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LEGEND

EXISTING	PROPOSED
THALWEG	CONTOURS
10" S SANITARY SEWER	THALWEGS
SDx STORM DRAIN	LIMIT OF DISTURBANCE
8" W POTABLE WATER	SILT FENCE
300 CONTOUR LINE	TOP OF BANK
TREELINE	COBBLE RIPPLE
PROPERTY LINE	ROCK STEP
TREE	CASCADE
EXISTING TRAFFIC POLE	BOULDER BANK
ELECTRIC JUNCTION BOX	BURIED SILL
TOP OF CURB ELEVATION	STABILIZED CONSTRUCTION ENTRANCE
FLOWLINE ELEVATION	TEMPORARY STAGING & STOCKPILE AREA
STORMDRAIN YARD INLET	
GAS METER	
GAS VALVE	
WATER METER	
WATER VALVE	
FIRE HYDRANT	
WATER MANHOLE	
SEWER MANHOLE	
SEWER CLEAN OUT	
TELCO MANHOLE	
TELCO RISER	
SIGN	
LIGHT POLE	
UTILITY POLE	
GUY WIRE	
ELEC. MANHOLE	
TRANSFORMER	
CONCRETE SIDEWALK	
ASPHALT WALK/PATH	
EXISTING ELECTRIC	
EXISTING GAS	
EXISTING CABLE	
EXISTING SEWER	
EXISTING STORM DRAIN	
EXISTING TELCO	
EXISTING WATER	
WETLAND	
WETLAND BUFFER	

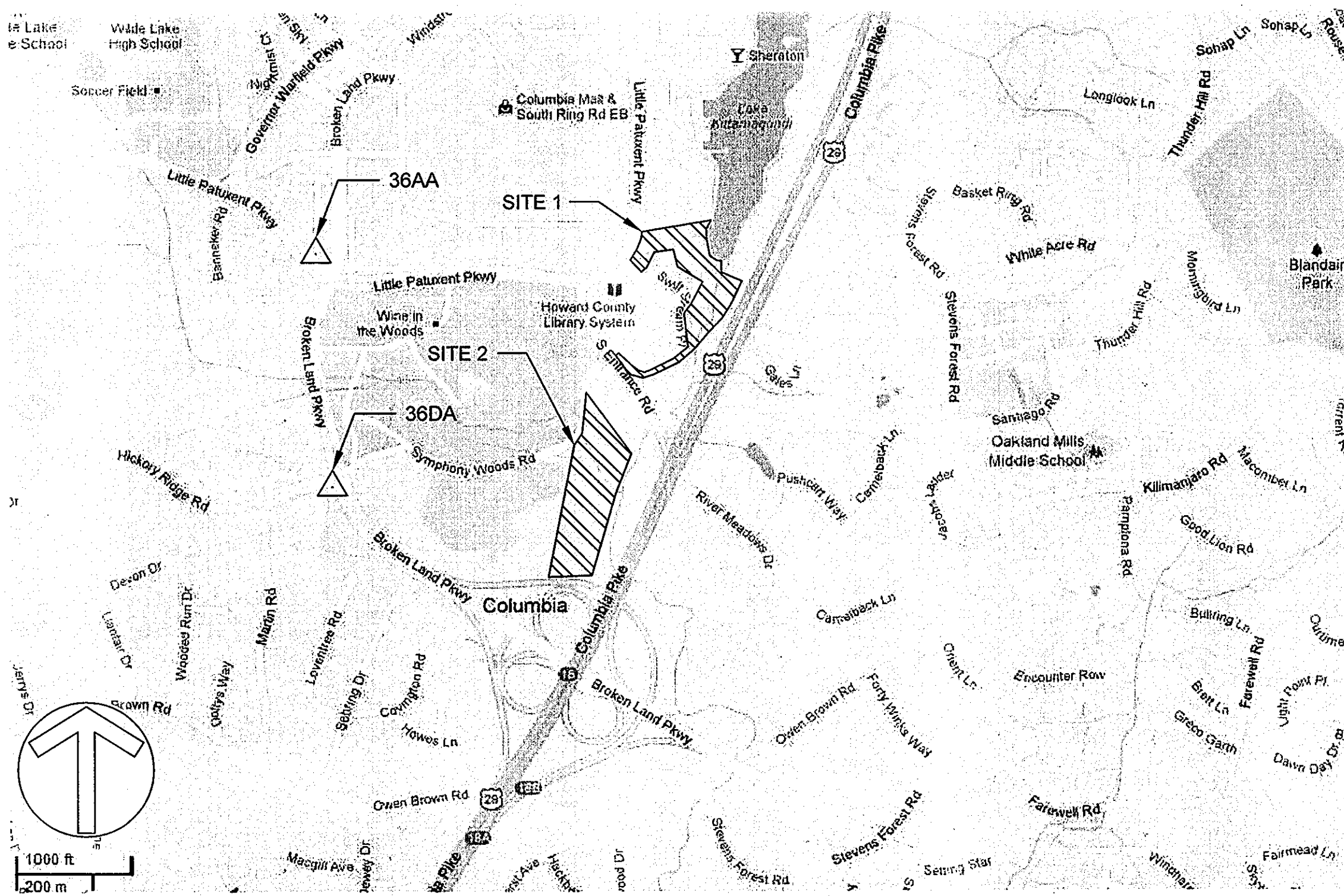
DOWNTOWN COLUMBIA FOREST ENHANCEMENT PLAN AND STREAM RESTORATION PLAN

SITE 1 & SITE 2

COLUMBIA TOWN CENTER SECTION 1, AREA 3

COLUMBIA TOWN CENTER SECTION 5, AREA 2,3,4

COLUMBIA, MARYLAND



SITE VICINITY MAP

ADC MAP COORD. MAP: 33, GRID: B-1

COORDINATES BASED ON NAD '83 MARYLAND COORDINATE SYSTEM AS PROJECTED BY HOWARD COUNTY GEODETIC CONTROL STATIONS Nos. 36DA AND 36AA.

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

SITE ANALYSIS DATA CHART - FOREST ENHANCEMENT

- TOTAL PROJECT AREA: 20.68 ACRES (900,745.90 SF).
- DISTURBED AREA: 0.0 ACRES
- PRESENT ZONING DESIGNATION: NT
- PROPOSED USE FOR THE SITE: OPEN SPACE

SITE ANALYSIS DATA CHART - STREAM

- TOTAL PROJECT AREA 197 ACRES (8,146,000 SF)
- DISTURBED AREA 1.87 ACRES (81,460 SF)
- PRESENT ZONING DESIGNATION NT
- PROPOSED USE FOR THE SITE: RESTORATION AND CONSERVATION PRESERVATION
- OPEN SPACE ON SITE 1.87 ACRES (81,460 SF)

NON-TIDAL WETLANDS & WATERWAYS PERMIT

5/19/2013 STATE OF MARYLAND Letter of AUTHORIZATION 13-NT-3023/201360180
 7/2/2013 NATIONAL PERMIT APPLICATION APPROVAL CWA 401-OP-RUN (Howard Hughes Corp. / SYMPHONY WOODS) 2013-60181 - M02

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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 SUBJECT PROPERTIES ARE ZONED NT PER FEBRUARY 2, 2004 COMPREHENSIVE ZONING PLAN AND THE COMPLETE ZONING AMENDMENTS DATED 7/28/2006.
- 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 16.1202(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.
- ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY CONTAINED HEREIN 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 24 HOURS IN ADVANCE OF ANY WORK BEING DONE.
- THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION WORK BEING DONE. NO EXCAVATION IS PROPOSED FOR THIS WORK EFFORT.
- THE COORDINATES SHOWN HEREIN ARE BASED ON HOWARD COUNTY GEODETIC CONTROL, WHICH IS BASED UPON THE MARYLAND STATE PLANE COORDINATE SYSTEM. HOWARD COUNTY MONUMENTS NUMBER 36AA AND 36DA WERE USED FOR THIS SITE.
- NO FOREST ENHANCEMENT ACTIVITIES ARE PROPOSED IN EASEMENTS (SEWER & UTILITY, PEDESTRIAN OVERPASS, STORM DRAIN, RETAINING WALL MAINTENANCE, ETC.).
- WATER IS PUBLIC.
- SEWER IS PUBLIC.
- STORMWATER MANAGEMENT IS NOT REQUIRED FOR THIS PROJECT SINCE THE PROJECT WILL NOT ADD IMPERVIOUS AREA NOR WILL IT CHANGE THE EXISTING HYDROLOGY OF THE SITE.
- EXISTING UTILITIES ARE BASED ON FIELD SURVEYS AND AVAILABLE RECORD DRAWINGS.
- A DELINEATION RECERTIFICATION WAS NOT REQUIRED PRIOR TO PLAN APPROVAL SINCE PERMANENT WETLAND IMPACTS ARE NOT PROPOSED.
- THE EXISTING TOPOGRAPHY IS TAKEN FROM FIELD RUN SURVEY WITH ONE-FOOT CONTOUR INTERVALS PREPARED BY AB CONSULTANTS, INC. IN AUGUST 2007.
- ALL WORK SHALL BE CONSTRUCTED ACCORDING TO THE REQUIREMENTS OF THE NONTIDAL WETLANDS AND WATERWAYS PERMIT APPROVED JUNE 5, 2009 - (MDE TRACKING #2009060004/60-NT-3004) - SHOW ON TABLE BELOW
- 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 CONTRACTOR 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.
- LANDSCAPING PLAN PREPARED IN ACCORDANCE WITH THE GUIDELINES FROM THE NEW TOWN ZONING DISTRICT.
- LAND DISTURBANCE ACTIVITIES, INCLUDING ANY CLEARING AND GRUBBING, WILL NOT EXCEED 6000 SQUARE FEET.
- HOWARD COUNTY GIS USED FOR THE ENTIRE PROJECT AREA.
- SOILS DATA WAS ACQUIRED USING HOWARD COUNTY GIS.
- NO PROPOSED GRADING IS INCLUDED IN THIS PROJECT.
- NO STORM DRAINS OR CHANGES TO EXISTING DRAINAGE PROPOSED FOR THIS PROJECT.
- BIOHABITATS SHALL CERTIFY IN WRITTEN LETTER THAT THE CONSTRUCTION ACTIVITIES HAVE BEEN COMPLETED IN ACCORDANCE TO THESE PLANS.

SPECIAL NOTES

- CEPPA 7 - THE PHASING SCHEDULE FOR IMPLEMENTATION OF THE ENVIRONMENTAL RESTORATION WORK WAS SUBMITTED AND APPROVED ON AUGUST 31, 2012.
- CEPPA 15 - GGP WILL COMPLETE, AT GGP'S EXPENSE, ENVIRONMENTAL RESTORATION PROJECTS INCLUDING SWM RETROFIT, STREAM CORRIDOR RESTORATION, WETLAND ENHANCEMENT, AND REFORESTATION AND FOREST RESTORATION ON ITS PROPERTY AND ON PROPERTY INCLUDED WITHIN GGP'S CONSTRUCTION PLANS FOR THE MERRIWEATHER - SYMPHONY WOODS AND CRESCENT AREAS, AS IDENTIFIED IN THE LAND FRAMEWORK OF THE SUSTAINABILITY PROGRAM AS REFERRED IN SECTION 3.1 OF THE DOWNTOWN WIDE COLUMBIA PLAN.

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 OF ENGINEER (PRINTNAME BELOW SIGNATURE) DATE

N/A

DEVELOPER'S CERTIFICATE

"I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN FOR SEDIMENT AND EROSION CONTROL, AND THAT 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 OF DEVELOPER (PRINTNAME BELOW SIGNATURE) DATE

N/A

Downtown Columbia Restoration Sites 1 & 2

DATE 05/24/2013 ISSUES / REVISIONS

9/6/2013 ADD STREAM RESTORATION

10/22/2013 REVISED SITE DEVELOPMENT PLAN



THE HOWARD HUGHES CORPORATION
 10275 LITTLE PATUXENT PARKWAY
 COLUMBIA, MD 21044



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

Restore the Earth and Inspire Ecological Stewardship

DOWNTOWN COLUMBIA FOREST ENHANCEMENT AND STREAM RESTORATION PLAN

TITLE SHEET

PROJECT NO.: 12024.01 SCALE: AS SHOWN

SEAL: TB CHECK: CS



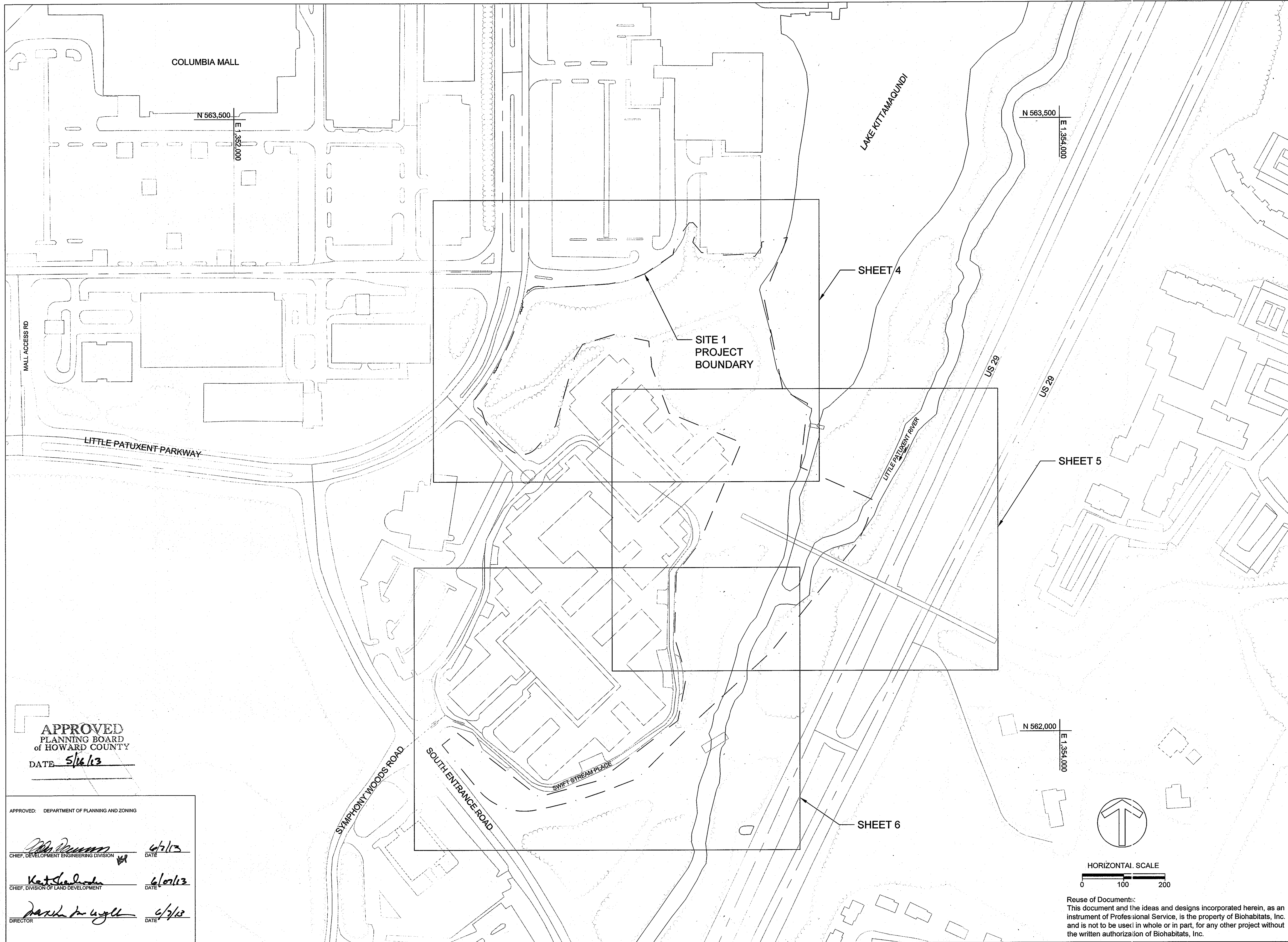
01 of 14

APPROVED: DEPARTMENT OF PLANNING AND ZONING
 [Signature] 6/7/13
 CHIEF, DEVELOPMENT ENGINEERING DIVISION
 [Signature] 6/27/13
 CHIEF, DIVISION OF LAND DEVELOPMENT
 [Signature] 6/7/13
 DIRECTOR

PERMIT INFORMATION CHART

SUBDIVISION NAME COLUMBIA TOWN CENTER	SECTION/AREA 1/3, 5/2, 3/4	LOT/PARCEL# 1, 2, 3
PLAT OR LUF 1054 1054	GRID# 20, 1	ZONING NT
TAX MAP NO. 30, 36	ELECT. DIST. 7	CENSUS TRACT # 6054.02
WATER CODE PUBLIC	SEWER CODE PUBLIC	# 6054.02

This development plan is approved for Sediment and Sediment Control by the HOWARD SOIL CONSERVATION DISTRICT
 Howard SCD DATE



Downtown
Columbia
Restoration
Sites 1 & 2

DATE	ISSUES / REVISIONS
8/14/2013	ADD STREAM RESTORATION
10/22/2013	REVISED SITE DEVELOPMENT PLAN



THE HOWARD HUGHES CORPORATION
10275 LITTLE PATUXENT PARKWAY
COLUMBIA, MD 21044

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fx: 410.554.0168 / www.biohabitats.com
Restore the Earth and Inspire Ecological Stewardship

**DOWNTOWN
COLUMBIA
FOREST
ENHANCEMENT
PLAN**

TITLE:
**SHEET INDEX
SITE 1**

PROJECT NO.:	12024.01	SCALE:	1" = 100'
SEAL:	BY: KG	CHECK:	CS
	DWG. NO.:		



APPROVED
PLANNING BOARD
of HOWARD COUNTY
DATE 5/16/13

APPROVED: DEPARTMENT OF PLANNING AND ZONING	
<i>[Signature]</i> CHIEF, DEVELOPMENT ENGINEERING DIVISION	4/2/13 DATE
<i>[Signature]</i> CHIEF, DIVISION OF LAND DEVELOPMENT	6/10/13 DATE
<i>[Signature]</i> DIRECTOR	6/13/13 DATE

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Downtown
Columbia
Restoration
Sites 1 & 2

DATE 05/24/2013 ISSUES / REVISIONS

9/6/2013 ADD STREAM RESTORATION

10/22/2013 REVISIONS FOR DEVELOPMENT PLAN

Howard Hughes
THE HOWARD HUGHES CORPORATION

THE HOWARD HUGHES CORPORATION
10275 LITTLE PATUXENT PARKWAY
COLUMBIA, MD 21044

 **Biohabitats**
incorporated

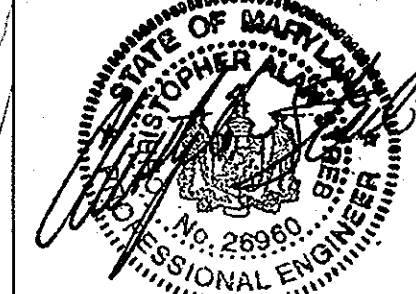
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**DOWNTOWN
COLUMBIA
FOREST
ENHANCEMENT
PLAN**

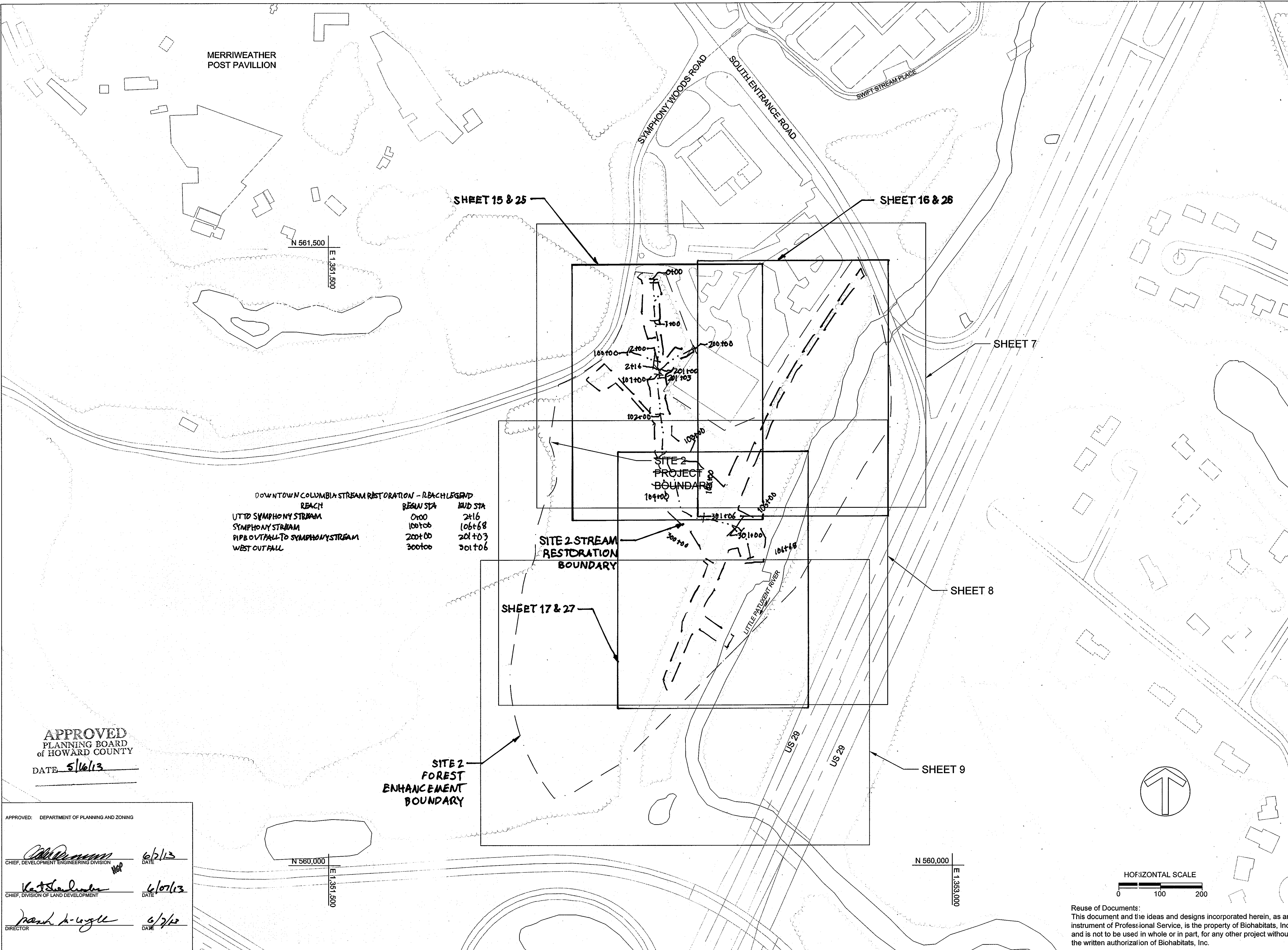
TITLE
**SHEET INDEX
SITE 2**

PROJECT NO.: 12024.01 SCALE: 1" = 100'

SEAL: BY: KG CHECK: CS
DWG. NO.:



28
03 of 14



DOWNTOWN COLUMBIA STREAM RESTORATION - REACH LEGEND

REACH	BEACH STA	HEAD STA
UTTD SYMPHONY STREAM	0+00	2+16
SYMPHONY STREAM	100+00	106+68
PIPE OUTFALL TO SYMPHONY STREAM	200+00	201+03
WEST OUTFALL	300+00	301+06

APPROVED
PLANNING BOARD
of HOWARD COUNTY
DATE 5/16/13

APPROVED: DEPARTMENT OF PLANNING AND ZONING

John P. ... 6/2/13
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

Kevin ... 6/07/13
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

Frank ... 6/7/13
DIRECTOR DATE

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Downtown Columbia Restoration Sites 1 & 2

DATE 05/24/2013 ISSUES / REVISIONS
 9/6/2013 ADD STREAM RESTORATION
 10/22/2013 REVISED SITE DEVELOPMENT PLAN



THE HOWARD HUGHES CORPORATION
 10275 LITTLE PATUXENT PARKWAY
 COLUMBIA, MD 21044

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 Incorporated
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 Baltimore, Maryland 21211 / ph: 410.554.0156
 fx: 410.554.0168 / www.biohabitats.com
 Restore the Earth and Inspire Ecological Stewardship

DOWNTOWN COLUMBIA FOREST ENHANCEMENT PLAN

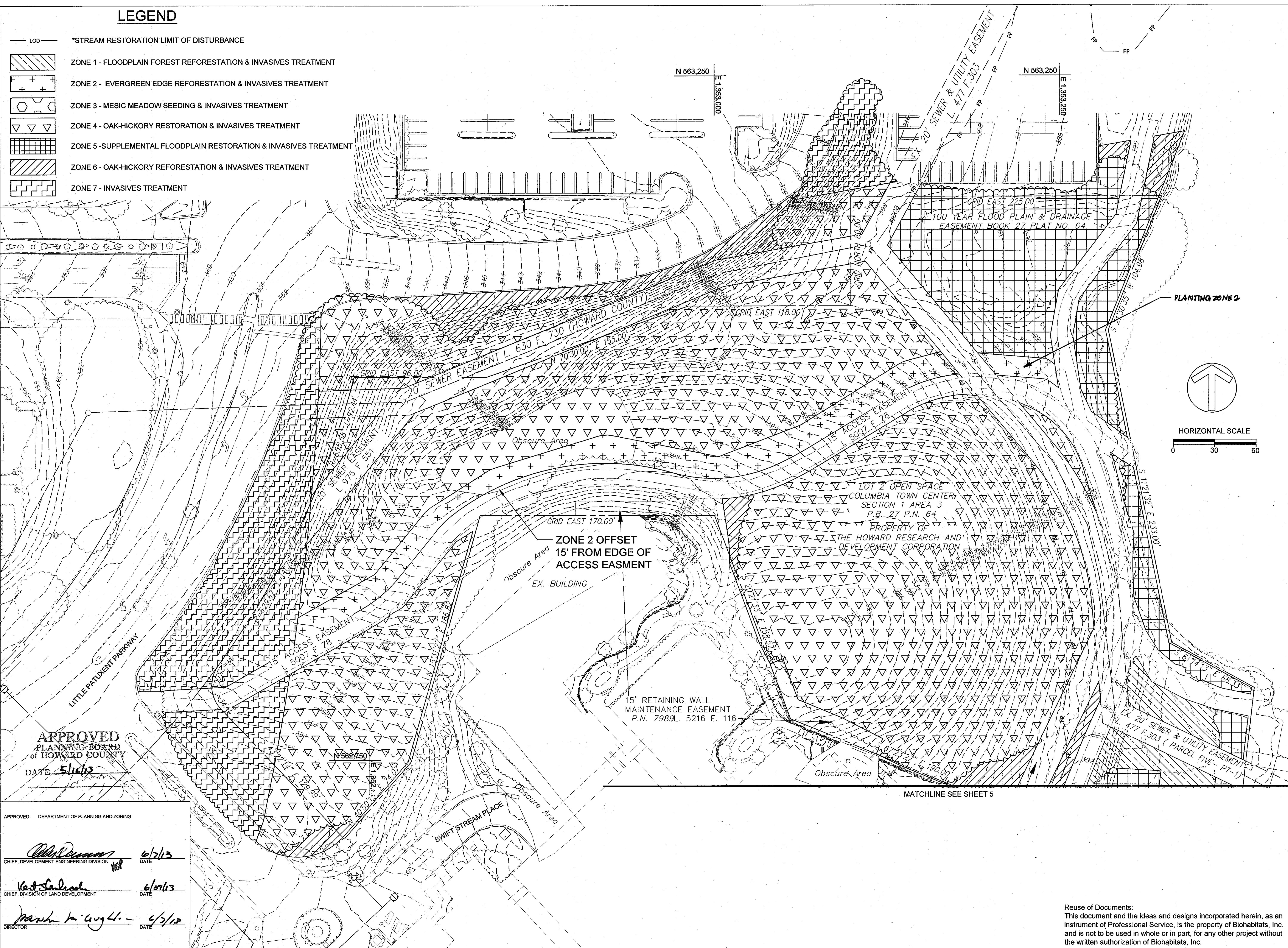
PLANTING PLAN FOREST ENHANCEMENT

TITLE: PLANTING PLAN FOREST ENHANCEMENT
 PROJECT NO.: 12024.01 SCALE: 1" = 30'
 BY: KG CHECK: CS
 DWG. NO.:



LEGEND

- LOD — *STREAM RESTORATION LIMIT OF DISTURBANCE
- ZONE 1 - FLOODPLAIN FOREST REFORESTATION & INVASIVES TREATMENT
- ZONE 2 - EVERGREEN EDGE REFORESTATION & INVASIVES TREATMENT
- ZONE 3 - MESIC MEADOW SEEDING & INVASIVES TREATMENT
- ZONE 4 - OAK-HICKORY RESTORATION & INVASIVES TREATMENT
- ZONE 5 - SUPPLEMENTAL FLOODPLAIN RESTORATION & INVASIVES TREATMENT
- ZONE 6 - OAK-HICKORY REFORESTATION & INVASIVES TREATMENT
- ZONE 7 - INVASIVES TREATMENT



