC
SCALE: AS NOTED
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DRAWN: CH

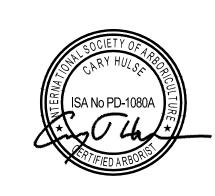
ISSUE: OCTOBER 16, 2013

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10.01.2013	ISSUED FOR CONSTRUCTION
10.16.2013	USE PERMIT RESUBMISSION
01.09.2014	PERMIT RESUBMISSION

# ARLINGTON PUBLIC SCHOOLS



ASHLAWN ELEMENTARY SCHOOL ADDITION Arlington, VA 22205



# ARLINGTON, VIRGINIA DEPARTMENT OF ENVIRONMENTAL SERVICES

## ASHLAWN ELEMENTARY SCHOOL ADDITION

SCALE: HOR. AS NOTED DESIGNED	: CH	CHEC	CKED: CO	c	
SUBMITTED DATE:	APPROVED DATE:		APPROVE	ED DATE:	
	CHIEF TRANSPORTAT	TION PLANNING BUF	REAU CHIEF TE	RAFFIC ENGINEERIN	IG BURE
APPROVED DATE:	APPROVED DATE:	:	APPROV	'ED DATE:	
CHIEF WATER, SEWER & STREETS BUREAU	CHIEF ENGINEERING E	BUREAU	DIRECTOR	OF ENVIRONMENTAL	L SERVIC
		PROJECT	CONT	RACT	
		SHEET OF	SHEE	T OF	

RESOURCE GROU

A Division of The Davey Tree Expert Company

**Land Development Solutions** 

2138 Priest Bridge Ct, Suite 4, Crofton, MD 21114 Office 410.774.0024 • Fax 310.858.0184

National 877.818.7337

SHEET TITLE:

TREE PRESERVATION NOTES

LJ-103

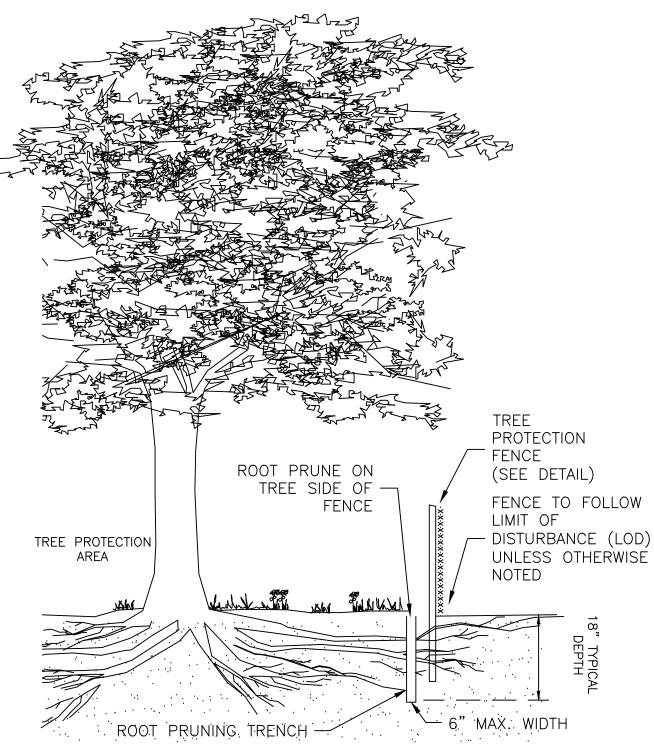
SHW Project:

3112.006.00

1. TREE PROTECTION FENCE SHALL BE INSTALLED PRIOR TO ANY SITE WORK, CLEARING OR

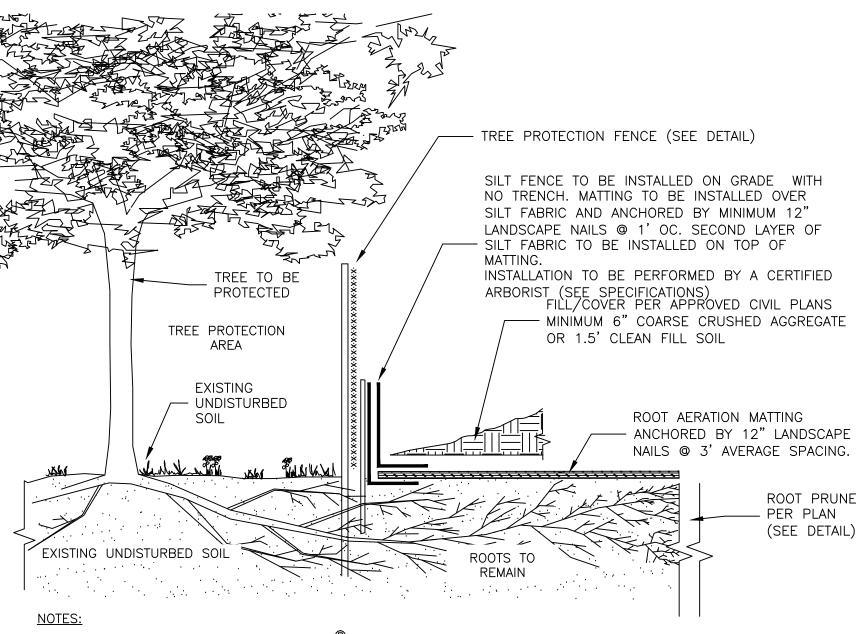
- 2. SUPER SILT FENCE MAY BE USED IN LIEU OF WELDED WIRE FOR TREE PROTECTION PROVIDED IT IS INSTALLED AND MAINTAINED AS A TREE PROTECTION MEASURE AND IS POSTED WITH TREE PROTECTION SIGNS.
- 3. TREE PROTECTION FENCE SHALL BE MAINTAINED THROUGHOUT CONSTRUCTION. REMOVE FENCE ONLY WITH APPROVAL AND AFTER ALL SITE WORK HAS BEEN COMPLETED.





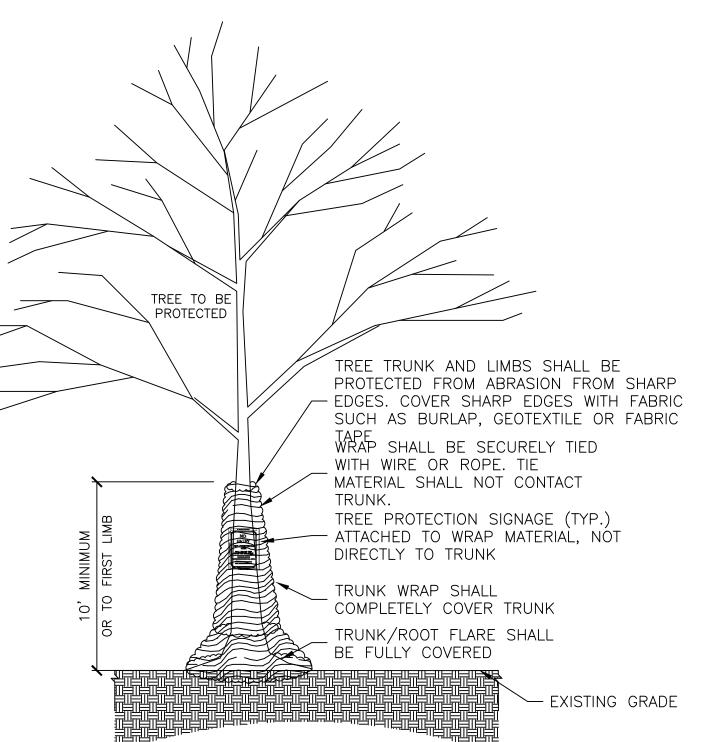
- 1. TREE PROTECTION AREA WILL BE DETERMINED AS PART OF THE PLAN REVIEW PROCESS. EXACT LOCATION, DEPTH AND METHODS OF ROOT PRUNING TO BE DETERMINED IN THE FIELD BY PROJECT
- 2. EXACT LOCATION OF TREE PROTECTION AREAS SHALL BE STAKED OR FLAGGED PRIOR TO TRENCHING. 3. TRENCH SHOULD BE BACKFILLED IMMEDIATELY OR INCORPORATED WITH SILT FENCE INSTALLATION.
- 4. ROOTS SHOULD BE SEVERED BY TRENCHER, VIBRATORY PLOW OR APPROVED EQUIVALENT. ROOTS OVER
- 1.5" DIAMETER SHOULD BE CLEANLY CUT BY HAND. ROOT PRUNING ADJACENT TO SPECIMEN TREES MAY REQUIRE SOIL REMOVAL BY SUPERSONIC AIR TOOL TO MINIMIZE TREE AND ROOT IMPACTS.





- 1. MATTING MATERIAL SHALL BE AMERDRAIN $^{\textcircled{R}}$  700 PERFORATED SHEET DRAIN OR APPROVED EQUIVALENT. MANUFACTURER: AMERICAN WICK DRAIN CORP, 1209 AIRPORT ROAD, MONROE, NC 28110
- 2. RAM SHALL BE ANCHORED BY 12" LANDSCAPE NAILS @ 3' AVERAGE SPACING.
- 3. RAM SHALL BE INSTALLED BY A CERTIFIED ARBORIST EXPERIENCED WITH THESE SYSTEMS.
- 4. PROPOSED RAM IN STRUCTURAL SITUATIONS SHALL BE REVIEWED AND APPROVED BY THE PROJECT CIVIL
- ENGINEER. ADDITIONAL LAYERS OF MATERIALS, SUCH AS GEONET AND/OR GEOGRID, MAY BE REQUIRED.
- 5. ALL SITE PREPARATION/GRADING TO BE DONE USING SSAT TO MINIMIZE ROOT DAMAGE. 6. ALL ADJACENT WORK SHALL BE SUPERVISED BY CERTIFIED ARBORIST





- 1. TRUNK WRAP MATERIAL SHALL BE DOUBLE SIDED GEOCOMPOSITE, GEONET CORE WITH
- NON-WOVEN COVERING (SUCH AS TENAX TENDRAIN 770/2) OR EQUIVALENT. 2. WRAP SHALL BE INSTALLED BY A CERTIFIED ARBORIST.
- WRAP SHALL BE INSTALLED PRIOR TO ANY SITE WORK, CLEARING OR DEMOLITION.
- WRAP SHALL BE MAINTAINED THROUGHOUT CONSTRUCTION. REMOVE WRAP ONLY WITH APPROVAL AND AFTER ALL SITE WORK HAS BEEN COMPLETED.
- 5. WRAP SHALL BE REMOVED PROMPTLY AFTER CONSTRUCTION.

