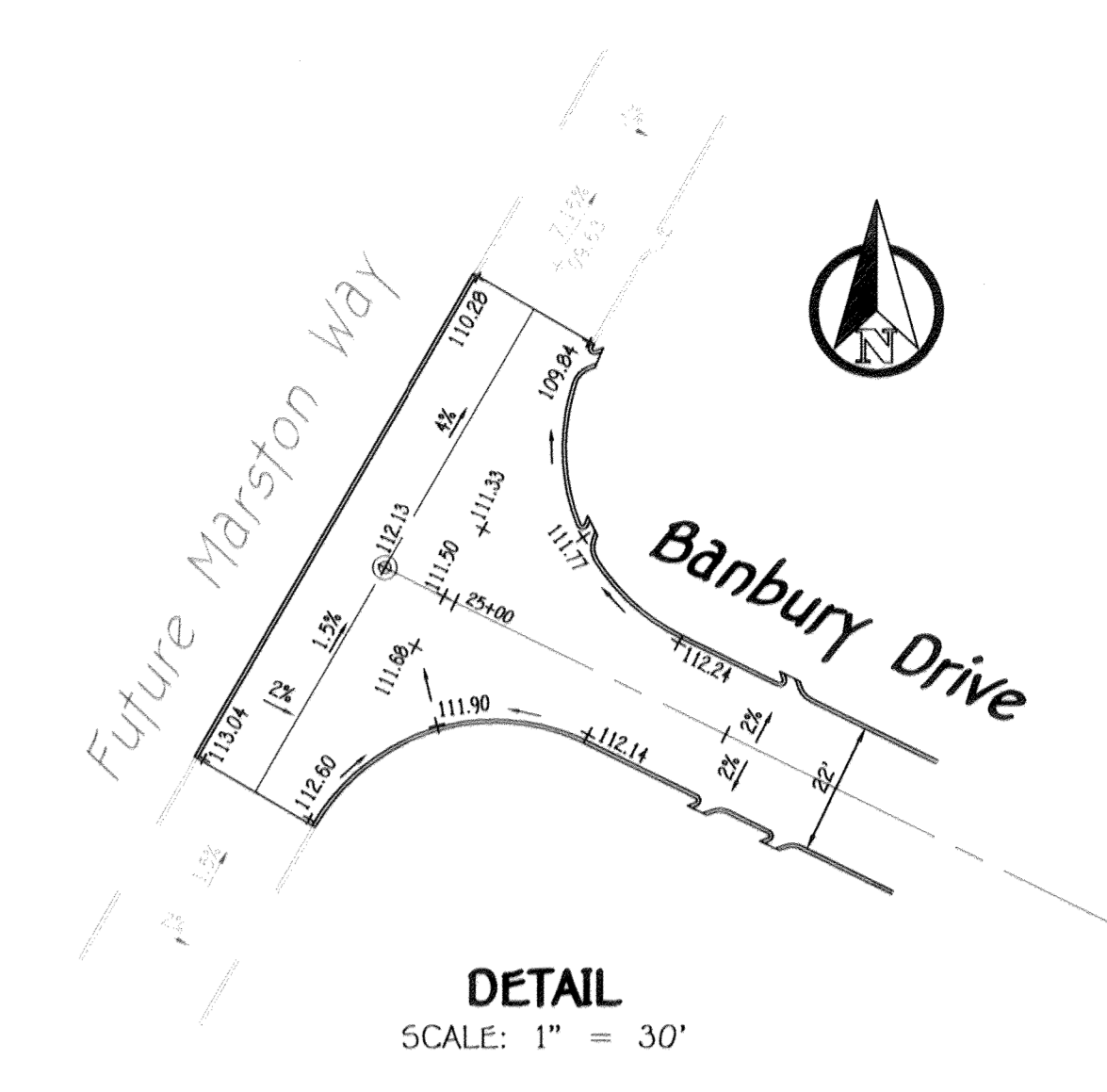
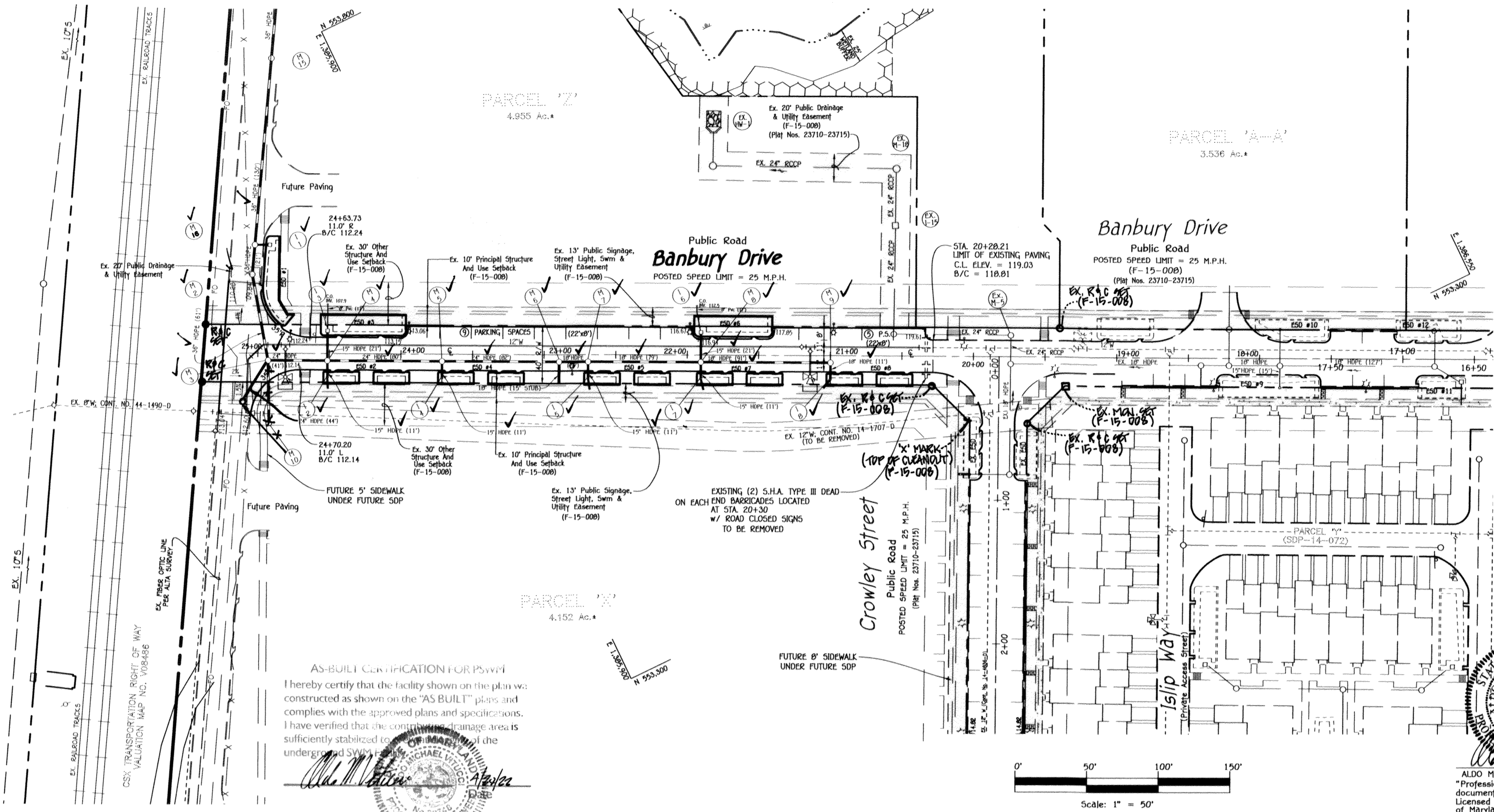
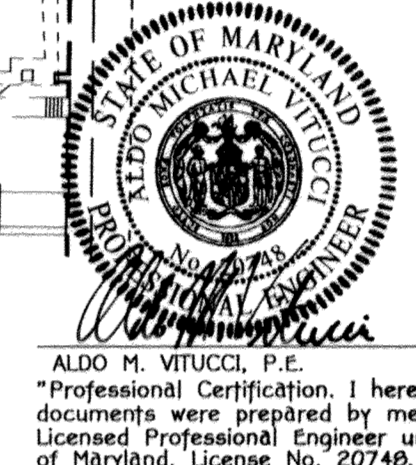




NO.	DESCRIPTION	DATE
REVISIONS		
APPROVED: DEPARTMENT OF PLANNING AND ZONING		
	<i>K. J. ...</i>	9-24-16
	<i>...</i>	8-22-16
APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS		
	<i>...</i>	8/9/16



**AS-BUILT CERTIFICATION FOR PSWVT**  
 I hereby certify that the facility shown on the plan was constructed as shown on the "AS BUILT" plans and complies with the approved plans and specifications. I have verified that the construction area is sufficiently stabilized to support the design of the underground SWM.



**OXFORD SQUARE**  
 "A Howard County Green Neighborhood"  
**Banbury Drive**  
 (Sta. 20+28.21 to Sta. 25+13.00)  
 Zoned: 100  
 Tax Map: 30, Parcel: 1003, Grid: 20 And Tax Map: 44, Parcel 1003, Grid 1  
 First Election District - Howard County, Maryland

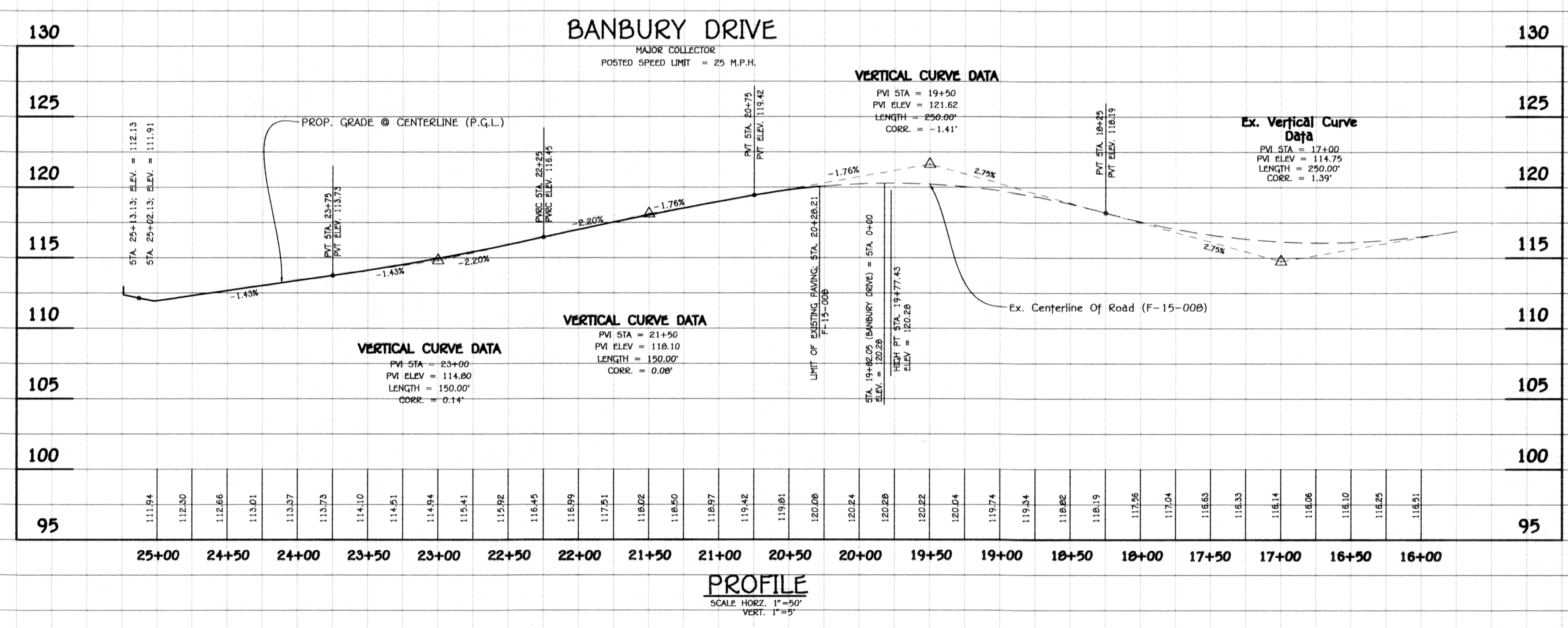
**BANBURY DRIVE**  
 PLAN AND PROFILE

**Owner:** Kellogg-CCP, LLC  
 c/o David P. Scheffendcker, Jr., Managing Member  
 2330 West Joppa Road, Suite 190  
 Lutherville, Maryland 21093-4614  
 P.O. 410-296-3002

**Developer:** Preston - Scheffendcker Properties  
 2330 West Joppa Road, Suite 190  
 Lutherville, Maryland 21093-4614  
 P.O. 410-296-3000

SCALE: AS SHOWN    DATE: June 3, 2016    DWG. NO. 2 OF 15  
 DES. R.A.I./J.C.L.    DRN. J.C.L.    CHK. A.M.V.

**FISHER, COLLINS & CARTER, INC.**  
 CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS  
 CENTENNIAL SQUARE OFFICE PARK - 10772 BALDORF NATIONAL PIKE  
 ELLEOTT CITY, MARYLAND 21042  
 (410) 461-2899



"AS-BUILT" F-15-008

# Infiltration and Filter System Construction Specifications

Infiltration and filter systems either take advantage of existing permeable soils or create a permeable medium such as sand for infiltration. In some instances where permeability is great, these facilities may be used for flow storage. The most common systems include infiltration trenches, infiltration basins, sand filters, and organic filters.

When properly planted, vegetation will thrive and enhance the functioning of these systems. For example, pre-treatment buffers will trap sediments that often are bound with phosphorus and metals. Vegetation planted in the facility will aid in nutrient uptake and water storage. Additionally, plant roots will provide arteries for stormwater to permeate soil for groundwater recharge. Finally, successful plantings provide aesthetic value and wildlife habitat making these facilities more desirable to the public.

## Design Constraints:

- Planting buffer strip of at least 20 feet will cause sediments to settle out before reaching the facility, thereby reducing the possibility of clogging.
- Determine areas that will be saturated with water and water table depth so that appropriate plants may be selected (hydrology will be similar to bio-retention facilities, see figure A.5 and Table A.4 for planting material guidance).
- Plants known to send down deep taproots should be avoided in systems where filter fabric is used as part of facility design.
- Test soil conditions to determine if soil amendments are necessary.
- Plants shall be located so that access is possible for structure maintenance.
- Stabilize heavy flow areas with erosion control mats or sod.
- Temporarily divert flows from seeded areas until vegetation is established.
- See Table A.5 for additional design considerations.

## Bio-retention

### Soil Bed Characteristics

The characteristics of the soil for the bio-retention facility are perhaps as important as the facility location, size, and treatment volume. The soil must be permeable enough to allow runoff to filter through the media, while having characteristics suitable to promote and sustain a robust vegetative cover crop. In addition, much of the nutrient pollutant uptake (nitrogen and phosphorus) is accomplished through chemical and microbial activity within the soil profile. Therefore, soils must balance their chemical and physical properties to support biotic communities above and below ground.

The planting soil should be a sandy loam, loamy sand, loam (USDA), or a loam/sand mix (should contain a minimum 35 to 60% sand, by volume). The clay content for these soils should be less than 25% by volume (Environmental Quality Resources (EQR), 1996; Engineering Technology Inc. and Biobility, Inc. (2004), 1993). Soils should fall within the CM, ML, SC classifications or the Unified Soil Classification System (USCS). A permeability of at least 1.0 feet per day (0.27 ft/d) is required (a conservative value of 0.5 feet per day is used for design). The soil should be free of stones, stumps, roots, or other woody material over 2" in diameter. Brush or roots from noxious weeds (e.g., Johnson Grass, Mugwort, Nutcracker, and Canada Thistle) or other noxious weeds as specified under COMAR 15.08.01.02 should not be present in the soil. Placement of the planting soil should be in 12 to 18 lifts that are loosely compacted (tamped lightly with a backhoe bucket or traversed by dozer tracks). The specific characteristics are presented in Table A.3.

Table A.3 Planting Soil Characteristics

Parameter	Value
pH range	5.2 to 7.00
Organic matter	1.5 to 4.0% (by weight)
Magnesium	35 lbs. per acre, minimum
Phosphorus (phosphate - P2O5)	75 lbs. per acre, minimum
Potassium (potash - K2O)	85 lbs. per acre, minimum
Soluble salts	500 ppm
Clay	0 to 5 %
Silt	30 to 55 %
Sand	35 to 60%

### Mulch Layer

The mulch layer plays an important role in the performance of the bio-retention system. The mulch layer helps maintain soil moisture and avoids surface sealing, which reduces permeability. Mulch helps prevent erosion, and provides a microenvironment suitable for soil biota of the mulch/soil interface. It also serves as a pre-treatment layer, trapping the finer sediments, which remain suspended in runoff.

The mulch layer should be standard landscape style, single or double shredded hardwood mulch or chips. The mulch layer should be well aged (stockpiled or stored for at least 12 months), uniform in color, and free of other materials, such as weed seeds, soil, roots, etc. The mulch should be applied to a minimum depth of three inches. Grass clippings should not be used as a mulch material.

### Planting Guidance

Plant material selection should be based on the goal of simulating a terrestrial forested community of native species. Bio-retention simulates an upland-species ecosystem. The community should be dominated by trees, but have a distinct community of understory trees, shrubs and herbaceous materials. By creating a diverse, dense plant cover, a bio-retention facility will be able to treat stormwater runoff and withstand urban stresses from insects, disease, drought, temperature, wind, and exposure.

The proper selection and installation of plant material is key to a successful system. There are essentially three zones within a bio-retention facility (Figure A.5). The lowest elevation supports plants species adapted to standing and fluctuating water levels. The middle elevation supports plants that like drier soil conditions, but can still tolerate occasional inundation by water. The outer edge is the highest elevation and generally supports plants adapted to drier conditions. For appropriate plant materials for bio-retention facilities, refer to MSA Approved Species List. The layout of plant material should be flexible, but should follow the general principles described in Table A.5. The objective is to have a system, which resembles a random, and natural plant layout, while maintaining optimal conditions for plant establishment and growth. For a more extensive bio-retention plan, consult FEMA, 1993 or Clayton and Schweder, 1997.

# Operation and Maintenance Schedule For Commercial Association Owned & Maintained Bio-Retention Areas (M-6)

- The owner shall maintain the plant material, mulch layer and soil layer annually. Maintenance of mulch and soil is limited to correcting areas of erosion or wash out. Any mulch replacement shall be done in the spring. Plant material shall be checked for disease and insect infestation and maintenance will address dead material and pruning. Acceptable replacement plant material is limited to the following: 2000 Maryland stormwater design manual volume II, table A.4.1 and 2.
- The owner shall perform a plant in the spring and in the fall each year. During the inspection, the owner shall remove dead and diseased vegetation considered beyond treatment, replace dead plant material with acceptable replacement plant material, treat diseased trees and shrubs and replace all deficient stakes and wires.
- The owner shall inspect the mulch each spring. The mulch shall be replaced every two to three years. The previous mulch layer shall be removed before the new layer is applied.
- The owner shall correct soil erosion on an as needed basis, with a minimum of once per month and after each heavy storm.
- The owner shall maintain all observation wells, clean-outs and perforated underdrains.
- Filter material must be replaced when water remains on the surface of the filter bed for more than 24 hours following a 1 or 2 year storm event or more than 48 hours following a 10 year storm event.

NOTES:  
UNDERDRAIN PIPE SHALL BE 4" TO 6" DIAMETER, SLOTTED OR PERFORATED RIGID PLASTIC PIPE (ASTM F756, TYPE F5 2B OR AASHTO M-278) IN A GRAVEL LAYER. THE PREFERRED MATERIAL IS SLOTTED 4" RIGID PIPE (E.G., PVC OR HDPE).

PERFORATIONS SHALL BE 3/8" DIAMETER LOCATED 6" ON CENTER WITH A MINIMUM OF FOUR HOLES PER ROW. PIPE SHALL BE WRAPPED WITH A 1/4" (NO. 4 OR 4 x 4) GALVANIZED HARDWARE CLOTH.

GRAVEL LAYER SHALL BE (NO. 57 STONE PREFERRED) AT LEAST 3" THICK ABOVE AND BELOW THE UNDERDRAIN.

THE MAIN COLLECTOR PIPE SHALL BE AT A MINIMUM 0.5% SLOPE.

A RIGID, NON PERFORATED OBSERVATION WELL MUST BE PROVIDED (ONE PER EVERY 1,000 SQ. FT.) TO PROVIDE A CLEANOUT POINT AND MONITOR PERFORMANCE OF THE FILTER.

A 4" LAYER OF PEA GRAVEL (1/8" TO 3/8" STONE) SHALL BE LOCATED BETWEEN THE FILTER MEDIA AND UNDERDRAIN TO PREVENT MIGRATION OF FINES INTO THE UNDERDRAIN. THIS LAYER MAY BE CONSIDERED PART OF THE FILTER BED WHEN BED THICKNESS EXCEEDS 24".

# B.A.C Specifications for Micro-Bio-retention. Rain Gardens, Landscape Infiltration & Infiltration Berms

## 1. Material Specifications

The allowable materials to be used in these practices are detailed in Table B.A.1.

## 2. Filtering Media or Planting Soil

The soil shall be a uniform mix, free of stones, stumps, roots or other similar objects larger than two inches. No other materials or substances shall be mixed or dumped within the micro-bio-retention practice that may be harmful to plant growth, or prove a hindrance to the planting or maintenance operations. The planting soil shall be free of Bermuda grass, Quackgrass, Johnson grass, or other noxious weeds as specified under COMAR 15.08.01.02.

The planting soil shall be tested and shall meet the following criteria:

Soil Component - Loamy Sand or Sandy Loam (USDA Soil Textural Classification)

Organic Content - Minimum 10% by dry weight (ASTM D 2974). In general, this can be met with a mixture of loamy sand (60%-65%) and compost (35% to 40%) or sandy loam (30%), coarse sand (30%), and compost (40%).

Clay Content - Media shall have a clay content of less than 5%.

pH Range - should be between 5.5 - 7.0. Amendments (e.g., lime, iron sulfate plus sulfur) may be mixed into the soil to increase or decrease pH.

There shall be at least one soil test per project. Each test shall consist of both the standard soil test for pH, and additional tests of organic matter, and soluble salts. A textual analysis is required from the site stockpiled topsoil. If topsoil is imported, then a texture analysis shall be performed for each location where the topsoil was excavated.

## 3. Compaction

It is very important to minimize compaction of both the base of bio-retention practices and the required backfill. When possible, use excavation hoses to remove original soil. If practices are excavated using a loader, the contractor should use wide track or mat tires. A loader or light equipment with turf type tires. Use of equipment with narrow tracks or narrow tires, rubber tires with large lugs, or high-pressure tires will cause excessive compaction resulting in reduced infiltration rates and is not acceptable. Compaction will significantly contribute to design failure.

Compaction can be alleviated at the base of the bio-retention facility by using a primary filling operation such as a chisel plow, ripper, or subsoiler. These filling operations are to restructure the soil profile through the 12 inch compaction zone. Substitute methods must be approved by the engineer. Compaction typically does not fill deep enough to reduce the effects of compaction from heavy equipment.

Rototill 2 to 3 inches of sand into the base of the bio-retention facility before backfilling the optional sand layer. Pump any ponded water before preparing (rototilling) base.

When backfilling the topsoil over the sand layer, first place 3 to 4 inches of topsoil over the sand, then rototill the sand/topsoil to create a gradation zone. Backfill the remainder of the topsoil to final grade.

When backfilling the bio-retention facility, place soil in lifts 12" to 18". Do not use heavy equipment within the bio-retention basin. Heavy equipment can be used around the perimeter of the basin to supply soils and sand. Grade bio-retention materials with light equipment such as a compact loader or a dozer/loader with mat tires.

## 4. Plant Material

Recommended plant material for micro-bio-retention practices can be found in Appendix A, Section A.2.3.

## 5. Plant Installation

Compost is a better organic material source, is less likely to float, and should be placed in the sweet and other low areas. Mulch should be placed surrounding to a uniform thickness of 2" to 3". Shredded or chipped hardwood mulch is the only accepted mulch. Fine mulch and wood chips will float and move to the perimeter of the bio-retention area during a storm event and are not acceptable. Shredded mulch must be well aged (6 to 12 months) for acceptance.

Rootstock of the plant material shall be kept moist during transport and on-site storage. The plant root ball should be planted so 1/8th of the ball is above final grade surface. The diameter of the planting pit shall be at least six inches larger than the diameter of the planting ball. Set and maintain the plant straight during the entire planting process. Thoroughly water ground bed cover after installation.

Trees shall be braced using 2" by 2" stakes only as necessary and for the first growing season only. Stakes are to be equally spaced on the outside of the tree ball.

Grasses and legume seed should be drilled into the soil to a depth of at least one inch. Grass and legume seed should be planted following the non-grass ground cover planting specifications.

The topsoil specifications provide enough organic material to adequately supply nutrients from natural cycling. The primary function of the bio-retention structure is to improve water quality. Adding fertilizers, pesticides, or of a minimum, impedes this goal. Only add fertilizer if wood chips or mulch are used to amend the soil. Rototill urea fertilizer at a rate of 2 pounds per 1000 square feet.

## 6. Underdrains

Underdrains should meet the following criteria:  
Pipe - should be 4" to 6" diameter, slotted or perforated rigid plastic pipe (ASTM F756, Type F5 2B or AASHTO M-278) in a gravel layer. The preferred material is slotted, 4" rigid pipe (e.g., PVC or HDPE).

Perforations - If perforated pipe is used, perforations should be 3/8" diameter located 6" center with a minimum of four holes per row. Pipe shall be wrapped with a 1/4" (No. 4 or 4x) galvanized hardware cloth.

Gravel - The gravel layer (No. 57 stone preferred) shall be at least 3" thick above and below the underdrain.

The main collector pipe shall be at a minimum 0.5% slope.

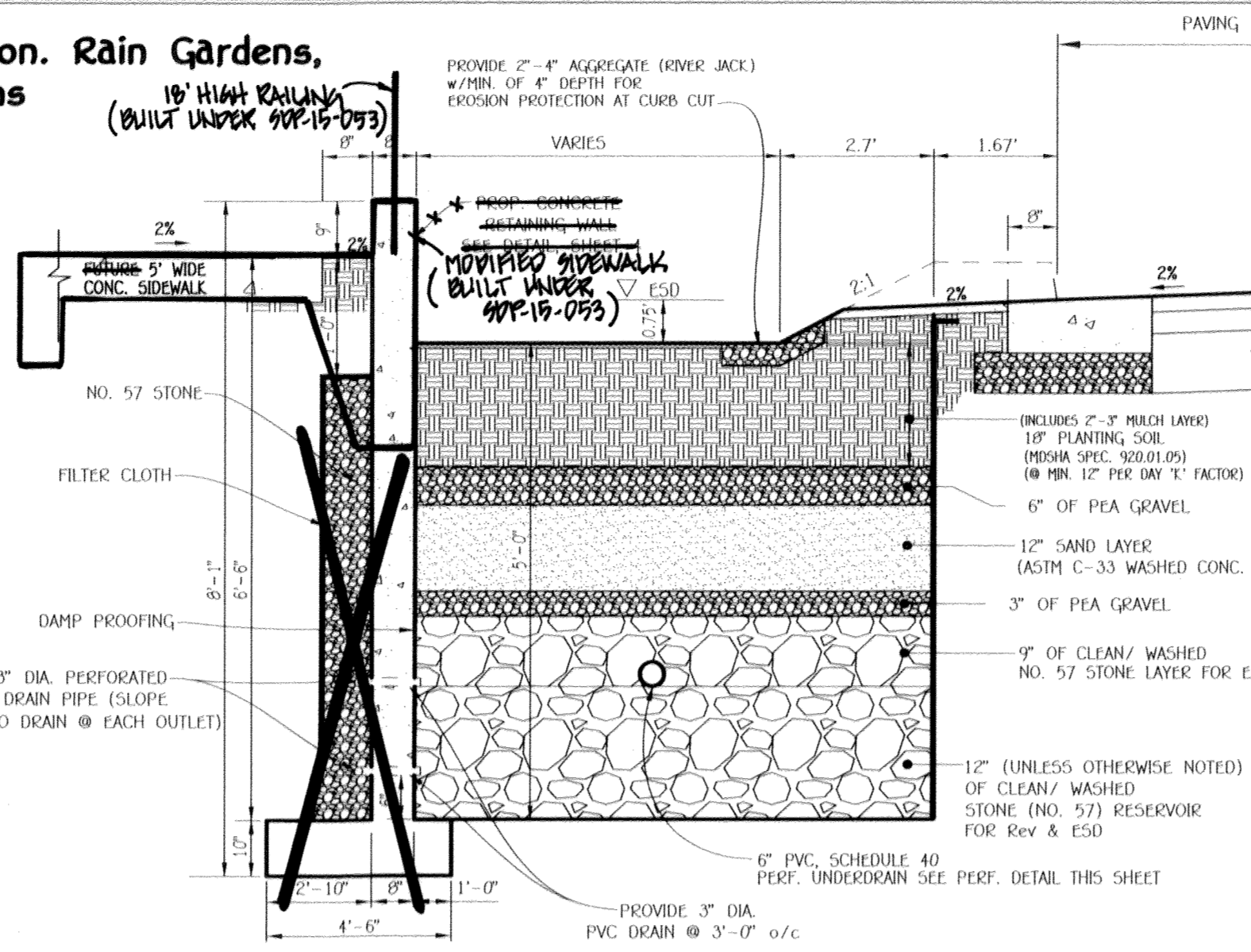
A rigid, non-perforated observation well must be provided (one per every 1,000 square feet) to provide a clean-out point and monitor performance of the filter.

A 4" layer of pea gravel (1/8" to 3/8" stone) shall be located between the filter media and underdrain to prevent migration of fines into the underdrain. This layer may be considered part of the filter bed when bed thickness exceeds 24".