APPROVED
 PLANNING BOARD
 of HOWARD COUNTY
 DATE 5/16/13

APPROVED: DEPARTMENT OF PLANNING AND ZONING

6/7/13
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

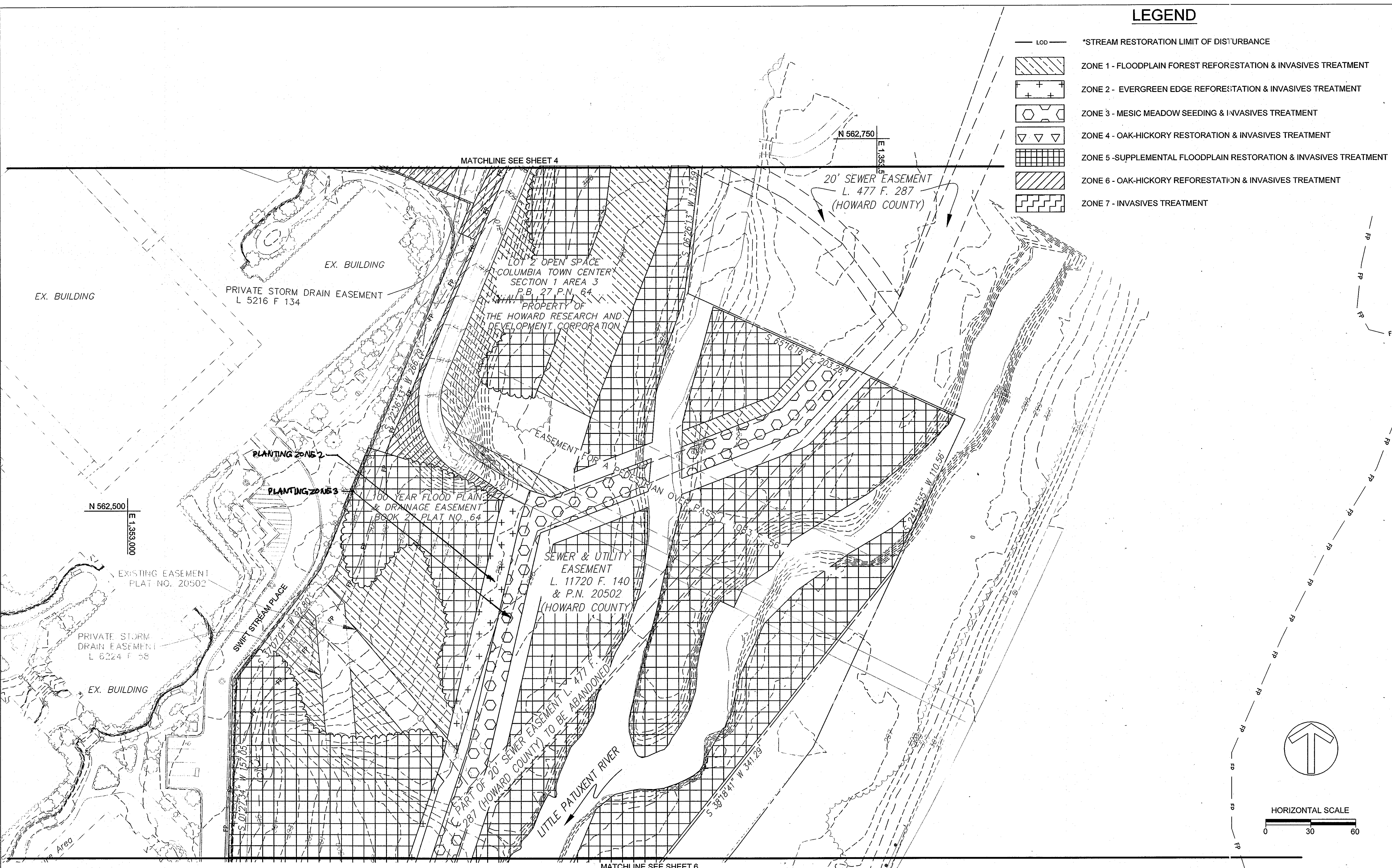
6/10/13
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

6/12/13
 DIRECTOR DATE

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LEGEND

- LOD — *STREAM RESTORATION LIMIT OF DISTURBANCE
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**Downtown
Columbia
Restoration
Sites 1 & 2**

DATE 05/24/2013 ISSUES / REVISIONS
 9/6/2013 ADDSTREAM RESTORATION
 10/22/2013 REVISED SITE DEVELOPMENT PLAN



THE HOWARD HUGHES CORPORATION
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**DOWNTOWN
COLUMBIA
FOREST
ENHANCEMENT
PLAN**

TITLE
**PLANTING
PLAN
FOREST ENHANCEMENT**

PROJECT NO.: 12024.01 SCALE: 1" = 30'

SEAL: BY: KG CHECK: CS
 DWG. NO.: 28
 05 of 14

APPROVED: DEPARTMENT OF PLANNING AND ZONING

 DATE 6/2/13


 DATE 6/10/13

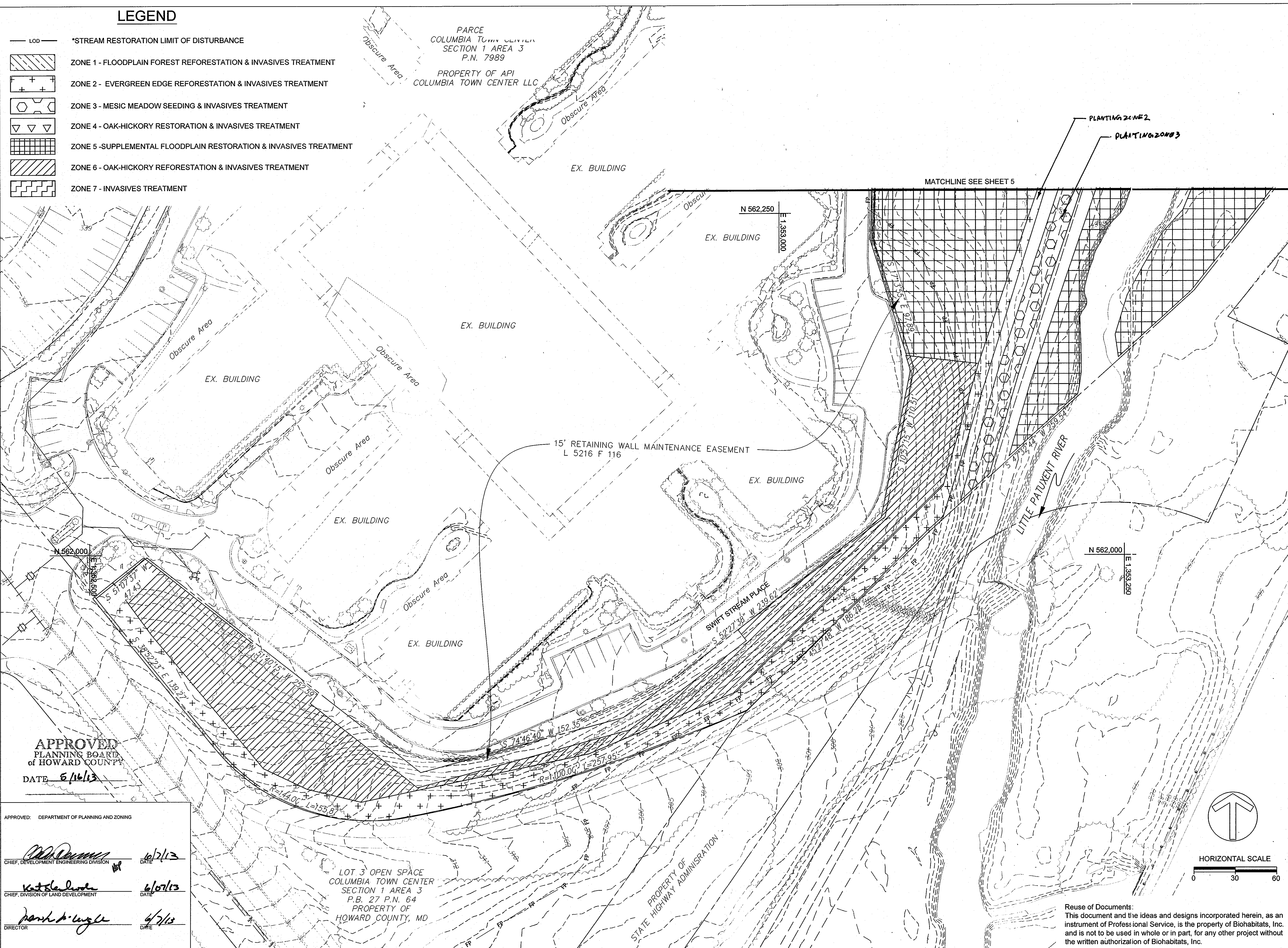
 DATE 6/5/13

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PLANNING BOARD
of HOWARD COUNTY**
 DATE 5/16/13

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LEGEND

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-  ZONE 6 - OAK-HICKORY REFORESTATION & INVASIVES TREATMENT
-  ZONE 7 - INVASIVES TREATMENT



APPROVED
PLANNING BOARD
of HOWARD COUNTY
DATE 6/16/13

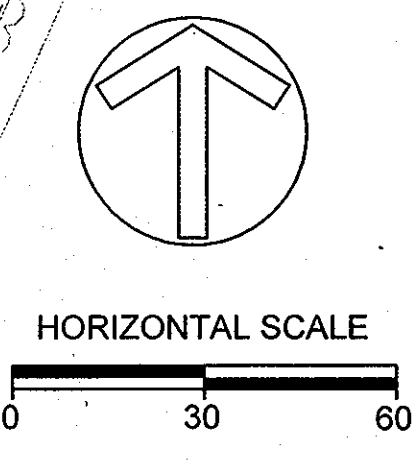
APPROVED: DEPARTMENT OF PLANNING AND ZONING

[Signature] 6/17/13
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

[Signature] 6/17/13
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

[Signature] 6/17/13
DIRECTOR DATE

LOT 3 OPEN SPACE
COLUMBIA TOWN CENTER
SECTION 1 AREA 3
P.B. 27 P.N. 64
PROPERTY OF
HOWARD COUNTY, MD



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Downtown
Columbia
Restoration
Sites 1 & 2

DATE 05/24/2013 ISSUES / REVISIONS
9/6/2013 ADD STREAM RESTORATION
10/22/2013 REVISED SITE DEVELOPMENT PLAN



THE HOWARD HUGHES CORPORATION
10275 LITTLE PATUXENT PARKWAY
COLUMBIA, MD 21044



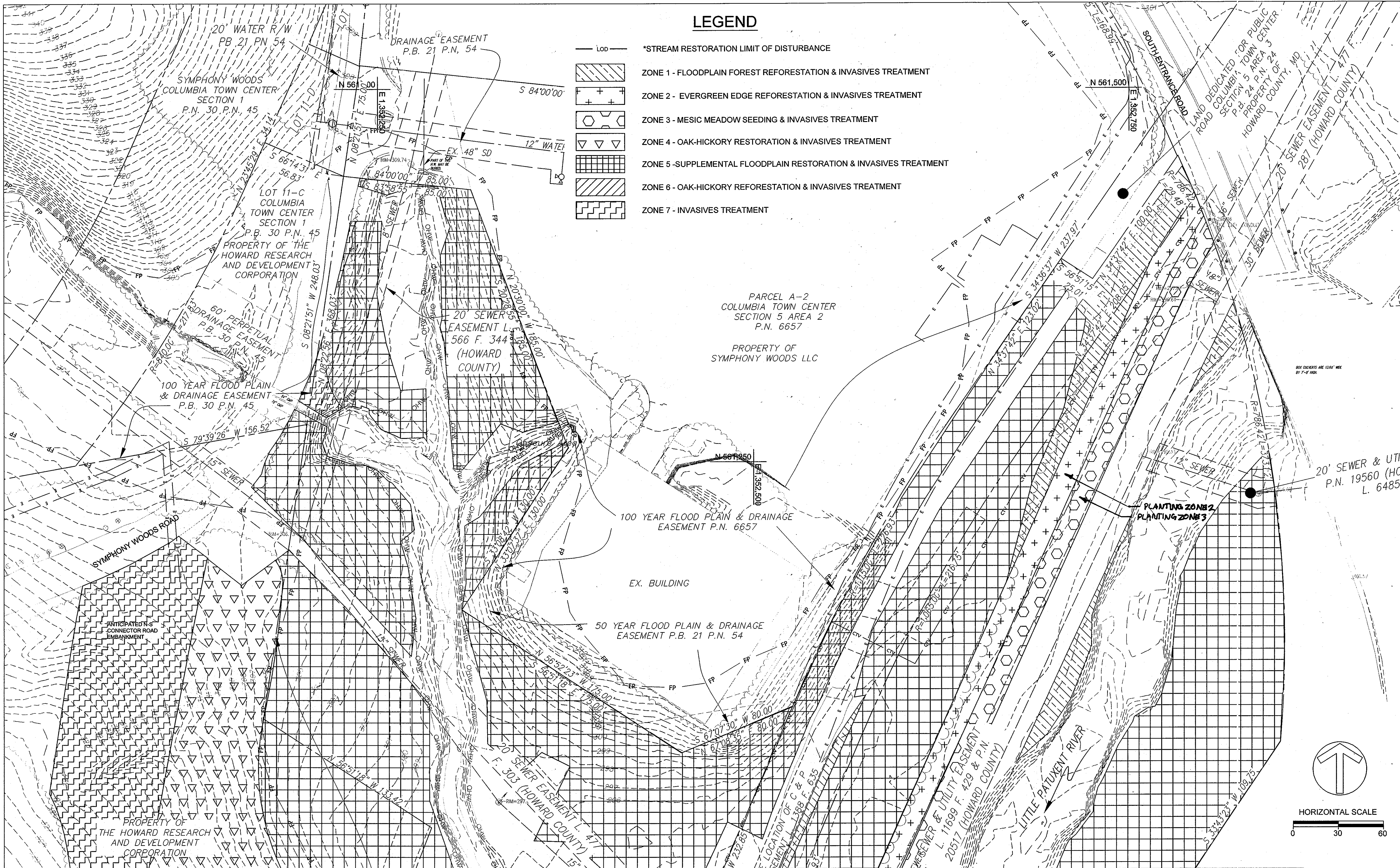
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DOWNTOWN
COLUMBIA
FOREST
ENHANCEMENT
PLAN

TITLE
PLANTING
PLAN
FOREST ENHANCEMENT

PROJECT NO.: 12024.01 SCALE: 1" = 30'

SEAL: *[Signature]* BY: KG CHECK: CS
DWG. NO.: 28
06 of 14



LEGEND

- Lod — *STREAM RESTORATION LIMIT OF DISTURBANCE
- [Hatched Box] ZONE 1 - FLOODPLAIN FOREST REFORESTATION & INVASIVES TREATMENT
- [Box with +] ZONE 2 - EVERGREEN EDGE REFORESTATION & INVASIVES TREATMENT
- [Box with X] ZONE 3 - MESIC MEADOW SEEDING & INVASIVES TREATMENT
- [Box with V] ZONE 4 - OAK-HICKORY RESTORATION & INVASIVES TREATMENT
- [Box with Grid] ZONE 5 - SUPPLEMENTAL FLOODPLAIN RESTORATION & INVASIVES TREATMENT
- [Box with Diagonal Lines] ZONE 6 - OAK-HICKORY REFORESTATION & INVASIVES TREATMENT
- [Box with Zigzag] ZONE 7 - INVASIVES TREATMENT

**Downtown
Columbia
Restoration
Sites 1 & 2**

DATE 05/24/2013 ISSUES / REVISIONS
 9/6/2013 ADD STREAM RESTORATION
 10/22/2013 REVISED SITE DEVELOPMENT PLAN



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 COLUMBIA, MD 21044

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**DOWNTOWN
COLUMBIA
FOREST
ENHANCEMENT
PLAN**

**PLANTING
PLAN
FOREST ENHANCEMENT**

PROJECT NO.: 12024.01		SCALE: 1" = 30'	
SEAL:	BY: KG	CHECK:	CS
DWG. NO.:			

STATE OF MARYLAND
 PROFESSIONAL ENGINEERING
 No. 26990
 07 of 44

APPROVED: DEPARTMENT OF PLANNING AND ZONING

[Signature] 6/2/13
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

[Signature] 6/27/13
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

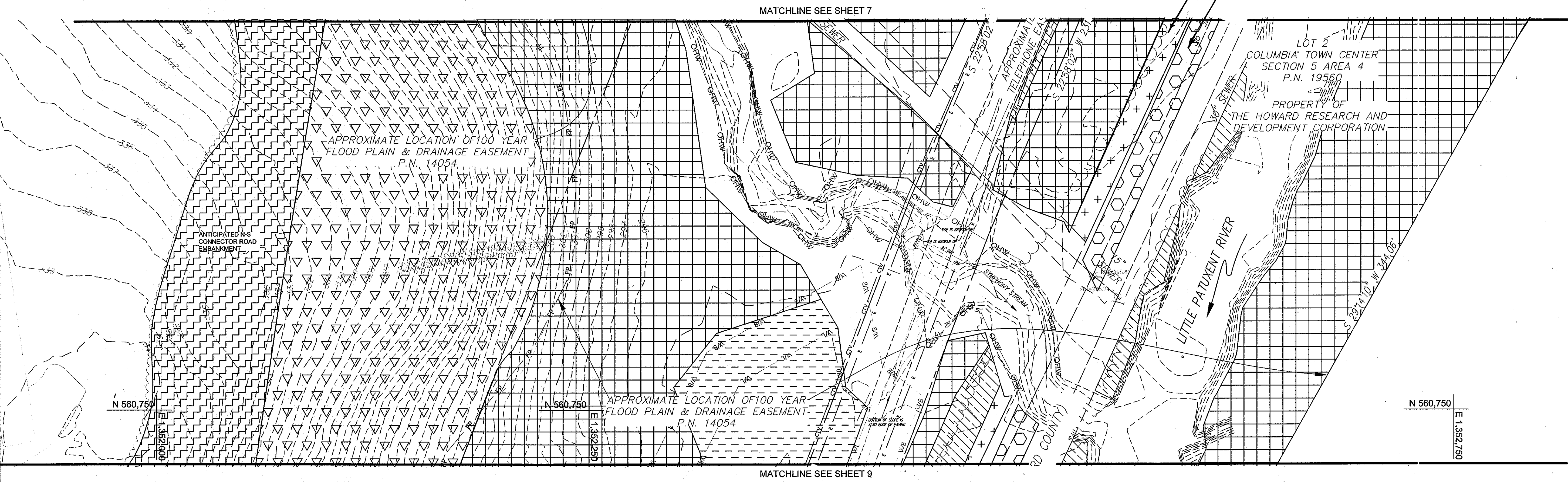
[Signature] 6/7/13
 DIRECTOR DATE

APPROVED
 PLANNING BOARD
 of HOWARD COUNTY
 DATE 5/16/13

*STREAM RESTORATION AND ASSOCIATED PLANTING WILL BE COMPLETED UNDER A SEPARATE SITE DEVELOPMENT PLAN ENTITLED, DOWNTOWN COLUMBIA STREAM RESTORATION PLAN - SITE 2

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Restoration
Sites 1 & 2



DATE 05/24/2013 ISSUES / REVISIONS
 7/6/2013 ADD STREAM RESTORATION
 10/22/2013 REVISED SITE DEVELOPMENT PLAN



THE HOWARD HUGHES CORPORATION
 10275 LITTLE PATUXENT PARKWAY
 COLUMBIA, MD 21044

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 Baltimore, Maryland 21211 / ph: 410.554.0156
 fx: 410.554.0168 / www.biohabitats.com
 Restore the Earth and Inspire Ecological Stewardship

**DOWNTOWN
 COLUMBIA
 FOREST
 ENHANCEMENT
 PLAN**

**PLANTING
 PLAN
 FOREST ENHANCEMENT**

PROJECT NO.:	12024.01	SCALE:	1" = 30'
SEAL:	BY: KG	CHECK:	CS
DWG. NO.:		28 08 of 14	

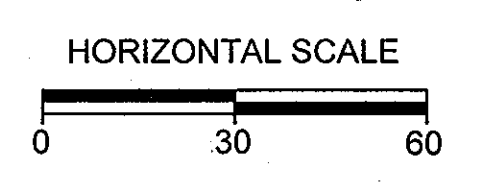
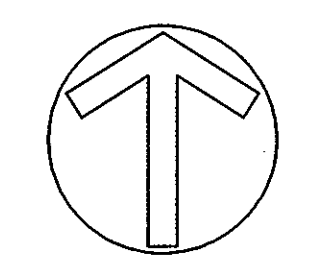
LEGEND

- LOD — *STREAM RESTORATION LIMIT OF DISTURBANCE
- [Hatched Box] ZONE 1 - FLOODPLAIN FOREST REFORESTATION & INVASIVES TREATMENT
- [Cross-hatched Box] ZONE 2 - EVERGREEN EDGE REFORESTATION & INVASIVES TREATMENT
- [Hexagonal Box] ZONE 3 - MESIC MEADOW SEEDING & INVASIVES TREATMENT
- [Inverted Triangle Box] ZONE 4 - OAK-HICKORY RESTORATION & INVASIVES TREATMENT
- [Grid Box] ZONE 5 - SUPPLEMENTAL FLOODPLAIN RESTORATION & INVASIVES TREATMENT
- [Diagonal Line Box] ZONE 6 - OAK-HICKORY REFORESTATION & INVASIVES TREATMENT
- [Stippled Box] ZONE 7 - INVASIVES TREATMENT

APPROVED: DEPARTMENT OF PLANNING AND ZONING
 [Signature] 6/2/13
 CHIEF, DEVELOPMENT ENGINEERING DIVISION
 [Signature] 6/2/13
 CHIEF, DIVISION OF LAND DEVELOPMENT
 [Signature] 6/5/13
 DIRECTOR

APPROVED
 PLANNING BOARD
 of HOWARD COUNTY
 DATE 5/16/13

*STREAM RESTORATION AND ASSOCIATED PLANTING WILL BE COMPLETED UNDER A SEPARATE SITE DEVELOPMENT PLAN ENTITLED, DOWNTOWN COLUMBIA STREAM RESTORATION PLAN - SITE 2



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MATCHLINE SEE SHEET 8

Downtown Columbia Restoration Sites 1 & 2

DATE 05/24/2013 ISSUES / REVISIONS

9/6/2013 ADD STREAM RESTORATION

10/22/2013 REVISED SITE DEVELOPMENT PLAN

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THE HOWARD HUGHES CORPORATION

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10275 LITTLE PATUXENT PARKWAY
COLUMBIA, MD 21044

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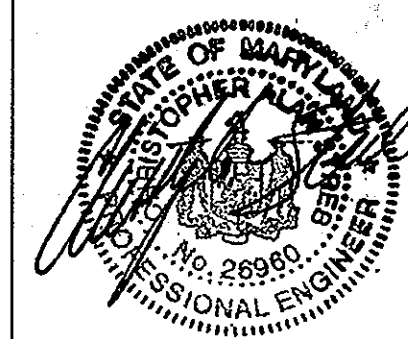
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DOWNTOWN COLUMBIA FOREST ENHANCEMENT PLAN

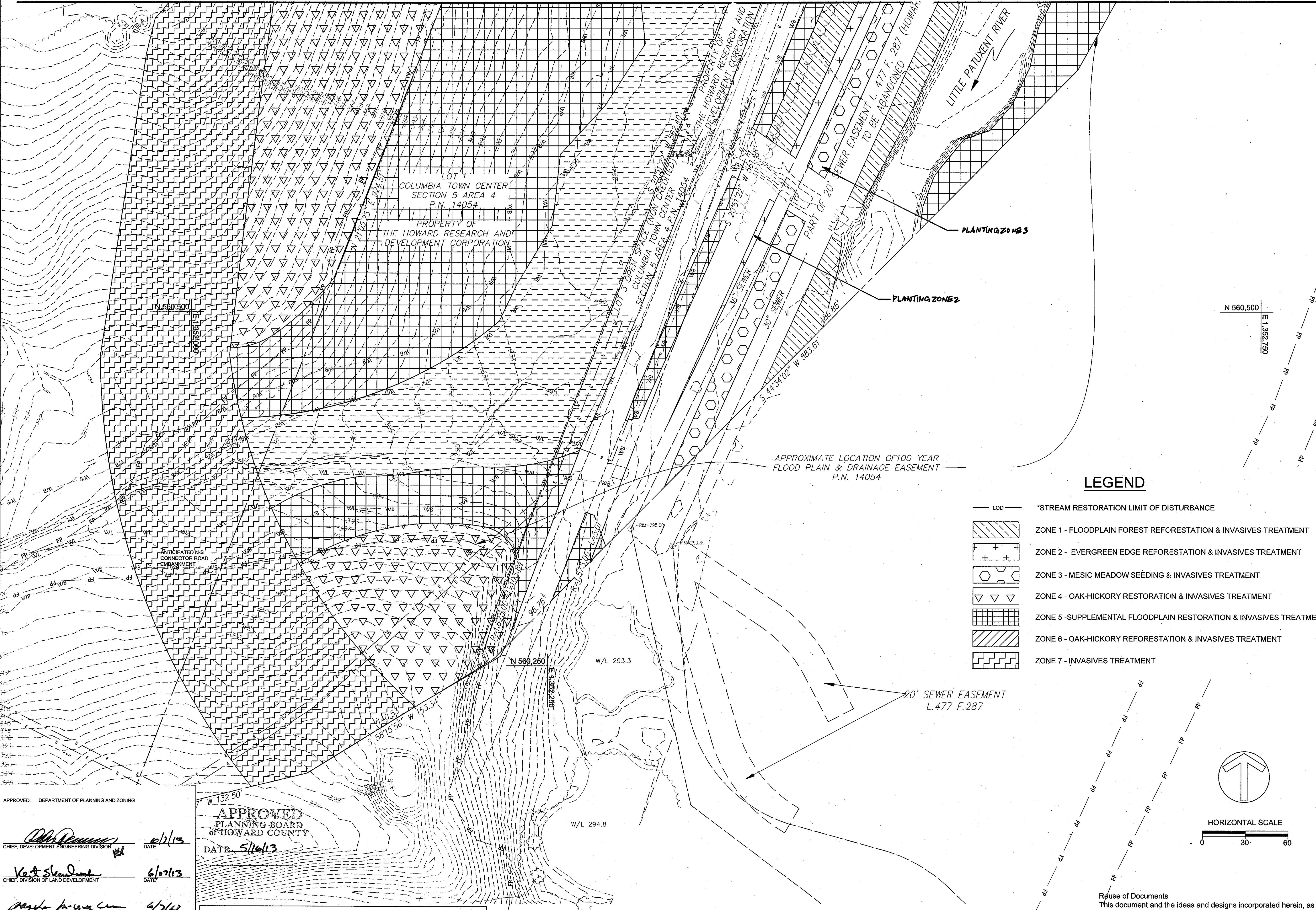
TITLE: **PLANTING PLAN FOREST ENHANCEMENT**

PROJECT NO.: 12024.01 SCALE: 1" = 30'

SEAL: BY: KG CHECK: CS DWG. NO.:

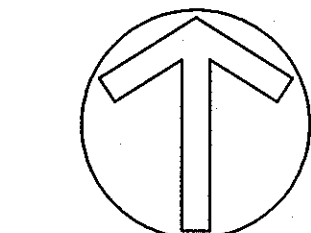


28
09 of 144



LEGEND

- LOD — *STREAM RESTORATION LIMIT OF DISTURBANCE
- ZONE 1 - FLOODPLAIN FOREST REFORESTATION & INVASIVES TREATMENT
- ZONE 2 - EVERGREEN EDGE REFORESTATION & INVASIVES TREATMENT
- ZONE 3 - MESIC MEADOW SEEDING & INVASIVES TREATMENT
- ZONE 4 - OAK-HICKORY RESTORATION & INVASIVES TREATMENT
- ZONE 5 - SUPPLEMENTAL FLOODPLAIN RESTORATION & INVASIVES TREATMENT
- ZONE 6 - OAK-HICKORY REFORESTATION & INVASIVES TREATMENT
- ZONE 7 - INVASIVES TREATMENT



HORIZONTAL SCALE
0 30 60

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John Dennis 2/1/13
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

Keith Steward 6/27/13
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

Shirley King 6/7/13
DIRECTOR DATE

APPROVED
PLANNING BOARD
OF HOWARD COUNTY
DATE 5/16/13

*STREAM RESTORATION AND ASSOCIATED PLANTING WILL BE COMPLETED UNDER A SEPARATE SITE DEVELOPMENT PLAN ENTITLED, DOWNTOWN COLUMBIA STREAM RESTORATION PLAN - SITE 2



