

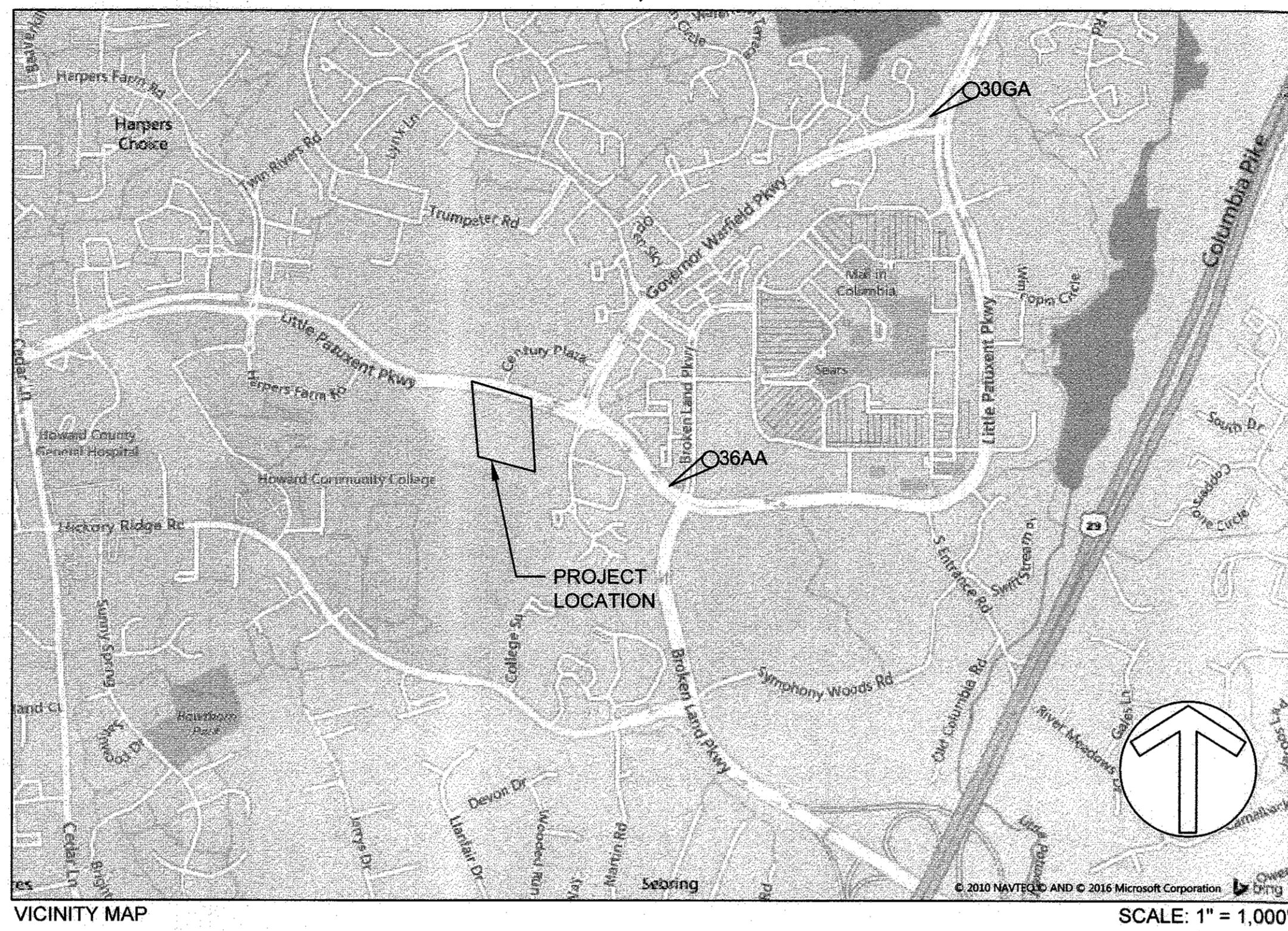
# SYMPHONY STREAM 5 (SS-S5) STREAM RESTORATION

## COLUMBIA TOWN CENTER, SECTION 3, AREA 3

### LEGEND

EXISTING	PROPOSED
--- MAJOR CONTOUR	--- 425 MAJOR CONTOUR
--- MINOR CONTOUR	--- 424 MINOR CONTOUR
--- SS SANITARY SEWER	--- BASELINE
--- SD STORM DRAIN	--- 100YR PROPOSED 100 YEAR FLOODPLAIN
--- PROPERTY LINE	--- LOD LIMIT OF DISTURBANCE
--- BUILDINGS	--- BOF BLAZE ORANGE FENCE
--- UTILITY EASEMENT	--- SSF SUPER SILT FENCE
--- EDGE OF PAVEMENT	--- COBBLE RIFFLE
--- CONCRETE CURB	--- CASCADE
--- 100YR EXISTING 100 YEAR FLOODPLAIN	--- OUTFALL APRON
--- TREELINE	--- ROCK OR LOG SILL
--- CFB SoD SOIL BOUNDARY	--- LARGE WOODY DEBRIS
--- WB WETLAND BUFFER	--- BOULDER TOE PROTECTION
--- WUS WATERS OF THE US	--- TREE SAVE
--- SB 100 FT STREAM BUFFER	--- TREE REMOVAL
--- MULTI-USE PATH	--- STAGING AND STOCKPILING AREA
--- WETLAND	--- MULCH ACCESS ROAD
--- 15-24.9% SLOPES	--- STABILIZED CONSTRUCTION ENTRANCE
--- 25% OR GREATER SLOPES	--- FILTER BAG
--- TREE	--- PUMP AROUND LOCATION
--- TREE WITH DBH > 30"	--- INTAKE/DISCHARGE HOSE
--- TRAVERSE POINT	--- SAND BAG DIKES
--- SEWER MANHOLE	
--- LIGHT POLE	
--- ELECTRIC JUNCTION BOX	
--- STORMDRAIN YARD INLET	
--- STORMDRAIN CATCH BASIN	
--- TELCO MANHOLE	
--- HEADWALL	

### COLUMBIA, MARYLAND



VICINITY MAP

ADC MAP COORD. MAP: 15 GRID: ALPHA 6

COORDINATES BASED ON NAD '83 MARYLAND COORDINATE SYSTEM AS PROJECTED BY HOWARD COUNTY GEODETIC CONTROL STATIONS No 30GA AND 36AA.

THE ELEVATIONS SHOWN HEREON ARE BASED ON NAVD '88 DATUM.

### SITE ANALYSIS DATA CHART

- TOTAL PROJECT AREA: 0.83 ACRES (36144 SF).
- DISTURBED AREA: 0.83 ACRES
- PRESENT ZONING DESIGNATION: NT
- PROPOSED USE FOR THE SITE: FLOODPLAIN FOREST OPEN SPACE ON SITE: 0.83 ACRES (36144 SF).

### MISS UTILITY

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 UNDERGROUND FACILITIES IN THE AREA OF THE PROPOSED EXCAVATION AND HAVE THOSE FACILITIES LOCATED BY THE UTILITY COMPANIES PRIOR TO COMMENCING EXCAVATION.

### SHEET LIST TABLE

SHEET NUMBER	SHEET TITLE
1	TITLE SHEET
2	EXISTING CONDITIONS & GEOMETRY PLAN
3	EROSION & SEDIMENT CONTROL PLAN
4	PROPOSED CONDITIONS
5	PROFILE
6	DETAILS
7	DETAILS
8	EROSION AND SEDIMENT CONTROL NOTES
9	EROSION AND SEDIMENT CONTROL DETAILS
10	EROSION AND SEDIMENT CONTROL DETAILS
11	PLANTING PLAN
12	PLANTING DETAILS AND SCHEDULES

### SPECIAL CONTRACTOR NOTES

- UPON COMPLETION OF THE WORK, BUT PRIOR TO DE-MOBILIZATION, THE CONTRACTOR SHALL RESTORE ALL DISTURBED AREAS TO A CONDITION EQUAL TO OR BETTER THAN THE PRE-CONSTRUCTION CONDITIONS.
- PRIOR TO BEGINNING ANY CONSTRUCTION ACTIVITIES, PHOTOGRAPHS OF THE PROPOSED WORK AREA AND ACCESS SHALL BE TAKEN.

### NOTES

- THE PROPERTY IS ZONED NT PER THE OCTOBER 6, 2013 COMPREHENSIVE ZONING PLAN.
- THIS PLAN COMPLIES WITH THE REQUIREMENTS OF SECTION 16.124 OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS AND THE LANDSCAPE MANUAL BY ALTERNATIVE COMPLIANCE, RESULTING IN IMPROVED ENVIRONMENTAL QUALITY.
- THERE ARE NO BURIAL GROUNDS OR CEMETERY SITES LOCATED ON THE PROJECT SITE.
- THIS PLAN IS EXEMPT FROM THE REQUIREMENTS OF THE FOREST CONSERVATION REGULATIONS IN ACCORDANCE WITH SUBSECTION 16.120(B)(1)(IV) SINCE IT IS LOCATED WITHIN A PLANNED UNIT DEVELOPMENT WHICH HAD PRELIMINARY PLAN APPROVAL AND 50% OR MORE OF THE LAND WAS RECORDED AND SUBSTANTIALLY DEVELOPED BEFORE DECEMBER 31, 1992.
- A JOINT PERMIT APPLICATION HAS BEEN SUBMITTED TO THE MARYLAND DEPARTMENT OF THE ENVIRONMENT FOR THIS PROJECT. (AUTHORIZATION NUMBER: 16-NT-3075/201660582) PROJECT IMPACTS INCLUDE WORK IN A USE IV STREAM. UNDER THIS PERMIT, IN-STREAM WORK IS PROHIBITED FROM MARCH 1 TO MAY 31, INCLUSIVE OF ANY YEAR.
- ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY PLUS MSHA STANDARDS AND SPECIFICATIONS IF APPLICABLE.
- THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PUBLIC WORKS/BUREAU OF ENGINEERING/CONSTRUCTION INSPECTION DIVISION AT (410) 313-1880 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION WORK BEING DONE.
- TRAFFIC CONTROL DEVICES, MARKINGS AND SIGNING SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD). ALL STREET AND REGULATORY SIGNS SHALL BE IN PLACE PRIOR TO THE PLACEMENT OF ANY ASPHALT.
- THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION WORK BEING DONE.
- THE COORDINATES AND ELEVATIONS SHOWN HEREIN ARE BASED ON HOWARD COUNTY GEODETIC CONTROL, WHICH IS BASED UPON THE MARYLAND STATE PLANE COORDINATE SYSTEM NAD83/ NAVD88. HOWARD COUNTY MONUMENTS NUMBER 36AA AND 30GA WERE USED FOR THIS SITE.
- WATER IS PUBLIC.
- SEWER IS PUBLIC.
- STORMWATER MANAGEMENT IS NOT REQUIRED FOR STREAM AND WETLAND RESTORATION.
- EXISTING UTILITIES ARE BASED ON FIELD SURVEYS AND AVAILABLE RECORD DRAWINGS.
- THE EXISTING TOPOGRAPHY IS TAKEN FROM FIELD RUN SURVEY WITH ONE FOOT CONTOUR INTERVALS PREPARED BY GUTSHICK, LITTLE AND WEBER DATED DECEMBER 2015.
- DPZ HAS DETERMINED THE DISTURBANCE WITHIN THE REGULATED 100' PERENNIAL STREAMBANK BUFFER, WETLANDS, WETLAND BUFFER, AND 100-YEAR FLOODPLAIN ARE ESSENTIAL AND NECESSARY FOR CONSTRUCTION OF THE STREAM RESTORATION PROJECT IN ACCORDANCE WITH SECTION 16.116(C) OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATION.
- THE WETLANDS DELINEATION FOR THIS SITE WAS PREPARED BY BIOHABITATS, DATED 9/15/15.
- NO TRAFFIC STUDY IS REQUIRED FOR THIS PROJECT.
- OBSTRUCTIONS SHOWN ON THIS DRAWING ARE FOR THE CONVENIENCE OF THE CONTRACTOR ONLY, AND BIOHABITATS, INC. DOES NOT WARRANT OR GUARANTEE THE CORRECTNESS OR COMPLETENESS OF THE INFORMATION GIVEN. SHOULD THE CONTRACTOR DISCOVER ANY DISCREPANCIES BETWEEN THE PLANS AND THE FIELD CONDITIONS, THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY TO RESOLVE THE SITUATION. SHOULD THE CONTRACTOR MAKE FIELD CORRECTIONS OR ADJUSTMENTS WITHOUT NOTIFYING THE ENGINEER, THE CONTRACTOR ASSUMES ALL RESPONSIBILITY FOR THOSE CHANGES.
- THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PROTECT THE EXISTING UTILITIES AND MAINTAIN UNINTERRUPTED SERVICE. ANY DAMAGE INCURRED DUE TO THE CONTRACTOR'S OPERATION SHALL BE REPAIRED IMMEDIATELY AT THE CONTRACTOR'S EXPENSE.
- SOILS DATA WAS ACQUIRED USING HOWARD COUNTY GIS.
- LANDSCAPING PLAN PREPARED IN ACCORDANCE WITH THE GUIDELINES FROM THE NEW TOWN ZONING DISTRICT.

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

DATE	ISSUES / REVISIONS

AS BUILT CERTIFICATION  
 I HEREBY CERTIFY, BY MY SEAL, THAT TO THE BEST OF MY KNOWLEDGE AND BELIEF THE FACILITIES SHOWN ON THIS PLAN WERE CONSTRUCTED AS SHOWN ON THIS "AS-BUILT" PLAN MEET THE APPROVED PLANS AND SPECIFICATIONS.

CHRISTOPHER STREB, PE DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING

*[Signature]* 6-21-17  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

*[Signature]* 6-24-17  
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

*[Signature]* 6-29-17  
 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 SHEET

PROJECT NO.: 13020.05 SCALE: AS SHOWN

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

1 OF 12

APPROVED PLANNING BOARD OF HOWARD COUNTY  
 DATE: 3/16/17

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

CHIEF, DIVISION OF LAND DEVELOPMENT DATE

DIRECTOR DATE

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

*[Signature]* 6/20/17  
 HOWARD SCD DATE

ENGINEERS CERTIFICATE  
 "I CERTIFY THAT THIS PLAN FOR SEDIMENT AND EROSION 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 COUNTY SOIL CONSERVATION DISTRICT"

*[Signature]* 5-5-2017  
 SIGNATURE OF ENGINEER (PRINT NAME BELOW SIGNATURE) DATE  
 Christopher Streb

DEVELOPERS CERTIFICATE  
 "I WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN FOR SEDIMENT AND EROSION CONTROL, AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE THE BEGINNING OF THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD COUNTY SOIL CONSERVATION DISTRICT"

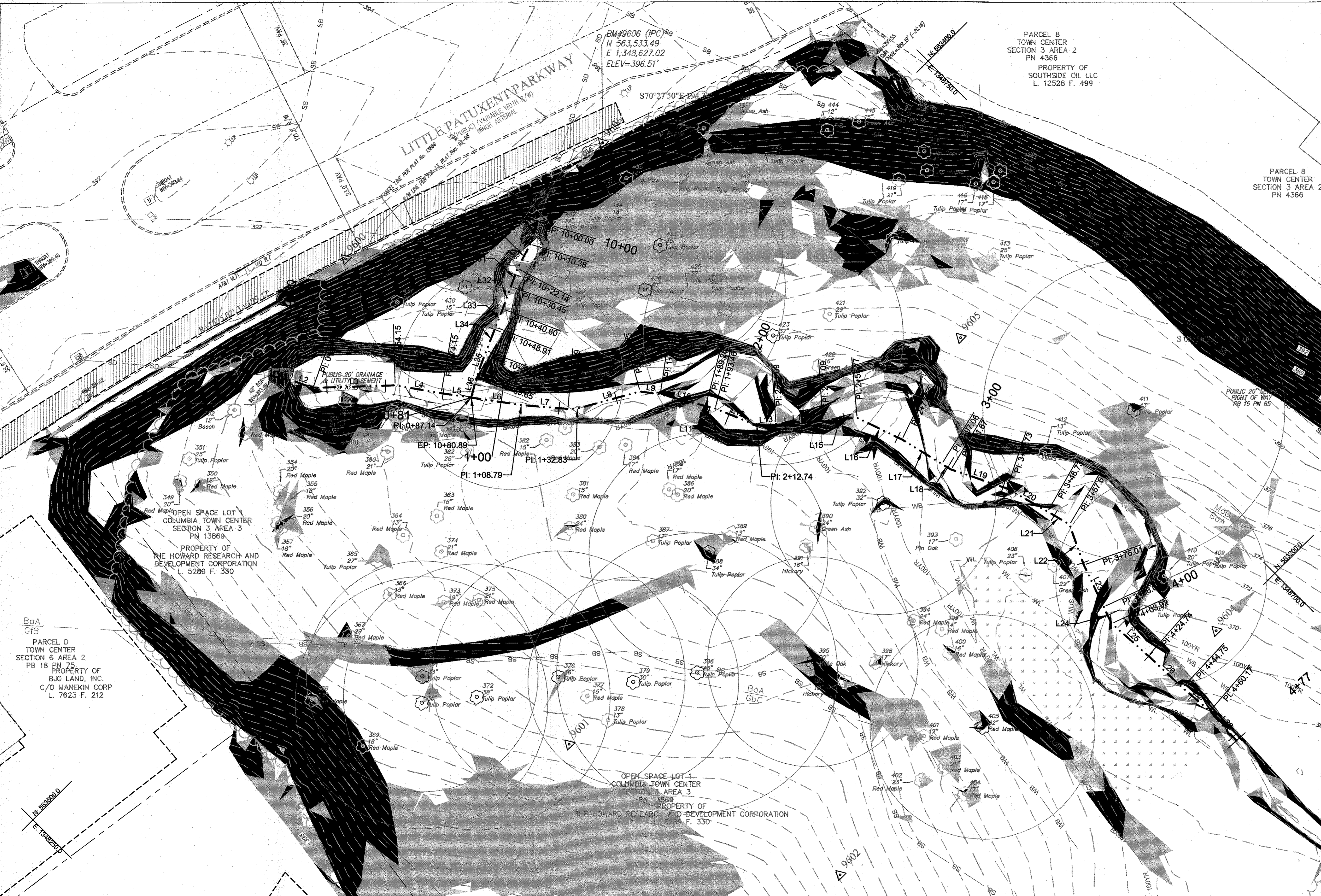
*[Signature]* 6-29-17  
 SIGNATURE OF DEVELOPER (PRINT NAME BELOW SIGNATURE) DATE  
 Jim T. Rowe