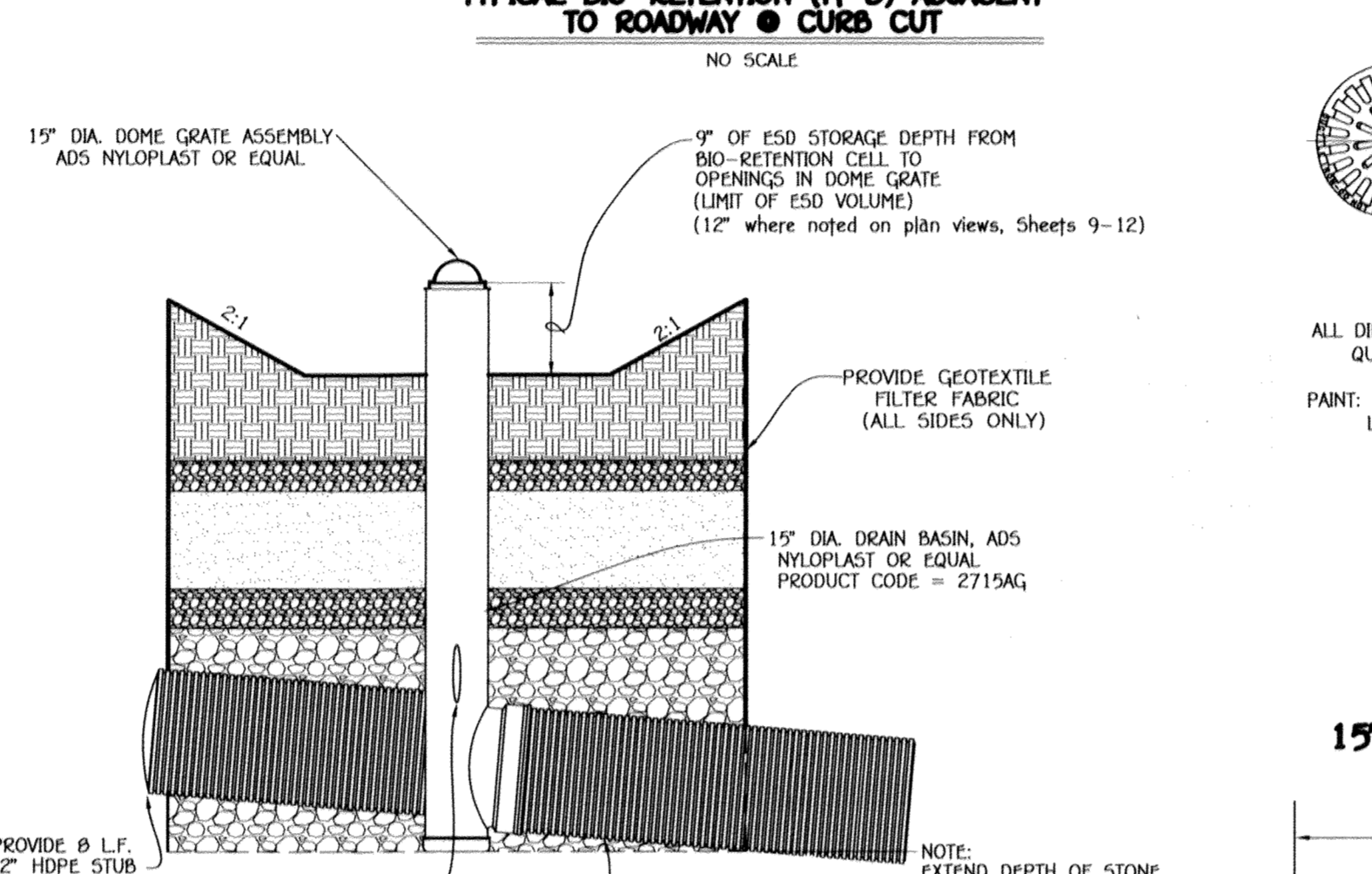
The main collector pipe for underdrain systems shall be constructed at a minimum slope of 0.5%. Observation wells and/or clean-out pipes must be provided (one minimum per every 1000 square feet of surface area).

## 7. Miscellaneous

These practices may not be constructed until all contributing drainage area has been established.



TYPICAL BIO-RETENTION (M-6) ADJACENT TO ROADWAY CURB CUT



TYPICAL 15' BASIN INLET STRUCTURE DETAIL - BIO-RETENTION

## 15' DOME GRATE ASSEMBLY NYLOPLAST OR EQUAL

BIO-RETENTION CELL

6" DIA. DOME W/ WEIR INVERT @ 9"

2" DIA. PVC STAGE ONE WEIR W/ DRAIN COVER

(INCLUDES 2" - 3" MULCH LAYER)

12" PLANTING SOIL (MESH SPEC. 920.01.01) @ MIN 12" PER DAY T. FACTOR

6" PEA GRAVEL LAYER

6" PERFORATED PVC, SCH. 40 UNDERDRAIN PIPE

2" PERFORATED PVC, SCH. 40 PIPE (CENTER PIPE IN GRAVEL LAYER)

2" PVC END CAP (TYP.)

6" PERFORATED PVC, SCH. 40 UNDERDRAIN PIPE

BIO-RETENTION SECTION ALONG BANBURY DRIVE @ 2" STAGE ONE WEIR

NO SCALE

6" PERFORATED PVC, SCH. 40 UNDERDRAIN PIPE

6" PERFORATED PVC, SCH. 40 UNDERDRAIN PIPE

6" PERFORATED PVC, SCH. 40 UNDERDRAIN PIPE

6" PERFORATED PVC, SCH. 40 UNDERDRAIN PIPE

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6" PERFORATED PVC, SCH. 40 UNDERDRAIN PIPE

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6" PERFORATED PVC, SCH. 40 UNDERDRAIN PIPE

6" PERFORATED PVC, SCH. 40 UNDERDRAIN PIPE

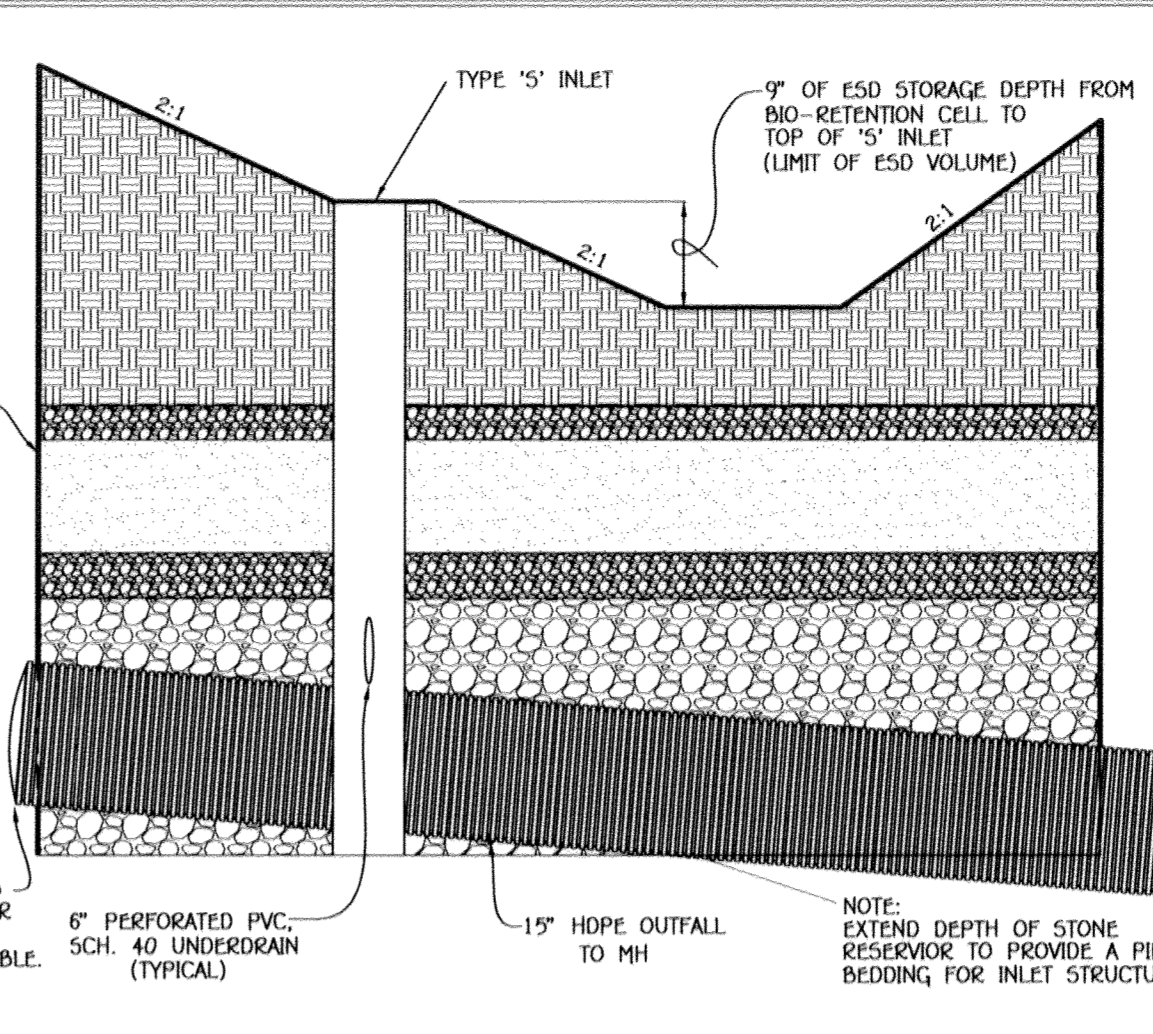
6" PERFORATED PVC, SCH. 40 UNDERDRAIN PIPE

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6" PERFORATED PVC, SCH. 40 UNDERDRAIN PIPE

6" PERFORATED PVC, SCH. 40 UNDERDRAIN PIPE



TYPICAL 5' INLET STRUCTURE DETAIL - BIO-RETENTION

NO SCALE

6" PERFORATED PVC, SCH. 40 UNDERDRAIN PIPE

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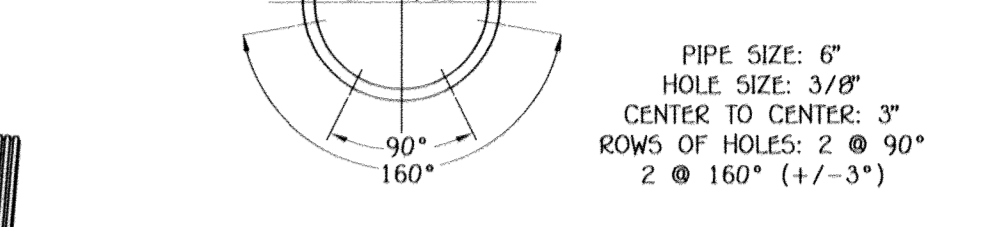
6" PERFORATED PVC, SCH. 40 UNDERDRAIN PIPE

6" PERFORATED PVC, SCH. 40 UNDERDRAIN PIPE

APPROVED: DEPARTMENT OF PUBLIC WORKS  
CHIEF, BUREAU OF HIGHWAYS  
APPROVED: DEPARTMENT OF PLANNING AND ZONING  
CHIEF, DIVISION OF LAND DEVELOPMENT  
CHIEF, DEVELOPMENT ENGINEERING DIVISION

8/21/16  
9-14-16  
8-22-16

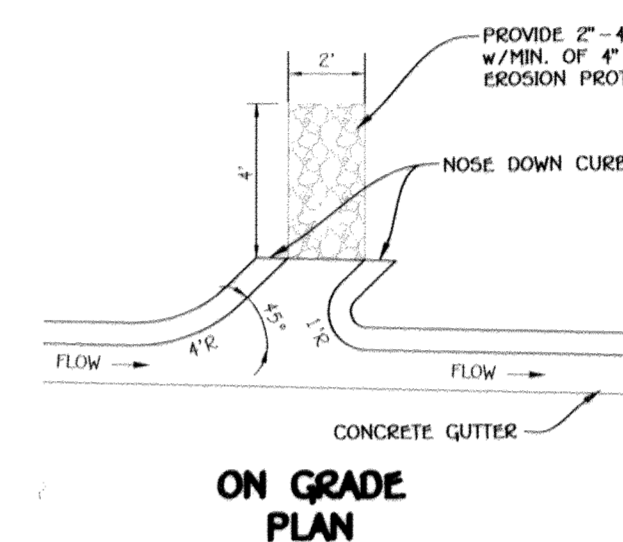
NOTE: PIPE SHALL BE WRAPPED WITH A 1/4" (NO. 4 OR 4 x 4) GALVANIZED HARDWARE CLOTH.



SCH 40 PVC PERFORATED UNDERDRAIN PIPE DETAIL FOR HORIZONTAL DRAIN PIPE

NO SCALE

PIPE SIZE: 6" HOLE SIZE: 3/8" CENTER TO CENTER: 3" ROWS OF HOLES: 2 @ 90° 2 @ 160° (4-3")



ON GRADE PLAN

SUMP PLAN

PROVIDE 2" - 4" AGGREGATE (RIVER JACK) W/ MIN. OF 4" DEPTH FOR EROSION PROTECTION AT CURB CUT

NOSE DOWN CURB

CONCRETE GUTTER

CONCRETE GUTTER

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PROVIDE 2" - 4" AGGREGATE (RIVER JACK) W/ MIN. OF 4" DEPTH FOR EROSION PROTECTION AT CURB CUT

NOSE DOWN CURB

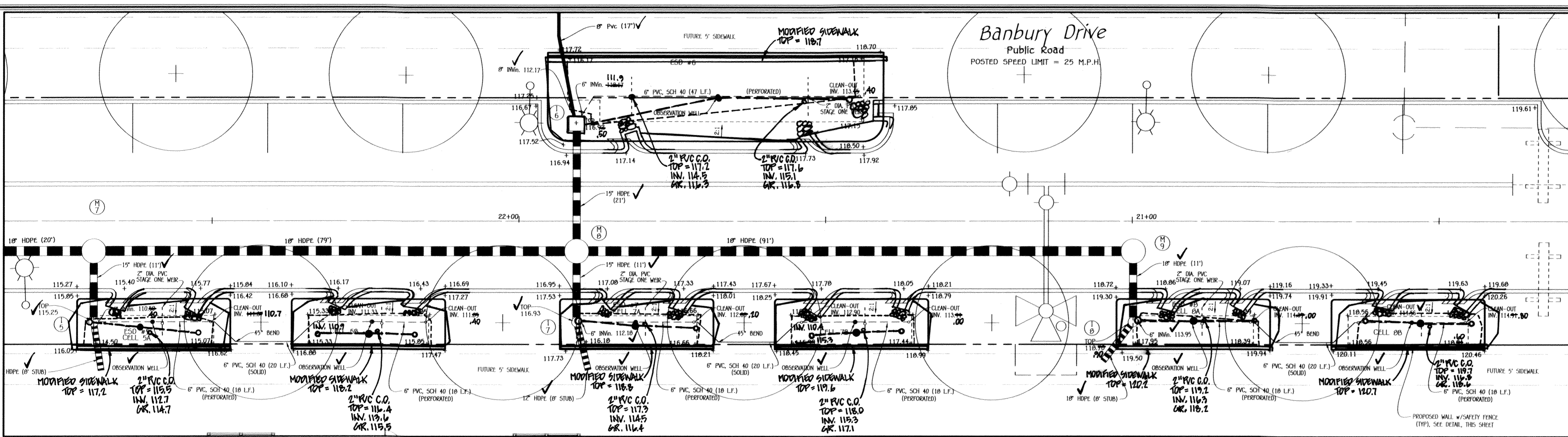
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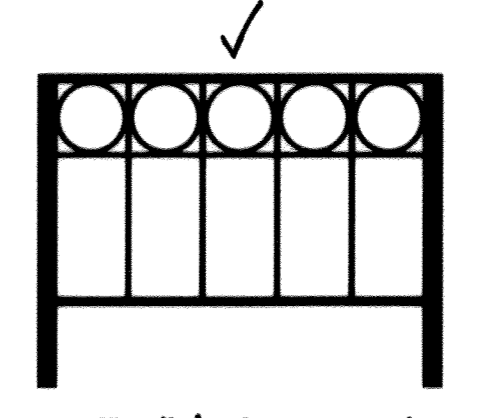
CONCRETE GUTTER

</

APPROVED: *[Signature]* 8/9/16  
 CHIEF, BUREAU OF HIGHWAYS  
 APPROVED: *[Signature]* 9.14.16  
 CHIEF, DIVISION OF PLANNING AND ZONING  
 APPROVED: *[Signature]* 8.22.16  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

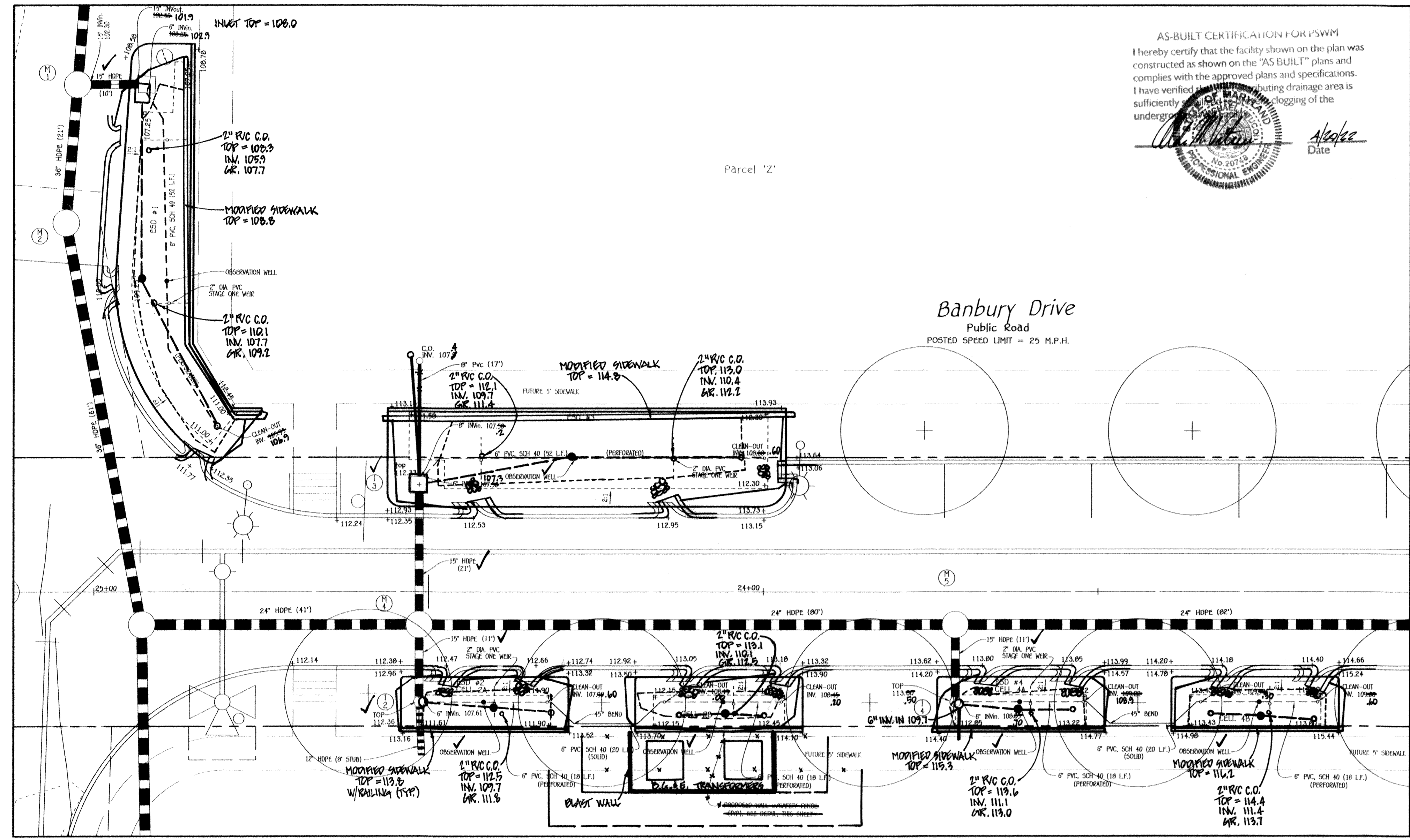


**PROPOSED MICRO BIO-RETENTION (M-6)**  
 ESD Nos. 5 thru 8 PLAN VIEW  
 SCALE: 1" = 10'



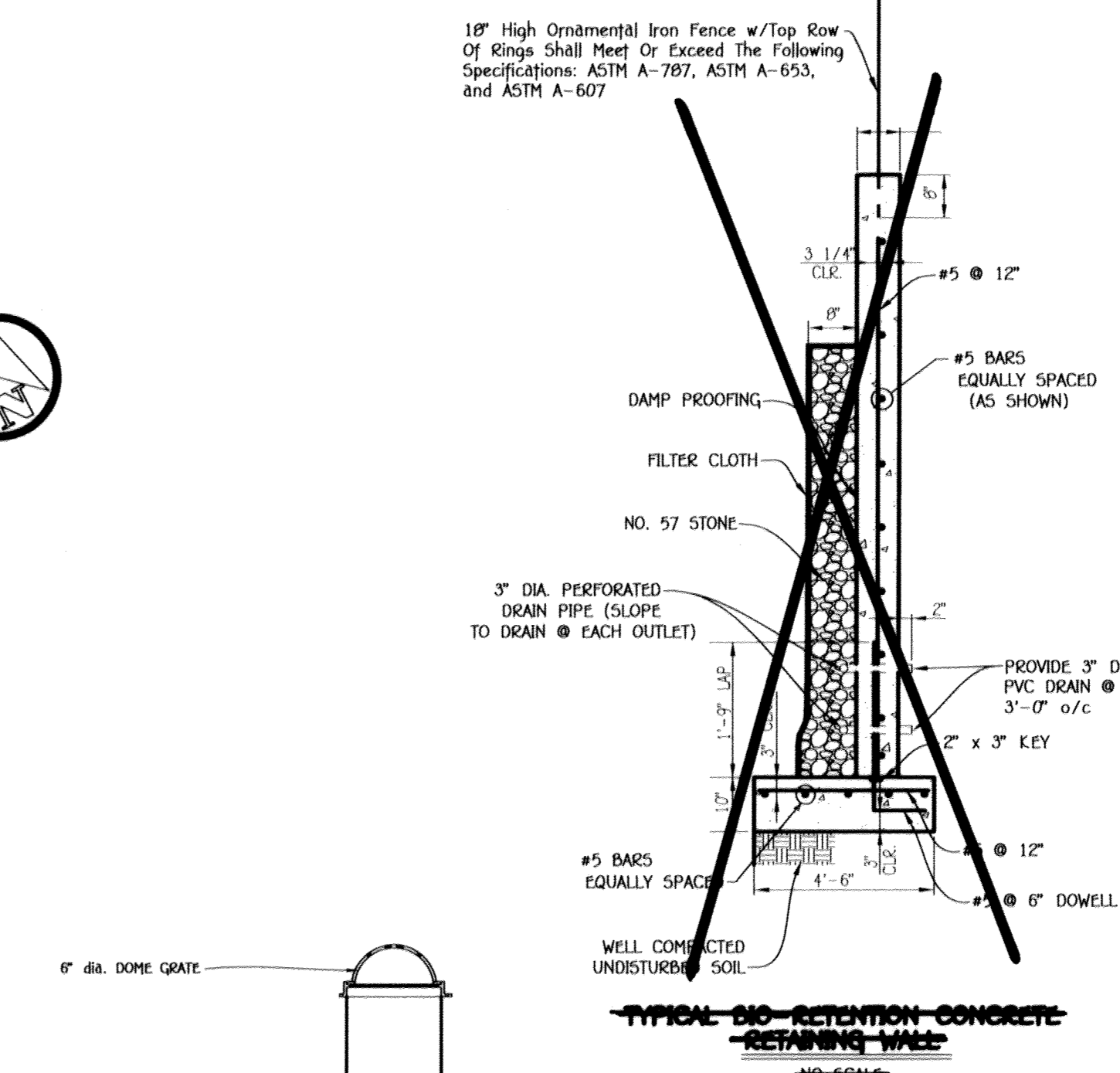
**18" High Ornamental Iron Fence w/Top Row Of Rings (OR EQUAL)**  
 INSTALLED UNDER 90P-19-093

18" High Ornamental Iron Fence w/Top Row Of Rings shall Meet Or Exceed The Following Specifications: ASTM A-787, ASTM A-653, and ASTM A-607

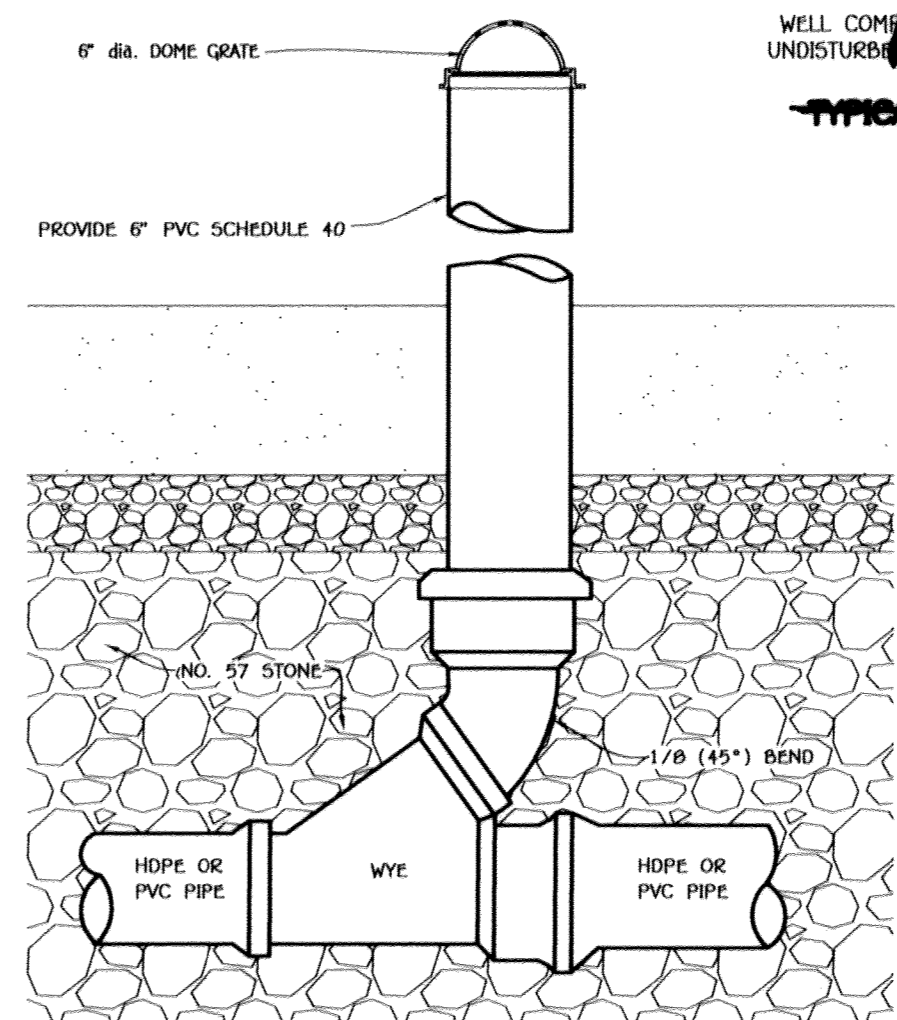


**PROPOSED MICRO BIO-RETENTION (M-6)**  
 ESD Nos. 1 thru 4 PLAN VIEW  
 SCALE: 1" = 10'

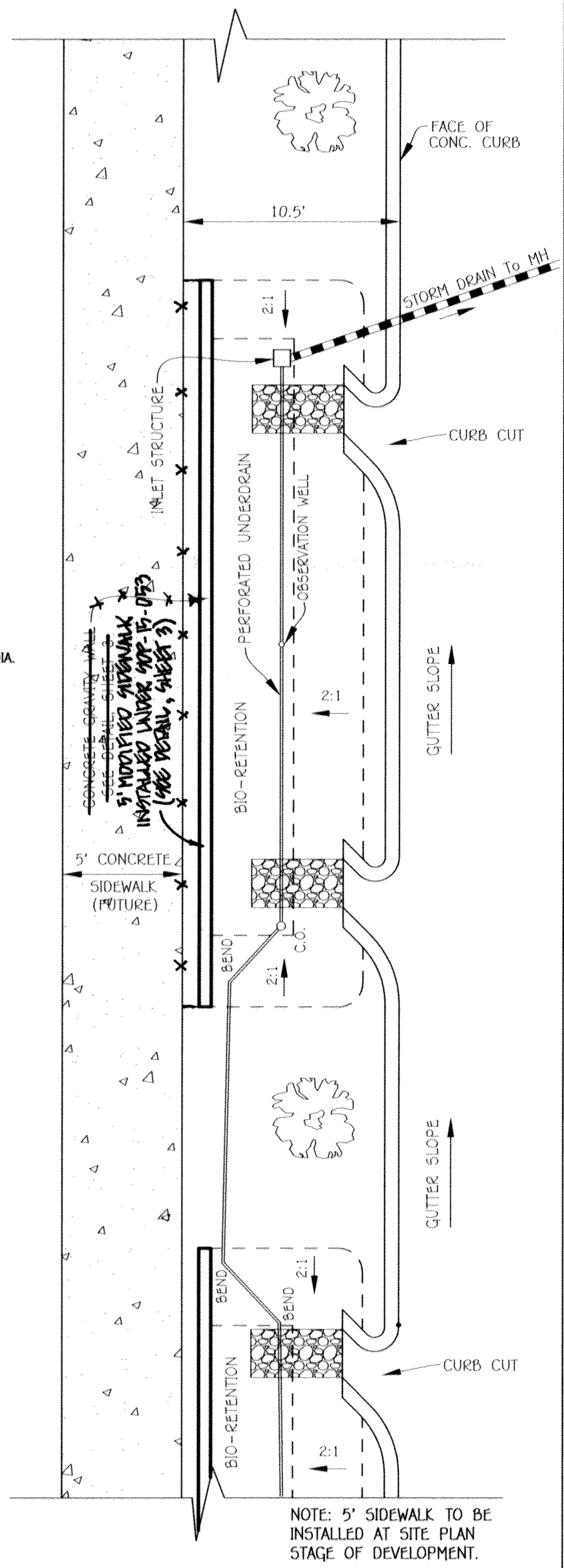
**AS-BUILT CERTIFICATION FOR PWSM**  
 I hereby certify that the facility shown on the plan was constructed as shown on the "AS BUILT" plans and complies with the approved plans and specifications. I have verified that the existing drainage area is sufficiently sized to prevent logging of the underground facility.  
*[Signature]*  
 Date: \_\_\_\_\_



**TYPICAL BIO-RETENTION CONCRETE RETAINING WALL**

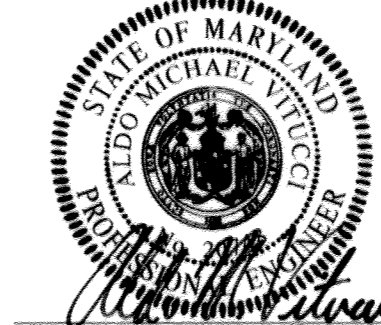


**TYPICAL CLEAN-OUT DETAIL**  
 NO SCALE



**TYPICAL DOUBLE BIO-RETENTION CELL PLAN ALONG ROADWAY**  
 SCALE: 1" = 5'

**STORMWATER MANAGEMENT PLAN VIEWS**  
**OXFORD SQUARE**  
 "A Howard County Green Neighborhood"  
 Banbury Drive  
 (Sta. 20+28.21 to Sta. 25+13.13)

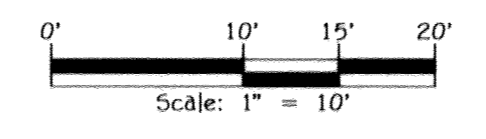


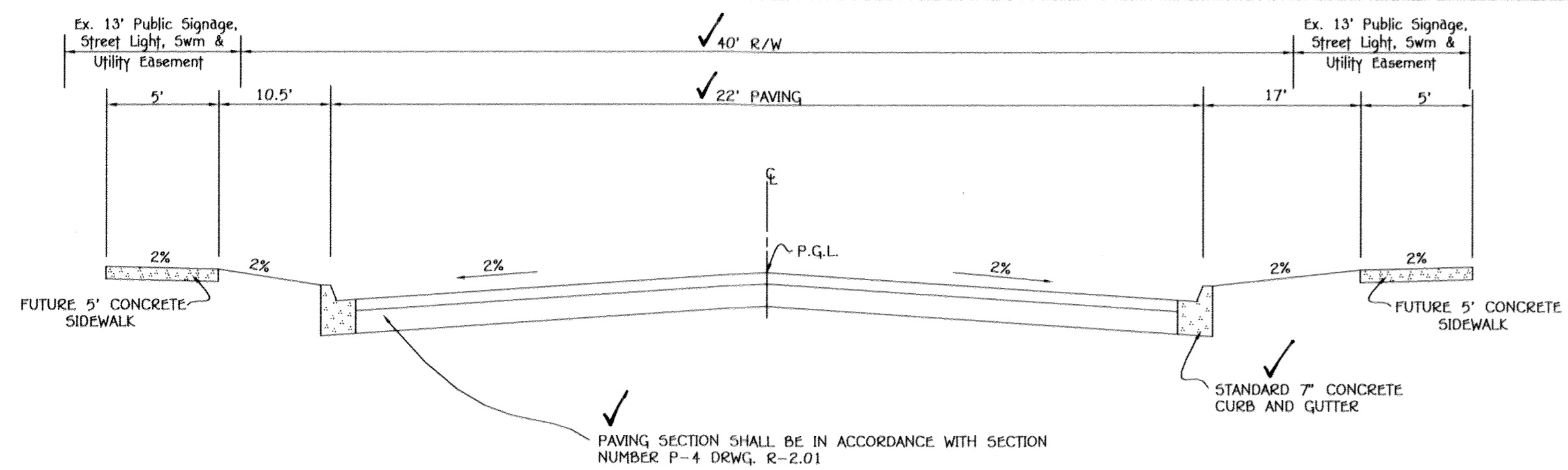
Aldo M. Vitucci, P.E.  
 "Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly Licensed Professional Engineer under the laws of the State of Maryland, License No. 20748, Expiration Date 2-22-17."

