PHASE I-FINAL PLAN
DOWNTOWN COLUMBIA
CRESCENT NEIGHBORHOOD PARCELS B THRU H, NON-BUILDABLE BLOCK PARCELS J THRU R, OPEN SPACE LOTS 1 THRU 8 AND MERRIWEATHER-SYMPHONY WOODS NEIGHBORHOOD OPEN SPACE LOT 1 AND NON-BUILDABLE BULK PARCEL A

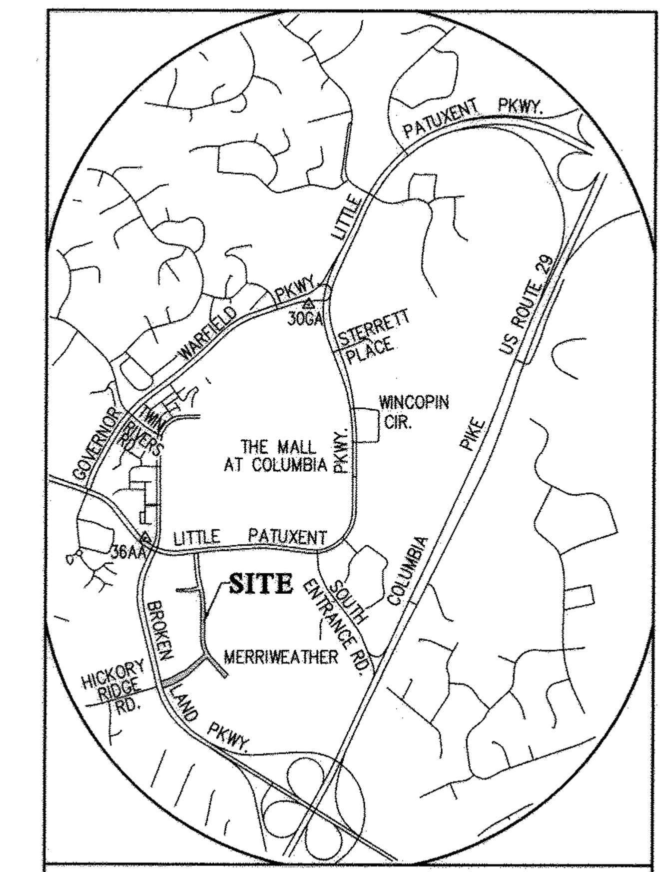
GENERAL NOTES:

1. The property is zoned NT per the October 6, 2013 Comprehensive Zoning Plan.
2. Applicable DPZ File References: FDP DC Crescent-1, ECP 15-074, ECP 15-083, F 15-098, F 15-106, SDP 15-068, SDP 14-073, FDP-DC-MSW-1A, and FDP-4-A-V.
3. The following permits and tracking number have been assigned to this project by state and federal agencies:
   For the Maryland Dept. of the Environment: 14-NT-3189/201461063
   For the Army Corps of Engineers: CENAB-PP-RMN-2014-61063-M36
4. Site Analysis:

Total area of subdivision	99.94 acres
Area of this submission (Limit of Disturbance)	16.42 acres
LOD within Merriweather Neighborhood	2.59 acres
LOD within the Crescent Neighborhood	13.83 acres
Number of Parcels under this submission	7
Area of Parcels	32.23 acres
Number of Non-Buildable Parcels under this submission	10
Area of Non-Buildable Parcels	9.42 acres
Number of Open Space Lots under this submission	9
Area of Open Space Lots	54.08 acres
Area of Public Roadways	4.21 acres

All construction shall be in accordance with the latest standards and specifications of Howard County plus MSHA standards and specifications if applicable.

