

### TOWN OF HAYMARKET PLANNING COMMISSION

# REGULAR MEETING ~ AGENDA ~

Emily Kyriazi, Town Planner <a href="http://www.townofhaymarket.org/">http://www.townofhaymarket.org/</a>

15000 Washington Street, Suite 100 Haymarket, VA 20169

Monday, October 16, 2023

7:00 PM

Council Chambers

- I. Call To Order
- II. Pledge of Allegiance
- III. Citizen's Time
- IV. Minute Approval
  - 1. Planning Commission Public Hearing/Regular Meeting Sep 18, 2023 7:00 PM
- V. Agenda Items
  - 1. Final Site Plan- Lifetime Smiles: 15234 Washington Street
- VI. Old Business
- VII. New Business
- VIII. Architectural Review Board Update
- IX. Town Council Update
- X. 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

Monday, September 18, 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 Robert Hallet called the meeting to order.

#### I. Call To Order

Chairman Robert Hallet: Present, Vice Chairman Alexander Beyene: Present, Commissioner Jerome Gonzalez: Present, Commissioner Pankaj Singla: Present, Commissioner Walt Young: Present.

#### II. Pledge of Allegiance

Chairman Rob Hallet invited everyone to stand for the Pledge of Allegiance.

#### III. Oath of Office

At this time, Town Clerk Kim Henry administered the Oath of Office to the newest Planning Commission member, Walt Young.

#### IV. Public Hearing

1. Public Notice

After Town Clerk Kim Henry read the public notice into the record, Chairman Rob Hallet opened the floor for public comment.

2. Citizen Comments

There were no citizens present wishing to address the subject of the public hearing.

3. Close Public Hearing

With no citizen comments, Chairman Hallet closed the public hearing.

#### V. Citizens Time

Mayor Ken Luersen spoke during citizens time welcoming both Commissioner Singla and Commissioner Young to the Planning Commission.

#### VI. Minute Approval

1. Planning Commission - Regular Meeting - Aug 14, 2023 7:00 PM Commissioner Gonzalez moved to adopt the minutes from the August 14, 2023 Planning Commission meeting. Commissioner Singla seconded the motion. The motion carried.

**RESULT:** 

**ACCEPTED [UNANIMOUS]** 

MOVER:

Jerome Gonzalez, Commissioner

SECONDER:

Pankaj Singla, Commissioner

AYES:

Hallet, Beyene, Gonzalez, Singla, Young

#### VII. Agenda Items

#### 1. Consideration of Resolution 2023-013: Resource Protection Area Map

Town Planner Thomas Britt shared that the Town did not have a resource protection area map in the Town's Comprehensive Plan. He stated, however, that it is required through the Chesapeake Bay Preservation Act (CBPA). He provided the map for the Commission to review and made some legend edits as suggested by the Commission at the last meeting and the contact from DEQ. Mr. Britt provided a draft resolution for consideration. +

Commissioner Beyene moved for the Town of Haymarket Planning Commission adopt a map amendment adding a resource protection area map to the Town of Haymarket's

Comprehensive Plan set out in Resolution #2023-013. Commissioner Gonzalez seconded the motion. The motion carried by a roll call vote.

RESULT:

**ADOPTED [UNANIMOUS]** 

MOVER: SECONDER: Alexander Beyene, Vice Chairman Jerome Gonzalez, Commissioner

AYES:

Hallet, Beyene, Gonzalez, Singla, Young

#### VIII. Old Business

Town Planner Thomas Britt provided Old Business updates to the Planning Commission. He shared that staff is still working on obtaining bids for the Town park sidewalk. He also shared that the construction of Pulte town houses in Crossroads Village Center are moving quickly and smoothly. He stated that he is coordinating with the supervisor to schedule more zoning release inspections. He also shared that the homes in the Robinson Paradise development are close to being ready for sale.

Mr. Britt gave the update on the Kiddie Academy site plan and stated that staff is working on the final site plan submitted.

#### IX. New Business

Town Planner Thomas Britt shared that he will be providing a bulk of comprehensive plan updates for the next meeting, to include Architectural Review Board guideline edits. He also shared that staff has received all permitting requirements for construction to start at the Taco Bell site. He also shared that staff is working with civil engineering regarding the Bleight Drive town homes.

#### X. Architectural Review Board Updates

Chairman Hallet reiterated what Town Planner Thomas Britt shared with the ARB working on the guidelines. He stated that the ARB will continue working on the guidelines at their next meeting.

#### XI. Town Council Updates

Councilmember Beyene shared that after much deliberation at the last Town Council meeting, the Council voted to demolish the Town Park building and to construct a pavilion in its place. He shared it was not an unanimous vote but there were some compromises to the plan, such as incorporating some architectural historic elements into the pavilion. He also shared that the Town Council appointed Mr. Young to the Planning Commission at their September meeting.

Lastly, Mr. Beyene shared that the Council discussed increasing the members on the Planning Commission. He shared that the Council discussed several options and brought for the subject of a non voting member. He stated that the Town Council directed him to seek Planning Commission opinion on a non voting member. The Commission discussed the subject in detail and asked for staff to reach out to other localities to see if they have non voting members on any of their boards.

#### XII. Adjournment

With no further business before the Planning Commission, Commissioner Beyene moved to adjourn with a second by Commissioner Singla seconded the motion. The motion carried.

#### 1. Motion to Adjourn

RESULT:

**ADOPTED [UNANIMOUS]** 

MOVER:

Alexander Beyene, Vice Chairman

SECONDER:

Pankaj Singla, Commissioner

AYES:

Hallet, Beyene, Gonzalez, Singla, Young

Submitted:

Kimberly Henry, Clerk of the Council

Rob Hallet, Chairman

oproved:



#### 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: October 12, 2023

SUBJECT: Haymarket Lifetime Smiles Final Site Plan, 15234 Washington Street

<u>Background</u>: The applicant has applied to build and operate a dentist's office at 15234 Washington Street, a subdivided parcel on the Quarles Property.

The Town Engineer has provided comment response for the applicant's engineers for the PC's information.

<u>Response</u>: The applicant should address the engineer comments to their best extent to comply with the Zoning Ordinance.



# FINAL SITE PLAN

# HAYMARKET LIFETIME SMILES

# TOWN OF HAYMARKET, VIRGINIA

PRINCE WILLIAM COUNTY SERVICE AUTHORITY PLAN NO: SA2023-0228

# PLAN STATUS 07/07/2023 | 1ST SUBMISSION TO TOWN OF HAYMARKET

Dumfries, Va. 22026

**DATE:** MAY, 2023 CONTOUR INT. = N/A **SCALE:** AS NOTED

FINAL HAYMARKET GAINSV TOWN OF HA

SHEET

# SHEET INDEX

- 01 COVER SHEET
- 02 NOTES & DETAILS
- 03 EXISTING CONDITIONS & DEMO PLAN
- 04 UTILITIES LAYOUT
- 05 GRADING PLAN
- 06 EROSION AND SEDIMENT CONTROL PHASE I
- 07 EROSION AND SEDIMENT CONTROL PHASE II
- 08 EROSION & SEDIMENT NARRATIVE
- 09 EROSION & SEDIMENT CONTROL DETAILS
- 10 STORM SEWER PROFILES & COMPUTATIONS
- 11 STORM SEWER DETAILS
- 12 SWM & BMP REFERENCE SHEET
- 13 SWM & BMP REFERENCE SHEET
- 14 SWM & BMP REFERENCE SHEET
- 15 SWM & BMP REFERENCE SHEET
- 16 SWM & BMP REFERENCE SHEET
- 17 SWM & BMP REFERENCE SHEET 18 - SANITARY PROFILES & UTILITY DETAILS
- 19 PWCSA WATER & SANITARY SEWER INFORMATION
- 20 FIRE LANE MARKING
- 21 HYDRANT COVERAGE PLAN
- 22 LANDSCAPE PLAN
- 23 LANDSCAPE DETAILS
- 24 PHOTOMETRIC PLAN
- 25 UNIT PRICE LIST
- 26 UNIT PRICE LIST
- 27 PWCSA UNIT PRICE LIST
- 28 PWCSA UNIT PRICE LIST

**VICINITY MAP** SCALE: 1"=1000'

# **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

COLUMBIA GAS TRANSMISSION CO. COLUMBIA GAS OF VIRGINIA CONTINENTAL TELEPHONE OF VIRGINIA

GENERAL NOTES:

2.1. OUARLES CENTER FINAL SITE PLAN

3. THE DISTURBED AREA IS 0.43 ACRES.

PRINCE WILLIAM COUNTY SERVICE AUTHORITY COLONIAL PIPELINE CO. PLANTATION PIPELINE CO. C & P TELEPHONE CO.

THE SUBJECT PROPERTY SHOWN HEREON IS ZONED B-2 ADMINISTERED UNDER THE 2017 TOWN OF HAYMARKET ZONING AND SUBDIVISION

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.

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.

ORDINANCE. PROPERTY ADDRESS IS 15250 WASHINGTON STREET. PRINCE WILLIAM COUNTY GPIN: 7298-71-5820

DOES CONTAIN CLASS III SOILS AS IDENTIFIED BY THE INTERPRETIVE GUIDE TO SOILS MAP, PRINCE WILLIAM COUNTY

#AFS20080813

2. THE FOLLOWING LAND DEVELOPMENT APPLICATIONS ARE ASSOCIATED WITH THIS PROJECT:

THE PROPERTY DOES NOT CONTAIN ANY AREAS OF EITHER MODERATELY OR VERY STEEP SLOPES.

4. METES AND BOUNDS SHOWN HEREON ARE THE RESULT OF A CURRENT FIELD SURVEY.

11. A VSMP PERMIT WILL BE SUBMITTED WITH THE FINAL ENGINEERING PLAN.

17. THE ANTICIPATED SEWAGE FLOWS FOR THE SITE IS 2,000 GPD.

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

#### CONTACT THESE UTILITIES TRI-COUNTY ELEC. CO-OP

**EMERGENCY DIAL 911** POLICE - FIRE - RESCUE

PRINCE WILLIAM COUNTY SERVICE AUTHORITY 703-335-7950

703-777-1021 703-777-2222

# APPLICANT/DEVELOPER

LIFETIME SMILES LLC 5391 MERCHANTS VIEW SQUARE HAYMARKET, VA 20169

# MELADON HAYMARKET LLC

**OWNER** 

1602 VILLAGE MARKET 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

# SITE NOTES THE CONTRACTOR SHALL CAREFULLY EXAMINE THE SITE AND MAKE ALL INSPECTIONS AS NECESSARY IN ORDER TO DETERMINE THE FUL

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

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.

ALL UNDERGROUND UTILITIES WITHIN THE STREET RIGHT -OF WAY SHALL BE INSTALLED TO THE REQUIRED DISTANCE BEYOND THE

OR HIS AGENT OF ANY LEGAL RESPONSIBILITIES WHICH MAY BE REQUIRED BY THE CODE OF VIRGINIA OR ANY ORDINANCE ENACTED BY THE

RIGHT-OF-WAY LINE PRIOR TO THE INSTALLATION OF ANY SUBBASE MATERIAL, CURB AND GUTTER OR SIDEWALK. 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

EROSION AND SILTATION CONTROL SHALL BE PROVIDED WHERE NECESSARY PRIOR TO CLEARING, GRADING AND CONSTRUCTION.

EROSION AND SEDIMENT CONTROL MEASURES WILL BE PROVIDED IN ACCORDANCE WITH THE VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK (LATEST EDITION)

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.

ALL CONSTRUCTION SHALL COMPLY WITH THE LATEST U.S. DEPARTMENT OF LABOR OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION RULES AND REGULATIONS.

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. 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

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.

GUTTERS AND AREAS OF PONDING. ALL GRADING SHALL PROVIDE FOR POSITIVE DRAINAGE TO STABILIZED OUTFALLS.

GEOTECHNICAL NOTES

THE SUBJECT DEVELOPMENT SITE DOES CONTAIN CLASS IV SOILS, PER THE APPROVED PRELIMINARY SOILS REVIEW INVESTIGATION AND REPORT. PRINCE WILLIAM COUNTY

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

THESE PLANS WERE PREPARED IN ACCORDANCE WITH THE

RECOMMENDATIONS OF THE GEOTECHNICAL REPORT.

RECOMMENDS NO CONSTRUCTION OF STRUCTURES WITH

COUNTY, VIRGINIA.

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

## **VDOT GENERAL NOTES**

1. VDOT Approved Exceptions/Waivers (must be incorporated in the plan):

Access Management - Date of Approval:

• SSAR- Date of Approval:

 Design Waiver - Date of Approval: Date of Approval: \_ Other

and Regulations, the most stringent shall govern.

2. SSAR Connectivity Summary (provide a check mark ✓ where applicable or write N/A):

[ ] Connections in multiple directions (first connection must be to a VDOT maintained road, the second connection may either be to a VDOT road or to a stub out)

[X] Stub out connection (the prop. right of way terminates at parcel abutting the development and consists of a short segment that is intended to serve current and future development; the applicant must verify that connection with a future street is feasible)

3. All work on this project shall conform to the current editions of and latest revisions to the Virginia Department of Transportation (VDOT) Road and Bridge Specifications and Standards,

the Virginia Erosion and Sediment Control Regulations, and any other applicable state, federal or

local regulations. In case of a discrepancy or conflict between the Standards or Specifications

4. Methods and materials used shall conform to current county/town and VDOT standards and specifications. 5. All utilities, including all poles, are to be relocated at the developer's expense, prior to construction.

6. Open cutting of paved or surface treated roads is not permitted. All utilities which will be placed under existing streets are

to be bored or jacked. Any exceptions, due to extenuating circumstances, are to be addressed at the permit stage.

7. Any type of reverse curb (spill curb, CG-6R, etc.) and transition to these curbs shall not be used within the public right of way. 8. The developer is responsible for any damage to existing roads and utilities which occur as a result of project construction within or contiguous to existing right of way.

9. A smooth grade shall be maintained from the centerline of the existing road to the proposed edge of pavement to preclude the forming of false gutters and/or the ponding of any water in the roadway.

10. Standard guardrails and/or handrails shall be installed at hazardous locations as designated during field review by the county/town inspector or VDOT.

11. The developer is responsible for all traffic control. The developer shall submit a signing, striping and/or signalization plan to the VDOT Land Development Section prior to permit application. The developer shall not commence construction of any pavement course without an approved striping plan.

12. Pavement design shall be provided in accordance with the Pavement Design Guide for Subdivision and Secondary Roads in Virginia. For primary roads and interstate highways where truck traffic exceeds 5%, pavement design shall be provided in accordance with AASHTO guidelines. Typical pavement sections shall depict the top 6" of the subgrade immediately under the pavement structure compacted to 100% of the theoretical maximum dry density.

13. Asphalt pavement widening shall conform to VDOT Standard WP-2.

14. All right of way dedicated to public use shall be clear and unencumbered.

15. Flowers, shrubs, trees, and irrigation shall not be placed within State maintained right of way limits without an approved set of plans and an approved planting agreement. No irrigation (sprinkler) systems, brick columns, end walls, and/or brick mailboxes will be constructed or installed within State maintained right of way limits without a permit. Any of the above

items found in the right of way without a permit will be removed, and all costs of the removal will be borne by the owner

and/or developer 16. The county/town shall obtain a permit for all sidewalks/crosswalks within the right of way that do not qualify for VDOT

17. Traffic control devices or advisory signs, such as multiway stops, speed limits, Watch for Children, Pedestrian Traffic etc., shall not be installed unless specifically shown on these plans or a VDOT approved plan revision. Speed study certified by professional engineer shall be submitted for VDOT approval prior to the street acceptance for any road to be posted other than the statutory speed limit. Should unapproved signs be noted at the time of VDOT inspection, the road acceptance process shall be terminated immediately and not recommenced until a determination is made regarding the approval of any additional signs. Immediate removal of such signs shall not negate the need for the submission of a revision.

18. During construction, the maintenance of traffic shall conform to the requirements in the most recent version of the Virginia Work Area Protection Manual and the MUTCD.

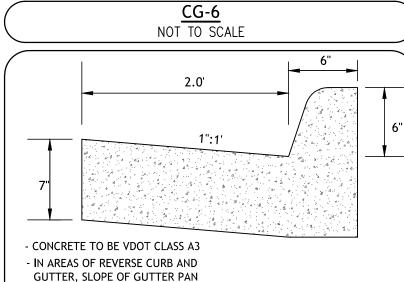
#### QUARLES SITE PARKING TABULATIONS

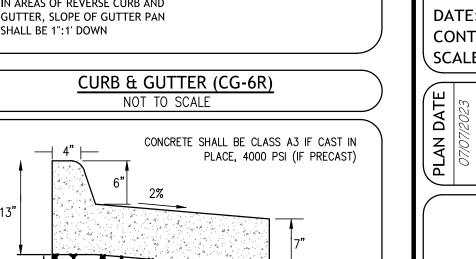
FICE AND CLINICS
RE FOOTAGE = 5850 SF
PROVIDED
PARKING SPACES = 30 SPACES
1: RETAIL, CVS
PARKING SPACES = 61 SPACES
, VIRGINIA NATIONAL BANK
PARKING SPACES = 15 SPACES

# ZONING REQUIREMENTS

ZONING: B-2	REQUIRED
SITE AREA	6.0 AC.
REQUIRED FRONT YARDS PROVIDED FRONT YARDS	10' FROM ROW 10' FROM ROW
REQUIRED SIDE YARDS	ADJ. TO ROW: 10' ADJ. TO COMMERCIAL: 0' ADJ. TO RESIDENTIAL: 25'
PROVIDED SIDE YARDS	ADJ. TO COMMERCIAL: 0'
REQUIRED REAR YARDS PROVIDED REAR YARDS	SAME AS SIDE ADJ. TO COMMERCIAL: 0'
MAXIMUM BUILDING HEIGHT	35 FT
MAXIMUM BUILDABLE LOT COVERAGE	75%
PROVIDED BUILDABLE LOT COVERAGE	68%
MAXIMUM LOT COVERAGE	75%
PROVIDED LOT COVERAGE	68%
	·

# SIDEWALK DETAIL NOT TO SCALE 5' SIDEWALK └4" CONCRETE (A-3) -SIDEWALK SUBGRADE (4" OF 21-A) COMPACTED TO 95% DENSITY





 CONTINUE STONE BASE FROM ADJACENT PAVEMENT SECTION UNDER CURB EXPANSION JOINT AND #3 BAR DOWELS @ 24" O.C. IF ADJACENT TO OTHER CONCRETE AREAS. (TYP. ALL CURBS)

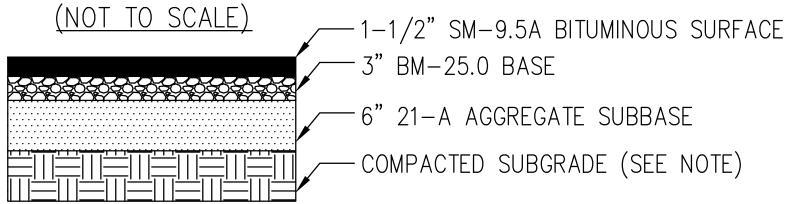
# TYPICAL SECTION ONSITE PAVEMENT

1 PER 100 SQUARE FEET OF

GROSS FLOOR AREA (GFA)

4874 SF \* (1 SPACE/100 SF)

= 48 SPACES

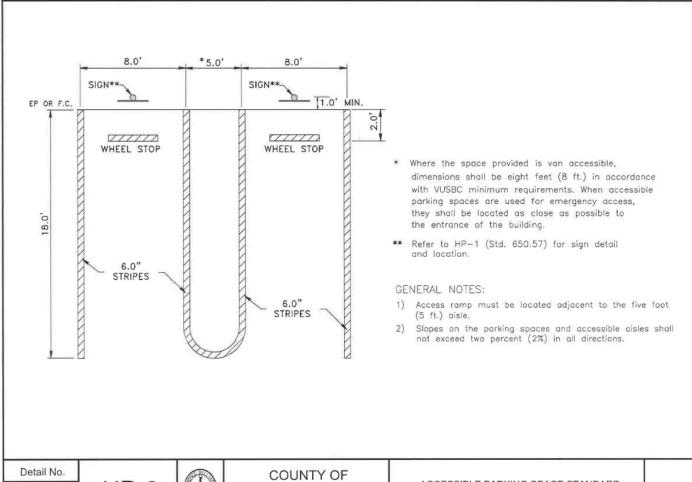


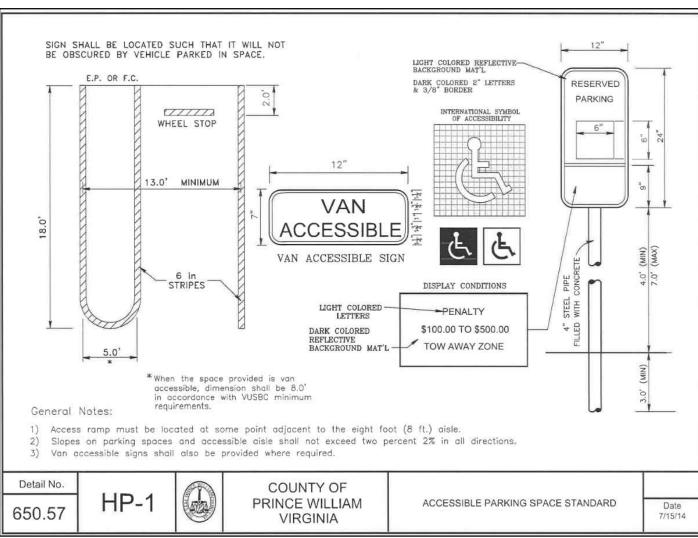
PARKING SPACES = 69 SPACES

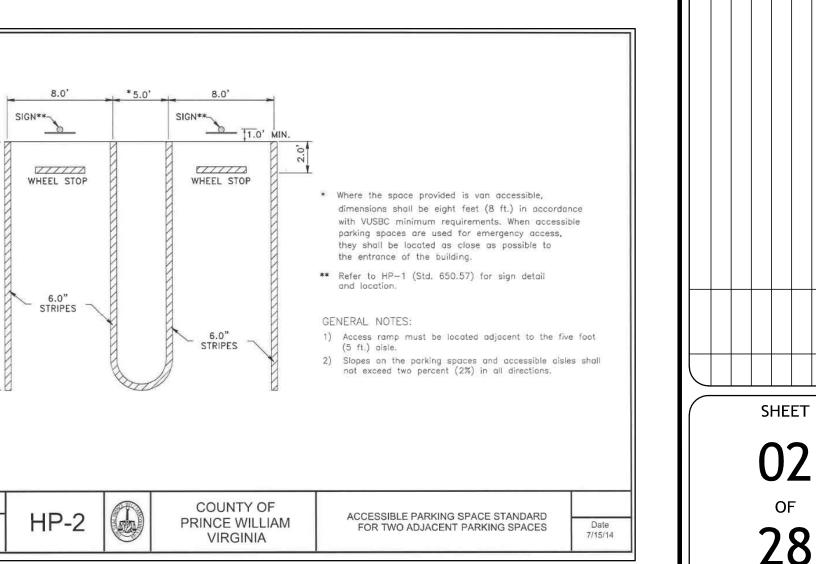
COMPACTION NOTE: SUBBASE TO BE COMPACTED TO 95% MAX. DRY DENSITY WITHIN 20% OF THE OPTIMUM MOISTURE CONTENT. (AASHTO T-99).

SUBBASE DEPTH BASED ON A CBR OF 10. SOIL TESTS ON SUBGRADE WILL BE PERFORMED FOR ACTUAL DETERMINATION OF REQUIRED THICKNESS PRIOR TO THE PLACEMENT OF SUBBASE.

#### SIGN SHALL BE LOCATED SUCH THAT IT WILL NOT BE OBSCURED BY VEHICLE PARKED IN SPACE. LIGHT COLORED REFLECTIVE DARK COLORED 2" LETTERS & 3/8" BORDER RESERVED PARKING 1//// WHEEL STOP VAN ACCESSIBL VAN ACCESSIBLE SIGN PENALTY \$100.00 TO \$500.00 TOW AWAY ZONE \*When the space provided is van General Notes: ) Access ramp must be located at some point adjacent to the eight foot (8 ft.) aisle. Slopes on parking spaces and accessible aisle shall not exceed two percent 2% in all directions. Van accessible signs shall also be provided where required. COUNTY OF