**FISHER, COLLINS & CARTER, INC.**  
 CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS  
 10712 BATHURST NATIONAL PKCE  
 ELLETTT CITY, MARYLAND 21042  
 (410) 461-2895

**Owner**  
 Kellogg-CCP, LLC  
 c/o David P. Scheffenacker, Jr.,  
 Managing Member  
 2330 West Joppa Road, Suite 190  
 Lutherville, Maryland 21093-4614  
 Ph# 410-296-3800

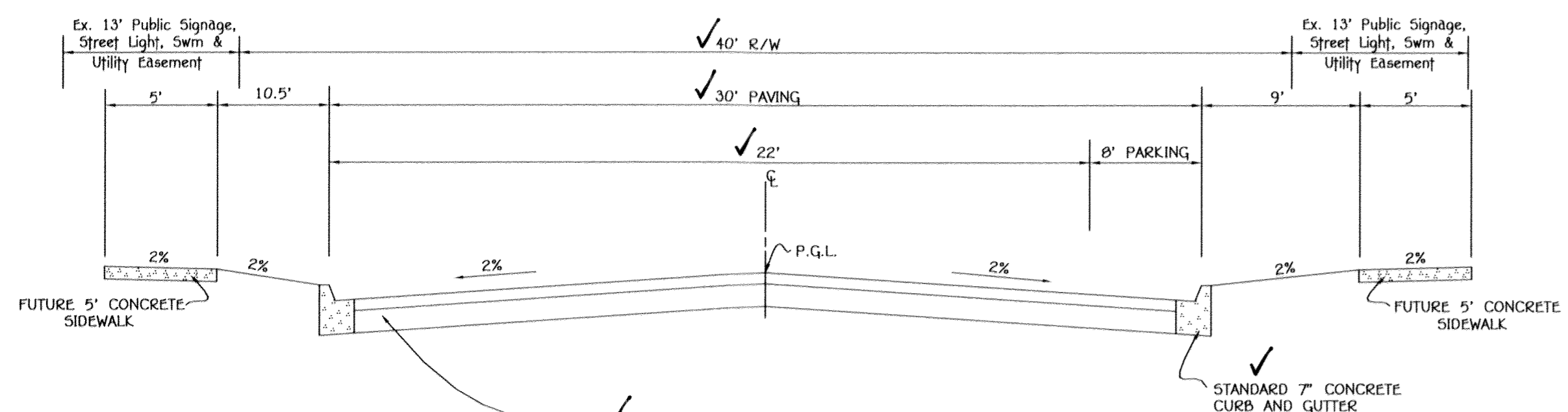
**Developer**  
 Preston + Scheffenacker Properties  
 2330 West Joppa Road, Suite 190  
 Lutherville, Maryland 21093-4614  
 Ph# 410-296-3800





TYPICAL ROADWAY SECTION

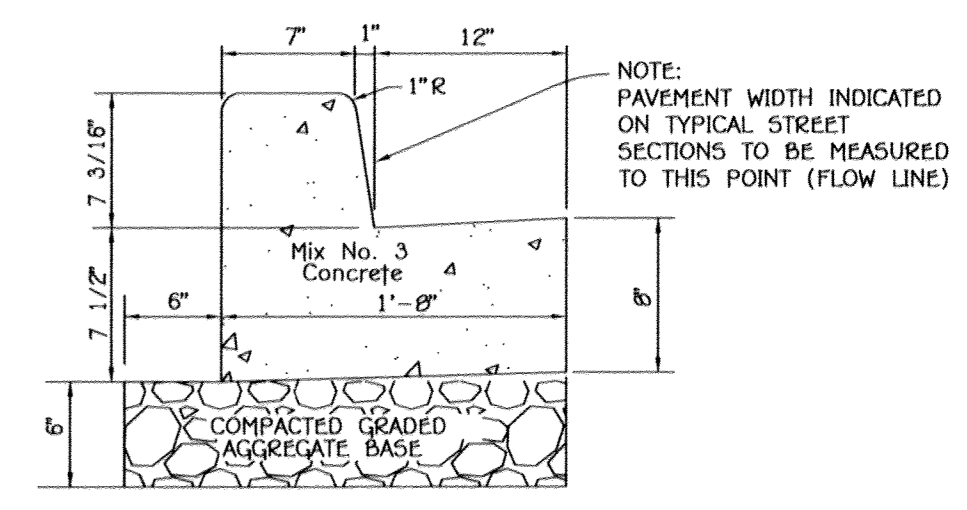
NO SCALE



TYPICAL ROADWAY SECTION

NO SCALE

APPROVED: DEPARTMENT OF PUBLIC WORKS  
 M. M. M. 5/11/2016  
 CHIEF, BUREAU OF HIGHWAYS DATE  
 APPROVED: DEPARTMENT OF PLANNING AND ZONING  
 K. S. S. 9-14-16  
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE  
 A. E. E. 8-22-16  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

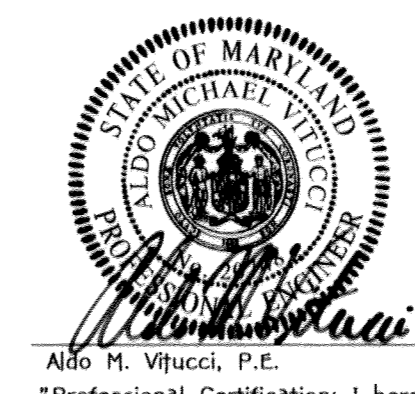
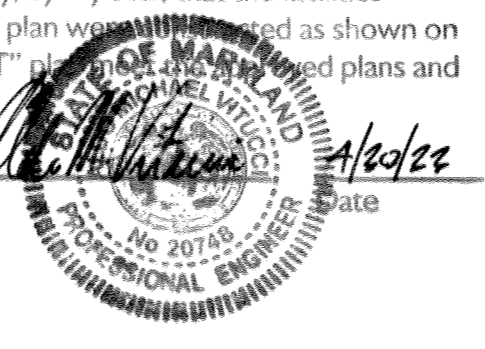


STD. 7' CONC. CURB AND GUTTER  
 NO SCALE R-3.01

SECTION NUMBER	ROAD AND STREET CLASSIFICATION	CALIFORNIA BEARING RATIO (CBR)						
		3 TO <5	5 TO <7	>7	3 TO <5	5 TO <7	>7	
P-4	MINOR COLLECTORS: NON-RESIDENTIAL MAJOR COLLECTORS	PAVEMENT MATERIAL (INCHES)	MIN HMA WITH GAB			HMA WITH CONSTANT GAB		
		HMA SUPERPAVE FINAL SURFACE 12.5 MM PG 64-22, LEVEL 2 (LOW ESAL)	2.0	2.0	2.0	2.0	2.0	2.0
		HMA SUPERPAVE INTERMEDIATE SURFACE 12.5 MM PG 64-22, LEVEL 2 (LOW ESAL)	2.0	2.0	2.0	2.0	2.0	2.0
		HMA SUPERPAVE BASE 19.0 MM PG 64-22, LEVEL 2 (LOW ESAL)	4.0	4.0	3.0	6.0	5.0	3.0
		GRADED AGGREGATE BASE (GAB)	13.0	7.0	4.0	6.0	6.0	6.0

**SIDEWALK NOTE:**  
 FUTURE CONCRETE SIDEWALKS WILL BE PRIVATELY OWNED & MAINTAINED BY THE OXFORD SQUARE COMMERCIAL ASSOCIATION, INC. AS RESIDENTIAL AND COMMERCIAL LOTS/PARCELS ARE DEVELOPED. PERIMETER SIDEWALKS ON EACH LOT/PARCEL SHALL BE CONSTRUCTED WITH EACH FUTURE SITE DEVELOPMENT PLAN. ADDITIONALLY, SIDEWALKS FROM RESIDENTIAL LOTS/PARCELS SHALL BE CONTINUED ON AND OVER ADJACENT RESIDENTIAL LOTS/PARCELS TO PROVIDE A CONTINUOUS WALKWAY FROM THE SUBJECT LOT/PARCEL UNDER DEVELOPMENT TO THE PUBLIC SCHOOL SITE.

AS-BUILT CERTIFICATION  
 I hereby certify, by my seal, that the facilities shown on this plan were constructed as shown on this "AS BUILT" plan in accordance with the plans and specifications.



Also M. Vitucci, P.E.  
 "Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly Licensed Professional Engineer under the laws of the State of Maryland, License No. 20745, Expiration Date 2-22-17."

ROADWAY DETAILS  
**OXFORD SQUARE**  
 "A Howard County Green Neighborhood"  
 Banbury Drive  
 (Sta. 20+28.21 to Sta. 25+13.13)

Zoned: TOC  
 Tax Map: 38, Parcel: 1003, Grid: 20 and Tax Map: 44, Parcel 1003, Grid 1  
 Feet Election District - Howard County, Maryland  
 Date: April 12, 2016  
 Sheet 5 of 15

FISHER, COLLINS & CARTER, INC.  
 CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS  
 CENTRAL SQUARE OFFICE PARK - 10272 BALDORNE NATIONAL PKWY.  
 ELLETTT CITY, MARYLAND 21042  
 (410) 461-2895

**Owner**  
 Kellogg-CCP, LLC  
 c/o David P. Scheffnacker, Jr.,  
 Managing Member  
 2330 West Joppa Road, Suite 190  
 Lutherville, Maryland 21093-4614  
 Ph: 410-296-3800

**Developer**  
 Preston - Scheffnacker Properties  
 2330 West Joppa Road, Suite 190  
 Lutherville, Maryland 21093-4614  
 Ph: 410-296-3800

(Per F-12-026)  
 NRF # 2  
 EXISTING SWM FACILITY  
 No. 2 (SDP-89-275)  
 THE BARREL/RISER ASSEMBLY  
 FOR THIS FACILITY IS TO BE  
 REMOVED AND THE DAM  
 BREACHED IN THE SAME  
 AREA. ANY STANDING WATER  
 WILL BE PUMPED THROUGH A  
 SEDIMENT FILTER BAG AND  
 RELEASE ON EXISTING GRADE  
 AT NON-EROSIVE VELOCITIES.

MATCH LINE THIS SHEET

SEDIMENT CONTROL LEGEND

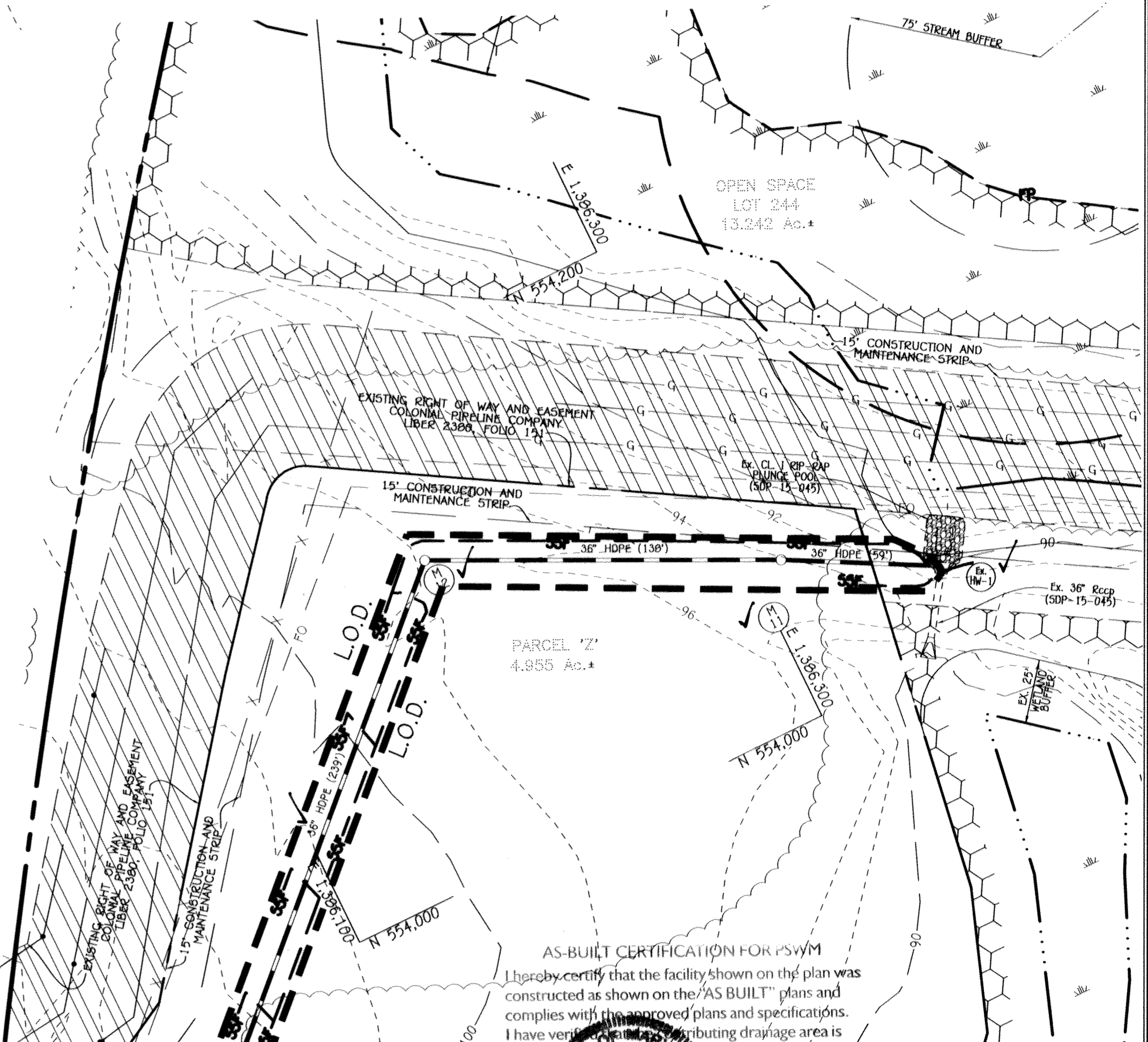
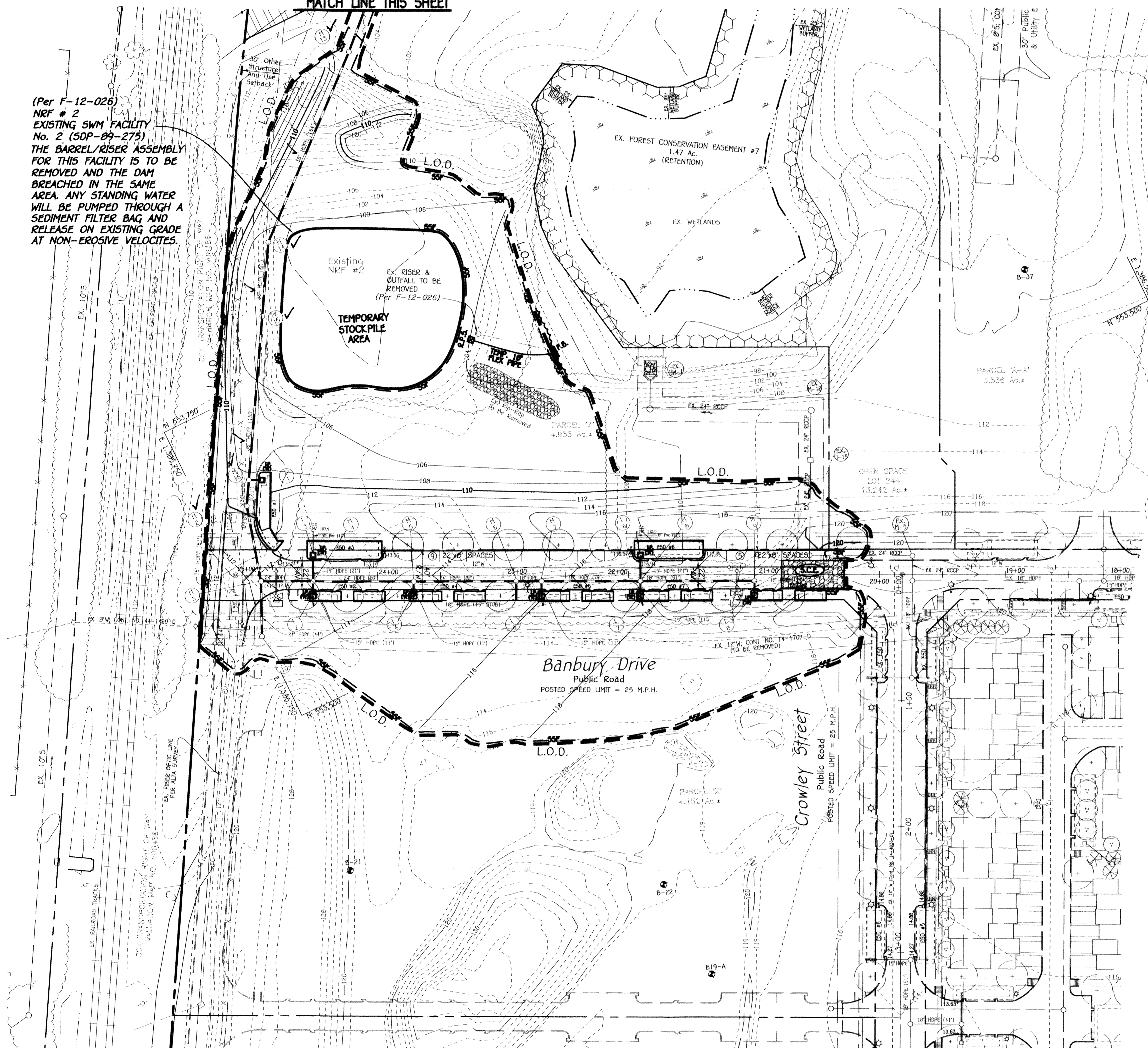
- SF—SF—SF— SILT FENCE
- SSF—SSF—SSF— SUPER-SILT FENCE
- S.C.E. STABILIZED CONSTRUCTION ENTRANCE
- L.O.D. — LIMIT OF DISTURBANCE
- I.P. (A) STANDARD INLET PROTECTION (TYPE 'A')
- ▣ F.B. FILTER BAG
- ⊠ R.P.S. REMOVABLE PUMPING STATION

**ENGINEER'S CERTIFICATE**  
 I hereby certify that this plan for Erosion and Sediment Control Represents A Practical And Workable Plan Based On My Personal Knowledge Of The Site Condition And That It Was Prepared In Accordance With The Requirements Of The Howard Soil Conservation District.  
 Signature of Engineer: *David P. Scheffacker, Jr.* Date: 9/2/16

**DEVELOPER'S CERTIFICATE**  
 I/We Certify That All Development And Construction Will Be Done According To This Plan Of Development And Plan For Erosion And Sediment Control And That All Responsible Personnel Involved In The Construction Project Will Have A Certificate Of Attendance At A Department Of Natural Resources Approved Training Program For The Control Of Sediment And Erosion Before Beginning The Project. I Also Authorize Periodic On-Site Inspection By The Howard Soil Conservation District Or Their Authorized Agents, As Are Deemed Necessary.  
 Signature of Developer: *David P. Scheffacker, Jr.* Date: 8/2/16

Approved: This Development Is Approved For Erosion And Sediment Control By The Howard Soil Conservation District.  
 Signature: *John K. Roberts* Date: 4/26/16  
 District Howard Soil Conservation Dist.  
 Approved: Department Of Planning And Zoning  
 Signature: *Kate Schuchman* Date: 9-14-16  
 Chief, Division Of Land Development  
 Signature: *Chris Hill* Date: 8-22-16  
 Chief, Development Engineering Division  
 Approved: Howard County Department Of Public Works  
 Signature: *Samuel J. Hill* Date: 8/19/16  
 Chief, Bureau Of Highways

REVISIONS		
NO.	DESCRIPTION	DATE



MATCH LINE THIS SHEET

AS-BUILT CERTIFICATION FOR SWM  
 I hereby certify that the facility shown on the plan was constructed as shown on the "AS BUILT" plans and complies with the approved plans and specifications. I have verified that the contributing drainage area is sufficient to prevent clogging of the underdrains.  
 Signature: *David P. Scheffacker, Jr.*  
 Date: 9/2/16



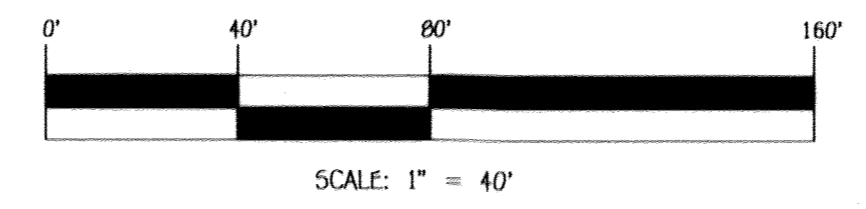
Aldo M. Vitucci, P.E. 9/2/16 Date  
 "Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly Licensed Professional Engineer under the laws of the State of Maryland, License No. 20748, Expiration Date 2-22-17."

**GRADING & SEDIMENT CONTROL PLAN**  
**OXFORD SQUARE**  
 "A Howard County Green Neighborhood"  
 Banbury Drive  
 (Sta. 20+28.21 to Sta. 25+13.13)  
 Zoned: TCO  
 Tax Map: 30, Parcel: 1003, Grid: 20 And Tax Map: 44, Parcel: 1003, Grid 1  
 First Election District - Howard County, Maryland  
 Date: June 3, 2016  
 Sheet 6 of 15

**FISHER, COLLINS & CARTER, INC.**  
 CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS  
 OXFORD SQUARE OFFICE PARK - 10772 BALTIMORE NATIONAL, P.E.C.  
 ELIZABETH CITY, MARYLAND 21042  
 (410) 461-2895

**Owner**  
 Kellogg - CCP, LLC  
 c/o David P. Scheffacker, Jr.,  
 Managing Member  
 2330 West Joppa Road, Suite 190  
 Lutherville, Maryland 21093-4614  
 Ph# 410-296-3800

**Developer**  
 Preston - Scheffacker Properties  
 2330 West Joppa Road, Suite 190  
 Lutherville, Maryland 21093-4614  
 Ph# 410-296-3800



**SOIL PREPARATION, TOPSOILING AND SOIL AMENDMENTS (B-4-2)**

- A. Soil Preparation**
- Temporary Stabilization
    - Soil preparation consists of loosening soil to a depth of 3 to 5 inches by means of suitable agricultural or construction equipment, such as disc harrows or chisel plows or ripers mounted on construction equipment. After the soil is loosened, it must not be rolled or dragged smooth but left in the roughened condition. Slopes 2:1 or flatter are to be tracked with ridges running parallel to the contour of the slope.
    - Apply fertilizer and lime as prescribed on the plans.
    - Incorporate lime and fertilizer into the top 3 to 5 inches of soil by disking or other suitable means.
  - Permanent Stabilization
    - A soil test is required for any earth disturbance of 5 acres or more. The minimum soil conditions required for permanent vegetative establishment are:
      - Soil pH between 6.0 and 7.0.
      - Soluble salts less than 500 parts per million (ppm).
      - Soil contains less than 40 percent clay but enough fine grained material (greater than 30 percent silt plus clay) to provide the capacity to hold a moderate amount of moisture. An exception: if lowgrass will be planted, then a sandy soil (less than 30 percent silt plus clay) may be used.
      - Soil contains 1.5 percent minimum organic matter by weight.
      - Soil contains sufficient pore space to permit adequate root penetration.
    - Application of amendments or topsoil is required if on-site soils do not meet the above conditions.
    - Graded areas must be maintained in a true and even grade as specified on the approved plan, then accepted or otherwise loosened to a depth of 3 to 5 inches.
    - Apply soil amendments as specified on the approved plan or as indicated by the results of a soil test.
    - Mix soil amendments into the top 3 to 5 inches of soil by disking or other suitable means. Rate lawn areas to smooth the surface, remove large objects like stones and branches, and ready the area for seed application. Loosen surface soil by dragging with a heavy chain or other equipment to roughen the surface where site conditions will not permit normal seeded preparation. Track slopes 3:1 or flatter with tracked equipment leaving the soil in an irregular condition with ridges running parallel to the contour of the slope. Leave the top 1 to 3 inches of soil loose and friable. Seeded loosening may be unnecessary on newly disturbed areas.

- B. Topsoiling**
- Topsoil is placed over prepared subsoil prior to establishment of permanent vegetation. The purpose is to provide a suitable soil medium for vegetative growth. Soils of concern have low moisture content, low nutrient levels, low pH, materials toxic to plants, and/or undesirable soil conditions.
  - Topsoil obtained from an existing site may be used provided it meets the standards as set forth in these specifications. Typically, the depth of topsoil to be added for a given soil type can be found in the representative soil profile section in the Soil Survey published by USDA-NRCS.
  - Topsoiling is limited to areas having 2:1 or flatter slopes where:
    - The texture of the exposed subsoil/parent material is not adequate to produce vegetative growth.
    - The soil material is so shallow that the rooting zone is not deep enough to support plants or furnish containing supplies of moisture and plant nutrients.
    - The original soil to be vegetated contains material toxic to plant growth.
    - The soil is so acidic that treatment with limestone is not feasible.
  - Areas having slopes steeper than 2:1 require special consideration and design.
  - Topsoil Specifications: Soil to be used as topsoil must meet the following criteria:
    - Topsoil must be a loam, sandy loam, clay loam, silt loam, sandy clay loam, or loamy sand. Other soils may be used if recommended by an agronomist or soil scientist and approved by the appropriate approval authority. Topsoil must not be a mixture of contrasting textured subsoils and must contain less than 5 percent by volume of cinders, stones, slag, coarse fragments, gravel, sticks, roots, trash, or other materials larger than 1 1/2 inches in diameter.
    - Topsoil must be free of noxious plants or plant parts such as Bermuda grass, quack grass, Johnson grass, nut sedge, poison ivy, thistle, or others as specified.
    - Topsoil substitutes or amendments, as recommended by a qualified agronomist or soil scientist and approved by the appropriate approval authority, may be used in lieu of natural topsoil.

- C. Soil Amendments (Fertilizer and Lime Specifications)**
- Soil tests must be performed to determine the exact rates and application rates for both lime and fertilizer on sites having disturbed areas of 5 acres or more. Soil analysis may be performed by a recognized private or commercial laboratory. Soil samples taken for engineering purposes may also be used for chemical analyses.
  - Fertilizers must be uniform in composition, free flowing and suitable for accurate application by appropriate equipment. Manure may be substituted for fertilizer with prior approval from the appropriate approval authority. Fertilizers must all be delivered to the site fully labeled according to the applicable laws and must bear the name, trade name or trademark and warranty of the producer.
  - Lime materials must be ground limestone (hydrated or burnt lime may be substituted except when hydrosedding) which contains at least 50 percent total oxides (calcium oxide plus magnesium oxide). Limestone must be ground to such fineness that at least 50 percent will pass through a #100 mesh sieve and 90 to 100 percent will pass through a #20 mesh sieve.
  - Lime and fertilizer are to be evenly distributed and incorporated into the top 3 to 5 inches of soil by disking or other suitable means.
  - Where the subsoil is either highly acidic or composed of heavy clays, spread ground limestone at the rate of 4 to 8 tons/acre (200-400 pounds per 1,000 square feet) prior to the placement of topsoil.

**Permanent Seeding Summary**

Hardness Zone (from Figure B.3):	lb	Fertilizer Rate (10-20-20)	Lime Rate
Seed Mixture (from Table B.3):	lb		
No. Species Application Rate (lb/ac)	Seeding Dates	Seeding Depth	N P <sub>2</sub> O <sub>5</sub> K <sub>2</sub> O
0 TALL FESCUE 100	Mar. 1-May 15 Aug. 1-Oct. 15	1/4"-1/2" in.	45 lb./ac (10 lb./1000 sq ft)
			90 lb./ac (2 lb./1000 sq ft)
			2 tons/ac (90 lb./1000 sq ft)

- TEMPORARY SEEDING NOTES (B-4-4)**
- Definition**  
To stabilize disturbed soils with vegetation for up to 6 months.
- Purpose**  
To use fast growing vegetation that provides cover on disturbed soils.
- Conditions Where Practice Applies**  
Exposed soils where ground cover is needed for a period of 6 months or less. For longer duration of time, permanent stabilization practices are required.
- Criteria**
- Select one or more of the species or mixtures listed in Table B.1 for the appropriate Plant Hardness Zone (from Figure B.3), and enter them in the Temporary Seeding Summary below along with application rates, seeding dates and seeding depths. This summary is not put on the plan and completed, then Table B.1 plus fertilizer and lime rates must be put on the plan.
  - For sites having soil tests performed, use and show the recommended rates by the testing agency. Soil tests are not required for Temporary Seeding.
  - When stabilization is required outside of a seeding season, apply seed and mulch or straw mulch alone as prescribed in Section B-4-3A.1.b and maintain until the next seeding season.