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 # 26990  
 EXPIRATION DATE: 2/25/2018

PERMIT INFORMATION CHART					
SUBDIVISION NAME	COLUMBIA TOWN CENTER	SECTION/AREA	SECTION 3, AREA 3	LOT/PARCEL#	13689
PLAT# OR LUF	L. 5289 F. 330	GRID#	ALPHA 6	ZONING	NT
TAX MAP NO.	35.36	ELECT. DISTR.	5-15	CENSUS TRACT	#805602
WATER CODE	PUBLIC	SEWER CODE	PUBLIC		

ADDRESS CHART	
LOT/PARCEL NO.	STREET ADDRESS
75	10715 LITTLE PATUXENT PKWY COLUMBIA, MD
13869	10701 LITTLE PATUXENT PKWY COLUMBIA, MD
4366	10611 LITTLE PATUXENT PKWY COLUMBIA, MD



Line Table: Alignments		
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"W
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  
 APPROVED: DEPARTMENT OF PLANNING AND ZONING  
 CHIEF, BUREAU OF ENVIRONMENTAL SERVICES  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION  
 CHIEF, DIVISION OF LAND DEVELOPMENT  
 DIRECTOR

4/26/17  
 6/26/17  
 6/29/17

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

COLUMBIA TOWN CENTER SECTION 3 AREA 2  
 GRID #ALPHA 6  
 CURRENT ZONING: NT  
 HOWARD COUNTY, MD  
 TAX MAP NO. 35.36  
 PARCEL #13689  
 L. 5289 F. 330

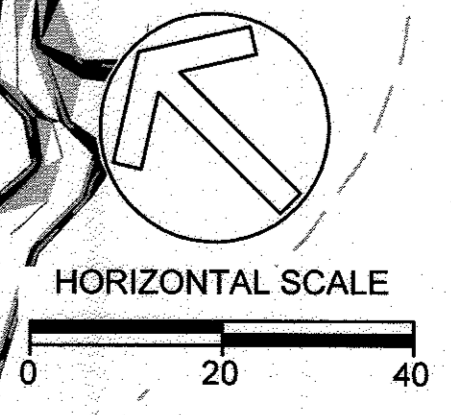
**EXISTING  
 CONDITIONS &  
 GEOMETRY PLAN**

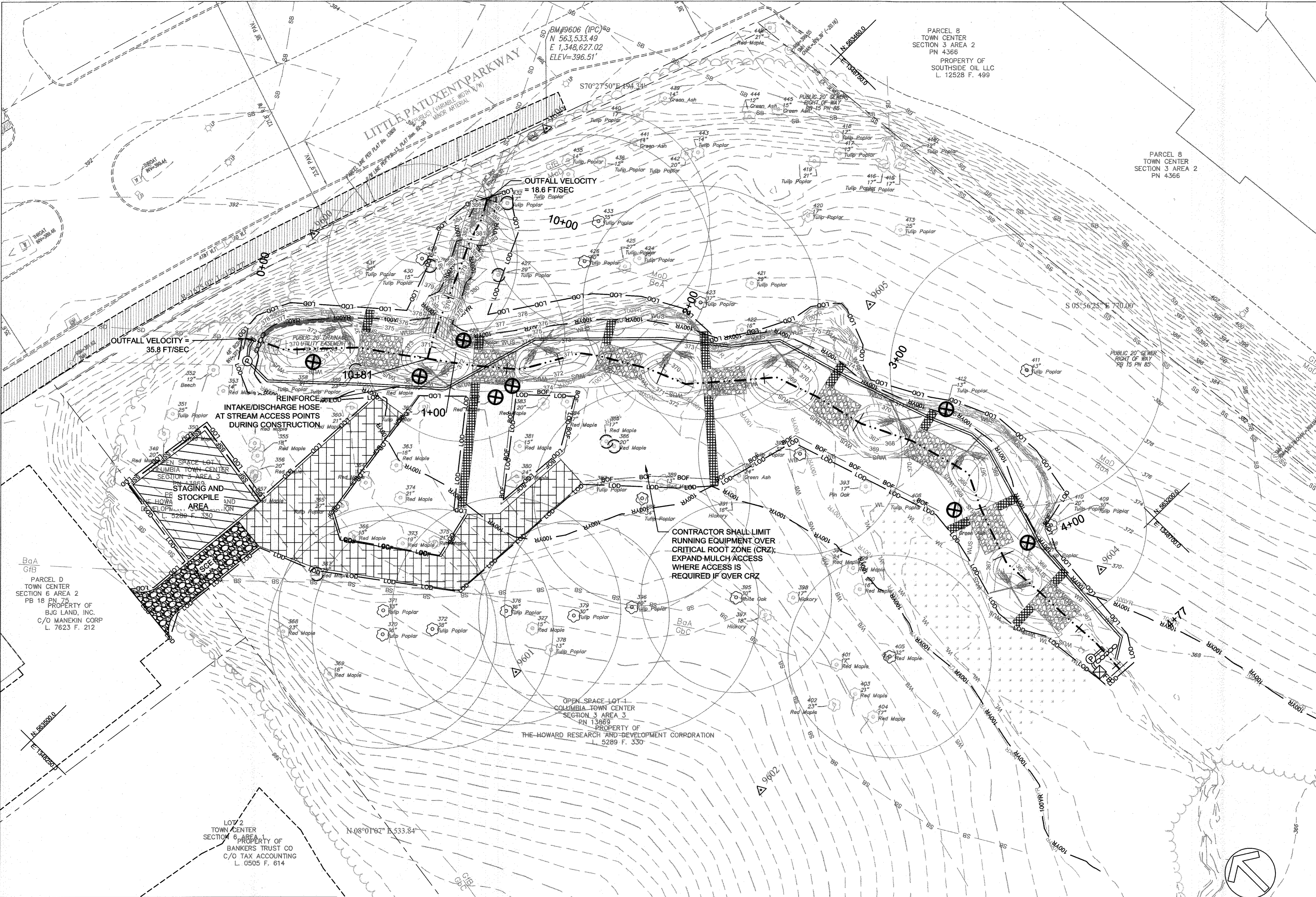
PROJECT NO.: 13020.05  
 SCALE: 1" = 20'  
 SEAL: [Professional Engineer Seal]  
 BY: SH, KT  
 CHECK: [Professional Engineer Seal]  
 DWG. NO.: 2 OF 12

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	Pin Oak Red Maple	Well Suited	Good	Yellow Poplar- 50% Green Ash- 35% Pin Oak- 1% Red Maple- 10% White Oak- 1%	16-40" 12-24"	80yrs
			Gladstone	Northern Red Oak White Oak Yellow Poplar	-	-	Northern Red Oak- 1% Hickory- 2%	18" 12-24" 30"	
			Manor	Black Oak Hickory Northern Red Oak Shortleaf Pine Virginia Pine White Oak Yellow Poplar	Average	Good		30" 18"	

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	
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	
411	Tulip Poplar	<i>Liriodendron tulipifera</i>	43	Fair	SAVE	Tree Protection Fence
423	Tulip Poplar	<i>Liriodendron tulipifera</i>	37	Fair	SAVE	
426	Tulip Poplar	<i>Liriodendron tulipifera</i>	40	Good	SAVE	Tree Protection Fence
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>w</sub> )	Hydric Rating	Hydrologic Soil Group	Drainage Class
BaA	Baile 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
GbB	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





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

DATE ISSUES / REVISIONS

APPROVED: DEPARTMENT OF PLANNING AND ZONING  
  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION 6-21-17 DATE  
  
 CHIEF, DIVISION OF LAND DEVELOPMENT 6-26-17 DATE  
  
 DIRECTOR 6-29-17 DATE

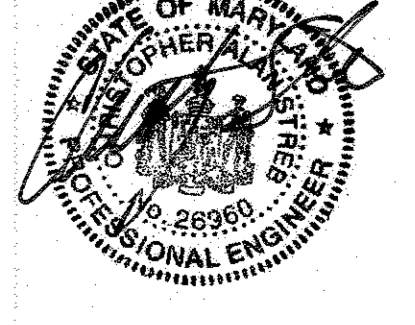
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**SYMPHONY STREAM  
 SITE 5 (SS-S5)  
 RESTORATION**

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

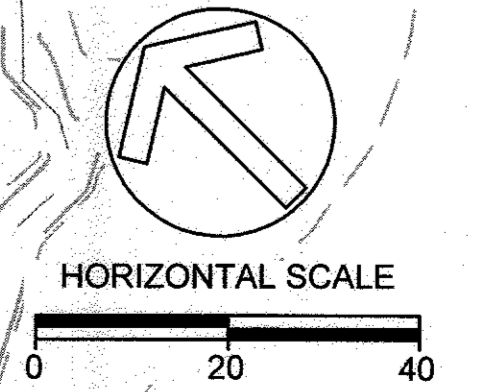
**EROSION &  
 SEDIMENT CONTROL  
 PLAN**

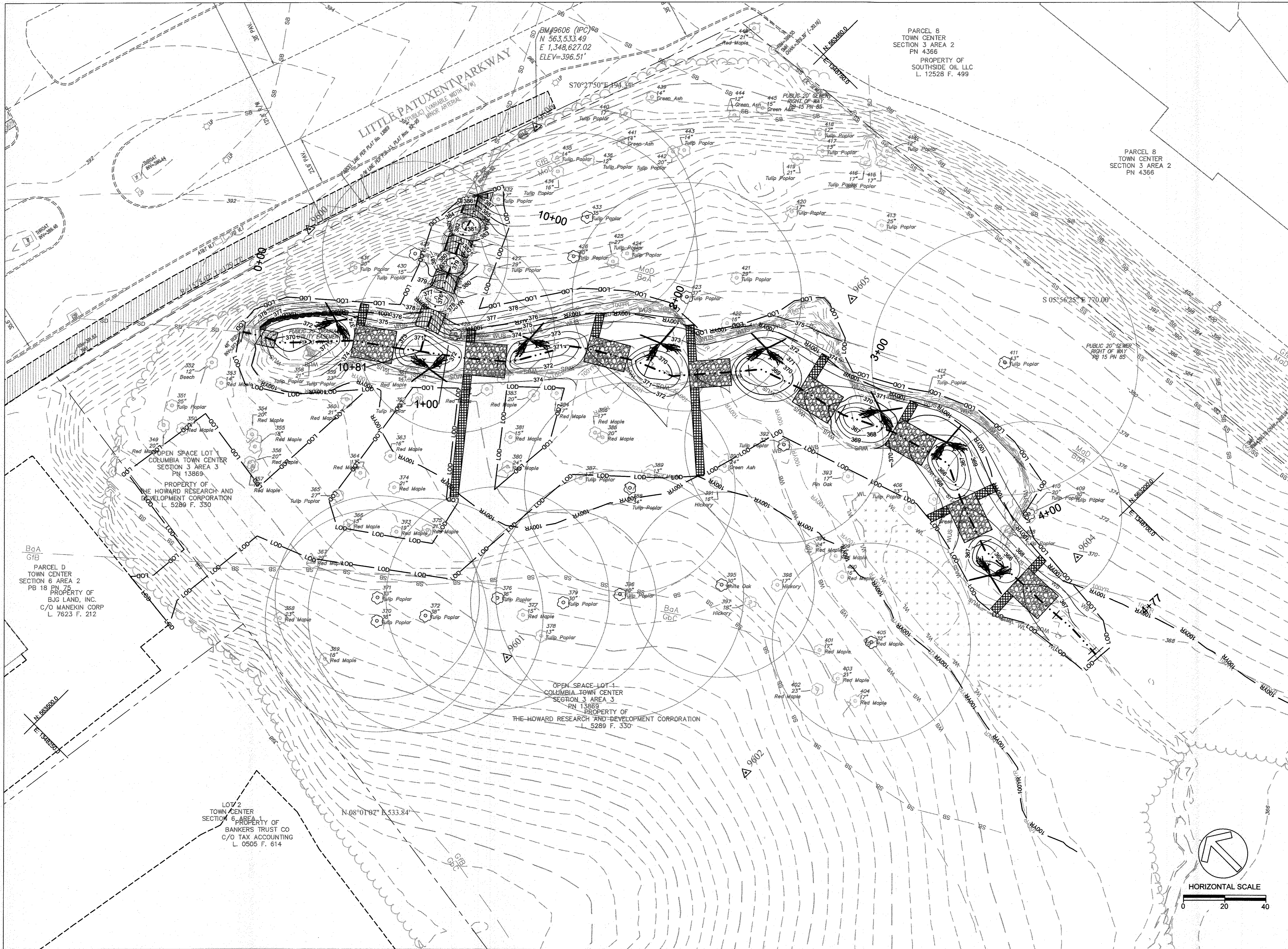
PROJECT NO.: 13020.05 SCALE: 1" = 20'  
 SEAL: BY: SH, KT CHECK: MT DWG. NO.:



THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.  
  
 HOWARD SCD  
 DATE: 6/20/17

NOTE: SEE EX CONDITIONS SHEET FOR SOILS AND SLOPE INFO





**CLIENT**

*Howard Hughes*  
THE HOWARD HUGHES CORPORATION

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

*W. J. ...* 4-21-17  
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

*K. ...* 6-26-17  
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

*N. ...* 6-29-17  
DIRECTOR DATE

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

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

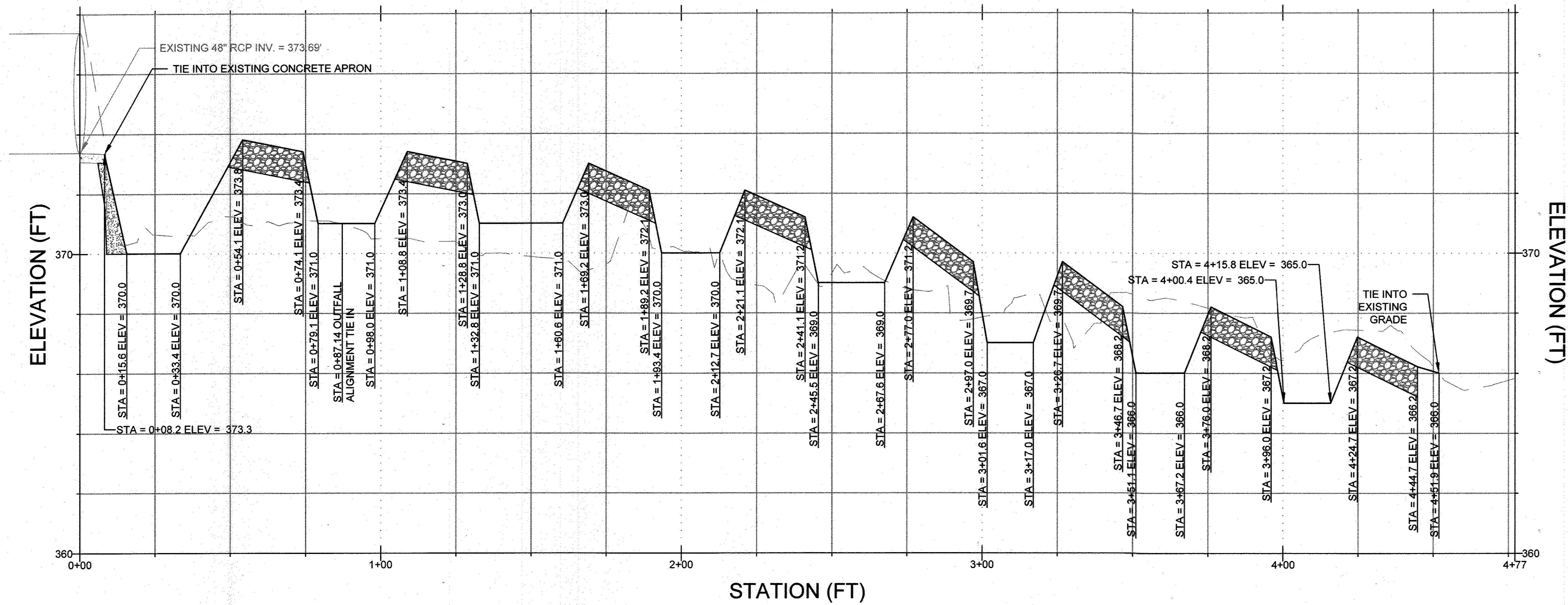
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TAX MAP NO. 36.38  
PARCEL #13869  
L. 5289 F. 330

