Town of Haymarket Planning Commission

Regular Meeting

~ AGENDA ~

Emily Kyriazi, Town Planner
http://www.townofhaymarket.org/

15000 Washington Street, Suite 100
Haymarket, VA 20169

Monday, July 24, 2023 | 7:00 PM | Council Chambers

I. Call To Order

II. Pledge of Allegiance

III. Appointment of Chair and Vice Chair

IV. Citizens Time

V. Minute Approval

1. Planning Commission - Public Hearing/Regular Meeting - Jun 20, 2023 7:00 PM

VI. Agenda Items

1. Kiddie Academy Site Plan
2. Authorize to Advertise for Public Hearing: RPA Map

VII. Old Business

VIII. New Business

IX. Architectural Review Board Updates

X. Town Council Updates

XI. Adjournment

Town of Haymarket Planning Commission

Public Hearing/Regular Meeting
~ MINUTES ~

Emily Kyriazi, Town Planner
http://www.townofhaymarket.org/

15000 Washington Street, Suite 100
Haymarket, VA 20169

Tuesday, June 20, 2023 | 7:00 PM | Council Chambers

A Public Hearing/Regular Meeting of the Planning Commission of the Town of Haymarket, VA, was held this evening in the Council Chambers, commencing at 7:00 PM.

Chairman Alexander Beyene called the meeting to order.

I. Call To Order

Commissioner Robert Hallet: Present, Chairman Alexander Beyene: Present, Commissioner Sandy Freeman: Late (7:05 PM), Commissioner Jerome Gonzalez: Present.

II. Pledge of Allegiance

Chairman Alexander Beyene invited everyone to stand for the Pledge of Allegiance.

III. Public Hearing

1. Public Notice

After Town Clerk Kim Henry read the public notice into the record, Mr. Beyene opened the floor for citizen comment.

2. Citizen Comments

There was comments from the citizens on the subject of the public hearing.

3. Close Public Hearing

With no comments, Chairman Beyene closed the public hearing.

IV. Citizens Time

No citizens present wished to address the Planning Commission at this evening's meeting.

V. Minute Approval

1. Planning Commission - Public Hearing/Regular Meeting - May 15, 2023 7:00 PM

Commissioner Hallet moved to accept the minutes for the May 15, 2023 Planning Commission meeting. Commissioner Gonzalez seconded the motion. The motion carried.

RESULT:	**ACCEPTED [UNANIMOUS]**
MOVER:	Robert Hallet, Commissioner
SECONDER:	Jerome Gonzalez, Commissioner
AYES:	Robert Hallet, Alexander Beyene, Jerome Gonzalez
ABSENT:	Sandy Freeman

VI. Agenda Items

1. Consideration of Resolution #2023-007

Chairman Beyene asked if the Planning Commission had any questions or would like to discuss prior to the vote. Commissioner Gonzalez requested a short edit to the resolution.

With no further discussion or corrections, Commissioner Gonzalez moved to adopt Resolution 2023-007 related to the updated hazards map in the Town's Comprehensive Plan. Commissioner Hallet seconded the motion. The motion carried.

RESULT:	**ADOPTED [UNANIMOUS]**
MOVER:	Jerome Gonzalez, Commissioner
SECONDER:	Robert Hallet, Commissioner
AYES:	Robert Hallet, Alexander Beyene, Jerome Gonzalez
ABSENT:	Sandy Freeman

2. CIP Review and Recommendation to Town Council

Town Manager Emily Kyriazi shared that she would like to address the edits to the CIP that was discussed at a previous meeting. She stated that some notes have been added based on the discussion previously. She stated that she moved some of next years projects out to 2024-25 and 2025-26 time frame namely the Jefferson turn lane and Town Center property master plan construction. She stated that the Town Council needs to talk on whether they would like to take a phase approach on the site plan project for the Town Center property of if the majority of it would be done all at once. Mrs. Kyriazi asked for any questions or final edits from the Planning Commission.

At this time, Chairman Beyene recognized that Commissioner Freeman joined the meeting. There was a short discussion on the Town Park property. Mrs. Kyriazi shared that she has left those line items blank at this time waiting on direction from the Town Council on what they see as a good use for that property. She told the Commission that the Town is in the middle of a survey which is asking the citizens what they envision regarding the Park building and property. Chairman Beyene stated that the Town Park sidewalk to Bleight Drive would be a priority. Mrs. Kyriazi confirmed that along with the sidewalk is the master plan construction under the Town Center property. She also stated that even though it is not a high cost amount, another priority would be the general streetscape beautification. She shared that the Town Maintenance Coordinator has been doing significant work and repairs on the streetscape, to include the street lights and benches. She shared that she recognizes that there may be some that will need a full replacement. She also shared that due to significant price increases on the lights, staff is trying to use the existing inventory to repair what is broken and as a last resort order a replacement. There was also a discussion on replacement of some of the trees along the street. Mrs. Kyriazi stated that currently all the trees along the street are healthy and growing at a nice pace. Mrs. Kyriazi also shared that the Town building and signs above the Town Hall door and the Police Department door is a funded expense for this year. Lastly, there was a question on the quiet zone updates. Mrs. Kyriazi shared that she currently did not have any updates. She stated that the staff spoke with Prince William County in April about the quiet zone. She shared that the staff is still going to apply for the quiet zone grant. There was a question regarding the Town Center master plan. Mrs. Kyriazi stated that the master plan construction includes a lot of different phases and gave a brief description.

3. Kiddie Academy Site Plans - Crossroads Village Center

Town Planner Thomas Britt presented the site plan for Kiddie Academy which will be located within Crossroads Village Center. He shared that the building will be at 6525 Crossroads Village Blvd. He stated that it has gone through all preliminary reviews and 2 final site plan submissions have been reviewed. He continued to state that it is due to have all agency approval and waiting on the engineers conditional approval letter. There was a discussion on the plans regarding meeting all of the requirements. Mr. Britt shared that there were comments on parking lot landscaping. He stated that there was a couple stormwater dimensions that were updated and curb radius on the northwest end of the site. He stated that all the items have been commented on by the developer and have been resubmitted. There was also a question on building height requirements and the maximum build-able lot coverage in the Town's zoning ordinance. Town Manager Emily Kyriazi stated that staff will get with the developers engineer on the height shown on the plans and the lot coverage. There was also a discussion on a drop off point for children so that they do not have to walk across any traffic lanes. Commissioner Gonzalez asked if the plans could incorporate a drop off zone that would be in accordance to the Town's Zoning Ordinance. Town Planner Britt stated that he would bring that up along with the building height comments. Mr. Britt shared that the developer is adding bollards at the front of the building so that there would be a safe place for drop offs. Lastly, there was a discussion on the sidewalk connectivity to the rest of Crossroads Village. There was also a brief discussion on the traffic flow concerns.

VII. Old Business

1. R-2 Zoning Text Discussion

Town Manager Emily Kyriazi shared that at the last meeting there was a discussion on allowable uses in the R-2 zoning district. Mrs. Kyriazi provided the R-2 by right and special use permit list for that district. She stated that she is waiting on the Town Attorney response to specific detail of multi family dwellings that is allowable in the R-2. She explained that R-2 is intended for more central to the Town residential with higher density with smaller houses which could include townhouses, smaller lots with single family homes with minimum requirements. She went over the lot coverage, yard and height regulations. There was a question on maximum parking spaces per unit. Mrs. Kyriazi responded that for townhouses the maximum allowable parking spaces would be 2.25 per dwelling unit with a reserved parking area of 1 space for every 4 townhouses for visitor parking and for single family homes 2 parking spaces per unit exclusive of the garage and for second floor apartments above a B-1 commercial would be 1.5 per dwelling unit that would be specifically assigned and reserved for the unit. Mrs. Kyriazi shared that staff is working through a rezoning application that was recently submitted requesting an R-2 district and will keep the Planning Commission updated as more information becomes available. She stated that the Town Council will be passing the application to the Planning Commission for review and that a public hearing will be needed in the near future. A discussion followed on interpretation of R-2.

Town Planner Thomas Britt updated the Planning Commission on Old Business items such as the design phase of the Town's sidewalk is almost at completion. He also shared that the townhouses in Crossroads Village are continually getting construction approval from staff and are selling quickly. He continued to state that the Robinson Paradise single family homes are starting to be constructed. Mr. Britt also shared the upcoming opening of businesses at Crossroads Village Center. Lastly, he shared that staff is waiting on outside comments on the proposed town houses at Bleight Drive. He stated that this item will be coming before the Planning Commission in the very near future.

VIII. New Business

Town Planner Thomas Britt stated that he will keep the Planning Commission informed on any Comprehensive Plan updates along with the rezoning application and the Bleight Drive townhouses.

IX. Architectural Review Board Updates

Town Planner Thomas Britt gave the Architectural Review Board updates. He shared that the ARB approved a sign permit application for Self Storage Plus, a fence application for VCA Healthy Paws approval and a review with comments on an exterior elevation for a new dental office located south of the Kiddie Academy. He stated that the site plan for that business is under preliminary review.

X. Town Council Updates

Chairman Beyene gave the Town Council updates. He shared that the Town Council is asking for input on what citizens would like to see done with the Town Park building, otherwise known as the Lewis Home. He stated that the questionnaire was developed for the Town Council to understand what the priorities and preferences are from the public.

XI. Adjournment

With no further business before the Planning Commission, Commissioner Hallet moved to adjourn the meeting with a second by Commissioner Freeman. The motion carried.

1. Motion to Adjourn

RESULT:	**ADOPTED [UNANIMOUS]**
MOVER:	Robert Hallet, Commissioner
SECONDER:	Sandy Freeman, Commissioner
AYES:	Robert Hallet, Alexander Beyene, Sandy Freeman, Jerome Gonzalez

Submitted:

Approved:

Kimberly Henry, Clerk of the Council

Alexander Beyene, Chairperson

Town of Haymarket
15000 Washington Street, #100
Haymarket, VA 20169
703-753-2600

Thomas Britt
Town Planner

MEMORANDUM

TO: Planning Commission
FROM: Thomas Britt, Town Planner
DATE: July 10, 2023
SUBJECT: Kiddie Academy Final Site Plan Submission

Background: The applicant has submitted a site plan for the Kiddie Academy education center. The site is in the northwest corner of the Crossroads Village Center development, behind the Quarles Property. The second submission of the final site plan is currently under Town and outside agency review.

In the June 20 PC meeting, the Commission and Town Staff discussed a few zoning requirements to update in the site plan, and child safety during drop off. Town Staff have coordinated with J2 Engineers about the update requests.

J2 Engineers has provided an updated site plan with dimensional fixes to meet the zoning ordinance. The engineers were not able to add a drop off point and lane in the proposed site. The Town Planner will bring these updates before the Planning Commission for review on the July 24th PC meeting.

Response: The Town Planner Recommends the Planning Commission motions to approve Site Plan #2023-0510, Kiddie Academy at Crossroads Village Center.

Or an alternate motion.

FINAL SITE PLAN

KIDDIE ACADEMY AT CROSSROADS VILLAGE CENTER

TOWN OF HAYMARKET, VIRGINIA

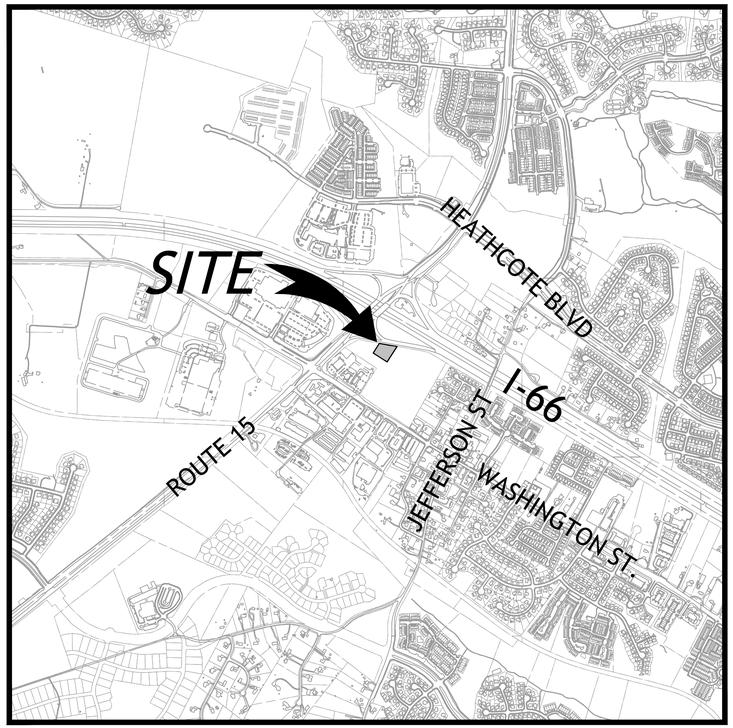
SERVICE AUTHORITY PLAN NUMBER: SA2023-0014

GENERAL NOTES:

1. THE SUBJECT PROPERTY SHOWN HEREON IS ZONED B-2 ADMINISTERED UNDER THE 2017 TOWN OF HAYMARKET ZONING AND SUBDIVISION ORDINANCE. PROPERTY ADDRESS IS 15150 WASHINGTON STREET. PRINCE WILLIAM COUNTY GPIN: 7298-21-2707
2. THE FOLLOWING LAND DEVELOPMENT APPLICATIONS ARE ASSOCIATED WITH THIS PROJECT:

SP #1977	CROSSROADS VILLAGE CENTER - FINAL SITE PLAN	11/20/2018.
	CROSSROADS VILLAGE CENTER - RETAIL PRELIMINARY PLAN	09/13/2021.
	CROSSROADS VILLAGE CENTER - FINAL SITE PLAN - OVERALL REVISION	02/10/2022.
	CROSSROADS VILLAGE CENTER - FINAL SITE PLAN - OVERALL REVISION 2	08/09/2022.
	KIDDIE ACADEMY AT CROSS ROADS VILLAGE CENTER PRELIMINARY PLAN	11/29/2022.

3. THE DISTURBED AREA IS 1.08 ACRES.
4. METES AND BOUNDS SHOWN HEREON ARE THE RESULT OF A CURRENT FIELD SURVEY.
5. THE PROPERTY DOES NOT CONTAIN ANY AREAS OF EITHER MODERATELY OR VERY STEEP SLOPES.
6. DATA SHOWN HEREON ARE ON HORIZONTAL DATUM VIRGINIA STATE PLAN COORDINATE SYSTEM NAD 1983 AND VERTICAL DATUM NAVD 1988.
7. THERE IS NO FLOODPLAIN ON THE PROPERTY THAT IS THE SUBJECT OF THIS APPLICATION. THE PROPERTY SHOWN HERON LIES WITHIN FLOOD HAZARD AREA ZONE "X" AS DEPICTED ON FLOOD INSURANCE RATE MAP, COMMUNITY PANEL 51153C0059D, HAVING AN EFFECTIVE DATE OF JANUARY 5, 1995 AND PREPARED BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY.
8. ALL STRUCTURES WITHIN 50 FEET OF THE SUBJECT PROPERTY HAVE BEEN SHOWN ON THE EXISTING CONDITIONS MAP.
9. NO RPA IS PRESENT ON SITE. THERE ARE NO KNOWN CEMETERIES OR HISTORIC SITES ON THIS PROPERTY.
10. SOILS INFORMATION SHOWN HEREON IS TAKEN FROM DIGITAL MAPS PROVIDED BY PRINCE WILLIAM COUNTY THE SUBJECT DEVELOPMENT SITE DOES CONTAIN CLASS III SOILS AS IDENTIFIED BY THE INTERPRETIVE GUIDE TO SOILS MAP, PRINCE WILLIAM COUNTY.
11. A VSMP PERMIT WILL BE SUBMITTED WITH THE FINAL ENGINEERING PLAN.
12. UTILITIES, INCLUDING TELEPHONE, ELECTRIC, CABLE AND OTHER UTILITIES, WILL BE EXTENDED TO THE SITE.
13. PUBLIC WATER AND SEWER WILL BE PROVIDED THROUGH CONNECTIONS TO EXISTING FACILITIES (OWNED AND OPERATED BY PRINCE WILLIAM COUNTY SERVICE AUTHORITY) WHICH ARE AVAILABLE AT THE SITE BOUNDARY. THE SERVICE AUTHORITY DOES NOT GUARANTEE THE CONSTRUCTION OR TIMING WHEN UTILITIES WILL BE PLACED INTO SERVICE THAT ARE SHOWN AS EXISTING IN THIS PLAN SET. IF UTILITIES SHOWN AS EXISTING ARE NOT AVAILABLE WHEN NEEDED BY THIS PROJECT, THIS PROJECT SHALL OBTAIN THE NECESSARY RIGHTS TO INSTALL ON-SITE AND OFF-SITE WATER AND SANITARY SEWER UTILITIES FROM AN APPROVED PLAN TO PROVIDE THE DESIRED SERVICE.
14. PARKING FOR ALL USES SHALL COMPLY WITH THE REQUIREMENTS OF SECTION 58-6.1
15. VEHICLE COUNTS (VPD) ARE BASED ON THE 9th EDITION OF THE ITE TRIP GENERATION MANUAL.
16. THE APPROVAL OF THESE PLANS SHALL IN NO WAY RELIEVE THE DEVELOPER OR HIS AGENT OF ANY LEGAL RESPONSIBILITY WHICH MAYBE REQUIRED BY APPLICABLE LOCAL, STATE AND FEDERAL REQUIREMENTS OR ANY OTHER ORDINANCE ENACTED BY THE TOWN OF HAYMARKET.



VICINITY MAP

SCALE : 1"=1000'

APPLICANT/DEVELOPER

BAKER & ASSOCIATES, ARCHITECTS
673 HIGH STREET, SUITE 204
WORTHINGTON, OH 43085

OWNER

MELADON GROUP
1602 VILLAGE MARKT BLVD, SE
SUITE 235
LEESBURG, VIRGINIA 20175
571-375-1750

ENGINEER

J2 ENGINEERS
17739 MAIN STREET
SUITE 180
DUMFRIES, VA 22026
703-361-1550

TOWN REPRESENTATIVE

EMILY KYRIAZI
1500 WASHINGTON STREET
SUITE 100
HAYMARKET, VA 20169
703-753-2600 EXT. 204

NOTICE REQUIRED

CONTRACTORS SHALL NOTIFY OPERATORS WHO MAINTAIN UNDERGROUND UTILITY LINES IN THE AREA OF PROPOSED EXCAVATION OR BLASTING AT LEAST TWO WORKING DAYS, BUT NOT MORE THAN TEN WORKING DAYS PRIOR TO COMMENCEMENT OF EXCAVATION OR DEMOLITION.

CONTACT "MISS UTILITY" AT
1-800-552-7001
FOR THESE UTILITIES

A.T.& T. CO.
VIRGINIA ELECTRIC & POWER CO.
COLUMBIA GAS TRANSMISSION CO.
FAIRFAX CO. SAN. SEWER DIV.
TRANSCO GAS PIPELINE CO.
COLUMBIA GAS OF VIRGINIA
CONTINENTAL TELEPHONE OF VIRGINIA
COLONIAL PIPELINE CO.
FAIRFAX CO. WATER AUTHORITY
WASHINGTON GAS LIGHT CO.
PRINCE WILLIAM ELEC. CO-OP.
PLANTATION PIPELINE CO.
C & P TELEPHONE CO.

CONTACT THESE UTILITIES

TRI-COUNTY ELEC. CO-OP 703-777-2151
FALLS CHURCH WATER SER. 703-241-5078
LOUDOUN WATER 571-291-7888
FAIRFAX CITY WATER SER. 703-385-7916

EMERGENCY DIAL 911
POLICE - FIRE - RESCUE
703-777-1021 703-777-2222

SHEET INDEX

PLAN STATUS

DATE	DESCRIPTION
01/06/23	1ST SUBMISSION TO TOWN OF HAYMARKET
03/17/23	2ND SUBMISSION TO TOWN OF HAYMARKET
06/30/23	3RD SUBMISSION TO TOWN OF HAYMARKET

J2 Engineers, Inc.
17739 Main Street
Suite 180
Dumfries, Va. 22026

703.361.1550 (office)
703.956.6845 (fax)
www.j2engineers.com

COMMONWEALTH OF VIRGINIA
SEBASTIAN SANDOVAL
Lic. No. 045207
06/30/23
PROFESSIONAL ENGINEER

PLAN# BA2201
DATE: MARCH, 2023
CONTOUR INT.= N/A
SCALE: AS NOTED

PLAN DATE
01/06/23
03/17/23
06/30/23

COVER SHEET
FINAL SITE PLAN
KIDDIE ACADEMY AT CROSSROADS VILLAGE CENTER

TOWN OF HAYMARKET, VIRGINIA

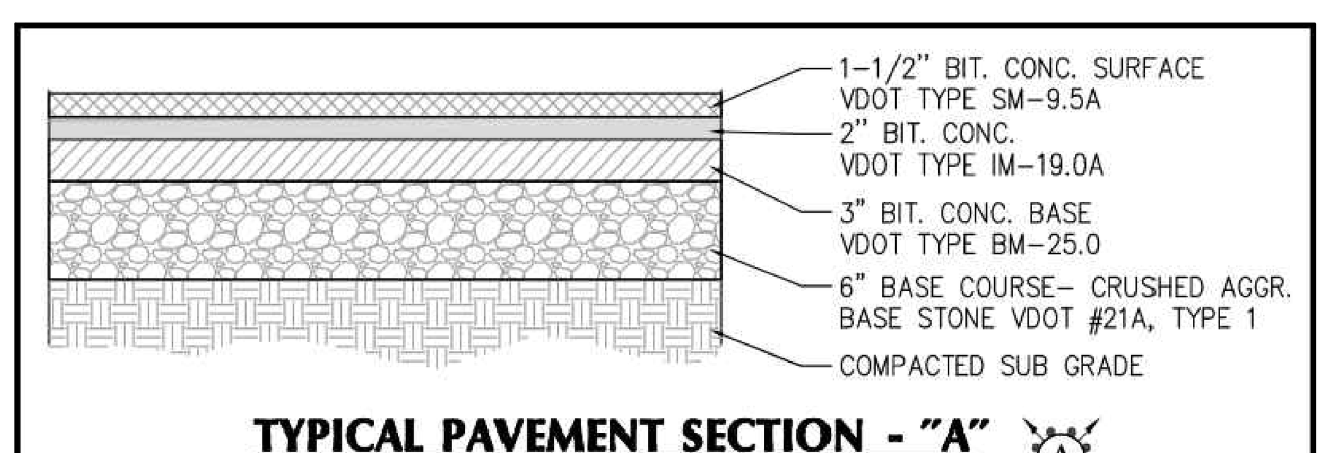
REVISIONS

No.	DATE	DESCRIPTION

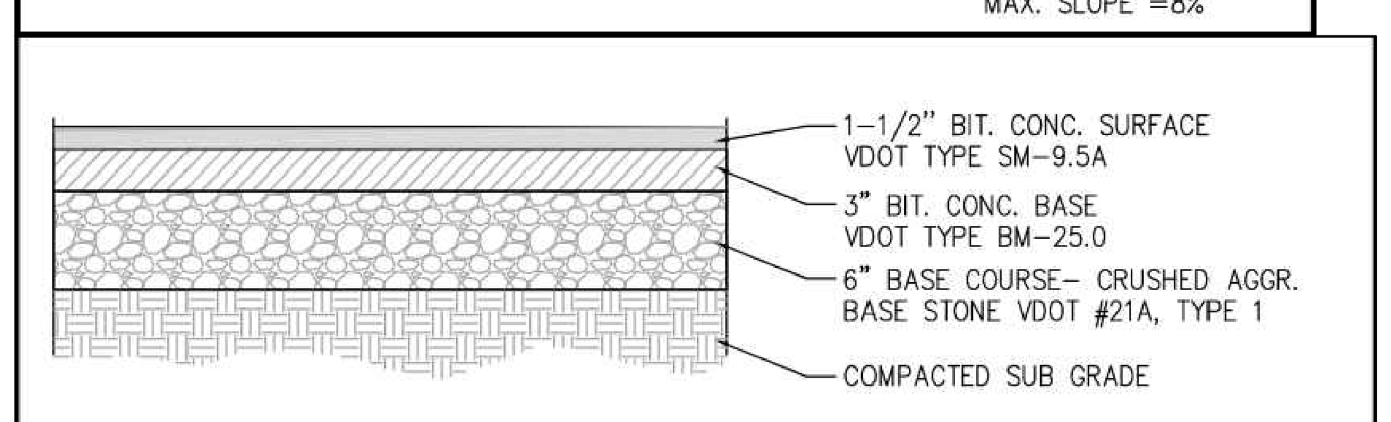
SHEET
01
OF
43

SITE NOTES

1. THE CONTRACTOR SHALL CAREFULLY EXAMINE THE SITE AND MAKE ALL INSPECTIONS AS NECESSARY IN ORDER TO DETERMINE THE FULL EXTENT OF THE WORK REQUIRED TO MAKE THE PROPOSED WORK CONFORM TO THE DRAWINGS AND SPECIFICATIONS. THE CONTRACTOR SHALL SATISFY HIMSELF AS TO THE NATURE AND LOCATION OF THE WORK, CONDITIONS, AND CONFORMATION AND CONDITION OF EXISTING GROUND SURFACE AND THE CHARACTER OF THE EQUIPMENT AND FACILITIES NEEDED PRIOR TO AND DURING PROSECUTION OF THE WORK. THE CONTRACTOR SHALL SATISFY HIMSELF AS TO THE CHARACTER, QUANTITY AND QUALITY OF SURFACE AND SUBSURFACE MATERIALS OR OBSTACLES TO BE ENCOUNTERED. ANY INACCURACIES OR DISCREPANCIES BETWEEN THE DRAWINGS AND SPECIFICATIONS MUST BE BOUGHT TO THE OWNER'S ATTENTION IN ORDER TO CLARIFY THE EXACT NATURE OF THE WORK TO BE PERFORMED PRIOR TO THE COMMENCEMENT OF ANY WORK. THE CONTRACTOR/DEVELOPER/APPLICANT SHALL BE RESPONSIBLE FOR ALL ERRORS AND INCONSISTENCIES.
2. EXCEPT WHERE NOTED HEREON, TO THE BEST OF OUR KNOWLEDGE, THE PROPOSED DEVELOPMENT OF THE SUBJECT PROPERTY CONFORMS TO ALL CURRENT APPLICABLE LAND DEVELOPMENT ORDINANCES, REGULATIONS, AND ADOPTED STANDARDS.
3. ALL UNDERGROUND UTILITIES WITHIN THE STREET RIGHT -OF WAY SHALL BE INSTALLED TO THE REQUIRED DISTANCE BEYOND THE RIGHT-OF-WAY LINE PRIOR TO THE INSTALLATION OF ANY SUBBASE MATERIAL, CURB AND GUTTER OR SIDEWALK.
4. LAND CONSERVATION NOTES- MEASURES TO CONTROL EROSION AND SILTATION SHALL BE PROVIDED PURSUANT TO AND IN COMPLIANCE WITH CURRENT STATE AND LOCAL REGULATIONS. HOWEVER, THE APPROVAL OF THESE PLANS SHALL IN NO WAY RELIEVE THE DEVELOPER OR HIS AGENT OF ANY LEGAL RESPONSIBILITIES WHICH MAY BE REQUIRED BY THE CODE OF VIRGINIA OR ANY ORDINANCE ENACTED BY THE TOWN OF HAYMARKET.
5. EROSION AND SILTATION CONTROL SHALL BE PROVIDED WHERE NECESSARY PRIOR TO CLEARING, GRADING AND CONSTRUCTION.
6. EROSION AND SEDIMENT CONTROL MEASURES WILL BE PROVIDED IN ACCORDANCE WITH THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK (LATEST EDITION).
7. ADDITIONAL SILTATION AND EROSION CONTROL MEASURES SHALL BE INSTALLED AS DIRECTED BY VDOT AND / OR THE INSPECTOR DURING FIELD REVIEW; COSTS ASSOCIATED WITH ADDITIONAL MEASURES SHALL BE ASSUMED BY THE DEVELOPER.
8. ALL CONSTRUCTION SHALL COMPLY WITH THE LATEST U.S. DEPARTMENT OF LABOR OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION RULES AND REGULATIONS.
9. THE RIGHT IS SPECIFICALLY RESERVED TO UTILIZE NONSTRUCTURAL AREAS FOR BORROW PITS CONSISTENT WITH THE GEOTECHNICAL REQUIREMENTS.
10. THE APPROVAL OF THIS PLAN SHALL IN NO WAY GRANT PERMISSION BY THE COUNTY FOR THE DEVELOPER TO TRESPASS ON OFF-SITE PROPERTIES.
11. THE APPROVAL OF THESE PLANS SHALL IN NO WAY RELIEVE THE OWNER OF COMPLYING WITH OTHER APPLICABLE LOCAL, STATE, AND FEDERAL REQUIREMENTS.
12. CONTRACTOR SHALL BE RESPONSIBLE FOR ADJUSTMENTS AND/OR RECONSTRUCTION OF ALL UTILITY COVER (MANHOLE FRAMES AND COVERS, VALVE BOX COVERS, ETC.) TO MATCH THE FINISHED GRADES OF THE AREAS EFFECTED BY THE CONSTRUCTION.
13. THE CONTRACTOR MUST HAVE THE APPROVED CONSTRUCTION DRAWINGS IN POSSESSION PRIOR TO THE START OF CONSTRUCTION. AT LEAST ONE (1) COPY OF THE APPROVED PLANS, WITH REVISIONS, MUST BE KEPT ON-SITE AT ALL TIMES.
14. ALL UTILITIES NOTED TO BE RELOCATED OR REMOVED SHALL BE AT THE DEVELOPERS EXPENSE, TO INCLUDE ALL POLES AND STRUCTURES AS REQUIRED. ALL POLES REQUIRED TO BE RELOCATED MUST BE MOVED PRIOR TO CONSTRUCTION.
15. DISTURBED AREAS WITHIN THE PROJECTS LIMITS THAT WILL REMAIN INACTIVE FOR A PERIOD OF 14 CALENDAR DAYS OR LONGER SHALL BE TEMPORARILY STABILIZED WITH SEED AND STRAW, MULCH, OR OTHER ACCEPTABLE GROUNDCOVER.
16. THE DEVELOPER IS RESPONSIBLE FOR SECURING ALL REQUIRED PERMITS PRIOR TO CONSTRUCTION.
17. THE CONTRACTOR IS RESPONSIBLE FOR ARRANGING ALL NECESSARY INSPECTIONS.
18. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING A SAFE CONSTRUCTION SITE AND COMPLYING WITH ALL OSHA REGULATIONS.
19. EMERGENCY VEHICLE ACCESS SHALL BE PROVIDED DURING ALL PHASES OF CONSTRUCTION.
20. WHERE IMPROVEMENTS ARE PROPOSED WITHIN EXISTING EASEMENTS OF RECORD, THE DEVELOPER SHALL OBTAIN WRITTEN PERMISSION FROM THE AUTHORITIES THAT ARE DOMINANT TENEMENTS OF THESE EASEMENTS FOR PERMIT FOR ANY DISTURBANCES WITHIN THESE AREAS PRIOR TO CONSTRUCTION.
21. ALL SIDEWALKS TO BE 4" THICK CONCRETE UNLESS OTHERWISE SHOWN ON THE PLAN.
22. ALL HANDICAP RAMPS SHALL BE BUILT IN ACCORDANCE WITH THE MOST CURRENT EDITION OF THE VIRGINIA DEPARTMENT OF TRANSPORTATION ROAD AND BRIDGE STANDARDS.
23. AN APPROVED SET OF PLANS AND ALL APPLICABLE PERMITS MUST BE AVAILABLE AT THE CONSTRUCTION SITE. ALSO, A REPRESENTATIVE OF THE DEVELOPER MUST BE AVAILABLE AT ALL TIMES.
24. THE ENGINEER SHALL NOT HAVE CONTROL OVER OR CHARGE OF AND SHALL NOT BE RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES OR PROCEDURES OR FOR SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THE WORK SHOWN ON THESE PLANS. THE ENGINEER SHALL NOT BE RESPONSIBLE FOR THE CONTRACTOR'S SCHEDULES OR FAILURE TO CARRY OUT THE WORK. THE ENGINEER IS NOT RESPONSIBLE FOR ACTS OR OMISSIONS OF THE CONTRACTOR, SUBCONTRACTORS, OR THEIR AGENTS OR EMPLOYEES, OR OF ANY OTHER PERSONS PERFORMING PORTIONS OF THE WORK.
25. THE CONTRACTOR/DEVELOPER/APPLICANT SHALL BE RESPONSIBLE FOR ALL ITEMS MENTIONED ABOVE.
26. PEDESTRIAN ACCESS FOR THIS DEVELOPMENT IS PROVIDED BY A SIDEWALK AND TRAFFIC SYSTEM.
27. THE PRINCE WILLIAM COUNTY SERVICE AUTHORITY (PWCSA) SHALL BE RESPONSIBLE FOR THE MAINTENANCE OF ALL PUBLIC SANITARY SEWER AND WATER MAIN SYSTEMS WITHIN DEDICATED EASEMENTS CONVEYED TO PWCSA AT THE TIME OF BOND RELEASE.
28. A VDOT ENTRANCE PERMIT MUST BE OBTAINED FROM THE RESIDENT ENGINEER'S OFFICE PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION WITHIN THE EXISTING STATE RIGHT-OF-WAY, TO INCLUDE THE INSTALLATION OF ANY TEMPORARY CONSTRUCTION ENTRANCE.
29. THE VIRGINIA DEPARTMENT OF TRANSPORTATION (VDOT) SHALL BE RESPONSIBLE FOR THE MAINTENANCE OF ALL STREET PAVEMENTS AND STORM DRAINAGE SYSTEMS THAT ARE LOCATED WITHIN DEDICATED AND ACCEPTED PUBLIC STREET RIGHT-OF-WAYS.
30. APPROVAL OF SOIL REPORT IS REQUIRED PRIOR TO FINAL SITE PLAN APPROVAL
31. THE TOWN SHALL NOT BE RESPONSIBLE FOR REPAVING OR RESURFACING PAVED AREAS OR MAINTAINING LANDSCAPING WITHIN EASEMENTS.
32. THE FEE TITLE OWNER SHALL BE RESPONSIBLE FOR GRASS MOWING WITH REASONABLE FREQUENCY, IF APPLICABLE, AND FOR THE REMOVAL OF DEBRIS AND OTHER MATTER THAT HAS IMPEDED OR THREATENS TO IMPEDE THE FREE FLOW OF STORM WATER
33. PWCSA INSPECTOR SHALL BE NOTIFIED WHEN ANY IMPROVEMENTS PERTINENT TO HIS INSPECTION DUTIES ARE BEING INSTALLED, SPECIFIC REQUIREMENTS ARE:
    A. SITE INSPECTOR OR AREA SUPERVISOR IS TO BE NOTIFIED AT LEAST 3 DAYS PRIOR TO START OF CONSTRUCTION.
    B. A MINIMUM OF 24 HOURS NOTICE IS REQUIRED WHEN REQUESTING COMPACTION TEST AND RESIDENTIAL OR NONRESIDENTIAL USE PERMITS.
    C. A MINIMUM OF 48 HOURS NOTICE IS REQUIRED WHEN REQUESTING TESTS PERTAINING TO SANITARY SEWER ACCEPTANCE.
34. LOCATIONS AND / OR ADDITIONAL SIGNAGE AND STRIPING REQUIREMENTS ARE TO BE DETERMINED DURING THE FINAL INSPECTION PROCESS.
35. ALL CURB AND GUTTER SHALL BE VIRGINIA DEPARTMENT OF TRANSPORTATION STANDARD CG-6 UNLESS OTHERWISE NOTED.
36. ALL EXCAVATION SUPPORT SYSTEMS SHALL CONFORM TO AND COMPLY WITH THE CURRENT OSHA STANDARDS AND SPECIFICATIONS.
37. ALL FINISHED GRADING, SEEDING, SODDING, AND PAVING SHALL BE PERFORMED IN SUCH MANOR TO PRECLUDE THE FORMING OF FALSE GUTTERS AND AREAS OF PONDING. ALL GRADING SHALL PROVIDE FOR POSITIVE DRAINAGE TO STABILIZED OUTFALLS.



TYPICAL PAVEMENT SECTION - "A"
NO SCALE



TYPICAL PAVEMENT SECTION - "B"
NO SCALE

GEOTECHNICAL NOTES

1. THE SUBJECT DEVELOPMENT SITE DOES CONTAIN CLASS IV SOILS, PER THE APPROVED PRELIMINARY SOILS REVIEW INVESTIGATION AND REPORT. PRINCE WILLIAM COUNTY RECOMMENDS NO CONSTRUCTION OF STRUCTURES WITH SUBGRADE LEVELS WITHIN NATURAL DRAINAGE SWALES OR WITHIN SOILS OR SPOTS SPECIFICALLY IDENTIFIED AS WET PER THE LATEST COUNTY SOILS MAP AS IDENTIFIED BY THE INTERPRETIVE GUIDE TO SOULS MAPS, PRINCE WILLIAM COUNTY, VIRGINIA.
2. THESE PLANS WERE PREPARED IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE GEOTECHNICAL REPORT.

CROSSROADS VILLAGE CENTER PARKING TABULATIONS

KIDDIE ACADEMY
(DAY CARE CENTER)

PARKING REQUIRED:
1 SPACE PER 300 SF OF GFA

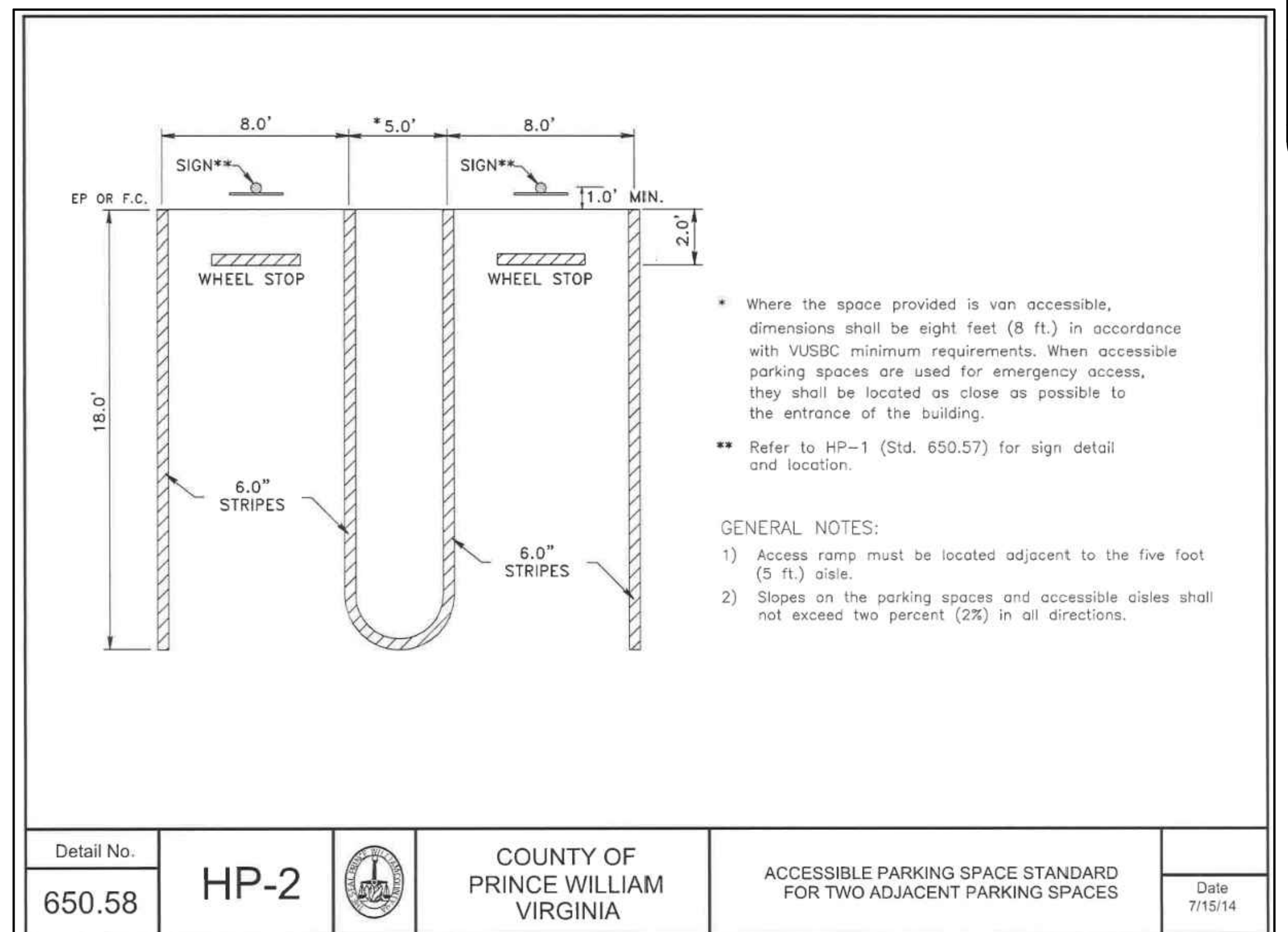
GFA = 11,250 SQFT

11,250 SQFT / 300 = 38 SPACES

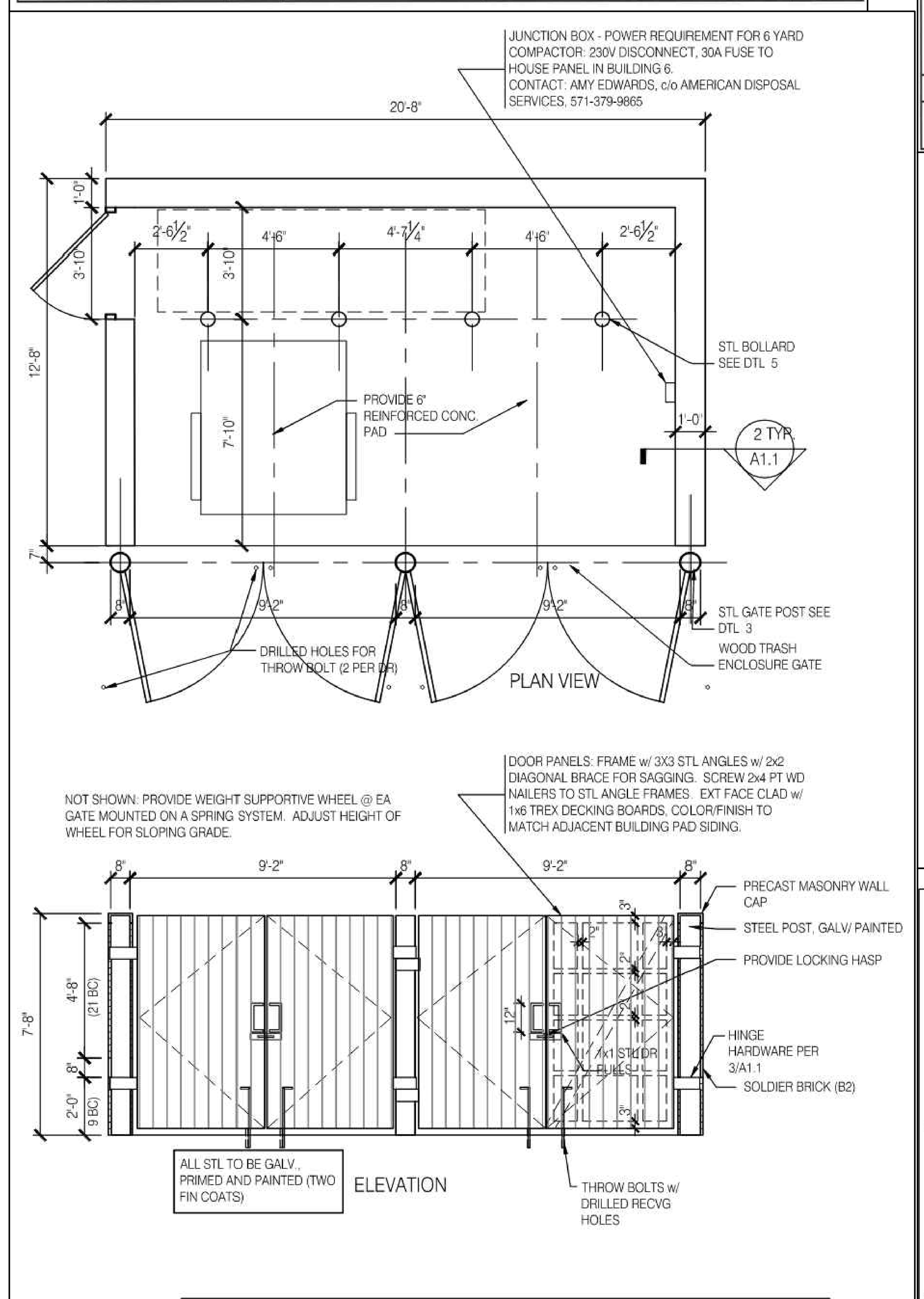
PARKING PROVIDED:
41 SPACES

ZONING REQUIREMENTS

ZONING: B-2	REQUIRED	PROPOSED
LOT SETBACKS		
FRONT	10'	
SIDE	0' FROM ADJ SIMILAR COMMERCIAL USE, 10', 25' FROM ADJ. RES	
REAR	SAME AS SIDE	
MAXIMUM BUILDING HEIGHT	35 FT	35 FT MAX.
MAXIMUM BUILDABLE LOT COVERAGE	75%	13%
MAXIMUM LOT COVERAGE	75%	50%



8.0'
*5.0'
SIGN**
EP OR F.C.
1.0' MIN.
WHEEL STOP
18.0'
6.0" STRIPES
* Where the space provided is van accessible, dimensions shall be eight feet (8 ft.) in accordance with VUSBC minimum requirements. When accessible parking spaces are used for emergency access, they shall be located as close as possible to the entrance of the building.
** Refer to HP-1 (Std. 650.57) for sign detail and location.
GENERAL NOTES:
1) Access ramp must be located adjacent to the five foot (5 ft.) aisle.
2) Slopes on the parking spaces and accessible aisles shall not exceed two percent (2%) in all directions.
Detail No.
650.58
HP-2
COUNTY OF PRINCE WILLIAM VIRGINIA
ACCESSIBLE PARKING SPACE STANDARD FOR TWO ADJACENT PARKING SPACES
Date 7/15/14

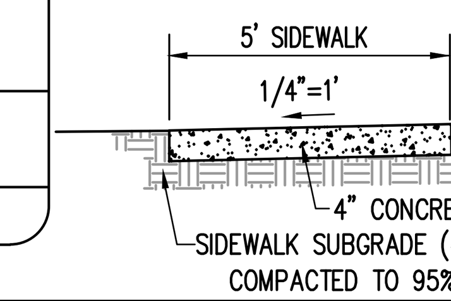


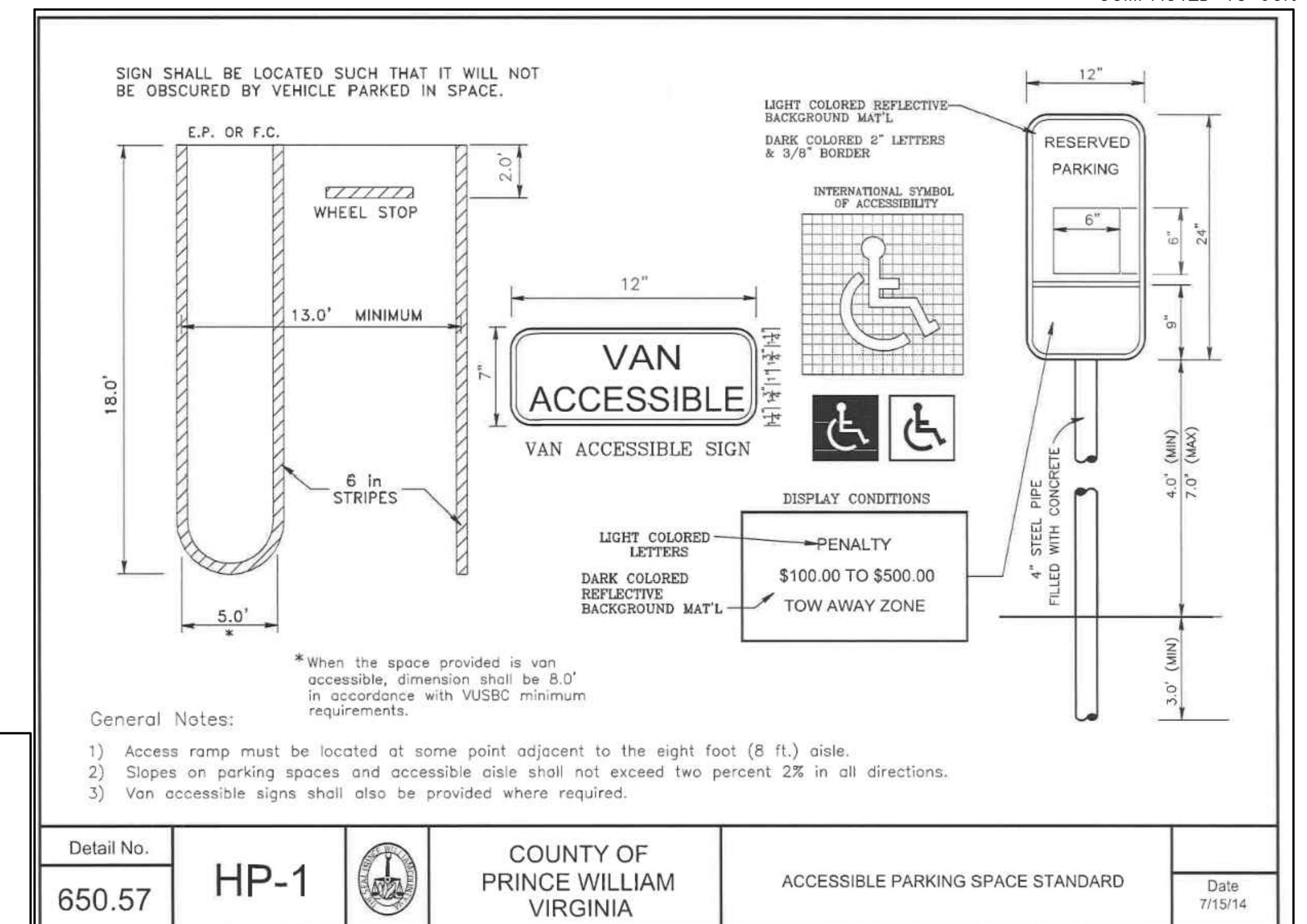
JUNCTION BOX - POWER REQUIREMENT FOR 6 YARD COMPACTOR: 230V DISCONNECT, 60A FUSE TO HOUSE PANEL IN BUILDING 6. CONTACT: AMY EDWARDS, c/o AMERICAN DISPOSAL SERVICES. 571-379-9865
20'-8"
STL BOLLARD SEE DTL 5
PROVIDE 6" REINFORCED CONC PAD
DRILLED HOLES FOR THROW BOLT (2 PER GATE)
STL GATE POST SEE DTL 3
WOOD TRASH ENCLOSURE GATE
PLAN VIEW
NOT SHOWN: PROVIDE WEIGHT SUPPORTIVE WHEEL @ EA GATE MOUNTED ON A SPRING SYSTEM. ADJUST HEIGHT OF WHEEL FOR SLOPING GRADE.
DOOR PANELS: FRAME w/ 3X3 STL ANGLES w/ 2x2 DIAGONAL BRACE FOR SAGGING. SCREW 2x4 PT WD NAILERS TO STL ANGLE FRAMES. EXT FACE CLAD w/ 1x6 TREX DECKING BOARDS. COLOR/FINISH TO MATCH ADJACENT BUILDING PAD SIDING.
PRECAST MASONRY WALL CAP
STEEL POST, GALV/ PAINTED
PROVIDE LOCKING HASP
HINGE HARDWARE PER 3/A1.1
SOLDIER BRICK (B2)
ALL STL TO BE GALV, PRIMED AND PAINTED (TWO FIN COATS)
ELEVATION
THROW BOLTS w/ DRILLED RECVG HOLES

01 DUMPSTER ENCLOSURE
scale: 1/4"=1'-0"

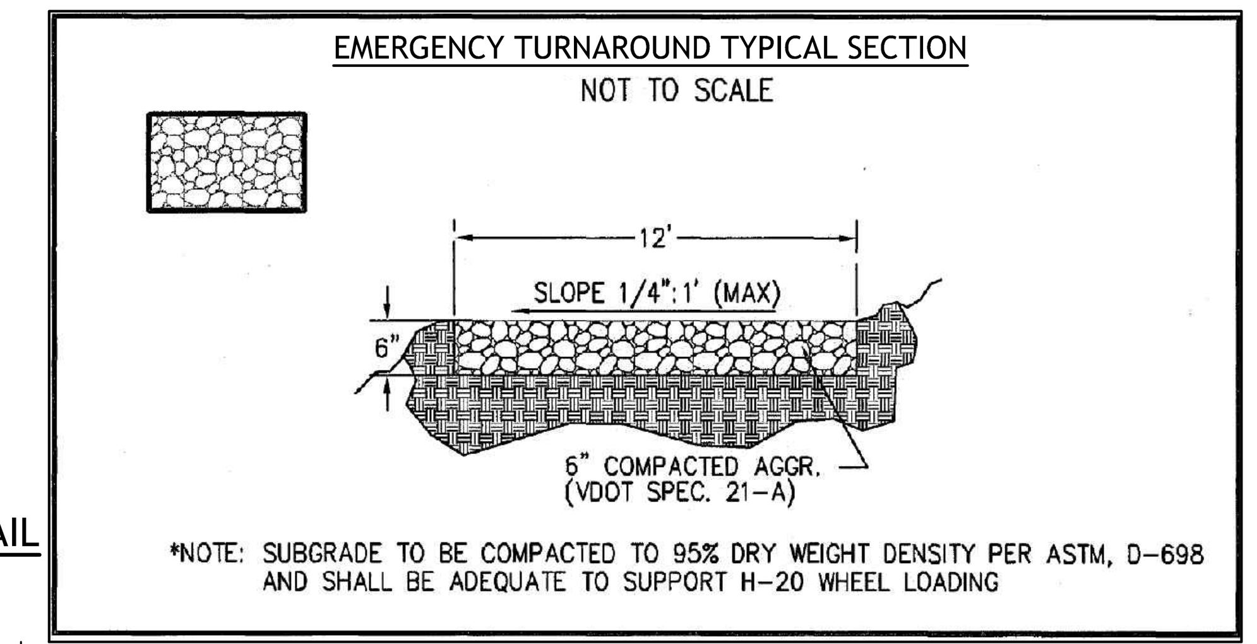
SIDEWALK DETAIL

NOT TO SCALE

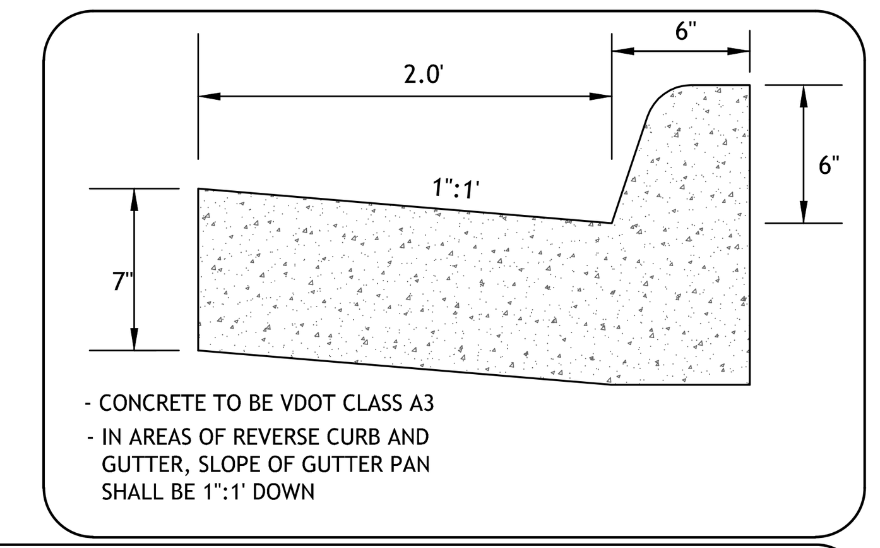




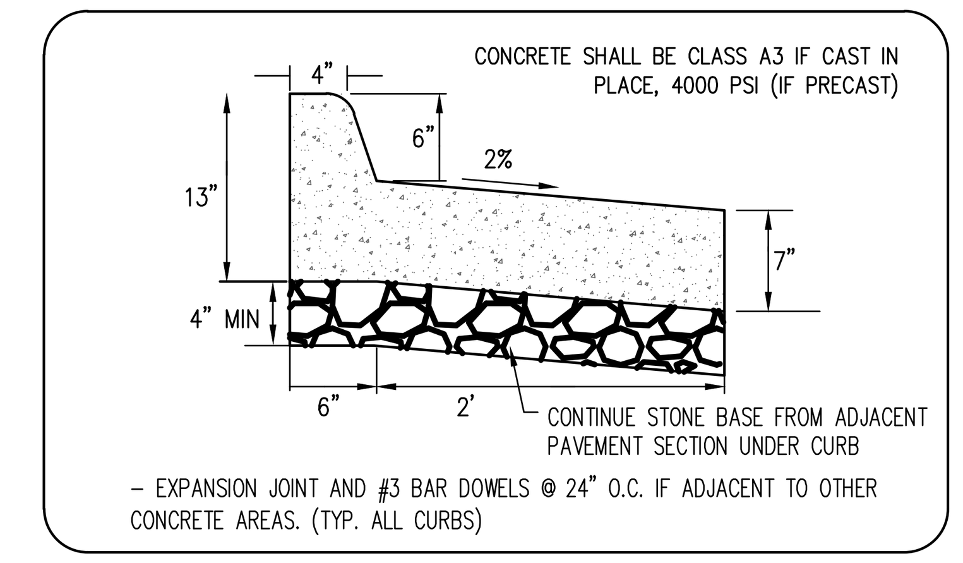
SIGN SHALL BE LOCATED SUCH THAT IT WILL NOT BE OBSCURED BY VEHICLE PARKED IN SPACE.
E.P. OR F.C.
WHEEL STOP
13.0' MINIMUM
18.0'
6 in STRIPES
5.0'
VAN ACCESSIBLE
VAN ACCESSIBLE SIGN
RESERVED PARKING
PENALTY
$100.00 TO $500.00
TOW AWAY ZONE
*When the space provided is van accessible, dimension shall be 8.0' in accordance with VUSBC minimum requirements.
General Notes:
1) Access ramp must be located at some point adjacent to the eight foot (8 ft.) aisle.
2) Slopes on parking spaces and accessible aisle shall not exceed two percent 2% in all directions.
3) Van accessible signs shall also be provided where required.
Detail No.
650.57
HP-1
COUNTY OF PRINCE WILLIAM VIRGINIA
ACCESSIBLE PARKING SPACE STANDARD
Date 7/15/14

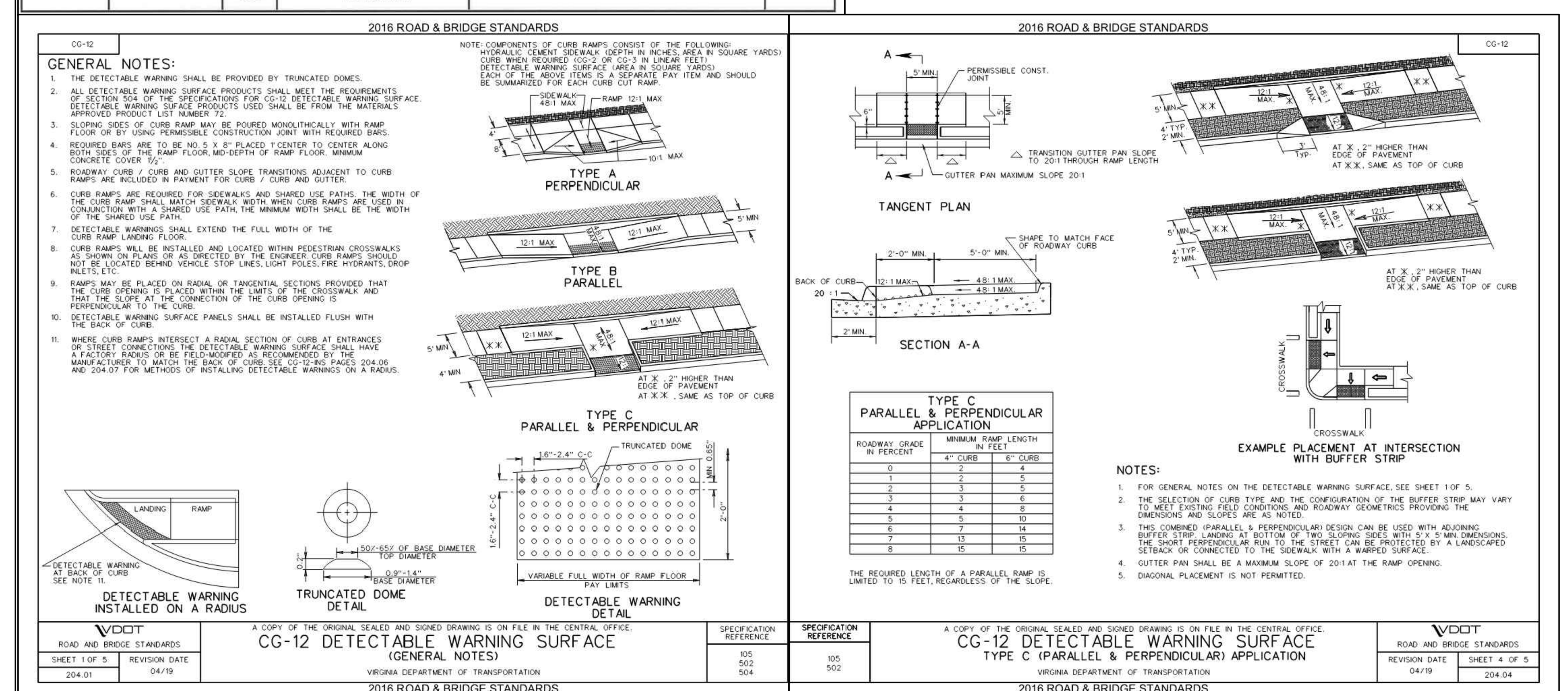


CG-6
NOT TO SCALE

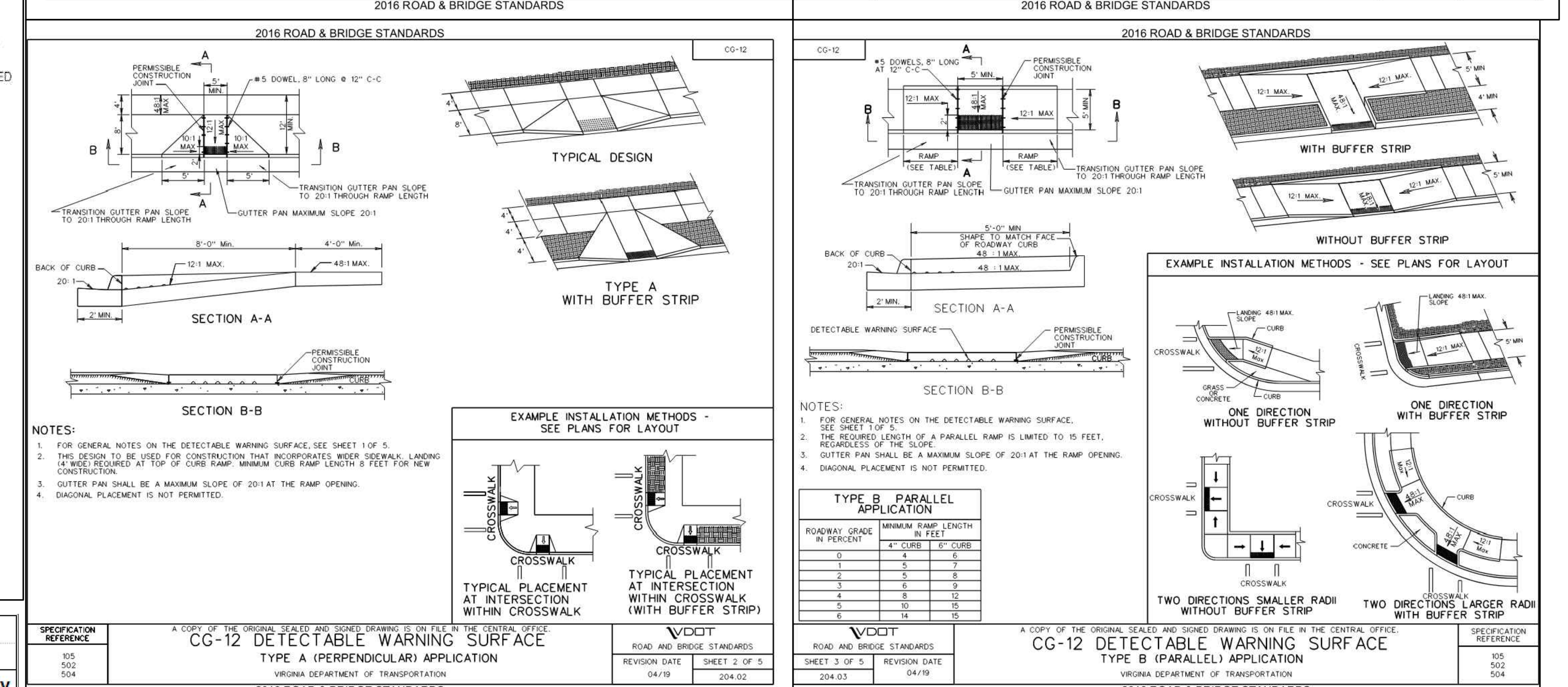


CURB & GUTTER (CG-6R)
NOT TO SCALE





2016 ROAD & BRIDGE STANDARDS
GENERAL NOTES:
TYPE A PERPENDICULAR
TYPE B PARALLEL
TYPE C PARALLEL & PERPENDICULAR
DETECTABLE WARNING INSTALLED ON A RADIUS
TRUNCATED DOME DETAIL
DETECTABLE WARNING DETAIL
CG-12 DETECTABLE WARNING SURFACE (GENERAL NOTES)
TANGENT PLAN
SECTION A-A
TYPE C PARALLEL & PERPENDICULAR APPLICATION
EXAMPLE PLACEMENT AT INTERSECTION WITH BUFFER STRIP
CG-12 DETECTABLE WARNING SURFACE TYPE C (PARALLEL & PERPENDICULAR) APPLICATION
VIRGINIA DEPARTMENT OF TRANSPORTATION



2016 ROAD & BRIDGE STANDARDS
TYPICAL DESIGN
TYPE A WITH BUFFER STRIP
SECTION A-A
SECTION B-B
EXAMPLE INSTALLATION METHODS - SEE PLANS FOR LAYOUT
TYPICAL PLACEMENT AT INTERSECTION WITHIN CROSSWALK
TYPICAL PLACEMENT AT INTERSECTION WITHIN CROSSWALK (WITH BUFFER STRIP)
CG-12 DETECTABLE WARNING SURFACE TYPE A (PERPENDICULAR) APPLICATION
WITH BUFFER STRIP
WITHOUT BUFFER STRIP
ONE DIRECTION WITHOUT BUFFER STRIP
ONE DIRECTION WITH BUFFER STRIP
TWO DIRECTIONS SMALLER RADII WITHOUT BUFFER STRIP
TWO DIRECTIONS LARGER RADII WITH BUFFER STRIP
TYPE B PARALLEL APPLICATION
CG-12 DETECTABLE WARNING SURFACE TYPE B (PARALLEL) APPLICATION
VIRGINIA DEPARTMENT OF TRANSPORTATION

AVERAGE DAILY TRAFFIC

Description/ITE Code	Units	ITE Vehicle Trip Generation Rates (peak hours are for peak hour of adjacent street traffic unless highlighted)								Expected Units	Total Generated Trips			Total Distribution of Generated Trips					
		Weekday	AM	PM	Pass-By	AM In	AM Out	PM In	PM Out		Daily	AM Hour	PM Hour	AM In	AM Out	Pass-By	PM In	PM Out	Pass-By
Daycare Center 565	KSF²	74.06	12.18	12.34		53%	47%	47%	53%	11.3	834	137	139	73	64	0	65	74	0

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COMMONWEALTH OF VIRGINIA
SEBASTIAN SANDOVAL
Lic. No. 045207
06/30/23
PROFESSIONAL ENGINEER

PLAN# BA2201
DATE: MARCH, 2023
CONTOUR INT.= N/A
SCALE: AS NOTED

PLAN DATE
01/06/23
03/17/23
06/30/23

DETAILS
FINAL SITE PLAN
KIDDIE ACADEMY AT CROSSROADS VILLAGE CENTER

TOWN OF HAYMARKET, VIRGINIA

No.	DATE	DESCRIPTION

REVISIONS

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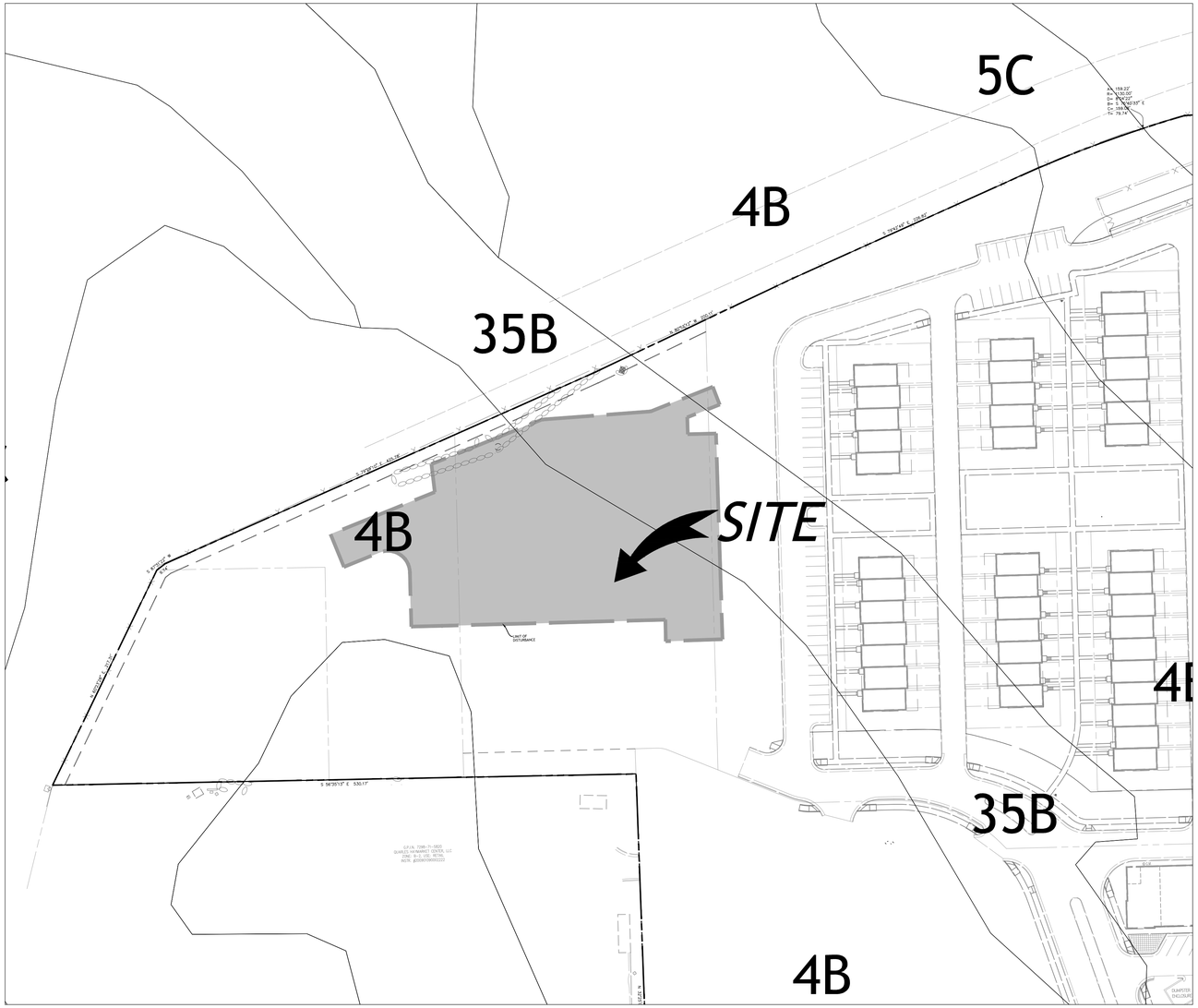
UNIT NUMBER	NAME	CATEGORY	RUNOFF	EROSION HAZARD	DEPTH TO BEDROCK	SHRINK/SWELL	FLOODING	SLOPES (%)	K VALUE	CLASS
4B	ARCOLA	C	MEDIUM	SEVERE	20"-40"	LOW	NONE	2 TO 7	0.43	II
35B	MANASSAS	B	SLOW	MODERATE	40"-60"	LOW	RARE	2 TO 7	0.37	III



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Lic. No. 045207
06/30/23
PROFESSIONAL ENGINEER

PLAN# *BA2201*
DATE: *MARCH, 2023*
CONTOUR INT.= *N/A*
SCALE: *1"=60'*

PLAN DATE
01/06/23
03/17/23
06/30/23

SOILS MAP
FINAL SITE PLAN
KIDDIE ACADEMY AT CROSSROADS VILLAGE CENTER

TOWN OF HAYMARKET, VIRGINIA

No.	DATE	DESCRIPTION
		REVISIONS

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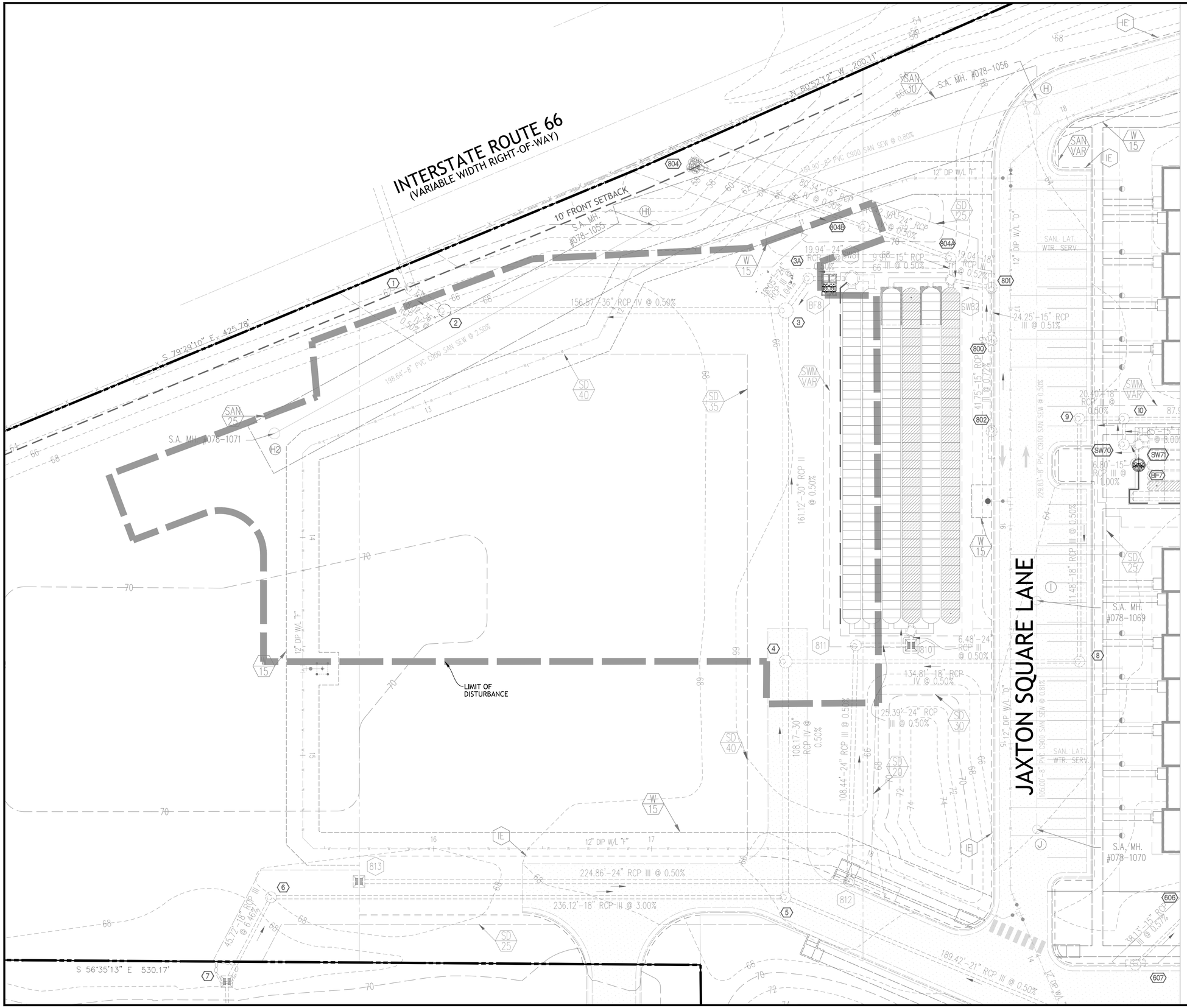

NOTES:

1) THE SERVICE AUTHORITY DOES NOT GUARANTEE THE CONSTRUCTION OR TIMING WHEN UTILITIES WILL BE PLACED INTO SERVICE THAT ARE SHOWN AS EXISTING IN THIS PLAN SET. IF UTILITIES SHOWN AS EXISTING ARE NOT AVAILABLE WHEN NEEDED BY THIS PROJECT, THIS PROJECT SHALL OBTAIN THE NECESSARY RIGHTS TO INSTALL ON-SITE AND OFFSITE- WATER AND SANITARY SEWER UTILITIES FROM AN APPROVED PLAN TO PROVIDE THE DESIRED SERVICE.

2) DEVELOPER OF THIS PROJECT CANNOT CONNECT TO WATER AND SANITARY SEWER BUILT BY THE DEVELOPER OF CROSSROADS VILLAGE CENTER UNTIL THE WATER AND SANITARY SEWER UTILITIES, PASS ALL INSPECTIONS, TESTING AND PLACES THE UTILITIES INTO SERVICE THROUGH THE SERVICE AUTHORITY'S BENEFICIAL USE PROCESS.

3) IF THIS PROJECT WISHES TO CONNECT TO WATER AND SANITARY SEWER UTILITIES PLACED INTO SERVICE BY THE DEVELOPER OF CROSSROADS VILLAGE CENTER PRIOR TO THAT DEVELOPER ACHIEVING BOND RELEASE FROM THE SERVICE AUTHORITY, THE DEVELOPER OF THIS PROJECT MUST SIGN A LETTER OF INDEMNIFICATION AND ASSUMPTION OF LIABILITY PER USM 2.9A. USM 2.9A IS NO LONGER APPLICABLE ONCE THE DEVELOPER OF CROSSROADS VILLAGE CENTER ACHIEVES SERVICE AUTHORITY ACCEPTANCE OF UTILITIES THROUGH BOND RELEASE.

4) EXISTING UTILITIES SHOWN ARE TO BE INSTALLED AS PART OF THE CROSSROADS VILLAGE CENTER PLAN #PRV2022-013.