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

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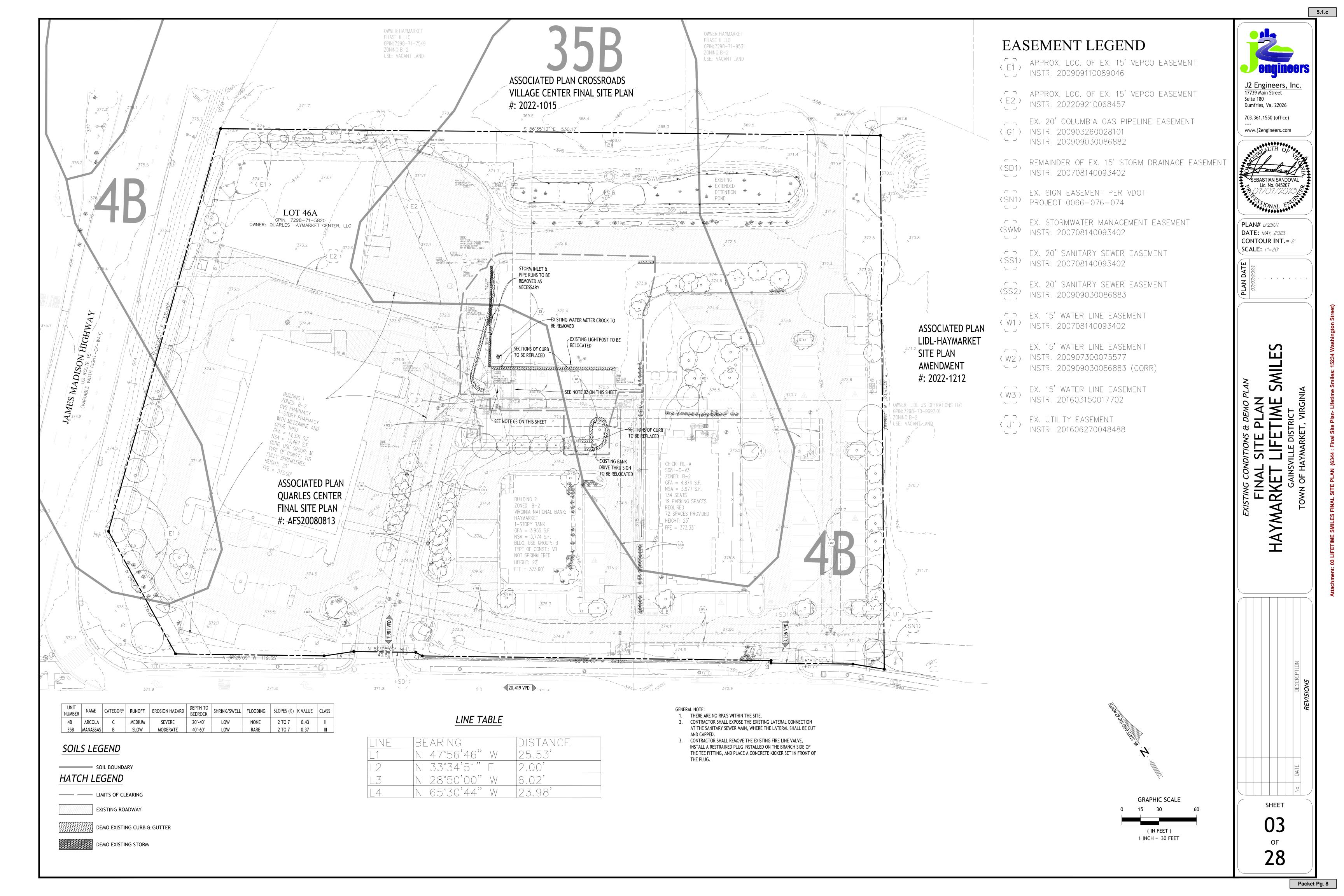
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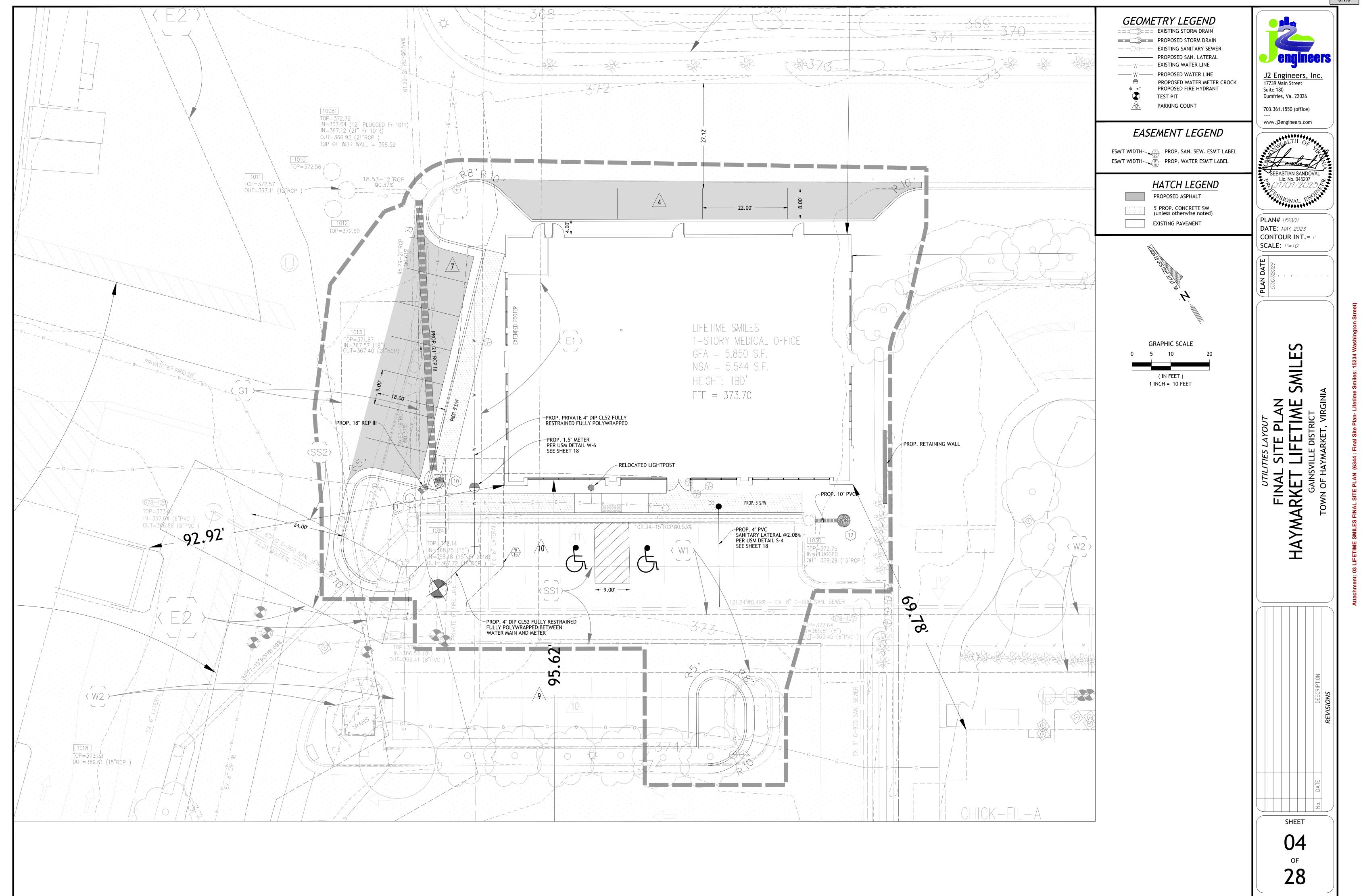
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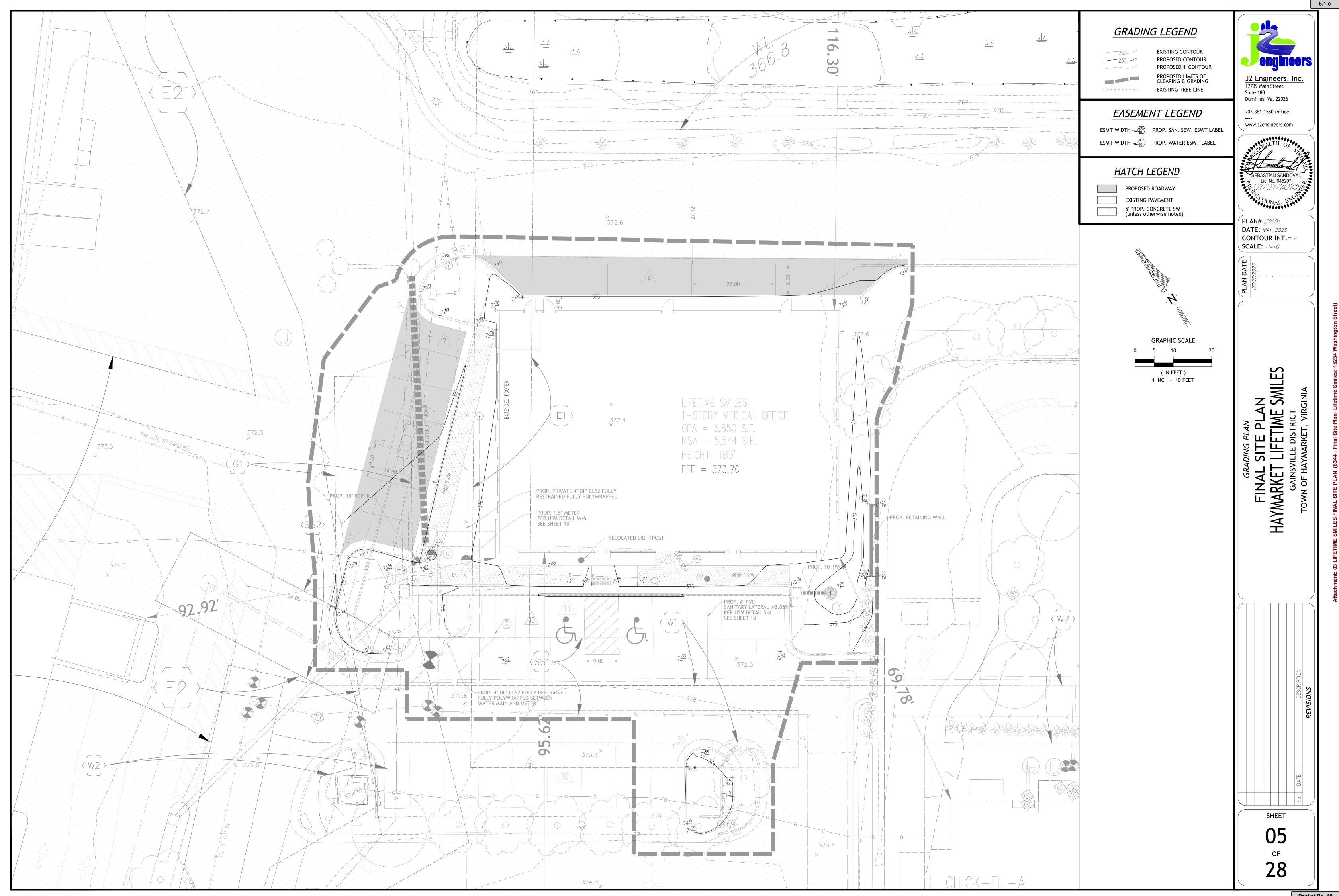
# AVERAGE DAILY TRAFFIC

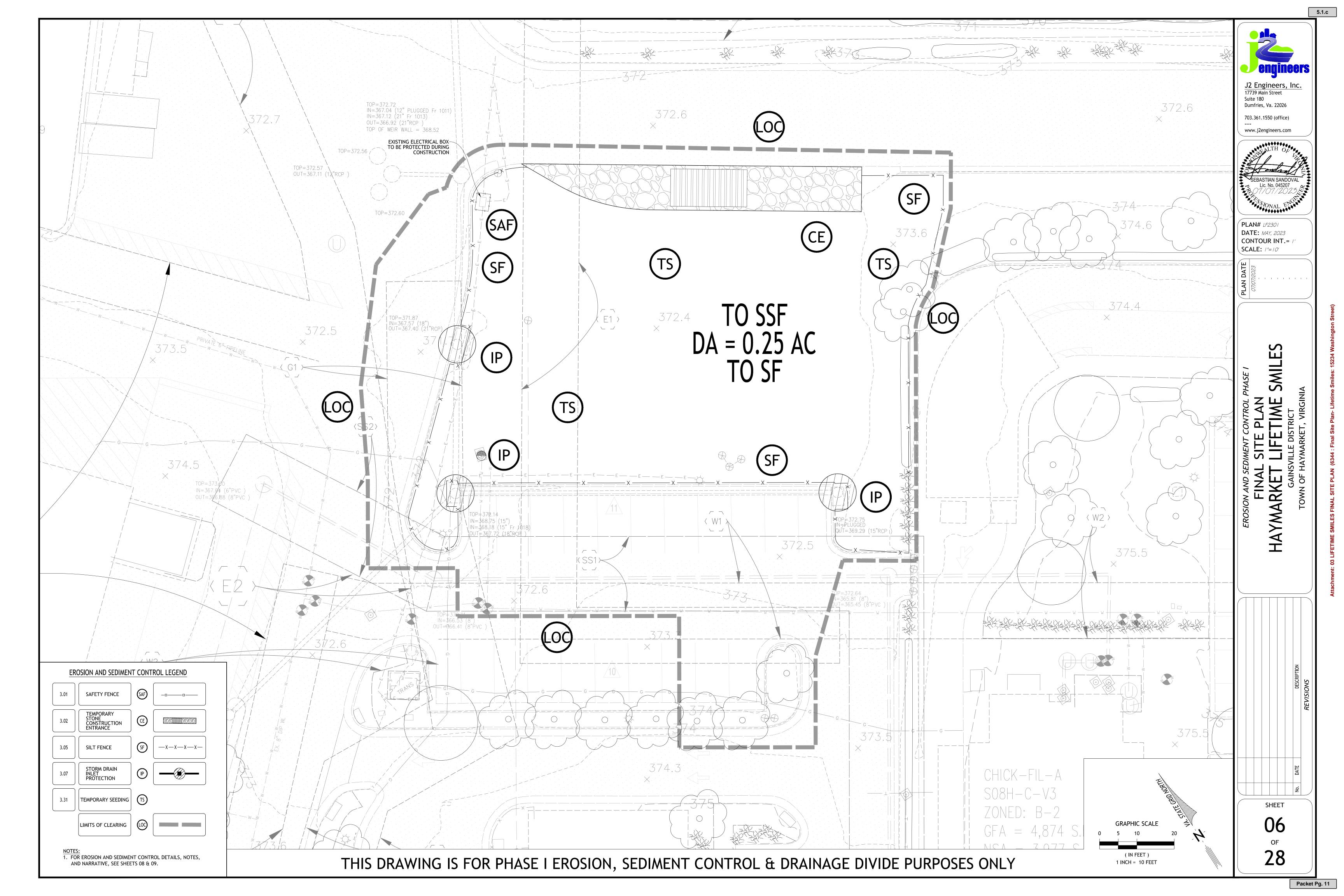
Description/ITE Code		ITE	Vehic	le Trip	General	tion Ra	ates			Expected	Total G	enerated	l Trips		<u>otal Distr</u>	ibution o	of Gene	rated Tr	ips
	Units	(peak hours are for peak hour of adjacent street traffic unless highlighted)						Units											
		Weekday	AM	PM	Pass-By	AM In	AM Out	PM In	PM Out		Daily	AM Hour	PM Hour	AM In	AM Out	Pass-By	PM In	PM Out	Pass-B
Medical Dental Office 720	KSF <sup>2</sup>	36.13	2.39	3.57		79%	21%	28%	72%	5.9	211	14	21	11	3	0	6	15	0





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#### MS-19 EROSION & SEDIMENT CONTROL NOTES

- 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.
- 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.
- 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.
- STABILIZATION MEASURES SHALL BE APPLIED TO EARTHEN STRUCTURES SUCH AS DAMS, DIKES AND DIVERSIONS IMMEDIATELY AFTER INSTALLATION.
- SEDIMENT TRAPS AND SEDIMENT BASINS SHALL BE DESIGNED AND CONSTRUCTED BASED UPON THE TOTAL DRAINAGE AREA TO BE SERVED BY THE TRAP OR BASIN.
- 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
- 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.
- 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.
- CONCENTRATED RUNOFF SHALL NOT FLOW DOWN CURT OR FILL SLOPES UNLESS CONTAINED WITHIN AN ADEQUATE TEMPORARY OR PERMANENT CHANNEL, FLUME OR
- 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.
- 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
- 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
- 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.

AND COFFERDAMS. EARTHEN FILL MAY BE USED FOR THESE STRUCTURES IF ARMORED BY NONERODIBLE COVER MATERIALS.

- 16. UNDERGROUND UTILITY LINES SHALL BE INSTALLED IN ACCORDANCE WITH THE FOLLOWING STANDARDS IN ADDITION TO OTHER APPLICABLE CRITERIA:
- NO MORE THAN 500 LINEAR FEET OF TRENCH MAY BE OPENED AT ONE TIME.
- EXCAVATED MATERIAL SHALL BE PLACED ON THE UPHILL SIDE OF TRENCHES.
- 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. MATERIAL USED FOR BACKFILLING TRENCHES SHALL BE PROPERLY COMPACTED IN ORDER TO MINIMIZE EROSION AND PROMOTE STABILIZATION.
- RESTABILIZATION SHALL BE ACCOMPLISHED IN ACCORDANCE WITH THESE REGULATIONS.
- APPLICABLE SAFETY REGULATIONS SHALL BE COMPLIED WITH.
- 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.
- 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:
- 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.
- THE APPLICANT SHALL PROVIDE EVIDENCE OF PERMISSION TO MAKE THE IMPROVEMENTS.
- ALL HYDROLOGIC ANALYSIS SHALL BE BASED ON THE EXISTING WATERSHED CHARACTERISTICS AND THE ULTIMATE DEVELOPMENT OF THE SUBJECT PROJECT. 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. 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.
- ALL ON-SITE CHANNELS MUST BE VERIFIED TO BE ADEQUATE.
- 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.
- IN APPLYING THESE STORMWATER RUNOFF CRITERIA, INDIVIDUAL LOTS OR PARCELS IN A COMMERCIAL 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.
- 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**

THE SITE'S DISTURBED AREA IS 0.43 ACRES WITHIN A COMMERCIAL DEVELOPMENT, IT INVOLVES THE CONSTRUCTION OF A MEDICAL, DENTAL OFFICE/CLINIC AND SUPPORTING PARKING LOT.

THE SITE IS CLEARED WITH NO STEEP SLOPES PRESENT.

NORTHERN BOUNDARY: THE PROPERTY IS BORDERED TO EXISTING CROSSROADS VILLAGE CENTER. SOUTHERN BOUNDARY: THE PROPERTY IS BORDERED TO ROUTE 55 - WASHINGTON STREET. EASTERN BOUNDARY: THE PROPERTY IS ADJACENT TO EXISTING RESTAURANT.

WESTERN BOUNDARY: THE PROPERTY IS ADJACENT TO JAMES MADISON HIGHWAY US ROUTE 15.

NO OFFSITE AREAS ARE PROPOSED TO BE IMPACTED WITH THIS PLAN.

## ALL SOILS INFORMATION IS PROVIDED IN THE SOILS MAP ON SHEET 03

THERE ARE NO CRITICAL AREAS WITHIN THE PROPOSED SITE.

#### 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
- 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.

- 1. INSTALL THE TEMPORARY CONSTRUCTION ENTRANCE WITH WASH RACKS AS SHOWN ON SHEET 06. 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.
- INSTALL INLET PROTECTION FOR ALL EXISTING STORM SEWER INLETS AS SHOWN ON THE PHASE I DRAWINGS ON SHEET 06.
- 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.

## 1. ALL SUPER SILT FENCES AND SILT FENCE WILL REMAIN WHERE SHOWN ON THE PHASE II PLAN ON SHEET 07. THE CONSTRUCTION ENTRANCE SHALL BE REMOVED WHEN FINAL PAVING IS

- COMPLETED AND APPROVED BY THE TOWN INSPECTOR.
- INLET PROTECTION FOR STORM INLETS SHALL BE PLACED AS SOON AS THE INLETS ARE INSTALLED.
  - 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.
- REMOVE THE EXISTING CURB AND GUTTER IN THE LOCATIONS INDICATED ON THE PLAN.
- INSTALL THE PROPOSED STORM DRAINS CONCURRENTLY WITH NEW CURB AND GUTTER. INSTALL PAVEMENT SUBBASE AND AND INTERMEDIATE COURSE.
- INSTALL PAVEMENT TOP COURSE AND PROPOSED SIDEWALKS.
- COMPLETE FINAL MISCELLANEOUS SITE ITEMS INCLUDING PAVEMENT STRIPING, ECT.
- 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.

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 VESCR SHALL BE ADHERED TO UNLESS OTHERWISE WAIVED OR APPROVED BY A VARIANCE.

#### STRUCTURAL PRACTICES

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.

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

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.

#### 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.

#### 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)

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.

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

# 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 09), 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.

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
- 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.

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.

#### 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 OUALITY, 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.

DUST SHALL BE CONTROLLED USING A VARIETY OF METHODS, SUCH AS VEGETATIVE COVER, MULCH, TILLAGE, IRRIGATION, SPRAY-ON ADHESIVES, STONE, BARRIERS, AND CALCIUM CHLORIDE. THE IMPLEMENTATION OF THE DUST CONTROL METHODS SHALL BE INSTALLED PER SECTION 3.39 OF VESCH.

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

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

- NO MORE THAN 500 LINEAR FEET OF TRENCH MAY BE OPENED AT ONE TIME.
- EXCAVATED MATERIAL SHALL BE PLACED ON THE UPHILL SIDE OF TRENCHES. 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. MATERIAL USED FOR BACKFILLING TRENCHES SHALL BE PROPERLY COMPACTED IN ORDER TO MINIMIZE EROSION AND PROMOTE STABILIZATION.
- RESTABILIZATION SHALL BE ACCOMPLISHED IN ACCORDANCE WITH THESE REGULATIONS. APPLICABLE SAFETIES SHALL TAKE PLACE AND REGULATIONS SHALL BE COMPLIED WITH.

#### LAND CONSERVATION NOTES:

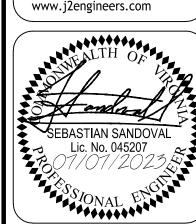
- ALL E&S CONTROL MEASURES APPROVED WITH THE PHASE I E&S CONTROL PLAN SHALL BE PLACED PRIOR TO OR AS THE FIRST STEP IN GRADING. FIRST AREAS TO BE CLEARED ARE TO BE
- THOSE REQUIRED FOR THE PERIMETER CONTROLS.
- ALL STORM AND SANITARY SEWER LINES NOT IN STREETS SHALL BE SEEDED AND MULCHED WITHIN 7 DAYS AFTER BACKFILL. NO MORE THAT 500' SHALL BE OPEN AT ANY ONE TIME. ELECTRIC POWER, TELEPHONE AND GAS SUPPLY TRENCHES SHALL BE COMPACTED, SEEDED, AND MULCHED WITHIN 7 DAYS AFTER BACKFILL.
- 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.

DURING CONSTRUCTION, ALL STORM SEWER INLETS SHALL BE PROTECTED BY INLET PROTECTION DEVICES, MAINTAINED AND MODIFIED AS REQUIRED BY CONSTRUCTION PROGRESS.

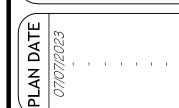


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R Z

SHEET

SILT FENCE

1. SET THE STAKES.

3. STAPLE FILTER MATERIAL

IT INTO THE TRENCH.

TO STAKES AND EXTEND

(WITHOUT WIRE SUPPORT)

( PERSPECTIVE VIEW )

POINTS A SHOULD BE HIGHER THAN POINT B.

2" X 4" WOOD STUD

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

DRAINAGEWAY INSTALLATION

BLOCK & GRAVEL CURB INLET

SEDIMENT FILTER

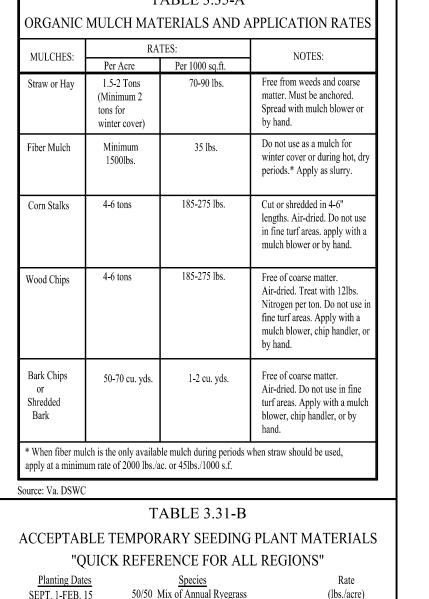
UPSLOPE ALONG THE LINE

4. BACKFILL AND COMPACT

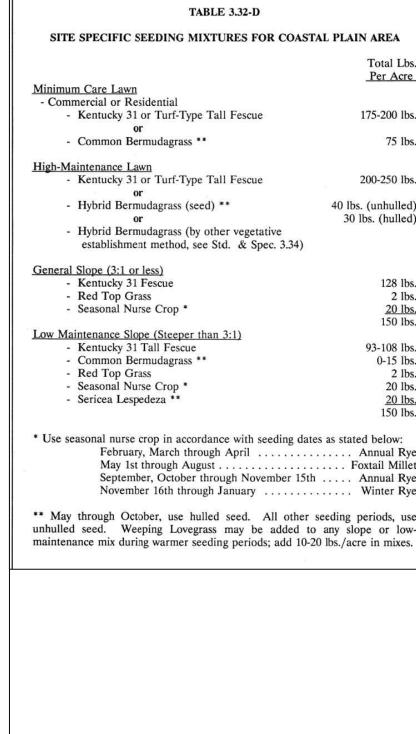
THE EXCAVATED SOIL.

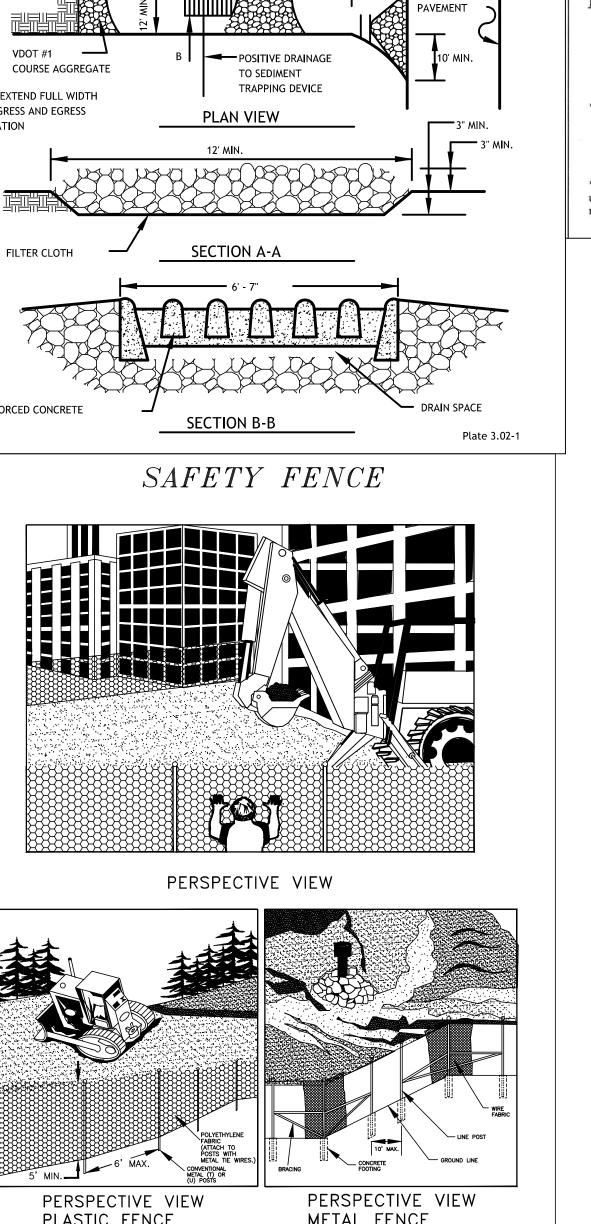
- FILTERED WATER

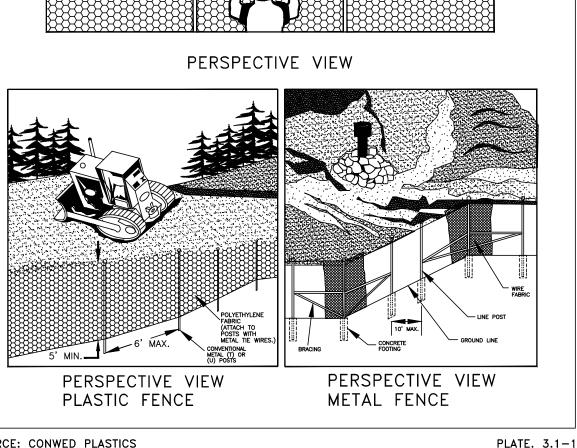
TABLE 3.32-D **TABLE 3.35-A** SITE SPECIFIC SEEDING MIXTURES FOR COASTAL PLAIN AREA RATES: MULCHES: Per Acre - Kentucky 31 or Turf-Type Tall Fescue 175-200 lbs. tons for 75 lbs. <u>High-Maintenance Lawn</u>
- Kentucky 31 or Turf-Type Tall Fescue iber Mulch Minimum 200-250 lbs. 1500lbs. - Hybrid Bermudagrass (seed) \*\* 40 lbs. (unhulled) 30 lbs. (hulled) Corn Stalks Hybrid Bermudagrass (by other vegetative establishment method, see Std. & Spec. 3.34) 2 lbs. Wood Chips 20 lbs. 150 lbs. Low Maintenance Slope (Steeper than 3:1) 93-108 lbs. 0-15 lbs. by hand. 2 lbs. 20 lbs. 50-70 cu. yds. 1-2 cu. yds. Free of coarse matter. 20 lbs. 150 lbs. Bark \* 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 ...
November 16th through January ..... . Annual Rye apply at a minimum rate of 2000 lbs./ac. or 45lbs./1000 s.f. \*\* May through October, use hulled seed. All other seeding periods, use unhulled seed. Weeping Lovegrass may be added to any slope or low-**TABLE 3.31-B** 



50/50 Mix of Annual Ryegrass (lbs./acre) (Lolium multi-florum) 50-100 Cereal (Winter) Rye (Secale cereale) FEB. 16-APR. 30 Annual Ryegrass 60-100 (Lolium multi-florum) MAY 1-AUG. 31 German Millet Source: Va. DSWC (Setaria italica)

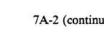






SOURCE: CONWED PLASTICS VDOT ROAD AND BRIDGE STANDARDS VA. DSWC

PLATE. 3.1-1



SITE PLAN

**NARRATIVE** 

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

Critical erosion areas - Areas with potentially serious erosion problems. (See

Site Development - Show all improvements such as buildings, parking lots,

Location of practices - The locations of erosion and sediment control and stormwater management practices used on the site. Use the standard symbols

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?)

<u>Detail drawings</u> - Any structural practices used that are not referenced to the E&S Handbook or local handbooks should be explained and illustrated with

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



7A-2

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> > SMI

ARKET GAINS' TOWN OF H,

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7A-2 (continued)

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

**CHECKLIST** 

FOR EROSION AND SEDIMENT CONTROL PLANS

disturbing activity, and the area (acres) to be disturbed.

underground springs, etc.).

should satisfy minimum standards in Chapter 3.)

Minimum Standards - All applicable Minimum Standards must be addressed.

Project description - Briefly describes the nature and purpose of the land-

Existing site conditions - A description of the existing topography, vegetation

Adjacent areas - A description of neighboring areas such as streams, lakes, residential areas, roads, etc., which might be affected 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

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

Critical areas - A description of areas on the site which have potentially

serious erosion problems (e.g., steep slopes, channels, wet weather/

Erosion and sediment control measures - A description of the methods which

<u>Permanent stabilization</u> - 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

Calculations - Detailed calculations for the design of temporary sediment

Include calculations for pre- and post-development runoff.

VII - 26

basins, permanent stormwater detention basins, diversions, channels, etc.

will be used to control erosion and sedimentation on the site. (Controls

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

Existing contours - The existing contours of the site. Final contours - Changes to the existing contours, including final drainage

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

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.