**PROPOSED  
CONDITIONS**

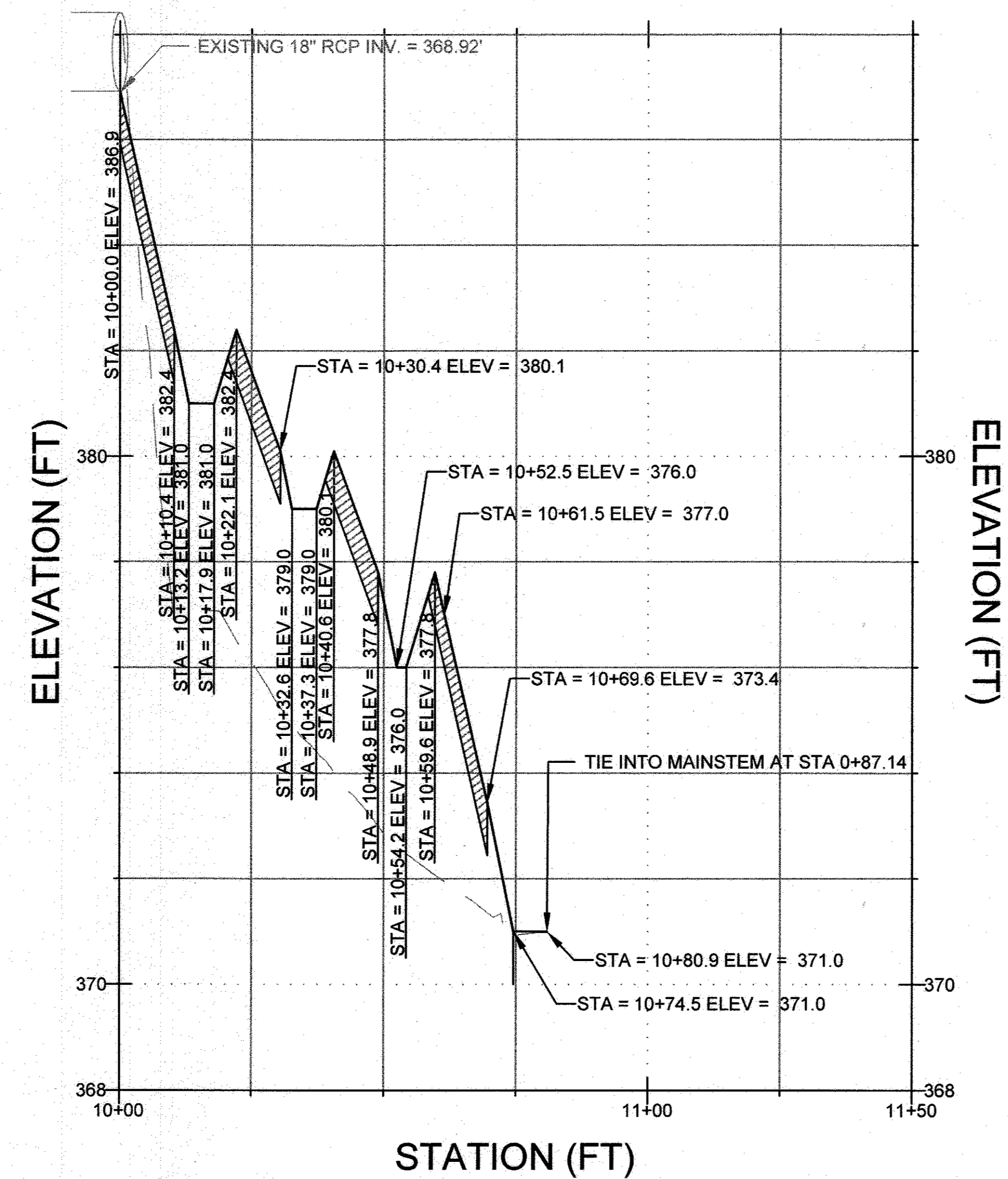
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DWG. NO.: 4 OF 12

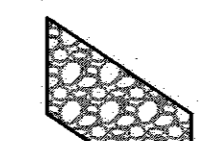


STATE OF MARYLAND  
PROFESSIONAL ENGINEER

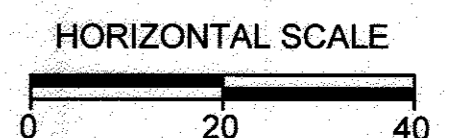
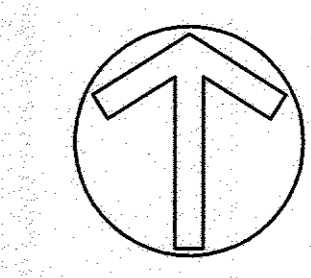
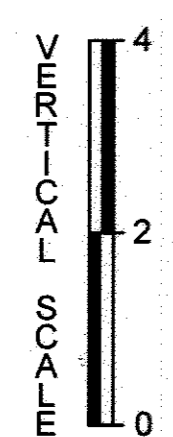


PROFILE VIEW OF ALIGNMENT - OUTFALL



PROFILE LEGEND

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



CLIENT  
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DATE ISSUES / REVISIONS

APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING

*[Signature]* 4-26-17  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

*[Signature]* 6-26-17  
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

*[Signature]* 6-29-17  
 DIRECTOR DATE

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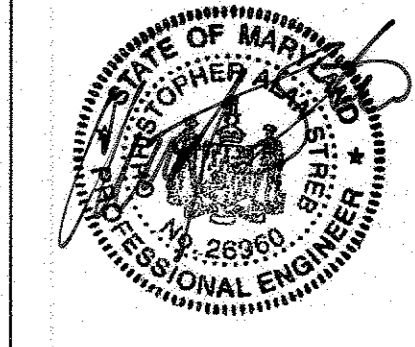
**SYMPHONY STREAM  
 SITE 5 (SS-S5)  
 RESTORATION**

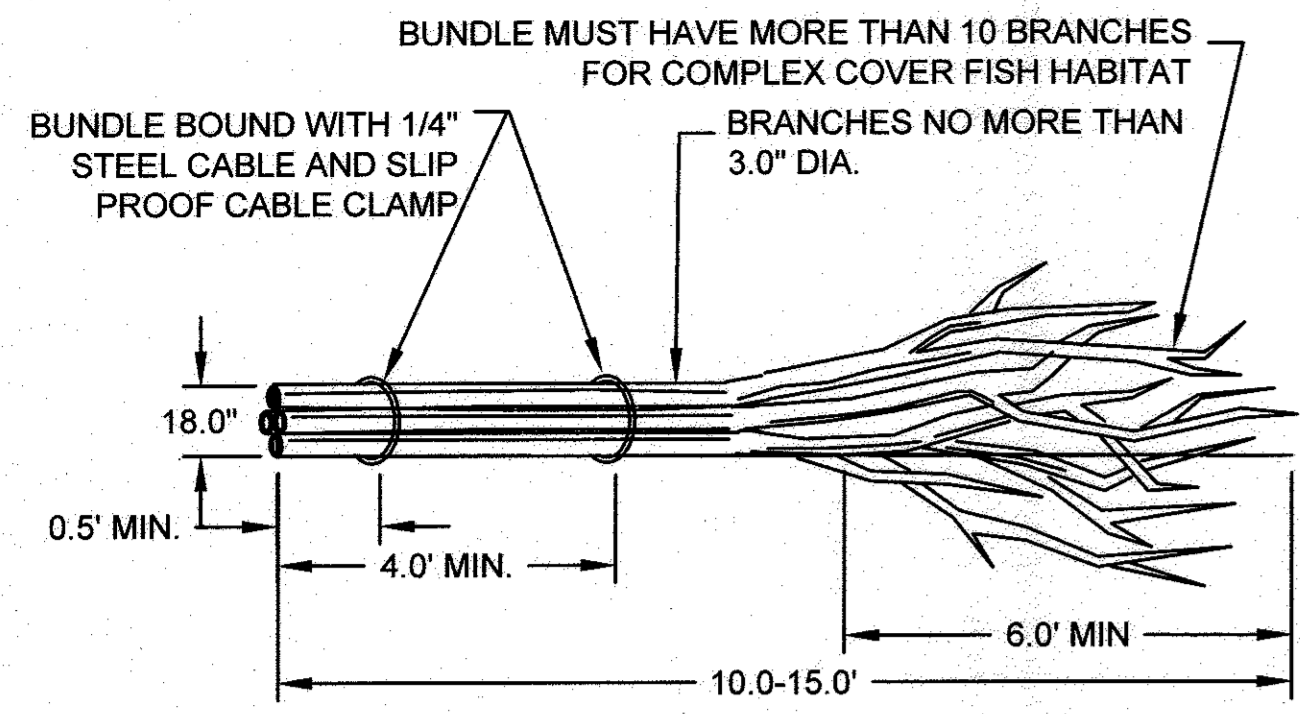
COLUMBIA TOWN CENTER HOWARD COUNTY, MD  
 ELECT DISTRICT 5-15 TAX MAP NO. 35.36  
 GRID #ALPHA 6 PARCEL #13689  
 CURRENT ZONING: NT L. 5289 F. 330

TITLE  
**PROFILE**

PROJECT NO.: 13020.05 SCALE: AS SHOWN

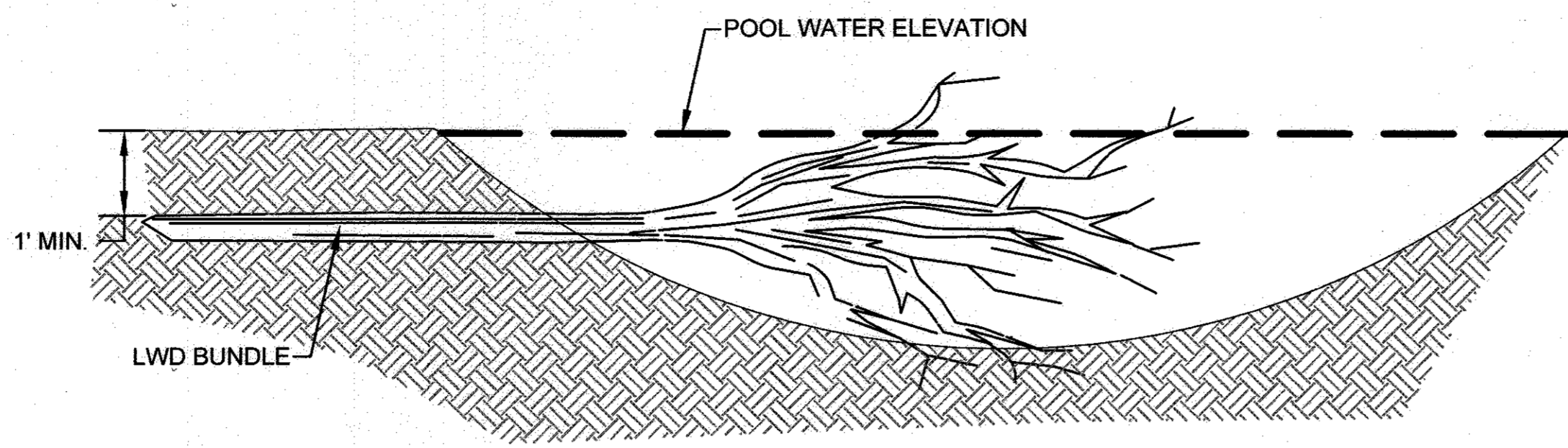
SEAL: BY: SH, KT CHECK: MT  
 DWG. NO.:



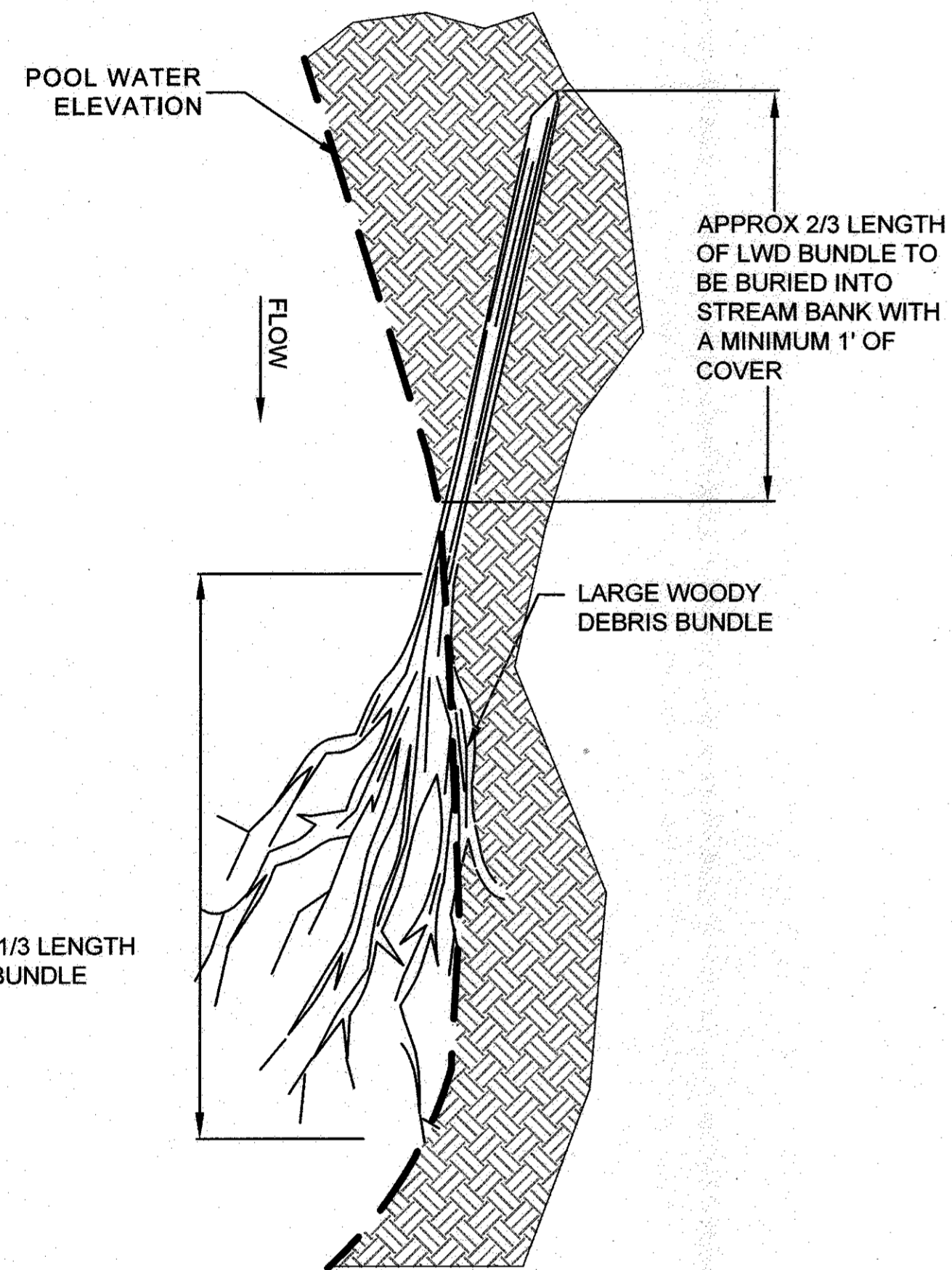


- NOTE:
1. INSTALL IN-STREAM LARGE WOODY DEBRIS, TWO PER POOL AT LOCATIONS AS SHOWN ON PROPOSED CONDITIONS PLAN
  2. PARTIALLY BURY ONSITE LWD INTO THE STREAM BANK APPROXIMATELY 2/3 OF TOTAL LENGTH TO SECURE IN PLACE AS DIRECTED BY THE ENGINEER

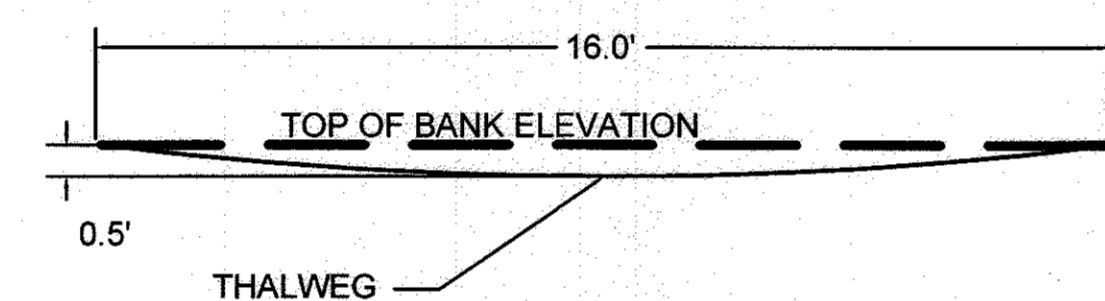
**INSTREAM LARGE WOODY DEBRIS (LWD)**  
**LARGE WOODY DEBRIS BUNDLE** NOT TO SCALE



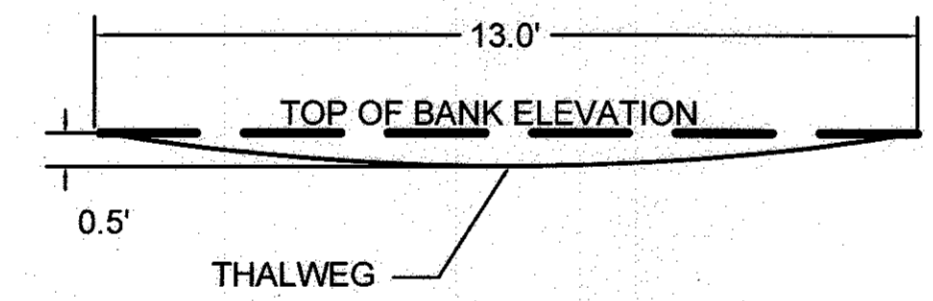
**INSTREAM LARGE WOODY DEBRIS (LWD)**  
**CROSS SECTION** NOT TO SCALE



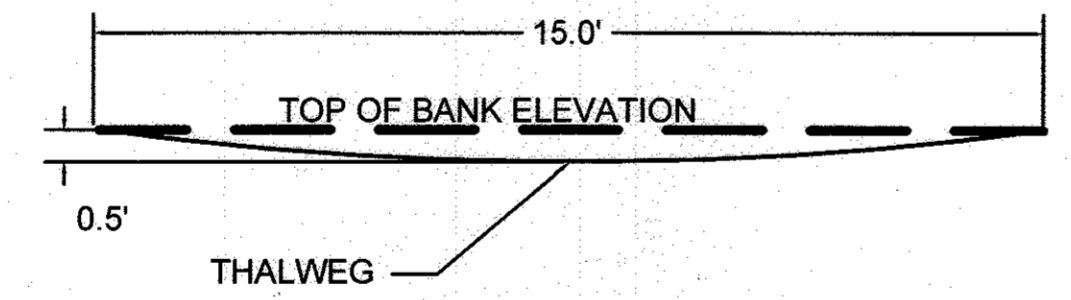
**INSTREAM LARGE WOODY DEBRIS (LWD)**  
**PLAN VIEW-TYPICAL** NOT TO SCALE



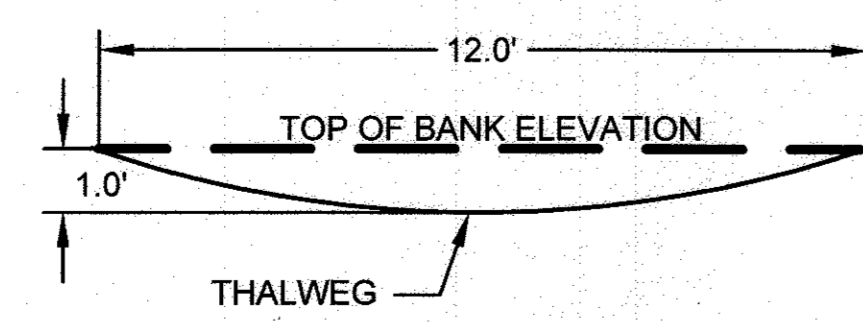
**COBBLE RIFFLE**  
**CROSS SECTION - STA 0+00 TO 1+28.8** SCALE: 1"=5'