**Temporary Seeding Summary**

Hardness Zone (from Figure B.3):	lb	Fertilizer Rate (10-20-20)	Lime Rate
Seed Mixture (from Table B.1):	lb		
Species Application Rate (lb/ac)	Seeding Dates	Seeding Depth	
BARLEY 96	3/1 - 5/15 8/15 - 10/15	1"	436 lb./ac (10 lb./1000 sq ft)
OATS 72	3/1 - 5/15 8/15 - 10/15	1"	2 tons/ac (90 lb./1000 sq ft)
RYE 112	3/1 - 5/15 8/15 - 10/15	1"	

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 CENTRAL SQUARE OFFICE PARK - 10772 BELTFRONT NATIONAL PARK  
 ELLSWORTH CITY, MARYLAND 21042  
 (410) 461-2895

**PERMANENT SEEDING NOTES (B-4-5)**

- A. Seed Mixtures**
- General Use
    - Select one or more of the species or mixtures listed in Table B.3 for the appropriate Plant Hardness Zone (from Figure B.3) and based on the site condition or purpose found on Table B.2. Enter selected mixtures, application rates, and seeding dates in the Permanent Seeding Summary. The Summary is to be placed on the plan.
    - Additional planting specifications for exceptional sites such as shorelines, stream banks, or dunes or for special purposes such as wildlife or aesthetic treatment may be found in USDA-NRCS Technical Field Office Guide, Section 342 - Critical Area Planting.
    - For sites having disturbed area over 5 acres, use and show the rates recommended by the testing agency. Soil tests are not required for Permanent Seeding.
    - For areas receiving low maintenance, apply urea form fertilizer (46-0-0) at 3 1/2 pounds per 1000 square feet (150 pounds per acre) at the time of seeding in addition to the soil amendments shown in the Permanent Seeding Summary.
  - Turfgrass Mixtures
    - Areas where turfgrasses may be desired include lawns, parks, playgrounds, and commercial sites which will receive a medium to high level of maintenance.
    - Select one or more of the species or mixtures listed below based on the site conditions or purpose. Enter selected mixtures, application rates, and seeding dates in the Permanent Seeding Summary. The summary is to be placed on the plan.
      - Kentucky Bluegrass: Full Sun Mixture: For use in areas that receive intensive management, irrigation required in the areas of central Maryland and Eastern Shore. Recommended Certified Kentucky Bluegrass Cultivars Seeding Rate: 1.5 to 2.0 pounds per 1000 square feet. Choose a minimum of three Kentucky Bluegrass cultivars with each ranging from 10 to 95 percent of the total mixture by weight.
      - Kentucky Bluegrass/Perennial Rye: Full Sun Mixture: For use in full sun areas where rapid establishment is necessary and when turf will receive medium to intensive management. Certified Perennial Ryegrass Cultivars/Certified Kentucky Bluegrass Seeding Rate: 2 pounds mixture per 1000 square feet. Choose a minimum of three Kentucky bluegrass cultivars with each ranging from 10 to 35 percent of the total mixture by weight.
      - Tall Fescue/Kentucky Bluegrass: Full Sun Mixture: For use in drought prone areas and/or for areas receiving low to medium management in full sun to medium shade. Recommended mixture includes: Certified Tall Fescue Cultivars 95 to 100 percent, Certified Kentucky Bluegrass Cultivars 0 to 5 percent. Seeding Rate: 5 to 8 pounds per 1000 square feet. One or more cultivars may be blended.
      - Kentucky Bluegrass/Fine Fescue: Shade Mixture: For use in areas with shade in Bluegrass lawns. For establishment in high quality, intensively managed turf area. Mixture includes: Certified Kentucky Bluegrass Cultivars 30 to 40 percent and Certified Fine Fescue and 60 to 70 percent. Seeding Rate: 1 1/2 to 3 pounds per 1000 square feet.

- Notes:**  
 Select turfgrass varieties from those listed in the most current University of Maryland Publication, Agronomy Memo #77, "Turfgrass Cultivar Recommendations for Maryland".  
 Choose certified material. Certified material is the best guarantee of cultivar purity. The certification program of the Maryland Department of Agriculture, Turf and Seed Section, provides a reliable means of consumer protection and assures a pure genetic line.
- Ideal times of Seeding for Turf Grass Mixtures: Western MD: March 15 to June 1, August 1 to October 1 (Hardness Zone: 5b, 6a) Central MD: March 1 to May 15, August 15 to October 15 (Hardness Zone: 6b) Southern MD, Eastern Shore: March 1 to May 15, August 15 to October 15 (Hardness Zone: 7a, 7b)
  - All areas to receive seed by disking or other approved methods to a depth of 2 to 4 inches, level and rake the areas to prepare a proper seedbed. Remove stones and debris over 1 1/2 inches in diameter. The resulting seedbed must be in such condition that future mowing of grasses will pose no difficulty.
  - If soil moisture is deficient, supply new seedlings with adequate water for plant growth (1/2 to 1 inch every 3 to 4 days depending on soil texture) until they are firmly established. This is especially true when seedlings are made late in the planting season, in abnormally dry or hot seasons, or on adverse sites.

**Standard Stabilization Note**

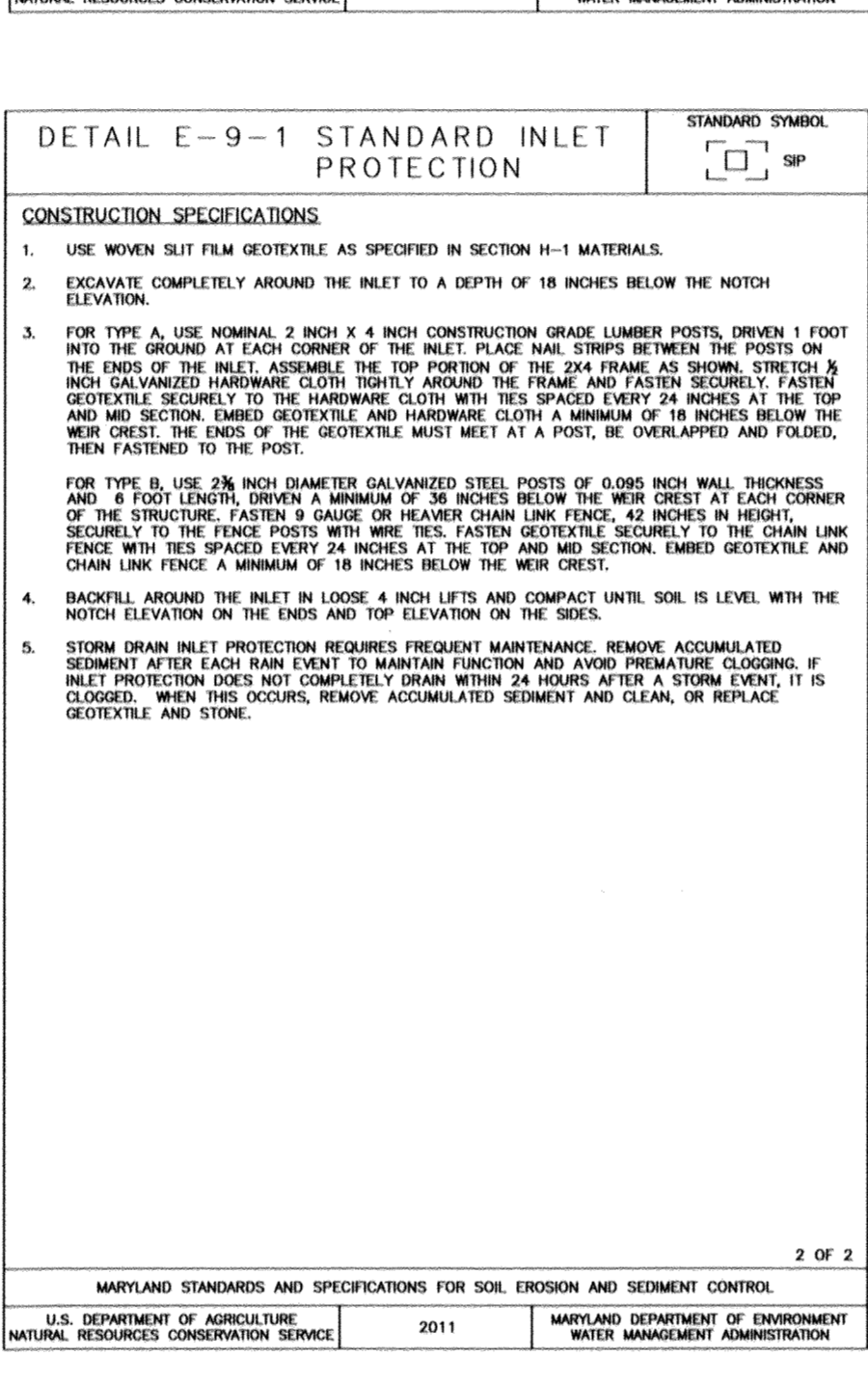
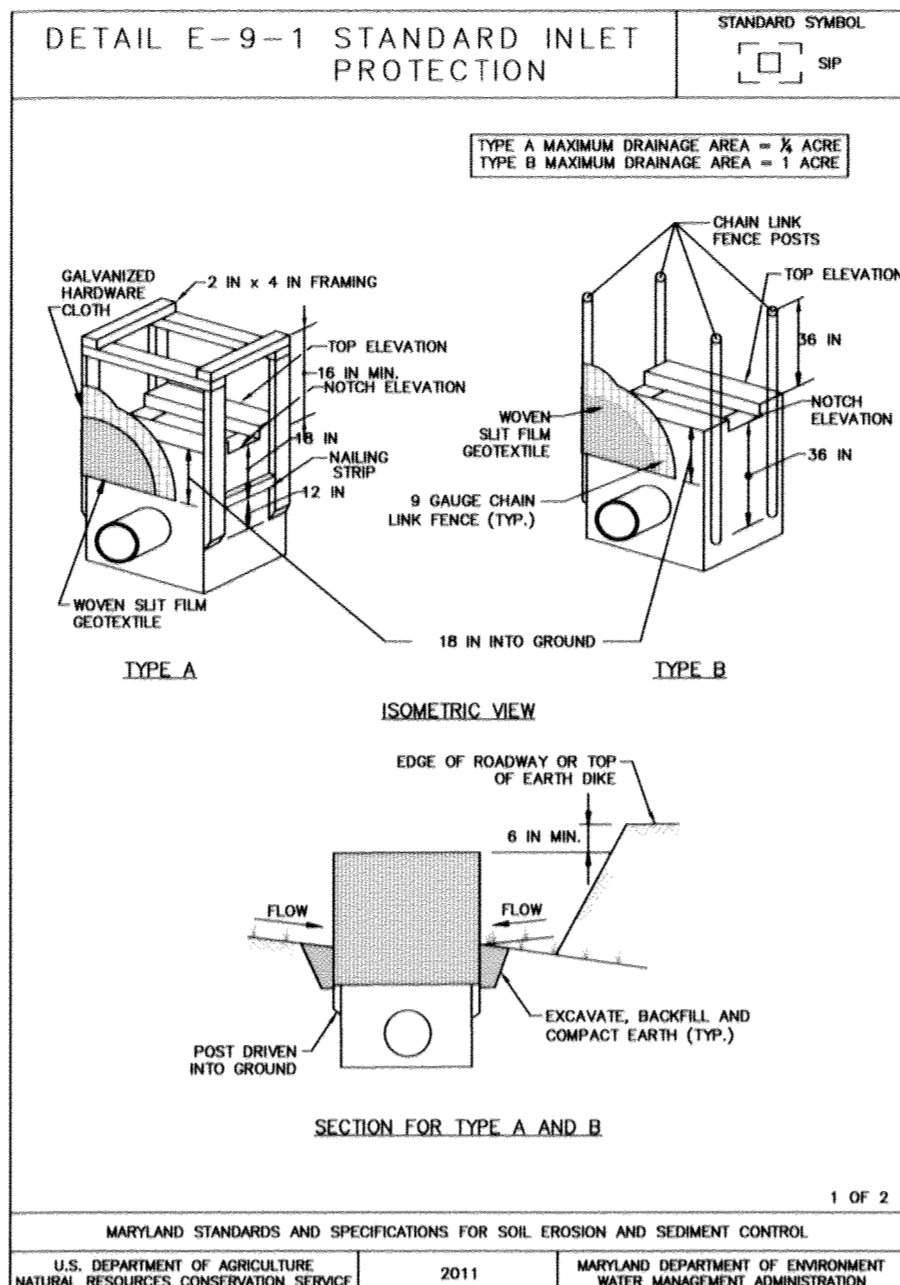
FOLLOWING INITIAL SOIL DISTURBANCE OR RE-DISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION MUST BE COMPLETED WITHIN:

- THREE (3) CALENDAR DAYS AS TO THE SURFACE OF ALL PERIMETER DIKES, SWALES, DITCHES, PERIMETER SLOPES AND ALL SLOPES STEEPER THAN 3 HORIZONTAL TO 1 VERTICAL (3:1); AND
- SEVEN (7) CALENDAR DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE NOT UNDER ACTIVE GRADING.

- B-4-8 STANDARDS AND SPECIFICATIONS FOR STOCKPILE AREA**
- Definition**  
A mound or pile of soil protected by appropriately designed erosion and sediment control measures.
- Purpose**  
To provide a designated location for the temporary storage of soil that controls the potential for erosion, sedimentation, and changes to drainage patterns.
- Conditions Where Practice Applies**  
Stockpile areas are utilized when it is necessary to subgrade and store soil for later use.
- Criteria**
- The stockpile location and all related sediment control practices must be clearly indicated on the erosion and sediment control plan.
  - The footprint of the stockpile must be sized to accommodate the anticipated volume of material and based on a side slope ratio no steeper than 2:1. Benching must be provided in accordance with Section B-3 Land Grading.
  - Runoff from the stockpile area must drain to a suitable sediment control practice.
  - Access the stockpile area from the upgrade side.
  - Clear water runoff into the stockpile area must be minimized by use of a diversion device such as an earth dike, temporary walls or diversion fence. Provisions must be made for discharging concentrated flow in a non-erosive manner.
  - Where runoff concentrates along the toe of the stockpile fill, an appropriate erosion/sediment control practice must be used to intercept the discharge.
  - Stockpiles must be stabilized in accordance with the 3/7 day stabilization requirement as well as Standard B-4-1 Incremental Stabilization and Standard B-4-4 Temporary Stabilization.
  - If the stockpile is located on an impervious surface, a liner should be provided below the stockpile to facilitate cleanup. Stockpiles containing contaminated material must be covered with impermeable sheeting.

**Owner**  
 Kellogg-CCP, LLC  
 c/o David P. Scheffenacker, Jr.,  
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 2330 West Joppa Road, Suite 190  
 Lutherville, Maryland 21093-4614  
 Ph: 410-296-3800

**Developer**  
 Preston - Scheffenacker Properties  
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 Lutherville, Maryland 21093-4614  
 Ph: 410-296-3800



**MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL**

U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE 2011 MARYLAND DEPARTMENT OF ENVIRONMENT AND WATER MANAGEMENT ADMINISTRATION

**HOWARD SOIL CONSERVATION DISTRICT (HSCD) STANDARD SEDIMENT CONTROL NOTES**

- A pre-construction meeting must occur with the Howard County Department of Public Works, Construction Inspection Division (CID), 410-313-1055 after the future LOD and protected areas are marked clearly in the field. A minimum of 48 hour notice to CID must be given at the following stages: a. Prior to the start of earth disturbance.
  - Upon completion of the installation of perimeter erosion and sediment controls, but before proceeding with any other earth disturbance or grading.
  - Prior to the start of another phase of construction or opening of another grading unit, d. Prior to the removal or modification of sediment control practices.
- Other building or grading inspection approvals may not be authorized until this initial approval by the inspection agency is made. Other related state and federal permits shall be referenced, to ensure coordination and to avoid conflicts with this plan.
- All vegetative and structural practices are to be installed according to the provisions of this plan and are to be in conformance with the 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, and revisions thereto.
  - Following initial soil disturbance or re-disturbance, permanent or temporary stabilization is required within three (3) calendar days as to the surface of all perimeter controls, dikes, swales, ditches, perimeter slopes, and all slopes steeper than 3 horizontal to 1 vertical (3:1); and seven (7) calendar days as to all other disturbed areas on the project site except for those areas under active grading.
  - All disturbed areas must be stabilized within the time period specified above in accordance with the 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL for topsoil (Sec. B-4-2), permanent seeding (Sec. B-4-5), temporary seeding (Sec. B-4-4) and mulching (Sec. B-4-3). Temporary stabilization with mulch alone can only be applied between the fall and spring seeding dates if the ground is frozen. Incremental stabilization (Sec. B-4-1) specifications shall be enforced in areas with >15' of cut and/or fill. Stockpiles (Sec. B-4-8) in excess of 20 ft. must be benched with stable outlet. All concentrated flow, steep slope, and highly erodible areas shall receive soil stabilization matting (Sec. B-4-6).
  - All sediment control structures are to remain in place, and are to be maintained in operative condition until permission for their removal has been obtained from the CID.

- Site Analysis:
  - Total Area of Site: 0.47 ACRES (PUBLIC R/W)
  - Area Disturbed: 6.22 ACRES
  - Area to be roofed or paved: 0.30 ACRES
  - Area to be vegetatively stabilized: 5.87 ACRES
  - Total Cut: 1,774 CU.YDS.
  - Total Fill: 22,174 CU.YDS.
  - Offsite waste/borrow area location: ON-SITE
- Any sediment control practice which is disturbed by grading activity for placement of utilities must be repaired on the same day of disturbance.
- Additional sediment control must be provided, if deemed necessary by the CID. The site and all controls shall be inspected by the contractor weekly, and the next day after each rain event. A written report by the contractor, made available upon request, is part of every inspection and should include:
  - Inspection date
  - Inspection type (routine, pre-storm event, during rain event)
  - Name and title of inspector
  - Weather information (current conditions as well as time and amount of last recorded precipitation)
  - Brief description of project's status (e.g., percent complete) and/or current activities
  - Evidence of sediment discharges
  - Identification of plan deficiencies
  - Identification of sediment controls that require maintenance
  - Identification of missing or improperly installed sediment controls
  - Compliance status regarding the sequence of construction and stabilization requirements
  - Photographs
  - Monitoring/sampling
  - Maintenance and/or corrective action performed
  - Other inspection items as required by the General Permit for Stormwater Associated with Construction Activities (NPDES, MD).
- Trenches for the construction of utilities is limited to three pipe lengths or that which can and shall be back-filled and stabilized by the end of each workday, whichever is shorter.
- Any major changes or revisions to the plan or sequence of construction must be reviewed and approved by the HSCD prior to proceeding with construction. Minor revisions may be allowed by the CID per the list of HSCD-approved field changes.
- Disturbance shall not occur outside the L.O.D. A project is to be sequenced so that grading activities begin on one grading unit (maximum acreage of 20 ac. per grading unit) at a time. Work may proceed to a subsequent grading unit when at least 50 percent of the disturbed area in the preceding grading unit has been stabilized and approved by the CID. Unless otherwise specified and approved by the CID, no more than 30 acres cumulatively may be disturbed at a given time.
- Wash water from any equipment, vehicles, wheels, pavement, and other sources must be treated in a sediment basin or other approved washout structure.
- Topsoil shall be stockpiled and preserved on-site for redistribution until final grade.
- All Silt Fence and Super Silt Fence shall be placed on-the-contour, and be imbricated at 25' minimum intervals, with lower ends curled uphill by 2' in elevation.
- Stream channels must not be disturbed during the following restricted time periods (inclusive):
  - Use I and IP March 1 - June 15
  - Use III and IIIIP October 1 - April 30
  - Use IV March 1 - May 31
- A copy of this plan, the 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, and associated permits shall be on-site and available when the site is active.

**ENGINEER'S CERTIFICATE**

I hereby Certify that this Plan for Erosion And Sediment Control Represents A Practical And Workable Plan Based On My Personal Knowledge Of The Site Condition And That It Was Prepared In Accordance With The Requirements Of The Howard Soil Conservation District.

Signature Of Engineer: *Aldo M. Viteuci* Date: 4/12/16

**DEVELOPER'S CERTIFICATE**

"I/We Certify That All Development And Construction Will Be Done According To This Plan Of Development And Plan For Erosion And Sediment Control And That All Responsible Personnel Involved In The Construction Project Will Have A Certificate Of Attendance At A Department Of Natural Resources Approved Training Program For The Control Of Sediment And Erosion Before Beginning The Project. I Also Authorize Periodic On-Site Inspection By The Howard Soil Conservation District Or Their Authorized Agents As Are Deemed Necessary."

Signature Of Developer: *David P. Scheffenacker* Date: 4/13/16

Approved: This Development is Approved For Erosion And Sediment Control By The Howard Soil Conservation District.

Signature: *John R. Rauter* Date: 4/14/16  
 District Howard Soil Conservation Dist.

Approved: Department Of Planning And Zoning  
 Signature: *Kate Johnson* Date: 9-14-16  
 Chief, Division Of Land Development

Signature: *Chad...* Date: 8/22/16  
 Chief, Development Engineering Division

Approved: Howard County Department Of Public Works  
 Signature: *M. Meenan* Date: 5/11/2016  
 Chief, Bureau Of Highways

REVISIONS	
NO.	DESCRIPTION

- SEQUENCE OF CONSTRUCTION**
- OBTAIN GRADING PERMITS. (2 WEEKS)
  - NOTIFY "MISS UTILITY" AT LEAST 48 HOURS BEFORE BEGINNING ANY WORK AT 1-800-257-7777. NOTIFY HOWARD COUNTY OFFICE OF CONSTRUCTION/INSPECTION DIVISION AT 410-313-1070 AT LEAST 24 HOURS BEFORE STARTING ANY WORK. IN ADDITION, NOTIFY AT&T PRIOR TO ANY ACTIVITY WITHIN THEIR EASEMENT.
  - INSTALL STABILIZED CONSTRUCTION ENTRANCES, SILT FENCE & SUPER-SILT FENCE WHERE SHOWN ON THE PLANS. CLEAR AND GRUB WHERE NECESSARY FOR ROADWAY CONSTRUCTION. (1 WEEK)
  - INSTALL REMAINING PERIMETER SEDIMENT CONTROL MEASURES. DEWATER EXISTING SEDIMENT BASIN (NRP #2) WITH R.P.S. AND F.B. AS SHOWN. (3 DAYS)
  - STABILIZE ALL DISTURBED AREAS WITH TEMPORARY SEEDING. CONTACT THE COUNTY SEDIMENT EROSION CONTROL INSPECTOR BEFORE PROCEEDING. (2 DAYS)
  - INSTALL STORM DRAIN LOCATED IN BANBURY DRIVE FROM 1-77M-8 TO 5-1 ALONG WITH INLETS 1-1 THRU 1-5 AND PIPE FROM M-3 TO M-9. (1 WEEK)
  - GRADE SITE TO MASS GRADING CONTOURS AND GRADE ROADWAYS TO SUB BASE. (8 WEEKS)
  - STABILIZE ALL DISTURBANCE WITH TEMPORARY SEEDING. RECEIVE PERMISSION TO CONTINUE FROM THE EROSION AND SEDIMENT CONTROL INSPECTOR. (2 DAYS)
  - INSTALL WATER LINE CONSTRUCTION FOR BANBURY DRIVE. (3 WEEKS)
  - ONCE STORM DRAINS ARE INSTALLED, PLACE STANDARD INLET PROTECTION AT THE INLETS AS SHOWN IN BANBURY DRIVE. WRAP ALL THE INLETS WITH SUPER-SILT FENCE. THE CONSTRUCTION OF THE FILTER MEDIA UNDERDRAIN AND PLANTINGS FOR EACH BIO-RETENTION CELL SHALL BE DELAYED UNTIL THE CONTRIBUTING DRAINAGE AREA IS PERMANENTLY STABILIZED. PLACE ROADWAY SUB-BASE WITHIN BANBURY DRIVE. PAVE BANBURY DRIVE AND ASSOCIATED UP TO THE INTERMEDIATE SURFACE LAYER WITHIN THE P-4 PAVING SECTION. SEE E-2-01 OF THE HOWARD COUNTY DESIGN MANUAL VOLUME IV. (1 WEEK)  
 NOTE: FUTURE SITE PLANS WILL PROTECT BIO-RETENTION FACILITIES WITH SILT FENCE AS WELL.
  - INSTALL BASE COURSE OF PAVING FOR BANBURY DRIVE AND CROWLEY STREET. (2 WEEKS)
  - STABILIZE ALL DISTURBED AREAS THAT DRAIN ONTO BANBURY DRIVE WITH PERMANENT SEEDING. INSTALL THE PROPOSED MICRO BIO-RETENTION FACILITIES INCLUDING THE FILTER MEDIA AND UNDERDRAINS LOCATED OUTSIDE OF THE ROADWAY. (3 WEEKS)
  - NOTE: REMOVAL OF THE PERIMETER SEDIMENT CONTROL FEATURES SHALL BE COORDINATED WITH FUTURE SITE PLANS BEFORE THE FINAL SWM CONVEYANCES TAKE PLACE AS SHOWN ON THIS PLAN.
  - PROVIDE PERMANENT SEEDING TO ANY DISTURBED AREAS ONSITE AND STABILIZE THE ENTIRE SITE. (3 DAYS)
  - WITH THE APPROVAL OF THE SEDIMENT CONTROL INSPECTOR START REMOVING ANY SEDIMENT CONTROL FEATURES NOT REQUIRED TO REMAIN FOR FUTURE SITE PLAN PHASES AND STABILIZE THE AREAS WITH PERMANENT SEEDING. (1 WEEK)
- NOTE: THE CONTRACTOR SHALL INSPECT AND PROVIDE NECESSARY MAINTENANCE ON ALL SEDIMENT AND EROSION CONTROL STRUCTURES SHOWN HEREON AFTER EACH RAINFALL AND ON A DAILY BASIS.
- NOTE: ALL CONSTRUCTION WASTE MUST BE MANAGED IN ACCORDANCE WITH THE CONSTRUCTION WASTE MANAGEMENT PLAN.

**SEDIMENT AND EROSION CONTROL NOTES & DETAILS**

**OXFORD SQUARE**  
 "A Howard County Green Neighborhood"  
 Banbury Drive  
 (Sta. 20+28.21 to Sta. 25+13.00)

Zoned: T02  
 Tax Map: 30, Parcel: 1003, Grid: 22 And Tax Map: 44, Parcel: 1003, Grid 1  
 First Election District - Howard County, Maryland  
 Date: January 11, 2016  
 Sheet 7 of 15

**AS-BUILT CERTIFICATION**

Note: The provided information is true and correct to the best of my knowledge and belief.

Signature: *Aldo M. Viteuci* Date: 4/12/16

**STATE OF MARYLAND**  
 ENGINEER  
 Signature: *Aldo M. Viteuci* Date: 4/12/16

Aldo M. Viteuci, P.E.  
 "Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly Licensed Professional Engineer under the laws of the State of Maryland, License No. 20748, Expiration Date 2-22-17."

THERE IS NO "AS-BUILT" INFORMATION PROVIDED ON THIS SHEET

**ENGINEER'S CERTIFICATE**

I hereby certify that this Plan For Erosion And Sediment Control Represents A Practical And Workable Plan Based On My Personal Knowledge Of The Site Conditions And That It Was Prepared In Accordance With The Requirements Of The Howard Soil Conservation District.

Signature Of Engineer: *Aldo M. Vitucci* Date: *4/12/16*

**DEVELOPER'S CERTIFICATE**

"I/We Certify That All Development And Construction Will Be Done According To This Plan Of Development And Plan For Erosion And Sediment Control And That All Responsible Personnel Involved In The Construction Project Will Have A Certificate Of Attendance At A Department Of Natural Resources Approved Training Program For The Control Of Sediment And Erosion Before Beginning The Project. I Also Authorize Periodic On-Site Inspection By The Howard Soil Conservation District Or Their Authorized Agents, As Are Deemed Necessary."

Signature Of Developer: *David P. Scheffacker* Date: *4/13/16*

Approved: This Development Is Approved For Erosion And Sediment Control By The Howard Soil Conservation District.