5. The contractor shall notify the Department of Public Works/ Bureau of Engineering/ Construction Inspection Division at (410) 313-1880 at least five (5) working days prior to the start of work.
6. The contractor shall notify "Miss Utility" at 1-800-257-7777 at least 48 hours prior to any excavation work being done.
7. Street light placement and the type of fixtures and poles shall be in accordance with the Howard County Design Manual, Volume III (2006), Section 5.5.A and Crescent Neighborhood Design Guidelines. A minimum of 20' shall be maintained between any street light and any tree.
8. Traffic Control Devices: a) The R1-1 (STOP) signs and the street name signs (SNS) assemblies for this development must be installed before the base paving is completed. b) The traffic control device locations shown on the plans are approximate and must be field approved by Howard County traffic division (410-313-2430) prior to the installation of any traffic control devices. c) All traffic control devices and their locations shall be in accordance with the latest edition of the "Maryland Manual on Uniform Traffic Control Devices" (MdMUTCD). d) All sign posts used for traffic control signs installed in the County Right-of-Way shall be mounted on a 2" galvanized steel, perforated ("Quick Punch"), square tube post (14 guage) inserted into a 2-1/2" galvanized steel, perforated square tube sleeve (12guage) - 3' long. the anchor shall not extend more than two "Quick Punch" holes above ground level. A galvanized steel pole cap shall be mounted on top of each post.
9. 95% compaction in fill areas shall meet AASHTO T-180 requirements.
10. This project is in conformance with the latest Howard County standards unless waivers have been approved.
11. A Traffic Impact Study and Traffic Signal Warrant Analysis submitted and approved as a part of the Final Development Plan (FDP-DC-Crescent-1) by Wells and Associates.
12. Boundary information is from boundary surveys by Gutschick, Little, and Weber, P.A., dated November, 2011.
13. Horizontal and vertical datum is based on Howard County Control Stations: 30GA, 36AA.
14. Aerial topography by McKenzie Snyder, Inc. on March, 2007 and Gutschick, Little and Weber on August, 2011. Topography north and west of Broken Land Parkway provided by Howard County GIS.
15. No grading, removal of vegetative cover or trees or placement of new structures is permitted within wetlands, streams or their required buffers, and 100 year floodplain areas unless approved by the Department of Planning and Zoning as necessary disturbances or waivers have been approved.
16. Vehicular ingress & egress to Broken Land Parkway is restricted except as approved by Howard County Department of Planning and Zoning.
17. The Cemetery Inventory Maps do not show any cemeteries within the project limits.
18. The Scenic Roads Map does not indicate any scenic roads within or adjacent to the project limits.
    Existing utilities are based on available Howard County records.
19. This property is within the Metropolitan District.
20. Water and Sewer are Public per Contract No. 24-4931-D and are within the Little Patuxent Sewerage Area
21. The 100-year flood plain limits shown on these plans were determined in a floodplain study submitted as part of this Final Plan submission.
22. This subdivision is exempt from the requirements of Section 16.1202(b)(1)(iv) of the Howard County Code for Forest Conservation because the subject property is part of a Planned Unit development which has preliminary development plan approval and 50% or more of the land is recorded and substantially developed before December 31, 1992.
23. This site is subject to the Final Development Plan recorded as plat numbers 23403 thru 23409, the Neighborhood Concept Plan (NCP) recorded as plat numbers 23397 thru 23402, the Neighborhood Specific Design Guidelines (NSDG) recorded as Liber 16305 Folio 415 and the Neighborhood Specific Implementation Plan (NSIP) recorded as Liber 16306 Folio 1.
24. For information on the potential transit route circulation, see the Neighborhood Specific Implementation Plan pages 10 and 11.
25. For information on the locations of primary and secondary pedestrian routes and the bicycle circulation, see Chapter 3 of the Crescent Neighborhood Specific Design Guidelines. For information on the Street Framework changes, see Chapter 3 of the Crescent Neighborhood Specific Design Guidelines.
26. Street tree and landscape plans have been prepared by a Registered Landscape Architect and are certified to conform with the Crescent Neighborhood Design Guidelines recorded in the Land Records of Howard County in Liber 16305, Folio 415 thru 511 and Liber 16306, Folio 001 thru 192.
27. Landscape surety in the amount of $6,000 for tree replacement for trees not within micro bio-retention facilities will be provided with the Developer's Agreement.
28. Stormwater management for this site is provided in accordance with Chapter 5 of the MDE Stormwater Management Design Manual, Volumes I and 2. Throughout the site, Micro Bio-Retention (M6), Submerged Gravel Wetlands (M2), Pervious Pavement (A-2), and Filterras have been utilized. A Pe value of 1.95" was calculated for the site. The Bio-Retention and Submerged Gravel Wetland facilities will be publicly owned but jointly maintained; while the Filterras and Pervious Pavement will be privately owned and maintained.
29. Water and sewer service to these parcels will be granted under the provisions of Section 18.122.B of the Howard County code.
30. Public water and sewer allocations will be granted at the time of issuance of building permit if capacity is available at that time.
31. See Sheet 26 for Stormwater Management Practice chart.
32. A determination for the impacts to the environmental features to be "essential and necessary" has been submitted to the Dept. of Planning and Zoning. The determination is for impacts as a result of the construction of the bridge, arch spans, storm drain outfalls, water and sewer, stream restoration and mitigation, and the removal of existing access roads.
33. A reciprocal easement agreement between Inner Arbor Trust, Inc., as expressly authorized by Columbia Association Inc., and Merriweather Post Business Trust and The Howard Research and Development Corporation was recorded on May 27, 2015 at Liber 16235, Folio 245. Easement Area B is for the purposes of constructing and providing a new, re-designed ADA-compliant parking lot and pedestrian ingress and egress for the Pavilion and Symphony Woods for shared use. The remaining easement areas established under this reciprocal easement agreement are Easement Areas: B, D-1, F-1, and F-2.
34. Howard County's maintenance responsibility is limited to the improvement shown from the back of curb to the other back of curb. This will leave an area between the back of curb and the right-of-way line that will be the responsibility of an Owner's Association or similar entity to be determined with the Developer's Agreement.
35. The upgrade of the existing traffic signal located at Broken Land Parkway and Hickory Ridge Road is tied to this plan and can be viewed under the Red Line to F 91-042. As part of the upgrade to the existing signal several existing street lights will need to be upgraded, removed and/or new installed.
36. A surety of $16,200 will be provided for the street trees as part of the DPW Developer Agreement.