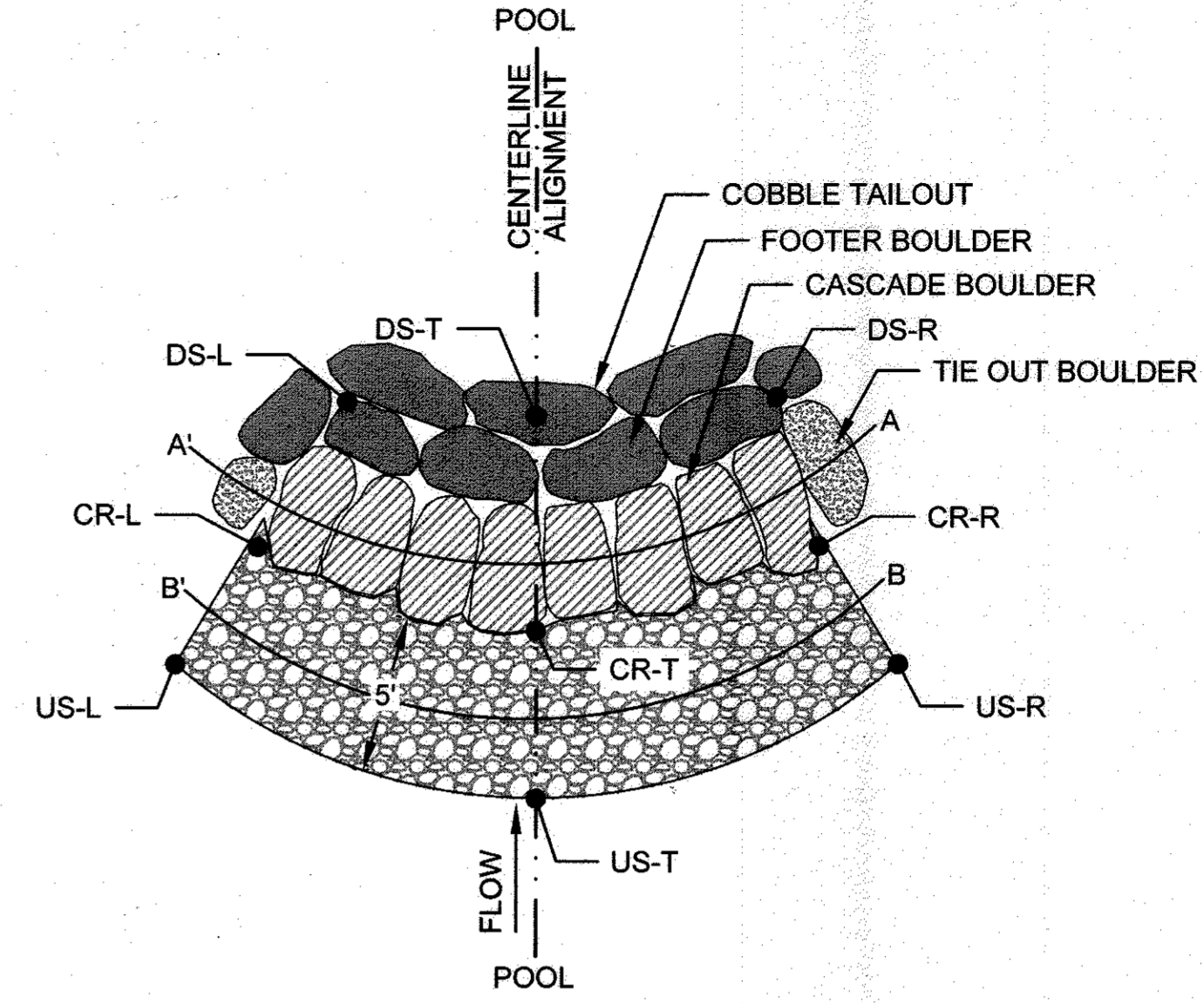
**COBBLE RIFFLE**  
**CROSS SECTION - STA 1+69.2 TO 2+41.1** SCALE: 1"=5'



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

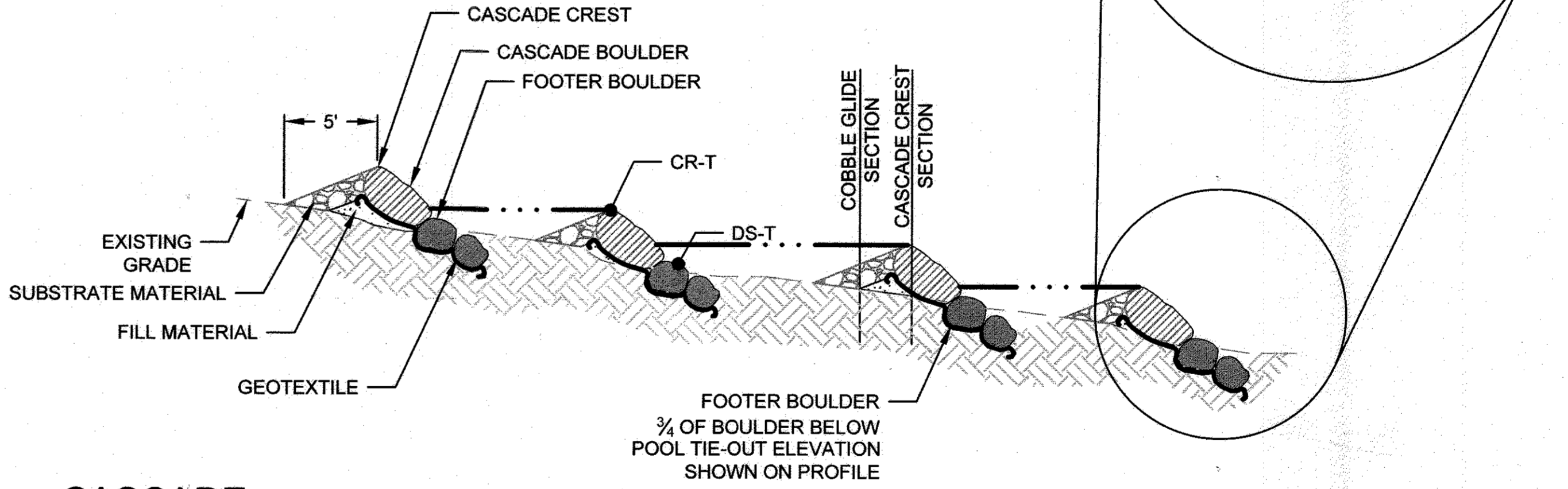


**CASCADE**  
**CROSS SECTION - STA 10+00 TO 10+69.6** SCALE: 1"=5'

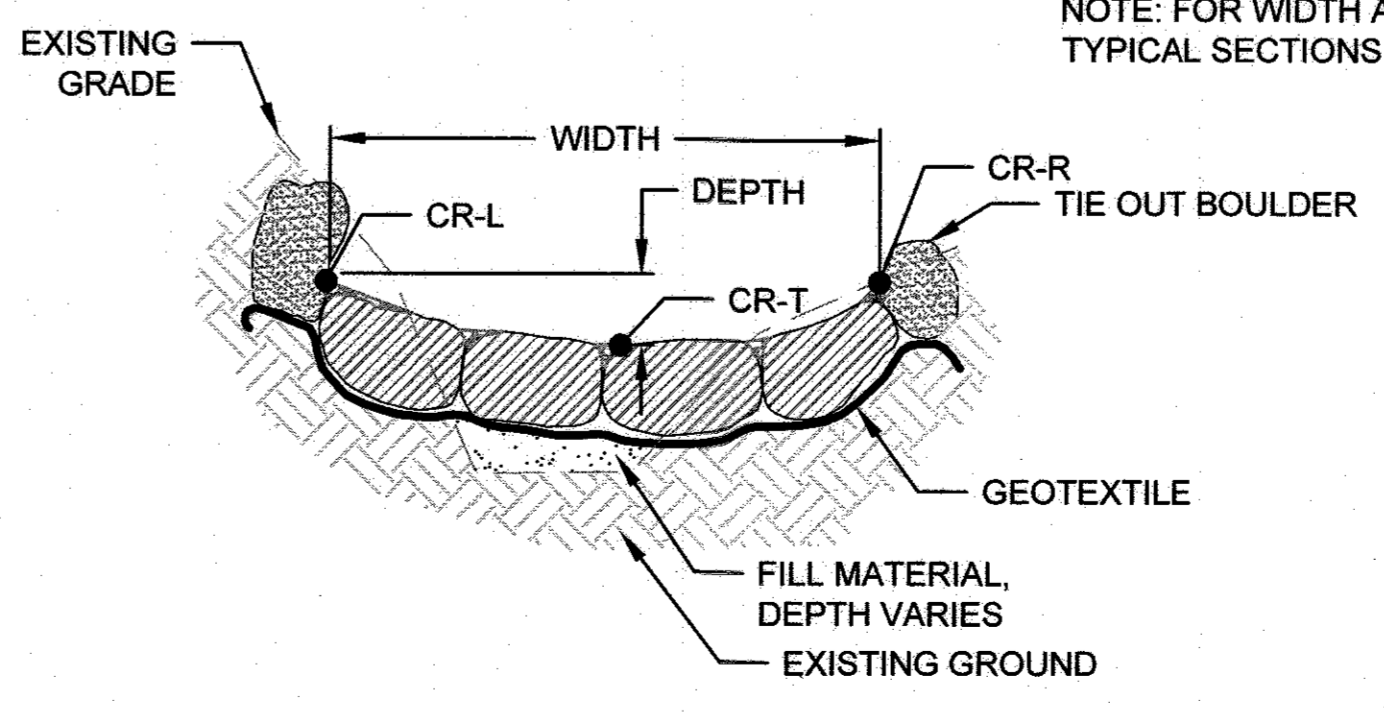


**CASCADE**  
**PLAN VIEW** NOT TO SCALE

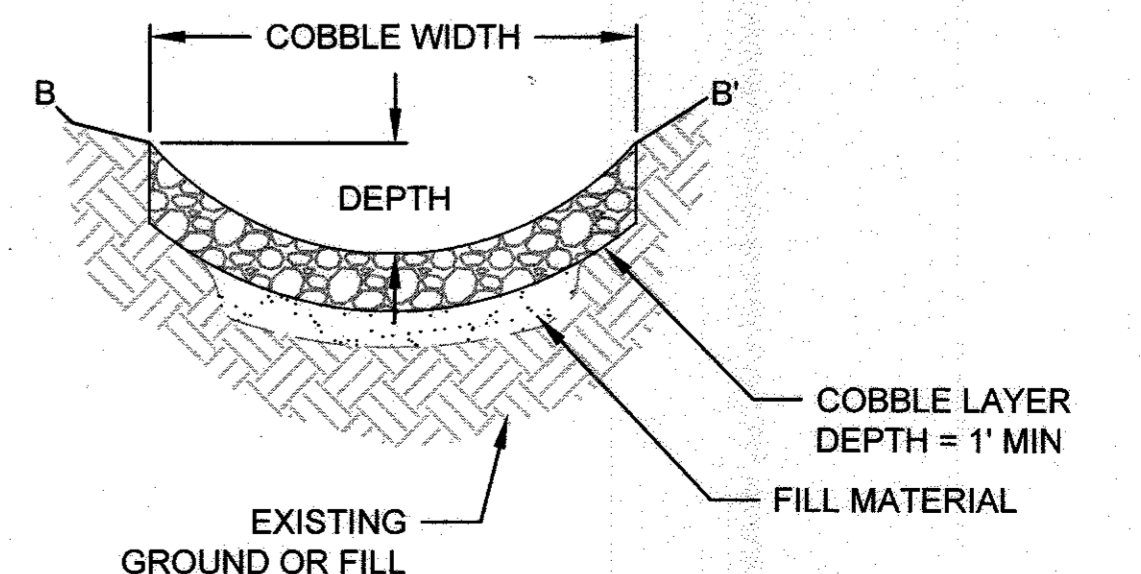
- NOTES
1. GAPS BETWEEN BOULDERS SHALL BE CHINKED WITH COBBLE
  2. TYPICALLY, CASCADE BOULDER A-AXIS WILL BE ORIENTED IN DIRECTION OF FLOW. FOOTER BOULDERS A-AXIS WILL BE ORIENTED PERPENDICULAR TO FLOW.
  3. SEE SPECIFICATIONS FOR COBBLE SIZE AND DEPTH



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



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



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

**CLIENT**  
*Howard Hughes*  
 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 6-21-17

CHIEF, DIVISION OF LAND DEVELOPMENT DATE 6-26-17

DIRECTOR DATE 6-29-17

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 Baltimore, MD 21211 / ph: 410.554.0156  
 fx: 410.554.0168 / www.biohabitats.com  
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**SYMPHONY STREAM**  
**SITE 5 (SS-S5)**  
**RESTORATION**

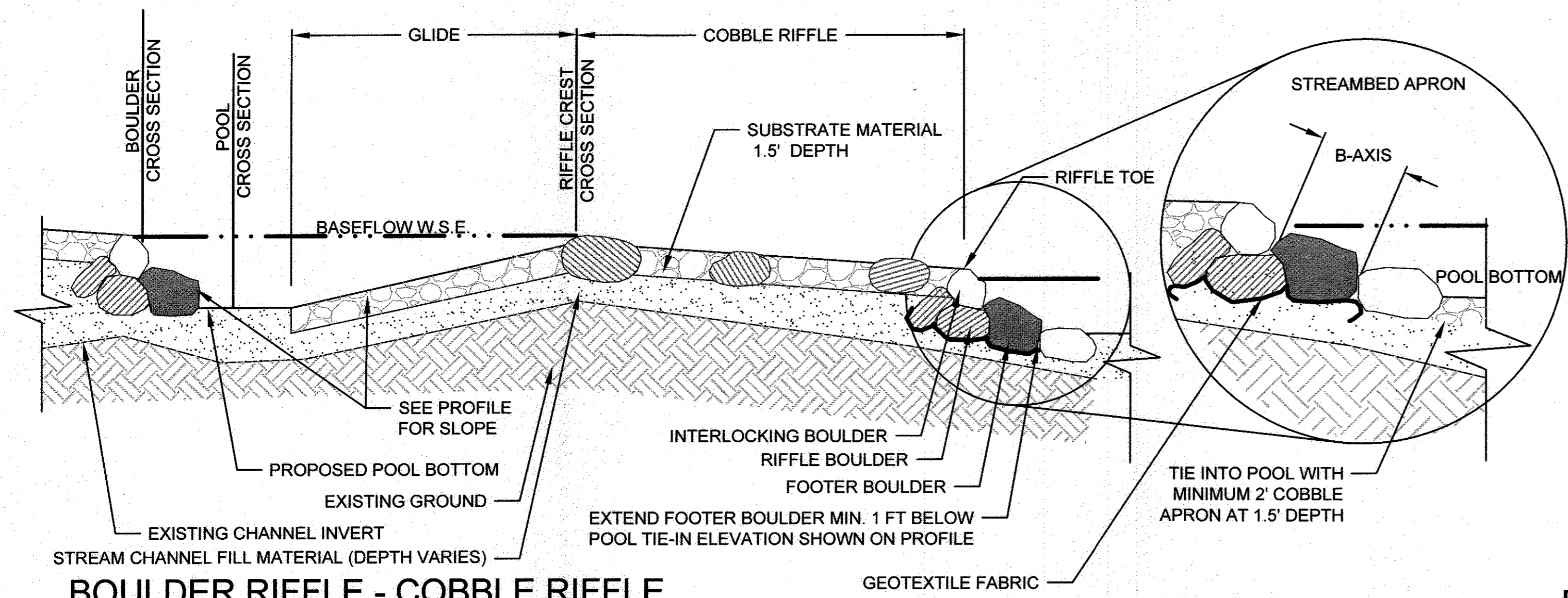
COLUMBIA TOWN CENTER ELECT. DIST. 5-15 GRID #ALPHA 6 CURRENT ZONING: NT HOWARD COUNTY, MD TAX MAP NO. 35-36 PARCEL #13689 L. 5289 F. 330