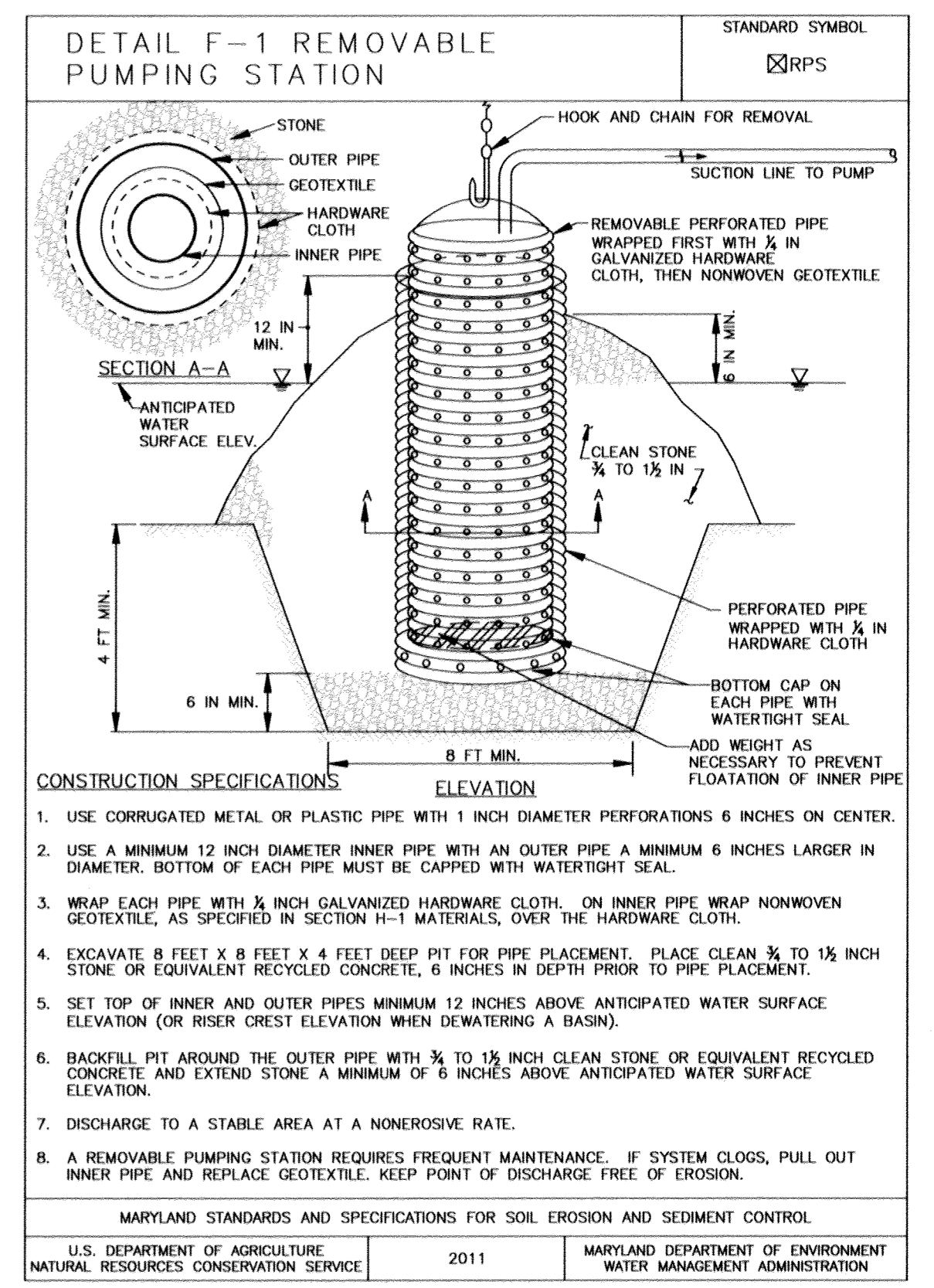
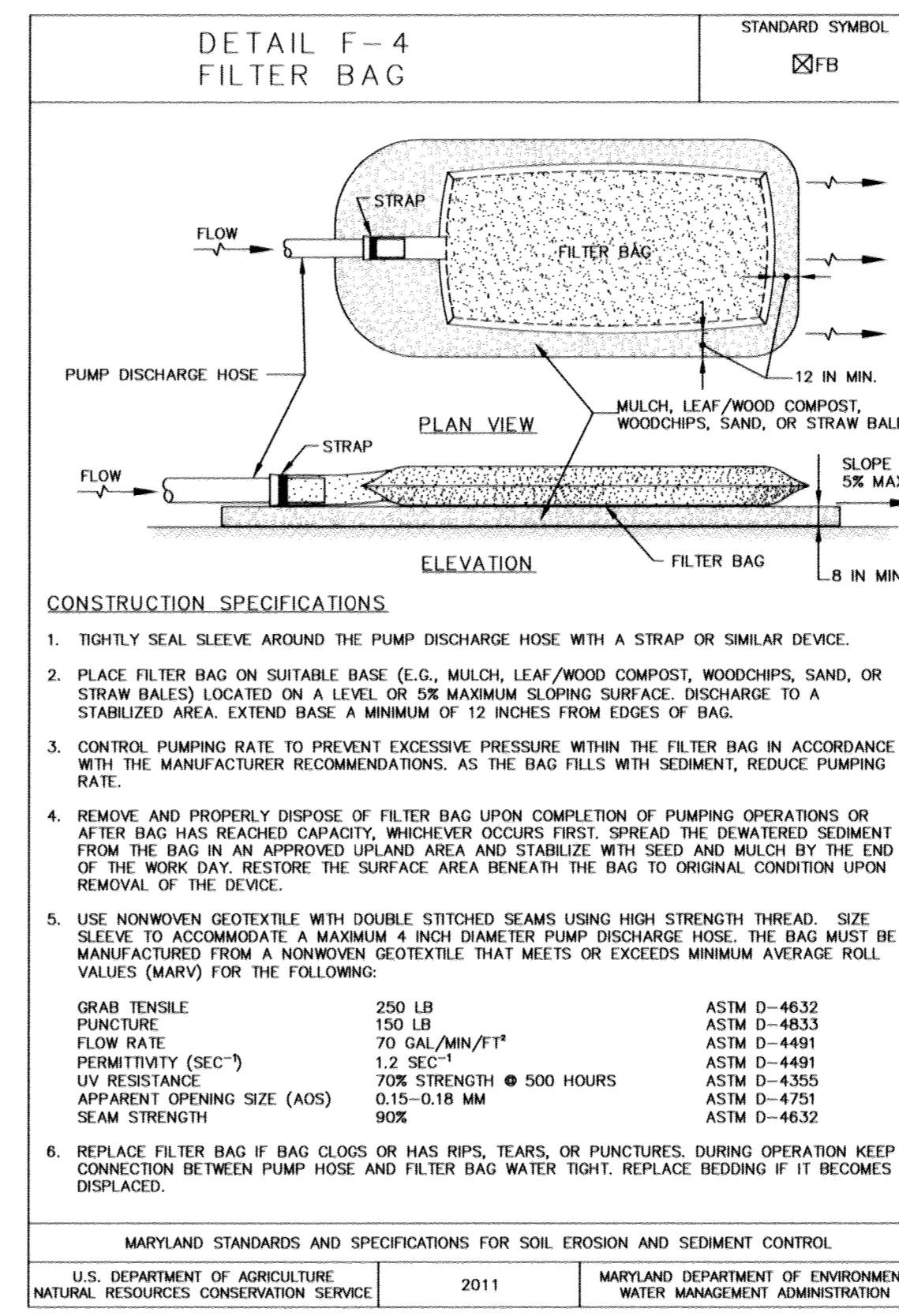
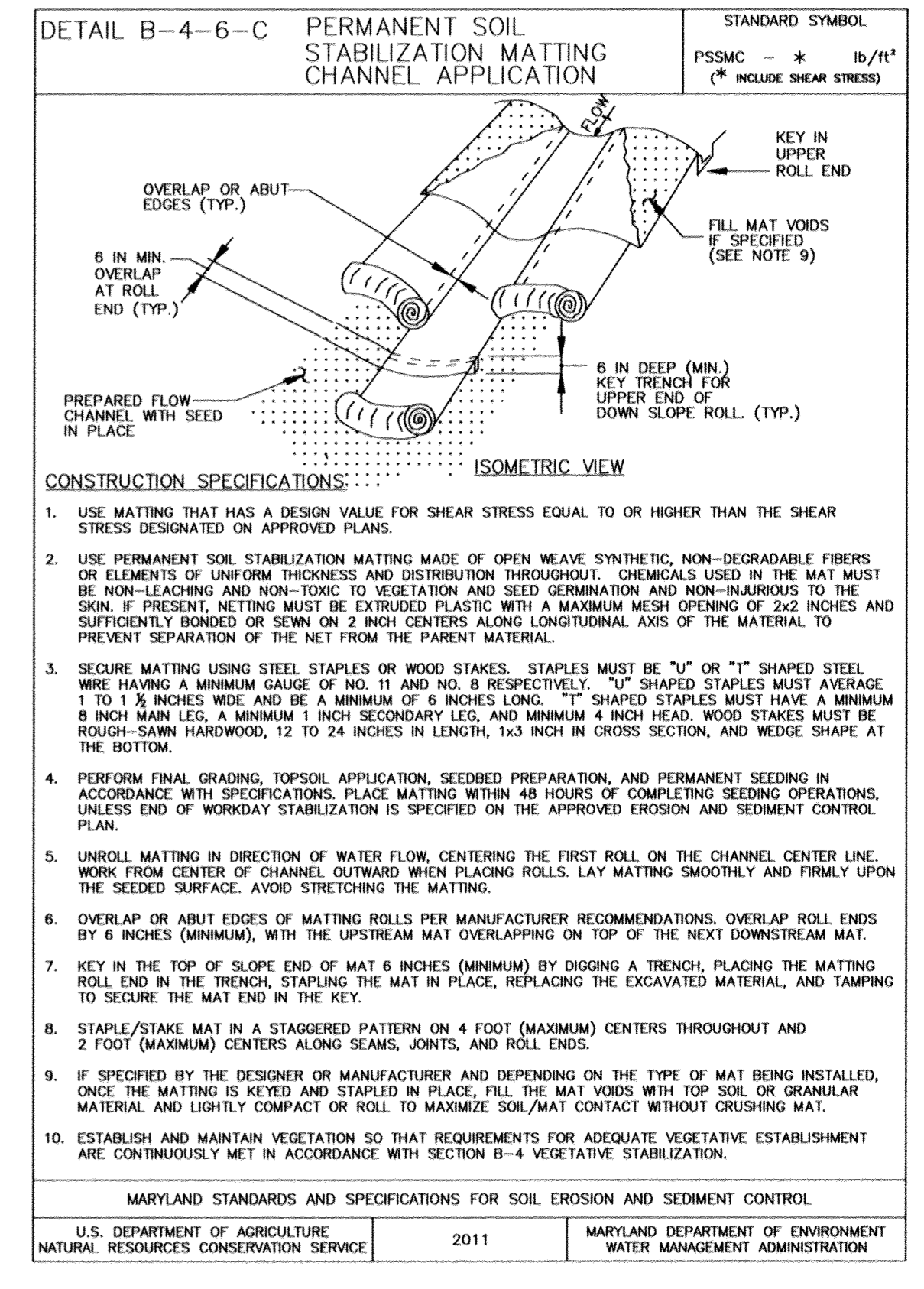
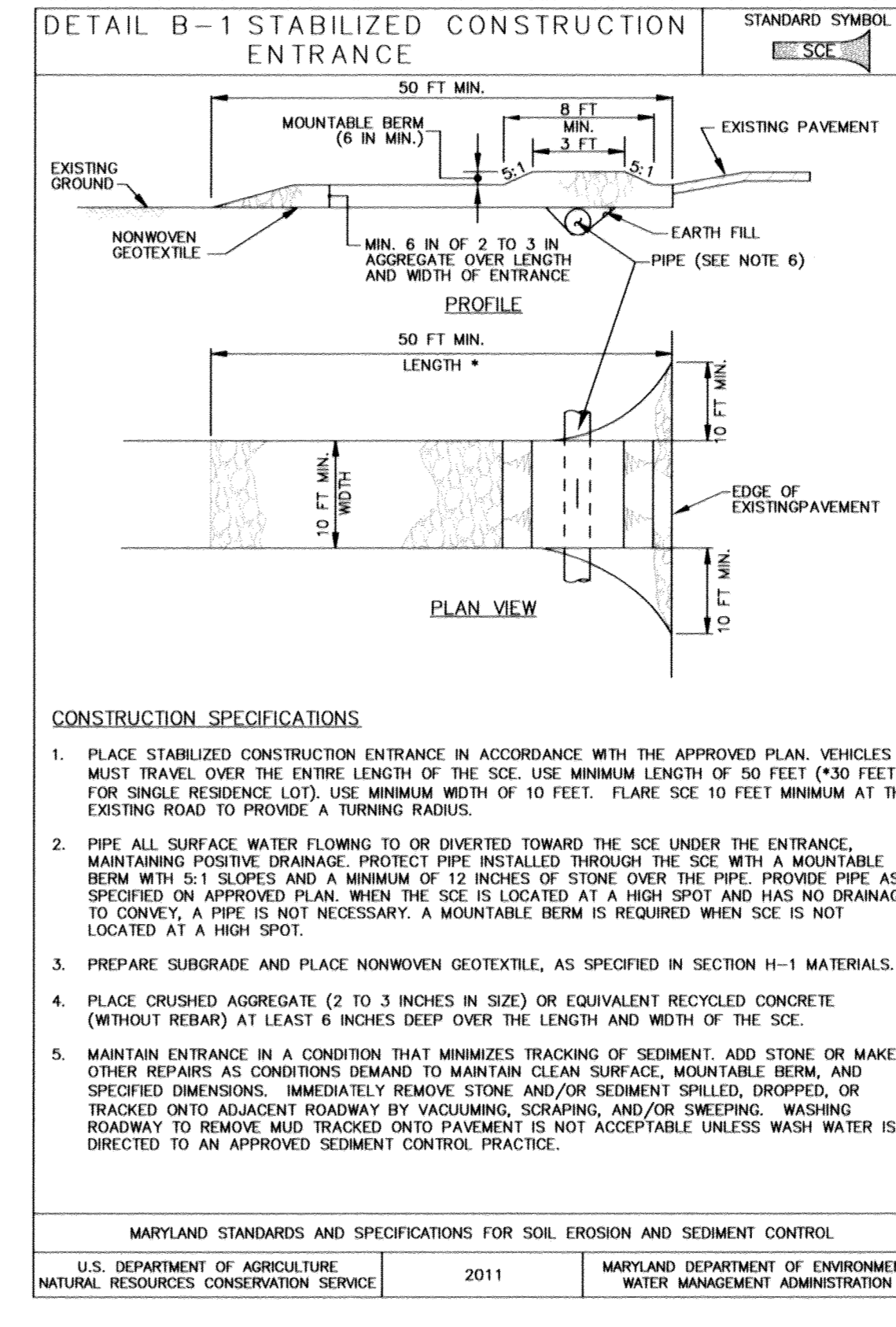
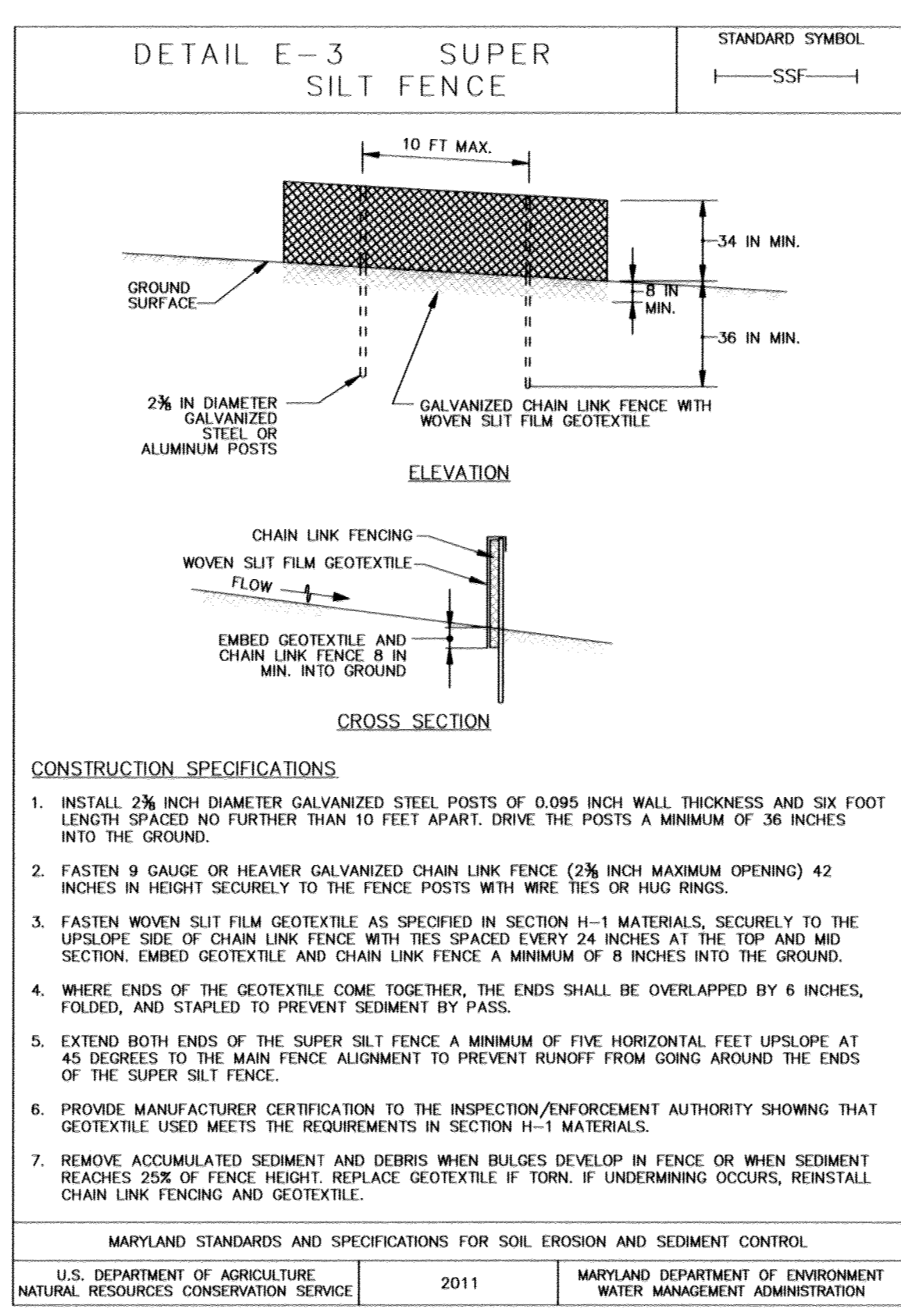
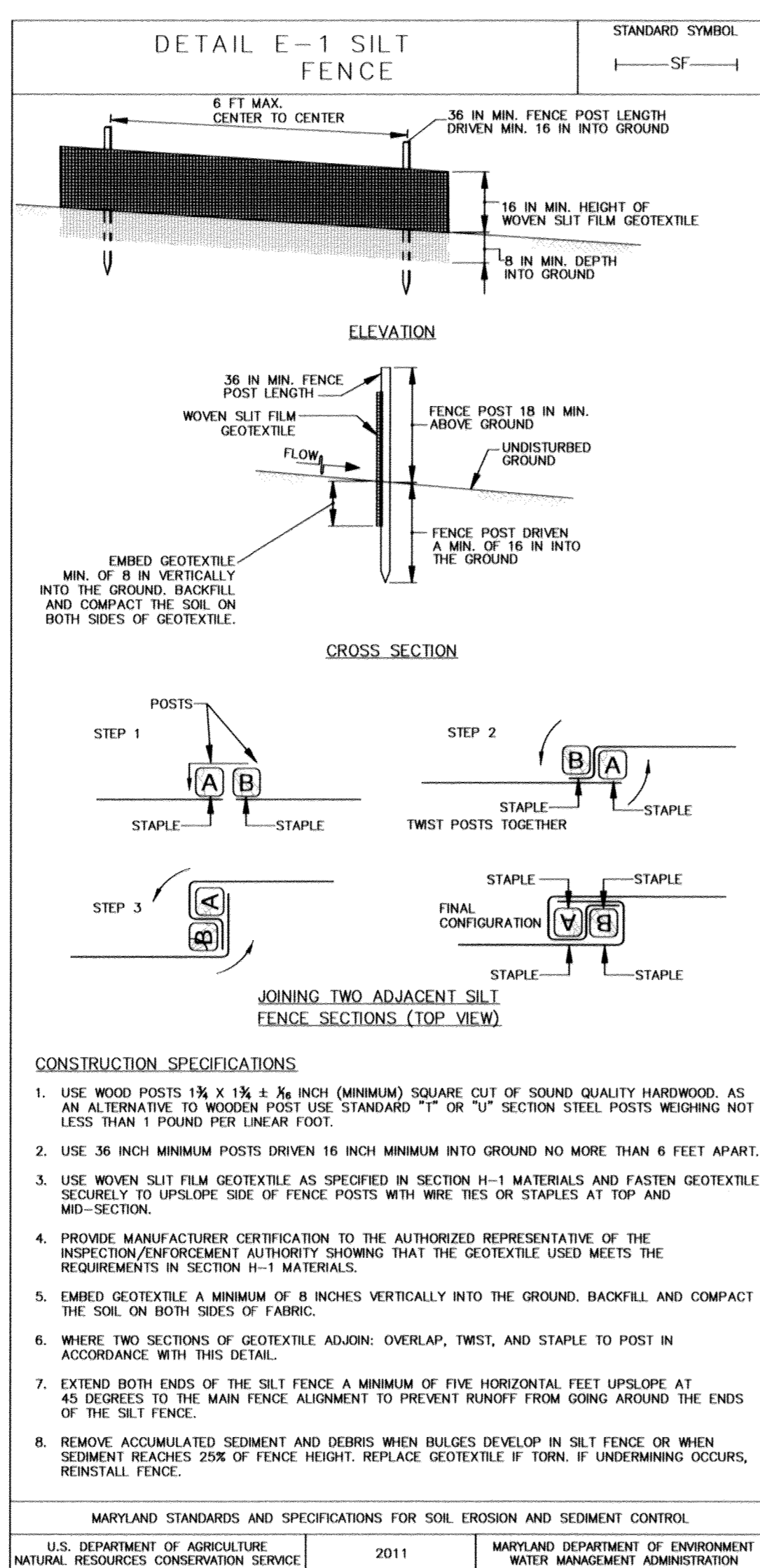
Signature: *John P. Rector* Date: *4/12/16*  
 Chief, Division Of Land Development

Signature: *Paul Chubb* Date: *8/22/16*  
 Chief, Development Engineering Division

Approved: Howard County Department Of Public Works

Signature: *M. Meunier* Date: *5/11/2016*  
 Chief, Bureau Of Highways

NO.	DESCRIPTION	DATE



**FISHER, COLLINS & CARTER, INC.**  
 CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS  
 CENTENNIAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL PIKE  
 ELICOTT CITY, MARYLAND 21042  
 (410) 461-2999

**Owner**  
 Kellogg-CCP, LLC  
 c/o David P. Scheffacker, Jr.,  
 Managing Member  
 2330 West Joppa Road, Suite 190  
 Lutherville, Maryland 21093-4614  
 Ph 410-296-3800

**Developer**  
 Preston - Scheffacker Properties  
 2330 West Joppa Road, Suite 190  
 Lutherville, Maryland 21093-4614  
 Ph 410-296-3800

**AS-BUILT CERTIFICATION**  
 Note: The information provided is for AS-BUILT information.  
 Signature: *Aldo M. Vitucci*  
 Date: *4/12/16*

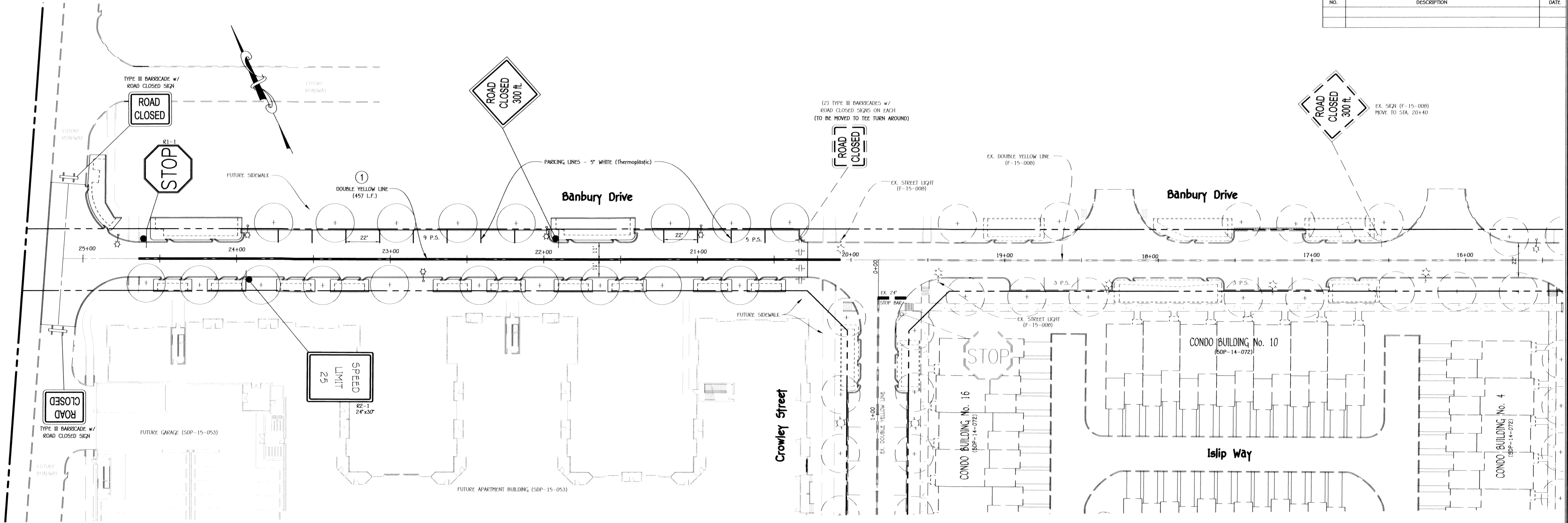
**STATE OF MARYLAND**  
 PROFESSIONAL ENGINEER  
 Signature: *Aldo M. Vitucci*  
 Date: *4/12/16*  
 Aldo M. Vitucci, P.E.  
 "Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly Licensed Professional Engineer under the laws of the State of Maryland, License No. 20748, Expiration Date 2-22-17."

**SEDIMENT AND EROSION CONTROL**  
 NOTES & DETAILS  
**OXFORD SQUARE**  
 "A Howard County Green Neighborhood"  
 Banbury Drive  
 (Sta. 20+28.21 to Sta. 25+13.00)  
 Zoned: IOD  
 Tax Map: 38, Parcel: 1003, Grid 20 and Tax Map: 44, Parcel: 1003, Grid 1  
 First Election District - Howard County, Maryland  
 Date: January 11, 2016  
 Sheet 8 of 15

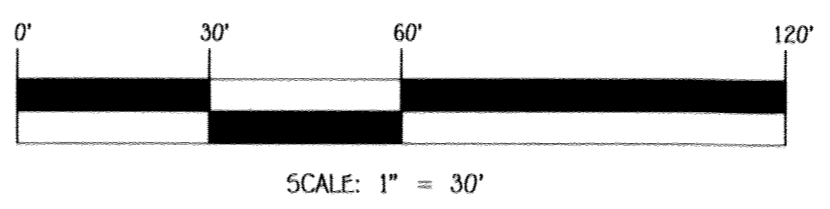
THESE IS NO "AS-BUILT" INFORMATION PROVIDED ON THIS SHEET F-15-088



APPROVED: DEPARTMENT OF PUBLIC WORKS		
CHIEF, BUREAU OF HIGHWAYS	<i>[Signature]</i>	8/9/16
APPROVED: DEPARTMENT OF PLANNING AND ZONING		
CHIEF, DIVISION OF LAND DEVELOPMENT	<i>[Signature]</i>	9-14-16
APPROVED: DEPARTMENT OF ENGINEERING		
CHIEF, DEVELOPMENT ENGINEERING DIVISION	<i>[Signature]</i>	8-22-16
REVISIONS		
NO.	DESCRIPTION	DATE



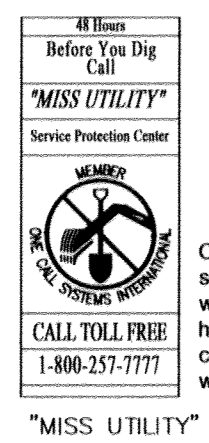
MARKING LEGEND	
Item	Description
1	Install 5 in. wide solid double yellow pavement marking for center line.



SIGNING LEGEND			
Description	Size	Color	
	R1-1	30" x 30"	Red/White
	W20-3	30" x 30"	Black/Orange
	R11-2	30" x 30"	Black/White
	R2-1	24" x 30"	Black/White

NOTES:

- 1) ALL SIGN POSTS USED FOR TRAFFIC CONTROL SIGNS INSTALLED IN THE COUNTY RIGHT-OF-WAY SHALL BE MOUNTED ON A 2" GALVANIZED STEEL, PERFORATED, (QUICK PUNCH) SQUARE TUBE POST (14 GAUGE) INSERTED INTO A 2-1/2" GALVANIZED STEEL, PERFORATED, SQUARE TUBE SLEEVE (12 GAUGE) - 3' LONG. A GALVANIZED STEEL POLE CAP SHALL BE MOUNTED ON TOP OF EACH POST.
- 2) ALL SIGN LOCATIONS AND ALL PAVEMENT MARKINGS SHALL BE APPROVED BY HOWARD COUNTY TRAFFIC PRIOR TO ANY SIGNING OR PAVEMENT MARKING INSTALLATIONS.



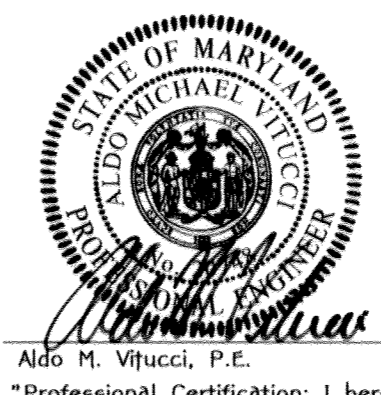
Call "MISS UTILITY" at 1-800-257-7777, 48 hours prior to the start of work the excavator must notify all public utility companies with under ground facilities in the area of proposed excavation and have those facilities located by the utility companies prior to commencing excavation, the excavator is responsible for compliance with requirements of Chapter 36a of the Montgomery County Code.

**FISHER, COLLINS & CARTER, INC.**  
 CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS  
 CENTRAL SQUARE OFFICE PARK - 18272 BALDOR, NATIONAL FILE  
 ELICOTT CITY, MARYLAND 21042  
 410.481.2995

**Owner**  
 Kellogg-CCP, LLC  
 c/o David P. Scheffnacker, Jr.,  
 Managing Member  
 2330 West Joppa Road, Suite 190  
 Lutherville, Maryland 21093-4614  
 Ph 410-296-3800

**Developer**  
 Preston - Scheffnacker Properties  
 2330 West Joppa Road, Suite 190  
 Lutherville, Maryland 21093-4614  
 Ph 410-296-3800

AS-BUILT CERTIFICATION  
 Note: There is no "AS-BUILT" information provided.  
  