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6. MAJOR SCAFFOLD LIMBS MAY ALSO REQUIRE THIS PROTECTION AS DIRECTED BY THE PROJECT

TREE TRUNK & LIMB PROTECTION WRAP (TYP) SCALE: NTS



11415 Isaac Newton Square, Reston, VA 20190

**Gordon** 

4501 Daly Drive Chantilly, VA 20151 Phone: 703-263-1900

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### **ARLINGTON PUBLIC SCHOOLS**



**ASHLAWN ELEMENTARY** SCHOOL ADDITION Arlington, VA 22205



## ARLINGTON, VIRGINIA DEPARTMENT OF ENVIRONMENTAL SERVICES

ASHLAWN ELEMENTARY SCHOOL ADDITION SCALE: HOR. AS NOTED DESIGNED: CH CHECKED: SUBMITTED DATE: APPROVED DATE: APPROVED DATE: CHIEF TRANSPORTATION PLANNING BUREAU CHIEF TRAFFIC ENGINEERING BUREAU APPROVED DATE: APPROVED DATE: APPROVED DATE: CHIEF WATER, SEWER & STREETS BUREAU CHIEF ENGINEERING BUREAU DIRECTOR OF ENVIRONMENTAL SERVICES CONTRACT PROJECT

SHFFT OF

SHFFT OF

SHEET TITLE:

TREE PRESERVATION **DETAILS** 

LJ-104

3112.006.00

Date: JULY 2013

RESOURCE GROUP

Project: Ashlawn Elementary	

ate: <u>JULY 2013</u>	Tree Protection Action Key
10. <u>00L1 2010</u>	ree Protection Action Key

Н					SCRZ	CRZ		it	Re	ecor	mme	ende	ed F	res	erva	atio	n N	leas	ure	S			
grade)	Common Name	Botanical Name	Condition Rating %	Condition Rating	Structural Critical Root Zone (radius) in Feet	Critical Root Zone Radius in Ft (1.5 ft radius/in DBH)	Remova	Removal By Arborist	Prune	Tree Protection Fence	Mulch		Soil Restoration/SSAT Aeration	ree Gr	ē	Temp Root Protection Matt	Root Aeration Matting	ó	SSAT Excavation for Utilities	Canopy Prune	Comments	Additional Notes	Condition Notes
23	locust, black	Robinia pseudoacacia	63	Fair	9.0	35				х											low disturbance.		Narrow Crown,
3	cherry, black	Prunus serotina	50	Fair	2.0	5				х											low disturbance.		Full Crown,
3	cherry, black	Prunus serotina	50	Fair	2.0	5				х			T	T		T	Ī				low disturbance.		Full Crown,

	(Diameter			Condi	Cond	Structural (	Critical Roof (1.5 ft n	Remov	R	Tree Pr		S	Soil Restora	Tree Con	Temp Dog	ov tood	Col Col	Oversic SSAT Ever	Can			
74	23	locust, black	Robinia pseudoacacia	63	Fair	9.0	35			х										low disturbance.		Narrow Crown,
75	3	cherry, black	Prunus serotina	50	Fair	2.0	5			х										low disturbance.		Full Crown,
76	3	cherry, black	Prunus serotina	50	Fair	2.0	5			х										low disturbance.		Full Crown,
77	3	cherry, black	Prunus serotina	50	Fair	2.0	5			х										low disturbance.		Full Crown,
78	16	cherry, black	Prunus serotina	50	Fair	8.0	24			х										low disturbance.		Full Crown,
79		, ,	Acer saccharum		Critical	6.0	17	х													LIMITED LIFE SPAN	Narrow Crown, Large DW (3"+),
80	12	cherry, black	Prunus serotina	50	Fair	7.0	18			х										low disturbance.		Full Crown,
81	3	locust, black	Robinia pseudoacacia	50	Fair	2.0	5			Х										low disturbance.		Full Crown,
82	4	locust, black	Robinia pseudoacacia	50	Fair	3.0	6			х										low disturbance.	LEAN.	Full Crown,
83	22	maple, norway	Acer platanoides	63	Fair	9.0	33			x	x	x	x 2	<b>x</b> >	( )	ζ.	×	Х	x	high disturbance	GIRDLING ROOT	Full Crown, Small DW (1-2"),
84			Hamamelis virginiana		Poor	4.0	10			x								х	(	moderate disturbance.	FOLIAR DECLINE	Full Crown, Stressed,
85			Acer platanoides		Good	10.0	38			Х	Х	Х	X 2	<b>X</b> X	( )	Κ .	Х	( X	X	high disturbance		Full Crown,
86			Ilex x attenuata-Fosteri		Good	4.0	9			Х				$\perp$	$\perp$	$\perp$	$\perp$	Х	(	low disturbance.		Full Crown,
87		redbud, eastern	Cercis canadensis	75	Good	4.0	9			Х				$\perp$	$\perp$	┸	$\perp$			no disturbance		Full Crown,
88		, , ,	Salix discolor		Fair	10.0	36			x								х	(	low disturbance.		Full Crown,
89	7	mulberry, white	Morus alba	53	Fair	4.0	11	х														Narrow Crown,

84	2,2,3,3	witchhazel, common	Hamamelis virginiana	44	Poor	4.0	10			Х	(							Х		disturbance.	FOLIAR DECLINE	Full Crown, Stressed,
85	25	maple, Norway	Acer platanoides	75	Good	10.0	38			х	Х	х	Х	Х	Х	х	Х	Х	Х	high disturbance		Full Crown,
86	6	holly, Fosters	Ilex x attenuata-Fosteri	75	Good	4.0	9			Х								Х		low disturbance.		Full Crown,
87	6	redbud, eastern	Cercis canadensis	75	Good	4.0	9			Х										no disturbance		Full Crown,
	6,6,6,6,6																					
88	,6,	willow, pussy	Salix discolor		Fair	10.0	36			×	(							Х		low disturbance.		Full Crown,
89	7	mulberry, white	Morus alba	53	Fair	4.0	11	2	x													Narrow Crown,
90	6	cherry, black	Prunus serotina	56	Fair	4.0	9													low disturbance.		Full Crown,
																				moderate		Full Crown, Large DW
91	21	maple, Norway	Acer platanoides	41	Poor	9.0	32			×	X	х			х	х	х	х	Х	disturbance.		(3"+),
																				moderate		
92	26	maple, sugar	Acer saccharum	75	Good	10.0	39		×	( x	X	х			х					disturbance.		Full Crown,
93	4	locust, black	Robinia pseudoacacia	56	Fair	3.0	6			×	(									no disturbance		Narrow Crown, Suppressed,
																					•	Full Crown, One Sided,
94	12	oak, black	Quercus velutina	56	Fair	7.0	18			×										no disturbance		Vines,
												-	-				-	-			•	

3.0 8 | x | | no disturbance Quercus velutina Narrow Crown, Narrow Crown, One Sided, Quercus velutina disturbance. Full Crown, One Sided, moderate disturbance. Small DW (1-2"), Quercus falcata 56 Fair 28 oak, southern red Full Crown, Large DW LIMITED LIFE SPAN (3"+), Trunk Decay, 41 Poor Recommend Mh

17 maple, sugar shift to retain 75 Good 9 cedar, deodar Cedrus deodara Full Crown, Full Crown, 4 maple, Norway Acer platanoides GIRDLING ROOT TRUNK SCAR. 4 maple, Norway Full Crown 4 maple, Norway 75 Good Full Crown, Acer platanoides

5 oak, willow Full Crown, Quercus phellos 5 Good 5 oak, willow Quercus phellos Full Crown, 5 oak, willow Full Crown, Quercus phellos 75 Good Full Crown. 5 oak, willow Quercus phellos 5 oak, willow Quercus phellos Full Crown, Full Crown, 4 oak, willow Quercus phellos 6 oak, willow Full Crown. Quercus phellos 4 maple, sugar Full Crown. Acer saccharum 3 maple, sugar Full Crown, Acer saccharum 72 Good 4.0 11 x TRUNK SCAR Full Crown, maple, sugar Acer saccharum

cherry, Japanese Full Crown. 3 flowering Prunus serrulata 75 Good 3 Dead 0 Dead 2.0 5 x Dead Full Crown, cherry, Japanese 3 flowering Full Crown, Prunus serrulata 75 Good Full Crown, maple, red Acer rubrum cherry, Japanese 12 flowering 72 Good Full Crown, Prunus serrulata cherry, Japanese 10 flowering Prunus serrulata 75 Good Full Crown. crapemyrtle, 4,4,4, common agerstroemia indica 75 Good Full Crown,

Full Crown, Small DW (1-25 maple, Norway 2"), Basal Decay, Stressed 63 Fair Acer platanoides 75 Good 3.0 6 x Full Crown, 4 oak, northern red Quercus rubra dogwood, flowering Cornus florida .2. viburnum, spp. 75 Good Full Crown. Viburnum spp. 126 12, 14 oak, black Quercus velutina 56 Fair Full Crown, Narrow Crown, One Sided, 44 Poor 11 planetree, London Platanus x acerifolia Full Crown, One Sided, llex opaca SIDEWALK CONFLICT Full Crown, One Sided, Quercus falcata

128 4.4.4.4 holly, American 28 oak, southern red 27 oak, southern red Quercus falcata 75 Good 10.0 41 | x x x x x x x x x x | x | high disturbance Full Crown, 9.0 33 X X X X X X X X X high disturbance SURFACE ROOTS Full Crown, 22 oak, southern red Quercus falcata 10.0 47 x x x x x x x SIDEWALK CONFLICT Full Crown, 31 maple, silver Acer saccharinum Large DW (3"+), 22 maple, silver Acer saccharinum 56 Fair 134 3,3,6 holly, spp. Full Crown, burford lex spp. 7 holly, spp. 50 Fair burford Full Crown, llex spp.

63 Fair 4.0 11 x

12 dogwood, flowering Cornus florida 7 dogwood, flowering Cornus florida

9 cherry, black

22 maple, Norway

crapemyrtle,

\_agerstroemia indica

Prunus serotina

Acer platanoides

75 Good

121 4,4,4,4 common

RESOURCE GROUP

119

120

125

133

## ARLINGTON, VIRGINIA DEPARTMENT OF ENVIRONMENTAL SERVICES

Full Crown,

Project: Ashlawn Elementary

## ASHLAWN ELEMENTARY SCHOOL ADDITION

Narrow Crown, Suppressed

Full Crown, Large DW

Full Crown, Large DW

Full Crown, Stressed,

(3"+), Trunk Decay, Basal

GIRDLING ROOTS (3"+), Branch Decay,

Decay.

SCALE: HOR. AS NOTED DESIGNED: CHECKED: SUBMITTED DATE: APPROVED DATE: APPROVED DATE: CHIEF TRANSPORTATION PLANNING BUREAU CHIEF TRAFFIC ENGINEERING BUREAU APPROVED DATE: APPROVED DATE: APPROVED DATE: CHIEF WATER, SEWER & STREETS BUREAU CHIEF ENGINEERING BUREAU DIRECTOR OF ENVIRONMENTAL SERVICES PROJECT CONTRACT

SHFFT OF

SHFFT OF

SHWGROUP ARCHITECTS | ENGINEERS | PLANNERS

11415 Isaac Newton Square, Reston, VA 20190



4501 Daly Drive Chantilly, VA 20151 Phone: 703-263-1900

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### **ARLINGTON PUBLIC SCHOOLS**