**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

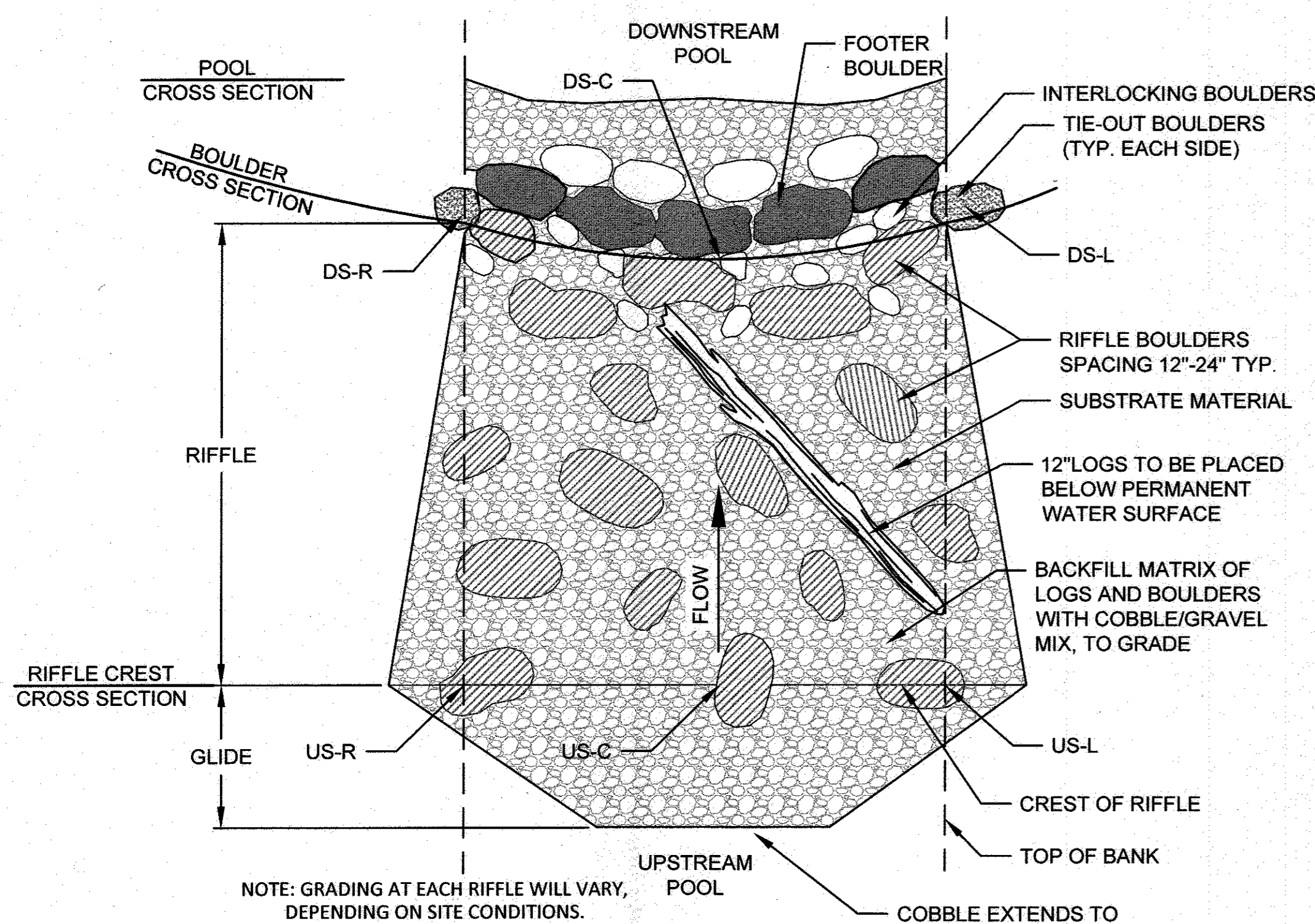
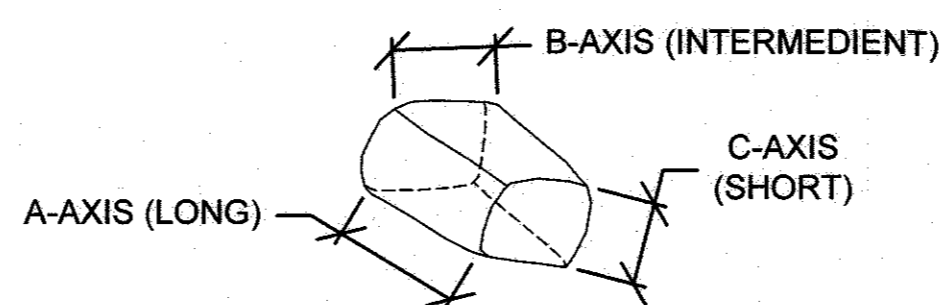
- COBBLE RIFFLE NOTES:**
1. IN AREAS OF CUT, STREAM CHANNEL FILL MATERIAL UNDER RIFFLE IS NOT NEEDED. IN AREAS OF FILL, EXISTING STREAM CHANNEL TO BE FILLED IN 8" LIFTS TO ELEVATION SPECIFIED ON PROFILE.
  2. TIE-OUT BOULDER SHALL EXTEND PAST THE CORNER NODES DS-R & DS-L A MINIMUM OF ONE BOULDER LENGTH (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**

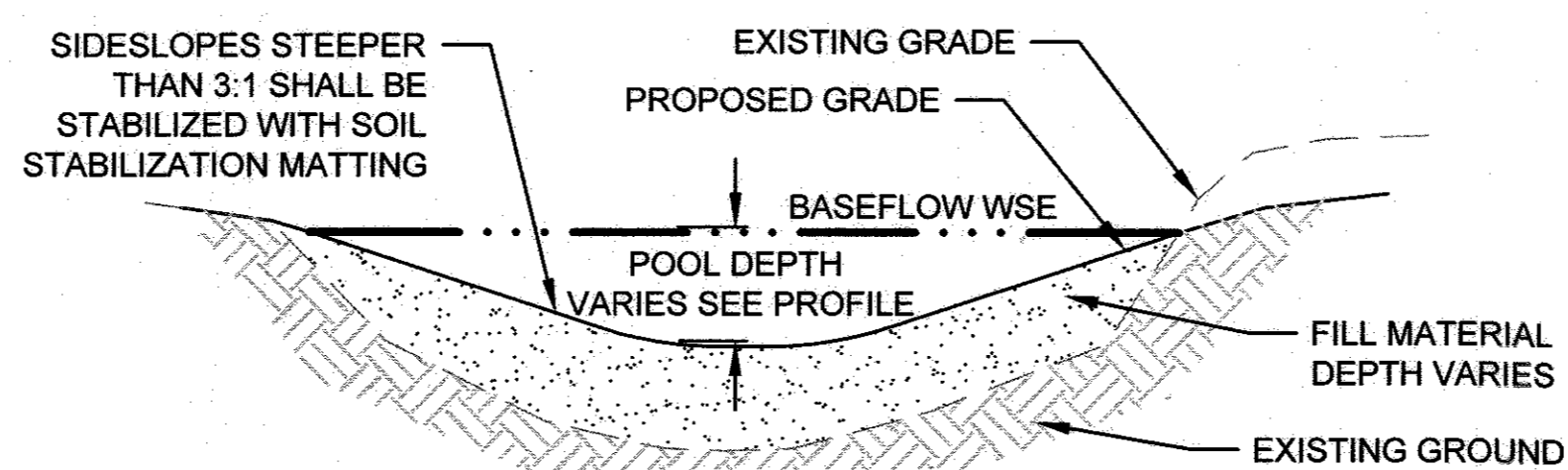
BOULDER TYPE	A-AXIS	B-AXIS	C-AXIS
RIFFLE/CASCADE	3.5-4.5	2.5-3.5	1.6-2.0
FOOTER	3.5-4.5	2.5-3.5	1.6-2.0
TIE-OUT	3.0-4.0	2.5-3.5	1.6-2.0
INTERLOCKING	2.0-3.0	1.5-2.0	1.2-1.5

**SUBSTRATE MATERIAL GRADATION TABLE**

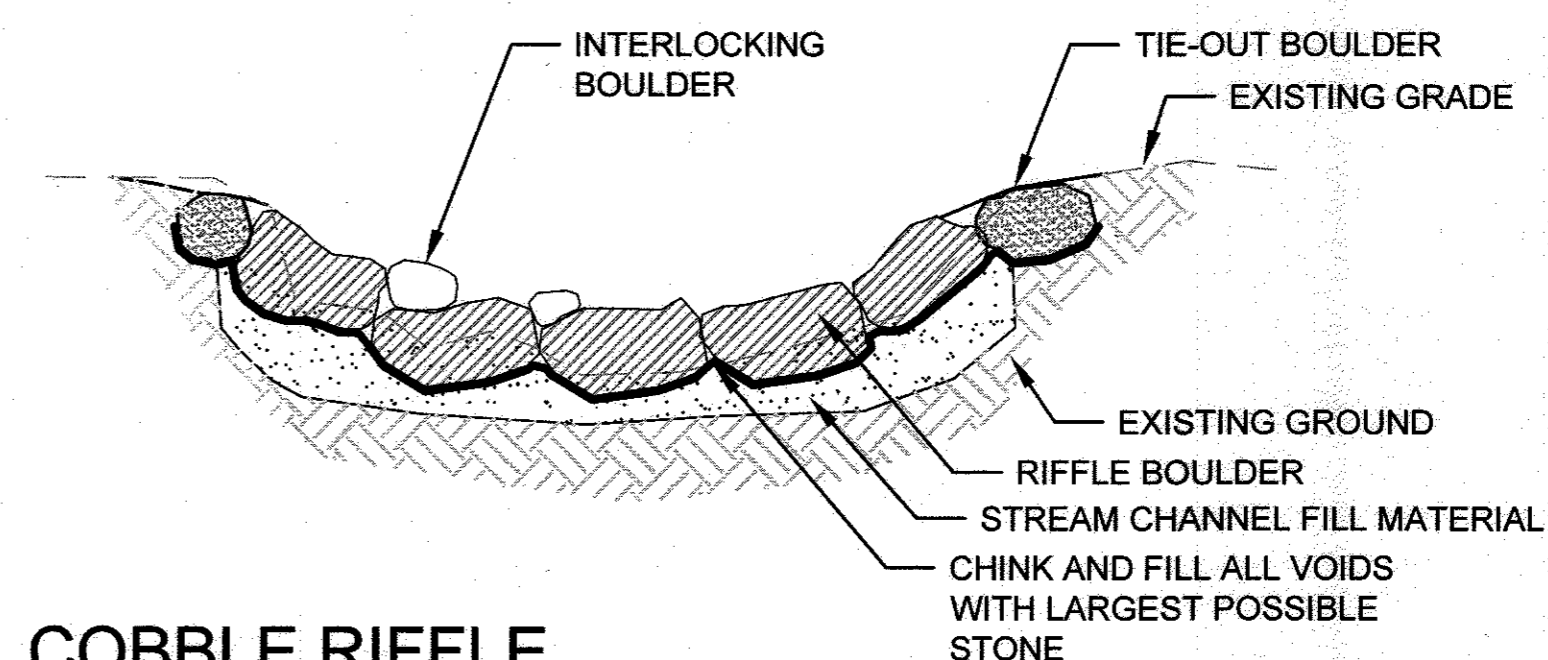
CUMULATIVE % FINER	COBBLE SIZE (IN)
100	30(RIFFLE BOULDERS)
84	12
50	5
16	1.5



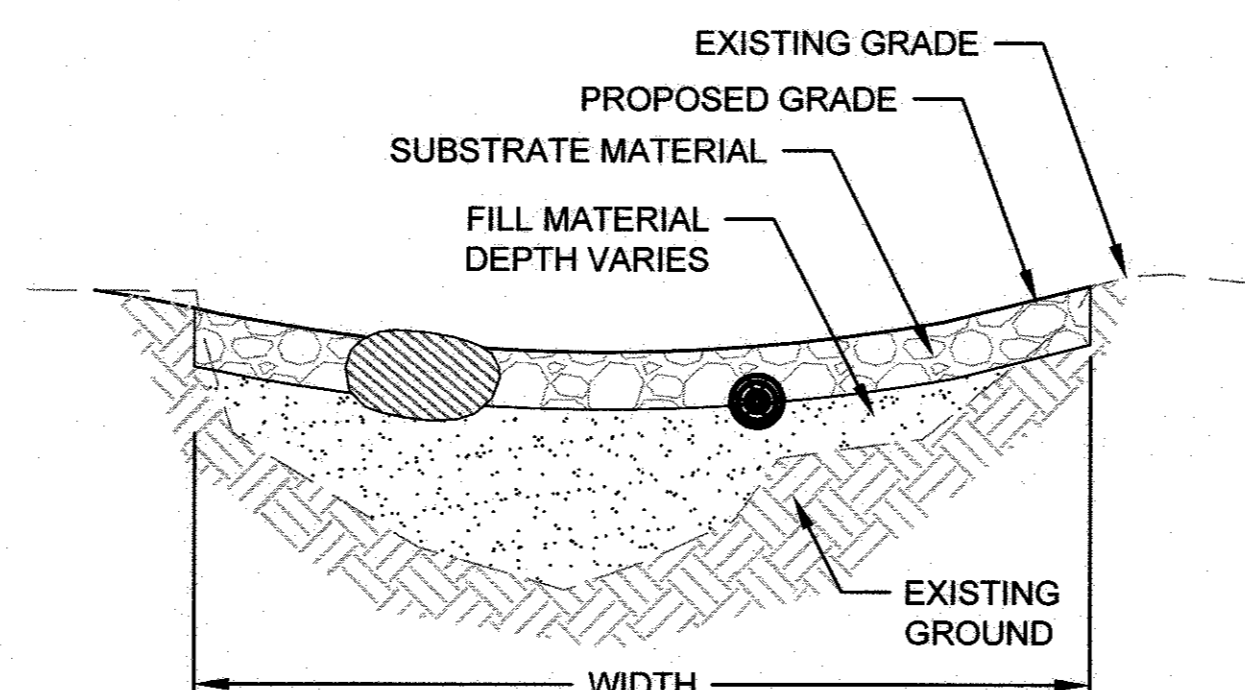
**COBBLE RIFFLE  
PLAN VIEW**  
NOT TO SCALE



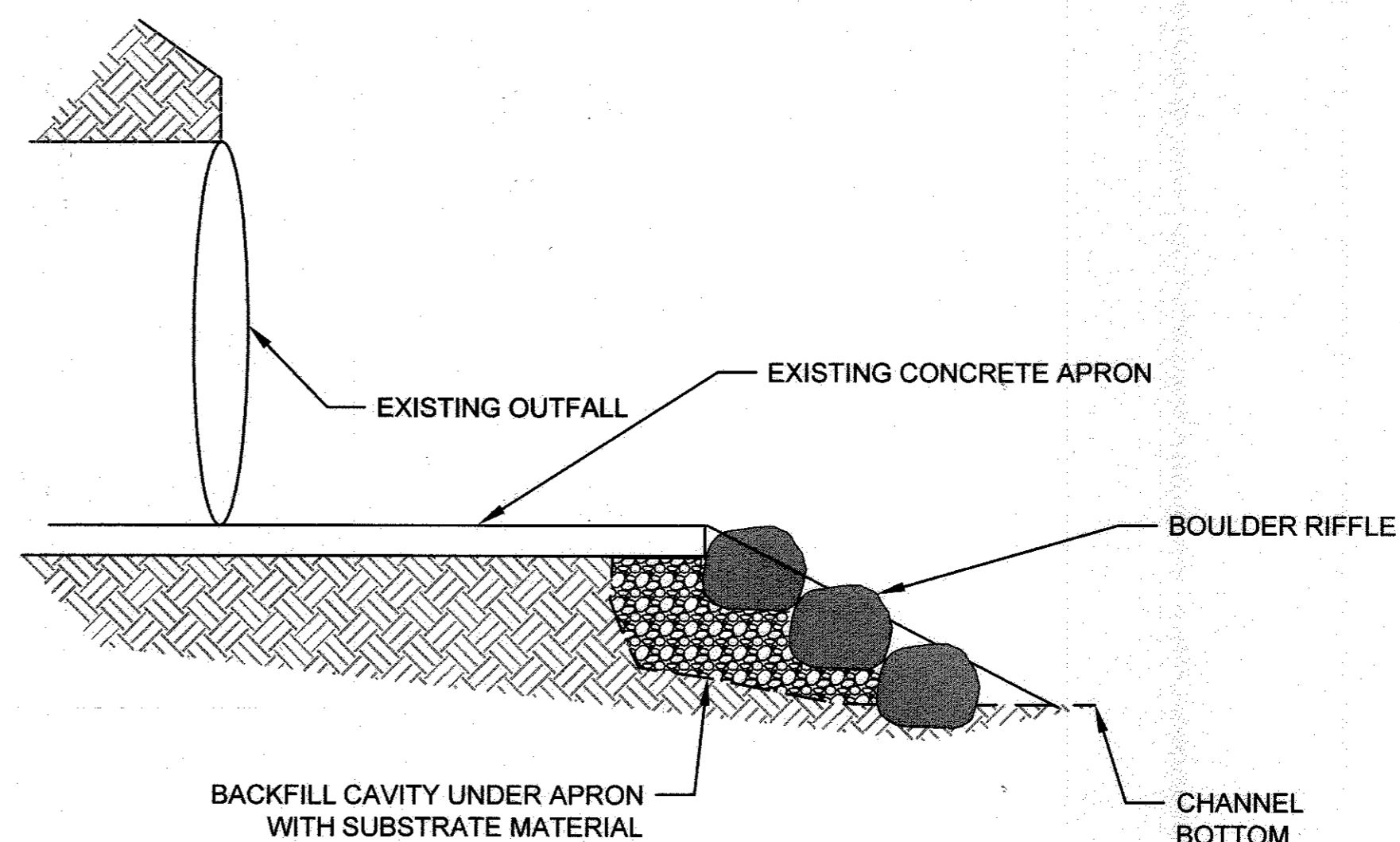
**COBBLE RIFFLE  
POOL CROSS SECTION**  
NOT TO SCALE