 Date: *[Signature]*



Aldo M. Vitucci, P.E.  
 Date: 9/2/16  
 "Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly Licensed Professional Engineer under the laws of the State of Maryland. License No. 20748, Expiration Date 2-22-17."  
 Sheet 9 of 15

**STREET LIGHTING, SIGNING AND PAVEMENT MARKING PLAN**  
**OXFORD SQUARE**  
 "A Howard County Green Neighborhood"  
 Banbury Drive  
 (Sta. 20+29.21 to Sta. 25+13.13)

Approved: Department Of Planning And Zoning		
Chief, Division Of Land Development	<i>Kent Burdum</i>	9-14-16
Chief, Development Engineering Division	<i>Ch/Ch</i>	8/22/16
Approved: Howard County Department Of Public Works	<i>Howard</i>	8/9/16
Chief, Bureau Of Highways	<i>Howard</i>	
REVISIONS		
NO.	DESCRIPTION	DATE

AS-BUILT CERTIFICATION  
 Note: The information provided is for informational purposes only.  
*Alejo*  
 Date

MATCH LINE SEE THIS SHEET

**NOTES:**

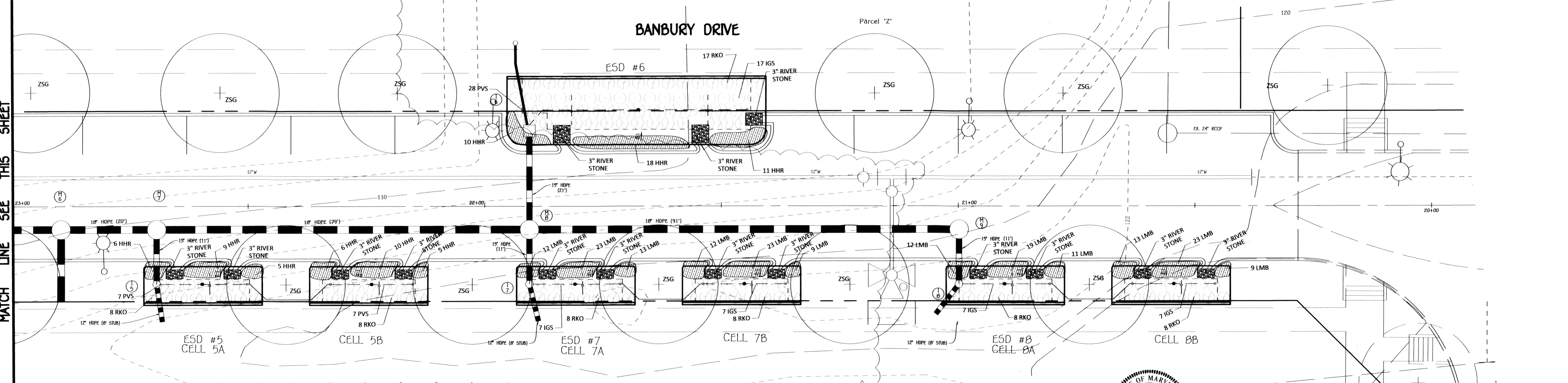
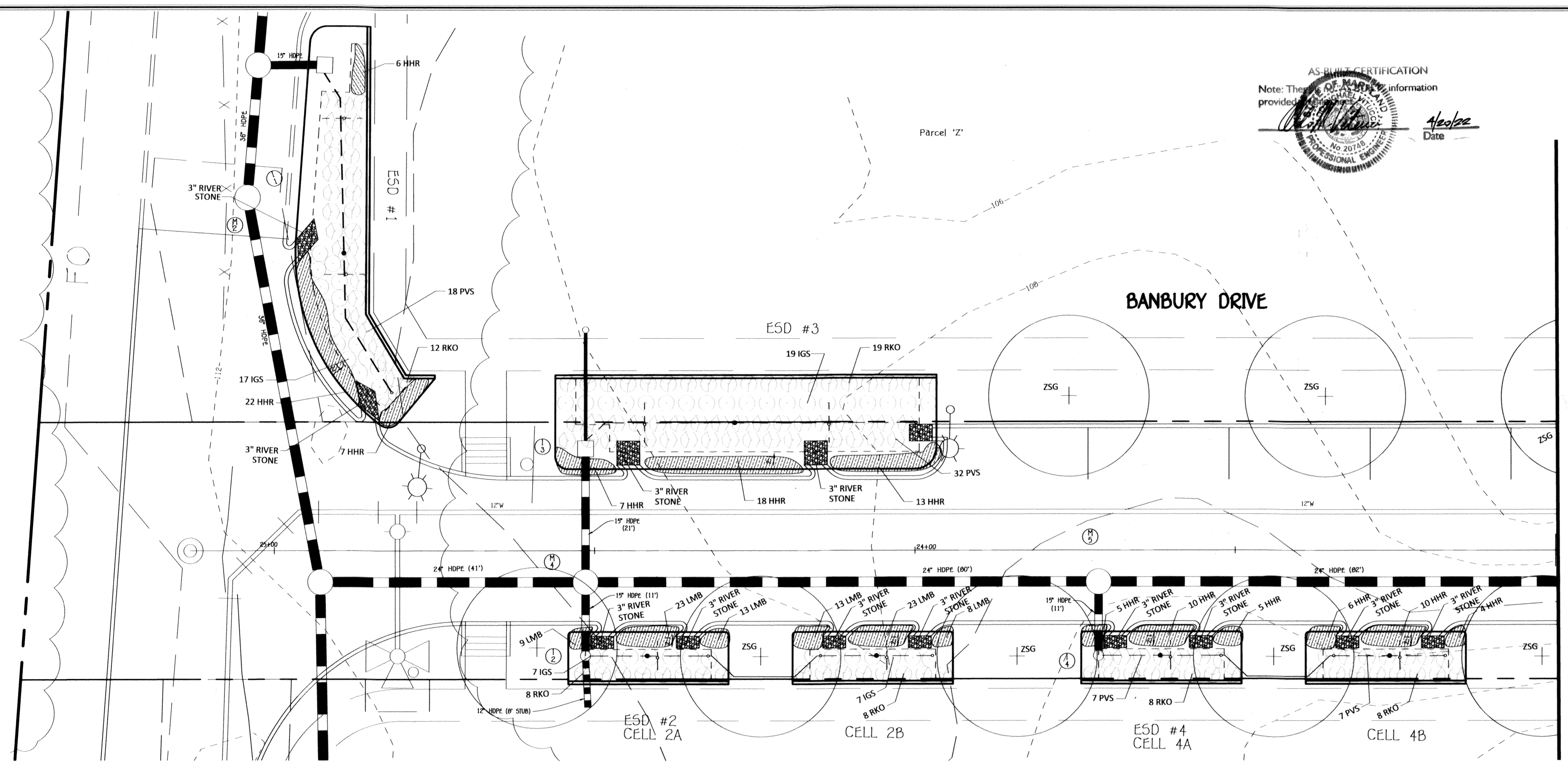
Should any tree designated for preservation for which landscaping credit is given, die prior to release of bonds, the owner will be required to replace the tree with the equivalent species or with a tree which will obtain the same height, spread and growth characteristics. The replacement tree must be a minimum of 3 inches in caliper and installed as required in the Howard County Landscape Manual.

At the time of plant installation, all trees listed and approved on the landscape plan, shall comply with the proper height requirement in accordance with the Howard County Landscape Manual. In addition, no substitutions or relocations of the required plantings may be made without prior review and approval from the Department of Planning and Zoning. Any deviations from the approved Landscape Plan may result in denial or delay in the release of landscape surety until such time as all required materials are planted and/or revisions are made to the road drawing plans.

The Owner, tenants and/or their agents shall be responsible for maintenance of the required perimeter landscaping. All plant materials shall be maintained in good growing condition, and when necessary, replaced with new materials to ensure continued compliance with applicable regulations. All the other required landscaping shall be permanently maintained in good condition, and when necessary, repaired or replaced.

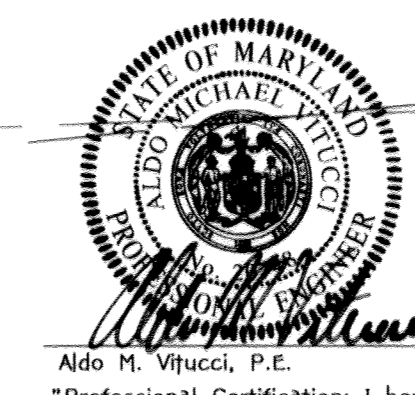
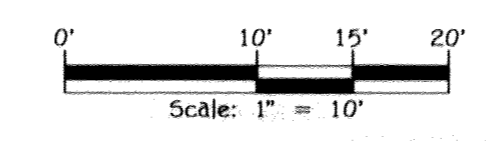
**LANDSCAPE DEVELOPER'S CERTIFICATE**  
 I/we certify that the landscaping shown on this plan will be done according to the plan, Section 16.124 of the Howard County Code and the Howard County Landscape Manual. I/we further certify that upon completion a letter of landscape installation accompanied by an executed one year guarantee of plant materials will be submitted to the Department of Planning and Zoning.

*David M. Schifano*  
 Name  
 8/2/16  
 Date



**Owner**  
 Kellogg-CCP, LLC  
 c/o David P. Scheffacker, Jr.,  
 Managing Member  
 2330 West Joppa Road, Suite 190  
 Lutherville, Maryland 21093-4614  
 Ph: 410-296-3800

**Developer**  
 Preston + Scheffacker Properties  
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 Lutherville, Maryland 21093-4614  
 Ph: 410-296-3800

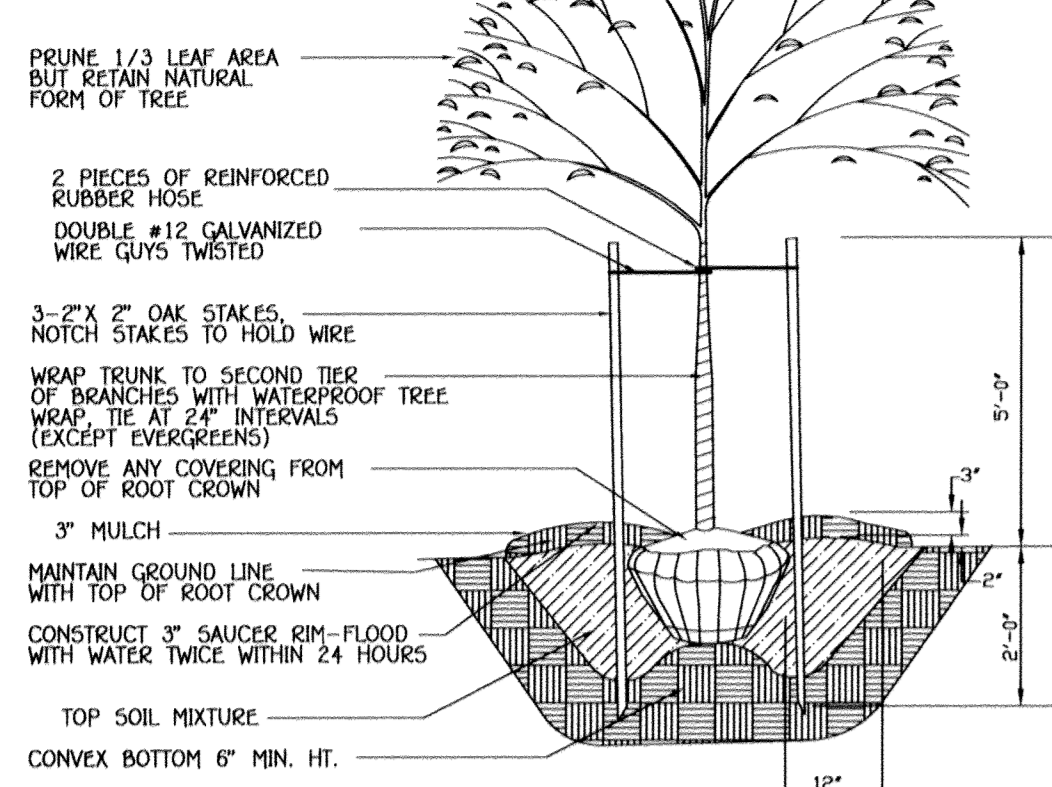


*Aldo M. Vitucci*  
 Aldo M. Vitucci, P.E.  
 "Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly Licensed Professional Engineer under the laws of the State of Maryland, License No. 20748, Expiration Date 2-22-17."

**STREET TREE & LANDSCAPE PLAN**  
**OXFORD SQUARE**  
 "A Howard County Green Neighborhood"  
 Banbury Drive  
 (Sta. 20+28.21 to Sta. 25+13.13)  
 Zone: 100  
 Tax Map: 30, Parcel: 1003, Grid: 20 And Tax Map: 44, Parcel: 1003, Grid 1  
 First Election District - Howard County, Maryland  
 Date: June 3, 2016  
 Sheet 10 of 15

**FISHER, COLLINS & CARTER, INC.**  
 CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS  
 CENTRAL SQUARE OFFICE PARK - 10772 BALTIMORE NATIONAL, FREDERICK, MD 21704  
 (410) 461-2899

NOTE: CONTRACTOR TO REGRADE, SOD OR HYDROSEED AND STREW MULCH ALL AREAS DISTURBED AS A RESULT OF THEIR WORK.  
 SPRAY WITH WILT-PROOF ACCORDING TO MANUFACTURERS STANDARDS



**STREET TREE PLANTING DETAIL**

NO SCALE

**STREET TREE NOTE:**  
 ALL TREES SHALL BE LOCATED A MINIMUM OF 20' FROM ANY PUBLIC STREET LIGHT LOCATION.

**PLANTING SPECIFICATIONS**

Plants, related material, and operations shall meet the detailed description as given on the plans and as described herein. All plant material, unless otherwise specified, shall be nursery grown, uniformly branched, have a vigorous root system, and shall conform to the species, size, root and shape shown on the plant list and the American Association of Nurserymen (AAN) Standards. Plant material shall be healthy, vigorous, free from defects, decay, disfiguring roots, sun scald injuries, abrasions of the bark, plant disease, insect pest eggs, borers and all forms of insect infestations or objectionable disfigurements. Plant material that is weak or which has been cut back from larger grades to meet specified requirements will be rejected. Trees with forked leaders will not be accepted. All plants shall be freshly dug no hauled-in plants from cold storage will be accepted. Unless otherwise specified, all general conditions, planting operations, details and planting specifications shall conform to "Landscape Specification Guidelines for Baltimore-Washington Metropolitan Area", hereinafter "Landscape Guidelines" approved by the Landscape Contractors Association of Metropolitan Washington and the Potomac Chapter of the American Society of Landscape Architects, latest edition, including all agenda. Contractor shall be required to guarantee all plant material for a period of one year after date of acceptance in accordance with the appropriate section of the Landscape Guidelines. Contractor's attention is directed to the maintenance requirements found within the one year specifications including watering and replacement of specified plant material. Contractor may make minor adjustments in spacing and location of plant material to avoid conflicts with utilities. Damage to existing structure and utilities shall be repaired at the expense of the Contractor. Protection of existing vegetation to remain shall be accomplished by the temporary installation of 4 foot high snow fence or blaze orange safety fence at the drip line. Contractor is responsible for installing all material in the proper planting season for each plant type. All planting is to be completed within the growing season of completion of site construction. Bid shall be based on actual site conditions. No extra payment shall be made for work arising from site conditions differing from those indicated on drawings and specifications. Plant quantities are provided for the convenience of the contractor only. If discrepancies exist between quantities shown on plan and those shown on the plant list, the quantities on the plan take precedence. All shrubs shall be planted in continuous trenches or prepared planting beds and mulched with composted hardwood mulch as details and specified except where noted on plans. Positive drainage shall be maintained in planting beds 2 percent slope. Planting mix shall be as follows: Deciduous Plants - Two parts topsoil, one part well-rotted cow or horse manure. Add 3 lbs. of standard fertilizer per cubic yard of planting mix. Evergreen Plants - two parts topsoil, one part humus or other approved organic material. Add 3 lbs. of evergreen (acidic) fertilizer per cubic yard of planting mix. Topsoil shall conform to the Landscape Guidelines. Weed Control: Incorporate a pre-emergent herbicide into the planting bed following recommended rates on the label. Caution: Be sure to carefully check the chemical used to assure its adaptability to the specific ground cover to be treated. All areas within contract limits disturbed during or prior to construction not designated to receive plants and mulch shall be fine graded and seeded. This plan is intended for landscape use only. See other plan sheets for more information on grading, sediment control, layout, etc.

STREET TREE SCHEDULE			
QTY. REQUIRED	BOTANICAL AND COMMON NAME	SIZE	COMMENTS
ZSG x	ZELKOVA SERRATA 'GREEN VASE' GREEN VASE JAPANESE ZELKOVA	2-1/2" cal. min.	10 ALONG PUBLIC R/W BANBURY DRIVE (SEE PLAN)

**NOTES:**

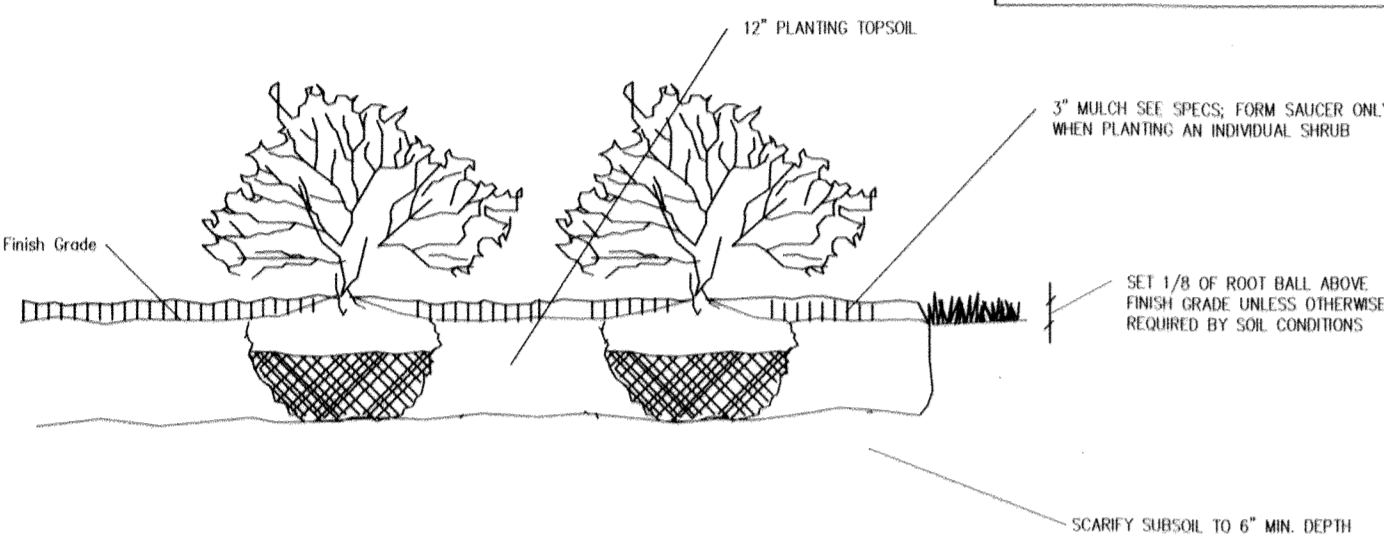
- FINAL PLACEMENT OF STREET TREES WILL OCCUR IN THE FIELD AND BE PLACED A MINIMUM OF 30 FEET FROM ALL SIGNS AND INTERSECTIONS WHEN PLANTED BETWEEN SIDEWALK AND CURB, BE LOCATED WITH CONSIDERATION OF UNDERGROUND UTILITIES AND STRUCTURES AND MAINTAIN A MINIMUM 5 FEET DISTANCE ON CENTER FROM A DRAIN INLET STRUCTURE, 5 FEET FROM AN OPEN SPACE ACCESS STRIP AND 10 FEET FROM A DRIVEWAY.
- FINANCIAL SURETY FOR THE 10 STREET TREES HAS BEEN POSTED AS PART OF THE DEVELOPER'S AGREEMENT IN THE AMOUNT OF \$5,400.00

Approved: Department Of Planning And Zoning  
 Chief, Division Of Land Development  
 Date: 9/14/16

Approved: Howard County Department Of Public Works  
 Chief, Bureau Of Highways  
 Date: 8/22/16

Approved: 5/11/2016  
 Date

REVISIONS		
NO.	DESCRIPTION	DATE



**SHRUB AND HEDGEROW - TYPICAL PLANTING DETAIL**

**STREET TREE LOCATION REQUIREMENTS (per Ho. Co. Landscaping Manual)**

The following standards shall govern the placement of street trees in public rights-of-way:

When the distance between the curb and sidewalk is 6 feet or greater, trees shall be located within the right-of-way and shall be centered between the curb and the sidewalk.

When the distance between the curb and the sidewalk is less than 6 feet, and where trees are planted closer than 3 feet to the sidewalk, a biologic root inhibitor barrier or physical container barrier shall be required.

When the distance between the curb and the sidewalk is less than 6 feet, trees may be planted 3 feet from the sidewalk in the direction away from the road. A 10 foot wide tree maintenance easement shall be required if the right-of-way is limited.

Trees shall be planted 6 feet behind the curb when there are no sidewalks.

Trees shall be placed a minimum of 30 feet from all signs and intersections when planted between sidewalk and curb, and be located with consideration of underground utilities and structures. Street trees may not be planted within 5 feet of a drain inlet structure, 5 feet of an open space access strip, or 10 feet of a driveway.

PLANT LIST (F-15-088)					
QTY.	SYM.	BOTANICAL/COMMON NAME	SIZE	CONT.	REMARKS
<b>DECIDUOUS TREES</b>					
10	ZSG	Zelkova serrata 'Green Vase' Green Vase Japanese Zelkova	2-1/2" cal. min.	B&B	Street Trees
<b>ESD SHRUBS</b>					
95	IGS	Ilex glabra 'Shamrock' Inkberry Holly	18" - 24" Ht.	3 Gal.	30" o.c.
106	PVS	Panicum virgatum 'Shenandoah' Switchgrass	18" - 24" Ht.	3 Gal.	30" o.c.
128	RKO	Rosa x Knockout Knockout Rose (Blush Pink)	18" - 24" Ht.	3 Gal.	30" o.c.
<b>GROUNDCOVERS</b>					
159	HHR	Hemerocallis 'Happy Returns' Yellow Daylily		3 Gal.	24" o.c.
304	LMB	Liriope muscari 'Big Blue' Lilyturf		1 Gal.	15" o.c.

NOTE: HEMEROCALLIS FULVA SHALL NOT BE PLANTED AS IT IS CONSIDERED TO BE AN INVASIVE PLANT.

**FISHER, COLLINS & CARTER, INC.**  
 CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS  
 NATIONAL SQUARE OFFICE PARK - 10272 BALTIMORE NATIONAL FREE  
 ELICOTT CITY, MARYLAND 21042  
 (410) 461-2895

**LANDSCAPE DEVELOPER'S CERTIFICATE**  
 I/We certify that the landscaping shown on this plan will be done according to the plan, Section 16.124 of the Howard County Code and the Howard County Landscape Manual. I/We further certify that upon completion a letter of landscape installation accompanied by an executed one year guarantee of plant materials will be submitted to the Department of Planning and Zoning.

Owner: \_\_\_\_\_  
 Developer: \_\_\_\_\_

Name: \_\_\_\_\_ Date: 4/13/16

Owner: Kelllogg-CGP, LLC  
 c/o David P. Scheffenacker, Jr.,  
 Managing Member  
 2330 West Joppa Road, Suite 190  
 Lutherville, Maryland 21093-4614  
 Ph# 410-296-3800

Developer: Preston • Scheffenacker Properties  
 2330 West Joppa Road, Suite 190  
 Lutherville, Maryland 21093-4614  
 Ph# 410-296-3800

AS-BUILT CERTIFICATION  
 Note: There is no AS-BUILT information provided.  
 Signature: \_\_\_\_\_  
 Date: 4/13/16

STATE OF MARYLAND  
 ALDO M. VITUCI, P.E.  
 License No. 20748  
 Signature: \_\_\_\_\_  
 Date: 4/13/16

**LANDSCAPE NOTES & DETAILS**  
**OXFORD SQUARE**  
 "A Howard County Green Neighborhood"  
 Banbury Drive  
 (Sta. 20+20.21 to Sta. 25+13.13)

Zoned: TDD  
 Tax Map: 30, Parcel: 1003, Grid: 20 And Tax Map: 44, Parcel: 1003, Grid 1  
 First Election District - Howard County, Maryland  
 Date: April 12, 2016  
 Sheet 11 of 15

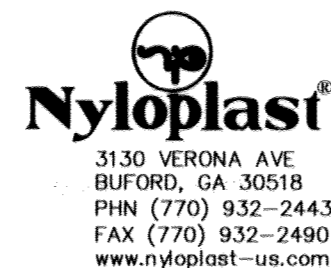
THERE IS NO "AS-BUILT" INFORMATION PROVIDED ON THIS SHEET F-15-088

I:\2009\05014\05014.dwg\Finals - Phase Five\Finals - part 5 lowered Jan 2016\05014 sheet 10-11 landscape planting.dwg 4/12/2016 10:10:15 AM 11

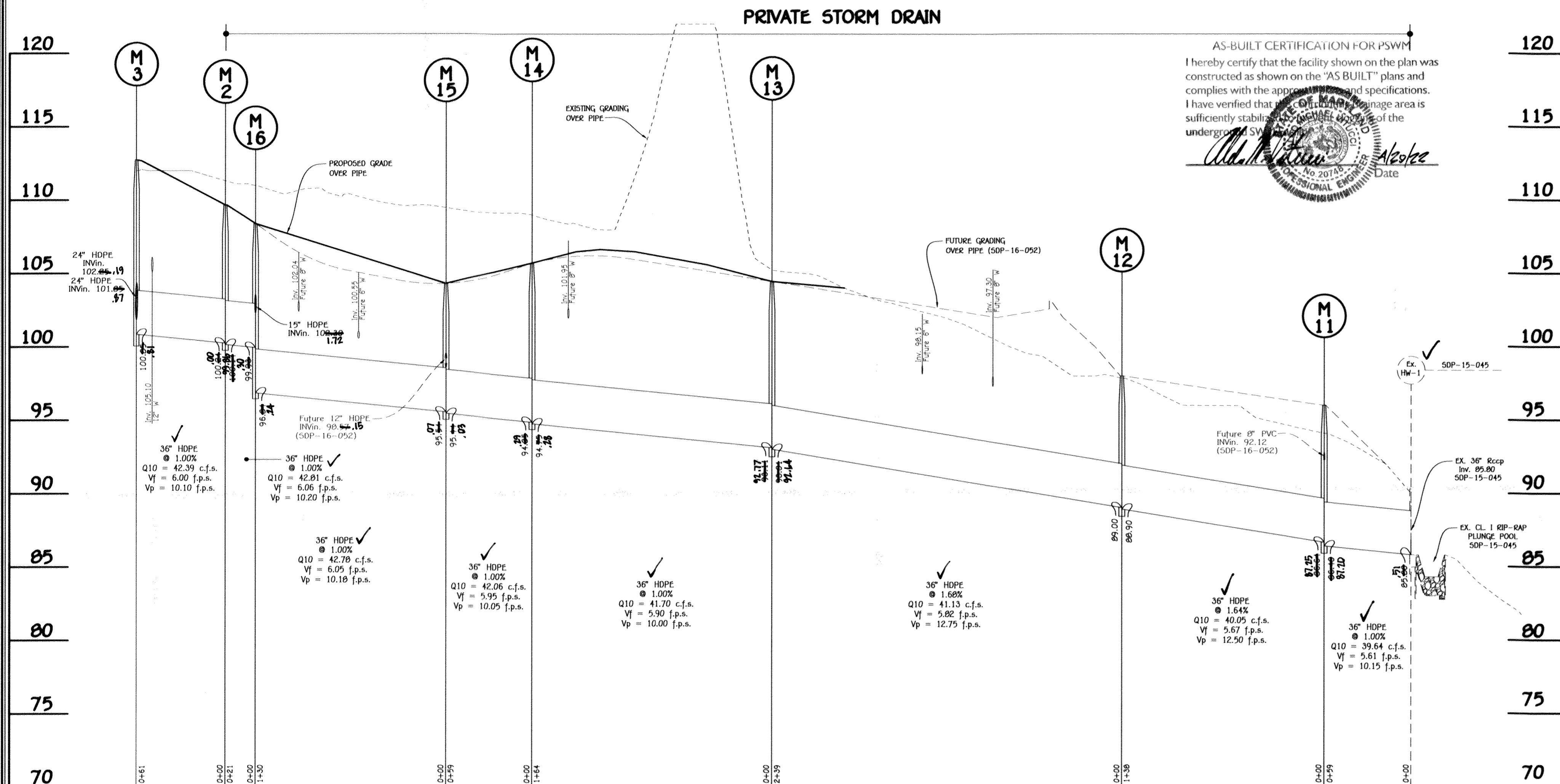
STRUCTURE SCHEDULE								
STRUCTURE NO.	TOP ELEVATION	INV. IN	INV. OUT	ROAD NAME	ROAD STA.	OFFSET	TYPE	REMARKS
I-1	108.00	107.50 (6")	107.50 (6")	N 553661.81 E 1389503.22	---	---	5" INLET	D - 4.39
I-2	112.36	107.70 (12"), 107.61 (6")	107.10 (15")	BANBURY DRIVE	24+51	16.4' L	15" BASIN	Nyloplast OR EQUAL
I-3	112.33	107.55 (6"), 107.55 (6")	107.10 (15")	BANBURY DRIVE	24+51	15.8' R	5" INLET	D - 4.39
I-4	113.66	109.70 (6")	108.55 (6")	BANBURY DRIVE	23+71	16.4' L	15" BASIN	Nyloplast OR EQUAL
I-5	115.25	110.72 (12"), 110.40 (6")	110.22 (15")	BANBURY DRIVE	22+69	16.4' L	15" BASIN	Nyloplast OR EQUAL
I-6	116.96	112.50 (6"), 111.77 (6")	111.62 (15")	BANBURY DRIVE	21+90.5	15.8' R	5" INLET	D - 4.39
I-7	116.93	112.50 (12"), 112.18 (6")	111.00 (15")	BANBURY DRIVE	21+90.5	16.4' L	15" BASIN	Nyloplast OR EQUAL
I-8	116.96	112.95 (18"), 113.95 (6")	110.55 (18")	BANBURY DRIVE	21+00	16.4' L	15" BASIN	Nyloplast OR EQUAL
M-2	109.66	100.24 (36")	100.14 (36")	N 553668.99 E 1389783.38	---	---	5" DIA. MANHOLE	G - 5.13
M-3	111.96	102.55 (24"), 101.50 (24")	100.55 (36")	BANBURY DRIVE	24+92.8	5' L	5" DIA. MANHOLE	G - 5.13
M-4	112.44	106.50 (15"), 106.50 (15"), 102.55 (24")	102.55 (24")	BANBURY DRIVE	24+51	5' L	4" DIA. MANHOLE	G - 5.12
M-5	113.66	103.70 (15"), 103.57 (24")	103.57 (24")	BANBURY DRIVE	23+71	5' L	4" DIA. MANHOLE	G - 5.12
M-6	115.07	104.00 (18"), 103.50 (18")	104.50 (24")	BANBURY DRIVE	22+89.5	5' L	4" DIA. MANHOLE	G - 5.12
M-7	115.44	104.00 (15"), 103.50 (18")	106.50 (18")	BANBURY DRIVE	22+69	5' L	4" DIA. MANHOLE	G - 5.12
M-8	114.00	111.50 (15"), 111.50 (15"), 106.50 (18")	106.50 (18")	BANBURY DRIVE	21+90.5	5' L	5" DIA. MANHOLE	G - 5.13
M-9	116.00	110.50 (18")	110.50 (18")	BANBURY DRIVE	21+00	5' L	4" DIA. MANHOLE	G - 5.12
M-10	113.52	102.79 (FUTURE 24")	102.69 (24")	N 553570.28 E 1389748.93	---	---	5" DIA. MANHOLE	G - 5.13
M-11	96.00	87.00 (36"), 92.12 (FUTURE 8")	87.00 (36")	N 554061.21 E 1386312.21	---	---	5" DIA. MANHOLE	G - 5.13
M-12	98.00	88.90 (36")	88.90 (36")	N 554121.99 E 1386187.69	---	---	5" DIA. MANHOLE	G - 5.13
M-13	104.44	94.17 (36")	94.17 (36")	N 553956.87 E 1386014.41	---	---	5" DIA. MANHOLE	G - 5.13
M-14	105.70	94.50 (36")	94.50 (36")	N 553848.98 E 1385890.41	---	---	5" DIA. MANHOLE	G - 5.13
M-15	104.00	95.07 (36"), 98.15 (FUTURE 12")	95.07 (36")	N 553798.43 E 1385860.43	---	---	5" DIA. MANHOLE	G - 5.13
M-16	108.30	100.55 (15"), 99.50 (36")	96.50 (36")	N 553666.35 E 1385793.92	---	---	5" DIA. MANHOLE	G - 5.13
Ex. HW-1	90.30	85.80 (36"), 85.80 (EX. 36")	---	N 554031.77 E 1386367.42	---	---	CONC. HEADWALL-TYPE 'A'	D - 5.11

PUBLIC PIPE SCHEDULE		
SIZE	CLASS	LENGTH
12"	HDPE	32 l.f.
15"	HDPE	111 l.f.
18"	HDPE	190 l.f.
24"	HDPE	247 l.f.
36"	HDPE	61 l.f.