Chapter 6 for criteria.)

access roads, utility construction, etc.

and abbreviations in Chapter 3 of the E&S Handbook.

VII - 27

SHEET

# STORM SEWER DESIGN COMPUTATIONS

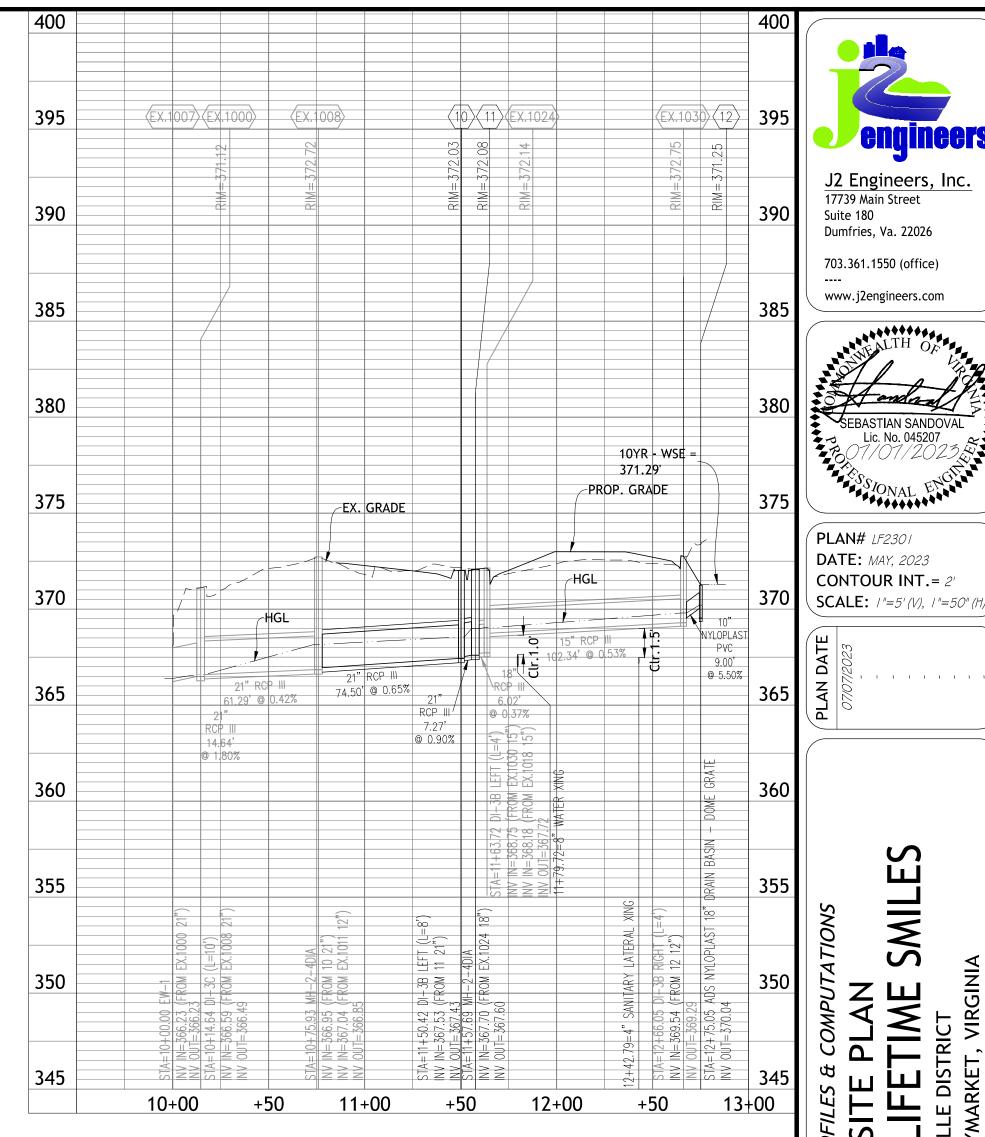
Project:	LIFETIME SMILES	**		Ac.		450	tel	;=					A;		460	
From	То	Drainage	C	Cx	A	Inlet	Rain	Runoff	Invert	Elev.	Length	Slope	Dia.	Capacity	VEL.	Flow
Point	Point	Area	Factor	Increment	Cumm.	Time	Fall	Q	Upper	Lower				Q		Time
						Min.	In/Hr	C.F.S.	End	End	FT.	%	IN.	C.F.S.	F.P.S.	MIN.
12	EX.1030	0.02	0.35	0.01	0.01	5.00	7.27	0.05	370.04	369.54	9.00	5.50%	10	5.15	3.02	0.05
EX.1018	EX.1024	0.38	0.89	0.34	0.34	5.00	7.27	2.46	369.61	368.18	84.77	1.69%	15	8.42	5.95	0.24
EX.1030	EX.1024	0.24	0.75	0.18	0.19	5.16	7.23	1.35	369.29	368.75	102.34	0.53%	15	4.72	3.30	0.52
EX.1024	11	0.11	0.86	0.09	0.62	5.68	7.09	4.39	367.72	367.70	6.02	0.37%	18	6.41	3.91	0.03
11	10	0.00	0	0.00	0.62	5.70	7.08	4.39	367.60	367.53	7.27	0.90%	21	15.07	5.43	0.02
10	EX.1008	0.51	0.84	0.43	1.05	5.72	7.07	7.42	367.43	366.95	74.50	0.65%	21	12.80	5.52	0.23
EX.1008	EX.1000	0.00	0	0.00	1.05	5.95	7.01	7.35	366.85	366.59	61.29	0.42%	21	10.30	4.65	0.22
EX.1000	EX.1007	0.85	0.73	0.62	1.67	6.17	6.95	11.60	366.49	366.23	14.64	1.80%	21	21.32	9.05	0.03

# STORM SEWER INLET COMPUTATIONS

Project:	LIFETIN	ME SN	<b>IILES</b>									4:	_			,		78		1270	20				3			80		200		,	v .
//\	ILET		6	6					Q	Q	Q	S	Sx	T	W	W/T	Sw	Sw/Sx	Eo	a	S'W	Se	Lt	P	L/Lt	d	Ε	h	Q	d/H	Qb	T	
NUMBER	TYPE		STATION	DRAINAGE AREA	С	$C \times A$	C×A W	INTENSITY	INCR	CARRY OVER	TOTAL	GUTTER	CROSS SLOPE	SPREAD										EFFECTIVE LENGTH					INT		CARRY OVER	SPREAD AT SAG	REMARKS
12	DI-7		i.	0.02	0.35	0.01	0.01	7.27	0.05	0.00	0.05													2.36		0.04							
EX.1018	DI-3B	12.0		0.38	0.89	0.34	0.34	5.75	1.94		1.94	0.0150	0.0493	4.29	2.00	0.47	0.0833	1.69	0.86	2.82	0.12	0.15	8.73		1.37		1.00		1.94		0.00		
EX.1030	DI-3B	4.0	,	0.24	0.75	0.18	0.18	5.75	1.04		1.04	0.0180	0.0180	9.66	2.00	0.21	0.0833	4.63	0.61	3.57	0.15	0.11	8.58		0.47		1.00		1.04		0.00		ĺ
EX.1024	DI-3B	4.0		0.11	0.86	0.09	0.09	5.75	0.54		0.54	0.0080	0.0208	3.50	2.00	0.57	0.0833	4.00	0.97	3.50	0.15	0.16	4.04		0.99		1.00		0.54		0.00		
10	DI-3B	12.0	-	0.51	0.84	0.43	0.43	5.75	2.46		2.46	0.0175	0.0208	7.36	2.00	0.27	0.0833	4.00	0.72	3.50	0.15	0.13	11.20		1.07		1.00		2.46		0.00		
EX.1000	DI-3C	10		0.43	0.73	0.31	0.31	5.75	1.80		1.80	0.0056	0.0208	8.38	2		0.083	3.99						13.60		0.23		0.42		0.56		11.23	
				0.42	0.73	0.31	0.31	5.75	1.76	0.00	1.76			8.29																			

# HYDRAULIC GRADE LINE COMPUTATIONS

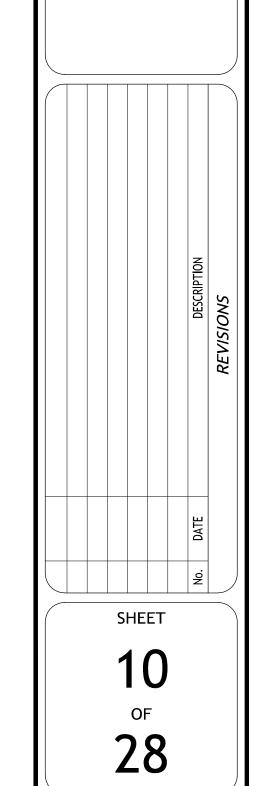
INLET	UPSTREAM	Outlet Water	Do	Qo	Lo	Sfo	Hf				JU	INCTION	LOSS					1.3	0.5	FINAL	Inlet Water	RIM
STATION	INLET	Surface						Vo	Но	Qi	Vi	QiVi	2	Hi	Angle	Hd	Ht	Ht	Ht	Н	Surface	ELEV.
<b>(</b> 1)		Elev. (2)	in (3)	cfs (4)	ft (5)	% (6)	ft (7)	(8)	<b>(</b> 9)	(10)	(11)	(12)	Vi /2g	(13)	(14)	(15)	(16)	(17)	(18)	(19)	Elev. (20)	(21)
EX.1007																			Startin	g Elevation	366.39	
EX.1000		366.39	21.00	11.60	14.64	0.53	0.08	4.82	0.09					0.05	2	0.10	0.24	0.00	0.12	0.20	366.59	371.12
3	EX.1008		21.00				7.7			7.35	3.06	22.47	0.15		90.00							
EX.1008		367.99	21.00	7.35	61.29	0.21	0.13	3.06	0.04					0.05		0.00	0.09	0.00	0.04	0.18	368.17	372.72
	10		21.00				:			7.42	3.08	22.86	0.15		1.00					×		
10		368.35	21.00	7.42	74.50	0.22	0.16	3.08	0.04					0.02		0.03	0.08	0.00	0.04	0.20	368.55	371.93
	11		21.00							4.39	1.82	8.01	0.05		52.00							
11		368.93	21.00	4.39	7.27	0.08	0.01	1.82	0.01					0.03		0.04	0.09	0.00	0.04	0.05	368.98	372.08
	EX.1024		18.00							4.39	2.49	10.92	0.10		48.00							
EX.1024		368.98	18.00	4.39	6.02	0.17	0.01	2.49	0.02				·	0.02		0.03	0.07	0.00	0.04	0.05	369.03	372.14
	EX.1018		15.00							2.46	2.00	4.93	0.06	0.02	45.00	0.03						
	EX.1030		15.00							1.35	1.10	1.49	0.02	0.01	90.00	0.01						
EX.1018		369.75	15.00	2.46	84.77	0.14	0.12	2.00	0.02					0.00		0.00	0.02	0.00	0.01	0.13	369.88	373.53
	0						3			2.46	0.00	0.00	0.00		0.00							
EX.1030		369.75	15.00	1.35	102.34	0.04	0.04	1.10	0.00					0.00		0.00	0.00	0.00	0.00	0.05	369.80	372.75
	12		10.00							0.05	0.09	0.00	0.00		0.00							
12		370.21	10.00	0.05	9.00	0.00	0.00	0.09	0.00					0.00		0.00	0.00	0.00	0.00	0.00	370.21	371.25
	0									0.05	0.00	0.00	0.00		0.00							



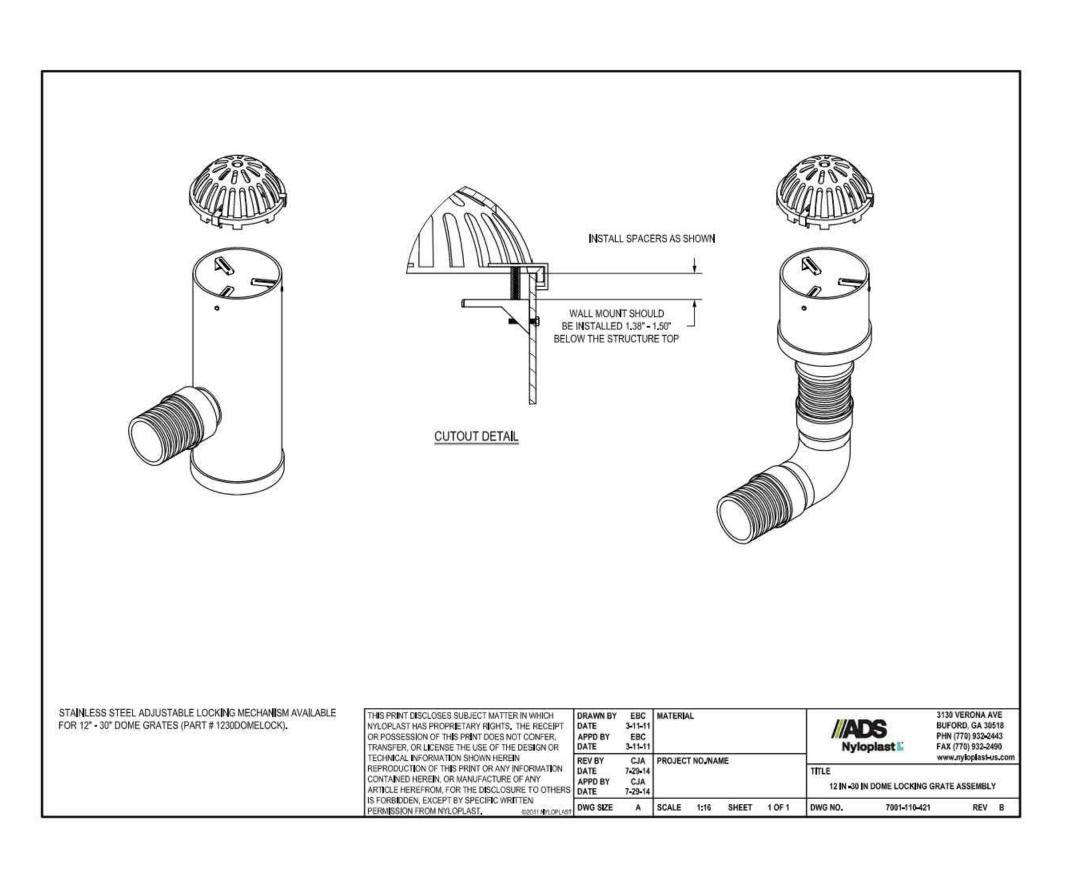
# SWM & BMP NARRATIVE

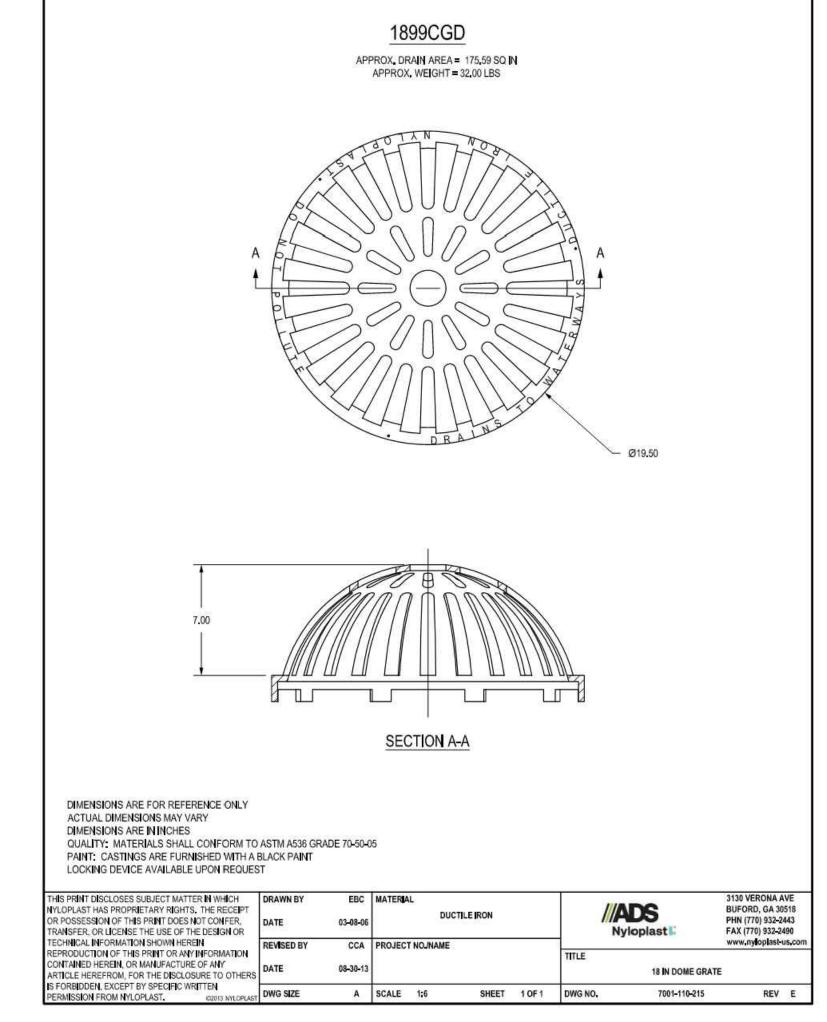
ALL STORMWATER AND BMP REQUIREMENTS ARE ACHIEVED BY THE EXISTING SWM POND PROPOSED IN THE APPROVED FINAL SITE PLAN REVISION, QUARLES CENTER PLAN #AFS20080813, SEE SHEETS 13-14. THE POND WAS DESIGNED FOR THE TREATMENT AND DETENTION OF A DRAINAGE AREA OF 3.91 ACRES WITH A C VALUE OF 0.83. THE CONDITIONS PROPOSED WITH THIS SITE PLAN MAINTAIN A DRAINAGE AREA OF 3.91 ACRES AND REDUCE THE IMPERVIOUS COVER TO A RESULTANT C FACTOR OF 0.77. THEREFORE, IT HAS BEEN DETERMINED THE POND IS SIZED ADEQUATELY TO HANDLE THE RUNOFF GENERATED FROM THE PROPOSED SITE CONDITIONS.

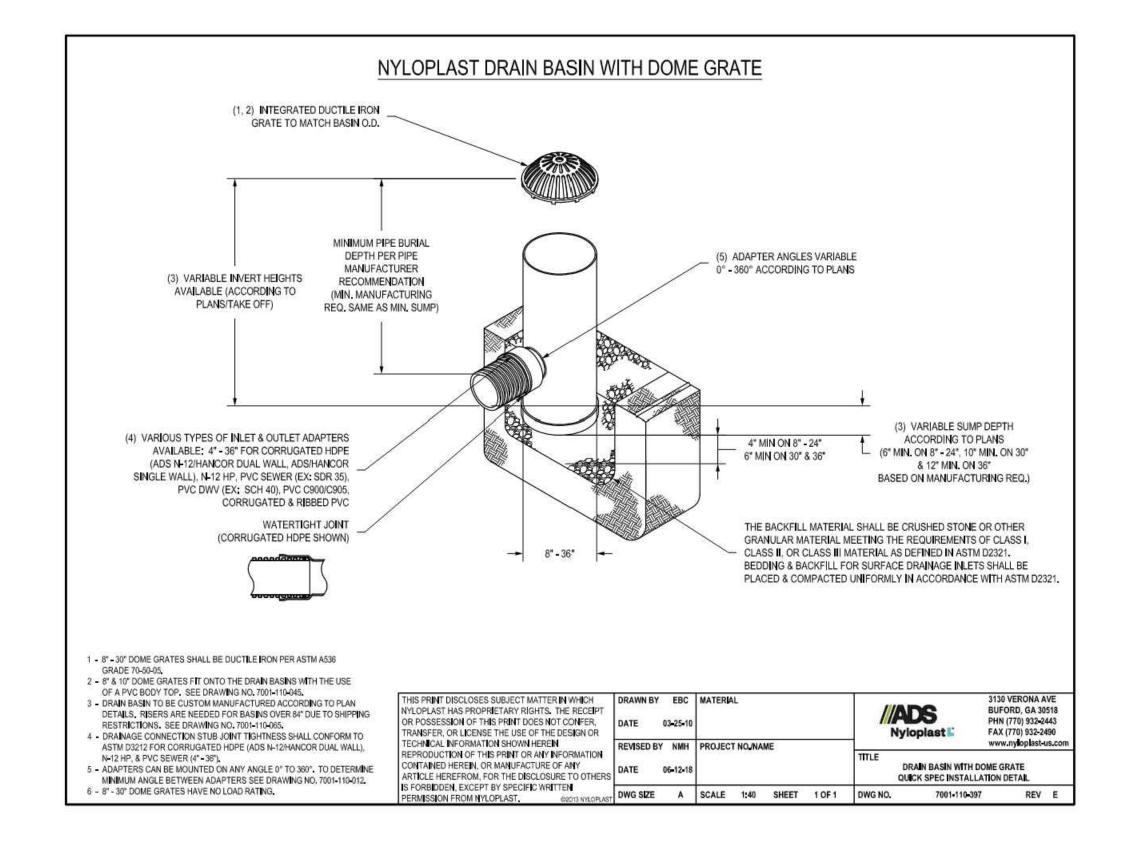
BMP WILL NOT BE EFFECTED PERTAINING TO THE VORTFILTER SHOWN ON SHEET 11 AND 12A OF 31 ON THE APPROVED FINAL SITE PLAN REVISION, QUARLES CENTER PLAN #AFS20080813. THE DRAINAGE AREA TO THE EXISTING VORTFILTER SHOWN ON SHEET 11 OF THE APPROVED PLAN #AFS20080813 REMAINS UNCHANGED AND IS THEREFORE DESIGNED TO ADEQUATELY HANDLE THE PROPOSED CONDITION RUNOFF.



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## Section 2721

## Engineered Surface Drainage Products

PVC surface drainage inlets shall include the drain basin type as indicated on the contract drawing and referenced within the contract specifications. The ductile iron grates for each of these fittings are to be considered an integral part of the surface drainage inlet and shall be furnished by the same manufacturer. The surface drainage inlets shall be as manufactured by Nyloplast a division of Advanced Drainage Systems, Inc., or prior approved equal.

The drain basins required for this contract shall be manufactured from PVC pipe stock, utilizing a thermoforming process to reform the pipe stock to the specified configuration. The drainage pipe connection stubs shall be manufactured from PVC pipe stock and formed to provide a watertight connection with the specified pipe system. This joint tightness shall conform to <u>ASTM D3212 for joints for drain and sewer plastic pipe using flexible elastomeric seals</u>. The flexible elastomeric seals shall conform to <u>ASTM F477</u>. The pipe bell spigot shall be joined to the main body of the drain basin or catch basin. The raw material used to manufacture the pipe stock that is used to manufacture the main body and pipe stubs of the surface drainage inlets shall conform to ASTM D1784 cell class 12454.

The grates and frames furnished for all surface drainage inlets shall be ductile iron for structure sizes 8", 10", 12", 15", 18", 24", 30" and 36" and shall be made specifically for each basin so as to provide a round bottom flange that closely matches the diameter of the surface drainage inlet. Grates for drain basins shall be capable of supporting various wheel loads as specified by Nyloplast. 12" and 15" square grates will be hinged to the frame using pins. Ductile iron used in the manufacture of the castings shall conform to ASTM A536 grade 70-50-05. Grates and covers shall be provided painted black.

#### INSTALLATION

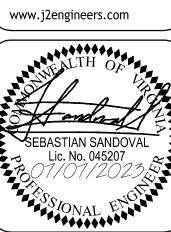
The specified PVC surface drainage inlet shall be installed using conventional flexible pipe backfill materials and procedures. The backfill material shall be crushed stone or other granular material meeting the requirements of class 1, class 2, or class 3 material as defined in <u>ASTM D2321</u>. Bedding and backfill for surface drainage inlets shall be well placed and compacted uniformly in accordance with ASTM D2321. The drain basin body will be cut at the time of the final grade. No brick, stone or concrete block will be required to set the grate to the final grade height. For load rated installations, a concrete slab shall be poured under and around the grate and frame. The concrete slab must be designed taking into consideration local soil conditions, traffic loading, and other applicable design factors. For other installation considerations such as migration of fines, ground water, and soft foundations refer to ASTM D2321 guidelines.

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CONTOUR INT. = N/A

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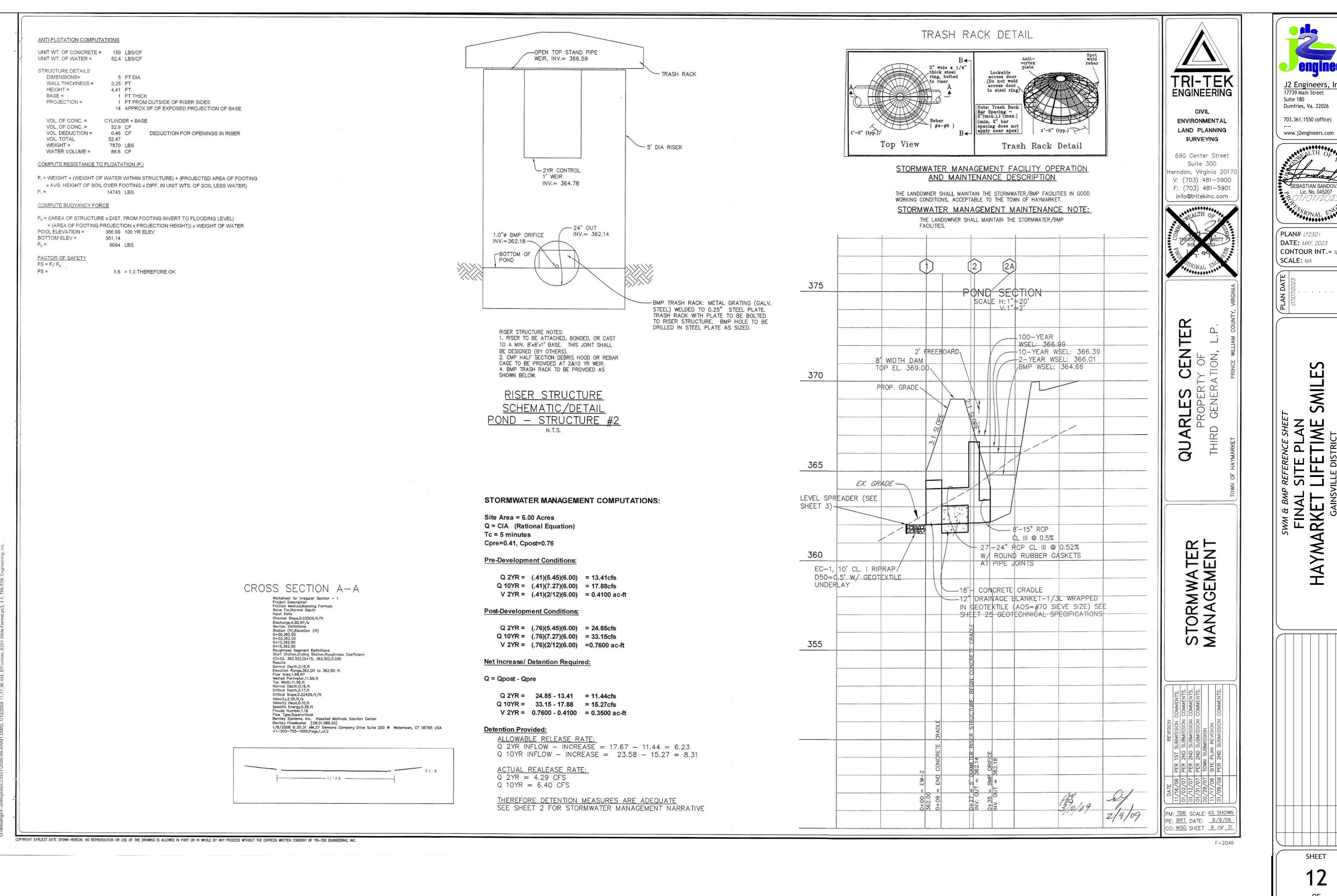
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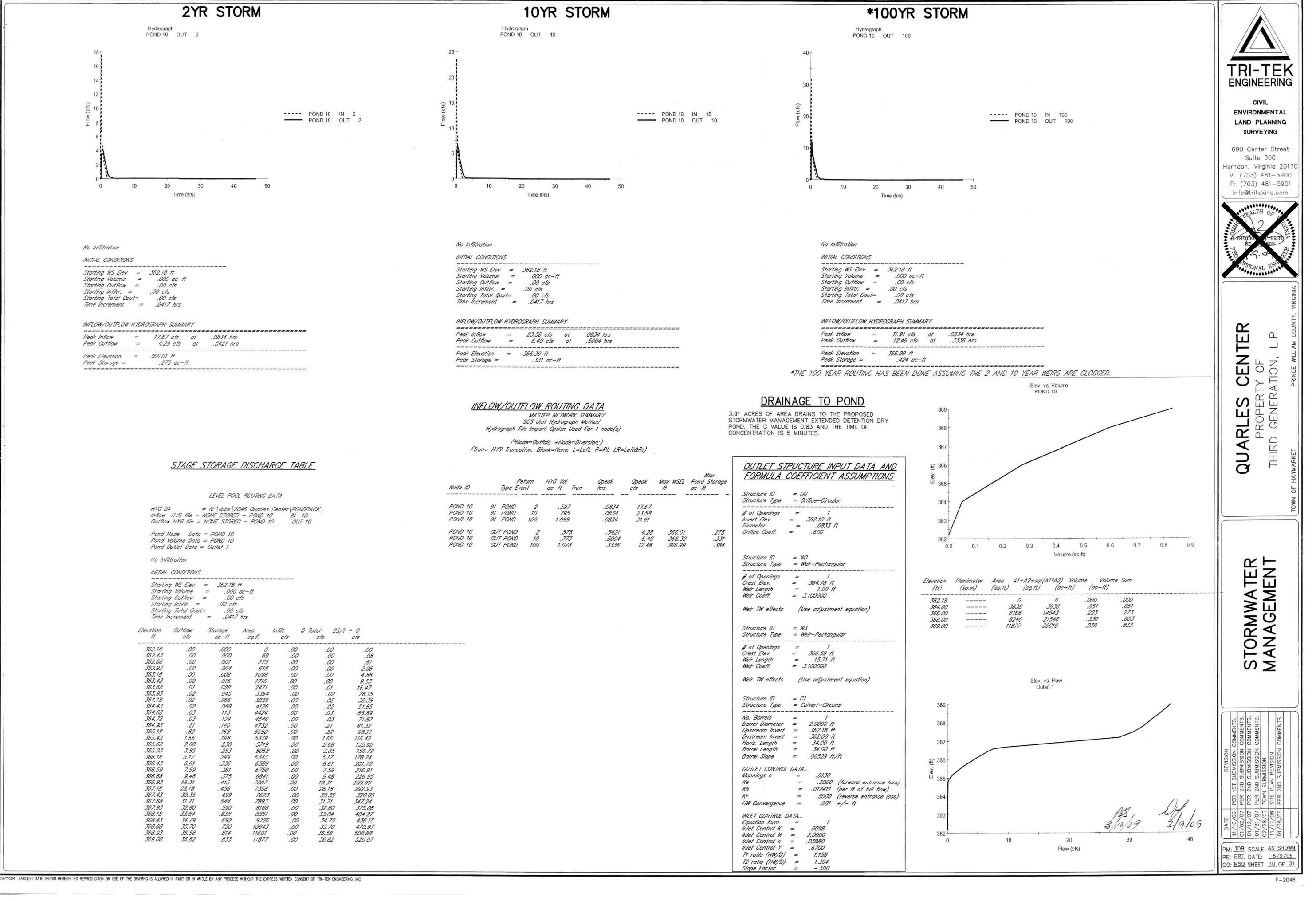
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Suite 180



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SWIL

17739 Main Street

Suite 180

TRI-TEK

**ENGINEERING** 

0: MSO SHEET 11 OF 31

Northern Virginia BMP Handbook 11/6/92

Acres

Product

Part 7: Compute The Weighted Average "C" Factor for Each Proposed BMP Facility

(A) List the areas to be controlled by the proposed BMP.

