



**TECHNICAL STAFF REPORT**  
**SYMPHONY STREAM SITE 5 RESTORATION**

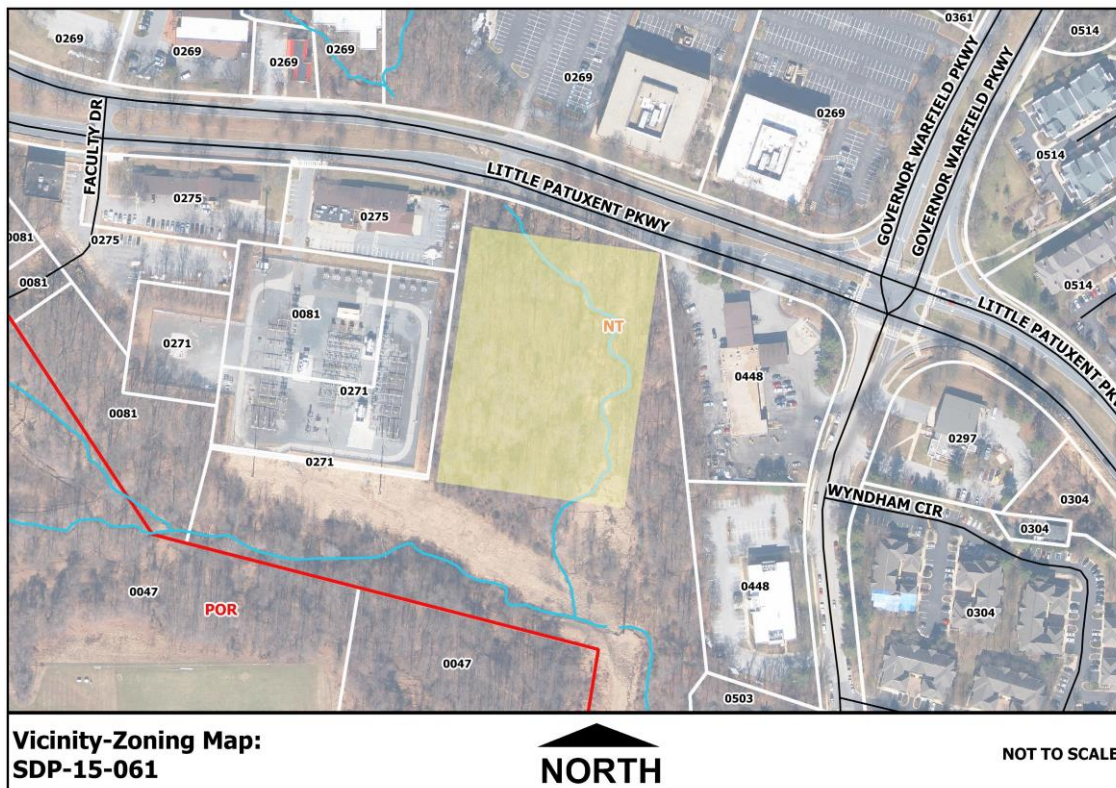
Planning Board Meeting of March 16, 2017

**File No./Petitioner:** SDP-15-061, Howard Hughes Corporation  
**Project Name:** Symphony Stream Site 5 Restoration, (SDP-15-061)  
**DPZ Planner:** Nicholas Haines, (410) 313-4333, nhaines@howardcountymd.gov

**Request:** To approve Site Development Plan (SDP-15-061) for a 0.83 acre, stream restoration in accordance with Section 125.0.1 of the Zoning Regulations. The property is zoned “NT” (New Town - Open Space) and is subject to the Downtown Columbia Design Guidelines pertaining to environmental restoration. Its completion is a requirement of conditions imposed by the Alternative Compliance to CEPPA 15.

**Location:** The property (Tax Map 36, Grid 1, Parcel 81, Town Center Section 3, Area 3, Open Space Lot A-4, in the Fifth Election District of Howard County, Maryland) is accessed via Little Patuxent Parkway.

**DPZ Recommendation:** **Approval**, subject to complying with remaining minor comments from the Subdivision Review Committee (SRC) and any conditions by the Planning Board.



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**Vicinal Properties:**

Surrounding properties are zoned NT. They include:

**North** – Little Patuxent Parkway - across the street is the Century Plaza Office Center.

**East** – Exxon Gas Station at the intersection of Little Patuxent Parkway and Banneker Road.

**South** – Forested natural areas and BGE transmission lines.

**West** – The Wilde Lake BGE substation and a commercial service building.

**Legal Notice:**

The property was properly posted and verified by DPZ.

**Regulatory Compliance:**

The Downtown Columbia Design Guidelines, Amended Fifth Edition of the Subdivision and Land Development Regulations, the Zoning Regulations (effective October 6, 2013), the Howard County Design Manual, the Forest Conservation Manual, and the Landscape Manual all apply.

**History:**

- **FDP-233, Columbia Town Center, Section 3 Area 3** - Final Development Plan outlining the development criteria for Open Space Lot 1. The plan was recorded on December 24, 1998.
- **FDP-DC-Crescent 1A** - Final Development Plan outlining the criteria for the Crescent Neighborhood. Through this FDP and amendments the land for restoration was moved to alternate locations. The plan was recorded on February 24, 2017.
- **F-15-060** - Submitted December 8, 2014, to subdivide Parcel 81, Open Space Lot 1 to create Open Space Lots A-1, A-2, A-3, and A-4. The Final Plat was recorded on December 19, 2014.

**Analysis:**

**Site Improvements** – The existing stream channel has widened and the banks have been downcut due to increased runoff and concentrated stormwater. The proposed restoration includes approximately 500 linear feet of stream channel restoration, 2 acres of forest restoration, and approximately 1 acre of reforestation. The site restoration will include the installation of low flow cobble riffles and cascades to increase the surface area to stream flow volume and provide efficient water movement. The boulder banks and deposits of large wood debris provide stream bank erosion protection, as well as additional wildlife habitat.

**Setbacks** – The proposed development complies with all setback requirements.

**Storm Water Management (SWM)** - Storm water management is not required for stream and wetland restoration.

**Environmental Considerations** - The restoration area contains 0.83 acres of forested stream area. The stream restoration measures will provide a more stable and efficient stream channel, with increased habitat for native aquatic wildlife.

**Landscaping** - Native vegetation will be planted along the edge of the stream channel and in the mulch access pathways used during the restoration efforts.

**Forest Conservation** - The proposed stream restoration is exempt from the forest conservation regulations.

**Development Criteria** - This plan complies with the Downtown Columbia Design Guidelines, Howard County Subdivision and Land Development Regulations, and the October 6, 2013 Howard County Zoning Regulations.

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**CEPPA's** – This environmental restoration SDP is subject to two CEPPA's.

- CEPPA 7 – Which required a phasing schedule to implement environmental restoration, in accordance with the Merriweather and Crescent Environmental Enhancement Study. The phasing plan originally approved in 2012 was updated and approved in 2015 with FDP-DC-Crescent 1 to include this site for alternative compliance for a portion of the required Crescent environmental restoration land area.
- CEPPA 15 – Originally required all environmental work to be completed prior to issuing a building permit for the 1.3 millionth square foot of development. An alternative compliance was approved in 2015 with FDP-DC-Crescent 1 to complete restoration prior to issuing a building permit for the adjoining land area. A new alternative compliance for CEPPA 15 was approved in December 2016 to include this alternative site area and adjust timing for all environmental restoration, to be completed prior to issuing a use and occupancy permit for the first building in Crescent Neighborhood Area 3. It is anticipated the work proposed on the SDP will be completed with this timeframe.

**Planning Board Criteria:** The Site Development Plan complies with the two criteria requirements of Section 125.0.1 of the October 6, 2013, Howard County Zoning Regulations.

**1. The project conforms with the adopted Downtown Columbia Plan.**

The Symphony Stream Site 5 stream restoration project will only improve the current stream channel and surrounding forested area. The restoration efforts do not alter the open space layout as it pertains to the Downtown Columbia Plan. In accordance with the alternative compliance approved in December 1, 2016, for CEPPA 15, the restoration work must be completed prior to issuing the first use and occupancy permit for a building in Crescent Neighborhood Development Area 3.

**2. The project conforms with the Downtown-Wide Design Guidelines pertaining to environmental restoration.**

Environmental features on the property will be improved with the restoration. The deteriorated stream channel will be restored and stabilized by improving the channel. The specific methods will create and restore non-tidal wetlands and vernal pool habitats. The improvements will also reconnect the damaged stream with the adjacent wooded riparian zone. Native tree and shrub plantings surrounding the stream channel will enhance the forest areas that encompass the open space riparian corridor.

**SRC Action:** The SRC determined the final plan can be approved, subject to addressing minor drafting errors that must be corrected prior to DPZ signature approval.

**Recommendation:** The Department of Planning and Zoning recommends approval of Site Development Plan (SDP-15-061), subject to complying with SRC comments.

  
Valdis Lazdins, Director  
Department of Planning and Zoning

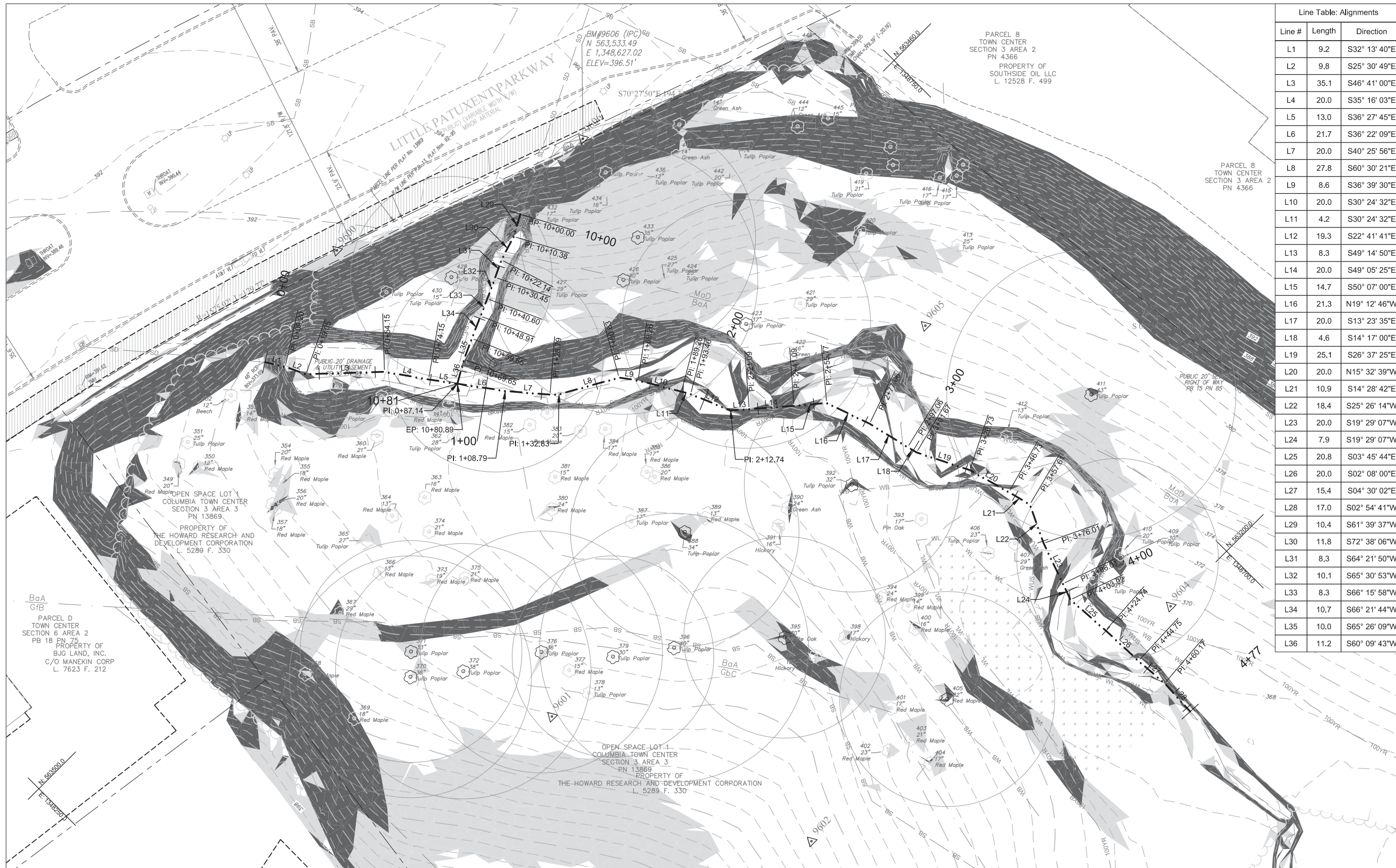
3/2/17  
Date

**Please note that this file is available for public review by appointment at the Department of Planning and Zoning's public service counter, Monday through Friday, 8:00 a.m. to 5:00 p.m.**









Line #	Length	Direction
L1	9.2	S32° 13' 40"E
L2	9.8	S25° 30' 49"E
L3	35.1	S46° 41' 00"E
L4	20.0	S35° 16' 03"E
L5	13.0	S36° 27' 45"E
L6	21.7	S36° 22' 09"E
L7	20.0	S40° 25' 56"E
L8	27.8	S60° 30' 21"E
L9	8.6	S36° 39' 30"E
L10	20.0	S30° 24' 32"E
L11	4.2	S30° 24' 32"E
L12	19.3	S22° 41' 41"E
L13	8.3	S49° 14' 50"E
L14	20.0	S49° 05' 25"E
L15	14.7	S50° 07' 00"E
L16	21.3	N19° 12' 46"W
L17	20.0	S13° 23' 35"E
L18	4.6	S14° 17' 00"E
L19	25.1	S26° 37' 25"E
L20	20.0	N15° 32' 39"W
L21	10.9	S14° 28' 42"E
L22	18.4	S25° 26' 14"W
L23	20.0	S19° 29' 07"W
L24	7.9	S19° 29' 07"W
L25	20.8	S03° 45' 44"E
L26	20.0	S02° 08' 00"E
L27	15.4	S04° 30' 02"E
L28	17.0	S02° 54' 41"W
L29	10.4	S61° 39' 37"W
L30	11.8	S72° 38' 06"W
L31	8.3	S64° 21' 50"W
L32	10.1	S65° 30' 53"W
L33	8.3	S66° 15' 58"W
L34	10.7	S66° 21' 44"W
L35	10.0	S65° 26' 09"W
L36	11.2	S60° 09' 43"W