LEGEND

- Ha SOIL MAP UNITS
- SOIL MAP UNIT BOUNDARY
- HABITAT BOUNDARY
- WOODS LINE
- WETLAND BUFFER
- [Hatched Box] 100 YEAR FLOOD PLAIN
- [Dotted Box] STEEP SLOPES

SITE 1 SOIL TYPES

UuB	Kf = -
W	Kf = -
MaC	Kf = 0.28
GbB	Kf = 0.24
Ha	Kf = 0.37
GmB	Kf = 0.43

Downtown Columbia Restoration Sites 1 & 2

DATE 05/24/2013 ISSUES / REVISIONS
 7/6/2013 ADD STREAM RESTORATION
 10/22/2013 REVISED SITE DEVELOPMENT PLAN

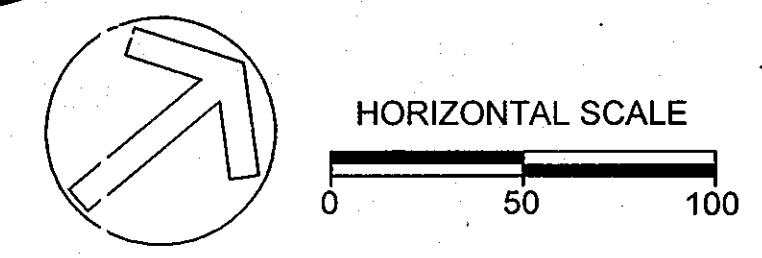
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DOWNTOWN COLUMBIA FOREST ENHANCEMENT PLAN

DELINEATION PLAN

PROJECT NO.: 12024.01 SCALE: 1" = 50'
 BY: KG CHECK: CS
 DWG. NO.:
 TITLE: DELINEATION PLAN



APPROVED PLANNING BOARD OF HOWARD COUNTY
 DATE 5/16/13

APPROVED: DEPARTMENT OF PLANNING AND ZONING

W.D. [Signature] 6/7/13
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

K.S. [Signature] 6/27/13
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

[Signature] 6/27/13
 DIRECTOR DATE

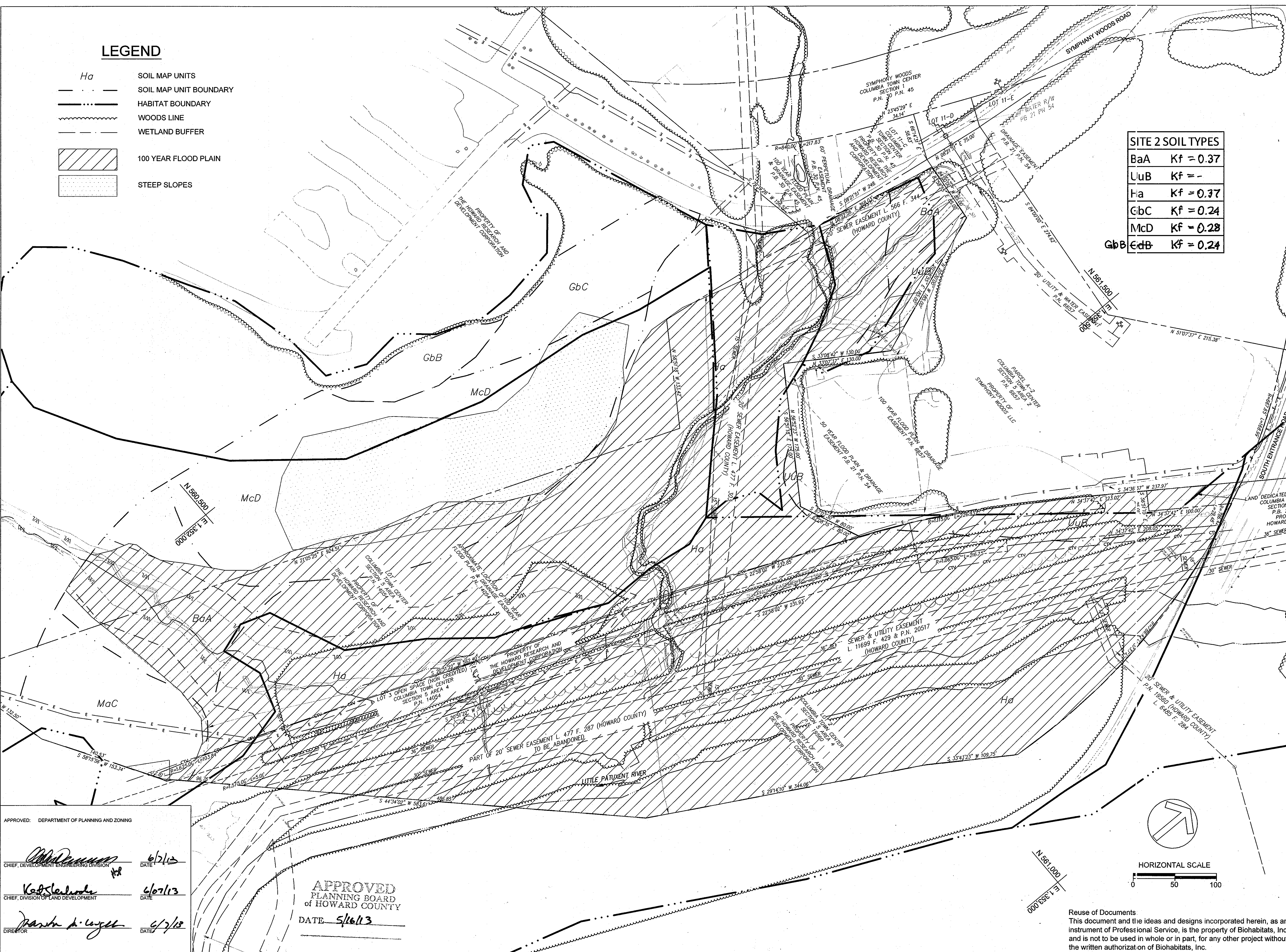
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LEGEND

- Ha SOIL MAP UNITS
- SOIL MAP UNIT BOUNDARY
- HABITAT BOUNDARY
- WOODS LINE
- WETLAND BUFFER
- 100 YEAR FLOOD PLAIN
- STEEP SLOPES

SITE 2 SOIL TYPES	
BaA	Kf = 0.37
LuB	Kf = -
Ha	Kf = 0.37
GbC	Kf = 0.24
McD	Kf = 0.28
GbB	Kf = 0.24



**Downtown
Columbia
Restoration
Sites 1 & 2**

DATE 06/24/2013 ISSUES / REVISIONS
 7/6/2013 ADD STREAM RESTORATION
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**DOWNTOWN
COLUMBIA
FOREST
ENHANCEMENT
PLAN**

**TITLE:
DELINEATION
PLAN**

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 [Signature] 6/7/13
 CHIEF, DEVELOPMENT ENGINEERING DIVISION
 [Signature] 6/7/13
 CHIEF, DIVISION OF LAND DEVELOPMENT
 [Signature] 6/7/13
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PROJECT NO.: 12024.01 SCALE: 1" = 50'
 SEAL: [Professional Engineer Seal] BY: KG CHECK: CS
 DWG. NO.: [Blank] DATE: 2/28/13
 28
 11 of 14

Downtown
Columbia
Restoration
Sites 1 & 2

DATE 05/24/2013 ISSUES / REVISIONS

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10/22/2013 REVISED SITE DEVELOPMENT PLAN

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COLUMBIA, MD 21044

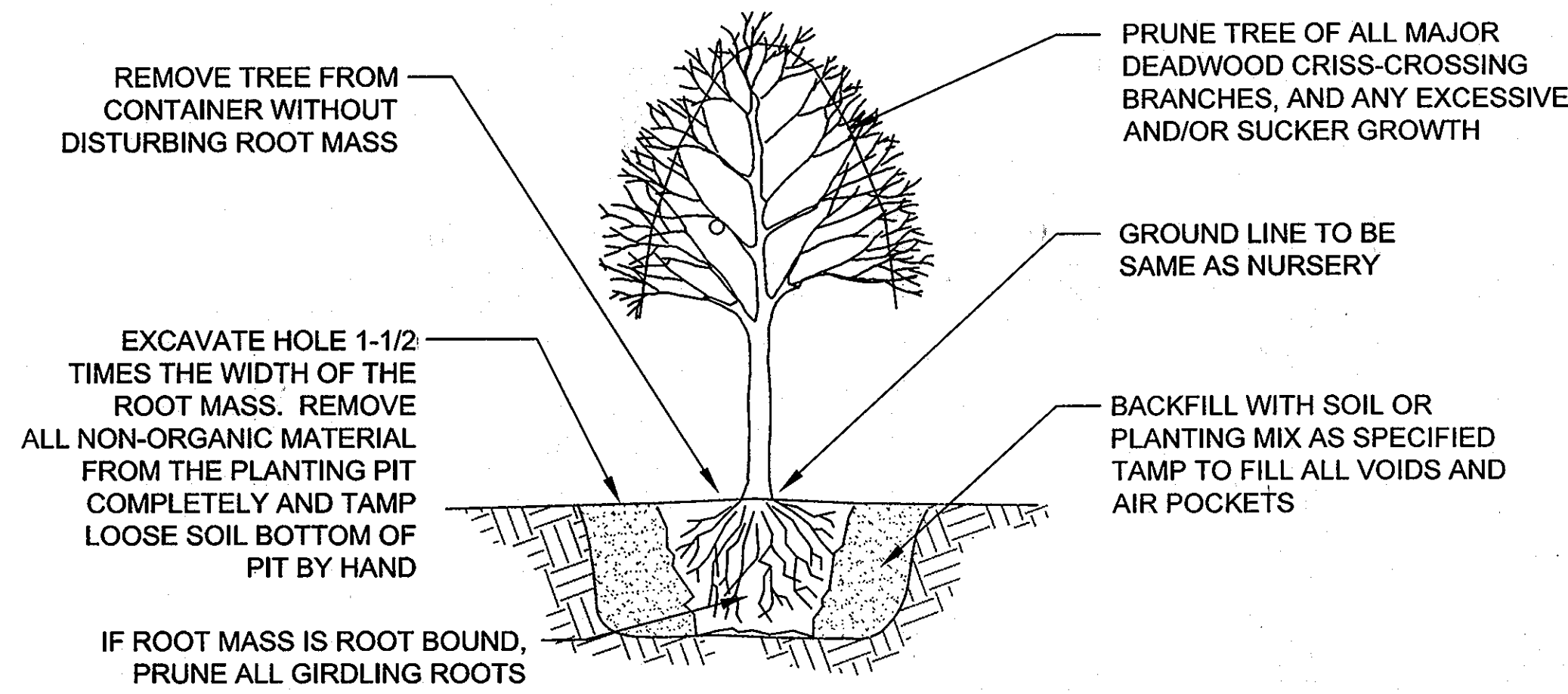
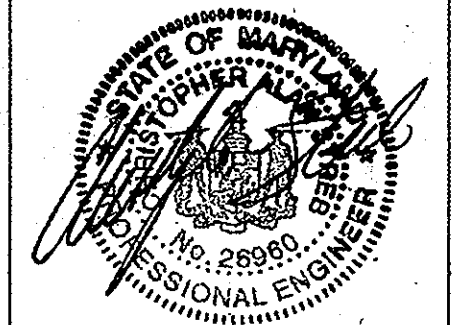
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**DOWNTOWN
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FOREST
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PLAN**

TITLE
PLANTING DETAILS

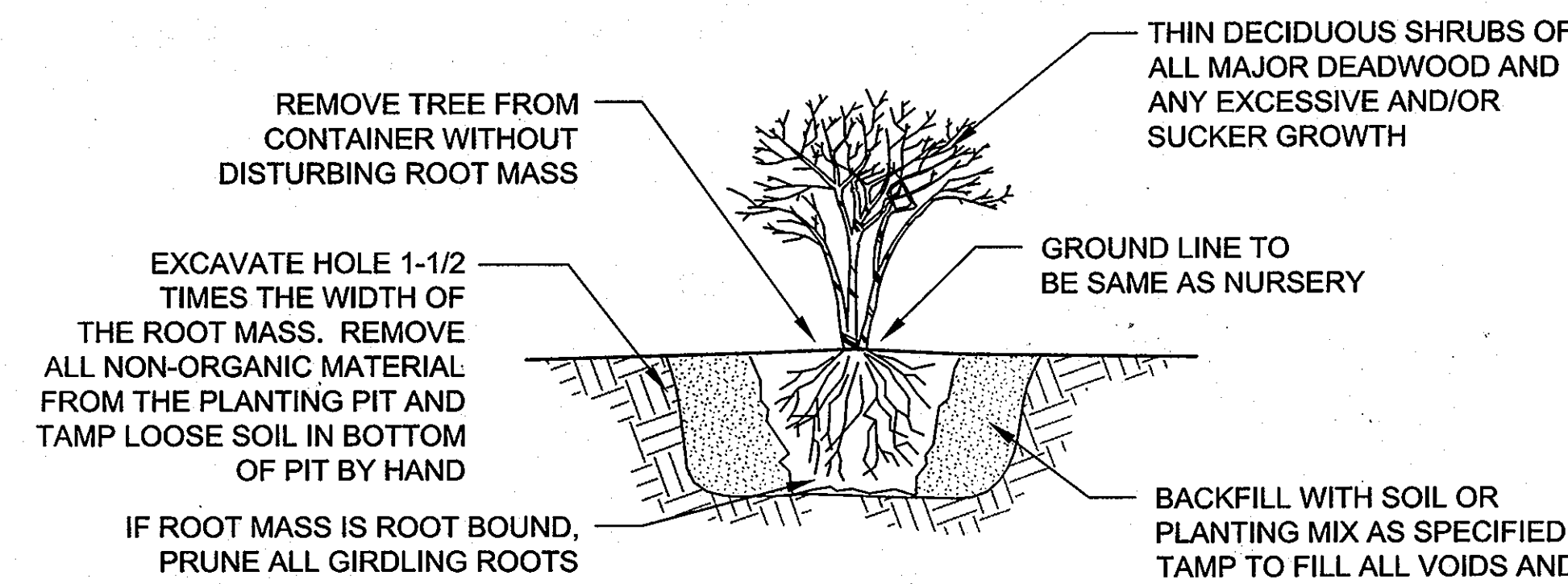
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SEAL BY: KG CHECK: CS
DWG. NO.:



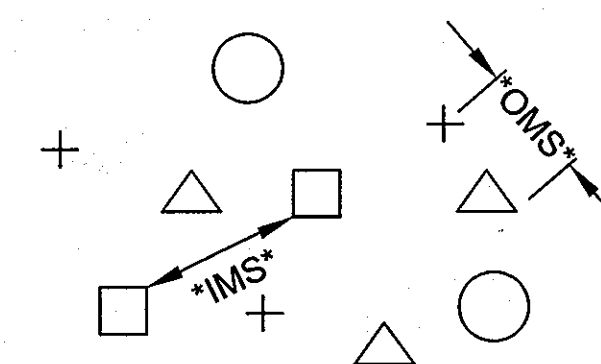
TREE PLANTING - CONTAINER GROWN

NOT TO SCALE



SHRUB PLANTING - CONTAINER GROWN

NOT TO SCALE



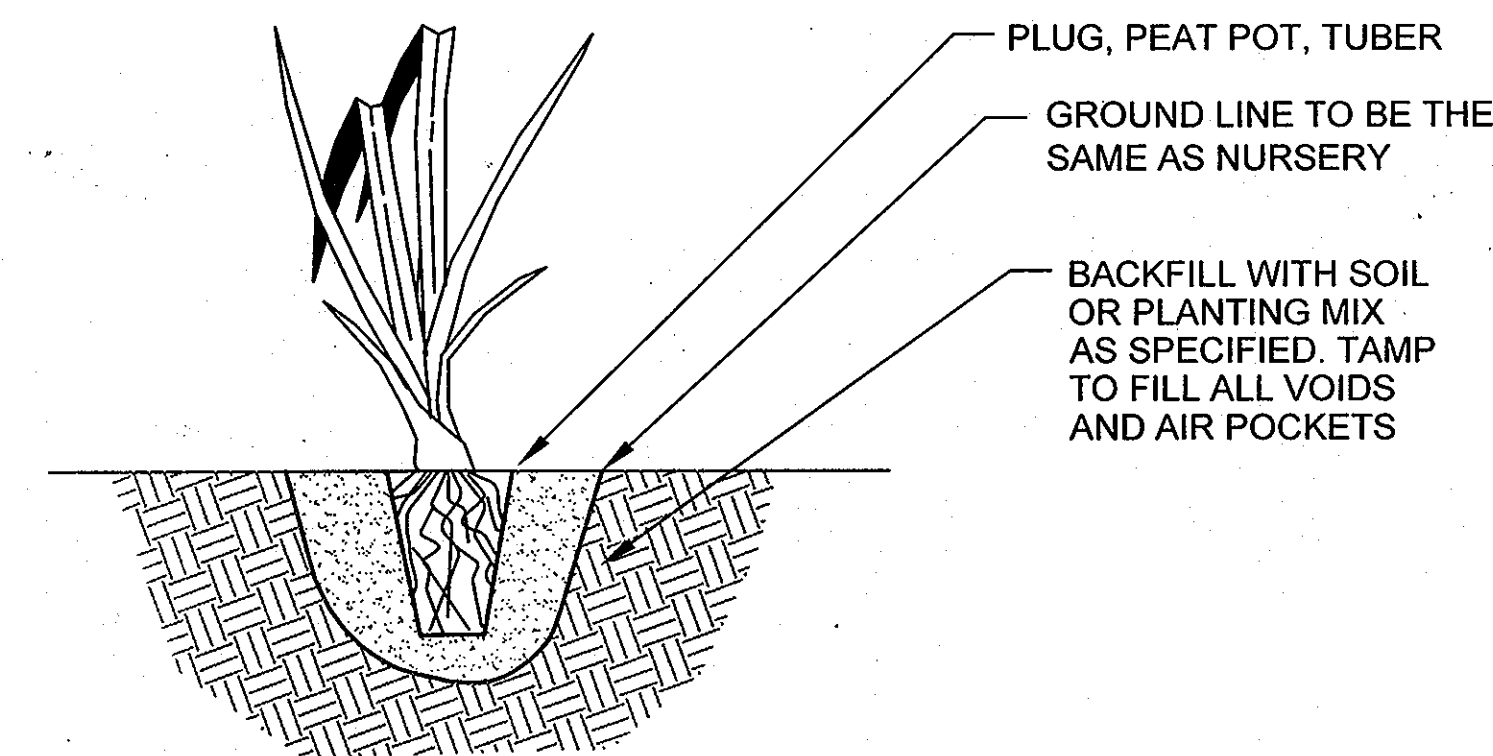
OMS- AN OVERALL MINIMUM SPACING DISTANCE *OMS* IS ASSIGNED TO THE PLANTING CONFIGURATION *SEE PLANT SCHEDULE*
IMS- AN INDIVIDUAL MINIMUM SPACING DISTANCES *IMS* IS ASSIGNED TO EACH INDIVIDUAL SPECIES *SEE PLANT SCHEDULE*

PLANT SPACING - RANDOM

NOTE: EACH SYMBOL INDICATES A DIFFERENT SPECIES

PLAN VIEW

NOT TO SCALE



HERBACEOUS PLANTING- CONTAINERS

NOT TO SCALE

APPROVED
PLANNING BOARD
of HOWARD COUNTY
DATE 5/16/13

APPROVED: DEPARTMENT OF PLANNING AND ZONING

W. J. ... 6/7/13
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

R. J. ... 6/10/13
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

P. ... 6/7/13
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PLANT COMPOSITION SCHEDULE

ZONE 1 - Floodplain Forest Reforestation

Size (acres): 0.5

Overall Minimum Spacing (ft.)	Quantity per acre	Frequency (%)	Species Quantity	Vegetation Strata/ Species Name	Common Name	Unit	Spacing Type	Size	Individual Minimum Spacing (ft.)
19	121			TREES					
		10	6	<i>Acer rubrum</i>	Red maple	CONT	Random	1" CAL	60
		15	6	<i>Acer saccharinum</i>	Silver maple	CONT	Random	1" CAL	60
		30	9	<i>Juglans nigra</i>	Black walnut	CONT	Random	1" CAL	49
		25	18	<i>Salix nigra</i>	Black willow	CONT	Random	1" CAL	35
		10	15	<i>Platanus occidentalis</i>	American sycamore	CONT	Random	1" CAL	38
		100	60	<i>Celtis occidentalis</i>	Hackberry	CONT	Random	1" CAL	60
				= total					
23	82			MIDSTORY TREES					
		50	21	<i>Betula nigra</i>	River birch	CONT	Random	1" CAL	32
		50	21	<i>Acer negundo</i>	Boxelder	CONT	Random	1" CAL	32
		100	42	= total					
33	40			SHRUB					
		20	4	<i>Cornus amomum</i>	Silky dogwood	CONT	Random	18-24"	74
		15	3	<i>Alnus serrulata</i>	Smooth alder	CONT	Random	18-24"	85
		30	6	<i>Lindera benzoin</i>	Common spicebush	CONT	Random	18-24"	60
		15	3	<i>Sambucus canadensis</i>	American elder	CONT	Random	18-24"	85
		20	4	<i>Viburnum dentatum</i>	Southern arrowwood	CONT	Random	18-24"	74
		100	20	= total					
6	1210			HERBACEOUS					
		40	8	<i>Mitella struthiopteris</i>	Ostrich fern	CONT	Random	QUART	52
		40	8	<i>Osmundastrum cinnamomeum</i>	Cinnamon fern	CONT	Random	QUART	52
		20	4	<i>Verbesina alternifolia</i>	Wingstem	CONT	Random	QUART	74
		100	20	= total					

PLANT COMPOSITION SCHEDULE

ZONE 2 - Evergreen Edge

Size (acres): 0.59

Overall Minimum Spacing (ft.)	Quantity per acre	Frequency (%)	Species Quantity	Vegetation Strata/ Species Name	Common Name	Unit	Spacing Type	Size	Individual Minimum Spacing (ft.)
15	194			TREES					
		25	29	<i>Pinus virginiana</i>	Virginia pine	CONT	Random	1" CAL	30
		25	29	<i>Pinus strobus</i>	White pine	CONT	Random	1" CAL	30
		25	29	<i>Magnolia virginiana</i>	Sweetbay magnolia	CONT	Random	1" CAL	30
		100	116	<i>Juniperus virginiana</i>	Eastern red cedar	CONT	Random	1" CAL	30
				= total					
N/A	35			HERBACEOUS SEED					
		10	0	<i>Carex pensylvanica</i>	Pennsylvania sedge	SEED	LB of P.L.S. 76%	N/A	N/A
		25	0	<i>Elymus hystrix</i>	Bottlebrush grass	SEED	LB of P.L.S. 76%	N/A	N/A
		25	0	<i>Elymus virginicus</i>	Virginia wild rye	SEED	LB of P.L.S. 76%	N/A	N/A
		25	0	<i>Tridens flavus</i>	Purpletop	SEED	LB of P.L.S. 76%	N/A	N/A
		15	0	<i>Dichanthium clandestinum</i>	Deertongue	SEED	LB of P.L.S. 76%	N/A	N/A
		100	0	= total					

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

PLANT COMPOSITION SCHEDULE

ZONE 3 - Mesic Meadow

Size (acres): 0.26

Overall Minimum Spacing (ft.)	Quantity per acre	Frequency (%)	Species Quantity	Vegetation Strata/ Species Name	Common Name	Unit	Spacing Type	Size	Individual Minimum Spacing (ft.)
N/A	15			HERBACEOUS SEED (ERNMX-721 MD Lower Midland Upland Meadow Mix)					
		53	2.1	<i>Schizachyrium scoparium 'Camper'</i>	Little bluestem 'Camper'	SEED	LB of P.L.S. 76%	N/A	N/A
		10	0.4	<i>Sorghastrum nutans</i>	Indiangrass	SEED	LB of P.L.S. 76%	N/A	N/A
		10	0.4	<i>Elymus virginicus</i>	Virginia wild rye	SEED	LB of P.L.S. 76%	N/A	N/A
		5	0.2	<i>Andropogon gerardii 'Niagara'</i>	Big bluestem 'Niagara'	SEED	LB of P.L.S. 76%	N/A	N/A
		5	0.2	<i>Tridens flavus</i>	Purpletop	SEED	LB of P.L.S. 76%	N/A	N/A
		5	0.2	<i>Rudbeckia hirta</i>	Blackeyed susan	SEED	LB of P.L.S. 76%	N/A	N/A
		4	0.1	<i>Senna hebecarpa</i>	Wild Senna	SEED	LB of P.L.S. 76%	N/A	N/A
		3	0.1	<i>Chamaecrista fasciculata</i>	Partidge pea	SEED	LB of P.L.S. 76%	N/A	N/A
		2	0.1	<i>Eragrostis spectabilis</i>	Purple lovegrass	SEED	LB of P.L.S. 76%	N/A	N/A
		2	0.1	<i>Monarda punctata</i>	Spotted beebalm	SEED	LB of P.L.S. 76%	N/A	N/A
		1	0	<i>Solidago bicolor</i>	White goldenrod	SEED	LB of P.L.S. 76%	N/A	N/A
		100	4	= total					

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

APPROVED
PLANNING BOARD
OF HOWARD COUNTY

DATE 5/16/13

APPROVED: DEPARTMENT OF PLANNING AND ZONING

6/7/13
DATE

6/27/13
DATE

6/7/10
DATE

PLANT COMPOSITION SCHEDULE

ZONE 4 - Oak-Hickory Restoration

Size (acres): 2.64

Overall Minimum Spacing (ft.)	Quantity per acre	Frequency (%)	Species Quantity	Vegetation Strata/ Species Name	Common Name	Unit	Spacing Type	Size	Individual Minimum Spacing (ft.)
33	40			TREES					
		10	11	<i>Liriodendron tulipifera</i>	Tulip poplar	CONT	Random	1" CAL	102
		10	11	<i>Fagus grandifolia</i>	American beech	CONT	Random	1" CAL	102
		20	21	<i>Quercus falcata</i>	Red oak	CONT	Random	1" CAL	74
		25	26	<i>Quercus velutina</i>	Black oak	CONT	Random	1" CAL	67
		15	16	<i>Carya glabra</i>	Pignut hickory	CONT	Random	1" CAL	85
		10	11	<i>Carya alba</i>	Mockemut hickory	CONT	Random	1" CAL	102
		10	11	<i>Nyssa sylvatica</i>	Black Gum	CONT	Random	1" CAL	102
		100	107	= total					
40	27			MIDSTORY TREES					
		30	21	<i>Cornus florida</i>	Flowering dogwood	CONT	Random	1" CAL	74
		30	21	<i>Amelanchier canadensis</i>	Serviceberry	CONT	Random	1" CAL	74
		40	29	<i>Carpinus caroliniana</i>	Ironwood	CONT	Random	1" CAL	63
		100	71	= total					
33	40			SHRUB					
		20	21	<i>Viburnum acerifolium</i>	Maple-leaf viburnum	CONT	Random	18-24"	74
		15	16	<i>Viburnum dentatum</i>	Southern arrowwood	CONT	Random	18-24"	85
		30	32	<i>Vaccinium corymbosum</i>	Highbush blueberry	CONT	Random	18-24"	60
		15	16	<i>Vaccinium pallidum</i>	Hillside blueberry	CONT	Random	18-24"	85
		20	21	<i>Cercis canadensis</i>	Redbud	CONT	Random	18-24"	74
		100	106	= total					

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

PLANT COMPOSITION SCHEDULE

ZONE 5 - Supplemental Floodplain Restoration

Size (acres): 2.68

Overall Minimum Spacing (ft.)	Quantity per acre	Frequency (%)	Species Quantity	Vegetation Strata/ Species Name	Common Name	Unit	Spacing Type	Size	Individual Minimum Spacing (ft.)
33	40			TREES					
		10	11	<i>Acer rubrum</i>	Red maple	CONT	Random	1" CAL	103
		10	11	<i>Acer saccharinum</i>	Silver maple	CONT	Random	1" CAL	103
		15	16	<i>Juglans nigra</i>	Black walnut	CONT	Random	1" CAL	85
		30	32	<i>Salix nigra</i>	Black willow	CONT	Random	1" CAL	60
		25	27	<i>Platanus occidentalis</i>	American sycamore	CONT	Random	1" CAL	66
		10	11	<i>Celtis occidentalis</i>	Hackberry	CONT	Random	1" CAL	103
		100	108	= total					
40	27			MIDSTORY TREES					
		50	36	<i>Betula nigra</i>	River birch	CONT	Random	1" CAL	57
		50	36	<i>Acer negundo</i>	Boxelder	CONT	Random	1" CAL	57
		100	72	= total					
33	40			SHRUB					
		20	21	<i>Cornus amomum</i>	Silky dogwood	CONT	Random	18-24"	75
		15	16	<i>Alnus serrulata</i>	Smooth alder	CONT	Random	18-24"	85
		30	32	<i>Lindera benzoin</i>	Common spicebush	CONT	Random	18-24"	60
		15	16	<i>Sambucus canadensis</i>	American elder	CONT	Random	18-24"	85
		20	21	<i>Viburnum dentatum</i>	Southern arrowwood	CONT	Random	18-24"	75
		100	106	= total					