VA STATE GRID NORTH

GRAPHIC SCALE

0 10 20 40

(IN FEET)

1 INCH = 20 FEET

LEGEND

- LOT LINE
- BOUNDARY/PHASING LINE
- EXISTING ROAD
- LIMITS OF CLEARING
- EXISTING WATERLINE (W)
- EXISTING STORM DRAINAGE
- EXISTING SANITARY SEWER
- EXISTING OVERHEAD ELECTRICAL LINE (OHE)
- EXISTING GAS LINE (G)
- EXISTING RIPRAP
- EXISTING TREE LINE
- EXISTING MAJOR CONTOUR LINE
- EXISTING MINOR CONTOUR LINE

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COMMONWEALTH OF VIRGINIA
SEBASTIAN SANDOVAL
Lic. No. 045207
06/30/23
PROFESSIONAL ENGINEER

PLAN# BA2201
DATE: MARCH, 2023
CONTOUR INT.= 2'
SCALE: 1"=20'

PLAN DATE
01/06/23
02/17/23
06/30/23

EXISTING CONDITIONS
FINAL SITE PLAN
KIDDIE ACADEMY AT CROSSROADS VILLAGE CENTER
TOWN OF HAYMARKET, VIRGINIA

REVISIONS

No.	DATE	DESCRIPTION

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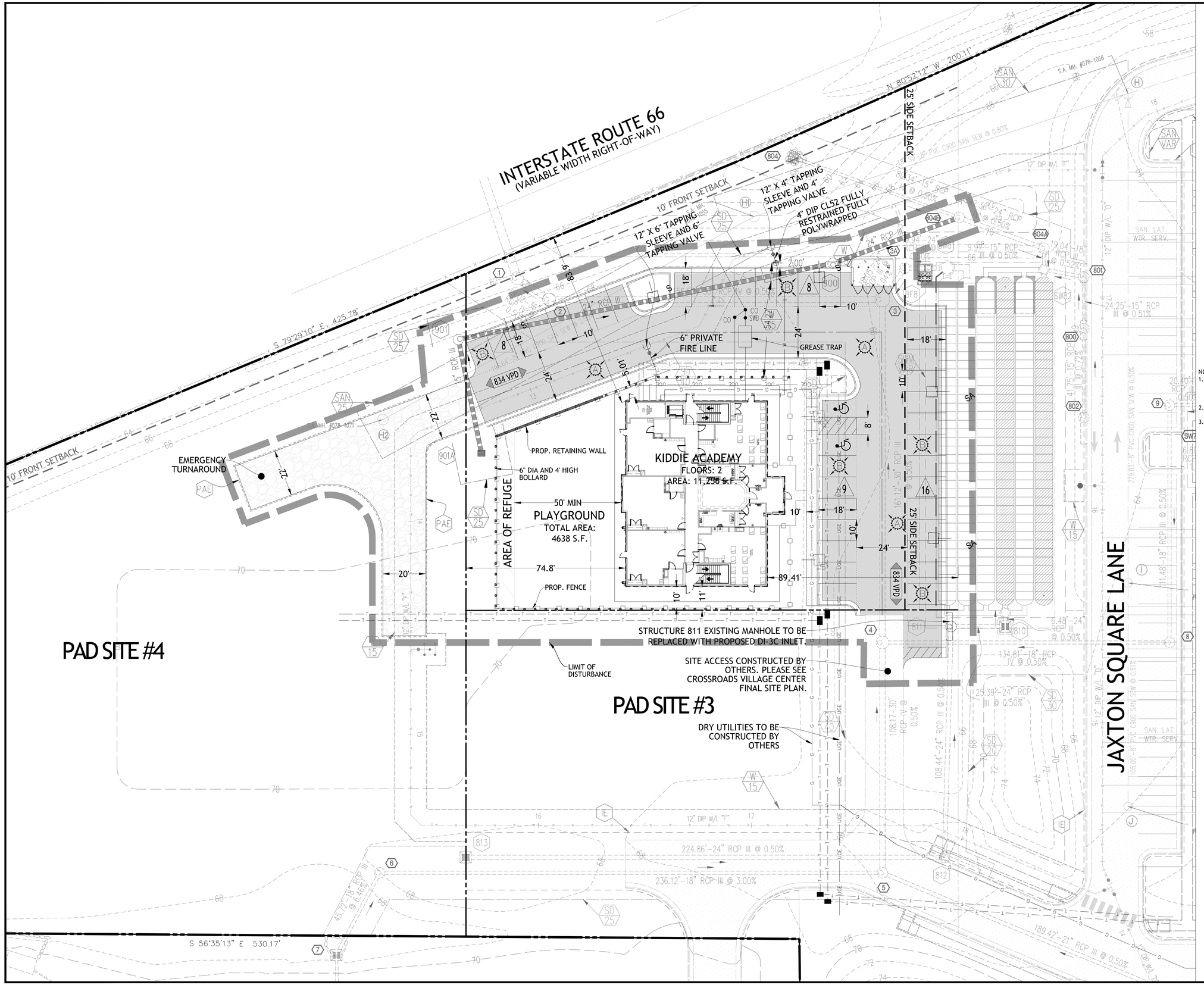

GEOMETRY LEGEND

- EXISTING STORM DRAIN
- PROPOSED STORM DRAIN
- EXISTING SANITARY SEWER
- PROPOSED SANITARY SEWER
- EXISTING WATER LINE
- PROPOSED WATER LINE
- 3/4" WATER METER CROCK
- PROPOSED FIRE HYDRANT
- 4" SANITARY LATERAL
- TEST PIT LOCATION
- ESM'T WIDTH — PROP. SAN. SEW. ESM'T LABEL
- ESM'T WIDTH — PROP. WATER ESM'T LABEL
- ESM'T WIDTH — PROP. STORM WATER MANAGEMENT ESM'T LABEL
- ESM'T WIDTH — PROP. STORM DRAIN ESM'T LABEL
- ESM'T WIDTH — PROP. INGRESS/EGRESS ESM'T LABEL
- ESM'T WIDTH — PROP. ACCESS ESM'T LABEL

HATCH LEGEND

- PROPOSED ROADWAY
- 5' PROP. CONCRETE SW (unless otherwise noted)
- EXISTING ROADWAY
- PROP. CONCRETE (unless otherwise noted)
- PROP. GRAVEL EMERGENCY TURNAROUND

NOTE:
1. THE LOCATION AND DESIGN OF SWM/BMP HAS ALREADY BEEN ACCOUNTED FOR THE DEVELOPMENT OF THIS SITE AND IS PROVIDED ON THE APPROVED CROSSROADS VILLAGE CENTER - FINAL SITE PLAN - OVERALL REVISION
2. A COMMERCIAL KITCHEN AND FOOD PREPARATIONS ARE PROPOSED WITHIN THE BUILDING.
3. PROPOSED FENCE SHALL BE A MINIMUM OF 4' TALL.

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PLAN# BA2201
DATE: MARCH, 2023
CONTOUR INT.= 2'
SCALE: 1"=20'

PLAN DATE
01/06/23
03/17/23
06/30/23

UTILITIES LAYOUT
FINAL SITE PLAN
KIDDIE ACADEMY AT CROSSROADS VILLAGE CENTER

TOWN OF HAYMARKET, VIRGINIA

No.	DATE	DESCRIPTION
		REVISIONS

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OF
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GEOMETRY LEGEND

- EXISTING STORM DRAIN
- PROPOSED STORM DRAIN
- FUTURE POTENTIAL STORM DRAIN
- EXISTING SANITARY SEWER
- PROPOSED SANITARY SEWER
- PROPOSED SAN. LATERAL
- EXISTING WATER LINE
- PROPOSED WATER LINE
- PROPOSED WATER METER CROCK
- PROPOSED FIRE HYDRANT
- TEST PIT
- PARKING COUNT
- TYPICAL PAVEMENT SECTION
- CURB TRANSITION (CG-6 / CG-6R)

EASEMENT LEGEND

- ESM'T WIDTH — PROP. SAN. SEW. ESM'T LABEL
- ESM'T WIDTH — PROP. WATER ESM'T LABEL
- ESM'T WIDTH — PROP. STORM DRAIN ESMT. LABEL
- ESM'T WIDTH — PROP. ACCESS ESMT. LABEL
- PROP. INGRESS/EGRESS ESMT. LABEL

HATCH LEGEND

- PROPOSED ASPHALT
- 5' PROP. CONCRETE SW (unless otherwise noted)
- EX. ROADWAY
- PROP. CONCRETE (unless otherwise noted)
- PROP. GRAVEL EMERGENCY ACCESS

NOTE:

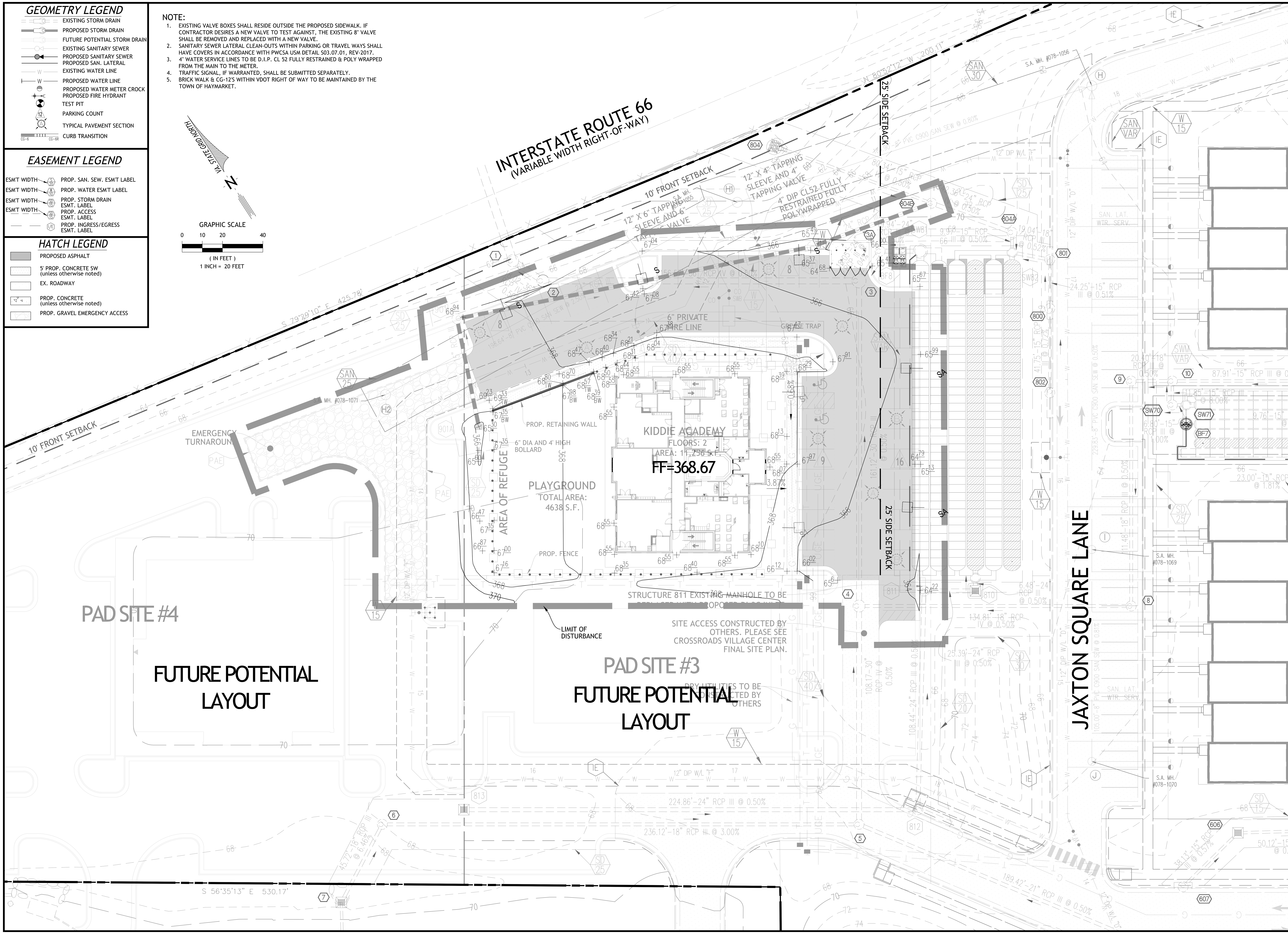
1. EXISTING VALVE BOXES SHALL RESIDE OUTSIDE THE PROPOSED SIDEWALK. IF CONTRACTOR DESIRES A NEW VALVE TO TEST AGAINST, THE EXISTING 8" VALVE SHALL BE REMOVED AND REPLACED WITH A NEW VALVE.
2. SANITARY SEWER LATERAL CLEAN-OUTS WITHIN PARKING OR TRAVEL WAYS SHALL HAVE COVERS IN ACCORDANCE WITH PWCSA USM DETAIL S03.07.01, REV-2017.
3. 4" WATER SERVICE LINES TO BE D.I.P. CL 52 FULLY RESTRAINED & POLY WRAPPED FROM THE MAIN TO THE METER.
4. TRAFFIC SIGNAL, IF WARRANTED, SHALL BE SUBMITTED SEPARATELY.
5. BRICK WALK & CG-12'S WITHIN VDOT RIGHT OF WAY TO BE MAINTAINED BY THE TOWN OF HAYMARKET.

GRAPHIC SCALE

0 10 20 40

(IN FEET)

1 INCH = 20 FEET



VA. STATE GRID NORTH
INTERSTATE ROUTE 66
(VARIABLE WIDTH RIGHT-OF-WAY)
10' FRONT SETBACK
25' SIDE SETBACK
JAXTON SQUARE LANE
KIDDIE ACADEMY
FLOORS: 2
AREA: 11,256 S.F.
FF=368.67
PLAYGROUND
TOTAL AREA:
4638 S.F.
AREA OF REFUGE
PROP. RETAINING WALL
6" DIA AND 4' HIGH BOLLARD
PROP. FENCE
6" PRIVATE FIRE LINE
GREASE TRAP
EMERGENCY TURNAROUND
12" X 6" TAPPING SLEEVE AND 6" TAPPING VALVE
12" X 4" TAPPING SLEEVE AND 4" TAPPING VALVE
4" DIP CL52 FULLY RESTRAINED FULLY POLYWRAPPED
STRUCTURE 811 EXISTING MANHOLE TO BE
LIMIT OF DISTURBANCE
SITE ACCESS CONSTRUCTED BY OTHERS. PLEASE SEE CROSSROADS VILLAGE CENTER FINAL SITE PLAN.
DRY UTILITIES TO BE CONSTRUCTED BY OTHERS
PAD SITE #4
FUTURE POTENTIAL LAYOUT
PAD SITE #3
FUTURE POTENTIAL LAYOUT
S 79°29'10" E 425.78'
S 56°35'13" E 530.17'
N 80°52'12" W 200.11'

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COMMONWEALTH OF VIRGINIA
SEBASTIAN SANDOVAL
Lic. No. 045207
06/30/23
PROFESSIONAL ENGINEER

PLAN# BA2201
DATE: MARCH, 2023
CONTOUR INT.= 2'
SCALE: 1"=20'

PLAN DATE
01/06/23
03/17/23
06/30/23

GRADING PLAN
FINAL SITE PLAN
KIDDIE ACADEMY AT CROSSROADS VILLAGE CENTER
TOWN OF HAYMARKET, VIRGINIA

No.	DATE	DESCRIPTION

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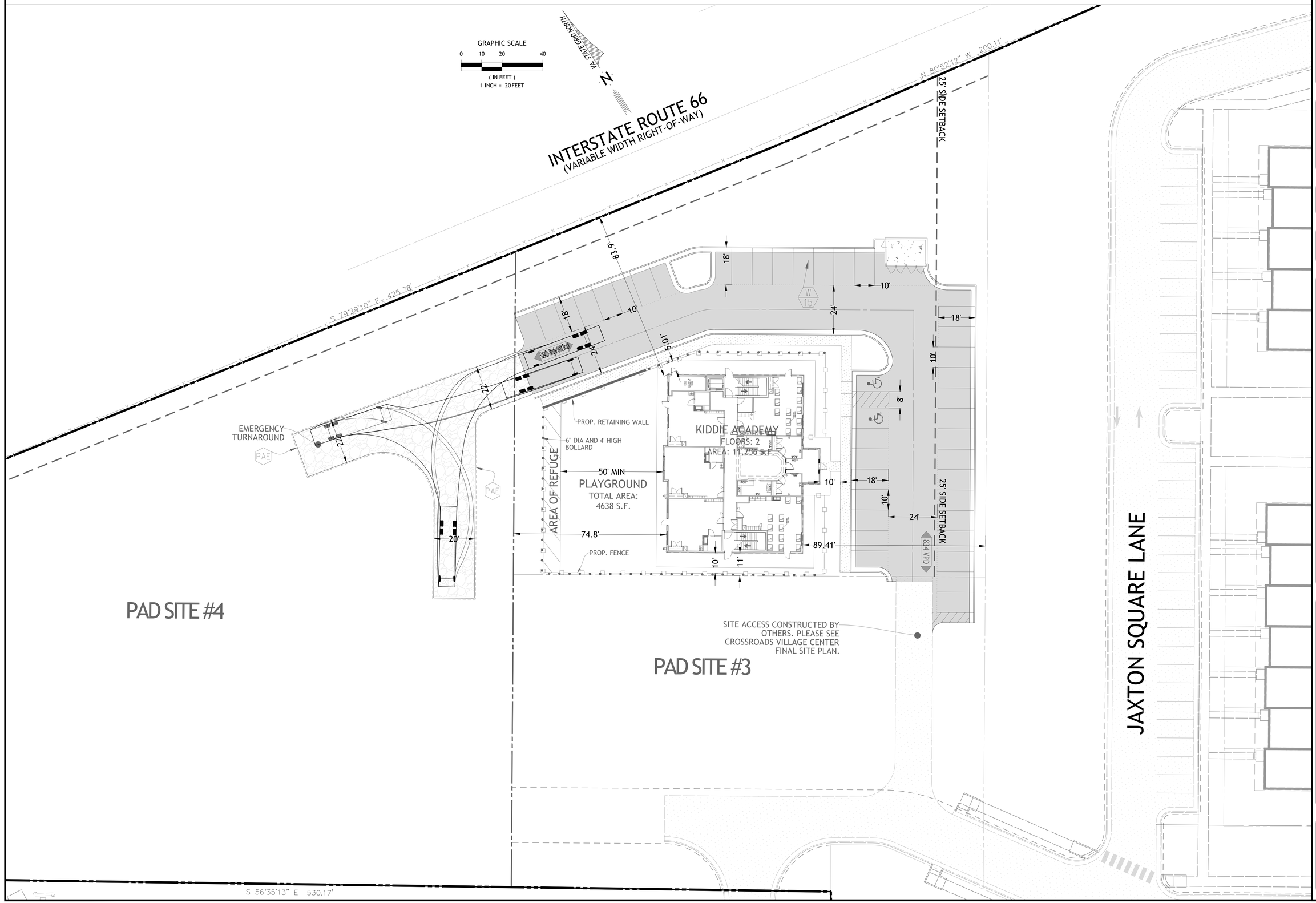
Attachment: 02 Kiddie Academy at CVC with Updated Drop Off (6224 : Kiddie Academy Site Plan)

SU-40 SINGLE UNIT TRUCK



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PLAN# BA2201
DATE: MARCH, 2023
CONTOUR INT.= N/A
SCALE: 1"=40'

PLAN DATE
01/06/23
03/17/23
06/30/23

AUTOTURN ANALYSIS
FINAL SITE PLAN
KIDDIE ACADEMY AT CROSSROADS VILLAGE CENTER

TOWN OF HAYMARKET, VIRGINIA

REVISIONS

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INTERSTATE ROUTE 66
(VARIABLE WIDTH RIGHT-OF-WAY)

N 80°52'12" W 200.11'

S 79°29'10" E 425.78'

10' FRONT SETBACK

10' FRONT SETBACK

184.90'-8" PVC C900 SAN SEW @ 0.80%

198.64'-8" PVC C900 SAN SEW @ 2.50%

156.87'-36" RCP AV @ 0.50%

DA = 0.47 AC
TO 478' SSF

DA = 0.14 AC
TO 146' SSF

DA = 0.12 AC
TO 49' SSF

DA = 0.28 AC
TO 231' SSF

DA = 0.02 AC
TO 77 SSF

LIMIT OF DISTURBANCE

JAXTON SQUARE LANE

THIS DRAWING IS FOR PHASE I EROSION, SEDIMENT CONTROL & DRAINAGE DIVIDE PURPOSES ONLY

EROSION AND SEDIMENT CONTROL LEGEND

3.02	TEMPORARY STONE CONSTRUCTION ENTRANCE	CE	
3.05	SUPER SILT FENCE	SSF	SSF SSF
3.31	TEMPORARY SEEDING	TS	
	LIMITS OF CLEARING	LOC	
	DRAINAGE DIVIDE		

NOTES:
1. CONTRACTOR TO PROVIDE TEMPORARY SEEDING & MULCHING (PS & MU) OUTSIDE OF THE PAVED AREA WITHIN LIMITS OF CLEARING.
2. FOR DETAILS, NOTES, AND NARRATIVE, SEE SHEETS 10 & 11.

GRAPHIC SCALE
0 10 20 40
(IN FEET)
1 INCH = 20 FEET

VA STATE GRID NORTH

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COMMONWEALTH OF VIRGINIA
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Lic. No. 045207
06/30/23
PROFESSIONAL ENGINEER

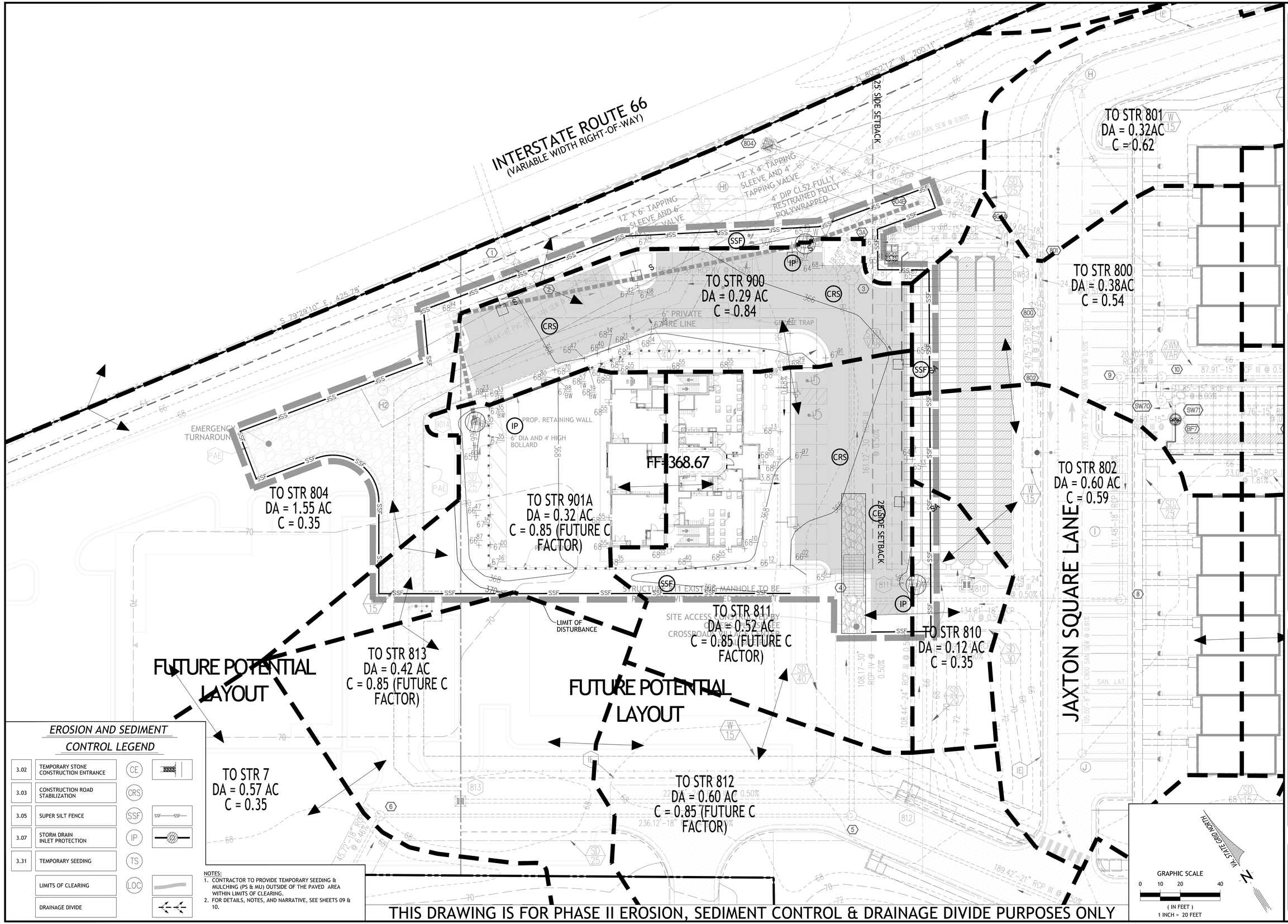
PLAN# BA2201
DATE: MARCH, 2023
CONTOUR INT.= 2'
SCALE: 1"=20'

PLAN DATE
01/06/23
03/17/23
06/30/23

EROSION AND SEDIMENT CONTROL PHASE 1
FINAL SITE PLAN
KIDDIE ACADEMY AT CROSSROADS VILLAGE CENTER
TOWN OF HAYMARKET, VIRGINIA

REVISIONS
No. | DESCRIPTION | DATE

SHEET
08
OF
43



EROSION AND SEDIMENT CONTROL LEGEND

3.02	TEMPORARY STONE CONSTRUCTION ENTRANCE	CE	
3.03	CONSTRUCTION ROAD STABILIZATION	CRS	
3.05	SUPER SILT FENCE	SSF	SSF SSF
3.07	STORM DRAIN INLET PROTECTION	IP	
3.31	TEMPORARY SEEDING	TS	
	LIMITS OF CLEARING	LOC	
	DRAINAGE DIVIDE		

NOTES:
1. CONTRACTOR TO PROVIDE TEMPORARY SEEDING & MULCHING (PS & MU) OUTSIDE OF THE PAVED AREA WITHIN LIMITS OF CLEARING.
2. FOR DETAILS, NOTES, AND NARRATIVE, SEE SHEETS 09 & 10.

THIS DRAWING IS FOR PHASE II EROSION, SEDIMENT CONTROL & DRAINAGE DIVIDE PURPOSES ONLY

GRAPHIC SCALE
0 10 20 40
(IN FEET)
1 INCH = 20 FEET

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PLAN# BA2201
DATE: MARCH, 2023
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PLAN DATE
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06/30/23

EROSION AND SEDIMENT CONTROL PHASE 2
FINAL SITE PLAN
KIDDIE ACADEMY AT CROSSROADS VILLAGE CENTER
TOWN OF HAYMARKET, VIRGINIA

REVISIONS

No.	DATE	DESCRIPTION

SHEET
09
OF
43

MS-19 EROSION & SEDIMENT CONTROL NOTES

1. PERMANENT OR TEMPORARY SOIL STABILIZATION SHALL BE APPLIED TO DENUDED AREAS WITHIN SEVEN DAYS AFTER FINAL GRADE IS REACHED ON ANY PORTION OF THE SITE. TEMPORARY SOIL STABILIZATION SHALL BE APPLIED WITHIN SEVEN DAYS TO DENUDED AREAS THAT MAY NOT BE AT FINAL GRADE BUT WILL REMAIN DORMANT FOR LONGER THAN 30 DAYS. PERMANENT STABILIZATION SHALL BE APPLIED TO AREAS THAT ARE TO BE LEFT DORMANT FOR MORE THAN ONE YEAR.

2. DURING CONSTRUCTION OF THE PROJECT, SOIL STOCKPILES AND BORROW AREAS SHALL BE STABILIZED OR PROTECTED WITH SEDIMENT TRAPPING MEASURES. THE APPLICANT IS RESPONSIBLE FOR THE TEMPORARY PROTECTION AND PERMANENT STABILIZATION OF ALL SOIL STOCKPILES ON SITE AS WELL AS BORROW AREAS AND SOIL INTENTIONALLY TRANSPORTED FROM THE PROJECT SITE.

3. A PERMANENT VEGETATIVE COVER SHALL BE ESTABLISHED ON DENUDED AREAS NOT OTHERWISE PERMANENTLY STABILIZED. PERMANENT VEGETATION SHALL NOT BE CONSIDERED ESTABLISHED UNTIL A GROUND COVER IS ACHIEVED THAT IS UNIFORM, MATURE ENOUGH TO SURVIVE AND WILL INHIBIT EROSION.

4. SEDIMENT BASINS AND TRAPS, PERIMETER DIKES, SEDIMENT BARRIERS AND OTHER MEASURES INTENDED TO TRAP SEDIMENT SHALL BE CONSTRUCTED AS A FIRST STEP IN ANY LAND-DISTURBING ACTIVITY AND SHALL BE MADE FUNCTIONAL BEFORE UPSTREAM LAND DISTURBANCE TAKES PLACE.

5. STABILIZATION MEASURES SHALL BE APPLIED TO EARTHEN STRUCTURES SUCH AS DAMS, DIKES AND DIVERSIONS IMMEDIATELY AFTER INSTALLATION.

6. SEDIMENT TRAPS AND SEDIMENT BASINS SHALL BE DESIGNED AND CONSTRUCTED BASED UPON THE TOTAL DRAINAGE AREA TO BE SERVED BY THE TRAP OR BASIN.

A. THE MINIMUM STORAGE CAPACITY OF A SEDIMENT TRAP SHALL BE 134 CUBIC YARDS PER ACRE OF DRAINAGE AREA AND THE TRAP SHALL ONLY CONTROL DRAINAGE AREAS LESS THAN THREE ACRES.
B. SURFACE RUNOFF FROM DISTURBED AREAS THAT IS COMPRISED OF FLOW FROM DRAINAGE AREAS GREATER THAN OR EQUAL TO THREE ACRES SHALL BE CONTROLLED BY A SEDIMENT BASIN. THE MINIMUM STORAGE CAPACITY OF A SEDIMENT BASIN SHALL BE 134 CUBIC YARDS PER ACRE OF DRAINAGE AREA. THE OUTFALL SYSTEM SHALL, AT A MINIMUM, MAINTAIN THE STRUCTURAL INTEGRITY OF THE BASIN DURING A TWENTY-FIVE YEAR STORM OF 24-HOUR DURATION. RUNOFF COEFFICIENTS USED IN RUNOFF CALCULATIONS SHALL CORRESPOND TO A BARE EARTH CONDITION OR THOSE CONDITIONS EXPECTED TO EXIST WHILE THE SEDIMENT BASIN IS UTILIZED.

7. CUT AND FILL SLOPES SHALL BE DESIGNED AND CONSTRUCTED IN A MANNER THAT WILL MINIMIZE EROSION. SLOPES THAT ARE FOUND TO BE ERODING EXCESSIVELY WITHIN ONE YEAR OF PERMANENT STABILIZATION SHALL BE PROVIDED WITH ADDITIONAL SLOPE STABILIZING MEASURES UNTIL THE PROBLEM IS CORRECTED.

8. CONCENTRATED RUNOFF SHALL NOT FLOW DOWN CURT OR FILL SLOPES UNLESS CONTAINED WITHIN AN ADEQUATE TEMPORARY OR PERMANENT CHANNEL, FLUME OR SLOPE DRAIN STRUCTURE.

9. WHENEVER WATER SEEPS FROM A SLOPE FACE, ADEQUATE DRAINAGE OR OTHER PROTECTION SHALL BE PROVIDED.

10. ALL STORM SEWER INLETS THAT ARE MADE OPERABLE DURING CONSTRUCTION SHALL BE PROTECTED SO THAT SEDIMENT-LADEN WATER CANNOT ENTER THE CONVEYANCE SYSTEM WITHOUT FIRST BEING FILTERED OR OTHERWISE TREATED TO REMOVE SEDIMENT.

11. BEFORE NEWLY CONSTRUCTED STORMWATER CONVEYANCE CHANNELS OR PIPES ARE MADE OPERATIONS., ADEQUATE OUTLET PROTECTION AND ANY REQUIRED TEMPORARY OR PERMANENT CHANNEL LINING SHALL BE INSTALLED IN BOTH THE CONVEYANCE CHANNEL AND RECEIVING CHANNEL.

12. WHEN WORK IN A LIVE WATERCOURSE IS PERFORMED, PRECAUTIONS SHALL BE TAKEN TO MINIMIZE ENCROACHMENT, CONTROL SEDIMENT TRANSPORT AND STABILIZE THE WORK AREA TO THE GREATEST EXTENT POSSIBLE DURING CONSTRUCTION. NONERODIBLE MATERIAL SHALL BE USED FOR THE CONSTRUCTION OF CAUSEWAYS AND COFFERDAMS. EARTHEN FILL MAY BE USED FOR THESE STRUCTURES IF ARMORED BY NONERODIBLE COVER MATERIALS.

13. WHEN A LIVE WATERCOURSE MUST BE CROSSED BY CONSTRUCTION VEHICLES MORE THAN TWICE IN ANY SIX-MONTH PERIOD, A TEMPORARY VEHICULAR STREAM CROSSING CONSTRUCTED OF NONERODIBLE MATERIAL SHALL BE PROVIDED.

14. ALL APPLICABLE FEDERAL, STATE AND LOCAL REGULATIONS PERTAINING TO WORKING IN OR CROSSING LIVE WATERCOURSES SHALL BE MET.

15. THE BED AND BANKS OF A WATER COURSE SHALL BE STABILIZED IMMEDIATELY AFTER WORK IN THE WATERCOURSE IS COMPLETED.

16. UNDERGROUND UTILITY LINES SHALL BE INSTALLED IN ACCORDANCE WITH THE FOLLOWING STANDARDS IN ADDITION TO OTHER APPLICABLE CRITERIA:

A. NO MORE THAN 500 LINEAR FEET OF TRENCH MAY BE OPENED AT ONE TIME.
B. EXCAVATED MATERIAL SHALL BE PLACED ON THE UPHILL SIDE OF TRENCHES.
C. EFFLUENT FROM DEWATERING OPERATIONS SHALL BE FILTERED OR PASSED THROUGH AN APPROVED SEDIMENT TRAPPING DEVICE, OR BOTH, AND DISCHARGED IN A MANNER THAT DOES NOT ADVERSELY AFFECT FLOWING STREAMS OR OFF-SITE PROPERTY.
D. MATERIAL USED FOR BACKFILLING TRENCHES SHALL BE PROPERLY COMPACTED IN ORDER TO MINIMIZE EROSION AND PROMOTE STABILIZATION.
E. RESTABILIZATION SHALL BE ACCOMPLISHED IN ACCORDANCE WITH THESE REGULATIONS.
F. APPLICABLE SAFETY REGULATIONS SHALL BE COMPLIED WITH.

17. WHERE CONSTRUCTION VEHICLE ACCESS ROUTES INTERSECT PAVED OR PUBLIC ROADS, PROVISIONS SHALL BE MADE TO MINIMIZE THE TRANSPORT OF SEDIMENT BY VEHICULAR TRACKING ONTO THE PAVED SURFACE. WHERE SEDIMENT IS TRANSPORTED ONTO A PAVED OR PUBLIC ROAD SURFACE, THE ROAD SURFACE SHALL BE CLEANED THOROUGHLY AT THE END OF EACH DAY. SEDIMENT SHALL BE REMOVED FROM THE ROADS BY SHOVELING OR SWEEPING AND TRANSPORTED TO A SEDIMENT CONTROL DISPOSAL AREA. STREET WASHING SHALL BE ALLOWED ONLY AFTER SEDIMENT IS REMOVED IN THIS MANNER. THIS PROVISION SHALL APPLY TO INDIVIDUAL DEVELOPMENT LOTS AS WELL AS TO LARGER LAND-DISTURBING ACTIVITIES.

18. ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REMOVED WITHIN 30 DAYS AFTER FINAL SITE STABILIZATION OR AFTER THE TEMPORARY MEASURES ARE NO LONGER NEEDED, UNLESS OTHERWISE AUTHORIZED BY THE LOCAL PROGRAM AUTHORITY. TRAPPED SEDIMENT AND THE DISTURBED SOIL AREAS RESULTING FROM THE DISPOSITION OF TEMPORARY MEASURES SHALL BE PERMANENTLY STABILIZED TO PREVENT FURTHER EROSION AND SEDIMENTATION.

19. PROPERTIES AND WATERWAYS DOWNSTREAM FROM DEVELOPMENT SITES SHALL BE PROTECTED FROM SEDIMENT DEPOSITION, EROSION AND DAMAGE DUE TO INCREASES IN VOLUME, VELOCITY AND PEAK FLOW RATE OF STORMWATER RUNOFF FOR THE STATED FREQUENCY STORM OF 24-HOUR DURATION IN ACCORDANCE WITH THE FOLLOWING STANDARDS AND CRITERIA:

A. CONCENTRATED STORMWATER RUNOFF LEAVING A DEVELOPMENT SITES SHALL BE DISCHARGED DIRECTLY INTO AN ADEQUATE NATURAL OR MAN-MADE RECEIVING CHANNEL, PIPE OR STORM SEWER SYSTEMS. FOR THOSE SITES WHERE RUNOFF IS DISCHARGED INTO A PIPE OR SYSTEM, DOWNSTREAM STABILITY ANALYSIS AT THE OUTFALL OF THE PIPE OR PIPE SYSTEM SHALL BE PERFORMED.
B. ADEQUACY OF ALL CHANNELS AND PIPES SHALL BE VERIFIED IN THE FOLLOWING MANNER:
(1). THE APPLICANT SHALL DEMONSTRATE THAT THE TOTAL DRAINAGE AREA TO THE POINT OF ANALYSIS WITHIN THE CHANNEL IS ONE HUNDRED TIMES GREATER THAN THE CONTRIBUTING DRAINAGE AREA OF THE PROJECT IN QUESTION: OR
(2). NATURAL CHANNELS SHALL BE ANALYZED BY THE USE OF A TWO-YEAR STORM TO VERIFY THAT STORMWATER WILL NOT OVERTOP CHANNEL BANKS NOR CAUSE EROSION OF CHANNEL BED OR BANKS; AND
(A) ALL PREVIOUSLY CONSTRUCTED MAN-MADE CHANNELS SHALL BE ANALYZED BY THE USE OF A TEN-YEAR STORM TO VERIFY THAT STORMWATER WILL NOT OVERTOP ITS BANKS AND BY THE USE OF A TWO-YEAR STORM TO DEMONSTRATE THAT STROMWATER WILL NOT CAUSE EROSION OF CHANNEL BED OR BANKS; AND
(B) PIPES AND STORM SYSTEMS SHALL BE ANALYZED BY THE USE OF A TEN-YEAR STORM TO VERIFY THAT STORMWATER WILL BE CONTAINED WITHIN THE PIPE OR SYSTEM.
C. IF EXISTING NATURAL RECEIVING CHANNELS OR PREVIOUSLY CONSTRUCTED MAN-MADE CHANNELS OR PIPES ARE NOT ADEQUATE, THE APPLICANT SHALL:
(1) IMPROVE THE CHANNEL TO A CONDITION WHERE A TEN-YEAR STORM WILL NOT OVERTOP THE BANKS AND A TWO-YEAR STORM WILL NOT CAUSE EROSION TO THE CHANNEL BED OR BANKS; OR
(2) IMPROVE THE PIPE OR PIPE SYSTEM TO A CONDITION WHERE THE TEN-YEAR STORM IS CONTAINED WITHIN THE APPURTENANCES; OR
(3) DEVELOP A SITE DESIGN THAT WILL NOT CAUSE THE PRE-DEVELOPMENT PEAK RUNOFF RATE FROM A TWO-YEAR STORM TO INCREASE WHEN RUNOFF OUTFALLS INTO A NATURAL CHANNEL OR WILL NOT CAUSE THE PRE-DEVELOPMENT PEAK RUNOFF RATE FROM A TEN-YEAR STORM TO INCREASE WHEN RUNOFF OUTFALLS INTO A MAN-MADE CHANNEL;
(4) PROVIDE A COMBINATION OF CHANNEL IMPROVEMENT, STORMWATER DETENTION OR OTHER MEASURES WHICH IS SATISFACTORY TO THE PLAN-APPROVING AUTHORITY TO PREVENT DOWNSTREAM EROSION.
D. THE APPLICANT SHALL PROVIDE EVIDENCE OF PERMISSION TO MAKE THE IMPROVEMENTS.
E. ALL HYDROLOGIC ANALYSIS SHALL BE BASED ON THE EXISTING WATERSHED CHARACTERISTICS AND THE ULTIMATE DEVELOPMENT OF THE SUBJECT PROJECT.
F. IF THE APPLICANT CHOOSES AN OPTION THAT INCLUDES STORMWATER DETENTION HE SHALL OBTAIN APPROVAL FROM THE LOCALITY OF A PLAN FOR MAINTENANCE OF THE DETENTION FACILITIES. THE PLAN SHALL SET FORTH THE MAINTENANCE REQUIREMENTS OF THE FACILITY AND THE PERSON RESPONSIBLE FOR PERFORMING THE MAINTENANCE.
G. OUTFALL FROM A DETENTION FACILITY SHALL BE DISCHARGED TO A RECEIVING CHANNEL, AND ENERGY DISSIPATERS SHALL BE PLACED AT THE OUTFALL OF ALL DETENTION FACILITIES AS NECESSARY TO PROVIDE A STABILIZED TRANSITION FROM THE FACILITY TO THE RECEIVING CHANNEL.
H. ALL ON-SITE CHANNELS MUST BE VERIFIED TO BE ADEQUATE.
I. INCREASED VOLUMES OF SHEET FLOWS THAT MAY CAUSE EROSION OR SEDIMENTATION ON ADJACENT PROPERTY SHALL BE DIVERTED TO A STABLE OUTLET, ADEQUATE CHANNEL, PIPE OR PIPE SYSTEM, OR TO A DETENTION FACILITY.
J. IN APPLYING THESE STORMWATER RUNOFF CRITERIA, INDIVIDUAL LOTS OR PARCELS IN A RESIDENTIAL, COMMERCIAL OR INDUSTRIAL DEVELOPMENT SHALL NOT BE CONSIDERED TO BE SEPARATE DEVELOPMENT PROJECTS. INSTEAD, THE DEVELOPMENT, AS A WHOLE, SHALL BE CONSIDERED TO BE A SINGLE DEVELOPMENT PROJECT. HYDROLOGIC PARAMETERS THAT REFLECT THE ULTIMATE DEVELOPMENT CONDITIONS SHALL BE USED IN ALL ENGINEERING CALCULATIONS.
K. ALL MEASURES USED TO PROTECT PROPERTIES AND WATERWAYS SHALL BE EMPLOYED IN A MANNER WHICH MINIMIZES IMPACTS ON THE PHYSICAL, CHEMICAL AND BIOLOGICAL INTEGRITY OF RIVERS, STREAMS AND OTHER WATERS OF THE STATE.

EROSION & SEDIMENT CONTROL NARRATIVE

PROJECT DESCRIPTION:
THE SITE'S DISTURBED AREA IS 1.21 ACRES WITHIN A 21.0 ACRE MIXED USE DEVELOPMENT. THIS PROJECT IS THE DEVELOPMENT OF A DAYCARE FACILITY AND PARKING.

EXISTING SITE CONDITIONS:
THE SITE IS CLEARED WITH NO STEEP SLOPES PRESENT.

ADJACENT AREAS:
NORTH OF THE SITE IS THE EXISTING INTERSTATE 66. SOUTH, EAST AND WEST OF THE SITE IS THE EXISTING CROSSROADS VILLAGE CENTER.

OFF-SITE AREAS:
NO OFFSITE AREAS ARE PROPOSED TO BE IMPACTED WITH THIS PLAN.

SOILS:
ALL SOILS INFORMATION IS PROVIDED IN THE SOILS MAP ON SHEET 03.

CRITICAL AREAS:
THERE ARE NO CRITICAL AREAS WITHIN THE PROPOSED SITE.

PROPOSED TREE SAVE AREA:
ANY TREE OUTSIDE THE LIMITS OF CLEARING AND GRADING SHALL REMAIN UNDISTURBED UNLESS DIRECTLY INSTRUCTED BY THE TOWN OF HAYMARKET INSPECTOR.

SEDIMENT AND EROSION CONTROL PROGRAM:
THE CONTRACTOR SHALL TAKE THE FOLLOWING STEPS TO MINIMIZE THE VOLUME OF SILT:

1. CONTRACTOR SHALL EVALUATE THE SITE TO DETERMINE EXTENSIVE CUT AND FILL AREAS, AND SHALL WORK THESE AREAS TO MINIMIZE THE EXTENT OF HEAVY EQUIPMENT WORK. CONTRACTOR SHALL STRIVE TO BRING AREAS TO GRADE (ROUGH OR FINISH) AND TO STABILIZE, BY TEMPORARY OR PERMANENT VEGETATION, THESE DISTURBED AREAS PRIOR TO BEGINNING WORK IN ANOTHER AREA.
2. FILL AREAS SHALL BE COMPACTED, COMPLETELY PRIOR TO THE END OF EACH WORK DAY. FILL SLOPE SURFACES SHALL BE LEFT ROUGHENED TO REDUCE SHEET EROSION OF THE SLOPES. CONTRACTOR SHALL RE-DIRECT CONCENTRATED RUNOFF, BY EARTH BERMS OR OTHER DEVICES, AROUND ACTIVELY DISTURBED AREAS TO STABILIZE OUTLETS.
3. CUT SLOPE AS NECESSARY, SHALL BE PROTECTED FORM CONCENTRATED FLOW BY BERMS ABOVE THE SLOPE AND DIRECTED AROUND THE DISTURBED AREA TO STABILIZED OUTLETS.
4. IN NEW PAVEMENT AREAS, PLACE THE AGGREGATE BASE STONE ON THE FINISH SUBGRADE AT THE EARLIEST POSSIBLE TIME.

PHASE 1:
1. INSTALL THE TEMPORARY CONSTRUCTION ENTRANCE WITH WASH RACKS AS SHOWN ON SHEET 08. WATER TRUCKS SHALL BE USED IF THERE IS NO ON-SITE WATER AVAILABLE. PROVIDE FILTER FABRIC UNDERLAIN. MUD AND DEBRIS SHALL BE WASHED FROM ALL CONSTRUCTION VEHICLES AND EQUIPMENT BEFORE LEAVING THE SITE. ANY MUD OR SILT CARRIED INTO THE STREET AFTER WASHING SHALL BE IMMEDIATELY REMOVED.
2. INSTALL INLET PROTECTION FOR ALL EXISTING STORM SEWER INLETS AS SHOWN ON THE PHASE I DRAWINGS ON SHEET 08.
3. CLEAR AND GRUB ALONG THE PERIMETER OF LIMITS OF CLEARING AND GRADING. INSTALL SAFETY FENCE AND PERIMETER CONTROLS.
4. ONCE THE THE ABOVE STEPS HAVE BEEN COMPLETED, THE CONTRACTOR SHALL CONTACT THE TOWN E&S INSPECTOR TO INSPECT THE SITE. NO FURTHER CONSTRUCTION ACTIVITY SHALL COMMENCE UNTIL THE TOWN INSPECTOR HAS PERFORMED THE SITE INSPECTION.

PHASE II:
1. ALL SUPER SILT FENCES AND SILT FENCE WILL REMAIN WHERE SHOWN ON THE PHASE II PLAN ON SHEET 08. THE CONSTRUCTION ENTRANCE SHALL BE REMOVED WHEN FINAL PAVING IS COMPLETED AND APPROVED BY THE TOWN INSPECTOR.
2. INLET PROTECTION FOR STORM INLETS SHALL BE PLACED AS SOON AS THE INLETS ARE INSTALLED.
3. FILL SLOPE SURFACES SHALL BE LEFT IN A ROUGHENED CONDITION TO REDUCE SHEET AND RILL EROSION OF THE SLOPES. THE CONTRACTOR SHALL RE-DIRECT CONCENTRATED FLOW AWAY FROM THE FILL SLOPES BY INSTALLING EARTH BERMS AND OUTLETTING THE RUNOFF TO A STABILIZED OUTLET.
4. REMOVE THE EXISTING CURB AND GUTTER IN THE LOCATIONS INDICATED ON THE PLAN.
5. INSTALL THE PROPOSED STORM DRAINS CONCURRENTLY WITH NEW CURB AND GUTTER.
6. INSTALL PAVEMENT SUBBASE AND AND INTERMEDIATE COURSE.
7. INSTALL PAVEMENT TOP COURSE AND PROPOSED SIDEWALKS.
8. COMPLETE FINAL MISCELLANEOUS SITE ITEMS INCLUDING PAVEMENT STRIPING, etc.
9. AFTER CONSTRUCTION OPERATIONS HAVE ENDED AND ALL DISTURBED AREAS HAVE BEEN STABILIZED WITH VEGETATION, THE EROSION AND SEDIMENT CONTROL MEASURES MAY BE REMOVED UPON THE APPROVAL OF THE TOWN E&S INSPECTOR.

E&S MEASURES:
UNLESS OTHERWISE INDICATED, ALL VEGETATIVE AND STRUCTURAL EROSION AND SEDIMENT CONTROL PRACTICES SHALL BE CONSTRUCTED AND MAINTAINED ACCORDING TO MINIMUM STANDARDS AND SPECIFICATIONS OF THE HANDBOOK. THE MINIMUM STANDARDS OF THE VESCH SHALL BE ADHERED TO UNLESS OTHERWISE WAIVED OR APPROVED BY A VARIANCE.
STRUCTURAL PRACTICES

SAFETY FENCE - 3.01
A PROTECTIVE BARRIER INSTALLED TO PREVENT ACCESS TO AN EROSION CONTROL MEASURE

TEMPORARY CONSTRUCTION ENTRANCE - 3.02
A GRAVEL PAD LOCATED AT POINTS OF VEHICULAR INGRESS AND EGRESS ON A CONSTRUCTION SITE TO REDUCE THE MUD TRANSPORTED ONTO PUBLIC ROADS AND OTHER PAVED AREAS.

CONSTRUCTION ROAD STABILIZATION - 3.03
A TEMPORARY STABILIZATION OF ACCESS ROADS, AND OTHER ONSITE VEHICLE TRANSPORTATION ROUTES WITH STONE IMMEDIATELY AFTER GRADING.

SUPER SILT FENCE BARRIER - 3.05
A TEMPORARY BARRIER CONSISTING OF A SYNTHETIC FILTER FABRIC STRETCHED ACROSS AND ATTACHED TO SUPPORTING POSTS AND ENTRENCHED.

STORM DRAIN INLET PROTECTION - 3.07
A SEDIMENT FILTER OR AN EXCAVATED IMPOUNDING AREA AROUND A STORM DRAIN DROP INLET OR CURB INLET.

VEGETATIVE PRACTICES

TOPSOILING - 3.30
TOPSOIL WILL BE STRIPPED FROM AREAS TO BE GRADED AND STOCKPILED FOR LATER USE. TOPSOIL OPERATIONS SHOULD NOT BE PERFORMED WHEN THE SOIL IS WET OR FROZEN. STRIPPING SHALL BE CONFINED TO THE IMMEDIATE CONSTRUCTION AREA. A 4-TO 6-INCH STRIPPING DEPTH SHALL BE PROVIDED. ALL PERIMETER DIKES, BASINS, AND OTHER SEDIMENT CONTROLS SHALL BE IN PLACE PRIOR TO STRIPPING. TOPSOIL SHALL BE STOCKPILED IN SUCH A MANNER THAT NATURAL DRAINAGE IS NOT OBSTRUCTED AND NO OFF-SITE SEDIMENT DAMAGE SHALL RESULT. STABILIZE OR PROTECT STOCKPILES IN ACCORDANCE WITH MS #2. PERIMETER CONTROLS MUST BE PLACED AROUND THE STOCKPILE IMMEDIATELY. STOCKPILE LOCATIONS SHALL BE LOCATED ON-SITE AND ARE TO BE STABILIZED WITH TEMPORARY VEGETATION WITHIN 7 DAYS OF THE FORMATION OF THE STOCKPILE, IN ACCORDANCE WITH STD. & SPEC. 3.31, TEMPORARY SEEDING IF IT IS TO REMAIN DORMANT FOR LONGER THAN 30 DAYS (REFER TO MS #1 AND MS #2).

PRIOR TO LAND-DISTURBING ACTIVITIES, THE CONTRACTOR SHALL SUBMIT A SUPPLEMENTARY E&S PLAN TO THE OWNER COVERING ANY OFF-SITESTOCKPILE AREA WHICH WOULD HAVE TO BE APPROVED BY THE PLAN APPROVING AUTHORITY BEFORE ANY OFF-SITE ACTIVITY COMMENCES. ANY OFFSITE WORK MUST BE CONDUCTETD AT A SITE WITH AN ACTIVE GRADING PERMIT AND AN APPROVED E&SC PLAN.

TOPSOIL SHALL NOT BE PLACED WHILE IN A FROZEN OR MUDDY CONDITION, WHEN TOPSOIL OR SUBGRADE IS EXCESSIVELY WET, OR IN A CONDITION THAT MAY OTHERWISE BE DETRIMENTAL TO PROPER GRADING OR PROPOSED SODDING OR SEEDING. THE TOPSOIL SHALL BE UNIFORMLY DISTRIBUTED TO A MINIMUM COMPACTED DEPTH OF 2 INCHES ON 3:1 OR STEEPER SLOPES AND 4 INCHES ON FLATTER SLOPES. (SEE TABLE 3.30-A TO DETERMINE VOLUME OF TOPSOIL REQUIRED FOR APPLICATION TO VARIOUS DEPTHS). ANY IRREGULARITIES IN THE SURFACE, RESULTING FROM TOPSOILING OR OTHER OPERATIONS, SHALL BE CORRECTED IN ORDER TO PREVENT THE FORMATION OF DEPRESSIONS OR WATER POCKETS.

TEMPORARY SEEDING - 3.31
ALL DENUDED AREAS, WHICH WILL BE LEFT DORMANT FOR EXTENDED PERIODS OF TIME, SHALL BE SEEDED WITH FAST GERMINATING TEMPORARY VEGETATION IMMEDIATELY FOLLOWING GRADING. SELECTION OF THE SEED MIXTURE WILL DEPEND ON THE TIME OF YEAR IT IS APPLIED.

PERMANENT SEEDING - 3.32
ESTABLISHMENT OF PERENNIAL VEGETATIVE COVER BY PLANTING SEED ON ROUGH GRADING AREAS THAT WILL NOT BE BROUGHT TO FINAL GRADE FOR A YEAR OR MORE OR WHERE PERMANENT, LONG LIVED VEGETATIVE COVER IS NEEDED ON FINE GRADING AREAS.

EROSION CONTROL BLANKET - 3.36 OR MULCH - 3.35
EROSION CONTROL BLANKETS WILL BE INSTALLED OVER FILL SLOPES, WHICH HAVE BEEN BROUGHT TO FINAL GRADE AND HAVE BEEN SEEDED TO PROTECT THE SLOPES FROM RILL AND GULLY EROSION AND TO ALLOW SEED TO GERMINATE PROPERLY. MULCH (STRAW OR FIBER) WILL BE USED ON RELATIVELY FLAT AREAS AND WILL BE APPLIED AS A SECOND STEP IN THE SEEDING OPERATION. (SEE SHEET 26 FOR MULCHING RATES,TABLE 3.35-A)

SPECIAL CARE NOTES:
THE CONTRACTOR SHALL TAKE SPECIAL CARE TO PROTECT THE EXISTING VEGETATION, WETLANDS AND STREAMS OUTSIDE OF THE DESIGNATED LIMITS OF WORK SHOWN ON THE PLANS. WHEN WORK IS PERFORMED IN/NEAR STREAMS AND WETLANDS, PRECAUTIONS SHALL BE TAKEN TO MINIMIZE ENCROACHMENT, CONTROL SEDIMENT TRANSPORT AND STABILIZE THE WORK AREA TO THE GREATEST EXTENT POSSIBLE DURING CONSTRUCTION. NONERODIBLE MATERIAL SHALL BE USED FOR THE CONSTRUCTION OF CAUSEWAYS AND COFFERDAMS. EARTHEN FILL MAY BE USED FOR THESE STRUCTURES IF ARMORED BY NONERODIBLE MATERIALS. THE BED AND BANKS OF THE STREAM AND WETLANDS SHALL BE STABILIZED IMMEDIATELY AFTER WORK IN/NEAR THESE LOCATIONS IS COMPLETED.

MANAGEMENT STRATEGIES:
1. CONSTRUCTION WILL BE SEQUENCED SO THAT GRADING OPERATIONS CAN BEGIN AND END AS QUICKLY AS POSSIBLE.
2. TEMPORARY SEEDING OR OTHER STABILIZATION WILL FOLLOW IMMEDIATELY AFTER GRADING.
3. AREAS WHICH ARE NOT TO BE DISTURBED WILL BE CLEARLY MARKED BY FLAGS, SIGNS, ETC.
4. THE JOB SUPERINTENDENT SHALL BE RESPONSIBLE FOR THE INSTALLATION AND MAINTENANCE OF ALL EROSION AND SEDIMENT CONTROL PRACTICES.
5. AFTER ACHIEVING ADEQUATE STABILIZATION, THE TEMPORARY E&S CONTROLS WILL BE CLEANED UP AND REMOVED.
6. IF ON-SITE WATER IS NOT AVAILABLE, WATER TRUCKS SHALL BE PRESENT ON-SITE.

PERMANENT STABILIZATION:
ALL AREAS DISTURBED BY CONSTRUCTION SHALL BE STABILIZED WITH PERMANENT SEEDING IMMEDIATELY FOLLOWING FINISH GRADING. SEEDING SHALL BE DONE WITH A SITE SPECIFIC SEED, AS BASED ON TIME OF CONSTRUCTION AND AVAILABILITY, ACCORDING TO STD. & SPEC. 3.32, PERMANENT SEEDING, OF THE HANDBOOK (SEE SHEET 11). EROSION CONTROL BLANKETS WILL BE INSTALLED OVER FILL STEEP SLOPES WHICH HAVE BEEN BROUGHT TO FINAL GRADE AND HAVE BEEN SEEDED TO PROTECT THE SLOPES FROM RILL AND GULLY EROSION AND TO ALLOW SEED TO GERMINATE PROPERLY. MULCH (STRAW OR FIBER) WILL BE USED ON RELATIVELY FLAT AREAS. IN ALL SEEDING OPERATIONS, SEED, FERTILIZER AND LIME WILL BE APPLIED PRIOR TO MULCHING. SOIL TESTS SHALL BE REQUIRED TO DETERMINE SITE SPECIFIC LIME AND FERTILIZER REQUIREMENTS.

MAINTENANCE:
THE FOLLOWING IS A PROGRAM OF MAINTENANCE FOR MECHANICAL CONTROLS SPECIFIED IN THIS NARRATIVE AND ON THE PLAN:
1. THE SITE SUPERINTENDENT, OR HIS REPRESENTATIVE, SHALL MAKE A VISUAL INSPECTION OF ALL MECHANICAL CONTROLS AND NEWLY STABILIZED AREAS (I.E.-SEEDED OR SODDED AREAS) ON A DAILY BASIS (ESPECIALLY AFTER A HEAVY RAINFALL) TO INSURE THAT ALL CONTROLS ARE IN PLACE AND THAT NONE HAVE BEEN DAMAGED. ANY DAMAGED CONTROL SHALL BE REPAIRED PRIOR TO END OF THE WORK DAY TO INCLUDE RESEEDING OR RESODDING, IF NECESSARY.
2. ALL SILT TRAPPING FACILITIES SHALL BE CLEANED OUT AT 50% TRAP CAPACITY AND SEDIMENT SHALL BE DISPOSED OF BY SPREADING ON SITE (OR HAULING AWAY IF NOT SUITABLE FOR STRUCTURUAL FILL).
3. AFTER ALL CONSTRUCTION OPERATIONS HAVE ENDED AND ALL DISTURBED AREAS ARE STABILIZED, MECHANICAL SEDIMENT CONTROLS SHALL BE REMOVED AND GROUND SHALL BE RESTORED INCLUDING ESTABLISHMENT OF VEGETATION TO ITS NATURAL OR PROPOSED CONDITION. REMOVAL OF ANY CONTROL IS CONTINGENT UPON APPROVAL BY THE INSPECTOR.
4. DURING CONSTRUCTION OF THE PROJECT, SOIL STOCKPILES AND BORROW AREAS SHALL BE STABILIZED OR PROTECTED WITH SEDIMENT TRAPPING MEASURES.

TEMPORARY SEEDING:
SEE SHEET III-288 OF THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK (VESCH) FOR ALLOWABLE PLANTING MATERIAL, SEEDING RATES, AND DATES. THE REQUIREMENTS OF THE "SOUTH" PLANTING REQUIREMENTS SHALL BE FOLLOWED. LIMING SHALL BE BASED ON TABLE 3.31-A OF VESCH. FERTILIZERS SHALL BE APPLIED AS 600 LB/ACRE. THE FERTILIZER SHALL BE INCORPORATED INTO THE TOP 2-4" OF SOIL. SEED SHALL BE EVENLY APPLIED AND SMALL GRAINS SHALL BE PLANTED NO MORE THAN 1.5" DEEP. SEEDING MADE IN FALL FOR WINTER COVER AND DURING HOT SUMMER MONTHS SHALL BE MULCHED.

SODDING:
SODDED AREAS SHALL BE BROUGHT TO FINAL GRADE IN ACCORDANCE WITH THE APPROVED PLANS. SOIL TEST SHOULD BE MADE TO DETERMINE THE EXACT REQUIREMENTS FOR LIME AND FERTILIZER. PRIOR TO LAYING SOD, SOIL SURFACE SHALL BE CLEAR OF TRASH, DEBRIS AND LARGE OBJECTS. QUALITY OF SOD SHALL BE STATE CERTIFIED AND ENSURE GENETIC PURITY AND HIGH QUALITY. SOD SHALL NOT BE LAID IN EXCESSIVELY WET OR DRY WEATHER AND BE DELIVERED AND INSTALLED WITHIN 36 HOURS. SOD SHOULD NOT BE LAID ON FROZEN SOIL SURFACE AND SHALL BE INSTALLED PER PAGE III-339 OF VESCH.

STOCKPILING:
DURING CONSTRUCTION OF THIS PROJECT, SOIL STOCKPILES AND BORROW AREAS SHALL BE STABILIZED OR PROTECTED WITH SEDIMENT CONTROL DEVICES.

UTILITY INSTALLATION:
UNDERGROUND UTILITY LINES SHALL BE INSTALLED IN ACCORDANCE WITH THE FOLLOWING STANDARDS IN ADDITION TO OTHER APPLICABLE CRITERIA:
1. NO MORE THAN 500 LINEAR FEET OF TRENCH MAY BE OPENED AT ONE TIME.
2. EXCAVATED MATERIAL SHALL BE PLACED ON THE UPHILL SIDE OF TRENCHES.
3. EFFLUENT FROM DEWATERING OPERATIONS SHALL BE FILTERED OR PASSED THROUGH AN APPROVED SEDIMENT TRAPPING DEVICE, OR BOTH, AND DISCHARGED IN A MANNER THAT DOES NOT ADVERSELY AFFECT FLOWING STREAMS OR OFF-SITE PROPERTY.
4. MATERIAL USED FOR BACKFILLING TRENCHES SHALL BE PROPERLY COMPACTED IN ORDER TO MINIMIZE EROSION AND PROMOTE STABILIZATION.
5. RESTABILIZATION SHALL BE ACCOMPLISHED IN ACCORDANCE WITH THESE REGULATIONS.
6. APPLICABLE SAFETIES SHALL TAKE PLACE AND REGULATIONS SHALL BE COMPLIED WITH.

LAND CONSERVATION NOTES:
1. ALL E&S CONTROL MEASURES APPROVED WITH THE PHASE I E&S CONTROL PLAN SHALL BE PLACED PRIOR TO OR AS THE FIRST STEP IN GRADING. FIRST AREAS TO BE CLEARED ARE TO BE THOSE REQUIRED FOR THE PERIMETER CONTROLS.
2. ALL STORM AND SANITARY SEWER LINES NOT IN STREETS SHALL BE SEEDED AND MULCHED WITHIN 7 DAYS AFTER BACKFILL. NO MORE THAT 500' SHALL BE OPEN AT ANY ONE TIME.
3. ELECTRIC POWER, TELEPHONE AND GAS SUPPLY TRENCHES SHALL BE COMPACTED, SEEDED, AND MULCHED WITHIN 7 DAYS AFTER BACKFILL.
4. ALL TEMPORARY EARTH BERMS, DIVERSIONS AND SEDIMENT CONTROL DAMS SHALL BE SEEDED AND MULCHED FOR TEMPORARY VEGETATIVE COVER IMMEDIATELY (AS SOON AS POSSIBLE BUT NO LATER THAN 48 HOURS) AFTER COMPLETION OF GRADING. STRAW OR HAY MULCH IS REQUIRED. ALL SOIL STOCKPILES SHALL BE SEEDED AND MULCHED WITHIN 7 DAYS AFTER GRADING.
5. DURING CONSTRUCTION, ALL STORM SEWER INLETS SHALL BE PROTECTED BY INLET PROTECTION DEVICES, MAINTAINED AND MODIFIED AS REQUIRED BY CONSTRUCTION PROGRESS.

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COMMONWEALTH OF VIRGINIA
SEBASTIAN SANDOVAL
Lic. No. 045207
06/30/23
PROFESSIONAL ENGINEER

PLAN# BA2201
DATE: MARCH, 2023
CONTOUR INT.= N/A
SCALE: N/A

PLAN DATE
01/06/23
03/17/23
06/30/23

EROSION & SEDIMENT NARRATIVE
FINAL SITE PLAN
KIDDIE ACADEMY AT CROSSROADS VILLAGE CENTER

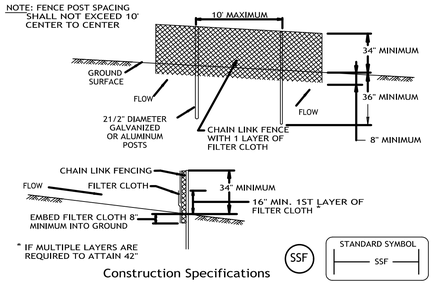
TOWN OF HAYMARKET, VIRGINIA

No.	DATE	DESCRIPTION

REVISIONS

SHEET
10
OF
43

SUPER SILT FENCE



Construction Specifications

1. Fencing shall be 42" in height and constructed in accordance with the latest VDOT Details for Chain Link Fencing.

2. Chain link fence shall be fastened securely to the fence posts with wire ties. The lower tension wire, brace and truss rods, drive anchors and post caps are not required except on the ends of the fence.

3. Filter cloth shall be fastened securely to the chain link fence with ties spaced every 24" at the top and mid section.

4. Filter cloth shall be embedded a minimum of 8" into the ground.

5. When two sections of filter cloth adjoin each other, they shall be overlapped by 6" and folded.

6. Maintenance shall be performed as needed and silt buildups removed when "bulges" develop in the silt fence, or when silt reaches 50% of fence height

7. Filter cloth shall be fastened securely to each fence post with wire ties or staples at top and mid section and shall meet the following requirements for Geotextile Class F:

Tensile Strength	50 lbs/in (min.)	Test: MSMT 509
Tensile Modulus	20 lbs/in (min.)	Test: MSMT 509
Flow Rate	0.3 gal/ft /minute (max.)	Test: MSMT 322
Filtering Efficiency	75% (min.)	Test: MSMT 322

(CE) STONE CONSTRUCTION ENTRANCE

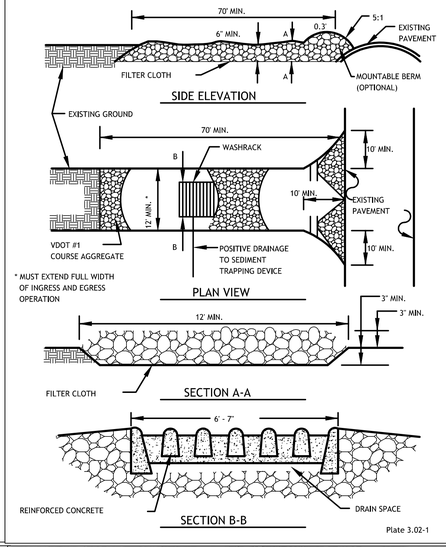


Plate 3.02-1

TABLE 3.32-D

SITE SPECIFIC SEEDING MIXTURES FOR COASTAL PLAIN AREA

	Total Lbs. Per Acre
Minimum Care Lawn	
- Commercial or Residential	
- Kentucky 31 or Turf-Type Tall Fescue	175-200 lbs.
or	
- Common Bermudagrass **	75 lbs.
High-Maintenance Lawn	
- Kentucky 31 or Turf-Type Tall Fescue	200-250 lbs.
or	
- Hybrid Bermudagrass (seed) **	40 lbs. (unhulled) 30 lbs. (hulled)
or	
- Hybrid Bermudagrass (by other vegetative establishment method, see Std. & Spec. 3.34)	
General Slope (3:1 or less)	
- Kentucky 31 Fescue	128 lbs.
- Red Top Grass	2 lbs.
- Seasonal Nurse Crop *	20 lbs.
	150 lbs.
Low Maintenance Slope (Steeper than 3:1)	
- Kentucky 31 Tall Fescue	93-108 lbs.
- Common Bermudagrass **	0-15 lbs.
- Red Top Grass	2 lbs.
- Seasonal Nurse Crop *	20 lbs.
- Sericea Lespedeza **	20 lbs.
	150 lbs.

* Use seasonal nurse crop in accordance with seeding dates as stated below:

February, March through April	Annual Rye
May 1st through August	Foxtail Millet
September, October through November 15th	Annual Rye
November 16th through January	Winter Rye

** May through October, use hulled seed. All other seeding periods, use unhulled seed. Weeping Lovegrass may be added to any slope or low-maintenance mix during warmer seeding periods; add 10-20 lbs./acre in mixes.

TABLE 3.35-A

ORGANIC MULCH MATERIALS AND APPLICATION RATES

MULCHES:	RATES: Per Acre	RATES: Per 1000 sq.ft.	NOTES:
Straw or Hay	1.5-2 Tons (Minimum 2 tons for winter cover)	70-90 lbs.	Free from weeds and coarse matter. Must be anchored. Spread with mulch blower or by hand.
Fiber Mulch	Minimum 1500lbs.	35 lbs.	Do not use as a mulch for winter cover or during hot, dry periods.* Apply as slurry.
Corn Stalks	4-6 tons	185-275 lbs.	Cut or shredded in 4-6" lengths. Air-dried. Do not use in fine turf areas. apply with a mulch blower or by hand.
Wood Chips	4-6 tons	185-275 lbs.	Free of coarse matter. Air-dried. Treat with 12lbs. Nitrogen per ton. Do not use in fine turf areas. Apply with a mulch blower, chip handler, or by hand.
Bark Chips or Shredded Bark	50-70 cu. yds.	1-2 cu. yds.	Free of coarse matter. Air-dried. Do not use in fine turf areas. Apply with a mulch blower, chip handler, or by hand.

* When fiber mulch is the only available mulch during periods when straw should be used, apply at a minimum rate of 2000 lbs./ac. or 45lbs./1000 s.f.

Source: Va. DSWC

TABLE 3.31-B

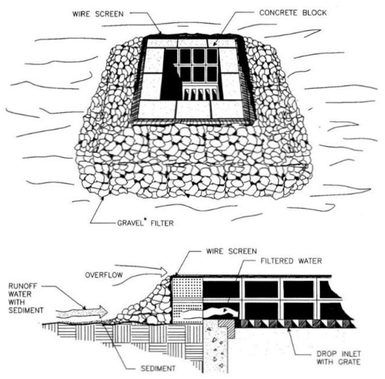
ACCEPTABLE TEMPORARY SEEDING PLANT MATERIALS

"QUICK REFERENCE FOR ALL REGIONS"

Planting Dates	Species	Rate (lbs./acre)
SEPT. 1-FEB. 15	50/50 Mix of Annual Ryegrass (Lolium multi-florum) & Cereal (Winter) Rye (Secale cereale)	50-100
FEB. 16-APR. 30	Annual Ryegrass (Lolium multi-florum)	60-100
MAY 1-AUG. 31	German Millet (Setaria italica)	50

Source: Va. DSWC

BLOCK AND GRAVEL DROP INLET SEDIMENT FILTER

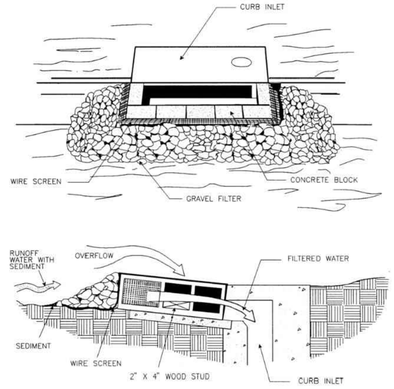


SPECIFIC APPLICATION

THIS METHOD OF INLET PROTECTION IS APPLICABLE WHERE HEAVY FLOWS ARE EXPECTED AND WHERE AN OVERFLOW CAPACITY IS NECESSARY TO PREVENT EXCESSIVE PONDING AROUND THE STRUCTURE.

* GRAVEL SHALL BE VDOT #3, #357 OR #5 COARSE AGGREGATE.

BLOCK & GRAVEL CURB INLET SEDIMENT FILTER



SPECIAL APPLICATION

THIS METHOD OF INLET PROTECTION IS APPLICABLE AT CURB INLETS WHERE AN OVERFLOW CAPABILITY IS NECESSARY TO PREVENT EXCESSIVE PONDING IN FRONT OF THE STRUCTURE.

* GRAVEL SHALL BE VDOT #3, #357 OR #5 COARSE AGGREGATE

CHECKLIST

FOR EROSION AND SEDIMENT CONTROL PLANS

✓ Minimum Standards - All applicable Minimum Standards must be addressed.

NARRATIVE

✓ Project description - Briefly describes the nature and purpose of the land-disturbing activity, and the area (acres) to be disturbed.

✓ Existing site conditions - A description of the existing topography, vegetation and drainage.

✓ Adjacent areas - A description of neighboring areas such as streams, lakes, residential areas, roads, etc., which might be affeced by the land disturbance.

✓ Off-site areas - Describe any off-site land-disturbing activities that will occur (including borrow sites, waste or surplus areas, etc.). Will any other areas be disturbed?

✓ Soils - A brief description of the soils on the site giving such information as soil name, mapping unit, erodibility, permeability, depth, texture and soil structure.

✓ Critical areas - A description of areas on the site which have potentially serious erosion problems (e.g., steep slopes, channels, wet weather/ underground springs, etc.).

✓ Erosion and sediment control measures - A description of the methods which will be used to control erosion and sedimentation on the site. (Controls should satisfy minimum standards in Chapter 3.)

✓ Permanent stabilization - A brief description, including specifications, of how the site will be stabilized after construction is completed.

✓ Stormwater runoff considerations - Will the development site cause an increase in peak runoff rates? Will the increase in runoff cause flooding or channel degradation downstream? Describe the strategy to control stormwater runoff.

✓ Calculations - Detailed calculations for the design of temporary sediment basins, permanent stormwater detention basins, diversions, channels, etc. Include calculations for pre- and post-development runoff.

SITE PLAN

✓ Vicinity map - A small map locating the site in relation to the surrounding area. Include any landmarks which might assist in locating the site.

✓ Indicate north - The direction of north in relation to the site.

✓ Limits of clearing and grading - Areas which are to be cleared and graded.

✓ Existing contours - The existing contours of the site.

✓ Final contours - Changes to the existing contours, including final drainage patterns.

✓ Existing vegetation - The existing tree lines, grassed areas, or unique vegetation.

✓ Soils - The boundaries of different soil types.

✓ Existing drainage patterns - The dividing lines and the direction of flow for the different drainage areas. Include the size (acreage) of each drainage area.

✓ Critical erosion areas - Areas with potentially serious erosion problems. (See Chapter 6 for criteria.)

✓ Site Development - Show all improvements such as buildings, parking lots, access roads, utility construction, etc.

✓ Location of practices - The locations of erosion and sediment control and stormwater management practices used on the site. Use the standard symbols and abbreviations in Chapter 3 of the E&S Handbook.

✓ Off-site areas - Identify any off-site land-disturbing activities (e.g., borrow sites, waste areas, etc.). Show location of erosion controls. (Is there sufficient information to assure adequate protection and stabilization?)

✓ Detail drawings - Any structural practices used that are not referenced to the E&S Handbook or local handbooks should be explained and illustrated with detail drawings.

✓ Maintenance - A schedule of regular inspections and repair of erosion and sediment control structures should be set forth.