**ASHLAWN ELEMENTARY** SCHOOL ADDITION Arlington, VA 22205



**SHEET TITLE:** 

TREE PRESERVATION **TABLES** 

LJ-105

3112.006.00

Page 1 of 3

25 Critical

38 Poor

National 877.818.7337

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	DBH					SCRZ	CRZ			Rec	om	nmer	nded	l Pre	ser	vatio	on N	/leas	ures	6		;	
Tree #	(Diameter at 4.5 feet above grade)	Common Name	Botanical Name	Condition Rating %	Condition Rating	Structural Critical Root Zone (radius) in Feet	Critical Root Zone Radius in Ft (1.5 ft radius/in DBH)	Removal	Removal By Arborist	Root Prune Tree Protection Fence	Milch	Mulch Soil Care	Soil Restoration/SSAT Aeration	Tree Growth Regulator	Tree Condition Inspections	Temp Root Protection Matt	Root Aeration Matting	Construction Oversight/Monitoring	SSAT Excavation for Utilities	Canopy Prune	Comments	Additional Notes	Condition Notes
140	8	dogwood, flowering	Cornus florida	50	Fair	5.0	12	x															Full Crown, One Sided, Small DW (1-2"), Stressed,
444	10 10 10	monlo Amur	Acer totarioum ginnala	24	Door	10.0	26	_															Full Crown, Trunk Decay,
141		maple, Amur crapemyrtle,	Acer tataricum ginnala	31	Poor	10.0	36	X	+	+	+	+		+	+	$\vdash$		$\vdash$	-	$\dashv$		,	Included Bark, Stressed,
142		common	Lagerstroemia indica	75	Good	10.0	45	х	_	_		_	_	_					_				Full Crown, Narrow Crown, Large DW
																							(3"+), Broken Limbs,
143			Pinus strobus	25	Critical	10.0	39	x														TRUNK SCAR	Stressed,
144		arborvitae, eastern	Thuja occidentalis		Fair	3.0		х															Full Crown, One Sided,
145		arborvitae, eastern	Thuja occidentalis		Fair	3.0		x		_		_			_			$\sqcup$					Full Crown, One Sided,
146		arborvitae, eastern	Thuja occidentalis		Fair	9.0	31		_	_	_	_	4	_	<u> </u>			$\vdash$		_			Full Crown, Included Bark,
147 148			Pyrus calleryana		Fair Fair	5.0 5.0	14		+	+	+	+	+	+	-	_		$\vdash$	_	-			Full Crown, Included Bark,
149		pear, callery pear, callery	Pyrus calleryana Pyrus calleryana		Fair	5.0	14	х	+	+	+	+	+	+	-	┢		$\vdash$	+	$\dashv$			Full Crown, Full Crown,
150	5,7,8 4,4,4,4,4	dogwood, flowering	Cornus florida	38	Poor	7.0	20		x														Narrow Crown, Trunk Decay, Basal Decay, Stressed,
151	,4,4,4,4,	crapemyrtle, common	Lagerstroemia indica	75	Good	10.0	44		9	x x	:										low disturbance.		Full Crown,
152			Pinus strobus		Poor	9.0	29		x													GIRDLING ROOT	Full Crown, Broken Limbs, Stressed,
153		oak, scarlet	Quercus coccinea		Good	5.0	12		_	х	_			_	_	_		$\sqcup$	_	_	no disturbance		Full Crown,
154	9	holly, spp.	llex spp.	50	Fair	5.0	14		+	X	-	_	+	+	$\vdash$	┝		$\vdash$	_	$\dashv$	no disturbance	burford	Full Crown,
155			Pinus strobus		Poor	5.0	14		$\perp$	х	_												Narrow Crown, Small DW (1-2"), Stressed,
156	5	walnut, black	Juglans nigra	50	Fair	3.0	8		_	X	-	_	+	+	$\vdash$	$\vdash$		$\vdash$	_	$\dashv$			Full Crown,
157	6	cherry, black	Prunus serotina	38	Poor	4.0	9		_	x												,	Narrow Crown, Suppressed
158			Pinus virginiana		Poor	6.0	15			x		$\perp$										,	Narrow Crown, Stressed, Vines,
159			Pinus strobus		Dead	8.0	27		x		_	+	_	+	$\vdash$	$\vdash$	_	$\vdash \vdash$	_	$\dashv$		LEAN	Cupproced
160 161		walnut, black walnut, black	Juglans nigra		Poor Poor	6.0 3.0	17 8		+	X	_	+	-	+	+	$\vdash$	$\vdash$	$\vdash \vdash$	$\dashv$	$\dashv$		LEAN LEAN	Suppressed, Suppressed,
162		-	Juglans nigra Pinus virginiana		Critical	8.0	23		+			+	+					-	$\dashv$	$\dashv$		LEAN	Narrow Crown, One Sided, Stressed, Vines,
									$\dashv$	X		+	+			$\vdash$		H	$\dashv$	$\dashv$			One Sided, Broken Limbs,
163			Pinus strobus		Critical	10.0	36		+	X	_	+	-	+	$\vdash$	$\vdash$	$\vdash$	$\vdash \vdash$	$\dashv$	$\dashv$			Vines,
164 165		locust, black pine, eastern white	Robinia pseudoacacia Pinus strobus		Critical Critical	3.0 10.0	6 39		+	X	_	+	-	+	+	$\vdash$	$\vdash$	$\vdash \vdash$	$\dashv$	$\dashv$		+	Suppressed, Broken Limbs, Vines,
166		locust, black	Robinia pseudoacacia		Fair	4.0	11		+	X	_	+	+	+	$\vdash$	$\vdash$	$\vdash$	$\vdash \vdash$	$\dashv$	$\dashv$			Full Crown,
167		hemlock, eastern	Tsuga canadensis		Fair	2.0	5	-	+	+ x	_	+	+	+	$\vdash$	$\vdash$		$\vdash$	$\dashv$	$\dashv$			Full Crown,
168	u.	locust, black	Robinia pseudoacacia		Critical	3.0	6		$\dagger$			$\dagger$	$\top$			T				$\dashv$		LEAN	Narrow Crown, Suppressed Vines,
169		holly, spp.	llex spp.		Good	5.0	-		+	X	_	+	-	+	+	$\vdash$	$\vdash$	$\vdash \vdash$	$\dashv$	$\dashv$		burford	Full Crown,
103	0	попу, орр.	пол орр.	73	10000	3.0	12	ш	$\perp$	^								ш		1		Dulloid	i dii Olowii,



Page 3 of 3



11415 Isaac Newton Square, Reston, VA 20190



4501 Daly Drive Chantilly, VA 20151 Phone: 703-263-1900

DRAWN: CH CHECKED: CC SCALE: AS NOTED © 2013 SHW Group

ISSUE: **OCTOBER 16, 2013** 

10.01.2013	ISSUED FOR CONSTRUCTION
10.16.2013	USE PERMIT RESUBMISSION
01.09.2014	PERMIT RESUBMISSION
· · · · · · · · ·	

## **ARLINGTON PUBLIC** SCHOOLS



ASHLAWN ELEMENTARY SCHOOL ADDITION Arlington, VA 22205



## ARLINGTON, VIRGINIA DEPARTMENT OF ENVIRONMENTAL SERVICES

ASHLAWN ELEMENTARY SCHOOL ADDITION SCALE: HOR. AS NOTED DESIGNED: CH
SUBMITTED DATE: APPROV CHECKED: CC APPROVED DATE: APPROVED DATE: CHIEF TRANSPORTATION PLANNING BUREAU CHIEF TRAFFIC ENGINEERING BUREAU APPROVED DATE:

APPROVED DATE: APPROVED DATE: CHIEF WATER, SEWER & STREETS BUREAU CHIEF ENGINEERING BUREAU DIRECTOR OF ENVIRONMENTAL SERVICES CONTRACT PROJECT

SHFFT OF

SHEET OF

SHEET TITLE:

TREE PRESERVATION **TABLES** 

LJ-106

3112.006.00

RESSURCE GROUP
A Division of The Davey Tree Expert Company Land Development Solutions
2138 Priest Bridge Ct, Suite 4, Crofton, MD 21114
Office 410.774.0024 ● Fax 310.858.0184
National 877.818.7337

## TREE REPLACEMENT CALCULATIONS

Tree #	DBH (inches)	Species	To Be Removed (Y/N)	Condition	Species Rating	Total Score	Replacement Required
1	11	Quercus palustris	No	75%	65%	5.36	0
2		Morus alba	No	63%	45%	7.31	0
3		Acer saccharum	Yes	50%	75%	11.25	3
4		Liriodendron tulipifera	Yes	50%	70%	11.20	3
5 6		Acer rubrum	Yes	50% 50%	70% 45%	7.35 1.80	2
7		Acer saccharinum Liriodendron tulipifera	Yes No	75%	70%	18.90	0
8		Acer saccharinum	No	75%	45%	5.06	0
9		Liriodendron tulipifera	No	25%	70%	13.13	0
10		Robinia pseudoacacia	No	44%	55%	7.46	0
11	32	Acer rubrum	No	44%	70%	9.80	0
12		Acer saccharinum	Yes	50%	45%	5.85	2
13		Acer rubrum	No	25%	70%	3.68	0
14		Liriodendron tulipifera	Yes	75%	70%	19.95	4
15		Acer saccharum	Yes	50%	75%	1.50	1
16 17		Acer saccharum	Yes	50%	75% 55%	1.13	1 1
18		Prunus serotina Juglans nigra	Yes Yes	50% 75%	68%	1.38 4.05	1 1
19		Cercis canadensis	Yes	50%	73%	1.09	1 1
20		Liriodendron tulipifera	Yes	53%	70%	5.58	2
21		Juglans nigra	Yes	75%	68%	10.13	3
22		Celtis occidentalis	Yes	50%	63%	3.13	1
23		Liriodendron tulipifera	Yes	75%	70%	5.25	1
24		Acer saccharum	Yes	50%	75%	1.50	1
25		Juglans nigra	Yes	50%	68%	1.35	1
26		X Cupressocyparis leylandii	Yes	75%	60%	1.35	1
27		X Cupressocyparis leylandii	Yes	75%	60%	1.80	1
28		llex opaca	Yes	50%	73%	1.45	1
29		Liriodendron tulipifera	No	75%	70%	21.00	0
30 31		Liriodendron tulipifera	Yes Yes	0% 69%	70% 70%	0.00	0 4
32		Acer rubrum Liriodendron tulipifera	No	38%	70%	15.40 5.51	0
33		Acer saccharum	No	75%	75%	10.69	0
34		Acer saccharinum	No	66%	45%	14.77	0
35	4	Cornus florida	No	50%	60%	1.20	0
36	23	Acer saccharum	No	50%	75%	8.63	0
37		Quercus phellos	No	75%	75%	7.88	0
38		Quercus phellos	Yes	50%	75%	2.25	1
39		Quercus phellos	No	69%	75%	12.38	0
40		Acer rubrum	No	50%	70%	3.50	0
41		Acer saccharum	No	69%	75%	7.73	0
42		Acer saccharum	No	69%	75%	10.83	0
43 44		Acer saccharum Fraxinus americana	Yes Yes	69% 50%	75% 53%	14.44 2.10	3
45		Zelkova serrata	Yes	75%	80%	3.60	1 1
46		Zelkova serrata	No	69%	80%	6.60	0
47		Acer saccharum	No	75%	75%	15.19	0
48		Acer saccharum	No	75%	75%	14.06	0
49		Morus alba	No	50%	45%	2.25	0
50		Acer platanoides	No	75%	55%	8.25	0
51		Dead	Yes	0%	0%	0.00	0
52		Acer platanoides	No	75%	55%	9.90	0
53		Acer platanoides	No	75%	55%	9.90	0
54		Acer platanoides	Yes	50%	55%	7.70	2
55 56		Acer platanoides	Yes	50% 50%	55% 55%	6.05 4.40	1
56 57		Acer platanoides Acer rubrum	Yes Yes	75%	70%	9.45	2
57 58		Acer rubrum	Yes	38%	70%	3.68	1
59		Koelreuteria paniculata	Yes	75%	63%	5.63	2
60		Ulmus parvifolia	Yes	75%	80%	2.40	1
61		Ulmus parvifolia	Yes	75%	80%	2.40	1
62		llex spp.	Yes	50%	73%	1.09	1
63		Cedrus atlantica	Yes	75%	60%	7.20	2
64	3	llex spp.	Yes	50%	73%	1.09	1
65	3	Ulmus parvifolia	Yes	50%	80%	1.20	1
66	12	Malus spp.	No	75%	63%	5.63	0
67		Koelreuteria paniculata	Yes	50%	63%	2.50	1