**CLIENT**  
  
 THE HOWARD HUGHES CORPORATION  
 10480 LITTLE PATUXENT PARKWAY  
 SUITE 400  
 COLUMBIA, MD 21044  
 PHONE: 410-964-4800

DATE: \_\_\_\_\_ ISSUES / REVISIONS

APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF ENVIRONMENTAL SERVICES: \_\_\_\_\_ DATE: \_\_\_\_\_

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION: \_\_\_\_\_ DATE: \_\_\_\_\_

CHIEF, DIVISION OF LAND DEVELOPMENT: \_\_\_\_\_ DATE: \_\_\_\_\_

DIRECTOR: \_\_\_\_\_ DATE: \_\_\_\_\_

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 Baltimore, MD 21211 / ph: 410.554.0156  
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**SYMPHONY STREAM SITE 5 (SS-S5) RESTORATION**

COLUMBIA TOWN CENTER ELECT. DIST. 5-15 GRID ALPHA 6 CURRENT ZONING: NT

HOWARD COUNTY, MD TAX MAP NO. 35.36 PARCEL #13689 L. 5289 F. 330

**EXISTING CONDITIONS & GEOMETRY PLAN**

PROJECT NO.: 13020.05 SCALE: 1" = 20'

BY: SH, KT CHECK: MT

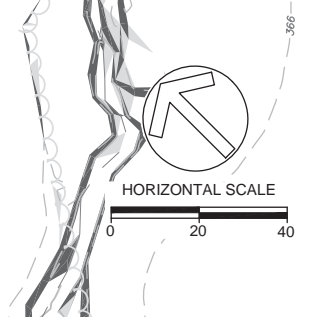
DWG. NO.: \_\_\_\_\_

**2 OF 12**

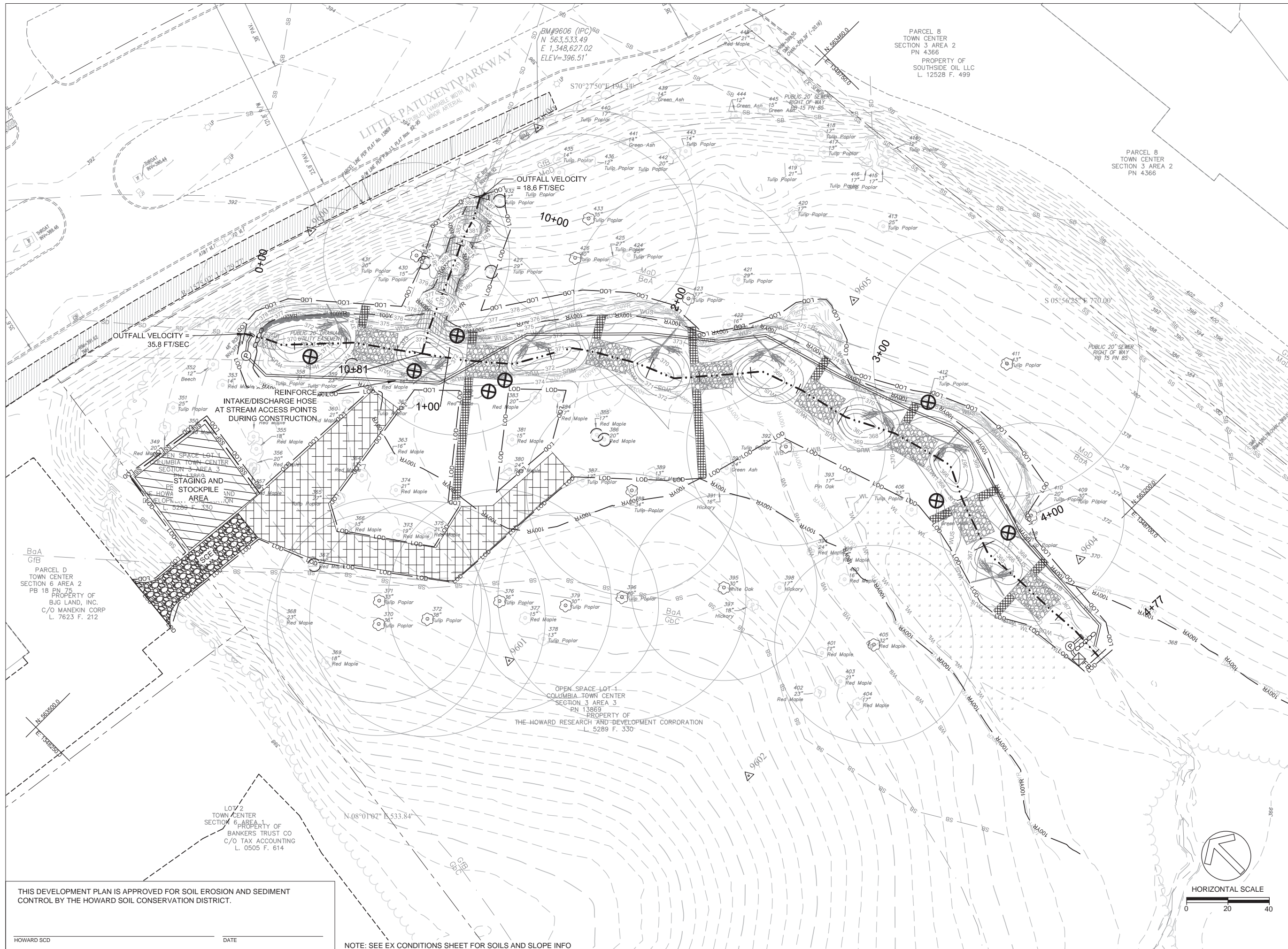
KEY	A. TYPE OF COMMUNITY	B. AREA*	C. SOIL INFORMATION**				D. EXISTING VEGETATION (Dominant Species and Approximate %)	E. STAND CHARACTERISTICS	
			1. Soil Types	2. Typical Forest Cover for Soil Type	3. Woodland Suitability Index	4. Habitat Value for Soil type		1. Size (Diameter inches)	2. Age
FS-1	Mixed Deciduous Forest	0.7	Baile Gladstone Manor	Pin Oak Red Maple Northern Red Oak White Oak Yellow Poplar Black Oak Hickory Northern Red Oak Shortleaf Pine Virginia Pine White Oak Yellow Poplar	Well Suited Average	Good Good	Yellow Poplar- 50% Green Ash- 35% Pin Oak- 1% White Oak- 10% White Oak- 1% Northern Red Oak- 1% Hickory- 2%	16-40" 12-24" 18" 12-24" 30" 30" 18"	80yrs

No.	Common Name	Scientific Name	DBH (Inches)	Condition	Disposition	Preservation Comments
370	Tulip Poplar	<i>Liriodendron tulipifera</i>	36	Good	SAVE	
371	Tulip Poplar	<i>Liriodendron tulipifera</i>	33	Good	SAVE	
372	Tulip Poplar	<i>Liriodendron tulipifera</i>	38	Good	SAVE	
376	Tulip Poplar	<i>Liriodendron tulipifera</i>	36	Good	SAVE	
379	Tulip Poplar	<i>Liriodendron tulipifera</i>	30	Good	SAVE	
388	Tulip Poplar	<i>Liriodendron tulipifera</i>	34	Fair	SAVE	Tree Protection Fence
392	Tulip Poplar	<i>Liriodendron tulipifera</i>	32	Fair	SAVE	Tree Protection Fence
395	White Oak	<i>Quercus alba</i>	30	Fair	SAVE	
396	Tulip Poplar	<i>Liriodendron tulipifera</i>	40	Good	SAVE	
405	Red Maple	<i>Acer rubrum</i>	32	Good	SAVE	
409	Tulip Poplar	<i>Liriodendron tulipifera</i>	30	Poor	SAVE	Tree Protection Fence
411	Tulip Poplar	<i>Liriodendron tulipifera</i>	43	Fair	SAVE	
423	Tulip Poplar	<i>Liriodendron tulipifera</i>	37	Fair	SAVE	Tree Protection Fence
426	Tulip Poplar	<i>Liriodendron tulipifera</i>	40	Good	SAVE	
428	Tulip Poplar	<i>Liriodendron tulipifera</i>	32	Good	REMOVE	
429	Tulip Poplar	<i>Liriodendron tulipifera</i>	30	Fair	SAVE	Tree Protection Fence
433	Tulip Poplar	<i>Liriodendron tulipifera</i>	35	Good	SAVE	

Map Unit Symbol	Map Unit Name	K. Factor (K <sub>v</sub> )	Hydric Rating	Hydrologic Soil Group	Drainage Class
BaA	Ballie silt loam, 0-3% slopes	0.32	Hydric	C/D	Poorly Drained
GBC	Gladstone loam, 8-15% slopes	0.20	Non-Hydric	A	Well Drained
GIB	Gladstone-Urban land complex, 0-8% slopes	0.20	Non-Hydric	A	Well Drained
MaD	Manor loam, 15-25% slopes	0.24	Non-Hydric	B	Well Drained







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 PHONE: 410-964-4800

DATE	ISSUES / REVISIONS

APPROVED: DEPARTMENT OF PUBLIC WORKS  
 CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

CHIEF, DIVISION OF LAND DEVELOPMENT DATE

DIRECTOR DATE

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COLUMBIA TOWN CENTER ELECT. DISTR. 5-15 GRID ALPHA 6 CURRENT ZONING: NT  
 HOWARD COUNTY, MD TAX MAP NO. 35.36 PARCEL #13689 L. 5289 F. 330

**EROSION & SEDIMENT CONTROL PLAN**

PROJECT NO.: 13020.05 SCALE: 1" = 20'  
 SEAL: BY: SH, KT CHECK: MT  
 DWG. NO.: 3 OF 12

STATE OF MARYLAND  
 CHRISTOPHER ALLEN  
 No. 26959  
 PROFESSIONAL ENGINEER

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.

HOWARD SCD DATE

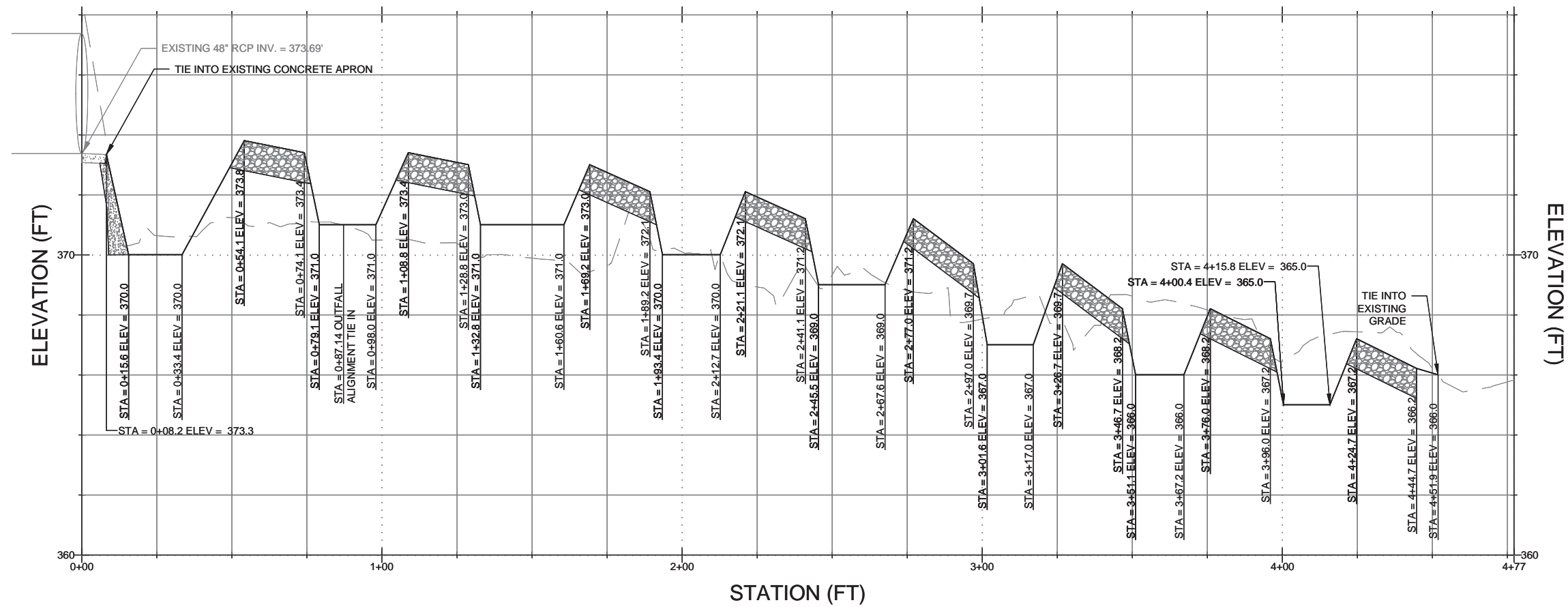
NOTE: SEE EX CONDITIONS SHEET FOR SOILS AND SLOPE INFO