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SEBASTIAN SANDOVAL
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PROFESSIONAL ENGINEER

PLAN# BA2201
DATE: MARCH, 2023
CONTOUR INT.= N/A
SCALE: N/A

PLAN DATE
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03/17/23
06/30/23

EROSION & SEDIMENT CONTROL DETAILS
FINAL SITE PLAN
KIDDIE ACADEMY AT CROSSROADS VILLAGE CENTER
TOWN OF HAYMARKET, VIRGINIA

No.	DATE	DESCRIPTION

REVISIONS

SHEET 11 OF 43

STORM SEWER DESIGN COMPUTATIONS

Project: CROSSROADS VILLAGE CENTER

From Point	To Point	Drainage Area	C Factor	C x A Increment	C x A Cumm.	Inlet Time Min.	Rain Fall In/Hr	Runoff Q C.F.S.	Invert Elev. Upper End	Invert Elev. Lower End	Length FT.	Slope %	Dia. IN.	Capacity Q C.F.S.	VEL. F.P.S.	Flow Time MIN.
EX.802	EX.800	0.60	0.59	0.35	0.35	5.00	6.41	2.27	358.98	358.60	41.75	0.91%	15	6.18	4.65	0.15
EX.800	EX.801	0.38	0.54	0.21	0.56	5.17	6.37	3.56	358.50	358.31	24.25	0.80%	15	5.79	3.48	0.12
EX.801	EX.SW82	0.32	0.62	0.20	0.76	5.29	6.34	4.80	358.21	358.11	19.0	0.50%	18	7.45	4.48	0.07
*																
EX.804	EX.804B	1.55	0.35	0.54	0.54	5.00	6.41	3.48	355.73	355.33	80.34	0.50%	15	4.58	3.38	0.40
EX.804B	EX.804A	0.00	0	0.00	1.06	5.74	6.23	6.59	355.23	355.02	42.36	0.50%	24	16.04	4.86	0.15
EX.804A	EX.SW82	0	0	0.00	1.06	5.84	6.20	6.56	354.92	354.87	10.0	0.50%	24	16.04	4.85	0.03
*																
EX.813	EX.812	0.42	0.85	0.36	0.36	5.00	6.41	2.29	359.00	357.88	224.86	0.50%	24	16.04	3.62	1.04
EX.812	811	0.60	0.85	0.51	0.87	6.01	6.16	5.34	357.78	357.23	108.44	0.50%	24	16.04	4.59	0.39
811	EX.810	0.52	0.85	0.44	1.31	6.35	6.08	7.95	357.13	357.00	25.39	0.52%	24	16.29	5.16	0.08
EX.810	EX.SW83	0.12	0.35	0.04	1.35	6.42	6.06	8.19	356.90	356.87	6.5	0.50%	24	16.04	5.13	0.02
*																
901A	901	0.32	0.85	0.27	0.27	5.00	6.41	1.74	358.54	358.00	54.50	1.00%	15	6.48	4.48	0.20
901	900	0.00	0	0.00	0.27	5.13	6.38	1.74	357.25	355.74	179.57	0.84%	24	20.74	4.01	0.75
900	EX.804B	0.29	0.84	0.24	0.52	5.58	6.27	3.23	355.64	355.33	62.96	0.50%	24	15.98	3.98	0.26
*																

STORM SEWER INLET COMPUTATIONS

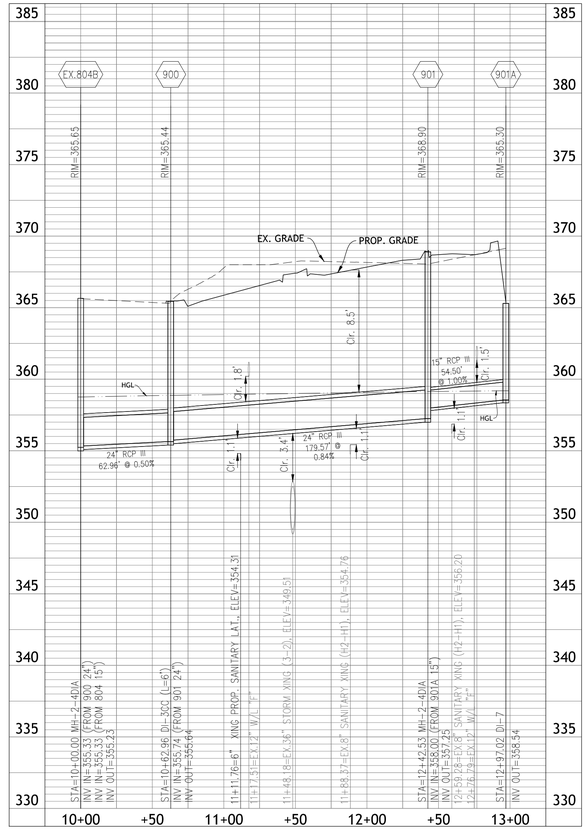
Project: CROSSROADS VILLAGE CENTER

INLET NUMBER	TYPE		STATION		DRAINAGE AREA	C	C x A	W	INTENSITY	Q INCR	Q CARRY OVER	Q TOTAL	S GUTTER	Sx CROSS SLOPE	T SPREAD	W	W/T	Sw	SwSx	Eo	a	S'w	Se	Lt	P EFFECTIVE LENGTH	L/Lt	d	E	h	Q INT	d/H	Qb CARRY OVER	T SPREAD AT SAG	REMARKS
EX.802	DI-3B	14.0			0.60	0.59	0.35	0.35	5.75	2.04		2.04	0.0400	0.0200	5.30	2.00	0.38	0.0833	4.17	0.87	3.52	0.15	0.15	12.06		1.16		1.00		2.04		0.00		
EX.800	DI-3C	8			0.19	0.68	0.13	0.13	5.75	0.74	0.00	0.74	0.02	0.02	3.09	2		0.083	4.15						11.60		0.14		0.42		0.34		7.22	
					0.19	0.68	0.13	0.13	5.75	0.74	0.00	0.74			3.09																			
EX.810	DI-1				0.12	0.35	0.04	0.04	5.75	0.24	0.00	0.24													5.17		0.06							
EX.812	DI-3C	18			0.30	0.85	0.26	0.26	5.75	1.47		1.47	0.02	0.02	5.37	2		0.083	4.15						21.60		0.15		0.42		0.36		7.51	
					0.30	0.85	0.26	0.26	5.75	1.47	0.00	1.47			5.37																			
EX.813	DI-1	6			0.42	0.85	0.36	0.36	5.75	2.05	0.00	2.05													6.42		0.22							
*																																		
811	DI-3CC	12			0.26	0.85	0.22	0.22	5.75	1.27		1.27	0.0217	0.02	4.74	2		0.083	4.15						15.60		0.17		0.42		0.40		8.48	
					0.26	0.85	0.22	0.22	5.75	1.27	0.00	1.27			4.74																			
900	DI-3CC	6			0.15	0.84	0.13	0.13	5.75	0.72		0.72	0.0203	0.02	2.98	2		0.083	4.15						9.60		0.16		0.42		0.38		7.88	
					0.14	0.84	0.12	0.12	5.75	0.68	0.00	0.68			2.76																			
901A	DI-I				0.32	0.85	0.27	0.27	5.75	1.56	0.00	1.56													6.42		0.19							

HYDRAULIC GRADE LINE COMPUTATIONS

Project: CROSSROADS VILLAGE CENTER

INLET STATION (1)	UPSTREAM INLET	Outlet Water Surface Elev. (2)	Do in (3)	Qo cfs (4)	Lo ft (5)	Sfo % (6)	Hf ft (7)	JUNCTION LOSS Vo (8)	Ho (9)	Qi (10)	Vi (11)	QiVi (12)	2 Vi /2g	Hi (13)	Angle (14)	Hd (15)	Ht (16)	1.3 Ht (17)	0.5 Ht (18)	FINAL H (19)	Inlet Water Surface Elev. (20)	RIM ELEV. (21)
EX.SW82																			Starting Elevation		358.39	
EX.804A		358.39	24.00	6.56	9.97	0.08	0.01	4.85	0.09					0.13		0.22	0.44	0.58	0.29	0.30	358.69	366.00
	EX.804B		24.00							6.59	4.86	31.99	0.37		70.00							
EX.804B		358.69	24.00	6.59	42.36	0.08	0.04	4.86	0.09					0.09		0.09	0.27	0.35	0.18	0.21	358.90	365.65
	EX.804		15.00							3.48	3.38	11.74	0.18	0.06	0.00	0.00						
	900		24.00							3.23	3.98	12.87	0.25	0.09	40.00	0.09						
EX.804		358.90	15.00	3.48	80.34	0.29	0.23	3.38	0.04					0.00		0.00	0.04	0.06	0.03	0.26	359.16	355.00
	0							3.48	0.00	0.00	0.00			0.00								
900		358.90	24.00	3.23	62.96	0.02	0.01	3.98	0.06					0.09		0.01	0.16	0.00	0.00	0.17	359.07	365.44
	901		24.00							1.74	4.01	6.95	0.25		8.00							
901		359.07	24.00	1.74	179.57	0.01	0.01	4.01	0.06					0.11		0.22	0.39	0.00	0.00	0.40	359.47	368.90
	901A		15.00							1.74	4.48	7.81	0.31		90.00							
901A		359.47	15.00	1.74	54.50	0.07	0.04	4.48	0.08					0.00		0.00	0.08	0.10	0.05	0.09	359.56	365.30
	0									1.74	0.00	0.00	0.00		0.00							
EX.801		358.39	18.00	4.80	19.04	0.21	0.04	4.48	0.08					0.07		0.12	0.27	0.35	0.17	0.21	358.60	362.65
	EX.800		15.00							3.56	3.48	12.39	0.19		79.00							
EX.800		359.31	15.00	3.56	24.25	0.30	0.07	3.48	0.05					0.12		0.00	0.16	0.21	0.11	0.18	359.49	362.50
	EX.802		15.00							2.27	4.65	10.55	0.34		0.00							
EX.802		359.60	15.00	2.27	41.75	0.12	0.05	4.65	0.08					0.00		0.00	0.08	0.11	0.05	0.11	359.70	362.90
	0									2.27	0.00	0.00	0.00		0.00							
EXSW83																			Starting Elevation		358.47	
EX.810		358.47	24.00	8.19	6.48	0.13	0.01	5.13	0.10					0.14		0.29	0.54	0.00	0.00	0.54	359.01	364.00
	811		24.00							7.95	5.16	41.01	0.41		90.00							
811		359.01	24.00	7.95	25.39	0.12	0.03	5.16	0.10					0.11		0.23	0.44	0.00	0.00	0.48	359.49	365.59
	EX.812		24.00							5.34	4.59	24.53	0.33		88.00							
EX.812		359.49	24.00	5.34	108.44	0.06	0.06	4.59	0.08					0.07		0.14	0.29	0.00	0.00	0.35	359.84	365.43
	EX.813		24.00							2.29	3.62	8.28	0.20		88.00							
EX.813		359.84	24.00	2.29	224.86	0.01	0.02	3.62	0.05					0.00		0.00	0.05	0.07	0.03	0.06	359.90	367.70
	0									2.29	0.00	0.00	0.00		0.00							



HORIZONTAL SCALE

GRAPHIC SCALE

0 25 50 100

(IN FEET)

1 INCH = 50 FEET

VERTICAL SCALE

GRAPHIC SCALE

0 2.5 5 10

(IN FEET)

1 INCH = 5 FEET

SWM AND BMP NARRATIVE

ALL STORMWATER AND BMP REQUIREMENTS ARE ACHIEVED BY THE UNDERGROUND DETENTION STRUCTURE PROPOSED IN THE OVERALL REVISION TO THE APPROVED CROSSROADS VILLAGE CENTER SITE PLAN #1977, SEE SHEETS 13-29. STORMTECH 8 AND BAYFILTER 8 WILL PROVIDE DETENTION AND TREATMENT FOR THIS SITE. THE EXISTING STORM DRAINAGE SYSTEM WAS DESIGNED FOR A MAXIMUM LOT COVERAGE OF 85%. THE PROPOSED LOT COVERAGE IS 50%. THEREFORE, THE DESIGN PROVIDED IN THE OVERALL REVISION TO THE APPROVED CROSSROADS VILLAGE SITE PLAN IS DEEMED ADEQUATE.

GENERAL NOTES:

1. THE CONTRACTOR SHALL IDENTIFY THE LIMITS OF EXCAVATION AND THE AMOUNT OF EXISTING WATERLINE PIPE THAT WILL BE EXPOSED WITH THE PWCSA FIELD INSPECTOR.

2. PRIOR TO EXCAVATING THE FULL TRENCH, THE CONTRACTOR SHALL TEST PIT AND EXPOSE ALL EXISTING WATERLINE PIPE JOINTS WITHIN THE PLANNED TRENCH AREA. ALL PIPE JOINTS WITHIN THE PLANNED EXCAVATION AREA SHALL BE MECHANICALLY RESTRAINED AGAINST MOVEMENT.

3. THE CONTRACTOR SHALL TEST PIPE AND EXPOSE ALL EXISTING WATERLINE PIPE JOINTS 20 FEET BEYOND THE LIMITS OF PLANNED TRENCH AREA. ALL PIPE JOINTS WITH 20 FEET OF A TRENCH WALL SHALL BE MECHANICALLY RESTRAINED AGAINST MOVEMENT.

4. THE CONTRACTOR SHALL REPLACE THE EXISTING JOINT RESTRAINTS IF THERE ARE ANY SIGNS OF CORROSION.

5. THE CONTRACTOR SHALL SECURE THE EXISTING WATERLINE THAT WILL BE EXPOSED IN THE TRENCH AGAINST MOVEMENT THAT WOULD RESULT IN A BREAK OR LEAK. AT THE REQUEST OF THE PWCSA FIELD INSPECTOR, THE CONTRACTOR SHALL HAVE A PROFESSIONAL ENGINEER CERTIFY THE MEANS AND METHODS PROPOSED TO SUPPORT THE EXISTING PIPE IN WRITING.

6. THE CONTRACTOR SHALL INSTALL #57 STONE FROM UNDISTRIBUTED SOIL TO THE SPRING LINE OF THE EXITING WATERLINE WITH 95% COMPACTION TO PREVENT VOIDS AND SETTLING OF THE BEDDING.

7. THE TOP OF THE PIPE SHALL BE BACKFILLED IN COMPLIANCE WITH PWCSA'S CURRENT UTILITY

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COMMONWEALTH OF VIRGINIA
SEBASTIAN SANDOVAL
Lic. No. 045207
06/30/23
PROFESSIONAL ENGINEER

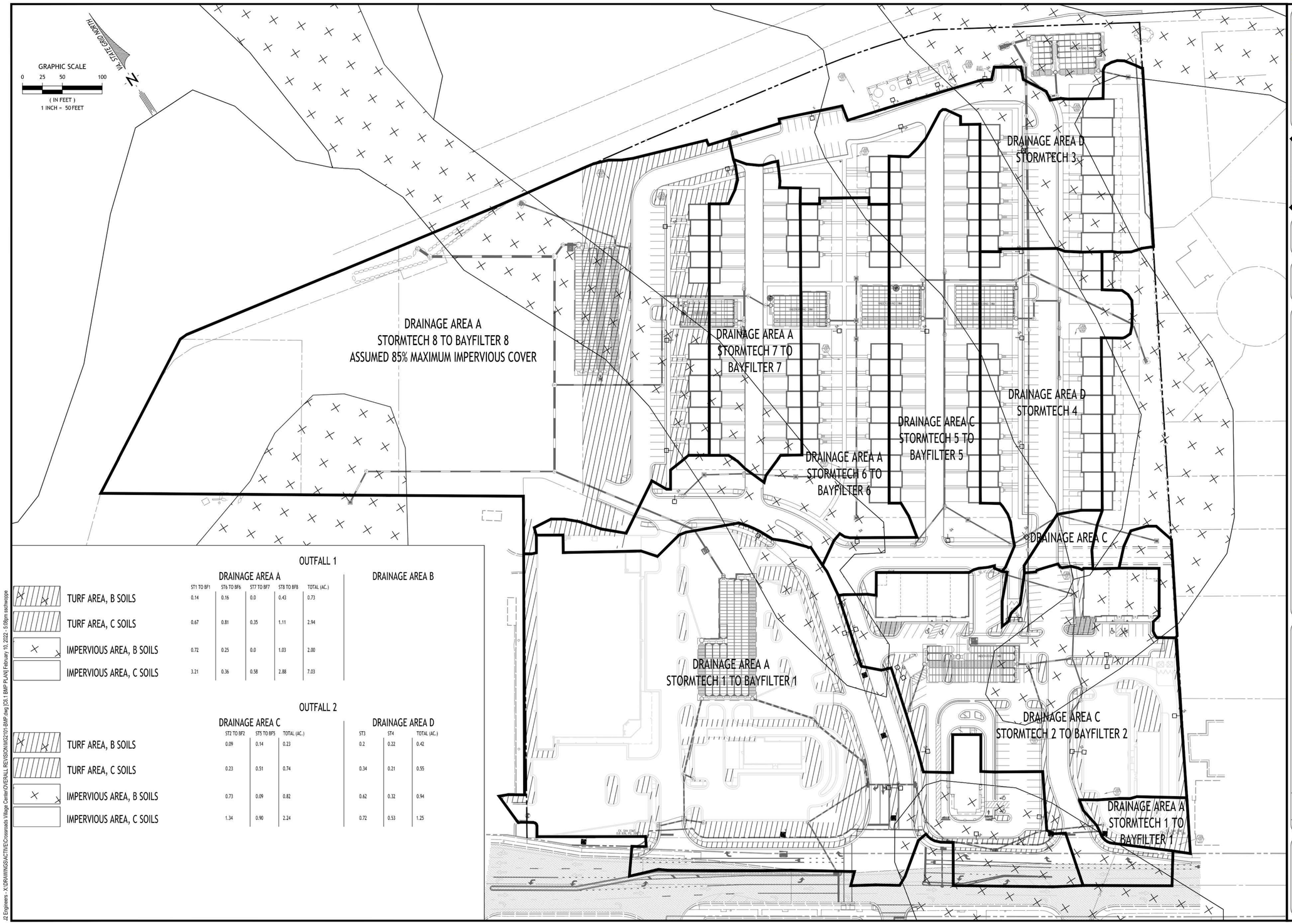
PLAN# BA2201
DATE: MARCH, 2023
CONTOUR INT.= N/A
SCALE: AS NOTED

PLAN DATE
01/06/23
03/17/23
06/30/23

STORM COMPUTATIONS AND PROFILES
FINAL SITE PLAN
KIDDIE ACADEMY AT CROSSROADS VILLAGE CENTER
TOWN OF HAYMARKET, VIRGINIA

No.	DATE	DESCRIPTION
		REVISIONS

SHEET 12 OF 43



OUTFALL 1

	DRAINAGE AREA A					DRAINAGE AREA B
	ST1 TO BF1	ST6 TO BF6	ST7 TO BF7	ST8 TO BF8	TOTAL (AC.)	
TURF AREA, B SOILS	0.14	0.16	0.0	0.43	0.73	
TURF AREA, C SOILS	0.67	0.81	0.35	1.11	2.94	
IMPERVIOUS AREA, B SOILS	0.72	0.25	0.0	1.03	2.00	
IMPERVIOUS AREA, C SOILS	3.21	0.36	0.58	2.88	7.03	

OUTFALL 2

	DRAINAGE AREA C			DRAINAGE AREA D		
	ST2 TO BF2	ST5 TO BF5	TOTAL (AC.)	ST3	ST4	TOTAL (AC.)
TURF AREA, B SOILS	0.09	0.14	0.23	0.2	0.22	0.42
TURF AREA, C SOILS	0.23	0.51	0.74	0.34	0.21	0.55
IMPERVIOUS AREA, B SOILS	0.73	0.09	0.82	0.62	0.32	0.94
IMPERVIOUS AREA, C SOILS	1.34	0.90	2.24	0.72	0.53	1.25

J2 Engineers , X:\DRAWINGS\ACTIVE\Crossroads Village Center\OVERALL REVISIONS\MG2101.BMP dwg [C6.1 BMP PLAN] February 10, 2022 - 5:08pm zsotheoppe

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PLAN# MG2101
DATE: OCTOBER, 2021
CONTOUR INT.= 2'
SCALE: 1"=50'

PLAN DATE
07/30/21
10/08/21
11/10/22
02/10/22

BMP PLAN
REVISION
CROSSROADS VILLAGE CENTER
GAINESVILLE DISTRICT
TOWN OF HAYMARKET, VIRGINIA

No.	DATE	DESCRIPTION
1.	02/10/22	BMP AREAS HAVE BEEN REVISED TO ACCOUNT FOR NEW DRAINAGE DIVIDES AND SURFACE CONDITIONS

REVISIONS

SHEET
C6.1
OF
106

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COMMONWEALTH OF VIRGINIA
SEBASTIAN SANDOVAL
Lic. No. 045207
06/30/23
PROFESSIONAL ENGINEER

PLAN# BA2201
DATE: MARCH, 2023
CONTOUR INT.= N/A
SCALE: N/A

PLAN DATE
01/06/23
03/17/23
06/30/23

SWM & BMP REFERENCE SHEET
FINAL SITE PLAN
KIDDIE ACADEMY AT CROSSROADS VILLAGE CENTER

TOWN OF HAYMARKET, VIRGINIA

No.	DATE	DESCRIPTION

REVISIONS

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43

Attachment: 02 Kiddie Academy at CVC with Updated Drop Off (6224 : Kiddie Academy Site Plan)

Project Name:	Crossroads Village Center
Date:	8/6/2021

CLEAR ALL (Ctrl+Shift+R)

data input cells
constant values
calculation cells
final results

BMP Design Specifications List: 2013 Draft Stds & Specs

Site Information

Post-Development Project (Treatment Volume and Loads)

Land Cover (acres)

	A Soils	B Soils	C Soils	D Soils	Totals
Forest/Open Space (acres) -- undisturbed, protected forest/open space or reforested					0.00
Managed Turf (acres) -- disturbed, graded for yards or other turf to be		2.10	4.37		6.47
Impervious Cover (acres)		3.84	10.44		14.28
					20.75

Constants

Annual Rainfall (inches)	43
Target Rainfall Event (inches)	1.00
Total Phosphorus (TP) EMC (mg/L)	0.26
Total Nitrogen (TN) EMC (mg/L)	1.86
Target TP Load (lb/acre/yr)	0.41
Pj (unitless correction factor)	0.90

Runoff Coefficients (Rv)

	A Soils	B Soils	C Soils	D Soils
Forest/Open Space	0.02	0.03	0.04	0.05
Managed Turf	0.15	0.20	0.22	0.25
Impervious Cover	0.95	0.95	0.95	0.95

Post-Development Requirement for Site Area

TP Load Reduction Required (lb/yr)	25.58

LAND COVER SUMMARY – POST DEVELOPMENT

Land Cover Summary

Forest/Open Space Cover (acres)	0.00
Weighted Rv (forest)	0.00
% Forest	0%
Managed Turf Cover (acres)	6.47
Weighted Rv (turf)	0.21
% Managed Turf	31%
Impervious Cover (acres)	14.28
Rv (impervious)	0.95
% Impervious	69%
Site Area (acres)	**20.75**
Site Rv	**0.72**

Treatment Volume and Nutrient Loads

Treatment Volume (acre-ft)	1.2456
Treatment Volume (cubic feet)	54,259
TP Load (lb/yr)	34.09
TN Load (lb/yr) (Informational Purposes Only)	243.88

Site Results (Water Quality Compliance)

Area Checks	D.A. A	D.A. B	D.A. C	D.A. D	D.A. E	AREA CHECK
FOREST/OPEN SPACE (ac)	0.00	0.00	0.00	0.00	0.00	OK.
IMPERVIOUS COVER (ac)	9.03	0.00	3.06	2.19	0.00	OK.
IMPERVIOUS COVER TREATED (ac)	9.03	0.00	3.06	2.19	0.00	OK.
MANAGED TURF AREA (ac)	3.67	0.00	0.97	0.97	0.00	OK.
MANAGED TURF AREA TREATED (ac)	3.67	0.00	0.97	0.97	0.00	OK.
AREA CHECK	OK.	OK.	OK.	OK.	OK.	

Site Treatment Volume (ft^3): 54,259

Runoff Reduction Volume and TP By Drainage Area

	D.A. A	D.A. B	D.A. C	D.A. D	D.A. E	TOTAL
RUNOFF REDUCTION VOLUME ACHIEVED (ft^3)	0	0	0	0	0	0
TP LOAD AVAILABLE FOR REMOVAL (lb/yr)	21.37	0.00	7.11	5.21	0.00	33.69
TP LOAD REDUCTION ACHIEVED (lb/yr)	14.94	0.00	4.97	2.08	0.00	22.00
TP LOAD REMAINING (lb/yr)	6.43	0.00	2.14	3.13	0.00	11.70
NITROGEN LOAD REDUCTION ACHIEVED (lb/yr)	0.00	0.00	0.00	0.00	0.00	0.00

Total Phosphorus

FINAL POST-DEVELOPMENT TP LOAD (lb/yr)	34.09
TP LOAD REDUCTION REQUIRED (lb/yr)	25.58
TP LOAD REDUCTION ACHIEVED (lb/yr)	22.00
TP LOAD REMAINING (lb/yr):	12.10
REMAINING TP LOAD REDUCTION REQUIRED (lb/yr):	3.59

Total Nitrogen (For Information Purposes)

POST-DEVELOPMENT LOAD (lb/yr)	243.88
NITROGEN LOAD REDUCTION ACHIEVED (lb/yr)	0.00
REMAINING POST-DEVELOPMENT NITROGEN LOAD (lb/yr)	243.88

WATER QUALITY NARRATIVE

USING THE VRRM SPREADSHEET, IT HAS BEEN DETERMINED THAT 25.58 LBS/YR OF PHOSPHORUS REDUCTION IS REQUIRED. THE PHOSPHORUS LOAD REDUCTION REQUIREMENT SHALL BE MET PARTIALLY THROUGH THE USE OF ISOLATOR ROWS OR APPROVED EQUALS AND BAY FILTERS OR APPROVED EQUALS. THE REMAINING 3.59 LBS/YR OF PHOSPHORUS REDUCTION SHALL BE MET THROUGH THE ACQUISITION OF OFF-SITE NUTRIENT CREDITS.

CP NUTRIENT BANK

HUC: 02070011

Applicant: Haymarket Development #1 LLC

1602 Village Market Blvd. Suite 235

Leesburg, VA 20175

RE: Nutrient Offset Availability

Ronald Green, (Broker)

Date: October 7, 2021

Project Reference: Crossroads Village Center

Attention: Scott Schwoppe

This letter is to confirm the availability of authorized nonpoint nutrient offsets at our CP Nutrient Bank project located in Westmoreland County. The CP Nutrient Bank project has received operational status through the Chesapeake Bay Watershed Nutrient Exchange Program (Virginia Code 62.1-44.19:14 et seq.) of the Virginia Department of Environmental Quality. CP Nutrient Bank currently has 27.22 pounds of phosphorus offsets and 426.25 pounds of nitrogen offsets available for transfer in the approved service area in the Potomac River watershed.

These offsets were certified pursuant to the Chesapeake Bay Nutrient Exchange Program by Virginia Department of Environmental Quality and the Virginia Department of Conservation and Recreation to be used as compensation for state or local permit water quality requirements. These offsets have been generated and are transferable according to 10.1-603.8:1 of the code of Virginia.

Per your request, the project would like to purchase 3.59 lbs/yr of phosphorus credits or 56.22 lbs./yr. of nitrogen credits. CP Nutrient Bank upon execution of a credit purchase agreement and payment shall transfer those credits to the project owner. The 3.59 phosphorus credits or 56.22 nitrogen credits shall be available for a period of 30 days from the date of this letter.

If we can provide further assistance please do not hesitate to contact me at 804-908-4171

Sincerely,

Ronald Green, (Broker)

Drainage Area A

OUTFALL 1, STORMTECH 1, 6, 7, 8 TO BAYFILTERS

CLEAR BMP AREAS

Drainage Area A Land Cover (acres)

	A Soils	B Soils	C Soils	D Soils	Totals	Land Cover Rv
Forest/Open Space (acres)					0.00	0.00
Managed Turf (acres)		0.73	2.94		3.67	0.22
Impervious Cover (acres)		2.00	7.03		9.03	0.95
				Total	12.70	

'otal Phosphorus Available for Removal in D.A. A (lb/yr): 21.37

Post Development Treatment Volume in D.A. A (ft^3): 34,018

Stormwater Best Management Practices (RR = Runoff Reduction) --Select from dropdown lists-

Practice	Runoff Reduction Credit (%)	Managed Turf Credit Area (acres)	Impervious Cover Credit Area (acres)	Volume from Upstream Practice (ft^3)	Runoff Reduction (ft^3)	Remaining Runoff Volume (ft^3)	Total BMP Treatment Volume (ft^3)	Phosphorus Removal Efficiency (%)	Phosphorus Load from Upstream Practices (lb)	Untreated Phosphorus Load to Practice (lb)	Phosphorus Removed By Practice (lb)	Remaining Phosphorus Load (lb)	Downstream Practice to be Employed
14. Manufactured Treatment Devices (no RR)													
14.a ISOLATOR ROW	0	3.67	9.03	0	0	34,018	34,018	40	0.00	21.35	8.54	12.81	14.b. MTD - Filtering
BAYFILTER	0			34,018	0	34,018	34,018	50	12.81	0.00	6.40	6.40	

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COMMONWEALTH OF VIRGINIA — SEBASTIAN SANDOVAL — Lic. No. 045207 — 06/30/23 — PROFESSIONAL ENGINEER

PLAN# *BA2201*
DATE: *MARCH, 2023*
CONTOUR INT.= *N/A*
SCALE: *N/A*

PLAN DATE: *01/06/23*, *03/17/23*, *06/30/23*

PLAN# *MG2101*
DATE: *OCTOBER, 2021*
CONTOUR INT.= *2'*
SCALE: *1"=50'*

PLAN DATE: *07/30/21*, *10/06/21*, *12/20/22*, *02/10/22*

BMP WORKSHEET
REVISION
CROSSROADS VILLAGE CENTER
GAINESVILLE DISTRICT
TOWN OF HAYMARKET, VIRGINIA

No.	DATE	DESCRIPTION
1.	02/10/22	BMP AREAS HAVE BEEN REVISED TO ACCOUNT FOR NEW DRAINAGE DIVIDES AND SURFACE CONDITIONS

REVISIONS

SHEET
C6.2
OF
106

SWM & BMP REFERENCE SHEET
FINAL SITE PLAN
KIDDIE ACADEMY AT CROSSROADS VILLAGE CENTER

TOWN OF HAYMARKET, VIRGINIA

No.	DATE	DESCRIPTION

REVISIONS

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Drainage Area C

OUTFALL 2, STORMTECH 2, 5 TO BAYFILTERS

Drainage Area A Land Cover (acres)

CLEAR BMP AREAS

	A Soils	B Soils	C Soils	D Soils	Totals	Land Cover Rv
Forest/Open Space (acres)					0.00	0.00
Managed Turf (acres)		0.23	0.74		0.97	0.22
Impervious Cover (acres)		0.82	2.24		3.06	0.95
				Total	4.03	

Total Phosphorus Available for Removal in D.A. C (lb/yr)	7.11
Post Development Treatment Volume in D.A. C (ft^3)	11,310

Stormwater Best Management Practices (RR = Runoff Reduction)

--Select from dropdown lists-

Practice	Runoff Reduction Credit (%)	Managed Turf Credit Area (acres)	Impervious Cover Credit Area (acres)	Volume from Upstream Practice (ft^3)	Runoff Reduction (ft^3)	Remaining Runoff Volume (ft^3)	Total BMP Treatment Volume (ft^3)	Phosphorus Removal Efficiency (%)	Phosphorus Load from Upstream Practices (lb)	Untreated Phosphorus Load to Practice (lb)	Phosphorus Removed By Practice (lb)	Remaining Phosphorus Load (lb)	Downstream Practice to be Employed
14. Manufactured Treatment Devices (no RR)													
14.a ISOLATOR ROW	0	0.97	3.06	0	0	11,310	11,310	40	0.00	7.10	2.84	4.26	14.b. MTD - Filtering
BAYFILTER	0			11,310	0	11,310	11,310	50	4.26	0.00	2.13	2.13	

Drainage Area D

OUTFALL 2, STORMTECH 3, 4

Drainage Area A Land Cover (acres)

CLEAR BMP AREAS

	A Soils	B Soils	C Soils	D Soils	Totals	Land Cover Rv
Forest/Open Space (acres)					0.00	0.00
Managed Turf (acres)		0.42	0.55		0.97	0.21
Impervious Cover (acres)		0.94	1.25		2.19	0.95
				Total	3.16	

Total Phosphorus Available for Removal in D.A. D (lb/yr)	5.21
Post Development Treatment Volume in D.A. D (ft^3)	8,296

Stormwater Best Management Practices (RR = Runoff Reduction)

--Select from dropdown lists-

Practice	Runoff Reduction Credit (%)	Managed Turf Credit Area (acres)	Impervious Cover Credit Area (acres)	Volume from Upstream Practice (ft^3)	Runoff Reduction (ft^3)	Remaining Runoff Volume (ft^3)	Total BMP Treatment Volume (ft^3)	Phosphorus Removal Efficiency (%)	Phosphorus Load from Upstream Practices (lb)	Untreated Phosphorus Load to Practice (lb)	Phosphorus Removed By Practice (lb)	Remaining Phosphorus Load (lb)	Downstream Practice to be Employed
14. Manufactured Treatment Devices (no RR)													
14.a. ISOLATOR ROW	0	0.97	2.19	0	0	8,296	8,296	40	0.00	5.21	2.08	3.12	

J2 Engineers - X:\DRAWINGS\ACTIVE\Crossroads Village Center\OVERALL REVISION\M02101.BMP.dwg f:\20.3 BMP WORKSHEET] February 10, 2022 - 5:08pm isschnoppe

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PLAN# M02101
DATE: OCTOBER, 2021
CONTOUR INT.= 2'
SCALE: 1"=50'

PLAN DATE
07/30/21
10/06/21
12/08/21
02/10/22

BMP WORKSHEET
REVISION
CROSSROADS VILLAGE CENTER
GAINESVILLE DISTRICT
TOWN OF HAYMARKET, VIRGINIA

No.	DATE	DESCRIPTION
1.	02/10/22	BMP AREAS HAVE BEEN REVISED TO ACCOUNT FOR NEW DRAINAGE DIVIDES AND SURFACE CONDITIONS

REVISIONS

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SEBASTIAN SANDOVAL
Lic. No. 045207
06/30/23
PROFESSIONAL ENGINEER

PLAN# BA2201
DATE: MARCH, 2023
CONTOUR INT.= N/A
SCALE: N/A

PLAN DATE
01/06/23
03/17/23
06/30/23

SWM & BMP REFERENCE SHEET
FINAL SITE PLAN
KIDDIE ACADEMY AT CROSSROADS VILLAGE CENTER

TOWN OF HAYMARKET, VIRGINIA

No.	DATE	DESCRIPTION

REVISIONS

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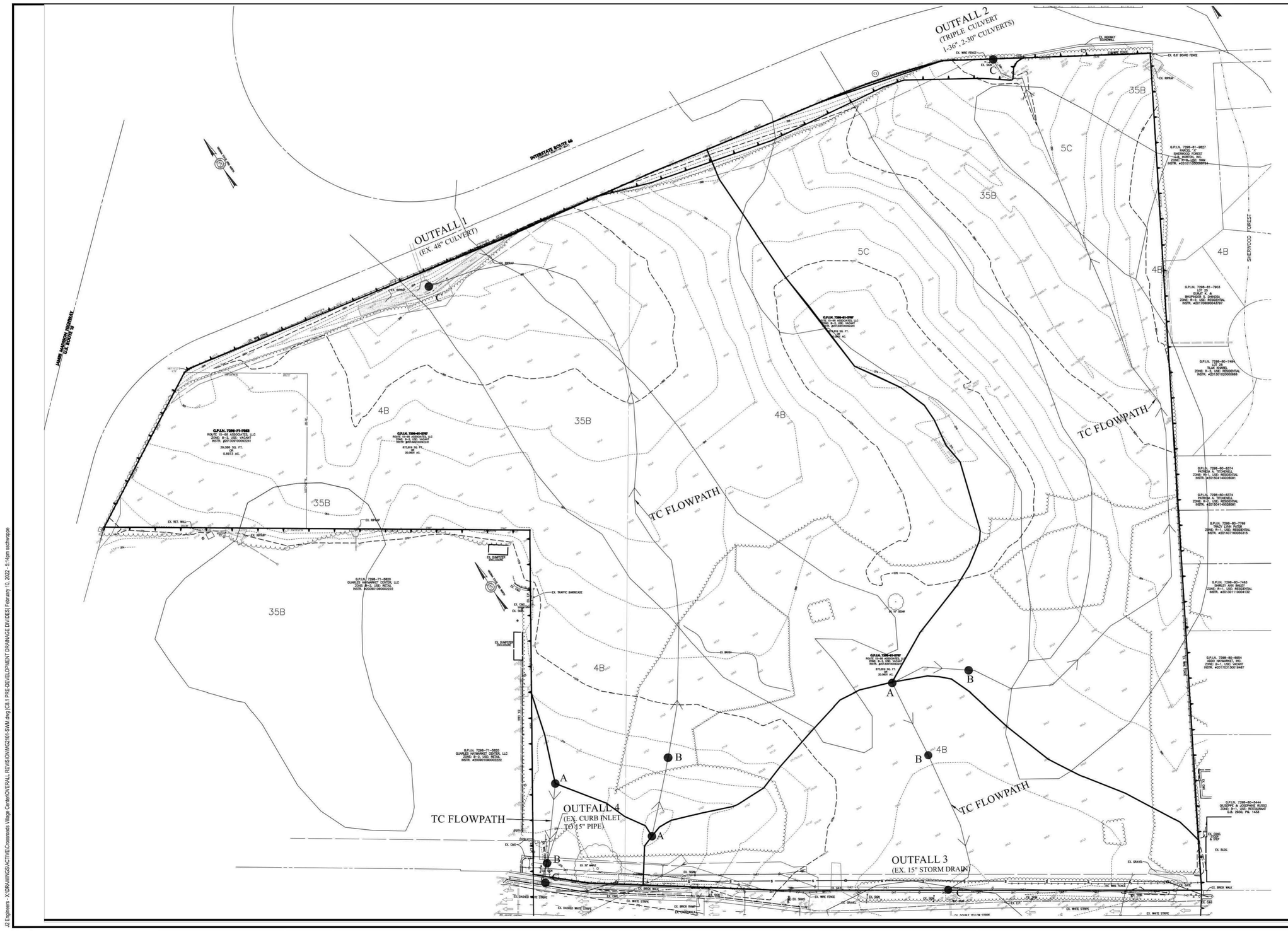
REFERENCE SHEET - FOR INFORMATION PURPOSES ONLY



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PLAN# MG2101
DATE: OCTOBER, 2021
CONTOUR INT.= 2'
SCALE: 1"=50'

PLAN DATE
07/20/22
12/20/22
12/20/22
02/10/23

No.	DATE	DESCRIPTION
		REVISIONS

PRE-DEVELOPMENT DRAINAGE DIVIDES
REVISION
CROSSROADS VILLAGE CENTER
GAINESVILLE DISTRICT
TOWN OF HAYMARKET, VIRGINIA

SHEET
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OF
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COMMONWEALTH OF VIRGINIA
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06/30/23
PROFESSIONAL ENGINEER

PLAN# BA2201
DATE: MARCH, 2023
CONTOUR INT.= N/A
SCALE: N/A

PLAN DATE
01/06/23
03/17/23
06/30/23

No.	DATE	DESCRIPTION
		REVISIONS

SWM & BMP REFERENCE SHEET
FINAL SITE PLAN
KIDDIE ACADEMY AT CROSSROADS VILLAGE CENTER

TOWN OF HAYMARKET, VIRGINIA

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REFERENCE SHEET - FOR INFORMATION PURPOSES ONLY

J2 Engineers - X:\DRAWINGS\ACTIVE\Crossroads Village Center\OVERALL REVISION\MG2101-SWM.dwg [C8.1 PRE-DEVELOPMENT DRAINAGE DIVIDES] February 10, 2022 - 5:14pm aschwope

Pre-Development Flow to Outfalls

Outfall 1 Existing 48 culvert under Route 66

Assume Good Woods
Total drainage area = 10.48 Acres
2.76 Acres B Soils woods, CN = 55
7.72 Acres C Soils woods, CN = 70
Composite CN
2.76 x 55 = 151.80
7.72 x 70 = 540.40
10.48 692.20/10.48 = 66.05 = CN, use 66

Tc
A-B Overland Flow 100 LF, Change in Elevation = 6.0'
From Seelye Chart TC = 11 min.
B-C Shallow Concentrated Flow 830 LF, Change in elevation = 24.5'
S = .0295, V = 2.8 fps, 830/2.8 = 296 seconds = 4.94 min
Total TC = 11+4.94 = 15.94 min., Use 16 minutes

Energy Balance Volume
S = 1000/CN -10 = 5.15
$Q = (P-.2S)^2/P+.8S = (2.51 - .2(5.15))^2/2.51 + .8(5.15) = 2.19/6.63 = .33''$
Volume = 10.48 Acres x .33" x 43560 x 1/12 = 12,554 CF

Pre-Development Flow
1 YR = 2.906 cfs
2 Yr = 6.141
10 Yr = 19.51 cfs
100 Yr = 43.41 cfs

Outfall 2 Existing triple culvert under Route 66
(1-36", 2-30")

Assume Good Woods
Total drainage area = 7.46 Acres
3.21 Acres B Soils woods, CN = 55
4.25 Acres C Soils woods, CN = 70
Composite CN
3.21 x 55 = 176.55
4.25 x 70 = 297.50
7.46 474.05/7.46 = 63.546 = CN, use 63.5

Tc
A-B Overland Flow 100 LF, Change in Elevation = .35'
From Seelye Chart TC = 19 min.
B-C Shallow Concentrated Flow 1010 LF, Change in elevation = 20.7'
S = .0205, V = 2.3 fps, 1010/2.3 = 439.13 seconds = 7.3 min
Total TC = 19+7.3 = 26.3 min., Use 26 minutes

Energy Balance Volume
S = 1000/CN -10 = 1000/63.5 – 10 = 5.748
$Q = (P-.2S)^2/P+.8S = (2.51 - .2(5.748))^2/2.51 + .8(5.748) = 1.85/7.108 = .26''$
Volume = 7.48 Acres x .26" x 43560 x 1/12 = 7041 CF

Pre-Development Flow
1 YR = 0.959 cfs
2 Yr = 2.348 cfs
10 Yr = 8.922 cfs
100 Yr = 21.39 cfs

Outfall 3 Existing 15" storm drain across Washington Street

Assume Good Woods
Total drainage area = 2.64 Acres
0.14 Acres B Soils woods, CN = 55
2.50 Acres C Soils woods, CN = 70
Composite CN
0.14 x 55 = 7.70
2.50 x 70 = 175.00
7.46 182.7/2.64 = 69.20 = CN, use 69.2

Tc
A-B Overland Flow 100 LF, Change in Elevation = 1.20'
From Seelye Chart TC = 12.5 min.
B-C Shallow Concentrated Flow 200 LF, Change in elevation = 3.75'
S = .01875, V = 2.2 fps, 200/2.2 = 90.91 seconds = 1.52 min
Total TC = 15.5+1.52 = 17.02 min., Use 17 minutes

Energy Balance Volume
S = 1000/CN -10 = 1000/69.2 – 10 = 4.45
$Q = (P-.2S)^2/P+.8S = (2.51 - .2(4.45))^2/2.51 + .8(4.45) = 2.62/6.07 = .43''$
Volume = 2.64 Acres x .43" x 43560 x 1/12 = 4121 CF

Pre-Development Flow
1 YR = 1.063 cfs
2 Yr = 1.962 cfs
10 Yr = 5.412 cfs
100 Yr = 11.38 cfs

Outfall 4 Existing Storm Inlet in Washington Street

Assume Good Woods
Total drainage area = 0.37 Acres
0.37 Acres C Soils woods, CN = 70

Tc
A-B Overland Flow 100 LF, Change in Elevation = 2.90'
From Seelye Chart TC = 12.6 min.
B-C Shallow Concentrated Flow 25 LF, Change in elevation = 2.20'
S = .088, V = 4.8 fps, 25/4.8 = 5.2 seconds = 0.08 min
Total TC = 12.6+0.08 = 12.68 min., Use 13 minutes

Energy Balance Volume
S = 1000/CN -10 = 1000/70 – 10 = 4.29
$Q = (P-.2S)^2/P+.8S = (2.51 - .2(4.29))^2/2.51 + .8(4.29) = 2.729/5.942 = .46''$
Volume = 0.37 Acres x .46" x 43560 x 1/12 = 618 CF

Pre-Development Flow
1 YR = 0.200 cfs
2 Yr = 0.354 cfs
10 Yr = 0.927 cfs
100 Yr = 1.907 cfs

OUTFALL 1 PRE-DEVELOPMENT RELEASE RATES

1 YEAR

Hydrograph Summary Report Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
1	SCS Runoff	2.906	1	726	12,717	----	----	----	Pre-Dev Outfall 1

2 YEAR

Hydrograph Summary Report Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
1	SCS Runoff	6.141	1	725	21,723	----	----	----	Pre-Dev Outfall 1

10 YEAR

Hydrograph Summary Report Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
1	SCS Runoff	19.51	1	724	58,042	----	----	----	Pre-Dev Outfall 1

25 YEAR

Hydrograph Summary Report Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
1	SCS Runoff	30.86	1	724	89,451	----	----	----	Pre-Dev Outfall 1

100 YEAR

Hydrograph Summary Report Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
1	SCS Runoff	43.41	1	723	124,337	----	----	----	Pre-Dev Outfall 1

OUTFALL 2 PRE-DEVELOPMENT RELEASE RATES

1 YEAR

Hydrograph Summary Report Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
1	SCS Runoff	0.959	1	734	7,103	----	----	----	Pre-Dev flow to Outfall 2

2 YEAR

Hydrograph Summary Report Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
1	SCS Runoff	2.348	1	732	12,768	----	----	----	Pre-Dev flow to Outfall 2

10 YEAR

Hydrograph Summary Report Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
1	SCS Runoff	8.922	1	730	36,492	----	----	----	Pre-Dev flow to Outfall 2

25 YEAR

Hydrograph Summary Report Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
1	SCS Runoff	14.82	1	730	57,519	----	----	----	Pre-Dev flow to Outfall 2

100 YEAR

Hydrograph Summary Report Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
1	SCS Runoff	21.39	1	730	81,155	----	----	----	Pre-Dev flow to Outfall 2

OUTFALL 3 PRE-DEVELOPMENT RELEASE RATES

1 YEAR

Hydrograph Summary Report Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
1	SCS Runoff	1.063	1	726	4,095	----	----	----	Pre-Development Flow to Outfall 3

2 YEAR

Hydrograph Summary Report Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
1	SCS Runoff	1.962	1	725	6,834	----	----	----	Pre-Development Flow to Outfall 3

10 YEAR

Hydrograph Summary Report Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
1	SCS Runoff	5.412	1	725	18,446	----	----	----	Pre-Development Flow to Outfall 3

100 YEAR

Hydrograph Summary Report Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
1	SCS Runoff	11.38	1	724	33,724	----	----	----	Pre-Development Flow to Outfall 3

OUTFALL 4 PRE-DEVELOPMENT RELEASE RATES

1 YEAR

Hydrograph Summary Report Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
1	SCS Runoff	0.200	1	723	608	----	----	----	Pre-Development Flow to Outfall 4

2 YEAR

Hydrograph Summary Report Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
1	SCS Runoff	0.354	1	722	974	----	----	----	Pre-Development Flow to Outfall 4

10 YEAR

Hydrograph Summary Report Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
1	SCS Runoff	0.927	1	721	2,373	----	----	----	Pre-Development Flow to Outfall 4

100 YEAR

Hydrograph Summary Report Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
1	SCS Runoff	1.907	1	721	4,817	----	----	----	Pre-Development Flow to Outfall 4

Post Development to Outfall and Energy Balance Equation

Outfall 1 – ST 1, ST6, ST7, and ST 8, ST9

Outfall Facility	Flowrates Q1	Q2	Q10	Q100
ST1	0.106 cfs	0.414 cfs	4.366 cfs	29.82 cfs
ST6	0.030 cfs	0.104 cfs	1.626 cfs	8.650 cfs
ST7	0.038 cfs	0.175 cfs	3.189 cfs	7.806 cfs
ST8	0.097 cfs	0.381 cfs	3.731 cfs	25.88 cfs
ST9	0.070 cfs	0.256 cfs	2.301 cfs	20.14 cfs
Total	0.341 cfs			

There is no bypass flow to Outfall 1

Total Post-Dev Volume to Outfall 1

Facility	Area	Weighted CN	Area x CN
ST1	4.31 Acres	93.7	= 403.85
ST6	1.58 Acres	75.7	= 119.61
ST7	0.93 Acres	89.0	= 82.77
ST8	3.92 Acres	84.1	= 329.67
ST9	1.90 Acres	89.4	= 169.86
	12.64 Acres		1105.8/12.64 = 87.5

Post Development Volume
S = 1000/CN – 10 = 1000/87.5 – 10 = 1.43
$Q = (P-.2S)^2/P+.8S = (2.51 - .2(1.43))^2/2.51 + .8(1.43) = 4.946/3.654 = 1.35''$
Volume = 12.64 Acres x 1.35" x 43560 x 1/12 = 61,942.32 CF

1 Year allowable release rate to meet Energy Balance Equation
Q1 post </= Q1 Pre (Volume Pre/Volume Post) x IF
Q1 Post </= 2.906 (12,554/61,942.32) x 0.8
Q1 Post </= 0.47 cfs from site
Since 0.341 cfs < 0.47 cfs, the Energy Balance Equation is met.

Outfall 2 – ST 2, ST3, ST4, and ST 5

Outfall Facility	Flowrates Q1	Q2	Q10	Q100
ST2	0.048 cfs	0.151 cfs	1.612 cfs	20.62 cfs
ST3	0.039 cfs	0.161 cfs	1.621 cfs	12.78 cfs
ST4	0.033 cfs	0.109 cfs	0.998 cfs	11.12 cfs
ST5	0.037 cfs	0.132 cfs	1.424 cfs	13.05 cfs
Total	0.157 cfs			

See Bypass Information Below

Total Post-Dev Volume to Outfall 2

Facility	Area	Weighted CN	Area x CN
ST2	2.30 Acres	93.0	= 213.9
ST3	1.88 Acres	89.7	= 168.6
ST4	1.28 Acres	87.7	= 112.3
ST5	1.64 Acres	87.4	= 143.3
	7.10 Acres		638.1/7.10 = 89.9

Post Development Volume
S = 1000/CN – 10 = 1000/89.9 – 10 = 1.123
$Q = (P-.2S)^2/P+.8S = (2.51 - .2(1.123))^2/2.51 + .8(1.123) = 5.22/3.41 = 1.53''$
Volume = 7.10 Acres x 1.53" x 43560 x 1/12 = 39,433 CF

There is bypass flow to Outfall 2. This needs to be accounted for in the post-development volume and flowrate.

On-site Bypass Flow

1.05 Acres, B Soils Turf x 61 = 64.05
0.22 Acres, C Soils Turf x 74 = 16.28
0.11 Acres, B Soils Pavement x 98 = 10.78
1.38 Acres 91.11/1.38 = 66.0

Volume Bypass
S = 1000/CN – 10 = 1000/66 – 10 = 5.152
$Q = (P-.2S)^2/P+.8S = (2.51 - .2(5.152))^2/2.51 + .8(5.152) = 2.19/6.63 = 0.33''$
Volume = 1.38 Acres x 0.33" x 43560 x 1/12 = 1653.10 CF

Bypass Flow 1.38 Acres, CN = 66, Tc = 26 min

Q1 = 0.275 cfs
Q2 = .584 cfs
Q10 = 1.917 cfs
Q100 = 4.33 cfs

1 Year allowable release rate to meet Energy Balance Equation
Q1 post </= Q1 Pre (Volume Pre/Volume Post) x IF – Bypass Flow
Q1 Post </= 0.959 (7,041/39,433 + 1653.10) x 0.8 – 0.275 cfs
Q1 Post </= 0.13 – Bypass Flow
Since the bypass flow of 0.275 cfs is more than the allowable release rate from the site, **the Energy Balance Equation cannot be met for Outfall 2.** Adequate channel comps will be performed for Outfall 2.

Outfall 3 – Overland Flow to existing 15" SD pipe
125 SF, C soils, Turf
650 SF, C Soils Pavement

Weighted CN
.003 x 74 = .222
.015 x 98 = 1.470
.018 1.692/.018 = 94

Tc = 5 min.

Q1 = 0.059 cfs
Q2 = 0.074 cfs
Q10 = 0.119 cfs
Q100 = 0.184 cfs

Post Development Volume
S = 1000/CN – 10 = 1000/94 – 10 = 0.638
$Q = (P-.2S)^2/P+.8S = (2.51 - .2(0.638))^2/2.51 + .8(0.638) = 5.676/3.020 = 1.88''$
Volume = 0.018 Acres x 1.88" x 43560 x 1/12 = 545.95 CF

1 Year allowable release rate to meet Energy Balance Equation
Q1 post </= Q1 Pre (Volume Pre/Volume Post) x IF – Bypass Flow
Q1 Post </= 1.063 (4121/545.95) x 0.9
Q1 Post </= 7.221

Since, 0.059 cfs < 7.221 cfs, Energy Balance Met

Since the discharge to structure 112 is less than the pre-development flow, there is a reduction in flow to the storm drain system. The channel should then be considered adequate. The **Energy Balance Equation has been met for Outfall 3.**

Outfall 4 – Overland Flow to existing curb inlet
0.044 Acres, C soils, Turf
CN = 74
Tc = 5 min.

Q1 = 0.048 cfs
Q2 = 0.076 cfs
Q10 = 0.172 cfs
Q100 = 0.327 cfs

Post Development Volume
S = 1000/CN – 10 = 1000/74 – 10 = 3.51
$Q = (P-.2S)^2/P+.8S = (2.51 - .2(3.51))^2/2.51 + .8(3.51) = 3.269/5.318 = 0.61''$
Volume = 0.044 Acres x 0.61" x 43560 x 1/12 = 97.43 CF

1 Year allowable release rate to meet Energy Balance Equation
Q1 post </= Q1 Pre (Volume Pre/Volume Post) x IF – Bypass Flow
Q1 Post </= 0.200 (618/97.43) x 0.9
Q1 Post </= 1.417

Since, 0.048 cfs < 1.417 cfs, Energy Balance Met

Since the discharge to the existing curb inlet is less than the pre-development flow, there is a reduction in flow to the storm drain system. The channel should then be considered adequate. The **Energy Balance Equation has been met for Outfall 4.**

Outfall 1

There is an existing 48 inch Culvert under Route 66 at Outfall 1. This culvert was designed to pass the 100 year storm. The pre-development design includes the following flows:
2 year storm = 47.22 cfs
50 year storm = 93.29 cfs
100 year storm = 106.40 cfs.
The 100 year flow must be less than 106.40 cfs to keep the culvert adequate.

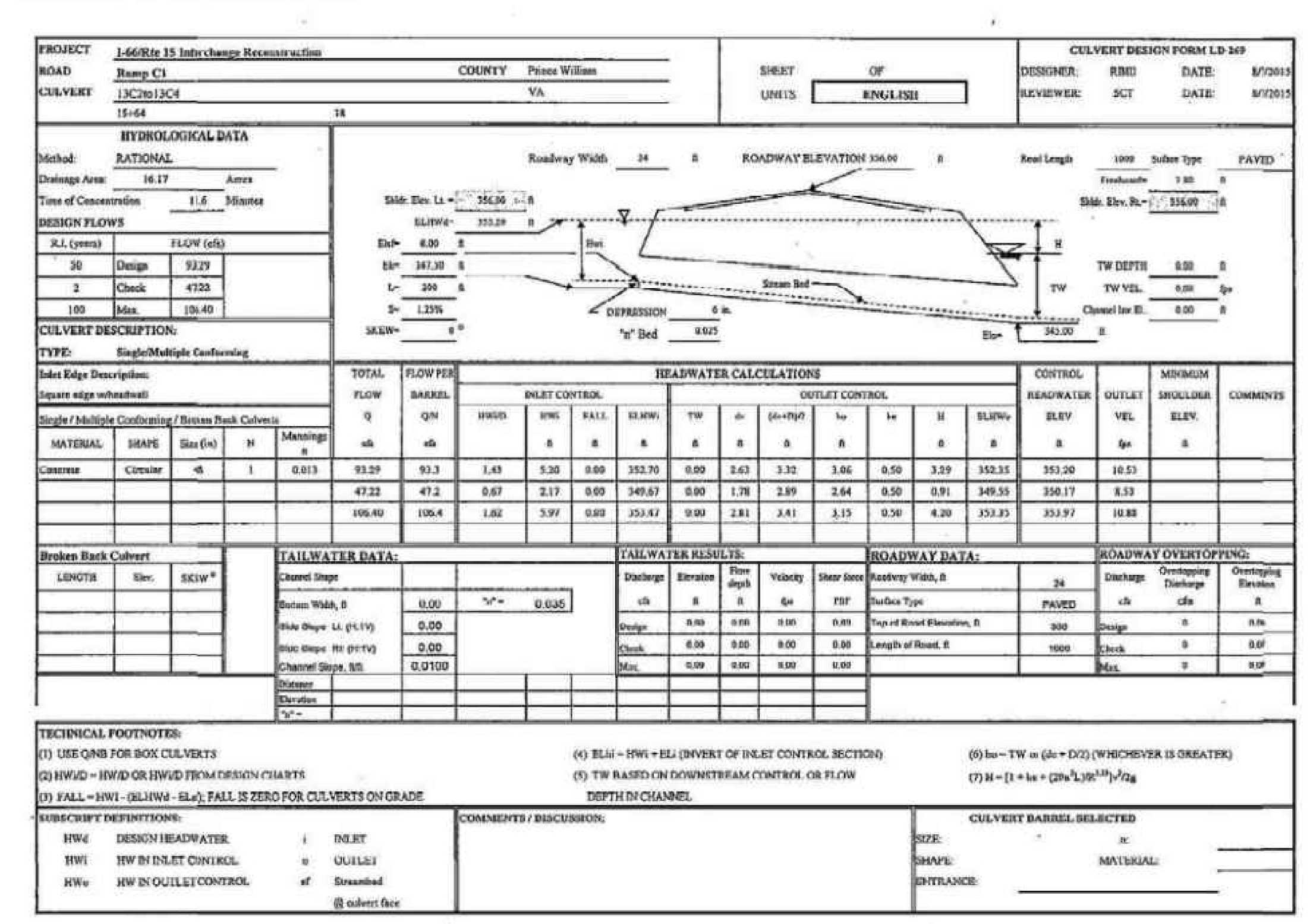
There is offsite flow to this culvert in addition to the onsite flow. The 100 year offsite flow is 12.46 cfs. The total on-site flow is 92.296 cfs. This brings the total post-development flow to the culvert to 104.76 cfs, which is less than the pre-development flow of 106.40 cfs. The existing 48" culvert should not be negatively impacted.

Outfall 2

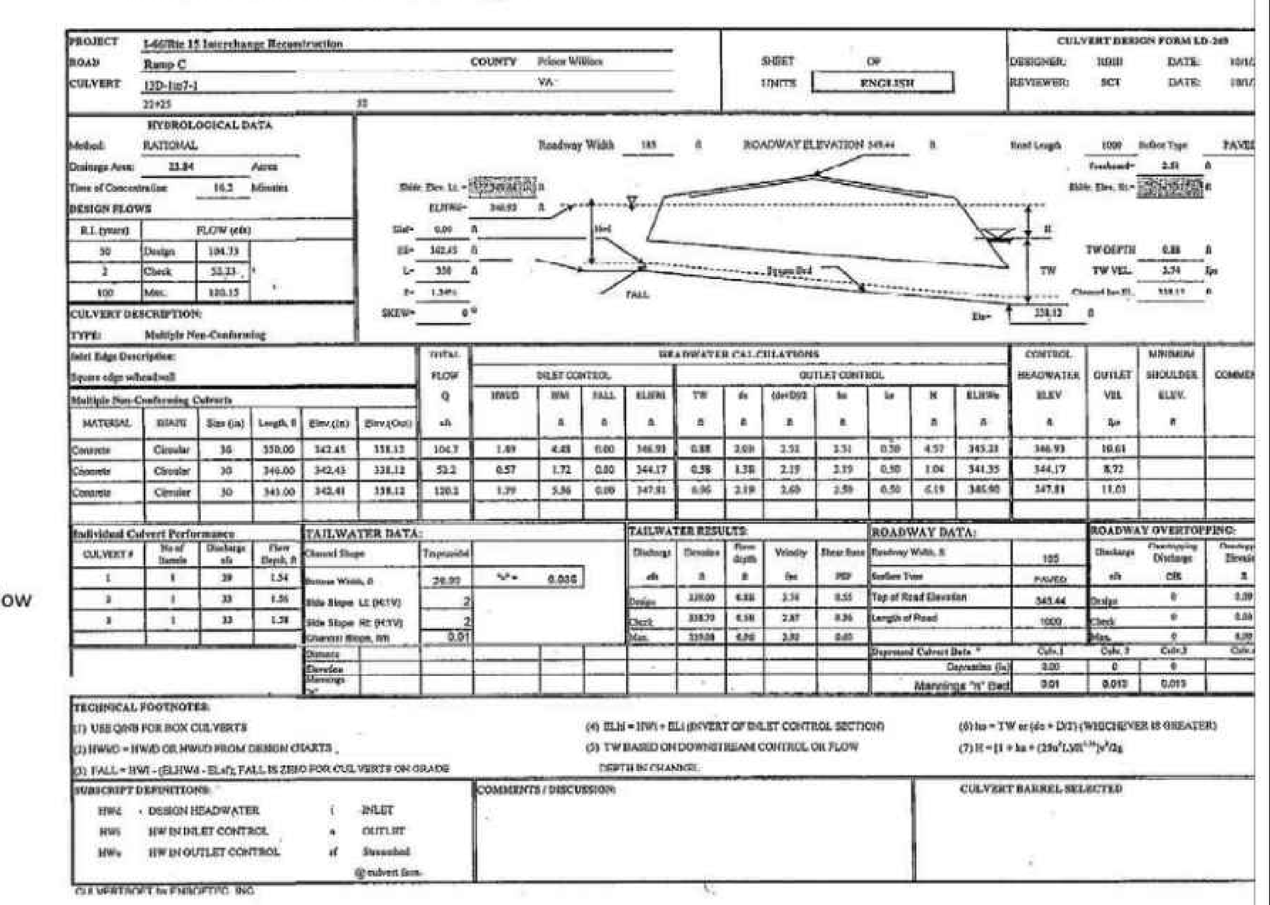
There is an existing triple culvert under Route 66 at Outfall 2. There are two 30" pipes and one 36" pipe. This culvert was designed to pass the 100 year storm. The pre-development design includes the following flows:
2 year storm = 52.23 cfs
50 year storm = 104.73 cfs
100 year storm = 120.15 cfs
The 100 year flow must be less than 120.15 cfs to keep the culvert adequate.

There is 4.18 acres of offsite water entering this culvert through the outfall pipe. There is also flow from the existing stormwater management pond. The total 100 year flow from the offsite area is 31.10 cfs. The 100 year flow from the Sherwood Forest Pond is 13.23 cfs. There is also on-site bypass flow that does not go through the stormwater management facilities, but directly to the storm drain system. The 100 year flow from the on-site bypass area is 4.33 cfs. The total on-site flow through the SWM facilities is 57.57 cfs. This brings the total flow to the culvert to 106.23 cfs, which is less than the pre-development flow of 120.15 cfs. The existing triple culvert should not be negatively impacted.

EXISTING 48" CULVERT COMPS



EXISTING TRIPLE CULVERT COMPS



FOR REVISION NARRATIVE, PLEASE SEE SHEET C8.2A.

OUTFALL ANALYSIS
REVISION
CROSSROADS VILLAGE CENTER
GAINESVILLE DISTRICT
TOWN OF HAYMARKET, VIRGINIA

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PLAN# MG2101
DATE: OCTOBER, 2021
CONTOUR INT.= N/A
SCALE: N/A

REVISIONS
No. | DATE | DESCRIPTION

SHEET C8.2 OF 106

SWM & BMP REFERENCE SHEET
FINAL SITE PLAN
KIDDIE ACADEMY AT CROSSROADS VILLAGE CENTER

TOWN OF HAYMARKET, VIRGINIA

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COMMONWEALTH OF VIRGINIA
SEBASTIAN SANDOVAL
Lic. No. 045207
06/30/23
PROFESSIONAL ENGINEER

PLAN# BA2201
DATE: MARCH, 2023
CONTOUR INT.= N/A
SCALE: N/A

PLAN DATE
01/06/23
03/17/23
06/30/23

REVISIONS
No. | DATE | DESCRIPTION

SHEET 17 OF 43

REFERENCE SHEET - FOR INFORMATION PURPOSES ONLY

J2 Engineers - X:\DRAWINGS\ACTIVE\Crossroads Village Center\OVERALL REVISION\MG2101-SWM.dwg [C8.2 OUTFALL ANALYSIS] February 10, 2022 - 5:14pm sschwoppe

SWM REVISION NARRATIVE

THIS REVISION PROPOSES CHANGES TO ALL STORMTECH SYSTEMS.

OUTFALL 1

STORMTECHS 1, 6, 7, & 8 CONTRIBUTE TO OUTFALL 1.

STORMTECH 9 HAS BEEN REMOVED AND STORMTECH 8 HAS BEEN REVISED TO PROVIDE TREATMENT FOR THE ENTIRE PAD WEST OF THE ZONING LINE AT THE MAXIMUM IMPERVIOUS LOT COVERAGE ALLOWED PER MUNICIPAL CODE AT 85% IMPERVIOUS TO ACCOUNT FOR ANY FUTURE DEVELOPMENT.

STORMTECH 1 HAS A REVISED LAYOUT AND CONTROL STRUCTURE TO ACCOUNT FOR CHANGES ON THIS PORTION OF THE SITE.

STORMTECH 6 HAS A REVISED CONTROL STRUCTURE.

SOTMRTECH 7 HAS A REVISED CONTROL STRUCTURE AND LAYOUT.

THE ORIGINAL POST-CONDITION FLOWS FOR OUTFALL 1 ARE (PER SHEET C8.2):
Q1=0.341 CFS
Q10=15.213 CFS

THE REVISED POST CONDITION 1 YEAR FLOWS FOR OUTFALL 1 ARE (PER SHEETS C9.11-C9.26):
ST1: 0.104 CFS
ST6: 0.040 CFS
ST7: 0.035 CFS
ST8: 0.158 CFS
TOTAL: 0.337 CFS < 0.341 CFS

THE REVISED POST CONDITION 10 YEAR FLOWS FOR OUTFALL 1 ARE (PER SHEETS C9.11-C9.26):
ST1: 4.424 CFS
ST6: 1.563 CFS
ST7: 3.007 CFS
ST8: 5.830 CFS
TOTAL: 14.824 CFS < 15.213 CFS

SINCE THE REVISED POST-CONDITION FLOWS ARE LESS THAN THE ORIGINAL POST-CONDITION FLOWS, ANALYSIS ON SHEET C8.2 IS STILL VALID FOR OUTFALL 1.

OUTFALL 2

STORMTECHS 2, 3, 4, & 5 CONTRIBUTE TO OUTFALL 2.

STORMTECH 2 HAS A REVISED CONTROL STRUCTURE.

STORMTECH 3 HAS A REVISED LAYOUT AND CONTROL STRUCTURE.

STORMTECH 4 HAS A REVISED LAYOUT AND CONTROL STRUCTURE.

STORMTECH 5 HAS A REVISED LAYOUT AND CONTROL STRUCTURE.

THE ORIGINAL POST-CONDITION FLOWS FOR OUTFALL 2 ARE (PER SHEET C8.2):
Q1=0.157 CFS
Q10=5.655 CFS

THE REVISED POST CONDITION 1 YEAR FLOWS FOR OUTFALL 2 ARE (PER SHEETS C9.11-C9.26):
ST2: 0.048 CFS
ST3: 0.036 CFS
ST4: 0.028 CFS
ST5: 0.033 CFS
TOTAL: 0.145 CFS < 0.157 CFS

THE REVISED POST CONDITION 10 YEAR FLOWS FOR OUTFALL 3 ARE (PER SHEETS C9.11-C9.26):
ST2: 1.536 CFS
ST3: 1.604 CFS
ST4: 0.991 CFS
ST5: 1.414 CFS
TOTAL: 5.545 CFS < 5.655 CFS

1 YEAR AND 10 YEAR REVISED POST CONDITION FLOWS ARE LESS THAN ORIGINAL POST CONDITION FLOWS. HOWEVER, OUTFALL 2 DID NOT ORIGINALLY MEET ENERGY BALANCE AND ANAYLSIS OF THE EXISTING DOWNSTREAM CULVERT WAS PERFORMED. THE ORIGINAL DETAINED ON SITE 100 FLOW WAS 57.57 CFS, THE REVISED 100 YEAR POST CONDITION FLOW WAS CALCULATED USING A WEIGHTED CURVE NUMBER ENCOMPASSING THETOTAL DRIANAGE AREA TO STORMTECHS 2, 3, 4, & 5 UTILIZING A TIME OF CONCENTRATION AS SHOWN ON SHEET C8.4.

Summary for Subcatchment 106S: ONSITE DETAINED OUTFALL 2

[47] Hint: Peak is 274% of capacity of segment #2

Runoff = 69.712 cfs @ 12.00 hrs, Volume= 4.095 af, Depth> 6.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-Year Rainfall=8.03"

	Area (ac)	CN	Description
*	0.650	61	B TURF
*	1.290	74	C TURF
*	1.750	98	B IMPERVIOUS
*	3.490	98	C IMPERVIOUS
	7.190	90	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2					**Direct Entry, FROM STORM COMPUTATIONS**
0.2	81	0.0370	6.37	25.463	**TrapVeeRect Channel Flow, DITCH FROM OUTFALL TO C**
					Bot.W=1.00' D=1.00' Z= 3.0 / 1' Top.W=7.00'
					n= 0.030 Earth, grassed & winding
9.4	81	Total			

THE REVISED 100 YEAR FLOW IS 69.712 CFS, WHICH IS GREATER THEN THE ORIGINAL POST CONDITION 100 YEAR FLOW OF 57.57. HOWEVER, THE PRE-CONDITION FLOW TO THE CULVERT IS CALCULATED AS 120.15 CFS PER SHEET C8.3. THE REVISED POST-CONDITION FLOW IS NOW 118.372 CFS WHICH IS LESS THAN THE PRE- CONDITION FLOW. THE EXISTING TRIPLE CULVERT SHOULD NOT BE NEGATIVELY IMPACTED.

OUTFALLS 3 & 4 HAVE REMAINED UNCHANGED WITH THIS REVISION.

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COMMONWEALTH OF VIRGINIA
SEBASTIAN SANDOVAL
PROFESSIONAL ENGINEER

PLAN# MG2101
DATE: OCTOBER, 2021
CONTOUR INT.= N/A
SCALE: N/A

PLAN DATE
07/30/21
12/20/21
12/20/21
02/10/22

OUTFALL ANAYSIS
REVISION
CROSSROADS VILLAGE CENTER
GAINESVILLE DISTRICT
TOWN OF HAYMARKET, VIRGINIA

SWM ANALYSIS FOR OUTFALLS 1 & 2 HAVE BEEN UPDATED PER REVISION CHANGES.

No.	DATE	DESCRIPTION
1.	02/10/22	

REVISIONS

SHEET
C8.2A
OF
106

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COMMONWEALTH OF VIRGINIA
SEBASTIAN SANDOVAL
Lic. No. 045207
06/30/23
PROFESSIONAL ENGINEER

PLAN# BA2201
DATE: MARCH, 2023
CONTOUR INT.= N/A
SCALE: N/A

PLAN DATE
01/06/23
03/17/23
06/30/23

SWM & BMP REFERENCE SHEET
FINAL SITE PLAN
KIDDIE ACADEMY AT CROSSROADS VILLAGE CENTER

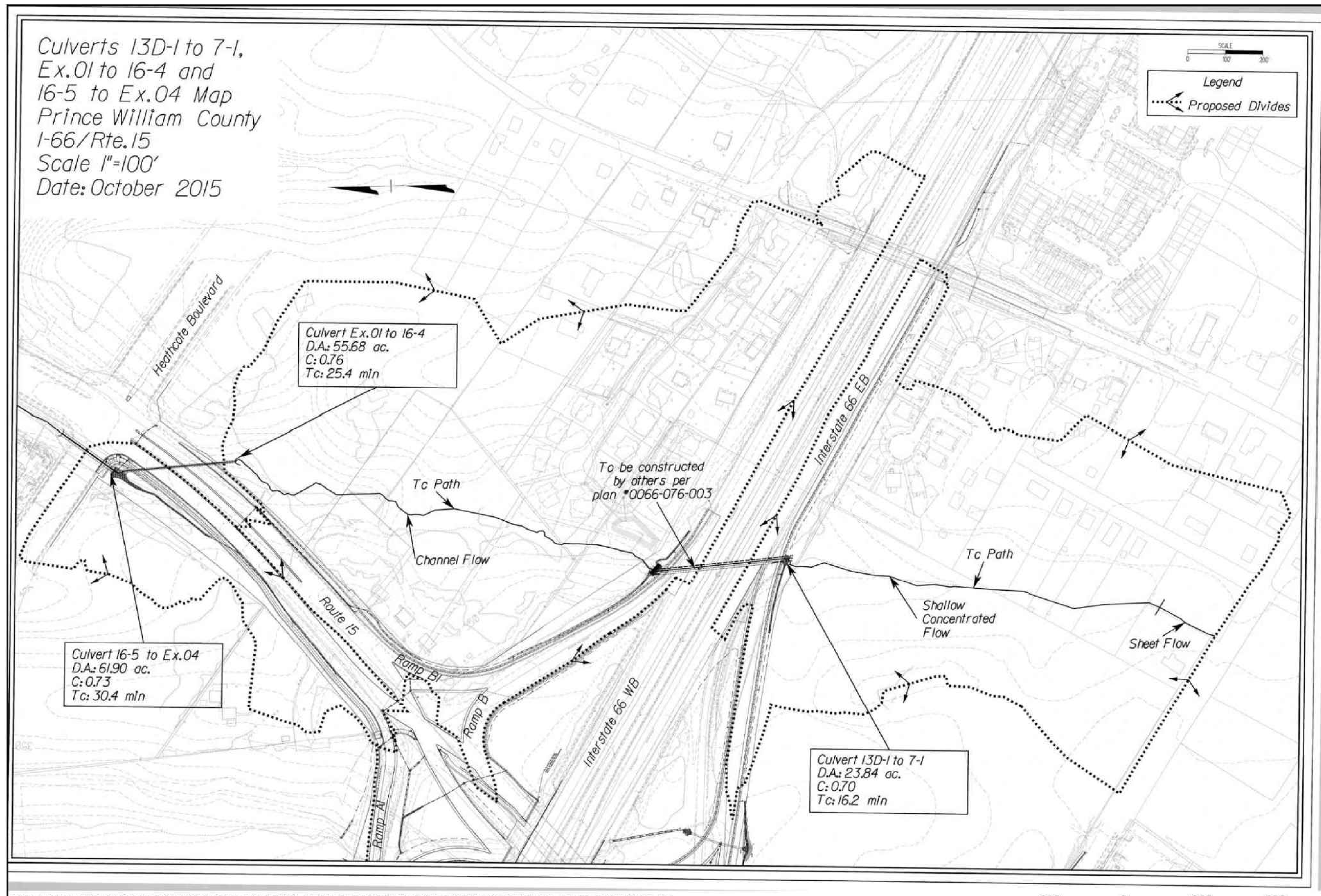
TOWN OF HAYMARKET, VIRGINIA

No.	DATE	DESCRIPTION

REVISIONS

SHEET
18
OF
43

REFERENCE SHEET - FOR INFORMATION PURPOSES ONLY



DRAINAGE DIVIDES FOR CULVERTS AT INTERSECTION OF ROUTE 66 AND ROUTE 15
FROM RDA PLANS, VDOT PROJECT 00666-076-074

CULVERT COMPS FOR CULVERT 13D-1 TO 7-1

CULVERT DESIGN FORM LD-269

PROJECT: I-66/Rte 15 Interchange Reconstruction
ROAD: Ramp C — COUNTY: Prince William, VA
CULVERT: 13D-1to7-1 — 22+25 — 52
SHEET — OF — UNITS: ENGLISH
DESIGNER: RBIII — DATE: 10/1/2015
REVIEWER: SCT — DATE: 10/1/2015

HYDROLOGICAL DATA

Method: RATIONAL
Drainage Area: 23.84 Acres
Time of Concentration: 16.2 Minutes

DESIGN FLOWS

R.I. (years)		FLOW (cfs)
50	Design	104.73
2	Check	52.23
100	Max.	120.15

Roadway Width 185 ft — ROADWAY ELEVATION 349.44 ft — Road Length 1000 — Surface Type PAVED — Freeboard= 2.51 ft
Shldr. Elev. Lt. = 349.44 ft — Shldr. Elev. Rt. = 349.44 ft
ELHWd= 346.93 ft
Elsf= 0.00 ft
Eli= 342.45 ft
L= 350 ft
S= 1.24%
SKEW= 0°
TW-DEPTH 0.88 ft — TW VEL. 3.74 fps — Channel Inv.El. 338.12 ft
Elo= 338.12 ft

CULVERT DESCRIPTION:
TYPE: Multiple Non-Conforming
Inlet Edge Description: Square edge w/headwall
Multiple Non-Conforming Culverts

MATERIAL	SHAPE	Size (in)	Length, ft	Elev.(In)	Elev.(Out)	TOTAL FLOW Q cfs	INLET CONTROL HWi/D	HWi ft	FALL ft	ELHWi ft	OUTLET CONTROL TW ft	dc ft	(dc+D)/2 ft	ho ft	ke	H ft	ELHWo ft	CONTROL HEADWATER ELEV ft	OUTLET VEL fps	MINIMUM SHOULDER ELEV. ft	COMMENTS
Concrete	Circular	36	350.00	342.45	338.12	104.7	1.49	4.48	0.00	346.93	0.88	2.03	2.52	2.51	0.50	4.57	345.21	346.93	10.61		
Concrete	Circular	30	346.00	342.43	338.12	52.2	0.57	1.72	0.00	344.17	0.58	1.38	2.19	2.19	0.50	1.04	341.35	344.17	8.72		
Concrete	Circular	30	343.00	342.41	338.12	120.2	1.79	5.36	0.00	347.81	0.96	2.19	2.60	2.59	0.50	6.19	346.90	347.81	11.01		

Individual Culvert Performance

CULVERT #	No of Barrels	Discharge cfs	Flow Depth, ft
1	1	39	1.54
2	1	33	1.56
3	1	33	1.58

TAILWATER DATA:
Channel Shape: Trapezoidal
Bottom Width, ft: 30.00 — "n" = 0.035
Side Slope Lt (H:1V): 2
Side Slope Rt (H:1V): 2
Channel Slope, ft/ft: 0.01

TAILWATER RESULTS:

	Discharge cfs	Elevation ft	Flow depth ft	Velocity fps	Shearforce PSF
Design	339.00	0.88	3.74	0.55	
Check	338.70	0.58	2.87	0.36	
Max.	339.08	0.96	3.93	0.60	

ROADWAY DATA:
Roadway Width, ft: 185
Surface Type: PAVED
Top of Road Elevation: 349.44
Length of Road: 1000

ROADWAY OVERTOPPING:

	Overtopping Discharge cfs	Overtopping Elevation ft
Design	0	0.00
Check	0	0.00
Max.	0	0.00

Depressed Culvert Data *	Culv.1	Culv.2	Culv.3	Culv.4
Depression (in)	0.00	0	0	
Mannings "n" Bed	0.01	0.013	0.013	

TECHNICAL FOOTNOTES:
(1) USE Q/NB FOR BOX CULVERTS
(2) HWi/D = HW/D OR HWi/D FROM DESIGN CHARTS
(3) FALL = HWi - (ELHWd - ELsf); FALL IS ZERO FOR CULVERTS ON GRADE
(4) ELhi = HWi + ELi (INVERT OF INLET CONTROL SECTION)
(5) TW BASED ON DOWNSTREAM CONTROL OR FLOW DEPTH IN CHANNEL
(6) ho = TW or (dc + D/2) (WHICHEVER IS GREATER)
(7) $H = [1 + ke + (29n^2L)/R^{1.33}]v^2/2g$

SUBSCRIPT DEFINITIONS:
HWd - DESIGN HEADWATER
HWi - HW IN INLET CONTROL
HWo - HW IN OUTLET CONTROL
i - INLET
o - OUTLET
sf - Streambed @ culvert face.

COMMENTS / DISCUSSION:

CULVERT BARREL SELECTED

CULVERTSOFT by ENSOFTEC, INC.