#	(inches)		(Y/N)		Rating	Score	Require
68		Acer saccharum	No	75%	75%	5.63	0
69		Acer saccharum	No	75%	75%	7.31	0
70		Acer saccharum	No	75%	75%	9.00	0
71		Quercus rubra	No	75%	75%	5.63	0
72		Quercus velutina	No	50%	75%	6.38	0
73		Quercus falcata	No	69%	70%	25.99	0
74		Robinia pseudoacacia	No	63%	55%	7.91	0
75		Prunus serotina	No	50%	55%	0.83	0
76		Prunus serotina	No	50%	55%	0.83	0
77		Prunus serotina	No	50%	55%	0.83	0
78		Prunus serotina	No	50%	55%	4.40	0
79		Acer saccharum	Yes	25%	75%	2.06	1
80		Prunus serotina	No	50%	55%	3.30	0
81		Robinia pseudoacacia	No	50%	55%	0.83	0
82		Robinia pseudoacacia	No	50%	55%	1.10	0
83		Acer platanoides	No	63%	55%	7.56	0
84		Hamamelis virginiana	No	44%	78%	3.39	0
85		Acer platanoides	No	75%	55%	10.31	0
86		Ilex x attenuata-Fosteri	No	75%	73%	3.26	0
87		Cercis canadensis	No	75%	73%	3.26	0
88		Salix discolor	No	56%	60%	12.15	0
89		Morus alba	Yes	53%	45%	1.67	1
90		Prunus serotina	No	56%	55%	1.86	0
91		Acer platanoides	No	41%	55%	4.69	0
92		Acer saccharum	No	75%	75%	14.63	0
93		Robinia pseudoacacia	No	56%	55%	1.24	0
94		Quercus velutina	No	56%	75%	5.06	0
95		Quercus velutina	No	56%	75%	2.11	0
96		Quercus velutina	No	53%	75%	8.77	0
97		Quercus falcata	No	56%	70%	11.03	0
98		Acer saccharum	Yes	41%	75%	5.18	2
99		Cedrus deodara	Yes	75%	50%	3.38	1
100		Acer platanoides	Yes	75%	55%	1.65	1
101		Acer platanoides	Yes	50%	55%	1.10	1
102		Acer platanoides	Yes	75%	55%	1.65	1
103		Quercus phellos	Yes	75%	75%	2.81	1
104		Quercus phellos	Yes	75%	75%	2.81	1
105		Quercus phellos	Yes	75%	75%	2.81	1
106		Quercus phellos	Yes	75%	75%	2.81	1
107		Quercus phellos	Yes	75%	75%	2.81	1
108		Quercus phellos	Yes	69%	75%	2.06	1
109		Quercus phellos	Yes	75%	75%	3.38	1
110		Acer saccharum	Yes	0%	75%	0.00	1
111		Acer saccharum	Yes	75%	75%	1.69	1
112		Acer saccharum	Yes	72%	75%	3.77	1
113		Acer saccharum	Yes	75%	75%	2.25	1
114		Prunus serrulata	Yes	75%	55%	1.24	1
115		Dead	Yes	0%	0%	0.00	0
116		Prunus serrulata	Yes	75%	55%	1.24	1
117		Acer rubrum	Yes	75%	70%	3.68	1
118		Prunus serrulata	Yes	72%	55%	4.74	1
119		Prunus serrulata	Yes	75%	55%	4.13	1
120		Lagerstroemia indica	Yes	75%	78%	6.98	2
121		Lagerstroemia indica	Yes	75%	78%	9.30	2
122		Acer platanoides	Yes	63%	55%	8.59	2
123		Quercus rubra	Yes	75%	75%	2.25	1
124		Cornus florida	Yes	75%	60%	1.35	1
125		Viburnum spp.	Yes	75%	68%	6.12	2
126		Quercus velutina	Yes	56%	75%	10.97	3
127		Platanus x acerifolia	Yes	44%	65%	3.13	1
128		Ilex opaca	Yes	50%	73%	5.80	2
129		Quercus falcata	Yes	63%	70%	12.25	3
130		Quercus falcata	No	75%	70%	14.18	0
131		Quercus falcata	No	69%	70%	10.59	0
132		Acer saccharinum	No	56%	45%	7.85	0
133		Acer saccharinum	Yes	56%	45%	5.57	2
134	10	llex spp.	Yes	50%	73%	4.35	1

Tree Replacement Calculations Project: ASHLAWN ELEMENTARY

Date: <u>JULY 2013</u>

Γree #	DBH (inches)	Species	To Be Removed (Y/N)	Condition	Species Rating	Total Score	Replacement Required
135	7	llex spp.	Yes	50%	73%	2.54	1
136		Prunus serotina	Yes	25%	55%	1.24	1
137	22	Acer platanoides	Yes	38%	55%	4.54	1
138		Cornus florida	Yes	38%	60%	2.70	1
139	7	Cornus florida	Yes	63%	60%	2.63	1
140	8	Cornus florida	Yes	50%	60%	2.40	1
141	36	Acer tataricum ginnala	Yes	31%	80%	9.00	2
142	45	Lagerstroemia indica	Yes	75%	78%	26.16	6
143	26	Pinus strobus	Yes	25%	55%	3.58	1
144	5	Thuja occidentalis	Yes	63%	60%	1.88	1
145		Thuja occidentalis	Yes	50%	60%	1.50	1
146		Thuja occidentalis	Yes	50%	60%	9.30	2
147		Pyrus calleryana	Yes	50%	50%	2.25	1
148		Pyrus calleryana	Yes	50%	50%	2.25	1
149		Pyrus calleryana	Yes	50%	50%	2.25	1
150		Cornus florida	Yes	38%	60%	4.50	1
151		Lagerstroemia indica	No	75%	78%	25.58	0
152		Pinus strobus	Yes	38%	55%	3.92	1
153	8	Quercus coccinea	No	75%	73%	4.35	0
154	9	Ilex spp.	No	50%	73%	3.26	0
155		Pinus strobus	No	38%	55%	1.86	0
156		Juglans nigra	No	50%	68%	1.69	0
157		Prunus serotina	No	38%	55%	1.24	0
158		Pinus virginiana	No	38%	50%	1.88	0
159		Pinus strobus	Yes	0%	55%	0.00	0
160		Juglans nigra	No	41%	68%	3.02	0
161		Juglans nigra	No	31%	68%	1.05	0
162		Pinus virginiana	No	25%	50%	1.88	0
163		Pinus strobus	No	25%	55%	3.30	0
164		Robinia pseudoacacia	No	25%	55%	0.55	0
165		Pinus strobus	No	25%	55%	3.58	0
166	7	Robinia pseudoacacia	No	50%	55%	1.93	0
167	5	Tsuga canadensis	No	50%	60%	1.50	0
168		Robinia pseudoacacia	No	25%	55%	0.55	0
169		Ilex spp.	No	75%	73%	4.35	0
					CDAN	D TOTAL:	130



Page 2 of 3

**Land Development Solutions** 

National 877.818.7337

SHV	<b>VGRC</b>	<b>DUP</b>
ARCHITECTS	ENGINEERS	PLANNERS

11415 Isaac Newton Square, Reston, VA 20190



4501 Daly Drive Chantilly, VA 20151 Phone: 703-263-1900

DRAWN: CH CHECKED: CC SCALE: AS NOTED

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	10.16.2013	USE PERMIT RESUBMISSION
_	01.09.2014	PERMIT RESUBMISSION

## **ARLINGTON PUBLIC SCHOOLS**



ASHLAWN ELEMENTARY SCHOOL ADDITION Arlington, VA 22205



## SHEET TITLE:

TREE PRESERVATION **TABLES** 

LJ-107

SCALE: HOR. AS NOTED DESIGNED: CH
SUBMITTED DATE: APPROV CHECKED: CC APPROVED DATE: APPROVED DATE: CHIEF TRANSPORTATION PLANNING BUREAU CHIEF TRAFFIC ENGINEERING BUREAU APPROVED DATE:

APPROVED DATE: APPROVED DATE: 2138 Priest Bridge Ct, Suite 4, Crofton, MD 21114
Office 410.774.0024 • Fax 310.858.0184 CHIEF WATER, SEWER & STREETS BUREAU CHIEF ENGINEERING BUREAU DIRECTOR OF ENVIRONMENTAL SERVICES PROJECT CONTRACT

20 YEAR TREE COVER WORKSHEET 316,094 SQ. FT. 1 GROSS SITE AREA 2 PERCENT OF TREE COVER REQUIRED 20 % 63,219 SQ. FT. 3 TREE COVER REQUIRED 47,815 SQ. FT. 4 TREE CANOPY TO BE PRESERVED 5 CREDIT FOR TREES TO BE PRESERVED (1.25xcanopy) 59,769 SQ. FT. 6 ADDITIONAL CREDITS SQ. FT. 7 TREE COVER TO BE PROVIDED BY PLANTING TREES 39,000 SQ. FT. 8 TOTAL TREE COVER PROVIDED 98,769 SQ. FT.

Page 1 of 3

35,550 SQ. FT.

RESOURCE GROUP

9 EXCESS TREE COVER

REFER TO SHEET L3.50 FOR PROPOSED PLANT SCHEDULE AND RELATED CANOPY CREDITS

DEPARTMENT OF ENVIRONMENTAL SERVICES

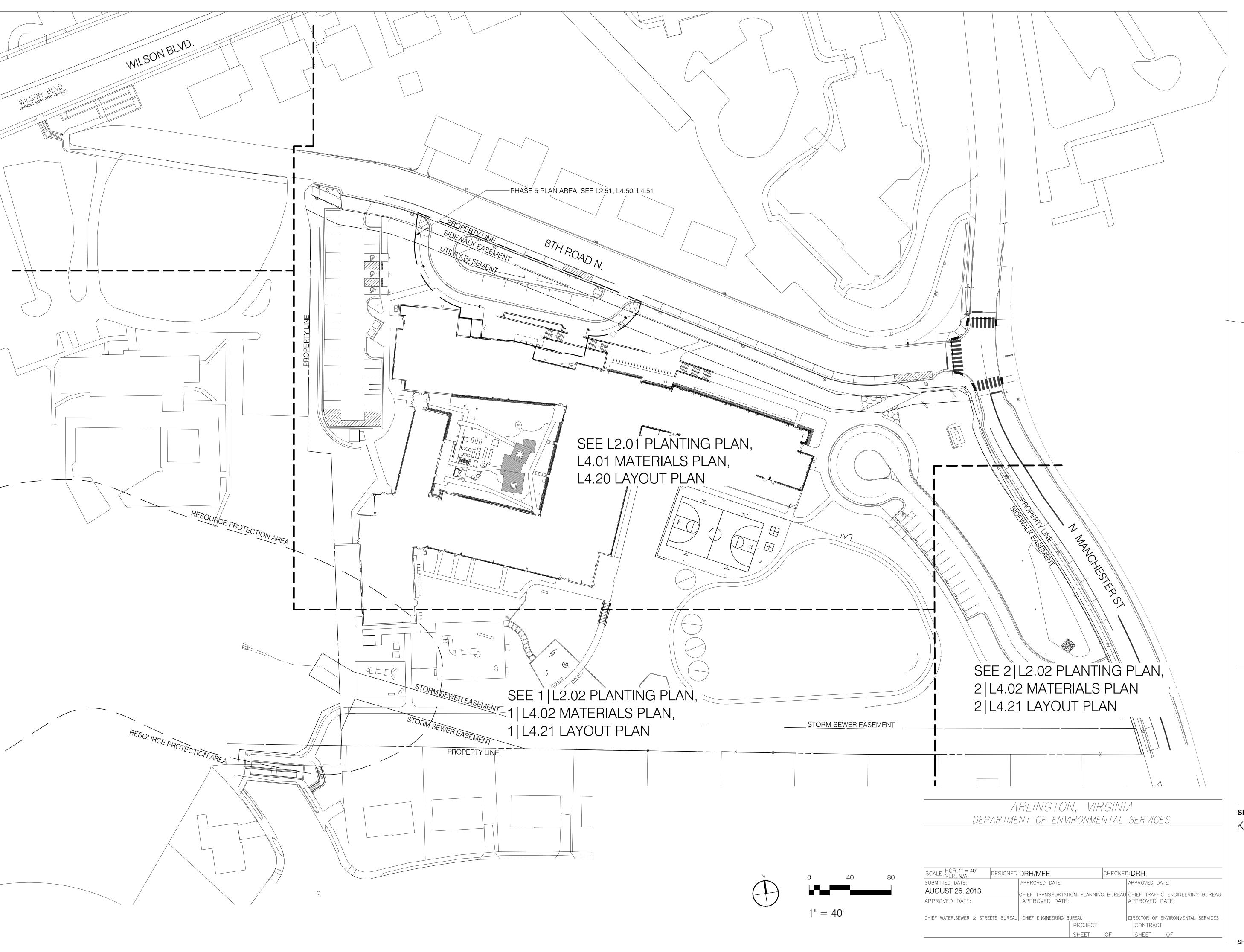
Page 3 of 3

ASHLAWN ELEMENTARY SCHOOL ADDITION

ARLINGTON, VIRGINIA

SHFFT OF SHEET OF

3112.006.00





11415 Isaac Newton Square, Reston, VA 20190

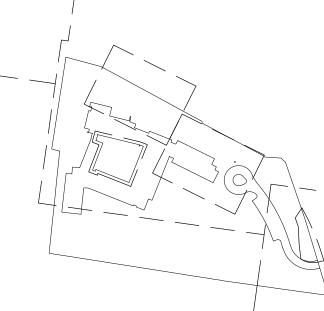
OCULUS

2410 17th STREET NW SUITE WASHINGTON, DC 20009

P 202 588 5454
F 202 588 5449
E OCULUS@OCULUS-DC.COM

 08.26.2013
 PERMIT / BID SET

 01.14.2014
 DRAFT LANDSCAPE PLAN



KEY PLAN (NTS)