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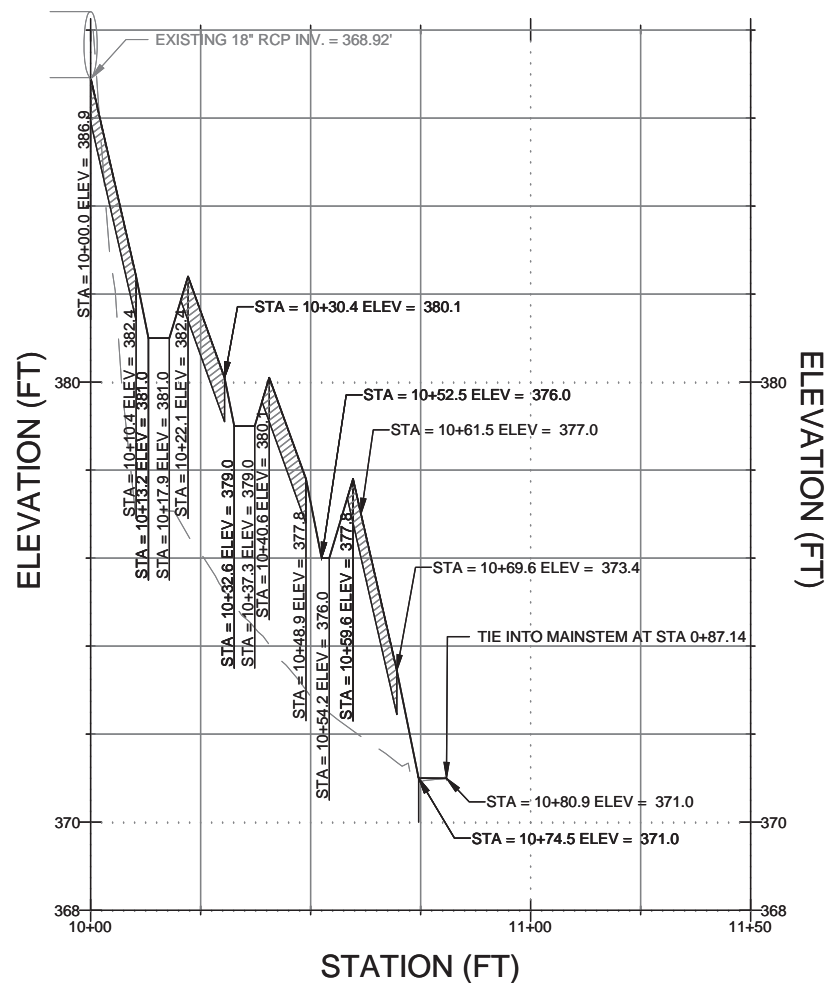
SDP-15-061










PROFILE VIEW OF ALIGNMENT - OUTFALL



PROFILE LEGEND

- EXISTING
- PROPOSED
-  COBBLE RIFFLE
-  CASCADE
-  OUTFALL APRON



HORIZONTAL SCALE

CLIENT  
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 10480 LITTLE PATUXENT PARKWAY  
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 COLUMBIA, MD 21044  
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DATE	ISSUES / REVISIONS


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CHIEF, BUREAU OF ENVIRONMENTAL SERVICES	DATE
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CHIEF, DIVISION OF LAND DEVELOPMENT	DATE
DIRECTOR	DATE

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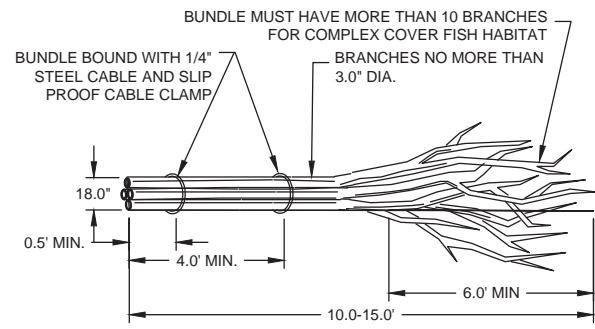
**SYMPHONY STREAM  
 SITE 5 (SS-S5)  
 RESTORATION**

COLUMBIA TOWN CENTER ELECT. DISTR. 5-15 GRID #ALPHA 6 CURRENT ZONING: NT  
 HOWARD COUNTY, MD TAX MAP NO. 35,36 PARCEL #13689 L. 5289 F. 330

TITLE  
**PROFILE**

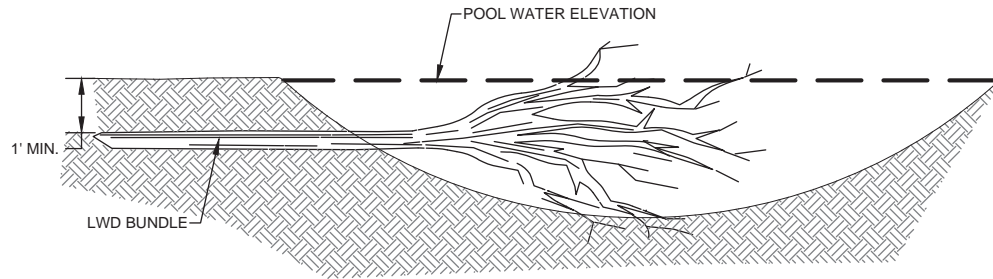
PROJECT NO.: 13020.05	SCALE: AS SHOWN
SEAL: 	BY: SH, KT CHECK: MT DWG. NO.: 5 OF 12



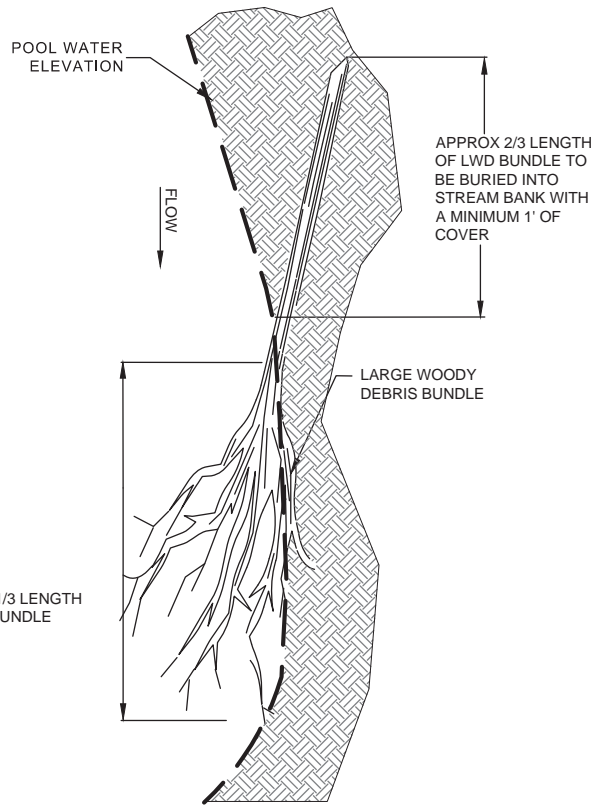


- NOTE:
1. INSTALL IN-STREAM LARGE WOODY DEBRIS, TWO PER POOL AT LOCATIONS AS SHOWN ON PROPOSED CONDITIONS PLAN
  2. PARTIALLY BURY ONSITE LWD INTO THE STREAM BANK APPROXIMATELY 2/3 OF TOTAL LENGTH TO SECURE IN PLACE AS DIRECTED BY THE ENGINEER

**INSTREAM LARGE WOODY DEBRIS (LWD)**  
**LARGE WOODY DEBRIS BUNDLE** NOT TO SCALE



**INSTREAM LARGE WOODY DEBRIS (LWD)**  
**CROSS SECTION** NOT TO SCALE

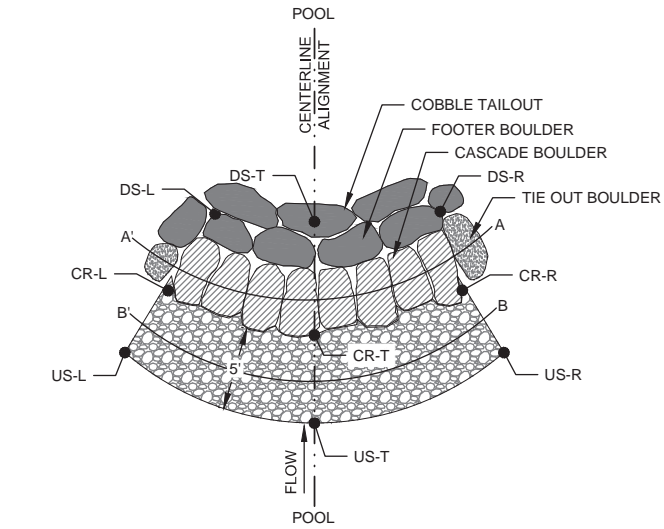


**COBBLE RIFFLE**  
**CROSS SECTION - STA 0+00 TO 1+28.8** SCALE: 1"=5'

**COBBLE RIFFLE**  
**CROSS SECTION - STA 1+69.2 TO 2+41.1** SCALE: 1"=5'

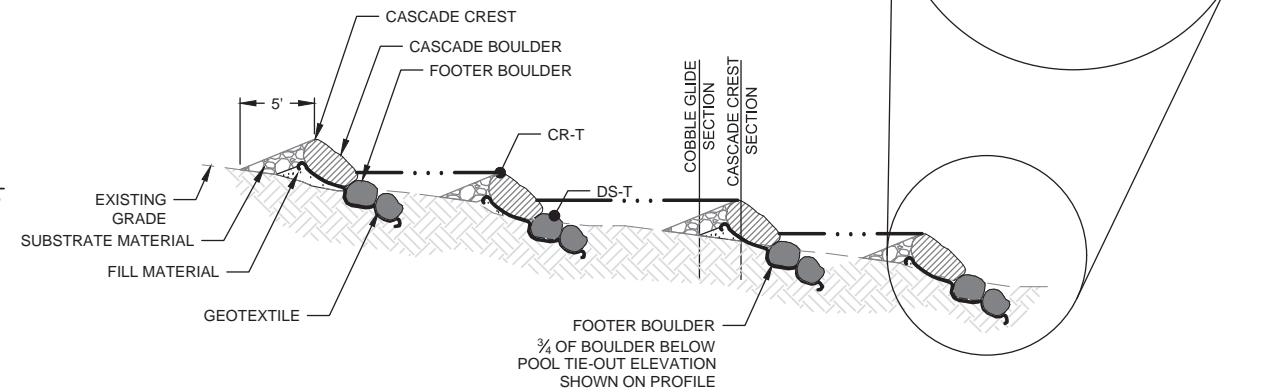
**COBBLE RIFFLE**  
**CROSS SECTION - STA 2+77 TO END** SCALE: 1"=5'

**CASCADE**  
**CROSS SECTION - STA 10+00 TO 10+69.6** SCALE: 1"=5'

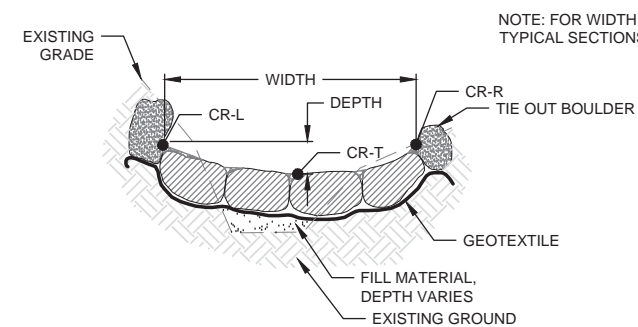


**CASCADE**  
**PLAN VIEW** NOT TO SCALE

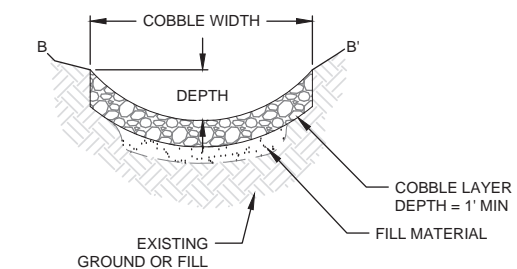
- NOTES
1. GAPS BETWEEN BOULDERS SHALL BE CHINKED WITH COBBLE
  2. TYPICALLY, CASCADE BOULDER A-AXIS WILL BE ORIENTED IN DIRECTION OF FLOW FOOTER BOULDERS A-AXIS WILL BE ORIENTED PERPENDICULAR TO FLOW.
  3. SEE SPECIFICATIONS FOR COBBLE SIZE AND DEPTH



**CASCADE**  
**CENTERLINE PROFILE** NOT TO SCALE



**CASCADE CREST**  
**SECTION A-A'** NOT TO SCALE



**COBBLE GLIDE**  
**SECTION B-B'** NOT TO SCALE

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DATE ISSUES / REVISIONS

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**SYMPHONY STREAM**  
**SITE 5 (SS-S5)**  
**RESTORATION**

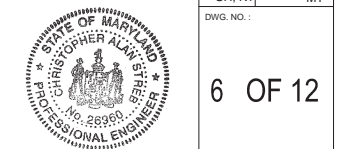
COLUMBIA TOWN CENTER ELECT. DISTR. 5-15 GRID #ALPHA 6 CURRENT ZONING: NT HOWARD COUNTY, MD TAX MAP NO. 35.36 PARCEL #13689 L. 5289 F. 330

TITLE:

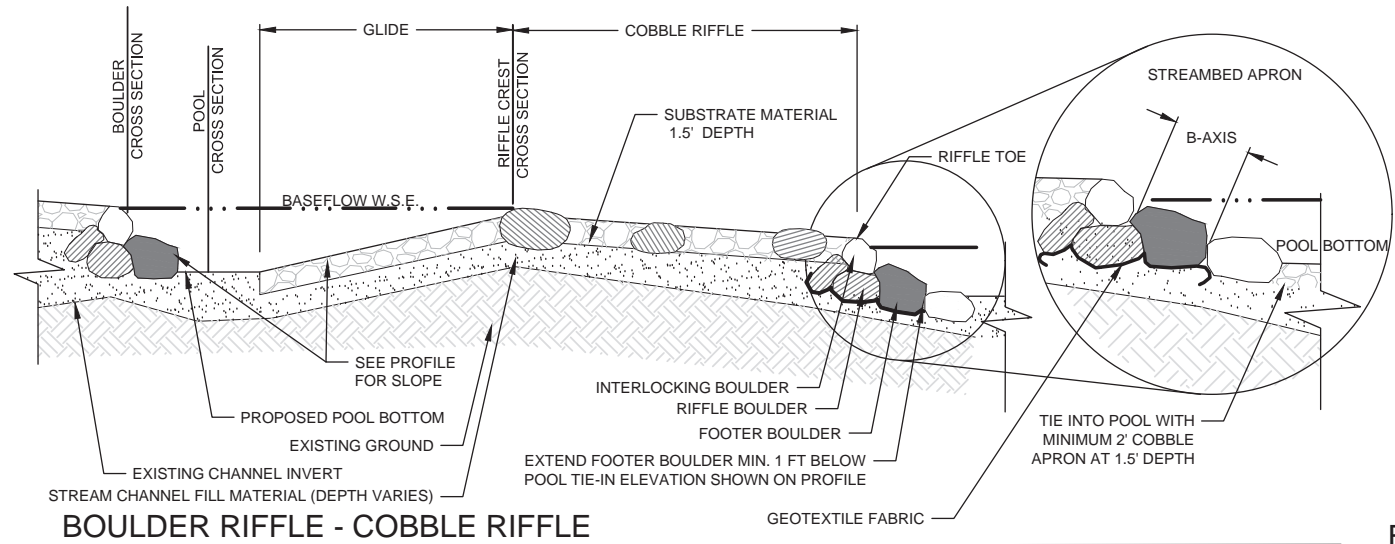
**DETAILS**

PROJECT NO.: 13020.05 SCALE: N.T.S.