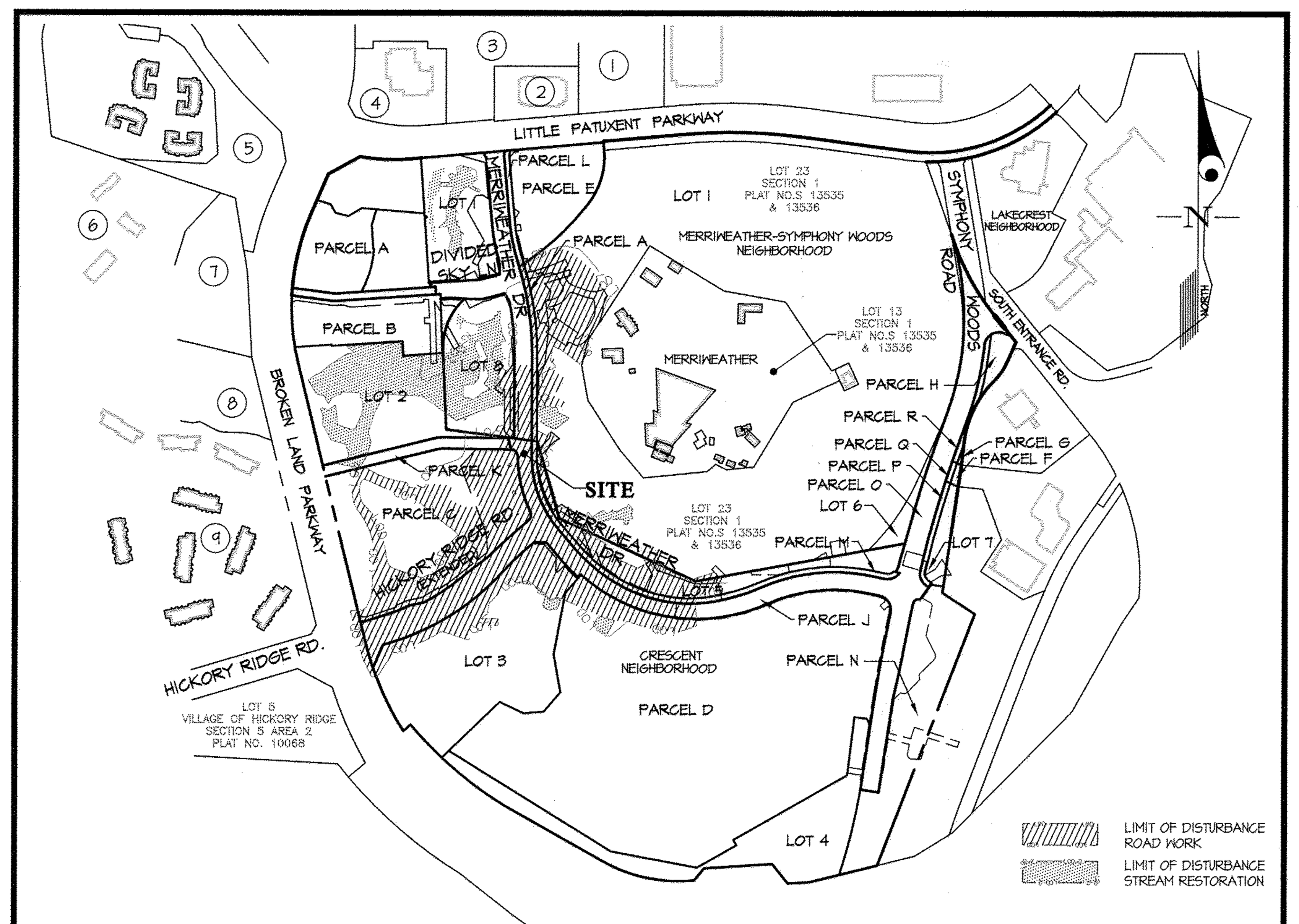


VICINITY MAP
SCALE: 1" = 2,000'

HOWARD COUNTY CONTROL STATIONS

30GA	36AA
NORTHING: 566,053.5979	NORTHING: 562,804.8537
EASTING: 1,352,177.5307	EASTING: 1,349,906.1701
ELEVATION: 339.878	ELEVATION: 359.151
(LATEST ADJ. NOV. 2008)	(LATEST ADJ. NOV. 2008)

ADC MAP 32 GRID A-1



KEY MAP
SCALE: 1" = 400'

1. PARCEL C-1 COLUMBIA TOWN CENTER SECTION 2 AREA 5 PLAT NO. 7896
2. PARCEL C-1 COLUMBIA TOWN CENTER SECTION 2 AREA 5 PLAT NO. 7896
3. PARCEL E COLUMBIA TOWN CENTER SECTION 2 AREA 8 PLAT NO. 14022
4. PARCEL B COLUMBIA TOWN CENTER SECTION 3 AREA 6 PLAT NO. 9512
5. LOT 2 COLUMBIA TOWN CENTER SECTION 3 AREA 2 PLAT NO. 10724
6. PARCEL A COLUMBIA TOWN CENTER SECTION 3 AREA 2 PLAT NO. 9749
7. LOT 1 COLUMBIA TOWN CENTER SECTION 3 AREA 2 PLAT NO. 9749
8. LOT 3 VILLAGE OF HICKORY RIDGE SECTION 5 AREA 2 PLAT NO.S 6324 & 6325
9. PARCEL D VILLAGE OF HICKORY RIDGE SECTION 5 AREA 2 PLAT NO. 6503

LEGEND

- 366 — EXISTING CONTOUR
- 300 — PROPOSED CONTOUR
- EXISTING TREELINE (DOES NOT MEET CRITERIA FOR A FOREST)
- LIMIT OF EXISTING FOREST
- LIMIT OF ULTIMATE FOREST
- EX. 8"S. — EXISTING SANITARY SEWER
- 8"S. — PROPOSED SANITARY SEWER
- EX. 8"W. — EXISTING WATERLINE
- 8"W. — PROPOSED WATERLINE
- PROPOSED FIRE HYDRANT
- EX. S.D. — EXISTING STORM DRAIN
- S.D. — PROPOSED STORM DRAIN
- FB — FILTER BAG
- HB — HAND BOX
- EXISTING POST
- EXISTING POLE
- EXISTING FLAG
- EXISTING MANHOLE
- EXISTING FIRE HYDRANT
- EXISTING SIGN
- EXISTING CURB AND GUTTER
- EXISTING EDGE OF PAVEMENT
- 36" HIGH FENCE (AT BRIDGE)
- PROPOSED CURB AND GUTTER
- PROPOSED REVERSE
- CONCRETE SIDEWALK
- PROPOSED MULTI-PURPOSE PATH
- DRAINAGE DIVIDE
- SOIL TYPE BOUNDARY
- SOIL TYPE / SOIL GROUP
- LOD — LIMIT OF DISTURBANCE ROAD WORK
- LOD-2 — LIMIT OF DISTURBANCE STREAM RESTORATION
- MBR-# — MICRO BIO-RETENTION FACILITY (M-6)
- ST # — SEDIMENT TRAP
- LIMIT OF WETLAND
- WETLAND AREA
- WB — WETLAND BUFFER
- FP — 100 YEAR FLOODPLAIN
- STREAM BANK
- SB — STREAM / BANK BUFFER
- ### — FLOODPLAIN CROSS SECTION
- SOIL BORING LOCATION
- DF — DIVERSION FENCE
- EXISTING STREET LIGHT
- PROPOSED STREET LIGHT
- DETECTABLE WARNING TRUNCATED DOME (Ho.Co. DPW R-4.07)