TOTAL POST DEVELOPMENT FLOW TO CULVERT

	OFFSITE FLOW TO CULVERT	BYPASS FLOW TO CULVERT	SHERWOOD FOREST FLOW	ONSITE FLOW Release from SWM	TOTAL FLOW	FROM DESIGN COMPS
1 YR	6.075 CFS	0.275 CFS	NOT GIVEN	0.157 CFS	6.507 CFS & SF	
2 YR	8.711 CFS	0.584 CFS	4.592 CFS	0.553 CFS	14.44 CFS	< 52.23 CFS (2 YR)
10 YR	17.58 CFS	1.917 CFS	7.871 CFS	5.655 CFS	31.106 CFS	104.73 CFS (50 YR)
100 YR	31.10 CFS	4.33 CFS	13.23 CFS	57.57 CFS	106.23 CFS	< 120.15 CFS (100 YR)

DOWNSTREAM CULVERT CAPACITY

CULVERT EX. 01 TO 16-4
GIVEN:
INV. IN = 316.15
INV. OUT = 312.11
L = 310.50'
PIPE SIZE = 72" RCP
SLOPE = 1.30%
ASSUMED:
MAXIMUM ALLOWABLE HWEL = 325.00'

CULVERT CAPACITY = 312.00 CFS

Culvert Report

Hydraflow Express Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. — Monday, Oct 29 2018

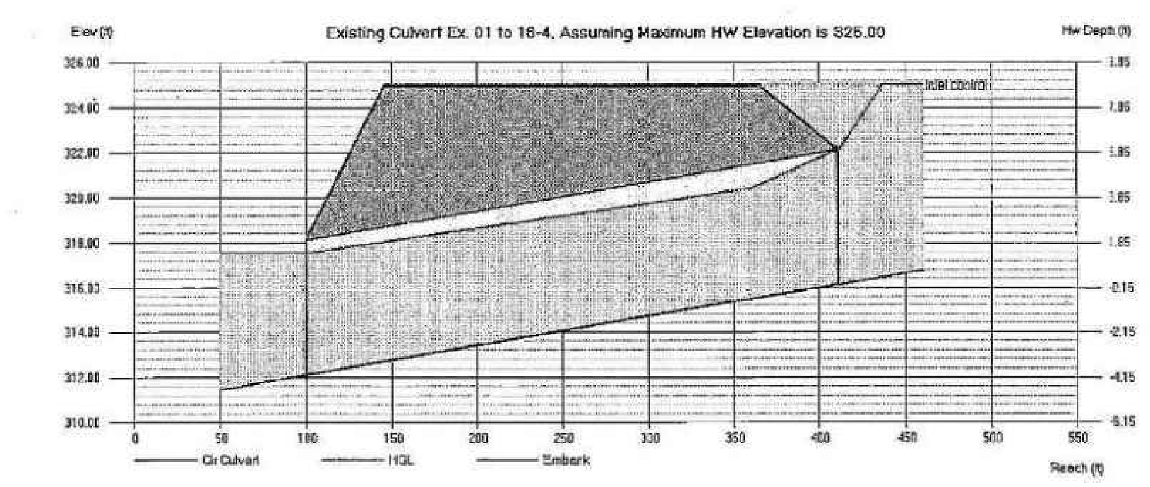
Existing Culvert Ex. 01 to 16-4, Assuming Maximum HW Elevation is 325.00

Invert Elev Dn (ft) = 312.11
Pipe Length (ft) = 310.50
Slope (%) = 1.30
Invert Elev Up (ft) = 316.15
Rise (in) = 72.0
Shape = Cir
Span (in) = 72.0
No. Barrels = 1
n-Value = 0.013
Inlet Edge = Sq Edge
Coeff. K,M,c,Y,k = 0.0098, 2, 0.0398, 0.67, 0.5

Embankment
Top Elevation (ft) = 325.00
Top Width (ft) = 220.00
Crest Width (ft) = 50.00

Calculations
Qmin (cfs) = 312.00
Qmax (cfs) = 312.00
Tailwater Elev (ft) = (dc+D)/2

Highlighted
Qtotal (cfs) = 312.00
Qpipe (cfs) = 312.00
Qovertop (cfs) = 0.00
Veloc Dn (ft/s) = 11.61
Veloc Up (ft/s) = 12.77
HGL Dn (ft) = 317.53
HGL Up (ft) = 320.99
Hw Elev (ft) = 324.98
Hw/D (ft) = 1.47
Flow Regime = Inlet Control



DOWNSTREAM CULVERT CAPACITY

CULVERT 16-5 TO EX. 4
GIVEN:
INV. IN = 309.72, 309.82
INV. OUT = NOT KNOWN
L = 171.50'
PIPE SIZE = TWIN 54" RCP
ASSUMED:
SLOPE = 0.50%
MAXIMUM ALLOWABLE HWEL = 320.00'

CULVERT CAPACITY = 430.00 CFS

Culvert Report

Hydraflow Express Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. — Monday, Oct 29 2018

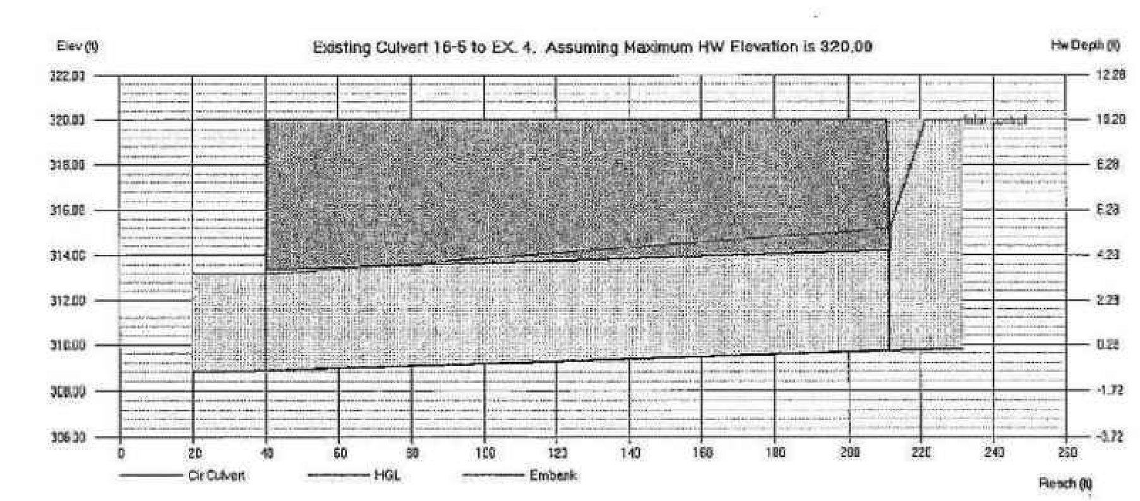
Existing Culvert 16-5 to EX. 4, Assuming Maximum HW Elevation is 320.00

Invert Elev Dn (ft) = 308.86
Pipe Length (ft) = 171.50
Slope (%) = 0.50
Invert Elev Up (ft) = 309.72
Rise (in) = 54.0
Shape = Cir
Span (in) = 54.0
No. Barrels = 2
n-Value = 0.013
Inlet Edge = Sq Edge
Coeff. K,M,c,Y,k = 0.0098, 2, 0.0398, 0.67, 0.5

Embankment
Top Elevation (ft) = 320.00
Top Width (ft) = 170.00
Crest Width (ft) = 50.00

Calculations
Qmin (cfs) = 430.00
Qmax (cfs) = 430.00
Tailwater Elev (ft) = (dc+D)/2

Highlighted
Qtotal (cfs) = 430.00
Qpipe (cfs) = 430.00
Qovertop (cfs) = 0.00
Veloc Dn (ft/s) = 13.71
Veloc Up (ft/s) = 13.52
HGL Dn (ft) = 313.18
HGL Up (ft) = 315.17
Hw Elev (ft) = 320.00
Hw/D (ft) = 2.28
Flow Regime = Inlet Control



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COMMONWEALTH OF VIRGINIA — SEBASTIAN SANDOVAL — PROFESSIONAL ENGINEER

PLAN# MG2101
DATE: OCTOBER, 2021
CONTOUR INT.= N/A
SCALE: N/A

PLAN DATE: 07/30/21, 10/08/21, 12/08/21, 02/10/22

OUTFALL ANALYSIS
REVISION
CROSSROADS VILLAGE CENTER
GAINESVILLE DISTRICT
TOWN OF HAYMARKET, VIRGINIA

REVISIONS — No. — DATE — DESCRIPTION

SHEET C8.3 OF 106

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COMMONWEALTH OF VIRGINIA — SEBASTIAN SANDOVAL — Lic. No. 045207 — 06/30/23 — PROFESSIONAL ENGINEER

PLAN# BA2201
DATE: MARCH, 2023
CONTOUR INT.= N/A
SCALE: N/A

PLAN DATE: 01/06/23, 03/17/23, 06/30/23

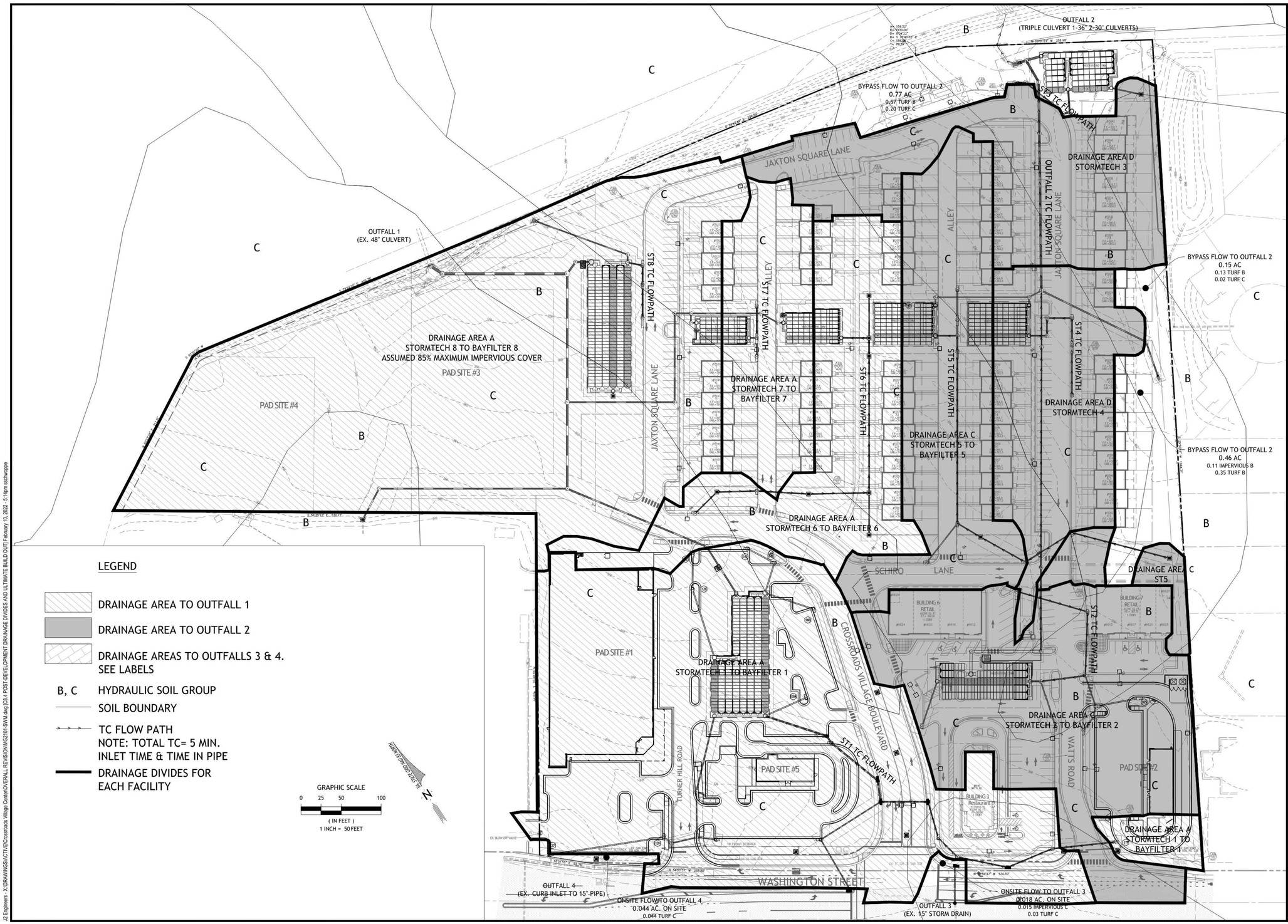
SWM & BMP REFERENCE SHEET
FINAL SITE PLAN
KIDDIE ACADEMY AT CROSSROADS VILLAGE CENTER

TOWN OF HAYMARKET, VIRGINIA

REVISIONS — No. — DATE — DESCRIPTION

SHEET 19 OF 43

REFERENCE SHEET - FOR INFORMATION PURPOSES ONLY



J2 Engineers - X:\DRAWINGS\ACTIVE\Crossroads Village Center\OVERALL REVISION\MG2101-SWM.dwg [C8.4 POST-DEVELOPMENT DRAINAGE DIVIDES AND ULTIMATE BUILD OUT] February 10, 2022 - 5:14pm sschwoppe

REFERENCE SHEET - FOR INFORMATION PURPOSES ONLY

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COMMONWEALTH OF VIRGINIA
SEBASTIAN SANDOVAL
Lic. No. 045207
06/30/23
PROFESSIONAL ENGINEER

PLAN# BA2201
DATE: MARCH, 2023
CONTOUR INT.= N/A
SCALE: N/A

PLAN DATE
01/06/23
03/17/23
06/30/23

PLAN# MG2101
DATE: OCTOBER, 2021
CONTOUR INT.= N/A
SCALE: 1"=50'

PLAN DATE
07/30/21
12/06/21
12/20/21
02/10/22

POST-DEVELOPMENT DRAINAGE DIVIDES AND ULTIMATE BUILD OUT

REVISION

CROSSROADS VILLAGE CENTER

GAINESVILLE DISTRICT
TOWN OF HAYMARKET, VIRGINIA

No.	DATE	DESCRIPTION
1.	02/10/22	BMP AREAS HAVE BEEN REVISED TO ACCOUNT FOR NEW DRAINAGE DIVIDES AND SURFACE CONDITIONS

REVISIONS

SHEET
C8.4
OF
106

SWM & BMP REFERENCE SHEET

FINAL SITE PLAN

KIDDIE ACADEMY AT CROSSROADS VILLAGE CENTER

TOWN OF HAYMARKET, VIRGINIA

No.	DATE	DESCRIPTION

REVISIONS

SHEET
20
OF
43

PROJECT INFORMATION	
ENGINEERED PRODUCT MANAGER:	JIM CLARK 240-403-0124 JAMES.CLARK@ADS-PIPE.COM
ADS SALES REP:	TIM GIMPLE 540-235-4519 TIM.GIMPLE@ADS-PIPE.COM
PROJECT NO:	S092352

ADVANCED DRAINAGE SYSTEMS, INC.

CROSSROADS HAYMARKET

HAYMARKET, VA

STORMTECH CHAMBER SPECIFICATIONS

1. CHAMBERS SHALL BE STORMTECH MC-4500.
2. CHAMBERS SHALL BE MANUFACTURED FROM VIRGIN, IMPACT-MODIFIED POLYPROPYLENE COPOLYMERS.
3. CHAMBER ROWS SHALL PROVIDE CONTINUOUS, UNOBSTRUCTED INTERNAL SPACE WITH NO INTERNAL SUPPORT PANELS THAT WOULD IMPEDE FLOW OR LIMIT ACCESS FOR INSPECTION.
4. THE STRUCTURAL DESIGN OF THE CHAMBERS, THE STRUCTURAL BACKFILL, AND THE INSTALLATION REQUIREMENTS SHALL ENSURE THAT THE LOAD FACTORS SPECIFIED IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SECTION 12.12, ARE MET FOR: 1) LONG-DURATION DEAD LOADS AND 2) SHORT-DURATION LIVE LOADS, BASED ON THE AASHTO DESIGN TRUCK WITH CONSIDERATION FOR IMPACT AND MULTIPLE VEHICLE PRESENCES.
5. CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2418-16, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
6. CHAMBERS SHALL BE DESIGNED AND ALLOWABLE LOADS DETERMINED IN ACCORDANCE WITH ASTM F2787, "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
7. ONLY CHAMBERS THAT ARE APPROVED BY THE SITE DESIGN ENGINEER WILL BE ALLOWED. THE CHAMBER MANUFACTURER SHALL SUBMIT THE FOLLOWING UPON REQUEST TO THE SITE DESIGN ENGINEER FOR APPROVAL BEFORE DELIVERING CHAMBERS TO THE PROJECT SITE:
   a. A STRUCTURAL EVALUATION SEALED BY A REGISTERED PROFESSIONAL ENGINEER THAT DEMONSTRATES THAT THE SAFETY FACTORS ARE GREATER THAN OR EQUAL TO 1.95 FOR DEAD LOAD AND 1.75 FOR LIVE LOAD, THE MINIMUM REQUIRED BY ASTM F2787 AND BY AASHTO FOR THERMOPLASTIC PIPE.
   b. A STRUCTURAL EVALUATION SEALED BY A REGISTERED PROFESSIONAL ENGINEER THAT DEMONSTRATES THAT THE LOAD FACTORS SPECIFIED IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SECTION 12.12, ARE MET. THE 50 YEAR CREEP MODULUS DATA SPECIFIED IN ASTM F2418 MUST BE USED AS PART OF THE AASHTO STRUCTURAL EVALUATION TO VERIFY LONG-TERM PERFORMANCE.
   c. STRUCTURAL CROSS SECTION DETAIL ON WHICH THE STRUCTURAL EVALUATION IS BASED.
8. CHAMBERS AND END CAPS SHALL BE PRODUCED AT AN ISO 9001 CERTIFIED MANUFACTURING FACILITY.

IMPORTANT - THIS PROJECT REQUIRES COMPACTION OF EMBEDMENT STONE AND REQUIREMENTS FOR STONE HARDNESS AND SHAPE WHICH ARE NOT SPECIFIED IN OTHER STORMTECH DOCUMENTS. CONTRACTORS MUST FOLLOW THE SPECIAL PROVISIONS IN THIS PLAN SET.

IMPORTANT - NOTES FOR THE BIDDING AND INSTALLATION OF MC-4500 CHAMBER SYSTEM

1. STORMTECH MC-4500 CHAMBERS SHALL NOT BE INSTALLED UNTIL THE MANUFACTURER'S REPRESENTATIVE HAS COMPLETED A PRE-CONSTRUCTION MEETING WITH THE INSTALLERS.
2. STORMTECH MC-4500 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH MC-3500/MC-4500 CONSTRUCTION GUIDE".
3. CHAMBERS ARE NOT TO BE BACKFILLED WITH A DOZER OR EXCAVATOR SITUATED OVER THE CHAMBERS. STORMTECH RECOMMENDS 3 BACKFILL METHODS:
   - STONESHOOTER LOCATED OFF THE CHAMBER BED.
   - BACKFILL AS ROWS ARE BUILT USING AN EXCAVATOR ON THE FOUNDATION STONE OR SUBGRADE.
   - BACKFILL FROM OUTSIDE THE EXCAVATION USING A LONG BOOM HOE OR EXCAVATOR.
4. THE FOUNDATION STONE SHALL BE LEVELED AND COMPACTED PRIOR TO PLACING CHAMBERS.
5. JOINTS BETWEEN CHAMBERS SHALL BE PROPERLY SEATED PRIOR TO PLACING STONE.
6. MAINTAIN MINIMUM 9" (230 mm) SPACING BETWEEN THE CHAMBER ROWS.
7. INLET AND OUTLET MANIFOLDS MUST BE INSERTED A MINIMUM OF 12" (300 mm) INTO CHAMBER END CAPS.
8. EMBEDMENT STONE SURROUNDING CHAMBERS MUST BE A CLEAN, CRUSHED, ANGULAR STONE MEETING THE AASHTO M43 DESIGNATION OF #3 OR #4.
9. STONE SHALL BE BROUGHT UP EVENLY AROUND CHAMBERS SO AS NOT TO DISTORT THE CHAMBER SHAPE. STONE DEPTHS SHOULD NEVER DIFFER BY MORE THAN 12" (300 mm) BETWEEN ADJACENT CHAMBER ROWS.
10. STONE MUST BE PLACED ON THE TOP CENTER OF THE CHAMBER TO ANCHOR THE CHAMBERS IN PLACE AND PRESERVE ROW SPACING.
11. THE CONTRACTOR MUST REPORT ANY DISCREPANCIES WITH CHAMBER FOUNDATION MATERIAL BEARING CAPACITIES TO THE SITE DESIGN ENGINEER.
12. ADS RECOMMENDS THE USE OF "FLEXSTORM CATCH IT" INSERTS DURING CONSTRUCTION FOR ALL INLETS TO PROTECT THE SUBSURFACE STORMWATER MANAGEMENT SYSTEM FROM CONSTRUCTION SITE RUNOFF.

NOTES FOR CONSTRUCTION EQUIPMENT

1. STORMTECH MC-4500 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH MC-3500/MC-4500 CONSTRUCTION GUIDE".
2. THE USE OF EQUIPMENT OVER MC-4500 CHAMBERS IS LIMITED:
   - NO EQUIPMENT IS ALLOWED ON BARE CHAMBERS.
   - NO RUBBER TIRED LOADER, DUMP TRUCK, OR EXCAVATORS ARE ALLOWED UNTIL PROPER FILL DEPTHS ARE REACHED IN ACCORDANCE WITH THE "STORMTECH MC-3500/MC-4500 CONSTRUCTION GUIDE".
   - WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT CAN BE FOUND IN THE "STORMTECH MC-3500/MC-4500 CONSTRUCTION GUIDE".
3. FULL 36" (900 mm) OF STABILIZED COVER MATERIALS OVER THE CHAMBERS IS REQUIRED FOR DUMP TRUCK TRAVEL OR DUMPING.

USE OF A DOZER TO PUSH EMBEDMENT STONE BETWEEN THE ROWS OF CHAMBERS MAY CAUSE DAMAGE TO THE CHAMBERS AND IS NOT AN ACCEPTABLE BACKFILL METHOD. ANY CHAMBERS DAMAGED BY USING THE "DUMP AND PUSH" METHOD ARE NOT COVERED UNDER THE STORMTECH STANDARD WARRANTY.

CONTACT STORMTECH AT 1-888-892-2694 WITH ANY QUESTIONS ON INSTALLATION REQUIREMENTS OR WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT.

STORMTECH CHAMBER SPECIFICATIONS

1. CHAMBERS SHALL BE STORMTECH MC-3500.
2. CHAMBERS SHALL BE MADE FROM VIRGIN, IMPACT-MODIFIED POLYPROPYLENE COPOLYMERS.
3. CHAMBER ROWS SHALL PROVIDE CONTINUOUS, UNOBSTRUCTED INTERNAL SPACE WITH NO INTERNAL SUPPORT PANELS THAT WOULD IMPEDE FLOW OR LIMIT ACCESS FOR INSPECTION.
4. THE STRUCTURAL DESIGN OF THE CHAMBERS, THE STRUCTURAL BACKFILL, AND THE INSTALLATION REQUIREMENTS SHALL ENSURE THAT THE LOAD FACTORS SPECIFIED IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SECTION 12.12, ARE MET FOR: 1) LONG-DURATION DEAD LOADS AND 2) SHORT-DURATION LIVE LOADS, BASED ON THE AASHTO DESIGN TRUCK WITH CONSIDERATION FOR IMPACT AND MULTIPLE VEHICLE PRESENCES.
5. CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2418-16, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
6. CHAMBERS SHALL BE DESIGNED AND ALLOWABLE LOADS DETERMINED IN ACCORDANCE WITH ASTM F2787, "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
7. ONLY CHAMBERS THAT ARE APPROVED BY THE SITE DESIGN ENGINEER WILL BE ALLOWED. THE CHAMBER MANUFACTURER SHALL SUBMIT THE FOLLOWING UPON REQUEST TO THE SITE DESIGN ENGINEER FOR APPROVAL BEFORE DELIVERING CHAMBERS TO THE PROJECT SITE:
   a. A STRUCTURAL EVALUATION SEALED BY A REGISTERED PROFESSIONAL ENGINEER THAT DEMONSTRATES THAT THE SAFETY FACTORS ARE GREATER THAN OR EQUAL TO 1.95 FOR DEAD LOAD AND 1.75 FOR LIVE LOAD, THE MINIMUM REQUIRED BY ASTM F2787 AND BY AASHTO FOR THERMOPLASTIC PIPE.
   b. A STRUCTURAL EVALUATION SEALED BY A REGISTERED PROFESSIONAL ENGINEER THAT DEMONSTRATES THAT THE LOAD FACTORS SPECIFIED IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SECTION 12.12, ARE MET. THE 50 YEAR CREEP MODULUS DATA SPECIFIED IN ASTM F2418 MUST BE USED AS PART OF THE AASHTO STRUCTURAL EVALUATION TO VERIFY LONG-TERM PERFORMANCE.
   c. STRUCTURAL CROSS SECTION DETAIL ON WHICH THE STRUCTURAL EVALUATION IS BASED.
8. CHAMBERS AND END CAPS SHALL BE PRODUCED AT AN ISO 9001 CERTIFIED MANUFACTURING FACILITY.

IMPORTANT - NOTES FOR THE BIDDING AND INSTALLATION OF MC-3500 CHAMBER SYSTEM

1. STORMTECH MC-3500 CHAMBERS SHALL NOT BE INSTALLED UNTIL THE MANUFACTURER'S REPRESENTATIVE HAS COMPLETED A PRE-CONSTRUCTION MEETING WITH THE INSTALLERS.
2. STORMTECH MC-3500 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH MC-3500/MC-4500 CONSTRUCTION GUIDE".
3. CHAMBERS ARE NOT TO BE BACKFILLED WITH A DOZER OR AN EXCAVATOR SITUATED OVER THE CHAMBERS. STORMTECH RECOMMENDS 3 BACKFILL METHODS:
   - STONESHOOTER LOCATED OFF THE CHAMBER BED.
   - BACKFILL AS ROWS ARE BUILT USING AN EXCAVATOR ON THE FOUNDATION STONE OR SUBGRADE.
   - BACKFILL FROM OUTSIDE THE EXCAVATION USING A LONG BOOM HOE OR EXCAVATOR.
4. THE FOUNDATION STONE SHALL BE LEVELED AND COMPACTED PRIOR TO PLACING CHAMBERS.
5. JOINTS BETWEEN CHAMBERS SHALL BE PROPERLY SEATED PRIOR TO PLACING STONE.
6. MAINTAIN MINIMUM - 9" (230 mm) SPACING BETWEEN THE CHAMBER ROWS.
7. INLET AND OUTLET MANIFOLDS MUST BE INSERTED A MINIMUM OF 12" (300 mm) INTO CHAMBER END CAPS.
8. EMBEDMENT STONE SURROUNDING CHAMBERS MUST BE A CLEAN, CRUSHED, ANGULAR STONE MEETING THE AASHTO M43 DESIGNATION OF #3 OR #4.
9. STONE MUST BE PLACED ON THE TOP CENTER OF THE CHAMBER TO ANCHOR THE CHAMBERS IN PLACE AND PRESERVE ROW SPACING.
10. THE CONTRACTOR MUST REPORT ANY DISCREPANCIES WITH CHAMBER FOUNDATION MATERIALS BEARING CAPACITIES TO THE SITE DESIGN ENGINEER.
11. ADS RECOMMENDS THE USE OF "FLEXSTORM CATCH IT" INSERTS DURING CONSTRUCTION FOR ALL INLETS TO PROTECT THE SUBSURFACE STORMWATER MANAGEMENT SYSTEM FROM CONSTRUCTION SITE RUNOFF.

NOTES FOR CONSTRUCTION EQUIPMENT

1. STORMTECH MC-3500 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH MC-3500/MC-4500 CONSTRUCTION GUIDE".
2. THE USE OF EQUIPMENT OVER MC-3500 CHAMBERS IS LIMITED:
   - NO EQUIPMENT IS ALLOWED ON BARE CHAMBERS.
   - NO RUBBER TIRED LOADER, DUMP TRUCK, OR EXCAVATORS ARE ALLOWED UNTIL PROPER FILL DEPTHS ARE REACHED IN ACCORDANCE WITH THE "STORMTECH MC-3500/MC-4500 CONSTRUCTION GUIDE".
   - WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT CAN BE FOUND IN THE "STORMTECH MC-3500/MC-4500 CONSTRUCTION GUIDE".
3. FULL 36" (900 mm) OF STABILIZED COVER MATERIALS OVER THE CHAMBERS IS REQUIRED FOR DUMP TRUCK TRAVEL OR DUMPING.

USE OF A DOZER TO PUSH EMBEDMENT STONE BETWEEN THE ROWS OF CHAMBERS MAY CAUSE DAMAGE TO CHAMBERS AND IS NOT AN ACCEPTABLE BACKFILL METHOD. ANY CHAMBERS DAMAGED BY USING THE "DUMP AND PUSH" METHOD ARE NOT COVERED UNDER THE STORMTECH STANDARD WARRANTY.

CONTACT STORMTECH AT 1-888-892-2694 WITH ANY QUESTIONS ON INSTALLATION REQUIREMENTS OR WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT.

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STORMTECH CHAMBER SPECIFICATIONS

1. CHAMBERS SHALL BE STORMTECH SC-740 OR SC-310.
2. CHAMBERS SHALL BE MANUFACTURED FROM VIRGIN POLYPROPYLENE OR POLYETHYLENE RESINS.
3. CHAMBER ROWS SHALL PROVIDE CONTINUOUS, UNOBSTRUCTED INTERNAL SPACE WITH NO INTERNAL SUPPORT PANELS THAT WOULD IMPEDE FLOW OR LIMIT ACCESS FOR INSPECTION.
4. THE STRUCTURAL DESIGN OF THE CHAMBERS, THE STRUCTURAL BACKFILL, AND THE INSTALLATION REQUIREMENTS SHALL ENSURE THAT THE LOAD FACTORS SPECIFIED IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SECTION 12.12, ARE MET FOR: 1) LONG-DURATION DEAD LOADS AND 2) SHORT-DURATION LIVE LOADS, BASED ON THE AASHTO DESIGN TRUCK WITH CONSIDERATION FOR IMPACT AND MULTIPLE VEHICLE PRESENCES.
5. CHAMBERS SHALL MEET ASTM F2922 (POLYETHYLENE) OR ASTM F2418-16 (POLYPROPYLENE), "STANDARD SPECIFICATION FOR THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
6. CHAMBERS SHALL BE DESIGNED AND ALLOWABLE LOADS DETERMINED IN ACCORDANCE WITH ASTM F2787, "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
7. ONLY CHAMBERS THAT ARE APPROVED BY THE SITE DESIGN ENGINEER WILL BE ALLOWED. THE CHAMBER MANUFACTURER SHALL SUBMIT THE FOLLOWING UPON REQUEST TO THE SITE DESIGN ENGINEER FOR APPROVAL BEFORE DELIVERING CHAMBERS TO THE PROJECT SITE:
   a. A STRUCTURAL EVALUATION SEALED BY A REGISTERED PROFESSIONAL ENGINEER THAT DEMONSTRATES THAT THE SAFETY FACTORS ARE GREATER THAN OR EQUAL TO 1.95 FOR DEAD LOAD AND 1.75 FOR LIVE LOAD, THE MINIMUM REQUIRED BY ASTM F2787 AND BY AASHTO FOR THERMOPLASTIC PIPE.
   b. A STRUCTURAL EVALUATION SEALED BY A REGISTERED PROFESSIONAL ENGINEER THAT DEMONSTRATES THAT THE LOAD FACTORS SPECIFIED IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SECTION 12.12, ARE MET. THE 50 YEAR CREEP MODULUS DATA SPECIFIED IN ASTM F2418 OR ASTM F2922 MUST BE USED AS PART OF THE AASHTO STRUCTURAL EVALUATION TO VERIFY LONG-TERM PERFORMANCE.
   c. STRUCTURAL CROSS SECTION DETAIL ON WHICH THE STRUCTURAL EVALUATION IS BASED.
8. CHAMBERS AND END CAPS SHALL BE PRODUCED AT AN ISO 9001 CERTIFIED MANUFACTURING FACILITY.

IMPORTANT - NOTES FOR THE BIDDING AND INSTALLATION OF THE SC-310/SC-740 SYSTEM

1. STORMTECH SC-310 & SC-740 CHAMBERS SHALL NOT BE INSTALLED UNTIL THE MANUFACTURER'S REPRESENTATIVE HAS COMPLETED A PRE-CONSTRUCTION MEETING WITH THE INSTALLERS.
2. STORMTECH SC-310 & SC-740 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".
3. CHAMBERS ARE NOT TO BE BACKFILLED WITH A DOZER OR AN EXCAVATOR SITUATED OVER THE CHAMBERS. STORMTECH RECOMMENDS 3 BACKFILL METHODS:
   - STONESHOOTER LOCATED OFF THE CHAMBER BED.
   - BACKFILL AS ROWS ARE BUILT USING AN EXCAVATOR ON THE FOUNDATION STONE OR SUBGRADE.
   - BACKFILL FROM OUTSIDE THE EXCAVATION USING A LONG BOOM HOE OR EXCAVATOR.
4. THE FOUNDATION STONE SHALL BE LEVELED AND COMPACTED PRIOR TO PLACING CHAMBERS.
5. JOINTS BETWEEN CHAMBERS SHALL BE PROPERLY SEATED PRIOR TO PLACING STONE.
6. MAINTAIN MINIMUM - 6" (150 mm) SPACING BETWEEN THE CHAMBER ROWS.
7. EMBEDMENT STONE SURROUNDING CHAMBERS MUST BE A CLEAN, CRUSHED, ANGULAR STONE 3/4-2" (20-50 mm).
8. THE CONTRACTOR MUST REPORT ANY DISCREPANCIES WITH CHAMBER FOUNDATION MATERIALS BEARING CAPACITIES TO THE SITE DESIGN ENGINEER.
9. ADS RECOMMENDS THE USE OF "FLEXSTORM CATCH IT" INSERTS DURING CONSTRUCTION FOR ALL INLETS TO PROTECT THE SUBSURFACE STORMWATER MANAGEMENT SYSTEM FROM CONSTRUCTION SITE RUNOFF.

NOTES FOR CONSTRUCTION EQUIPMENT

1. STORMTECH SC-310 & SC-740 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".
2. THE USE OF CONSTRUCTION EQUIPMENT OVER SC-310 & SC-740 CHAMBERS IS LIMITED:
   - NO EQUIPMENT IS ALLOWED ON BARE CHAMBERS.
   - NO RUBBER TIRED LOADERS, DUMP TRUCKS, OR EXCAVATORS ARE ALLOWED UNTIL PROPER FILL DEPTHS ARE REACHED IN ACCORDANCE WITH THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".
   - WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT CAN BE FOUND IN THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".
3. FULL 36" (900 mm) OF STABILIZED COVER MATERIALS OVER THE CHAMBERS IS REQUIRED FOR DUMP TRUCK TRAVEL OR DUMPING.

USE OF A DOZER TO PUSH EMBEDMENT STONE BETWEEN THE ROWS OF CHAMBERS MAY CAUSE DAMAGE TO THE CHAMBERS AND IS NOT AN ACCEPTABLE BACKFILL METHOD. ANY CHAMBERS DAMAGED BY THE "DUMP AND PUSH" METHOD ARE NOT COVERED UNDER THE STORMTECH STANDARD WARRANTY.

CONTACT STORMTECH AT 1-888-892-2694 WITH ANY QUESTIONS ON INSTALLATION REQUIREMENTS OR WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT.

BAYSAVER BAYFILTER SPECIFICATIONS

PRODUCTS

A. INTERNAL COMPONENTS: ALL COMPONENTS INCLUDING CONCRETE STRUCTURE(S), PVC MANIFOLD PIPING AND FILTER CARTRIDGES, SHALL BE PROVIDED BY BAYSAVER TECHNOLOGIES LLC, 1030 DEER HOLLOW DRIVE, MOUNT AIRY, MD (800.229.7283).

B. PVC MANIFOLD PIPING: ALL INTERNAL PVC PIPE AND FITTINGS SHALL MEET ASTM D1785. MANIFOLD PIPING SHALL BE PROVIDED TO THE CONTRACTOR PARTIALLY PRE-CUT AND PRE-ASSEMBLED.

C. FILTER CARTRIDGES: EXTERNAL SHELL OF THE FILTER CARTRIDGES SHALL BE SUBSTANTIALLY CONSTRUCTED OF POLYETHYLENE OR EQUIVALENT MATERIAL ACCEPTABLE TO THE MANUFACTURER. FILTRATION MEDIA SHALL BE ARRANGED IN A SPIRAL LAYERED FASHION TO MAXIMIZE AVAILABLE FILTRATION AREA. AN ORIFICE PLATE SHALL BE SUPPLIED WITH EACH CARTRIDGE TO RESTRICT THE FLOW RATE TO A MAXIMUM OF 45 GPM.

D. FILTER MEDIA: FILTER MEDIA SHALL BE BY BAYSAVER TECHNOLOGIES LLC AND SHALL CONSIST OF THE FOLLOWING MIX: A BLEND OF ZEOLITE, PERLITE AND ACTIVATED ALUMINA.

E. PRECAST CONCRETE VAULT: CONCRETE STRUCTURES SHALL BE PROVIDED ACCORDING TO ASTM C. THE MATERIALS AND STRUCTURAL DESIGN OF THE DEVICES SHALL BE PER ASTM C478, C857 AND C858. PRECAST CONCRETE SHALL BE PROVIDED BY BAYSAVER TECHNOLOGIES, LLC.

PERFORMANCE

A. THE STORMWATER FILTER SYSTEM SHALL BE AN OFFLINE DESIGN CAPABLE OF TREATING 100% OF THE REQUIRED TREATMENT FLOW AT FULL SEDIMENT LOAD CONDITIONS.
B. THE STORMWATER FILTER SYSTEM'S CARTRIDGES SHALL HAVE NO MOVING PARTS.
C. THE STORMWATER TREATMENT UNIT SHALL BE DESIGNED TO REMOVE AT LEAST 85% OF SUSPENDED SOLIDS, 65% OF TOTAL PHOSPHORUS, 85% OF TURBIDITY, 40% OF TOTAL COPPER, AND 40% OF TOTAL ZINC BASED ON FIELD DATA COLLECTED IN COMPLIANCE WITH THE TECHNOLOGY ACCEPTANCE RECIPROCITY PARTNERSHIP TIER II TEST PROTOCOL.
D. THE STORMWATER FILTRATION SYSTEM SHALL REDUCE INCOMING TURBIDITY (MEASURED AS NTUs) BY 50% OR MORE AND SHALL NOT HAVE ANY COMPONENTS THAT LEACH NITRATES OR PHOSPHATES.
E. THE STORMWATER FILTRATION CARTRIDGE SHALL BE EQUIPPED WITH A HYDRODYNAMIC BACKWASH MECHANISM TO EXTEND THE FILTER'S LIFE AND OPTIMIZE ITS PERFORMANCE.
F. THE STORMWATER FILTRATION SYSTEM SHALL BE DESIGNED TO REMOVE A MINIMUM OF 65% OF THE INCOMING TOTAL PHOSPHORUS (TP) LOAD.
G. THE STORMWATER FILTRATION SYSTEM'S CARTRIDGES SHALL HAVE A TREATED SEDIMENT CAPACITY FOR 80% TSS REMOVAL BETWEEN 150-350 LBS.

BAYFILTER MAINTENANCE

THE BAYFILTER SYSTEM REQUIRES PERIODIC MAINTENANCE TO CONTINUE OPERATING AT ITS PEAK EFFICIENCY DESIGN. THE MAINTENANCE PROCESS COMPRISES THE REMOVAL AND REPLACEMENT OF EACH BAYFILTER CARTRIDGE AND THE CLEANING OF THE VAULT OR MANHOLE WITH A VACUUM TRUCK. FOR BEST RESULTS, BAYFILTER MAINTENANCE SHOULD BE PERFORMED BY A CERTIFIED MAINTENANCE CONTRACTOR. A QUICK CALL TO AN ADS ENGINEER OR CUSTOMER SERVICE REPRESENTATIVE WILL PROVIDE YOU WITH A LIST OF RELIABLE CONTRACTORS IN YOUR AREA.

WHEN BAYFILTER IS INITIALLY INSTALLED, WE RECOMMEND THAT AN INSPECTION BE PERFORMED ON THE SYSTEM IN THE FIRST SIX (6) MONTHS. AFTER THAT, THE INSPECTION CYCLE TYPICALLY FALLS INTO A BIANNUAL PATTERN GIVEN NORMAL STORM OCCURRENCE AND ACTUAL SOLIDS LOADS.

WHEN BAYFILTER EXHIBITS FLOWS BELOW DESIGN LEVELS, THE SYSTEM SHOULD BE INSPECTED AND MAINTAINED AS SOON AS PRACTICAL. REPLACING A BAYFILTER CARTRIDGE SHOULD BE CONSIDERED AT OR ABOVE THE LEVEL OF THE MANIFOLD.

MAINTENANCE PROCEDURES

1. REMOVE THE MANHOLE COVERS AND OPEN ALL ACCESS HATCHES.
2. BEFORE ENTERING THE SYSTEM MAKE SURE THE AIR IS SAFE PER OSHA STANDARDS OR USE A BREATHING APPARATUS. USE LOW O2, HIGH CO, OR OTHER APPLICABLE WARNING DEVICES PER REGULATORY REQUIREMENTS.
3. USING A VACUUM TRUCK, REMOVE ANY LIQUID AND SEDIMENTS THAT CAN BE REMOVED PRIOR TO ENTRY.
4. USING A SMALL LIFT OR THE BOOM OF THE VACUUM TRUCK, REMOVE THE USED CARTRIDGES BY LIFTING THEM OUT.
5. ANY CARTRIDGES THAT CANNOT BE READILY LIFTED CAN BE EASILY SLID ALONG THE FLOOR TO A LOCATION THEY CAN BE LIFTED VIA A BOOM LIFT.
6. WHEN ALL THE CARTRIDGES HAVE BEEN REMOVED, IT IS NOW PRACTICAL TO REMOVE THE BALANCE OF THE SOLIDS AND WATER. LOOSEN THE STAINLESS CLAMPS ON THE FERNCO COUPLINGS FOR THE MANIFOLD AND REMOVE THE DRAINPIPES AS WELL. CAREFULLY CAP THE MANIFOLD AND THE FERNCO'S AND RINSE THE FLOOR, WASHING AWAY THE BALANCE OF ANY REMAINING COLLECTED SOLIDS.
7. CLEAN THE MANIFOLD PIPES, INSPECT, AND REINSTALL.
8. INSTALL THE EXCHANGE CARTRIDGES AND CLOSE ALL COVERS.
9. THE USED CARTRIDGES MUST BE SENT BACK TO ADS FOR EXCHANGE/RECYCLING AND CREDIT ON UNDAMAGED UNITS.

BAYFILTER INSTALLATION NOTES

1. CONTACT UTILITY LOCATOR TO MARK ANY NEARBY UNDERGROUND UTILITIES AND MAKE SURE IT IS SAFE TO EXCAVATE.
2. REFERENCE THE SITE PLAN AND STAKE OUT THE LOCATION OF THE BAYFILTER VAULT.
3. EXCAVATE THE HOLE, PROVIDING ANY SHEETING AND SHORING NECESSARY TO COMPLY WITH ALL FEDERAL, STATE AND LOCAL SAFETY REGULATIONS.
4. LEVEL THE SUB-GRADE TO THE PROPER ELEVATION. VERIFY THE ELEVATION AGAINST THE MANHOLE DIMENSIONS, THE INVERT ELEVATIONS, AND THE SITE PLANS. ADJUST THE BASE AGGREGATE, IF NECESSARY.
5. HAVE THE SOIL BEARING CAPACITY VERIFIED BY A LICENSED/ENGINEER FOR THE REQUIRED LOAD BEARING CAPACITY. ON SOLID SUB-GRADE, SET THE FIRST SECTION OF THE BAYFILTER PRE-CAST VAULT.
6. CHECK THE LEVEL AND ELEVATION OF THE FIRST SECTION TO ENSURE IT IS CORRECT BEFORE ADDING ANY RISER SECTIONS.
7. IF ADDITIONAL SECTION(S) ARE REQUIRED, ADD A WATERTIGHT SEAL TO THE FIRST SECTION OF THE BAYFILTER VAULT. SET ADDITIONAL SECTION(S) OF THE VAULT, ADDING A WATERTIGHT SEAL TO EACH JOINT.
8. INSTALL THE PVC OUTLET MANIFOLD.
9. INSTALL THE PVC OUTLET PIPE IN BAYFILTER VAULT.
10. INSTALL THE INLET PIPE TO THE BAYFILTER VAULT.
11. AFTER THE SITE IS STABILIZED, REMOVE ANY ACCUMULATED SEDIMENT OR DEBRIS FROM THE VAULT AND INSTALL THE FLOW DISKS, DRAINDOWN MODULES (IF APPLICABLE), AND THE BAYFILTER CARTRIDGES.
12. PLACE FULL SET OF HOLD DOWN BARS AND BRACKETS INTO PLACE.

J2 Engineers, Inc.
17739 Main Street
Suite 180
Dumfries, Va. 22026

703.361.1550 (office)
703.956.6845 (fax)
www.j2engineers.com

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COMMONWEALTH OF VIRGINIA
SEBASTIAN SANDOVAL
Lic. No. 045207
06/30/23
PROFESSIONAL ENGINEER

COMMONWEALTH OF VIRGINIA
SEBASTIAN SANDOVAL
PROFESSIONAL ENGINEER

PLAN# BA2201
DATE: MARCH, 2023
CONTOUR INT.= N/A
SCALE: N/A

PLAN# MG2101
DATE: OCTOBER, 2021
CONTOUR INT.= N/A
SCALE: N/T5

PLAN DATE
01/06/23
02/17/23
06/30/23

PLAN DATE
07/30/21
12/06/21
12/20/21
02/10/22

STORMTECH SPECIFICATIONS
REVISION
CROSSROADS VILLAGE CENTER
GAINESVILLE DISTRICT
TOWN OF HAYMARKET, VIRGINIA

No.	DESCRIPTION	DATE
	REVISIONS	

SHEET
C9.1
OF
106

SWM & BMP REFERENCE SHEET
FINAL SITE PLAN
KIDDIE ACADEMY AT CROSSROADS VILLAGE CENTER

TOWN OF HAYMARKET, VIRGINIA

No.	DESCRIPTION	DATE
	REVISIONS	

SHEET
21
OF
43

REFERENCE SHEET - FOR INFORMATION PURPOSES ONLY

J2 Engineers - X:\DRAWINGS\ACTIVE\Crossroads Village Center\OVERALL REVISION\MG2101-SWM.dwg [C9.1 STORMTECH SPECIFICATIONS] February 10, 2022 - 5:15pm sschwope

Attachment: 02 Kiddie Academy at CVC with Updated Drop Off (6224 : Kiddie Academy Site Plan)

PROPOSED LAYOUT - ST5

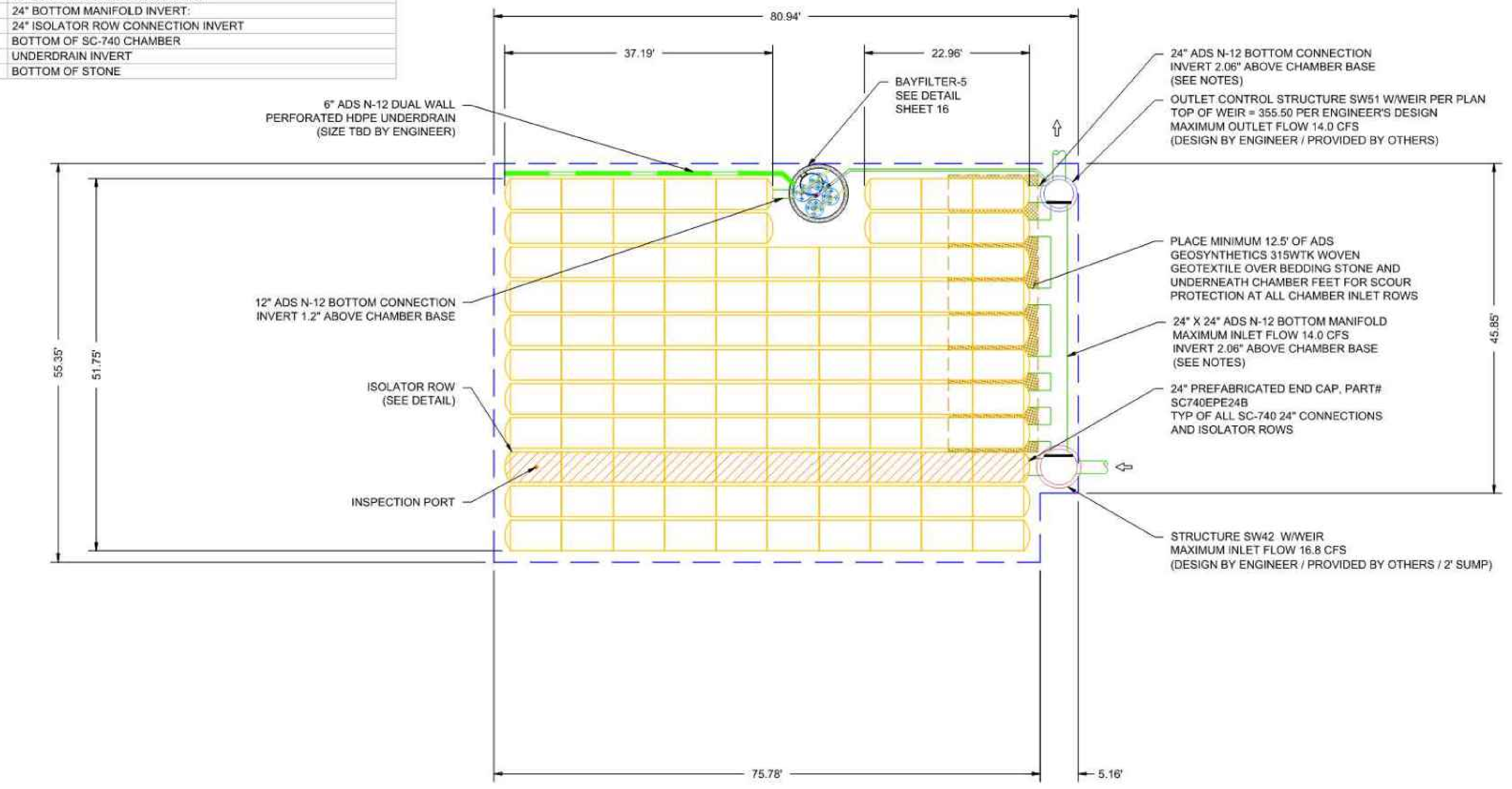
106	STORMTECH SC-740 CHAMBERS
26	STORMTECH SC-740 END CAPS
15	STONE ABOVE (in)
15	STONE BELOW (in)
40	% STONE VOID
10455	**INSTALLED SYSTEM VOLUME (CF)(ABOVE ELEVATION 354.00) (PERIMETER STONE INCLUDED)**
4431	SYSTEM AREA (ft²)
273	SYSTEM PERIMETER (ft)

PROPOSED ELEVATIONS - ST5

365.00	MAXIMUM ALLOWABLE GRADE (TOP OF PAVEMENT/UNPAVED)
359.00	MINIMUM ALLOWABLE GRADE (UNPAVED WITH TRAFFIC)
358.50	MINIMUM ALLOWABLE GRADE (UNPAVED NO TRAFFIC)
358.50	MINIMUM ALLOWABLE GRADE (BASE OF FLEXIBLE PAVEMENT)
358.50	MINIMUM ALLOWABLE GRADE (TOP OF RIGID PAVEMENT)
358.25	TOP OF STONE
357.00	TOP OF SC-740 CHAMBER
354.60	12" BOTTOM CONNECTION INVERT
354.51	24" BOTTOM MANIFOLD INVERT:
354.51	24" ISOLATOR ROW CONNECTION INVERT
354.50	BOTTOM OF SC-740 CHAMBER
354.00	UNDERDRAIN INVERT
353.25	BOTTOM OF STONE

NOTES

- MANIFOLD SIZE TO BE DETERMINED BY SITE DESIGN ENGINEER. SEE TECH SHEET #7 FOR MANIFOLD SIZING GUIDANCE.
- DUE TO THE ADAPTATION OF THIS CHAMBER SYSTEM TO SPECIFIC SITE AND DESIGN CONSTRAINTS, IT MAY BE NECESSARY TO CUT AND COUPLE ADDITIONAL PIPE TO STANDARD MANIFOLD COMPONENTS IN THE FIELD.
- THE SITE DESIGN ENGINEER MUST REVIEW ELEVATIONS AND IF NECESSARY ADJUST GRADING TO ENSURE THE CHAMBER COVER REQUIREMENTS ARE MET.
- THIS CHAMBER SYSTEM WAS DESIGNED WITHOUT SITE-SPECIFIC INFORMATION ON SOIL CONDITIONS OR BEARING CAPACITY. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR DETERMINING THE SUITABILITY OF THE SOIL AND PROVIDING THE BEARING CAPACITY OF THE INSITU SOILS. THE BASE STONE DEPTH MAY BE INCREASED OR DECREASED ONCE THIS INFORMATION IS PROVIDED.
- THE SITE DESIGN ENGINEER MUST REVIEW THE PROXIMITY OF THE CHAMBERS TO THE BUILDING/STRUCTURE. NO FOUNDATION LOADS SHALL BE TRANSMITTED TO THE CHAMBERS. THE SITE DESIGN ENGINEER MUST CONSIDER EFFECTS OF POSSIBLE SATURATED SOILS ON BEARING CAPACITY OF SOILS AND SEEPAGE INTO BASEMENTS.



CROSSROADS HAYMARKET
HAYMARKET, VA

DATE: 8/02/18 | DRAWN: LAH | PROJECT #: S092352 | CHECKED: KMS

DATE	DRWN	CHKD	DESCRIPTION
01/23/22	ALI	—	ADDED OUTLET WEIRS TO ST4&5 PER MARKUPS; ADDED 2' SUMP ON IR STRS.
01/06/22	MDG	MDG	UPDATED BAYFILTER ELEVATIONS PER MARKUP
11/12/21	AVM	JPR	UPDATED PER MARK UP
08-04-2021	LAH	JPR	REV ST8 TO 222 CHAMBERS
7/28/21	KLJ	KLJ	REV ST1 & BF1 PER NEW CIVIL PLAN
7/23/21	LAH	CJD	COMBINED ST 8 & 9 ADD BF 8
3/14/19	LAH	JPR	REV MANIFOLDS
9/10/18	LAH	CJD	REV PER ENG COM./MARK-UPS
09-03-2021	LAH	CJD	REV PER ENG

StormTech® Detention•Retention•Water Quality
70 INWOOD ROAD, SUITE 3 | ROCKY HILL | CT | 06067
860-529-8188 | 888-892-2694 | WWW.STORMTECH.COM

ADS® ADVANCED DRAINAGE SYSTEMS, INC.
4640 TRUEMAN BLVD
HILLIARD, OH 43026

0 15' 30'

THIS DRAWING HAS BEEN PREPARED BASED ON INFORMATION PROVIDED TO ADS UNDER THE DIRECTION OF THE SITE DESIGN ENGINEER OR OTHER PROJECT REPRESENTATIVE. THE SITE DESIGN ENGINEER SHALL REVIEW THIS DRAWING PRIOR TO CONSTRUCTION. IT IS THE ULTIMATE RESPONSIBILITY OF THE SITE DESIGN ENGINEER TO ENSURE THAT THE PRODUCT(S) DEPICTED AND ALL ASSOCIATED DETAILS MEET ALL APPLICABLE LAWS, REGULATIONS, AND PROJECT REQUIREMENTS.

SHEET 9 OF 29

PROPOSED LAYOUT - ST6

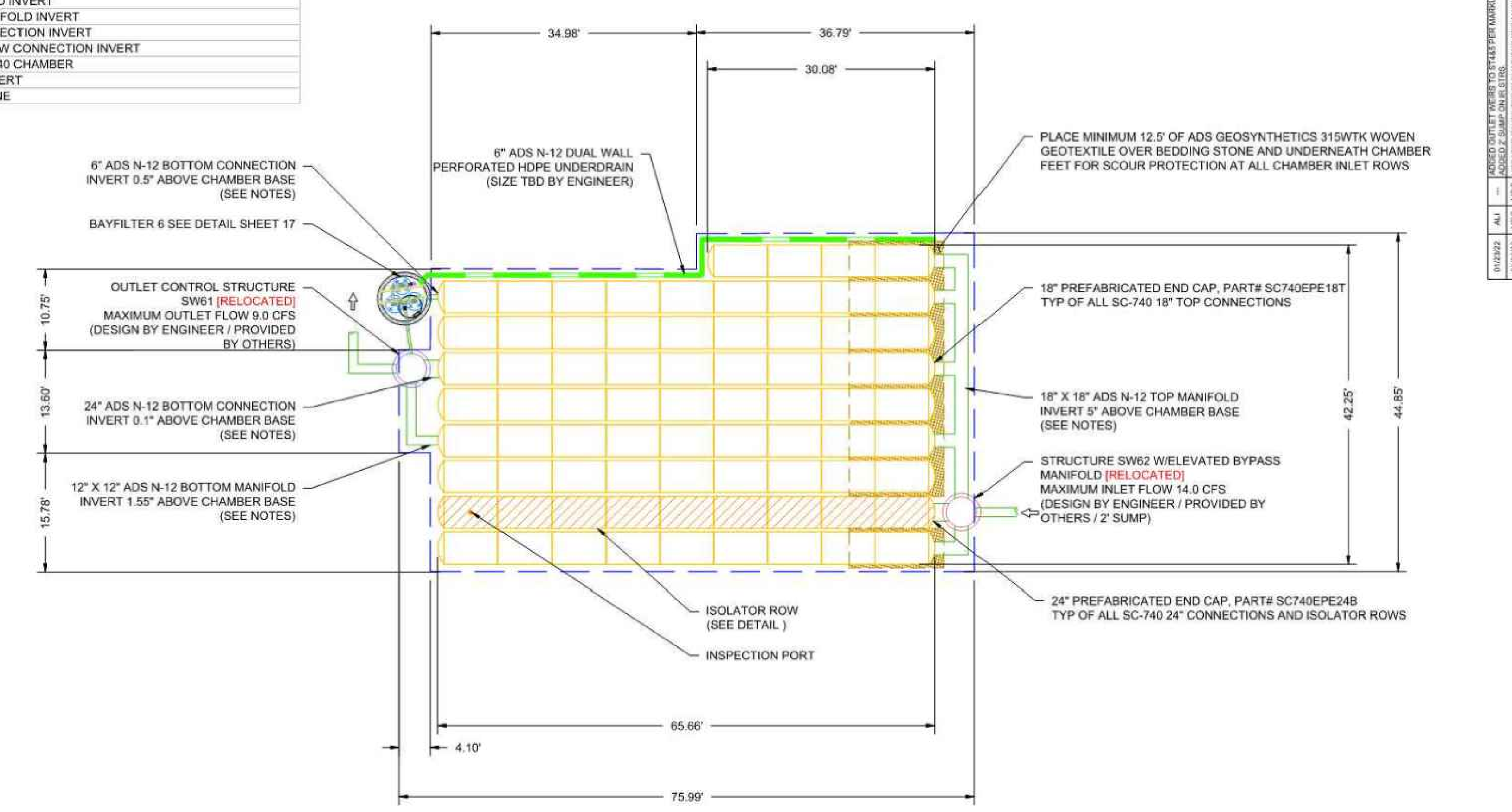
76	STORMTECH SC-740 CHAMBERS
18	STORMTECH SC-740 END CAPS
18	STONE ABOVE (in)
12	STONE BELOW (in)
40	% STONE VOID
7697	**INSTALLED SYSTEM VOLUME (CF)(ABOVE ELEVATION 357.60) (PERIMETER STONE INCLUDED)**
3112	SYSTEM AREA (ft²)
242	SYSTEM PERIMETER (ft)

PROPOSED ELEVATIONS - ST6

368.60	MAXIMUM ALLOWABLE GRADE (TOP OF PAVEMENT/UNPAVED)
362.60	MINIMUM ALLOWABLE GRADE (UNPAVED WITH TRAFFIC)
362.10	MINIMUM ALLOWABLE GRADE (UNPAVED NO TRAFFIC)
362.10	MINIMUM ALLOWABLE GRADE (BASE OF FLEXIBLE PAVEMENT)
362.10	MINIMUM ALLOWABLE GRADE (TOP OF RIGID PAVEMENT)
362.10	TOP OF STONE
360.60	TOP OF SC-740 CHAMBER
358.52	18" TOP MANIFOLD INVERT
358.20	12" BOTTOM MANIFOLD INVERT
358.15	6" BOTTOM CONNECTION INVERT
358.11	24" ISOLATOR ROW CONNECTION INVERT
358.10	BOTTOM OF SC-740 CHAMBER
357.60	UNDERDRAIN INVERT
357.10	BOTTOM OF STONE

NOTES

- MANIFOLD SIZE TO BE DETERMINED BY SITE DESIGN ENGINEER. SEE TECH SHEET #7 FOR MANIFOLD SIZING GUIDANCE.
- DUE TO THE ADAPTATION OF THIS CHAMBER SYSTEM TO SPECIFIC SITE AND DESIGN CONSTRAINTS, IT MAY BE NECESSARY TO CUT AND COUPLE ADDITIONAL PIPE TO STANDARD MANIFOLD COMPONENTS IN THE FIELD.
- THE SITE DESIGN ENGINEER MUST REVIEW ELEVATIONS AND IF NECESSARY ADJUST GRADING TO ENSURE THE CHAMBER COVER REQUIREMENTS ARE MET.
- THIS CHAMBER SYSTEM WAS DESIGNED WITHOUT SITE-SPECIFIC INFORMATION ON SOIL CONDITIONS OR BEARING CAPACITY. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR DETERMINING THE SUITABILITY OF THE SOIL AND PROVIDING THE BEARING CAPACITY OF THE INSITU SOILS. THE BASE STONE DEPTH MAY BE INCREASED OR DECREASED ONCE THIS INFORMATION IS PROVIDED.
- THE SITE DESIGN ENGINEER MUST REVIEW THE PROXIMITY OF THE CHAMBERS TO THE BUILDING/STRUCTURE. NO FOUNDATION LOADS SHALL BE TRANSMITTED TO THE CHAMBERS. THE SITE DESIGN ENGINEER MUST CONSIDER EFFECTS OF POSSIBLE SATURATED SOILS ON BEARING CAPACITY OF SOILS AND SEEPAGE INTO BASEMENTS.



SHEET 10 OF 29

PROPOSED LAYOUT - ST7

57	STORMTECH SC-740 CHAMBERS
14	STORMTECH SC-740 END CAPS
10	STONE ABOVE (in)
12	STONE BELOW (in)
40	% STONE VOID
5366	**INSTALLED SYSTEM VOLUME (CF) (ABOVE ELEVATION 359.30) (PERIMETER STONE INCLUDED)**
2475	SYSTEM AREA (ft²)
216	SYSTEM PERIMETER (ft)

PROPOSED ELEVATIONS - ST7

370.30	MAXIMUM ALLOWABLE GRADE (TOP OF PAVEMENT/UNPAVED)
364.30	MINIMUM ALLOWABLE GRADE (UNPAVED WITH TRAFFIC)
363.80	MINIMUM ALLOWABLE GRADE (UNPAVED NO TRAFFIC)
363.80	MINIMUM ALLOWABLE GRADE (BASE OF FLEXIBLE PAVEMENT)
363.80	MINIMUM ALLOWABLE GRADE (TOP OF RIGID PAVEMENT)
363.13	TOP OF STONE
362.30	TOP OF SC-740 CHAMBER
360.22	18" TOP MANIFOLD INVERT
359.90	12" BOTTOM MANIFOLD INVERT
359.85	6" BOTTOM CONNECTION INVERT
359.81	24" BOTTOM MANIFOLD INVERT
359.81	24" ISOLATOR ROW CONNECTION INVERT
359.80	BOTTOM OF SC-740 CHAMBER
359.30	UNDERDRAIN INVERT
358.80	BOTTOM OF STONE

NOTES

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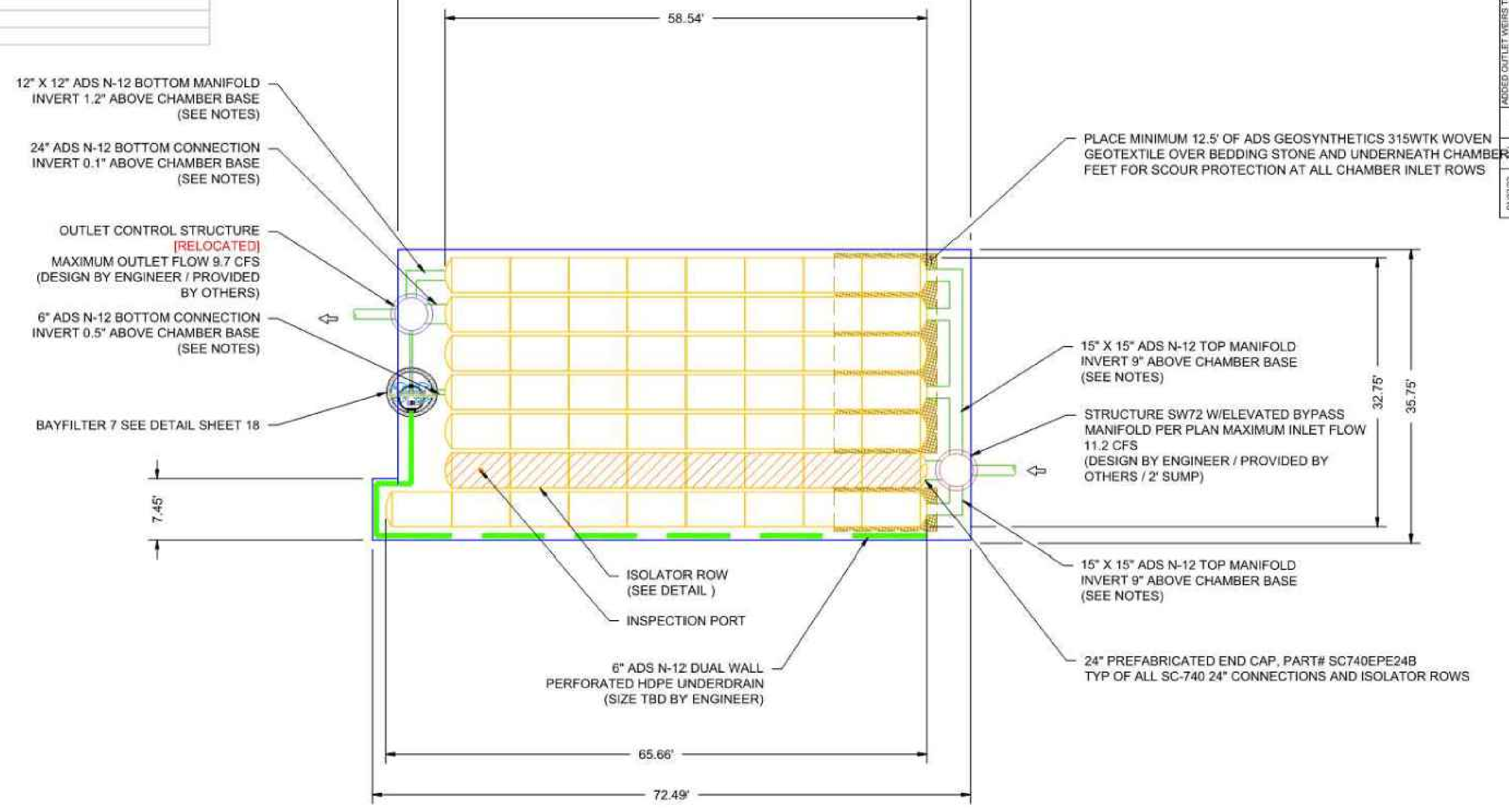

SHEET 11 OF 29

PROPOSED LAYOUT - ST8

222	STORMTECH MC-4500 CHAMBERS
12	STORMTECH MC-4500 END CAPS
12	STONE ABOVE (in)
36	STONE BELOW (in)
40	% STONE VOID
39,558	**INSTALLED SYSTEM VOLUME (CF) ABOVE ELEVATION 352.20 (PERIMETER STONE INCLUDED)**
9,291	SYSTEM AREA (ft²)
445	SYSTEM PERIMETER (ft)

PROPOSED ELEVATIONS - ST8

366.00	MAXIMUM GRADE ENGINEERS PLAN
360.45	MINIMUM ALLOWABLE GRADE (UNPAVED WITH TRAFFIC)
359.95	MINIMUM ALLOWABLE GRADE (UNPAVED NO TRAFFIC)
359.95	MINIMUM ALLOWABLE GRADE (BASE OF FLEXIBLE PAVEMENT)
359.95	MINIMUM ALLOWABLE GRADE (TOP OF RIGID PAVEMENT)
358.95	TOP OF STONE
357.95	TOP OF MC-4500 CHAMBER
354.87	24" TOP MANIFOLD INVERT
353.22	36" BOTTOM CONNECTION INVERT
353.20	30" BOTTOM MANIFOLD/CONNECTION INVERT
353.14	24" ISOLATOR ROW PLUS CONNECTION INVERT
352.95	BOTTOM OF MC-4500 CHAMBER
352.20	UNDERDRAIN INVERT
349.95	BOTTOM OF STONE

NOTES

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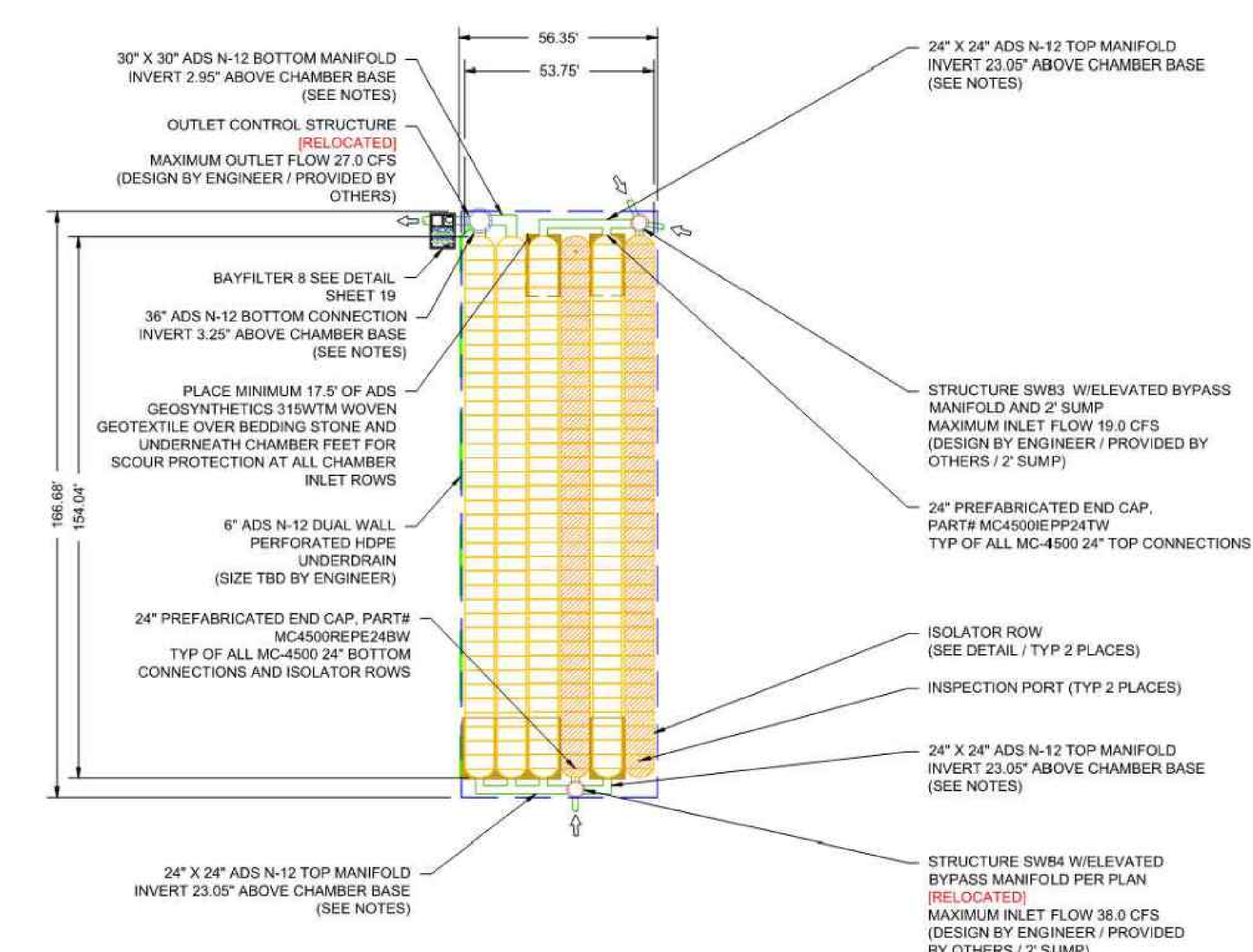
- THIS CHAMBER SYSTEM WAS DESIGNED WITHOUT SITE-SPECIFIC INFORMATION ON SOIL CONDITIONS OR BEARING CAPACITY. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR DETERMINING THE SUITABILITY OF THE SOIL AND PROVIDING THE BEARING CAPACITY OF THE INSITU SOILS. THE BASE STONE DEPTH MAY BE INCREASED OR DECREASED ONCE THIS INFORMATION IS PROVIDED.

TIER 1 DEEP COVER SPECIAL PROVISIONS

1. INSTALLATION REQUIREMENTS SHALL BE AS SPECIFIED IN THE STORMTECH DESIGN MANUALS AND CONSTRUCTION GUIDES EXCEPT AS MODIFIED IN THESE SPECIAL PROVISIONS.
2. ATTENTION IS CALLED TO "TABLE 1 - ACCEPTABLE FILL MATERIALS" IN THE STORMTECH CONSTRUCTION GUIDE AND ALL OTHER APPEARANCES OF THE "ACCEPTABLE FILL MATERIALS TABLE. FOR AREAS OF THE SYSTEM WITH COVER ABOVE 7 FEET (2.1 m) FOR THE MC-4500/MC-7200 AND ABOVE 8 FEET (2.4 m) FOR THE MC-3500, EMBEDMENT STONE SHALL BE COMPACTED WITH 1-3 PASSES OF A WALK BEHIND VIBRATORY PLATE COMPACTOR OR JUMPING JACK IN 12-18" (300-450 mm) LIFTS.
3. STONE SHALL BE CLEAN, CRUSHED, AND ANGULAR AND SHALL CONFORM TO THE SPECIFICATIONS DESIGNATED IN THE ACCEPTABLE FILL MATERIALS TABLE.
4. STONE SHALL BE HARD AND DURABLE. IT IS THE ENGINEER'S OR CONTRACTOR'S RESPONSIBILITY TO SELECT HARD AND DURABLE STONE. STORMTECH CONSIDERS AN LA ABRASION VALUE OF LESS THAN OR EQUAL TO 30 TO BE HARD STONE.
5. FOUNDATION STONE SHALL BE MECHANICALLY COMPACTED WITH A VIBRATORY ROLLER OR VIBRATORY PLATE IN 6" (152 mm) LIFTS.
6. EMBEDMENT STONE MUST BE DUMPED IN PLACE BY A STONE SHOOTER OR CONVEYOR OR EXCAVATOR.
7. INSPECTION DURING THE INSTALLATION BY THE ENGINEER, OWNER OR OTHER REPRESENTATIVE IS RECOMMENDED. THE INSPECTION SHALL INCLUDE OBSERVATIONS OF THE CHAMBER SYMMETRY DURING BACKFILLING TO ENSURE THE CONTRACTOR'S METHODS ARE NOT CAUSING UNACCEPTABLE DISTORTION OF THE CHAMBERS.
8. AN ADS FIELD TECHNICIAN WILL CONDUCT A PRE-CONSTRUCTION MEETING TO TRAIN REPRESENTATIVES INSTALLING THE CHAMBERS AND THOSE WHO MAY BE PERFORMING INSTALLATION INSPECTIONS.