SEAL: BY: SH, KT CHECK: MT DWG. NO.:



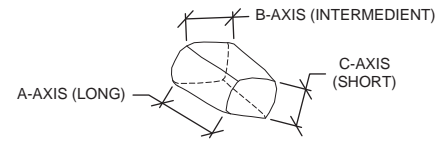
6 OF 12



**BOULDER RIFFLE - COBBLE RIFFLE  
PROFILE INDEX**

NOT TO SCALE

**BOULDER RIFFLE  
BOULDER AXIS**



NOT TO SCALE

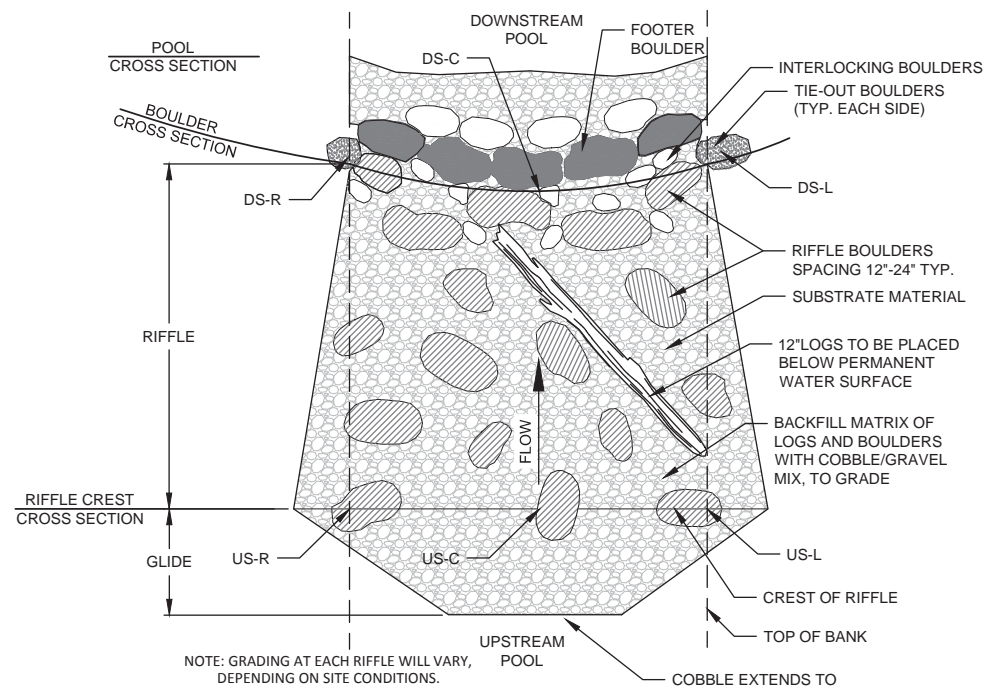
- COBBLE RIFFLE NOTES:**
1. IN AREAS OF CUT, STREAM CHANNEL FILL MATERIAL UNDER RIFFLE IS NOT NEEDED. IN AREAS OF FILL, EXISTING STREAM CHANNEL TO BE FILLED IN 8" LIFTS TO ELEVATION SPECIFIED ON PROFILE.
  2. TIE-OUT BOULDER SHALL EXTEND PAST THE CORNER NODES DS-R & DS-L A MINIMUM OF ONE BOULDER LENGTH (B-AXIS) INTO EXISTING BANK. WHERE THIS CONFLICTS WITH EXISTING TREE ROOTS, BEDROCK OR UTILITIES, TIE-OUT BOULDER MAY BE ELIMINATED OR ADJUSTED AT DIRECTION OF ENGINEER.
  3. SEE GRADING PLAN FOR STRUCTURE TABLES WITH NODE LOCATIONS AND ELEVATIONS DEFINING FOOTPRINT OF RIFFLE. GLIDE LIMITS ARE SHOWN ON PROFILE.
  4. LARGE WOODY DEBRIS SHALL BE INSTALLED IN POOLS AS SHOWN ON GRADING PLAN, OR AS DIRECTED BY THE ENGINEER.
  5. W.S.E. = WATER SURFACE ELEVATION

**BOULDER DIMENSIONS (FT) - COBBLE RIFFLE/CASCADE**

BOULDER TYPE	A-AXIS	B-AXIS	C-AXIS
RIFFLE/CASCADE	3.5-4.5	2.5-3.5	1.6-2.0
FOOTER	3.5-4.5	2.5-3.5	1.6-2.0
TIE-OUT	3.0-4.0	2.5-3.5	1.6-2.0
INTERLOCKING	2.0-3.0	1.5-2.0	1.2-1.5

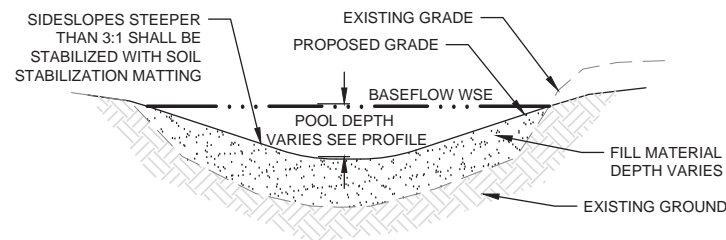
**SUBSTRATE MATERIAL GRADATION TABLE**

CUMULATIVE % FINER	COBBLE SIZE (IN)
100	30(RIFFLE BOULDERS)
84	12
50	5
16	1.5



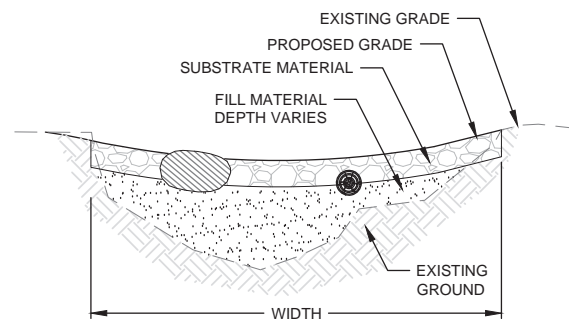
**COBBLE RIFFLE  
PLAN VIEW**

NOT TO SCALE



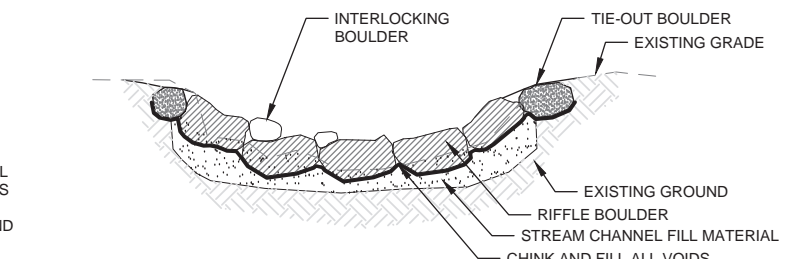
**COBBLE RIFFLE  
POOL CROSS SECTION**

NOT TO SCALE

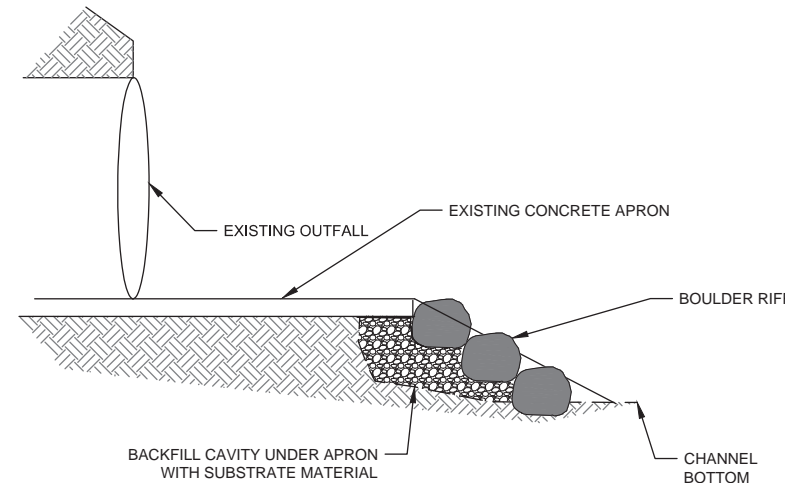


**COBBLE RIFFLE  
RIFFLE CREST CROSS SECTION**

NOT TO SCALE

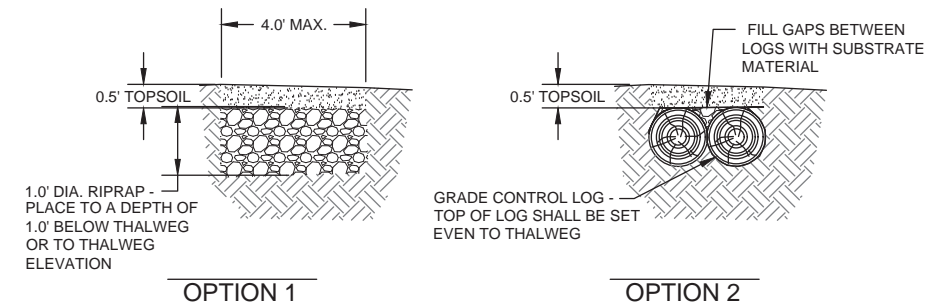


**COBBLE RIFFLE  
BOULDER CROSS SECTION**



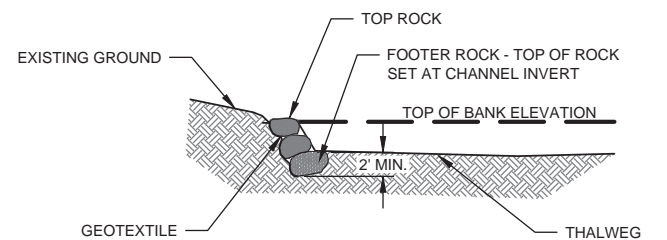
**OUTFALL APRON AT STA 0+00  
PROFILE**

NOT TO SCALE



**BURIED SILL  
SECTION**

NOT TO SCALE



**BOULDER TOE PROTECTION  
CROSS SECTION**

NOT TO SCALE

**CLIENT**  
*Howard Hughes*  
THE HOWARD HUGHES CORPORATION  
10480 LITTLE PATUXENT PARKWAY  
SUITE 400  
COLUMBIA, MD 21044  
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DATE ISSUES / REVISIONS

APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

CHIEF, DIVISION OF LAND DEVELOPMENT DATE

DIRECTOR DATE

*Biohabitats*  
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Baltimore, MD 21211 / ph: 410.554.0156  
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Restore the Earth & Inspire Ecological Stewardship

**SYMPHONY STREAM  
SITE 5 (SS-S5)  
RESTORATION**

COLUMBIA TOWN CENTER ELECT. DISTR. 5-15 GRID #ALPHA 6 CURRENT ZONING: NT HOWARD COUNTY, MD TAX MAP NO. 35.36 PARCEL #13689 L. 5289 F. 330

TITLE: **DETAILS**

PROJECT NO.: 13020.05 SCALE: N.T.S.  
BY: SH, KT CHECK: MT  
DWG. NO.:

STATE OF MARYLAND  
CHRISTOPHER ALAN STEIN  
No. 26950  
PROFESSIONAL ENGINEER



## SEQUENCE OF CONSTRUCTION

- THE CONTRACTOR MUST OBTAIN A GRADING PERMIT AND CONDUCT ON-SITE PRE-CONSTRUCTION MEETING. STREAM CHANNEL MUST NOT BE DISTURBED DURING MARCH 1 TO MAY 31. (1 DAY) THIS PROJECT IS SUBJECT TO THE FOLLOWING APPROVALS:
  - U.S. ARMY CORPS OF ENGINEERS NONTIDAL WETLANDS AND WATERWAYS PERMIT
  - MDE NONTIDAL WETLANDS AND WATERWAYS PERMIT
  - MDE NOI PERMIT
- NOTIFY THE DEPARTMENT OF PUBLIC WORKS, BUREAU OF ENGINEERING/CONSTRUCTION INSPECTION DIVISION AT LEAST 48 HOURS BEFORE COMMENCING WORK AT (410)-313-1880. WORK MAY NOT COMMENCE UNTIL THE PERMITTEE OR THE RESPONSIBLE PE HAVE MET ON SITE WITH THE SEDIMENT AND EROSION CONTROL INSPECTOR TO REVIEW THE APPROVED PLANS.
- A MINIMUM OF 48 HOURS NOTICE MUST BE GIVEN TO THE HOWARD COUNTY DEPARTMENT OF INSPECTIONS, LICENSES AND PERMITS, SEDIMENT CONTROL DIVISION PRIOR TO THE START OF ANY CONSTRUCTION (410)-313-1855.
- NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION WORK BEING DONE.
- CONSTRUCTION ACTIVITIES INCLUDING THE INSTALLATION OF EROSION AND SEDIMENT CONTROL MEASURES SHALL NOT BEGIN UNTIL ALL REQUIRED EASEMENTS AND RIGHT-OF-WAYS HAVE BEEN OBTAINED. CONSTRUCTION SHALL NOT BEGIN UNTIL ALL SEDIMENT AND EROSION CONTROL MEASURES HAVE BEEN INSTALLED AND APPROVED BY THE ENGINEER AND SEDIMENT CONTROL INSPECTOR. THE CONTRACTOR SHALL STAY WITHIN THE LIMIT OF DISTURBANCE AS SHOWN ON THE PLANS AND MINIMIZE DISTURBANCE WITHIN THE WORKING AREA WHENEVER POSSIBLE.
- CONTRACTOR SHALL TAKE EXTRA PRECAUTION FOR TRANSPORTING MATERIALS FROM THE STORAGE AREA TO THE CONSTRUCTION SITE. CONTRACTOR SHALL MINIMIZE THE IMPACT ON EXISTING TREES, WETLANDS, U.S. WATERS, EXISTING UTILITY AND OTHER EXISTING FEATURES.
- CONTRACTOR SHALL CAUTION THE TRUCK DRIVERS TO TAKE EXTRA PRECAUTION WHILE DRIVING ON ALL TEMPORARY ACCESS WAYS TO MINIMIZE THE IMPACTS ON STREAMBEDS, SIDE SLOPES, EXISTING TRESS, U.S. WATERS, AND ANY EXISTING FEATURES.
- ALL WETLAND AND IN STREAM WORK SHALL BE DONE IN STRICT ACCORDANCE WITH THE PUMP AROUND CRITERIA.

### EROSION AND SEDIMENT CONTROL SETUP (1 WEEK)

- THE CONTRACTOR SHALL STAKE OUT THE LIMITS OF DISTURBANCE AS SHOWN ON THE GRADING PLAN, PROPOSED CHANNEL BASELINE STATIONING AS SHOWN ON THE GEOMETRY PLAN, AND STRUCTURE LOCATIONS PER COORDINATE LOCATIONS SHOWN ON THE GRADING PLANS.
- CONTRACTOR SHALL FLAG ALL TREES WITHIN THE LIMIT OF DISTURBANCE WHICH WILL BE REMOVED FOR CONSTRUCTION ACCESS AND GRADING. NO TREES SHALL BE REMOVED WITHIN THE LIMITS OF DISTURBANCE WITHOUT APPROVAL FROM THE PROJECT ENGINEER OR CONSTRUCTION SUPERVISOR.
- CONTRACTOR SHALL CONDUCT A PRE-CONSTRUCTION MEETING ONSITE WITH THE PROJECT ENGINEER, CONSTRUCTION SUPERVISOR, AND APPROPRIATE AGENCY PERSONNEL TO REVIEW THE EROSION AND SEDIMENT CONTROL REQUIREMENTS, SEQUENCE OF CONSTRUCTION, LIMITS OF DISTURBANCE, PROJECT LAYOUT, AND TREE IMPACT BEFORE WORK BEGINS.
- CONTRACTOR SHALL INSTALL THE STABILIZED CONSTRUCTION ENTRANCE ON THE SOUTHEAST SIDE OF THE ZIPS DRY CLEANERS PARKING LOT OFF OF LITTLE PATUXENT PARKWAY ON THE NORTHWEST SIDE OF THE MAINSTEM AS SHOWN ON THE GRADING PLANS OR AS DIRECTED BY THE ENGINEER.
- CONTRACTOR SHALL INSTALL MULCH ACCESS PATHWAYS, BLAZE ORANGE FENCE, AND TREE PROTECTION AREAS AS SHOWN ON THE GRADING PLANS OR AS DIRECTED BY THE ENGINEER.
- CONTRACTOR SHALL ESTABLISH THE TEMPORARY STOCKPILE AREA IN THE LOCATION INDICATED ON GRADING PLAN (NOTE: INSTALL SUPER SILT FENCE AROUND STOCKPILE AREA AS INDICATED ON PLANS).
- MATERIALS FOR PUMPING STATION AND FILTER BAG SHALL BE LOCATED ON SITE.
- CONTRACTOR SHALL INSTALL A CLEAR WATER DIVERSION, OR PUMPING STATION AND FILTER BAG DEWATERING DEVICE AS NECESSARY TO DIVERT STORM AND STREAM FLOW AROUND THE WORK AREA. SEDIMENT SHALL NOT BE RELEASED INTO THE STREAM AND FLOODPLAIN. SEDIMENT LADEN WATER IS TO BE PUMPED INTO A SEDIMENT FILTERING BAG. CLEAN WATER ONLY IS TO BE DISCHARGED INTO THE STREAM AND FLOODPLAIN. NO WORK SHALL BE CONDUCTED IN THE STREAM CHANNEL, OR FLOODPLAIN DURING RAIN EVENTS.
- INSTALL REMAINING EROSION AND SEDIMENT CONTROL DEVICES SHOWN ON THE PLANS.
- CONTRACTOR SHALL CLEAR AND GRUB AS NECESSARY TO INSTALL SEDIMENT EROSION CONTROLS AND STAGING AREAS. WITH APPROVAL OF THE SEDIMENT AND EROSION CONTROL INSPECTOR, THE CONTRACTOR MAY BEGIN GRADING OPERATIONS.
- 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.
- ANY SEDIMENT CONTROL PRACTICE THAT IS DISTURBED BY GRADING ACTIVITY MUST BE REPAIRED ON THE SAME DAY OF DISTURBANCE.
- ADDITIONAL SEDIMENT CONTROL MUST BE PROVIDED, IF DEEMED NECESSARY BY THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.

### PHASE I: STREAM CONSTRUCTION (2 WEEKS):

- DEWATER WORK AREA BEFORE BEGINNING WORK. PUMP AROUND SHOULD OCCUR UPSTREAM TO DOWNSTREAM. SANDBAG DIKES SHOULD BE SITUATED AT UPSTREAM AND DOWNSTREAM ENDS OF WORK AND PUMP SHOULD DISCHARGE ONTO A STABLE VELOCITY DISSIPATOR. WATER FROM WORK AREA SHOULD BE PUMPED TO A SEDIMENT FILTERING MEASURE SUCH AS A FILTER BAG AND SHOULD DRAIN BACK INTO THE CHANNEL BELOW THE DOWNSTREAM SANDBAG DIKE.
- CONSTRUCTION WORK SHALL BEGIN DOWNSTREAM AND PROCEED UPSTREAM ALONG THE MAINSTEM. THE OUTFALL TRIBUTARY SHOULD BE INSTALLED AFTER ALL THE STRUCTURES DOWNSTREAM OF THE CONFLUENCE BETWEEN THE OUTFALL TRIBUTARY AND MAINSTEM HAVE BEEN CONSTRUCTED. ONCE THE OUTFALL TRIBUTARY IS COMPLETE, THE LAST MAINSTEM STRUCTURE AND WORK SHALL BE COMPLETED.
- PLACE FILL MATERIAL. CHANNEL STRUCTURES AND PERFORM GRADING AS DETAILED ON PLANS, WORKING DOWNSTREAM TO UPSTREAM. ONLY INSTALL AS MANY STRUCTURES AS CAN BE COMPLETED AND STABILIZED IN ONE DAY. ALL FINISHED GRADING MUST BE PERMANENTLY STABILIZED AT THE END OF EACH DAY WITH SOIL STABILIZATION MATTING. UPON COMPLETION OF INSTALLATION, STABILIZE REMAINING DISTURBED AREAS AND SECURE PUMP AROUND DEVICES AT THE END OF EACH DAY.
- TIE STREAM RESTORATION GRADING INTO EXISTING FLOODPLAIN.
- UPON COMPLETION OF INSTALLATION, STABILIZE REMAINING DISTURBED AREAS AND SECURE PUMP AROUND DEVICE AT THE END OF EACH DAY.
- A STABLE CHANNEL MUST BE OPERABLE AT THE END OF EACH DAY SUCH THAT ANY BASE FLOW OR STORM FLOW CAN BE SAFELY CONVEYED. THE CHANNEL SHALL BE THE EXISTING CHANNEL, THE PROPOSED CHANNEL, OR A COMBINATION OF THE TWO.
- WITH THE APPROVAL OF THE SEDIMENT CONTROL INSPECTOR, REMOVE THE SEDIMENT CONTROL DEVICES INCLUDING ALL SUPER SILT FENCE ASSOCIATED WITH STREAM AND WETLAND GRADING. STABILIZE ANY AREAS DISTURBED BY SEDIMENT CONTROL REMOVAL WITH APPROPRIATE PERMANENT SEED.

### PHASE II - PLANTING AND DEMOBILIZATION (1 WEEK)

- PLANT STREAM AND WETLAND AREAS ACCORDING TO THE PLANTING PLAN.
- PLANTING TREES AND SHRUBS SHALL BE CONDUCTED BETWEEN NOVEMBER 1 AND APRIL 1 WHEN THE TEMPERATURE IS NOT BELOW 35°F AND THE GROUND IS NOT FROZEN.
- PERMANENT SEEDING SHALL BE PERFORMED FROM MARCH 1 THROUGH NOVEMBER 30. NO SEEDING SHALL BE PERFORMED ON FROZEN GROUND OR WHEN THE TEMPERATURE IS 32°F/0°C OR LOWER.

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.

HOWARD SCD \_\_\_\_\_ DATE \_\_\_\_\_

## HOWARD SOIL CONSERVATION DISTRICT STANDARD SEDIMENT CONTROL NOTES

- A PRE-CONSTRUCTION MEETING MUST OCCUR WITH THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS, CONSTRUCTION INSPECTION DIVISION (CID), 410-313-1855 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:
  - PRIOR TO 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.
  - 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 SHALL BE COMPLETED WITHIN (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 (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 FOLLOWED 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	0.83	ACRES
AREA DISTURBED	0.83	ACRES
AREA TO BE ROOFED OR PAVED	0.00	ACRES
AREA TO BE STABILIZED WITH VEGETATION	0.83	ACRES
TOTAL CUT	159	CU. YDS.
TOTAL FILL	1,113	CU. YDS.
OFFSITE WASTE/BORROW AREA LOCATION	MOST OF THE MATERIAL COMING FROM OFF SITE WILL BE COBBLE FROM AN APPROVED QUARRY OR SAND FROM AN APPROVED SOURCE	
- ANY SEDIMENT CONTROL PRACTICE THAT 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 COMPLETED) 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, MDE).
- 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 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 BE STABILIZED AND APPROVED BY THE CID. UNLESS OTHERWISE SPECIFIED AND APPROVED BY HSCD, 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 ONTO 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 IIIP 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.

## 2011 MD STANDARDS & SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL - B-4-8 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 SALVAGE 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 SWALE 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.

MAINTENANCE:  
THE STOCKPILE AREA MUST CONTINUOUSLY MEET THE REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION. SIDE SLOPES MUST BE MAINTAINED AT NO STEEPER THAN A 2:1 RATIO. THE STOCKPILE AREA MUST BE KEPT FREE OF EROSION. IF THE VERTICAL HEIGHT OF A STOCKPILE EXCEEDS 20 FEET FOR 2:1 SLOPES, 30 FEET FOR 3:1 SLOPES, OR 40 FEET FOR 4:1 SLOPES, BENCHING MUST BE PROVIDED IN ACCORDANCE WITH SECTION B-3 LAND GRADING.

## CLIENT



THE HOWARD HUGHES CORPORATION  
10480 LITTLE PATUXENT PARKWAY  
SUITE 400  
COLUMBIA, MD 21044  
PHONE: 410-964-4800

## DATE ISSUES / REVISIONS

APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

CHIEF, DIVISION OF LAND DEVELOPMENT DATE

DIRECTOR DATE



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Restore the Earth & Inspire Ecological Stewardship

## SYMPHONY STREAM SITE 5 (SS-S5) RESTORATION

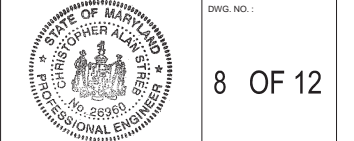
COLUMBIA TOWN CENTER ELECT. DISTR. 5-15 GRID ALPHA 6 CURRENT ZONING: NT HOWARD COUNTY, MD TAX MAP NO. 35.36 PARCEL #13689 L. 5289 F. 330

## TITLE EROSION AND SEDIMENT CONTROL NOTES

PROJECT NO.: 13020.05 SCALE: N.T.S.