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STORMWATER MANAGEMENT FACILITY OWNERSHIP AND MAINTENANCE RESPONSIBILITY TABLE

FACILITY	OWNERSHIP	MAINTENANCE
SGW-1	PUBLIC	JOINT
MBR-3	PUBLIC	JOINT
MBR-4	PUBLIC	JOINT
MBR-6	PUBLIC	JOINT
FILTERRA 4	PRIVATE	PRIVATE
FILTERRA 5	PRIVATE	PRIVATE
FILTERRA 6	PRIVATE	PRIVATE
FILTERRA 7	PRIVATE	PRIVATE
PERMEABLE PAVEMENTS	PRIVATE	PRIVATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
[signature] 7/12/2016
Chief, Bureau of Highways HS — Date

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
[signature] 8-3-16
Chief, Division of Land Development JMF — Date
[signature] 7-26-16
Chief, Development Engineering Division HSP — Date

GLW GUTSCHICK LITTLE & WEBER, P.A.
CIVIL ENGINEERS, LAND SURVEYORS, LAND PLANNERS, LANDSCAPE ARCHITECTS
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BURTONSVILLE, MARYLAND 20866
TEL: 301-421-4024 BALT: 410-880-1820 DC/VA: 301-989-2524 FAX: 301-421-4186

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DATE	REVISION	BY	APP'R.

PREPARED FOR:
THE HOWARD HUGHES CORPORATION
10480 LITTLE PATUXENT PARKWAY
SUITE 400
COLUMBIA, MD 21044
ATTN: BOB JENKINS
410-964-5443

PROFESSIONAL CERTIFICATION
I HEREBY CERTIFY THAT THESE PLANS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 12975, EXPIRATION DATE: MAY 26, 2018
6/9/16 [signature]
STATE OF MARYLAND — PROFESSIONAL ENGINEER (seal)

COVER SHEET
DOWNTOWN COLUMBIA
CRESCENT NEIGHBORHOOD
PARCELS B THRU H, NON-BULDABLE BULK PARCELS J THRU R, O.S. LOTS 1 THRU 8 AND MERRIWEATHER-SYMPHONY WOODS NEIGHBORHOOD O.S. LOT 1 AND NON-BUILDABLE BULK PARCEL A
ELECTION DISTRICT No. 5 — HOWARD COUNTY, MARYLAND

SCALE	ZONING	G. L. W. FILE No.
AS SHOWN	NT	11071
DATE	TAX MAP - GRID	SHEET
JUNE, 2016	36 - 01	1 OF 102

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PUBLIC GUARDRAIL, STORMWATER MANAGEMENT, STORM DRAIN & UTILITY EASEMENT

PUBLIC GUARDRAIL, STORMWATER MANAGEMENT, STORM DRAIN & UTILITY EASEMENT

EX. 20' SEWER ESMT L.1787 F.150

EX. 100 YR. FLOODPLAIN AND DRAINAGE EASEMENT (P.B. 30 F. 45)

EX. PRIVATE INGRESS-EGRESS EASEMENT (L.1868, F.116)

REVERTIBLE PUBLIC STORM DRAIN & UTILITY EASEMENT

EXISTING 20' PUBLIC SEWER EASEMENT (PARCEL B-PT 4) L. 471 F. 303

EXISTING 20' PUBLIC SEWER EASEMENT (PT 1) L. 448 F. 134

PUBLIC GUARDRAIL, WATER, STORM DRAIN & UTILITY EASEMENT

PART OF EXISTING 20' PUBLIC WATER EASEMENT (PARCEL ONE-PT 1) L. 540 F. 510 TO BE ABANDONED

EX. 100 YR. FLOODPLAIN AND DRAINAGE EASEMENT (P.B. 30 F. 45)