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

PLANT COMPOSITION SCHEDULE

ZONE 6 - Oak-Hickory Forest Reforestation

Size (acres): 0.76

Overall Minimum Spacing (ft.)	Quantity per acre	Frequency (%)	Species Quantity	Vegetation Strata/ Species Name	Common Name	Unit	Spacing Type	Size	Individual Minimum Spacing (ft.)
19	121			TREES					
		10	9	<i>Liriodendron tulipifera</i>	Tulip poplar	CONT	Random	1" CAL	61
		10	9	<i>Fagus grandifolia</i>	American beech	CONT	Random	1" CAL	61
		20	18	<i>Quercus falcata</i>	Red oak	CONT	Random	1" CAL	43
		25	23	<i>Quercus velutina</i>	Black oak	CONT	Random	1" CAL	38
		15	14	<i>Carya glabra</i>	Pignut hickory	CONT	Random	1" CAL	49
		10	9	<i>Carya alba</i>	Mockemut hickory	CONT	Random	1" CAL	61
		10	9	<i>Nyssa sylvatica</i>	Black Gum	CONT	Random	1" CAL	61
		100	91	= total					
23	82			MIDSTORY TREES					
		30	19	<i>Cornus florida</i>	Flowering dogwood	CONT	Random	1" CAL	42
		30	19	<i>Amelanchier canadensis</i>	Serviceberry	CONT	Random	1" CAL	42
		40	25	<i>Carpinus caroliniana</i>	Ironwood	CONT	Random	1" CAL	36
		100	63	= total					
33	40			SHRUB					
		20	6	<i>Viburnum acerifolium</i>	Maple-leaf viburnum	CONT	Random	18-24"	74
		15	5	<i>Viburnum dentatum</i>	Southern arrowwood	CONT	Random	18-24"	81
		30	9	<i>Vaccinium corymbosum</i>	Highbush blueberry	CONT	Random	18-24"	61
		15	5	<i>Vaccinium pallidum</i>	Hillside blueberry	CONT	Random	18-24"	81
		20	6	<i>Cercis canadensis</i>	Redbud	CONT	Random	18-24"	74
		100	31	= total					
6	1210			HERBACEOUS					
		40	368	<i>Athyrium filix-femina</i>	Common lady fern	CONT	Random	QUART	9
		40	368	<i>Polystichum acrostichoides</i>	Christmas Fern	CONT	Random	QUART	9
		20	184	<i>Eurybia divaricata</i>	White wood aster	CONT	Random	QUART	13
		100	920	= total					

NOTE: NO PLANTING WILL OCCUR IN ZONE 7

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Downtown
Columbia
Restoration
Sites 1 & 2

DATE 05/24/2013 ISSUES / REVISIONS

9/6/2013 ADD STREAM RESTORATION

10/22/2013 REVISED SITE DEVELOPMENT PLAN



THE HOWARD HUGHES CORPORATION
10275 LITTLE PATUXENT PARKWAY
COLUMBIA, MD 21044



The Stables Building 2081 Clipper Park Road
Baltimore, Maryland 21211 / ph: 410.554.0156
fx: 410.554.0168 / www.biohabitats.com
Restore the Earth and Inspire Ecological Stewardship

DOWNTOWN
COLUMBIA
FOREST
ENHANCEMENT
PLAN

PLANT
SCHEDULES
SITE 1

PROJECT NO.: 12024.01 SCALE: N/A

SEAL: BY: KG CHECK: CS
DWG. NO.:

PLANT COMPOSITION SCHEDULE

ZONE 1 - Floodplain Forest Reforestation

Overall Minimum Spacing (ft.)	Quantity per acre	Frequency (%)	Species Quantity	Vegetation Strata / Species Name	Common Name	Unit	Spacing Type	Size	Individual Minimum Spacing (ft.)	
Size (acres): 0.37										
19	121			TREES						
		10	4	<i>Acer rubrum</i>	Red maple	CONT	Random	1" CAL	63	
		10	4	<i>Acer saccharinum</i>	Silver maple	CONT	Random	1" CAL	63	
		15	7	<i>Juglans nigra</i>	Black walnut	CONT	Random	1" CAL	48	
		30	13	<i>Salix nigra</i>	Black willow	CONT	Random	1" CAL	35	
		25	11	<i>Platanus occidentalis</i>	American sycamore	CONT	Random	1" CAL	38	
		10	4	<i>Celtis occidentalis</i>	Hackberry	CONT	Random	1" CAL	63	
		100	43	= total						
23	82			MIDSTORY TREES						
		50	15	<i>Betula nigra</i>	River birch	CONT	Random	1" CAL	33	
		50	15	<i>Acer negundo</i>	Boxelder	CONT	Random	1" CAL	33	
		100	30	= total						
33	40			SHRUB						
		20	3	<i>Cornus amomum</i>	Silky dogwood	CONT	Random	18-24"	73	
		15	2	<i>Alnus serrulata</i>	Smooth alder	CONT	Random	18-24"	90	
		30	4	<i>Lindera benzoin</i>	Common spicebush	CONT	Random	18-24"	63	
		15	2	<i>Sambucus canadensis</i>	American elder	CONT	Random	18-24"	90	
		20	3	<i>Viburnum dentatum</i>	Southern arrowwood	CONT	Random	18-24"	73	
		100	14	= total						
6	1210			HERBACEOUS						
		40	6	<i>Matteuccia struthiopteris</i>	Ostrich fern	CONT	Random	QUART	52	
		40	6	<i>Osmundastrum cinnamomeum</i>	Cinnamon fern	CONT	Random	QUART	52	
		20	3	<i>Verbesina alternifolia</i>	Wingstem	CONT	Random	QUART	73	
		100	15	= total						

PLANT COMPOSITION SCHEDULE

ZONE 2 - Evergreen Edge

Overall Minimum Spacing (ft.)	Quantity per acre	Frequency (%)	Species Quantity	Vegetation Strata / Species Name	Common Name	Unit	Spacing Type	Size	Individual Minimum Spacing (ft.)	
Size (acres): 0.25										
15	184			TREES						
		25	12	<i>Pinus virginiana</i>	Virginia pine	CONT	Random	1" CAL	30	
		25	12	<i>Pinus strobus</i>	White pine	CONT	Random	1" CAL	30	
		25	12	<i>Magnolia virginiana</i>	Sweetbay magnolia	CONT	Random	1" CAL	30	
		25	12	<i>Juniperus virginiana</i>	Eastern red cedar	CONT	Random	1" CAL	30	
		100	48	= total						
N/A	35			HERBACEOUS SEED						
		10	0	<i>Carex pensylvanica</i>	Pennsylvania sedge	SEED	LB of P.L.S. 76 %	N/A	N/A	
		25	0	<i>Elymus hystrix</i>	Bottebrush grass	SEED	LB of P.L.S. 76 %	N/A	N/A	
		25	0	<i>Elymus virginicus</i>	Virginia wild rye	SEED	LB of P.L.S. 76 %	N/A	N/A	
		25	0	<i>Tridens flavus</i>	Purpletop	SEED	LB of P.L.S. 76 %	N/A	N/A	
		15	0	<i>Dichanthium clandestinum</i>	Deertongue	SEED	LB of P.L.S. 76 %	N/A	N/A	
		100	0	= total						

PLANT COMPOSITION SCHEDULE

ZONE 3 - Mesic Meadow

Overall Minimum Spacing (ft.)	Quantity per acre	Frequency (%)	Species Quantity	Vegetation Strata / Species Name	Common Name	Unit	Spacing Type	Size	Individual Minimum Spacing (ft.)	
Size (acres): 0.34										
N/A	15			HERBACEOUS SEED (ERNMX-721 MD Lower Midland Upland Meadow Mix)						
		53	2.7	<i>Schizanthus scoparium</i>	Little bluestem 'Camper'	SEED	LB of P.L.S. 76 %	N/A	N/A	
		10	0.5	<i>Sorghastrum nutans</i>	Indiangrass	SEED	LB of P.L.S. 76 %	N/A	N/A	
		10	0.5	<i>Elymus virginicus</i>	Virginia wild rye	SEED	LB of P.L.S. 76 %	N/A	N/A	
		5	0.3	<i>Andropogon gerardii</i>	Big bluestem 'Niagara'	SEED	LB of P.L.S. 76 %	N/A	N/A	
		5	0.3	<i>Tridens flavus</i>	Purpletop	SEED	LB of P.L.S. 76 %	N/A	N/A	
		5	0.3	<i>Rudbeckia hirta</i>	Balckeyed susan	SEED	LB of P.L.S. 76 %	N/A	N/A	
		4	0.2	<i>Senna hebecarpa</i>	Wild Senna	SEED	LB of P.L.S. 76 %	N/A	N/A	
		3	0.2	<i>Chamaecrista fasciculata</i>	Partridge pea	SEED	LB of P.L.S. 76 %	N/A	N/A	
		2	0.1	<i>Eragrostis spectabilis</i>	Purple lovegrass	SEED	LB of P.L.S. 76 %	N/A	N/A	
		2	0.1	<i>Monarda punctata</i>	Spotted beebalm	SEED	LB of P.L.S. 76 %	N/A	N/A	
		1	0.1	<i>Solidago bicolor</i>	White goldenrod	SEED	LB of P.L.S. 76 %	N/A	N/A	
		100	5.3	= total						

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

APPROVED
PLANNING BOARD
of HOWARD COUNTY

DATE 5/16/13

APPROVED: DEPARTMENT OF PLANNING AND ZONING

6/7/13
DATE

6/7/13
DATE

6/7/13
DATE

PLANT COMPOSITION SCHEDULE

ZONE 4 - Oak-Hickory Restoration

Overall Minimum Spacing (ft.)	Quantity per acre	Frequency (%)	Species Quantity	Vegetation Strata / Species Name	Common Name	Unit	Spacing Type	Size	Individual Minimum Spacing (ft.)	
Size (acres): 1.84										
33	40			TREES						
		10	7	<i>Liriodendron tulipifera</i>	Tulip poplar	CONT	Random	1" CAL	107	
		10	7	<i>Fagus grandifolia</i>	American beech	CONT	Random	1" CAL	107	
		20	15	<i>Quercus falcata</i>	Red oak	CONT	Random	1" CAL	73	
		25	18	<i>Quercus velutina</i>	Black oak	CONT	Random	1" CAL	67	
		15	11	<i>Carya glabra</i>	Pignut hickory	CONT	Random	1" CAL	85	
		10	7	<i>Carya alba</i>	Mockemut hickory	CONT	Random	1" CAL	107	
		100	72	<i>Nyssa sylvatica</i>	Black Gum	CONT	Random	1" CAL	107	
				= total						
40	27			MIDSTORY TREES						
		30	15	<i>Cornus florida</i>	Flowering dogwood	CONT	Random	1" CAL	73	
		30	15	<i>Amelanchier canadensis</i>	Serviceberry	CONT	Random	1" CAL	73	
		40	20	<i>Carpinus caroliniana</i>	Ironwood	CONT	Random	1" CAL	63	
		100	50	= total						
33	40			SHRUB						
		20	15	<i>Viburnum acerifolium</i>	Maple-leaf viburnum	CONT	Random	18-24"	73	
		15	11	<i>Viburnum dentatum</i>	Southern arrowwood	CONT	Random	18-24"	85	
		30	22	<i>Vaccinium corymbosum</i>	Highbush blueberry	CONT	Random	18-24"	60	
		15	11	<i>Vaccinium pallidum</i>	Hillside blueberry	CONT	Random	18-24"	85	
		20	15	<i>Cercis canadensis</i>	Redbud	CONT	Random	18-24"	73	
		100	74	= total						

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

PLANT COMPOSITION SCHEDULE

ZONE 5 - Supplemental Floodplain Restoration

Overall Minimum Spacing (ft.)	Quantity per acre	Frequency (%)	Species Quantity	Vegetation Strata / Species Name	Common Name	Unit	Spacing Type	Size	Individual Minimum Spacing (ft.)	
Size (acres): 5.18										
33	40			TREES						
		10	21	<i>Acer rubrum</i>	Red maple	CONT	Random	1" CAL	104	
		10	21	<i>Acer saccharinum</i>	Silver maple	CONT	Random	1" CAL	104	
		15	31	<i>Juglans nigra</i>	Black walnut	CONT	Random	1" CAL	85	
		30	62	<i>Salix nigra</i>	Black willow	CONT	Random	1" CAL	60	
		25	52	<i>Platanus occidentalis</i>	American sycamore	CONT	Random	1" CAL	66	
		10	21	<i>Celtis occidentalis</i>	Hackberry	CONT	Random	1" CAL	104	
		100	208	= total						
40	27			MIDSTORY TREES						
		50	70	<i>Betula nigra</i>	River birch	CONT	Random	1" CAL	57	
		50	70	<i>Acer negundo</i>	Boxelder	CONT	Random	1" CAL	57	
		100	140	= total						
33	40			SHRUB						
		20	41	<i>Cornus amomum</i>	Silky dogwood	CONT	Random	18-24"	74	
		15	31	<i>Alnus serrulata</i>	Smooth alder	CONT	Random	18-24"	85	
		30	62	<i>Lindera benzoin</i>	Common spicebush	CONT	Random	18-24"	60	
		15	31	<i>Sambucus canadensis</i>	American elder	CONT	Random	18-24"	85	
		20	41	<i>Viburnum dentatum</i>	Southern arrowwood	CONT	Random	18-24"	74	
		100	206	= total						

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

Downtown
Columbia
Restoration
Sites 1 & 2

DATE 05/24/2013 ISSUES / REVISIONS

9/6/2013 ADD STREAM RESTORATION

10/21/2013 REVISED SITE DEVELOPMENT PLAN

Howard Hughes
THE HOWARD HUGHES CORPORATION

THE HOWARD HUGHES CORPORATION
10275 LITTLE PATUXENT PARKWAY
COLUMBIA, MD 21044

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DOWNTOWN
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PLAN

PLANT
SCHEDULES
SITE 2

PROJECT NO.: 12024.01 SCALE: N/A

SEAL: BY: KG CHECK: CS

DWG. NO.:



28
14 of 44

NOTE: NO PLANTING WILL OCCUR IN ZONE 7

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 "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"

Christopher Strub
 SIGNATURE OF ENGINEER (PRINT NAME BELOW SIGNATURE)
 Christopher Strub
 DATE: 10/21/2013

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"

Robert Jenkins
 SIGNATURE OF DEVELOPER (PRINT NAME BELOW SIGNATURE)
 Robert Jenkins
 DATE: 10/21/2013

This development plan is approved for soil erosion and sediment control by the HOWARD SOIL CONSERVATION DISTRICT

Howard SCD _____ Date _____

DOWNTOWN COLUMBIA STREAM RESTORATION SITE 2

DATE	ISSUES / REVISIONS
9/6/2013	ADD STREAM RESTORATION

Howard Hughes
 THE HOWARD HUGHES CORPORATION

THE HOWARD HUGHES CORPORATION
 10275 LITTLE PATUXENT PARKWAY
 COLUMBIA, MD 21044

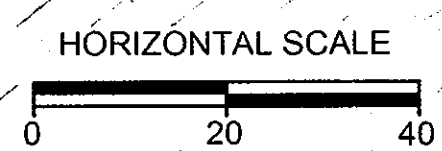
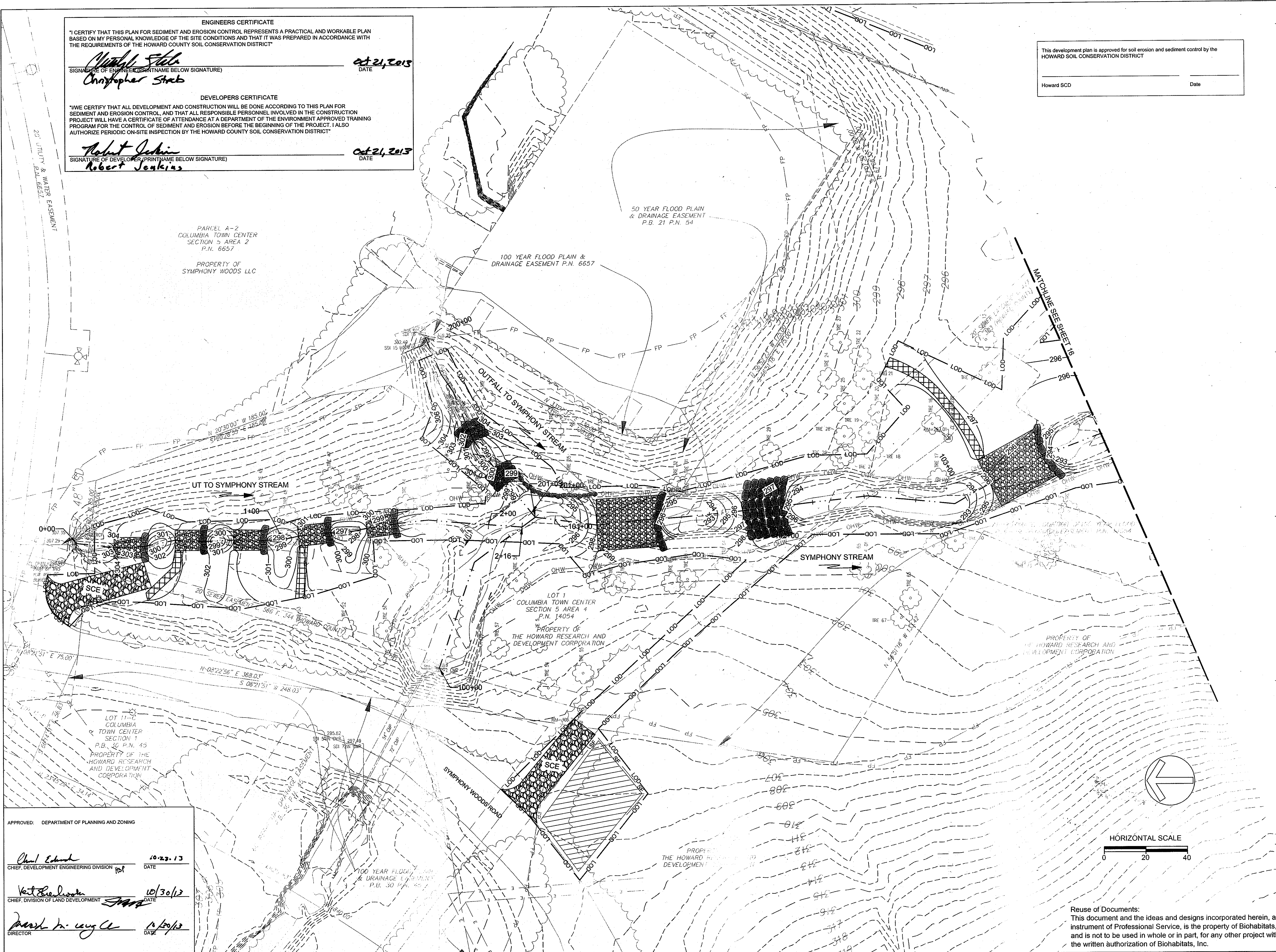
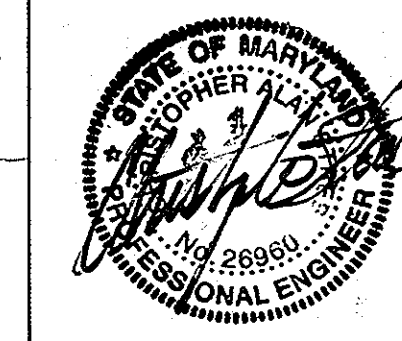
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 Restore the Earth and Inspire Ecological Stewardship

DOWNTOWN COLUMBIA STREAM RESTORATION SITE 2

TITLE:
 GRADING & EROSION AND SEDIMENT CONTROL PLAN

PROJECT NO.:	12024.01	SCALE:	1" = 20'
SEAL:		BY:	SH, TB
		CHECK:	CS, EM
		DWG. NO.:	



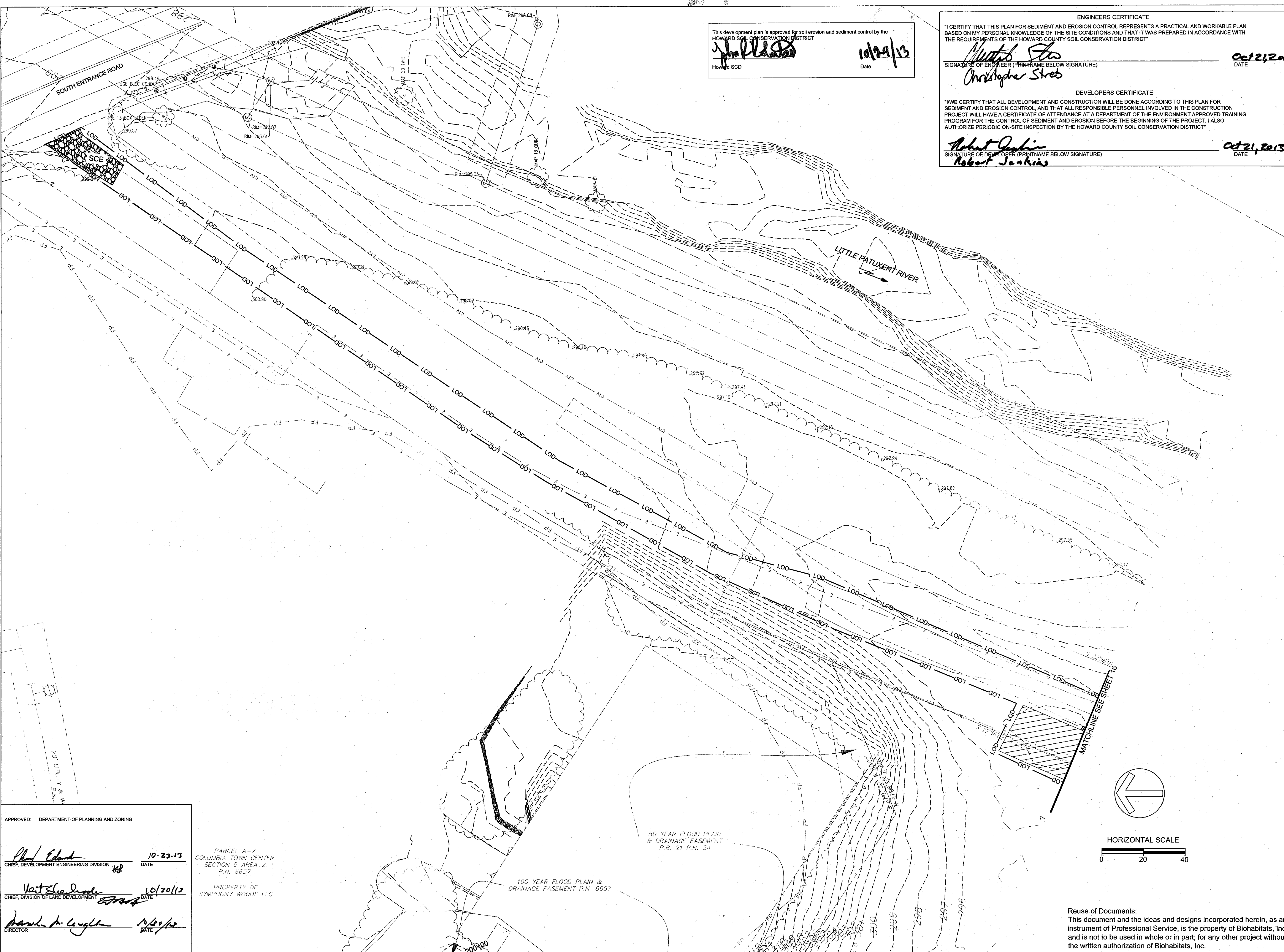
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APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chad Edwards 10/23/13
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

Vicki Richardson 10/30/13
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

Debra M. Long 10/30/13
 DIRECTOR DATE



This development plan is approved for soil erosion and sediment control by the HOWARD COUNTY SOIL CONSERVATION DISTRICT

John P. Blanton
 Howard SCD
 Date: 10/29/13

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"

Christopher Streb
 SIGNATURE OF ENGINEER (PRINT NAME BELOW SIGNATURE)
 DATE: Oct 21, 2013

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"

Robert Jenkins
 SIGNATURE OF DEVELOPER (PRINT NAME BELOW SIGNATURE)
 DATE: Oct 21, 2013

DOWNTOWN COLUMBIA STREAM RESTORATION SITE 2

DATE	ISSUES / REVISIONS
9/6/2013	ADD STREAM RESTORATION

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DOWNTOWN COLUMBIA STREAM RESTORATION SITE 2

TITLE: GRADING & EROSION AND SEDIMENT CONTROL PLAN

PROJECT NO.: 12024.01 SCALE: 1" = 20'

BY: SH, TB CHECK: CS, EM
 DWG. NO.:



APPROVED: DEPARTMENT OF PLANNING AND ZONING

Paul Edmond
 CHIEF, DEVELOPMENT ENGINEERING DIVISION
 DATE: 10-23-13

Vert Shee
 CHIEF, DIVISION OF LAND DEVELOPMENT
 DATE: 10/30/12

Paul A. Lough
 DIRECTOR
 DATE: 10/30/12

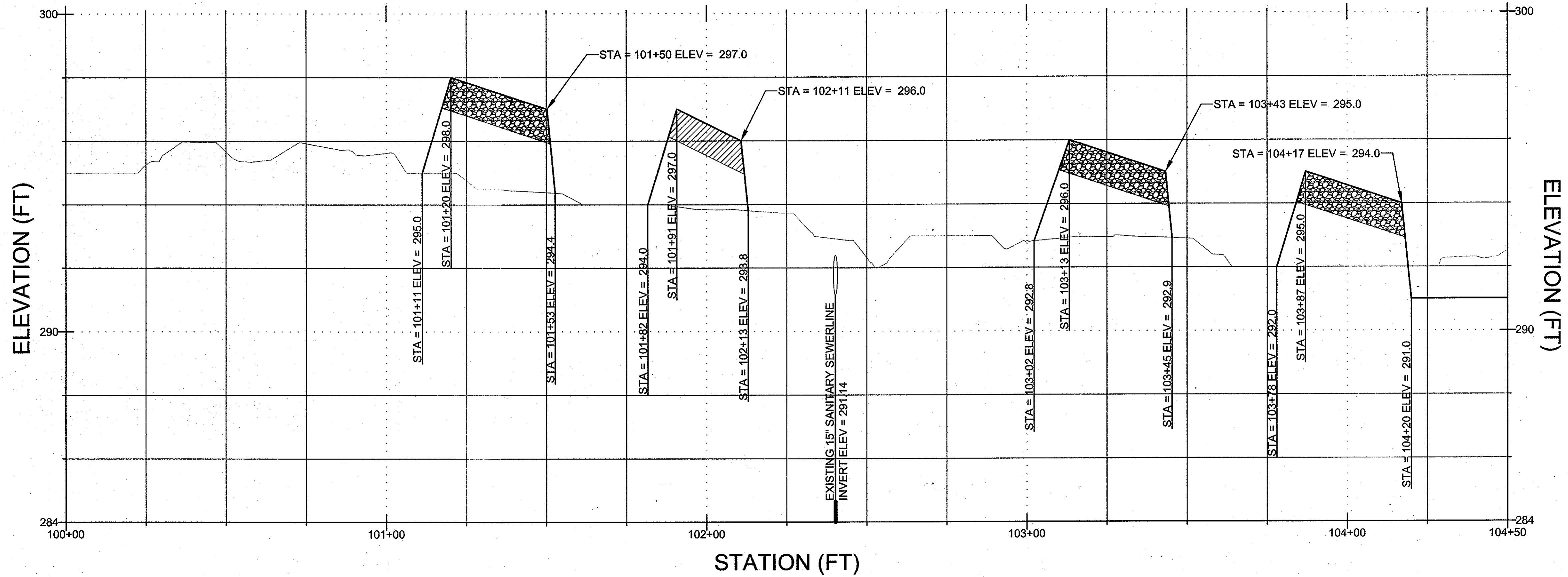
PARCEL A-2
 COLUMBIA TOWN CENTER
 SECTION 5 AREA 2
 P.N. 6657