Subarea Designation

ROUTE: On-Site
COUNTY: Prince William

**DESCRIPTION:** Proposed Inlet Structures

SCALE: 1"=100'

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Inlet L A Cw I Q S Sx T W W/T Sw Sw/Sx Eo a S'w Se Lt L/Lt d E h Qint d/h Q(co) T@sag Remarks

STORM INLET DESIGN

COMPUTATIONS

PROJECT: DISTRICT:

Northern Virginia BMP Handbook 11/6/92

Date: 05/01/06

Engineer: B. THOMAS

BMP Facility Design Calculations

Plan Name: QUARLES CENTER

Water Quality Narrative

(SEE SHEET 2)

Watershed Information

DA1: ONSITE CONTROLLED

DA2: ONSITE CONTROLLED
DA3: ONSITE CONTROLLED

DA4: ONSITE CONTROLLED
DA5: ONSITE CONTROLLED

A6: ONSITE CONTROLLED

DA7: ONSITE CONTROLLED

DAS: ONSITE UNCONTROLLED

Northern Virginia BMP Handbook 11/6/92

Water Supply Overlay District

(Occoquan Watershed) =

(New Development) =

(Redevelopment) =

[1-0.9 x ("I"pre / "I"post)] x 100 =

(A) Select Requirement

IV. Site Coverage

include qualifying open space.

Subarea Designation

(A) Total equivalent uncontrolled area

Plan Number:

Northern Virginia BMP Handbook 11/6/92

(a) 6.00 acres

(2)

Product

Part 2: Compute the Weighted Average "C" Factor for the Site

(A) Area of the site

(B) Subarea Designation

SHEET

28

#### Construction & Installation

A. Each unit shall be constructed at the locations and elevations according to the sizes shown on the approved drawings. Any modifications to the elevation or location shall be at the direction of and approved by the Engineer.

Filterra Standard Plan Notes

- B. If the Filterra® is stored before installation, the top slab must be placed on the box using the 2x4 wood provided, to prevent any contamination from the site. All internal fittings supplied (if any), must be left in place as per the delivery.
- C. The unit shall be placed on a compacted sub-grade with a minimum 6-inch gravel base matching the final grade of the curb line in the area of the unit. The unit to be placed such that the unit and top slab match the grade of the curb in the area of the unit. Compact undisturbed sub-grade materials to 95% of maximum density at +1- 2% of optimum moisture. Unsuitable material below sub-grade shall be replaced to the site engineer's approval.
- D. Outlet connections shall be aligned and sealed to meet the approved drawings with modifications necessary to meet site conditions and local regulations.
- E. Once the unit is set, the internal wooden forms and protective mesh cover must be left intact. The top lid should be sealed onto the box section before backfilling, using a non-shrink grout, butyl rubber or similar waterproof seal. The boards on top of the lid and boards sealed in the unit's throat must NOT be removed. The Supplier (Americast or its authorized dealer) will remove these sections at the time of activation. Backfilling should be performed in a careful manner, bringing the appropriate fill material up in 6" lifts on all sides. Precast sections shall be set in a manner that will result in a watertight joint. In all instances, installation of Filterra unit shall conform to ASTM specification C891 "Standard Practice for Installation of Underground Precast Utility Structures", unless directed otherwise in contract documents.

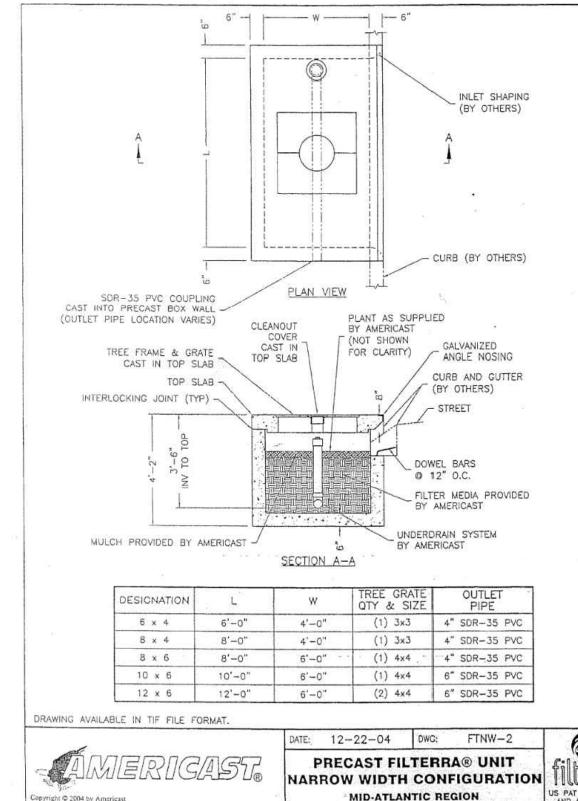
- A. Activation of the Filterra® unit is performed ONLY by the Supplier. This process cannot commence until the project site is fully stabilized and cleaned (full landscaping, grass cover, final paving and street sweeping completed), negating the chance of construction materials contaminating the Filterra® system. Care shall be taken during construction not to damage the protective throat and top plates.
- B. Activation includes installation of plant(s) and mulch layers as necessary.

#### Maintenance

- A. Each correctly installed Filterra® unit is to be maintained by the Supplier, or a Supplier approved contractor for a minimum period of 1 year. The cost of this service is to be included in the price of each Filterra® unit. Extended maintenance contracts are available at extra cost upon request.
- B. Annual maintenance consists of a maximum of (2) scheduled visits. The visits are scheduled seasonally; the spring visit aims to clean up after winter loads including salts and sands. The fall visit helps the system by removing excessive leaf litter.

#### C. Each maintenance visit consists of the following tasks.

- Filterra® unit inspection
- Foreign debris, silt, mulch & trash removal
- Filter media evaluation and recharge as necessary
- Plant health evaluation and pruning or replacement as necessary
- Replacement of mulch Disposal of all maintenance refuse items
- Maintenance records updated and stored (reports available upon request)
- D. The beginning and ending date of Supplier's obligation to maintain the installed system shall be determined by the Supplier at the time the system is placed in operation. Owners must promptly notify the Supplier of any damage to the plant(s),



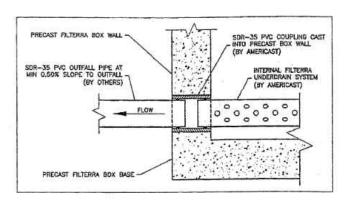
COPYRIGHT EARLIEST DATE SHOWN HEREON. NO REPRODUCTION OR USE OF THE DRAWING IS ALLOWED IN PART OR IN WHOLE BY ANY PROCESS WITHOUT THE EXPRESS WRITTEN CONSENT OF TRI-TEK ENGINEERING, INC

#### Table 1: Filterra® Quick Sizing Table (Mid-Atlantic Region - v02)

Available Filterra® Box Sizes (feet)	Recommended <u>Commercial</u> Contributing Drainage Area (acres) where C = 0.85	Outlet Pipe
4x6 or 6x4	up to 0.20	4" SDR-35 PVC
4x8 or 8x4 or 4x12 or 12x4	0.20 to 0.26	4" SDR-35 PVC
Standard 6x6	0.27 to 0.29	4" SDR-35 PVC
6x8 or 8x6	0.30 to 0.39	4" SDR-35 PVC
6x10 or 10x6	0.40 to 0.49	6" SDR-35 PVC
6x12 or 12x6	0.50 to 0.59	6" SDR-35 PVC
7x13 or 13x7	0.60 to 0.74	6" SDR-35 PVC

#### Filterra Piping Technical Details

Filterra® is supplied with an internal underdrain system that exits a wall in a perpendicular direction. Most efficient drainage is accomplished when the drain exits on the lower side of the Filterra®, i.e. nearest the overflow bypass. This is more important when using the larger sized



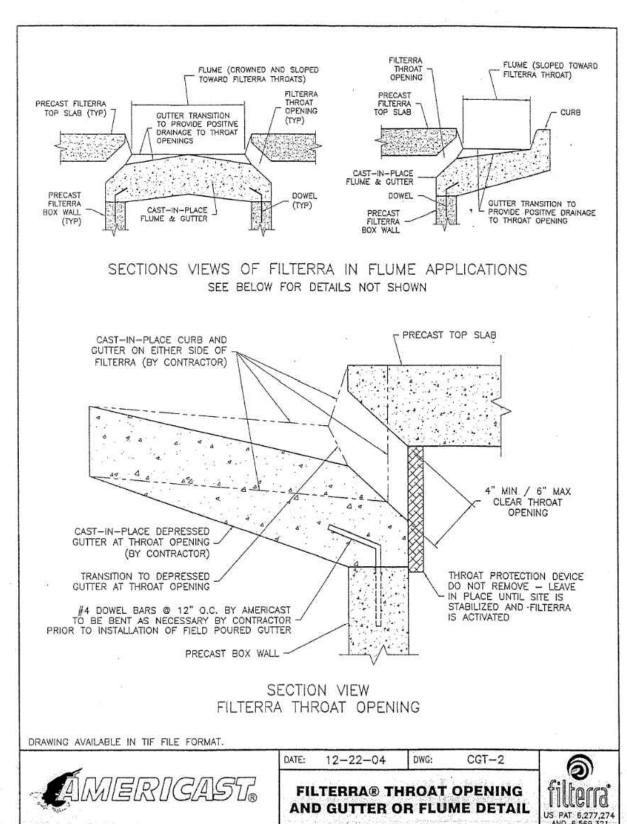
Drawing DP1: Section View through Filterra Precast Box Wall at Outfall Pipe Connection

All units are supplied with the drainage pipe coupling precast into the wall, at a depth of 3.50 feet (INV to TC). Drawing DP1 is a detail of the coupling. The coupling used is SDR-35 PVC.

Typically, a minimum slope of 0.50% is adequate to accommodate the flow of treated water from the Filterra®, but each site may present unique conditions based on routing of the outfall pipe (elbows). The pipe must not be a restricting point for the successful operation of Filterra. All connecting pipes must accommodate freefall flow. Table 3 lists expected flow rates of the various size Filterra® units and these flow rates can be used to confirm or calculate the minimum outfall pipe slope.

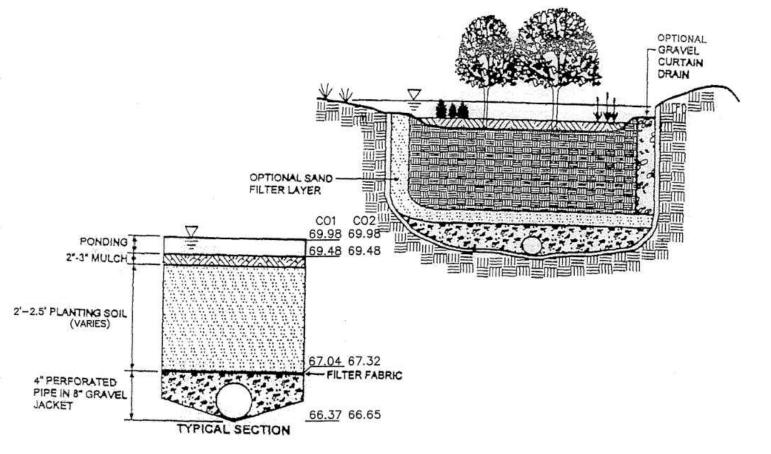
#### Table 3: Filterra Flow Rates & Pipe Details

Filterra® Size (feet)	Expected Flow Rate (cubic feet/second)	Connecting Drainage Pipe
4x6 or 6x4	0.056	4" SDR-35 PVC
4x8 or 8x4	0.075	4" SDR-35 PVC
6x6	0.084	4" SDR-35 PVC
6x8 or 8x6	0.112	4" SDR-35 PVC
4x12 or 12x4	0.112	4" SDR-35 PVC
6x10 or 10x6	0.140	6" SDR-35 PVC
6x12 or 12x6	0.168	6" SDR-35 PVC
7x13 or 13x7	0.213	6" SDR-35 PVC



# 13+00 12+00

BIORETENTION AREA PLANTING GUIDE SCALE 1" = 20'



BIORETENTION AREA SCHEMATIC CROSS SECTION

DRAINAGE AREA = 0.56	(AC.)
"C" FACTOR = 0.83	V. W. W. W. C. W. C.
CA = 0.4648	
IMPERVIOUS AREA = 0.48	(AC)
SIZE = 5% OF IMP. AREA	(%)
SIZE REQUIRED = 0.024	(AC.)
SIZE REQUIRED = 1045	(SQ, FT.)
SIZE PROVIDED = 1050	(SQ. FT.)
TREES/SHRUBS REQUIRED = 24	(PLANTS)
TREES/SHRUBS PROVIDED = 24	(PLANTS)
BIORETENTION AREA PLANTING SCHEDULE	
SHRUBS:	QUANTITY:
JUNIPERUS COMMUNLA "COMPRESSA"	6
COMMON JUNIPER	
CORNUS STOLONIFERA RED OSIER DOGWOOD	6
HAMAMELLA VIRGINIANA	6
WITCH-HAZEL	
TREES:	QUANTITY:
FRAXINUS PENNSYLVANICA	2
GREEN ASH	
ACER RUBRUM	2
RED MAPLE	
NYSSA SYLVATICA	2
BLACK GUM	
HERBACEOUS GROUND COVER:	QUANTITY:
AGROSTIS ALBA REDTOP	SEE NOTES
VINCA MAJOR	SEE NOTES
LARGE PERIWINKLE	

STRUCTURE #	BOX SIZE	INV. OUT	RIM ELEV.	PIPE SIZ
F1	8 x 6	367.40	370.90	4" PVC
F2	6 x 4	365.75	369.25	4" PVC
F3	6 x 6	366.00	369.50	4" PVC
F4	13 x 7	365.43	368.93	6" PVC

	BIORETEN	TION AREA C	HART (BA1)	)
6" C/O #	TOP MULCH	DEPTH SOIL	C/O INV.	PIPE SIZE
1	369.48	2.27	366.37	4" PVC
2	369.48	2.0	366.65	4" PVC

#### FILTERRA NOTES:

CONTRACTOR SHALL REFER TO FILTERRA® ENGINEERING DESIGN ASSISTANCE KIT, SECTION D, FOR ADDITIONAL TECHINCAL INFORMATION WITH REGARDS TO SUBMITTALS AND INSTALLATION.

PVC OUTLET PIPE LAYOUT AND CONNECTIONS TO ONSITE STORM SEWER STRUCTURES TO BE COORDINATED WITH MANUFACTURER TO PROVIDE OPTIMUM ALIGNMENT.

#### BMP MAINTENANCE NOTE:

ALL BMP FACILITIES ARE TO BE PRIVATELY MAINTAINED.

#### Bioretention Area Soil Specifications

#### Planting Soil

The bioretention areas shall contain a planting soil mixture of 50% sand, 30% leaf compost (fully composted, NOT partially rotted leaves), and 20% topsoil. Topsoil shall be sandy loam or loamy sand of uniform composition, containing no more than 5% clay, free of stones, stumps, roots, or similar objects greater than one inch, brush, or any other material or substance which may be harmful to plant growth, or a hindrance to plant growth or maintenance.

The top soil shall be free of plants or plant parts of Bermuda grass, Quack grass, Johnson grass, Mugwort, Nutsedge, Poison Ivy, Canadian Thistle or others as specified. It shall not contain toxic substances harmful to plant growth.

#### The top soil shall be tested and meet the following criteria:

pH range:	5.0 - 7.0
Organic matter:	Greater than 1.5 %
Magnesium (Mg):	100+ Units
Phosphorus (P2O5):	150+ Units
Potassium (K2O):	120+ Units
C-1-11 1	

Soluble salts: not to exceed 900 ppm/.9 MMHOS/cm (soil) not to exceed 3,000 ppm/2.5 MMHOS/cm (organic mix)

#### The following testing frequencies shall apply to the above soil constituents:

pH, Organic Matter: 1 test per 90 cubic yards, but no more than 1 test per Bioretention

#### Magnesium, Phosphorus, Potassium, Soluble Salts:

1 test per 500 cubic yards, but no less than 1 test per borrow source

One grain size analysis shall per performed per 90 cubic yards of planting soil, but no less than 1 test per Bioretention Area. Soil tests must be verified by a qualified professional.

A mulch layer shall be provided on top of the planting soil. An acceptable mulch layer shall include shredded hardwood or shredded wood chips or other similar product.

Of the approved mulch products all must be well aged, uniform in color, and free of foreign material including plant material.

#### 3. Sand

The sand for bioretention basins when utilized, shall be ASTM C-33 Concrete Sand and free of deleterious material.

#### 4. Compaction

Soil shall be placed in lifts less than 18 inches and lightly compacted (minimal compactive effort) by tamping or rolled with a hand-operated landscape roller.

## Bioretention Area Planting Specifications

Root stock of the plant material shall be kept moist during transport from the source to the job site and until planted.

#### Walls of planting pit shall be dug so that they are vertical.

- The diameter of the planting pit must be a minimum of six inches (6") larger than the diameter of the ball of the tree.
- 4. The planting pit shall be deep enough to allow 1/8 of the overall dimension of the root ball to be above grade. Loose soil at the bottom of the pit shall be tamped by hand.
- The appropriate amount of fertilizer is to be placed at the bottom of the pit (see below for
- The plant shall be removed from the container and placed in the planting pit by lifting and carrying the plant by its' ball (never lift by branches or trunk).
- Set the plant straight and in the center of the pit so that approximately 1/8 of the diameter of the root ball is above the final grade.

#### Backfill planting pit with existing soil.

#### Make sure plant remains straight during backfilling procedure.

## BIORETENTION AREA NOTES:

BIORETENTION AREAS ARE TO BE CONSTRUCTED AFTER SITE HAS BEEN PERMANENTLY

BIORETENTION AREAS WITHIN THIS DEVELOPMENT ARE DESIGNED WITH A PERFORATED UNDERDRAIN SYSTEM (0.5% MIN SLOPE) AS A RESULT OF UNFAVORABLE SOIL CONDITIONS. NO CLAY OR GEOMEMBRANE LINER IS REQUIRED.

ALL GRASS FILTER STRIPS, GRASS CHANNELS AND SIDE SLOPES ASSOCIATED WITH THE BIORETENTION AREAS SHALL BE SODDED WITH MATURE SOD PRIOR TO TO PLACEMENT OF BIORETENTION AREA INTO OPERATION.

PLACEMENT OF LANDSCAPING WITHIN THE BIORETENTION AREAS SHALL BE DONE UNDER THE SUPERVISION OF AN ARBORIST TO PROVIDE A MORE NATURAL APPEARANCE.

TREES TO BE 2.5" CALIPER AT TIME OF PLANTING AND ARE TO BE SPECIFIED PER ANSI Z60. SHRUBS TO BE 18"-24" IN HEIGHT AT TIME OF PLANTING.

PLANTING QUANTITIES BASED ON RECOMMENDED 1000 TREES/SHRUBS PER ACRE. MULCH TO BE APPLIED TO A DEPTH OF 2"-3" FOLLOWING PLANTING OF TREES AND

HERBACEOUS GROUND COVER TO COVER 70-80% OF THE BIORETENTION AREA CAD THE PLUGS SHALL BE PLACED FOLLOWING MULCHING.

# BIORETENTION AREA MAINTENANCE NOTES

ROUTINE MAINTENANCE TASKS SHALL INCLUDE MOWING OF SOD AREAS AROUND BIORETENTION AREA, WEEDING OF PLANTING BED AREA AND TRASH REMOVAL. THE SCHEDULING OF THESE TASKS SHOULD CORRELATE WITH THE ROUTINE LANDSCAPING MAINTENANCE FOR THE OVERALL PROPERTY.

BI-ANNUAL MAINTENANCE TASKS SHALL INCLUDE PRUNING OF TREES AND SHRUBS, REMOVAL AND REPLACEMENT OF DEAD PLANT MATERIAL AND ADDING NEW MULCH TO THE PLANTING BED TO MAINTAIN A MINIMUM OF 2" OF MULCH COVER.

IN GENERAL, THE USE OF HERBICIDES, FUNGICIDES, PESTICIDES AND FERTILIZERS SHOULD NOT BE USED IN THE BIORETENTION AREA PLANTING BED, ON THE PLANT MATERIALS OR SURROUNDING SOD AREAS.

**ENGINEERING** 

17739 Main Street Suite 180 Dumfries, Va. 22026 703.361.1550 (office) ENVIRONMENTAL LAND PLANNING

J2 Engineers, Inc.

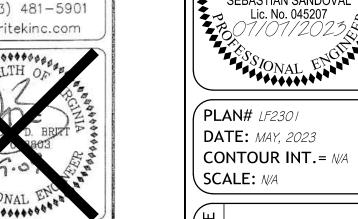
www.j2engineers.com

SEBASTIAN SANDOVA

SURVEYING 690 Center Street Suite 300 Herndon, Virginia 20170

V: (703) 481-5900





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PM: TDB SCALE: AS SHOWN

PE: BRT DATE: 6/9/06

CO: MSO SHEET 12 OF 31

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17739 Main Street

Dumfries, Va. 22026

703.361.1550 (office)

www.j2engineers.com

II SSIONAL

**PLAN#** *LF2301* 

SCALE: N/A

**DATE:** *MAY, 2023* 

CONTOUR INT. = N/A

Suite 180

#### Filterra Standard Plan Notes

#### Construction & Installation

- A. Each unit shall be constructed at the locations and elevations according to the sizes shown on the approved drawings. Any modifications to the elevation or location shall be at the direction of and approved by the Engineer.
- B. If the Filterra<sup>49</sup> is stored before installation, the top slab must be placed on the box using the 2x4 wood provided, to prevent any contamination from the site. All internal fittings supplied (if any), must be left in place as per the delivery.
- C. The unit shall be placed on a compacted sub-grade with a minimum 6-inch gravel base matching the final grade of the curb line in the area of the unit. The unit to be placed such that the unit and top slab match the grade of the curb in the area of the unit. Compact undisturbed sub-grade materials to 95% of maximum density at +1- 2% of optimum moisture. Unsuitable material below sub-grade shall be replaced to the site
- D. Outlet connections shall be aligned and sealed to meet the approved drawings with modifications necessary to meet site conditions and local regulations.
- E. Once the unit is set, the internal wooden forms and protective mesh cover must be left intact. The top lid should be sealed onto the box section before backfilling, using a non-shrink grout, butyl rubber or similar waterproof seal. The boards on top of the lid and boards sealed in the unit's throat must NOT be removed. The Supplier (Americast or its authorized dealer) will remove these sections at the time of activation. Backfilling should be performed in a careful manner, bringing the appropriate fill material up in 6" lifts on all sides. Precast sections shall be set in a manner that will result in a watertight joint. In all instances, installation of Filterra unit shall conform to ASTM specification C891 "Standard Practice for Installation of Underground Precast Utility Structures", unless directed otherwise in contract documents.

#### Activation

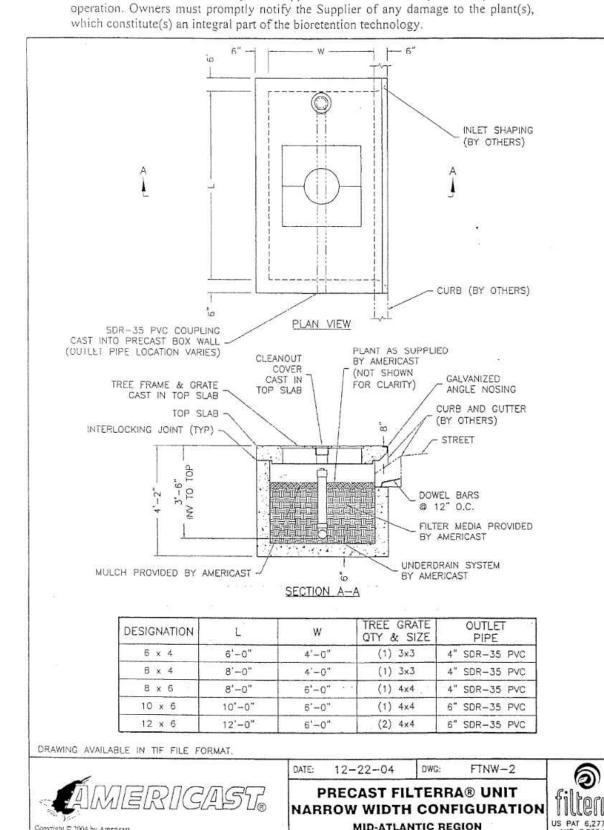
- A. Activation of the Filterra® unit is performed ONLY by the Supplier. This process cannot commence until the project site is fully stabilized and cleaned (full landscaping, grass cover, final paving and street sweeping completed), negating the chance of construction materials contaminating the Filterra® system. Care shall be taken during construction not to damage the protective throat and top plates.
- B. Activation includes installation of plant(s) and mulch layers as necessary.