PART OF EXISTING 20' PUBLIC WATER EASEMENT (PARCEL ONE-PT 1) L. 540 F. 510 TO BE ABANDONED

PUBLIC STREET TREE, STREET LIGHT, GUARDRAIL, STORMWATER MANAGEMENT, STORM DRAIN, WATER, SEWER & UTILITY EASEMENT

PUBLIC STREET TREE, STREET LIGHT, GUARDRAIL, STORMWATER MANAGEMENT, STORM DRAIN, WATER, SEWER & UTILITY EASEMENT

PUBLIC STREET TREE, STREET LIGHT, GUARDRAIL, STORM DRAIN, STORMWATER MANAGEMENT, WATER, SEWER & UTILITY EASEMENT

PUBLIC STREET TREE, STREET LIGHT, GUARDRAIL, STORM DRAIN, STORMWATER MANAGEMENT, WATER, SEWER & UTILITY EASEMENT

100 YR. FLOODPLAIN AND DRAINAGE EASEMENT

EXISTING 20' PUBLIC SEWER EASEMENT (PARCEL 'H'-PT 5) L. 540 F. 510

100 YR. FLOODPLAIN AND DRAINAGE EASEMENT

PUBLIC STREET TREE, STREET LIGHT, GUARDRAIL, STORM DRAIN, STORMWATER MANAGEMENT, WATER, SEWER & UTILITY EASEMENT

PUBLIC GUARDRAIL, STORM DRAIN & UTILITY EASEMENT

20' PUBLIC SEWER & UTILITY EASEMENT

PUBLIC STREET TREE, STREET LIGHT, GUARDRAIL, STORMWATER MANAGEMENT, STORM DRAIN, WATER, SEWER & UTILITY EASEMENT

PUBLIC STORMWATER MANAGEMENT, STORM DRAIN & UTILITY EASEMENT

EXISTING 20' PUBLIC SEWER EASEMENT (PARCEL 'A'-PT 2) L. 540 F. 510

100 YR. FLOODPLAIN AND DRAINAGE EASEMENT

100 YR. FLOODPLAIN AND DRAINAGE EASEMENT

PUBLIC STREET TREE, STREET LIGHT, GUARDRAIL, STORM DRAIN, STORMWATER MANAGEMENT, WATER, SEWER & UTILITY EASEMENT

PUBLIC REVERTIBLE CONSTRUCTION & UTILITY EASEMENT

PUBLIC STREET TREE, STREET LIGHT, GUARDRAIL, STORMWATER MANAGEMENT, STORM DRAIN, WATER, SEWER & UTILITY EASEMENT

PUBLIC STORMWATER MANAGEMENT, STORM DRAIN & UTILITY EASEMENT

EXISTING 20' PUBLIC SEWER EASEMENT (PARCEL 'A'-PT 2) L. 540 F. 510

100 YR. FLOODPLAIN AND DRAINAGE EASEMENT

PRIVATE STORMWATER MANAGEMENT & UTILITY EASEMENT

EX. INGRESS/EGRESS ESMT PT 2 L.448, F.91

EX. 20' WATER ESMT PT 4) L.448, F.144

EX. PRIVATE INGRESS-EGRESS ESMT L.1868 F.116

EXISTING PRIVATE INGRESS-EGRESS EASEMENT L.1868 F.116

EX. INGRESS/EGRESS ESMT PT 5) L.448 F.91

EX. REA (AREA X) L.16235 F.245

EX. REA (AREA X1) L.16235 F.245

EX. REA (AREA X) L.16235 F.245

EX. 100 YR. FLOODPLAIN AND DRAINAGE EASEMENT (P.B. 30 F. 45)

EXISTING PRIVATE RECIPROCAL EASEMENT AGREEMENT AREA D L. 16235 F. 245

EX. PRIVATE RECIPROCAL EASEMENT AGREEMENT AREA G L. 16235 F. 245

EX. 20' WATER ESMT PT 5) L. 448 F. 144

EXISTING PUBLIC 20' SEWER EASEMENT (PARCEL 'A'-PT 2) L. 540 F. 510

EX. 20' WATER ESMT PT 6) L. 448 F. 144

EXISTING PRIVATE DEED OF EASEMENT L. 466 F. 110

EXISTING PRIVATE RECIPROCAL EASEMENT AGREEMENT AREA J2 L. 16235 F. 245

PRIV. REA (AREA J2) L.16235, F.245

EX. 20' PRIVATE SEWER ESMT EXECUTED BUT NOT RECORDED

EX. 20' SEWER ESMT L.471, F.303

100 YR. FLOODPLAIN AND DRAINAGE EASEMENT

EXISTING PRIVATE DEED OF EASEMENT L. 466 F. 110

EX. 100 YR. FLOOD PLAIN AND DRAINAGE ESMT (P.B.30 F.45)

100 YR. FLOODPLAIN AND DRAINAGE EASEMENT

PUBLIC STREET TREE, STREET LIGHT, GUARDRAIL, STORM DRAIN, STORMWATER MANAGEMENT, WATER, SEWER & UTILITY EASEMENT

PUBLIC REVERTIBLE CONSTRUCTION & UTILITY EASEMENT

MERRIWEATHER DRIVE

BROKEN LAND PARKWAY

HICKORY RIDGE ROAD

300'

100'

SCALE: 1" = 5'

N

NAD'83

SCALE: 1" = 60'

0' 30' 60' 120' 240'

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

Chief, Bureau of Highways — Date 7/12/2016

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

Chief, Division of Land Development — Date 7-26-16

Chief, Development Engineering Division — Date 7.26.16

GLW GUTSCHICK LITTLE & WEBER, P.A.

CIVIL ENGINEERS, LAND SURVEYORS, LAND PLANNERS, LANDSCAPE ARCHITECTS
3909 NATIONAL DRIVE – SUITE 250 – BURTONSVILLE OFFICE PARK
BURTONSVILLE, MARYLAND 20866
TEL: 301-421-4024 BALT: 410-880-1820 DC/VA: 301-989-2524 FAX: 301-421-4186

L:\DATA\DRAWINGS\11071\PLANS BY GLW\Final\PHASE 1\11071_02_Easements.dwg | DES. JH | DRN. JH | CHK. DEV

DATE	REVISION	BY	APP'R.

PREPARED FOR:

THE HOWARD HUGHES CORPORATION
10480 LITTLE PATUXENT PARKWAY
SUITE 400
COLUMBIA, MD 21044
ATTN: BOB JENKINS
410-964-5443

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE PLANS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 12975
EXPIRATION DATE: MAY 26, 2018

6/6/16

STATE OF MARYLAND — CHRISTOPHER M. WEBER — REG. NO. 12975 — PROFESSIONAL ENGINEER

EASEMENTS PLAN

DOWNTOWN COLUMBIA

CRESCENT NEIGHBORHOOD

PARCELS B THRU H, NON-BUILDABLE BULK PARCELS J THRU R, O.S. LOTS 1 THRU 8 AND MERRIWEATHER-SYMPHONY WOODS NEIGHBORHOOD O.S. LOT 1 AND NON-BUILDABLE BULK PARCEL A