PRIVATE PIPE SCHEDULE		
SIZE	CLASS	LENGTH
6"	PVC, SCH. 40 (PERFORATED)	316 l.f.
6"	PVC, SCH. 40 (SOLID)	100 l.f.
36"	HDPE	810 l.f.



**NOTE:**  
ALL PVC PIPE TIE-IN TO PUBLIC STORM DRAIN SHALL BE OWNED AND MAINTAINED BY OXFORD SQUARE COMMERCIAL ENTITY.



**PROFILE**  
SCALE: HORIZ. : 1" = 50'  
VERT. : 1" = 5'

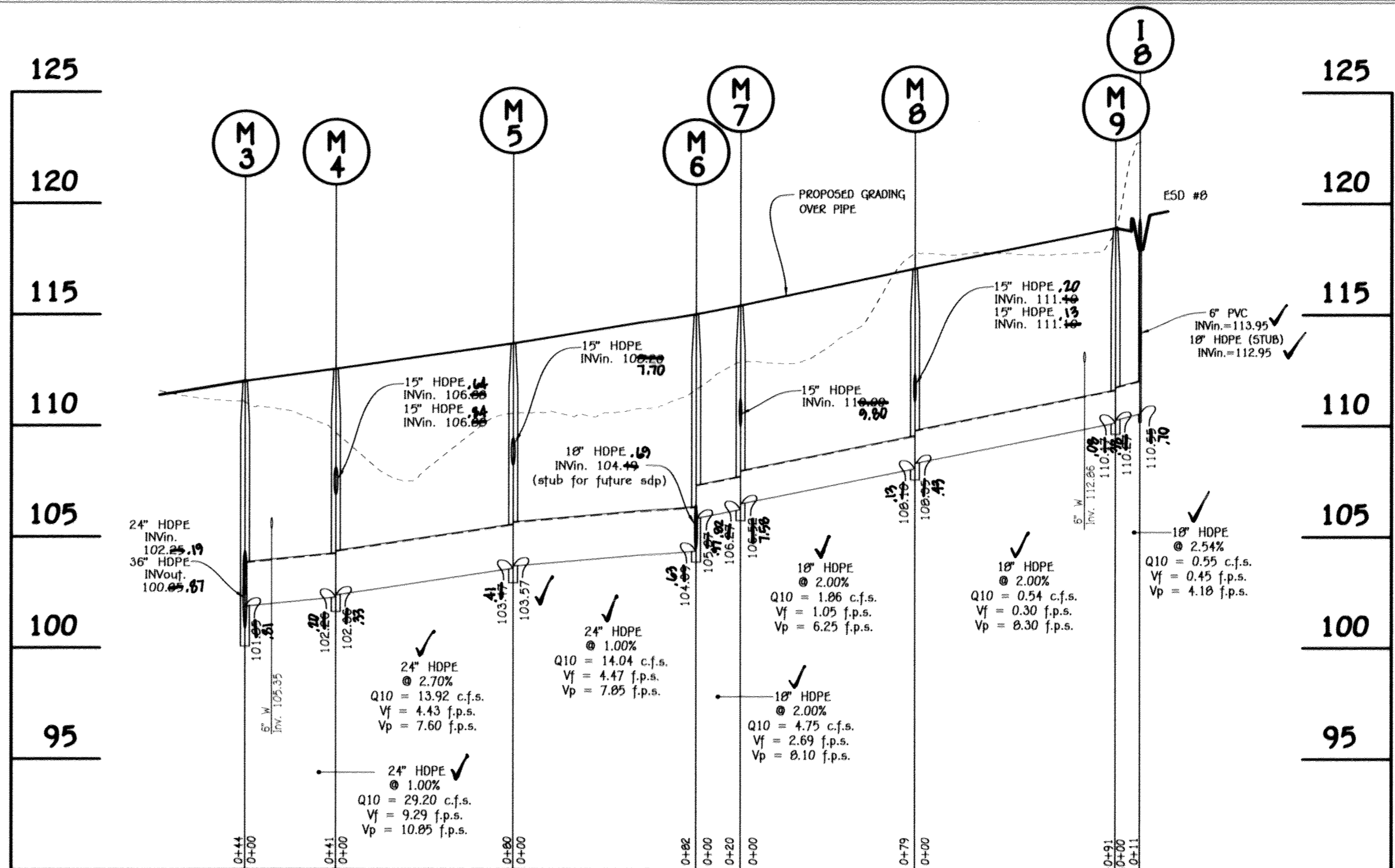
**AS-BUILT CERTIFICATION FOR PSWM**  
I hereby certify that the facility shown on the plan was constructed as shown on the "AS BUILT" plans and complies with the approved specifications. I have verified that the construction of the facility is sufficiently stable and permanent for the intended use of the underground system.  
*Aldo M. Vitucci*  
Professional Engineer  
No. 20748  
Date: 9/2/16

**Owner**  
Kellogg-CCP, LLC  
c/o David P. Scheffacker, Jr.,  
Managing Member  
2330 West Joppa Road, Suite 190  
Lutherville, Maryland 21093-4614  
Ph: 410-296-3800

**Developer**  
Preston • Scheffacker Properties  
2330 West Joppa Road, Suite 190  
Lutherville, Maryland 21093-4614  
Ph: 410-296-3800



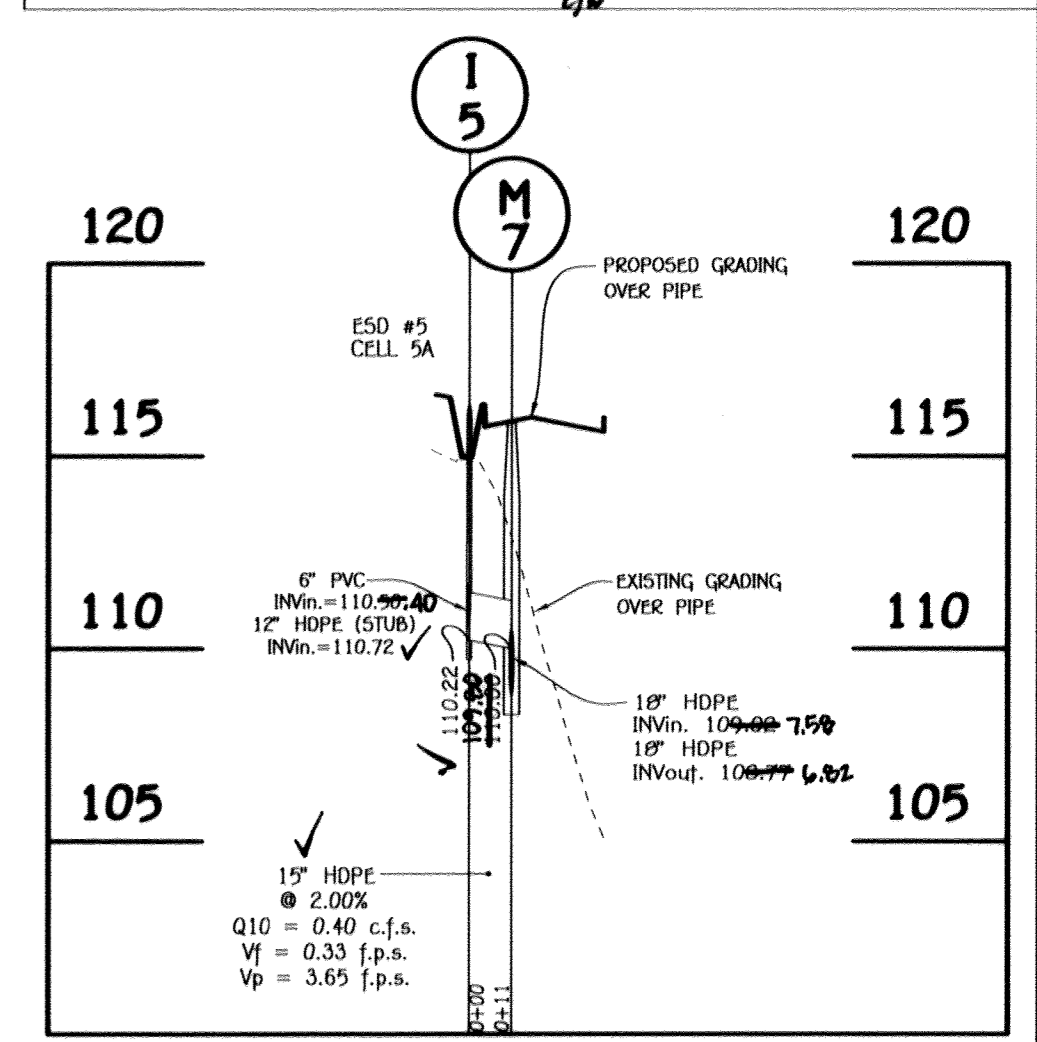
Aldo M. Vitucci, P.E.  
Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly Licensed Professional Engineer under the laws of the State of Maryland, License No. 20748, Expiration Date 2-22-17.



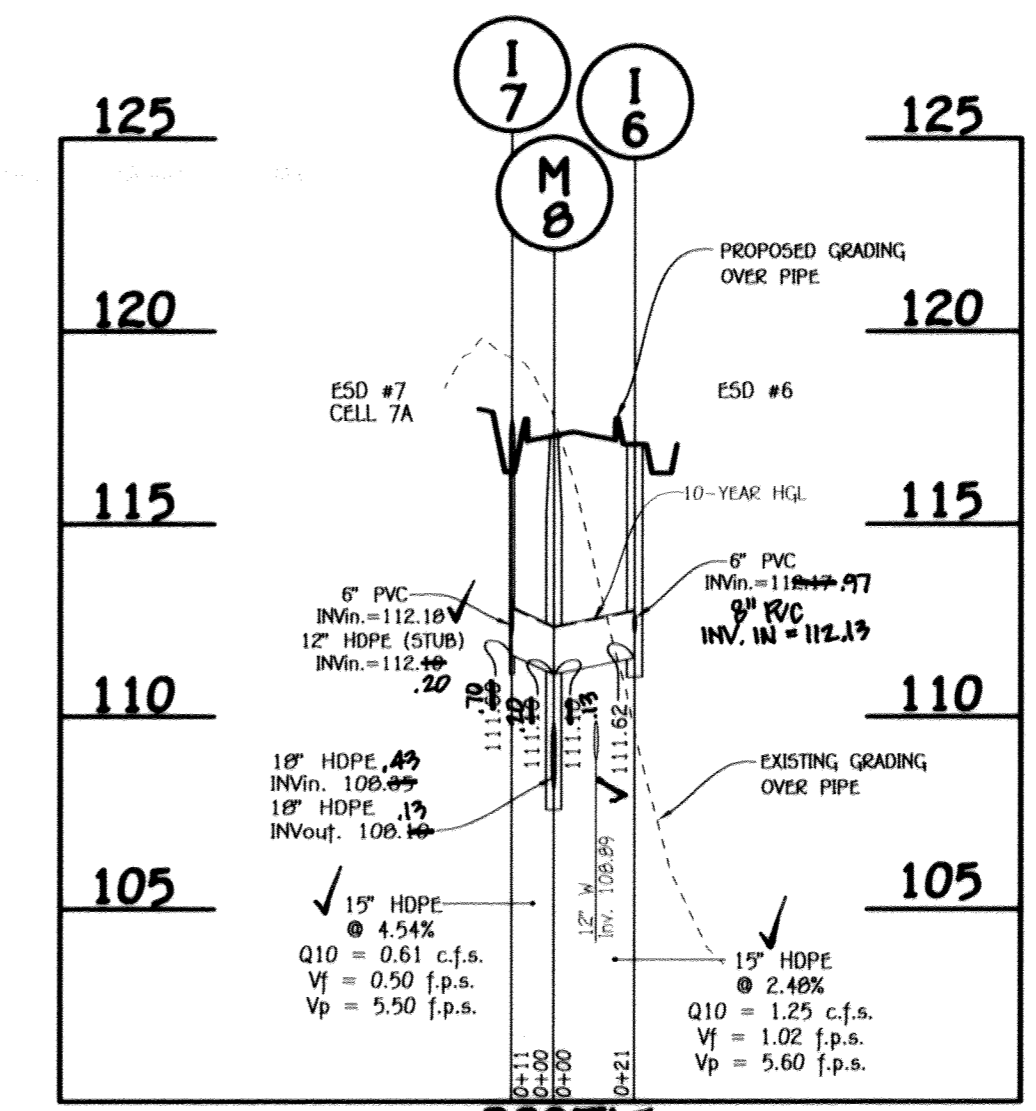
**PROFILE**  
SCALE: HORIZ. : 1" = 50'  
VERT. : 1" = 5'

APPROVED: DEPARTMENT OF PUBLIC WORKS  
CHIEF, BUREAU OF HIGHWAYS  
APPROVED: DEPARTMENT OF PLANNING AND ZONING  
CHIEF, DIVISION OF LAND DEVELOPMENT  
CHIEF, DEVELOPMENT ENGINEERING DIVISION

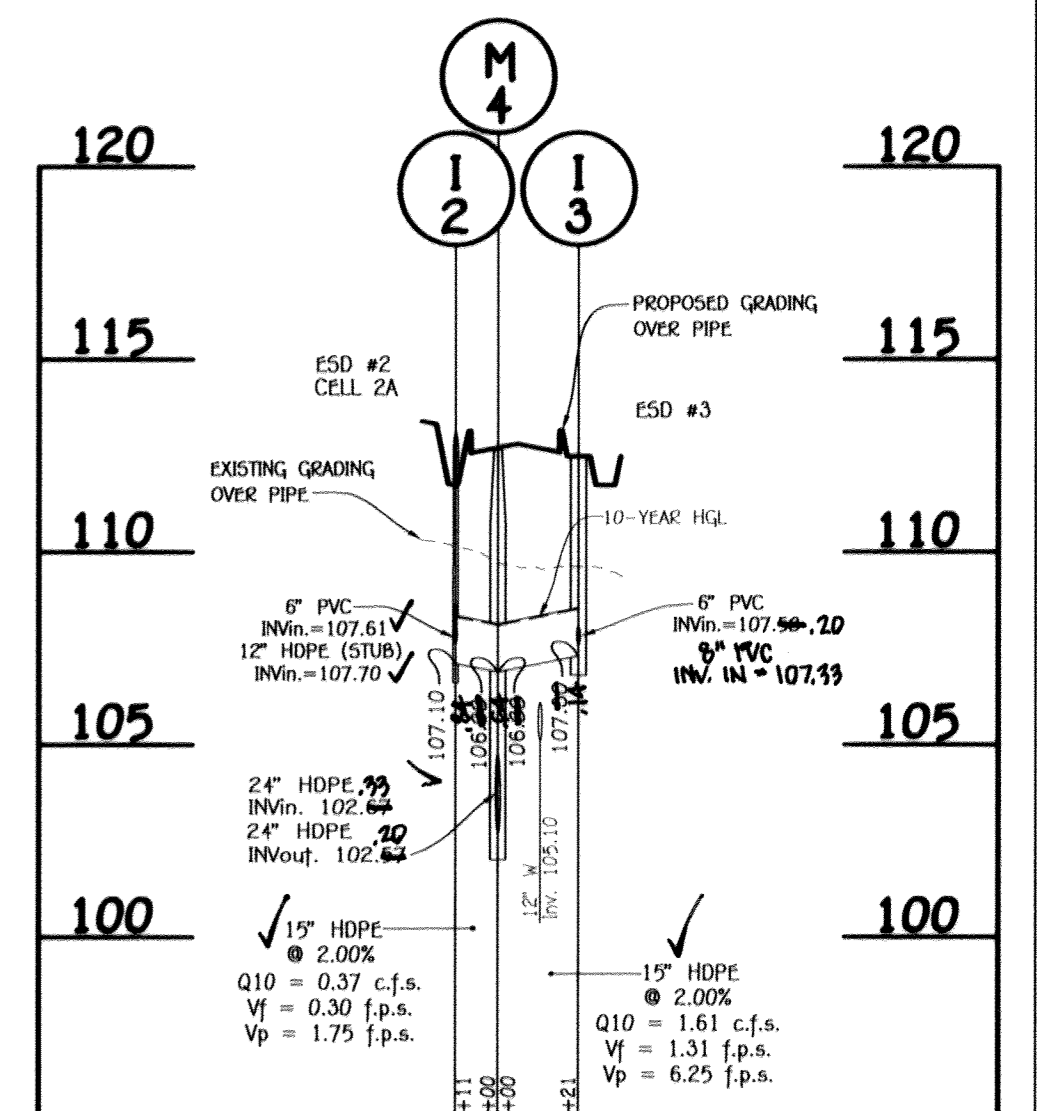
DATE: 8/29/16  
DATE: 9-14-16  
DATE: 8-22-16



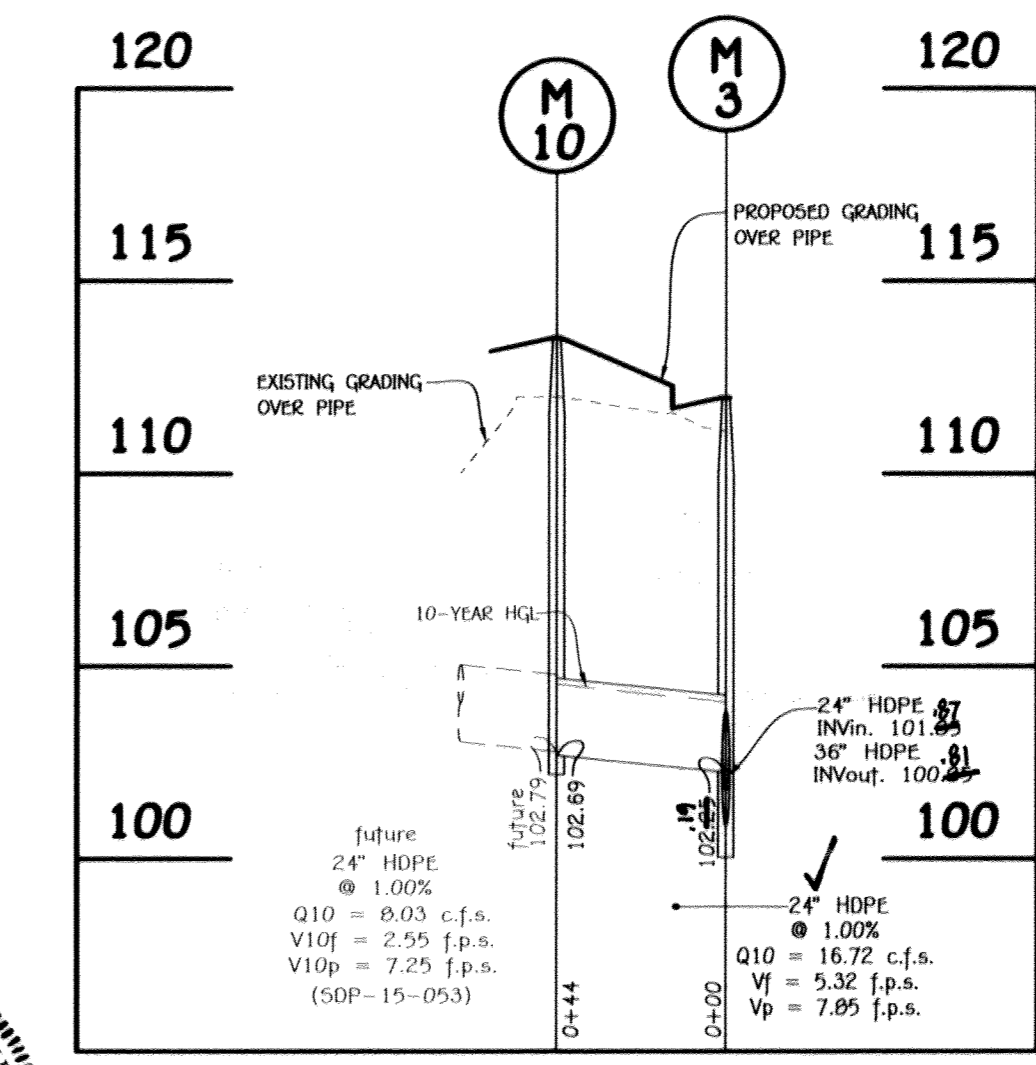
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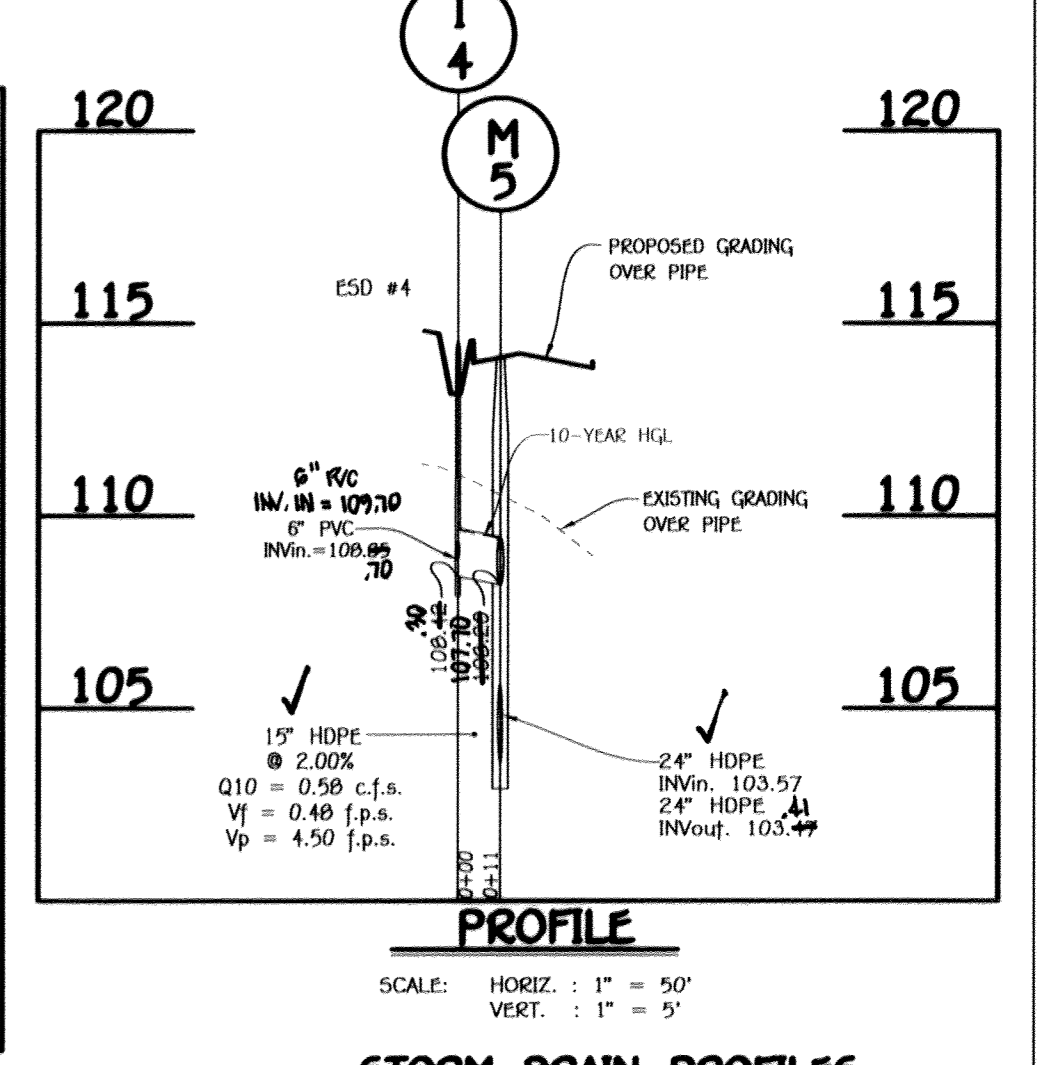
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**PROFILE**  
SCALE: HORIZ. : 1" = 50'  
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**PROFILE**  
SCALE: HORIZ. : 1" = 50'  
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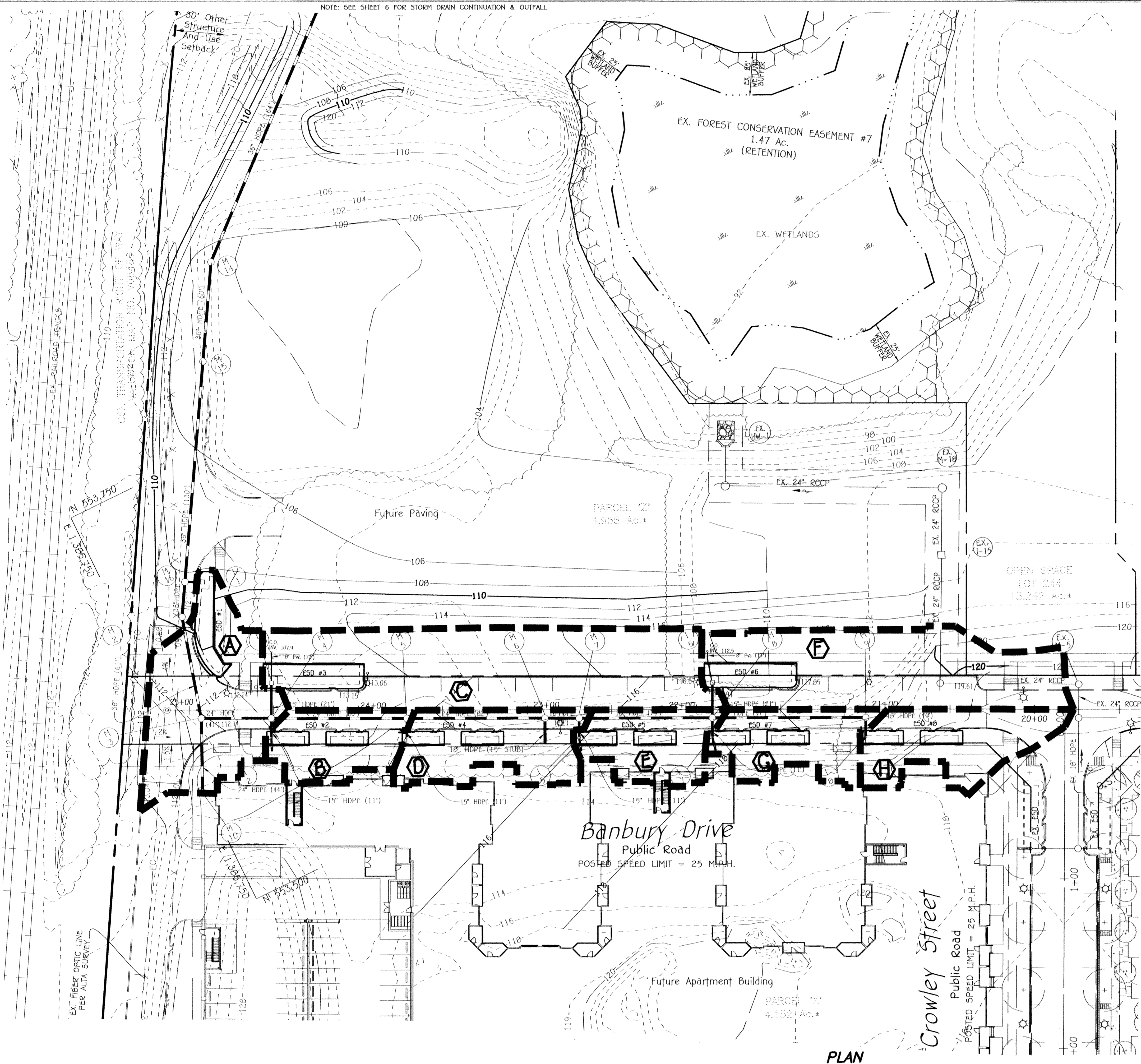
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VERT. : 1" = 5'

**STORM DRAIN PROFILES**  
**OXFORD SQUARE**

"A Howard County Green Neighborhood"  
Banbury Drive  
(Sta. 20+28.21 to Sta. 25+13.13)  
Zone: TOD  
Tax Map: 38, Parcel: 1003, Grid: 20 And Tax Map: 44, Parcel: 1003, Grid 1  
First Election District - Howard County, Maryland  
Date: June 3, 2016  
Sheet 12 of 15

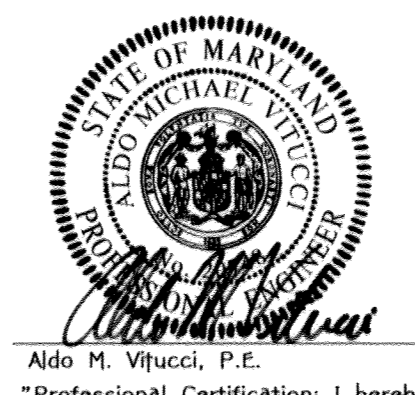
Approved: Department Of Planning And Zoning  
 Chief, Division Of Land Development *Kent Shalovich* 9-14-16 Date  
 Chief, Development Engineering Division *Chick* 8/22/16 Date  
 Approved: Howard County Department Of Public Works  
 Chief, Bureau Of Highways *Samuel* 8/19/16 Date

REVISIONS		
NO.	DESCRIPTION	DATE



DRAINAGE AREA DATA					
STRUCTURE NO.	DRAINAGE AREA	AREA	'C'	ZONED	% IMP.
I-1	A	0.16 AC.	0.73	TOD	68%
I-2	B	0.07 AC.	0.56	TOD	44%
I-3	C	0.28 AC.	0.56	TOD	47%
I-4	D	0.10 AC.	0.60	TOD	51%
I-5	E	0.07 AC.	0.60	TOD	49%
I-6	F	0.21 AC.	0.61	TOD	51%
I-7	G	0.08 AC.	0.80	TOD	78%
I-8	H	0.09 AC.	0.60	TOD	50%

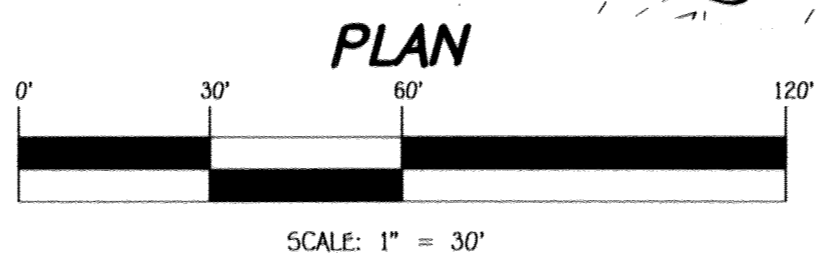
AS-BUILT CERTIFICATION  
 Note: The information provided is for information only.  
*Aldo M. Wjuczi*  
 PROFESSIONAL ENGINEER  
 No. 20748  
 Date: 8/2/16



**STORM DRAIN DRAINAGE AREA MAP**  
**OXFORD SQUARE**  
 "A Howard County Green Neighborhood"  
**Banbury Drive**  
**(Sta. 20+20.21 to Sta. 25+13.13)**  
 Zoned: TOD  
 Tax Map: 30, Parcel: 1003, Grid: 20 And Tax Map: 44, Parcel: 1003, Grid: 1  
 First Election District - Howard County, Maryland  
 Date: June 3, 2016  
 Sheet 13 of 19

**Owner**  
 Kellogg-CCP, LLC  
 c/o David P. Scheffenacker, Jr.,  
 Managing Member  
 2330 West Joppa Road, Suite 190  
 Lutherville, Maryland 21093-4614  
 Ph# 410-296-3800

**Developer**  
 Preston - Scheffenacker Properties  
 2330 West Joppa Road, Suite 190  
 Lutherville, Maryland 21093-4614  
 Ph# 410-296-3800



**FISHER, COLLINS & CARTER, INC.**  
 CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS  
 CENTRAL SQUARE OFFICE PARK - 10772 MANTON NATIONAL PIKE  
 ELLETTT CITY, MARYLAND 21042  
 (410) 461-2095

THERE IS NO "AS-BUILT" INFORMATION PROVIDED ON THIS SHEET F-15-086

**GREEN NEIGHBORHOOD COMPLIANCE CHECKLIST**

APPROVED  
HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING  
GREEN NEIGHBORHOOD PLAN FOR SITES

*Beth Bunge*  
CHIEF, RESOURCE CONSERVATION DIVISION  
DATE: **7-1-16**

LEED ACCREDITED PROFESSIONAL CERTIFICATE  
GREEN NEIGHBORHOOD PLAN FOR SITES  
I hereby certify that this plan represents a practical and workable plan for achieving the targeted credits and point total shown on the Green Neighborhood for Sites Compliance Checklist.