#### Maintenance

- A. Each correctly installed Filterra® unit is to be maintained by the Supplier, or a Supplier approved contractor for a minimum period of 1 year. The cost of this service is to be included in the price of each Filterra® unit. Extended maintenance contracts are available at extra cost upon request.
- B. Annual maintenance consists of a maximum of (2) scheduled visits. The visits are scheduled seasonally; the spring visit aims to clean up after winter loads including salts and sands. The fall visit helps the system by removing excessive leaf litter.

#### C. Each maintenance visit consists of the following tasks.

- Filterra® unit inspection
- Foreign debris, silt, mulch & trash removal
- Filter media evaluation and recharge as necessary Plant health evaluation and pruning or replacement as necessary
- Replacement of mulch
- Disposal of all maintenance refuse items Maintenance records updated and stored (reports available upon request)
- D. The beginning and ending date of Supplier's obligation to maintain the installed system shall be determined by the Supplier at the time the system is placed in



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#### Table 1: Filterra® Quick Sizing Table (Mid-Atlantic Region - v02)

vailable Filterra® Box Sizes (feet)	Recommended <u>Commercial</u> Contributing Drainage Area (acres) where C = 0.85	Outlet Pipe
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4x8 or 8x4 or 4x12 or 12x4	0.20 to 0.26	4" SDR-35 PVC
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6x12 or 12x6	0.50 to 0.59	6" SDR-35 PVC
7x13 or 13x7	0.60 to 0.74	6" SDR-35 PVC

#### Filterra Piping Technical Details

Filterra® is supplied with an internal underdrain system that exits a wall in a perpendicular direction. Most efficient drainage is accomplished when the drain exits on the lower side of the Filterra®, i.e. nearest the overflow bypass. This is more important when using the larger sized

PRECAST FILTERRA BOX WALL	SDR-35 PVC COUPLING INTO PRECAST BOX WALL (BY AMERICAST)
SDR-35 PVC OUTFALL PIPE AT MIN 0.50% SLOPE TO OUTFALL (BY OTHERS)	INTERNAL FILTERRA UNDERDRAIN SYSTE (BY AMERICAST)
FLOW	- 0000000
,	
PRECAST FILTERRA BOX BASE	1

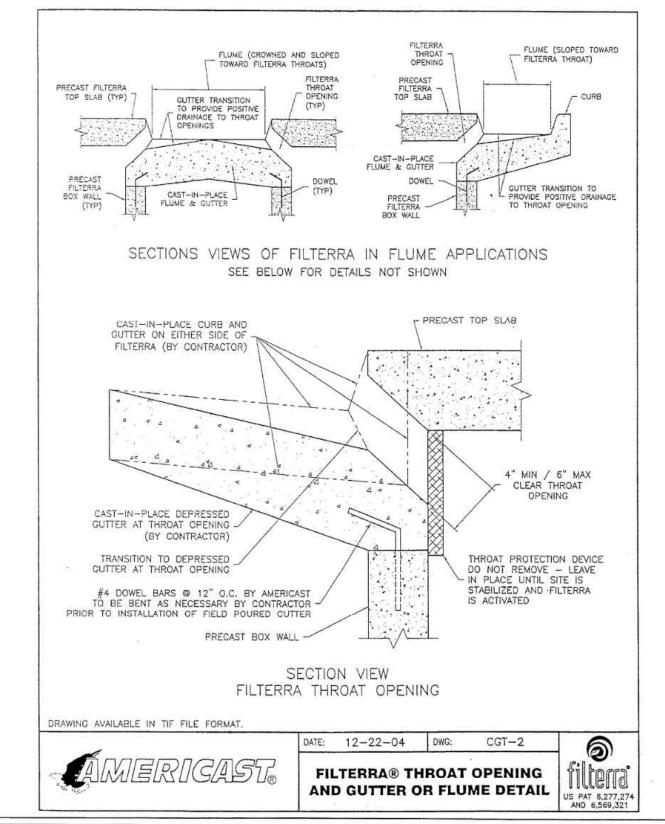
Section View through Filterra Precast Box Wall at Outfall Pipe

All units are supplied with the drainage pipe coupling precast into the wall, at a depth of 3.50 feet (INV to TC). Drawing DP1 is a detail of the coupling. The coupling used is SDR-35 PVC.

Typically, a minimum slope of 0.50% is adequate to accommodate the flow of treated water from the Filterra®, but each site may present unique conditions based on routing of the outfall pipe (elbows). The pipe must not be a restricting point for the successful operation of Filterra®. All connecting pipes must accommodate freefall flow. Table 3 lists expected flow rates of the various size Filterra® units and these flow rates can be used to confirm or calculate the minimum outfall pipe slope.

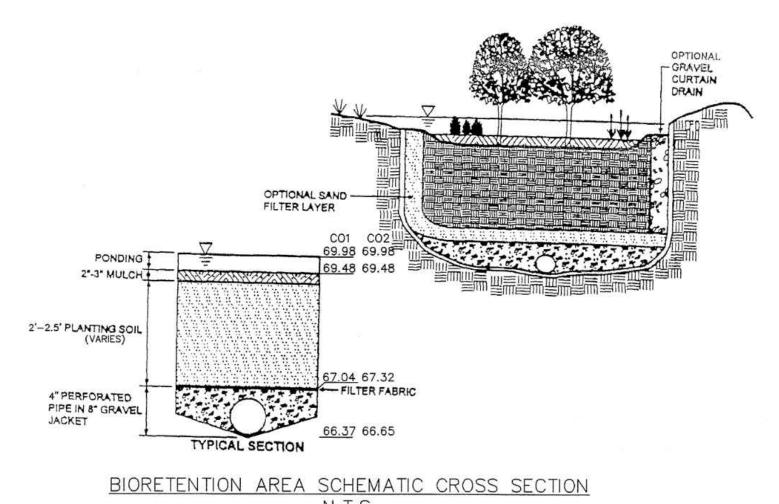
#### Table 3: Filterra Flow Rates & Pipe Details

Filterra® Size (feet)	Expected Flow Rate (cubic feet/second)	Connecting Drainage Pipe
4x6 or 6x4	0.056	4" SDR-35 PVC
4x8 or 8x4	0.075	4" SDR-35 PVC
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6x8 or 8x6	0.112	4" SDR-35 PVC
4x12 or 12x4	0.112	4" SDR-35 PVC
6x10 or 10x6	0.140	6" SDR-35 PVC
6x12 or 12x6	0.168	6" SDR-35 PVC
7x13 or 13x7	0.213	6" SDR-35 PVC
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LIMITS OF SOD		F.H 2760 VPD
	12+00 BIORETENTION AREA PLANT	13+00 1 (C

BIORETENTION AREA PLANTING GUIDE SCALE 1" = 20



DRAINAGE AREA = 0.56 "C" FACTOR = 0.83	(AC.)
CA = 0.4648	
IMPERVIOUS AREA = 0.48	(AC)
SIZE = 5% OF IMP. AREA	(%)
SIZE REQUIRED = 0.024	(AC.)
SIZE REQUIRED = 1045	(SQ. FT.)
SIZE PROVIDED = 1050	(SQ. FT.)
TREES/SHRUBS REQUIRED = 24	(PLANTS)
TREES/SHRUBS PROVIDED = 24	(PLANTS)
BIORETENTION AREA PLANTING SCHEDULE	
SHRUBS:	QUANTITY:
JUNIPERUS COMMUNLA "COMPRESSA" COMMON JUNIPER	6
CORNUS STOLONIFERA	6
RED OSIER DOGWOOD	
HAMAMELLA VIRGINIANA	6
WITCH-HAZEL	
TREES:	QUANTITY:
FRAXINUS PENNSYLVANICA GREEN ASH	2
ACER RUBRUM	2
RED MAPLE	-
NYSSA SYLVATICA	2
BLACK GUM	370
HERBACEOUS GROUND COVER:	QUANTITY:
AGROSTIS ALBA	SEE NOTES
REDTOP	
VINCA MAJOR LARGE PERIWINKLE	SEE NOTES

	FILTERRA	STRUCTURE	CHART	
STRUCTURE #	BOX SIZE	INV. OUT	RIM ELEV.	PIPE SIZE
F1	8 x 6	367.40	370.90	4" PVC
F2	6 x 4	365.75	369.25	4" PVC
F3	6 x 6	366.00	369.50	4" PVC
F4	13 x 7	365.43	368.93	6" PVC

	BIORETEN	ITION AREA C	HART (BA1	)
s" c/o #	TOP MULCH	DEPTH SOIL	C/O INV.	PIPE SIZE
1	369.48	2.27	366.37	4" PVC
2	369.48	2.0	366.65	4" PVC

#### Bioretention Area Soil Specifications

#### Planting Soil

The bioretention areas shall contain a planting soil mixture of 50% sand, 30% leaf compost (fully composted, NOT partially rotted leaves), and 20% topsoil. Topsoil shall be sandy loam or loamy sand of uniform composition, containing no more than 5% clay, free of stones, stumps, roots, or similar objects greater than one inch, brush, or any other material or substance which may be harmful to plant growth, or a hindrance to plant growth or maintenance.

The top soil shall be free of plants or plant parts of Bermuda grass, Quack grass, Johnson grass, Mugwort, Nutsedge, Poison Ivy, Canadian Thistle or others as specified. It shall not contain toxic substances harmful to plant growth.

#### The top soil shall be tested and meet the following criteria:

pH range:	5.0 - 7.0
Organic matter:	Greater than 1.5 %
Magnesium (Mg):	100+ Units
Phosphorus (P <sub>2</sub> O <sub>5</sub> ):	150+ Units
Potassium (K2O):	120+ Units

Soluble salts: not to exceed 900 ppm/.9 MMHOS/cm (soil) not to exceed 3,000 ppm/2.5 MMHOS/cm (organic mix)

#### The following testing frequencies shall apply to the above soil constituents:

pH, Organic Matter: 1 test per 90 cubic yards, but no more than 1 test per Bioretention

Magnesium, Phosphorus, Potassium, Soluble Salts:

1 test per 500 cubic yards, but no less than 1 test per borrow source

One grain size analysis shall per performed per 90 cubic yards of planting soil, but no less than 1 test per Bioretention Area. Soil tests must be verified by a qualified professional.

#### 2. Mulch

A mulch layer shall be provided on top of the planting soil. An acceptable mulch layer shall include shredded hardwood or shredded wood chips or other similar product.

Of the approved mulch products all must be well aged, uniform in color, and free of foreign material including plant material.

#### Sand

The sand for bioretention basins when utilized, shall be ASTM C-33 Concrete Sand and free of deleterious material.

#### 4. Compaction

Soil shall be placed in lifts less than 18 inches and lightly compacted (minimal compactive effort) by tamping or rolled with a hand-operated landscape roller.

#### Bioretention Area Planting Specifications

- Root stock of the plant material shall be kept moist during transport from the source to the job site and until planted.
- Walls of planting pit shall be dug so that they are vertical.
- The diameter of the planting pit must be a minimum of six inches (6") larger than the diameter of the ball of the tree.
- The planting pit shall be deep enough to allow 1/8 of the overall dimension of the root ball to be above grade. Loose soil at the bottom of the pit shall be tamped by hand.
- The appropriate amount of fertilizer is to be placed at the bottom of the pit (see below for
- The plant shall be removed from the container and placed in the planting pit by lifting and carrying the plant by its' ball (never lift by branches or trunk).
- Set the plant straight and in the center of the pit so that approximately 1/8 of the diameter of the root ball is above the final grade.
- Backfill planting pit with existing soil.
- Make sure plant remains straight during backfilling procedure.

#### BMP MAINTENANCE NOTE:

ALL BMP FACILITIES ARE TO BE PRIVATELY MAINTAINED.

CONTRACTOR SHALL REFER TO FILTERRA ENGINEERING DESIGN ASSISTANCE KIT, SECTION D, FOR ADDITIONAL TECHINCAL INFORMATION WITH REGARDS TO SUBMITTALS AND INSTALLATION. PVC OUTLET PIPE LAYOUT AND CONNECTIONS TO ONSITE STORM SEWER

STRUCTURES TO BE COORDINATED WITH MANUFACTURER TO PROVIDE OPTIMUM

#### BIORETENTION AREA NOTES:

BIORETENTION AREAS ARE TO BE CONSTRUCTED AFTER SITE HAS BEEN PERMANENTLY STABILIZED UPSTREAM.

BIORETENTION AREAS WITHIN THIS DEVELOPMENT ARE DESIGNED WITH A PERFORATED UNDERDRAIN SYSTEM (0.5% MIN SLOPE) AS A RESULT OF UNFAVORABLE SOIL CONDITIONS. NO CLAY OR GEOMEMBRANE LINER IS REQUIRED.

ALL GRASS FILTER STRIPS, GRASS CHANNELS AND SIDE SLOPES ASSOCIATED WITH THE BIORETENTION AREAS SHALL BE SODDED WITH MATURE SOD PRIOR TO TO PLACEMENT OF BIORETENTION AREA INTO OPERATION.

PLACEMENT OF LANDSCAPING WITHIN THE BIORETENTION AREAS SHALL BE DONE UNDER THE SUPERVISION OF AN ARBORIST TO PROVIDE A MORE NATURAL

TREES TO BE 2.5" CALIPER AT TIME OF PLANTING AND ARE TO BE SPECIFIED PER ANSI Z60. SHRUBS TO BE 18"-24" IN HEIGHT AT TIME OF PLANTING. PLANTING QUANTITIES BASED ON RECOMMENDED 1000 TREES/SHRUBS PER ACRE/ MULCH TO BE APPLIED TO A DEPTH OF 2"-3" FOLLOWING PLANTING OF TREES/

HERBACEOUS GROUND COVER TO COVER 70-80% OF THE BIORETENTION AREA AND THE PLUGS SHALL BE PLACED FOLLOWING MULCHING.

# **ENGINEERING**

ENVIRONMENTAL LAND PLANNING SURVEYING

690 Center Street Suite 300 lerndon, Virginia 20170 V: (703) 481-5900 F: (703) 481-5901 info@tritekinc.com



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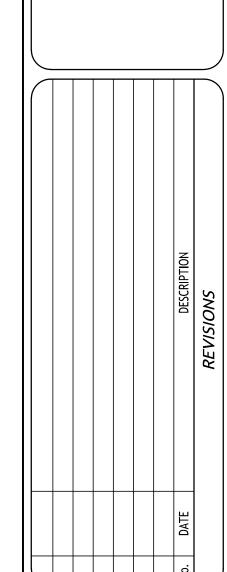
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703.361.1550 (office)

www.j2engineers.com

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**PLAN#** *LF2301* 

SCALE: N/A

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**DATE:** *MAY, 2023* 

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Lic. No. 045207

Suite 180

#### STORMWATER FILTRATION SYSTEM

#### PART 1.00 GENERAL 1.1 DESCRIPTION

#### A. Work included

The Contractor, and/or a manufacturer selected by the Contractor and approved by the Engineer, shall furnish all labor, materials, equipment and incidentals required and shall install all precast concrete stormwater filtration systems and appurtenances in accordance with the Drawings and these specifications.

#### 1.2 QUALITY CONTROL INSPECTION

- A. The quality of materials, the process of manufacture, and the finished sections shall be subject to inspection by the Engineer. Such inspection may be made at the place of manufacture, or on the work site after delivery, or at both places, and the sections shall be subject to rejection at any time if material conditions fail to meet any of the specification requirements, even though sample sections may have been accepted as satisfactory at the place of manufacture. Sections rejected after delivery to the site shall be marked for identification and shall be removed from the site at once. Any sections that have been damaged beyond repair during delivery will be rejected and, if already installed, shall be repaired to the Engineer's acceptance level, if permitted, or removed and replaced, entirely at the Contractor's expense.
- All sections shall be inspected for general appearance, dimensions, soundness, etc. The concrete surfaces shall be dense, close textured and free of blisters, cracks, excessive
- Imperfections may be repaired, subject to the acceptance of the Engineer, after demonstration by the manufacturer that strong and permanent repairs result. Repairs shall be carefully inspected before final acceptance. Cement mortar used for repairs shall have a minimum compressive strength of 4,000 psi (28 MPa) at the end of 7 days and 5,000 psi (34 MPa) at the end of 28 days when tested in 3 inch (76 mm) diameter by 6 inch (152 mm) long cylinders stored in the standard manner. Epoxy mortar may be utilized for concrete repairs.

#### 1.3 SUBMITTALS

#### A. Shop Drawings

The Contractor shall be provided with dimensional drawings and, when specified, utilize these drawings as the basis for preparation of shop drawings showing details for construction, reinforcing, joints and any appurtenances. Shop drawings shall be annotated to indicate all materials to be used and all applicable standards for materials required tests of materials and design assumptions for structural analysis. Upon request, structural design calculations and shop drawings certified by a Professional Engineer retained by the system manufacturer or Contractor and licensed in the state where the system is to be installed shall be provided. Shop drawings shall be prepared at a scale of not less than 3/16-inches per foot (1:75). Six (6) hard copies of said shop drawings shall be submitted to the Engineer for review and approval.

#### B. Affidavit on patent infringement

The Contractor shall submit to the Engineer, prior to installation of the stormwater filtration system, an affidavit regarding patent infringement rights stating that any suit or claim against the Owner due to alleged infringement rights shall be defended by the Contractor who will bear all the costs, expenses and attorney's fees incurred thereof.

#### Performance Documentation

The following documentation must be submitted by the Contractor and approved by the Engineer prior to the manufacture and delivery of any materials.

 Laboratory Data The stormwater filtration system supplier shall provide documentation of Total Suspended Solids (TSS) removal efficiency from laboratory testing conducted on the supplier's full-

- scale system. The documentation shall include: a. TSS removal efficiency versus operating rate data for silica based particles with an average diameter of 20 microns or less from full- scale laboratory
- b. TSS removal calculations for each system specified herein. The calculations must demonstrate that the system(s) is capable of treating the water quality flow rate at the required removal efficiency based upon documented removal

#### efficiency testing on a sediment sample with and d<sub>50</sub> of 20 microns or less. 2. Manufacturing Experience

The stormwater treatment supplier shall provide evidence of at least 5 years of successful product design and use of stormwater treatment systems

#### PART 2.00 PRODUCTS

#### 2.1 MATERIALS AND DESIGN

- A. Concrete for precast stormwater filtration systems shall conform to ASTM C 857 and C 858 and meet the following additional requirements:
- The concrete wall thickness shall not be less than 6 inches (152 mm) or as shown or the dimensional drawings. In all cases the wall thickness shall be no less than the ninimum thickness necessary to sustain HS20-44 (MS18) loading requirements as determined by a Licensed Professional Engineer.
- 2. Concrete sections shall have tongue and groove or ship-lap joints with a butyl mastic sealant conforming to ASTM C 990.
- 3. Cement shall be Type I, II, or III Portland cement conforming to ASTM C 150.
- 4. All sections shall be cured by an approved method. Sections shall not be shipped until the concrete has attained a compressive strength of 4,000 psi (28 MPa) or until 5
- 5. Pipe openings shall be sized to accept pipes of the specified size(s) and material(s) and shall be sealed by the Contractor with a hydraulic cement conforming to ASTM C
- Brick or masonry used to build the manhole frame to grade shall conform to ASTM C 32
- or ASTM C 139 and shall be installed in conformance with all local requirements.
- Casting for manhole frames and covers shall be in accordance with ASTM A48, CL.35B and AASHTO M105. The manhole frame and cover shall be equivalent to Campbell Foundry Pattern #1009A or #1012D, custom cast with the CONTECH Stormwater

#### Solutions Inc logo and the patent number(s)

- Cartridge and hardware: The VortFilter™ Housing shall be made of black polypropylene plastic or equivalent. The lid thickness shall not be less than  $\frac{1}{2}$ " in overall height and wall thickness not less than  $\frac{1}{2}$ 16" or as shown on the dimensional manufacturing drawings prepared by CONTECH Stormwater Solutions Inc. Internal metal components of VortFilter™ Cartridges shall be made of 304 Stainless Steel or equivalent and adhere to manufacturing drawing specifications. All hardware utilized in VortFilter Cartridges should ce Stainless Steel or have equivalent corrosion resistance to Stainless Steel. Cartridge shall be equipped with media retention plates with the ability to release media into the sedimentation basin.
- External gasket shall be made of Medium Density Closed-cell Neoprene or equivalent Said gasket shall be no less than 1/2" thick and 1-1/4" wide or as shown on dimensional
- manufacturing drawings prepared by CONTECH Stormwater Solutions Inc. 3. Filter Media: Filter Media shall be by CONTECH Stormwater Solutions Inc or approved alternate. Filter media shall comprise one or more of the following, as specified.
- a. Perlite Media: Perlite Media shall be expanded from naturally occurring siliceous rock free of any debris or foreign matter. The expanded perlite media shall have an apparent density ranging from 6.5 to 8.5 lb/ft<sup>3</sup> and particles sizes ranging from 0.01
- Zeolite Media: Zeolite media shall be made of naturally occurring clinoptilolite. which consists of hydrated sodium calcium aluminosilicate. The zeolite media shall have an apparent density ranging from 44 to 50 lb/ft<sup>3</sup>, particle sizes ranging from 0.06 to 0.25 inches, and a cation exchange capacity of 1.5 to 2.2 meq/g.
- c. Granular Activated Carbon: Granular Activated Carbon (GAC) shall be made from virgin bituminous coal that has been activated by high temperature steam. The media shall have an apparent density ranging from 24 to 26 lb/ft<sup>3</sup>. The particle size

#### shall range from 0.02 to 0.20 inches.

- 4. Standpipe: Standpipe shall be PVC SDR35 or equivalent, with a minimum diameter of 12
- 5. Vent Pipe: Vent pipe shall be PVC schedule 40 or equivalent. Height shall be established

#### 2.2 PERFORMANCE

Each stormwater filtration system shall be sized according to the rated flow capacity of each filter cartridge and the storage capacity of each filter such that the water quality goals are met with

Each stormwater filtration system shall include an inlet pipe that delivers untreated stormwater flows below a horizontal deck containing one or more media filter cartridges. A sediment storage sump shall be provided below the cartridges with a minimum depth of 12-inches (305 mm) and an area at least as large as the footprint of the cartridge array. Untreated stormwater shall enter the filter cartridges through the bottom and sides and be discharged above the deck through an outlet located on top of the cartridge. Each stormwater filtration system shall include a stand pipe to convey flow rates exceeding the combined treatment capacity of all filter media cartridges

Filtration shall occur within the filter cartridges such that the concentration of the treated stormwater is at least 80 percent lower than the concentration of the untreated influent based on documented laboratory testing of Sil-Co-Sil 106, a silica based silt with a d<sub>50</sub> of 20 microns.

The stormwater filtration system manufacturer shall furnish documentation that supports all product performance claims and features, storage capacities and maintenance requirements.

The manufacturer of the stormwater filtration system shall have been regularly engaged in the engineering design and production of systems for the physical treatment of stormwater runoff for

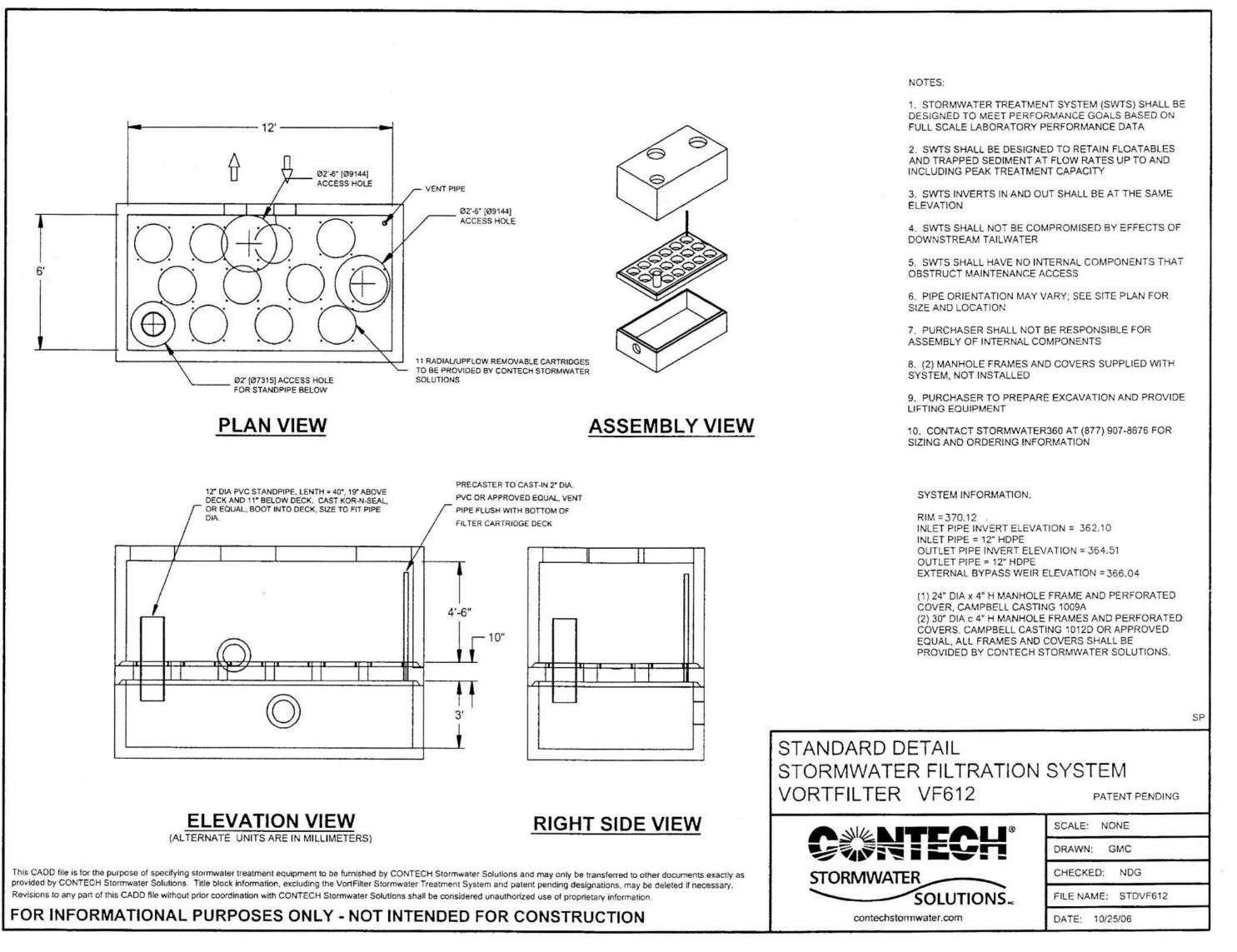
An approved manufacturer is CONTECH Stormwater Solutions Inc, 200 Enterprise Drive, Scarborough, Maine 04074, phone: 207-885-9830, fax: 207-885-9825, producing the VortFilter. Other manufacturers wishing to be approved must submit adequate proof of qualifications and experience in sufficient time for evaluation by the owner or its representative. The cost for any redesign or systems alterations to accommodate alternate manufacturers shall be borne by the Contractor at no additional cost to the owner. The structure shall meet all applicable requirements as set forth by local and state authorities.