PROPERTY OF
 SYMPHONY WOODS LLC

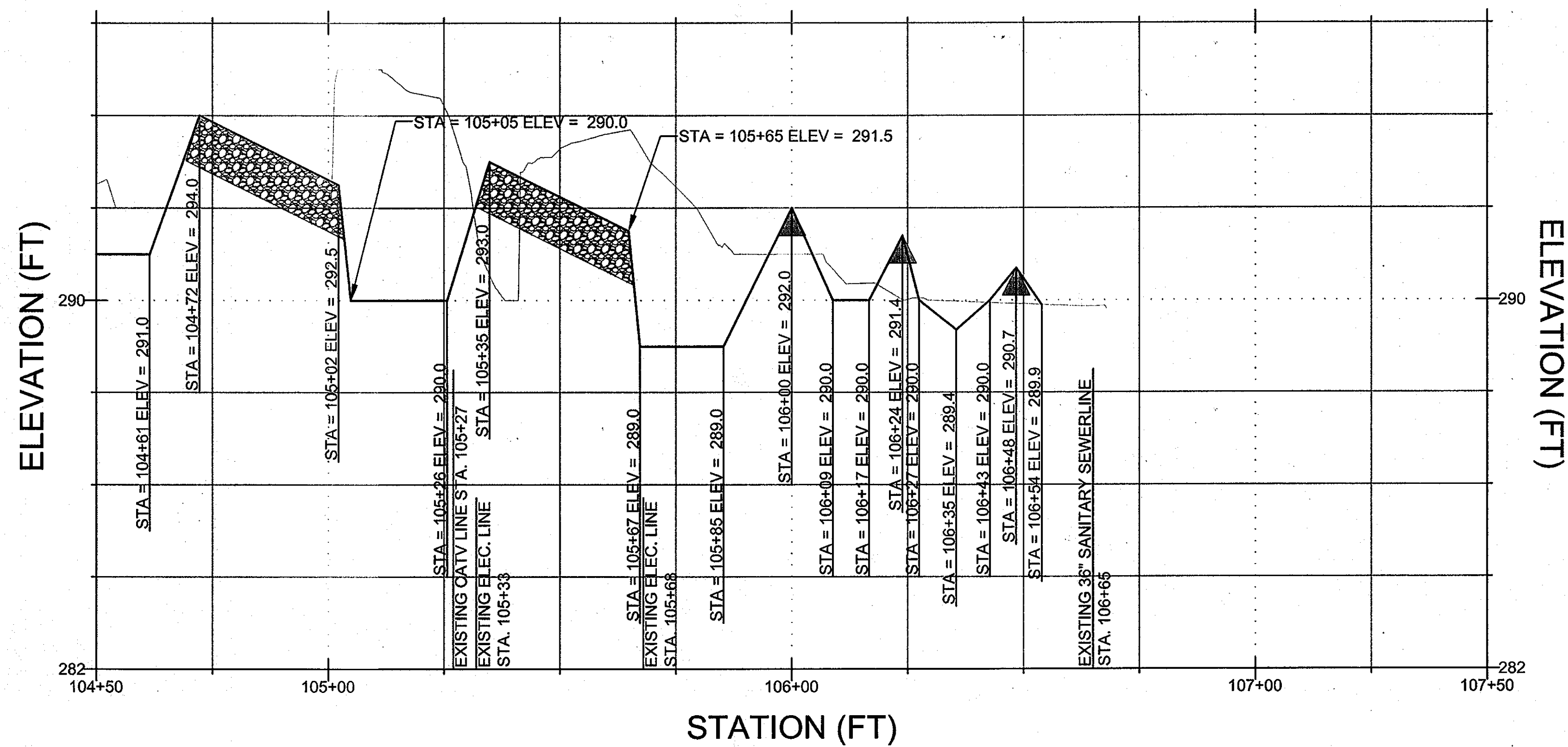
50 YEAR FLOOD PLAN & DRAINAGE EASEMENT
 P.B. 21 P.N. 54

100 YEAR FLOOD PLAN & DRAINAGE EASEMENT
 P.N. 6657

PROFILE OF SYMPHONY STREAM





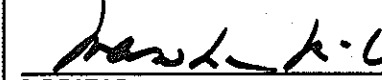
PROFILE OF SYMPHONY STREAM CON'D



PROFILE LEGEND

- EXISTING
- PROPOSED
- ▲ ROCK STEP
- ▨ COBBLE RIFFLE
- ▧ CASCADE

APPROVED: DEPARTMENT OF PLANNING AND ZONING

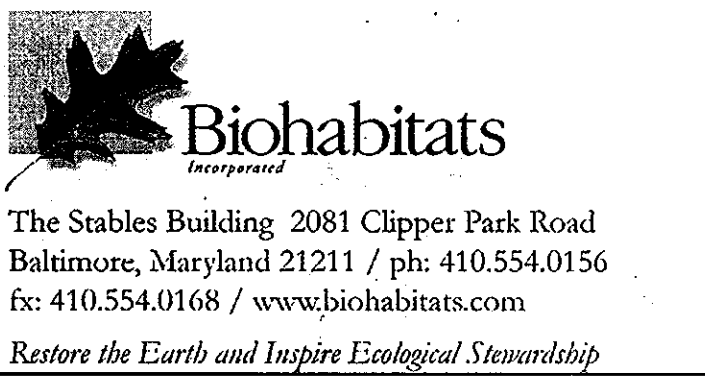
 10/23/13
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE
 10/30/13
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE
 10/20/13
 DIRECTOR DATE

DOWNTOWN COLUMBIA STREAM RESTORATION SITE 2

DATE	ISSUES / REVISIONS
9/6/2013	ADD STREAM RESTORATION




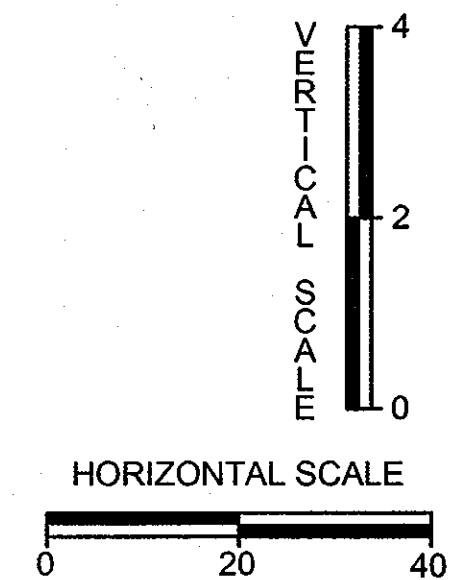
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 COLUMBIA, MD 21044



DOWNTOWN COLUMBIA STREAM RESTORATION SITE 2

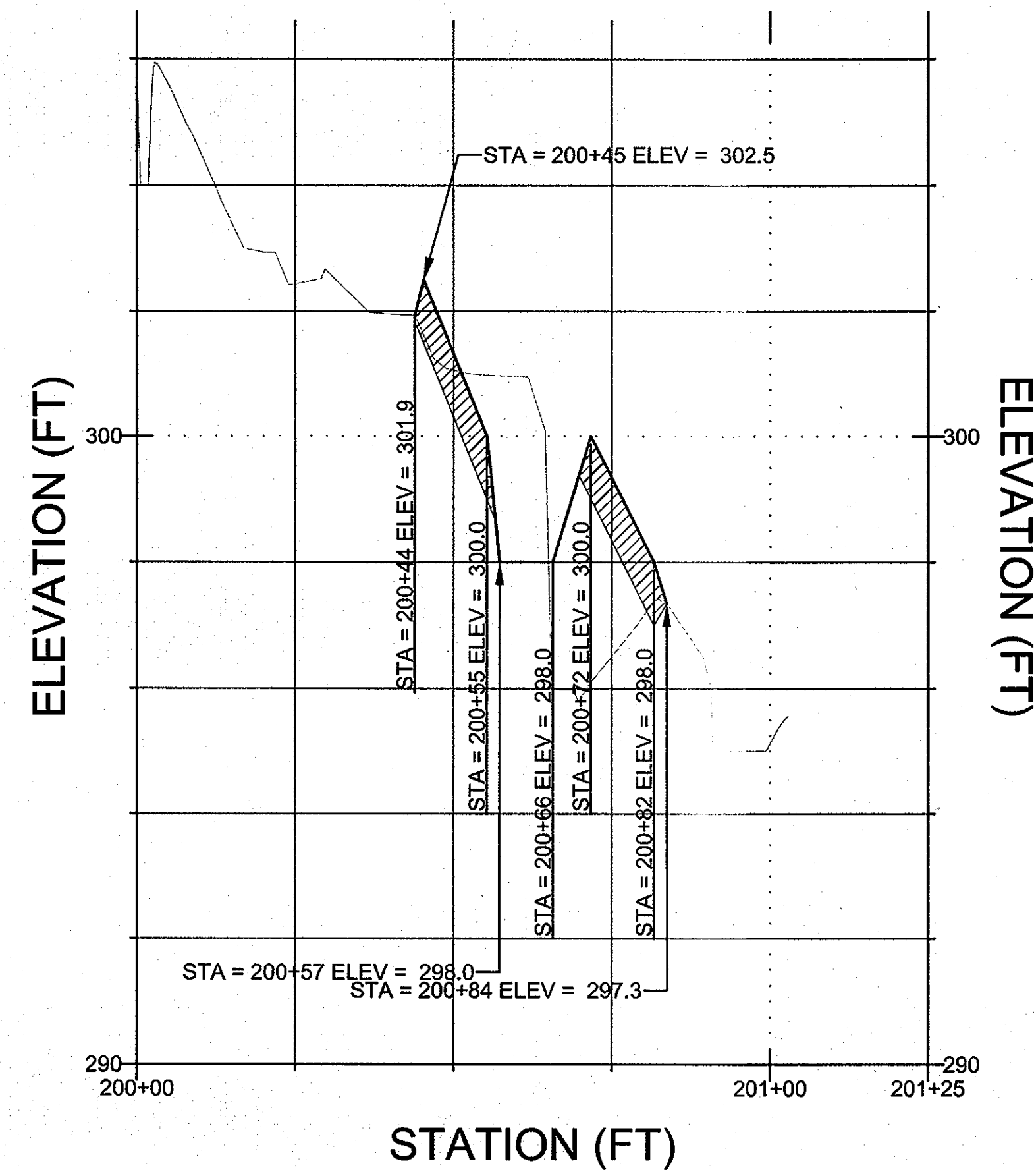
PROFILES

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SEAL: 	BY: SH, TB CHECK: CS, EM DWG. NO.:

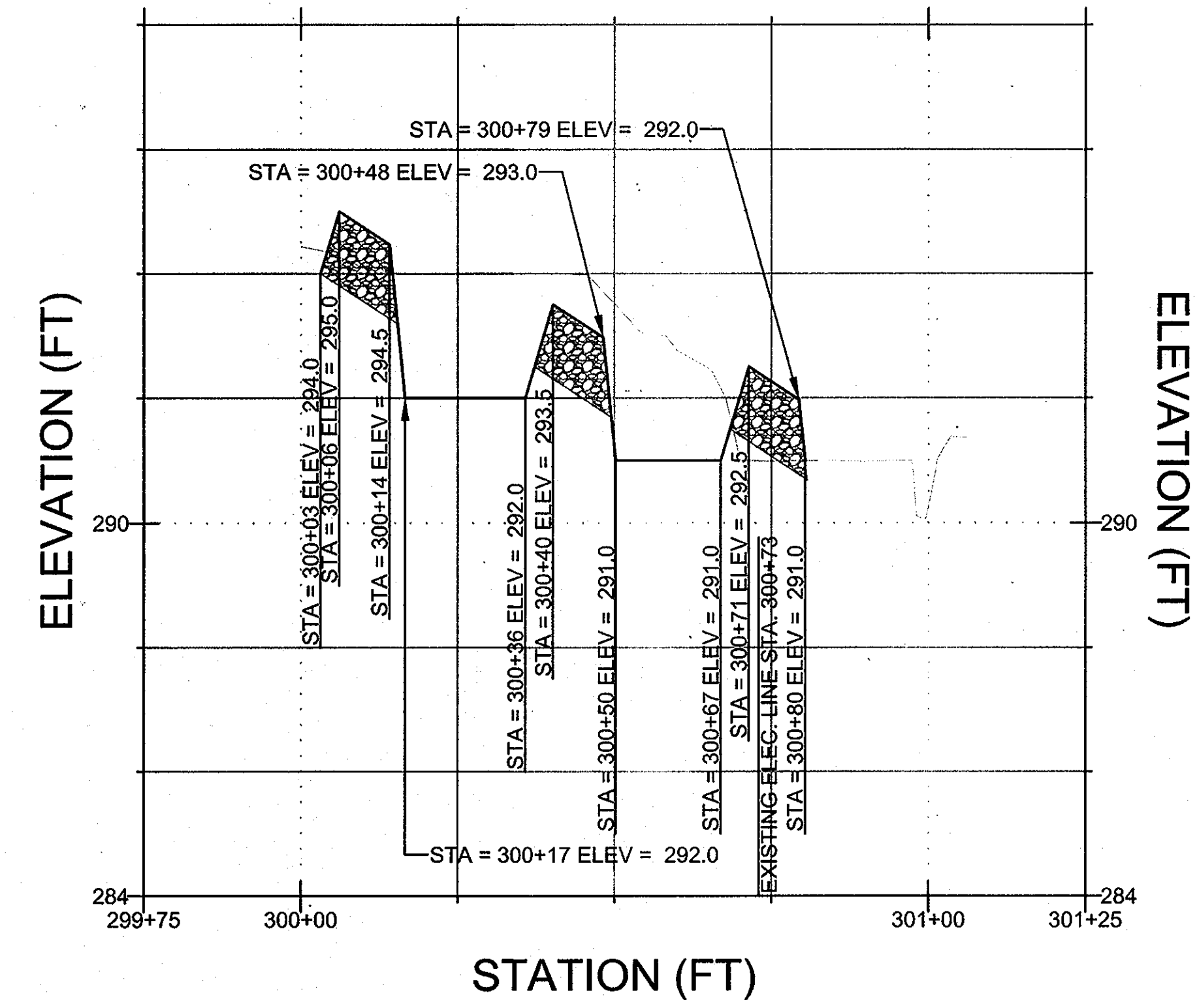


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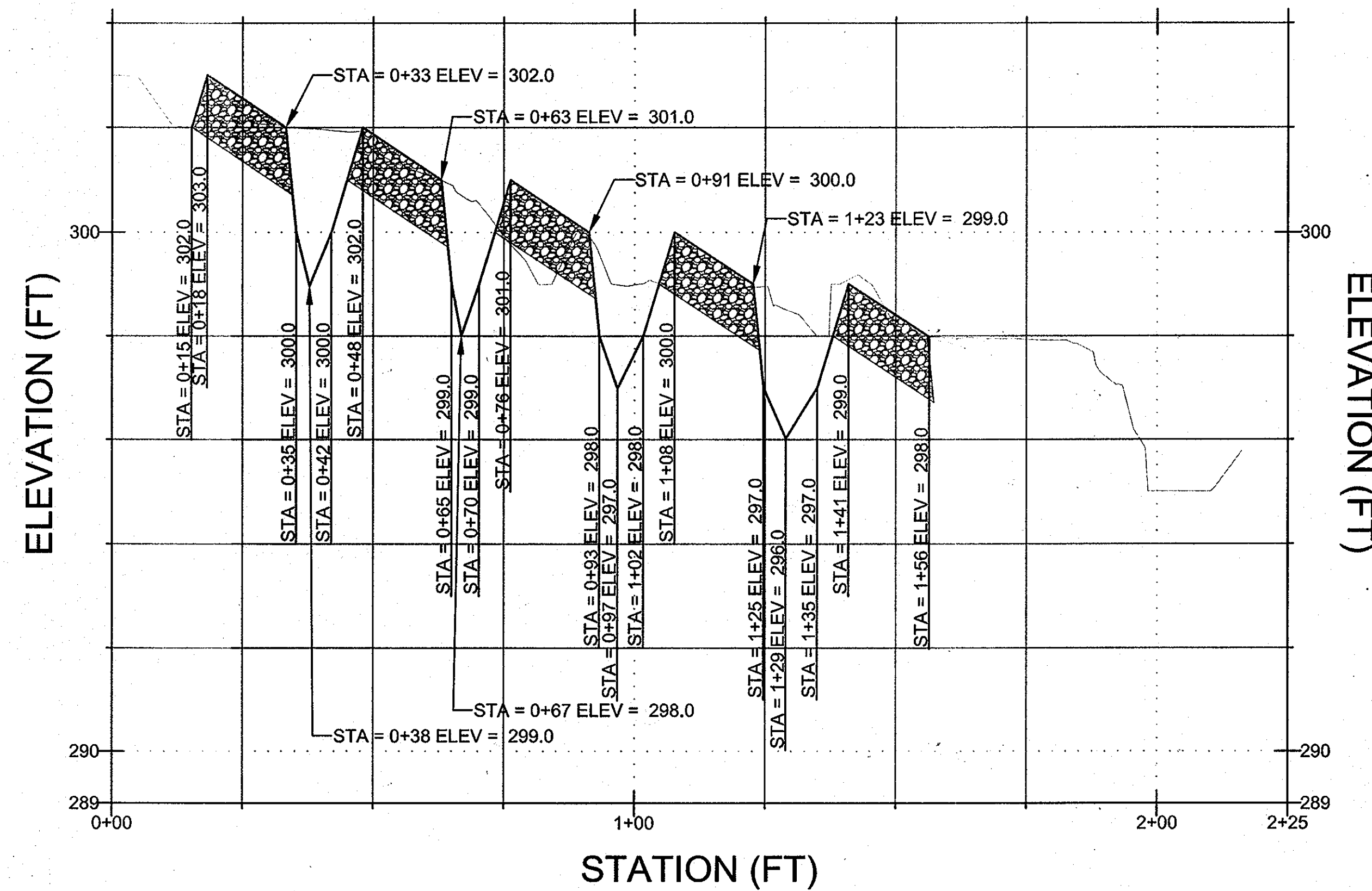
PROFILE OF OUTFALL TO SYMPHONY STREAM



PROFILE OF SOUTH WEST OUTFALL



PROFILE OF UT TO SYMPHONY STREAM



PROFILE LEGEND

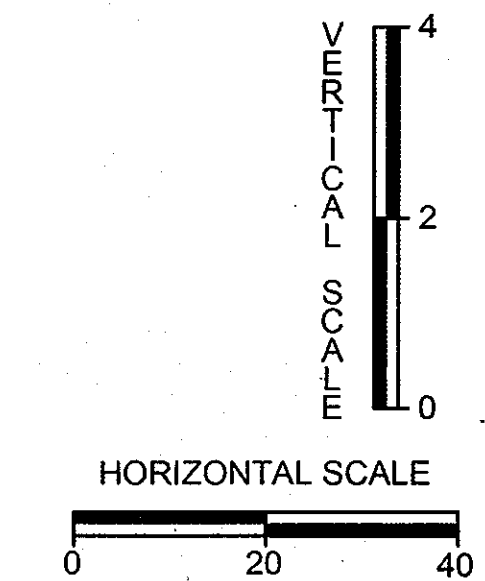
- EXISTING
- - - PROPOSED
- ▲ ROCK STEP
- ▨ COBBLE RIFFLE
- ▧ CASCADE

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Paul Edmund 10/23/12
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

Victor Schindler 10/30/12
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

Marsha A. Leavelle 10/30/12
DIRECTOR DATE



DOWNTOWN COLUMBIA STREAM RESTORATION SITE 2

DATE	ISSUES / REVISIONS
9/6/2013	ADD STREAM RESTORATION

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DOWNTOWN COLUMBIA STREAM RESTORATION SITE 2

PROFILES

PROJECT NO.: 12024.01	SCALE: 1" = 20'H 1" = 2'V
SEAL: [Signature]	BY: SH, TB CHECK: CS, EM DWG. NO.:

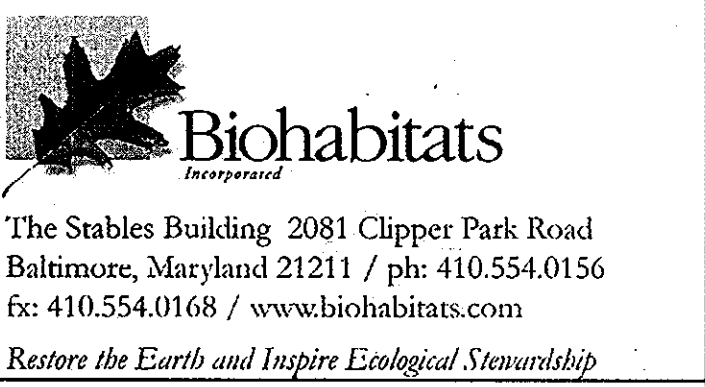
STATE OF MARYLAND
PROFESSIONAL ENGINEER
10/26/2012

**DOWNTOWN
COLUMBIA
STREAM
RESTORATION
SITE 2**

DATE ISSUES / REVISIONS
9/6/2013 ADD STREAM RESTORATION



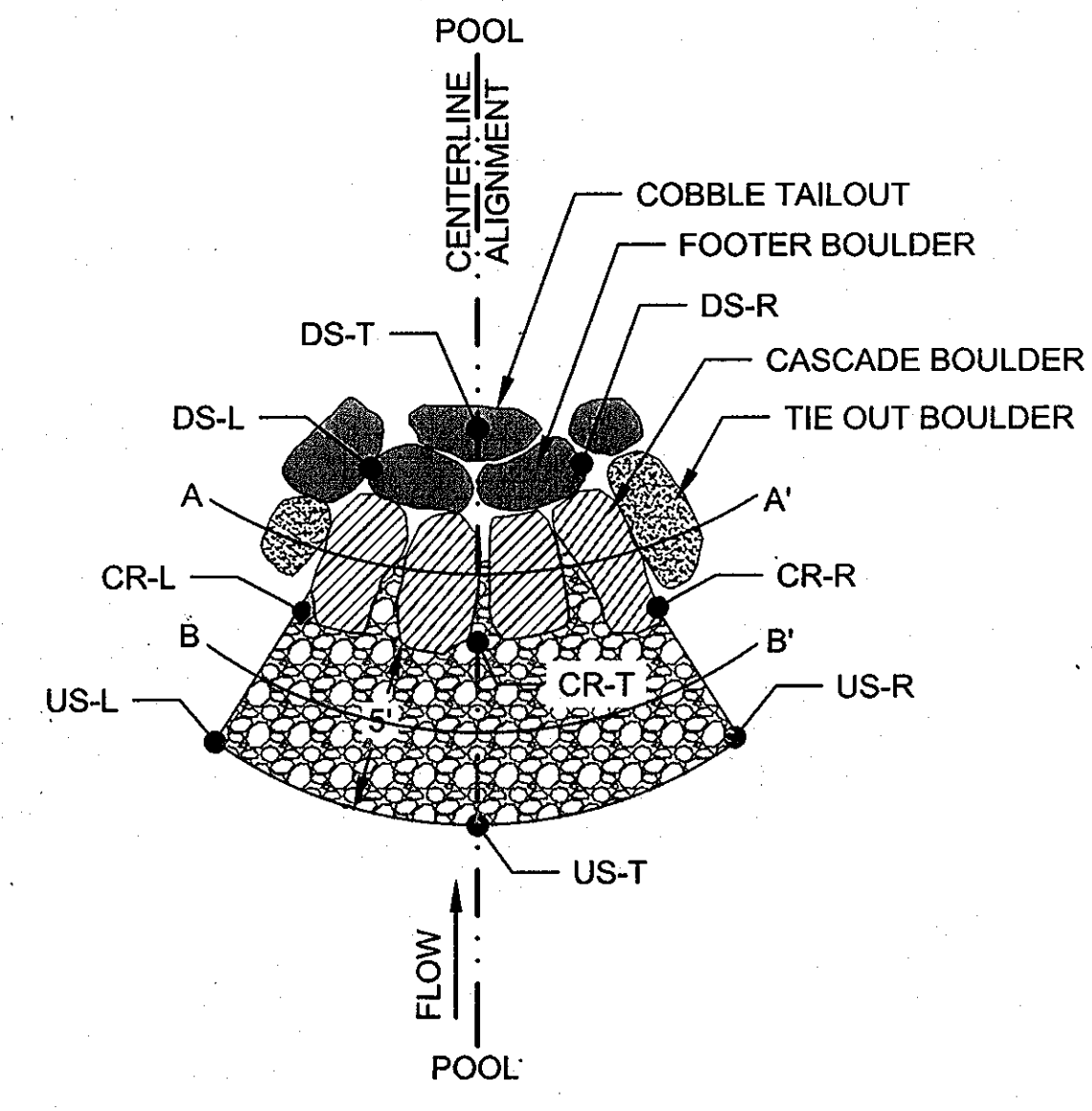
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10275 LITTLE PATUXENT PARKWAY
COLUMBIA, MD 21044



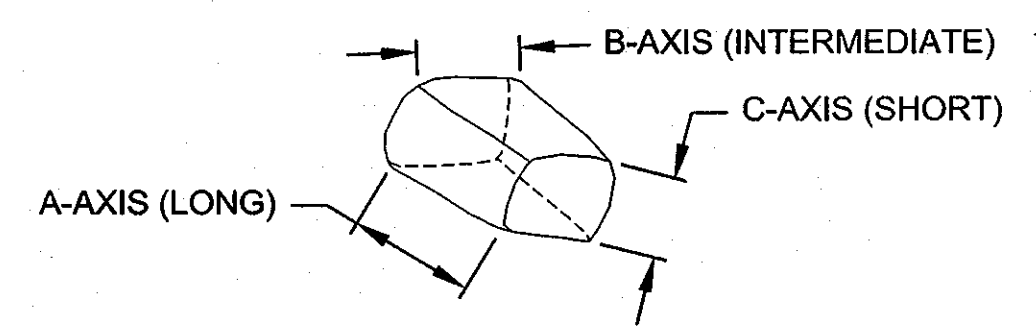
**DOWNTOWN
COLUMBIA
STREAM
RESTORATION
SITE 2**

DETAILS

PROJECT NO.: 12024.01 SCALE: NA
SEAL: BY: SH, TB CHECK: CS, EM
DWG. NO.:



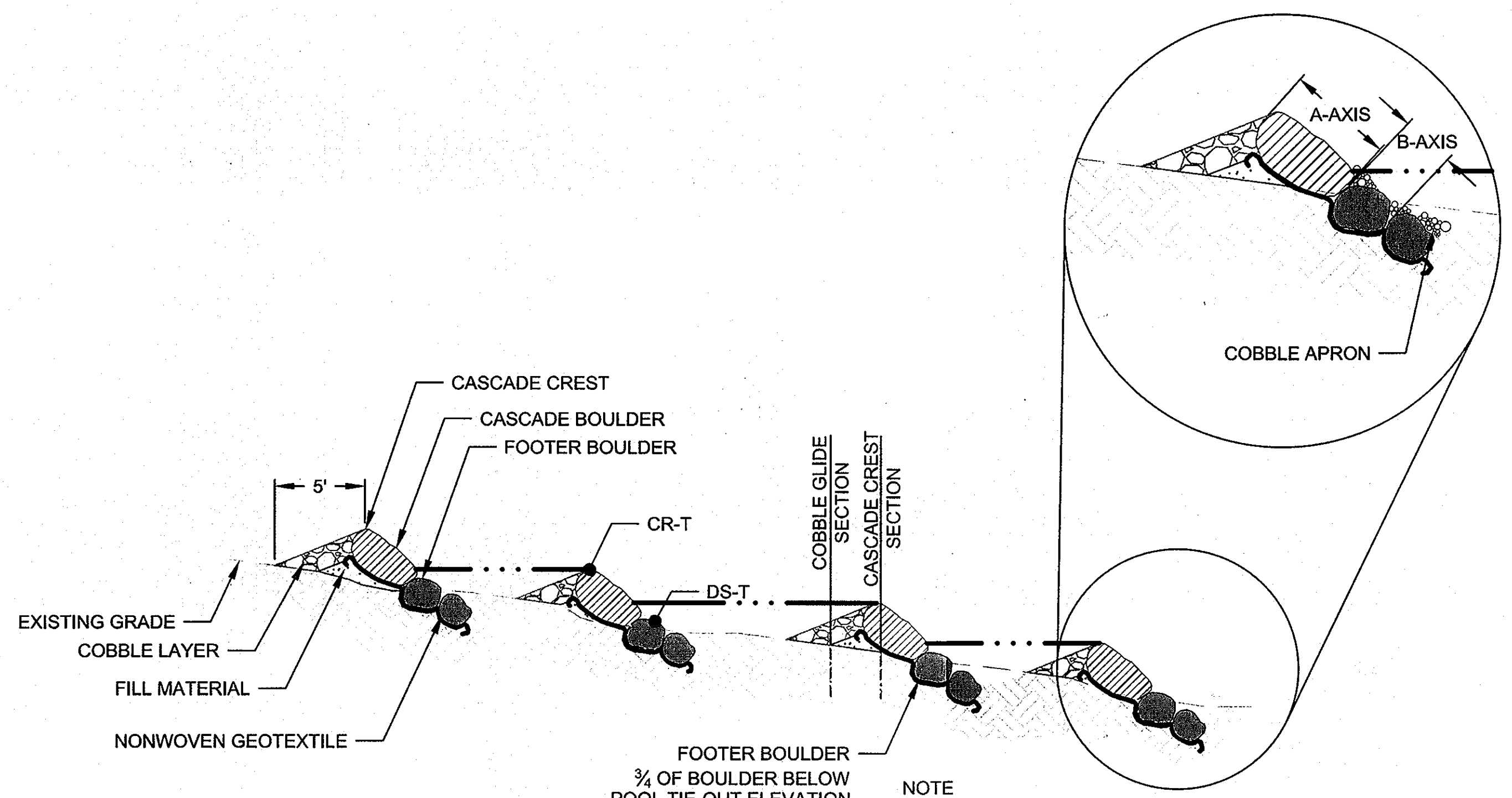
**CASCAD E
PLAN VIEW** NOT TO SCALE



BOULDER AXIS NOT TO SCALE

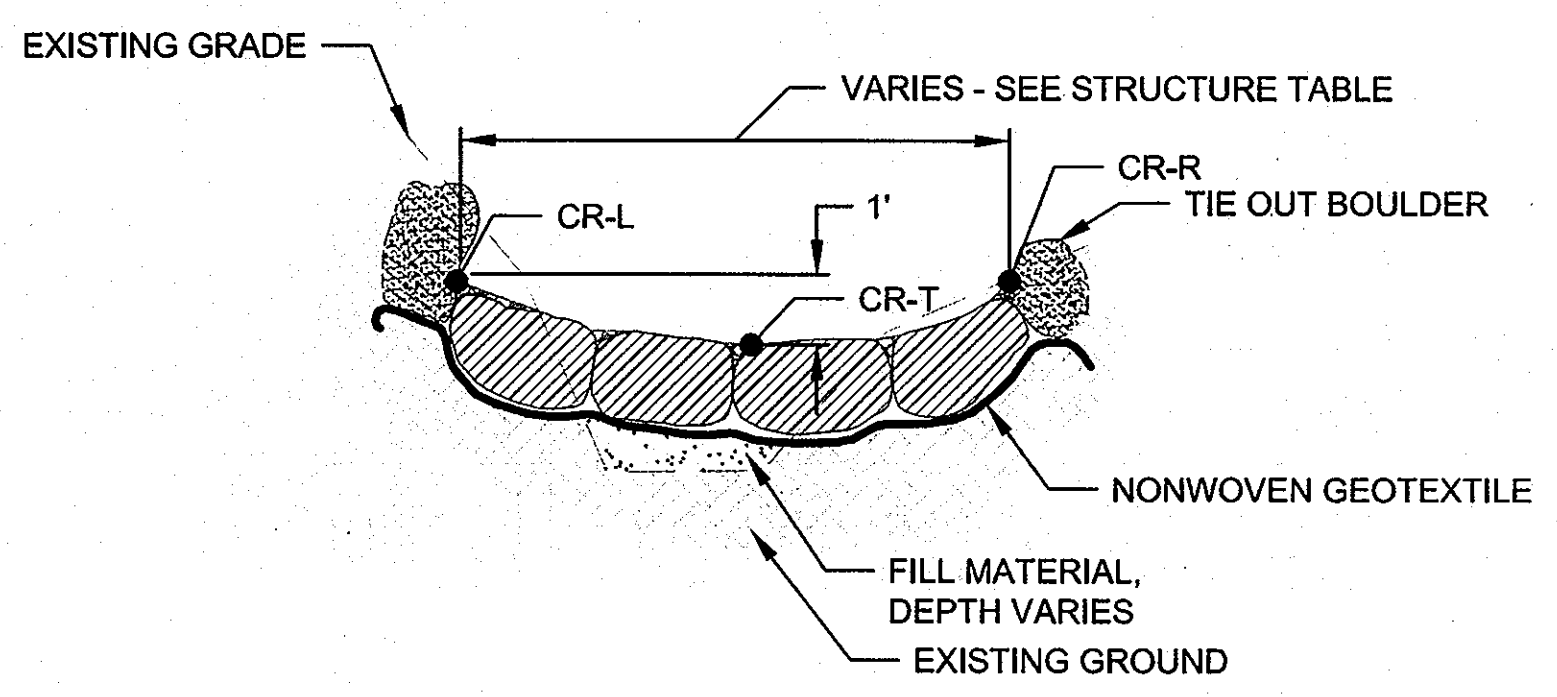
BOULDER DIMENSIONS			
	A-AXIS	B-AXIS	C-AXIS
FOOTER	4	3	2
TIE-OUT	4	3	2

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

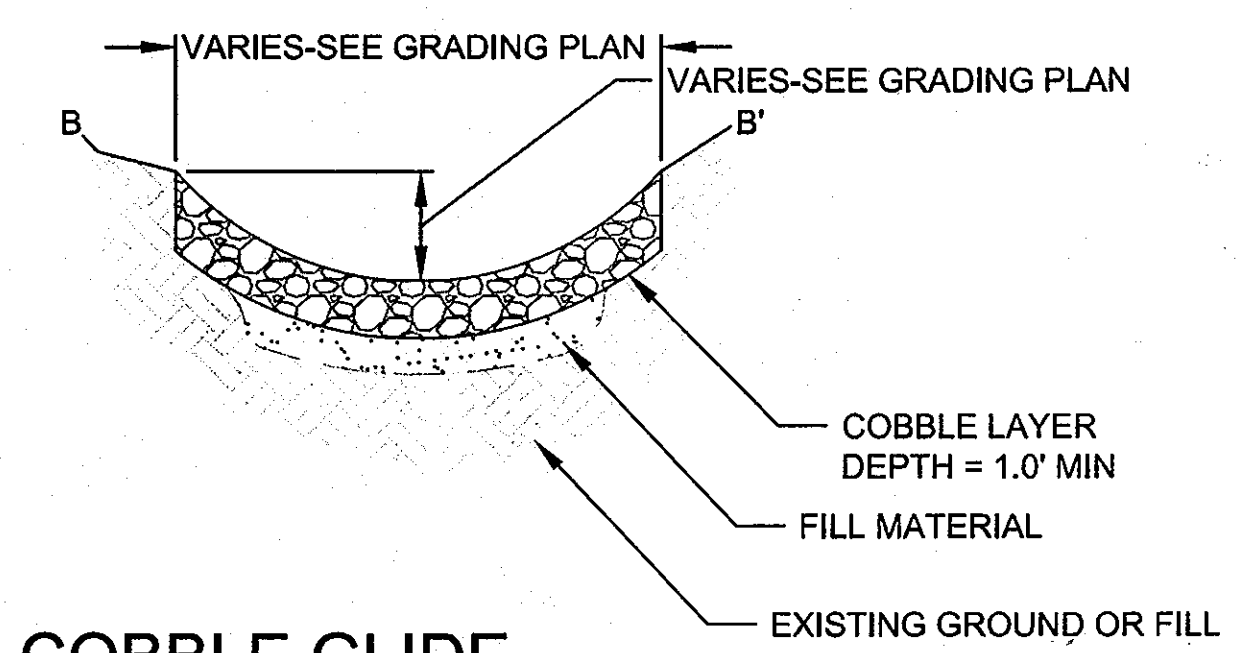


**CASCAD E
CENTERLINE PROFILE** NOT TO SCALE

NOTE
1. CASCAD E SEQUENCES ON PLAN SET MIGHT CONSIST OF ONLY ONE PROFILE SECTION



**CASCAD E CREST
SECTION A-A'** NOT TO SCALE



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

APPROVED: DEPARTMENT OF PLANNING AND ZONING
Chad Christ 10/22/13
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE
Veit Redwood 10/30/13
CHIEF, DIVISION OF LAND DEVELOPMENT DATE
Barbara M. Lytle 10/30/13
DIRECTOR DATE

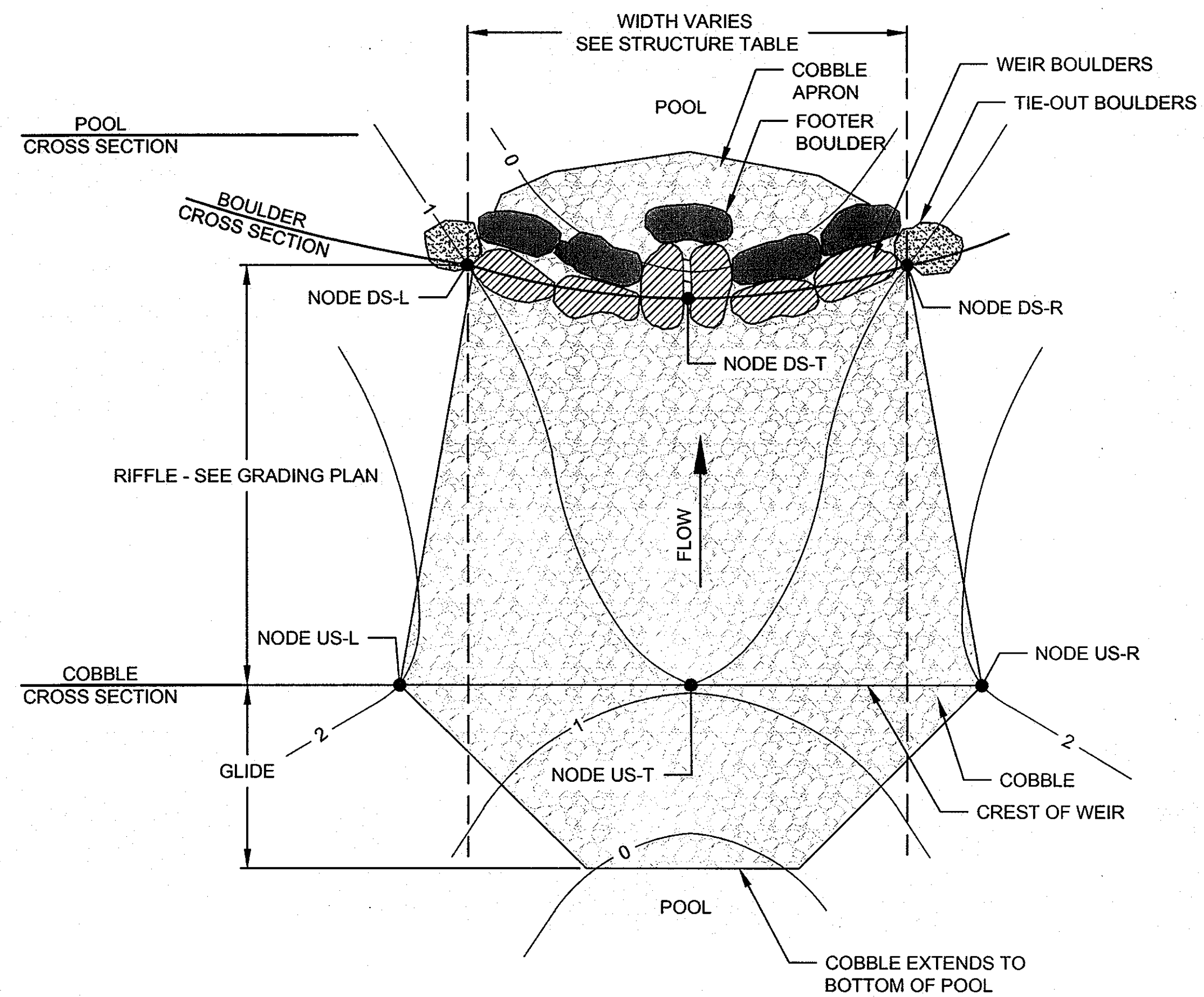
This development plan is approved for soil erosion and sediment control by the HOWARD SOIL CONSERVATION DISTRICT
John Roberts 10/29/13
Howard SCD Date

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."
Christopher Streb 10/21/13
SIGNATURE OF ENGINEER (PRINT NAME BELOW SIGNATURE) DATE

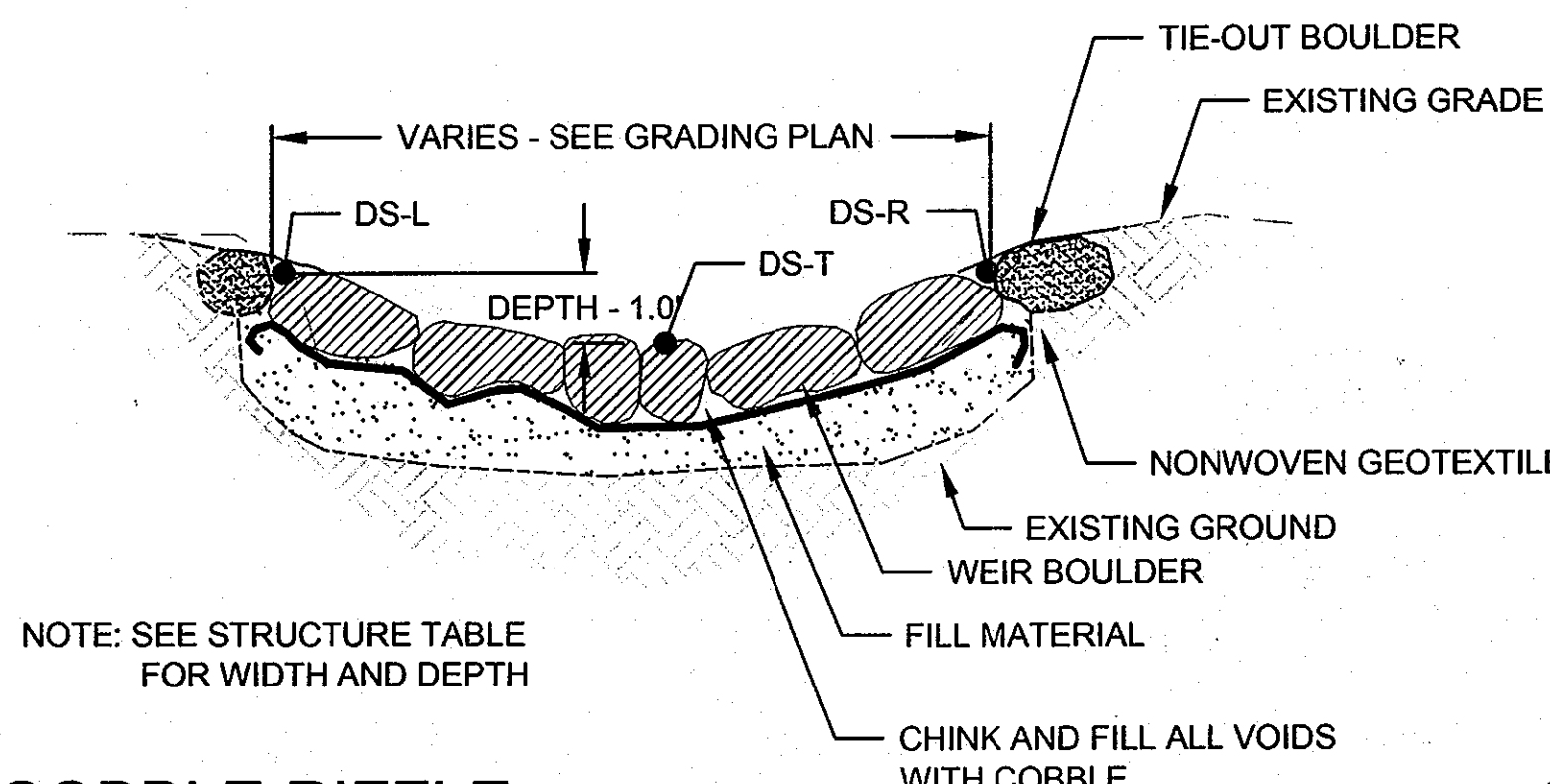
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Robert Jenkins 10/21/13
SIGNATURE OF DEVELOPER (PRINT NAME BELOW SIGNATURE) DATE

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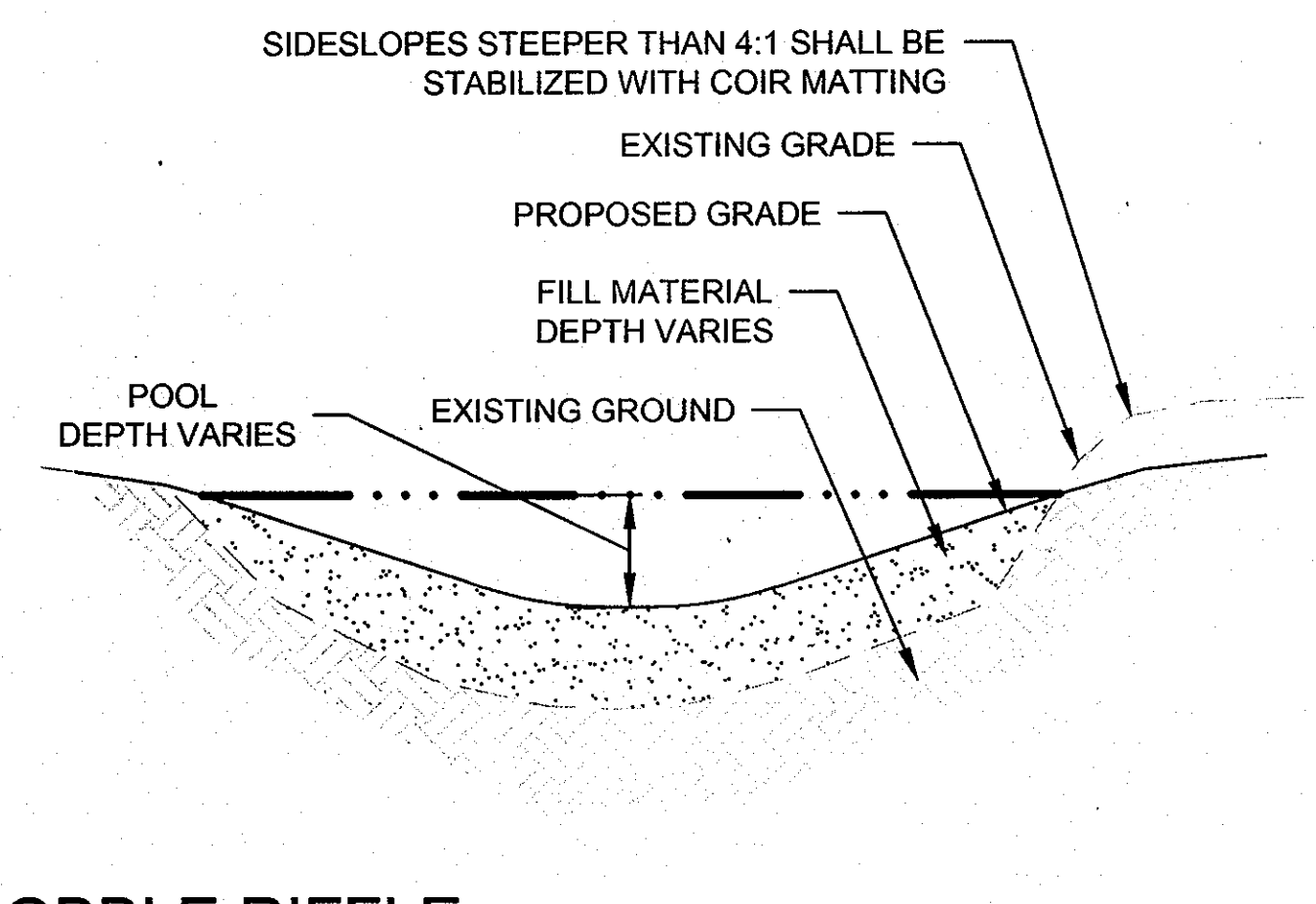
DOWNTOWN COLUMBIA STREAM RESTORATION SITE 2



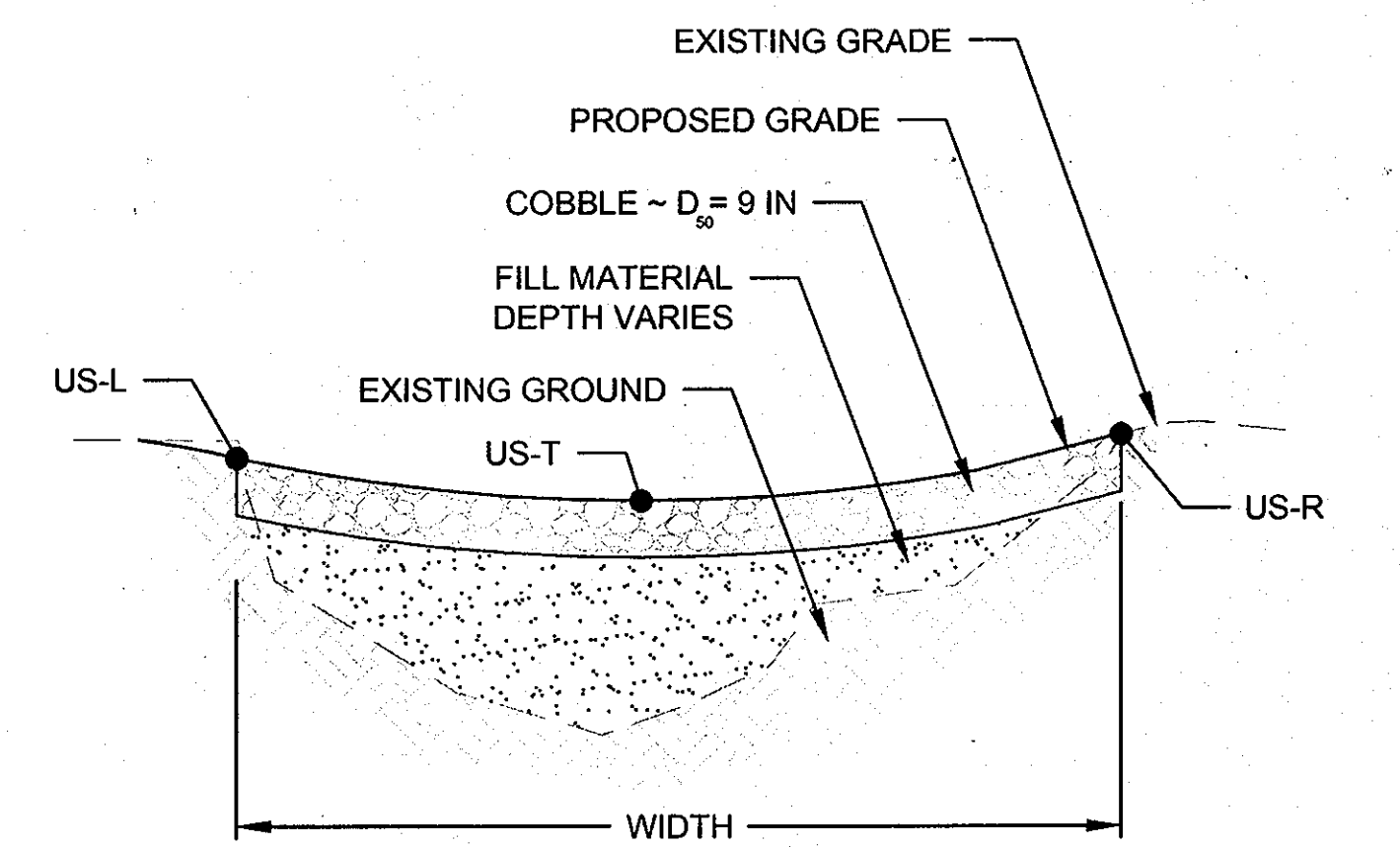
COBBLE RIFFLE PLAN VIEW
NOT TO SCALE



COBBLE RIFFLE BOULDER CROSS SECTION
NOT TO SCALE

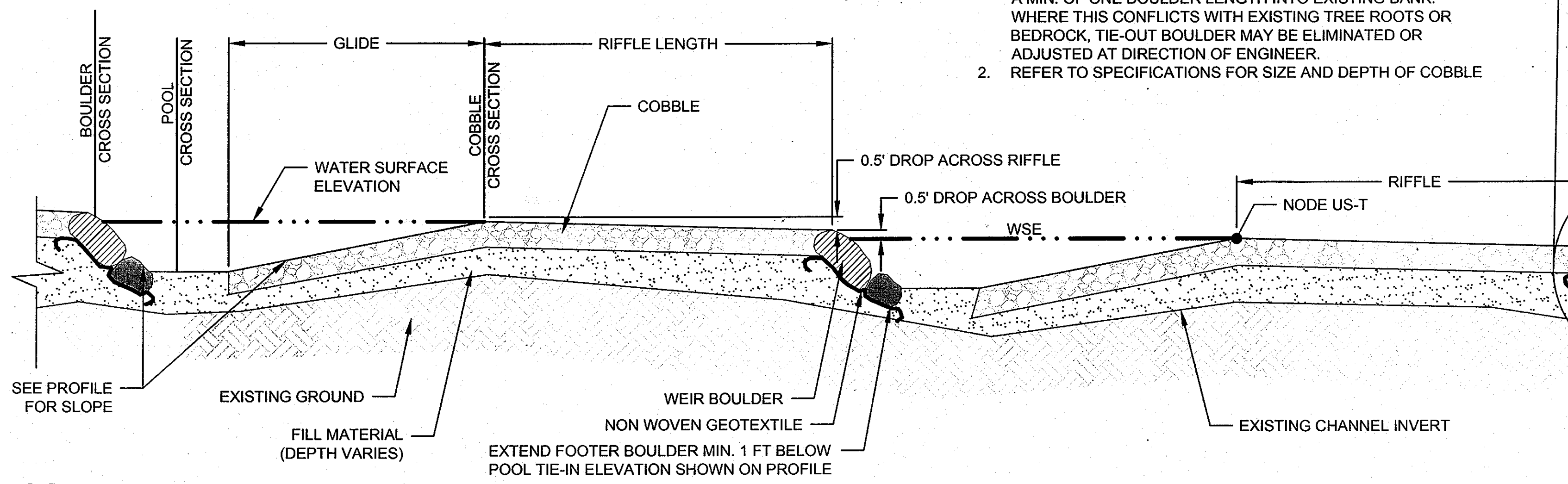


COBBLE RIFFLE POOL CROSS SECTION
NOT TO SCALE



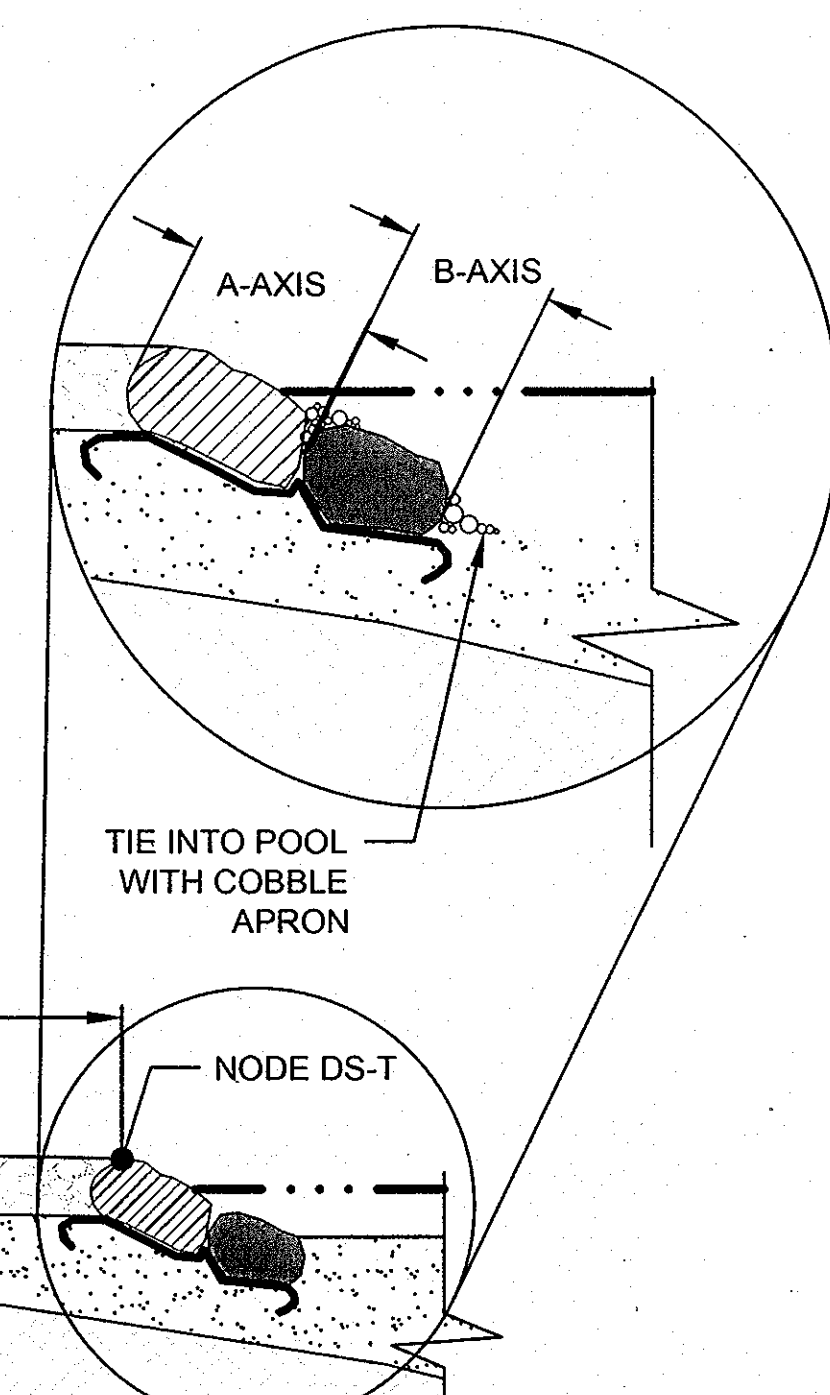
COBBLE RIFFLE COBBLE CROSS SECTION
NOT TO SCALE