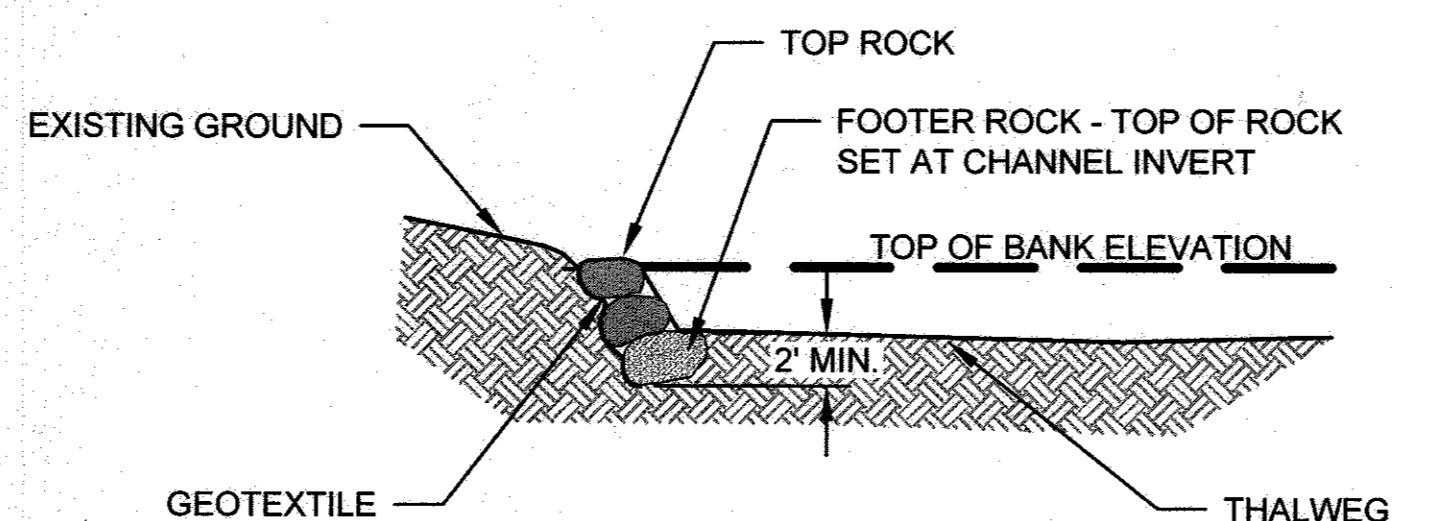
**COBBLE RIFFLE  
BOULDER CROSS SECTION**



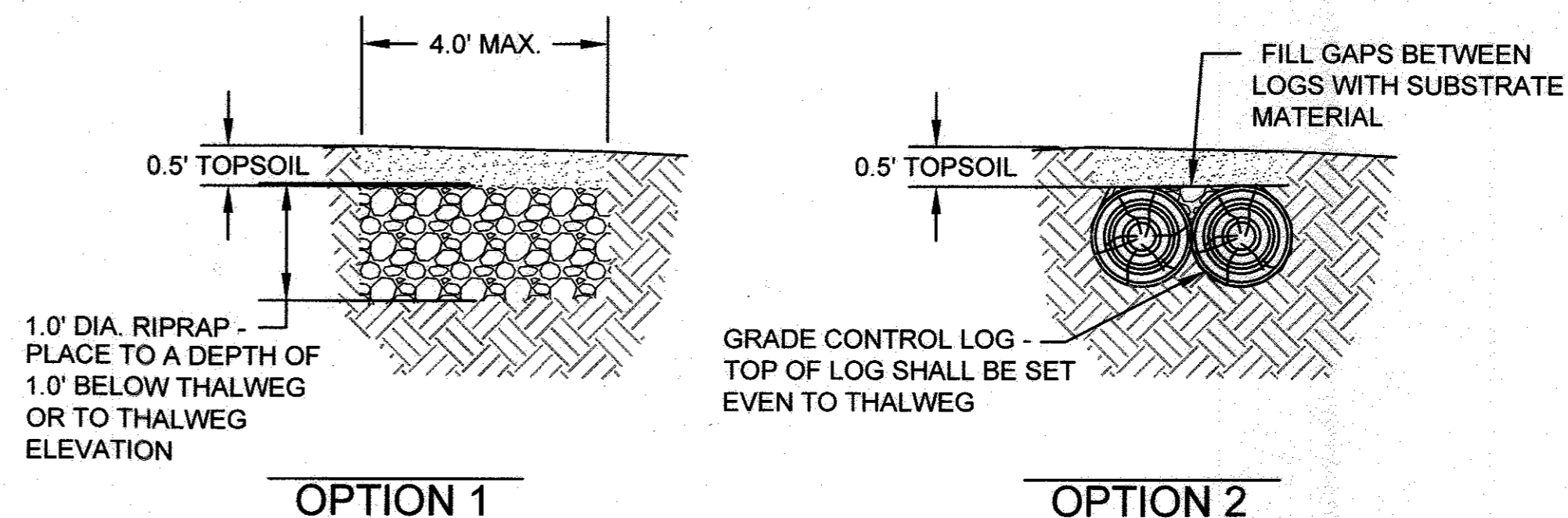
**COBBLE RIFFLE  
RIFFLE CREST CROSS SECTION**  
NOT TO SCALE



**OUTFALL APRON AT STA 0+00  
PROFILE**  
NOT TO SCALE



**BOULDER TOE PROTECTION  
CROSS SECTION**  
NOTE: INCLINATION OF WALL FROM HORIZONTAL SHALL BE 1H:2V  
NOT TO SCALE



**BURIED SILL  
SECTION**  
NOT TO SCALE

**CLIENT**  
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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

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division 4-26-17  
DATE

Chief, Division of Land Development 6-26-17  
DATE

Director 6-29-17  
DATE

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**SYMPHONY STREAM  
SITE 5 (SS-S5)  
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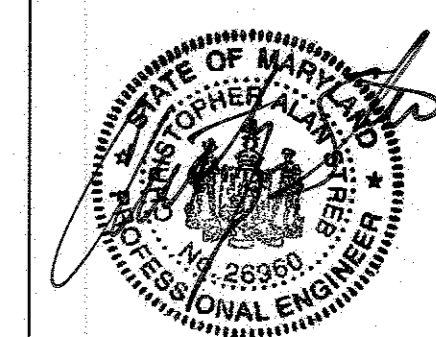
COLUMBIA TOWN CENTER HOWARD COUNTY, MD  
ELECT. DISTR. 5-15 TAX MAP NO. 35.35  
GRID #ALPHA 6 PARCEL #13689  
CURRENT ZONING: NT L. 5289 F. 330

TITLE

**DETAILS**

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

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



7 OF 12

# 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 TREES, 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 PROTECT CRITICAL ROOT ZONES WITHIN LOD WITH A MINIMUM OF 12" OF MULCH IF EQUIPMENT ACCESS IS NEEDED WITHIN THESE AREAS.
- 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.

# 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 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	0.83	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 BEEN 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 II MARCH 1 - JUNE 15
  - USE III AND IIII 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

*Howard Hughes*  
THE HOWARD HUGHES CORPORATION

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COLUMBIA, MD 21044  
PHONE: 410-964-4800

DATE ISSUES / REVISIONS

APPROVED: DEPARTMENT OF PLANNING AND ZONING

*W. J. Chisholm* 6-21-17  
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

*W. J. Chisholm* 6-26-17  
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

*W. J. Chisholm* 6-29-17  
DIRECTOR DATE

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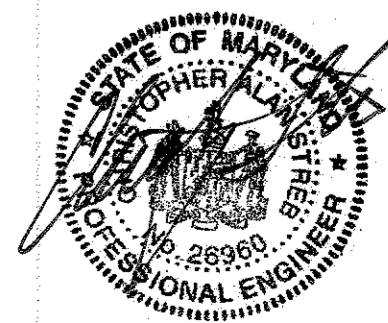
## SYMPHONY STREAM SITE 5 (SS-S5) RESTORATION