0 40' 80'

SHEET 12 OF 29

J2 Engineers - X:\DRAWINGS\ACTIVE\Crossroads Village Center\OVERALL REVISION\MG2101-SWM.dwg [C9.3 STORMTECH SPECIFICATIONS] February 10, 2022 - 5:15pm sschwoppe

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17739 Main Street
Suite 180
Dumfries, Va. 22026

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703.956.6845 (fax)
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PLAN# MG2101
DATE: OCTOBER, 2021
CONTOUR INT.= N/A
SCALE: NTS

PLAN DATE
07/30/21
10/08/21
12/08/21
02/10/22

STORMTECH SPECIFICATIONS
REVISION
CROSSROADS VILLAGE CENTER
GAINESVILLE DISTRICT
TOWN OF HAYMARKET, VIRGINIA

No.	DATE	DESCRIPTION

REVISIONS

SHEET C9.3 OF 106

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Dumfries, Va. 22026

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COMMONWEALTH OF VIRGINIA
SEBASTIAN SANDOVAL
Lic. No. 045207
06/30/23
PROFESSIONAL ENGINEER

PLAN# BA2201
DATE: MARCH, 2023
CONTOUR INT.= N/A
SCALE: N/A

PLAN DATE
01/06/23
03/17/23
06/30/23

SWM & BMP REFERENCE SHEET
FINAL SITE PLAN
KIDDIE ACADEMY AT CROSSROADS VILLAGE CENTER

TOWN OF HAYMARKET, VIRGINIA

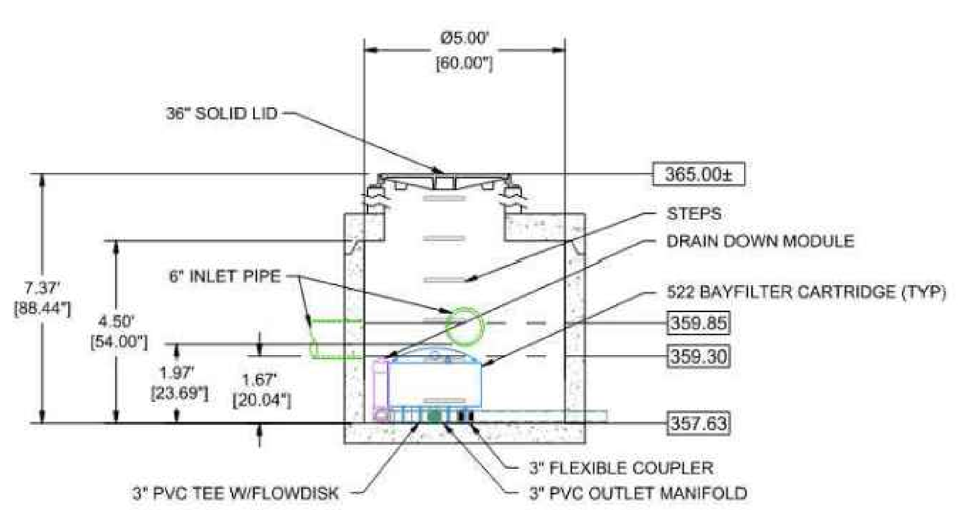
No.	DATE	DESCRIPTION

REVISIONS

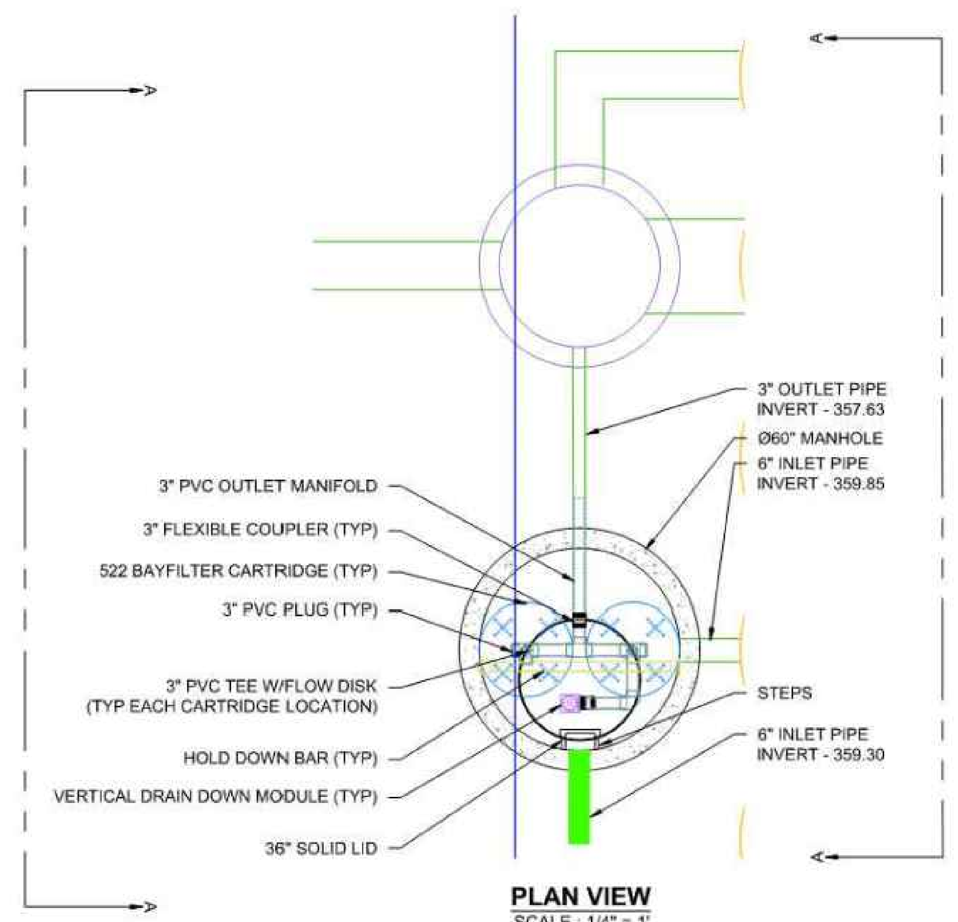
SHEET 22 OF 43

REFERENCE SHEET - FOR INFORMATION PURPOSES ONLY

Attachment: 02 Kiddie Academy at CVC with Updated Drop Off (6224 : Kiddie Academy Site Plan)

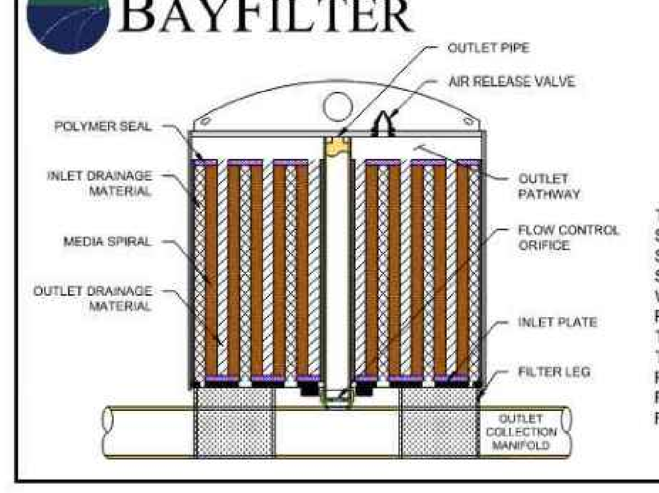


SECTION A-A
SCALE : 1/4" = 1'



PLAN VIEW
SCALE : 1/4" = 1'

BAYFILTER



522 BAYFILTER 60-2 MANHOLE	BF7
WATER QUALITY VOLUME	2,280 CF
DRAINAGE AREA	---
CARTRIDGE DESIGN VOLUME	1250 CF
# BAYFILTER CARTRIDGES	2
CAPTURED SEDIMENT CAPACITY*	262 LBS

*SEDIMENT CAPTURE PER CURRENT NJDEP APPROVAL

THE BAYFILTER STORMWATER MANAGEMENT SYSTEM IS A STORMWATER FILTRATION DEVICE DESIGNED TO REMOVE FINE SEDIMENTS, HEAVY METALS, AND PHOSPORUS. THE BAYFILTER SYSTEM RELIES ON A SPIRAL WOUND MEDIA FILTER CARTRIDGE WITH APPROXIMATELY 45 SQUARE FEET OF FILTRATION AREA. THE FILTER CARTRIDGES ARE HOUSED IN A CONCRETE STRUCTURE THAT EVENLY DISTRIBUTES THE FLOW BETWEEN CARTRIDGES. THE SYSTEM IS OFFLINE WITH AN EXTERNAL BYPASS THAT ROUTES HIGH INTENSITY STORMS AROUND THE SYSTEM. THE FILTER CARTRIDGES REMOVE POLLUTANTS FROM RUNOFF BY FILTRATION (INTERCEPTION/ATTACHMENT) AND ADSORPTION.

CROSSROADS HAYMARKET
HAYMARKET, VA
DATE: 8/02/18 | DRAWN: LAH
PROJECT #: S092352 | CHECKED: KMS

DATE	DRWN	CHKD	DESCRIPTION
01/23/22	ALI	---	ADDED OUTLET WEIRS TO ST4&5 PER MARKUPS, ADDED 2' SUMP ON IR STRS.
01/06/22	MDG	MDG	UPDATED BAYFILTER ELEVATIONS PER MARKUP
11/12/21	AVM	JPR	UPDATED PER MARK UP
08-04-2021	LAH	JPR	REV STR TO 222 CHAMBERS
7/28/21	KLJ	KLJ	REV ST1 & BF1 PER NEW CIVIL PLAN
7/23/21	LAH	CJD	COMBINED ST 8 & 9 ADD BF 8
3/14/19	LAH	JPR	REV MANIFOLDS
9/10/18	LAH	CJD	REV PER ENG COM /MARK-UPS
09-03-2021	LAH	CJD	REV PER ENG

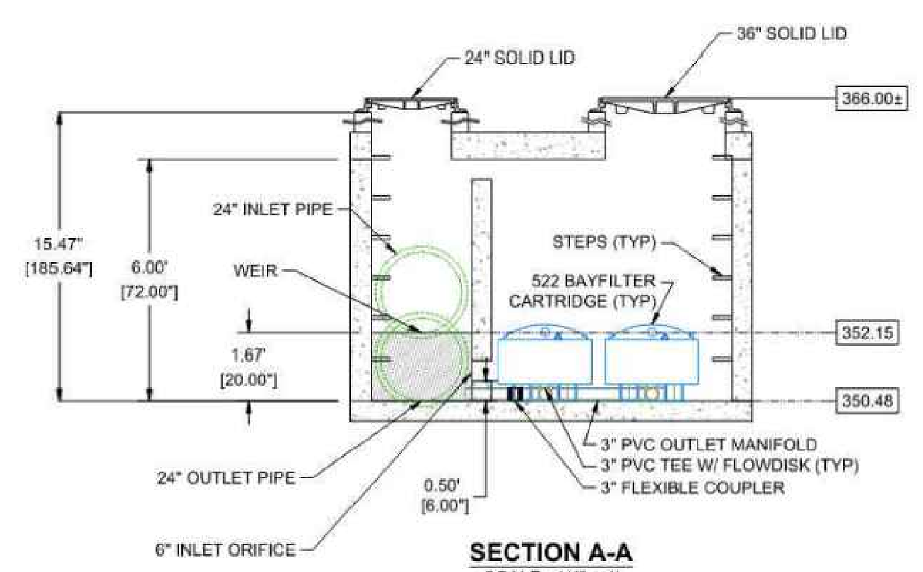
BAYSAVER TECHNOLOGIES
1030 Deer Hollow Drive 1-800-BAYSAVER
Mount Airy, MD 21771 1-800-229-7283

ADS 4640 TRUEMAN BLVD
HILLIARD, OH 43026
ADVANCED DRAINAGE SYSTEMS, INC.

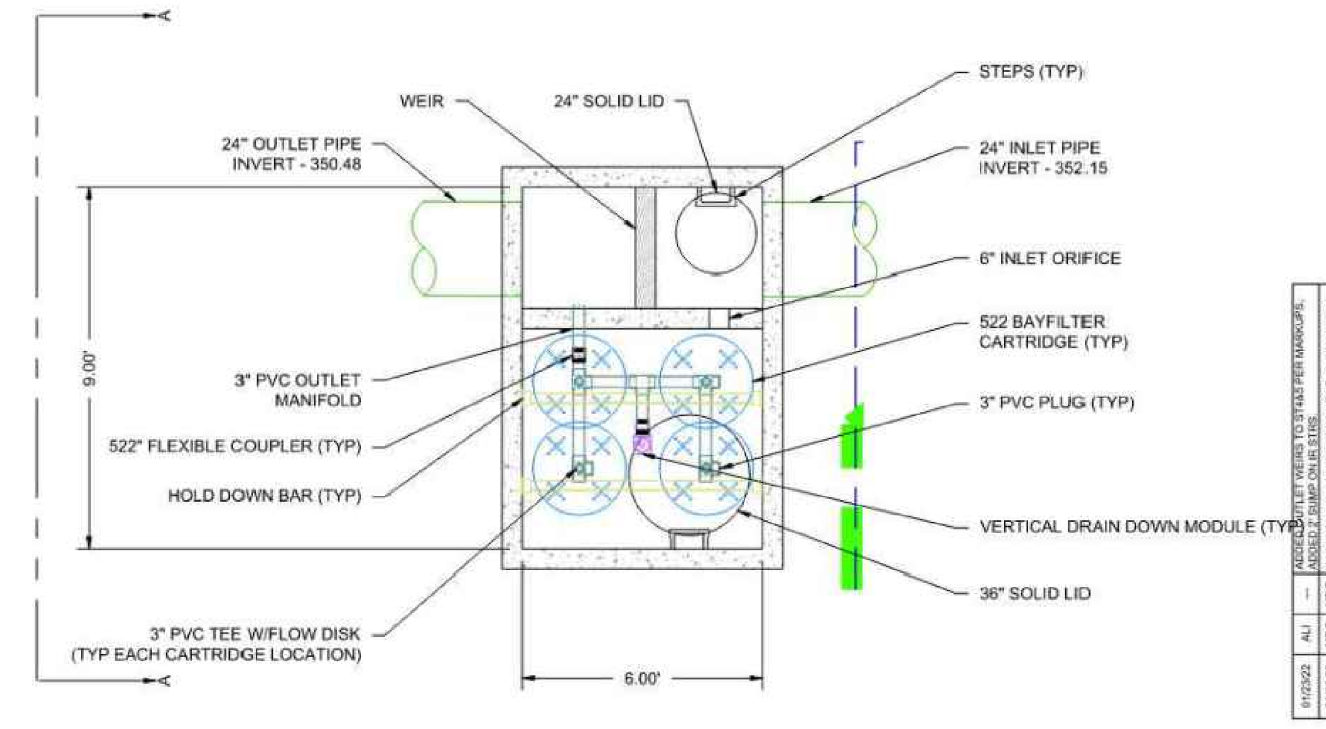
AS NOTED

SHEET 17 OF 29

THIS DRAWING HAS BEEN PREPARED BASED ON INFORMATION PROVIDED TO ADS UNDER THE DIRECTION OF THE SITE DESIGN ENGINEER OR OTHER PROJECT REPRESENTATIVE. THE SITE DESIGN ENGINEER SHALL REVIEW THIS DRAWING PRIOR TO CONSTRUCTION. IT IS THE ULTIMATE RESPONSIBILITY OF THE SITE DESIGN ENGINEER TO ENSURE THAT THE PRODUCT(S) DEPICTED AND ALL ASSOCIATED DETAILS MEET ALL APPLICABLE LAWS, REGULATIONS, AND PROJECT REQUIREMENTS.



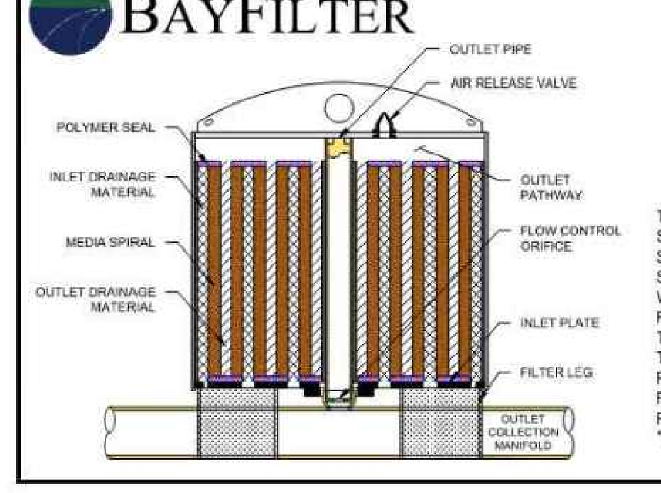
SECTION A-A
SCALE : 1/4" = 1'



PLAN VIEW
SCALE : 1/4" = 1'

NOTE: THIS DETAIL SHOWS A FUNCTIONAL FILTER DESIGN PER SITE SPECIFIC INFORMATION PROVIDED. THE FINAL APPROVED PRECAST DRAWINGS WILL DETERMINE THE FINAL SIZE, INCLUDING BUT NOT LIMITED TO; OVERALL DIMENSIONS, RISER SIZE, RISER TYPE & HEIGHT AND FRAMES & COVERS BEING PROVIDED.

BAYFILTER



522 BAYFILTER 6-9-4	BF-8
WATER QUALITY FLOW RATE	0.16 CFS
DRAINAGE AREA	---
CARTRIDGE DESIGN FLOW RATE	22 GPM
# BAYFILTER CARTRIDGES	4
CAPTURED SEDIMENT CAPACITY*	524 LBS

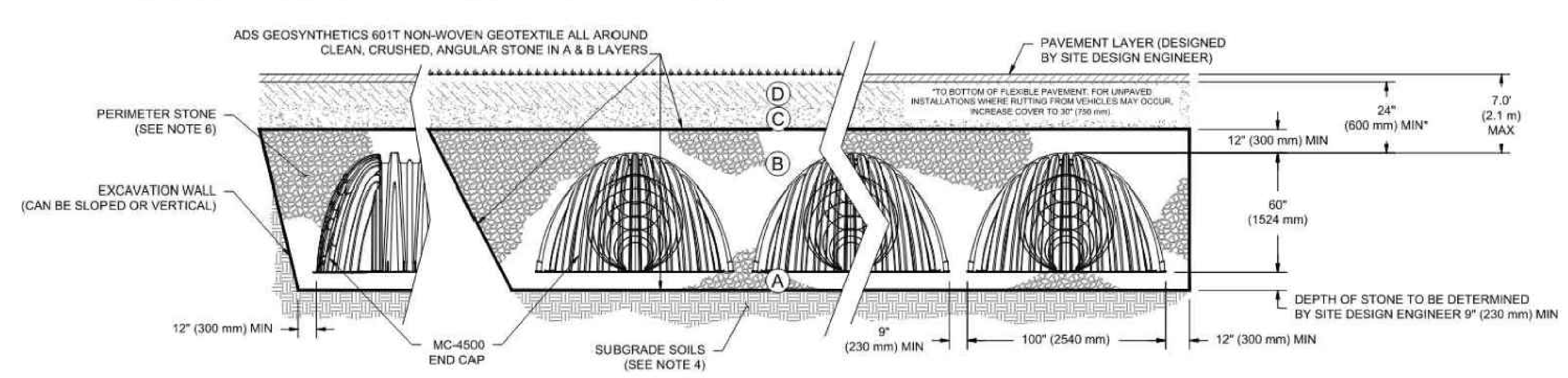
THE BAYFILTER STORMWATER MANAGEMENT SYSTEM IS A STORMWATER FILTRATION DEVICE DESIGNED TO REMOVE FINE SEDIMENTS, HEAVY METALS, AND PHOSPORUS. THE BAYFILTER SYSTEM RELIES ON A SPIRAL WOUND MEDIA FILTER CARTRIDGE WITH APPROXIMATELY 45 SQUARE FEET OF FILTRATION AREA. THE FILTER CARTRIDGES ARE HOUSED IN A CONCRETE STRUCTURE THAT EVENLY DISTRIBUTES THE FLOW BETWEEN CARTRIDGES. THE SYSTEM IS INLINE WITH AN INTERNAL BYPASS WEIR THAT ROUTES HIGH INTENSITY STORMS AROUND THE CARTRIDGES. THE FILTER CARTRIDGES REMOVE POLLUTANTS FROM RUNOFF BY FILTRATION (INTERCEPTION/ATTACHMENT) AND ADSORPTION.
*SEDIMENT CAPTURE PER CURRENT NJDEP APPROVAL

SHEET 18 OF 29

ACCEPTABLE FILL MATERIALS: STORMTECH MC-4500 CHAMBER SYSTEMS

MATERIAL LOCATION		DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION / DENSITY REQUIREMENT
D	**FINAL FILL:** FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER	ANY SOIL/ROCK MATERIALS, NATIVE SOILS, OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.	N/A	PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
C	**INITIAL FILL:** FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('B' LAYER) TO 24" (600 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LAYER.	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, <35% FINES OR PROCESSED AGGREGATE. MOST PAVEMENT SUBBASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER.	AASHTO M145[1] A-1, A-2-4, A-3 OR AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTIONS AFTER 24" (600 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 12" (300 mm) MAX LIFTS TO A MIN. 95% PROCTOR DENSITY FOR WELL GRADED MATERIAL AND 95% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS.
B	**EMBEDMENT STONE:** FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1] 3, 4	NO COMPACTION REQUIRED.
A	**FOUNDATION STONE:** FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1] 3, 4	PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE.[2,3]

PLEASE NOTE:
1. THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE: "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43) STONE".
2. STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 9" (230 mm) (MAX) LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR.
3. WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS.



NOTES:

1. MC-4500 CHAMBERS SHALL CONFORM TO THE REQUIREMENTS OF ASTM F2418 "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
2. MC-4500 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
3. "ACCEPTABLE FILL MATERIALS" TABLE ABOVE PROVIDES MATERIAL LOCATIONS, DESCRIPTIONS, GRADATIONS, AND COMPACTION REQUIREMENTS FOR FOUNDATION, EMBEDMENT, AND FILL MATERIALS.
4. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS.
5. ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.
6. PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.

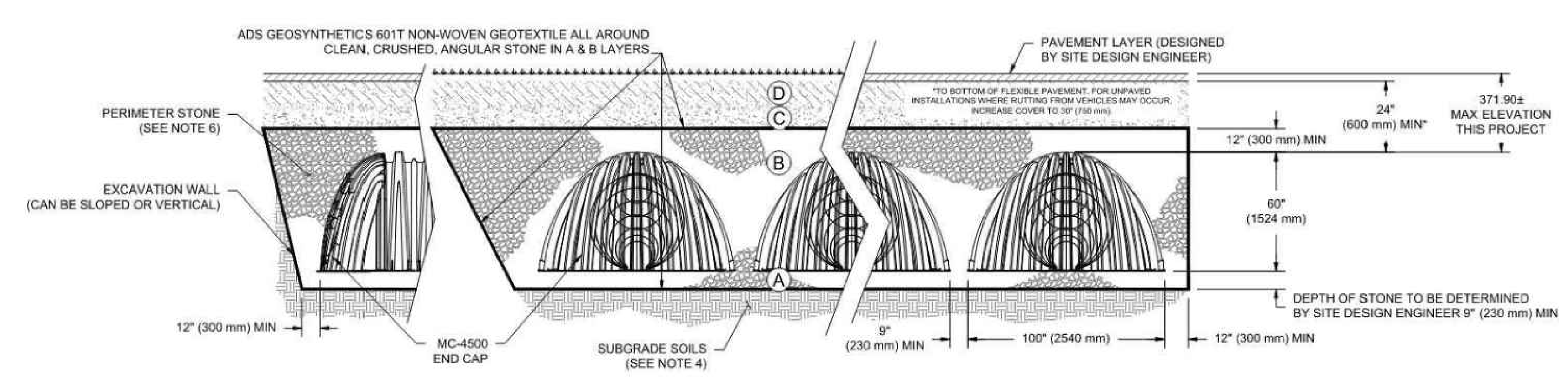
StormTech
70 INWOOD ROAD, SUITE 3 | ROCKY HILL | CT | 06067
860-529-8188 | 888-892-2694 | WWW.STORMTECH.COM

SHEET 19 OF 29

ACCEPTABLE FILL MATERIALS: STORMTECH MC-4500 CHAMBER SYSTEMS

MATERIAL LOCATION		DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION / DENSITY REQUIREMENT
D	**FINAL FILL:** FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER	ANY SOIL/ROCK MATERIALS, NATIVE SOILS, OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.	N/A	PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
C	**INITIAL FILL:** FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('B' LAYER) TO 24" (600 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LAYER.	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, <35% FINES OR PROCESSED AGGREGATE. MOST PAVEMENT SUBBASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER.	AASHTO M145[1] A-1, A-2-4, A-3 OR AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTIONS AFTER 24" (600 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 12" (300 mm) MAX LIFTS TO A MIN. 95% PROCTOR DENSITY FOR WELL GRADED MATERIAL AND 95% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS.
B	**EMBEDMENT STONE:** FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1] 3, 4	COMPACTION REQUIRED. SEE SPECIAL REQUIREMENTS ON LAYOUT PAGE.
A	**FOUNDATION STONE:** FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1] 3, 4	PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE.[2,3]

PLEASE NOTE:
1. THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE: "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43) STONE".
2. STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 9" (230 mm) (MAX) LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR.
3. WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS.



CROSSROADS HAYMARKET ST1 SPECIFIC CROSS SECTION

NOTES:

1. MC-4500 CHAMBERS SHALL CONFORM TO THE REQUIREMENTS OF ASTM F2418 "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
2. MC-4500 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
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5. ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.
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SHEET 20 OF 29

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SCALE: NTS

PLAN DATE
07/30/21
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STORMTECH SPECIFICATIONS
REVISION
CROSSROADS VILLAGE CENTER
GAINESVILLE DISTRICT
TOWN OF HAYMARKET, VIRGINIA

No.	DATE	DESCRIPTION

REVISIONS

SHEET C9.5 OF 106

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COMMONWEALTH OF VIRGINIA
SEBASTIAN SANDOVAL
Lic. No. 045207
06/30/23
PROFESSIONAL ENGINEER

PLAN# BA2201
DATE: MARCH, 2023
CONTOUR INT.= N/A
SCALE: N/A

PLAN DATE
01/06/23
03/17/23
06/30/23

SWM & BMP REFERENCE SHEET
FINAL SITE PLAN
KIDDIE ACADEMY AT CROSSROADS VILLAGE CENTER

TOWN OF HAYMARKET, VIRGINIA

No.	DATE	DESCRIPTION

REVISIONS

SHEET 23 OF 43

REFERENCE SHEET - FOR INFORMATION PURPOSES ONLY

ACCEPTABLE FILL MATERIALS: STORMTECH MC-4500 CHAMBER SYSTEMS

	MATERIAL LOCATION	DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION / DENSITY REQUIREMENT
D	**FINAL FILL:** FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER	ANY SOIL/ROCK MATERIALS, NATIVE SOILS, OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.	N/A	PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
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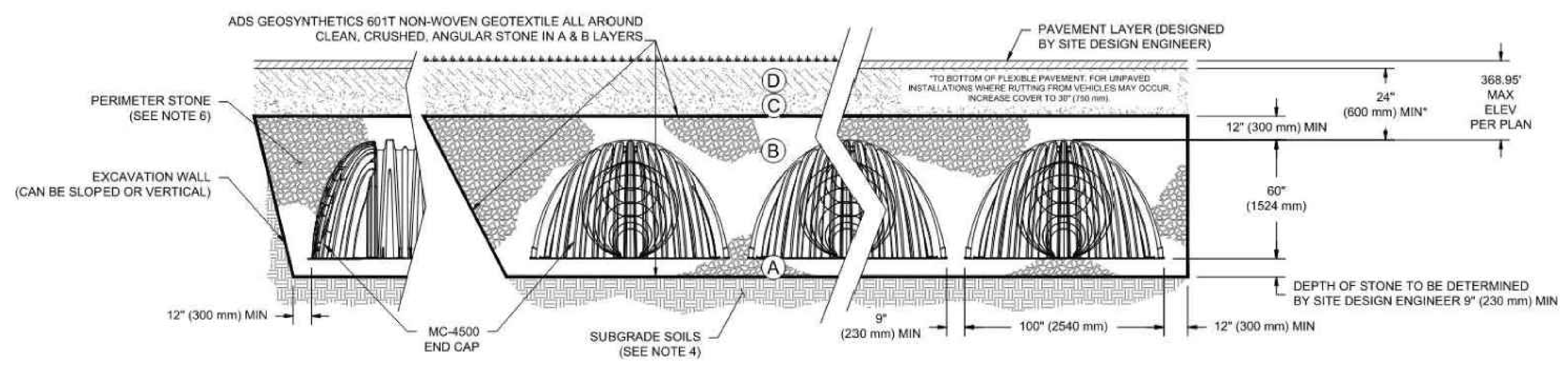

CROSSROADS HAYMARKET ST8 SPECIFIC CROSS SECTION

NOTES:

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4. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS.
5. ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.
6. PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.

CROSSROADS HAYMARKET, HAYMARKET, VA — DATE: 8/02/18 DRAWN: LAH — PROJECT #: S092352 CHECKED: KMS

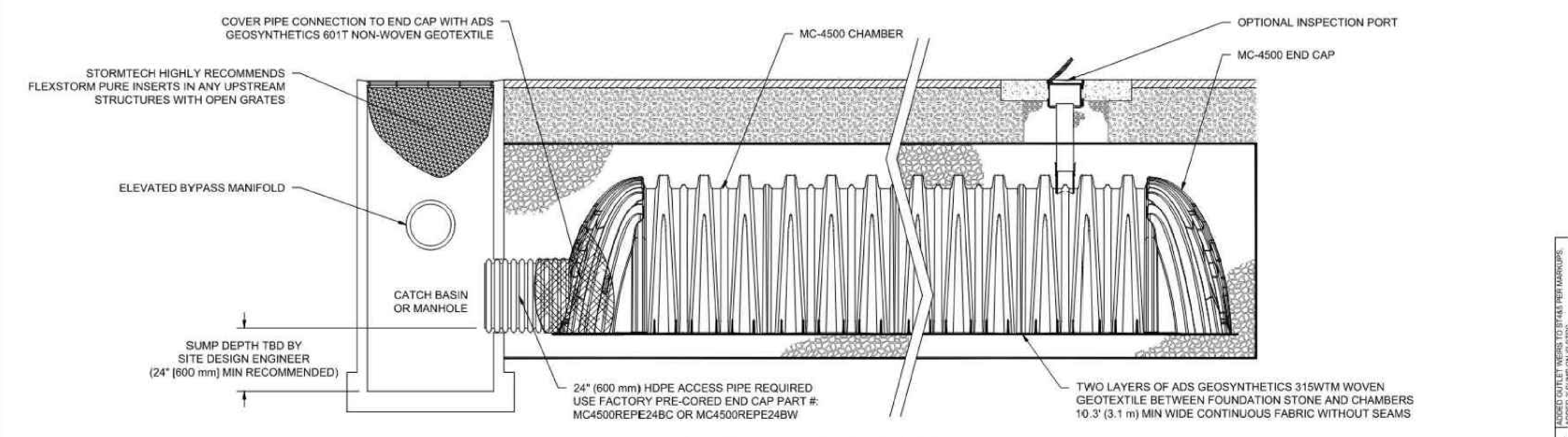
DATE	DRWN	CHKD	DESCRIPTION
01/23/22	ALI	—	ADDED OUTLET WEIRS TO ST4&5 PER MARKUPS. ADDED 2' SUMP ON IR STRS.
01/06/22	MDG	MDG	UPDATED BAYFILTER ELEVATIONS PER MARKUP
11/12/21	AVM	JPR	UPDATED PER MARK UP
08-04-2021	LAH	JPR	REV ST8 TO 222 CHAMBERS
7/28/21	KLJ	KLJ	REV ST1 & BF1 PER NEW CIVIL PLAN
7/23/21	LAH	CJD	COMBINED ST 8 & 9 ADD BF 8
3/14/19	LAH	JPR	REV MANIFOLDS
9/10/18	LAH	CJD	REV PER ENG COM./MARK-UPS
09-03-2021	LAH	CJD	REV PER ENG

StormTech — 70 INWOOD ROAD, SUITE 3 | ROCKY HILL | CT | 06067 — 860-529-8188 | 888-892-2694 | WWW.STORMTECH.COM

ADS — 4640 TRUEMAN BLVD, HILLIARD, OH 43026

THIS DRAWING HAS BEEN PREPARED BASED ON INFORMATION PROVIDED TO ADS UNDER THE DIRECTION OF THE SITE DESIGN ENGINEER OR OTHER PROJECT REPRESENTATIVE. THE SITE DESIGN ENGINEER SHALL REVIEW THIS DRAWING PRIOR TO CONSTRUCTION. IT IS THE ULTIMATE RESPONSIBILITY OF THE SITE DESIGN ENGINEER TO ENSURE THAT THE PRODUCT(S) DEPICTED AND ALL ASSOCIATED DETAILS MEET ALL APPLICABLE LAWS, REGULATIONS, AND PROJECT REQUIREMENTS.

SHEET 21 OF 29



MC-4500 ISOLATOR ROW DETAIL
NTS

INSPECTION & MAINTENANCE

STEP 1) INSPECT ISOLATOR ROW FOR SEDIMENT
- A. INSPECTION PORTS (IF PRESENT)
  - A.1. REMOVE/OPEN LID ON NYLOPLAST INLINE DRAIN
  - A.2. REMOVE AND CLEAN FLEXSTORM FILTER IF INSTALLED
  - A.3. USING A FLASHLIGHT AND STADIA ROD, MEASURE DEPTH OF SEDIMENT AND RECORD ON MAINTENANCE LOG
  - A.4. LOWER A CAMERA INTO ISOLATOR ROW FOR VISUAL INSPECTION OF SEDIMENT LEVELS (OPTIONAL)
  - A.5. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.
- B. ALL ISOLATOR ROWS
  - B.1. REMOVE COVER FROM STRUCTURE AT UPSTREAM END OF ISOLATOR ROW
  - B.2. USING A FLASHLIGHT, INSPECT DOWN THE ISOLATOR ROW THROUGH OUTLET PIPE
    - i) MIRRORS ON POLES OR CAMERAS MAY BE USED TO AVOID A CONFINED SPACE ENTRY
    - ii) FOLLOW OSHA REGULATIONS FOR CONFINED SPACE ENTRY IF ENTERING MANHOLE
  - B.3. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.

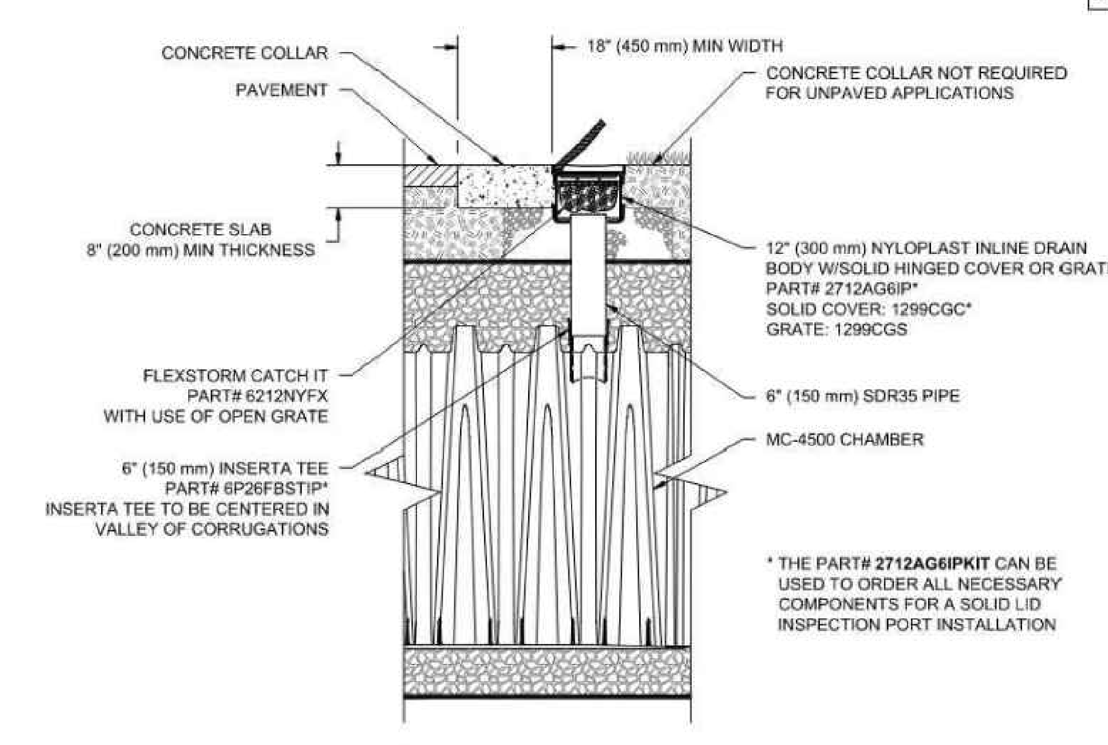
STEP 2) CLEAN OUT ISOLATOR ROW USING THE JETVAC PROCESS
- A. A FIXED CULVERT CLEANING NOZZLE WITH REAR FACING SPREAD OF 45" (1.1 m) OR MORE IS PREFERRED
- B. APPLY MULTIPLE PASSES OF JETVAC UNTIL BACKFLUSH WATER IS CLEAN
- C. VACUUM STRUCTURE SUMP AS REQUIRED

STEP 3) REPLACE ALL COVERS, GRATES, FILTERS, AND LIDS; RECORD OBSERVATIONS AND ACTIONS.

STEP 4) INSPECT AND CLEAN BASINS AND MANHOLES UPSTREAM OF THE STORMTECH SYSTEM.

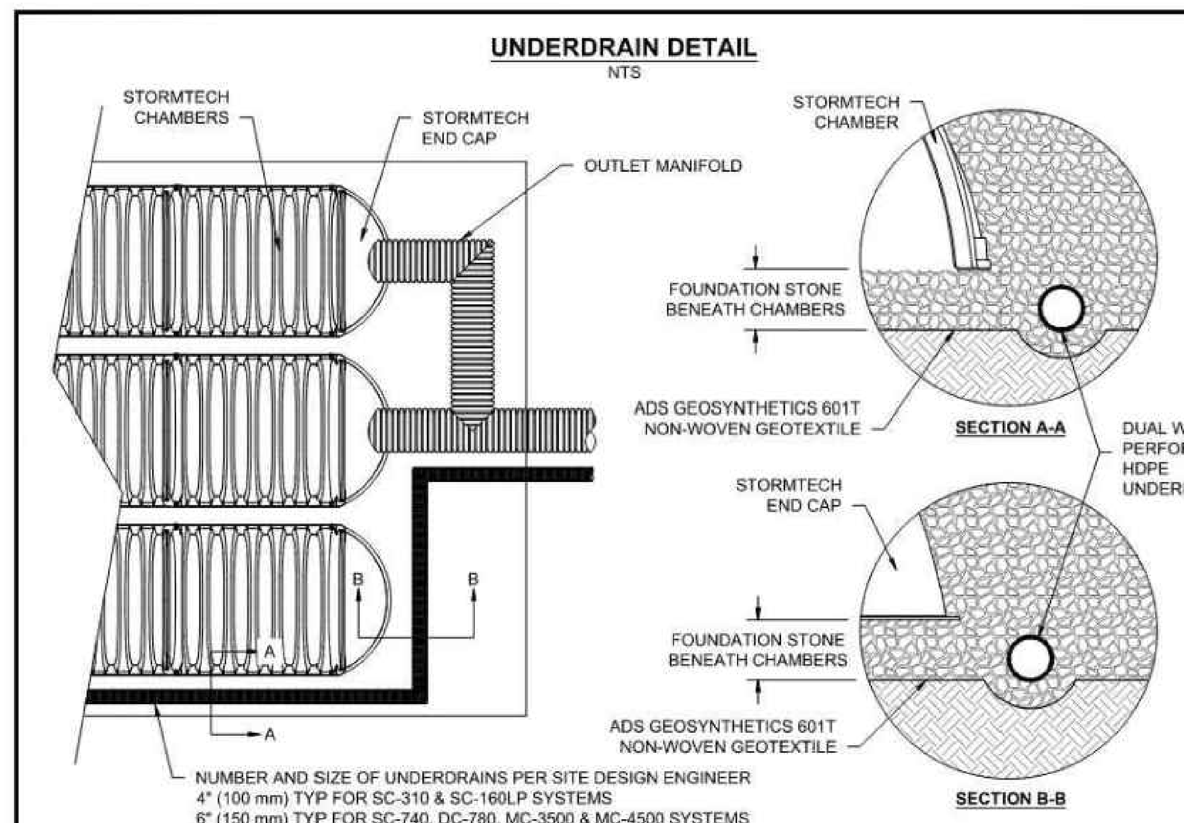
NOTES

1. INSPECT EVERY 6 MONTHS DURING THE FIRST YEAR OF OPERATION. ADJUST THE INSPECTION INTERVAL BASED ON PREVIOUS OBSERVATIONS OF SEDIMENT ACCUMULATION AND HIGH WATER ELEVATIONS.
2. CONDUCT JETTING AND VACTORING ANNUALLY OR WHEN INSPECTION SHOWS THAT MAINTENANCE IS NECESSARY.

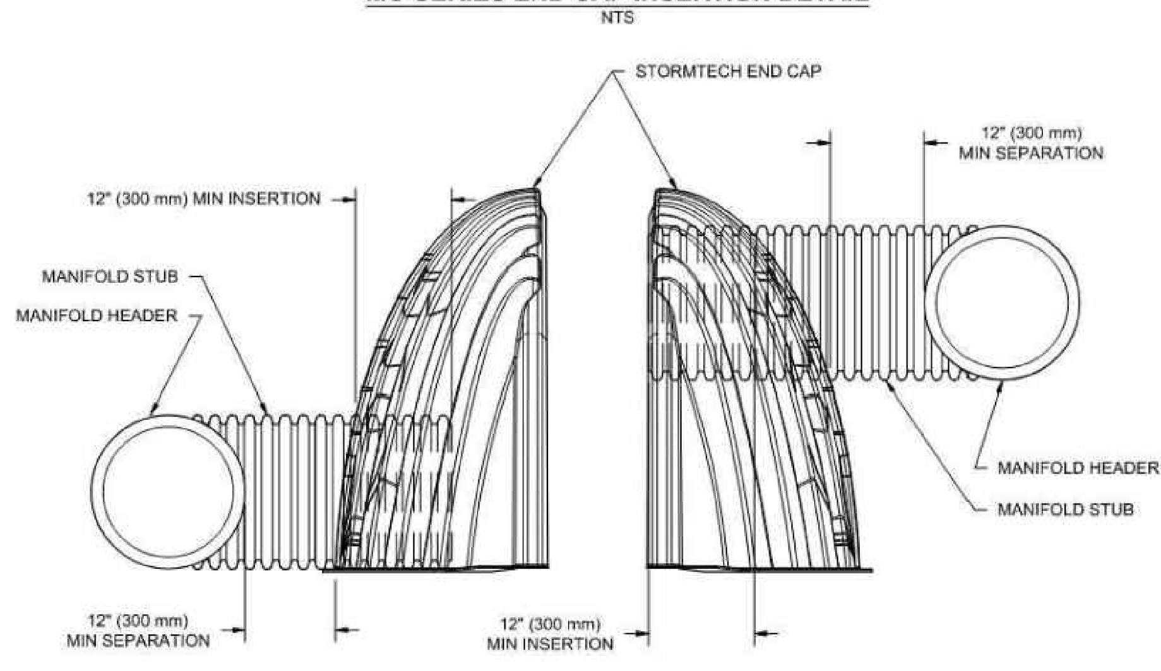


MC-4500 6" (150 mm) INSPECTION PORT DETAIL
NTS

SHEET 22 OF 29



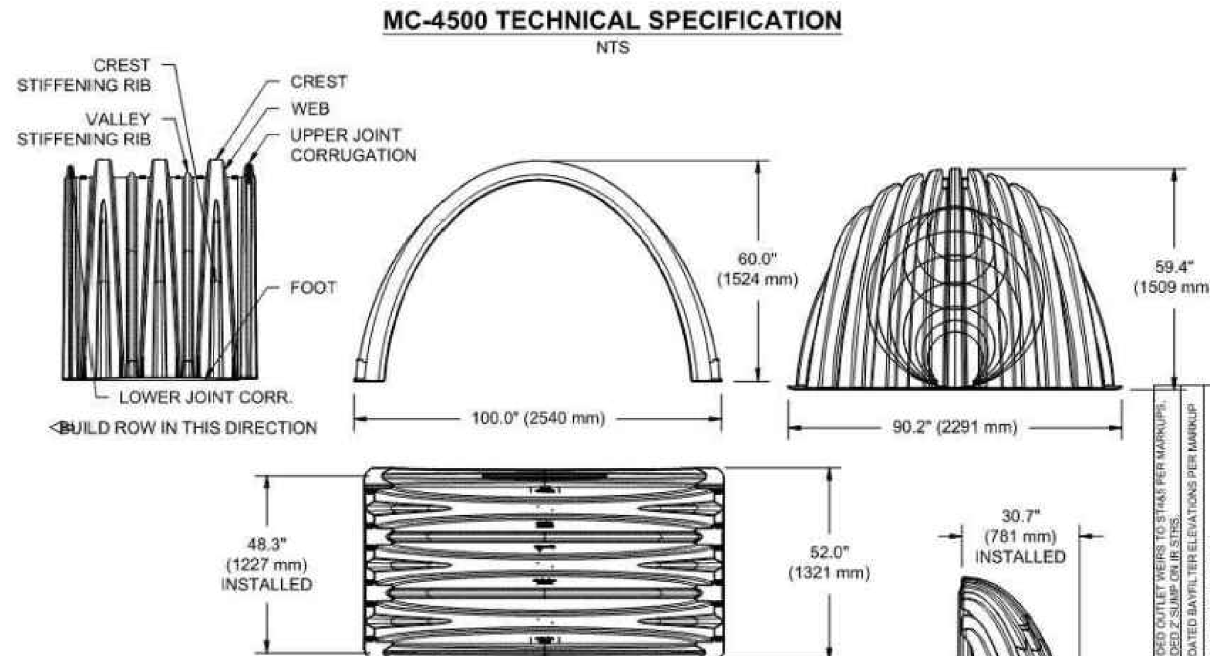
UNDERDRAIN DETAIL
NTS



MC-SERIES END CAP INSERTION DETAIL
NTS

NOTE: MANIFOLD STUB MUST BE LAID HORIZONTAL FOR A PROPER FIT IN END CAP OPENING.

MC-4500 TECHNICAL SPECIFICATION
NTS



NOMINAL CHAMBER SPECIFICATIONS

SIZE (W X H X INSTALLED LENGTH)	100.0" X 60.0" X 48.3"	(2540 mm X 1524 mm X 1227 mm)
CHAMBER STORAGE	106.5 CUBIC FEET	(3.01 m³)
MINIMUM INSTALLED STORAGE*	162.6 CUBIC FEET	(4.60 m³)
WEIGHT	130.0 lbs.	(59.0 kg)

NOMINAL END CAP SPECIFICATIONS

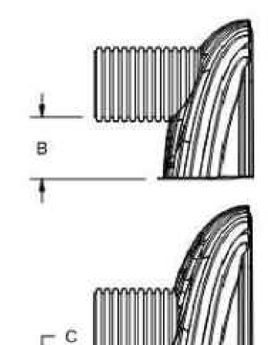
SIZE (W X H X INSTALLED LENGTH)	90.2" X 59.4" X 30.7"	(2291 mm X 1509 mm X 781 mm)
END CAP STORAGE	35.7 CUBIC FEET	(1.01 m³)
MINIMUM INSTALLED STORAGE*	108.7 CUBIC FEET	(3.08 m³)
WEIGHT	135.0 lbs.	(61.2 kg)

*ASSUMES 12" (305 mm) STONE ABOVE, 9" (229 mm) STONE FOUNDATION AND BETWEEN CHAMBERS, 12" (305 mm) STONE PERIMETER IN FRONT OF END CAPS AND 40% STONE POROSITY.

STUBS AT BOTTOM OF END CAP FOR PART NUMBERS ENDING WITH "B"
STUBS AT TOP OF END CAP FOR PART NUMBERS ENDING WITH "T"
END CAPS WITH A WELDED CROWN PLATE END WITH "C"
END CAPS WITH A PREFABRICATED WELDED STUB END WITH "W"

PART #	STUB	B	C
MC4500REPE06T	6" (150 mm)	42.54" (1.081 m)	---
MC4500REPE06B		---	0.86" (22 mm)
MC4500REPE08T	8" (200 mm)	40.50" (1.029 m)	---
MC4500REPE08B		---	1.01" (26 mm)
MC4500REPE10T	10" (250 mm)	38.37" (975 mm)	---
MC4500REPE10B		---	1.33" (34 mm)
MC4500REPE12T	12" (300 mm)	35.69" (907 mm)	---
MC4500REPE12B		---	1.55" (39 mm)
MC4500REPE15T	15" (375 mm)	32.72" (831 mm)	---
MC4500REPE15B		---	1.70" (43 mm)
MC4500REPE18TC	18" (450 mm)	29.36" (746 mm)	---
MC4500REPE18TW			
MC4500REPE18BC		---	1.97" (50 mm)
MC4500REPE18BW			
MC4500REPE24TC	24" (600 mm)	23.05" (585 mm)	---
MC4500REPE24TW			
MC4500REPE24BC		---	2.26" (57 mm)
MC4500REPE24BW			
MC4500REPE30BC	30" (750 mm)	---	2.95" (75 mm)
MC4500REPE36BC	36" (900 mm)	---	3.25" (83 mm)
MC4500REPE42BC	42" (1050 mm)	---	3.55" (90 mm)

NOTE: ALL DIMENSIONS ARE NOMINAL



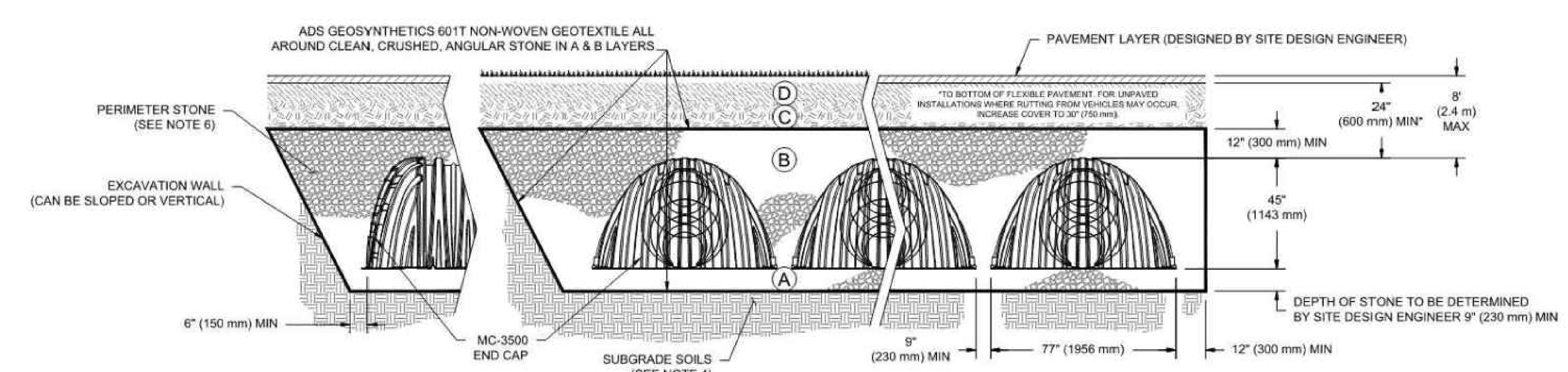
CUSTOM PRECORED INVERTS ARE AVAILABLE UPON REQUEST. INVENTORIED MANIFOLDS INCLUDE 12-24" (300-600 mm) SIZE ON SIZE AND 15-48" (375-1200 mm) ECCENTRIC MANIFOLDS. CUSTOM INVERT LOCATIONS ON THE MC-4500 END CAP CUT IN THE FIELD ARE NOT RECOMMENDED FOR PIPE SIZES GREATER THAN 10" (250 mm). THE INVERT LOCATION IN COLUMN 'B' ARE THE HIGHEST POSSIBLE FOR THE PIPE SIZE.

SHEET 23 OF 29

ACCEPTABLE FILL MATERIALS: STORMTECH MC-3500 CHAMBER SYSTEMS

	MATERIAL LOCATION	DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION / DENSITY REQUIREMENT
D	**FINAL FILL:** FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER	ANY SOIL/ROCK MATERIALS, NATIVE SOILS, OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.	N/A	PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
C	**INITIAL FILL:** FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('B' LAYER) TO 24" (600 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LAYER.	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, <35% FINES OR PROCESSED AGGREGATE. MOST PAVEMENT SUBBASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER.	AASHTO M145[1] A-1, A-2-4, A-3 OR AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTIONS AFTER 24" (600 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 12" (300 mm) MAX LIFTS TO A MIN. 95% PROCTOR DENSITY FOR WELL GRADED MATERIAL AND 95% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS.
B	**EMBEDMENT STONE:** FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1] 3, 4	NO COMPACTION REQUIRED.
A	**FOUNDATION STONE:** FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1] 3, 4	PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE.[2,3]

PLEASE NOTE:
1. THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE: "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43) STONE".
2. STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 9" (230 mm) (MAX) LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR.
3. WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS.



NOTES:

1. MC-3500 CHAMBERS SHALL CONFORM TO THE REQUIREMENTS OF ASTM F2418 "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
2. MC-3500 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
3. "ACCEPTABLE FILL MATERIALS" TABLE ABOVE PROVIDES MATERIAL LOCATIONS, DESCRIPTIONS, GRADATIONS, AND COMPACTION REQUIREMENTS FOR FOUNDATION, EMBEDMENT, AND FILL MATERIALS.
4. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS.
5. ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.
6. PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.

SHEET 24 OF 29

J2 Engineers, Inc.
17739 Main Street
Suite 180
Dumfries, Va. 22026
703.361.1550 (office)
703.956.6845 (fax)
www.j2engineers.com

SEBASTIAN SANDOVAL Lic. No. 045207

PLAN# MG2101
DATE: OCTOBER, 2021
CONTOUR INT.= N/A
SCALE: NTS

PLAN DATE: 07/30/21, 10/08/21, 12/08/21, 02/10/22

STORMTECH SPECIFICATIONS
REVISION
CROSSROADS VILLAGE CENTER
GAINESVILLE DISTRICT
TOWN OF HAYMARKET, VIRGINIA

REVISIONS — No. | DATE | DESCRIPTION

SHEET C9.6 OF 106

REFERENCE SHEET - FOR INFORMATION PURPOSES ONLY

J2 Engineers, Inc.
17739 Main Street
Suite 180
Dumfries, Va. 22026
703.361.1550 (office)
703.956.6845 (fax)
www.j2engineers.com

COMMONWEALTH OF VIRGINIA — SEBASTIAN SANDOVAL Lic. No. 045207 06/30/23 — PROFESSIONAL ENGINEER

PLAN# BA2201
DATE: MARCH, 2023
CONTOUR INT.= N/A
SCALE: N/A

PLAN DATE: 01/06/23, 03/17/23, 06/30/23

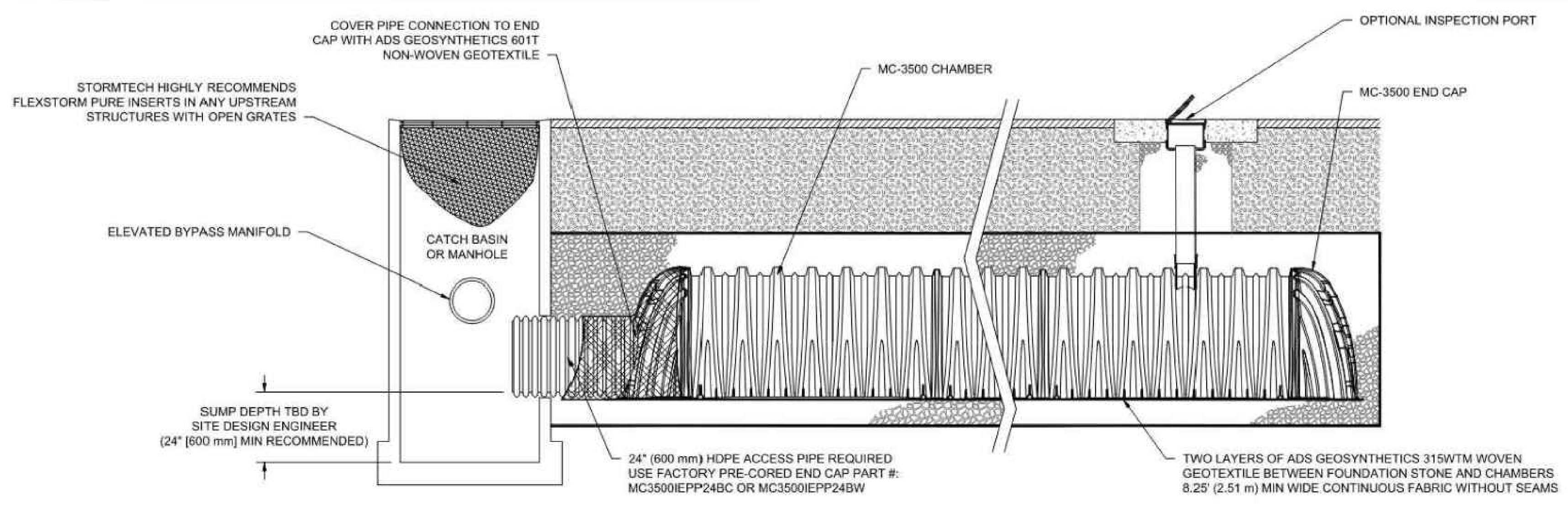
SWM & BMP REFERENCE SHEET
FINAL SITE PLAN
KIDDIE ACADEMY AT CROSSROADS VILLAGE CENTER

TOWN OF HAYMARKET, VIRGINIA

REVISIONS — No. | DATE | DESCRIPTION

SHEET 24 OF 43

J2 Engineers - X:\DRAWINGS\ACTIVE\Crossroads Village Center\OVERALL REVISION\MG2101-SWM.dwg [C9.6 STORMTECH SPECIFICATIONS] February 10, 2022 - 5:15pm sschwoppe


COVER PIPE CONNECTION TO END CAP WITH ADS GEOSYNTHETICS 601T NON-WOVEN GEOTEXTILE
MC-3500 CHAMBER
OPTIONAL INSPECTION PORT
MC-3500 END CAP
STORMTECH HIGHLY RECOMMENDS FLEXSTORM PURE INSERTS IN ANY UPSTREAM STRUCTURES WITH OPEN GRATES
ELEVATED BYPASS MANIFOLD
CATCH BASIN OR MANHOLE
SUMP DEPTH TBD BY SITE DESIGN ENGINEER (24" [600 mm] MIN RECOMMENDED)
24" (600 mm) HDPE ACCESS PIPE REQUIRED USE FACTORY PRE-CORED END CAP PART #: MC3500IEPP24BC OR MC3500IEPP24BW
TWO LAYERS OF ADS GEOSYNTHETICS 315WTM WOVEN GEOTEXTILE BETWEEN FOUNDATION STONE AND CHAMBERS 8.25' (2.51 m) MIN WIDE CONTINUOUS FABRIC WITHOUT SEAMS

MC-3500 ISOLATOR ROW DETAIL
NTS

INSPECTION & MAINTENANCE

STEP 1) INSPECT ISOLATOR ROW FOR SEDIMENT
- A. INSPECTION PORTS (IF PRESENT)
  - A.1. REMOVE/OPEN LID ON NYLOPLAST INLINE DRAIN
  - A.2. REMOVE AND CLEAN FLEXSTORM FILTER IF INSTALLED
  - A.3. USING A FLASHLIGHT AND STADIA ROD, MEASURE DEPTH OF SEDIMENT AND RECORD ON MAINTENANCE LOG
  - A.4. LOWER A CAMERA INTO ISOLATOR ROW FOR VISUAL INSPECTION OF SEDIMENT LEVELS (OPTIONAL)
  - A.5. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.
- B. ALL ISOLATOR ROWS
  - B.1. REMOVE COVER FROM STRUCTURE AT UPSTREAM END OF ISOLATOR ROW
  - B.2. USING A FLASHLIGHT, INSPECT DOWN THE ISOLATOR ROW THROUGH OUTLET PIPE
    - i) MIRRORS ON POLES OR CAMERAS MAY BE USED TO AVOID A CONFINED SPACE ENTRY
    - ii) FOLLOW OSHA REGULATIONS FOR CONFINED SPACE ENTRY IF ENTERING MANHOLE
  - B.3. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.

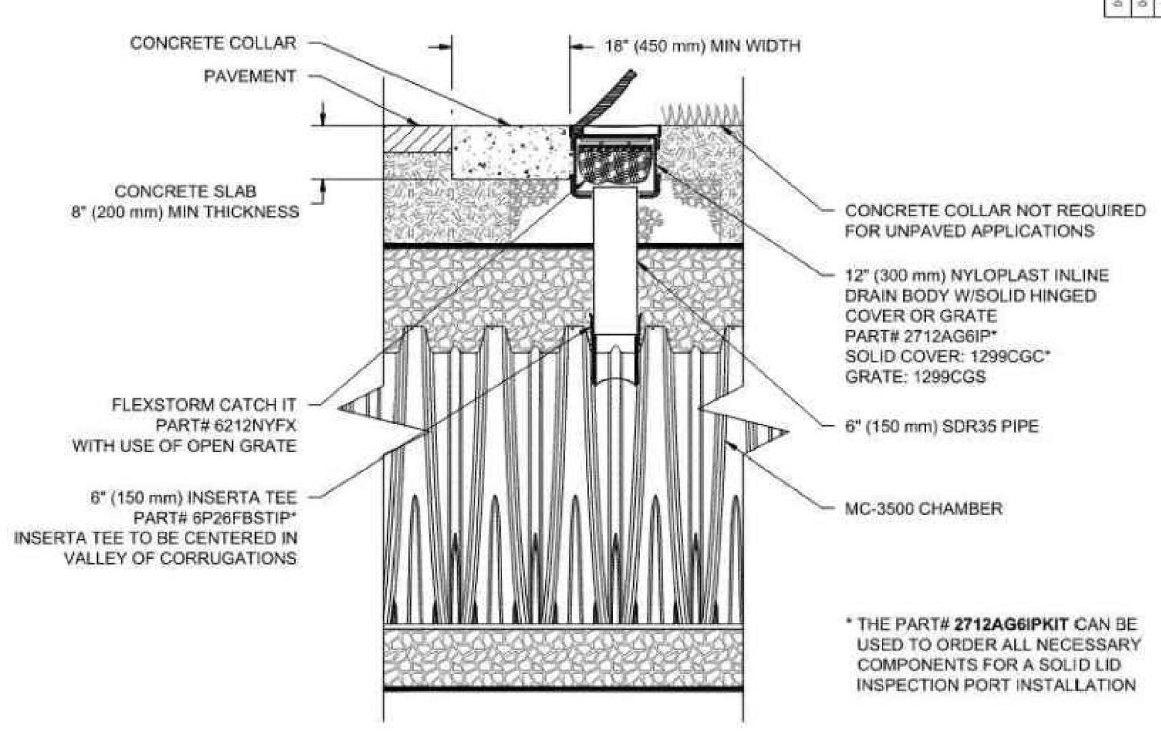
STEP 2) CLEAN OUT ISOLATOR ROW USING THE JETVAC PROCESS
- A. A FIXED CULVERT CLEANING NOZZLE WITH REAR FACING SPREAD OF 45" (1.1 m) OR MORE IS PREFERRED
- B. APPLY MULTIPLE PASSES OF JETVAC UNTIL BACKFLUSH WATER IS CLEAN
- C. VACUUM STRUCTURE SUMP AS REQUIRED

STEP 3) REPLACE ALL COVERS, GRATES, FILTERS, AND LIDS; RECORD OBSERVATIONS AND ACTIONS.

STEP 4) INSPECT AND CLEAN BASINS AND MANHOLES UPSTREAM OF THE STORMTECH SYSTEM.

NOTES

1. INSPECT EVERY 6 MONTHS DURING THE FIRST YEAR OF OPERATION. ADJUST THE INSPECTION INTERVAL BASED ON PREVIOUS OBSERVATIONS OF SEDIMENT ACCUMULATION AND HIGH WATER ELEVATIONS.
2. CONDUCT JETTING AND VACTORING ANNUALLY OR WHEN INSPECTION SHOWS THAT MAINTENANCE IS NECESSARY.


CONCRETE COLLAR
PAVEMENT
18" (450 mm) MIN WIDTH
CONCRETE SLAB 8" (200 mm) MIN THICKNESS
CONCRETE COLLAR NOT REQUIRED FOR UNPAVED APPLICATIONS
12" (300 mm) NYLOPLAST INLINE DRAIN BODY W/SOLID HINGED COVER OR GRATE PART# 2712AG6IP* SOLID COVER: 1299CGC* GRATE: 1299CGS
FLEXSTORM CATCH IT PART# 6212NYFX WITH USE OF OPEN GRATE
6" (150 mm) SDR35 PIPE
6" (150 mm) INSERTA TEE PART# 6P26FBSTIP* INSERTA TEE TO BE CENTERED ON VALLEY OF CORRUGATIONS
MC-3500 CHAMBER
* THE PART# 2712AG6IPKIT CAN BE USED TO ORDER ALL NECESSARY COMPONENTS FOR A SOLID LID INSPECTION PORT INSTALLATION

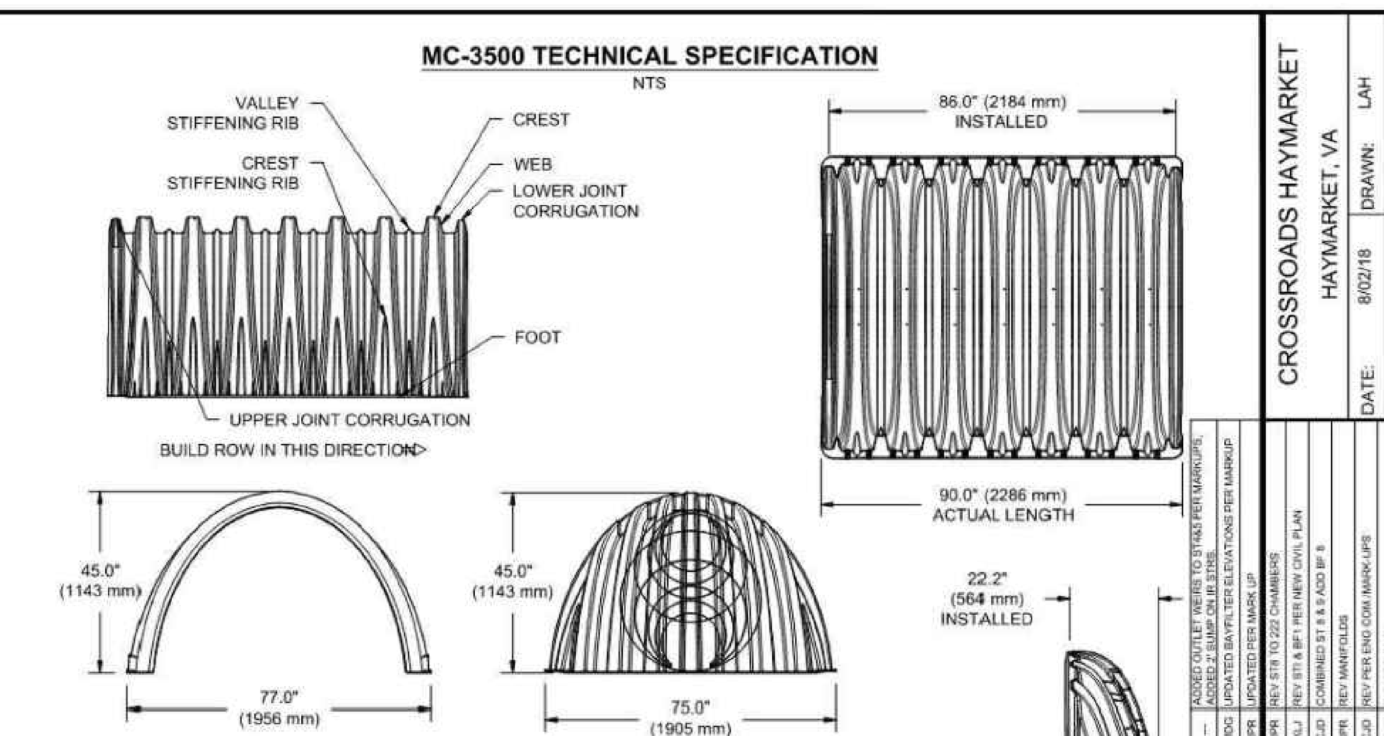
MC-3500 6" INSPECTION PORT DETAIL
NTS

CROSSROADS HAYMARKET
HAYMARKET, VA
DATE: 8/02/18 DRAWN: LAH
PROJECT #: S092352 CHECKED: KMS

StormTech
4640 TRUEMAN BLVD HILLIARD, OH 43026
ADS

SHEET 25 OF 29

MC-3500 TECHNICAL SPECIFICATION
NTS



NOMINAL CHAMBER SPECIFICATIONS

SIZE (W X H X INSTALLED LENGTH)	77.0" X 45.0" X 86.0"	(1956 mm X 1143 mm X 2184 mm)
CHAMBER STORAGE	109.9 CUBIC FEET	(3.11 m³)
MINIMUM INSTALLED STORAGE*	178.9 CUBIC FEET	(5.06 m³)
WEIGHT	134 lbs.	(60.8 kg)

NOMINAL END CAP SPECIFICATIONS

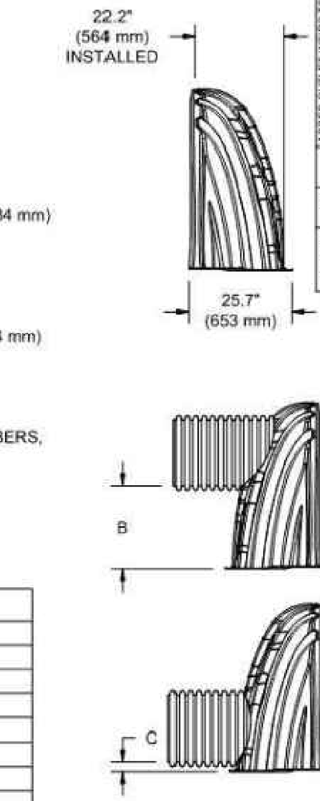
SIZE (W X H X INSTALLED LENGTH)	75.0" X 45.0" X 22.2"	(1905 mm X 1143 mm X 564 mm)
END CAP STORAGE	14.9 CUBIC FEET	(0.42 m³)
MINIMUM INSTALLED STORAGE*	46.0 CUBIC FEET	(1.30 m³)
WEIGHT	49 lbs.	(22.2 kg)

*ASSUMES 12" (305 mm) STONE ABOVE, 9" (229 mm) STONE FOUNDATION AND BETWEEN CHAMBERS, 6" (152 mm) STONE PERIMETER IN FRONT OF END CAPS AND 40% STONE POROSITY

STUBS AT BOTTOM OF END CAP FOR PART NUMBERS ENDING WITH "B"
STUBS AT TOP OF END CAP FOR PART NUMBERS ENDING WITH "T"
END CAPS WITH A WELDED CROWN PLATE END WITH "C"
END CAPS WITH A PREFABRICATED WELDED STUB END WITH "W"

PART #	STUB	B	C
MC3500IEPP06T	6" (150 mm)	33.21" (844 mm)	---
MC3500IEPP06B		---	0.66" (17 mm)
MC3500IEPP08T	8" (200 mm)	31.16" (791 mm)	---
MC3500IEPP08B		---	0.81" (21 mm)
MC3500IEPP10T	10" (250 mm)	29.04" (738 mm)	---
MC3500IEPP10B		---	0.93" (24 mm)
MC3500IEPP12T	12" (300 mm)	26.36" (670 mm)	---
MC3500IEPP12B		---	1.35" (34 mm)
MC3500IEPP15T	15" (375 mm)	23.39" (594 mm)	---
MC3500IEPP15B		---	1.50" (38 mm)
MC3500IEPP18TC	18" (450 mm)	20.03" (509 mm)	---
MC3500IEPP18TW			
MC3500IEPP18BC		---	1.77" (45 mm)
MC3500IEPP18BW			
MC3500IEPP24TC	24" (600 mm)	14.48" (368 mm)	---
MC3500IEPP24TW			
MC3500IEPP24BC		---	2.06" (52 mm)
MC3500IEPP24BW			
MC3500IEPP30BC	30" (750 mm)	---	2.75" (70 mm)

NOTE: ALL DIMENSIONS ARE NOMINAL



CUSTOM PRECORED INVERTS ARE AVAILABLE UPON REQUEST. INVENTORIED MANIFOLDS INCLUDE 12-24" (300-600 mm) SIZE ON SIZE AND 15-48" (375-1200 mm) ECCENTRIC MANIFOLDS. CUSTOM INVERT LOCATIONS ON THE MC-3500 END CAP CUT IN THE FIELD ARE NOT RECOMMENDED FOR PIPE SIZES GREATER THAN 10" (250 mm). THE INVERT LOCATION IN COLUMN 'B' ARE THE HIGHEST POSSIBLE FOR THE PIPE SIZE.

CROSSROADS HAYMARKET
HAYMARKET, VA
DATE: 8/02/18 DRAWN: LAH
PROJECT #: S092352 CHECKED: KMS

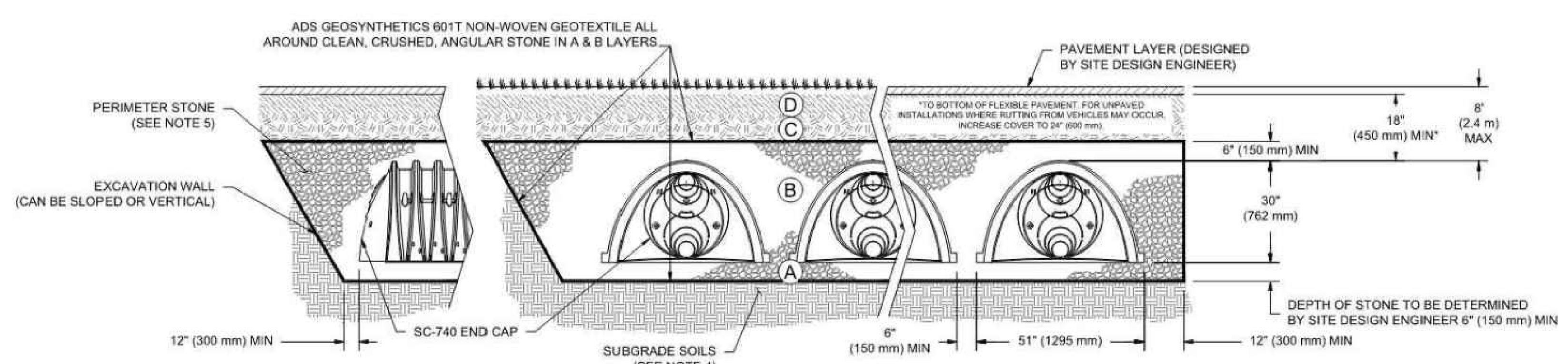
StormTech
4640 TRUEMAN BLVD HILLIARD, OH 43026
ADS

SHEET 26 OF 29

ACCEPTABLE FILL MATERIALS: STORMTECH SC-740 CHAMBER SYSTEMS

MATERIAL LOCATION		DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION / DENSITY REQUIREMENT
D	**FINAL FILL:** FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER	ANY SOIL/ROCK MATERIALS, NATIVE SOILS, OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.	N/A	PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
C	**INITIAL FILL:** FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('B' LAYER) TO 18" (450 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LAYER.	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, <35% FINES OR PROCESSED AGGREGATE. MOST PAVEMENT SUBBASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER.	AASHTO M145[1] A-1, A-2-4, A-3 OR AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTIONS AFTER 12" (300 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 6" (150 mm) MAX LIFTS TO A MIN. 95% PROCTOR DENSITY FOR WELL GRADED MATERIAL AND 95% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS. ROLLER GROSS VEHICLE WEIGHT NOT TO EXCEED 12,000 lbs (53 kN). DYNAMIC FORCE NOT TO EXCEED 20,000 lbs (89 kN).
B	**EMBEDMENT STONE:** FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57	NO COMPACTION REQUIRED.
A	**FOUNDATION STONE:** FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57	PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE.[2,3]

PLEASE NOTE:
1. THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE: "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43) STONE".
2. STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 6" (150 mm) (MAX) LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR.
3. WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS.


ADS GEOSYNTHETICS 601T NON-WOVEN GEOTEXTILE ALL AROUND CLEAN, CRUSHED, ANGULAR STONE IN A & B LAYERS
PAVEMENT LAYER (DESIGNED BY SITE DESIGN ENGINEER)
PERIMETER STONE (SEE NOTE 5)
EXCAVATION WALL (CAN BE SLOPED OR VERTICAL)
*TO BOTTOM OF FLEXIBLE PAVEMENT. FOR UNPAVED INSTALLATIONS WHERE RUTTING FROM VEHICLES MAY OCCUR, INCREASE COVER TO 24" (600 mm).
D
C
B
A
18" (450 mm) MIN*
8' (2.4 m) MAX
6" (150 mm) MIN
30" (762 mm)
DEPTH OF STONE TO BE DETERMINED BY SITE DESIGN ENGINEER 6" (150 mm) MIN
12" (300 mm) MIN
SC-740 END CAP
SUBGRADE SOILS (SEE NOTE 4)
6" (150 mm) MIN
51" (1295 mm)
12" (300 mm) MIN

NOTES:

1. SC-740 CHAMBERS SHALL CONFORM TO THE REQUIREMENTS OF ASTM F2418 "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS", OR ASTM F2922 "STANDARD SPECIFICATION FOR POLYETHYLENE (PE) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
2. SC-740 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
3. "ACCEPTABLE FILL MATERIALS" TABLE ABOVE PROVIDES MATERIAL LOCATIONS, DESCRIPTIONS, GRADATIONS, AND COMPACTION REQUIREMENTS FOR FOUNDATION, EMBEDMENT, AND FILL MATERIALS.
4. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS.
5. PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
6. ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.

CROSSROADS HAYMARKET
HAYMARKET, VA
DATE: 8/02/18 DRAWN: LAH
PROJECT #: S092352 CHECKED: KMS

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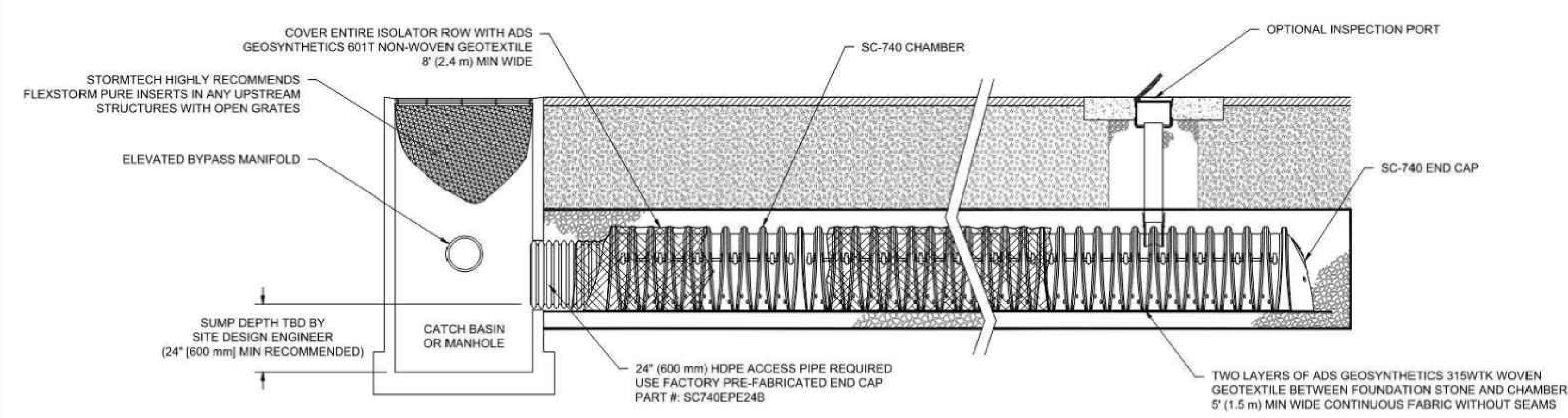

COVER ENTIRE ISOLATOR ROW WITH ADS GEOSYNTHETICS 601T NON-WOVEN GEOTEXTILE 8' (2.4 m) MIN WIDE
SC-740 CHAMBER
OPTIONAL INSPECTION PORT
STORMTECH HIGHLY RECOMMENDS FLEXSTORM PURE INSERTS IN ANY UPSTREAM STRUCTURES WITH OPEN GRATES
ELEVATED BYPASS MANIFOLD
SC-740 END CAP
SUMP DEPTH TBD BY SITE DESIGN ENGINEER (24" [600 mm] MIN RECOMMENDED)
CATCH BASIN OR MANHOLE
24" (600 mm) HDPE ACCESS PIPE REQUIRED USE FACTORY PRE-FABRICATED END CAP PART #: SC740EPE24B
TWO LAYERS OF ADS GEOSYNTHETICS 315WTK WOVEN GEOTEXTILE BETWEEN FOUNDATION STONE AND CHAMBERS 5' (1.5 m) MIN WIDE CONTINUOUS FABRIC WITHOUT SEAMS

SC-740 ISOLATOR ROW DETAIL
NTS

INSPECTION & MAINTENANCE

STEP 1) INSPECT ISOLATOR ROW FOR SEDIMENT
- A. INSPECTION PORTS (IF PRESENT)
  - A.1. REMOVE/OPEN LID ON NYLOPLAST INLINE DRAIN
  - A.2. REMOVE AND CLEAN FLEXSTORM FILTER IF INSTALLED
  - A.3. USING A FLASHLIGHT AND STADIA ROD, MEASURE DEPTH OF SEDIMENT AND RECORD ON MAINTENANCE LOG
  - A.4. LOWER A CAMERA INTO ISOLATOR ROW FOR VISUAL INSPECTION OF SEDIMENT LEVELS (OPTIONAL)
  - A.5. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.
- B. ALL ISOLATOR ROWS
  - B.1. REMOVE COVER FROM STRUCTURE AT UPSTREAM END OF ISOLATOR ROW
  - B.2. USING A FLASHLIGHT, INSPECT DOWN THE ISOLATOR ROW THROUGH OUTLET PIPE
    - i) MIRRORS ON POLES OR CAMERAS MAY BE USED TO AVOID A CONFINED SPACE ENTRY
    - ii) FOLLOW OSHA REGULATIONS FOR CONFINED SPACE ENTRY IF ENTERING MANHOLE
  - B.3. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.