ARLINGTON PUBLIC SCHOOLS

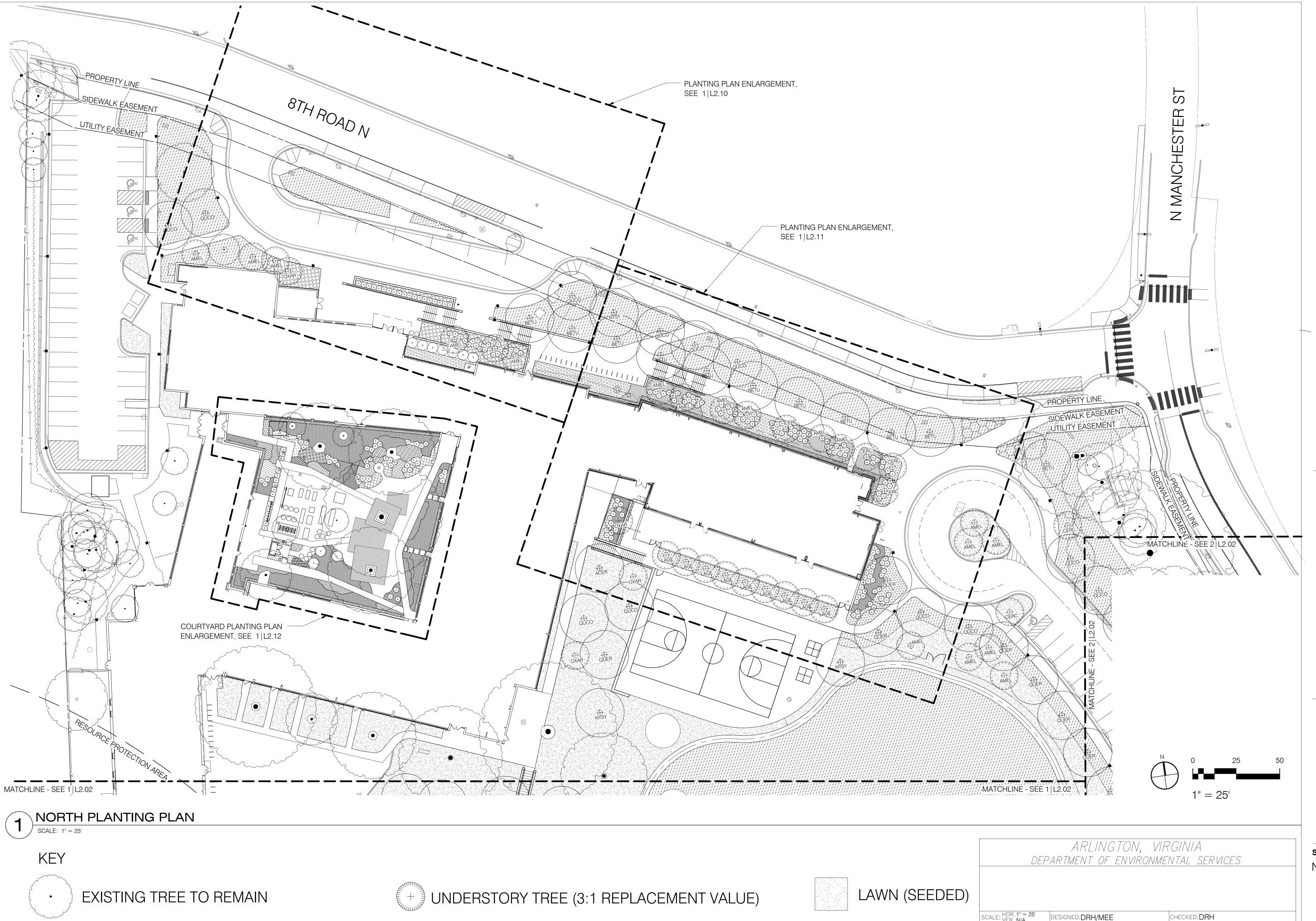


ASHLAWN ELEMENTARY SCHOOL RENOVATION & EXPANSION Arlington, VA 22205



SHEET TITLE: KEY PLAN

L1.00



EVERGREEN TREE (3:1 REPLACEMENT VALUE)

CANOPY TREE (1:1 REPLACEMENT VALUE)



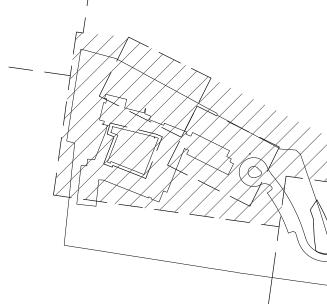
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ISSUE: **AUGUST 26, 2013** 

DRAFT LANDSCAPE PLAN



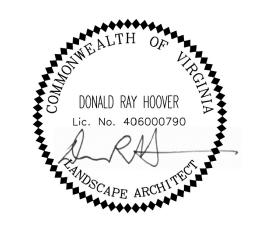
KEY PLAN (NTS)

**ARLINGTON PUBLIC** SCHOOLS



ASHLAWN ELEMENTARY SCHOOL RENOVATION & **EXPANSION** 

Arlington, VA 22205



SHEET TITLE:

NORTH PLANTING PLAN

DIRECTOR OF ENVIRONMENTAL SERVICES
CONTRACT

APPROVED DATE:

PROJECT

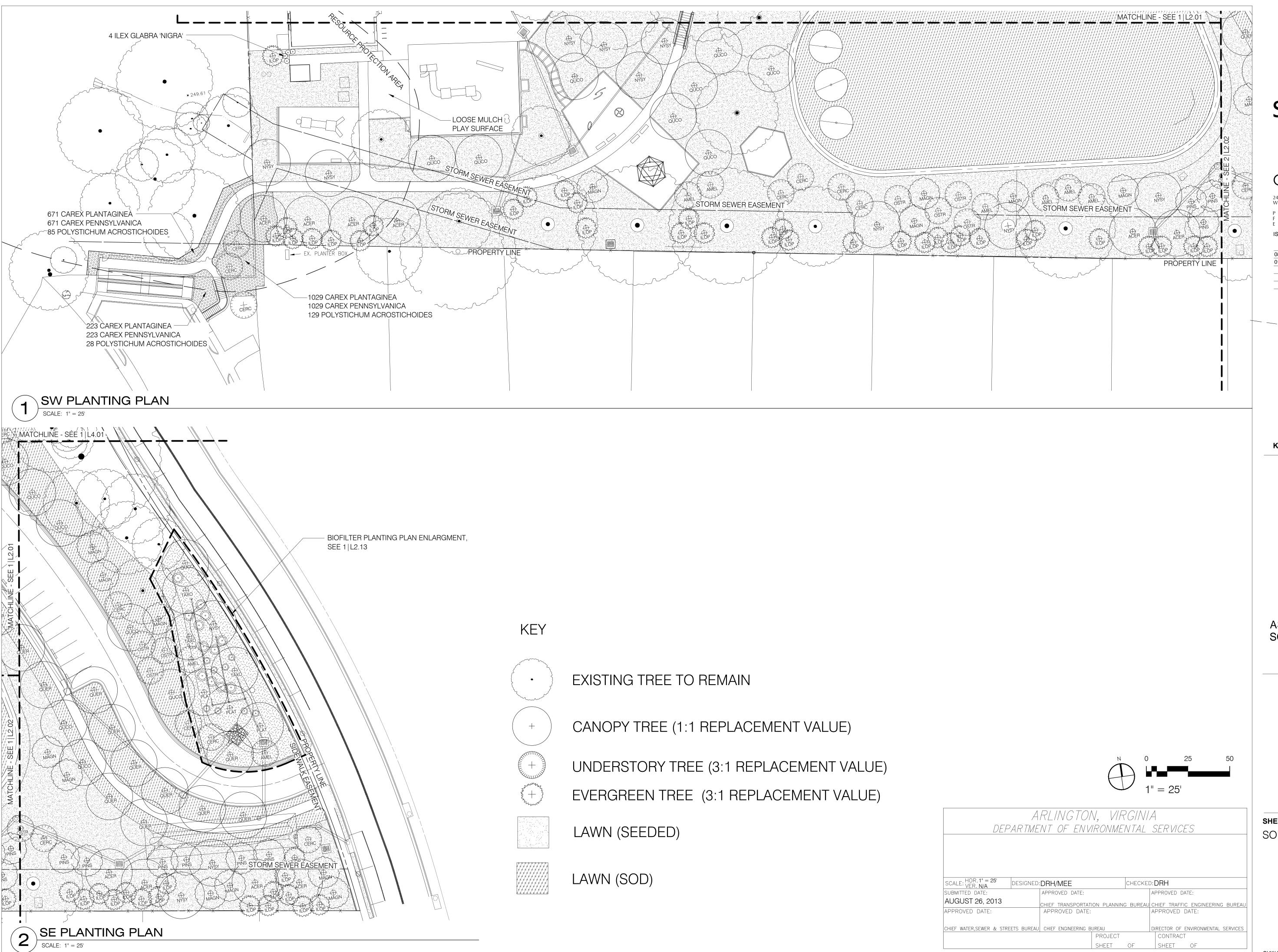
SHEET OF

CHIEF WATER, SEWER & STREETS BUREAU CHIEF ENGINEERING BUREAU

AUGUST 26, 2013

PPROVED DATE:

LAWN (SOD)





11415 Isaac Newton Square, Reston, VA 20190

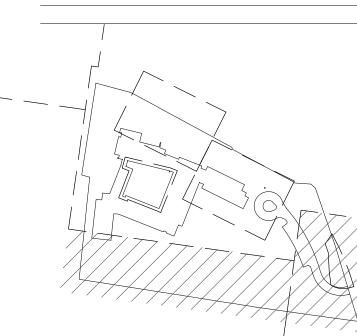
## OCULUS

2410 17th STREET NW SUITE 201 WASHINGTON, DC 20009

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F 202 588 5449
E OCULUS@OCULUS-DC.COM

ISSUE: AUGUST 26, 2013

08.26.2013 PERMIT / BID SET
01.14.2014 DRAFT LANDSCAPE PLAN



#### KEY PLAN (NTS)

# ARLINGTON PUBLIC SCHOOLS



## ASHLAWN ELEMENTARY SCHOOL RENOVATION & EXPANSION

Arlington, VA 22205



SHEET TITLE:
SOUTH PLANTING PLAN

L2.02

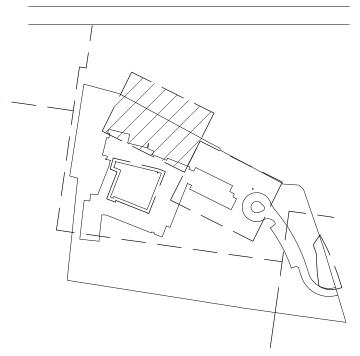


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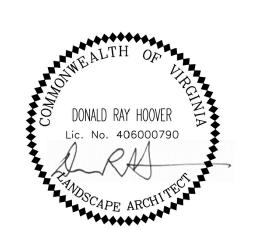


KEY PLAN (NTS)

### **ARLINGTON PUBLIC SCHOOLS**



**ASHLAWN ELEMENTARY SCHOOL RENOVATION & EXPANSION** Arlington, VA 22205



SHEET TITLE: NW PLANTING PLAN **ENLARGEMENT** 

3112.006.00

DIRECTOR OF ENVIRONMENTAL SERVICES

CONTRACT

PROJECT

SHEET OF

APPROVED DATE:

CHIEF WATER, SEWER & STREETS BUREAU CHIEF ENGINEERING BUREAU



11415 Isaac Newton Square, Reston, VA 20190

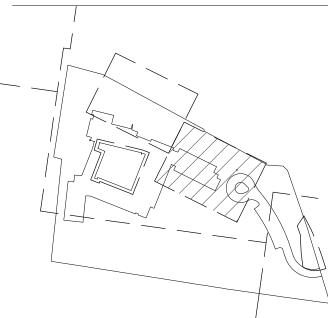
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ISSUE: AUGUST 26, 2013

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01.14.2014 DRAFT LANDSCAPE PLAN



KEY PLAN (NTS)

# ARLINGTON PUBLIC SCHOOLS



ASHLAWN ELEMENTARY SCHOOL RENOVATION & EXPANSION

Arlington, VA 22205



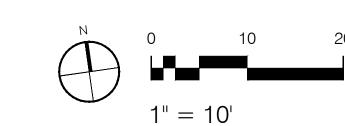
SHEET TITLE:

NE PLANTING PLAN

ENLARGEMENT

L2.11

SHEET OF



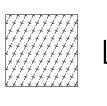
KEY

EXISTING TREE TO REMAIN

CANOPY TREE (1:1 REPLACEMENT VALUE)

UNDERSTORY TREE (3:1 REPLACEMENT VALUE)

EVERGREEN TREE (3:1 REPLACEMENT VALUE)



LAWN (SOD)



LAWN (SEEDED)



MULCH

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CHIEF WATER,SEWER & STRE	ETS BUREAU	CHIEF ENGINEERING B	UREAU		DIRECTOR OF ENVIRONMENTAL SERVICES		
			PROJECT		CONTRACT		
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ARLINGTON, VIRGINIA

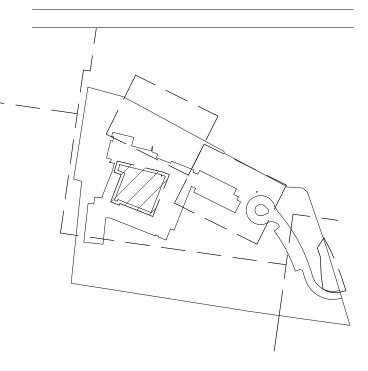


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## **ARLINGTON PUBLIC SCHOOLS**

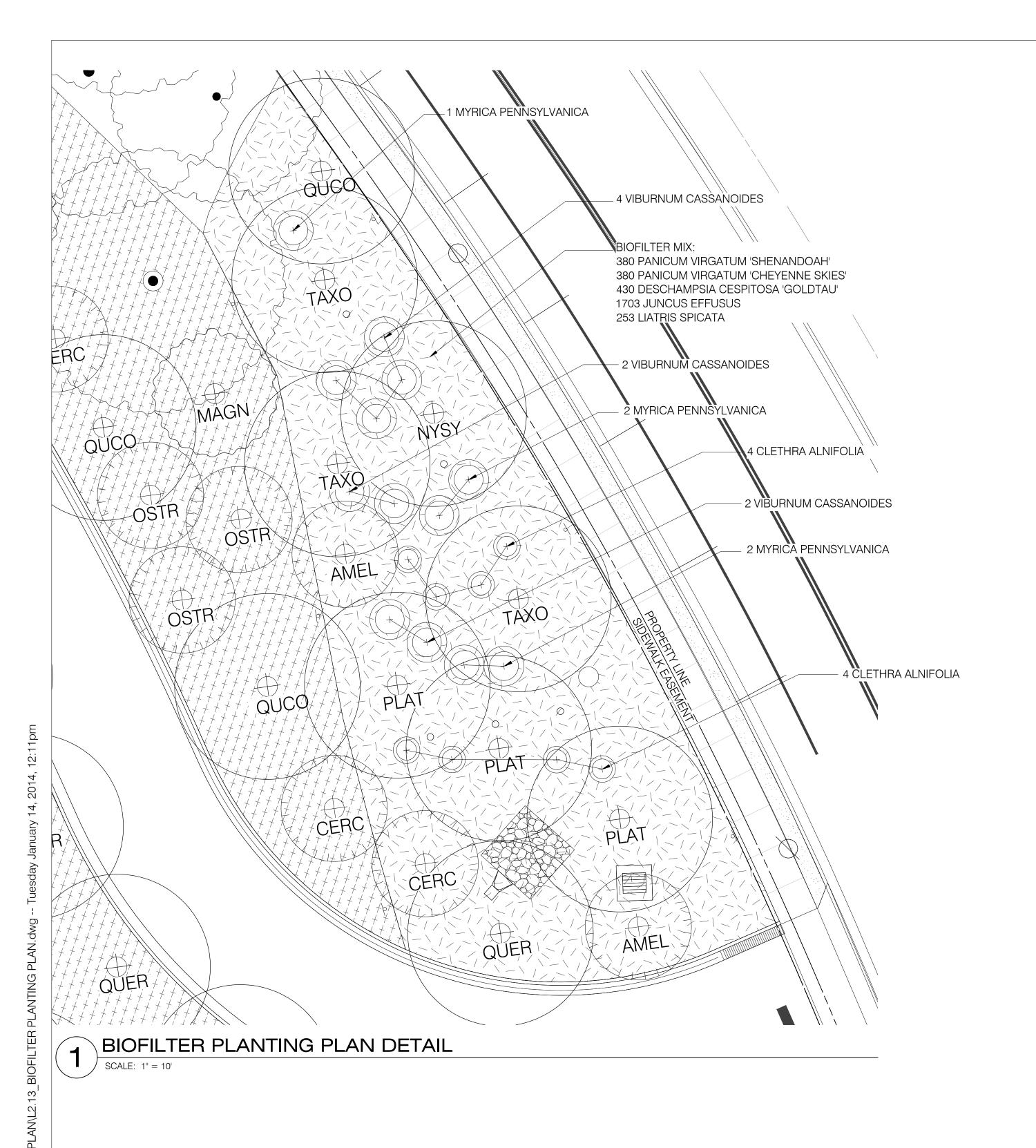


**ASHLAWN ELEMENTARY SCHOOL RENOVATION & EXPANSION** Arlington, VA 22205



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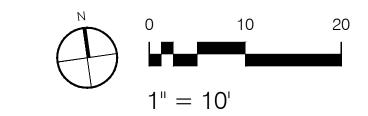
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KEY

EXISTING TREE TO REMAIN

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UNDERSTORY TREE (3:1 REPLACEMENT VALUE)

EVERGREEN TREE (3:1 REPLACEMENT VALUE)

LAWN (SOD)

LAWN (SEEDED)

DEPARTMENT OF ENVIRONMENTAL SERVICES

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CHIEF TRANSPORTATION PLANNING BUREAU DIRECTOR OF ENVIRONMENTAL SERVICES

PROJECT CONTRACT

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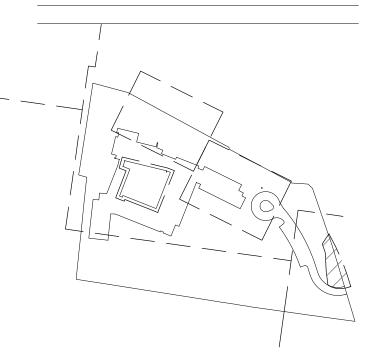
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KEY PLAN (NTS)

# ARLINGTON PUBLIC SCHOOLS



ASHLAWN ELEMENTARY
SCHOOL RENOVATION &
EXPANSION

Arlington, VA 22205



SHEET TITLE:
PLANTING PLAN

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EVERGREEN TREE (3:1 REPLACEMENT VALUE)

CANOPY TREE (1:1 REPLACEMENT VALUE)



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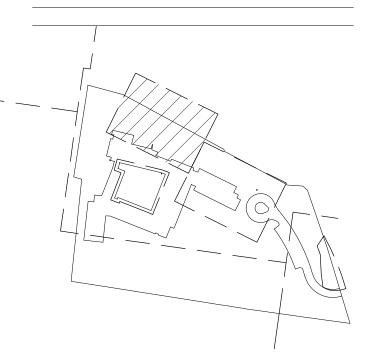
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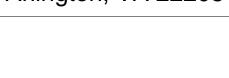


KEY PLAN (NTS)

# ARLINGTON PUBLIC SCHOOLS



ASHLAWN ELEMENTARY SCHOOL RENOVATION & EXPANSION Arlington, VA 22205





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NORTH PLANTING PLAN PHASE 5

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SCALE: HOR. 1" = 10' SUBMITTED DATE:

AUGUST 26, 2013

PPROVED DATE:

LAWN (SOD)

DESIGNED: DRH/MEE

CHIEF WATER, SEWER & STREETS BUREAU CHIEF ENGINEERING BUREAU
PROJECT

APPROVED DATE:

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DIRECTOR OF ENVIRONMENTAL SERVICES
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## PLANT SCHEDULE

TREES						
QTY.	KEY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	REMARKS
11	ACER	Acer rubrum 'Jamestown'	Jamestown Red Maple	3½ - 4 in. cal.	As shown	B&B
27	AMEL	Amelanchier x grandiflora 'Autumn Brilliance'	Autumn Brilliance Serviceberry	10-12' ht	As shown	B&B, multistem
11	BETU	Betula nigra 'Heritage'	Heritage River Birch	10-12' ht.	As shown	B&B, multistem
18	CERC	Cercis canadensis	Redbud	10-12' ht	As shown	B&B, multistem
49	ILOP	llex opaca	American Holly	8-9' ht	As shown	B&B
9	LAGE	Lagerstroemia indica 'Natchez'	Natchez Crape Myrtle	12'-14' ht	As shown	B&B, 4-5 canes
14	MAGN	Magnolia grandiflora 'Bracken's Brown Beauty'	Southern Magnolia	9-10' ht	As shown	B&B
15	NYSY	Nyssa sylvatica	Black Gum	3½ - 4 in. cal.	As shown	B&B
8	OSTR	Ostrya Virginiana	Eastern Hophornbeam	3-3½ in. cal.	As shown	B&B
4	OXAR	Oxydendrum arboreum	Sourwood	10-12' ht	As shown	B&B
9	PINS	Pinus strobus	White Pine	10-12' ht.	As shown	B&B
3	PLAT	Platanus occidentalis	Sycamore	3½ - 4 in. cal.	As shown	B&B
26	QUCO	Quercus coccinea	Scarlet Oak	3½ - 4 in. cal.	As shown	B&B
17	QUER	Quercus phellos	Willow Oak	3½ - 4 in. cal.	As shown	B&B
3	TAXO	Taxodium distichum	Bald Cypress	8-9' ht	As shown	B&B

#### SHRUBS

QTY.	KEY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	REMARKS
17		Aronia melanocarpa 'Iroquois Beauty'	Black Chokeberry	18 - 24" spread	3'-0" O.C.	
8		Clethra alnifolia	Sweet Pepperbush	18 - 24" spread	As Shown	
12		Fothergilla gardenii	Dwarf Fothergilla	18 - 24" spread	3'-0" O.C.	
134		Hydrangea quercifolia 'Pee Wee'	Pee Wee Oakleaf Hydrangea	18 - 24" spread	3'-0" O.C.	
15		Ilex glabra 'Nigra'	Compact Inkberry Holly	18 - 24" spread	2'-6" O.C.	
8		Ilex verticillata 'Jim Dandy'	Jim Dandy Winterberry	18 - 24" spread	3'-0" O.C.	
53		Ilex verticillata 'Red Sprite'	Red Sprite Winterberry	18 - 24" spread	3'-0" O.C.	
5		Itea virginica 'Little Henry'	Dwarf Virginia Sweetspire	18 - 24" spread	3'-0" O.C.	
5		Myrica pensylvanica	Northern Bayberry	18 - 24" spread	As Shown	
7		Prunus laurocerasus	Cherry Laurel	18 - 24" spread	As Shown	
1		Vaccinium ashei 'Climax'	Climax Rabbiteye Blueberry	18 - 24" spread	As Shown	
2		Vaccinium Ashei 'Tifblue'	Tifblue Rabbiteye Blueberry	18 - 24" spread	As Shown	
8		Viburnum cassinoides	Northern Wild Raisin	18 - 24" spread	As Shown	
3		Yucca filamentosa 'var. concava'	Spoonleaf Yucca	18 - 24" spread	As Shown	