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

TITLE  
**EROSION AND  
SEDIMENT CONTROL  
NOTES**

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

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

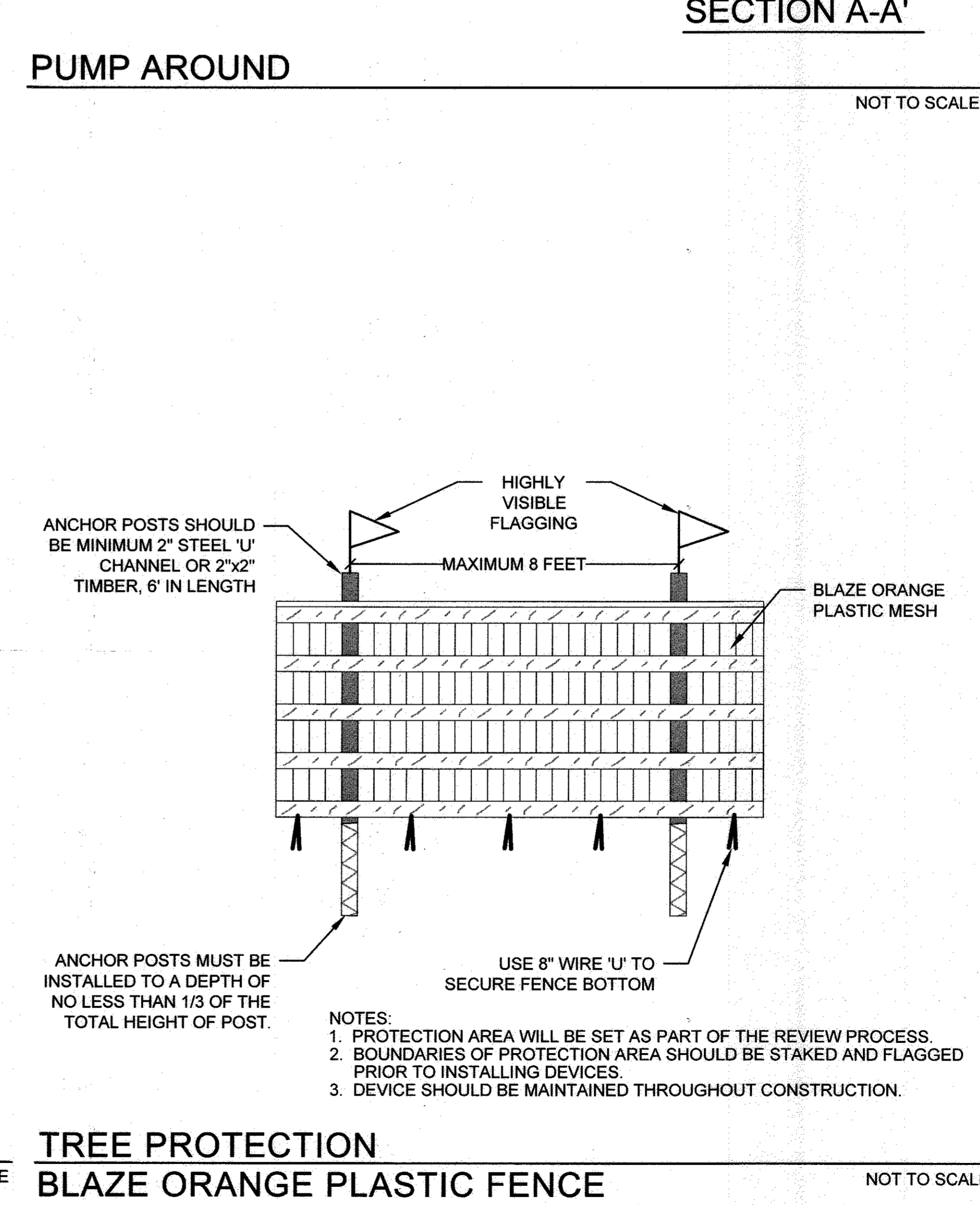
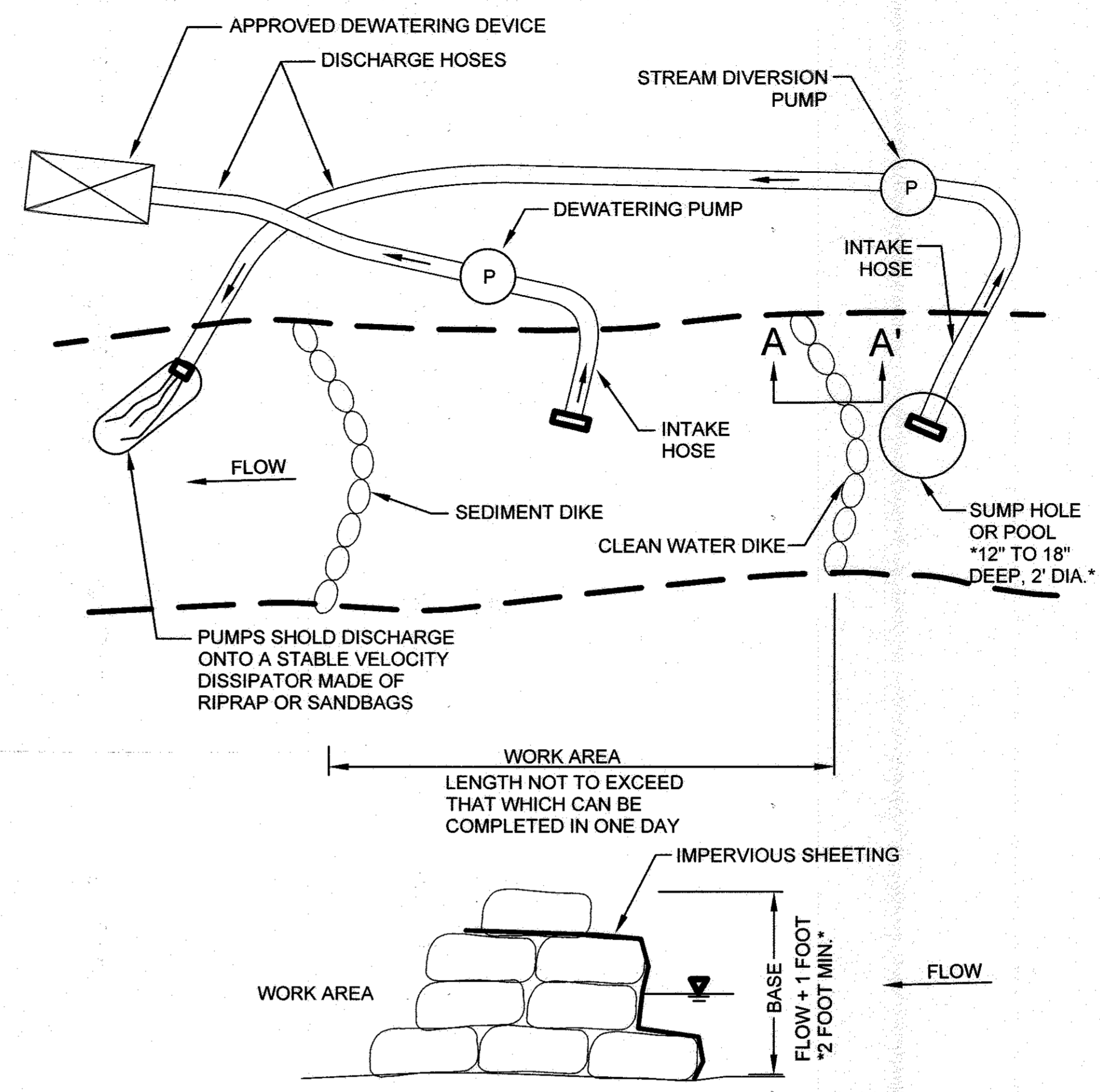
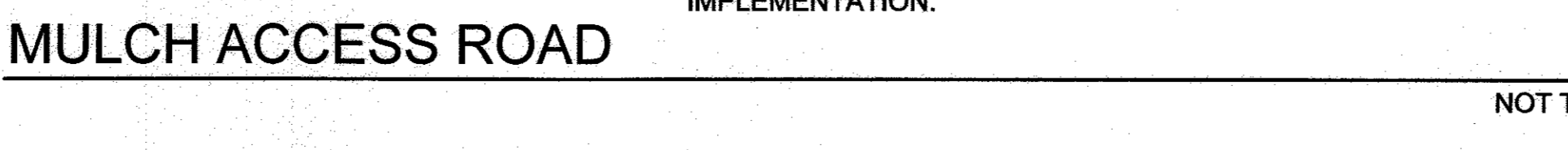
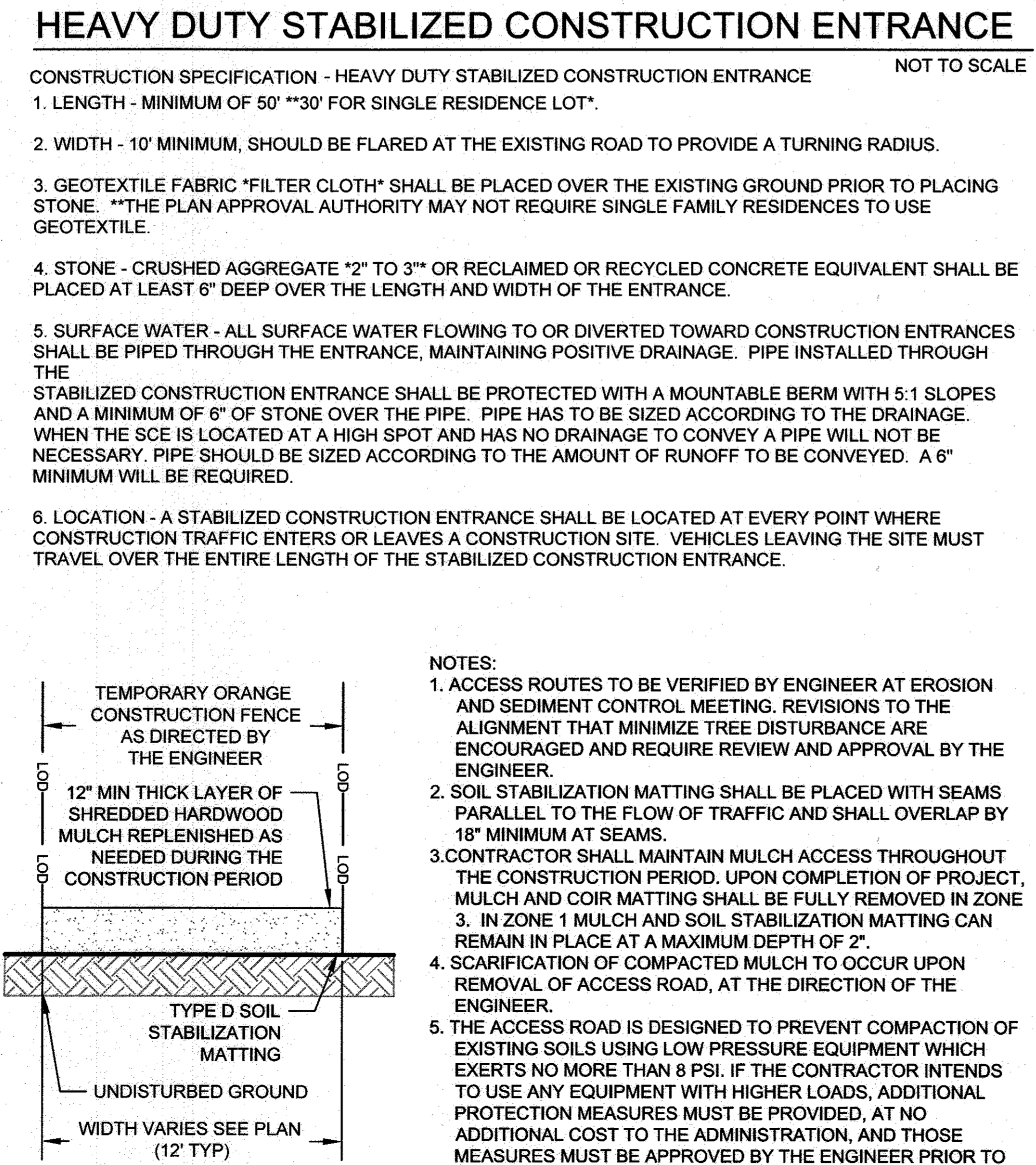
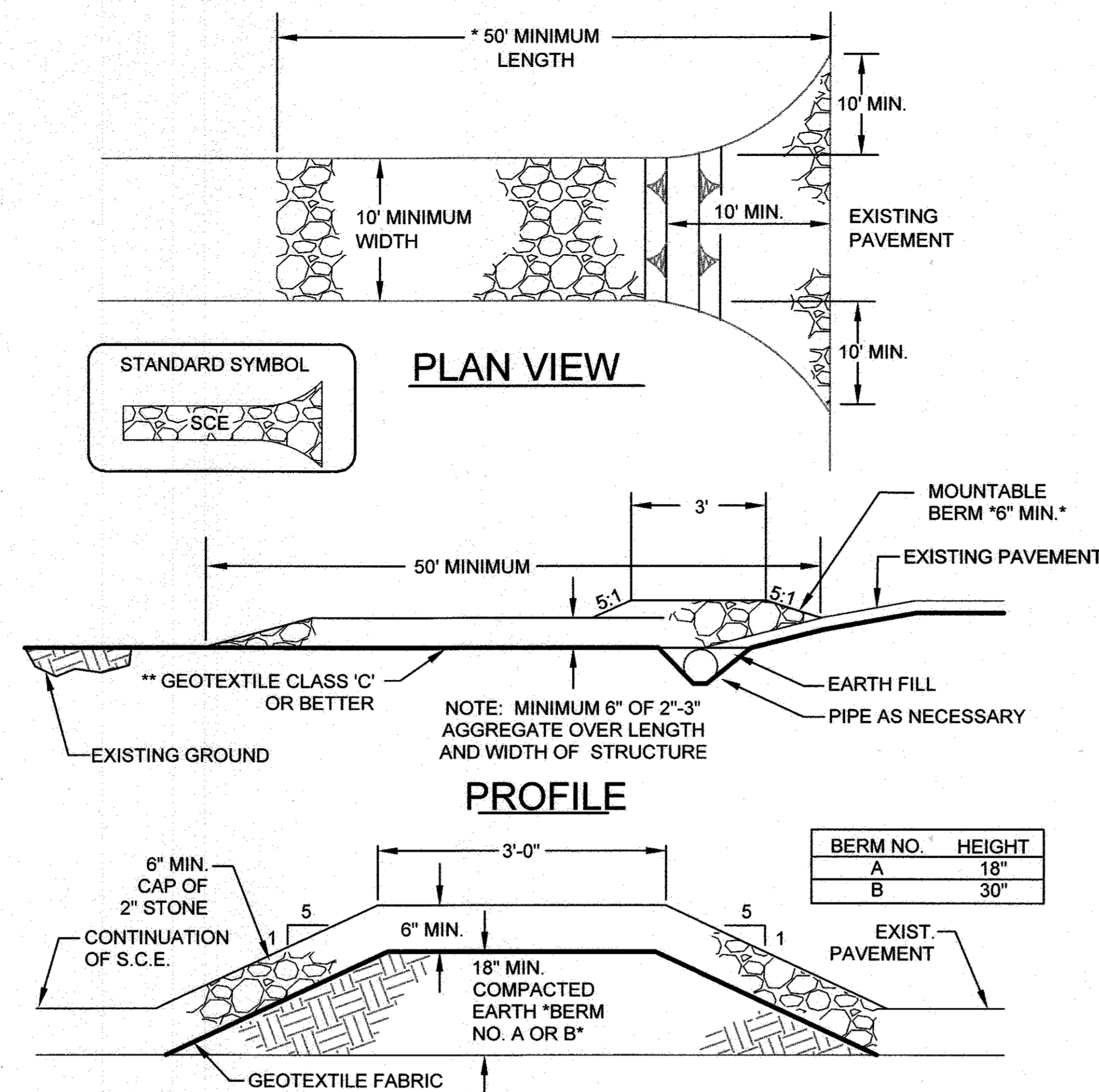
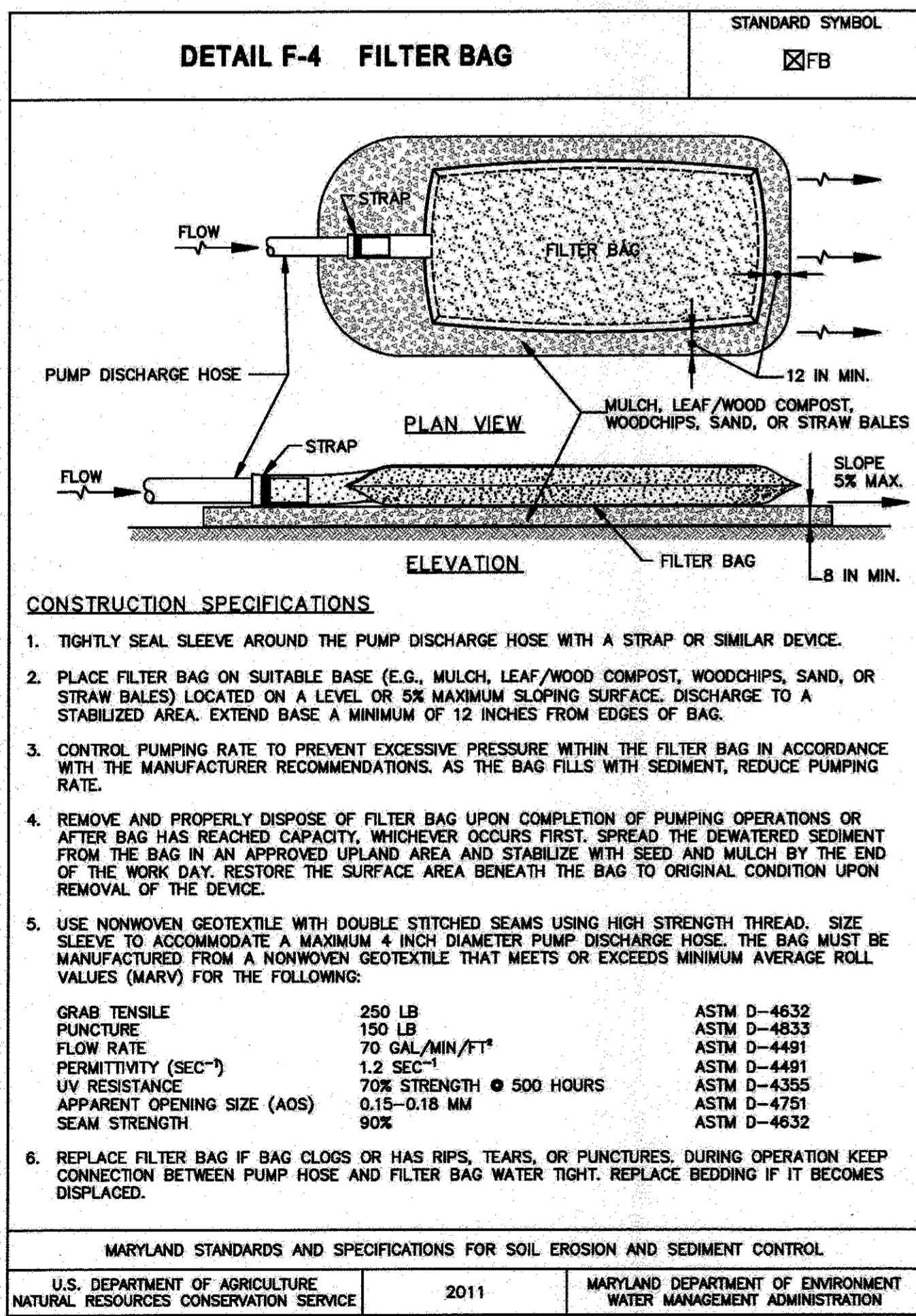
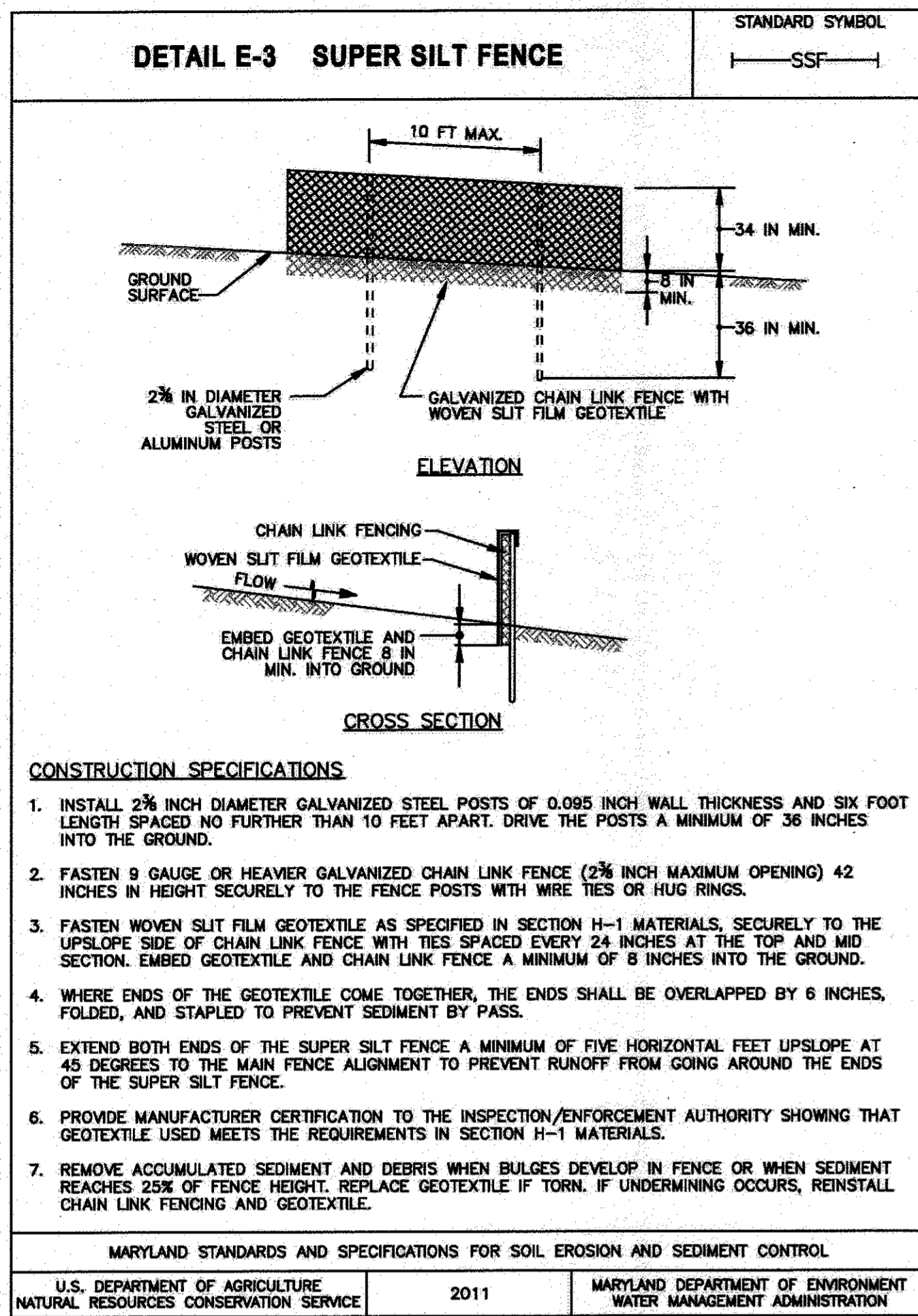


8 OF 12

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

*John R. Roberts* 6/28/17  
HOWARD SCD DATE





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

*John R. Blanton* 9/12/17  
HOWARD SCD DATE

CLIENT  
**Howard Hughes**  
THE HOWARD HUGHES CORPORATION  
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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

*David Blanton* 4-21-17  
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

*Katrina Jones* 6-26-17  
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

*Walter Jones* 6-29-17  
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 #13699 L. 5289 F. 330

TITLE: **EROSION AND SEDIMENT CONTROL DETAILS**

PROJECT NO: 13020.05 SCALE: N.T.S.  
SEAL: BY: SH, KT CHECK: MT  
DWG. NO.: 9 OF 12

*John R. Blanton*  
PROFESSIONAL ENGINEER  
STATE OF MARYLAND  
No. 28900  
EXPIRES 12/31/2018

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
1. Temporary Stabilization
a. Seedbed preparation consists of loosening soil to a depth of 3 to 5 inches by means of suitable agricultural or construction equipment...
b. Apply fertilizer and lime as prescribed on the plans.
c. Incorporate lime and fertilizer into the top 3 to 5 inches of soil by disking or other suitable means.
2. Permanent Stabilization
a. A soil test is required for any earth disturbance of 5 acres or more. The minimum soil conditions required for permanent vegetative establishment are:
i. Soil pH between 6.0 and 7.0.
ii. Soluble salts less than 500 parts per million (ppm).
iii. Soil contains less than 40 percent clay but enough fine grained material (greater than 50 percent silt plus clay) to provide the capacity to hold a moderate amount of moisture...
iv. Soil contains 1.5 percent minimum organic matter by weight.
v. Soil contains sufficient pore space to permit adequate root penetration.
b. Application of amendments or topsoil is required if on-site soils do not meet the above conditions.
c. 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.
d. Apply soil amendments as specified on the approved plan or as indicated by the results of a soil test.
e. 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.

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

- 1. 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.
2. For sites having soil tests performed, use and show the recommended rates by the testing agency. Soil tests are not required for Temporary Seeding.
3. 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

Table with columns: No., Species, Application Rate (lb/ac), Seeding Dates, Seeding Depths, Fertilizer Rate (10-20-20), Lime Rate. Includes rows for ANNUAL RYEGRASS and FOXTAIL MILLET.

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
1. General Use
a. 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.
b. 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.
c. For sites having disturbed areas over 5 acres, use and show the rates recommended by the soil testing agency.
d. 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.
2. Turfgrass Mixtures
a. Areas where turfgrass may be desired include lawns, parks, playgrounds, and commercial sites which will receive a medium to high level of maintenance.
b. 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.
i. 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.
ii. Kentucky Bluegrass/Perennial Rye: Full Sun Mixture: For use in full sun areas where

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT. John L. Robutan 4/12/17

DETAIL B-4-6-B TEMPORARY SOIL STABILIZATION MATTING SLOPE APPLICATION. STANDARD SYMBOL TSSMS - \* 2.0 lb/ft² (\* INCLUDE SHEAR STRESS). Includes an isometric view diagram and construction specifications for matting application.

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

- 1. The stockpile location and all related sediment control practices must be clearly indicated on the erosion and sediment control plan.
2. 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.
3. Runoff from the stockpile area must drain to a suitable sediment control practice.
4. Access the stockpile area from the upgrade side.
5. 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.
6. Where runoff concentrates along the toe of the stockpile fill, an appropriate erosion/sediment control practice must be used to intercept the discharge.
7. 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.
8. 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 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.43

Permanent Seeding Summary

Table with columns: No., Species, Application Rate (lb/ac), Seeding Dates, Seeding Depths, Fertilizer Rate (10-20-20) (N, P2O5, K2O), Lime Rate. Includes rows for DEERTONGUE, CREEPING RED FESCUE, and VIRGINIA WILD RYE.