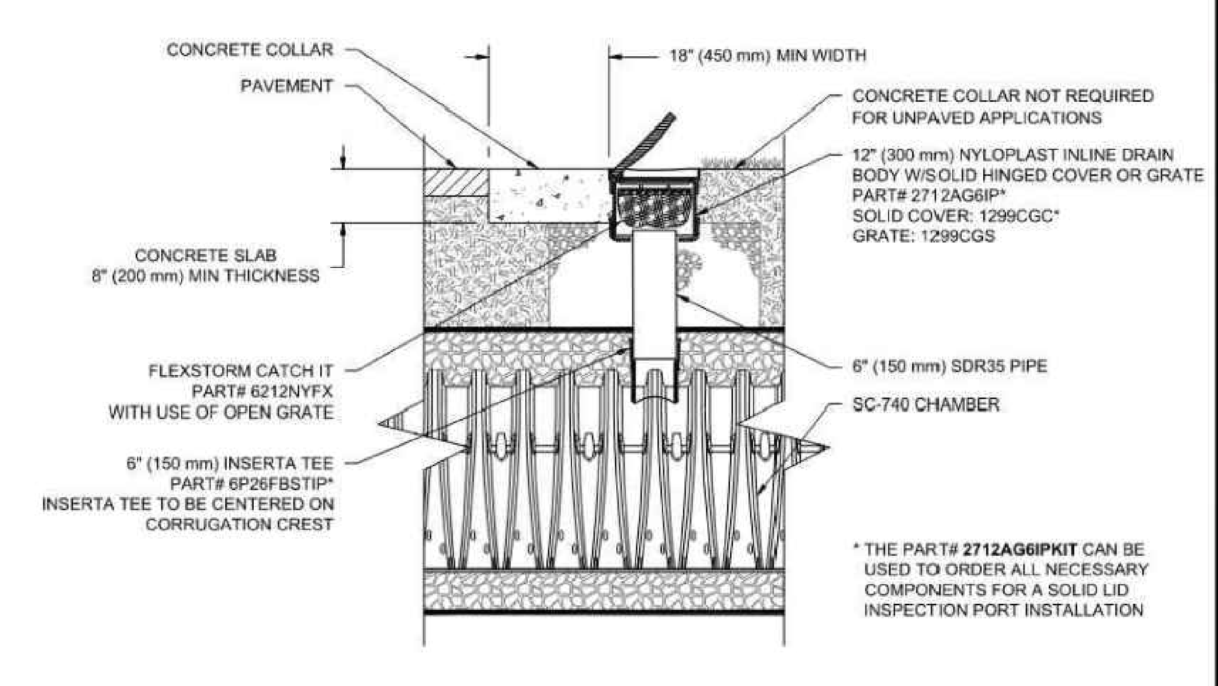
STEP 2) CLEAN OUT ISOLATOR ROW USING THE JETVAC PROCESS
- A. A FIXED CULVERT CLEANING NOZZLE WITH REAR FACING SPREAD OF 45" (1.1 m) OR MORE IS PREFERRED
- B. APPLY MULTIPLE PASSES OF JETVAC UNTIL BACKFLUSH WATER IS CLEAN
- C. VACUUM STRUCTURE SUMP AS REQUIRED

STEP 3) REPLACE ALL COVERS, GRATES, FILTERS, AND LIDS; RECORD OBSERVATIONS AND ACTIONS.

STEP 4) INSPECT AND CLEAN BASINS AND MANHOLES UPSTREAM OF THE STORMTECH SYSTEM.

NOTES

1. INSPECT EVERY 6 MONTHS DURING THE FIRST YEAR OF OPERATION. ADJUST THE INSPECTION INTERVAL BASED ON PREVIOUS OBSERVATIONS OF SEDIMENT ACCUMULATION AND HIGH WATER ELEVATIONS.
2. CONDUCT JETTING AND VACTORING ANNUALLY OR WHEN INSPECTION SHOWS THAT MAINTENANCE IS NECESSARY.


CONCRETE COLLAR
PAVEMENT
18" (450 mm) MIN WIDTH
CONCRETE COLLAR NOT REQUIRED FOR UNPAVED APPLICATIONS
12" (300 mm) NYLOPLAST INLINE DRAIN BODY W/SOLID HINGED COVER OR GRATE PART# 2712AG6IP* SOLID COVER: 1299CGC* GRATE: 1299CGS
CONCRETE SLAB 8" (200 mm) MIN THICKNESS
FLEXSTORM CATCH IT PART# 6212NYFX WITH USE OF OPEN GRATE
6" (150 mm) SDR35 PIPE
SC-740 CHAMBER
6" (150 mm) INSERTA TEE PART# 6P26FBSTIP* INSERTA TEE TO BE CENTERED ON CORRUGATION CREST
* THE PART# 2712AG6IPKIT CAN BE USED TO ORDER ALL NECESSARY COMPONENTS FOR A SOLID LID INSPECTION PORT INSTALLATION

SC-740 6" (150 mm) INSPECTION PORT DETAIL
NTS

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SEBASTIAN SANDOVAL

PLAN# MG2101
DATE: OCTOBER, 2021
CONTOUR INT.= N/A
SCALE: NTS

PLAN DATE
07/30/21
12/02/21
1/20/22
02/1/22

STORMTECH SPECIFICATIONS
REVISION
CROSSROADS VILLAGE CENTER
GAINESVILLE DISTRICT
TOWN OF HAYMARKET, VIRGINIA

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SEBASTIAN SANDOVAL
Lic. No. 045207
06/30/23

PLAN# BA2201
DATE: MARCH, 2023
CONTOUR INT.= N/A
SCALE: N/A

PLAN DATE
01/06/23
03/17/23
06/30/23

SWM & BMP REFERENCE SHEET
FINAL SITE PLAN
KIDDIE ACADEMY AT CROSSROADS VILLAGE CENTER
TOWN OF HAYMARKET, VIRGINIA

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REFERENCE SHEET - FOR INFORMATION PURPOSES ONLY

Attachment: 02 Kiddie Academy at CVC with Updated Drop Off (6224 : Kiddie Academy Site Plan)

UNDERDRAIN DETAIL

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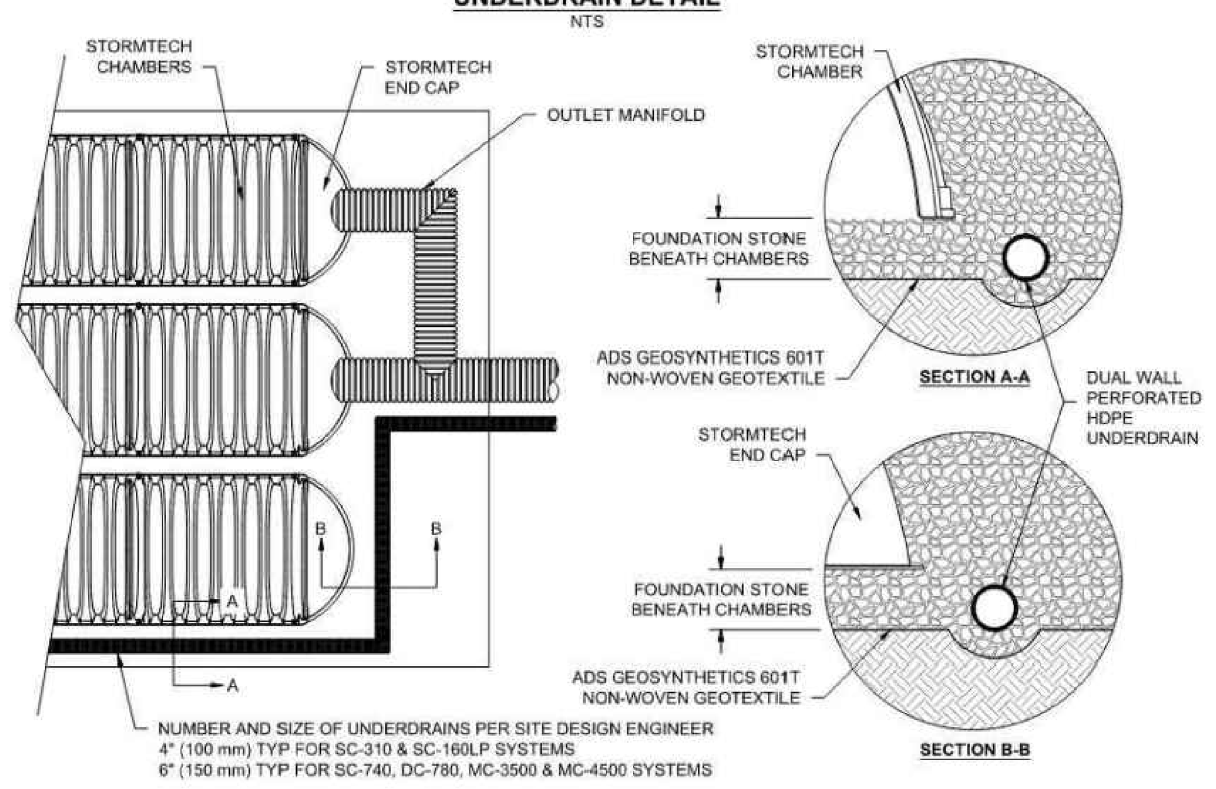
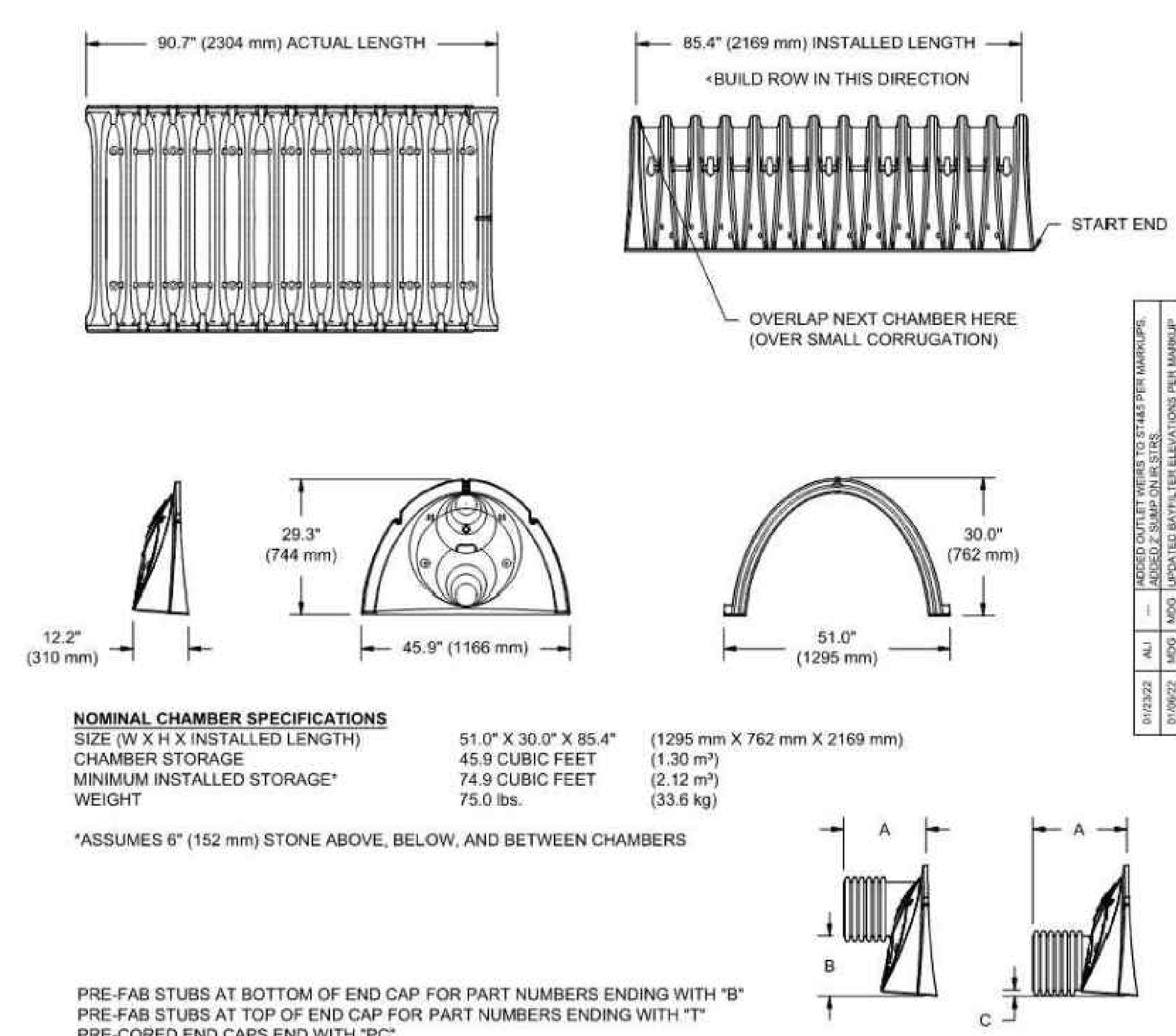


SC-740 TECHNICAL SPECIFICATION

NTS



NOMINAL CHAMBER SPECIFICATIONS

SIZE (W X H X INSTALLED LENGTH)	51.0" X 30.0" X 85.4"	(1295 mm X 762 mm X 2169 mm)
CHAMBER STORAGE	45.9 CUBIC FEET	(1.30 m³)
MINIMUM INSTALLED STORAGE*	74.9 CUBIC FEET	(2.12 m³)
WEIGHT	75.0 lbs.	(33.6 kg)

*ASSUMES 6" (152 mm) STONE ABOVE, BELOW, AND BETWEEN CHAMBERS

PRE-FAB STUBS AT BOTTOM OF END CAP FOR PART NUMBERS ENDING WITH "B"
PRE-FAB STUBS AT TOP OF END CAP FOR PART NUMBERS ENDING WITH "T"
PRE-CORED END CAPS END WITH "PC"

PART #	STUB	A	B	C
SC740EPE06T / SC740EPE06TPC	6" (150 mm)	10.9" (277 mm)	18.5" (470 mm)	---
SC740EPE06B / SC740EPE06BPC			---	0.5" (13 mm)
SC740EPE08T /SC740EPE08TPC	8" (200 mm)	12.2" (310 mm)	16.5" (419 mm)	---
SC740EPE08B / SC740EPE08BPC			---	0.6" (15 mm)
SC740EPE10T / SC740EPE10TPC	10" (250 mm)	13.4" (340 mm)	14.5" (368 mm)	---
SC740EPE10B / SC740EPE10BPC			---	0.7" (18 mm)
SC740EPE12T / SC740EPE12TPC	12" (300 mm)	14.7" (373 mm)	12.5" (318 mm)	---
SC740EPE12B / SC740EPE12BPC			---	1.2" (30 mm)
SC740EPE15T / SC740EPE15TPC	15" (375 mm)	18.4" (467 mm)	9.0" (229 mm)	---
SC740EPE15B / SC740EPE15BPC			---	1.3" (33 mm)
SC740EPE18T / SC740EPE18TPC	18" (450 mm)	19.7" (500 mm)	5.0" (127 mm)	---
SC740EPE18B / SC740EPE18BPC			---	1.6" (41 mm)
SC740EPE24B*	24" (600 mm)	18.5" (470 mm)	---	0.1" (3 mm)

ALL STUBS, EXCEPT FOR THE SC740EPE24B ARE PLACED AT BOTTOM OF END CAP SUCH THAT THE OUTSIDE DIAMETER OF THE STUB IS FLUSH WITH THE BOTTOM OF THE END CAP. FOR ADDITIONAL INFORMATION CONTACT STORMTECH AT 1-888-892-2694.

* FOR THE SC740EPE24B THE 24" (600 mm) STUB LIES BELOW THE BOTTOM OF THE END CAP APPROXIMATELY 1.75" (44 mm). BACKFILL MATERIAL SHOULD BE REMOVED FROM BELOW THE N-12 STUB SO THAT THE FITTING SITS LEVEL.

NOTE: ALL DIMENSIONS ARE NOMINAL

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PLAN# MG2101
DATE: OCTOBER, 2021
CONTOUR INT.= N/A
SCALE: NTS

STORMTECH SPECIFICATIONS
REVISION
CROSSROADS VILLAGE CENTER
GAINESVILLE DISTRICT
TOWN OF HAYMARKET, VIRGINIA

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COMMONWEALTH OF VIRGINIA
SEBASTIAN SANDOVAL
Lic. No. 045207
06/30/23
PROFESSIONAL ENGINEER

PLAN# BA2201
DATE: MARCH, 2023
CONTOUR INT.= N/A
SCALE: N/A

PLAN DATE
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SWM & BMP REFERENCE SHEET
FINAL SITE PLAN
KIDDIE ACADEMY AT CROSSROADS VILLAGE CENTER
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Attachment: 02 Kiddie Academy at CVC with Updated Drop Off (6224 : Kiddie Academy Site Plan)

3-F.3.0. EXAMPLE CHECKLIST FOR A FINAL STORMWATER MANAGEMENT SITE PLAN PREPARATION AND REVIEW

1. Applicant Information

Final Plan Submission Date_____
Project Name___CROSSROADS VILLAGE CENTER
Site Plan/Permit Number_____
Site Address_15150 WASHINGTON STREET TOWN OF HAYMARKET, VA 20169
Applicant___Meladon Group Phone Number_(571) 375.1750
Applicant Legal Address_1602 Village Market Blvd. SE Suite 235 Leesburg, Virginia 20175
Owner__Same as Applicant Phone Number_(571) 375.1750
Principal Designer_J2 Engineers Phone Number_(703)-361-1550
General Contractor_____ Phone Number_____

2. ✓ Signature and stamp of licensed professional consultant and owner certification

3. Plan Status

___ Approved
✓ Not Approved

Legend: ___ - Complete; Inc. - Incomplete/Incorrect; N/A - Not Applicable

4. _____ Common address and legal description of the site, including the tax reference number(s) and parcel number(s) of the property or properties affected.

Address: 15150 Washington Street, Town of Haymarket, VA 20169
Parcels 1-A, 1-B, 1-C, 1-D (Commercial + Retail)
Parcel 2 (R-2 Subdivision)

5. ✓ A narrative that includes a description of current site conditions and proposed development and final site conditions, including proposed use of environmental site design techniques and practices, stormwater control measures, relevant information pertaining to long-term maintenance of these measures (see item #12 below), and a construction schedule.

6. Existing and proposed mapping and plans (recommended scale of 1" = 50', or greater detail), which illustrates the following at a minimum:

✓ North arrow
✓ Legend
✓ Vicinity map
✓ Existing and proposed topography (minimum of 2-foot contours recommended)
✓ Property lines
✓ Perennial and intermittent streams
✓ Mapping of predominant soils from USDA soils surveys as well as the location of any site-specific test bore hole investigations that may have been conducted and information identifying the hydrologic characteristics and structural properties of soils used in the installation of stormwater management facilities
✓ Boundaries of existing predominant vegetation and proposed limits of clearing and grading

✓ Location and boundaries of natural feature protection and conservation areas (e.g., wetlands, lakes, ponds, aquifers, public drinking water supplies, etc.) and applicable setbacks (e.g., stream buffers, drinking water well setbacks, septic drainfield setbacks, building setbacks, etc.)
N/A Identification of any on-site or adjacent water bodies included on the Virginia 303(d) list of impaired waters
✓ Current land use and location of existing and proposed roads, buildings, parking lots and other impervious areas
N/A Location and description of any planned demolition of existing structures, roads, etc.
✓ Proposed land use(s) with a tabulation of the percentage of surface area to be adapted to various uses, including but not limited to planned locations of utilities, roads, parking lots, stormwater management facilities, and easements
✓ Location of existing and proposed utilities [e.g., water (including wells), sewer (including septic systems), gas, electric, telecommunications, cable TV, etc.] and easements
✓ Earthwork specifications
✓ Selection, location and design of both structural and non-structural stormwater control measures, including maintenance access and limits of disturbance
✓ Storm drainage plans for site areas *not* draining to any BMP(s)
✓ Location of existing and proposed conveyance systems, such as storm drains, inlets, catch basins, channels, swales, and areas of overland flow, including grades, dimensions, and direction of flow
✓ Final drainage patterns and flow paths
✓ Location of floodplain/floodway limits and relationship of site to upstream and downstream properties and drainage systems
✓ Location of all contributing drainage areas and points of stormwater discharge, receiving surface waters or karst features into which stormwater discharges, the pre-development and post-development conditions for drainage areas, and the potential impacts of site stormwater on adjoining parcels
N/A Location and dimensions of proposed channel modifications, such as bridge or culvert crossings
✓ Final stabilization and landscaping plans

7. Hydrologic and hydraulic analysis, including the following:

✓ Site map with locations of design points and drainage areas (size in acres) for runoff calculations
N/A Identification and calculation of stormwater site design credits, if any apply
✓ Estimates of unified stormwater sizing criteria requirements
✓ Time of concentration (and associated flow paths)
✓ Imperviousness of the entire site and each drainage area
✓ NRCS runoff curve numbers or volumetric runoff coefficients
✓ A hydrologic analysis for the existing (pre-development) conditions, including runoff rates, volumes, and velocities, showing the methodologies used and supporting calculations
✓ A hydrologic analysis for the proposed (post-development) conditions, including runoff rates, volumes, and velocities, showing the methodologies used and supporting calculations
✓ Hydrologic and hydraulic analysis of the stormwater management system for all applicable design storms
✓ Pollution load and load reduction requirements and calculations

✓ Final good engineering and sizing calculations for stormwater control measures, including contributing drainage areas, storage, and outlet configurations, verifying compliance with the water quality and water quantity requirements of the regulations
✓ Stage-discharge or outlet rating curves and inflow and outflow hydrographs for storage facilities
✓ Final analysis of the potential downstream impacts/effects of the project, where necessary
✓ Downstream analysis, where detention is proposed
N/A Dam safety and breach analysis, where necessary

8. Representative cross-section and profile drawings and details of stormwater control measures and conveyances which include the following:

✓ Existing and proposed structural elevations (e.g., inverts of pipes, manholes, etc.)
✓ Design water surface elevations
✓ Structural details of BMP designs, outlet structures, embankments, spillways, grade control structures, conveyance channels, etc.

9. ✓ Applicable construction and material specifications, including references to applicable material and construction standards (ASTM, etc.)

10. ✓ Erosion and sediment control plan that, at a minimum, meets the requirements outlined in the Virginia Erosion and Sediment Control Regulations and Handbook

11. ✓ Landscaping plans for stormwater control measures and any site reforestation or revegetation

12. Operations and maintenance plan/agreement that includes the following:

✓ Name, legal address and phone number of the party or parties responsible for long-term maintenance activities
✓ Description and schedule of maintenance tasks
✓ Identification/description of the source of funding to support maintenance activities
✓ Description of access and safety issues
✓ Procedures for testing and disposal of sediments, if required
✓ Right-of-entry authorization for local government inspections/repairs, as needed

13. _____ Evidence of acquisition of all applicable local and non-local permits

14. N/A Waiver/exception requests

15. ✓ Evidence of acquisition of all necessary legal agreements (e.g., easements, covenants, land trusts, etc.)

16. ✓ Applicable supporting documents and studies (e.g., infiltration tests, geotechnical investigations, TMDLs, flood studies, etc.)

17. N/A Other required permits

OUTFALL NARRATIVE

DETENTION FOR THE SITE WILL BE PROVIDED BY 8 STORMTECH UNITS. THERE ARE FOUR OUTFALLS FROM THE SITE. OF THE 4 OUTFALLS, THE DISCHARGE TO 3 OF THEM MEET THE ENERGY BALANCE EQUATION. OUTFALL 2 DOES NOT MEET THE ENERGY BALANCE EQUATION, BUT IT DOES MEET THE DETENTION REQUIREMENTS FOR THE 10 YEAR STORM AND THE 100 YEAR STORM RUNOFF HAS BEEN DECREASED BELOW THE DESIGN FLOW USED TO SIZE THE DOWNSTREAM CHANNELS.

OUTFALL 1
ALLOWABLE RELEASE RATE
Q1= 0.47 CFS TO MEET ENERGY BALANCE EQUATION
Q2=6.141 CFS
Q10=19.51 CFS

ACTUAL RELEASE RATE (ST1, 6, 7, & 8)
Q1=0.337 CFS
Q2=1.343 CFS
Q10=14.824 CFS

CHANNEL PROTECTION: THE 2-YEAR RELEASE RATE FROM OUTFALL 1 IS 1.343 CFS, WHICH IS LESS THAN THE ALLOWABLE 2 YEAR RELEASE RATE OF 6.141 CFS. THEREFORE, THE CHANNEL PROTECTION FOR OUTFALL 1 IS DEEMED ADEQUATE.

FLOOD PROTECTION: THE 10-YEAR RELEASE RATE FROM OUTFALL 1 IS 14.824 CFS WHICH IS LESS THAN THE ALLOWABLE 19.51 CFS AND MEETS ENERGY BALANCE. THEREFORE, FLOOD PROTECTION FOR OUTFALL 1 IS DEEMED ADEQUATE.

OUTFALL 3
THERE IS A DRAMATIC DECREASE IN THE AREA DRAINAING TO OUTFALL 3. THE PRE-DEVELOPMENT DRAINAGE AREA IS 2.64 ACRES AND THE POST DEVELOPMENT DRAINAGE AREA IS ONLY 0.18 ACRES.

ALLOWABLE RELEASE RATE
Q1=7.221 CFS TO MEET ENERGY BALANCE EQUATION (INCREASE AS A RESULT OF LESS VOLUME)
Q2=1.962
Q10=5.412 CFS

ACTUAL RELEASE RATE
Q1=0.059 CFS
Q2=0.074 CFS
Q10=0.119 CFS

CHANNEL PROTECTION: THE 2-YEAR RELEASE RATE FROM OUTFALL 3 IS 0.074 CFS, WHICH IS LESS THAN THE ALLOWABLE 2 YEAR RELEASE RATE OF 1.962 CFS. THEREFORE, THE CHANNEL PROTECTION FOR OUTFALL 3 IS DEEMED ADEQUATE.

FLOOD PROTECTION: THE 10-YEAR RELEASE RATE FROM OUTFALL 3 IS 0.119 CFS WHICH IS LESS THAN THE ALLOWABLE 5.412 CFS AND MEETS ENERGY BALANCE. THEREFORE, FLOOD PROTECTION FOR OUTFALL 3 IS DEEMED ADEQUATE.

OUTFALL 4
THERE IS A DECREASE IN THE AREA DRAINING TO OUTFALL 4. THE PRE-DEVELOPMENT DRAINAGE AREA IS 0.37 ACRES AND THE POST DEVELOPMENT DRAINAGE AREA IS ONLY 0.044 ACRES.

ALLOWABLE RELEASE RATE
Q1=0.048 CFS TO MEET ENERGY BALANCE EQUATION
Q2=0.354 CFS
Q10=0.927 CFS

ACTUAL RELEASE RATE
Q1=0.048 CFS
Q2=0.076 CFS
Q10=0.172 CFS

CHANNEL PROTECTION: THE 2-YEAR RELEASE RATE FROM OUTFALL 4 IS 0.076 CFS, WHICH IS LESS THAN THE ALLOWABLE 2 YEAR RELEASE RATE OF 0.354 CFS. THEREFORE, THE CHANNEL PROTECTION FOR OUTFALL 4 IS DEEMED ADEQUATE.

FLOOD PROTECTION: THE 10-YEAR RELEASE RATE FROM OUTFALL 4 IS 0.172 CFS WHICH IS LESS THAN THE ALLOWABLE 0.927 CFS AND MEETS ENERGY BALANCE. THEREFORE, FLOOD PROTECTION FOR OUTFALL 4 IS DEEMED ADEQUATE.

OUTFALL 2
THE ONLY OUTFALL THAT DOES NOT MEET THE ENERGY BALANCE EQUATION FOR THE PROJECT IS OUTFALL 2. THIS IS DUE TO AN AREA OF WATER THAT DOES NOT DRAIN TO A DETENTION FACILITY. IT DOES HOWEVER MEET THE DETENTION REQUIREMENTS FOR THE 1 & 10 YEAR STORM EVENT.

ALLOWABLE RELEASE RATE
Q1=0.13 CFS TO MEET ENERGY BALANCE EQUATION
Q2=2.348 CFS
Q10=8.922 CFS

ACTUAL RELEASE RATE
Q1=0.145 CFS
Q2=0.301 CFS
Q10=5.545 CFS

CHANNEL PROTECTION: THE 2-YEAR RELEASE RATE FROM OUTFALL 2 IS 0.301 CFS, WHICH IS LESS THAN THE ALLOWABLE 2 YEAR RELEASE RATE OF 2.348 CFS. THEREFORE, THE CHANNEL PROTECTION FOR OUTFALL 2 IS DEEMED ADEQUATE.

FLOOD PROTECTION: THE 10-YEAR RELEASE RATE FROM OUTFALL 2 IS 5.545 CFS WHICH IS LESS THAN THE ALLOWABLE 8.922 CFS. THEREFORE, FLOOD PROTECTION FOR OUTFALL 2 IS DEEMED ADEQUATE.

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SEBASTIAN SANDOVAL
Lic. No. 045207
06/30/23
PROFESSIONAL ENGINEER

PLAN# MG2101
DATE: OCTOBER, 2021
CONTOUR INT.= N/A
SCALE: NTS

PLAN DATE
07/30/22
10/26/21
12/20/21
02/10/22

DESCRIPTION
REVISIONS
No. DATE

STORMWATER MANAGEMENT NARRATIVE
REVISION
CROSSROADS VILLAGE CENTER
GAINESVILLE DISTRICT
TOWN OF HAYMARKET, VIRGINIA

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PLAN# BA2201
DATE: MARCH, 2023
CONTOUR INT.= N/A
SCALE: N/A

PLAN DATE
01/06/23
03/17/23
06/30/23

DESCRIPTION
REVISIONS
No. DATE

SWM & BMP REFERENCE SHEET
FINAL SITE PLAN
KIDDIE ACADEMY AT CROSSROADS VILLAGE CENTER

TOWN OF HAYMARKET, VIRGINIA

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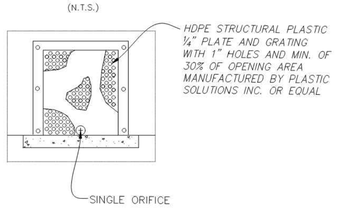
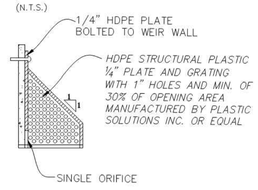
REFERENCE SHEET - FOR INFORMATION PURPOSES ONLY

TRASH RACK DETAIL

ELEVATION
(N.T.S.)



SECTION
(N.T.S.)



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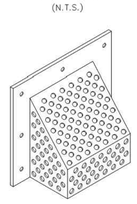

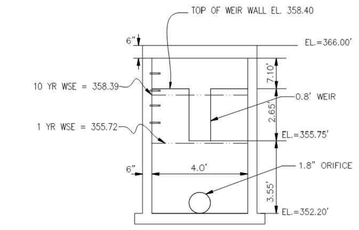

SECTION DETAIL FOR STORMTECH 8 OUTLET CONTROL STRUCTURE# SW81

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COMMONWEALTH OF VIRGINIA
SEBASTIAN SANDOVAL
PROFESSIONAL ENGINEER

PLAN# MG2101
DATE: OCTOBER, 2021
CONTOUR INT.= N/A
SCALE: N/A

PLAN DATE
07/30/22
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STORMTECH 8 DETAILS
REVISION
CROSSROADS VILLAGE CENTER
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SWM & BMP REFERENCE SHEET
FINAL SITE PLAN
KIDDIE ACADEMY AT CROSSROADS VILLAGE CENTER

TOWN OF HAYMARKET, VIRGINIA

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J2 Engineers - X:\DRAWINGS\ACTIVE\crossroads village center\OVERALL REVISIONS\MG2101-STORMTECH DETAILS.dwg [C 9.2] STORMTECH 8 DETAILS | February 10, 2022 - 5:17pm aschwoope

REFERENCE SHEET - FOR INFORMATION PURPOSES ONLY

POST - DETAINED - OUTFALL 1
DRAINAGE AREA A - STORMTECH 8 - 1 YEAR

Summary for Subcatchment 103S: DA 8

[49] Hint: Tc<2dt may require smaller dt

Runoff = 14.648 cfs @ 11.96 hrs, Volume= 0.699 af, Depth= 1.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-Year Rainfall=2.51"

	Area (ac)	CN	Description
*	0.430	61	B TURF
*	1.110	74	C TURF
*	1.030	98	B IMP
*	2.880	98	C IMP
	5.450	90	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.3					Direct Entry,

Summary for Pond 104P: STORMTECH 8

Inflow Area = 5.450 ac, Inflow Depth = 1.54" for 1-Year event
Inflow = 14.648 cfs @ 11.96 hrs, Volume= 0.699 af
Outflow = 0.158 cfs @ 20.20 hrs, Volume= 0.239 af, Atten= 99%, Lag= 494.7 min
Primary = 0.158 cfs @ 20.20 hrs, Volume= 0.239 af

Routing by Stor-Ind method, Time Span= 3.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 355.72' @ 20.20 hrs Surf.Area= 9,291 sf Storage= 23,444 cf

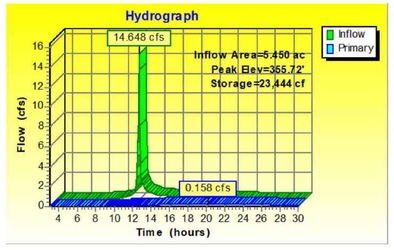
Plug-Flow detention time= 547.8 min calculated for 0.239 af (34% of inflow)
Center-of-Mass det. time= 422.2 min (1,235.1 - 812.9)

Volume	Invert	Avail.Storage	Storage Description
#1	352.20'	15,446 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 62,714 cf Overall - 24,099 cf Embedded = 38,616 cf x 40.0% Void
#2	352.95'	24,099 cf	**ADS_StormTech MC-4500 +Cap @ 4.03' L** x 222 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.6 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 222 Chambers in 6 Rows Cap Storage= +35.7 cf x 2 x 6 rows = 428.4 cf
	39,545 cf		Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
352.20	9,291	0	0
358.95	9,291	62,714	62,714

Device	Routing	Invert	Outlet Devices
#1	Primary	352.20'	**36.0" Round Culvert** L= 20.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 352.20' / 352.00' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 7.07 sf
#2	Device 1	352.20'	**1.8" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	355.75'	**0.8' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=0.158 cfs @ 20.20 hrs HW=355.72' (Free Discharge)
└1=**Culvert** (Passes 0.158 cfs of 43.326 cfs potential flow)
└2=**Orifice/Grate** (Orifice Controls 0.158 cfs @ 8.94 fps)
└3=**Sharp-Crested Rectangular Weir** (Controls 0.000 cfs)



POST - DETAINED - OUTFALL 1
DRAINAGE AREA A - STORMTECH 8 - 10 YEAR

Summary for Subcatchment 103S: DA 8

[49] Hint: Tc<2dt may require smaller dt

Runoff = 32.386 cfs @ 11.96 hrs, Volume= 1.616 af, Depth= 3.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 3.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-Year Rainfall=4.67"

	Area (ac)	CN	Description
*	0.430	61	B TURF
*	1.110	74	C TURF
*	1.030	98	B IMP
*	2.880	98	C IMP
	5.450	90	Weighted Average

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.3					Direct Entry,

Summary for Pond 104P: STORMTECH 8

Inflow Area = 5.450 ac, Inflow Depth = 3.56" for 10-Year event
Inflow = 32.386 cfs @ 11.96 hrs, Volume= 1.616 af
Outflow = 5.830 cfs @ 12.14 hrs, Volume= 1.134 af, Atten= 82%, Lag= 11.3 min
Primary = 5.830 cfs @ 12.14 hrs, Volume= 1.134 af

Routing by Stor-Ind method, Time Span= 3.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 358.39' @ 12.14 hrs Surf.Area= 9,291 sf Storage= 37,473 cf

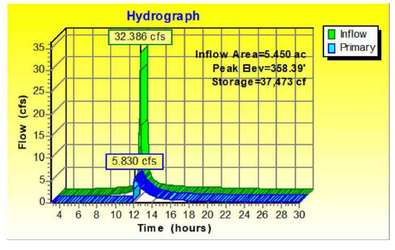
Plug-Flow detention time= 247.5 min calculated for 1.132 af (70% of inflow)
Center-of-Mass det. time= 153.0 min (942.2 - 789.2)

Volume	Invert	Avail.Storage	Storage Description
#1	352.20'	15,446 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc) 62,714 cf Overall - 24,099 cf Embedded = 38,616 cf x 40.0% Void
#2	352.95'	24,099 cf	**ADS_StormTech MC-4500 +Cap @ 4.03' L** x 222 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.6 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 222 Chambers in 6 Rows Cap Storage= +35.7 cf x 2 x 6 rows = 428.4 cf
	39,545 cf		Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
352.20	9,291	0	0
358.95	9,291	62,714	62,714

Device	Routing	Invert	Outlet Devices
#1	Primary	352.20'	**36.0" Round Culvert** L= 20.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 352.20' / 352.00' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 7.07 sf
#2	Device 1	352.20'	**1.8" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	355.75'	**0.8' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=5.817 cfs @ 12.14 hrs HW=358.39' (Free Discharge)
└1=**Culvert** (Passes 5.817 cfs of 73.698 cfs potential flow)
└2=**Orifice/Grate** (Orifice Controls 0.210 cfs @ 11.91 fps)
└3=**Sharp-Crested Rectangular Weir** (Weir Controls 5.607 cfs @ 5.31 fps)



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SEBASTIAN SANDOVAL
Lic. No. 045207
06/30/23

PLAN# BA2201
DATE: MARCH, 2023
CONTOUR INT.= N/A
SCALE: N/A

PLAN DATE
01/06/23
03/17/23
06/30/23

STORMTECH 8 COMPUTATIONS
REVISION
CROSSROADS VILLAGE CENTER
GAINESVILLE DISTRICT
TOWN OF HAYMARKET, VIRGINIA

No.	DATE	DESCRIPTION
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SWM & BMP REFERENCE SHEET
FINAL SITE PLAN
KIDDIE ACADEMY AT CROSSROADS VILLAGE CENTER

TOWN OF HAYMARKET, VIRGINIA

No.	DATE	DESCRIPTION
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GENERAL PLAN INFORMATION

Project Plan Name:	KIDDIE ACADEMY AT CROSSROADS VILLAGE CENTER
Prince William County Service Authority:	SA2023-0014
Engineering Firm:	J2 Engineers
Project Location:	The site is directly in the south-east quandrant of the I 66 and Route 15 interchange.

SERVICE AREA INFORMATION

Pressure Zone:	Haymarket
High Hydraulic Grade Line (ft):	535
Low Hydraulic Grade Line (ft):	515
Sewer Shed:	North Branch
Local Facility Charge:	Not Applicable
Master Plan Utility Adjustment Applicable:	No

PROJECT METRICS

WATER MAIN

Size:	Length:	Material:
8-inch	0	DIP
12-inch	0	DIP
16-inch	0	
18-inch	0	
Total Length	0	Feet

GRAVITY SANITARY SEWER MAIN

Size:	Length:	Material:
8-inch	0	C-900
10-inch	0	
12-inch	0	
16-inch	0	
Total Length	0	Feet

LOW PRESSURE FORCE MAIN

Size:	Length:	Material:
1.5-inch	0	
2-inch	0	
2.5-inch	0	
4-inch		
Total Length	0	Feet

PUMP STATION FORCE MAIN

Size:	Length:	Material:
4-inch	0	DIP
6-inch	0	
8-inch	0	
12-inch	0	
Total Length	0	Feet

Total Number of 4-inch or 6-inch proposed valves:	2 Each
Total Number of 8-inch or 12-inch proposed valves:	0 Each
Total Number of 16-inch or 24-inch proposed valves:	0 Each
Total Number of Proposed Manholes:	0 Each
Total Number of Proposed Fire Hydrants:	0 Each
Total Number of Proposed Residential Meter Crocks to be Installed:	0 Each
Total Number of 5/8"x 3/4" Residential Meters to be Certified:	0 Each

PIPE TOTALS FOR FEE CALCULATIONS

Pipe Quantity Summary	Total Project Quantities Proposed By This Plan	Quantities Previously Approved & Permitted by Plan #	Net Increase
WATER MAIN INSPECTION	0		
WATER MAIN AS-BUILT	0		
SANITARY SEWER / FORCE MAIN INSP.	0		
SANITARY SEWER/FORCE MAIN AS-BUILT	0		
TV SANITARY SEWER MAIN INPECTION	0		

Minimum water main inspection fee applies for water quantities less than 100 feet:	YES
Minimum sanitary sewer / force main inspection fee applies for quantities less than 100 linear feet:	YES
Minimum as-built fee applies when total as-built cost are less than $1000.00:	Yes

Notes:

THRUST RESTRAINT ASSUMPTIONS FOR CALCULATIONS

The profile shall call out the station restraint is to start and the station restraint is end for each fitting, reducer, and dead end.

Pipe Material:		DIP - POLYWRAP
Soil Type:	Fine_Grained_Soils	CL - Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, lean clays
Safety Factor:	(1.5 to 1 is typical)	1.5 to 1
Trench Type:	(Type 4 is typical for the Service Authority backfill requirements)	Type 3
Test Pressure:	(100 psi plus them max static pressure, but no less than 200 psi)	200 psi

DESIGNATION OF THE RESPONSIBLE PARTY & AS-BUILT RELEASE OF PLANS

The undersigned Engineer and /or firm, on behalf of itself and its successors, does hereby assume full liability and responsibility for the accuracy of the calculations, selections made, or information presented in this information sheet and agrees to hold harmless the Service Authority from any claim.

The undersigned Engineer and/or firm agrees that the Prince William County Service Authority shall have the right to use these plans and electronic files for the preparation of as-built records, as necessary. The Engineer and/or firm further agrees that the right to use the plans and electronic files shall be provided without cost to the Service Authority.

Signature: _____

SEBASTIAN SANDOVAL
(Type or Print)

HYDRAULIC SUMMARY

Maximum static water pressure in the proposed water system:	69 psi
Minimum static water pressure in the proposed water system:	62 psi

Information above is provided from the hydraulic model with applied maximum day water demands.

TITLE OF STUDY: REVISED CROSSROADS VILLAGE CENTER WATERY STUDY (APPROVED JULY 1, 2022)

FIRE FLOW SUMMARY

Available Fire Flow:	2500 gpm
Lowest Residual Pressure during a fire flow scenario:	22 psi

Information above is provided from the hydraulic model with applied maximum day and fire flow water demands.

Are residential fire sprinkler systems proposed? No

DELIVERY PRESSURE SUMMARY

High Hydraulic Grade Line	535 feet
Lowest Finished Floor Elevation proposed within the development	358.7 feet
*Estimated highest static pressure at the finished floor elevation	76 psi
Low Hydraulic Grade Line	515 feet
Highest Finished Floor Elevation proposed within the development	372 feet
*Estimated lowest static pressure at the finished floor elevation	62 psi

*Estimates are made with an assumed high and low hydraulic grade line and do not take into account the effects of friction loss or water booster pumps in the water system. Actual pressures may vary and delivery pressure are not guaranteed.

International Residential Code P2903.3 Minimum static pressure (as determined by the local water authority) at the building entrance for either public or private water service shall be 40 psi (276 kPa).

International Residential Code P2903.3.1 Maximum pressure. Maximum static pressure shall be 80 psi (551 kPa). When main pressure exceeds 80 psi (551 kPa), an approved pressure-reducing valve conforming to ASSE 1003 shall be installed on the domestic water branch main or riser at the connection to the water-service pipe.

Note: The professional engineer is responsible to account for the effects of friction loss on the delivery pressure at the finished floor elevation from the service line, meter, and other plumbing appurtenances. The Service Authority requires calculations to size the private service lines when delivery pressures are 45 psi or less and the service line is in excess of 70 feet.

☑ The hydraulic design and all finished floor elevations comply with the applicable plumbing code for pressure without a water booster pump or pressure reducing device.

☐ The use of private water booster pumps and/or pressure reducing devices are required for the following lots to comply with applicable plumbing code for pressure.

Lot# or Building ID	Elev. @ Finished Floor	High Hydraulic Grade Line (ft)	Low Hydraulic Grade Line (ft)	Estimated High Pres. (psi)	Estimated Low Pres. (psi)	Private Water Booster P. Needed	Pres. Red. Device Needed
		535	515			-	-
		535	515			-	-

AWWA WATER DEMAND ESTIMATE AND METER SIZING USING FIXTURE VALUES

(Based on AWWA M22 Manual, Second Edition)

Building Identifier: KIDDIE ACADEMY

Multi-Dwelling Residential or Non-Residential: High Demand (e.g. Non-Residential)

Maximum static water pressure at the meter location: 70 psi
(Obtained from hydraulic study at the meter location)

Fixture or Appliance	Fixture Value (at 60 psi)	Number of Fixtures	Subtotal Fixture Value
Toilet (tank)		0	0
Toilet (flush valve)	5	10	50
Urinal (wall or stall)		0	0
Urinal (flush valve)		0	0
Bidet		0	0
Shower (single head)		0	0
Sink / Faucet (Lavatory)	3	27	81
Kitchen Sink	4	2	8
Utility Sink	3	2	6
Dishwasher	1.4	1	1.4
Bathtub		0	0
Clothes Washer	1.4	1	1.4
Hose Connections (with 50 ft of hose)			
1/2 in.		0	0
5/8 in.		0	0
3/4 in.	2.5	2	5
Miscellaneous			
Bedpan washers		0	0
Drinking fountains	0.25	4	1
Dental units		0	0

Combined Fixture Value	153.8	
Demand (gpm) from AWWA Curve	55.1	gpm
Pressure Adjustment Factor	1.09	
Adjusted demand (gpm)	60	gpm
Irrigation Demand (gpm) that will occur simultaneously with normal water use	10	gpm
Water demand for equipment will occur simultaneously with normal water use	0	gpm
Total estimated peak flow	70	gpm
Required AWWA Meter Size	1.5-Inch Positive Displacement Meter	

METER SCHEDULES

MULTI-DWELLING METER SCHEDULE

Building Identifier	Building Address	Meter Use	Account Type	Number of Dwelling Units	[1]Peak Demand (GPM)	[2&3]ERU Purchase	Meter Size	Meter Type	(Reserved for Future Use)	(Reserved for Future Use)	[4]Non-Binding Estimated Availability Fee
						#N/A					
						#N/A					
						#N/A					
						#N/A					
						#N/A					
						#N/A					
						#N/A					
						#N/A					
						#N/A					

NOTES:
1 *A fixture unit list and meter sizing calculations shall be provided in the plan set for each proposed meter in accordance with the current AWWA M22 standard.*
2 *The number of ERU's for a multi-family building is 80% of the total number of dwelling units associated with the meter and is rounded up to the next full unit.*
3 *For water only accounts, the minimum purchased number of ERU units must match the allocation with the meter size as defined in Table VI: Availability Fees of the Customer Handbook.*
4 *The Availability Fee is not the total fee due. New connections may be subject to the following fees: meter, meter installation, sewer and/or water inspection, application and Local Facility charges. See the Customer Handbook for additional information.*

NON-RESIDENTIAL METER SCHEDULE

Building Identifier	Building Address	Meter Use	Account Type	[1]Est. Max Month Consumption (Gallons)	[2]Peak Demand (GPM)	[3]ERU Purchase	Meter Size	Meter Type	(Reserved for Future Use)	(Reserved for Future Use)	[4]Non-Binding Estimated Availability Fee
KIDDIE ACADEMY	DAYCARE	WATER SERVICE	Water & Sewer		70	7	1.5-Inch	Positive			$ 107,800.00

NOTES:
1 *For meters 2-inch and larger the maximum month water consumption shall be reported. The purchased number of ERU's shall be based on the estimated maximum month consumption, but shall not be less than the allocated number of ERU's allocated meter size. For meters smaller then 2-inch, the maximum month water consumption does not need to be reported.*
2 *A fixture unit list and meter sizing calculations shall be provided in the plan set for each proposed meter in accordance with the current AWWA M22 standard.*
3 *For all meters the minimum purchased number of ERU units must match the allocation with the meter size as defined in Table VI: Availability Fees of the Customer Handbook.*
4 *The Availability Fee is not the total fee due. New connections may be subject to the following fees: meter, meter installation, sewer and/or water inspection, application and Local Facility charges. See the Customer Handbook for additional information.*

DATA CENTER METER SCHEDULE

Building Identifier	Building Address	Meter Use	Account Type	[1]Est. Max Month Consumption (Gallons)	[2]Peak Demand (GPM)	[3]ERU Purchase	Meter Size	Meter Type	Meter Manufacturer	Flow Rate (gpm) Minimum	Flow Rate (gpm) Maximum	[4]Non-Binding Estimated Availability Fee

NOTES:
1 *For sewer only meters and 2-inch meters and larger, the purchased number of ERU's shall be based on the estimated maximum month consumption, but shall not be less then the allocated number of ERU's associated with the meter size.*
2 *A fixture unit list and meter sizing calculations shall be provided in the plan set for each proposed meter in accordance with the current AWWA M22 standard.*
3 *For all meters the minimum purchased number of ERU units must match the allocation with the meter size as defined in Table VI: Availability Fees of the Customer Handbook.*
4 *The Availability Fee is not the total fee due. New connections may be subject to the following fees: meter, meter installation, sewer and/or water inspection, application and Local Facility charges. See the Customer Handbook for additional information.*

GENERAL NOTES

1 Methods and materials used in the construction of water mains, sanitary sewer mains, force mains and appurtenances shall be in conformance with the current Prince William County Service Authority (Service Authority) Utility Standards Manual (USM) and the Virginia Department of Health Regulations.

2 Acceptance of these plans by the Service Authority will in no way relieve the owner from complying with the methods, policies or requirements stated in the Service Authority's USM.

3 Service Authority has Local Review Authority for water mains up to and including 18-inch and sanitary sewer mains up to and including 24-inch. Utilities outside the Service Authority's Local Review Authority, including low pressure force mains systems, are subject to the review, approval and permitting process of either the Virginia Department of Health Office of Drinking Water or Department of Environmental Quality. It is the Professional Engineer's responsibility to submit all necessary applications and plans and to secure all applicable plan approvals and permits from the different governing authorities.

4 Trees, fences, monuments, signs, entrance features, sheds, decks, overhanging canopies, or permanent structures shall not be placed in easements dedicated to the Service Authority without written permission from the Service Authority.

5 The contractor shall notify the Service Authority Inspection Manager at least two (2) business days, but not more than ten (10) business days, prior to the commencement of demolition, excavation or blasting in areas with underground water mains, sanitary sewer mains, and/or force mains.

6 All subdivision will require an address listing approved by the Prince William County Mapping Office. The address listing must be presented to the Service Authority at the time the utility permit is issued. Forms are available at the Service Authority. (Fax copies are not acceptable.)

7 Low pressure sewer force main systems are subject to the review and requirements of the Virginia Department of Environmental Quality.

8 The developer is responsible for all costs associated with damages to or relocation of water mains, sanitary sewer mains, force mains or service lines caused by the construction of this project.

9 The contractor shall coordinate all relocation of water mains, sanitary sewer mains and/or force mains with the Service Authority's Field Inspector. Water or sanitary sewer system shutdowns will not be executed without the prior approval of the Service Authority Field Inspector. The Field Inspector shall require the contractor to submit a relocation work plan for Service Authority acceptance prior to the commencement of the relocation work. The work plan will detail how the work will be done and the manpower, materials, and equipment that will be at the site to perform the work.

10 The Service Authority does not guarantee the availability or construction of utilities that are proposed by another entity even if those utilities are shown as existing in this plan set. If needed utilities shown as existing are not available or do not exist, it is the developer's responsibility to acquiring the necessary rights and permits to install on-site and off-site water and sanitary sewer utilities to provide the desired service.

11 Existing unused water service lines shall be exposed at the connection point on the water main and shall be cut and terminated (e.g. crimped) as directed by the Service Authority Field Inspector.

12 Existing unused laterals or sanitary service lines shall be cut and capped at the connection point to the sanitary sewer main or force main as directed by the Service Authority Field Inspector.

13 When an existing water service line, lateral, of sanitary service line will be reused as part of a new development, the Service Authority shall inspect the existing service line to insure that it is acceptable and meets current Service Authority material specifications. Any defects or out-of-date materials shall be repaired or replaced to the satisfaction of the Service Authority to ensure the service line is water tight before the existing service line is placed back in service.

Engineer's Seal & Signature

Service Authority
Prince William County

Water & Sanitary Sewer Information Sheet
Sheet effective as of September 1, 2019

SHEET 1 OF 2

J2 Engineers, Inc.
17739 Main Street
Suite 180
Dumfries, Va. 22026

703.361.1550 (office)
703.956.6845 (fax)
www.j2engineers.com

COMMONWEALTH OF VIRGINIA
SEBASTIAN SANDOVAL
Lic. No. 045207
06/30/2025
PROFESSIONAL ENGINEER

PLAN# BA2201
DATE: MARCH, 2023
CONTOUR INT.= N/A
SCALE: N/A

PLAN DATE
01/09/23
03/17/23
06/30/23

PWCSA WATER AND SANITARY SEWER INFORMATION
FINAL SITE PLAN
KIDDIE ACADEMY AT CROSSROADS VILLAGE CENTER
TOWN OF HAYMARKET, VIRGINIA

REVISIONS

No.	DATE	DESCRIPTION

SHEET 30 OF 43

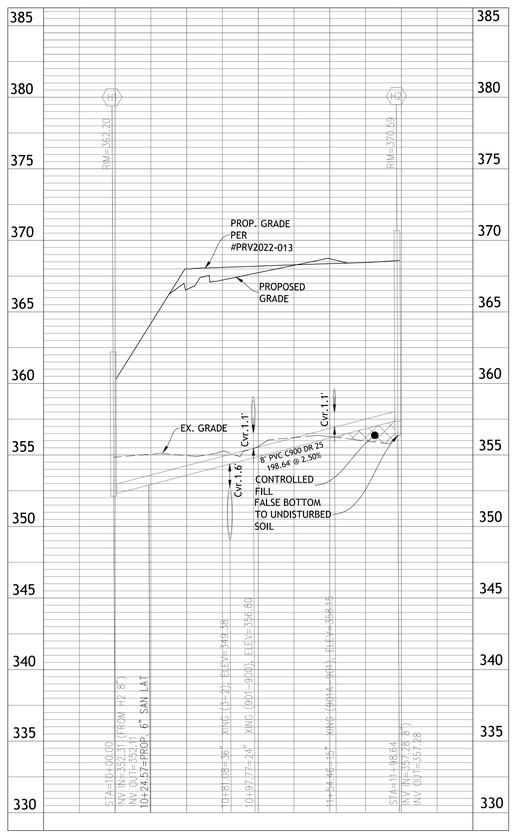
SANITARY SEWER LATERAL COMPUTATIONS

Ejector Pump Required	Lot	Station	Lower MH	/	Upper MH	Slope (%)	Overall Length (FT.)	Invert @ Main	Crown @ Main	Distance to Vert. Bend	Inv. @ Bottom of Vert. Bend	Riser Height (FT.)	Inv. @ Top of Vert. Bend	Inv. @ Lateral End	Lowest Flr.Elev. To Serve (Ft)	Diff. Lowest Floor to Crown @ Main	Lateral Material	PW/CSA Use Only Date Installed	PW/CSA Use Only Stub Installed % of Grade	Addt. length req.	Act Inv @ end	Diff lf-end of act	Lot
	1	1+05.0	@MH	/	J	2.08%	39.0	352.36	353.03	N/A	N/A	0	N/A	353.84	369.20	16.17	C-900			55	354.99	14.21	1
	2	0+91.0	I	/	J	2.08%	39.0	352.72	353.39	N/A	N/A	0	N/A	354.20	368.50	15.11	C-900			58	355.41	13.09	2
	3	0+71.1	I	/	J	2.08%	39.0	352.56	353.23	N/A	N/A	0	N/A	354.04	367.80	14.57	C-900			56	355.20	12.60	3
	4	0+51.0	I	/	J	2.08%	39.0	352.40	353.07	N/A	N/A	0	N/A	353.88	367.20	14.13	C-900			58	355.08	12.12	4
	5	0+31.0	I	/	J	2.08%	39.0	352.23	352.90	N/A	N/A	0	N/A	353.72	366.50	13.60	C-900			56	354.88	11.62	5
	6	0+11.0	I	/	J	2.08%	39.0	352.07	352.74	N/A	N/A	0	N/A	353.55	366.50	13.76	C-900			58	354.76	11.74	6
	7	2+04.7	H	/	I	2.08%	39.0	351.66	352.33	N/A	N/A	0	N/A	353.14	366.50	14.17	C-900			58	354.35	12.15	7
	8	1+18.7	H	/	I	2.08%	39.0	351.23	351.90	N/A	N/A	0	N/A	352.71	365.80	13.90	C-900			55	353.85	11.95	8
	9	1+05.8	H	/	I	2.08%	39.0	351.16	351.83	N/A	N/A	0	N/A	352.64	365.80	13.97	C-900			58	353.85	11.95	9
	10	0+85.8	H	/	I	2.08%	39.0	351.06	351.73	N/A	N/A	0	N/A	352.54	365.80	14.07	C-900			56	353.71	12.09	10
	11	0+65.8	H	/	I	2.08%	39.0	350.96	351.63	N/A	N/A	0	N/A	352.44	366.50	14.87	C-900			58	353.65	12.85	11
	12	0+36.9	H	/	I	2.08%	39.0	350.82	351.49	N/A	N/A	0	N/A	352.30	367.20	15.71	C-900			56	353.46	13.74	12
	13	0+92.4	B	/	N	2.08%	22.0	353.03	353.70	N/A	N/A	0	N/A	354.15	367.20	13.50	C-900			57	355.34	11.86	13
	14	1+20.4	B	/	N	2.08%	22.0	353.27	353.94	N/A	N/A	0	N/A	354.39	367.20	13.26	C-900			57	355.58	11.62	14
	15	1+40.4	B	/	N	2.08%	22.0	353.44	354.11	N/A	N/A	0	N/A	354.56	366.50	12.39	C-900			55	355.71	10.79	15
	16	1+60.4	B	/	N	2.08%	22.0	353.61	354.28	N/A	N/A	0	N/A	354.73	366.50	12.22	C-900			57	355.92	10.58	16
	17	1+80.6	B	/	N	2.08%	22.0	353.78	354.45	N/A	N/A	0	N/A	354.91	366.50	12.05	C-900			55	356.05	10.45	17
	18	2+98.7	B	/	N	2.08%	22.0	354.79	355.46	N/A	N/A	0	N/A	355.92	366.60	11.14	C-900			55	357.06	9.54	18
	19	3+18.7	B	/	N	2.08%	22.0	354.96	355.63	N/A	N/A	0	N/A	356.09	366.60	10.97	C-900			55	357.23	9.37	19
	20	3+38.7	B	/	N	2.08%	22.0	355.13	355.80	N/A	N/A	0	N/A	356.26	367.30	11.50	C-900			55	357.40	9.90	20
	21	3+58.7	B	/	N	2.08%	22.0	355.30	355.97	N/A	N/A	0	N/A	356.43	367.30	11.33	C-900			57	357.61	9.69	21
	22	3+78.7	B	/	N	2.08%	22.0	355.47	356.14	N/A	N/A	0	N/A	356.60	368.00	11.86	C-900			55	357.74	10.26	22
	23	3+98.7	B	/	N	2.08%	22.0	355.64	356.31	N/A	N/A	0	N/A	356.77	368.70	12.39	C-900			57	357.96	10.74	23
	24	4+20.9	B	/	N	2.08%	22.0	355.83	356.50	N/A	N/A	0	N/A	356.96	369.40	12.90	C-900			56	358.12	11.28	24
	25	4+75.4	@MH		N	2.08%	12.0	355.83	356.50	N/A	N/A	0	N/A	356.75	368.50	12.00	C-900			55	357.89	10.61	25
	26	4+56.0	B	/	N	2.08%	12.0	356.13	356.80	N/A	N/A	0	N/A	357.05	367.80	11.00	C-900			57	358.24	9.56	26
	27	4+33.4	B	/	N	2.08%	12.0	355.94	356.61	N/A	N/A	0	N/A	356.86	367.20	10.59	C-900			55	358.00	9.20	27
	28	4+13.4	B	/	N	2.08%	12.0	355.77	356.44	N/A	N/A	0	N/A	356.69	367.20	10.76	C-900			57	357.87	9.33	28
	29	3+93.4	B	/	N	2.08%	12.0	355.60	356.27	N/A	N/A	0	N/A	356.52	366.50	10.23	C-900			55	357.66	8.84	29
	30	3+73.4	B	/	N	2.08%	12.0	355.43	356.10	N/A	N/A	0	N/A	356.35	365.80	9.70	C-900			57	357.53	8.27	30
	31	3+53.4	B	/	N	2.08%	12.0	355.26	355.93	N/A	N/A	0	N/A	356.18	365.20	9.27	C-900			55	357.32	7.88	31
	32	3+33.4	B	/	N	2.08%	12.0	355.08	355.75	N/A	N/A	0	N/A	356.00	364.50	8.75	C-900			57	357.19	7.31	32
	33	3+13.4	B	/	N	2.08%	12.0	354.91	355.58	N/A	N/A	0	N/A	355.83	363.80	8.22	C-900			55	356.98	6.82	33
	34	2+93.4	B	/	N	2.08%	12.0	354.74	355.41	N/A	N/A	0	N/A	355.66	363.80	8.39	C-900			57	356.85	6.95	34
	35	1+85.3	B	/	N	2.08%	12.0	353.82	354.49	N/A	N/A	0	N/A	354.74	364.50	10.01	C-900			56	355.90	8.60	35
	36	1+66.4	B	/	N	2.08%	12.0	353.66	354.33	N/A	N/A	0	N/A	354.58	364.50	10.17	C-900			58	355.78	8.72	36
	37	1+46.4	B	/	N	2.08%	12.0	353.49	354.16	N/A	N/A	0	N/A	354.41	364.50	10.34	C-900			56	355.57	8.93	37
	38	1+26.4	B	/	N	2.08%	12.0	353.32	353.99	N/A	N/A	0	N/A	354.24	365.20	11.21	C-900			58	355.44	9.76	38
	39	1+06.4	B	/	N	2.08%	12.0	353.15	353.82	N/A	N/A	0	N/A	354.07	365.20	11.38	C-900			56	355.23	9.97	39
	40	0+86.4	B	/	N	2.08%	12.0	352.98	353.65	N/A	N/A	0	N/A	353.90	364.50	10.85	C-900			58	355.10	9.40	40
	41	0+60.7	B	/	N	2.08%	12.0	352.76	353.43	N/A	N/A	0	N/A	353.68	363.80	10.37	C-900			55	354.82	8.98	41
	42	0+15.7	D	/	E	2.08%	32.0	345.85	346.52	N/A	N/A	0	N/A	347.19	363.80	17.28	C-900			47	348.17	15.63	42
	43	0+40.9	F	/	G	2.08%	51.0	346.91	347.58	41.00	348.43	5	353.54	353.64	362.20	14.62	C-900			57	354.83	7.37	43
	44	0+60.9	F	/	G	2.08%	51.0	347.01	347.68	41.00	348.53	5	353.64	353.74	362.80	15.12	C-900			55	354.89	7.91	44
	45	0+82.9	F	/	G	2.08%	51.0	347.12	347.79	41.00	348.64	5	353.75	353.85	363.50	15.71	C-900			57	355.04	8.46	45
	46	0+94.8	F	/	G	2.08%	52.0	347.18	347.85	42.00	348.72	5	353.83	353.93	364.20	16.35	C-900			55	355.08	9.12	46
	47	1+20.9	F	/	G	2.08%	51.0	347.31	347.98	41.00	348.83	5	353.94	354.04	364.20	16.22	C-900			57	355.23	8.97	47
	48	1+40.9	F	/	G	2.08%	51.0	347.41	348.08	41.00	348.93	5	354.04	354.14	364.20	16.12	C-900			55	355.29	8.91	48
	49	1+60.9	F	/	G	2.08%	51.0	347.51	348.18	41.00	349.03	5	354.14	354.24	363.50	15.32	C-900			57	355.43	8.07	49
	50	1+80.9	F	/	G	2.08%	51.0	347.61	348.28	41.00	349.13	5	354.24	354.34	363.50	15.22	C-900			55	355.49	8.01	50
	51	0+42.9	G	/	G-1	2.08%	51.0	348.51	349.18	N/A	N/A	0	N/A	350.24	362.80	13.62	C-900			57	351.43	11.37	51
	52	0+62.5	G	/	G-1	2.08%	51.0	348.67	349.34	N/A	N/A	0	N/A	350.40	363.50	14.16	C-900			55	351.55	11.95	52
	53	0+82.5	G	/	G-1	2.08%	51.0	348.84	349.51	N/A	N/A	0	N/A	350.57	363.50	13.99	C-900			57	351.75	11.75	53
	54	1+08.8	G	/	G-1	2.08%	51.0	349.05	349.72	N/A	N/A	0	N/A	350.78	364.20	14.48	C-900			55	351.93	12.27	54
	55	1+22.5	G	/	G-1	2.08%	51.0	349.17	349.84	N/A	N/A	0	N/A	350.90	364.80	14.96	C-900			57	352.08	12.72	55
	56	1+42.5	G	/	G-1	2.08%	51.0	349.33	350.00	N/A	N/A	0	N/A	351.06	365.50	15.50	C-900			55	352.21	13.29	56
	57	1+64.6	G	/	G-1	2.08%	51.0	349.51	350.18	N/A	N/A	0	N/A	351.24	366.80	16.62	C-900			57	352.43	14.37	57
	58	1+84.5	G	/	G-1	2.08%	51.0	349.68	350.35	N/A	N/A	0	N/A	351.41	366.80	16.45	C-900			55	352.55	14.25	58
	59	2+06.9	G	/	G-1	2.08%	51.0	349.86	350.53	N/A	N/A	0	N/A	351.59	367.50	16.97	C-900			57	352.78	14.72	59
	60	2+33.0	@MH		G-1	2.08%	51.0	350.21	350.41	N/A	N/A	0	N/A	351.47	368.20	17.79	C-900			57	352.66	15.54	60
	61	2+25.8	G	/	G-1	2.08%	22.0	350.02	350.69	N/A	N/A	0	N/A	351.14	367.50	16.81	C-900			57	352.33	15.17	61
	62	2+01.8	G	/	G-1	2.08%	22.0	349.82	350.49	N/A	N/A	0	N/A	350.95	366.20	15.71	C-900			60	352.20	14.00	62
	63	1+77.8	G	/	G-1	2.08%	22.0	349.62	350.29	N/A	N/A	0	N/A	350.75	365.50	15.21	C-900			57	351.93	13.57	63
	64	1+53.8	G	/	G-1	2.08%	22.0	349.42	350.09	N/A	N/A	0	N/A	350.55	364.20	14.11	C-900			60	351.80	12.40	64
	65	1+29.8	G	/	G-1	2.08%	22.0	349.23	349.90	N/A	N/A	0	N/A	350.35	362.80	12.90	C-900			57	351.54	11.26	65
	66	1+05.8	G	/	G-1	2.08%	22.0	349.03	349.70	N/A	N/A	0	N/A	350.16	361.50	11.80	C-900			60	351.40	10.10	66
	67	0+95.6	G	/	G-1	2.08%	22.0	348.94	349.61	N/A	N/A	0	N/A	350.07	360.20	10.59	C-900			57	351.26	8.94	67
	68	0+57.8	G	/	G-1	2.08%	22.0	348.63	349.30	N/A	N/A	0	N/A	349.76	359.50	10.20	C-900			59	350.99	8.51	68
	69	0+47.8	G	/	G-1	2.08%	22.0	348.55	349.22	N/A	N/A	0	N/A	349.68	359.50	10.28	C-900			57	350.86	8.64	69
	70	1+99.8	F	/	G	2.08%	22.0	347.71	348.38	N/A	N/A	0	N/A	348.83	359.50	11.12	C-900			57	350.02	9.48	70
	71	1+75.8	F	/	G	2.08%	22.0	347.59	348.26	N/A	N/A	0	N/A	348.71	360.20	11.94	C-900			59	349.94	10.26	71
	72	1+51.8	F	/	G	2.08%	22.0	347.47	348.14	N/A	N/A	0	N/A	348.59	360.20	12.06	C-900			57	349.78	10.42	72
	73	1+27.8	F	/	G	2.08%	22.0	347.35	348.02	N/A	N/A	0	N/A	348.47	360.20	12.18	C-900			59	349.70	10.50	73
	74	1+03.8	F	/	G	2.08%	22.0	347.23	347.90	N/A	N/A	0	N/A	348.35	359.50	11.60	C-900			57	349.54	9.96	74
	75	0+79.8	F	/	G	2.08%	22.0	347.11	347.78	N/A	N/A	0	N/A	348.23	359.50	11.72	C-900			59	349.46	10.04	75
	76	0+55.8	F	/	G	2.08%	22.0	346.99	347.66	N/A	N/A	0	N/A	348.11	358.80	11.14	C-900			57	349.30	9.50	76
	77	0+31.8	F	/	G	2.08%	22.0	346.87	347.54	N/A	N/A	0	N/A	347.99	358.80	11.26	C-900			59	349.22	9.58	77
	78	0+07.8	F	/	G	2.08%	22.0	346.75	347.42	N/A	N/A	0	N/A	347.87	358.20	10.78	C-900			57	349.06	9.14	78
	79	0+00.0	@MH		G	2.08%	22.0	346.37	347.04	N/A	N/A	0	N/A	347.50	358.20	11.16	C-900			60	348.75	9.45	79
	BLDG.2	0+51.3	EX. 078/031	/	EX. 078/160	2.08%	100.3	361.95	362.62	N/A	N/A	0	N/A	364.71	371.25	8.63	C-900			77	366.31	4.94	BLDG.2
	BLDG.3	1+42.3	EX. 078/032	/	O	2.08%	126.0	360.16	360.83	N/A	N/A	0	N/A	363.45	369.24	8.41	C-900			78	365.07	4.17	BLDG.3
	BLDG.6	0+58.0	P	/	Q	1.00%	140.0	361.49	362.16	N/A	N/A	0	N/A	363.56	369.30	7.14	C-900			128	364.84	4.46	BLDG.6
	BLDG.7	0+63.0	P	/	Q	1.50%	85.0	361.51	362.18	N/A	N/A	0	N/A	363.46	367.70	5.52	C-900			114	365.17	2.53	BLDG.7
	SITE #1	2+79.9	EX. 078/031	/	EX. 078/160	1.00%	107.0	363.10	363.77	N/A	N/A	0	N/A	364.84	372.00	8.23	C-900			297	367.81	4.19	SITE #1
	SITE #2	0+64.6	O	/	P	2.08%	21.0	360.73	361.40	N/A	N/A	0	N/A	361.83	368.58	7.18	C-900			142	364.79	3.79	SITE #2
*	KA	0+24.6	H1	/	H2	2.87%	81.6	352.93	353.60	N/A	N/A	0	N/A	355.94	368.77	15.17	C-900			102	358.87	9.90	KA

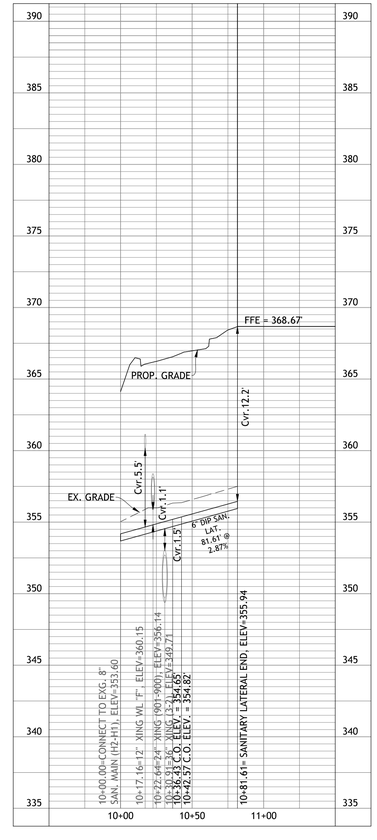
* SANITARY LATERAL PROPOSED WITH THIS SITE PLAN.

MANHOLE US	MANHOLE DS	UNITS LOTS	UNITS TOTAL	AVG.DESIGN FLOWS (GPD/UNIT)	DISCHARGE (GPD)	CUMULATIVE DISCHARGE (GPD)	P.F.F.	RESIDENTIAL PEAK FLOW (GPD)	RESIDENTIAL PEAK FLOW (cfs)	ACTUAL VELOCITY (fps)	LENGTH (ft)	PIPE DIA. (in)	SLOPE %	n	FULL FLOW CAPACITY (GPD)	FULL FLOW CAPACITY (cfs)	FULL FLOW VEL. (fps)	ELEVATION OF INVERTS US INV.	ELEVATION OF INVERTS DS INV.	d/D %	q/Q %	PIPE MATERIAL	PW/CSA Use Only Date Line Installed	PW/CSA Use Only Date Line Passed Test	PW/CSA Use Only MH ID	PW/CSA Use Only Date MH Passed Vac. Test
G-1	G	19	19	350	6650	6650	4	26600	0.0412	1.16	233.00	8	0.82%	0.013	710823	1.10	3.2	350.08	348.16	13.48%	3.74%	C-900				
G	F	18	37	350	6300	12950	4	51800	0.0802	1.29	250.00	8	0.50%	0.013	553710	0.86	2.5	347.96	346.71	23.36%	9.36%	C-900				
F	E	0	37	350	0	12950	4	51800	0.0802	1.28	61.23	8	0.49%	0.013	548145	0.85	2.4	346.51	346.21	23.50%	9.45%	C-900				
E	D	1	38	350	350	13300	4	53200	0.0823	1.36	41.56	8	0.60%	0.013	606559	0.94	2.7	346.01	345.76	22.53%	8.77%	C-900				
D	C	0	38	350	0	13300	4	53200	0.0823	1.30	152.00	8	0.50%	0.013	553710	0.86	2.5	345.56	344.80	23.73%	9.61%	C-900				
C	B	0	38	350	0	13300	4	53200	0.0823	1.31	25.00	8	0.52%	0.013	564676	0.87	2.5	344.60	344.47	23.46%	9.42%	C-900				
H1	H		3.7	2000	0	7400	4	29600	0.0458	1.20	184.90	8	0.80%	0.013	700395	1.08	3.1	352.11	350.63	14.45%	4.23%	C-900				
J	I	7	7	350	2450	2450	4	9800	0.0152	0.67	105.00	8	0.81%	0.013	704541	1.09	3.1	352.83	351.98	6.95%	1.39%	C-900				
I	H	5	12	350	1750	4200	4	16800	0.0260	0.85	229.83	8	0.50%	0.013	553710	0.86	2.5	351.78	350.63	12.07%	3.03%	C-900				
H	B	0	*	350	0	11600	4	46400	0.0718	1.25	285.91	8	0.51%	0.013	561409	0.87	2.5	350.43	349.07	21.81%	8.26%	C-900				
N	B	29	29	350	10150	10150	4	40600	0.0628	1.39	475.38	8	0.85%	0.013	723647	1.12	3.2	356.30	352.24	17.22%	5.61%	C-900				
B	A	0	*	350	0	35050	4	140200	0.2169	1.70	20.82	8	0.48%	0.013	542523	0.84	2.4	344.27	344.17	39.87%	25.84%	C-900				
A	PUMP STA	0	*		0	35050	4	140200	0.2169	1.73	29.52	8	0.50%	0.013	553710	0.86	2.5	343.97	343.82	39.43%	25.32%	C-900				
Q	P	1.91	1.91	2000	3820	3820	4	15280	0.0236	0.82	80.00	8	0.50%	0.013	553710	0.86	2.5	361.60	361.20	11.52%	2.76%	C-900				
P	O	1.07	2.98	2000	2140	5960	4	23840	0.0369	0.95	118.56	8	0.50%	0.013	553710	0.86	2.5	361.00	360.40	14.61%	4.31%	C-900				
O	EX. 078/032	0.49	3.47	2000	980	6940	4	27760	0.0430	1.01	150.62	8	0.50%	0.013	553710	0.86	2.5	360.20	359.45	16.03%	5.01%	C-900				
EX. 078/159	EX. 078/160				0	0	4	0	0.0000	0.00	38.41	8	0.50%	0.013	553710	0.86	2.5	363.52	363.33	0.00%	0.00%	C-900				
EX. 078/160	EX. 078/031	3.64	3.64	2000	7280	7280	4	29120	0.0451	1.03	285.42	8	0.50%	0.013	554817	0.86	2.5	363.13	361.70	16.50%	5.25%	C-900				
EX. 078/031	EX. 078/038				0	7280	4	29120	0.0451	1.04	401.18	8	0.51%	0.013	559220	0.87	2.5	361.50	359.45	16.41%	5.21%	C-900				
H2	H1	3.7	3.7	2000	7400	7400	4	29600	0.0458	1.77	198.64	8	2.50%	0.013	1238134	1.92	5.5	357.28	352.31	10.78%	2.39%	C-901				

8" SANITARY MAIN



6" SANITARY LATERAL



HORIZONTAL SCALE

GRAPHIC SCALE

0 25 50 100

(IN FEET)
1 INCH = 50 FEET

VERTICAL SCALE

GRAPHIC SCALE

0 2.5 5 10

(IN FEET)
1 INCH = 5 FEET

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COMMONWEALTH OF VIRGINIA
SEBASTIAN SANDOVAL
Lic. No. 045207
06/30/23
PROFESSIONAL ENGINEER

PLAN# BA2201
DATE: MARCH, 2023
CONTOUR INT.= N/A
SCALE: AS NOTED

PLAN DATE
01/06/23
02/17/23
06/30/23

UTILITY COMPUTATIONS AND PROFILES
FINAL SITE PLAN
KIDDIE ACADEMY AT CROSSROADS VILLAGE CENTER
TOWN OF HAYMARKET, VIRGINIA

REVISIONS

No.	DATE	DESCRIPTION

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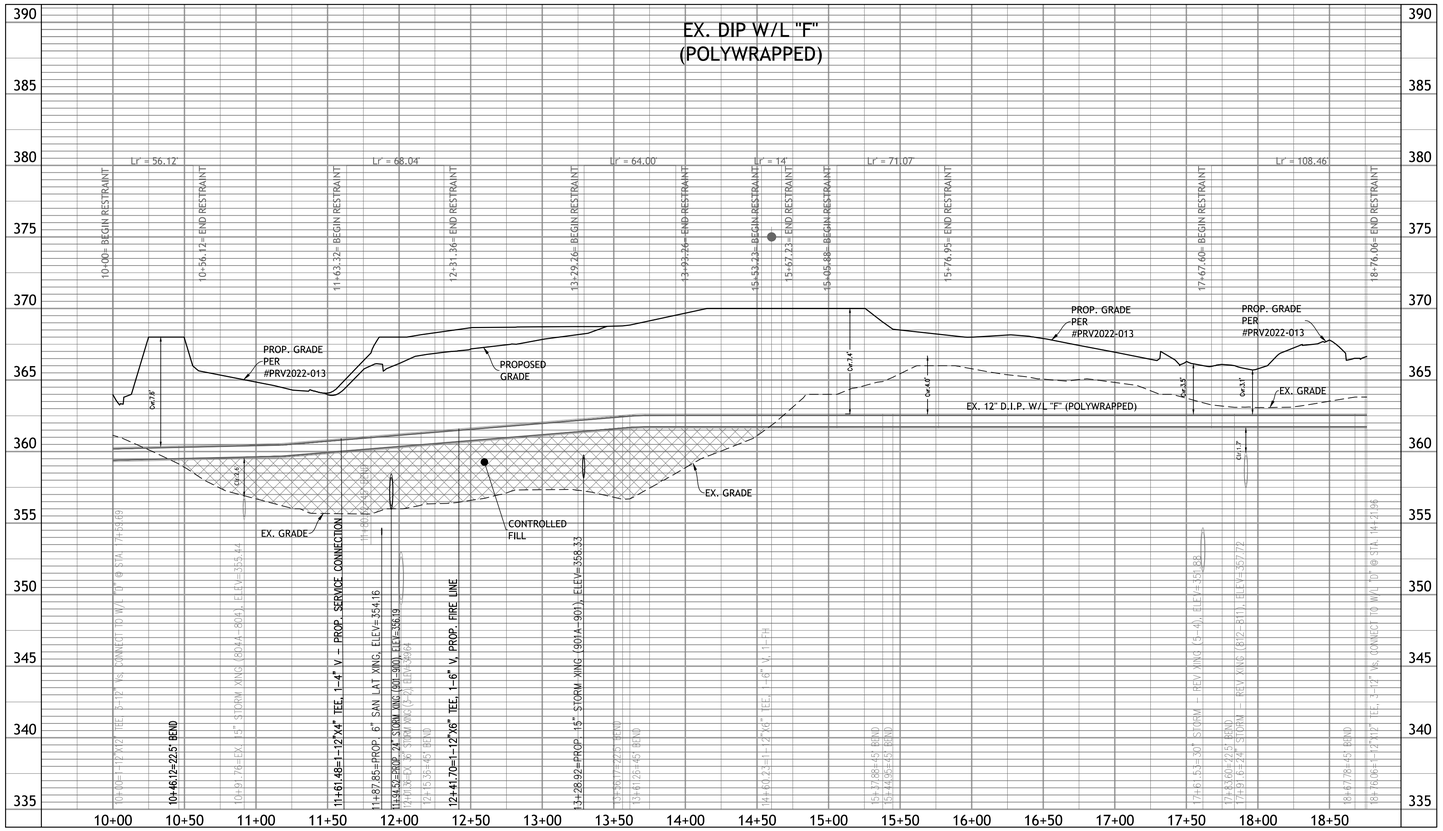

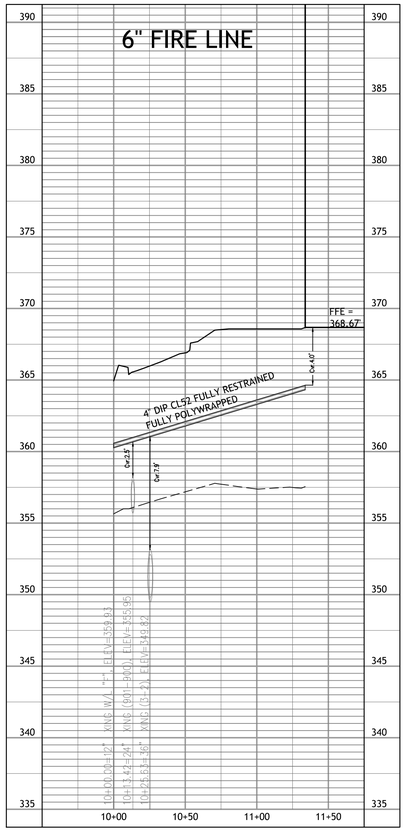

HORIZONTAL SCALE

GRAPHIC SCALE

0 25 50 100

(IN FEET)
1 INCH = 50 FEET

VERTICAL SCALE

GRAPHIC SCALE

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(IN FEET)
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UTILITY PROFILES
FINAL SITE PLAN
KIDDIE ACADEMY AT CROSSROADS VILLAGE CENTER
TOWN OF HAYMARKET, VIRGINIA

REVISIONS

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"NO PARKING" SIGN LEGEND

SIGN TYPE "A"

STANDARD WORDING WITH AN ARROW AT BOTTOM POINTING TO THE RIGHT. ONE SIGN MOUNTED PARALLEL TO THE LINE OF CURBING OR THE PAVEMENT EDGE AT END OF PAINTED AREA.