#### **PERENNIALS**

QTY.	KEY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING	REMARKS
65		Allium schoenoprasum	Wild Chives	3 in.	1'-0" O.C.	
43		Asclepias tuberosa	Butterfly Weed	1 Qt.	1'-0" O.C.	
2988		Carex pennsylvanica	Oak Sedge	1 Qt.	9" O.C.	Carex mix (45%)
2988		Carex plantaginea	Plantain Leaf Sedge	1 Qt.	9" O.C.	Carex mix (45 %)
249		Chasmanthium latifolium	Northern Sea Oats	1 Qt.	2'-0" O.C.	
47		Coreopsis verticillata 'Zagreb'	Zagreb Coreopsis	1 Qt.	1'-6" O.C.	
430		Deschampsia cespitosa 'Goldtau'	Gold Dew Tufted Hair Grass	1 Qt.	2'-0" O.C.	Biofilter mix (30%)
178		Dryopteris marginalis	Marginal Fern	1 Qt.	1'-0" O.C.	Fern mix (50%)
50		Echinacea purpurea	Eastern Purple Coneflower	1 Qt.	1'-6" O.C.	
85		Eurybia divartica	White Wood Aster	1 Qt.	1'-6" O.C.	
194		Heuchera americana 'Dale's Strain'	Alum Root	1 Qt.	1'-6" O.C.	Heuchera mix (50%)
197		Heuchera villosa 'Autumn Bride'	Hairy Alum Root	1 Qt.	2'-0" O.C.	Heuchera mix (50%)
1703		Juncus effusus	Soft Rush	1 Qt.	1'-0" O.C.	Biofilter mix (30%)
253		Liatris spicata	Spiked Gayflower	1 Qt.	1'-6" O.C.	Biofilter mix (10%)
53		Monarda fistulosum	Wild Bergamot	1 Qt.	1'-6" O.C.	
44		Origanum vulgare	Culinary Oregano	3 in.	1'-0" O.C.	
4674		Pachysandra procumbens	Allegheny Spurge	3 in.	9" O.C.	
380		Panicum virgatum 'Cheyenne Skies'	Cheyenne Sky Switch Grass	1 Qt.	1'-6" O.C.	Biofilter mix (15%)
630		Panicum virgatum 'Shenandoah'	Shenandoah Switch Grass	1 Qt.	1'-6" O.C.	Biofilter mix (15%)
13		Parthenocissus quinquefolia	Virginia Creeper	1 Qt.	2'-0" O.C.	
184		Phlox divaricata	Wild Blue Phlox	1 Qt.	1'-0" O.C.	
226		Phlox subulata	Creeping Phlox	1 Qt.	1'-0" O.C.	
42		Physostegia virginiana 'Miss Manners'	Obedient Plant	1 Qt.	1'-6" O.C.	
554		Polystichum acrostichoides	Christmas Fern	1 Qt.	1'-0" O.C.	Carex mix (10%); Fern mix (509
64		Pycnanthemum muticum	Mountain Mint	1 Qt.	1'-6" O.C.	
3		Rosmarinus officinalis 'Madeline Hill'	Madeline Hill Rosemary	1 Qt.	3'-0" O.C.	
399		Sporobolus heterolepis	Prairie Dropseed	1 Qt.	2'-0" O.C.	
24		Stachys byzantina 'Fuzzy Wuzzy'	Fuzzy Wuzzy Lambs Ears	1 Qt.	1'-6" O.C.	
70		Thymus vulgaris	Common Thyme	3 in.	1'-6" O.C.	

SHRUB COVERAGE CALCULATION 4811 SQUARE FEET TOTAL LANDSCAPE AREA 1250 SQUARE FEET SHRUB COVERAGE AREA 25% SHRUB COVERAGE

## TREE REPLACEMENT CALCULATION

DESCRIPTION	QTY.	REPLACEMENT VALUE
Shade Trees (1:1 replacement)	85	85
Understory and Evergreen Trees (3:1 replacement)	136	45
TOTAL	221	130
TOTAL		
REPLACEMENTS REQUIRED (per arborist)		13

20-Yr Tree Canopy Coverage Calculation

Chesapeake Bay Preservation Ordinance **TREES** 

QTY.	KEY	BOTANICAL NAME	COMMON NAME	20 year coverage (sq. ft.) (per tree)	TOTAL
11	ACER	Acer rubrum 'Jamestown'	Jamestown Red Maple	315	3465
27	AMEL	Amelanchier x grandiflora 'Autumn Brilliance'	Autumn Brilliance Serviceberry	175	4725
11	BETU	Betula nigra 'Heritage'	Heritage River Birch	175	1925
18	CERC	Cercis canadensis	Redbud	175	3150
49	ILOP	llex opaca	American Holly	110	5390
9	LAGE	Lagerstroemia indica 'Natchez'	Natchez Crape Myrtle	110	990
14	MAGN	Magnolia grandiflora 'Bracken's Brown Beauty'	Southern Magnolia	315	4410
15	NYSY	Nyssa sylvatica	Black Gum	250	3750
8	OSTR	Ostrya Virginiana	Eastern Hophornbeam	(no value in worksheet)	
4	OXAR	Oxydendrum arboreum	Sourwood	(no value in worksheet)	
9	PINS	Pinus strobus	White Pine	175	1575
3	PLAT	Platanus occidentalis	Sycamore	315	945
26	QUCO	Quercus coccinea	Scarlet Oak	315	8190
17	QUER	Quercus phellos	Willow Oak	250	4250
3	TAXO	Taxodium distichum	Bald Cypress	250	750
SUBTOTAL					43515
		OPY			-4515
GRAND TO	TAI				39000



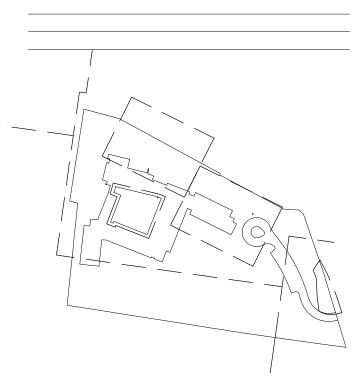
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KEY PLAN (NTS)

## **ARLINGTON PUBLIC SCHOOLS**



**ASHLAWN ELEMENTARY** SCHOOL RENOVATION & **EXPANSION** 

Arlington, VA 22205



SHEET TITLE:

ARLINGTON, VIRGINIA

DEPARTMENT OF ENVIRONMENTAL SERVICES

CHECKED: DRH

CHIEF TRANSPORTATION PLANNING BUREAU CHIEF TRAFFIC ENGINEERING BUREAU APPROVED DATE:

SHEET OF

APPROVED DATE:

SHEET OF

DIRECTOR OF ENVIRONMENTAL SERVICES

CONTRACT

DESIGNED: DRH/MEE

CHIEF WATER, SEWER & STREETS BUREAU CHIEF ENGINEERING BUREAU PROJECT

APPROVED DATE:

SCALE: HOR. N/A VER. N/A SUBMITTED DATE:

AUGUST 26, 2013

APPROVED DATE:

PLANTING SCHEDULE

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# APPENDIX IV: SECTION M - TRAFFIC AND CIRCULATION

# Ashlawn Elementary School School Transportation Plan

**FINAL DRAFT** 

November 28, 2012



## Contents

Executive Summary	2
Section 1: Introduction/Background	6
Part 1. Background Research	6
Part 2. Current School Environment and Travel Modes	8
Student Travel Tallies and Parent Surveys – Travel Mode	10
Staff Surveys – Travel Mode and Parking	13
Visitor surveys – travel mode and parking	14
Part 3. Observed School Arrival and Dismissal Processes	14
Arrival	
Observed Arrival by Mode	
Dismissal	17
Dismissal procedures	18
Observed Dismissal by Mode	18
Part 4. Summary of background information collected	19
Section 2: Vehicular Traffic Analysis and Recommendations	20
Part 1. Methodology	21
Part 2. Data Collection to Inform Traffic Analysis	22
Traffic Observations and Data Collection	22
Student Tally and Parent Surveys	26
Part 3. Existing Conditions Analysis	27
Part 4. Future Traffic Volumes	27
Background Growth	27
Trip Generation Estimates and Assumptions	28
Part 5. Analysis of Future Condition	30
Option #1 – Drop-off/Pick-up on 8 <sup>th</sup> Road	30
Option #2 – Access Drive on Manchester Street	31
Additional Considerations	32
Wilson Boulevard & 8 <sup>th</sup> Road Connection	32
Part 6. Vehicle Traffic Analysis Conclusion and Recommendations	33
Section 3: Safe Routes to School Strategies — Infrastructure Assessment, Recommendations and	34

Part 1. Non-vehicular Infrastructure Assessment	34
Part 2. Infrastructure Issues, Recommendations and TDM Strategies	38
Arrival and Dismissal	38
On Campus	40
Off Campus	43
Pedestrian Access from Wilson Boulevard via 8 <sup>th</sup> Road	45
Pedestrian Access from Manchester Street	48
Pedestrian Access from Montague Street	50
Wilson Boulevard	53
Manchester Street	54
Pedestrian Access across Bluemont Park	56
Pedestrian Access to Remote Parking Lots	58
Part 3. Additional TDM Strategies for Parents and Students	59
Section 4: School Parking and Staff Transportation Demand Management	63
Part 1: Background Research and Data Collection to Inform Parking Analysis	63
Parking Requirements	63
Current School student, staff and visitor populations	64
Current School Staff Travel Modes	65
Current Observed and Self-Reported School Parking Supply and Demand (staff and visitors)	65
Current Observed and Calculated Special Event Parking Demand	66
Part 2: Parking Needs Assessment	66
Estimated future school populations and maximum parking demand	66
Part 3. Onsite Parking and Staff TDM Recommendations	67
Vehicle parking supply recommendation	67
TDM Recommendations for staff	67
Section 5: Summary of Site Design and Circulation Recommendations	69
Part 1. Site Circulation and Driveways	69
Part 2. Motor Vehicle Parking	70
Part 3. On-campus infrastructure	70
Appendices	

#### **Executive Summary**

Arlington Public Schools (APS) is undertaking a comprehensive school renovation and expansion program and has hired SHW Group to develop a plan for expanding Ashlawn Elementary School. Ashlawn Elementary School has a current enrollment of approximately 533 students with a projected capacity after expansion of 684 students.

Toole Design Group, LLC (TDG) was hired to assess the transportation impacts of the Ashlawn Elementary School expansion project and provide infrastructure and programmatic recommendations to mitigate the demand for increased motor vehicle travel to and from the site. These recommendations will inform site design as well as safe routes to school (SRTS) strategies to impact travel mode choice and safety by staff, students and visitors. This resulting School Transportation Plan does not take the place of a Transportation Demand Management (TDM) plan but includes strategies that may be incorporated into a TDM plan.

TDG began its assessment process by assessing the existing school transportation context under the current configuration. TDG used this understanding to determine future transportation needs with school expansion, and finally develop a number of recommendations to optimize travel to and from the school by all modes.

#### **Summary of Key Findings**

A summary of key findings related to school travel for both existing and future conditions is provided below.

#### **Travel Mode and Processes**

Data collected through surveys, observation and field work provided a snapshot of the current processes, behaviors and travel modes at Ashlawn Elementary School. In general, the mode split for travel to and from school is promising in terms of balancing walkers and bicyclists, private motor vehicles and school buses. Currently students at Ashlawn Elementary School arrive by all travel modes, with approximately 30% bicycling or walking to/from school on a typical day. Of the students who live within one mile of the school, approximately 47% of students walk or bike to school. This is very close to goal included in the Countywide Master Transportation Plan of a 50% walk/bike rate for elementary school students who live within one mile of their school.