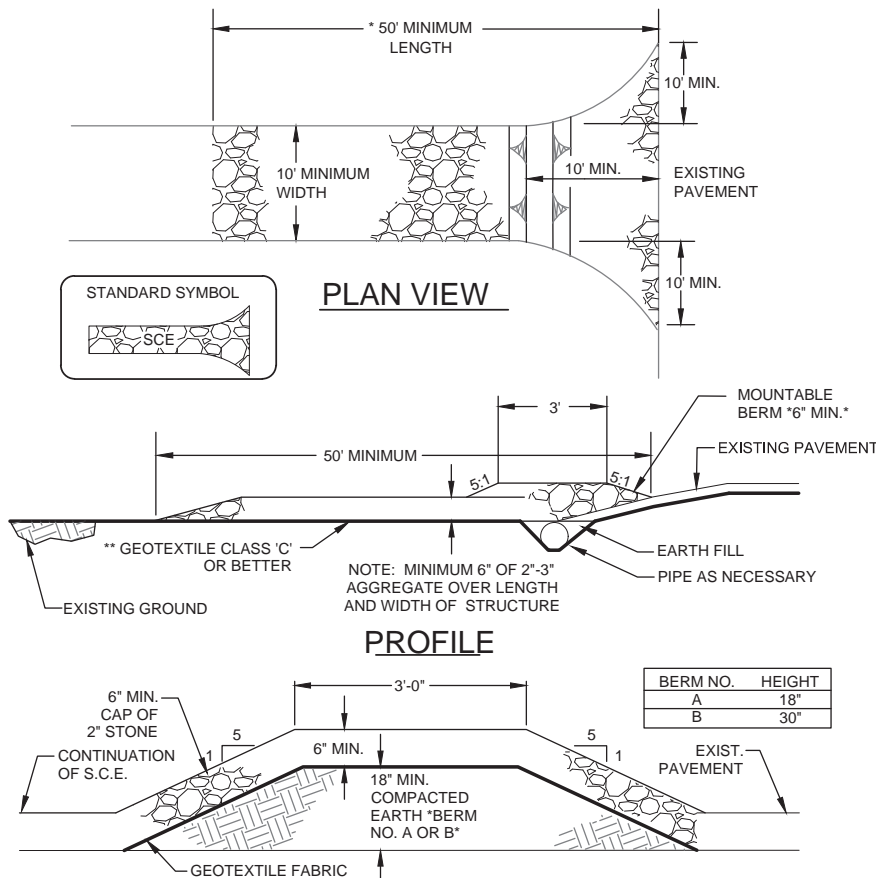
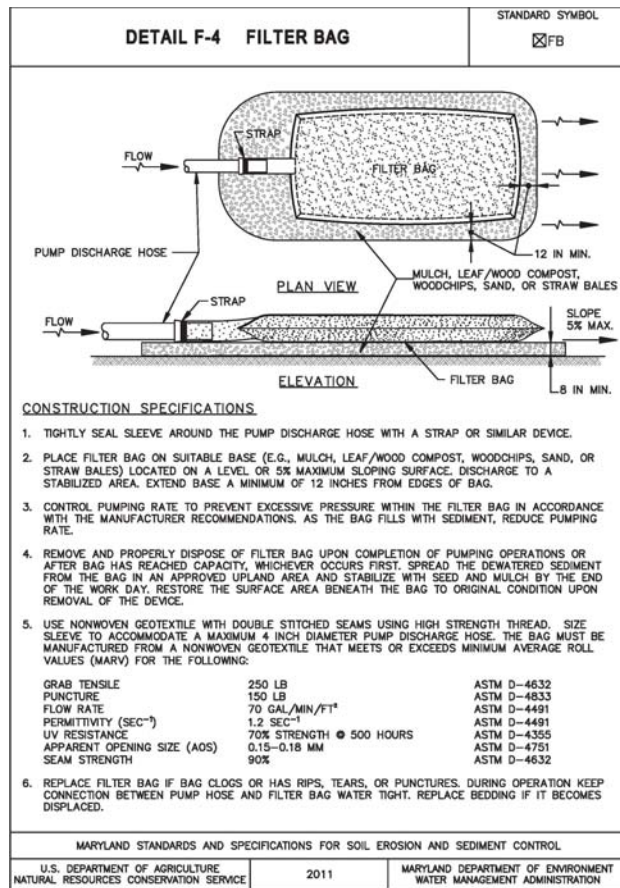
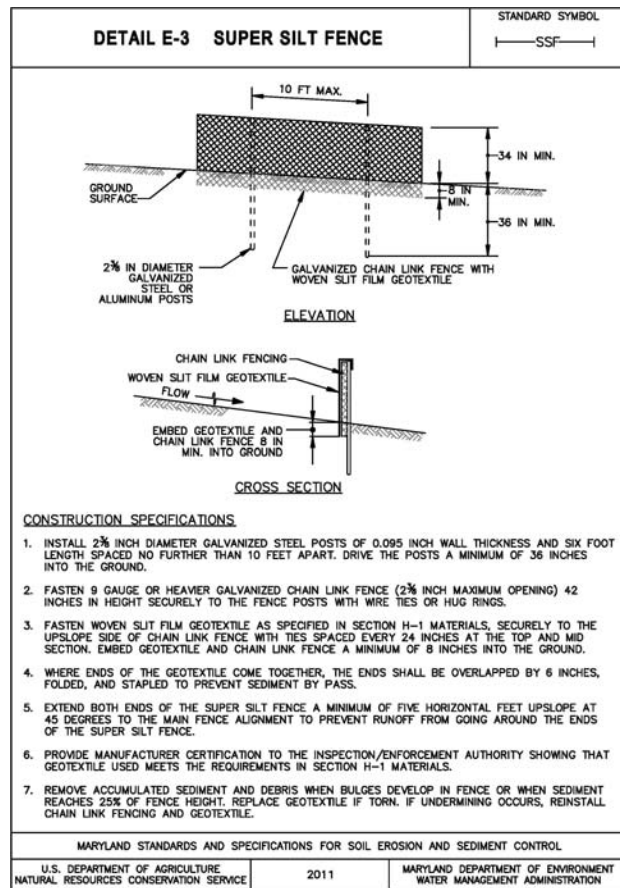
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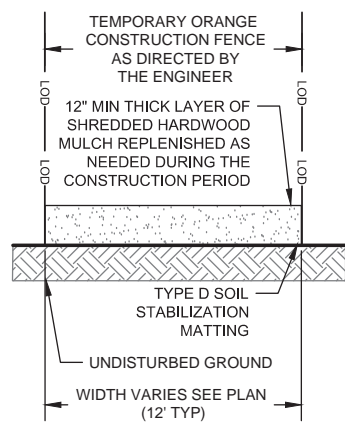


### HEAVY DUTY STABILIZED CONSTRUCTION ENTRANCE

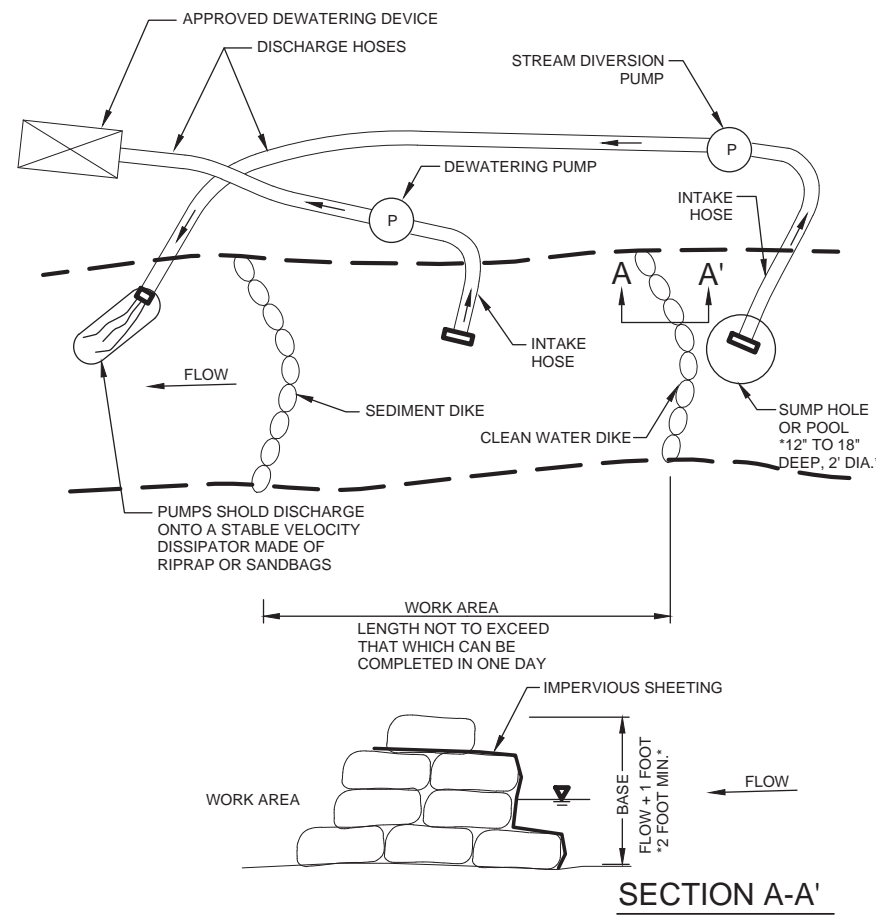
CONSTRUCTION SPECIFICATION - HEAVY DUTY STABILIZED CONSTRUCTION ENTRANCE NOT TO SCALE

- LENGTH - MINIMUM OF 50' \*\*30' FOR SINGLE RESIDENCE LOT\*.
- WIDTH - 10' MINIMUM, SHOULD BE FLARED AT THE EXISTING ROAD TO PROVIDE A TURNING RADIUS.
- GEOTEXTILE FABRIC "FILTER CLOTH" SHALL BE PLACED OVER THE EXISTING GROUND PRIOR TO PLACING STONE. \*\*THE PLAN APPROVAL AUTHORITY MAY NOT REQUIRE SINGLE FAMILY RESIDENCES TO USE GEOTEXTILE.
- STONE - CRUSHED AGGREGATE "2" TO 3" OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT SHALL BE PLACED AT LEAST 6" DEEP OVER THE LENGTH AND WIDTH OF THE ENTRANCE.
- SURFACE WATER - ALL SURFACE WATER FLOWING TO OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED THROUGH THE ENTRANCE, MAINTAINING POSITIVE DRAINAGE. PIPE INSTALLED THROUGH THE STABILIZED CONSTRUCTION ENTRANCE SHALL BE PROTECTED WITH A MOUNTABLE BERM WITH 5:1 SLOPES AND A MINIMUM OF 6" OF STONE OVER THE PIPE. PIPE HAS TO BE SIZED ACCORDING TO THE DRAINAGE. WHEN THE SCE IS LOCATED AT A HIGH SPOT AND HAS NO DRAINAGE TO CONVEY A PIPE WILL NOT BE NECESSARY. PIPE SHOULD BE SIZED ACCORDING TO THE AMOUNT OF RUNOFF TO BE CONVEYED. A 6" MINIMUM WILL BE REQUIRED.
- LOCATION - A STABILIZED CONSTRUCTION ENTRANCE SHALL BE LOCATED AT EVERY POINT WHERE CONSTRUCTION TRAFFIC ENTERS OR LEAVES A CONSTRUCTION SITE. VEHICLES LEAVING THE SITE MUST TRAVEL OVER THE ENTIRE LENGTH OF THE STABILIZED CONSTRUCTION ENTRANCE.

NOTES:  
1. ACCESS ROUTES TO BE VERIFIED BY ENGINEER AT EROSION AND SEDIMENT CONTROL MEETING. REVISIONS TO THE ALIGNMENT THAT MINIMIZE TREE DISTURBANCE ARE ENCOURAGED AND REQUIRE REVIEW AND APPROVAL BY THE ENGINEER.  
2. SOIL STABILIZATION MATTING SHALL BE PLACED WITH SEAMS PARALLEL TO THE FLOW OF TRAFFIC AND SHALL OVERLAP BY 18" MINIMUM AT SEAMS.  
3. CONTRACTOR SHALL MAINTAIN MULCH ACCESS THROUGHOUT THE CONSTRUCTION PERIOD. UPON COMPLETION OF PROJECT, MULCH AND COIR MATTING SHALL BE FULLY REMOVED IN ZONE 3. IN ZONE 1 MULCH AND SOIL STABILIZATION MATTING CAN REMAIN IN PLACE AT A MAXIMUM DEPTH OF 2".  
4. SCARIFICATION OF COMPACTED MULCH TO OCCUR UPON REMOVAL OF ACCESS ROAD, AT THE DIRECTION OF THE ENGINEER.  
5. THE ACCESS ROAD IS DESIGNED TO PREVENT COMPACTION OF EXISTING SOILS USING LOW PRESSURE EQUIPMENT WHICH EXERTS NO MORE THAN 8 PSI. IF THE CONTRACTOR INTENDS TO USE ANY EQUIPMENT WITH HIGHER LOADS, ADDITIONAL PROTECTION MEASURES MUST BE PROVIDED, AT NO ADDITIONAL COST TO THE ADMINISTRATION, AND THOSE MEASURES MUST BE APPROVED BY THE ENGINEER PRIOR TO IMPLEMENTATION.

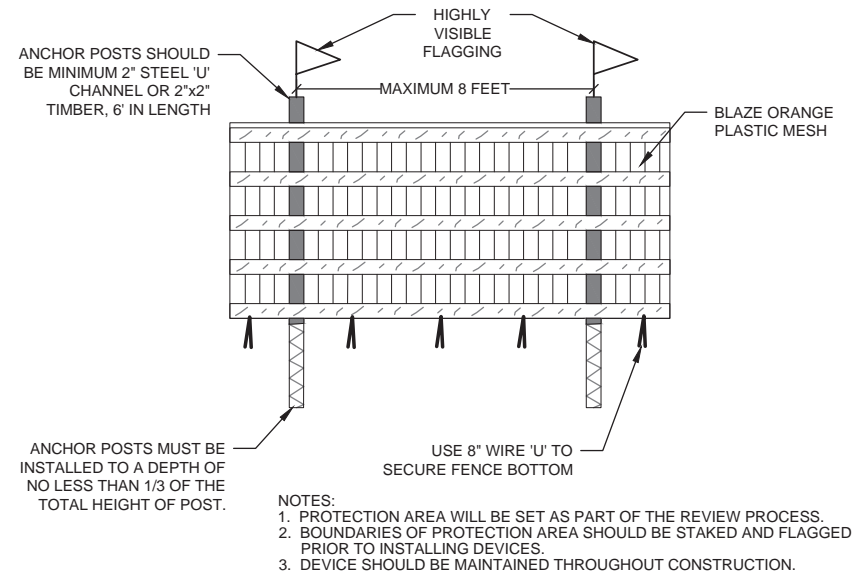


### MULCH ACCESS ROAD



### PUMP AROUND

NOT TO SCALE



### TREE PROTECTION BLAZE ORANGE PLASTIC FENCE

NOT TO SCALE

CLIENT  
**Howard Hughes**  
THE HOWARD HUGHES CORPORATION  
10480 LITTLE PATUXENT PARKWAY  
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COLUMBIA, MD 21044  
PHONE: 410-964-4800

DATE ISSUES / REVISIONS

APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

CHIEF, DIVISION OF LAND DEVELOPMENT DATE

DIRECTOR DATE

**Biohabitats**  
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fx: 410.554.0168 / www.biohabitats.com  
Restore the Earth & Inspire Ecological Stewardship

### SYMPHONY STREAM SITE 5 (SS-S5) RESTORATION

COLUMBIA TOWN CENTER ELECT. DISTR. 5-15 GRID #ALPHA 6 CURRENT ZONING: NT HOWARD COUNTY, MD TAX MAP NO. 35.36 PARCEL #13689 L. 5289 F. 330

### EROSION AND SEDIMENT CONTROL DETAILS

PROJECT NO.: 13020.05 SCALE: N.T.S.