ELECTION DISTRICT No. 5 — HOWARD COUNTY, MARYLAND

SCALE	ZONING	G. L. W. FILE No.
1"=60'	NT	11071
DATE	TAX MAP – GRID	SHEET
JUNE, 2016	36 – 01	2 OF 102

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F 15-106

LEGEND

- LOD — LIMIT OF DISTURBANCE DUE TO F 15-106 ROAD WORK
- LOD-2 — LIMIT OF DISTURBANCE DUE TO F 15-106 STREAM RESTORATION (SEE SHEETS 65-105)
- WORK IN THIS AREA REQUIRES SDP-15-068
- WORK IN THIS AREA REQUIRES F-15-098
- WORK IN THIS AREA REQUIRES BOTH SDP-15-068 AND F-15-098

NOTES:

1. SEE SHEETS 24-41 FOR BRIDGE CONSTRUCTION INFORMATION
2. SEE SHEETS 42-51 FOR ARCH SPAN CONSTRUCTION INFORMATION

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

Chief, Bureau of Highways — Date 7/12/2016

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

Chief, Division of Land Development — Date 8.3.16

Chief, Development Engineering Division — Date 7.26.16

GLW GUTSCHICK LITTLE & WEBER, P.A.

CIVIL ENGINEERS, LAND SURVEYORS, LAND PLANNERS, LANDSCAPE ARCHITECTS
3909 NATIONAL DRIVE – SUITE 250 – BURTONSVILLE OFFICE PARK
BURTONSVILLE, MARYLAND 20866
TEL: 301-421-4024 BALT: 410-880-1820 DC/VA: 301-989-2524 FAX: 301-421-4186

L:\DWG\DRAWINGS\11071\PLANS BY GLW\finals\PHASE 1\11071_01_LIMITS OF WORK.dwg | DES. JH | DRN. JH | CHK. DEV

DATE	REVISION	BY	APP'R.

PREPARED FOR:

THE HOWARD HUGHES CORPORATION
10480 LITTLE PATUXENT PARKWAY
SUITE 400
COLUMBIA, MD 21044
ATTN: BOB JENKINS
410-964-5443

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE PLANS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 12975 EXPIRATION DATE: MAY 25, 2018

6/5/16

LIMITS OF WORK - THIS PLAN

DOWNTOWN COLUMBIA

CRESCENT NEIGHBORHOOD

PARCELS B THRU H, NON-BULDABLE BULK PARCELS J THRU R, O.S. LOTS 1 THRU 8 AND MERRIWEATHER-SYMPHONY WOODS NEIGHBORHOOD O.S. LOT 1 AND NON-BUILDABLE BULK PARCEL A

ELECTION DISTRICT No. 5 — HOWARD COUNTY, MARYLAND

SCALE	ZONING	G. L. W. FILE No.
1"=100'	NT	11071
DATE	TAX MAP – GRID	SHEET
JUNE, 2016	36 – 01	3 OF 102

F 15-106

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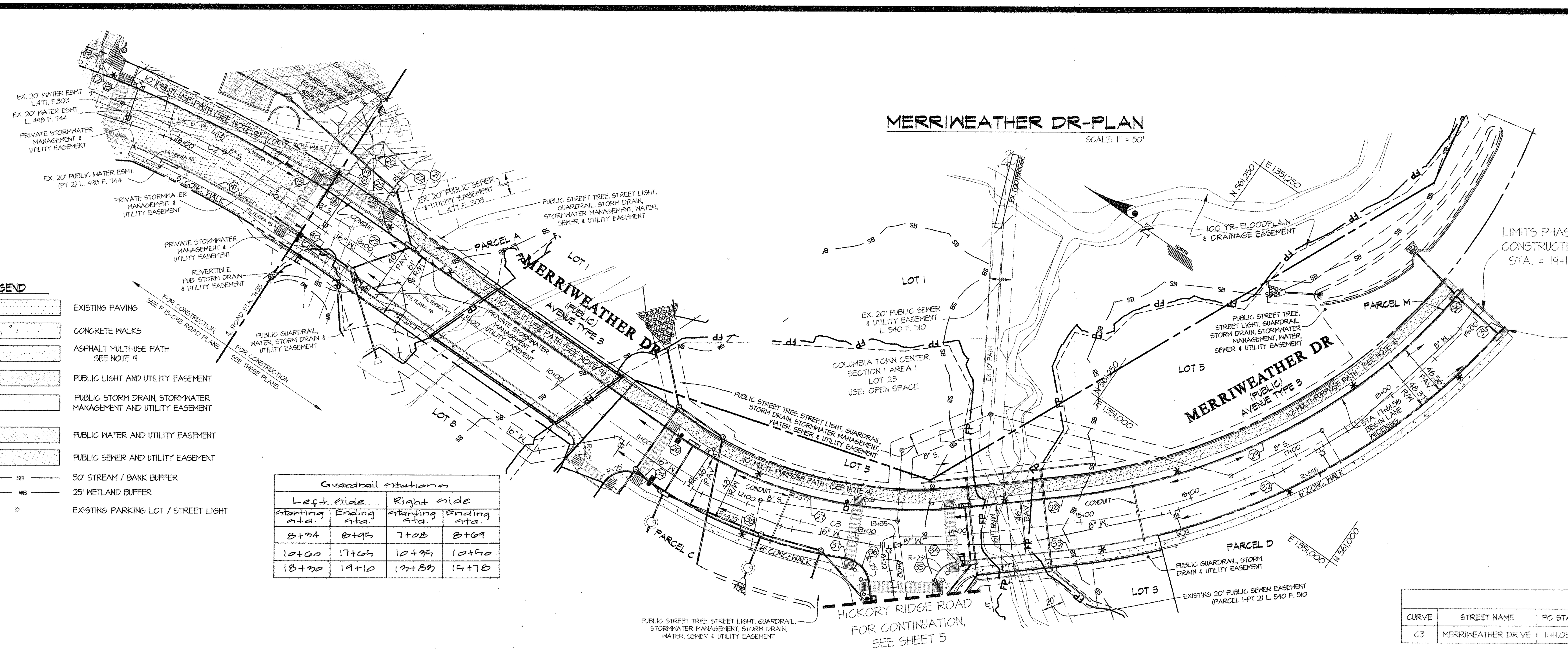
MERRIWEATHER DR-PLAN