STRUCTURE TABLE				
STREAM	WIDTH (FT)	DEPTH (FT)	LENGTH (FT)	FEATURE
SYMPHONY STREAM	25	1	30	COBBLE RIFFLE
OUTFALL TO SYMPHONY STREAM	10	1	15	CASCADE
UT TO SYMPHONY STREAM	10	1	15	COBBLE RIFFLE
SOUTHWEST OUTFALL	10	1	15	COBBLE RIFFLE



COBBLE RIFFLE PROFILE INDEX
NOT TO SCALE

- COBBLE RIFFLE NOTES:**
1. TIE-OUT BOULDER SHALL EXTEND PAST THE CORNER NODES A MIN. OF ONE BOULDER LENGTH INTO EXISTING BANK. WHERE THIS CONFLICTS WITH EXISTING TREE ROOTS OR BEDROCK, TIE-OUT BOULDER MAY BE ELIMINATED OR ADJUSTED AT DIRECTION OF ENGINEER.
 2. REFER TO SPECIFICATIONS FOR SIZE AND DEPTH OF COBBLE



APPROVED: DEPARTMENT OF PLANNING AND ZONING

[Signature] 10-23-13
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

[Signature] 10/20/13
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

[Signature] 10/20/13
DIRECTOR DATE

This development plan is approved for soil erosion and sediment control by the HOWARD SOIL CONSERVATION DISTRICT

[Signature] 10/29/13
Howard SCD Date

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[Signature] 10/21/2013
SIGNATURE OF ENGINEER (PRINT NAME BELOW SIGNATURE) DATE

[Signature] Christopher Streb

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[Signature] 10/21/2013
SIGNATURE OF DEVELOPER (PRINT NAME BELOW SIGNATURE) DATE

[Signature] Robert Jenkins

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DATE	ISSUES / REVISIONS
9/8/2013	ADD STREAM RESTORATION

Howard Hughes
THE HOWARD HUGHES CORPORATION

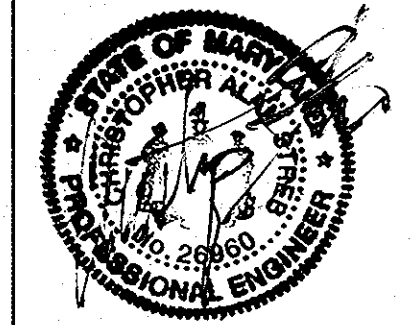
THE HOWARD HUGHES CORPORATION
10275 LITTLE PATUXENT PARKWAY
COLUMBIA, MD 21044

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fx: 410.554.0168 / www.biohabitats.com
Restore the Earth and Inspire Ecological Stewardship

DOWNTOWN COLUMBIA STREAM RESTORATION SITE 2

DETAILS

PROJECT NO.: 12024.01	SCALE: NA
SEAL:	BY: SH, TB CHECK: CS, EM DWG. NO.:



DOWNTOWN COLUMBIA STREAM RESTORATION SITE 2

DATE ISSUES / REVISIONS
9/6/2013 ADD STREAM RESTORATION

Howard Hughes
THE HOWARD HUGHES CORPORATION

THE HOWARD HUGHES CORPORATION
10275 LITTLE PATUXENT PARKWAY
COLUMBIA, MD 21044

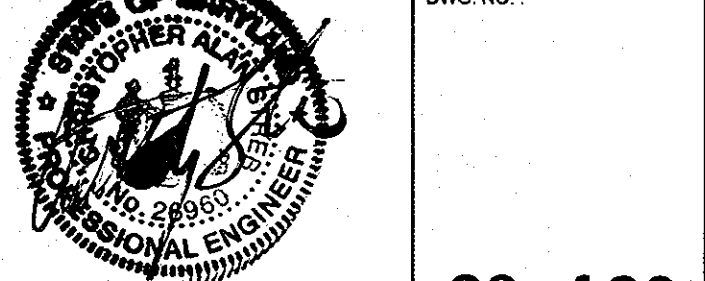
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DOWNTOWN COLUMBIA STREAM RESTORATION SITE 2

EROSION AND SEDIMENT CONTROL

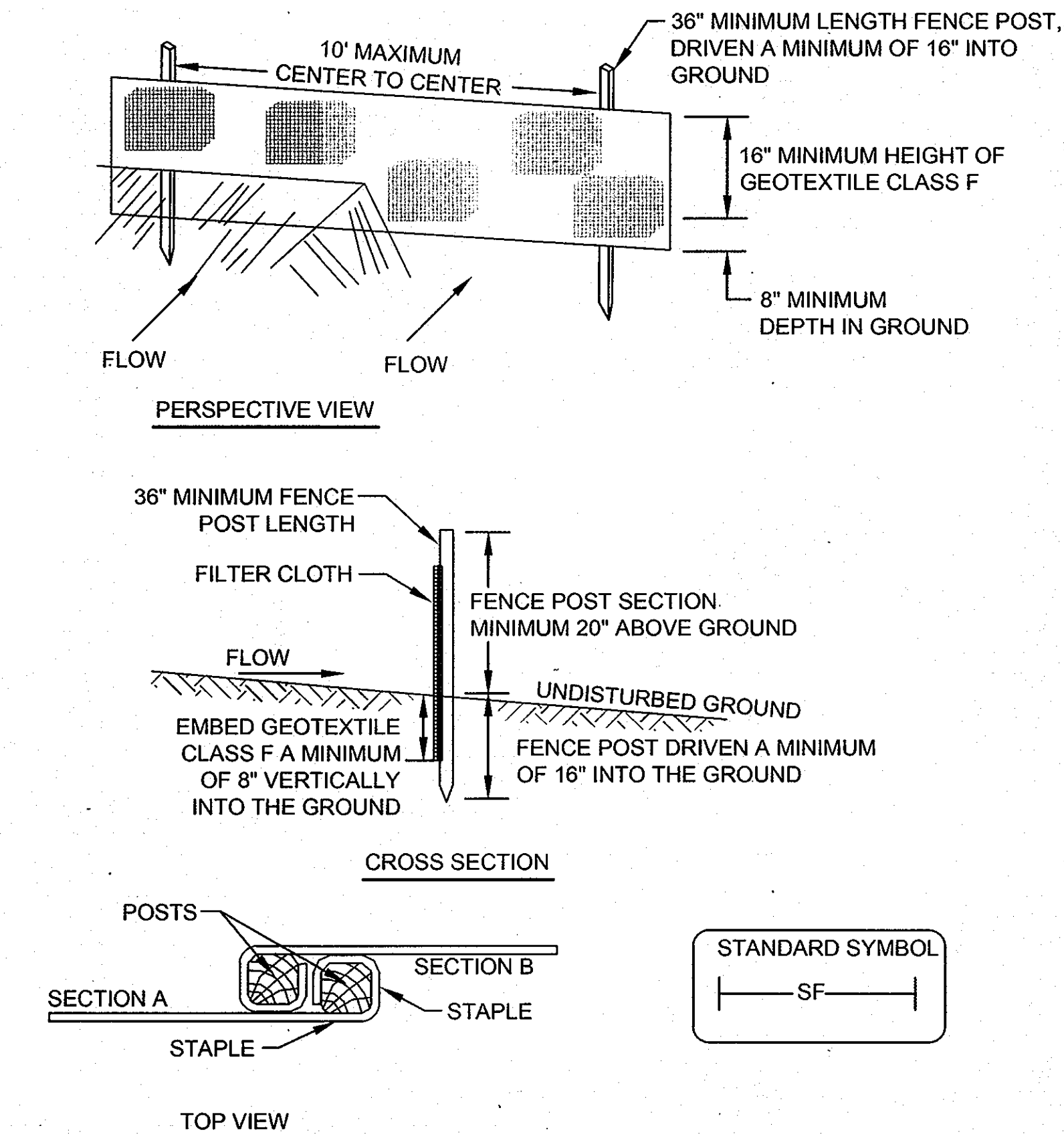
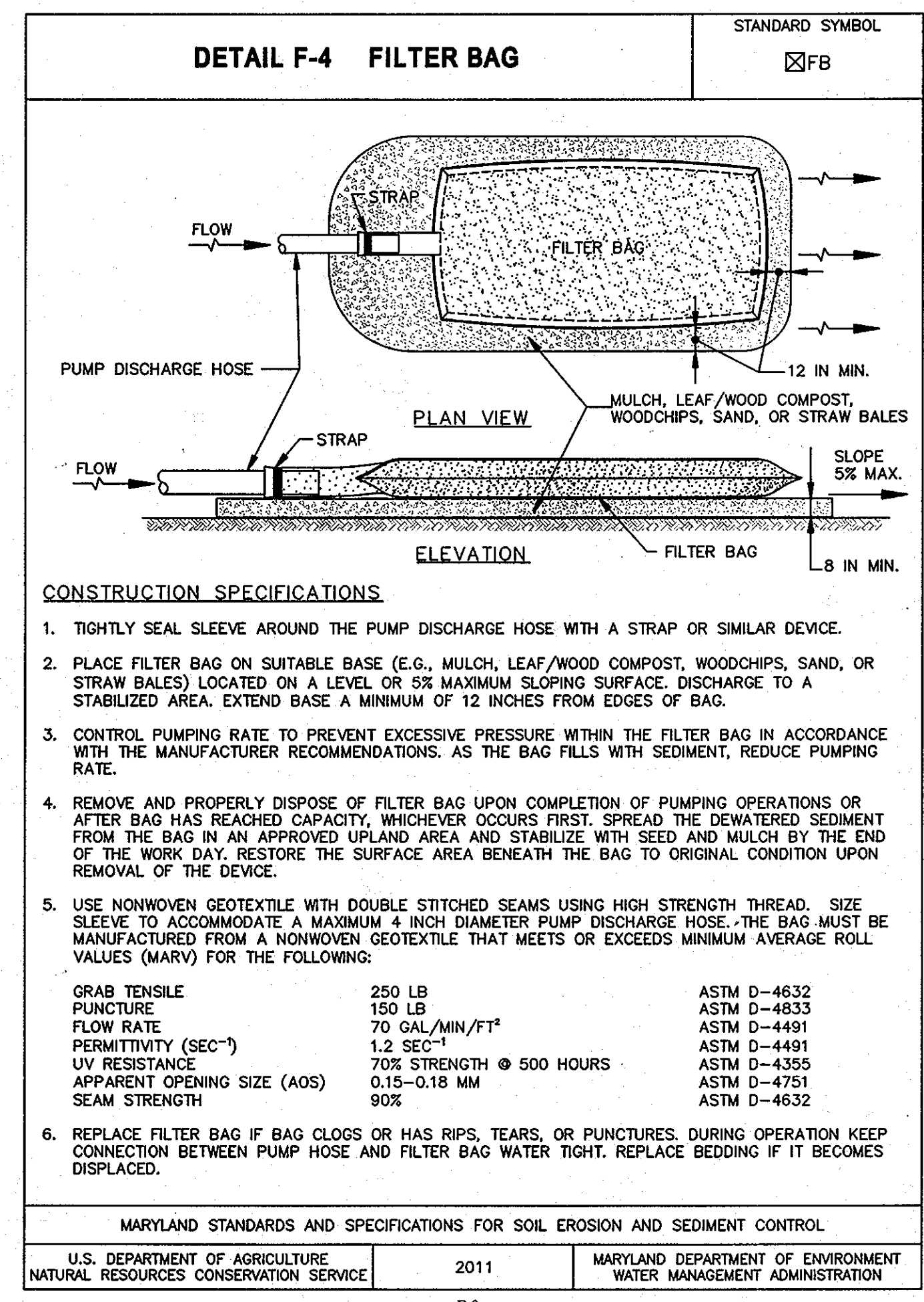
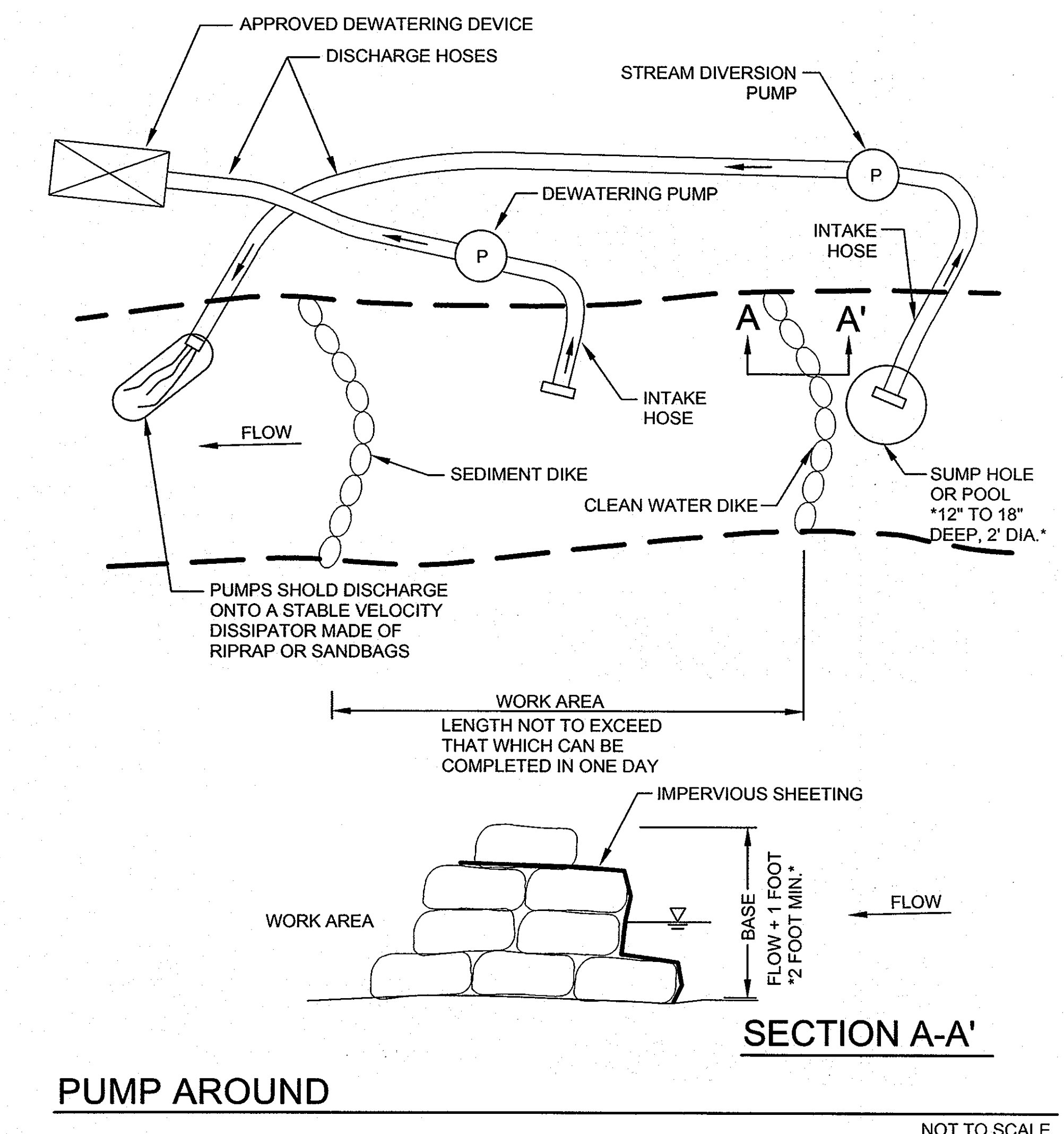
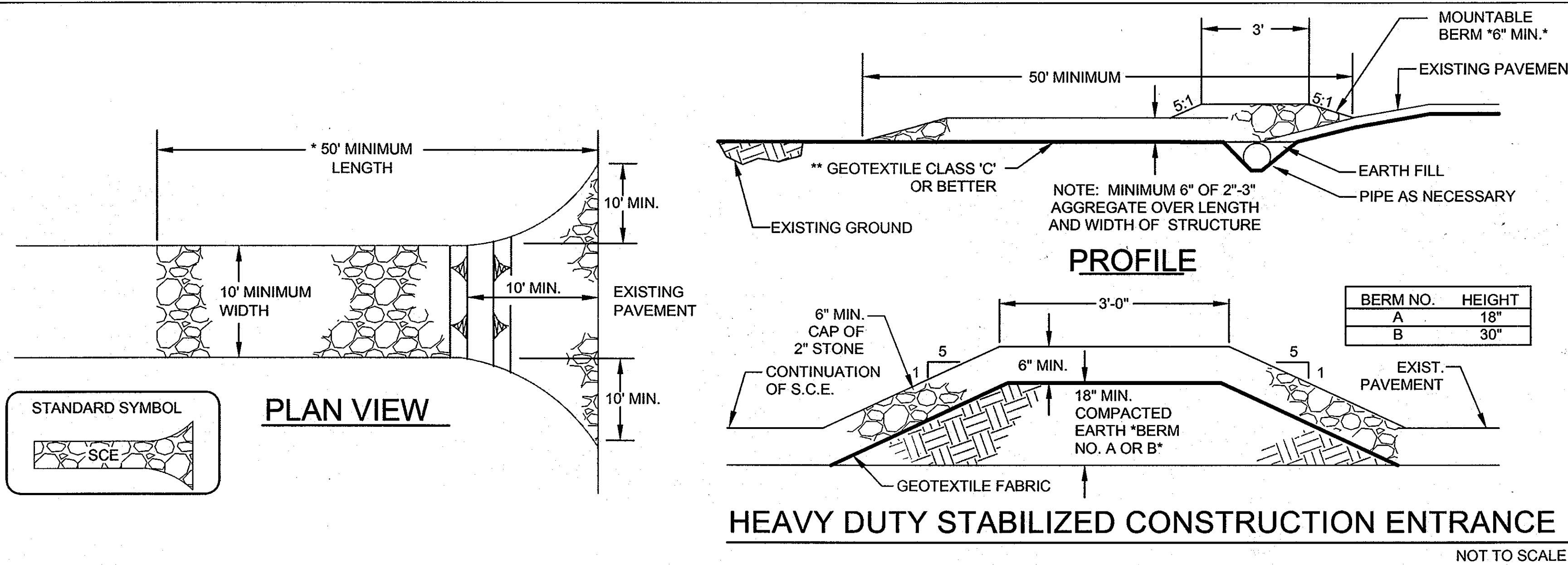
PROJECT NO.: 12024.01 SCALE: NA

SEAL: BY: SH, TB CHECK: CS, EM
DWG. NO.:



CONSTRUCTION SPECIFICATION - HEAVY DUTY STABILIZED CONSTRUCTION ENTRANCE

1. LENGTH - MINIMUM OF 50' **30' FOR SINGLE RESIDENCE LOT*.
2. WIDTH - 10' MINIMUM, SHOULD BE FLARED AT THE EXISTING ROAD TO PROVIDE A TURNING RADIUS.
3. 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.
4. 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.
5. 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 SILE 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.
6. 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.



- NOTE: JOINING TWO ADJACENT SILT FENCE SECTIONS CONSTRUCTION SPECIFICATIONS
1. FENCE POSTS SHALL BE A MINIMUM OF 36" LONG DRIVEN 16" MINIMUM INTO THE GROUND. WOOD POSTS SHALL BE 1 1/2" X 1 1/2" SQUARE (MINIMUM) CUT, OR 1 3/4" DIAMETER (MINIMUM) ROUND AND SHALL BE OF SOUND QUALITY HARDWOOD. STEEL POSTS WILL BE STANDARD T OR U SECTION WEIGHTING NOT LESS THAN 1.00 POUND PER LINEAR FOOT.
 2. GEOTEXTILE SHALL BE FASTENED SECURELY TO EACH FENCE POST WITH WIRE TIES OR STAPLES AT TOP AND MID-SECTION AND SHALL MEET THE FOLLOWING REQUIREMENTS FOR GEOTEXTILE CLASS F:
- | | | |
|----------------------|---|----------------|
| TENSILE STRENGTH | 50 LBS/IN (MIN.) | TEST: MSMT 509 |
| TENSILE MODULUS | 20 LBS/IN (MIN.) | TEST: MSMT 509 |
| FLOW RATE | 0.3 GAL FT ² / MINUTE (MAX.) | TEST: MSMT 322 |
| FILTERING EFFICIENCY | 75% (MIN.) | TEST: MSMT 322 |

WHERE ENDS OF GEOTEXTILE FABRIC COME TOGETHER, THEY SHALL BE OVERLAPPED, FOLDED AND STAPLED TO PREVENT SEDIMENT BYPASS.
4. SILT FENCE SHALL BE INSPECTED AFTER EACH RAINFALL EVENT AND MAINTAINED WHEN BULGES OCCUR OR WHEN SEDIMENT ACCUMULATION REACHED 50% OF THE FABRIC HEIGHT.
U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE

SILT FENCE

NOTE: STANDARD SILT FENCE IS TO BE UPGRADED TO "SUPER" SILT FENCE AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR. (SEE DETAIL - SHEET 24)

APPROVED: DEPARTMENT OF PLANNING AND ZONING
Chad Edmister
CHIEF, DEVELOPMENT ENGINEERING DIVISION
DATE: 10/30/13

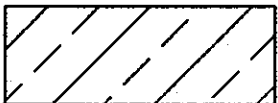
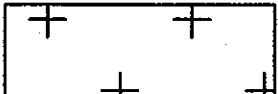

ENGINEERS CERTIFICATE
"I CERTIFY THAT THIS PLAN FOR SEDIMENT AND EROSION CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD COUNTY SOIL CONSERVATION DISTRICT"
Christopher Strob
SIGNATURE OF ENGINEER (PRINTNAME BELOW SIGNATURE)
DATE: Oct 21, 2013

DEVELOPERS CERTIFICATE
"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"
Robert Jenkins
SIGNATURE OF DEVELOPER (PRINTNAME BELOW SIGNATURE)
DATE: Oct 21, 2013

This development plan is approved for soil erosion and sediment control by the HOWARD COUNTY SOIL CONSERVATION DISTRICT.
John R. Roberts
HOWARD SCD
DATE: 10/29/13

This development plan is approved for soil erosion and sediment control by the HOWARD SOIL CONSERVATION DISTRICT
John P. Roberts 11/29/13
 Howard SCD Date

PLANTING LEGEND


-  PLANTING ZONE 1
-  PLANTING ZONE 2
-  PLANTING ZONE 3

DOWNTOWN COLUMBIA STREAM RESTORATION SITE 2

DATE	ISSUES / REVISIONS
9/6/2013	ADD STREAM RESTORATION


Howard Hughes
 THE HOWARD HUGHES CORPORATION

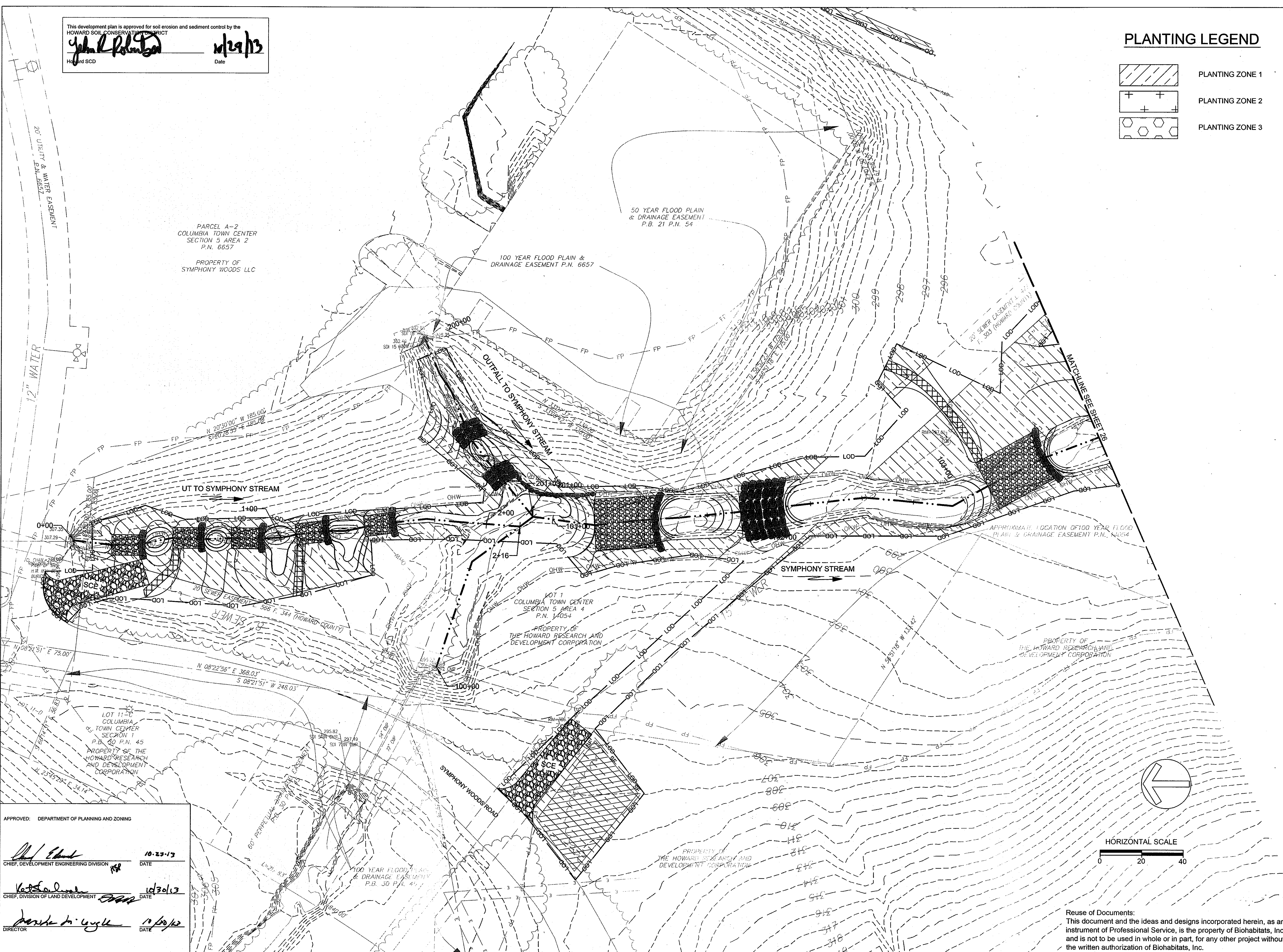
THE HOWARD HUGHES CORPORATION
 10275 LITTLE PATUXENT PARKWAY
 COLUMBIA, MD 21044

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DOWNTOWN COLUMBIA STREAM RESTORATION SITE 2

PLANTING PLAN - STREAM

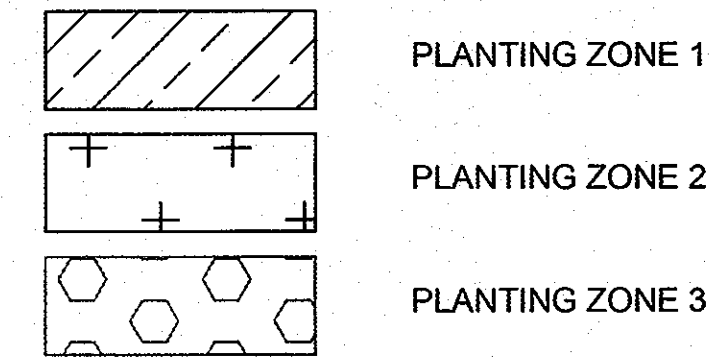
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SEAL:		BY:	SH, TB
		CHECK:	CS, EM
		DWG. NO.:	



APPROVED:	DEPARTMENT OF PLANNING AND ZONING
<i>John P. Roberts</i>	10-23-13
CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE
<i>John P. Roberts</i>	10/30/13
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE
<i>John P. Roberts</i>	11/29/13
DIRECTOR	DATE

This development plan is approved for soil erosion and sediment control by the HOWARD SOIL CONSERVATION DISTRICT
John L. Edwards 10/19/13
 Date
 Howard SCD