SEAL: BY: SH, KT CHECK: MT DWG. NO.:

STATE OF MARYLAND PROFESSIONAL ENGINEER No. 26950



**B-4.2 STANDARDS AND SPECIFICATIONS**

**FOR**

**SOIL PREPARATION, TOPSOILING, AND SOIL AMENDMENTS**

**Definition**

The process of preparing the soils to sustain adequate vegetative stabilization.

**Purpose**

To provide a suitable soil medium for vegetative growth.

**Conditions Where Practice Applies**

Where vegetative stabilization is to be established.

**Criteria**

- A. Soil Preparation
- Temporary Stabilization
    - Seedbed 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 rippers mounted on construction equipment. After the soil is loosened, it must not be rolled or dragged smooth but left in the roughened condition. Slopes 3:1 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 lovegrass will be planted, then a sandy soil (less than 30 percent silt plus clay) would be acceptable.
      - 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 scarified 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. Rake 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 seedbed 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. Seedbed 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 unacceptable soil gradation.
- Topsoil salvaged 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 salvaged 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 continuing 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.
- Topsoil Application
  - Erosion and sediment control practices must be maintained when applying topsoil.
  - Uniformly distribute topsoil in a 5 to 8 inch layer and lightly compact to a minimum thickness of 4 inches. Spreading is to be performed in such a manner that sodding or seeding can proceed with a minimum of additional soil preparation and tillage. Any irregularities in the surface resulting from topsoiling or other operations must be corrected in order to prevent the formation of depressions or water pockets.
  - Topsoil must not be placed if the topsoil or subsoil is in a frozen or muddy condition, when the subsoil is excessively wet or in a condition that may otherwise be detrimental to proper grading and seedbed preparation.

C. Soil Amendments (Fertilizer and Lime Specifications)

- Soil tests must be performed to determine the exact ratios 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 hydroseeding) 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 98 to 100 percent will pass through a #20 mesh sieve.
- 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.

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD COUNTY CONSERVATION DISTRICT.

HOWARD COD \_\_\_\_\_ DATE \_\_\_\_\_

**B-4.4 STANDARDS AND SPECIFICATIONS**

**FOR**

**TEMPORARY STABILIZATION**

**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 seed mixtures listed in Table B.1 for the appropriate Plant Hardiness Zone (from Figure B.3), and enter them in the Temporary Seeding Summary below along with application rates, seeding dates and seeding depths. If 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-4-3.A.1.b and maintain until the next seeding season.

**Temporary Seeding Summary**

Hardiness Zone (from Figure B.3): <b>6b</b>					Fertilizer Rate (10-20-20)	Lime Rate
Seed Mixture (from Table B.1): ANNUAL RYEGRASS/FOXTAIL MILLET						
No.	Species	Application Rate (lb/acre)	Seeding Dates	Seeding Depths		
	ANNUAL RYEGRASS	40	5/1 - 5/15 8/1 - 10/15	0.5	436 lb/acre (10 lb/1000 sf)	2 tons/acre (90 lb/1000 sf)
	FOXTAIL MILLET	30	5/16 - 7/31	0.5		

**B-4.5 STANDARDS AND SPECIFICATIONS**

**FOR**

**PERMANENT STABILIZATION**

**Definition**

To stabilize disturbed soils with permanent vegetation.

**Purpose**

To use long-lived perennial grasses and legumes to establish permanent ground cover on disturbed soils.

**Conditions Where Practice Applies**

Exposed soils where ground cover is needed for 6 months or more.

**Criteria**

- A. Seed Mixtures
- General Use
    - Select one or more of the species or mixtures listed in Table B.3 for the appropriate Plant Hardiness Zone (from Figure B.3) and based on the site condition or purpose found on Table B.2. Enter selected mixture(s), 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 soil testing agency.
    - 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 turfgrass 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 mixture(s), 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 35 percent of the total mixture by weight.
      - Kentucky Bluegrass/Perennial Rye: Full Sun Mixture: For use in full sun areas where

**DETAIL B-4-6-B TEMPORARY SOIL STABILIZATION MATTING SLOPE APPLICATION**

STANDARD SYMBOL  
TSSMS 2-0 \* lb/ft<sup>2</sup>  
(\* INCLUDE SHEAR STRESS)

**CONSTRUCTION SPECIFICATIONS**

- USE MATTING THAT HAS A DESIGN VALUE FOR SHEAR STRESS EQUAL TO OR HIGHER THAN THE SHEAR STRESS DESIGNATED ON APPROVED PLANS.
- USE TEMPORARY SOIL STABILIZATION MATTING MADE OF DEGRADABLE (LASTS 6 MONTHS MINIMUM) NATURAL OR MAN-MADE FIBERS (MOSTLY ORGANIC). MAT MUST HAVE UNIFORM THICKNESS AND DISTRIBUTION OF FIBERS THROUGHOUT AND BE SMOOTHER RESISTANT. CHEMICALS USED IN THE MAT MUST BE NON-LEACHING AND NON-TOXIC TO VEGETATION AND SEED GERMINATION AND NON-INJURIOUS TO THE SKIN. IF PRESENT, NETTING MUST BE EXTRUDED PLASTIC WITH A MAXIMUM MESH OPENING OF 2x2 INCHES AND SUFFICIENTLY BONDED OR SEWN ON 2 INCH CENTERS ALONG LONGITUDINAL AXIS OF THE MATERIAL TO PREVENT SEPARATION OF THE NET FROM THE PARENT MATERIAL.
- SECURE MATTING USING STEEL STAPLES, WOOD STAKES, OR BIODEGRADABLE EQUIVALENT. STAPLES MUST BE "U" OR "T" SHAPED STEEL WIRE HAVING A MINIMUM GAUGE OF NO. 11 AND NO. 8 RESPECTIVELY. "U" SHAPED STAPLES MUST AVERAGE 1 TO 1 1/2 INCHES WIDE AND BE A MINIMUM OF 6 INCHES LONG. "T" SHAPED STAPLES MUST HAVE A MINIMUM 8 INCH MAIN LEG, A MINIMUM 1 INCH SECONDARY LEG, AND A MINIMUM 4 INCH HEAD. WOOD STAKES MUST BE SAWN HARDWOOD, 12 TO 24 INCHES IN LENGTH, 1x3 INCH IN CROSS SECTION, AND WEDGE SHAPED AT THE BOTTOM.
- PERFORM FINAL GRADING, TOPSOIL APPLICATION, SEEDBED PREPARATION, AND PERMANENT SEEDING IN ACCORDANCE WITH SPECIFICATIONS. PLACE MATTING WITHIN 48 HOURS OF COMPLETING SEEDING OPERATIONS UNLESS END OF WORKDAY STABILIZATION IS SPECIFIED ON THE APPROVED EROSION & SEDIMENT CONTROL PLAN.
- UNROLL MATTING DOWNSLOPE. LAY MAT SMOOTHLY AND FIRMLY UPON THE SEEDED SURFACE. AVOID STRETCHING THE MATTING.
- OVERLAP OR ABUT ROLL EDGES PER MANUFACTURER RECOMMENDATIONS. OVERLAP ROLL ENDS BY 6 INCHES (MINIMUM), WITH THE UPSLOPE MAT OVERLAPPING ON TOP OF THE DOWNSLOPE MAT.
- KEY IN THE UPSLOPE END OF MAT 6 INCHES (MINIMUM) BY DIGGING A TRENCH, PLACING THE MATTING ROLL END IN THE TRENCH, STAPLING THE MAT IN PLACE, REPLACING THE EXCAVATED MATERIAL, AND TAMPING TO SECURE THE MAT END IN THE KEY.
- STAPLE/STAKE MAT IN A STAGGERED PATTERN ON 4 FOOT (MAXIMUM) CENTERS THROUGHOUT AND 2 FOOT (MAXIMUM) CENTERS ALONG SEAMS, JOINTS, AND ROLL ENDS.
- ESTABLISH AND MAINTAIN VEGETATION SO THAT REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT ARE CONTINUOUSLY MET IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

**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 salvage 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 swale 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.

**Maintenance**

The stockpile area must continuously meet the requirements for Adequate Vegetative Establishment in accordance with Section B-4 Vegetative Stabilization. Side slopes must be maintained at no steeper than a 2:1 ratio. The stockpile area must be kept free of erosion. If the vertical height of a stockpile exceeds 20 feet for 2:1 slopes, 30 feet for 3:1 slopes, or 40 feet for 4:1 slopes, benching must be provided in accordance with Section B-3 Land Grading.

**B.4.3**

**Permanent Seeding Summary**

Hardiness Zone (from Figure B.3): <b>6b</b>					Fertilizer Rate (10-20-20)			Lime Rate
Seed Mixture (from Table B.3): <b>4</b>					N	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O	
No.	Species	Application Rate (lb/acre)	Seeding Dates	Seeding Depths				
4	DEERTONGUE	15	3/1-5/15 8/15-10/15	1/4 - 1/2 in	45 pounds per acre (1.0 lb/1000 sf)	90 lb/acre (2 lb/1000 sf)	90 lb/acre (2 lb/1000 sf)	2 tons/acre (90 lb/1000 sf)
	CREEPING RED FESCUE	20	3/1-5/15 8/15-10/15	1/4 - 1/2 in				
	VIRGINIA WILD RYE	5	3/1-5/15 8/15-10/15	1/4 - 1/2 in				

B. Sod: To provide quick cover on disturbed areas (2:1 grade or flatter).

- General Specifications
  - Class of turfgrass sod must be Maryland State Certified. Sod labels must be made available to the job foreman and inspector.
  - Sod must be machine cut at a uniform soil thickness of 1/2 inch, plus or minus 1/8 inch, at the time of cutting. Measurement for thickness must exclude top growth and thatch. Broken pads and torn or uneven ends will not be acceptable.
  - Standard size sections of sod must be strong enough to support their own weight and retain their size and shape when suspended vertically with a firm grasp on the upper 10 percent of the section.
  - Sod must not be harvested or transplanted when moisture content (excessively dry or wet) may adversely affect its survival.
  - Sod must be harvested, delivered, and installed within a period of 36 hours. Sod not transplanted within this period must be approved by an agronomist or soil scientist prior to its installation.
- Sod Installation
  - During periods of excessively high temperature or in areas having dry subsoil, lightly irrigate the subsoil immediately prior to laying the sod.
  - Lay the first row of sod in a straight line with subsequent rows placed parallel to it and tightly wedged against each other. Stagger lateral joints to promote more uniform growth and strength. Ensure that sod is not stretched or overlapped and that all joints are butted tight in order to prevent voids which would cause air drying of the roots.
  - Wherever possible, lay sod with the long edges parallel to the contour and with staggering joints. Roll and tamp, peg or otherwise secure the sod to prevent slippage on slopes. Ensure solid contact exists between sod roots and the underlying soil surface.
  - Water the sod immediately following rolling and tamping until the underside of the new sod pad and soil surface below the sod are thoroughly wet. Complete the operations of laying, tamping and irrigating for any piece of sod within eight hours.
- Sod Maintenance
  - In the absence of adequate rainfall, water daily during the first week or as often and sufficiently as necessary to maintain moist soil to a depth of 4 inches. Water sod during the heat of the day to prevent wilting.
  - After the first week, sod watering is required as necessary to maintain adequate moisture content.
  - Do not mow until the sod is firmly rooted. No more than 1/2 of the grass leaf must be removed by the initial cutting or subsequent cuttings. Maintain a grass height of at least 3 inches unless otherwise specified.