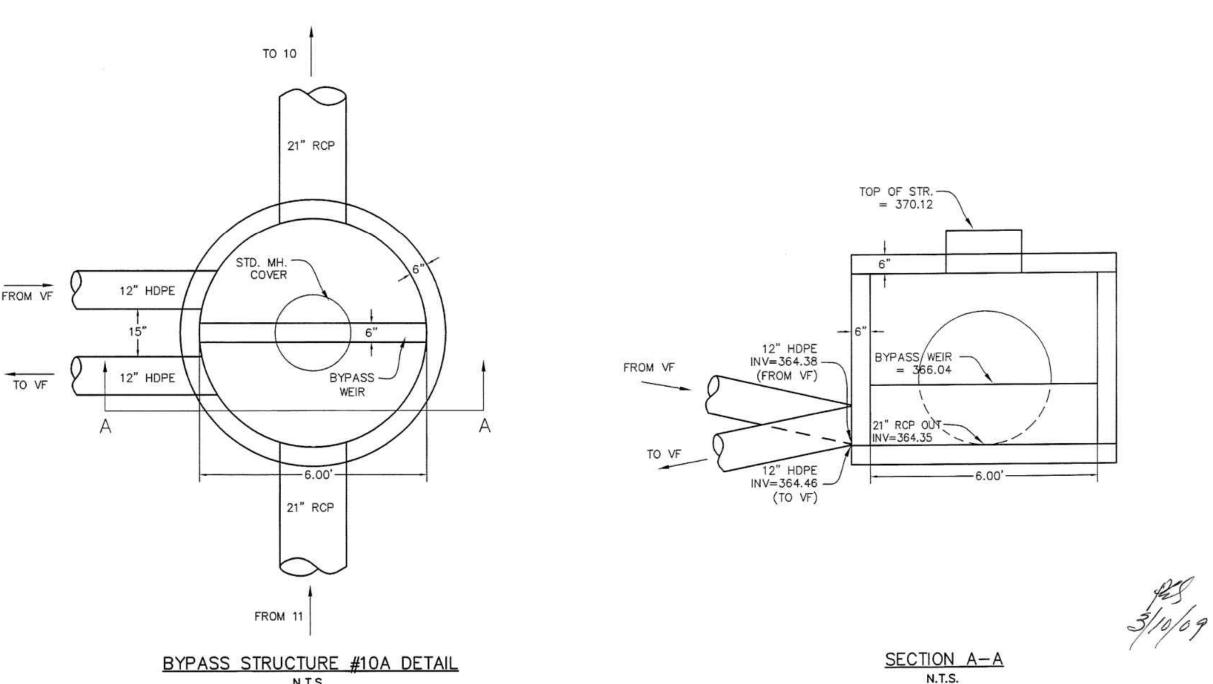
#### PART 3.00 EXECUTION

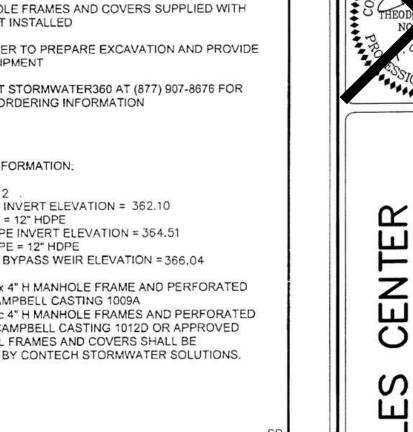
#### 3.1 INSTALLATION

- Each Stormwater Filtration System shall be constructed according to the sizes shown on he Drawings and as specified herein. Install at elevations and locations shown on the Drawings or as otherwise directed by the Engineer.
- Place the precast base unit on a granular subbase of minimum thickness of 6 inches (152 mm) after compaction or of greater thickness and compaction if specified elsewhere. The granular subbase shall be checked for level prior to setting and the precast base section of the system shall be checked for level at all four corners after it is set. If the slope from any corner to any other corner exceeds 0.5 percent, the base section shall be removed
- Prior to setting subsequent sections place bitumen sealant in conformance with ASTM C 990-91 along the construction joint in the section that is already in place.
- After setting the precast roof section of the stormwater filtration system, set precast concrete manhole riser sections, to the height required to bring the cast iron manhole covers to grade, so that the sections are vertical and in true alignment with a X-inch (6 m) maximum tolerance allowed. Backfill in a careful manner, bringing the fill up in sixinch (152 mm) lifts on all sides. If leaks appear, clean the inside joints and caulk with lead wool to the satisfaction of the Engineer. Precast sections shall be set in a manner that will result in a watertight joint. In all instances, installation of stormwater filtration systems shall conform to ASTM specification C 891 "Standard Practice for Installation of Inderground Precast Utility Structures"
- Holes made in the concrete sections for handling or other purposes shall be plugged with a nonshrink grout or by using grout in combination with concrete plugs.
- Where holes must be cut in the precast sections to accommodate pipes, do all cutting before setting the sections in place to prevent any subsequent jarring which may loosen the mortar joints. The Contractor shall make all pipe connections.
- G. A manufacturer's representative will perform the initial cartridge installation. The cartridges will not be installed until construction on the site is complete, to avoid inundating the filters with concentrated runoff from unconsolidated soils. Site contractor shall provide a clean, dry, secure and open vault structure prior to installation of

VortFilter® Specification









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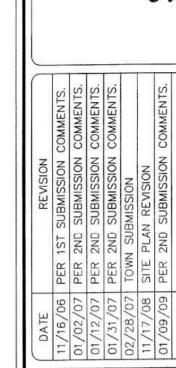
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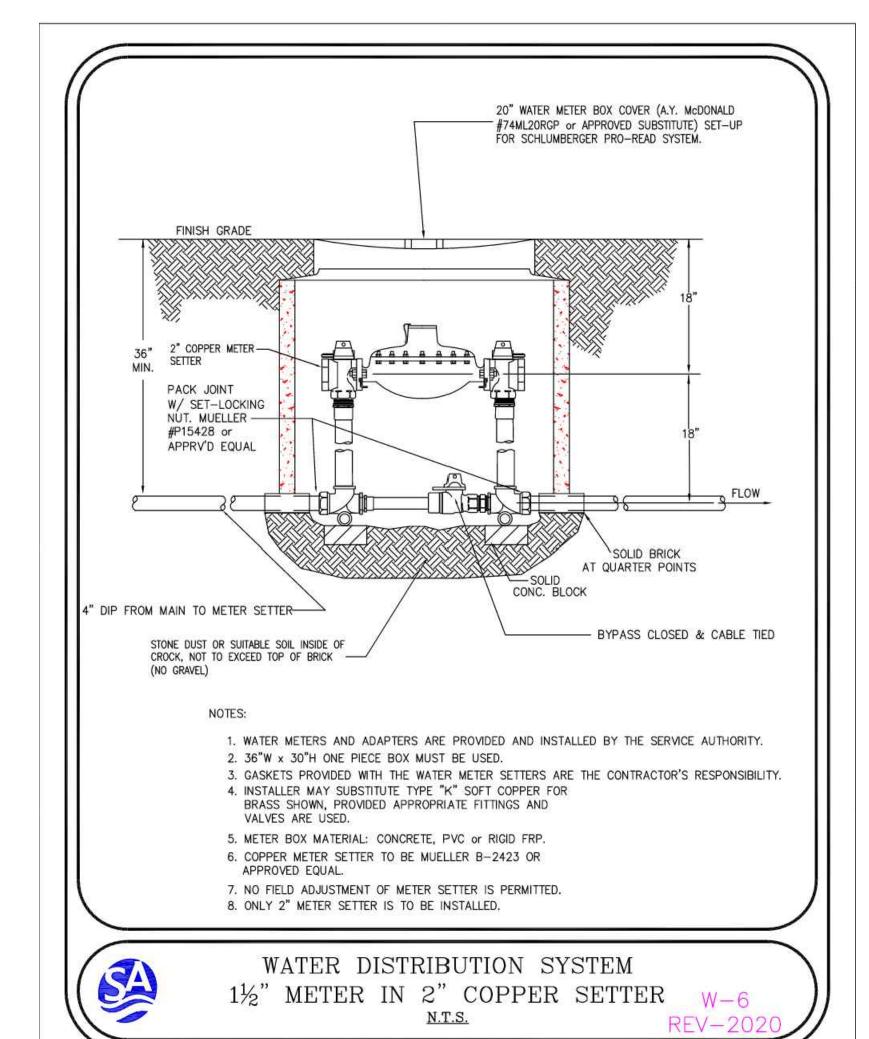
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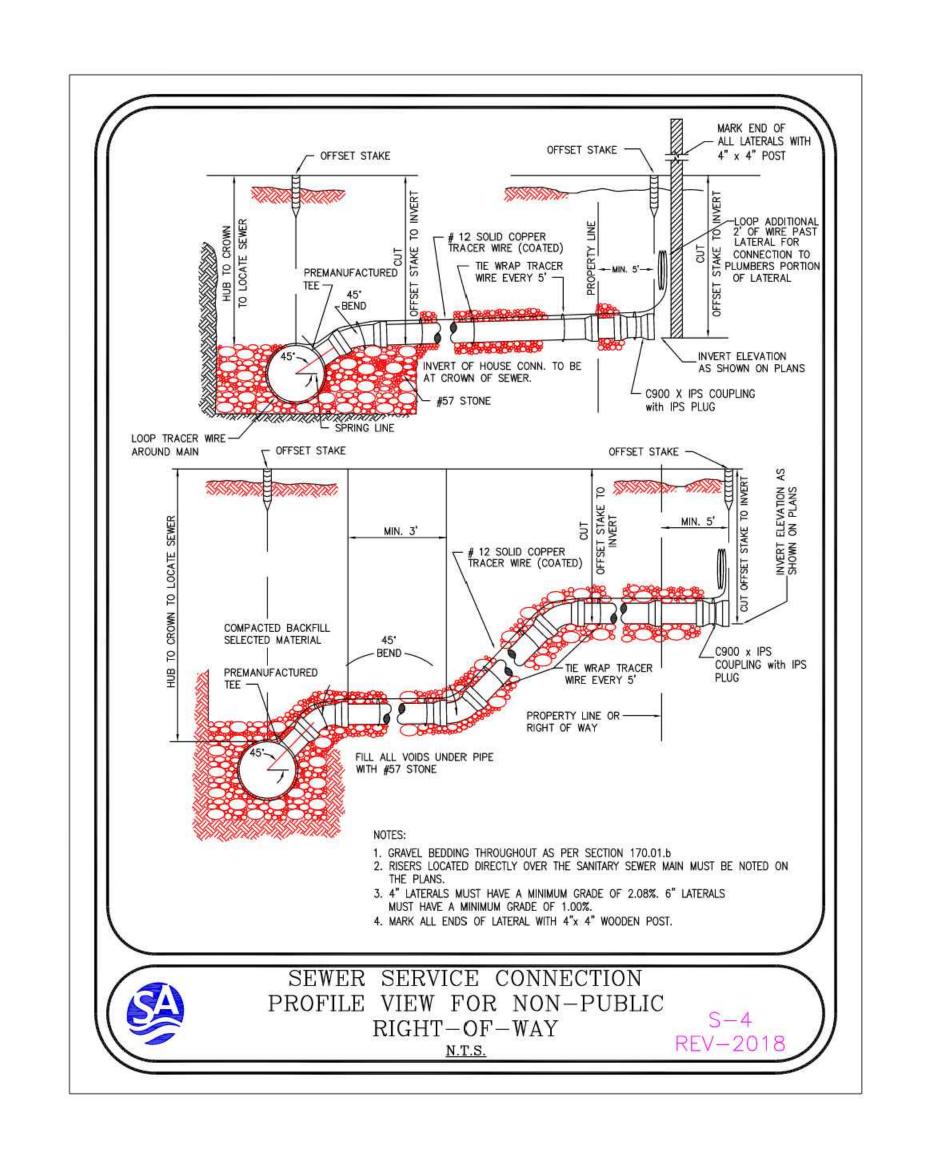
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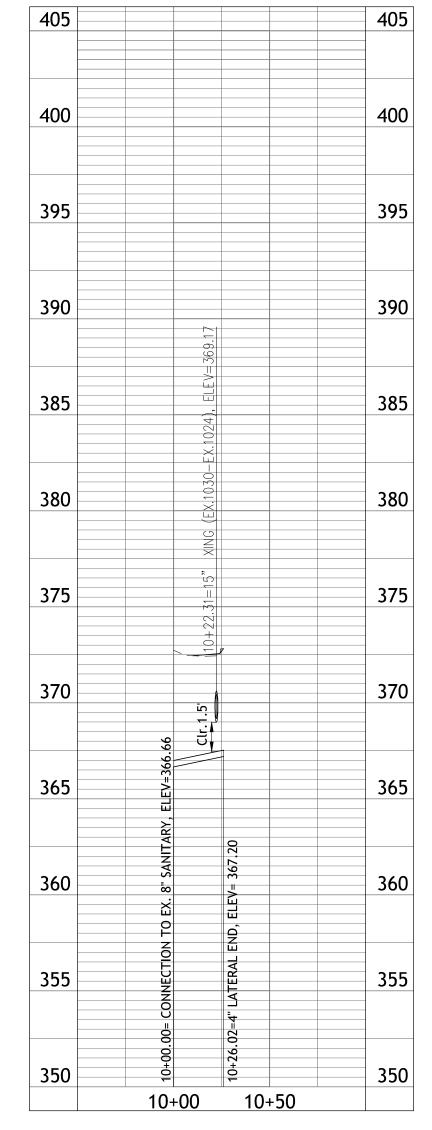
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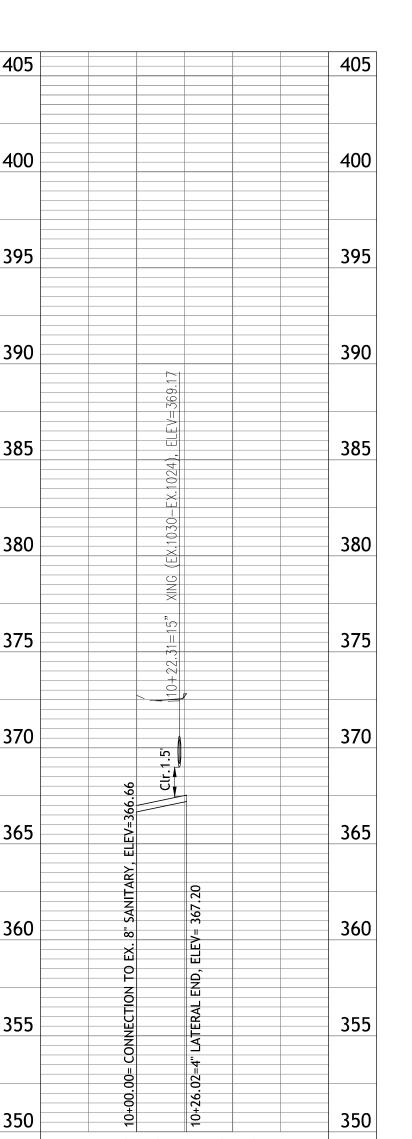
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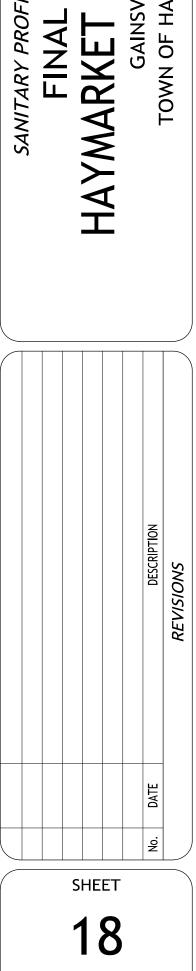
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WATER MAIN AS-BUILT  SANITARY SEWER / FORCE MAIN INSP. SANITARY SEWER/FORCE MAIN AS-BUILT  TV SANITARY SEWER MAIN INPECTION  Minimum water main inspection fee applies for water quantities  Minimum sanitary sewer / force main inspection fee applies for of the main inspection fee applies for on the main inspection fee applies fee app	0 0 0 0 1ess than 100 feet quantities less than 100 linear feet:	YES	NOTES: 1 A 2 Ti 3 Fe	Address  fixture unit list and meter sizing calculation The number of ERUs for a multi-family built for water only accounts, the minimum purch The Availability Fee is not the total fee due.	ons shall be provided in the plan so ding is 80% of the total number of hased number of ERU units must n New connections may be subject to	et for each proposed meter in ac f dwelling units associated with i natch the allocation with the met to the following fees: meter, mete	Dw elling Units  ordance with the current and is rounded upor size as defined in Table installation, sewer and/o	Demand (GPM)  AWWA M22 standar to to the next full unit VI: Availability Fee water inspection,	#N/A #N/A #N/A #N/A #N/A #N/A #N/A #N/A	lbook.  acility charges. See the Custom	Future	use)  additional information.		Availab  Availab  Availab
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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.

GENERAL NOTES

LIFETIME SMILES

70 psi

Fixture Value

45.5 gpm 1.09

<sup>4</sup>Non-Binding

<sup>4</sup>Non-Binding

Estimated Availability Fee

<sup>4</sup>Non-Binding Estimated

107,800.00

Estimated Availability Fee

rer Minimum Maximum Availability Fee

High Demand (e.g. Non-Residential)

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

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

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

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.

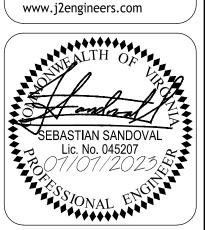
12 Existing unused laterals or sanitary service lines shall be cut and capped at the connection point to the sanitary sewer main or force main as directed by the Service Authority Field Inspector.

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.

J2 Engineers, Inc.

17739 Main Street Suite 180 Dumfries, Va. 22026

703.361.1550 (office)



PLAN# 152301 **DATE:** *MAY, 2023* CONTOUR INT. = N/A SCALE: N/A

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Engineer's Seal & Signature

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

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PARKING STANDING FIRE LANG



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ARROW AT BOTTOM POINTING TO DIRECTIONAL ARROW. ONE SIGN ARROW AT BOTTOM POINTING TO THE RIGHT. ONE SIGN MOUNTED MOUNTED PARALLEL TO THE LINE THE LEFT. ONE SIGN MOUNTED CURBING OR THE PAVEMENT EDGE IN BETWEEN SIGNS "A" & CURBING OR THE PAVEMENT EDGE AT END OF PAINTED AREA.

"C" IN DISTANCES GREATER THAN EDGE AT END OF PAINTED AREA.

## SIGN LEGEND:

-- SIGNS STREET SIGN STOP SIGN STREET SIGN

HANDICAP SIGN

\*SEE SHEET 02 FOR HANDICAP SIGN DETAILS

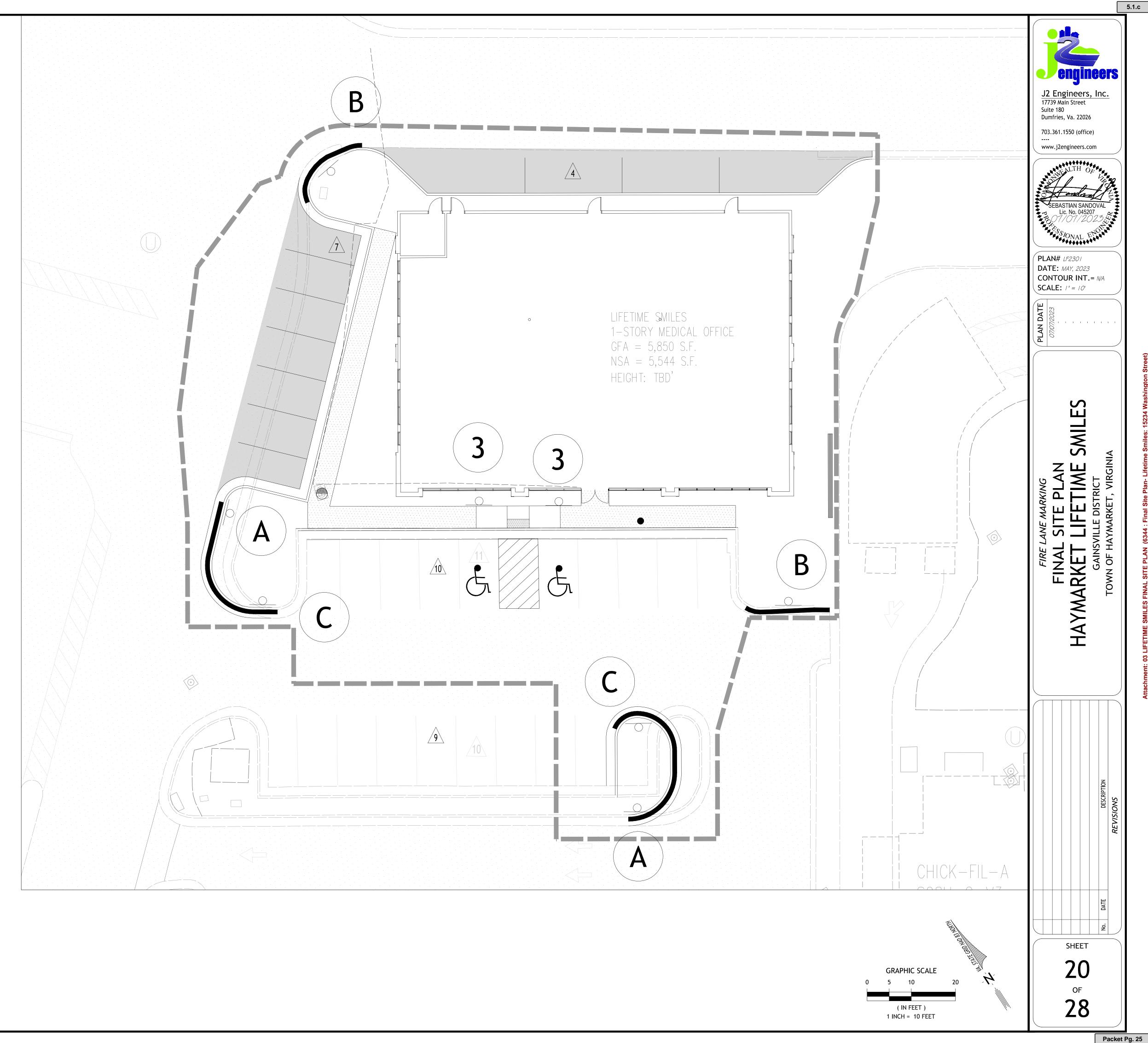
# REQUIREMENTS-FIRE LANE MARKINGS AND SIGNS

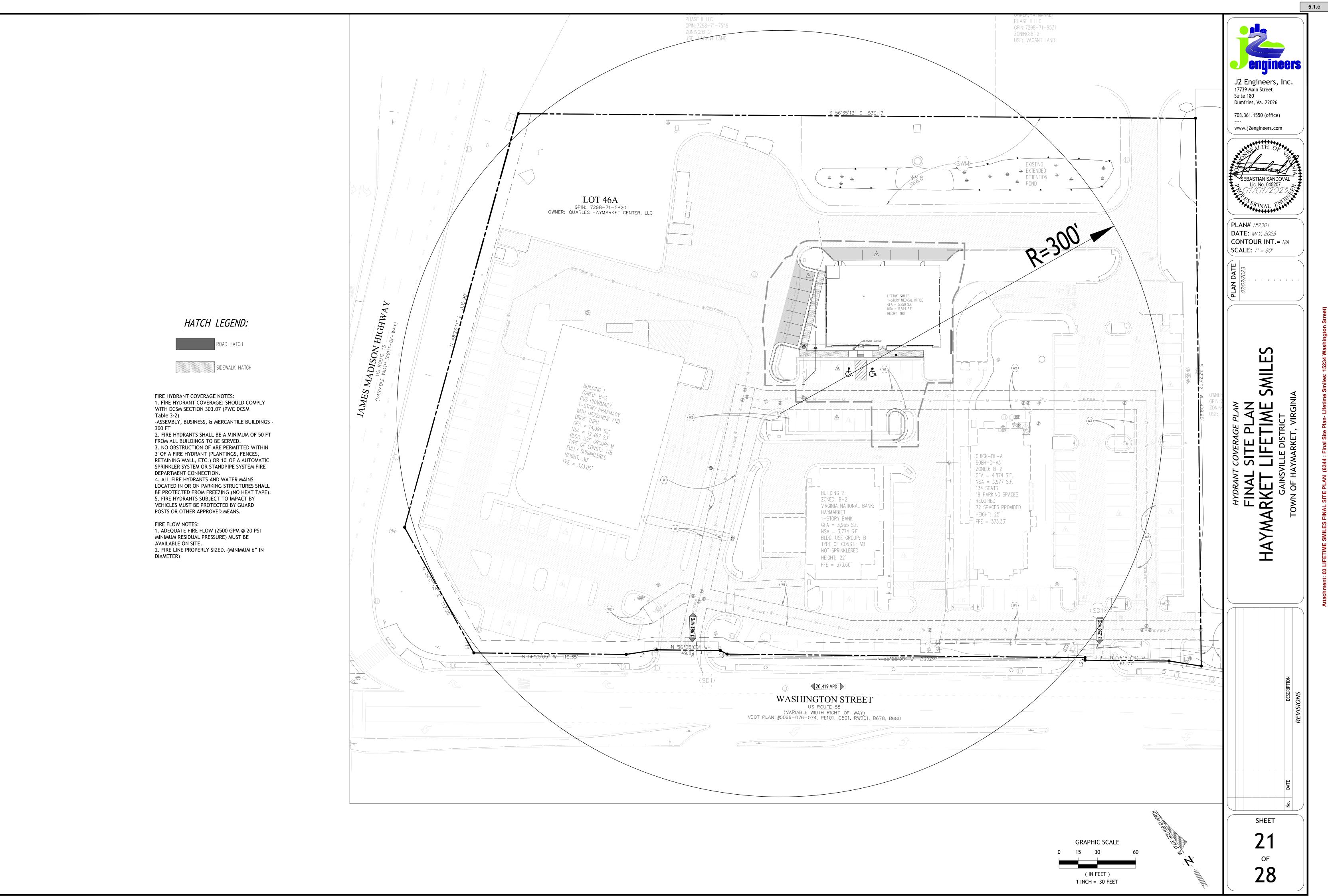
- I. APPROVED SIGN SPECIFICATIONS
- A. METAL CONSTRUCTION, "12x18". B. RED LETTERS ON REFLECTIVE WHITE BACKGROUND WITH 3/8" RED TRIM STRIP
- AROUND ENTIRE OUTER EDGE OF SIGN. C. LETTERING ON SIGN TO BE: "NO PARKING OR STANDING FIRE LANE". D. LETTERING SIZE TO BE AS FOLLOWS: "NO PARKING" AND "STANDING" - 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

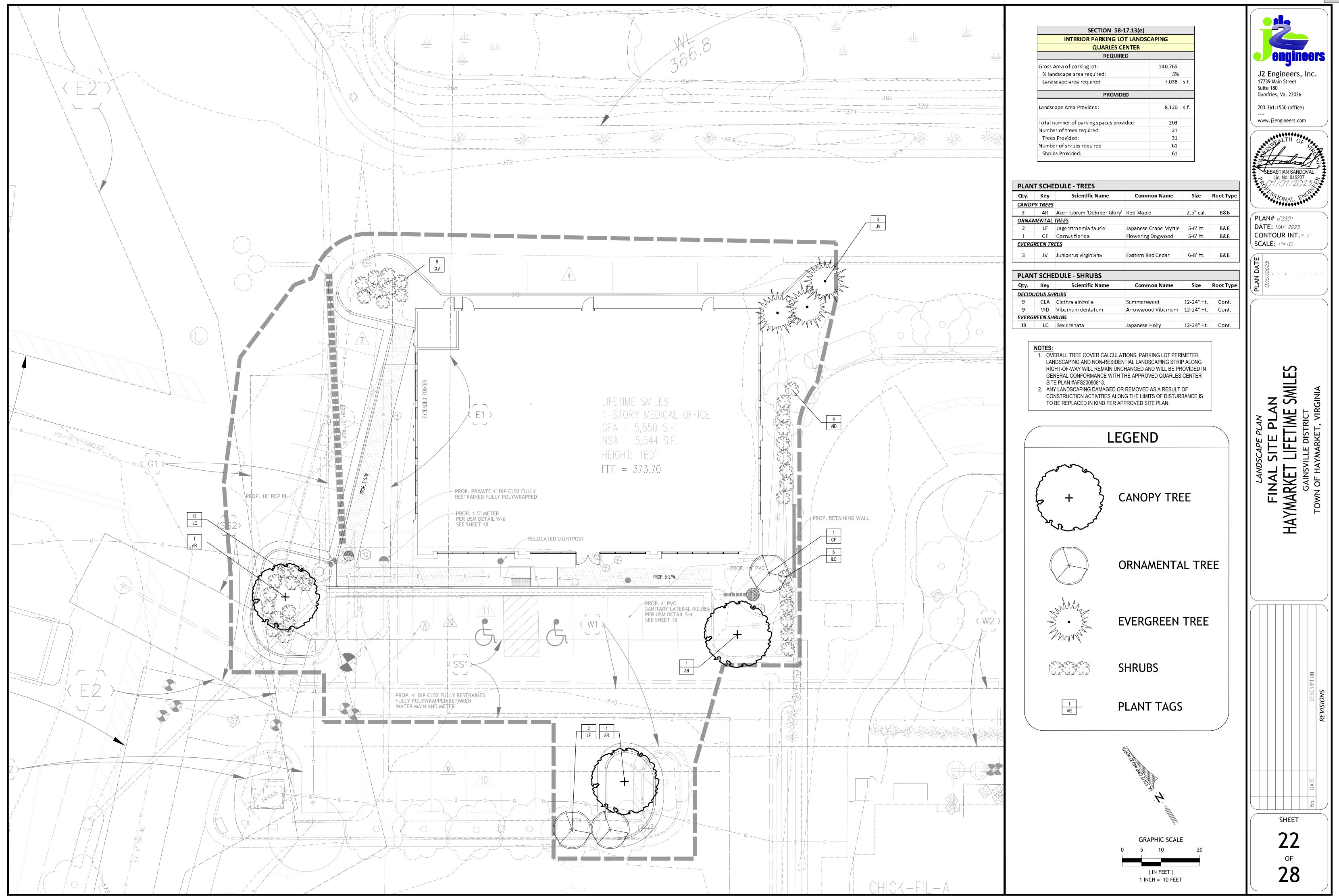
FIRE LANE SIGNS SHALL BE INSTALLED AT THE BEGINNING OF A DESIGNATED FIRE LANE AND AT THE END OF A DESIGNATED FIRE LANE WITH DIRECTIONAL ARROWS POINTING IN.