SCALE: 1" = 50'



LEGEND

(pattern)	EXISTING PAVING
(pattern)	CONCRETE WALKS
(pattern)	ASPHALT MULTI-USE PATH SEE NOTE 9
(pattern)	PUBLIC LIGHT AND UTILITY EASEMENT
(pattern)	PUBLIC STORM DRAIN, STORMWATER MANAGEMENT AND UTILITY EASEMENT
(pattern)	PUBLIC WATER AND UTILITY EASEMENT
(pattern)	PUBLIC SEWER AND UTILITY EASEMENT
— SB —	50' STREAM / BANK BUFFER
— WB —	25' WETLAND BUFFER
☼	EXISTING PARKING LOT / STREET LIGHT

Guardrail stations			
Left side		Right side	
Starting sta.	Ending sta.	Starting sta.	Ending sta.
8+34	8+95	7+08	8+69
10+60	17+65	10+35	10+50
18+30	19+10	13+83	15+78

MERRIWEATHER DR CURB FLOW LINE ELEVATION TABLE

PT. NO	STATION	OFFSET	ELEV.
14	6+25.91	23.00' L.	335.00
15	7+24.43	23.00' L.	333.53
16	7+37.93	28.71' L.	333.76
18	7+43.84	58.58' L.	333.99
19	7+46.18	74.04' L.	334.05
20	7+52.43	87.04' L.	334.18
21	7+84.55	79.86' L.	331.83
22	7+82.94	64.92' L.	331.80
23	7+82.94	53.00' L.	331.80
24	7+91.73	31.79' L.	332.57
25	8+12.94	23.00' L.	333.33
26	11+11.03	23.00' L.	337.30
27	12+53.47	23.00' L.	339.24
28	14+86.51	23.00' L.	342.73
29	16+77.79	23.00' L.	343.75
30	19+10.05	25.27' L.	341.56

MERRIWEATHER DR CURB FLOW LINE ELEVATION TABLE

PT. NO	STATION	OFFSET	ELEV.
31	19+10.05	23.00' R.	341.60
32	16+77.79	23.00' R.	343.75
33	14+86.51	23.00' R.	342.73
34	13+88.18	23.08' R.	341.23
35	13+71.90	31.10' R.	340.99
36	13+08.96	28.51' R.	340.03
37	12+94.67	23.00' R.	339.85
38	12+02.85	23.00' R.	338.49
39	11+11.03	23.00' R.	337.30
40	7+59.16	23.00' R.	333.29
41	6+49.79	23.00' R.	334.50

NOTE: POINT 17 OMITTED INTENTIONALLY.

STREET LIGHT SCHEDULE

LOCATION			TYPE
℄ STA. 5+26.5	MERRIWEATHER DR	27.05' LT.	A
℄ STA. 7+38.4	MERRIWEATHER DR	27.62' RT.	D
℄ STA. 8+00.2	MERRIWEATHER DR	29.21' LT.	A
℄ STA. 8+01.7	MERRIWEATHER DR	26.67' RT.	A
℄ STA. 8+66.5	MERRIWEATHER DR	26.71' LT.	A
℄ STA. 11+17.4	MERRIWEATHER DR	25.98' RT.	D
℄ STA. 11+17.8	MERRIWEATHER DR	26.00' LT.	D
℄ STA. 12+05.7	MERRIWEATHER DR	26.67' RT.	A
℄ STA. 12+00.0	MERRIWEATHER DR	28.24' LT.	A
℄ STA. 12+87.8	MERRIWEATHER DR	26.00' LT.	B
℄ STA. 13+92.4	MERRIWEATHER DR	26.78' RT.	B
℄ STA. 14+35.0	MERRIWEATHER DR	26.67' LT.	A
℄ STA. 15+15.0	MERRIWEATHER DR	26.67' RT.	A
℄ STA. 15+95.0	MERRIWEATHER DR	26.67' LT.	A
℄ STA. 16+81.1	MERRIWEATHER DR	26.67' RT.	A
℄ STA. 17+67.2	MERRIWEATHER DR	26.67' LT.	A
℄ STA. 18+55.0	MERRIWEATHER DR	26.67' RT.	A

LEGEND:

- A) LED-100 MODERN POST-TOP FIXTURE MOUNTED ON A 14' BLACK FIBERGLASS POLE
- B) LED-200 COBRA FIXTURE MOUNTED AT 30' ON A BRONZE FIBERGLASS POLE USING A 6' ARM
- D) LED-150 COBRA FIXTURE MOUNTED AT 30' ON A BRONZE FIBERGLASS POLE USING A 6' ARM