PLANTING LEGEND



DOWNTOWN COLUMBIA STREAM RESTORATION SITE 2

DATE	ISSUES / REVISIONS
9/6/2013	ADD STREAM RESTORATION



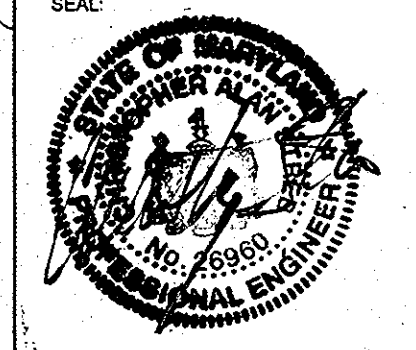
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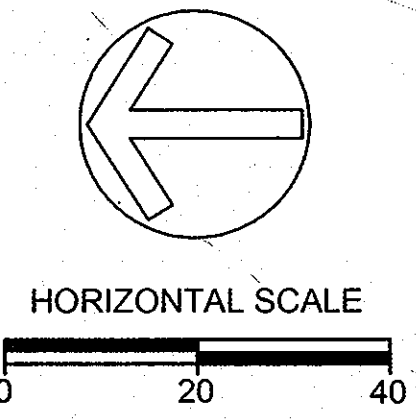
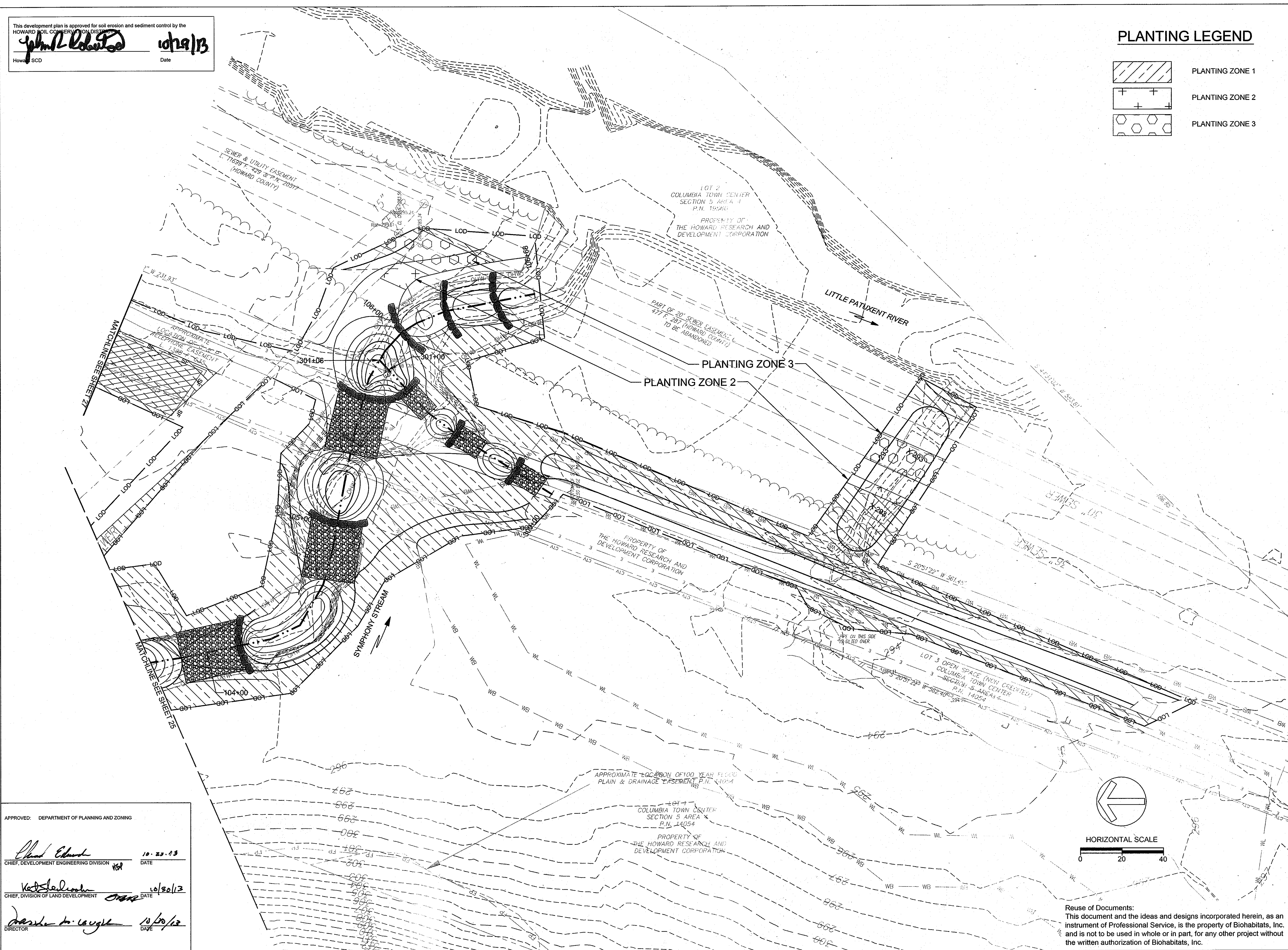
DOWNTOWN COLUMBIA STREAM RESTORATION SITE 2

PLANTING PLAN - STREAM

PROJECT NO.:	12024.01	SCALE:	1" = 20'
SEAL:		BY:	SH, TB
		CHECK:	CS, EM
		DWG. NO.:	




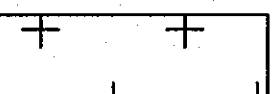

APPROVED: DEPARTMENT OF PLANNING AND ZONING
John L. Edwards 10/23/13
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE
Kate Stalder 10/30/13
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE
Harold L. Lough 10/30/13
 DIRECTOR DATE



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PLANTING LEGEND

-  PLANTING ZONE 1
-  PLANTING ZONE 2
-  PLANTING ZONE 3

DOWNTOWN COLUMBIA STREAM RESTORATION SITE 2

DATE	ISSUES / REVISIONS
9/8/2013	ADD STREAM RESTORATION



THE HOWARD HUGHES CORPORATION
 10275 LITTLE PATUXENT PARKWAY
 COLUMBIA, MD 21044



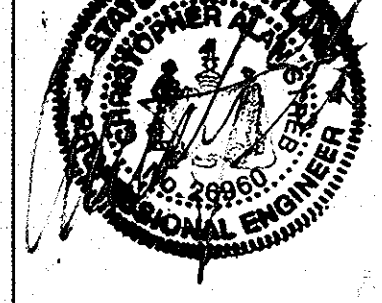
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 fx: 410.554.0168 / www.biohabitats.com
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DOWNTOWN COLUMBIA STREAM RESTORATION SITE 2

PLANTING PLAN - STREAM

PROJECT NO.: 12024.01 SCALE: 1" = 20'

SEAL: BY: SH, TB CHECK: CS, EM DWG. NO.:



APPROVED: DEPARTMENT OF PLANNING AND ZONING

Phil Chubb 10-25-13
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

Vicki Shonk 10/30/13
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

Maude Pa. Longley 10/20/13
 DIRECTOR DATE

PARCEL A-2
 COLUMBIA TOWN CENTER
 SECTION 5 AREA 2
 P.N. 6657

PROPERTY OF
 SYMPHONY WOODS LLC

100 YEAR FLOOD PLAIN & DRAINAGE EASEMENT P.N. 6657

50 YEAR FLOOD PLAIN & DRAINAGE EASEMENT P.B. 21 P.N. 54

This development plan is approved for soil erosion and sediment control by the HOWARD SOIL CONSERVATION DISTRICT

John C. Blanton 10/29/13
 Date
 Howard SCD

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DOWNTOWN COLUMBIA STREAM RESTORATION SITE 2

DATE ISSUES / REVISIONS

9/6/2013 ADD STREAM RESTORATION

Howard Hughes
THE HOWARD HUGHES CORPORATION

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10275 LITTLE PATUXENT PARKWAY
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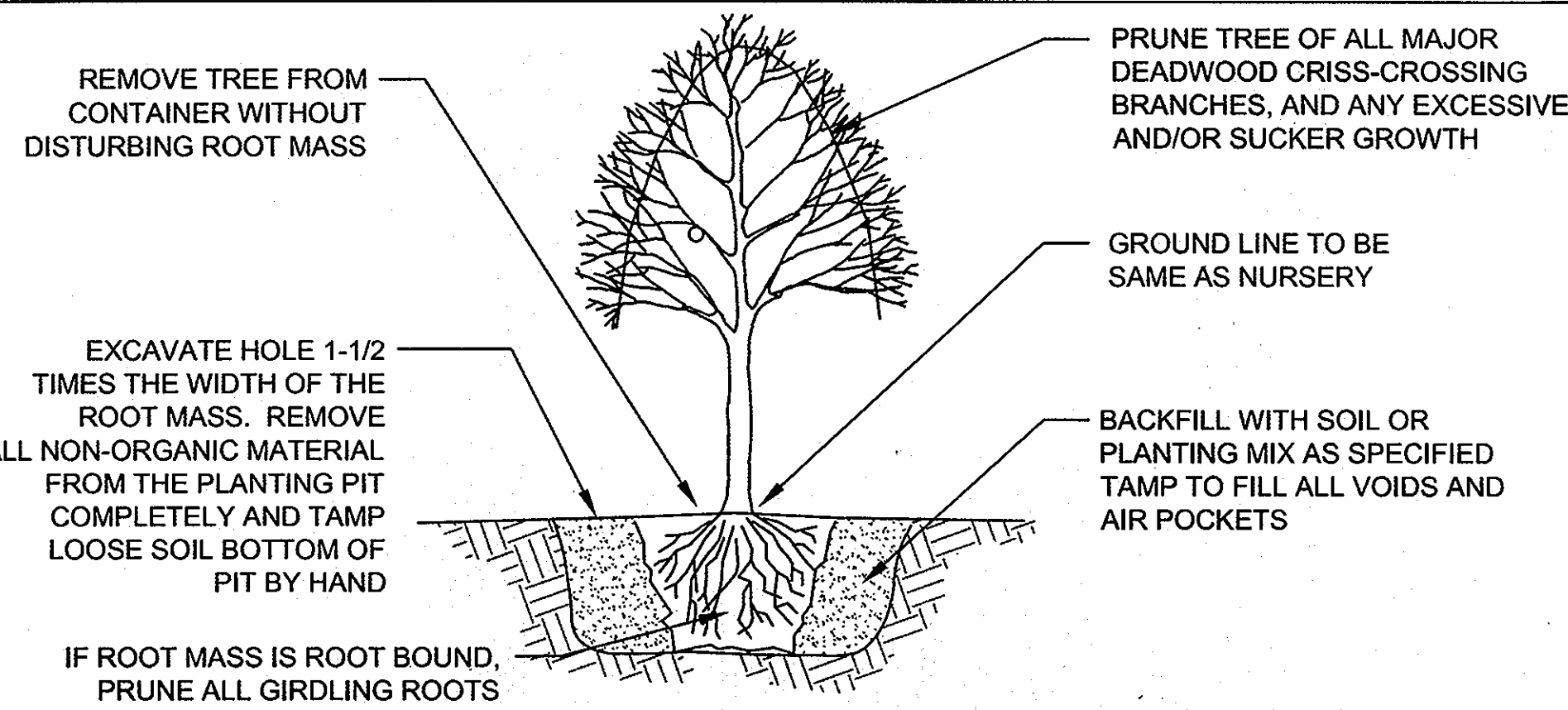
Restore the Earth and Inspire Ecological Stewardship

DOWNTOWN COLUMBIA STREAM RESTORATION SITE 2

PLANTING DETAILS AND SCHEDULES

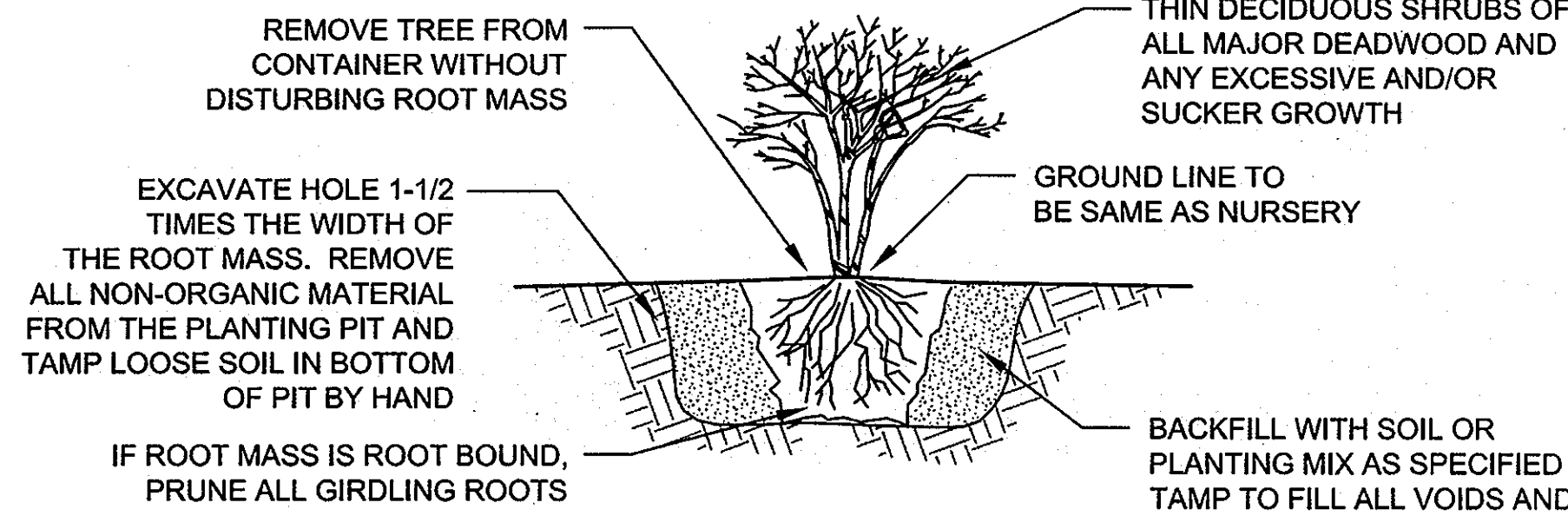
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SEAL: BY: SH, TB CHECK: CS, EM
DWG. NO.:



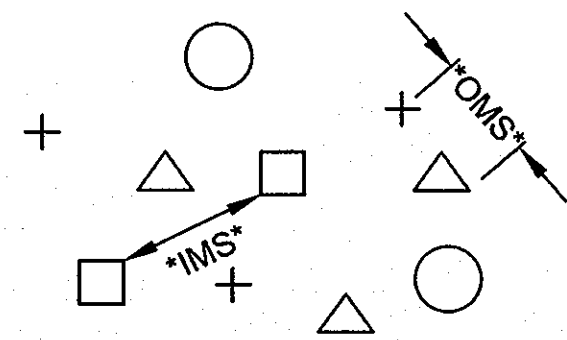
TREE PLANTING - CONTAINER GROWN

NOT TO SCALE



SHRUB PLANTING - CONTAINER GROWN

NOT TO SCALE



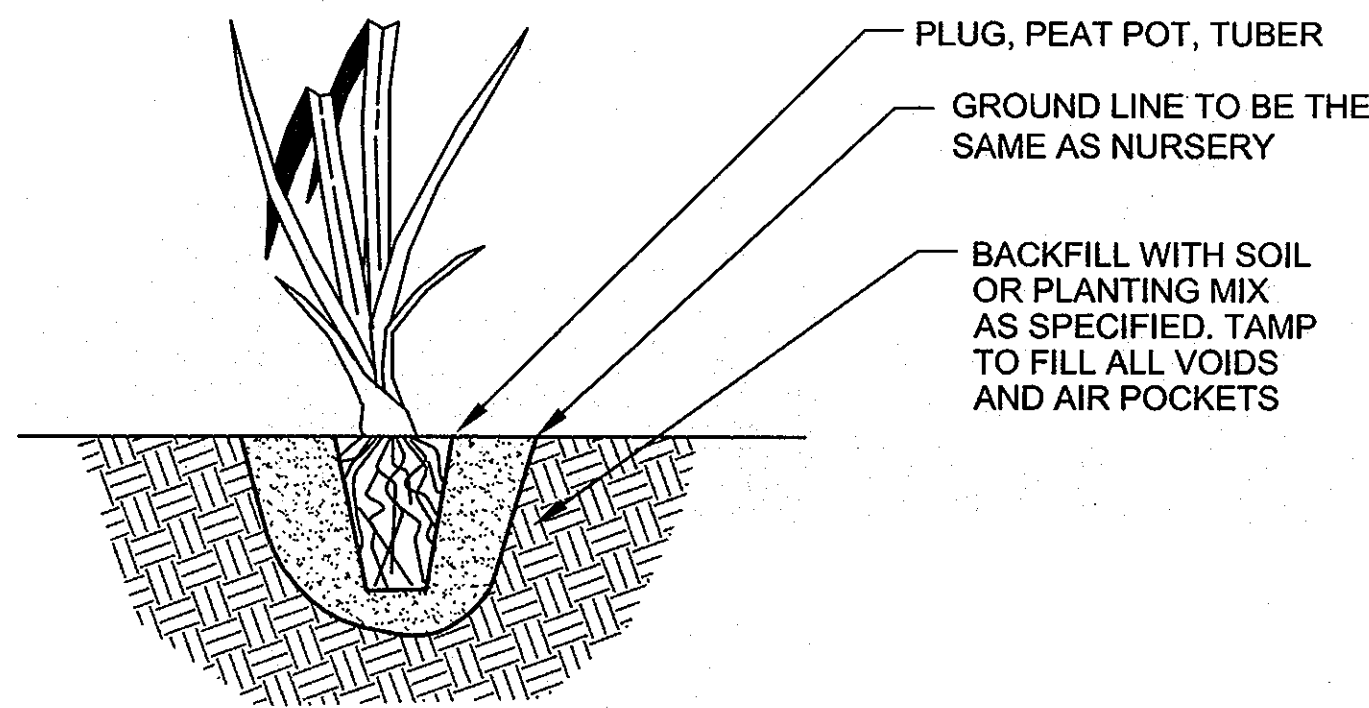
OMS- AN OVERALL MINIMUM SPACING DISTANCE *OMS* IS ASSIGNED TO THE PLANTING CONFIGURATION *SEE PLANT SCHEDULE*
IMS- AN INDIVIDUAL MINIMUM SPACING DISTANCES *IMS* IS ASSIGNED TO EACH INDIVIDUAL SPECIES *SEE PLANT SCHEDULE*

PLANT SPACING - RANDOM

NOTE: EACH SYMBOL INDICATES A DIFFERENT SPECIES

NOT TO SCALE

PLAN VIEW



HERBACEOUS PLANTING- CONTAINERS

NOT TO SCALE

PLANT COMPOSITION SCHEDULE

ZONE 1 - Floodplain Forest Reforestation

Size (acres): 0.83

Overall Minimum Spacing (ft.)	Quantity per acre	Frequency (%)	Species Quantity	Vegetation Strata/ Species Name	Common Name	Unit	Spacing Type	Size	Individual Minimum Spacing (ft.)
19	121			TREES					
		10	10	<i>Acer rubrum</i>	Red maple	CONT	Random	1" CAL	60
		10	10	<i>Acer saccharinum</i>	Silver maple	CONT	Random	1" CAL	60
		15	15	<i>Juglans nigra</i>	Black walnut	CONT	Random	1" CAL	49
		30	30	<i>Salix nigra</i>	Black willow	CONT	Random	1" CAL	35
		25	25	<i>Platanus occidentalis</i>	American sycamore	CONT	Random	1" CAL	38
		10	10	<i>Celtis occidentalis</i>	Hackberry	CONT	Random	1" CAL	60
		100	100	= total					
23	82			MIDSTORY TREES					
		50	34	<i>Betula nigra</i>	River birch	CONT	Random	1" CAL	33
		50	34	<i>Acer negundo</i>	Boxelder	CONT	Random	1" CAL	33
		100	68	= total					
33	40			SHRUB					
		20	7	<i>Cornus amomum</i>	Silky dogwood	CONT	Random	18-24"	72
		15	5	<i>Alnus serrulata</i>	Smooth alder	CONT	Random	18-24"	85
		30	10	<i>Lindera benzoin</i>	Common spicebush	CONT	Random	18-24"	60
		15	5	<i>Sambucus canadensis</i>	American elder	CONT	Random	18-24"	85
		20	7	<i>Viburnum dentatum</i>	Southern arrowwood	CONT	Random	18-24"	72
		100	34	= total					
6	1210			HERBACEOUS					
		40	13	<i>Mattuccia struthiopteris</i>	Ostrich fern	CONT	Random	QUART	53
		40	13	<i>Osmundastrum cinnamomeum</i>	Cinnamon fern	CONT	Random	QUART	53
		20	7	<i>Verbesina alternifolia</i>	Wingstem	CONT	Random	QUART	72
		100	33	= total					
N/A	35			HERBACEOUS SEED					
		10	2.9	<i>Scirpus cyperinus</i>	Wool grass	SEED	LB of P.L.S. 76 %	N/A	N/A
		25	7.3	<i>Elymus riparius</i>	Riverbank wild rye	SEED	LB of P.L.S. 76 %	N/A	N/A
		25	7.3	<i>Elymus virginicus</i>	Virginia wild rye	SEED	LB of P.L.S. 76 %	N/A	N/A
		25	7.3	<i>Tridens flavus</i>	Purpletop	SEED	LB of P.L.S. 76 %	N/A	N/A
		15	4.4	<i>Dichanthelium clandestinum</i>	Deertongue	SEED	LB of P.L.S. 76 %	N/A	N/A
		100	29.2	= total					

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

PLANT COMPOSITION SCHEDULE

ZONE 2 - Evergreen Edge

Size (acres): 0.011

Overall Minimum Spacing (ft.)	Quantity per acre	Frequency (%)	Species Quantity	Vegetation Strata/ Species Name	Common Name	Unit	Spacing Type	Size	Individual Minimum Spacing (ft.)
15	194			TREES					
		25	1	<i>Pinus virginiana</i>	Virginia pine	CONT	Random	1" CAL	22
		25	1	<i>Pinus strobus</i>	White pine	CONT	Random	1" CAL	22
		25	1	<i>Magnolia virginiana</i>	Sweetbay magnolia	CONT	Random	1" CAL	22
		25	1	<i>Juniperus virginiana</i>	Eastern red cedar	CONT	Random	1" CAL	22
		100	4	= total					
N/A	35			HERBACEOUS SEED					
		10	0	<i>Carex pensylvanica</i>	Pennsylvania sedge	SEED	LB of P.L.S. 76 %	N/A	N/A
		25	0	<i>Elymus hystrix</i>	Bottlebrush grass	SEED	LB of P.L.S. 76 %	N/A	N/A
		25	0	<i>Elymus virginicus</i>	Virginia wild rye	SEED	LB of P.L.S. 76 %	N/A	N/A
		25	0	<i>Tridens flavus</i>	Purpletop	SEED	LB of P.L.S. 76 %	N/A	N/A
		15	0	<i>Dichanthelium clandestinum</i>	Deertongue	SEED	LB of P.L.S. 76 %	N/A	N/A
		100	0	= total					

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

PLANT COMPOSITION SCHEDULE

ZONE 3 - Mesc Meadow - Disturbed Herbaceous

Size (acres): 0.024

Overall Minimum Spacing (ft.)	Quantity per acre	Frequency (%)	Species Quantity	Vegetation Strata/ Species Name	Common Name	Unit	Spacing Type	Size	Individual Minimum Spacing (ft.)
N/A	15			HERBACEOUS SEED (ERNMX-721 MD Lower Midland Upland Meadow Mix)					
		53	0.2	<i>Schizachyrium scoparium 'Camper'</i>	Little bluestem 'Camper'	SEED	LB of P.L.S. 76 %	N/A	N/A
		10	0	<i>Sorghastrum nutans</i>	Indiangrass	SEED	LB of P.L.S. 76 %	N/A	N/A
		10	0	<i>Elymus virginicus</i>	Virginia wild rye	SEED	LB of P.L.S. 76 %	N/A	N/A
		5	0	<i>Andropogon gerardii 'Niagara'</i>	Big bluestem 'Niagara'	SEED	LB of P.L.S. 76 %	N/A	N/A
		5	0	<i>Tridens flavus</i>	Purpletop	SEED	LB of P.L.S. 76 %	N/A	N/A
		5	0	<i>Rudbeckia hirta</i>	Balckeyed susan	SEED	LB of P.L.S. 76 %	N/A	N/A
		4	0	<i>Senna hebecarpa</i>	Wild Senna	SEED	LB of P.L.S. 76 %	N/A	N/A
		3	0	<i>Chamaecrista fasciculata</i>	Partridge pea	SEED	LB of P.L.S. 76 %	N/A	N/A
		2	0	<i>Eragrostis spectabilis</i>	Purple lovegrass	SEED	LB of P.L.S. 76 %	N/A	N/A
		2	0	<i>Monarda punctata</i>	Spotted beebalm	SEED	LB of P.L.S. 76 %	N/A	N/A
		1	0	<i>Solidago bicolor</i>	White goldenrod	SEED	LB of P.L.S. 76 %	N/A	N/A
		100	0.2	= total					

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

Table B.1: Temporary Seeding for Site Stabilization

Plant Species	Seeding Rate ^{1/}		Seeding Depth ^{2/} (inches)	Recommended Seeding Dates by Plant Hardiness Zone ^{3/}		
	lb/ac	lb/1000 ft ²		5b and 6a	6b	7a and 7b
Cool-Season Grasses						
Annual Ryegrass (<i>Lolium perenne</i> ssp. <i>multiflorum</i>)	40	1.0	0.5	Mar 15 to May 31; Aug 1 to Sep 30	Mar 1 to May 15; Aug 1 to Oct 15	Feb 15 to Apr 30; Aug 15 to Nov 30
Barley (<i>Hordeum vulgare</i>)	96	2.2	1.0	Mar 15 to May 31; Aug 1 to Sep 30	Mar 1 to May 15; Aug 1 to Oct 15	Feb 15 to Apr 30; Aug 15 to Nov 30
Oats (<i>Avena sativa</i>)	72	1.7	1.0	Mar 15 to May 31; Aug 1 to Sep 30	Mar 1 to May 15; Aug 1 to Oct 15	Feb 15 to Apr 30; Aug 15 to Nov 30
Wheat (<i>Triticum aestivum</i>)	120	2.8	1.0	Mar 15 to May 31; Aug 1 to Sep 30	Mar 1 to May 15; Aug 1 to Oct 15	Feb 15 to Apr 30; Aug 15 to Nov 30
Cereal Rye (<i>Secale cereale</i>)	112	2.8	1.0	Mar 15 to May 31; Aug 1 to Oct 31	Mar 1 to May 15; Aug 1 to Nov 15	Feb 15 to Apr 30; Aug 15 to Dec 15
Warm-Season Grasses						
Foxtail Millet (<i>Setaria italica</i>)	30	0.7	0.5	Jun 1 to Jul 31	May 16 to Jul 31	May 1 to Aug 14
Pearl Millet (<i>Pennisetum glaucum</i>)	20	0.5	0.5	Jun 1 to Jul 31	May 16 to Jul 31	May 1 to Aug 14

NOTES:

1/ Seeding rates for the warm-season grasses are in pounds of Pure Live Seed (PLS). Actual planting rates shall be adjusted to reflect percent seed germination and purity, as tested. Adjustments are usually not needed for the cool-season grasses.

Seeding rates listed above are for temporary seedings, when planted alone. When planted as a nurse crop with permanent seed mixes, use 1/3 of the seeding rate listed above for barley, oats, and wheat. For smaller-seeded grasses (annual ryegrass, pearl millet, foxtail millet), do not exceed more than 5% (by weight) of the overall permanent seeding mix. Cereal rye generally should not be used as a nurse crop, unless planting will occur in very late fall beyond the seeding dates for other temporary seedings. Cereal rye has allelopathic properties that inhibit the germination and growth of other plants. If it must be used as a nurse crop, seed at 1/3 of the rate listed above.

Oats are the recommended nurse crop for warm-season grasses.

2/ For sandy soils, plant seeds at twice the depth listed above.

3/ The planting dates listed are averages for each zone and may require adjustment to reflect local conditions, especially near the boundaries of the zone.

NOTE: ALL FINISHED GRADING MUST BE PERMANENTLY STABILIZED AT THE END OF EACH DAY WITH A 3" LAYER OF SINGLE SCREENED HARDWOOD MULCH. OTHERWISE TEMPORARILY STABILIZE ALL DISTURBED AREAS AT THE END OF EACH WORKING DAY.

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APPROVED: DEPARTMENT OF PLANNING AND ZONING

Chad Edwards 10/23/13
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

Keith Schuler 10/30/13
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

David M. Coyle 10/30/13
DIRECTOR DATE

This development plan is approved for soil erosion and sediment control by the HOWARD SOIL CONSERVATION DISTRICT
John R. Klotter 10/29/13
Howard SCD Date