SIGN TYPE "B"

STANDARD WORDING WITH A TWO DIRECTIONAL ARROW. ONE SIGN MOUNTED PARALLEL TO THE LINE OF CURBING OR THE PAVEMENT EDGE IN BETWEEN SIGNS "A" & "C" IN DISTANCES GREATER THAN 100'.

SIGN TYPE "C"

STANDARD WORDING WITH AN ARROW AT BOTTOM POINTING TO THE LEFT. ONE SIGN MOUNTED PARALLEL TO THE LINE OF CURBING OR THE PAVEMENT EDGE AT END OF PAINTED AREA.

SIGN LEGEND:

- SIGNS
- STREET SIGN
- 1 STOP SIGN
- 2 STREET SIGN
- 3 HANDICAP SIGN
- A FIRE LANE "A"
- B FIRE LANE "B"
- C FIRE LANE "C"
- FIRE LANE

*SEE SHEET 02 FOR HANDICAP SIGN DETAILS

REQUIREMENTS-FIRE LANE MARKINGS AND SIGNS

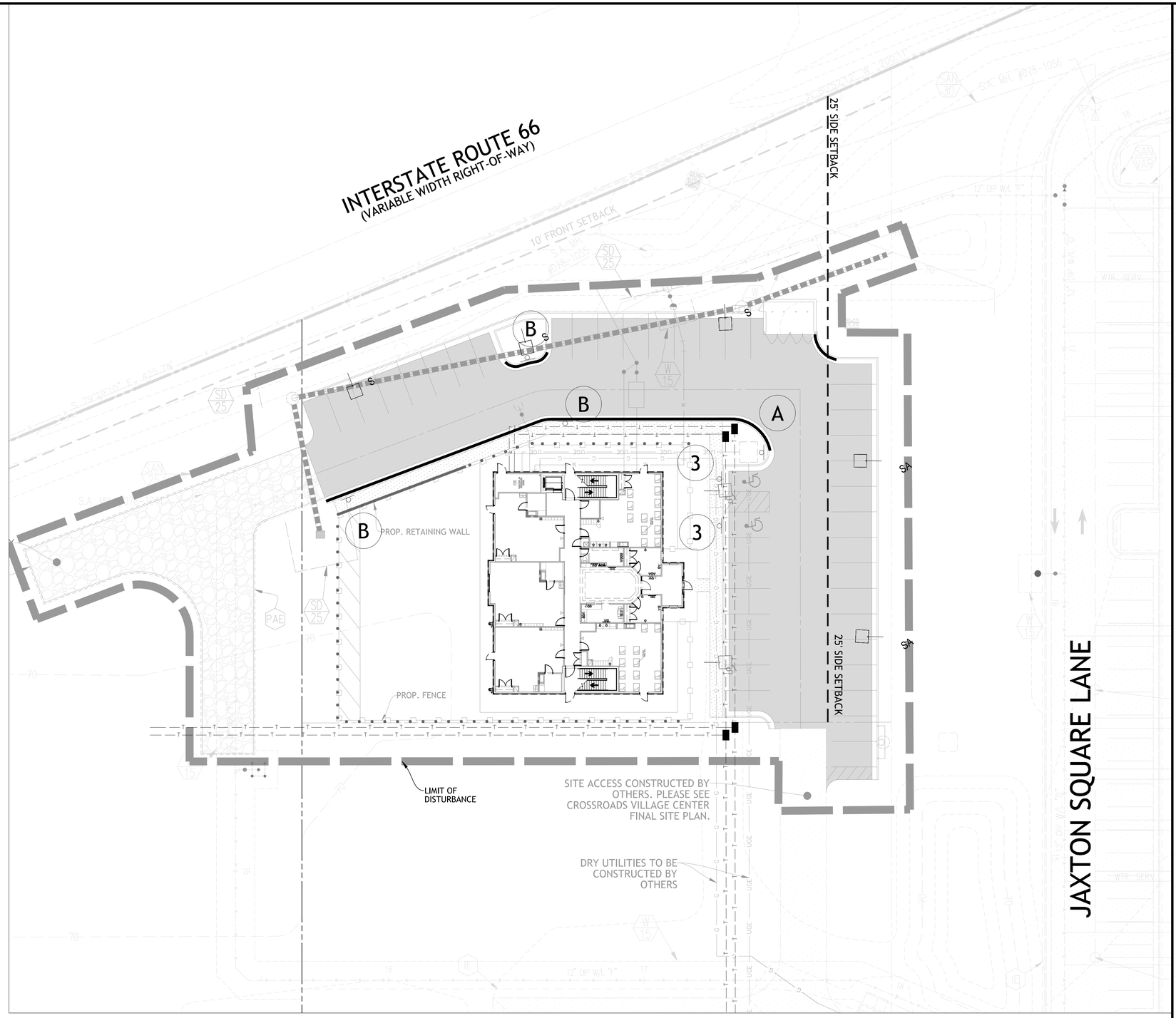
I. APPROVED SIGN SPECIFICATIONS
- A. METAL CONSTRUCTION, "12x18".
- B. RED LETTERS ON REFLECTIVE WHITE BACKGROUND WITH 3/8" RED TRIM STRIP AROUND ENTIRE OUTER EDGE OF SIGN.
- C. LETTERING ON SIGN TO BE: "NO PARKING OR STANDING FIRE LANE".
- D. LETTERING SIZE TO BE AS FOLLOWS: "NO PARKING" AND "STANDING" – 2", "OR" – 1", "FIRE LANE" – 2 1/2", ARROWS 1"x6" SOLID SHAFT WITH A SOLID HEAD 1 1/2" WIDE AND 2" DEEP.
- E. SIGNS ARE TO BE MOUNTED 7' FROM THE GROUND TO THE BOTTOM OF THE SIGN UNLESS OTHERWISE DIRECTED BY THE LOUDOUN COUNTY INSPECTOR.
- F. POSTS FOR SIGNS, WHEN REQUIRED, SHALL BE METAL AND SECURELY MOUNTED, UNLESS WRITTEN PERMISSION FOR ALTERNATIVES IS OBTAINED PRIOR TO INSTALLATION FROM THE CODE OFFICIAL.
- G. OTHER SPECIAL SIGNS AS APPROVED BY THE CODE OFFICIAL.

II. CURB DESIGNATION

FIRE LANE SIGNS SHALL BE INSTALLED AT THE BEGINNING OF A DESIGNATED FIRE LANE AND AT THE END OF A DESIGNATED FIRE LANE WITH DIRECTIONAL ARROWS POINTING IN.

III. INSPECTION NOTICE

FIRE MARSHAL FIELD INSPECTION NECESSARY FOR FINAL APPROVAL OF FIRE LANES. FIRE LANES MUST HAVE FINAL APPROVAL PRIOR TO REQUEST FOR OCCUPANCY PERMIT.



GRAPHIC SCALE
0 10 20 40
(IN FEET)
1 INCH = 20 FEET

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PLAN# BA2201
DATE: MARCH, 2023
CONTOUR INT.= 2'
SCALE: 1"=20'

PLAN DATE
01/06/23
03/17/23
06/30/23

FIRE LANE MARKING
FINAL SITE PLAN
KIDDIE ACADEMY AT CROSSROADS VILLAGE CENTER

TOWN OF HAYMARKET, VIRGINIA

REVISIONS

No.	DATE	DESCRIPTION

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HATCH LEGEND:

ROAD HATCH

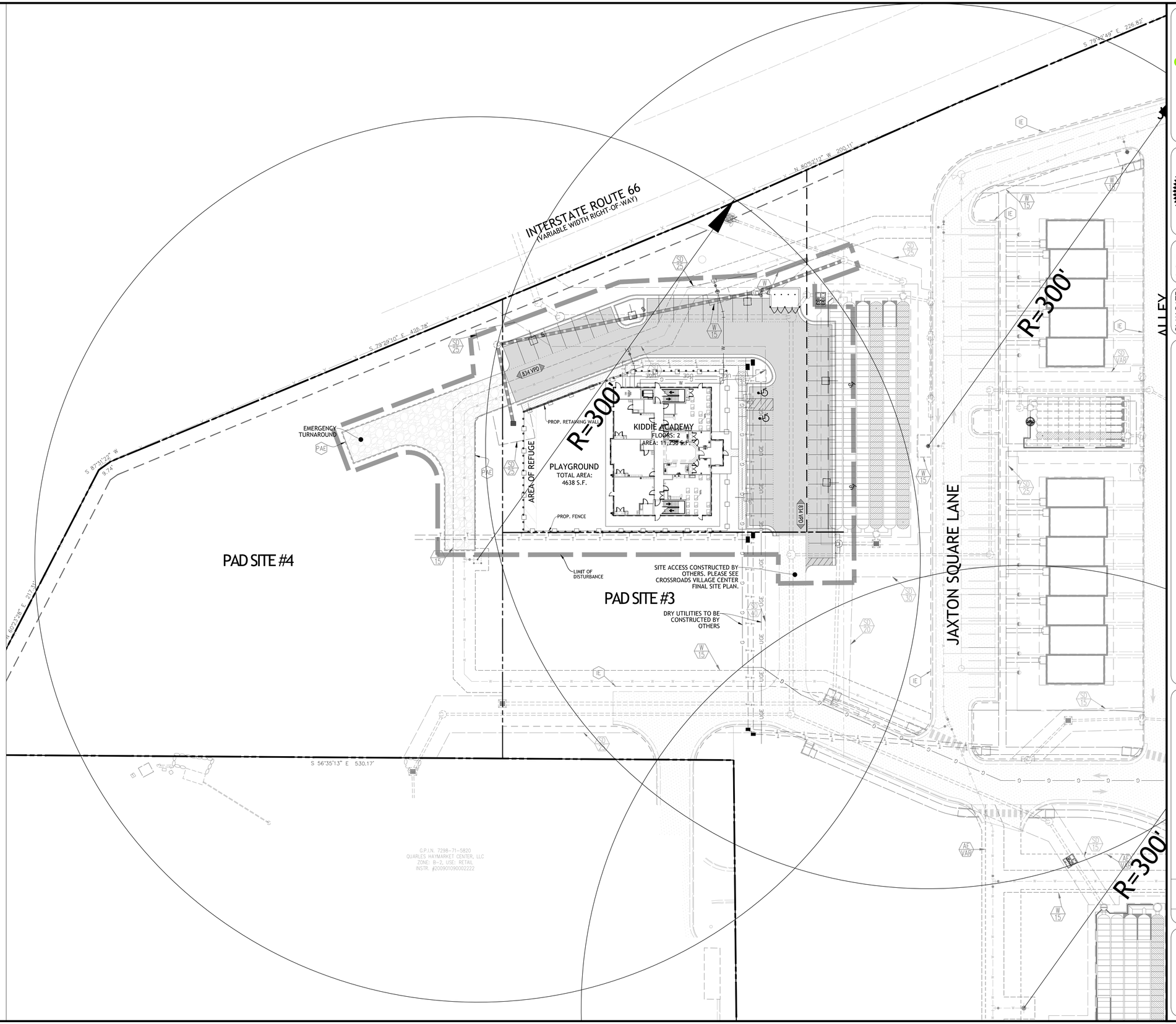
SIDEWALK HATCH

FIRE HYDRANT COVERAGE NOTES:
1. FIRE HYDRANT COVERAGE: SHOULD COMPLY WITH DCSM SECTION 302.08 (PWC DCSM Table 3-2)
-SINGLE FAMILY DWELLINGS ATTACHED - 300 FT
2. NO OBSTRUCTION OF ARE PERMITTED WITHIN 3' OF A FIRE HYDRANT (PLANTINGS, FENCES, RETAINING WALL, ETC.) OR 10' OF A AUTOMATIC SPRINKLER SYSTEM OR STANDPIPE SYSTEM FIRE DEPARTMENT CONNECTION.
3. ALL FIRE HYDRANTS AND WATER MAINS LOCATED IN OR ON PARKING STRUCTURES SHALL BE PROTECTED FROM FREEZING (NO HEAT TAPE).
4. FIRE HYDRANTS IN SINGLE FAMILY DWELLING AREAS SHALL BE LOCATED AS FOLLOWS:
(A) LOT LINE AND/OR
(B) CURVE OF PAVEMENT
5. FIRE HYDRANTS SUBJECT TO IMPACT BY VEHICLES MUST BE PROTECTED BY GUARD POSTS OR OTHER APPROVED MEANS.

FIRE FLOW NOTES:
1. ADEQUATE FIRE FLOW (2500 GPM @ 20 PSI MINIMUM RESIDUAL PRESSURE) MUST BE AVAILABLE ON SITE.
2. FIRE LINE PROPERLY SIZED. (MINIMUM 6" IN DIAMETER)

GRAPHIC SCALE
0 15 30 60
(IN FEET)
1 INCH = 30 FEET

N. STATE ROAD NO. 55 NORTH



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PLAN# BA2201
DATE: MARCH, 2023
CONTOUR INT.= N/A
SCALE: AS NOTED

PLAN DATE
01/06/23
03/17/23
06/30/23

HYDRANT COVERAGE PLAN
FINAL SITE PLAN
KIDDIE ACADEMY AT CROSSROADS VILLAGE CENTER
TOWN OF HAYMARKET, VIRGINIA

REVISIONS

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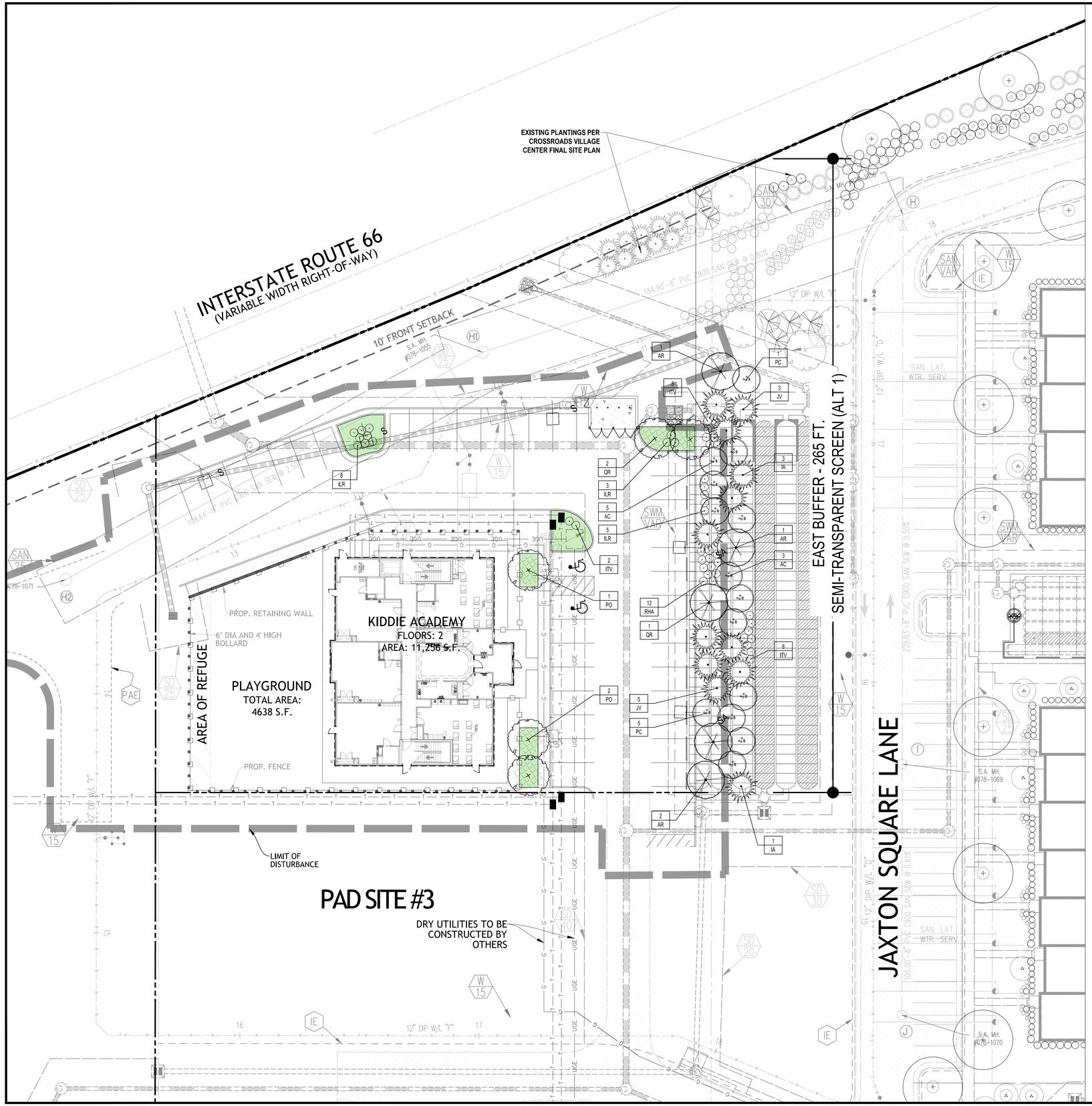

LEGEND

- PARKING LOT LANDSCAPE AREA
- INTERIOR PARKING LOT - CANOPY TREE
- CANOPY TREE
- ORNAMENTAL TREE
- EVERGREEN TREE
- SHRUB
- PLANT TAG (XX / XX)

GENERAL NOTE
PROPOSED PLANT MATERIAL THAT ARE PROVIDED IN THE EASEMENTS OR ON TOP OF THE UNDERGROUND STORM STRUCTURE WILL NOT BE DETRIMENTAL TO THE EASEMENT OR STRUCTURE. IT WILL BE REPLACED IN KIND BY THE OWNER IF DAMAGED OR REMOVED AS PART OF UTILITY MAINTENANCE.

INTERIOR PARKING LOT LANDSCAPING
- THIS PLAN ONLY PROVIDES INTERIOR PARKING LOT LANDSCAPING AND COMPUTATIONS FOR PROPOSED DEVELOPMENT - KIDDIE ACADEMY.
- SEE INTERIOR PARKING LOT LANDSCAPING SCHEMATIC PLAN AND COMPUTATIONS ON SHEET 36.

BUFFER YARD
BUFFER YARD IS ONLY PROVIDED FOR PROPOSED DEVELOPMENT (KIDDIE ACADEMY) THAT IS PART OF THIS APPLICATION.

SECTION 58-17.10 / 58-17.8
BUFFER YARDS & SCREENING

Buffer Yard	EAST	
Required buffer width:	25	ft
Provided buffer width:	25	ft
Buffer Length:	265	ft
Buffer Area:	6,625	sq.ft.
Required Screen	**S.S. (Semi Transparent Screen)**	
Screening Alternative	**ALT 1**	

Canopy Trees Required:	1 per	1,000	s.f. =	**7**	Existing:	2	Proposed:	5	Total Provided: **7**
Ornamental Trees Required:	1 per	500	s.f. =	**14**	Existing:	0	Proposed:	14	Total Provided: **14**
Evergreen Trees Required:	1 per	500	s.f. =	**14**	Existing:	2	Proposed:	12	Total Provided: **14**
Shrubs Required:	1 per	100	s.f. =	**67**	Existing:	34	Proposed:	33	Total Provided: **67**

PLANT SCHEDULE - TREES

Location / Use	Qty.	Key	Scientific Name	Common Name	Size	Root Type
			CANOPY TREES			
Buffer Yard	4	AR	Acer rubrum	Red Maple	2.5" cal.	B&B
Interior Parking Lot	3	PO	Platanus occidentalis	American Sycamore	2.5" cal.	B&B
Buffer Yard/Interior Parking Lot	3	QR	Quercus rubra	Northern Red Oak	2.5" cal.	B&B
			ORNAMENTAL TREES			
Buffer Yard	8	AC	Amelanchier canadensis	Serviceberry	5-6' ht.	B&B
Buffer Yard	6	PC	Prunus cerasifera	Cherry Plum	5-6' ht.	B&B
			EVERGREEN TREES			
Buffer Yard	4	IA	Ilex x attenuata 'Fosteri'	Foster's Holly	6-8' ht.	B&B
Buffer Yard	8	JV	Juniperus virginiana	Eastern Red Cedar	6-8' ht.	B&B

PLANT SCHEDULE - SHRUBS

Location / Use	Qty.	Key	Scientific Name	Common Name	Size	Root Type
			DECIDUOUS SHRUBS			
Buffer Yard/Interior Parking Lot	18	ITV	Ilex verticillata	Winterberry	12-24" Ht.	Cont.
Buffer Yard	12	RHA	Rhododendron atlanticum	Dwarf Azalea	12-24" Ht.	Cont.
			EVERGREEN SHRUBS			
Buffer Yard/Interior Parking Lot	16	ILR	Ilex crenata	Japanese Holly	12-24" Ht.	Cont.

VA. STATE GRID NORTH

GRAPHIC SCALE
0 10 20 40
(IN FEET)
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PLAN# BA2201
DATE: MARCH, 2023
CONTOUR INT.= N/A
SCALE: 1"=20'

PLAN DATE
01/06/23
03/17/23
06/30/23

LANDSCAPE PLAN
FINAL SITE PLAN
KIDDIE ACADEMY AT CROSSROADS VILLAGE CENTER

TOWN OF HAYMARKET, VIRGINIA

REVISIONS
No. | DATE | DESCRIPTION

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PLANTING SPECIFICATIONS

1. QUALITY ASSURANCE:
   A. Landscape planting and related work shall be performed by a firm with a minimum of five years experience specializing in this type and scale of work.
   B. Applicable Specifications and Standards:
      Town of Haymarket Zoning Ordinance;
      Virginia Stormwater Management Handbook;
      American Joint Committee on Horticultural Nomenclature;
      American Standard for Nursery Stock (ANSI Z60.1), latest edition;
      Landscape Specification Guidelines for Baltimore Washington Metropolitan Areas, latest edition, by Landscape Contractors Association MD, DC, VA.
   C. The Contractor shall guarantee all landscape improvements, including sod/seeding, for one full year from the date of initial acceptance by the owner. Contractor must contact owner at least 10 business days in advance to schedule acceptance inspection(s). Contractor must replace all dead or unacceptable plants during the following planting season.
2. SUBMITTALS: Submit the following to the Owner's Representative prior to beginning work:
   A. Copies of manufacturer's data for all materials required.
   B. Samples of required mulch material.
   C. Chemical and mechanical analysis and samples of all existing soil, topsoil, organic matter and soil mix to be used.
   D. Planting schedule showing the dates (earliest and latest) proposed for each type of plant specified, schedule each type of planting within the normal planting seasons for such work. Include requests for any proposed changes in the approved planting season and a list of proposed sources for all plant materials.
   E. List of proposed sources for all plant material.
3. DELIVERY, HANDLING, AND STORAGE:
   A. Deliver packaged materials in manufacturer's unopened containers or bundles, fully identified with name, brand, type, weight, and analysis. Store packaged materials in such a manner as to prevent damage or intrusion of foreign matter.
   B. Dig balled and burlapped (B&B) plants with firm, natural balls of earth, of a diameter not less than that shown on the plant list nor less than recommended by the American Standard for Nursery Stock, and of sufficient depth to include the fibrous and feeding roots. B&B plants will not be accepted if the ball is cracked or broken before or during planting operation.
   C. Deliver trees and shrubs after preparations for planting have been completed. Do not bend, bind, or tie trees or shrubs in such a manner as to damage bark, break branches or destroy natural shape. If planting is delayed more than 6 hours after delivery, set trees and shrubs in shade, protect from weather and mechanical damage, and keep roots moist by heeling-in bare root stock and covering plant balls with soil, peat moss or other acceptable material for balled stock. Plants shall be kept well watered and shall not remain unplanted for longer than ten (10) days after delivery.
   D. Plants shall be lifted and handled from the bottom of the ball only.
   E. Do not remove container-grown stock from containers until planting time.
4. DRAINAGE: Before planting, determine that areas to receive plant material have adequate subdrainage.
   A. The landscape contractor is responsible for drainage tests as necessary to identify any problems prior to beginning planting operations. Upon commencement of planting operations the landscape contractor assumes responsibility for soil conditions.
   B. Dig planting pits to full depth and dimensions indicated on drawings.
   C. At bottom of planting pit, excavate rectangular pit 12 inches by 12 inches by 18 inches deep. Quickly pour water into pit to a depth of 6 inches (approximately 3-3 3/4 gallon). Note time required for water to be completely absorbed. Divide time noted by 6 to achieve average rate of absorption for 1 inch of water. Where rate of absorption exceeds 60 minutes per inch, notify owner immediately for directions on how to proceed.
5. PLANTING DATES: Planting shall be done only within the following dates except as approved by Owner.
   A. Deciduous Trees and Shrubs: March 1 to May 31 and October 15 to December 15.
   B. Evergreen Trees, Shrubs and Vines: March 1 to May 31 and September 1 to November 15.
   C. All plant material shall be guaranteed by the Contractor for a period of 1 year from the date final acceptance to be in good, healthy and flourishing condition.
6. MATERIALS FOR PLANTING: Contractor must provide, load, haul, mix and spread all materials for plantings as required.
   A. Topsoil: shall be a fertile, friable natural loam, uniform in composition, free of stones, lumps, plants and their roots, debris and other extraneous matter over 1 inch in diameter, capable of sustaining vigorous plant growth. Soil shall be harvested at a single source from the O and/or A horizons of the soil profile.
      1) Topsoil shall have a pH range of 5.5 to 7.5.
      2) Topsoil shall contain 1.5-5% organic matter by dry weight .
      3) Soil Texture: sandy loam, sandy clay loam with the following particle size distribution:

Gravel	Less than 10%
Silt	15-30%
Clay	20-35%

      4) Chemical Levels shall be:

Magnesium Mg	100+ units
Phosphorus P205	150+ units
Potassium - K20	120+ units

      5) Soluble Salts/ Conductivity - Not to exceed 900 ppm/0.9 mmhos/cm (in soil); not to exceed 3000 ppm/2.5 mmhos/cm (in high organic mix)
      6) Cation exchange capacity shall be a minimum of 8 meq/100g.
   B. Clay Loam to Sandy Clay Loam Soil: shall be a fertile, friable natural loam, uniform in composition, free of stones, lumps, plants and their roots, debris and other extraneous matter over 1 inch in diameter, capable of sustaining vigorous plant growth.
      1) Soil shall have a pH range of 5.5 to 6.5.
      2) Soil shall contain 2-5% organic content by volume.
      3) Soil Texture: Clay loam to sandy clay loam with the following particle size distribution:

Gravel	Less than 10%
Sand	20-50%
Silt	<35%
Clay	20-40%

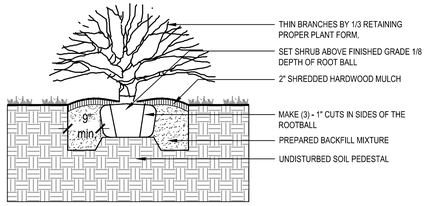
      4) Chemical Levels shall be:

Magnesium Mg	100+ units
Phosphorus P205	150+ units
Potassium - K20	120+ units

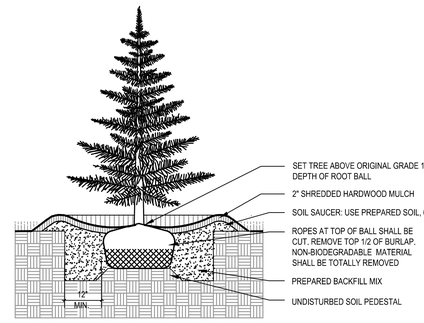
      5) Soluble Salts/ Conductivity - Not to exceed 900 ppm/0.9 mmhos/cm (in soil); not to exceed 3000 ppm/2.5 mmhos/cm (in high organic mix)
      6) Cation exchange capacity shall be 20-35 meq/100g.
   C. Compost: Compost shall be mature, stable, weed free, and produced by aerobic decomposition of organic matter. Compost feedstock shall be plant matter, such as high lignin forestry products or yard waste (leaves, brush and yard trimmings).
      1) The product must not contain any visible refuse or other physical contaminants, substances toxic to plants, or over 5% sand, silt, clay or rock material by dry weight.
      2) Compost shall be sampled and tested as required by the Seal of Testing Assurance Program of the United States Composting Council (USCC) and shall meet the physical requirements for compost as determined by USCC.
      3) The product shall possess no objectionable odors. The product must meet all applicable USEPA CFR, Title 40, Part 503 Standards for Class A biosolids.
      4) The moisture level shall be such that no visible water or dust is produced when handling the material.
   D. Composted Pine Bark Fines: Shall be approved composted, ground pine bark having no particle with a dimension greater than 3/4 inch. No more than 10% shall be wood.
   E. Mulch: Shall be shredded hardwood bark for trees and shrubs. Fine bark mulch is to be used for perennial beds.
   F. Sand: Shall be quartz based sharp concrete sand, ASTM C-33 Fine Aggregate, with a Fines Modulus Index between 2.8 and 3.2.
   G. Trace Elements: Shall be commercially available slow release materials containing zinc (Zn), Molybdenum (Mo), Copper (Cu), Boron (B), and Magnesium (Mn).
   H. Fertilizer: A commercial fertilizer for ornamental trees, shrubs and ground cover with an analysis of 10% Nitrogen, 6% Phosphorus and 4% Potassium shall be used. This fertilizer shall be granular with a minimum of 50% of the total Nitrogen in organic form. 14-14-14-Osmocote (or approved equal) shall be applied at a rate of 10 lbs. per square foot, tilled to a depth of 8 inch, shall be used for perennials.
   I. Soil Separator: Shall be rot resistant non-woven polypropylene filter fabric, water permeable, and unaffected by freezing and thawing. Acceptable products include: Mirafi 140N, Mirafi Civil Engineering Co., or Stabilenka Type T-80, American Enka Co., Enka, N.C.
   J. Planter Drainage Fabric: Shall be prefabricated planter drainage fabric Miradrain 9000, a composite system consisting of a Mirafi drainage fabric bonded to a three-dimensional highly impact-resistant plastic core. The core shall have the following attributes:
      1) Compressive Strength: (ASTM D-1621), 15,000 + PSF.
      2) Overlaps: Shall be capable of mechanically interlocking so as to prevent separation of the overlaps during backfill.
7. PLANT MATERIALS: Refer to the PLANT LIST on the drawings for specific types and quantities of plants:
   A. Plants shall be nursery grown in accordance with good horticultural practices. Plants shall either be obtained from local nurseries and/or others, which have soil (heavy clay) and climatic conditions similar to those in the locality of the project.
   B. Plant material grown in sandy, well-drained soil will not be approved for this project. Plants shall be true to species and variety and unless specifically noted otherwise, all plants shall be of specimen quality, exceptionally heavy, symmetrical, tightly-knit plants, so trained or favored in their development and appearance as to be superior in form, number of branches, compactness and symmetry.
   C. Plants shall be sound, healthy and vigorous, well branched and densely foliated when in leaf, free of disease, insect pests, eggs or larvae and shall have healthy, well-developed root systems. They shall be free from physical damage or any conditions that would prevent thriving health and the desired appearance.
   D. Trees, which have a damaged or crooked leader, or multiple leaders, unless specified in the plant list, will be rejected. Trees with abrasion of the bark, sun scald, disfiguring knots, or pruning cuts more than 1 1/4 inch diameter which have not completely callused, will be rejected.
   E. Plants shall conform to measurements specified in the plant schedules except that plants larger than specified may be used if acceptable to the Landscape Architect or owner. Use of such plants shall not increase the contract price. If larger plants are accepted, the root ball shall be sized for the larger plant.
   F. Caliper Measurement: Shall be taken at a point on the trunk 6 inches above natural ground line for trees up to 4 inches diameter, and at a point 12 inches above the natural ground line for trees over 4 inches diameter.
   G. Plants shall be measured when branches are in the normal position. Height and spread dimensions specified refer to the main body of the plant and not from branch tip to tip.
8. SOIL MIXING PROCEDURES:
   A. Topsoil used in sand/soil mixes shall be screened or shredded prior to mixing in sands. Maximum clod inclusion for soil mixes shall not exceed:

Clod size (largest dimension)	% of the soil mix volume
Less than 1"	Unlimited
1 to 3 inches	20%
3 to 6 inches	5%
>6 inches	Less than 2%

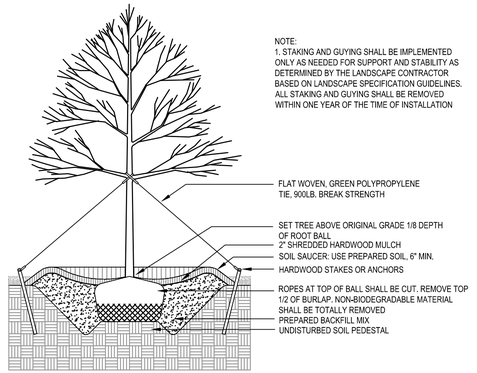
   B. Source material and soil mix stockpiles shall be protected from rain by covering with filter cloth.
9. INSPECTION:
   A. Examine the areas and conditions where soil mix is to be installed and notify the Landscape Architect of conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions are corrected to permit proper installation of the work.
   B. Cooperate with other Contractors and trades working in and adjacent to other work areas. Examine drawings which show development of entire project and become familiar with scope of other work required.
10. SOIL INSTALLATION - GENERAL PROCEDURES:
   A. If subgrade soil compaction exceeds 80%, existing soil shall be ripped to a depth of 14 inches to alleviate compaction which has taken place during construction. Prior to loosening of soil, Contractor must locate existing utilities and coordinate with Owner any underground electric lines, drainage pipes, conduits, etc.
   B. Prepare the subgrade by roughening the top 3 inches of the subsoil by dragging the teeth of a backhoe bucket across the surface.
   C. Begin soil installation as soon as subsoil is prepared. Use low impact equipment with track belts, large tires, or low tire pressure to lower compaction and soil damage during installation.
   D. Monitor compaction during installation and loosen soils as needed if compaction exceeds 80%.
   E. Install specified soil in 12-18 inch thick lifts. Compact each lift sufficiently to reduce settling but not enough to prevent the movement of water and feeder roots through the soil. The soils in each lift should feel firm to the foot in all areas and make only slight heel prints.
11. INSTALLATION OF SOIL MIX FOR LAWN AREAS ON GRADE:
   A. Soil Mix for Lawns on Grade: shall consist of 10% compost and 90% topsoil, by volume. These materials must meet specifications described in Section 2.00.
   B. Loosen subgrade lawn areas to a minimum of 3 inches. Remove stones more than 1-1/2 inches in any dimension and sticks, roots, rubbish, and other extraneous matter. Limit preparation to areas which will be planted promptly after preparation.
   C. Spread soil mix for lawn areas on grade to a minimum depth of 6 inches as required to meet grade and elevations shown on drawings, after lightly rolling and natural settlement. Allow for sod thickness in areas to be sodded.
12. INSTALLATION OF SOIL MIX FOR TREE PITS ON GRADE
   A. Confirm that native subsoil drains at a rate of at least ½ inch per hour. If drainage is less than ½ inch per hour, provide subsurface drainage lines.
   B. Install 30-36 inches of Soil Mix for Tree Pit Backfill on Grade, which shall consist of 3 parts existing clay loam to sandy clay loam soil, amended per soil test results instructions and incorporating 1 part Compost and/or Composted Pine Bark Fines.
   C. Till 4 inches of compost into the top 6 inches of the installed Soil Mix.
13. INSTALLATION OF SOIL MIX FOR MULCHED SHRUB AND PERENNIAL BEDS:
   A. Confirm that native subsoil drains at a rate of at least ½ inch per hour. If drainage is less than ½ inch per hour, provide subsurface drainage lines.
   B. Install 14-18 inches of Soil Mix for Mulched Shrub and Perennial Beds, which shall consist of 3 parts existing clay loam to sandy clay loam soil, amended per soil test results instructions and incorporating 1 part Compost and/or Composted Pine Bark Fines.
   C. Till 4 inches of compost into the top 6 inches of the installed Soil Mix.
14. EROSION CONTROL MATERIAL AND PLANTING ON STEEP SLOPES:
   A. Material meeting the requirements of the specifications shall be installed and maintained on the designated areas as shown and specified. The areas to be covered shall be prepared and fertilized as specified before the erosion material is placed. Immediately prior to the planting operations, the material shall be laid evenly, smoothly and in contact with the soil throughout.
   B. Lay erosion control materials with one inch nominal openings in accordance with manufacturer's instructions. Unroll in direction of water flow. Overlap sheets by at least 6 inches. Where strips are to be spliced lengthwise, overlap strips by 8 inches. Upgrade section shall be on top of all splices.
   C. The Contractor shall maintain and protect the erosion control material until the final inspection. Maintenance shall consist of repairs made necessary by erosion, wind or any other cause. Following the restoration of damaged areas under plant and turf guarantee and establishment requirements for applicable underlying items; the erosion control material shall be repaired or replaced to meet the original requirements and maintained until the final inspection.
15. GENERAL PLANT INSTALLATION:
   A. Excavation: Excavate all tree pits and planting areas to the width and depth shown in the planting details.
   B. Center plant in pit and orient for the best visual effect. Set plants plumb and hold rigidly in position until soil has been tamped firmly around root ball.
   C. Mix soil amendments and fertilizers with existing soil in accordance with soil recommendations for plant type, based upon soil test results as approved by Owner. Delay mixing of fertilizer if planting will not occur within a few days.
   D. Backfill pit with planting soil mix, consisting of 2/3 existing soil and 1/3 organic material, and fertilizer, until two-thirds full. Tamp and water each layer thoroughly to settle soil. After soil settles, fill pit with remaining planting soil mix, water and shape surface so that it slopes to drain from trunk and matches ground at edge of planting pit.
   E. Mulch within 48 hours after planting and after applying the pre-emergent herbicide, except ground cover areas (which shall have organic material placed before planting) with a 2 inch layer of mulch immediately after planting. All bed lines shall be cut with a smooth consistent edge to a minimum depth of 3 inches. Keep mulch out of the crowns of shrubs and off buildings, sidewalks, light standards, and other structures.
   F. All planting areas to conform to specified grades after full settlement has occurred and mulch has been applied. Provide saucers around tree pits as shown on planting details. Remove all tags, labels, strings, etc. from all plants.
16. PERMANENT SEEDING OR SODDING FOR GRASS AREAS:
   A. Lawn Seed or Sod varieties shall be an improved variety turf-type tall fescue blend. The landscape contractor shall select from varieties approved by the Maryland or Virginia Department of Agriculture.
   B. Refer to the Virginia Erosion and Sediment Control Handbook, for guidelines, specifications and installation techniques of seed and sod.
   C. Maintenance shall begin immediately after each plant and lawn area is installed and shall continue until 90 days after final acceptance of the last section.



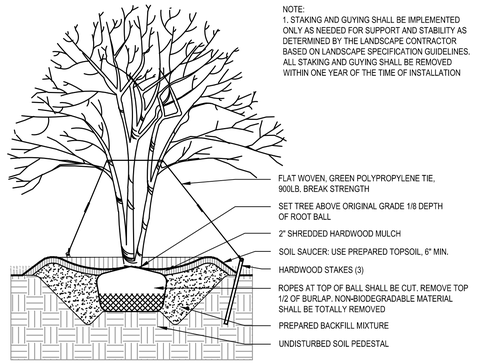
TYP. B&B SHRUB PLANTING
N.T.S.



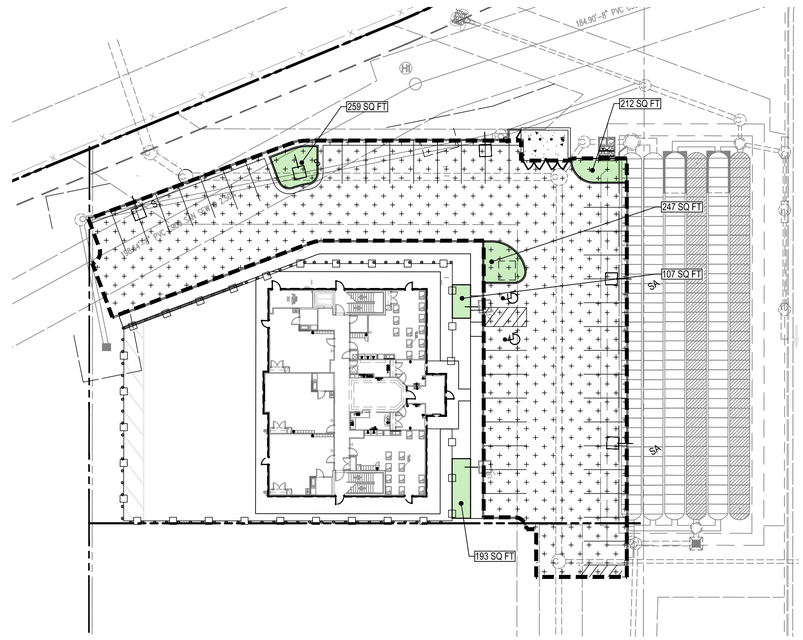
EVERGREEN TREE PLANTING
N.T.S.



DECIDUOUS TREE PLANTING
N.T.S.



ORNAMENTAL TREE PLANTING
N.T.S.



LEGEND
PARKING LOT AREA
PARKING LOT LANDSCAPE AREA

SECTION 58-17.13(e)		
INTERIOR PARKING LOT LANDSCAPING		
REQUIRED		
Gross Area of parking lot:	17,118	
% landscape area required:	5%	
Landscape area required:	856	s.f.
PROVIDED		
Landscape Area Provided:	1,018	s.f.
Total number of parking spaces provided:	41	
Number of trees required:	5	
Trees Provided:	5	
Number of shrubs required:	13	
Shrubs Provided:	13	

INTERIOR PARKING LOT AREA: SCHEMATIC PLAN
SCALE - 1:30

J2 Engineers, Inc.
17739 Main Street
Suite 180
Dumfries, Va. 22026

703.361.1550 (office)
703.956.6845 (fax)
www.j2engineers.com

COMMONWEALTH OF VIRGINIA
SEBASTIAN SANDOVAL
Lic. No. 045207
06/30/23
PROFESSIONAL ENGINEER

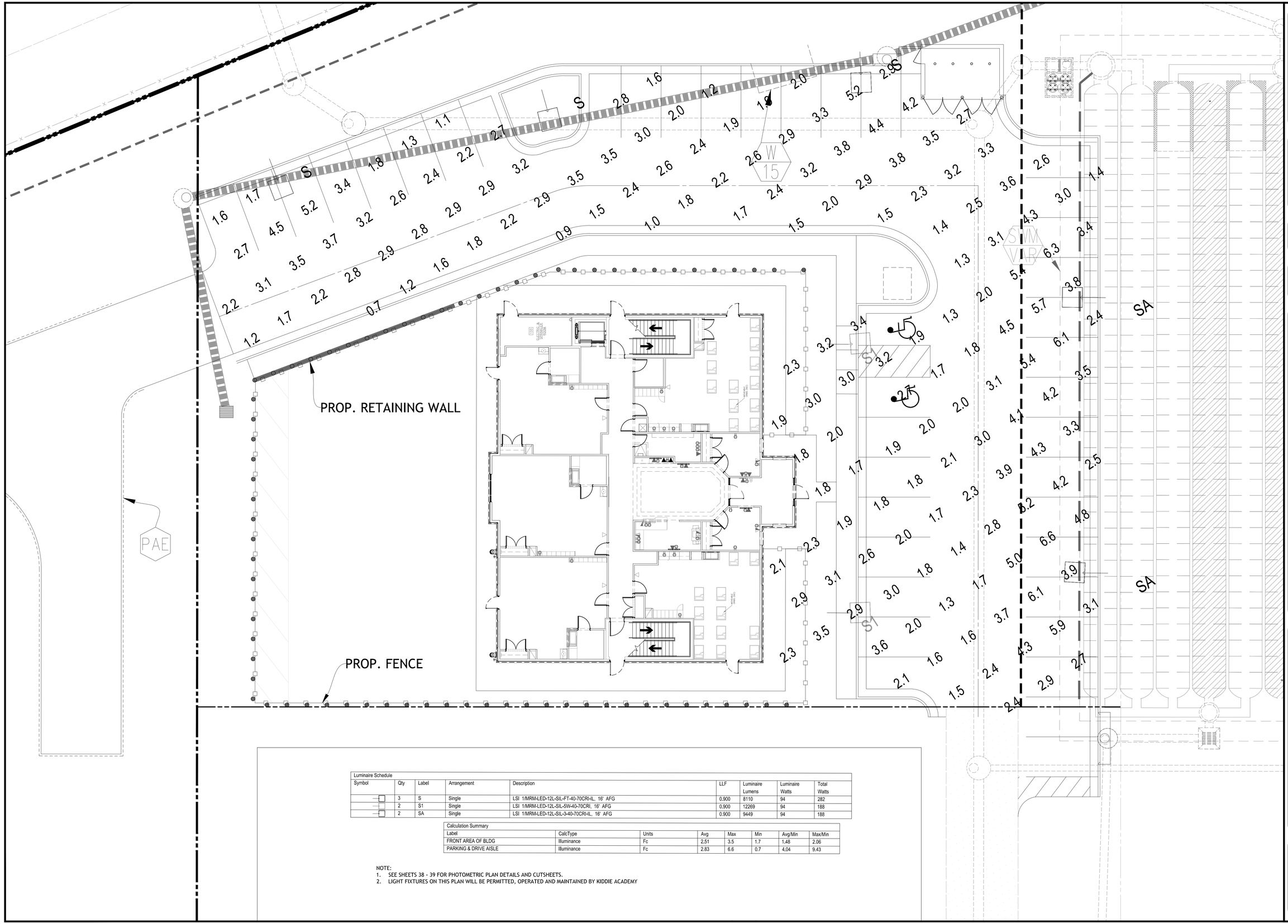
PLAN# BA2201
DATE: MARCH, 2023
CONTOUR INT.= N/A
SCALE: AS SHOWN

PLAN DATE
01/06/23
03/17/23
06/30/23

LANDSCAPE NOTES & DETAILS
FINAL SITE PLAN
KIDDIE ACADEMY AT CROSSROADS VILLAGE CENTER
TOWN OF HAYMARKET, VIRGINIA

No.	DATE	DESCRIPTION
		REVISIONS

SHEET
36
OF
43



Luminaire Schedule								
Symbol	Qty	Label	Arrangement	Description	LLF	Luminaire Lumens	Luminaire Watts	Total Watts
	3	S	Single	LSI 1/MRM-LED-12L-SIL-FT-40-70CRI-IL, 16' AFG	0.900	8110	94	282
	2	S1	Single	LSI 1/MRM-LED-12L-SIL-SW-40-70CRI, 16' AFG	0.900	12269	94	188
	2	SA	Single	LSI 1/MRM-LED-12L-SIL-3-40-70CRI-IL, 16' AFG	0.900	9449	94	188

Calculation Summary							
Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
FRONT AREA OF BLDG	Illuminance	Fc	2.51	3.5	1.7	1.48	2.06
PARKING & DRIVE AISLE	Illuminance	Fc	2.83	6.6	0.7	4.04	9.43

NOTE:
1. SEE SHEETS 38 - 39 FOR PHOTOMETRIC PLAN DETAILS AND CUTSHEETS.
2. LIGHT FIXTURES ON THIS PLAN WILL BE PERMITTED, OPERATED AND MAINTAINED BY KIDDIE ACADEMY

J2 Engineers, Inc.
17739 Main Street
Suite 180
Dumfries, Va. 22026

703.361.1550 (office)
703.956.6845 (fax)
www.j2engineers.com

COMMONWEALTH OF VIRGINIA
SEBASTIAN SANDOVAL
Lic. No. 045207
06/30/23
PROFESSIONAL ENGINEER

PLAN# BA2201
DATE: MARCH, 2023
CONTOUR INT.= N/A
SCALE: 1"=10'

PLAN DATE
01/06/23
03/17/23
06/30/23

PHOTOMETRIC PLAN
FINAL SITE PLAN
KIDDIE ACADEMY AT CROSSROADS VILLAGE CENTER

TOWN OF HAYMARKET, VIRGINIA

REVISIONS

No.	DATE	DESCRIPTION

SHEET
37
OF
43

Catalog # : | Project : | Type :
Prepared By : | Date :

Mirada Medium (MRM)

Outdoor LED Area Light

IP66 IK08

OVERVIEW	
Lumen Package	7,000 - 48,000
Wattage Range	48 - 401
Efficacy Range (LPW)	117 - 160
Weight lbs(kg)	30 (13.6)

QUICK LINKS

Ordering Guide | Performance | Photometrics | Dimensions

FEATURES & SPECIFICATIONS

Construction

- Rugged die-cast aluminum housing contains factory prewired driver and optical unit. Cast aluminum wiring access door located underneath.
- Designed to mount to square or round poles.
- Fixtures are finished with LSI's DuraGrip' polyester powder coat finishing process. The DuraGrip finish withstands extreme weather changes without cracking or peeling. Other standard LSI finishes available. Consult factory.
- Shipping weight: 37 lbs in carton.

Optical System

- State-of-the-Art one piece silicone optic sheet delivers industry leading optical control with an integrated gasket to provide IP66 rated sealed optical chamber in 1 component.
- Proprietary silicone refractor optics provide exceptional coverage and uniformity in IES Types 2, 3, 5W, FT, FTA and AM.
- Silicone optical material does not yellow or crack with age and provides a typical light transmittance of 93%.
- Zero uplight.
- Available in 5000K, 4000K, and 3000K color temperatures per ANSI C78.377. Also Available in Phosphor Converted Amber with Peak intensity at 610nm.
- Minimum CRI of 70.
- Integral louver (IL) and integral half louver (IH) options available for enhanced backlight control.

Electrical

- High-performance programmable driver features over-voltage, under-voltage, short-circuit and over temperature protection. Custom lumen and wattage packages available.
- 0-10V dimming (10% - 100%) standard.
- Standard Universal Voltage (120-277 Vac) Input 50/60 Hz or optional High Voltage (347-480 Vac).
- L80 Calculated Life: >100k Hours (See Lumen Maintenance chart)
- Total harmonic distortion: <20%
- Operating temperature: -40°C to +50°C (-40°F to +122°F). 42L and 48L lumen packages rated to +40°C.
- Power factor: >.90
- Input power stays constant over life.
- Field replaceable 10kV surge protection device meets a minimum Category C Low operation (per ANSI/IEEE C62.41.2).
- High-efficacy LEDs mounted to metal-core circuit board to maximize heat dissipation
- Components are fully encased in potting material for moisture resistance. Driver complies with FCC standards. Driver and key electronic components can easily be accessed.

Controls

- Optional integral passive infrared Bluetooth™ motion and photocell sensor (see page 8 for more details). Fixtures operate independently and can be commissioned via iOS or Android configuration app
- LSI's AirLink™ wireless control system options reduce energy and maintenance costs while optimizing light quality 24/7. (see controls section for more details).

Installation

- Designed to mount to square or round poles.
- A single fastener secures the hinged door, underneath the housing and provides quick & easy access to the electrical compartment.
- Included terminal block accepts up to 12 ga. wire.
- Utilizes LSI's traditional 3" drill pattern B3 for easy fastening of LSI products.

Warranty

- LSI LED Fixtures carry a 5-year warranty.

Listings

- Listed to UL 1598 and UL 8750.
- Meets Buy American Act requirements.
- IDA compliant; with 3000K color temperature selection.
- Title 24 Compliant; see local ordinance for qualification information.
- Suitable for wet Locations.
- IP66 rated Luminaire per IEC 60598.
- 3G rated for ANSI C136.31 high vibration applications are qualified.
- DesignLights Consortium® (DLC) qualified product. Not all versions of this product may be DLC qualified. Please check the DLC Qualified Products List at www.designlights.org/QPL to confirm which versions are qualified.
- Patented Silicone Optics (US Patent NO. 10,816,165 B2)
- IK08 rated luminiare per IEC 66262 mechanical impact code

ORDERING GUIDE

Back to Quick Links

TYPICAL ORDER EXAMPLE: MRM LED 36L SIL FTA UNV DIM 50 70CRI ALSCS04 BRZ IL

Prefix	Light Source	Lumen Package	Lens	Distribution	Orientation[2]	Voltage	Driver
MRM - Mirada Medium Area Light	LED	7L - 7,000 lms 9L - 9,000 lms 12L - 12,000 lms 18L - 18,000 lms 24L - 24,000 lms 30L - 30,000 lms 36L - 36,000 lms 42L - 42,000 lms 48L - 48,000 lms Custom Lumen Packages[1]	SIL - Silicone	2 - Type 2 3 - Type 3 5W - Type 5 Wide FT - Forward Throw FTA - Forward Throw Automotive AM - Automotive Merchandise	(blank) - standard L - Optics rotated left 90° R - Optics rotated right 90°	UNV - Universal Voltage (120-277V) HV - High Voltage (347-480V)	DIM - 0-10V Dimming (0-10%)

Color Temp	Color Rendering	Finish	Options
50 - 5,000 CCT 40 - 4,000 CCT 30 - 3,000 CCT AMB - Phosphor Converted Amber[12]	70CRI - 70 CRI	BLK - Black BRZ - Dark Bronze GMG - Gun Metal Gray GPT - Graphite MSV - Metallic Silver PLP - Platinum Plus SVG - Satin Verde Green WHT - White	(Blank) - None IH - Integral Half Louver (Moderate Spill Light Cutoff[2] IL - Integral Louver (Sharp Spill Light Cutoff)[2]

Controls (Choose One)

(Blank) - None

Wireless Controls System
- ALSC - AirLink Synapse Control System
- ALSCH - AirLink Synapse Control System Host / Satelite[3]
- ALSCS02 - AirLink Synapse Control System with 12-20' Motion Sensor
- ALSCHS02 - AirLink Synapse Control System Host / Satelite with 12-20' Motion Sensor[3]
- ALSCS04 - AirLink Synapse Control System with 20-40' Motion Sensor
- ALSCHS04 - AirLink Synapse Control System Host / Satelite with 20-40' Motion Sensor[3]
- ALBCS1 - AirLink Blue Wireless Motion & Photo Sensor Controller (8-24' mounting height)
- ALBCS2 - AirLink Blue Wireless Motion & Photo Sensor Controller (25-40' mounting height)

Stand-Alone Controls
- EXT - 0-10v Dimming leads extended to housing exterior
- CR7P - 7 Pin Control Receptacle ANSI C136.41[4]
- IMSBT1- Integral Bluetooth™ Motion and Photocell Sensor (8-24' MH)[5]
- IMSBT2- Integral Bluetooth™ Motion and Photocell Sensor (25-40' MH)[5]

Button Type Photocells
- PCI120 - 120V
- PCI208-277 - 208 -277V
- PCI347 - 347V

Need more information? Click here for our glossary

Have additional questions? Call us at (800) 436-7800

ACCESSORY ORDERING INFORMATION[7]

CONTROLS ACCESSORIES	
Description	Order Number
PC120 Photocell for use with CR7P option (120V)[8]	122514
PC208-277 Photocell for use with CR7P option (208V, 240V, 277V)[8]	122515
Twist Lock Photocell (347V) for use with CR7P[8]	122516
Twist Lock Photocell (480V) for use with CR7P[8]	1225180
AirLink 5 Pin Twist Lock Controller[8]	661409
AirLink 7 Pin Twist Lock Controller[8]	661410
Shorting Cap for use with CR7P	149328

FUSING OPTIONS[11]	
Single Fusing (120V)	See Fusing Accessory Guide
Single Fusing (277V)	
Double Fusing (208V, 240V)	
Double Fusing (480V)	
Double Fusing (347V)	

SHIELDING OPTIONS	
Mirada Small	See Shielding Guide
Mirada Medium	
Mirada Large	
Zone Medium	
Zone Large	
Slice Medium	

1. Custom lumen and wattage packages available, consult factory. Values are within industry standard tolerances but not DLC listed.
2. Not available with 5W distribution
3. Consult Factory for availability.
4. Not available in HV.
5. IMSBT is field configurable via the LSI app that can be downloaded from your smartphone's native app store.
6. Control device or shorting cap must be ordered separately. See Accessory Ordering Information.
7. Accessories are shipped separately and field installed.
8. Factory installed CR7P option required. See Options.
9. "CLR" denotes finish. See Finish options.
10. Only available with ALSC/ALSCH control options.
11. Fusing must be located in hand hole of pole. See Fusing Accessory Guide for compatability.
12. Only available in 9L, 12L, 18L and 24L Lumen Packages. Consult factory for lead time and availability.

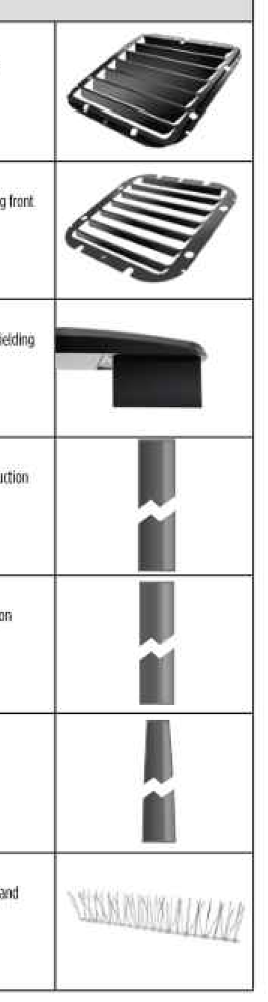
ACCESSORIES

MOUNTING ACCESSORIES

Category	Accessory
Side Arm	**Universal Mounting Bracket** Mounts to ≥ 3" square or round (tapered/straight) poles with (2) mounting hole spaces between 3.5" to 5". Part Number: BKA UMB CLR
Side Arm	**Quick Mount Plate** True one person installation to existing/new contruction poles with hole spaces beteen 2.4 to 4.6". Part Number: BKS PQM B3B5 XX CLR
Side Arm	**15° Tilt Quick Mount Plate** True one person installation to existing/new contruction poles with hole spaces beteen 2.4 to 4.6". Part Number: BKS PQ15 B3B5 XX CLR
Tenon / Slipfitter	**Adjustable Slipfitter** Mounts onto a 2" (51mm) IP, 2.375" (60mm) O.D. tenon and provides 180° of tilt (max 45° above horizontal). Part Number: BKA ASF CLR
Tenon / Slipfitter	**Square Tenon Top** Mounts onto a 2" (51mm) IP, 2.375" (60mm) O.D. tenon and allows for mounting up to 4 luminaires. Part Number: BKA XNM *
Tenon / Slipfitter	**Square Internal Slipfitter** Mounts inside 4" or 5" square pole and allows for mounting up to 4 lumianires. Part Number: BKA X_ISF * CLR
Wall Mount / Wood Pole	**Wall Mount Bracket** Mounts onto vertical wall surface (hardware/anchors not included). Part Number: BKS XBO WM CLR
Wall Mount / Wood Pole	**Wood Pole Bracket** Mounts onto wooden poles (6" minimum OD, hardware/anchors not inlcuded). Part Number: BKS XBO WP CLR

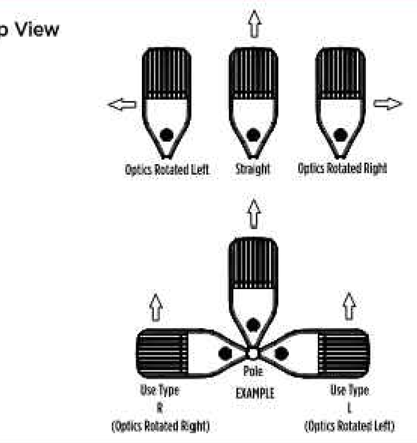
SHIELDING, POLES & MISC. ACCESSORIES

Category	Accessory
Shielding	**Integral Louver** Field Install Integral Louver provides maximum backlight control by shielding each individual row of LEDS. Part Number: 686485
Shielding	**Integral Half Louver** Field Install Integral Half Louver provides great backlight control without impacting front side distribution. Part Number: 743416
Shielding	**External Shield** External shield blocks view of light source from anyside of luminaire, additional shielding configurations available. Part Number: 785970BLK (3") / 785962BLK (6")
Poles	**Square Poles** 14 - 39' steel and aluminum poles in 4", 5" and 6" sizes for retrofit and new construction. Part Number: 4SQ/5SQ/6SQ
Poles	**Round Poles** 10 - 30' steel and aluminum poles in 4" and 5" sizes for retrofit and new construction. Part Number: 4RP/5RP
Poles	**Tapered Poles** 20' - 39' steel and aluminum poles for retrofit and new construction. Part Number: RTP
Misc	**Bird Spikes** 10' Linear Bird Spike Kit, 4' recommended per luminaire, includes silcone adhesive and application tool. Part Number: 736795



Replace CLR with paint finish description
Replace XX with SQ for square pole or RD for round pole (≥3" OD)
Replace * with S (Single), D180 (Double @180°), D90 (Double @90°), T90 (Triple), Q90 (Quad)
Replace _ with 4 (4" square pole) or 5 (5" square pole)

OPTICS ROTATION



ACCESSORIES/OPTIONS

Integral Louver (IL) and House-Side Shield (IH)

Integral louver (IL) and half louver (IH) accessory shields available for improved backlight control without sacrificing street side performance. LSI's Integral Louver (IL) and Integral House-Side Shield (IH) options deliver backlight control that significantly reduces spill light behind the poles for applications with pole locations close to adjacent properties. The design maximizes forward reflected light while reducing glare, maintaining the optical distribution selected, and most importantly eliminating light trespass. Both options rotate

Luminaire Shown with Integral Louver (IL)

Luminaire Shown with IMSBT Option

7 Pin Photoelectric Control

7-pin ANSI C136.41-2013 control receptacle option available for twist lock photocontrols or wireless control modules. Control accessories sold separately. Dimming leads from the receptacle will be connected to the driver dimming leads (Consult factory for alternate wiring).

Luminaire Shown with CR7P

PERFORMANCE

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DELIVERED LUMENS*

Lumen Package	Distribution	CRI	3000K CCT Delivered Lumens	3000K CCT Efficacy	3000K CCT BUG Rating	4000K CCT Delivered Lumens	4000K CCT Efficacy	4000K CCT BUG Rating	5000K CCT Delivered Lumens	5000K CCT Efficacy	5000K CCT BUG Rating	Wattage
7L	2	70	7560	157	B2-U0-G2	7560	157	B2-U0-G2	7560	157	B2-U0-G2	48
	3		7616	159	B1-U0-G2	7616	159	B1-U0-G2	7616	159	B1-U0-G2	
	5W		7292	152	B3-U0-G1	7292	152	B3-U0-G1	7292	152	B3-U0-G1	
	FT		7562	158	B2-U0-G2	7562	158	B2-U0-G2	7562	158	B2-U0-G2	
	FTA		7595	158	B2-U0-G2	7595	158	B2-U0-G2	7595	158	B2-U0-G2	
	AM		7687	160	B1-U0-G1	7687	160	B1-U0-G1	7687	160	B1-U0-G1	
9L	2	70	9853	159	B2-U0-G2	9853	159	B2-U0-G2	9853	159	B2-U0-G2	62
	3		9926	160	B2-U0-G2	9926	160	B2-U0-G2	9926	160	B2-U0-G2	
	5W		9504	153	B3-U0-G2	9504	153	B3-U0-G2	9504	153	B3-U0-G2	
	FT		9856	159	B2-U0-G3	9856	159	B2-U0-G3	9856	159	B2-U0-G3	
	FTA		9900	160	B2-U0-G2	9900	160	B2-U0-G2	9900	160	B2-U0-G2	
	AM		10019	162	B2-U0-G1	10019	162	B2-U0-G1	10019	162	B2-U0-G1	
12L	2	70	13135	155	B3-U0-G2	13135	155	B3-U0-G2	13135	155	B3-U0-G2	85
	3		13232	156	B2-U0-G2	13232	156	B2-U0-G2	13232	156	B2-U0-G2	
	5W		12669	149	B4-U0-G2	12669	149	B4-U0-G2	12669	149	B4-U0-G2	
	FT		13138	155	B2-U0-G3	13138	155	B2-U0-G3	13138	155	B2-U0-G3	
	FTA		13196	155	B2-U0-G2	13196	155	B2-U0-G2	13196	155	B2-U0-G2	
	AM		13355	157	B2-U0-G2	13355	157	B2-U0-G2	13355	157	B2-U0-G2	
18L	2	70	19318	143	B3-U0-G3	19318	143	B3-U0-G3	19318	143	B3-U0-G3	135
	3		19461	144	B3-U0-G3	19461	144	B3-U0-G3	19461	144	B3-U0-G3	
	5W		18633	138	B4-U0-G2	18633	138	B4-U0-G2	18633	138	B4-U0-G2	
	FT		19324	143	B3-U0-G3	19324	143	B3-U0-G3	19324	143	B3-U0-G3	
	FTA		19408	144	B3-U0-G3	19408	144	B3-U0-G3	19408	144	B3-U0-G3	
	AM		19641	145	B3-U0-G2	19641	145	B3-U0-G2	19641	145	B3-U0-G2	
24L	2	70	25957	147	B4-U0-G3	25957	147	B4-U0-G3	25957	147	B4-U0-G3	176
	3		26149	149	B3-U0-G4	26149	149	B3-U0-G4	26149	149	B3-U0-G4	
	5W		25037	142	B5-U0-G3	25037	142	B5-U0-G3	25037	142	B5-U0-G3	
	FT		25964	148	B3-U0-G4	25964	148	B3-U0-G4	25964	148	B3-U0-G4	
	FTA		26077	148	B3-U0-G3	26077	148	B3-U0-G3	26077	148	B3-U0-G3	
	AM		26393	150	B3-U0-G2	26393	150	B3-U0-G2	26393	150	B3-U0-G2	
30L	2	70	32417	140	B4-U0-G3	32417	140	B4-U0-G3	32417	140	B4-U0-G3	232
	3		32656	141	B3-U0-G4	32656	141	B3-U0-G4	32656	141	B3-U0-G4	
	5W		31267	135	B5-U0-G3	31267	135	B5-U0-G3	31267	135	B5-U0-G3	
	FT		32424	140	B3-U0-G4	32424	140	B3-U0-G4	32424	140	B3-U0-G4	
	FTA		32566	140	B4-U0-G3	32566	140	B4-U0-G3	32566	140	B4-U0-G3	
	AM		32960	142	B3-U0-G3	32960	142	B3-U0-G3	32960	142	B3-U0-G3	
36L	2	70	38275	133	B4-U0-G4	38275	133	B4-U0-G4	38275	133	B4-U0-G4	288
	3		38557	134	B4-U0-G5	38557	134	B4-U0-G5	38557	134	B4-U0-G5	
	5W		36917	128	B5-U0-G4	36917	128	B5-U0-G4	36917	128	B5-U0-G4	
	FT		38283	133	B4-U0-G5	38283	133	B4-U0-G5	38283	133	B4-U0-G5	
	FTA		38450	134	B4-U0-G4	38450	134	B4-U0-G4	38450	134	B4-U0-G4	
	AM		38916	135	B3-U0-G3	38916	135	B3-U0-G3	38916	135	B3-U0-G3	

PERFORMANCE (CONT.)

DELIVERED LUMENS*

Lumen Package	Distribution	CRI	3000K CCT Delivered Lumens	3000K CCT Efficacy	3000K CCT BUG Rating	4000K CCT Delivered Lumens	4000K CCT Efficacy	4000K CCT BUG Rating	5000K CCT Delivered Lumens	5000K CCT Efficacy	5000K CCT BUG Rating	Wattage
42L	2	70	44118	125	B5-U0-G4	44118	125	B5-U0-G4	44118	125	B5-U0-G4	354
	3		44444	126	B4-U0-G5	44444	126	B4-U0-G5	44444	126	B4-U0-G5	
	5W		42555	120	B5-U0-G4	42555	120	B5-U0-G4	42555	120	B5-U0-G4	
	FT		44130	125	B4-U0-G5	44130	125	B4-U0-G5	44130	125	B4-U0-G5	
	FTA		44322	125	B4-U0-G4	44322	125	B4-U0-G4	44322	125	B4-U0-G4	
	AM		44859	127	B4-U0-G3	44859	127	B4-U0-G3	44859	127	B4-U0-G3	
48L	2	70	48795	122	B5-U0-G4	48795	122	B5-U0-G4	48795	122	B5-U0-G4	401
	3		49156	123	B4-U0-G5	49156	123	B4-U0-G5	49156	123	B4-U0-G5	
	5W		47066	117	B5-U0-G4	47066	117	B5-U0-G4	47066	117	B5-U0-G4	
	FT		48809	122	B4-U0-G5	48809	122	B4-U0-G5	48809	122	B4-U0-G5	
	FTA		49021	122	B5-U0-G4	49021	122	B5-U0-G4	49021	122	B5-U0-G4	
	AM		49615	124	B4-U0-G3	49615	124	B4-U0-G3	49615	124	B4-U0-G3	

ELECTRICAL DATA (AMPS)*

Lumens	120V	208V	240V	277V	347V	480V
7L	0.40	0.23	0.20	0.17	0.14	0.10
9L	0.52	0.30	0.26	0.22	0.18	0.13
12L	0.71	0.41	0.35	0.31	0.24	0.18
18L	1.13	0.65	0.56	0.49	0.39	0.28
24L	1.47	0.85	0.73	0.64	0.51	0.37
30L	1.93	1.12	0.97	0.84	0.67	0.48
36L	2.40	1.38	1.20	1.04	0.83	0.60
42L	2.95	1.70	1.48	1.28	1.02	0.74
48L	3.4A	1.9A	1.7A	1.5A	1.2A	0.8A

ELECTRICAL DATA - PHOSPHOR CONVERTED AMBER (AMPS)*

Lumens	Watts	120V	208V	240V	277V	347V	480V
9L	74.3	0.6A	0.4A	0.3A	0.3A	0.2A	0.2A
12L	102.9	0.9A	0.5A	0.4A	0.4A	0.3A	0.2A

*Electrical data at 25°C (77°F). Actual wattage may differ by +/-10%

RECOMMENDED LUMEN MAINTENANCE[1] (7-18L)

Ambient	Intial[2]	25hr[2]	50hr[2]	75hr[2]	100hr[2]
0-50 C	100%	96%	92%	88%	84%

RECOMMENDED LUMEN MAINTENANCE[1] (24-48L)

Ambient	Intial[2]	25hr[2]	50hr[2]	75hr[2]	100hr[2]
0-40 C	100%	100%	97%	94%	92%

1. Lumen maintenance values at 25C are calculated per TM-21 based on LM-80 data and in-situ testing.
2. In accordance with IESNA TM-21-11, Projected Values represent interpolated value based on time durations that are within six times the IESNA LM-80-08 total test duration for the device under testing.
3. In accordance with IESNA TM-21-11, Calculated Values represent time durations that exceed six times the IESNA LM-80-08 total test duration for the device under testing.

DELIVERED LUMENS*

Lumen Package	Distribution	Phosphor Converted Amber (Peak 610mm) Delivered Lumens	Efficacy	BUG Rating	Wattage
9L	2	5848	80	B2-U0-G2	74
	3	6018	82	B1-U0-G2	
	5W	5471	74	B3-U0-G1	
	FT	5801	79	B1-U0-G2	
	FTA	5924	81	B1-U0-G1	
	AM	5995	81	B1-U0-G1	
12L	2	7530	74	B2-U0-G2	102
	3	7749	76	B1-U0-G2	
	5W	7045	69	B3-U0-G2	
	FT	7470	73	B2-U0-G2	
	FTA	7628	75	B2-U0-G2	
	AM	7720	76	B1-U0-G1	
18L	2	9311	69	B2-U0-G2	135
	3	9582	71	B2-U0-G2	
	5W	8712	65	B3-U0-G2	
	FT	9237	68	B2-U0-G2	
	FTA	9433	70	B2-U0-G2	
	AM	9546	71	B2-U0-G1	
24L	2	10955	63	B2-U0-G2	175
	3	11273	64	B2-U0-G2	
	5W	10249	59	B3-U0-G2	
	FT	10867	62	B2-U0-G2	
	FTA	11097	63	B2-U0-G2	
	AM	11230	64	B2-U0-G1	

*LEDs are frequently updated therefore values are nominal.

PHOTOMETRICS

Back to Quick Links

Luminaire photometry has been conducted by a NVLAP accredited testing laboratory in accordance with IESNA LM-79-08. As specified by IESNA LM-79-08 the entire luminaire is tested as the source resulting in a luminaire efficiency of 100%.

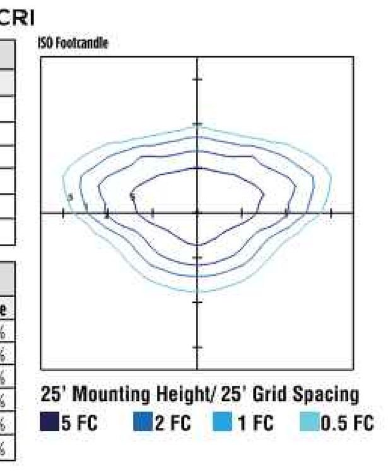
See the individual product page on https://www.lsicorp.com/ for detailed photometric data.