- B. Sod: To provide quick cover on disturbed areas (2:1 grade or flatter).
1. General Specifications
a. Class of turfgrass sod must be Maryland State Certified. Sod labels must be made available to the job foreman and inspector.
b. Sod must be machine cut at a uniform soil thickness of 3/4 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.
c. 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.
d. Sod must not be harvested or transplanted when moisture content (excessively dry or wet) may adversely affect its survival.
e. 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.
2. Sod Installation
a. During periods of excessively high temperature or in areas having dry soil, lightly irrigate the subsoil immediately prior to laying the sod.
b. 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.
c. Whenever 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.
d. 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.
3. Sod Maintenance
a. 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.
b. After the first week, sod watering is required as necessary to maintain adequate moisture content.
c. 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

CHIEF, BUREAU OF ENVIRONMENTAL SERVICES DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION 4/26/17 DATE

CHIEF, DIVISION OF LAND DEVELOPMENT 6/26/17 DATE

DIRECTOR 6/29/17 DATE

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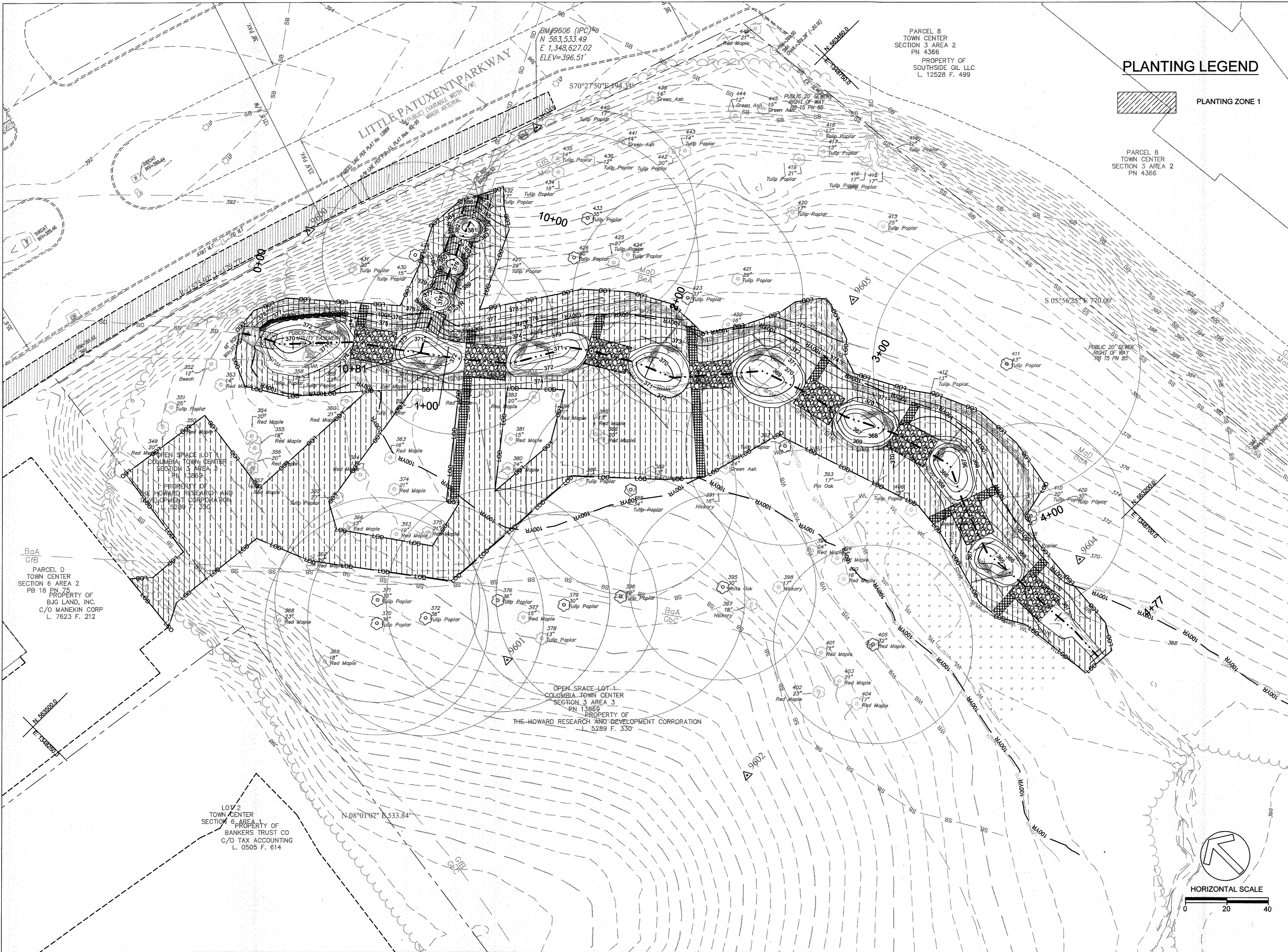
SYMPHONY STREAM SITE 5 (SS-S5) RESTORATION

COLUMBIA TOWN CENTER ELECT DISTRICT 5-15 GRID BALPHA 6 CURRENT ZONING: NT HOWARD COUNTY, MD TAX MAP NO. 55-38 PARCEL #19889 L 5289 F 330

EROSION AND SEDIMENT CONTROL DETAILS

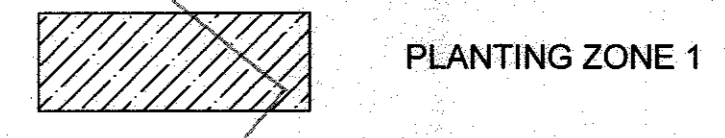
PROJECT NO.: 13020.05 SCALE: N.T.S. SEAL: BY: SH, KT CHECK: MT DWG NO.:

Professional Engineer Seal for Howard County, Maryland, License No. 28960, dated 4/12/17.



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

**PLANTING LEGEND**



PLANTING ZONE 1

PARCEL 8  
TOWN CENTER  
SECTION 3 AREA 2  
PN 4366

**CLIENT**  
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10480 LITTLE PATUXENT PARKWAY  
SUITE 400  
COLUMBIA, MD 21044

DATE ISSUES / REVISIONS

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CHIEF: BUREAU OF ENVIRONMENTAL SERVICES DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING

*Chad Clark* 4-26-17  
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

*Karl S. Jones* 6-26-17  
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

*Nathan J. Jaffe* 6-29-17  
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. 3536  
PARCEL #13689  
L. 5289 F. 330

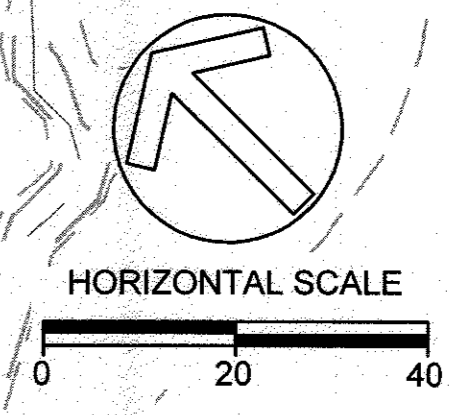
**PLANTING PLAN**

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

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



11 OF 12



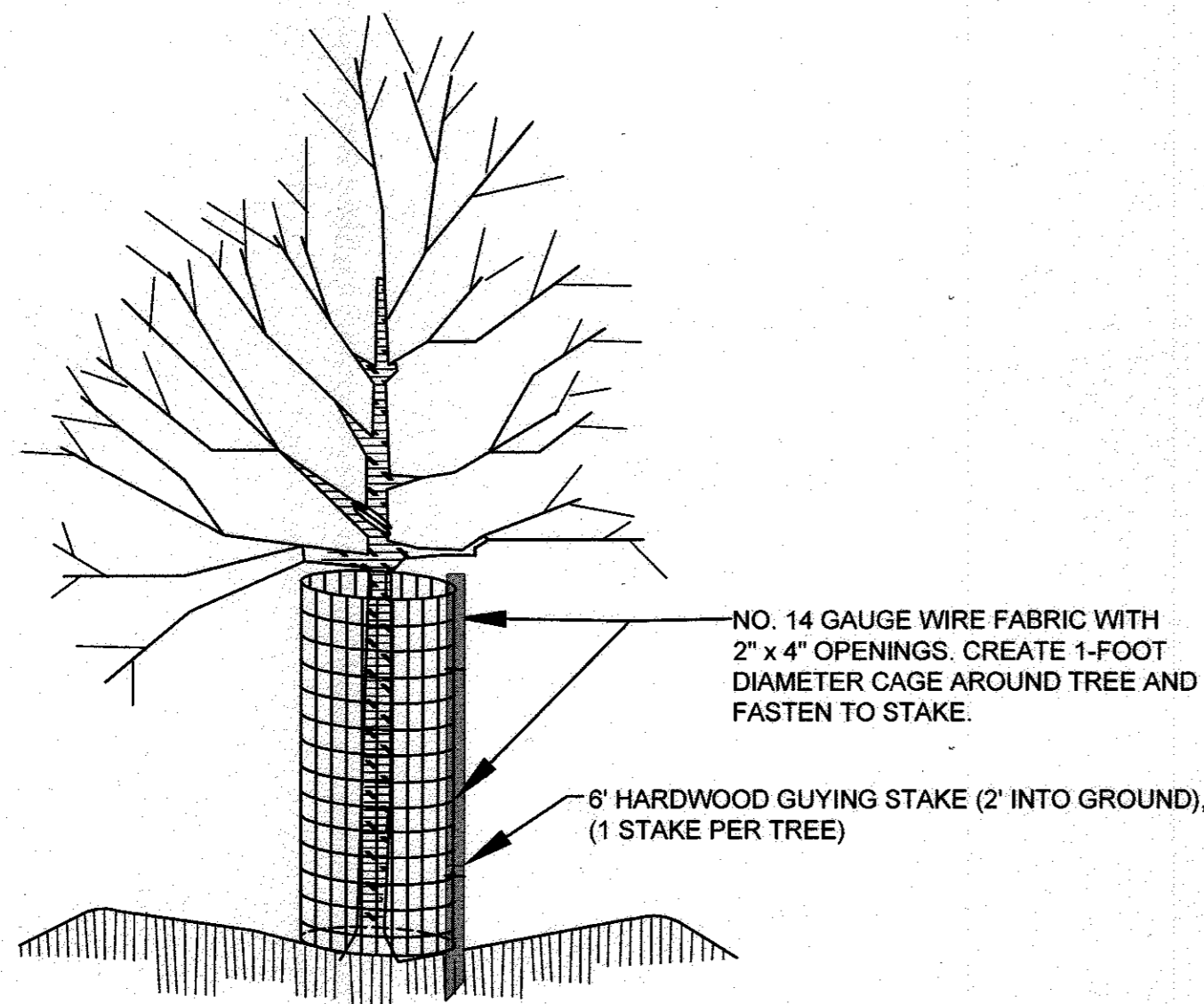
PLANT COMPOSITION SCHEDULE

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
		15	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	FACW	<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

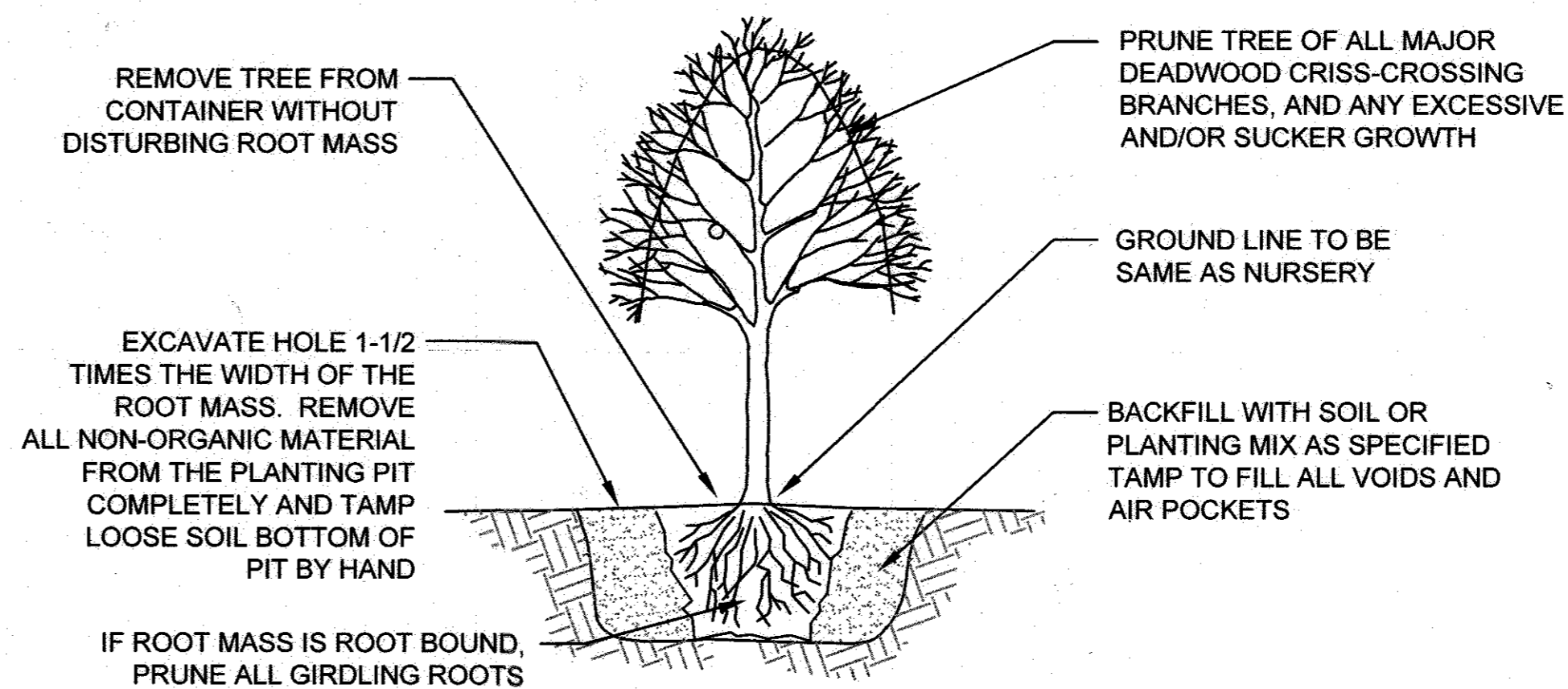


NOTES:

- 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.

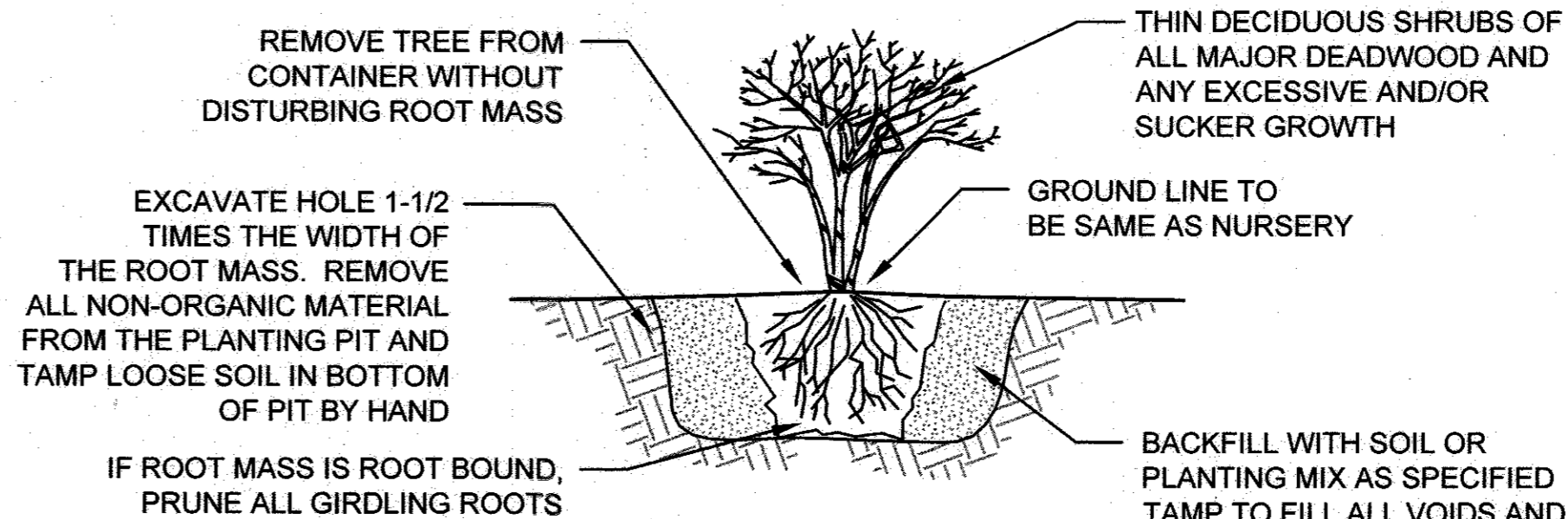
DEER PROTECTION CAGE

NOT TO SCALE



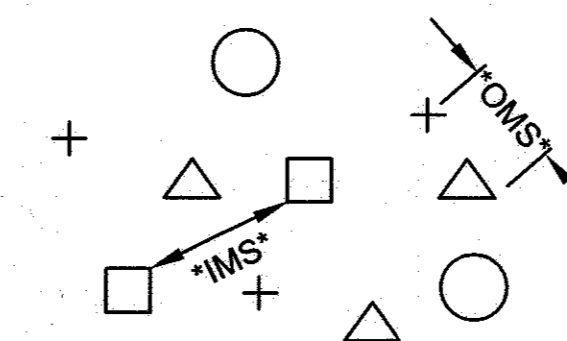
TREE PLANTING - CONTAINER GROWN

NOT TO SCALE



SHRUB PLANTING - CONTAINER GROWN

NOT TO SCALE



OMS- AN OVERALL MINIMUM SPACING DISTANCE \*OMS\* IS ASSIGNED TO THE PLANTING CONFIGURATION \*SEE PLANT SCHEDULE\*  
IMS- AN INDIVIDUAL MINIMUM SPACING DISTANCES \*IMS\* IS ASSIGNED TO EACH INDIVIDUAL SPECIES \*SEE PLANT SCHEDULE\*

PLANT SPACING - RANDOM

NOTE: EACH SYMBOL INDICATES A DIFFERENT SPECIES

PLAN VIEW

NOT TO SCALE

CLIENT

*Howard Hughes*  
THE HOWARD HUGHES CORPORATION

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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

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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

PLANTING DETAILS  
AND SCHEDULES

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

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