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.







17739 Main Street

Dumfries, Va. 22026

703.361.1550 (office)

www.j2engineers.com

**PLAN#** *LF2301* 

**SCALE:** / "= / O'

**DATE:** MAY, 2023

CONTOUR INT.=

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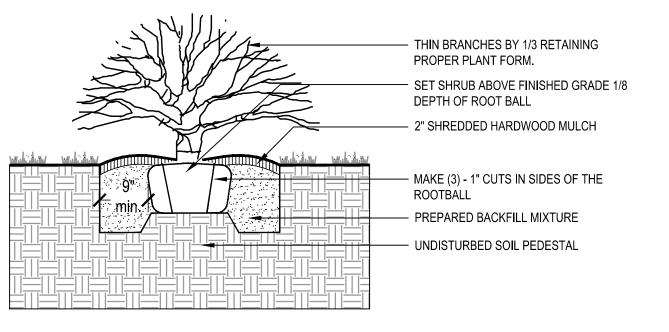
HAYMARKE

Suite 180

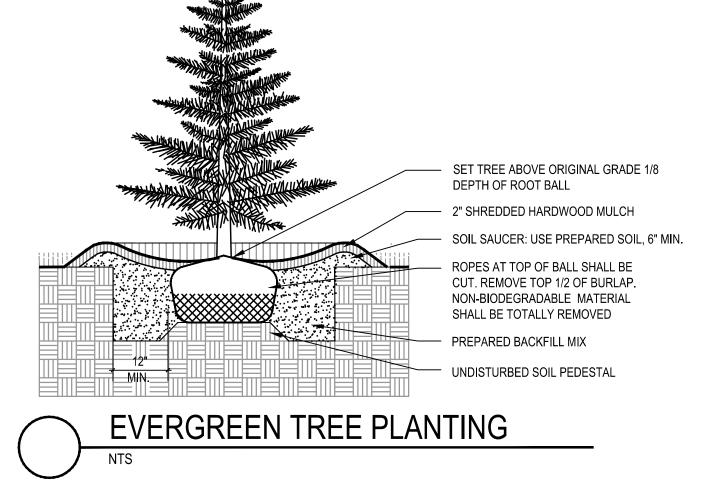
## PLANTING SPECIFICATIONS

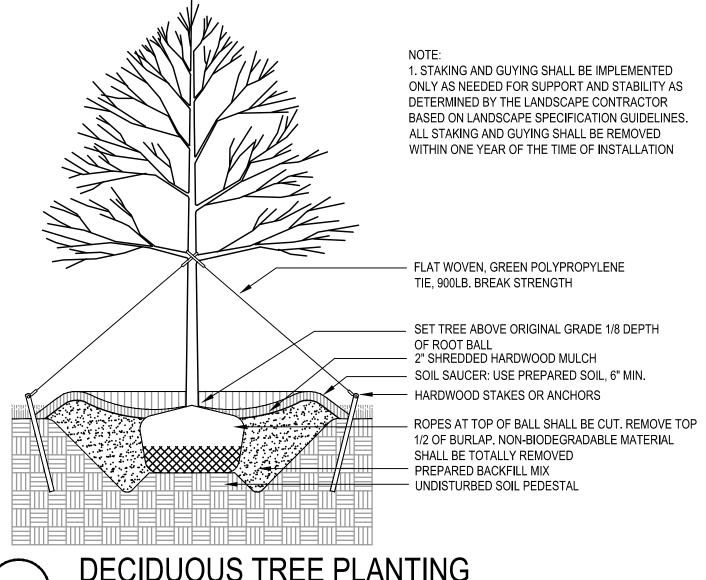
- QUALITY ASSURANCE
- Landscape planting and related work shall be performed by a firm with a minimum of five years experience specializing in this type and scale of work.
- Applicable Specifications and Standards:
- Town of Haymarket Zoning Ordinance;
- Virginia Stormwater Management Handbook;
- American 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.
- 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.
- SUBMITTALS: Submit the following to the Owner's Representative prior to beginning work:
- Copies of manufacturer's data for all materials required.
- Samples of required mulch material. 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.
- List of proposed sources for all plant material.
- 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
- 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.
- 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. <u>DRAINAGE</u>: 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
- B. Dig planting pits to full depth and dimensions indicated on drawings. 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. PLANTING DATES: Planting shall be done only within the following dates except as approved by Owner.
- Deciduous Trees and Shrubs: March 1 to May 31 and October 15 to December 15.
- 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 MATERIALS FOR PLANTING: Contractor must provide, load, haul, mix and spread all materials for plantings as required.
- 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.
- 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: Less than 10%
- 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.
- 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
- 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:
- Less than 10% 20-50%
- <35%
- 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 meg/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 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.
- Mulch: Shall be shredded hardwood bark for trees and shrubs. Fine bark mulch is to be used for perennial beds. Sand: Shall be quartz based sharp concrete sand, ASTM C-33 Fine Aggregate, with a Fines Modulus Index between
- 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.
- 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,
- 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.
- <u>PLANT MATERIALS</u>: 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. 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. 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. 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.
- 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.
- 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.
- SOIL MIXING PROCEDURES: Topsoil used in sand/soil mixes shall be screened or shredded prior to mixing in sands. Maximum clod inclusion for soil
- Clod size (largest dimension) % of the soil mix volume
  - 1 to 3 inches 20%
  - 3 to 6 inches Less than 2% >6 inches
- Source material and soil mix stockpiles shall be protected from rain by covering with filter cloth. 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. 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
- 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
- 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
- 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
- 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 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
- 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
- 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.
- 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. 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
- 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.

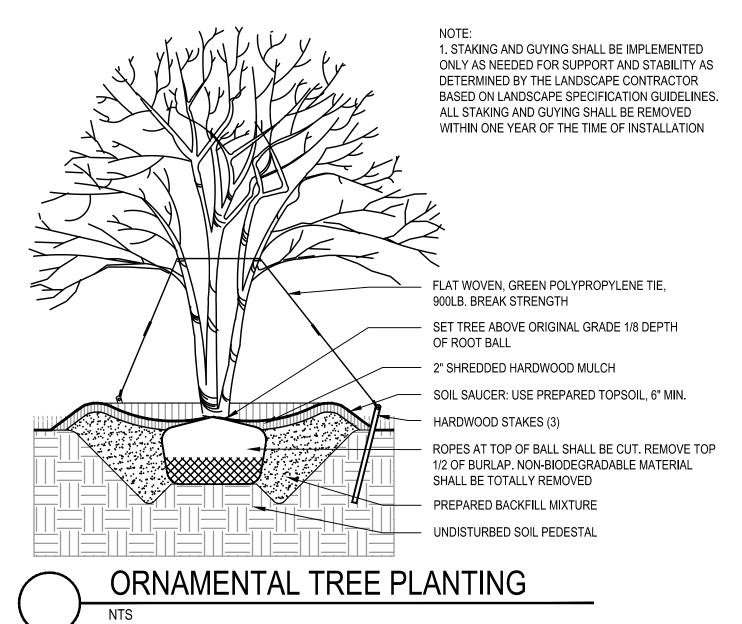




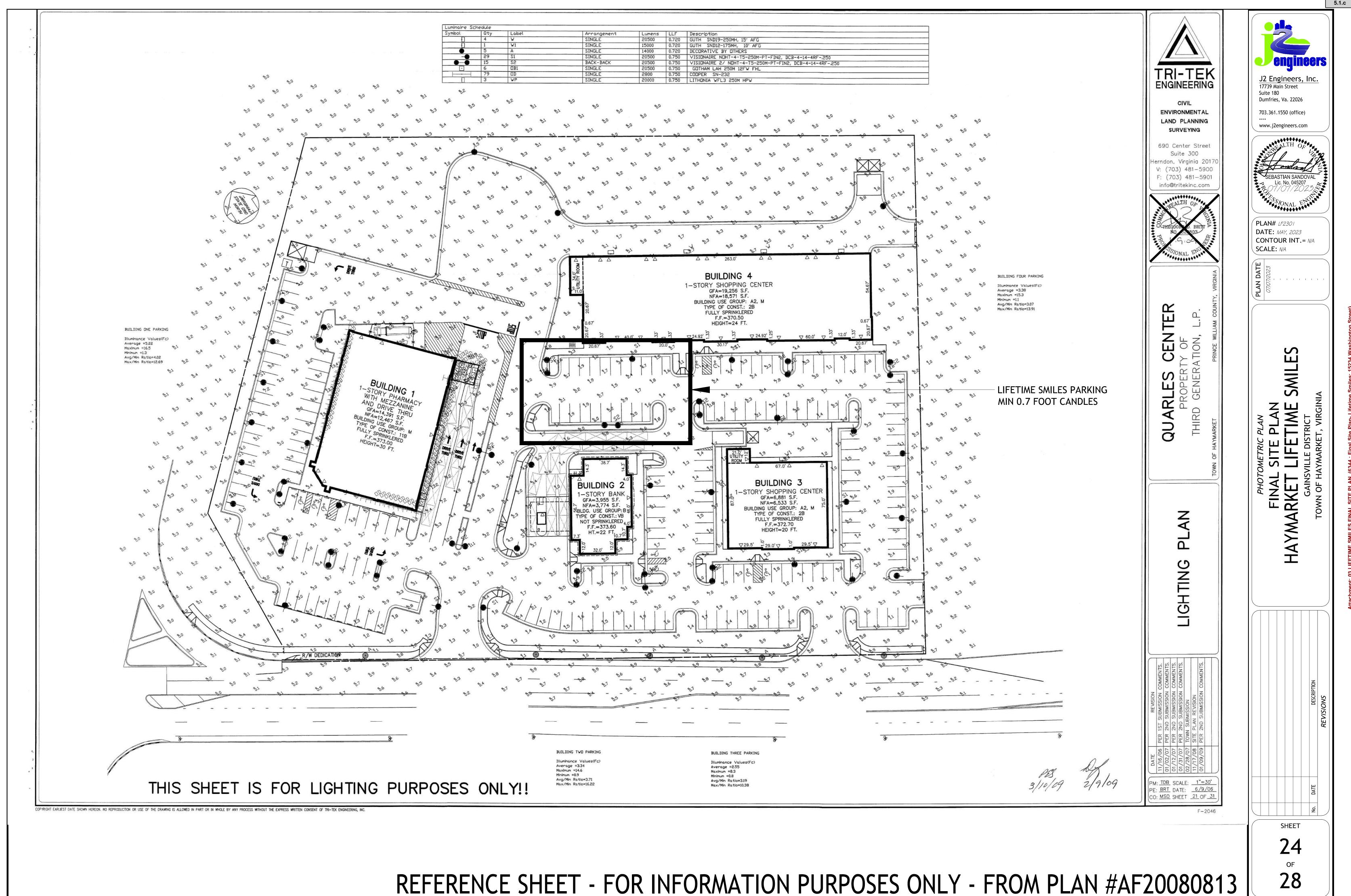




DECIDUOUS TREE PLANTING



SHEET



#### PRINCE WILLIAM COUNTY SERVICE AUTHORITY Department of Engineering Development UNIT PRICE LIST

Effective: March 1, 2022 Project Name: LIFETIME SMILE AT CROSSROADS VILLAGE CENTER PWC File #: Date Prepared: 7/7/2023 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

| Price | Cost | | @ Lump Sum \$15,000 min. | \$ 15,000.00 2. STORM DRAINAGE

@ \$6,900 EA \$ @ \$6,900 EA \$ 6,900.00 @ \$6,900 EA @ \$4,900 EA 4,900.00 @ \$4,500 EA @ \$7,175 EA @ \$6,800 EA \$

11,800.00 Subtotal for Structures: \$ 6,150.00 @ \$207 L @ \$207 LF @ \$207 LF @ \$207 LF @ \$365 LF @ \$365 LF @ \$365 LF @ \$365 LF

Subtotal for this page: \$ 33,524.00

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	S
	72"0	@ \$9,854 EA	\$
		Subtotal for End Walls	: s
D. End Sections	(ES-1)	Price	Cost
Quantity	12"0	@ \$1,048 EA	e.
	15"0	@ \$1,048 EA	
	18"0	@ \$1,048 EA	1.
	21"0	@ \$1,048 EA	d .
	24"0	@ \$1,046 EA	1.
	27"0	@ \$1,048 EA	di di
	30"0	@ \$1,200 EA	1.
	33"0	@ \$1,500 EA	Car.
	36"0		- Vicini
		@ \$1,900 EA	S
	42"0 - 60"	@ \$3,050 EA Subtotal for End Section ES-1	S

@ \$40 LF @ \$60 LF @ \$60 LF @ \$80 LF @ \$80 LF @ \$140 LF @ \$140 LF @ \$140 LF @ \$250 LF @ \$250 LF \$ Subtotal for CM Pipe: \$

Subtotal for this page: \$

F. End Section (ES-2)

Quantity	Item	Price	Cost	t.
	15"0	@ \$870 EA	\$	
	18"0	@ \$870 EA	\$	
	24"0	@ \$870 EA	S	
	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	): S	
G. AD N-12 (H	AND THE RESERVE OF THE PERSON	Price	Cost	
G. AD N-12 (H Quantity	Item	Price	Cost	ŧ,
The second secon	Item	@ \$45 LF	s	E)
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The second secon	12"0 15"0 18"0 24"0 30"0	@ \$45 LF @ \$106 LF	\$ \$ \$ \$ \$	
The second secon	12"0 15"0 18"0 24"0 30"0 36"0	@ \$45 LF @ \$106 LF @ \$170 LF	\$ \$ \$ \$ \$	
The second secon	12"0 15"0 18"0 24"0 30"0 36"0 42"0	@ \$45 LF @ \$106 LF @ \$170 LF @ \$170 LF	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	

Subtotal for this page: \$ H. Stormwater Management/BMP Facilities Cost Estimates Per Impervious Acre Treated (See Note 3)

Quantity | Item | Price

By itemized cost

Non-Proprietary BMP(Engineer Estimate for all SWM)

Dry Retention Pond

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 Cos	1 000
Aqua-Swirl® Stormwater Treatment System	By itemized cost
BaySeparator <sup>TM</sup>	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 M	
Subtotal for Stormwater Management/BMP Facilities Cost Estimate	e Par Important Agra Treated: \$

		Subtotal for this page:	\$
Miscellaneous	s 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	s

Grouted Rip-Rap Erosion Control Stone (EC-1)	@ \$9.00 @ \$130	SF	\$	
#57 - Coarse Aggregate	@ \$30	TON	\$	12
4' High Chain Link Fence (#9 gauge or better, including braces, end posts and gate)	@ \$45	LF	s	(12)
6' High Chain Link Fence (#9 gauge or better, including braces, end posts and gate)	@ \$45	LF	\$	20 <u>#</u> 8
SWM Sign (WATER RISES RAPIDLY) (Minimum 3 signs per facility)	@ \$390	EA	s	
Access Road	By Itemized Cos	t		

Quantity	Item	Price	Cost
	Box Culvert	@ 840 CY of conc.	S
	Energy Dissipater	@ \$2,250 EA	S
	Wing Walls	@ 990 CY of conc.	\$
Ditches:	STANCES CONTRACTOR		
	Roadside Standard Ditches (Seed, Fertilize & Mulch)	@ \$8.00 LF	S
	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	S
	Paved Flume	@ \$10 SF	\$
	Flush the Drainage System	\$290/Hr. (Min 8 @ Hrs.)	s
	Subtotal f	or Miscellaneous Drainage Items:	s

-1 Post Alexander	47
	al for this page:

# 3. CONSTRUCTION WITHIN THE PUBLIC RIGHT-OF-WAY AND/OR PRIVATE INGRESS/EGRESS

EASEMENT	rs .			
A. Site Work				
Quantity	Item	Price		Cost
	Clear & Grub	@ \$12,800	\$	(4)
	Excavation	@ \$35 C	S	( <del>(*</del> )
	Embankment** (cut and fill)	@ \$25 C	<b>S</b>	100
	Embankment (haul off)	@ \$36 C	<b>S</b>	1000

Quantity	Item	Price			Cost
ubgrade, S	ubbase, and Base Course Items				
		Subtotal for S	Site Work	: S	17.51
	Netting, Blankets, etc.)	@ \$20	SY	\$	
	Steep Slopes (Grading and Stabilization with Jute Mesh,				
	Slope Stab Sod (Between 2:1 to 3:1) \$200 Min	@ \$8.00	SY	\$	1920
	Slope Stab Jute Mesh, matting Blankets, etc. (Between 2:1 to 3:1) \$200 Min	@ \$6.00	SY	s	-
	Slope Stabilization - Hydroseeding (3:1 or flatter) \$1,000 Min.	@ \$1.25	SY	S	151
	Rock Excavation	@ \$75	CY	S	· 2
	Final Grading	@ \$5,000	AC	\$	9,50

Quantity	Itelli	THE		USC
	Subgrade preparation (Subbase and base course)	@ \$3.50 SY	\$	25 A
	Aggregate (21A/21B)	@ \$3 SY per Inch Depth	\$	S-2
	Bituminous Concrete	@ \$6.25 SY per Inch Depth	\$	
	Reinforced Concrete Pavement	@ \$18 SY per Inch Depth	S	(#.
	Gravel Shoulders (4" Depth)	@ \$12 SY (4" Depth)	\$	2
	Soil Cement Stabilization (4%)	@ \$24 SY (6" Depth)	S	1.5
	Lime Stabilization (10%)	@ \$16 SY (6" Depth)	\$	
	Cement Treated Aggregate	@ \$11 per Inch Depth	\$	<u> </u>
Underdrains:			91	
	UD-1	@ \$21 LF	\$	÷
	UD-2	@ \$21 LF	\$	
	UD-3	@ \$21 LF	\$	-
	UD-4	@ \$21 LF	\$	65
	Subtotal for Subgrade, Subbase, Base C	Course Items & Underdrains (Public):	s	18#1

		Subtotal for this page:	\$	
and the second second second	d Pipe Stems			
Quality	Item	Price	Cost	
	DE-1	@ \$1,800 EA	\$	
	DE-2	@ \$1,950 EA	\$	- 6
	DE-3	@ \$2,000 EA	\$	
	DE-4	@ \$2,300 EA	\$	
	PP-1 (1 Lot)	@ \$2,000 EA	\$	- 5
	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	\$	

	Subtotal for Entrance and Pipe Stem	s: S	(5
Pipestem Driveway - 18' (2-5 Lots)	@ \$81 LF	\$	
Pipestem Driveway - 10' (1 Lot)	@ \$61 LF	\$	0.
Valley Gutter	@ \$61 SY	\$	2
CG-11: Concrete Entrance	@ \$3,450 EA	\$	- 12
CG-10A or equal: 40' Width	@ \$6,095 EA	S	
CG-10A or equal: 30' Width	@ \$4,738 EA	\$	0,
CG-9D or equal: 40' Width	@ \$7,475 EA	\$	9.6

		Subtota	l for this page:	2	-
D. Miscellaneo	us Construction Items				
Quantity	Item	Pr	ice		Cost
162	Sidewalk (5' Width)	@ \$40	LF	\$	6,480.0
	Header Curb (CG-2/CG-3)	@ \$25	LF	\$	
419	Curb & Gutter	@ \$28	LF	S	11,732.00
	CG-12 (Truncated Dome)	@ \$2,000	EA	\$	(*)
	Bicycle Trail/Walkway	@ \$11.00	SF	\$	(i+)
	Raised Concrete Median (MS-1A)	@ \$81	SY	\$	721
	Trail (Wood Chip)	@ \$19	SY	S	251
	Trail (Stone Dust)	@ \$19	SY	\$	-
Retaining Walls:		*			
	Timber	@ \$34	SF	S	(*)
	Crib	@ \$44	SF	\$	1020
	MSE/Geogrid	@ \$50	SF	\$	10.00

	Gravity Wall	@ \$72 SY	S	0.00
	Excavation for tiebacks in walls in cut areas	@ \$29 CY	\$	2
	Anti-Graffiti Paint (Concrete Retaining Walls	@ \$18 SF		
	only-treatment/sealant)	(Min. \$2,500)	S	6#F
	Guardrail	@ \$45 LF	\$	
	GR-7 NCHRP 350	@ \$3,640 EA	S	0#1
	GR-9	@ \$3,640 EA	\$	(4)
	Address Sign (Entrance to Pipestems)	@ \$460 EA	\$	(m)
	Street Name Sign	@ \$525	\$	72-
7	Traffic Control Sign	@ \$450	\$	3,150.00
	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	S	1.00
	Roadside Delineators (ED-1)	@ \$75 EA	\$	
	Hand Rail (HR-1)	@ \$120 LF	S	
	Pavement Marking (Paint)	@ \$2.50 SF	S	: (A)
	Pavement Marking (Thermoplastic)	@ \$7.00 SF	\$	123
	Traffic Barricade (TB-1)	@ \$1,725 EA	\$	3.52
	Street Lighting	@ \$5,500 EA	S	-
		(Min. \$46,000) (Lump Sum or		
	Utilities Relocation	provide estimate from utility co.)	S	0.80
	VDOT Street Acceptance Package	@ \$7,000	\$	12
	P.E. Certified "As-Built" Plans	Lump Sum (Min. \$12,000)	\$	(19)
	Subto	tal for Miscellaneous Construction Items	: \$	22,802.00

Quantity	Item	Price	Cost
	Fire Hydrant Assembly	@ \$9,200 EA	\$
	Central Sewer Lift/Pump Station Construction	@ (Lump Sum)	
Water Main (Exclusiv		Price	Cost
Quantity	Item	122222	1,50900000
	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	S
	18'0 DIP	@ \$185 LF	\$
	4"0 or 6"0 RW Valve (with accessories)	@ \$1,200 EA	S
	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,		

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

703.361.1550 (office) www.j2engineers.com

PLAN# *LF2301* **DATE:** *MAY, 2023* CONTOUR INT. = N/A SCALE: N/A

SMILE NIT PRICE LIST

L SITE PLAN

T LIFETIME S/

4SVILLE DISTRICT
HAYMARKET, VIRGINIA

	Subtotal for Wate	r Main:	S	-
Dead End Anchor System	@ \$10,000	EA	\$	35
Air Release Assembly	@ \$6,800	EA	\$	-
Water Main Blow-off Assembly	@ \$3,000	EA	\$	
Meter Vault & Appurtenances (3 meters & larger)	@ \$40,000	EA	\$	2
backflow preventer, yoke, frame & cover, and service line)	@ \$2,500	EA	\$	

		Subtotal for this page:	\$ 5 <b>9</b> ()
nitary Sewer I	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	\$ 12 <u>0</u>
	8"0 DIP	@ \$95 LF	\$ 15 <del>8</del> 5
	10"0 PVC	@ \$100 LF	\$ 76E
	10"0 DIP	@ \$110 LF	\$ 
	12"0 PVC	@ \$170 LF	\$ 000
	12"0 DIP	@ \$185 LF	\$ 320
	15"0 PVC	@ \$225 LF	\$ 1678
	4' Dia. Sanitary Sewer Manhole	@ \$11,000 EA	\$ 243
	5' Dia. Sanitary Sewer Manhole	@ \$11,000 EA	\$ (13)
	Street Manhole Frame & Cover Assembly	<i>"</i>	
	(Including rain bowl & chimney seal)	@ \$1,200 EA	\$ 721
	Easement Manhole Frame & Cover Assembly		
	(Including chimney seal)	@ \$1,200 EA	\$ (S#3
	Abandonment of Manhole	@ \$290 VF	\$ (5)
26	4"0 PVC Lateral (including clean-out stack)	@ \$50 LF	\$ 1,300.00
	4"0 DIP Lateral (including clean-out stack)	@ \$60 LF	\$ 273
	6"0 PVC Lateral (including clean-out stack)	@ \$70 LF	\$ 0.60

	6"0 DIB Later (including along out steels)	@ \$75 LF	Т	S	-3-
	6"0 DIP Later (including clean-out stack)  LPFM Flushing Station	@ \$75 LF	-	\$	
	Sewerage Air Release/Vacuum Breaker Assembly	@ \$4,050 EA		\$	
	Steel Casing	@ \$600 LF		\$	343
	Grease Trap (500 gal. minimum)	@ \$5,200 EA		\$	
	Crease Trap (500 gai. miniman)	@		\$	
		(a)		\$	
		(a)		\$	
	Si	ibtotal for Sanitary Sewer Pi	pe:	\$	1,300.00
Note: For sizes	larger than 15"0, add \$4.00 per inch increase in diameter.	44.4	Oheranasado		
		C-14-4-1 E41-1	201	ø	1 200 00
	TOTA	Subtotal for this pa L CONSTRUCTION COS		3	1,300.00
	IOIA	(Pages 1 through		e.	57,626.00
		(rages i through	10)	.P	37,020.00
5. MISCELLA	NEAOUS COSTS				
	0 - 100/ 04 1-1	000		e.	P 828 28
	ve Cost - 10% of the total construction cost, not to exceed \$50		-	\$	5,762.60
s. Inflation Co	st - Compounded annually at 3.0% per year of the total Constru		- 1	\$	1,728.78
	TOTAL PEI	RFORMANCE BOND AMOU	NT:	Ş	65,117.38
6. FLOODPL	AIN ITEMS ESCROW				
Quantity	Item	Price			Cost
	LOMR	\$18,0	00	s	
	Elevation Certificate	\$1,0	_	-	, <del>-</del> ,
	LOMC (SF Detached)	\$1,8		100	
Stream Restorat					
	Stream Restoration	By itemized cost			
		2202	_		
	TOTAL	FLOODPLAIN ITEMS ESCRO	W:	ş	
	PING ESCROW				
A. Deciduous	Trees	D. L.	. 1	i.	Cont
	Trees Item	Price		(m)	Cost
A. Deciduous	Trees	@ \$300 EA		\$	
A. Deciduous Quantity	Trees	@ \$300 EA @ \$450 EA		S	2.5
A. Deciduous	Trees	@ \$300 EA @ \$450 EA @ \$600 EA		\$ \$	1,800.00
A. Deciduous Quantity	Trees	@ \$300 EA @ \$450 EA @ \$600 EA @ \$959 EA	-	\$ \$ \$	1,800.00
A. Deciduous Quantity	Trees	@ \$300 EA @ \$450 EA @ \$600 EA	-	\$ \$ \$	1,800.00
A. Deciduous Quantity	Trees    5'-6'	@ \$300 EA @ \$450 EA @ \$600 EA @ \$959 EA	-	\$ \$ \$	- 1,800.00
A. Deciduous Quantity	Trees    5'-6'	@ \$300 EA @ \$450 EA @ \$600 EA @ \$959 EA	-	\$ \$ \$	- 1,800.00
A. Deciduous Quantity  3  B. Evergreen	Trees    Item	@ \$300 EA @ \$450 EA @ \$600 EA @ \$959 EA Subtotal for Deciduous Tree	es:	\$ \$ \$	1,800.00 1,800.00
A. Deciduous Quantity  3  B. Evergreen	Trees	@ \$300 EA @ \$450 EA @ \$600 EA @ \$959 EA Subtotal for Deciduous Tree	es:	\$ \$ \$ \$	1,800.00 1,800.00 Cost
A. Deciduous  Quantity  3  B. Evergreen  Quantity	Trees	@ \$300 EA @ \$450 EA @ \$600 EA @ \$959 EA  Subtotal for Deciduous Tree	es:	\$ \$ \$ \$	1,800.00 1,800.00 Cost
A. Deciduous  Quantity  3  B. Evergreen  Quantity	Trees Item    5'-6'     1" - 1.5" or 1.5" - 2"	@ \$300 EA @ \$450 EA @ \$600 EA @ \$959 EA  Subtotal for Deciduous Tree  Price @ \$250 EA @ \$270 EA	es:	\$ \$ \$ \$	1,800.00 1,800.00 Cost
A. Deciduous  Quantity  3  B. Evergreen  Quantity	Trees    Item     5'-6'     1" - 1.5" or 1.5"-2"     2" - 2.5" or 2.5 - 3"     3" - 3.5" or 3.5" - 4"     Item     5' - 6'     6' - 7'     7' - 8'	@ \$300 EA @ \$450 EA @ \$600 EA @ \$959 EA  Subtotal for Deciduous Tree  Price  @ \$250 EA @ \$270 EA @ \$450 EA	ees:	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	1,800.00 1,800.00 Cost
A. Deciduous Quantity  3  B. Evergreen Quantity  3	Trees    Item     5'-6'     1" - 1.5" or 1.5"-2"     2" - 2.5" or 2.5 - 3"     3" - 3.5" or 3.5" - 4"     Item     5' - 6'     6' - 7'     7' - 8'	@ \$300 EA @ \$450 EA @ \$600 EA @ \$959 EA  Subtotal for Deciduous Tree  @ \$250 EA @ \$270 EA @ \$450 EA @ \$450 EA	ees:	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	1,800.00 1,800.00 Cost
A. Deciduous Quantity  3  B. Evergreen Quantity  3  C. Shrubs	Trees    Item	@ \$300 EA @ \$450 EA @ \$600 EA @ \$959 EA Subtotal for Deciduous Tro  Price @ \$250 EA @ \$270 EA @ \$450 EA @ \$450 EA Subtotal for Evergreen Tro  @ \$830 EA	ees:	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	1,800.00 1,800.00 Cost
A. Deciduous Quantity  3  B. Evergreen Quantity  3  C. Shrubs Quantity	Trees    Item     5'-6'     1" - 1.5" or 1.5" - 2"     2" - 2.5" or 2.5 - 3"     3" - 3.5" or 3.5" - 4"     Item     5' - 6'     6' - 7'     7' - 8'     8' - 10'     Item	@ \$300 EA @ \$450 EA @ \$600 EA @ \$959 EA Subtotal for Deciduous Tro  Price  @ \$250 EA @ \$270 EA @ \$450 EA @ \$450 EA Subtotal for Evergreen Tro  Price	ees:	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	1,800.00  1,800.00  Cost  810.00  Cost
A. Deciduous Quantity  3  B. Evergreen Quantity  3  C. Shrubs	Trees    Item	@ \$300 EA @ \$450 EA @ \$600 EA @ \$959 EA Subtotal for Deciduous Tro  Price @ \$250 EA @ \$270 EA @ \$450 EA @ \$450 EA Subtotal for Evergreen Tro  @ \$830 EA	ees:	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	1,800.00 1,800.00 Cost