MRM-LED-30L-SIL-2-40-70CRI

Luminaire Data	
Type 2 Distribution	
Description	4000 Kelvin, 70 CRI
Delivered Lumens	32,416
Watts	232
Efficacy	140
IES Type	Type II - Short
BUG Rating	B4-U0-G3

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
Low (0-30°)	4796	15%
Medium (30-60°)	19811	61%
High (60-80°)	7474	23%
Very High (80-90°)	335	1%
Uplight (90-180°)	0	0%
Total Flux	32416	100%

ISO Footcandle



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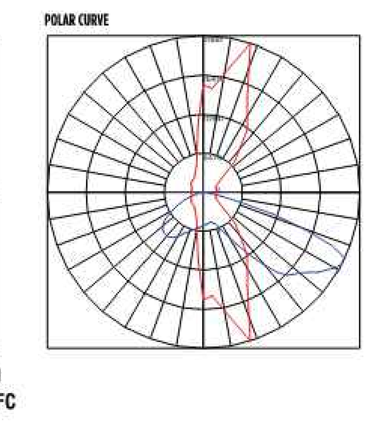


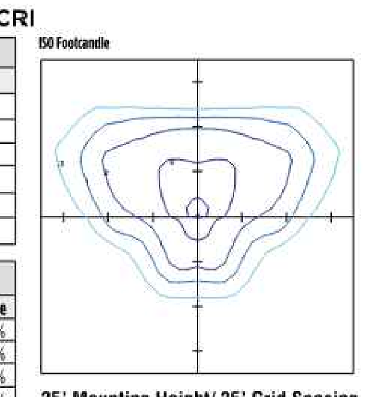
25' Mounting Height/ 25' Grid Spacing
5 FC 2 FC 1 FC 0.5 FC

MRM-LED-30L-SIL-3-40-70CRI

Luminaire Data	
Type 3 Distribution	
Description	4000 Kelvin, 70 CRI
Delivered Lumens	32,656
Watts	232
Efficacy	141
IES Type	Type III - Short
BUG Rating	B3-U0-G4

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
Low (0-30°)	3385	10%
Medium (30-60°)	16250	50%
High (60-80°)	12430	38%
Very High (80-90°)	591	2%
Uplight (90-180°)	0	0%
Total Flux	32656	100%

ISO Footcandle



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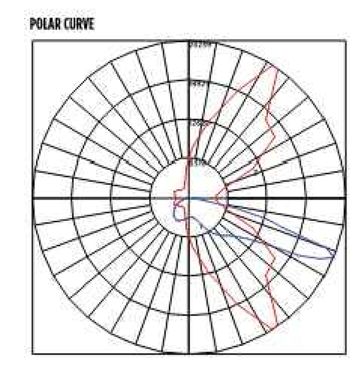


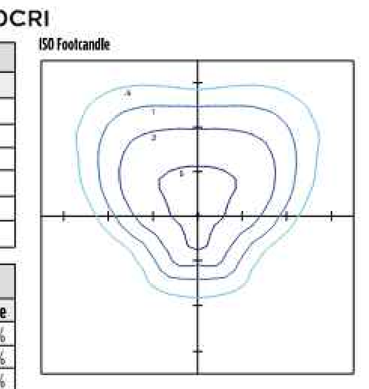
25' Mounting Height/ 25' Grid Spacing
5 FC 2 FC 1 FC 0.5 FC

MRM-LED-30L-SIL-FT-40-70CRI

Luminaire Data	
Type FT Distribution	
Description	4000 Kelvin, 70 CRI
Delivered Lumens	32,424
Watts	232
Efficacy	140
IES Type	Type IV - Short
BUG Rating	B3-U0-G4

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
Low (0-30°)	3952	12%
Medium (30-60°)	15505	48%
High (60-80°)	12279	38%
Very High (80-90°)	688	2%
Uplight (90-180°)	0	0%
Total Flux	32424	100%

ISO Footcandle



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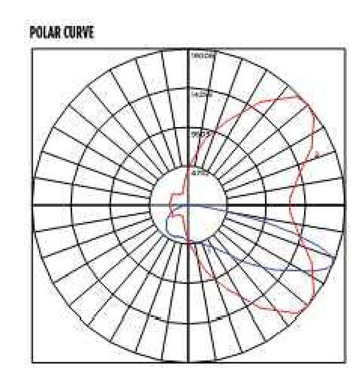


25' Mounting Height/ 25' Grid Spacing
5 FC 2 FC 1 FC 0.5 FC

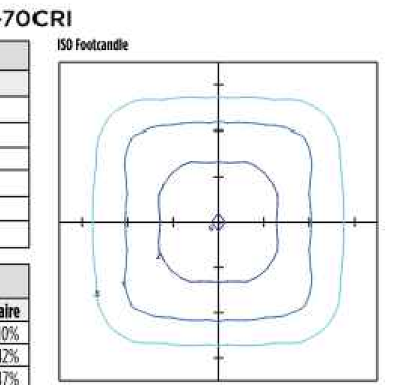
PHOTOMETRICS (CONT)

MRM-LED-30L-SIL-5W-40-70CRI

Luminaire Data	
Type 5W Distribution	
Description	4000 Kelvin, 70 CRI
Delivered Lumens	31,267
Watts	232
Efficacy	135
IES Type	Type VS - Short
BUG Rating	B5-U0-G3

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
Low (0-30°)	3138	10%
Medium (30-60°)	13193	42%
High (60-80°)	14641	47%
Very High (80-90°)	296	1%
Uplight (90-180°)	0	0%
Total Flux	31267	100%

ISO Footcandle



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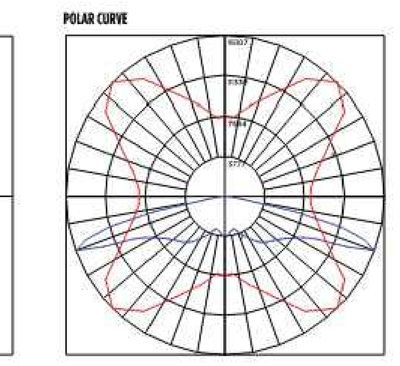


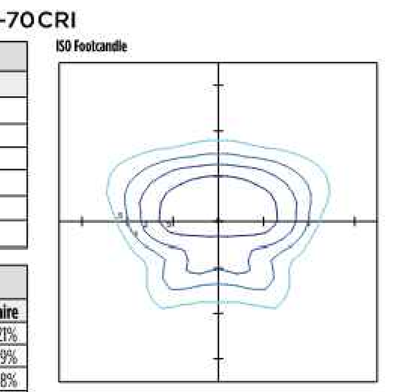
25' Mounting Height/ 25' Grid Spacing
5 FC 2 FC 1 FC 0.5 FC

MRM-LED-30L-SIL-FTA-40-70CRI

Luminaire Data	
Type FTA Distribution	
Description	4000 Kelvin, 70 CRI
Delivered Lumens	32,566
Watts	232
Efficacy	140
IES Type	Type VS - Short
BUG Rating	B4-U0-G3

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
Low (0-30°)	6986	21%
Medium (30-60°)	19172	59%
High (60-80°)	5875	18%
Very High (80-90°)	534	2%
Uplight (90-180°)	0	0%
Total Flux	32566	100%

ISO Footcandle



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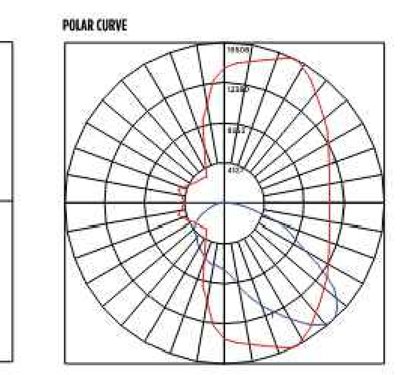


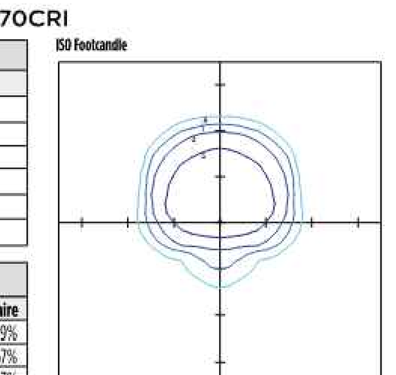
25' Mounting Height/ 25' Grid Spacing
5 FC 2 FC 1 FC 0.5 FC

MRM-LED-30L-SIL-AM-40-70CRI

Luminaire Data	
Type AM Distribution	
Description	4000 Kelvin, 70 CRI
Delivered Lumens	32,960
Watts	232
Efficacy	142
IES Type	Type III - Very Short
BUG Rating	B3-U0-G3

Zonal Lumen Summary		
Zone	Lumens	% Luminaire
Low (0-30°)	6363	19%
Medium (30-60°)	22026	67%
High (60-80°)	4192	13%
Very High (80-90°)	379	1%
Uplight (90-180°)	0	0%
Total Flux	32960	100%

ISO Footcandle



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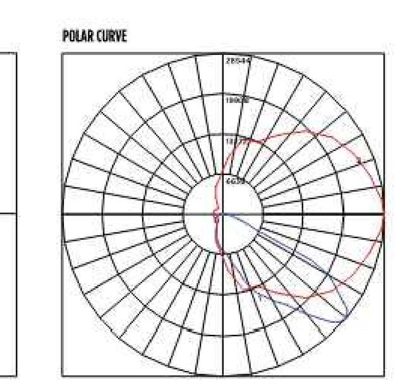

25' Mounting Height/ 25' Grid Spacing
5 FC 2 FC 1 FC 0.5 FC

PRODUCT DIMENSIONS

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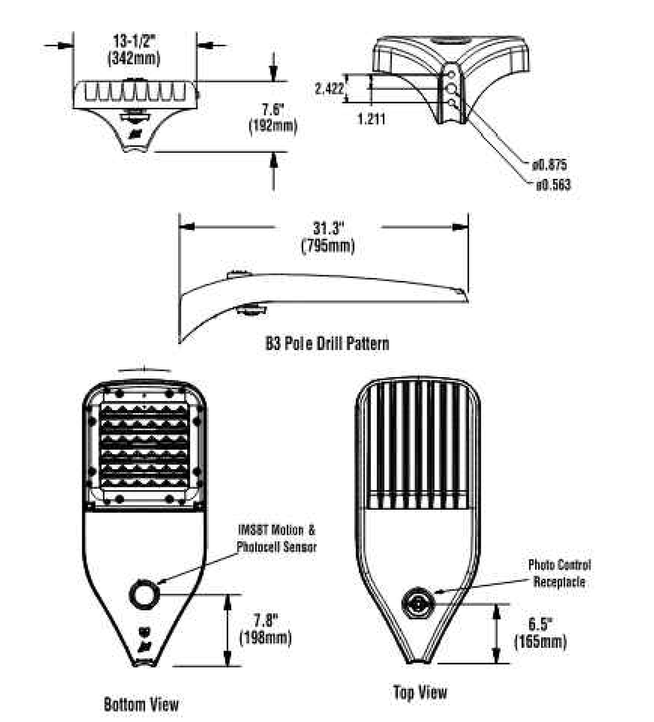

LUMINAIRE EPA CHART - MRM

Tilt Degree	0	30	45	Tilt Degree	0	30	45
Single	0.5	1.5	1.9	T90°	1.0	2.5	2.8
D180°	1.0	1.5	1.9	TN120°	1.0	3.3	3.9
D90°	0.8	1.9	2.3	Q90°	1.0	2.5	2.8

CONTROLS

AirLink Wireless Lighting Controller

The AirLink integrated controller is a California Title 24 compliant lighting controller that provides real-time light monitoring and control with utility-grade power monitoring. It includes a 24V sensor input and power supply to connect a sensor into the outdoor AirLink wireless lighting system. The wireless integrated controller is compatible with this fixture.

Click the link below to learn more details about AirLink.

https://www.lsicorp.com/wp-content/uploads/documents/products/airlink-outdoor-specsheet.pdf

Integral Bluetooth™ Motion and Photocell Sensor (IMSBT)

Slim low profile sensor provides multi-level control based on motion and/or daylight. Sensor controls 0-10 VDC LED drivers and is rated for cold and wet locations (-30° C to 70° C). Two unique PIR lenses are available and used based on fixture mounting height. All control parameters are adjustable via an iOS or Android App capable of storing and transmitting sensor profiles.

Click the link below to learn more details about IMSBT.

https://www.lsicorp.com/wp-content/uploads/documents/products/imsbt-specsheet.pdf

AirLink Blue

Wireless Bluetooth Mesh Outdoor Lighting Control System that provides energy savings, code compliance and enhanced safety/security for parking lots and parking garages. Three key components; Bluetooth wireless radio/sensor controller, Time Keeper and an iOS App. Capable of grouping multiple fixtures and sensors as well as scheduling time-based events by zone. Radio/Sensor Controller is factory integrated into Area/Site, Wall Mounted, Parking Garage and Canopy luminaires.

Click the link below to learn more details about AirLink Blue.

https://www.lsicorp.com/product/airlink-blue/

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COMMONWEALTH OF VIRGINIA
SEBASTIAN SANDOVAL
Lic. No. 045207
06/30/23
PROFESSIONAL ENGINEER

PLAN# BA2201
DATE: MARCH, 2023
CONTOUR INT.= N/A
SCALE: N/A

PLAN DATE
01/06/23
03/17/23
06/30/23

PHOTOMETRIC DETAILS
FINAL SITE PLAN
KIDDIE ACADEMY AT CROSSROADS VILLAGE CENTER

TOWN OF HAYMARKET, VIRGINIA

No.	DATE	DESCRIPTION

REVISIONS

SHEET 38 OF 43

Catalog # : Project :

Prepared By : Date :

Steel Poles
Round Tapered

QUICK LINKS

Ordering Guide | Configurations | Dimensions | EPA

FEATURES & SPECIFICATIONS

Pole Shaft
- Steel round poles are 4" or 5" in diameter
- Pole shaft is electro-welded ASTM-A500 Grade C Steel Tubing with a minimum yield strength of 55,000 psi.
- On Tenon Mount steel poles, tenon is high-strength pipe. Tenon N option is 2-3/8" O.D. x 4-3/4" tall.

Hand-Hole
- Standard hand-hole location is 12" above pole base.
- Hand-hole size is 4" x 6" and reinforced.

Base
- Pole base is ASTM-A36 hot-rolled steel plate with a minimum yield strength of 36,000 psi.
- Two-piece square base cover is optional. Decorative base cover is also available

Anchor Bolts
- Steel Round Tapered Poles of 11 gauge material are furnished with anchor bolts featuring zinc-plated double nuts and washers. Galvanized anchor bolts are optional
- Poles of 7 gauge material are furnished with galvanized anchor bolts as a standard. Anchor Bolts conform to aSTM F 1554-07a Grade 55 with a minimum yield strength of 55,000 psi.

Ground Lug
- Ground lug is standard.

Duplex Receptacle
- Weatherproof duplex receptacle is optional.

Ground Fault Circuit Interrupter
- Self-testing Ground fault circuit interrupter is optional.

Finishes
- Every pole is provided with the DuraGrip® Protection System and a 5-year limited warranty:
- When the top-of-the line DuraGrip® Plus Protection System is selected, in addition to the DuraGrip® Protection System, a non-porous, automotive-grade corrosion coating is applied to the lower portion of the pole interior, sealing and further protecting it from corrosion. This option extends the limited warranty to 7 years.

Determining The Luminaire/Pole Combination For Your Application:
- Select luminaire from luminaire ordering information.
- Select bracket configuration if required
- Determine EPA value from luminaire/bracket EPA chart.
- Select Pole Height
- Select MPH to match wind speed in the application area (See windspeed maps).
- Confirm pole EPA equal to or exceeding value of luminaire/bracket EPA
- Consult factory for special wind load requirements and banner brackets.

Pole Vibration Damper
- A pole vibration damper is recommended in open terrain areas of the country where low steady state winds are common.
- Non-tapered poles and lightly loaded poles are more susceptible to destructive vibration if a damper is not installed.

Listings
- UL Listed
- BAA/TAA Compliant

ORDERING GUIDE

Back to Quick Links

TYPICAL ORDER EXAMPLE: **RTP B3 S11G 35 S PLP DGP**

Pole Series	Mounting Method	Material	Height [1]	Mounting Configuration	Pole Finish	Options
RTP - Round Tapered Pole (New Build) **RTPU** - Round Tapered Pole (Retrofit)	**Bolt-On Mount[2]** - See pole selection guide for patterns and fixture matches. **B5** - 5" Traditional Drilling Pattern **B3** - 3" Reduced Drilling Pattern **B2** - 2" Reduced Drilling Pattern **T** - Tenon Mount - See pole selection guide for patterns and fixture matches **I** - No Mounting Holes[3] - Use with: BKA-IFM4 - Flush Mount Adapter[4] Greenlee Lifestyle CH Mounting Style Enterprise, Lexington, Constitution PT Single Mounting[5]	**S11G** - 11 Ga. Steel (4SQ/4SQU and 5SQ/5SQU Only) **S07G** - 07 Ga. Steel	**20'** **22'** **22' 6"** **25'** **27'** **30'** **32'** **35'** **39'**	**S** – Single/Parallel **D180** – Double **D90** – Double **DN90** – Double **T90** – Triple **TN120** – Triple **Q90** – Quad **QN90** – Quad **N** – Tenon Mount (Standard Tenon size is 2-3/8" O.D.)[6] **4N** - Tenon Mount (SRPT only. For 4" poles only, use 4RPS)[7] **4N-6** - Tenon Mount (SRPT only. For 4" poles use 4RPS)	**BRZ** – Bronze **BLK** – Black **PLP** – Platinum Plus **WHT** – White **SVG** – Satin Verde Green **GPT** – Graphite **MSV** – Metallic Silver **BZA** – Alternate Bronze	**GA** – Galvanized Anchor Bolts **SF** – Single Flood[1] **DF** – Double Flood[1] **DGP** – DuraGrip® Plus **LAB** – Less Anchor Bolts **CRXX** - Conduit Raceway

Accessory Ordering Information

Description	Order Number
20 SRTBC Square Based Cover (for 20' RTP Poles)	158398CLR
25 SRTBC Square Based Cover (for 22', 22' 6", and 25' RTP Poles)	158399CLR
30 SRTBC Square Based Cover (for 27' and 30' RTP Poles)	158392CLR
35 SRTBC Square Based Cover (for 32' and 35' RTP Poles)	158564CLR
39 SRTBC Square Based Cover (for 39' RTP Poles)	155687CLR
MH5 – mounting Hole Plugs for use with 5" traditional drill pattern (3 set of 3 plugs)	133236
MH3 – mounting Hole Plugs for use with 3" reduced drill pattern (3 sets of 3 plugs)	681126
MH2 - Mounting Hole Plugs for use with 2" reduced drill pattern (3 sets of 3 plugs)	725841

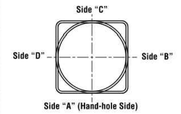
Description	Order Number
MH2 - Mounting Hole Plugs for use with 2" reduced drill pattern (3 sets of 3 plugs)	725841
ER2 – Weatherproof RTP Duplex Receptacle	122566CLR
GFI – Ground Fault RTP Circuit Interrupter	122569CLR

FOOTNOTES:
1 - See Area Light Brackets - 3" Reduced Drill Pattern and Area Light Brackets - 5" Traditional Drill Pattern Spec Sheets.
2 - Pole heights will have a +/- 1/2" tolerance. Max height for 4RP S10G is 24'. Max height of the SRP S11G is 26'
3 - See Flood Lighting Brackets section for choice of FBO Brackets
4 - Only use with 4 inch pole.
5 - For Enterprise, Lexington, and Constitution PT mounting configuration styles, see Tenon Mount (4N) and Lifestyle Slipfit Pole Series
6 - Use with BKA-IFM4.
7 - For Enterprise and Lexington D180 or other mounting configuration styles using BK MPT BO accessories order with B3 or B5 drill pattern.

DRILLING LOCATIONS

Back to Quick Links

Sides	A	B	C	D
Hand-hole	X			
Single	X			
D180		X		X
D90	X			X
DN90[1]				
T90	X	X		X
TN120[1]	X			
Q90	X	X	X	X
QN90[1]				
Single FBO	X			
Double FBO		X		X

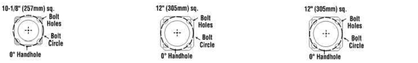


NOTES:
1 - Two locations will be 45° to the left and right of Side A.
2 - Other two locations will be 120° to the left and right of Side A.
3 - Two locations will be 45° to the left and right of Side A and two locations will be 135° to the left and right of Side A.

Consult factory for custom variations. Standard SF and DF pole preparations are located 3/4 of the height of the pole from the base, except on 20' poles. Maximum height for SF and DF pole preparations on 20' poles is 13' from the base.

FIXTURE CONFIGURATIONS

BOLT CIRCLE



Bolt Circle Designator	N	O	S
Bolt Circle	Slotted 11" (279mm)	Slotted 12" (305mm)	Slotted 12" (305mm)
Anchor Bolt Size	1" x 36" (25mm x 914mm)	1" x 36" (25mm x 914mm)	1-1/4" x 42" (32mm x 1067mm)
Anchor Bolt Projection	4" (102mm)	4" (102mm)	5" (127mm)
Base Plate Dimensions	10-1/8" sq. x 1" thk. (257mm x 25mm)	12" sq. x 1" thk. (305mm x 25mm)	12" sq. x 1-1/4" thk. (305mm x 32mm)
Pole Gauge	11	11	7 (39' only)

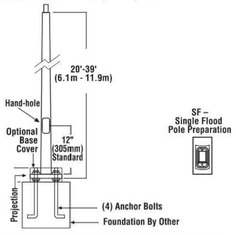
Note: Base plate illustrations may change without notice. Do not use for setting anchor bolts. Consult factory for the appropriate anchor bolt template.

Bolt Circle Designator	T	U	V	W	X	Y
Bolt Circle	Slotted 8-1/2" - 11" (216mm-279mm)	Slotted 9" - 13" (229mm-330mm)	Slotted 10" - 14" (254mm-356mm)	Slotted 11" - 13-1/2" (279mm-343mm)	Slotted 11-1/2" - 14-1/2" (292mm-368mm)	Slotted 12" - 15" (305mm-406mm)
Anchor Bolt Size	1" x 36" (25mm-914mm)	1" x 36" (25mm-914mm)	1" x 36" (25mm-914mm)	1" x 36" (25mm x 914mm)	1" x 36" (25mm x 914mm)	1-1/4" x 42" (32mm x 1067mm)
Anchor Bolt Projection	4" (102mm)	4" (102mm)	4" (102mm)	4" (102mm)	4" (102mm)	5" (127mm)
Base Plate Opening for Wireway Entry	5-9/10" (150mm)	6-7/10" (171mm)	7-5/8" (194mm)	8-5/8" (219mm)	9-1/8" (232mm)	9-1/8" (232mm)
Base Plate Dimensions	9-7/8" sq. x 1" thk. (251mm x 25mm)	11-1/4" sq. x 1" thk. (286mm x 25mm)	12" sq. x 1" thk. (305mm x 25mm)	12-1/8" sq. x 1" thk. (308mm x 25mm)	12" sq. x 1" thk. (330mm x 25mm)	14-3/8" sq. x 1-1/4" thk. (365mm x 32mm)
Pole Gauge	11	11	11	11	11	7 (39' Only)

Note: Base plate illustrations may change without notice. Do not use for setting anchor bolts. Consult factory for the appropriate anchor bolt template.

PRODUCT DIMENSIONS

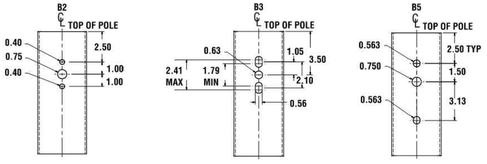
ONE-PIECE RTPT –
N = 2-3/8" (60mm) O.D. x 4-3/4" (121mm) Tenon



SHIPPING WEIGHTS	
20' (6.1m) 5ft Ga. is approximately	137 lbs. (62kg)
22' (6.7m) 5ft Ga. is approximately	165 lbs. (75kg)
25' (7.6m) 5ft Ga. is approximately	183 lbs. (83kg)
27' (8.2m) 5ft Ga. is approximately	219 lbs. (99kg)
30' (9.1m) 5ft Ga. is approximately	234 lbs. (106kg)
32' (9.7m) 5ft Ga. is approximately	286 lbs. (130kg)
35' (10.7m) 5ft Ga. is approximately	310 lbs. (141kg)
39' (11.9m) 5ft Ga. is approximately	346 lbs. (157kg)
39' (11.9m) 5ft Ga. is approximately	527 lbs. (239kg)
Anchor Bolts (1" x 36")(25mm x 914mm)	30 lbs. (14kg)/set
Anchor Bolts (1-1/4" x 42")(32mm x 1069mm)	63 lbs. (29kg)/set

ONE-PIECE SHAFT Height	Pole Bottom	Pole Top
20' (6.1m)	5.80" (147mm)O.D.	3.00" (76mm)O.D.
22' (6.1m)	6.60" (168mm)O.D.	3.52" (89mm)O.D.
25' (7.1m)	6.60" (168mm)O.D.	3.10" (79mm)O.D.
27' (8.2m)	7.50" (191mm)O.D.	3.72" (94mm)O.D.
30' (9.1m)	7.50" (191mm)O.D.	3.30" (84mm)O.D.
32' (9.7m)	8.50" (216mm)O.D.	4.02" (102mm)O.D.
35' (10.7m)	8.50" (216mm)O.D.	3.60" (91mm)O.D.
39' (11.9m)	9.00" (229mm)O.D.	3.54" (90mm)O.D.

Bolt-On Mount 2-Bolt Pattern



WIND SPEED

EPA Information
All LSI Industries' poles are guaranteed to meet the EPA requirements listed. LSI Industries is not responsible if a pole order has a lower EPA rating than the indicated wind-loading zone where the pole will be located.
CAUTION: This guarantee does not apply if the pole/bracket/fixture combination is used to support any other items such as flags, pennants, or signs, which would add stress to the pole. LSI Industries cannot accept responsibility for harm or damage caused in these situations.

NOTE: Pole calculations include a 1.3 gust factor over steady wind velocity. Example: poles designed to withstand 80 MPH steady wind will withstand gusts to 104 MPH. EPAs are for locations 100 miles away from hurricane ocean lines. Consult LSI for other areas. Note: Hurricane ocean lines are the Atlantic and Gulf of Mexico coastal areas. For applications in Florida or Canada, consult factory.

Use ONLY with "Wind Speed Map for ASCE 7-10

POLE*	Mtg. Height Length (ft)	Wall Thick (ga)	BOLT CIRCLE			EPA								
			Designator	Dia. (in)	Anchor bolt Dia (in)	110 MPH	115 MPH	120 MPH	130 MPH	140 MPH	150 MPH	160 MPH	170 MPH	180 MPH
11-ga x 20'	20	11	N	11	1.00	14.5	13.1	12.0	10.0	8.5	7.3	6.3	5.5	4.8
11-ga x 22'	22	11	N	11	1.00	16.6	15.0	13.8	11.6	9.8	8.4	7.3	6.4	5.6
11-ga x 25'	25	11	N	11	1.00	13.1	12.0	10.9	9.0	7.6	6.5	5.6	4.9	4.2
11-ga x 27'	27	11	N	11	1.00	15.2	13.8	12.5	10.5	8.8	7.6	6.5	5.7	5.0
11-ga x 30'	30	11	N	11	1.00	12.3	11.1	10.1	8.4	7.0	6.0	5.1	4.4	3.8
11-ga x 32'	32	11	O	12	1.00	12.3	11.1	10.1	8.4	7.0	6.0	5.1	4.4	3.8
11-ga x 35'	35	11	O	12	1.00	10.1	9.1	8.2	6.7	5.6	4.7	3.9	3.4	2.9
11-ga x 39'	39	11	O	12	1.00	7.6	6.8	6.1	4.9	4.0	3.3	2.7	2.3	1.9
7-ga x 39'	39	7	S	12	1.25	10.2	9.1	8.2	6.7	5.6	4.7	3.9	3.3	2.8

All LSI Industries' poles are guaranteed to meet the EPA requirements listed. LSI Industries is not responsible if a pole order has a lower EPA rating than the indicated wind-loading zone where the pole will be located.
CAUTION: This guarantee does not apply if the pole/bracket/fixture combination is used to support any other items such as flags, pennants, or signs, which would add stress to the pole. LSI Industries cannot accept responsibility for harm or damage caused in these situations.

Note:
1- Poles shorter than these listed here in for each gauge have EPA rating equal to or greater than what is provided in this table. To Confirm EPA ratings on shorter poles, contact LSI Industries.

J2 Engineers, Inc.
17739 Main Street
Suite 180
Dumfries, Va. 22026
703.361.1550 (office)
703.956.6845 (fax)
www.j2engineers.com

COMMONWEALTH OF VIRGINIA
SEBASTIAN SANDOVAL
Lic. No. 045207
06/30/23
PROFESSIONAL ENGINEER

PLAN# BA2201
DATE: MARCH, 2023
CONTOUR INT.= N/A
SCALE: N/A

PLAN DATE
01/06/23
02/17/23
06/30/23

PHOTOMETRIC DETAILS
FINAL SITE PLAN
KIDDIE ACADEMY AT CROSSROADS VILLAGE CENTER

TOWN OF HAYMARKET, VIRGINIA

No.	DATE	DESCRIPTION
		REVISIONS

SHEET 39 OF 43

Attachment: 02 Kiddie Academy at CVC with Updated Drop Off (6224 : Kiddie Academy Site Plan)

PRINCE WILLIAM COUNTY
Department of Development Services - Land Development Division

UNIT PRICE LIST

(Performance Bonds, Landscape Escrows, Siltation & Erosion Control Escrows, and Floodplain Item Escrows)

Effective: March 1, 2022

Project Name: KIDDIE ACADEMY AT CROSSROADS VILLAGE

PWC File #: _____ **Date Prepared:** 10/22/2022

NOTE: This form is to be used to estimate Performance Bond, Landscape Escrow, Siltation Erosion Escrow and Floodplain Items Escrow prices posted with Prince William County. These prices do not include items that are to be bonded separately with the Virginia Department of Transportation.

1. MOBILIZATION/DEMOBILIZATION OF CONSTRUCTION EQUIPMENT

Quantity	Item	Price	Cost
1	Mobilization/Demobilization	@ Lump Sum $15,000 min.	$ 15,000.00

2. STORM DRAINAGE

A. Structures

Quantity	Item	Price	Cost
	DI-1	@ $6,900 EA	$ -
2	DI-3	@ $6,900 EA	$ 13,800.00
	DI-4	@ $6,900 EA	$ -
1	MH-1	@ $4,900 EA	$ 4,900.00
	MH-2	@ $4,500 EA	$ -
	JB-1	@ $7,175 EA	$ -
1	DI-7	@ $6,800 EA	$ 6,800.00
	DI-12	@ $6,800 EA	$ -
		Subtotal for Structures:	**$ 25,500.00**

B. Concrete Pipe

Quantity	Item	Price	Cost
	12"0	@ $82 LF	$ -
54.5	15"0	@ $82 LF	$ 4,469.00
	18"0	@ $82 LF	$ -
	21"0	@ $82 LF	$ -
242.53	24"0	@ $103 LF	$ 24,980.59
	27"0	@ $103 LF	$ -
	30"0	@ $103 LF	$ -
	33"0	@ $207 LF	$ -
	36"0	@ $207 LF	$ -
	42"0	@ $207 LF	$ -
	48"0	@ $207 LF	$ -
	54"0	@ $365 LF	$ -
	60"0	@ $365 LF	$ -
	66"0	@ $365 LF	$ -
	72"0	@ $453 LF	$ -
		Subtotal for Concrete Pipe:	**$ 29,449.59**

Subtotal for this page:	**$ 69,949.59**

C. End Walls

Quantity	Item	Price	Cost
	12"0	@ $1,950 EA	$ -
	15"0	@ $1,950 EA	$ -
	18"0	@ $1,950 EA	$ -
	21"0	@ $1,950 EA	$ -
	24"0	@ $1,950 EA	$ -
	27"0	@ $1,950 EA	$ -
	30"0	@ $2,100 EA	$ -
	33"0	@ $2,300 EA	$ -
	36"0	@ $2,800 EA	$ -
	42"0	@ $7,236 EA	$ -
	48"0	@ $7,236 EA	$ -
	54"0	@ $7,236 EA	$ -
	60"0	@ $7,236 EA	$ -
	66"0	@ $7,236 EA	$ -
	72"0	@ $9,854 EA	$ -
		Subtotal for End Walls:	**$ -**

D. End Sections (ES-1)

Quantity	Item	Price	Cost
	12"0	@ $1,048 EA	$ -
	15"0	@ $1,048 EA	$ -
	18"0	@ $1,048 EA	$ -
	21"0	@ $1,048 EA	$ -
	24"0	@ $1,048 EA	$ -
	27"0	@ $1,200 EA	$ -
	30"0	@ $1,300 EA	$ -
	33"0	@ $1,500 EA	$ -
	36"0	@ $1,900 EA	$ -
	42"0 - 60"	@ $3,050 EA	$ -
		Subtotal for End Section ES-1:	**$ -**

E. Corrugated Metal Pipe

Quantity	Item	Price	Cost
	12"0	@ $40 LF	$ -
	15"0	@ $60 LF	$ -
	18"0	@ $60 LF	$ -
	24"0	@ $80 LF	$ -
	30"0	@ $80 LF	$ -
	36"0	@ $140 LF	$ -
	42"0	@ $140 LF	$ -
	48"0	@ $140 LF	$ -
	54"0	@ $250 LF	$ -
	60"0	@ $250 LF	$ -
		Subtotal for CM Pipe:	**$ -**

Subtotal for this page:	**$ -**

F. End Section (ES-2)

Quantity	Item	Price	Cost
	15"0	@ $870 EA	$ -
	18"0	@ $870 EA	$ -
	24"0	@ $870 EA	$ -
	30"0	@ $870 EA	$ -
	36"0	@ $1,100 EA	$ -
	42"0	@ $1,400 EA	$ -
	48"0	@ $1,800 EA	$ -
		Subtotal for End Sections (ES-2):	**$ -**

G. AD N-12 (HDPE)

Quantity	Item	Price	Cost
	12"0	@ $45 LF	$ -
	15"0	@ $106 LF	$ -
	18"0	@ $106 LF	$ -
	24"0	@ $106 LF	$ -
	30"0	@ $106 LF	$ -
	36"0	@ $170 LF	$ -
	42"0	@ $170 LF	$ -
	48"0	@ $170 LF	$ -
	60"0	@ $250 LF	$ -
		Subtotal for AD N-12 (HDPE):	**$ -**

Subtotal for this page:	**$ -**

H. Stormwater Management/BMP Facilities Cost Estimates Per Impervious Acre Treated (See Note 3)

Quantity	Item	Price	Cost
Non-Proprietary BMP(Engineer Estimate for all SWM)			
	Dry Retention Pond	By itemized cost	
	Dry Extended Detention Pond	By itemized cost	
	Wet Pond/Wetlands	By itemized cost	
	Bioswale	By itemized cost	
	Vegetated Grass Channel	By itemized cost	
	Micro-Bio-Retention (Raingarden)	By itemized cost	
	Infiltration Practices without Sand	By itemized cost	
	Infiltration Practices with Sand	By itemized cost	
	Filtering Practices with Sand Below Ground	By itemized cost	
	Filtering Practices with Sand Above Ground	By itemized cost	
	Permeable Pavement Level 2 Design	By itemized cost	
	Vegetated Roof Level 1 Design	By itemized cost	
	Vegetated Roof Level 2 Design	By itemized cost	
	Soil Compost Amendment	By itemized cost	
	Rooftop Impervious Surface Disconnection	By itemized cost	
	Sheet Flow to a Vegetated Filter Strip	By itemized cost	
Proprietary/Manufactured BMP-manufacturer's Certified Cost Plus Construction Cost			
	Aqua-Swirl® Stormwater Treatment System	By itemized cost	
	BaySeparator™	By itemized cost	
	Continuous Defective Separator® (CDS)	By itemized cost	
	Downstream Defender®	By itemized cost	
	Hydroguard	By itemized cost	
	Stormceptor® MAX	By itemized cost	
	Stormceptor® OSR	By itemized cost	
	Stormceptor® STC	By itemized cost	
	StormPro	By itemized cost	
	Storm Water Quality Unit	By itemized cost	
	V2B1	By itemized cost	
	The Vortechs® System	By itemized cost	
	Aqua-Filter Stormwater™ Filtration System	By itemized cost	
	Storm Tech® Isolater Row™	By itemized cost	
	Up-Flo Filter® with CPZ Media	By itemized cost	
	The Stormwater Management StormFilter® with ZPG Media	By itemized cost	
	BayFilter™ Stormwater Cartridge System	By itemized cost	
	Filterra Bioretention Systems	By itemized cost	
	Jellyfish® Filter	By itemized cost	
	Modular Wetland System Linear (MWS-Linear)	By itemized cost	
	Perk Filter	By itemized cost	
	The Stormwater Management StormFilter® with Phosphosorb Media	By itemized cost	
	Subtotal for Stormwater Management/BMP Facilities Cost Estimates Per Impervious Acre Treated:		**$ -**

Subtotal for this page:	**$ -**

I. Miscellaneous Stormwater Management

Quantity	Item	Price	Cost
	Seed, Fertilizer & Mulch ($200 Min.)	@ $3.00 SY	$ -
	Sod	@ $8.00 SY	$ -
	Hydraulic Cem. Conc. - 4" depth	@ $8.00 SF	$ -
	Bituminous Concreate - 1" depth	@ $6.00 SY	$ -
	Rip-Rap	@ $7.75 SF	$ -
	Grouted Rip-Rap	@ $9.00 SF	$ -
	Erosion Control Stone (EC-1)	@ $130 TON	$ -
	#57 - Coarse Aggregate	@ $30 TON	$ -
	4' High Chain Link Fence (#9 gauge or better, including braces, end posts and gate)	@ $45 LF	$ -
	6' High Chain Link Fence (#9 gauge or better, including braces, end posts and gate)	@ $45 LF	$ -
	SWM Sign (WATER RISES RAPIDLY) (Minimum 3 signs per facility)	@ $390 EA	$ -
	Access Road	By Itemized Cost	
		Subtotal for Miscellaneous Stormwater Management	**$ -**

J. Miscellaneous Drainage Items

Quantity	Item	Price	Cost
	Box Culvert	@ $ 840 CY of conc.	$ -
	Energy Dissipater	@ $2,250 EA	$ -
	Wing Walls	@ $990 CY of conc.	$ -
Ditches:			
	Roadside Standard Ditches (Seed, Fertilize & Mulch)	@ $8.00 LF	$ -
	Sod Ditches	@ $10.50 LF	$ -
	Paved Ditches	@ $8.50 SF	$ -
	Filter Cloth Fabric & Gabion Stone	@ $22 SF	$ -
	Rip-Rap	@ $7.75 SF	$ -
	Grouted Rip-Rap	@ $9.00 SF	$ -
	Paved Flume	@ $10 SF	$ -
	Flush the Drainage System	$290/Hr. (Min 8 Hrs.)	$ -
		Subtotal for Miscellaneous Drainage Items:	**$ -**

Subtotal for this page:	**$ -**

3. CONSTRUCTION WITHIN THE PUBLIC RIGHT-OF-WAY AND/OR PRIVATE INGRESS/EGRESS EASEMENTS

A. Site Work

Quantity	Item	Price	Cost
	Clear & Grub	@ $12,800	$ -
	Excavation	@ $35 CY	$ -
	Embankment** (cut and fill)	@ $25 CY	$ -
	Embankment (haul off)	@ $36 CY	$ -
	Final Grading	@ $5,000 AC	$ -
	Rock Excavation	@ $75 CY	$ -
	Slope Stabilization - Hydroseeding (3:1 or flatter) $1,000 Min.	@ $1.25 SY	$ -
	Slope Stab. - Jute Mesh, matting Blankets, etc. (Between 2:1 to 3:1) $200 Min	@ $6.00 SY	$ -
	Slope Stab. - Sod (Between 2:1 to 3:1) $200 Min	@ $8.00 SY	$ -
	Steep Slopes (Grading and Stabilization with Jute Mesh, Netting, Blankets, etc.)	@ $20 SY	$ -
		Subtotal for Site Work:	**$ -**

B. Subgrade, Subbase, and Base Course Items

Quantity	Item	Price	Cost
1639	Subgrade preparation (Subbase and base course)	@ $3.50 SY	$ 5,736.50
9834	Aggregate (21A/21B)	@ $3 SY per Inch Depth	$ 29,502.00
10653.5	Bituminous Concrete	@ $6.25 SY per Inch Depth	$ 66,584.38
192	Reinforced Concrete Pavement	@ $18 SY per Inch Depth	$ 3,456.00
	Gravel Shoulders (4" Depth)	@ $12 SY (4" Depth)	$ -
	Soil Cement Stabilization (4%)	@ $24 SY (6" Depth)	$ -
	Lime Stabilization (10%)	@ $16 SY (6" Depth)	$ -
	Cement Treated Aggregate	@ $11 per Inch Depth	$ -
Underdrains:			
	UD-1	@ $21 LF	$ -
	UD-2	@ $21 LF	$ -
	UD-3	@ $21 LF	$ -
	UD-4	@ $21 LF	$ -
		Subtotal for Subgrade, Subbase, Base Course Items & Underdrains (Public):	**$ 105,278.88**

Subtotal for this page:	**$ 105,278.88**

C. Entrances and Pipe Stems

Quality	Item	Price	Cost
	DE-1	@ $1,800 EA	$ -
	DE-2	@ $1,950 EA	$ -
	DE-3	@ $2,000 EA	$ -
	DE-4	@ $2,300 EA	$ -
	PP-1 (1 Lot)	@ $2,000 EA	$ -
	PP-1 (2-5 Lots)	@ $2,300 EA	$ -
	PP-2 (1 Lot)	@ $1,725 EA	$ -
	PP-2 (2-5 Lots)	@ $1,725 EA	$ -
	CG-9D or equal: 30' Width	@ $5,750 EA	$ -
	CG-9D or equal: 40' Width	@ $7,475 EA	$ -
	CG-10A or equal: 30' Width	@ $4,738 EA	$ -
	CG-10A or equal: 40' Width	@ $6,095 EA	$ -
	CG-11: Concrete Entrance	@ $3,450 EA	$ -
	Valley Gutter	@ $61 SY	$ -
	Pipestem Driveway - 10' (1 Lot)	@ $61 LF	$ -
	Pipestem Driveway - 18' (2-5 Lots)	@ $81 LF	$ -
		Subtotal for Entrance and Pipe Stems:	**$ -**

Subtotal for this page:	**$ -**

D. Miscellaneous Construction Items

Quantity	Item	Price	Cost
263	Sidewalk (5' Width)	@ $40 LF	$ 10,520.00
	Header Curb (CG-2/CG-3)	@ $25 LF	$ -
706	Curb & Gutter	@ $28 LF	$ 19,768.00
	CG-12 (Truncated Dome)	@ $2,000 EA	$ -
	Bicycle Trail/Walkway	@ $11.00 SF	$ -
	Raised Concrete Median (MS-1A)	@ $81 SY	$ -
	Trail (Wood Chip)	@ $19 SY	$ -
	Trail (Stone Dust)	@ $19 SY	$ -
Retaining Walls:			
	Timber	@ $34 SF	$ -
	Crib	@ $44 SF	$ -
	MSE/Geogrid	@ $50 SF	$ -
	Gravity Wall	@ $72 SY	$ -
	Excavation for tiebacks in walls in cut areas	@ $29 CY	$ -
	Anti-Graffiti Paint (Concrete Retaining Walls only-treatment/sealant)	@ $18 SF (Min. $2,500)	$ -
	Guardrail	@ $45 LF	$ -
	GR-7 NCHRP 350	@ $3,640 EA	$ -
	GR-9	@ $3,640 EA	$ -
	Address Sign (Entrance to Pipestems)	@ $460 EA	$ -
	Street Name Sign	@ $525	$ -
	Traffic Control Sign	@ $450	$ -
	Bus Stop Sign	@ $415	$ -
	Bus Shelter	@ $24,000	$ -
	Traffic Signal	@ (Lump Sum)	
2	HC Parking Space Sign	@ $720 EA	$ 1,440.00
	Bike Rack	@ $350 EA	$ -
	Roadside Delineators (ED-1)	@ $75 EA	$ -
	Hand Rail (HR-1)	@ $120 LF	$ -
	Pavement Marking (Paint)	@ $2.50 SF	$ -
	Pavement Marking (Thermoplastic)	@ $7.00 SF	$ -
	Traffic Barricade (TB-1)	@ $1,725 EA	$ -
	Street Lighting	@ $5,500 EA	$ -
	Utilities Relocation	(Min. $46,000) (Lump Sum or provide estimate from utility co.)	$ -
	VDOT Street Acceptance Package	@ $7,000	$ -
	P.E. Certified "As-Built" Plans	Lump Sum (Min. $12,000)	$ -
		Subtotal for Miscellaneous Construction Items:	**$ 31,728.00**

Subtotal for this page:	**$ -**

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COMMONWEALTH OF VIRGINIA
SEBASTIAN SANDOVAL
Lic. No. 045207
06/30/23
PROFESSIONAL ENGINEER

PLAN# BA2201
DATE: MARCH, 2023
CONTOUR INT.= N/A
SCALE: N/A

PLAN DATE
01/06/23
03/17/23
06/30/23

UNIT PRICE LIST
FINAL SITE PLAN
KIDDIE ACADEMY AT CROSSROADS VILLAGE CENTER

TOWN OF HAYMARKET, VIRGINIA

REVISIONS

No.	DATE	DESCRIPTION

SHEET 40 OF 43

Subtotal for this page:	**$**	**31,728.00**

4. SANITARY SEWER & WATER LINE CONSTRUCTION

Quantity	Item	Price		Cost
	Fire Hydrant Assembly	@ $9,200	EA	$ -
	Central Sewer Lift/Pump Station Construction	@ (Lump Sum)		

Water Main (Exclusive of Fire Hydrants)

Quantity	Item	Price		Cost
	4"0 DIP	@ $60	LF	$ -
	6"0 DIP	@ $75	LF	$ -
	8"0 DIP	@ $90	LF	$ -
	12"0 DIP	@ $125	LF	$ -
	16"0 DIP	@ $165	LF	$ -
	18'0 DIP	@ $185	LF	$ -
	4"0 or 6"0 RW Valve (with accessories)	@ $1,200	EA	$ -
	8"0 or 12"0 RW Valve (with accessories)	@ $3,000	EA	$ -
	16"0 or 24"0 RW Valve (with accessories)	@ $7,000	EA	$ -
	Standard Meter Crock & Appurtenances (Angle valve, backflow preventer, yoke, frame & cover, and service line)	@ $2,500	EA	$ -
	Meter Vault & Appurtenances (3 meters & larger)	@ $40,000	EA	$ -
	Water Main Blow-off Assembly	@ $3,000	EA	$ -
	Air Release Assembly	@ $6,800	EA	$ -
	Dead End Anchor System	@ $10,000	EA	$ -
	Subtotal for Water Main:			**$ -**

Subtotal for this page:	**$**	**-**

Sanitary Sewer Pipe Line (Exclusive of Manhole Structures)

Quantity	Item	Price		Cost
	1.5"0 thru 4"0 LPFM (Low Pressure Force Main System)	@ $35	LF	$ -
	8"0 PVC	@ $81	LF	$ -
	8"0 DIP	@ $95	LF	$ -
	10"0 PVC	@ $100	LF	$ -
	10"0 DIP	@ $110	LF	$ -
	12"0 PVC	@ $170	LF	$ -
	12"0 DIP	@ $185	LF	$ -
	15"0 PVC	@ $225	LF	$ -
	4' Dia. Sanitary Sewer Manhole	@ $11,000	EA	$ -
	5' Dia. Sanitary Sewer Manhole	@ $11,000	EA	$ -
	Street Manhole Frame & Cover Assembly (Including rain bowl & chimney seal)	@ $1,200	EA	$ -
	Easement Manhole Frame & Cover Assembly (Including chimney seal)	@ $1,200	EA	$ -
	Abandonment of Manhole	@ $290	VF	$ -
	4"0 PVC Lateral (including clean-out stack)	@ $50	LF	$ -
	4"0 DIP Lateral (including clean-out stack)	@ $60	LF	$ -
38.7	6"0 PVC Lateral (including clean-out stack)	@ $70	LF	$ 2,709.00
	6"0 DIP Later (including clean-out stack)	@ $75	LF	$ -
	LPFM Flushing Station	@ $2,900	EA	$ -
	Sewerage Air Release/Vacuum Breaker Assembly	@ $4,050	EA	$ -
	Steel Casing	@ $600	LF	$ -
	Grease Trap (500 gal. minimum)	@ $5,200	EA	$ -
		@		$ -
		@		$ -
		@		$ -
	Subtotal for Sanitary Sewer Pipe:			**$ 2,709.00**

Note: For sizes larger than 15"0, add $4.60 per inch increase in diameter.

Subtotal for this page:	**$**	**2,709.00**
TOTAL CONSTRUCTION COST: (Pages 1 through 10)	**$**	**209,665.47**

5. MISCELLANEAOUS COSTS

A. Administrative Cost - 10% of the total construction cost, not to exceed $50,000	$	20,966.55
B. Inflation Cost - Compounded annually at 3.0% per year of the total Construction Cost	$	6,289.96
TOTAL PERFORMANCE BOND AMOUNT:	**$**	**236,921.98**

6. FLOODPLAIN ITEMS ESCROW

Quantity	Item	Price	Cost
	LOMR	$18,000	$ -
	Elevation Certificate	$1,000	$ -
	LOMC (SF Detached)	$1,800	$ -
	Stream Restoration (By Itemized Cost)		
	TOTAL FLOODPLAIN ITEMS ESCROW:		**$ -**

7. LANDSCAPING ESCROW

A. Deciduous Trees

Quantity	Item	Price		Cost
	5'-6'	@ $300	EA	$ -
	1" - 1.5" or 1.5"- 2"	@ $450	EA	$ -
	2" - 2.5" or 2.5 - 3"	@ $600	EA	$ -
	3" - 3.5" or 3.5" - 4"	@ $959	EA	$ -
	Subtotal for Deciduous Trees:			**$ -**

B. Evergreen Trees

Quantity	Item	Price		Cost
	5' - 6'	@ $250	EA	$ -
13	6' - 7'	@ $270	EA	$ 3,510.00
	7' - 8'	@ $450	EA	$ -
	8' - 10'	@ $830	EA	$ -
	Subtotal for Evergreen Trees:			**$ 3,510.00**

C. Shrubs

Quantity	Item	Price		Cost
78	18" - 24"	@ $60	EA	$ 4,680.00
	24" - 30"	@ $80	EA	$ -
	Subtotal for Shrubs:			**$ 4,680.00**

D. Ornamental

Quantity	Item	Price	Cost
	1 Gal. (#1)	@ $35	$ -
	2 Gal. (#2)	@ $45	$ -
	3 Gal. (#3)	@ $50	$ -
	Subtotal for Ornamentals:		**$ -**

E. Perennial

Quantity	Item	Price	Cost
	18" - 24"	@ $15.00	$ -
	Subtotal for Perennial:		**$ -**

F. Reforestation

Quantity	Item	Price		Cost
	# of Acres	@ $11,700	AC	$ -
	Subtotal for Reforestation			**$ -**
	TOTAL LANDSCAPE ESCROW AMOUNT:			**$ 8,190.00**

8. SILTATION AND EROSION CONTROL ESCROWS

Quantity	Item	Price		Cost
	Diversion Dike	@ $7.00	LF	$ -
	Cleaning out SWM Facilities, Silt Traps and Silt Basins	$600/Hr. Lump Sum (Min. $20,000 or actual estimate provided by engineer to the satisfaction of the plan review)		$ -
906	Silt Fence: 0' - 1000' (installation, maintenance for 1 year & removal)	@ $8.00	LF	$ 7,248.00
	Silt Fence: 1001' - 1000' (installation, maintenance for 1 year & removal)	@ $6.00	LF	$ -
	Silt Fence: 10,000' + (installation, maintenance for 1 year & removal)	@ $4.00	LF	$ -
	Super Silt Fence: 0' - 1000' (installation, maintenance for 1 year & removal)	@ $20	LF	$ -
	Super Silt Fence: 1001' - 10000 (installation, maintenance for 1 year & removal)	@ $12	LF	$ -
	Super Silt Fence: 10,000' + (installation, maintenance for 1 year & removal)	@ $11.00	LF	$ -
	Sod	@ $8.00	SY	$ -
	Seed, Fertilizer & Mulch	@ $3.00 SY ($200 Min)		$ -
	Steep Slopes (Grading and Stabilization with jute mesh, netting, blankets, etc.)	@ $18	SY	$ -
	Coarse Aggregates (#1 or #57)	@ $35	TON	$ -
	Inlet Protection	@ $190	EA	$ -
	Check Dam	@ $250	EA	$ -
1	Temp. Construction Entrance	@ $2,300	EA	$ 2,300.00
1	Wash Rack	@ $2,000	EA	$ 2,000.00
	Temp. Sediment Trap	@ $1,000		$ -
		@ $1,500		$ -
		@ $2,000		$ -
	Temporary Sediment Basin	By itemized cost		
	Channel Diversion	By itemized cost		
	6' Chain-link Safety Fence	@ $50	LF	$ -
	4' Plastic Orange Safety Fence	@ $4.00	LF	$ -
	Yard utility refurbishment	@ $875 EA Single Family Lot		$ -
	Stockpile Removal (Quantity based on policy)	@ $30	CY	$ -
0.77	Removal of Erosion Control Measures (Min. $1000) cost per acre	@		$ 1,000.00
	Level Spreader	By itemized cost		
				$ -
		Total Cost:		**$ 12,548.00**
		Administrative Cost (10% of Total Cost):		$ 1,254.80

TOTAL SILTATION & EROSION CONTROL ESCROW AMOUNT:	**$**	**13,802.80**

Minimum acceptable amount for Siltation and Erosion Control is $2,500.00

I hereby certify that the above is my best estimate of the quantities and current cost of bondable improvements, landscaping items, Siltation & Erosion Control Escrow and floodplain items in this subdivision or site plan.

Preparer's Signature

(703) 361-1550 x401
Telephone #

Sebastian Sandoval
Name (Print)

J2 Engineers
Company or Firm

NOTES:

1. For items identified with ** the quantity for the embankment material is the net difference of total fill material needed and cut material available at the project site, if excavated or cut material is suitable for embankment.
2. The excavation and embankment costs include necessary grading, spreading and/or compaction of soil in accordance with County and State Standards and Specifications
3. The unit cost for each of the items in the Unit Price Lists is the installation cost which includes factors such as materials, excavation, bedding backfilling, compaction, form work, etc.
4. Inflation has been calculated based on Northern Virginia Consumer Price Index of the Washington D.C. area provided by the Bureau of Labor and Statistics.
5. Whoever certifies the site development plans must also certify the total cost of the bonded items, landscaping escrow and siltation and erosion control escrow and must sign "Preparer's Signature" on page 10 of this form.
6. Floodplain Items Escrow not to be part of Bond/Escrow reduction.

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COMMONWEALTH OF VIRGINIA
SEBASTIAN SANDOVAL
Lic. No. 045207
06/30/23
PROFESSIONAL ENGINEER

PLAN# BA2201
DATE: MARCH, 2023
CONTOUR INT.= N/A
SCALE: N/A

PLAN DATE
01/06/23
03/17/23
06/30/23

UNIT PRICE LIST
FINAL SITE PLAN
KIDDIE ACADEMY AT CROSSROADS VILLAGE CENTER

TOWN OF HAYMARKET, VIRGINIA

REVISIONS

No.	DATE	DESCRIPTION

SHEET
41
OF
43

PRINCE WILLIAM COUNTY SERVICE AUTHORITY
Department of Engineering Development
UNIT PRICE LIST

Effective: March 1, 2022

Project Name: KIDDIE ACADEMY AT CROSSROADS VILLAGE CENTER

PWC File #: _____ **Date Prepared:** 10/20/2022

NOTE: This form is to be used to estimate Performance Bond, Landscape Escrow, Siltation Erosion Escrow and Floodplain Items Escrow prices posted with Prince William County. These prices do not include items that are to be bonded separately with the Virginia Department of Transportation.

1. MOBILIZATION/DEMOBILIZATION OF CONSTRUCTION EQUIPMENT

Quantity	Item	Price	Cost
	Mobilization/Demobilization	@ Lump Sum $15,000 min.	$ -

2. STORM DRAINAGE

A. Structures

Quantity	Item	Price	Cost
	DI-1	@ $6,900 EA	$ -
	DI-3	@ $6,900 EA	$ -
	DI-4	@ $6,900 EA	$ -
	MH-1	@ $4,900 EA	$ -
	MH-2	@ $4,500 EA	$ -
	JB-1	@ $7,175 EA	$ -
	DI-7	@ $6,800 EA	$ -
	DI-12	@ $6,800 EA	$ -
		Subtotal for Structures:	**$ -**

B. Concrete Pipe

Quantity	Item	Price	Cost
	12"0	@ $82 LF	$ -
	15"0	@ $82 LF	$ -
	18"0	@ $82 LF	$ -
	21"0	@ $82 LF	$ -
	24"0	@ $103 LF	$ -
	27"0	@ $103 LF	$ -
	30"0	@ $103 LF	$ -
	33"0	@ $207 LF	$ -
	36"0	@ $207 LF	$ -
	42"0	@ $207 LF	$ -
	48"0	@ $207 LF	$ -
	54"0	@ $365 LF	$ -
	60"0	@ $365 LF	$ -
	66"0	@ $365 LF	$ -
	72"0	@ $453 LF	$ -
		Subtotal for Concrete Pipe:	**$ -**

		Subtotal for this page:	**$ -**

C. End Walls

Quantity	Item	Price	Cost
	12"0	@ $1,950 EA	$ -
	15"0	@ $1,950 EA	$ -
	18"0	@ $1,950 EA	$ -
	21"0	@ $1,950 EA	$ -
	24"0	@ $1,950 EA	$ -
	27"0	@ $1,950 EA	$ -
	30"0	@ $2,100 EA	$ -
	33"0	@ $2,300 EA	$ -
	36"0	@ $2,800 EA	$ -
	42"0	@ $7,236 EA	$ -
	48"0	@ $7,236 EA	$ -
	54"0	@ $7,236 EA	$ -
	60"0	@ $7,236 EA	$ -
	66"0	@ $7,236 EA	$ -
	72"0	@ $9,854 EA	$ -
		Subtotal for End Walls:	**$ -**

D. End Sections (ES-1)

Quantity	Item	Price	Cost
	12"0	@ $1,048 EA	$ -
	15"0	@ $1,048 EA	$ -
	18"0	@ $1,048 EA	$ -
	21"0	@ $1,048 EA	$ -
	24"0	@ $1,048 EA	$ -
	27"0	@ $1,200 EA	$ -
	30"0	@ $1,300 EA	$ -
	33"0	@ $1,500 EA	$ -
	36"0	@ $1,900 EA	$ -
	42"0 - 60"	@ $3,050 EA	$ -
		Subtotal for End Section ES-1:	**$ -**

E. Corrugated Metal Pipe

Quantity	Item	Price	Cost
	12"0	@ $40 LF	$ -
	15"0	@ $60 LF	$ -
	18"0	@ $60 LF	$ -
	24"0	@ $80 LF	$ -
	30"0	@ $80 LF	$ -
	36"0	@ $140 LF	$ -
	42"0	@ $140 LF	$ -
	48"0	@ $140 LF	$ -
	54"0	@ $250 LF	$ -
	60"0	@ $250 LF	$ -
		Subtotal for CM Pipe:	**$ -**

		Subtotal for this page:	**$ -**

F. End Section (ES-2)

Quantity	Item	Price	Cost
	15"0	@ $870 EA	$ -
	18"0	@ $870 EA	$ -
	24"0	@ $870 EA	$ -
	30"0	@ $870 EA	$ -
	36"0	@ $1,100 EA	$ -
	42"0	@ $1,400 EA	$ -
	48"0	@ $1,800 EA	$ -
		Subtotal for End Sections (ES-2):	**$ -**

G. AD N-12 (HDPE)

Quantity	Item	Price	Cost
	12"0	@ $45 LF	$ -
	15"0	@ $106 LF	$ -
	18"0	@ $106 LF	$ -
	24"0	@ $106 LF	$ -
	30"0	@ $106 LF	$ -
	36"0	@ $170 LF	$ -
	42"0	@ $170 LF	$ -
	48"0	@ $170 LF	$ -
	60"0	@ $250 LF	$ -
		Subtotal for AD N-12 (HDPE):	**$ -**

		Subtotal for this page:	**$ -**

H. Stormwater Management/BMP Facilities Cost Estimates Per Impervious Acre Treated (See Note 3)

Quantity	Item	Price	Cost

Non-Proprietary BMP(Engineer Estimate for all SWM)

	Dry Retention Pond	By itemized cost	
	Dry Extended Detention Pond	By itemized cost	
	Wet Pond/Wetlands	By itemized cost	
	Bioswale	By itemized cost	
	Vegetated Grass Channel	By itemized cost	
	Micro-Bio-Retention (Raingarden)	By itemized cost	
	Infiltration Practices without Sand	By itemized cost	
	Infiltration Practices with Sand	By itemized cost	
	Filtering Practices with Sand Below Ground	By itemized cost	
	Filtering Practices with Sand Above Ground	By itemized cost	
	Permeable Pavement Level 2 Design	By itemized cost	
	Vegetated Roof Level 1 Design	By itemized cost	
	Vegetated Roof Level 2 Design	By itemized cost	
	Soil Compost Amendment	By itemized cost	
	Rooftop Impervious Surface Disconnection	By itemized cost	
	Sheet Flow to a Vegetated Filter Strip	By itemized cost	

Proprietary/Manufactured BMP-manufacturer's Certified Cost Plus Construction Cost

	Aqua-Swirl® Stormwater Treatment System	By itemized cost	
	BaySeparator™	By itemized cost	
	Continuous Defective Separator® (CDS)	By itemized cost	
	Downstream Defender®	By itemized cost	
	Hydroguard	By itemized cost	
	Stormceptor® MAX	By itemized cost	
	Stormceptor® OSR	By itemized cost	
	Stormceptor® STC	By itemized cost	
	StormPro	By itemized cost	
	Storm Water Quality Unit	By itemized cost	
	V2B1	By itemized cost	
	The Vortechs® System	By itemized cost	
	Aqua-Filter Stormwater™ Filtration System	By itemized cost	
	Storm Tech® Isolater Row™	By itemized cost	
	Up-Flo Filter® with CPZ Media	By itemized cost	
	The Stormwater Management StormFilter® with ZPG Media	By itemized cost	
	BayFilter™ Stormwater Cartridge System	By itemized cost	
	Filterra Bioretention Systems	By itemized cost	
	Jellyfish® Filter	By itemized cost	
	Modular Wetland System Linear (MWS-Linear)	By itemized cost	
	Perk Filter	By itemized cost	
	The Stormwater Management StormFilter® with Phosphosorb Media	By itemized cost	
	Subtotal for Stormwater Management/BMP Facilities Cost Estimates Per Impervious Acre Treated:		**$ -**

		Subtotal for this page:	**$ -**

I. Miscellaneous Stormwater Management

Quantity	Item	Price	Cost
	Seed, Fertilizer & Mulch ($200 Min.)	@ $3.00 SY	$ -
	Sod	@ $8.00 SY	$ -
	Hydraulic Cem. Conc. - 4" depth	@ $8.00 SF	$ -
	Bituminous Concreate - 1" depth	@ $6.00 SY	$ -
	Rip-Rap	@ $7.75 SF	$ -
	Grouted Rip-Rap	@ $9.00 SF	$ -
	Erosion Control Stone (EC-1)	@ $130 TON	$ -
	#57 - Coarse Aggregate	@ $30 TON	$ -
	4' High Chain Link Fence (#9 gauge or better, including braces, end posts and gate)	@ $45 LF	$ -
	6' High Chain Link Fence (#9 gauge or better, including braces, end posts and gate)	@ $45 LF	$ -
	SWM Sign (WATER RISES RAPIDLY) (Minimum 3 signs per facility)	@ $390 EA	$ -
	Access Road	By Itemized Cost	
		Subtotal for Miscellaneous Stormwater Management	**$ -**

J. Miscellaneous Drainage Items

Quantity	Item	Price	Cost
	Box Culvert	@ $40 CY of conc.	$ -
	Energy Dissipater	@ $2,250 EA	$ -
	Wing Walls	@ 990 CY of conc.	$ -
Ditches:			
	Roadside Standard Ditches (Seed, Fertilize & Mulch)	@ $8.00 LF	$ -
	Sod Ditches	@ $10.50 LF	$ -
	Paved Ditches	@ $8.50 SF	$ -
	Filter Cloth Fabric & Gabion Stone	@ $22 SF	$ -
	Rip-Rap	@ $7.75 SF	$ -
	Grouted Rip-Rap	@ $9.00 SF	$ -
	Paved Flume	@ $10 SF	$ -
	Flush the Drainage System	$290/Hr. (Min 8 @ Hrs.)	$ -
		Subtotal for Miscellaneous Drainage Items:	**$ -**

		Subtotal for this page:	**$ -**

3. CONSTRUCTION WITHIN THE PUBLIC RIGHT-OF-WAY AND/OR PRIVATE INGRESS/EGRESS EASEMENTS

A. Site Work

Quantity	Item	Price	Cost
	Clear & Grub	@ $12,800	$ -
	Excavation	@ $35 CY	$ -
	Embankment** (cut and fill)	@ $25 CY	$ -
	Embankment (haul off)	@ $36 CY	$ -
	Final Grading	@ $5,000 AC	$ -
	Rock Excavation	@ $75 CY	$ -
	Slope Stabilization - Hydroseeding (3:1 or flatter) $1,000 Min.	@ $1.25 SY	$ -
	Slope Stab. - Jute Mesh, matting Blankets, etc. (Between 2:1 to 3:1) $200 Min	@ $6.00 SY	$ -
	Slope Stab. - Sod (Between 2:1 to 3:1) $200 Min	@ $8.00 SY	$ -
	Steep Slopes (Grading and Stabilization with Jute Mesh, Netting, Blankets, etc.)	@ $20 SY	$ -
		Subtotal for Site Work:	**$ -**

B. Subgrade, Subbase, and Base Course Items

Quantity	Item	Price	Cost
	Subgrade preparation (Subbase and base course)	@ $3.50 SY	$ -
	Aggregate (21A/21B)	@ $3 SY per Inch Depth	$ -
	Bituminous Concrete	@ $6.25 SY per Inch Depth	$ -
	Reinforced Concrete Pavement	@ $18 SY per Inch Depth	$ -
	Gravel Shoulders (4" Depth)	@ $12 SY (4" Depth)	$ -
	Soil Cement Stabilization (4%)	@ $24 SY (6" Depth)	$ -
	Lime Stabilization (10%)	@ $16 SY (6" Depth)	$ -
	Cement Treated Aggregate	@ $11 per Inch Depth	$ -
Underdrains:			
	UD-1	@ $21 LF	$ -
	UD-2	@ $21 LF	$ -
	UD-3	@ $21 LF	$ -
	UD-4	@ $21 LF	$ -
		Subtotal for Subgrade, Subbase, Base Course Items & Underdrains (Public):	**$ -**

		Subtotal for this page:	**$ -**

C. Entrances and Pipe Stems

Quality	Item	Price	Cost
	DE-1	@ $1,800 EA	$ -
	DE-2	@ $1,950 EA	$ -
	DE-3	@ $2,000 EA	$ -
	DE-4	@ $2,300 EA	$ -
	PP-1 (1 Lot)	@ $2,000 EA	$ -
	PP-1 (2-5 Lots)	@ $2,300 EA	$ -
	PP-2 (1 Lot)	@ $1,725 EA	$ -
	PP-2 (2-5 Lots)	@ $1,725 EA	$ -
	CG-9D or equal: 30' Width	@ $5,750 EA	$ -
	CG-9D or equal: 40' Width	@ $7,475 EA	$ -
	CG-10A or equal: 30' Width	@ $4,738 EA	$ -
	CG-10A or equal: 40' Width	@ $6,095 EA	$ -
	CG-11: Concrete Entrance	@ $3,450 EA	$ -
	Valley Gutter	@ $61 SY	$ -
	Pipestem Driveway - 10' (1 Lot)	@ $61 LF	$ -
	Pipestem Driveway - 18' (2-5 Lots)	@ $81 LF	$ -
		Subtotal for Entrance and Pipe Stems:	**$ -**

		Subtotal for this page:	**$ -**

D. Miscellaneous Construction Items

Quantity	Item	Price	Cost
	Sidewalk (5' Width)	@ $40 LF	$ -
	Header Curb (CG-2/CG-3)	@ $25 LF	$ -
	Curb & Gutter	@ $28 LF	$ -
	CG-12 (Truncated Dome)	@ $2,000 EA	$ -
	Bicycle Trail/Walkway	@ $11.00 SF	$ -
	Raised Concrete Median (MS-1A)	@ $81 SY	$ -
	Trail (Wood Chip)	@ $19 SY	$ -
	Trail (Stone Dust)	@ $19 SY	$ -
Retaining Walls:			
	Timber	@ $34 SF	$ -
	Crib	@ $44 SF	$ -
	MSE/Geogrid	@ $50 SF	$ -
	Gravity Wall	@ $72 SY	$ -
	Excavation for tiebacks in walls in cut areas	@ $29 CY	$ -
	Anti-Graffiti Paint (Concrete Retaining Walls only-treatment/sealant)	@ $18 SF (Min. $2,500)	$ -
	Guardrail	@ $45 LF	$ -
	GR-7 NCHRP 350	@ $3,640 EA	$ -
	GR-9	@ $3,640 EA	$ -
	Address Sign (Entrance to Pipestems)	@ $460 EA	$ -
	Street Name Sign	@ $525	$ -
	Traffic Control Sign	@ $450	$ -
	Bus Stop Sign	@ $415	$ -
	Bus Shelter	@ $24,000	$ -
	Traffic Signal	@ (Lump Sum)	
	HC Parking Space Sign	@ $720 EA	$ -
	Bike Rack	@ $350 EA	$ -
	Roadside Delineators (ED-1)	@ $75 EA	$ -
	Hand Rail (HR-1)	@ $120 LF	$ -
	Pavement Marking (Paint)	@ $2.50 SF	$ -
	Pavement Marking (Thermoplastic)	@ $7.00 SF	$ -
	Traffic Barricade (TB-1)	@ $1,725 EA	$ -
	Street Lighting	@ $5,500 EA	$ -
	Utilities Relocation	(Min. $46,000) (Lump Sum or provide estimate from utility co.)	$ -
	VDOT Street Acceptance Package	@ $7,000	$ -
	P.E. Certified "As-Built" Plans	Lump Sum (Min. $12,000)	$ -
		Subtotal for Miscellaneous Construction Items:	**$ -**

		Subtotal for this page:	**$ -**

4. SANITARY SEWER & WATER LINE CONSTRUCTION

Quantity	Item	Price	Cost
	Fire Hydrant Assembly	@ $9,200 EA	$ -
	Central Sewer Lift/Pump Station Construction	@ (Lump Sum)	
	4"0 DIP	@ $60 LF	$ -
	6"0 DIP	@ $75 LF	$ -
	8"0 DIP	@ $90 LF	$ -
	12"0 DIP	@ $125 LF	$ -
	16"0 DIP	@ $165 LF	$ -
	18"0 DIP	@ $185 LF	$ -
2	4"0 or 6"0 RW Valve (with accessories)	@ $1,200 EA	$ 2,400.00
	8"0 or 12"0 RW Valve (with accessories)	@ $3,000 EA	$ -
	16"0 or 24"0 RW Valve (with accessories)	@ $7,000 EA	$ -
1	Standard Meter Crock & Appurtenances (Angle valve, backflow preventer, yoke, frame & cover, and service line)	@ $2,500 EA	$ 2,500.00
	Meter Vault & Appurtenances (3 meters & larger)	@ $40,000 EA	$ -
	Water Main Blow-off Assembly	@ $3,000 EA	$ -
	Air Release Assembly	@ $6,800 EA	$ -
	Dead End Anchor System	@ $10,000 EA	$ -
		Subtotal for Water Main:	**$ 4,900.00**

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COMMONWEALTH OF VIRGINIA
SEBASTIAN SANDOVAL
Lic. No. 045207
06/30/23
PROFESSIONAL ENGINEER

PLAN# BA2201
DATE: MARCH, 2023
CONTOUR INT.= N/A
SCALE: N/A

PLAN DATE
01/06/23
03/17/23
06/30/23

PWCSA UNIT PRICE LIST
FINAL SITE PLAN
KIDDIE ACADEMY AT CROSSROADS VILLAGE CENTER

TOWN OF HAYMARKET, VIRGINIA

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	Subtotal for this page:	**$ 4,900.00**

Sanitary Sewer Pipe Line (Exclusive of Manhole Structures)

Quantity	Item	Price		Cost
	1.5"0 thru 4"0 DIPFM (DIP Force Main System)	@ $35	LF	$ -
	8"0 PVC	@ $81	LF	$ -
	8"0 DIP	@ $95	LF	$ -
	10"0 PVC	@ $100	LF	$ -
	10"0 DIP	@ $110	LF	$ -
	12"0 PVC	@ $170	LF	$ -
	12"0 DIP	@ $185	LF	$ -
	15"0 PVC	@ $225	LF	$ -
	4' Dia. Sanitary Sewer Manhole	@ $11,000	EA	$ -
	5' Dia. Sanitary Sewer Manhole	@ $11,000	EA	$ -
	Street Manhole Frame & Cover Assembly (Including rain bowl & chimney seal)	@ $1,200	EA	$ -
	Easement Manhole Frame & Cover Assembly (Including chimney seal)	@ $1,200	EA	$ -
	Abandonment of Manhole	@ $290	VF	$ -
	4"0 PVC Lateral (including clean-out stack)	@ $50	LF	$ -
	4"0 DIP Lateral (including clean-out stack)	@ $60	LF	$ -
42.92	6"0 PVC Lateral (including clean-out stack)	@ $70	LF	$ 3,004.40
	6"0 DIP Later (including clean-out stack)	@ $75	LF	$ -
	LPFM Flushing Station	@ $2,900	EA	$ -
	Sewerage Air Release/Vacuum Breaker Assembly	@ $4,050	EA	$ -
	Steel Casing	@ $600	LF	$ -
	Grease Trap (500 gal. minimum)	@ $5,200	EA	$ -
		@		$ -
		@		$ -
		@		$ -
	Subtotal for Sanitary Sewer Pipe:			**$ 3,004.40**

Note: For sizes larger than 15"0, add $4.00 per inch increase in diameter.

Subtotal for this page:	**$ 3,004.40**
TOTAL CONSTRUCTION COST: (Pages 1 through 10)	**$ 7,904.40**

5. MISCELLANEAOUS COSTS

A. Administrative Cost - 10% of the total construction cost, not to exceed $50,000	$ 790.44
B. Inflation Cost - Compounded annually at 3.0% per year of the total Construction Cost	$ 237.13
TOTAL PERFORMANCE BOND AMOUNT:	**$ 8,931.97**

6. FLOODPLAIN ITEMS ESCROW

Quantity	Item	Price	Cost
	LOMR	$18,000	$ -
	Elevation Certificate	$1,000	$ -
	LOMC (SF Detached)	$1,800	$ -
Stream Restoration			
	Stream Restoration	By itemized cost	
	TOTAL FLOODPLAIN ITEMS ESCROW:		**$ -**

7. LANDSCAPING ESCROW

A. Deciduous Trees

Quantity	Item	Price		Cost
	5'-6'	@ $300	EA	$ -
	1" - 1.5" or 1.5"- 2"	@ $450	EA	$ -
	2" - 2.5" or 2.5 - 3"	@ $600	EA	$ -
	3" - 3.5" or 3.5" - 4"	@ $959	EA	$ -
	Subtotal for Deciduous Trees:			**$ -**

B. Evergreen Trees

Quantity	Item	Price		Cost
	5' - 6'	@ $250	EA	$ -
	6' - 7'	@ $270	EA	$ -
	7' - 8'	@ $450	EA	$ -
	8' - 10'	@ $830	EA	$ -
	Subtotal for Evergreen Trees:			**$ -**

C. Shrubs

Quantity	Item	Price		Cost
	18" - 24"	@ $60	EA	$ -
	24" - 30"	@ $80	EA	$ -
	Subtotal for Shrubs:			**$ -**

D. Ornamental

Quantity	Item	Price	Cost
	1 Gal. (#1)	@ $35	$ -
	2 Gal. (#2)	@ $45	$ -
	3 Gal. (#3)	@ $50	$ -
	Subtotal for Ornamentals:		**$ -**

E. Perennial

Quantity	Item	Price	Cost
	18" - 24"	@ $15.00	$ -
	Subtotal for Perennial:		**$ -**

F. Reforestation

Quantity	Item	Price		Cost
	# of Acres	@ $11,700	AC	$ -
	Subtotal for Reforestation			**$ -**

TOTAL LANDSCAPE ESCROW AMOUNT: $ -

8. SILTATION AND EROSION CONTROL ESCROWS

Quantity	Item	Price		Cost
	Diversion Dike	@ $7.00	LF	$ -
	Cleaning out SWM Facilities, Silt Traps and Silt Basins	$600/Hr. Lump Sum (Min. $20,000 or actual estimate provided by engineer to the satisfaction of the plan review)		$ -
	Silt Fence: 0' - 1000' (installation, maintenance for 1 year & removal)	@ $8.00	LF	$ -
	Silt Fence: 1001' - 1000' (installation, maintenance for 1 year & removal)	@ $6.00	LF	$ -
	Silt Fence: 10,000' + (installation, maintenance for 1 year & removal)	@ $4.00	LF	$ -
	Super Silt Fence: 0' - 1000' (installation, maintenance for 1 year & removal)	@ $20	LF	$ -
	Super Silt Fence: 1001' - 10000 (installation, maintenance for 1 year & removal)	@ $12	LF	$ -
	Super Silt Fence: 10,000' + (installation, maintenance for 1 year & removal)	@ $11.00	LF	$ -
	Sod	@ $8.00	SY	$ -
	Seed, Fertilizer & Mulch	@ $3.00 SY ($200 Min)		$ -
	Steep Slopes (Grading and Stabilization with jute mesh, netting, blankets, etc.)	@ $18	SY	$ -
	Coarse Aggregates (#1 or #57)	@ $35	TON	$ -
	Inlet Protection	@ $190	EA	$ -
	Check Dam	@ $250	EA	$ -
	Temp. Construction Entrance	@ $2,300	EA	$ -
	Wash Rack	@ $2,000	EA	$ -
	Temp. Sediment Trap	@ $1,000		$ -
		@ $1,500		$ -
		@ $2,000		$ -
	Temporary Sediment Basin	By itemized cost		$ -
	Channel Diversion	By itemized cost		
	6' Chain-link Safety Fence	@ $50	LF	$ -
	4' Plastic Orange Safety Fence	@ $4.00	LF	$ -
	Yard utility refurbishment	@ $875 EA Single Family Lot		$ -
	Stockpile Removal (Quantity based on policy)	@ $30	CY	$ -
	Removal of Erosion Control Measures	@ AC (min $500)		$ -
	Level Spreader	By itemized cost		
				$ -
	Total Cost:			**$ -**
	Administrative Cost (10% of Total Cost):			$ -
	TOTAL SILTATION & EROSION CONTROL ESCROW AMOUNT:			**$ -**

Minimum acceptable amount for Siltation and Erosion Control is $2,000.00

I hereby certify that the above is my best estimate of the quantities and current cost of bondable improvements, landscaping items, Siltation & Erosion Control Escrow and floodplain items in this subdivision or site plan.

Preparer's Signature

(703) 361-1550 x401
Telephone #

Sebastian Sandoval
Name (Print)

J2 Engineers
Company or Firm

NOTES:

1. For items identified with ** the quantity for the embankment material is the net difference of total fill material needed and cut material available at the project site, if excavated or cut material is suitable for embankment.
2. The excavation and embankment costs include necessary grading, spreading and/or compaction of soil in accordance with County and State Standards and Specifications
3. The unit cost for each of the items in the Unit Price Lists is the installation cost which includes factors such as materials, excavation, bedding backfilling, compaction, form work, etc.
4. Inflation has been calculated based on Northern Virginia Consumer Price Index of the Washington D.C. area provided by the Bureau of Labor and Statistics.
5. Whoever certifies the site development plans must also certify the total cost of the bonded items, landscaping escrow and siltation and erosion control escrow and must sign "Preparer's Signature" on page 10 of this form.
6. Floodplain Items Escrow not to be part of Bond/Escrow reduction.

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REVISIONS

No.	DATE	DESCRIPTION

SHEET
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OF
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Town of Haymarket
15000 Washington Street, #100
Haymarket, VA 20169
703-753-2600

Thomas Britt
Town Planner

MEMORANDUM

TO: Planning Commission
FROM: Thomas Britt, Town Planner
DATE: July 17, 2023
SUBJECT: Comprehensive Plan Update: RPA Map

Background: As part of the Virginia DEQ's external review of the Town of Haymarket's compliance with required CBPA items, the DEQ noted that the Town of Haymarket Comprehensive Plan did not include an updated Resource Protection Area map. To comply with state code 9VAC25-830-170, DEQ advised the Town to update this map.

The Town Planner has provided an updated map showing the Resource Protection Area (RPA) boundaries found within the Town of Haymarket. The Resource Protection Areas are located along the North Fork Broad Run on the southern end of Town.

Response: The Town Planner recommends the Planning Commission move to hold a public hearing for the adoption of the Haymarket RPA Map in the Town Comprehensive Plan.

Or an alternate motion.

Resource Protection Areas in Haymarket