**CLIENT**



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**DATE ISSUES / REVISIONS**

APPROVED: DEPARTMENT OF PUBLIC WORKS

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**SYMPHONY STREAM SITE 5 (SS-S5) RESTORATION**

COLUMBIA TOWN CENTER ELECT. DIST. 5-15 GRID ALPHA 6 CURRENT ZONING: NT HOWARD COUNTY, MD TAX MAP NO. 35.36 PARCEL #13689 L. 5289 F. 330

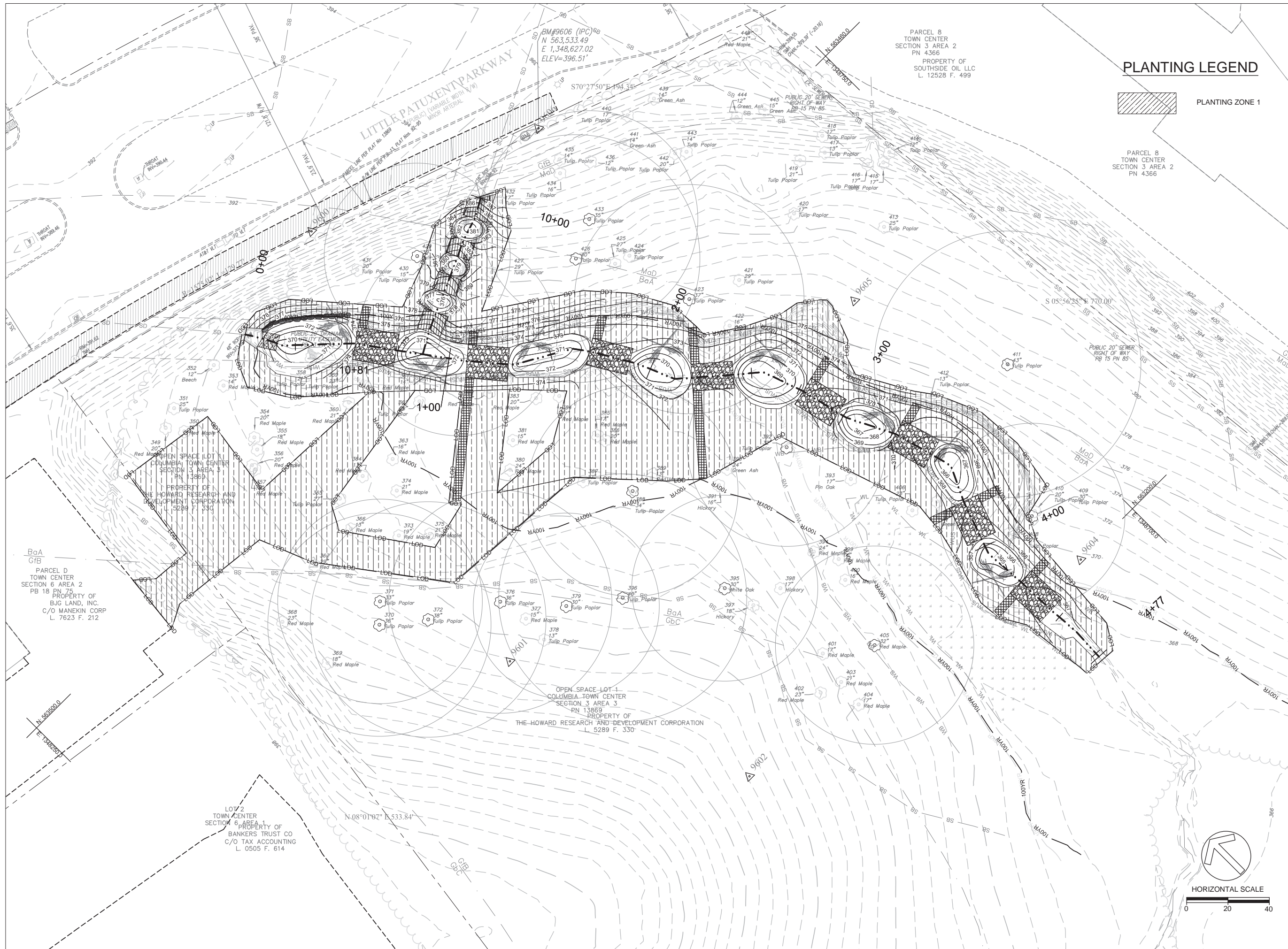
**EROSION AND SEDIMENT CONTROL DETAILS**

PROJECT NO.: 13020.05 SCALE: N.T.S.

SEAL: BY: SH, KT CHECK: MT DWG. NO.:







**PLANTING LEGEND**



PLANTING ZONE 1

PARCEL 8  
TOWN CENTER  
SECTION 3 AREA 2  
PN 4366

PARCEL 8  
TOWN CENTER  
SECTION 3 AREA 2  
PN 4366  
PROPERTY OF  
SOUTHSIDE OIL LLC  
L. 12528 F. 499

**CLIENT**

*Howard Hughes*  
THE HOWARD HUGHES CORPORATION

THE HOWARD HUGHES CORPORATION  
10480 LITTLE PATUXENT PARKWAY  
SUITE 400  
COLUMBIA, MD 21044

DATE	ISSUES / REVISIONS

APPROVED:	DEPARTMENT OF PUBLIC WORKS	
	CHIEF, BUREAU OF ENVIRONMENTAL SERVICES	DATE
APPROVED:	DEPARTMENT OF PLANNING AND ZONING	
	CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE
	CHIEF, DIVISION OF LAND DEVELOPMENT	DATE
	DIRECTOR	DATE

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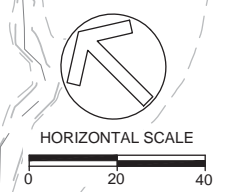
**SYMPHONY STREAM  
SITE 5 (SS-S5)  
RESTORATION**

COLUMBIA TOWN CENTER ELECT. DISTR. 5-15  
GRID ALPHA 6  
CURRENT ZONING: NT

HOWARD COUNTY, MD  
TAX MAP NO. 35.36  
PARCEL #13689  
L. 5289 F. 330

**PLANTING PLAN**

PROJECT NO.:	13020.05	SCALE:	1" = 20'
SEAL:		BY:	SH, KT
		CHECK:	MT
		DWG. NO.:	



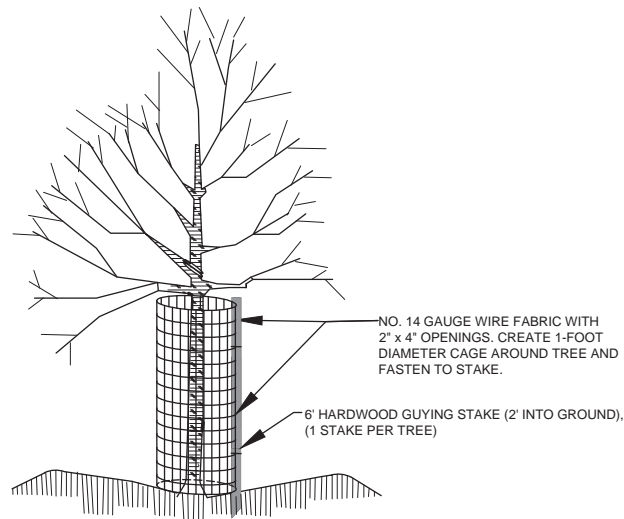


PLANT COMPOSITION SCHEDULE  
**ZONE 1 - Floodplain Forest Reforestation**

Size (acres): 0.63

Overall Minimum Spacing (ft.)	Quantity per acre	Frequency (%)	Species Quantity	Wetland Indicator Status	Vegetation Strata/Species Name	Common Name	Unit	Spacing Type	Size	Individual Minimum Spacing (ft.)
20	109				<b>TREES</b>					
		20	14	FAC	<i>Acer rubrum</i>	Red maple	CONT	Random	2" CAL	44
		10	7	FACW	<i>Quercus palustris</i>	Pin oak	CONT	Random	1.25" CAL	62
		15	10	FACW	<i>Quercus bicolor</i>	Swamp white oak	CONT	Random	1.25" CAL	52
		5	3	OBL	<i>Salix nigra</i>	Black willow	CONT	Random	2" CAL	95
		5	3	FAC	<i>Quercus phellos</i>	Willow oak	CONT	Random	2" CAL	95
		25	17	FACW	<i>Platanus occidentalis</i>	American sycamore	CONT	Random	2" CAL	40
		10	7	FAC	<i>Nyssa sylvatica</i>	Black gum	CONT	Random	1.25" CAL	62
			<b>61</b>		<b>= total</b>					
					<b>MIDSTORY TREES</b>					
		5	3	FACW	<i>Betula nigra</i>	River birch	CONT	Random	1.5" CAL	95
		5	3	FAC	<i>Carpinus caroliniana</i>	Ironwood	CONT	Random	1.25" CAL	95
		100	<b>6</b>		<b>= total</b>					
12	303				<b>SHRUB</b>					
		20	38	FACW	<i>Cornus amomum</i>	Silky dogwood	CONT	Random	3 GAL	27
		15	29	OBL	<i>Alnus serrulata</i>	Smooth alder	CONT	Random	2 GAL	31
		30	57	FAC	<i>Lindera benzoin</i>	Common spicebush	CONT	Random	2 GAL	22
		15	29	FACW	<i>Cornus sericea</i>	Red osier dogwood	CONT	Random	3 GAL	31
		20	38	FAC	<i>Viburnum dentatum</i>	Southern arrowwood	CONT	Random	3 GAL	27
		100	<b>191</b>		<b>= total</b>					
N/A	35				<b>HERBACEOUS SEED</b>					
		10	2.2	FACW	<i>Scirpus cyperinus</i>	Wool grass	SEED	LB of P.L.S. 76 %	N/A	N/A
		25	5.5	FACW	<i>Elymus riparius</i>	Riverbank wild rye	SEED	LB of P.L.S. 76 %	N/A	N/A
		25	5.5	FACW	<i>Elymus virginicus</i>	Virginia wild rye	SEED	LB of P.L.S. 76 %	N/A	N/A
		25	5.5	OBL	<i>Calamagrostis canadensis</i>	Bluejoint reedgrass	SEED	LB of P.L.S. 76 %	N/A	N/A
		15	3.3	FAC	<i>Dichanthelium clandestinum</i>	Deertongue	SEED	LB of P.L.S. 76 %	N/A	N/A
		100	<b>22</b>		<b>= total</b>					

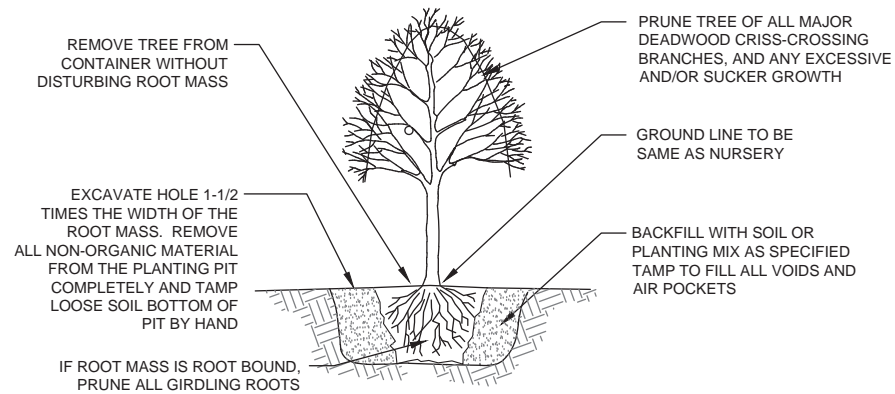
CON = Containerized  
P.L.S. = Pure Live Seed



- NOTES:
- HEIGHT OF CAGE SHALL BE 4-FEET (MIN.)
  - CAGE SHALL BE FASTENED TO STAKE WITH TWO (MIN.) 11-INCH RELEASABLE CABLE TIES (ONE AT TOP AND ONE 6" (MIN.) ABOVE THE GROUND).
  - DO NOT DAMAGE TREE DURING INSTALLATION.
  - DEER BARK PROTECTORS (ITEM #bg48, BY A.M. LEONARD, OR EQUAL) MAY BE SUBSTITUTED FOR TREES GREATER THAN 3/4" CALIPER. ALL OTHER SUBSTITUTIONS MUST BE APPROVED BY FOREST ECOLOGIST.
  - CAGES TO BE REMOVED AT DIRECTION OF FOREST ECOLOGIST.
  - ENSURE CAGE IS SECURE TO GROUND TO PREVENT UPLIFT BY DEER.

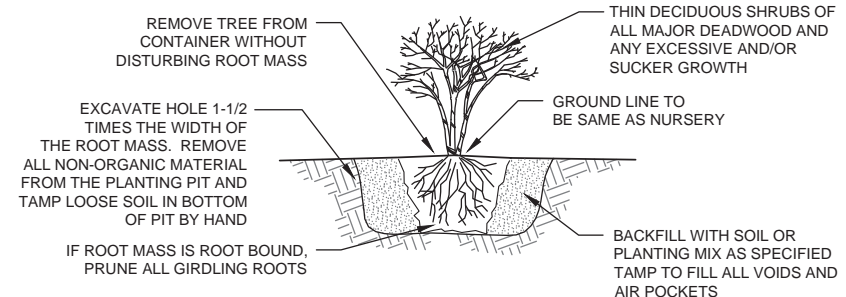
**DEER PROTECTION CAGE**

NOT TO SCALE



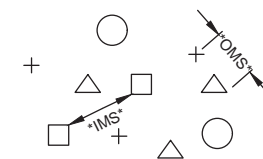
**TREE PLANTING - CONTAINER GROWN**

NOT TO SCALE



**SHRUB PLANTING - CONTAINER GROWN**

NOT TO SCALE



**PLANT SPACING - RANDOM PLAN VIEW**

NOTE: EACH SYMBOL INDICATES A DIFFERENT SPECIES  
NOT TO SCALE

CLIENT



THE HOWARD HUGHES CORPORATION  
10480 LITTLE PATUXENT PARKWAY  
SUITE 400  
COLUMBIA, MD 21044  
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DATE ISSUES / REVISIONS

APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

CHIEF, DIVISION OF LAND DEVELOPMENT DATE

DIRECTOR DATE



The Stables Building, 2081 Clipper Park Road  
Baltimore, MD 21211 / ph: 410.554.0156  
fx: 410.554.0168 / www.biohabitats.com

Restore the Earth & Inspire Ecological Stewardship

**SYMPHONY STREAM SITE 5 (SS-S5) RESTORATION**

COLUMBIA TOWN CENTER ELECT. DISTR. 5-15 GRID #ALPHA 6 CURRENT ZONING: NT HOWARD COUNTY, MD TAX MAP NO. 35.36 PARCEL #13689 L. 5289 F. 330

**PLANTING DETAILS AND SCHEDULES**

PROJECT NO.: 13020.05 SCALE: N.T.S.

SEAL BY: SH, KT CHECK MT