@ \$35 @ \$45	\$	105.00
@ \$45	er.	
	\$	
@ \$50	\$	37.2
Subtotal for Ornamentals:	\$	105.00
		Cost
		6 4
@ \$15.00	\$	(40)
5.44.4.4.1.1.4.4.1.1.4.4.1.1.4.4.1.1.4.4.1.1.4.4.1.4.4.1.4	***	
Price		Cost
@ \$11,700 AC	\$	37.2
Subtotal for Reforestation	S	747
	Price  @ \$15.00 Subtotal for Perennial:  Price  @ \$11,700 AC	@ \$15.00 \$ Subtotal for Perennial: \$  Price @ \$11,700 AC \$

#### 8. SILTATION AND EROSION CONTROL ESCROWS

Quantity	Item	Price		Cost
	Diversion Dike	@ \$7.00 LF	\$	1.0
	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)	s	
	Silt Fence: 0' - 1000'			
422	(installation, maintenance for 1 year & removal)	@ \$8.00 LF	\$	3,376.00
	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	s	127
	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	\$	9.5
	Sod	@ \$8.00 SY	\$	-
	Seed, Fertilizer & Mulch	@ \$3.00 SY (\$200 Min)	\$	_ 320
	Steep Slopes (Grading and Stabilization with jute mesh, netting, blankets, etc.)	@ \$18 SY	s	2#8
	Coarse Aggregates (#1 or #57)	@ \$35 TON	1 \$	3.00
5	Inlet Protection	@ \$190 EA	S	950.00

	TOTAL SILTATION & F	ROSION CONTROL ESCR	OW AMOUNT:	Ś	10,663.40
	Adı	ministrative Cost (10%	of Total Cost):	\$	969.40
			Total Cost:	200	9,694.0
			2700 x 2 x 2 x 2 x 2 x 2 x 2 x 2 x 2 x 2 x	11101	22.02.02000
	Level Spreader	By Remized Cost		s	-
WATERTO	Level Spreader	By itemized cost	AC (000 \$1000)	Φ.	1,000.
0.4346	Removal of Erosion Control Measures	@ \$30	AC (min \$1000)	\$	1,000.
	Stockpile Removal (Quantity based on policy)	@ \$30	CY	\$	12
: 4. /.	Yard utility refurbishment	@ \$875 EA Sing	1,100.01	S	
17	4' Plastic Orange Safety Fence	@ \$4.00	LF	S	68.
	6' Chain-link Safety Fence	@ \$50	LF	\$	
	Channel Diversion	By itemized cost		1965	
	Temporary Sediment Basin	By itemized cost		\$	
		@ \$2,000		\$	
	remp. Sediment Trap	@ \$1,500		\$	-
	Temp. Sediment Trap	@ \$1,000	EA	\$	2,614,000
1	Temp. Construction Entrance Wash Rack	@ \$2,300 @ \$2,000	EA EA	\$	2,300. 2,000.
- 1	Check Dam	@ \$250	EA	\$	2 200

I hereby certify that the above is my best estimate of the quantities and current cost of bondable improvements, landscaping items, Siltytion & Erosion Control Escrow and floodplain items in this subdivision or site plan.

(703) 361-1550 x401

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.

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.

Floodplain Items Escrow not to be part of Bond/Escrow reduction.

J2 Engineers, Inc.
17739 Main Street

Dumfries, Va. 22026

703.361.1550 (office)

www.j2engineers.com

Suite 180

PLAN# *LF2301* **DATE:** *MAY, 2023* CONTOUR INT. = N/A SCALE: N/A

FINAL FINAL HAYMARKET GAINSV TOWN OF HA

#### PRINCE WILLIAM COUNTY SERVICE AUTHORITY Department of Engineering Development UNIT PRICE LIST

Effective: March 1, 2022

Project Name: LIFETIME SMILE AT CROSSROADS VILLAGE CENTER PWC File #: Date Prepared: 7/17/2023

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

Price Cost @ Lump Sum \$15,000 min. \$

2. STORM DRAINAGE

Quantity @ \$6,900 EA

> @ \$6,800 EA \$ @ \$6,800 EA \$

@ \$4,900 EA @ \$4,500 EA

@ \$7,175 EA \$

Concrete Pip		Pric		1 /	Cont
Quantity	Item			THE STATE OF THE S	Cost
	12"0	@ \$82	LF	\$	
	15"0	@ S82	LF	\$	
	18"0	@ \$82	LF	\$	
	21"0	@ \$82	LF	S	
	24"0	@ \$103	LF	S	
	27"0	@ \$103	LF	\$	
	30"0	@ \$103	LF	\$	
	33"0	@ \$207	LF	S	
	36"0	@ \$207	LF	\$	
	42"0	@ \$207	LF	S	
	48"0	@ \$207	LF	S	
	54"0	@ \$365	LF	S	
	60"0	@ \$365	LF	S	
	66"0	@ \$365	LF	S	

Subtotal for this page: \$

Subtotal for Concrete Pipe: S

Quantity	Item	Price			Cost
12"0		@ \$1,950	EA	\$	3
15"0		@ \$1,950	EA	\$	- 3
18"0		@ \$1,950	EA	\$	1
21"0		@ \$1,950	EA	\$	8
24"0		@ \$1,950	EA	\$	15
27"0		@ \$1,950	EA	S	ij
30"0		@ \$2,100	EA	\$	
33"0		@ \$2,300	EA	\$	
36"0		@ \$2,800	EA	\$	B
42"0		@ \$7,236	EA	\$	
48"0		@ \$7,236	EA	\$	į.
54"0		@ \$7,236	EA	\$	
60"0		@ \$7,236	EA	\$	9
66"0		@ \$7,236	EA	\$	ē,
72"0		@ \$9,854	EA	S	

Subtotal for End Walls: \$ D. End Sections (ES-1) Quantity Price Cost @ \$1,048 EA @ \$1,048 EA

@ \$1,048 EA @ \$1,048 EA @ \$1,200 EA @ \$1,300 EA @ \$1,500 EA @ \$1,900 EA

> @ \$3,050 EA \$ Subtotal for End Section ES-1: \$

E. Corrugated Metal Pipe

42"0 - 60"

@ \$40 LF \$ @ \$60 LF @ \$60 LF @ \$80 LF @ \$80 LF @ \$140 LF \$ @ \$140 LF \$ @ \$140 LF \$ @ \$250 LF @ \$250 LF

Subtotal for this page: \$

Quantity	Item	Price	C	ost
	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	S	
	*	Subtotal for End Sections (ES-2):	s	

AD N-12 (H	T - /-	Subtotal for End Section			~
Quantity	Item	Pric		1 9	Cost
	12"0	@ \$45	LF	\$	
	15"0	@ \$106	LF	S	
	18"0	@ \$106	LF	\$	
	24"0	@ \$106	LF	\$	
	30"0	@ \$106	LF	S	
	36"0	@ \$170	LF	S	
	42"0	@ \$170	LF	S	
	48"0	@ \$170	LF	S	
				0	

Subtotal for this page: \$

@ \$250 LF \$

Subtotal for AD N-12 (HDPE): \$

Quantity	Item	Price
Non-Proprietary	BMP(Engineer Estimate for all SWM)	W:
***	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

		200 J. C. CONTROL TO THE PROPERTY OF THE PROPE	
	Sheet Flow to a Vegetated Filter Strip	By itemized cost	
Proprietary/	Manufactured BMP-manufacturer's Certified Cost Plus Construction Co	st	
	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	
Sub	ototal for Stormwater Management/BMP Facilities Cost Estimates P	er Impervious Acre Treated: \$	

Subtotal for this page: \$

Price

Price Cost @ \$3.00 SY \$ Seed, Fertilizer & Mulch (\$200 Min.) @ \$8.00 SY \$ @ \$8.00 SF \$ Hydraulic Cem. Conc. - 4" depth Bituminous Concreate - 1" depth @ \$6.00 SY Rip-Rap @ \$7.75 SF @ \$9.00 SF \$ Grouted Rip-Rap @ \$130 TON \$ Erosion Control Stone (EC-1) #57 - Coarse Aggregate @ \$30 TON \$ 4' High Chain Link Fence (#9 gauge or better, including braces, end posts and gate) 6' High Chain Link Fence (#9 gauge or better, including braces, end posts and gate) SWM Sign (WATER RISES RAPIDLY) (Minimum 3 signs per facility) Access Road By Itemized Cost Subtotal for Miscellaneous Stormwater Management \$

Quantity	Item	Price	Cost
	Box Culvert	@ 840 CY of conc.	\$
	Energy Dissipater	@ \$2,250 EA	\$ .
	Wing Walls	@ 990 CY of conc.	\$
Ditches;			111
	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.)	s
	Subtotal for N	discellaneous Drainage Items:	s -

Subtotal for this page: \$

## 3. CONSTRUCTION WITHIN THE PUBLIC RIGHT-OF-WAY AND/OR PRIVATE INGRESS/EGRESS

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	\$	į
	Slope Stabilization - Hydroseeding (3:1 or flatter) \$1,000 Min.	@ \$1.25	SY	S	
	Slope Stab Jute Mesh, matting Blankets, etc. (Between 2:1 to 3:1) \$200 Min	@ \$6.00	SY	s	
	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	s	
		Subtotal for S	ite Work:	\$	

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	S
	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	\$
Inderdrains:	STREET, STREET		14-
	UD-1	@ \$21 LF	\$
	UD-2	@ \$21 LF	\$
	UD-3	@ \$21 LF	\$
	UD-4	@ \$21 LF	\$
	Subtotal for Subgrade, Subbase, Base Cou	rse Items & Underdrains (Public):	S

Subtotal for this page: \$

Quality	Item	Price	Cost
220 W	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	S
	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	S
	Pipestem Driveway - 18' (2-5 Lots)	@ \$81 LF	\$
	10 To 30 To	Subtotal for Entrance and Pipe Stems:	S

	Subtotal for this page: \$	5.
--	----------------------------	----

Quantity	Item
5.50 50	Sidewalk (5' Width)
	Header Curb (CG-2/CG-3)
	10.100

	Subtota	I for Miscellaneous Construction Items:	S	14
	P.E. Certified "As-Built" Plans	Lump Sum (Min. \$12,000)	S	-
	VDOT Street Acceptance Package	@ \$7,000	\$	iā
	Utilities Relocation	provide estimate from utility co.)	\$	;4
		(Min. \$46,000) (Lump Sum or	1111	
	Street Lighting	@ \$5,500 EA	\$	
	Traffic Barricade (TB-1)	@ \$1,725 EA	\$	
	Pavement Marking (Thermoplastic)	@ \$7.00 SF	\$	
	Pavement Marking (Paint)	@ \$2.50 SF	\$	
	Hand Rail (HR-1)	@ \$120 LF	\$	
	Roadside Delineators (ED-1)	@ \$75 EA	\$	1
	Bike Rack	@ \$350 EA	\$	
	HC Parking Space Sign	@ \$720 EA	\$	- 1
	Traffic Signal	@ (Lump Sum)		
	Bus Shelter	@ \$24,000	\$	1
	Bus Stop Sign	@ \$415	\$	- 1
	Traffic Control Sign	@ \$450	\$	
	Street Name Sign	@ \$525	S	
	Address Sign (Entrance to Pipestems)	@ \$460 EA	\$	
	GR-9	@ \$3,640 EA	\$	
	GR-7 NCHRP 350	@ \$3,640 EA	\$	
	Guardrail	@ \$45 LF	\$	
	only-treatment/sealant)	(Min. \$2,500)	\$	
	Anti-Graffiti Paint (Concrete Retaining Walls	@ \$18 SF		
	Excavation for tiebacks in walls in cut areas	@ \$29 CY	\$	
	Gravity Wall	@ S72 SY	\$	
	MSE/Geogrid	@ \$50 SF	\$	
	Crib	@ \$44 SF	S	
8	Timber	@ \$34 SF	s	
etaining W	Transport of the Control of the Cont	5 417		
	Trail (Stone Dust)	@ \$19 SY	S	
	Trail (Wood Chip)	@ \$19 SY	S	
	Raised Concrete Median (MS-1A)	@ \$81 SY	s	
	Bicycle Trail/Walkway	@ \$11.00 SF	\$	
	Curb & Gutter CG-12 (Truncated Dome)	@ \$28 LF @ \$2,000 EA	\$	

Subtotal for this page: \$

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

703.361.1550 (office)

Cost

Cost

www.j2engineers.com

PLAN# 152301 **DATE:** *MAY, 2023* CONTOUR INT. = N/A SCALE: N/A

SMILI A UNIT PRICE LIST

L SITE PLAN

[ LIFETIME S/
ISVILLE DISTRICT
HAYMARKET, VIRGINIA FINAL SALVINAL SALVINAR SALVIN

SHEET

17739 Main Street

Dumfries, Va. 22026

703.361.1550 (office)

www.j2engineers.com

PLAN# *LF2301* 

SCALE: N/A

**DATE:** *MAY, 2023* 

CONTOUR INT. = N/A

Suite 180

#### 4. SANITARY SEWER & WATER LINE CONSTRUCTION

Quantity	Item	Price			Cost
	Fire Hydrant Assembly	@ \$9,200	EA	S	17
	Central Sewer Lift/Pump Station Construction	@ (Lump Sur	n)		
ter Main (Exclusi	ve of Fire Hydrants)				
Quantity	Item	Price			Cost
30	4"0 DIP	@ \$60	LF	S	1,800.00
	6"0 DIP	@ \$75	LF	S	:8
	8"0 DIP	@ \$90	LF	S	in.
	12"0 DIP	@ \$125	LF	S	22
	16"0 DIP	@ \$165	LF	S	
	18'0 DIP	@ \$185	LF	S	
	4"0 or 6"0 RW Valve (with accessories)	@ \$1,200	EA	S	12
	8"0 or 12"0 RW Valve (with accessories)	@ \$3,000	EA	S	
	16"0 or 24"0 RW Valve (with accessories)	@ \$7,000	EA	S	3
1	Standard Meter Crock & Appurtenances(Angle valve, backflow preventer, yoke, frame & cover, and service line)	@ \$2,500	EA	s	2,500.00
	Meter Vault & Appurtenances (3 meters & larger)	@ \$40,000	EA	S	<u> </u>
	Water Main Blow-off Assembly	@ \$3,000	EA	S	2
	Air Release Assembly	@ \$6,800	EA	S	in .
	Dead End Anchor System	@ \$10,000	EA	S	:0
		Subtotal for Wat	er Main:	S	4,300.00

Subtotal for this page:	\$ 4,300.00

#### Price Item 1.5"0 thru 4"0 DIPFM (DIP Force Main System) @ \$35 LF \$ 8"0 PVC 8"0 DIP 10"0 PVC @ \$100 LF 10"0 DIP @ \$110 LF @ \$170 LF \$ 12"0 DIP 15"0 PVC @ \$185 LF \$ @ \$225 LF \$ @ \$11,000 EA \$ 4' Dia. Sanitary Sewer Manhole 5' Dia. Sanitary Sewer Manhole @ \$11,000 EA Street Manhole Frame & Cover Assembly (Including rain bowl & chimney seal) Easement Manhole Frame & Cover Assembly @ \$1,200 EA (Including chimney seal) Abandonment of Manhole @ \$290 VF 4"0 PVC Lateral (including clean-out stack) @ \$50 LF 4"0 DIP Lateral (including clean-out stack) @ \$70 LF \$ 6"0 PVC Lateral (including clean-out stack) 6"0 DIP Later (including clean-out stack) LPFM Flushing Station @ \$2,900 EA Sewerage Air Release/Vacuum Breaker Assembly @ \$4,050 EA @ \$600 LF Steel Casing Grease Trap (500 gal. minimum) @ \$5,200 EA \$ Subtotal for Sanitary Sewer Pipe: S Note: For sizes larger than 15"0, add \$4.00 per inch increase in diameter. Subtotal for this page: \$ TOTAL CONSTRUCTION COST: (Pages 1 through 10) \$ 5. MISCELLANEAOUS COSTS

B. Inflation Cost - Compounded annually at 3.0% per year of the total Construction Cost \$ 168.00 TOTAL PERFORMANCE BOND AMOUNT: \$ 6,328.00

Price

By itemized cost

TOTAL FLOODPLAIN ITEMS ESCROW: \$

\$18,000 \$ \$1,000

Cost

A. Administrative Cost - 10% of the total construction cost, not to exceed \$50,000

6. FLOODPLAIN ITEMS ESCROW

Stream Restoration

LOMC (SF Detached)

Stream Restoration

# 7. LANDSCAPING ESCROW

Quantity	Item	Price			Cost
	5'-6'	@ \$300	EA	S	
	1" - 1.5" or 1.5"- 2"	@ \$450	EA	S	3
	2" - 2.5" or 2.5 - 3"	@ \$600	EA	\$	9
	3" - 3.5" or 3.5" - 4"	@ \$959	EA	S	
		Subtotal for Deciduous	Trees:	S	

Quantity	Item	Price		Cost
	5' - 6'	@ \$250 E	S	
	6' - 7'	@ \$270 E.	. \$	5 -
	7' - 8'	@ \$450 E	S	
	8' - 10'	@ \$830 E	S	-
		Subtotal for Evergreen To	ees: S	s -

Quantity	Item	Price	Cost	
	18" - 24"	@ \$60 EA	S	
	24" - 30"	@ \$80 EA	S	-
		Subtotal for Shrubs	S	-

Quantity	Item	Price		Cost
	1 Gal. (#1)	@ \$35	S	15
	2 Gal. (#2)	@ \$45	S	12
	3 Gal. (#3)	@ \$50	S	:
		Subtotal for Ornamentals:	S	-

Quantity	Item	Price	(	Cost
18" - 24"	18" - 24"	@ \$15.00	\$	
		Subtotal for Perennial:	S	

Quantity		Item	Price			Cost
	# of Acres	as A Parisis Collinson	@ \$11,700	AC	S	-
			Subtotal for Refo	restation	S	

#### 8. SILTATION AND EROSION CONTROL ESCROWS

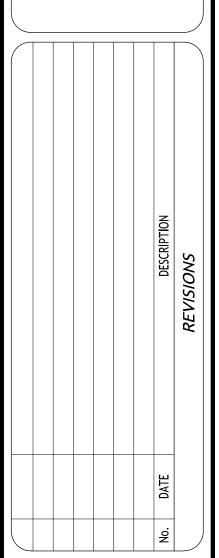
Quantity	Item	Price	e	ĵ.	Cost
	Diversion Dike	@ \$7.00	LF	S	
	Cleaning out SWM Facilities, Silt Traps and Silt Basins	\$600/Hr. Lump Su	ım (Min.	1	
	(22) S20	\$20,000 or actual estima	ate		
		provided by engineer to	the		
		satisfaction of the plan r	review)	\$	
	Silt Fence: 0' - 1000'				
	(installation, maintenance for 1 year & removal)	@ \$8.00	LF	\$	
	Silt Fence: 1001' - 1000'	e	200.00	520	
	(installation, maintenance for 1 year & removal)	@ \$6.00	LF	\$	
	Silt Fence: 10,000' +				
	(installation, maintenance for 1 year & removal)	@ \$4.00	LF	S	
	Super Silt Fence: 0' - 1000'				
	(installation, maintenance for 1 year & removal)	@ \$20	LF	S	
	Super Silt Fence: 1001' - 10000				
	(installation, maintenance for 1 year & removal)	@ S12	LF	S	
	Super Silt Fence: 10,000' +				
	(installation, maintenance for 1 year & removal)	@ S11.00	LF	S	
	Sod	@ \$8.00	SY	\$	
	Seed, Fertilizer & Mulch	@ \$3.00 SY (\$	5200 Min)	\$	
	Steep Slopes (Grading and Stabilization with jute mesh,				
	netting, blankets, etc.)	@ \$18	SY	S	
	Coarse Aggregates (#1 or #57)	@ \$35	TON	S	
	Inlet Protection	@ \$190	EA	S	
	Check Dam	@ \$250	EA	S	
	Temp. Construction Entrance	@ \$2,300	EA	S	
	Wash Rack	@ \$2,000	EA	S	
	Temp. Sediment Trap	@ \$1,000		S	
	3.00 to 0.00 (Menos Model Andre Service Anno 10 to 10	@ \$1,500		S	
		@ \$2,000		S	
	Temporary Sediment Basin	By itemized cost		S	
	Channel Diversion	By itemized cost			
	6' Chain-link Safety Fence	@ \$50	LF	S	
	4' Plastic Orange Safety Fence	(a) \$4.00	LF	\$	
	Yard utility refurbishment	(a) \$875 EA Single	Family Lot	S	
	Stockpile Removal (Quantity based on policy)	(a) \$30	CY	S	
	Removal of Erosion Control Measures	(a)	AC (min \$1000)	S	1,000
	Level Spreader	By itemized cost			10 P. M. T. T.
	† ·			S	
			Total Cost:		1,000
	Administr	ative Cost (10% of	Total Cost):	S	100

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.
- Floodplain Items Escrow not to be part of Bond/Escrow reduction.

reparer's Signature	(703) 361-1550 Telephone #	0 x401		
Had II			p.u	
I hereby certify that the above is my best estimate of the quanti- land scaping items, Siltation & Erosion Control Escrow and flo				
Minimum acceptable amount for Siltation	on and Erosion Control	is \$2,000.00		
TOTAL SILTATION & EROSION				2,000.00
Admi	nistrative Cost (10%	Total Cost:		1,000.00
			S	
Level Spreader	By itemized cost	t		(5)
Removal of Erosion Control Measures	(a)	AC (min \$1000)	S	1,000.0
Stockpile Removal (Quantity based on policy)	@ \$30	CY	S	- 1
Yard utility refurbishment	@ \$875 EA Sir		S	::
4' Plastic Orange Safety Fence	@ \$4.00	LF	8	
6' Chain-link Safety Fence	@ \$50	LF	S	iž
Channel Diversion	By itemized cost			
Temporary Sediment Basin	By itemized cost		S	a.
	@ \$2,000		S	12
	@ \$1,500		S	æ
Temp, Sediment Trap	@ \$1,000		\$	
Wash Rack	@ \$2,000	EA	S	葟
Temp. Construction Entrance	@ \$2,300	EA	S	
Check Dam	@ \$250	EA	S	•
Inlet Protection	@ \$190	EA	S	14
Coarse Aggregates (#1 or #57)	@ \$35	TON	S	-
netting, blankets, etc.)	@ \$18	SY	\$	2
Steep Slopes (Grading and Stabilization with jute mesh,	@ 0010V 01	(Joseph Line)		
Seed, Fertilizer & Mulch	@ \$3.00 SY		\$	
Sod	@ \$8.00	SY	\$	- 4
Super Silt Fence: 10,000' +  (installation, maintenance for 1 year & removal)	@ \$11.00	LF	S	





SHEET



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

#### Memorandum

To: Planning Commission

From: Katie McDaniel, Town Engineer;

Thomas Britt, Town Planner

**DATE:** October 12, 2023

Re: Lifetime Smiles Final Site Plan First Submission Engineering Comments

Per your request, I have reviewed the first submission of the Lifetime Smiles Site Plan. I used the Haymarket Zoning and Subdivision Ordinance, Site Plan Checklist, and Town Code to review this plan. The plan has been disapproved until the following comments are addressed.

Comment	Reference	Comment
1.	58-3.7.c	Clarify which scale is correct on sheet 3. Graphic scale does not match scale indicated in title block.
2.	58-3.7.c.7	Provide plan view representation of all setbacks, lot numbers and buffers on overall parcel.
3.	58-3.7.c.14,17,33	Provide and label street right of way, name, recordation deed book and page reference, VDOT classification, and street widths.
4.	58-3.7.c.18	Label proposed sanitary lateral length, slope and material in profile.
5.	58-3.7.c.22	Add note or show divides for comps to structures up stream and downstream of proposed storm system changes. Do these come directly from the previously

"Everyone's Home Town" www.townofhaymarket.org

		approved plan or is this based on actual existing areas and C factors coming to structures?  Show 10-year WSE at inlets in plan view and on profiles. Adjust structures Ex. 1030 and 10 to reduce extent of ponding in the parking spaces.  Demonstrate overland relief for the building for the 100-year storm.
6.	58-3.7.c.23	Provide additional contour labels and spot shots for both existing and proposed features to demonstrate adequate drainage and ADA accessibility.
7.	58-3.7.c.25	Include discussion of existing drainage in existing site conditions section of E&S narrative.  Add stormwater runoff considerations section to E&S narrative.  Include a preconstruction meeting with the Town E&S inspector in the Phase 1 narrative. Include building construction in Phase II narrative.  Show divides for existing drainage patterns in Phase I plan.  Swap out the Site Specific Seeding Mixtures for Coastal Plain Area detail for Piedmont Area detail.
8.	58-3.7.c.27	Differentiate between existing number of plantings and proposed plantings in Interior Parking Lot Landscaping comps. Ensure plantings do not bloc flow path to structure 12.

		Japanese Crape Myrtle and Summersweet are not included on the Required Plant Material List. Please revise.
9.	58-3.7.c.34	Submit plat and deed for review.
10.	58-19.5	The maintenance and replacement of all landscaping in commercial, industrial, and residential open space shall be the responsibility of the individual property owners.  Planted material shall be maintained in a healthy state and replaced when diseased or dead. All landscaping structures shall also be kept in good condition.
11.	58-20.10.b	Photometric plans shall include a narrative outlining the specifications and responsible parties for the permit, operation and associated maintenance costs.
12.	58-20.12.b	Demonstrate that site lighting is located at primary building entrances and all parking areas, including the new parallel spaces, achieve the minimum 0.6 footcandles.
13.	General	Clean up overlapping and cut off text and dimensions on sheets throughout plan.
14.	General	Provide documentation of comments and approvals from outside agencies.

Please let me know if you have any additional questions regarding these comments. I can be reached at <a href="mailto:kmcdaniel@townofhaymarket.org">kmcdaniel@townofhaymarket.org</a>