The current arrival process concentrates all modes on 8<sup>th</sup> Road, which presents challenges because 8<sup>th</sup> Road is a relatively narrow, dead-end street with no good place for motor vehicles to turn around. The existing Kiss and Drop loop (where private vehicles drop off students) is closed to cars during dismissal and the bus loop is closed to cars after 8:30 AM during arrival, and until all buses have departed during dismissal. During drop off and pick up, cars execute three point turns on 8<sup>th</sup> Road as buses are entering and leaving the school campus. Walkers coming from/going to Wilson Boulevard must utilize 8<sup>th</sup> Road during this time as well, because there is no sidewalk on 8<sup>th</sup> Road west of the upper lot parking lot.

#### Vehicular Traffic

TDG collected and reviewed various sources of data for consideration in the traffic analysis, including traffic counts, traffic observations, school driveway counts, and surveys of teachers, parents and students regarding their travel modes. The analysis showed that current vehicular traffic demands can be accommodated with the existing infrastructure, with the exception of the Manchester northbound left turning movement at the intersection of Manchester Street and Wilson Boulevard, which currently operates at an LOS F during the elementary school arrival peak hour and an LOS D during the dismissal peak hour. The remaining movements at this intersection operate at LOS C or better during arrival and dismissal peak hours. Analysis showed that all movements at the intersection of Manchester Street and 8<sup>th</sup> Road operate at LOS A.

The analysis indicates that the current infrastructure can support the additional vehicle trips anticipated to accompany the elementary school expansion. Two access options were studied to improve circulation and safety of the parent pickup/dropoff process: access off 8<sup>th</sup> Road, and access via a new driveway on Manchester Street. Both options have similar results for the vehicle capacity analysis; however, the access drive on Manchester provides significant benefit to the efficiency and safety by separating modes. A third access option, connecting 8<sup>th</sup> Road and Wilson Boulevard only for school bus access, was evaluated qualitatively, but did not undergo detailed traffic analysis.

#### **On-campus Infrastructure**

Several on-campus infrastructure issues were identified and corresponding recommendations developed to support pedestrian and bicycle access to the school, including:

- Convenient, accessible pedestrian connections are not provided between all school access points and school entrances.
- Some sidewalks adjacent to the campus are not wide enough to accommodate peak pedestrian flows.
- Vegetation obstructs some on-campus pedestrian pathways.
- Some on-campus pedestrian pathways are not well-lit.
- Some on-campus curb ramps do not meet ADA guidelines.
- Driveway entrances create potential conflict points between motor vehicle drivers and pedestrians/bicyclists.
- Sight lines between pedestrians and motor vehicle drivers are obstructed by parked cars and/or vegetation at some driveway openings.
- Bicycle parking is not adequate for existing demand.

#### Vehicle Parking

Current on-site parking at Ashlawn Elementary totals 44 spaces (22 in the upper lot, 5 in the bus loop, and 17 in the lower lot). In addition, 30 parking spaces are leased from Dominion Hills.
 There are currently 68 parking spaces available in the Bluemont Park parking lot, and approximately 20 on-street spaces available on the east side of Manchester Street.

• Responses to a staff survey indicate that approximately 71% of school staff live more than 2 miles from the school and 86% of respondents report driving alone to school.

#### **Summary of Key Recommendations**

A summary of key recommendations that relate to school site design or circulation is provided below.

#### Traffic Circulation (all modes)

Of the three site design concepts presented throughout this project, TDG supports the new driveway off of Manchester Street with the following additional features:

- Permitted or limited access on-street parking on 8<sup>th</sup> Road
- Crossing guard and raised crosswalk on the south leg of 8<sup>th</sup> Road and Manchester intersection
- Enhanced drop off and pick up procedure to provide a safer and more efficient unloading and loading process. This could include on-campus signs and paint on curb and driveway surface to provide direction for loading/unloading. Ashlawn Elementary should continue to utilize student valets, and consider implementing a driver ID system for student pick up. Additionally, measures should be taken to communicate early and often with parents regarding the arrival and dismissal processes (see Section 3 for additional information).

Note: The County is conducting a feasibility study of opening 8<sup>th</sup> Road at Wilson Boulevard to school buses only. TDG would want to see feasibility study before making a decision on this, but generally speaking it could simplify turning movements from Manchester onto 8<sup>th</sup> Road by removing school buses.

#### **Vehicle Parking**

Due to current and projected staff travel mode share, and the existence of off-site parking facilities around Ashlawn Elementary School, it is recommended that the expanded Ashlawn Elementary School accommodate a total of 134 vehicles through a combination of onsite, leased and off-site facilities such as Bluemont Park and on-street parking on Manchester Street. This would accommodate 77% of future estimated school staff parking demand (93 spaces), and 100% of estimated maximum visitor parking demand (41 spaces).

#### **On-Campus Infrastructure**

Several recommendations are provided to inform design of the school campus in order to adequately accommodate active modes of travel, including:

- Ensure that convenient, accessible pathways are provided wherever feasible.
- Ensure that all on-campus sidewalks are sufficiently wide.
- Ensure that all on-campus pedestrian pathways are well-lit.
- Update all on-campus curbs to meet ADA guidelines.
- Provide convenient ADA compliant curb ramps from school parking lots and arrival/dismissal drives.
- Minimize and consolidate curb cuts.

- Indicate pedestrian priority at driveway opening by continuing the sidewalk at-grade across the opening.
- Arrange parking locations, signs, utilities, and landscaping to ensure clear sight lines between
  pedestrians and drivers. Choose landscaping that is low-growing and does not obstruct sight
  lines and/or continuously trim vegetation to preserve sightlines.
- Add additional bicycle parking. Add parking locations for scooters and strollers.
- Add way finding for all modes of travel that provides clear information as to how to navigate to and from the school by walking bicycling or automobile.
- When constructing a stair along a potential bicycle access route, include wheel gutters (also called rolling trays) if an adjacent ramp is infeasible.



## APPENDIX V: SECTION O - GREEN BUILDING

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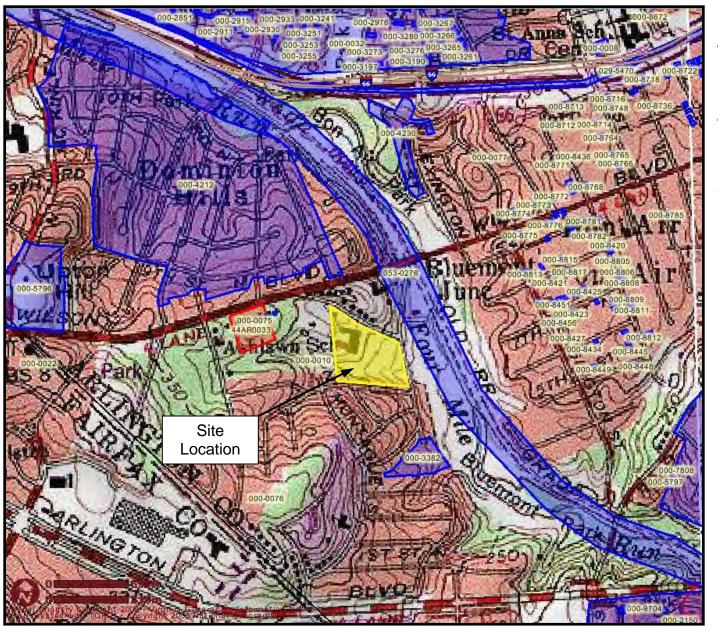
#### LEED 2009 for New Construction and Major Renovations

Project Name

Project Checklist

	nable Sites Possible Poin	nts: <b>26</b>			als and Resources, Continued		
N			Υ ?				
Prereq 1	Construction Activity Pollution Prevention		Υ	Credit 4	Recycled Content		1
Credit 1	Site Selection	1	Υ	Credit 5	Regional Materials		1
N Credit 2	Development Density and Community Connectivity	5		N Credit 6	Rapidly Renewable Materials		1
N Credit 3	Brownfield Redevelopment	1		N Credit 7	Certified Wood		1
N Credit 4.1	Alternative Transportation—Public Transportation Access	6					
Credit 4.2	, , , , , ,			Indoor	Environmental Quality	Possible Points:	1
Credit 4.3			_				
Credit 4.4	Alternative Transportation—Parking Capacity	2	Υ	Prereq 1	Minimum Indoor Air Quality Performance		
Credit 5.1		1	Υ	Prereq 2	Environmental Tobacco Smoke (ETS) Contro	ol	
Credit 5.2	Site Development—Maximize Open Space	1	Υ	Credit 1	Outdoor Air Delivery Monitoring		1
Credit 6.1	Stormwater Design—Quantity Control	1	Υ	Credit 2	Increased Ventilation		1
Credit 6.2	Stormwater Design—Quality Control	1	Υ	Credit 3.1	Construction IAQ Management Plan-During	Construction	1
Credit 7.1	Heat Island Effect—Non-roof	1	Υ	Credit 3.2	Construction IAQ Management Plan-Before	Occupancy	1
Credit 7.2	Heat Island Effect—Roof	1	Υ		Low-Emitting Materials—Adhesives and Sea		1
Credit 8	Light Pollution Reduction	1	Υ	Credit 4.2	Low-Emitting Materials—Paints and Coating	<b>şs</b>	1
			Υ	Credit 4.3	Low-Emitting Materials—Flooring Systems		1
Water	<b>Efficiency</b> Possible Poin	nts: 10	Υ	Credit 4.4	Low-Emitting Materials—Composite Wood a	and Agrifiber Products	1
			Υ	Credit 5	Indoor Chemical and Pollutant Source Cont	rol	1
Prereq 1	Water Use Reduction—20% Reduction		Υ	Credit 6.1	Controllability of Systems—Lighting		1
Credit 1	Water Efficient Landscaping	2 to 4	Υ	Credit 6.2	Controllability of Systems—Thermal Comfo	rt	1
Credit 2	Innovative Wastewater Technologies	2	Υ	Credit 7.1	Thermal Comfort—Design		1
Credit 3	Water Use Reduction	2 to 4		N Credit 7.2	Thermal Comfort—Verification		1
			Υ	Credit 8.1	Daylight and Views—Daylight		1
Energy	y and Atmosphere Possible Poin	nts: <b>35</b>	Y	Credit 8.2	Daylight and Views—Views		1
Prereg 1	Fundamental Commissioning of Building Energy Systems			Innova	tion and Design Process	Possible Points:	6
Prereq 2	Minimum Energy Performance			IIIIOVA	and Design 1 rocess	1 OSSIDIC 1 OITICS.	U
Prereg 3	Fundamental Refrigerant Management		Υ	Credit 1 1	Innovation in Design: Specific Title		1
Credit 1	Optimize Energy Performance	1 to 19	Y		Innovation in Design: Specific Title		1
N Credit 2	On-Site Renewable Energy	1 to 7			Innovation in Design: Specific Title		1
N Credit 3	Enhanced Commissioning	2			Innovation in Design: Specific Title		1
Credit 4	Enhanced Refrigerant Management	2			Innovation in Design: Specific Title		1
N Credit 5	Measurement and Verification	3		N Credit 2	LEED Accredited Professional		1
N Credit 6	Green Power	2		Credit 2	EEED Accredited Froressional		
				Region	al Priority Credits	Possible Points:	: 4
Materi	ials and Resources Possible Poin	nts: 14					
					Regional Priority: Specific Credit		1
	Storage and Collection of Recyclables				Regional Priority: Specific Credit		1
Prereq 1	Building Reuse—Maintain Existing Walls, Floors, and Roof	1 to 3			Regional Priority: Specific Credit		1
Credit 1.1							
	Building Reuse—Maintain 50% of Interior Non-Structural Elements			N Credit 1.4	Regional Priority: Specific Credit		1
Credit 1.1		s 1 1 to 2 1 to 2		N Credit 1.4	Regional Priority: Specific Credit	Possible Points:	1

# APPENDIX VI: SECTION P - CULTURAL AND HISTORIC RESOURCES



Archeological Resource



Architectural Resource



Site