*Matthew J. Fishers*  
MATHREW J. FISHERS, LEED AP  
LEED ACCREDITATION NUMBER: **10007912**  
DATE: **4/13/16**

APPROVED: DEPARTMENT OF PLANNING AND ZONING  
*Kex Stebbins*  
Chief, Division of Land Development  
DATE: **9-14-16**

*Chad Clark*  
Chief, Development Engineering Division  
DATE: **8-22-16**

APPROVED: DEPARTMENT OF PUBLIC WORKS  
*M. M...*  
Chief, Bureau of Highways  
DATE: **5/10/2016**

REVISIONS		
NO.	DESCRIPTION	DATE

Credit No.	Credit	Champion (Name, Role)	Requirement	Site Development Plan GN Strategies	Documentation Location	Points	Points
<b>A Innovative / Integrated Design Process</b>							
A.1	Green Development Plan	FCM/Planners, FCM/Planners	Show how plan meets criteria, includes checklist, natural resource inventory and energy analysis	Provide documentation	GN Report GN Plan	4	4
A.2	Interdisciplinary Project Team	FCM/Planner	Includes U.S. Green Building Council Leadership in Energy and Environmental Design (LEED) Accredited professional, ecologist / environmental professional / landscape architect, and engineer	The design team includes a LEED AP professional, an ecologist, a civil engineer, an architect and landscape architect	GN Plan	4	4
A.3	Third Party Certification	FCM/Planner	Certification of credits by independent LEED accredited professional	Alexander Design Studio	GN Report GN Plan	4	4
A.4a	Innovative Design A	FCM/Planners	Green Streets	Green Streets	GN Report GN Plan (F-15-008) Sheet 5 Reference: Sketch Plan (S-15-001)	1	1
A.4b	Innovative Design B	FCM/Planners	Prioritize Parking for Fuel Efficient Cars	Reserve 5% for Fuel Efficient Cars	GN Report GN Plan (F-15-001) Sheet 5 Reference: Sketch Plan (S-15-001)	1	1
A.4c	Innovative Design C	FCM/Planners	Compact Development	Residential Development will exceed 20 DU/AC	GN Report GN Plan (F-15-001) Sheet 5 Reference: Sketch Plan (S-15-001)	1	1
A.4d	Innovative Design D	FCM/Planners	Walkable Streets	More than 60% building frontage oriented low and public spaces; Less than 20% service and garage openings to public spaces	GN Report GN Plan (F-15-001) Sheet 5 Reference: Sketch Plan (S-15-001)	1	1
<b>B Location, Linkages &amp; Community Context</b>							
B.1a	Redevelopment Site	FCM/Planners, FCM/Planner	Plan of previously developed site (minimum 20% existing impervious, with adding scale for credits based on amount of % impervious)	More than 25% area previously developed (former sand and gravel operation)	GN Plan Reference: Sketch Plan (S-15-001)	4	2
B.1b	Undeveloped Site (Flow Fields)	NA	Flow fields cleanup of undeveloped site	NA	NA	0	0
B.1c	Reduce Buildings	NA	Reduce number of buildings	NA	NA	1	0
B.3a	Transit Access & Amenities for Reduced Auto Dependence (Stop)	FCM/Planners	Site is served by transit stop within 1/2 mile (1 point) or 1/4 mile (2 points) walk from property	Private Shuttle Service within 2 stops (0.4% DU within 1/4 mile walking distance)	GN Plan Reference: Sketch Plan (S-15-001) F Plan (F-15-008)	2	2
B.3b	Transit Access & Amenities for Reduced Auto Dependence (Shelter)	FCM/Planners	Provide county specified transit shelter with benches and lighting at transit stop within 1/2 mile of property and provided pedestrian link to stop if none currently exists	Provide HoCo transit approved shelter for private shuttle service	Reference: Sketch Plan (S-15-001) SEP (SEP-13-008)	4	4
B.4	Proximity to Community Resources	NA	Credit for 1/2 mile proximity to existing or proposed community resources such as schools, parks, library, post office, etc.	NA	NA	5	0
<b>C Compact, Complete &amp; Connected Development</b>							
C.1	Density of Uses	FCM/Planners	1 point per different land use; minimum 100 sf for each non-residential per DU. Minimum of 100,000 SF each of office, institutional and civic use, per 1,400 DU	Provide 3 Uses: Institutional, Civic and Office	GN Plan Reference: Sketch Plan (S-15-001)	3	3
C.2	Planned Service Area	FCM/Planners	Locate the project within the Planned Service Area	The project is within the Planned Service Area	GN Plan	5	5
C.3a	Pedestrian System (Path)	FCM/Planners	Provide an off-site path system with 2 connections to internal or external sidewalk, with minimal environmental impacts, long-term maintenance	Provide a shared use path system	GN Plan Reference: Sketch Plan (S-15-001) Sketch Plan (S-14-001) SEP 14-019 SEP 15-008 SEP 12-075	2	2
C.3b	Pedestrian System (Amenities)	FCM/Planners	Provide at least two different pedestrian experience features	Provide pedestrian amenities at trailheads, the lawn, school and residential new s	GN Plan Reference: Sketch Plan (S-15-001) Sketch Plan (S-14-001)	2	2
C.4	Connected On-site Street Network	FCM/Planners	Provide a gridded street network	More than 75% connected streets	GN Plan GN Report Reference: Sketch Plan (S-15-001)	2	2
C.5	Parking does not exceed Required Minimum	FCM/Planners	Surface parking lots do not exceed required parking ratios (1 point); plan takes advantage of shared parking provisions parking structure provided (in deck or beneath building, does not include garages within individual units) (4 points)	Provide common parking structures (4 points)	GN Plan Reference: Sketch Plan (S-15-001)	4	4
C.6	Exceed Minimum Open Space Requirements	FCM/Planners	1 point for every 5% above required minimum open space for the TOD zone; 1 point for every 10% of non buildable HOA parcels above 50% of the site (up to 3 points)	Provide more than 20% increase in amenity space above the required minimum amenity space (FOC zoning regulations)	GN Plan Reference: Sketch Plan (S-15-001)	5	5
C.7	Green Spaces and Amenity Areas	FCM/Planners	Open space along public/private roads available for public use	Additional accessible open space will be provided at Lane n/Barn and clubhouse and pool	GN Plan Reference: Sketch Plan (S-15-001) SEP (SEP-13-008)	2	2

<b>D Environmental Preservation</b>							
D.1	Stream Restoration or Wetland Creation or Restoration	Ecoscience	Restoration of degraded on site stream channel, on site wetland or creation of additional wetlands (adding scale based on % of length of stream restored and % of acres of wetland created or restored)	Provide Wetland Restoration to +/- 80,810 SF	GN Report Reference: Restoration SEP (SEP-14-001) Sketch Plan (S-15-001) SEP (SEP-14-019)	16	16
D.2	Habitat Management Plan	Ecoscience	Prepare and implement plan that identifies, conserves and enhances natural resources and ecological communities (may include clean up of debris, removal of invasives, etc.)	Provide Habitat Management Plan	GN Report Reference: Restoration SEP (SEP-14-001) Sketch Plan (S-15-001) SEP (SEP-14-019)	4	4
D.3	20% Slope Steep Preservation	NA	Protect all existing steep slopes as defined by County regulations (minimum buffer of 20' at top of 20% slope) (2 points)	NA	NA	2	0
D.4	15% Slope Preservation	FCO/NA, FCM/Planners	Protect existing 15% slopes (protect minimum 1/2 acre, with adding scale based on area or % protected)	Preserve below 25-50% of 15%-24.9% slopes	GN Plan Reference: Sketch Plan (S-15-001)	4	2
D.5	Minimize Grading and Site Disturbance	FCO/NA, FCM/Planners	Minimize limit of disturbance; leave at least 20% of site undisturbed (1 point); 30% (2 points); 40% (3 points); balance cut and fill on site (2 points); retaining walls 3:1 (deduct 1 point) retaining walls 0.5:1 (deduct 2 points); walls 0.2:1 and higher (deduct 3 points); no new created steep slopes over 25% (1 point); amend soil nutrients in turf and planting areas (1 point)	Balance Cut and Fill on entire site - 2 points Minimize Retaining Walls - 0 points No new > 25% Steep slopes: 1 point Leave more than 20% of site undisturbed - 1 points	GN Plan Reference: Sketch Plan (S-15-001)	5	4
D.6	Exceed Minimum Forest Conservation Requirements	Ecoscience, FCO/NA, FCM/Planners	1 point for every 10% of existing forest retained above break even point; 1 point for every 10% of on-site forest planted in excess of deforestation obligation	NA	NA	5	0
D.7	Save Trees above 12" Diameter Caliper	NA	1 point for protecting each 20% of all species trees (does not include specimen trees within forest conservation areas or within forests that are being cleared)	NA	NA	1	0
D.8a	Exceed Minimum Stream Buffer Requirements	FCO/NA	75' buffer required for perennial and intermittent streams inside PSA, 100' buffer required for perennial and intermittent streams outside PSA	75' buffer required for perennial and intermittent streams inside PSA, 100' buffer required for perennial and intermittent streams outside PSA	GN Plan Reference: Sketch Plan (S-15-001) F Plan (F-15-008)	6	6
D.8b	Exceed Minimum Stream Buffer Requirements	Ecoscience, FCO/NA, FCM/Planners	2 points for each additional 25' of buffer provided in excess of requirements in D.8a outside wetland buffer or floodplain	Provide 150 FT Stream Buffer (75 FT enhanced buffer) - 6 points	GN Plan Reference: Sketch Plan (S-15-001) F Plan (F-12-026) F Plan (F-15-008)	6	6
D.9	Exceed Minimum Wetland Buffer Requirements	Ecoscience, FCO/NA, FCM/Planners	2 points for each additional 25' of wetland buffer	NA	NA	4	0
D.10	Floodplain Buffer	NA	1 point for each 25' of buffer to floodplain outside regulated or provided wetland or stream buffer	NA	NA	2	0

<b>E Site Landscape Improvements</b>							
E.1	Landscape exceeds Minimum Requirements and Reduces Heat Island Effect	NA	1 point for each 10% increase in number of plants (must be native plants) provided above total minimum required in Landscape Manual; 1 point for plant trees on south and west sides of buildings and increase trees within parking areas and along sidewalks and paths	Provide 20% increase in Landscape Requirements	GN Plan GN Report F Plan (F-15-008) Sheets 10, 11	5	2
E.2	Native Plants	NA	1 point for 90%, 2 points for 95%, 3 points for 100% of all plants native to within 20% radius of site	NA	NA	1	0
E.3	No Invasive Plants	FCM/Planners	No plants that are on DNR, USDA or Cooperative Extension Service lists of invasive plants	Will not plant invasive plants	GN Plan F Plan (F-15-008) Sheets 10, 11 Reference: Sketch Plan (S-15-001)	4	4
E.4	Lawn Turf	FCM/Planners	Turf does not exceed 30% of unimproved site (1 point); no turf on new created steep slopes 25% or in densely shaded areas (1 point); turf areas must be planted in native vegetation	Will not plant conventional turf in densely shaded areas and on newly created >20% steep slopes	GN Plan Reference: Sketch Plan (S-15-001)	2	1
<b>F Water Conservation / Efficiency / Management</b>							
F.1	Rainwater Harvesting System	Straghan	Collect and make use of water runoff from minimum 50% of roof area; provide storage system and monitoring device and maintenance management program	Provide rainwater harvesting for school and recreational fields	Reference: SEP (SEP-12-075)	5	5
F.2	Water Efficient Water-spays	NA	Use water efficient water-spays in 40% or more of all parking lots; provide water efficient water-spays in 100% of all parking lots	NA	NA	1	0
F.3a	Low Impact Development (LID) Stormwater Treatment	FCO/NA	Meets minimum Design Manual requirements; no dry ponds allowed	No dry ponds	GN Plan F Plan (F-15-008) Sheets 2-4 Reference: Sketch Plan (S-15-001)	4	4
F.3b	Low Impact Development (LID) Stormwater Treatment	FCO/NA	Exceeds Design Manual requirements; maximize use of infiltration (esp. for parking lots), rain gardens, rain barrels, stormwater wetlands, green roof, etc.	Will provide 51% water quality volume stored and infiltrated into On Site	GN Plan GN Report F Plan (F-15-008) Sheets 2-4 Reference: Sketch Plan (S-15-001)	6	6
<b>G Energy Efficiency</b>							
G.1	Light Pollution Reduction	FCO/NA, FCM/Planners	Shield all site lighting fixtures to reduce light and glare; use low-glare, shielded fixtures; use low-glare, shielded fixtures; use low-glare, shielded fixtures	NA	NA	1	0
G.2	Water Orientations	NA	1 point 50% (1 point) or 75% (2 points) or 100% (3 points) of buildings; in make available for water utilization	NA	NA	1	0
G.3	Infrastructure Energy Efficiency	NA	Select high efficiency fixtures for parking lots and other site light fixtures	NA	NA	0	0
<b>H Materials Beneficial to the Environment / Waste Management</b>							
H.1	Environmentally Preferable Products	FCO/NA, FCM/Planners	Use environmentally preferable products in building (recycled materials, concrete, asphalt, etc.); use environmentally preferable products in site materials; use recycled content, salvaged or engineered materials	NA	NA	1	0
H.2	Reduce Field Erosion (Prevention of Flooding)	NA	Use light colored or high albedo materials and/or pervious paving with a minimum 50% infiltration rate or use for at least 30% of the site	NA	NA	2	0
H.3	Site Construction Waste Management	Straghan	Develop and implement a construction waste management plan to divert, reuse, recycle or reduce the amount of site material sent to the landfill by 25% (2 points) or 50% (3 points) or 75% (4 points)	Divert 75% or more site construction waste	GN Report	4	4
H.4	Regionally Provided Materials	Straghan, FCO/NA, FCM/Planners	20% of common and public infrastructure materials from within 200 miles	Use regionally produced materials for 20% of total site materials	GN Report	3	3
<b>I Operations and Maintenance Education</b>							
I.1	HCA Documents	Straghan	Include information about green site features and maintenance requirements in HCA documents	Provide HCA document	Reference: SEP-13-008	4	4
I.2	Maintenance Manual for Owner / HCA / Manage	Straghan	Provide a manual that includes information on how to maintain the green features of the site, including paving materials, landscaping and stormwater management (LID) and encourages additional green activities such as recycling, gardening, etc.	Provide manual	Reference: SEP-13-008	4	4
I.3	Public Awareness of Sustainable Community	Straghan, FCM	Develop a program to advertise the environmental benefits of the community	Implement public awareness strategy	Reference: SEP-13-008	4	4
<b>TOTAL GREEN NEIGHBORHOOD SITE POINTS</b>						<b>167</b>	<b>90</b>
Number of points required to obtain Green Neighborhood Allocations						<b>90</b>	

**Third Party Certification**  
By affixing my signature below, the undersigned does hereby declare and affirm to Howard County that the targeted Green Neighborhood Site credits and point total, as specified in this Green Neighborhood Site Compliance Checklist, are reasonable and achievable.

Signature: *Charles Alexander* Title: **President** No. **10439200** Date: **4-13-16**  
Name: **CHARLES ALEXANDER** Organization: **ALEXANDER DESIGN STUDIO**  
Submission (mark "X" where applicable): F Plan (F-15-008)

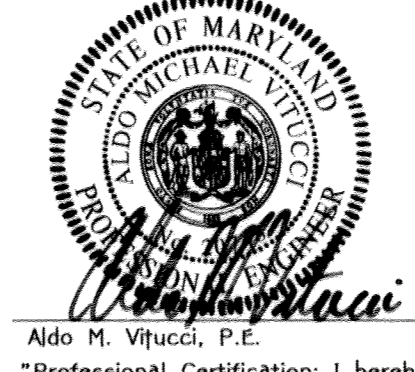
**FISHER, COLLINS & CARTER, INC.**  
CIVIL ENGINEERING CONSULTANTS & LAND SURVEYORS  
CENTRAL SQUARE OFFICE PARK - 10772 BALTIMORE NATIONAL PIKE  
ELICOTT CITY, MARYLAND 21042  
(410) 461-3999

**hord coplan | macth**  
750 E. Pratt Street, Suite 1100 Baltimore MD 21202  
410.537.7311 | www.hcm2.com  
Hord Coplan Macth, Inc. 2014

**Owner**  
Kellogg-CCP, LLC  
c/o David P. Scheffenacker, Jr.,  
Managing Member  
2330 West Joppa Road, Suite 190  
Lutherville, Maryland 21093-4614  
Ph# 410-296-3800

**Developer**  
Preston - Scheffenacker Properties  
2330 West Joppa Road, Suite 190  
Lutherville, Maryland 21093-4614  
Ph# 410-296-3800

**AS-BUILT CERTIFICATION**  
Note: There is no "AS BUILT" information provided on this plan.  
*Matthew M...*  
Date: **4/12/16**



**GREEN NEIGHBORHOOD PLAN**  
**OXFORD SQUARE**  
"A Howard County Green Neighborhood"  
Banbury Drive  
57a. 20+20.21 to 57a. 25+13.13)  
Zone: 100  
Tax Map: 38, Parcel: 1003, Grid: 20 And Tax Map: 44, Parcel 1003, Grid 1  
First Election District - Howard County, Maryland  
Date: April 12, 2016  
Sheet 14 of 15

THERE IS NO "AS-BUILT" INFORMATION PROVIDED ON THIS SHEET F-15-008

**GREEN NEIGHBORHOOD NOTES:**

- A-2 THE DESIGN AND DEVELOPMENT TEAM INCLUDES A LEED AP (MATTHEW FITZSIMMONS - HORD COPLAN MACHT), ENVIRONMENTAL PROFESSIONAL (JOHN CANALES - ECO SCIENCE PROFESSIONALS, INC.), LANDSCAPE ARCHITECT (JOSH KILRAIN - HORD COPLAN MACHT) AND AN ENGINEER (ALDO VITUCCI - FISHER, COLLINS & CARTER, INC.).
- A-3 THE THIRD PARTY CERTIFICATION IS PROVIDED BY CHARLES ALEXANDER, LEED-AP OF ALEXANDER DESIGN STUDIOS.
- B-1a THE 118.5 ACRES GREEN NEIGHBORHOOD BOUNDARY AREA CONSISTS OF 30.4 ACRES OF PREVIOUSLY DEVELOPED LAND (25.7% OF THE OXFORD SQUARE DEVELOPMENT).
- B-3a OXFORD SQUARE WILL PROVIDE TWO TRANSIT STOPS FOR THE PROPOSED PRIVATE SHUTTLE SERVICE CONNECTING OXFORD SQUARE TO THE DORSEY MARC COMMUTER RAIL STATION. THE STOPS WILL BE WITHIN 1/4 WALKING DISTANCE TO 94.0% OF DWELLING UNITS.
- B-3b OXFORD SQUARE WILL PROVIDE ONE SHELTER AT ONE OF THE PRIVATE SHUTTLE STOPS. THE SHELTER WILL COMPLY WITH COUNTY APPROVED CRITERIA INCLUDING BENCHES AND LIGHTING.
- C-1 OXFORD SQUARE WILL PROVIDE THREE DIVERSE USES OTHER THAN RESIDENTIAL: INSTITUTIONAL (MIDDLE SCHOOL BUILDING AND OUTDOOR CLASSROOM SPACE, ELEMENTARY SCHOOL) AND CIVIC (SCHOOL'S RECREATIONAL PLAYING FIELDS AND SHARED-USE PATH) AND OFFICE.
- C-2 OXFORD SQUARE IS LOCATED WITHIN THE EXISTING PLANNED WATER AND SEWER SERVICE AREA.
- C-3c OXFORD SQUARE WILL PROVIDE A MINIMUM OF TWO PEDESTRIAN SYSTEM AMENITY EXPERIENCES: 1) SHARED USE PATH AND NATURE TRAIL (TRAIL SIGNS AND MARKERS, BENCHES, LITTER RECEPTACLES, INFORMATIONAL SIGNS, BIKE RACKS), 2) THE LAWN (BENCHES, EXTERIOR LIGHTING, SHADE TREES, INFORMATIONAL SIGNS), 3) RESIDENTIAL COURTYARDS AND MEWS (BENCHES), AND 4) SCHOOL SITES (PLAYING FIELDS, BENCHES, BIKE RACKS)
- D-4b OXFORD SQUARE WILL PROVIDE A MINIMUM 75 FT ENHANCED STREAM BUFFER.
- E-3 OXFORD SQUARE WILL NOT PLANT INVASIVE PLANTS.
- E-4 OXFORD SQUARE WILL NOT PLANT TURF IN DENSELY SHADED AREAS.
- F-3b OXFORD SQUARE WILL PROVIDE AT LEAST 51% WATER QUALITY VOLUME STORED AND INFILTRATED/RE-USED ON-SITE.

**GREEN NEIGHBORHOOD CALCULATIONS & TABLES:**

**A-4b Priority Parking for Low-Emitting and Fuel Efficient Vehicles**

Total Number of Off-Street Parking Spaces:	Overall Development	1,059 Spaces
Total Number of Proposed Preferred Parking Spaces:		57 Spaces
<b>Percent of Preferred Parking Spaces:</b>		<b>5.4%</b>

Note: Overall Development calculations summarize all filed plan submissions. This plan does not provide off-street parking.

**A-4c Compact Development**

Total Dwelling Units:	Complete Build Out	1,492 DU
Residential Land Area:		50.8 AC
<b>Residential Density:</b>		<b>29.39 DU/AC</b>

**A-4d Walkable Streets**

Length of Buildings Frontage Oriented Towards the Public Space:	Complete Build Out	12,195 FT
Total Length of Building Frontage:		14,314 FT
<b>% of Building Frontage Oriented Towards the Public Spaces:</b>		<b>85.2%</b>
Length of Building Frontage with Service or Garage Openings:		1,222 FT
Length of Building Frontage Oriented Towards Public Spaces (Including Service and Garage Openings):		13,417 FT
<b>% of Building Frontage with Service or Garage Openings:</b>		<b>9.1%</b>

**B-1a Redevelopment Site**

Gross Site Area:	118.5 Acres
Area of Existing Development:	30.4 Acres
<b>Percent of Previously Developed:</b>	<b>25.7%</b>

**B-3a Transit Access & Amenities for Reduced Auto Dependence (Stop)**

Residential Buildings within 1/4 Mile (<1,320 FT)	Total Number of Qualifying Units	Percent of all Units
All Buildings except the most distant buildings on Parcel 'Z'	1,402 DU	94%

**C-1 Diversity of Uses**

Residential Uses	Number of Units	Percent of Total Units
Apartments & Townhouses	1,492 DU	100%
Nonresidential Uses		
Office:	166,000 SF	111 SF/DU
Institutional:		
Middle School	95,747 SF	
Middle School Outdoor Classroom Space	2,500 SF	
Elementary School	101,014 SF	
<b>Institutional Subtotal:</b>	<b>199,261 SF</b>	<b>134 SF/DU</b>
Civic:		
Recreational Playing Fields (School Site)	236,139 SF	
Northern Loop Shared-Use Path (8 FT wide)	22,968 SF	
Southern Loop Shared-Use Path (8 FT wide)	8,016 SF	
<b>Civic Subtotal:</b>	<b>267,123 SF</b>	<b>179 SF/DU</b>

**C-3a Pedestrian System (Paths and Trails)**

Northern Shared Use Path:	Width of Path: 8 FT Length: 2,871 FT (0.54 Miles)
Southern Shared Use Path:	Width of Path: 8 FT Length: 1,002 FT (0.19 Miles)
Nature Path:	Width of Path: 8 FT Length: 1,129 FT (0.21 Miles)

**C-4 Street Connections**

Street Name / ID	Street Length	Qualifying Street Length
Saint Margarets Boulevard	1,684 FT	1,684 FT
Banbury Drive	2,491 FT	2,491 FT
Southmoor Street	960 FT	960 FT
Dene Court	514 FT	- FT
Crowley Street	1,136 FT	947 FT
Danvers Street	465 FT	465 FT
Beaumont Place	1,450 FT	1,450 FT
Dunstead Street	240 FT	- FT
Headley Street	120 FT	- FT
Pattison Street	120 FT	- FT
Road I	736 FT	736 FT
Road B	554 FT	554 FT
Road C	1,613 FT	928 FT
<b>Summary</b>		
Total Street Length:	12,083 FT	
Total Connected Street Length:		10,215 FT
<b>Percent Connected Streets:</b>	<b>84.5%</b>	

**C-5 Parking Does Not Exceed Required Minimum**

Number of Spaces within a Common Parking Structure:	1,708 spaces
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**C-6 Exceed Minimum Open Space**

Net Acreage:	107.4 AC
Required Amenity Space (TOD: 10% of Net Acreage):	10.7 AC
Provided Amenity Space:	23.4 AC
<b>Percent Increase above the Minimum Required:</b>	<b>118.1 %</b>

Note: This submission does not contribute to the open space goal for this development.

**C-7 Green Spaces and Amenity Areas**

Parcel	Road Frontage	Amenity Type	Amenity Area
Open Space 1: Lawn and Barn Parcel 'I' (future SDP)	4/108 FT (length along Banbury Drive)	Lawn: passive recreation and gathering space Barn: learning, meeting and performance space	57,604 SF (1.32 AC)
Open Space 2: Pool House and Pool O.S. Lot #107 (SDP 13-068)	4/138 FT (length along Dene Court)	Pool house, Pool, Fitness Room, and Warming Kitchen	11,282 SF (0.26 AC)

**D-4 15% Slope Preservation**

Total Area of Slopes 15-24.9%:	GN Boundary	506,841 SF
Area of Undisturbed Slopes 15-24.9%:		200,866 SF
<b>Percent of Undisturbed Slopes:</b>		<b>39.6 %</b>

Note: 1. The area of undisturbed slopes is the summation of slopes impacted by the greatest extent of LOD accumulated from the entire development (Sketch Plan (S-15-001)) and future environmental restoration work.

**D-5 Minimize Grading and Site Disturbance**

Gross Area of Site	Complete Build Out	118.5 AC
Existing Impervious Cover		30.4 AC
Area of Site		88.1 AC
Area of Site to Remain Undisturbed:		24.2 AC
<b>Percent of Site to Remain Undisturbed:</b>		<b>27.5 %</b>
Ratio of Cut to Fill:		1.16 Ratio
Retaining Wall:		<3 FT

Note: 1. Complete Build Out Calculations are based on the aggregate greatest extent of LOD's (Sketch Plan (S-15-001)) and future environmental restoration work.

**D-8b Exceed Minimum Stream Buffer Requirements**

Total Stream Buffer Width:	150 FT
Width of Buffer Exceeding Requirements:	75 FT
Total Length of Stream Buffer:	1,984.2 FT
Length of Stream Buffer Outside Other Buffers:	1,352.3 FT
<b>Percent of Stream Buffer Outside Other Buffers:</b>	<b>68.2 %</b>

APPROVED  
HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING  
GREEN NEIGHBORHOOD PLAN FOR SITES

*Bill Burg* 9-1-16  
CHIEF, RESOURCE CONSERVATION DIVISION DATE

LEED ACCREDITED PROFESSIONAL CERTIFICATE  
GREEN NEIGHBORHOOD PLAN FOR SITES

I hereby certify that this plan represents a practical and workable plan for achieving the targeted credits and point total shown on the Green Neighborhood for Sites Compliance Checklist.

*Matthew J. Fitzsimmons* 10007912 4/13/16  
MATTHEW J. FITZSIMMONS, LEED AP LEED ACCREDITATION NUMBER DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING

*Keith Sedbrook* 9-14-16  
Chief, Division of Land Development DATE

*Chad Edwards* 8-22-16  
Chief, Development Engineering Division DATE

APPROVED: DEPARTMENT OF PUBLIC WORKS

*Michael* 5/11/2016  
Chief, Bureau Of Highways DATE

NO.	REVISIONS DESCRIPTION	DATE

**E-1 Landscaping**

Plants Required	Shade Trees	Evergreen	Shrubs	Total	Percent
Number of Plants Required by Landscape Manual	19	0	0	19	78
Number Excess Plants Required for GN Credit	4	0	0	4	21
Landscape Manual and GN Requirements	23	0	0	23	22.1

Plants Provided	Shade Trees	Shade Tree (Substitute)	Evergreen	Evergreen (Substitute)	Other Trees (Substitute)	Shrubs (Substitute)	Shrub (Substitute)	Total
Number of Plants Provided to Meet Landscape Manual	19	0	0	0	0	0	0	19
Number of Plants Provided to Meet GN Credits	0	0	0	0	0	0	0	0
Total Number of Plants Provided	19	0	0	0	0	0	0	19

Notes: 1. This plan provides no surplus native trees towards the project's 20% goal.