℄ CURVE DATA CHART

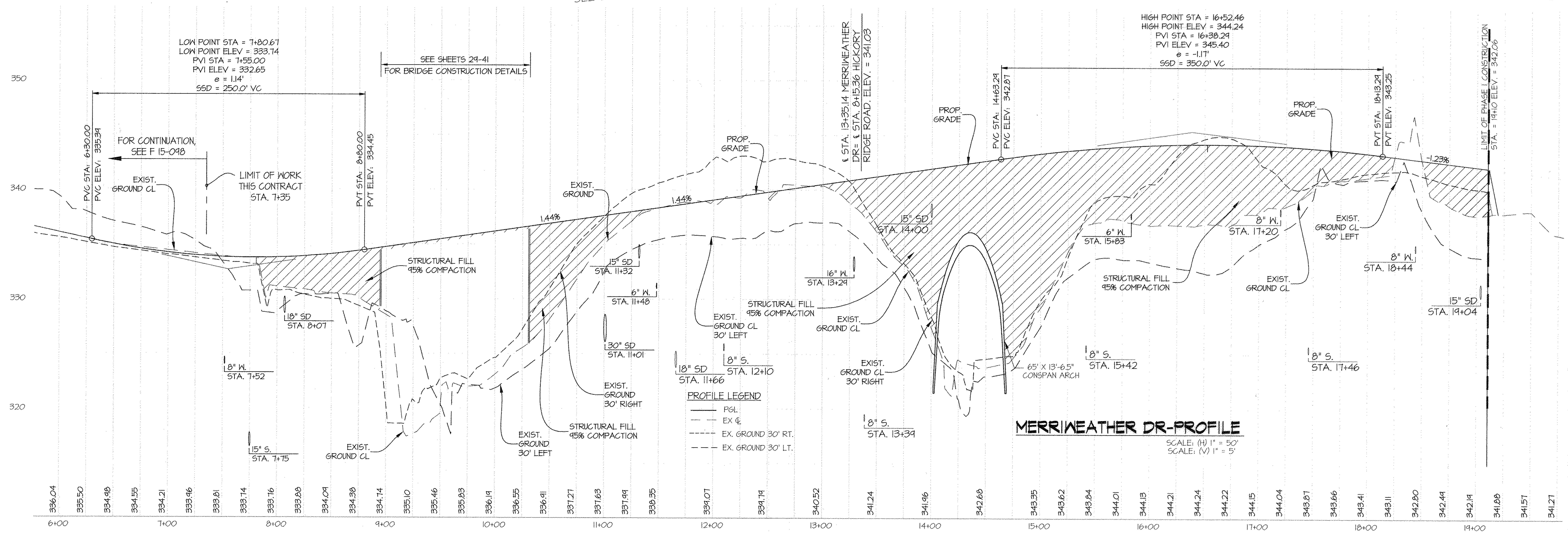
CURVE	STREET NAME	PC STA.	PT STA.	RADIUS	TANGENT	ARC	CHORD	BEARING	DELTA
C3	MERRIWEATHER DRIVE	11+11.03	13+95.91	400.00'	148.78'	284.88'	278.90'	S20°24'11"E	40°48'22"

NOTES:

1. SEE SHEET 6 FOR TYPICAL ROAD SECTIONS
2. SEE SHEET 6 FOR CURB DETAILS
3. SEE SHEETS 11 AND 12 FOR FLOODPLAIN CROSS SECTION LOCATIONS AND WSEL's.
4. SEE SHEETS 9 AND 10 FOR EXISTING ITEMS TO BE REMOVED AND BEARINGS AND DISTANCES.
5. SEE SHEET 14 FOR STORM DRAIN INFORMATION
6. ALL SIDEWALK RAMPS ARE TYPE B HOWARD COUNTY DETAIL R-4.03 UNLESS OTHERWISE NOTED.
7. SEE SHEET 27 FOR STREET TREES AND STREET LIGHTS
8. FOR LIMITS OF WORK, SEE SHEET 3: "LIMITS OF WORK - THIS PLAN"
9. TYPICAL SECTIONS FOR THE PERMEABLE ASPHALT MULTI-USE PATH HAVE BEEN PROVIDED ON SHEET 11.
10. THE ENDS OF GUARDRAIL SEGMENTS SHALL HAVE TYPE 1 END TREATMENT PER MD 605.10-01. SEE DETAIL, SHEET 5.
11. STYLE AND MATERIAL OF FENCING TO BE SPECIFIED BY GRAPHIC DESIGNER PRIOR TO FABRICATION.
12. FOR THE BRIDGE GUARDRAIL, FENCING, AND TYPICAL SECTIONS, SEE SHEETS 29-41.
13. SEE SHEETS 60-61 FOR STRIPING AND SIGNING.
14. FOR STREET SECTION ABOVE CULVERT AT STATION 14+36, SEE TYPICAL SECTION #1 ON SHEET 6.
15. FOR LIMITS AND PLACEMENT OF RAILING ALONG BRIDGE, SEE SHEET 29.

MERRIWEATHER DR-PROFILE

SCALE: (H) 1" = 50'
SCALE: (V) 1" = 5'



APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
[signature] 7/12/2016
Chief, Bureau of Highways — Date

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
[signature] 8-3-16
Chief, Division of Land Development — Date
[signature] 7-26-16
Chief, Development Engineering Division — Date

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L:\CADD\DRAWINGS\11071\PLANS BY GLW\Finals\PHASE 1\11071_04-05_ROADS.dwg | DES. MJT | DRN. WsJ | CHK. MJT

DATE	REVISION	BY	APP'R.

PREPARED FOR:
THE HOWARD HUGHES CORPORATION
10480 LITTLE PATUXENT PARKWAY
SUITE 400
COLUMBIA, MD 21044
ATTN: BOB JENKINS
410-964-5443

PROFESSIONAL CERTIFICATION
I HEREBY CERTIFY THAT THESE PLANS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 12975, EXPIRATION DATE: MAY 26, 2018.
6/9/16 [signature]

MERRIWEATHER DR - PLAN AND PROFILE
DOWNTOWN COLUMBIA
CRESCENT NEIGHBORHOOD
PARCELS B THRU H, NON-BULDABLE BULK PARCELS J THRU R, O.S. LOTS 1 THRU 8 AND MERRIWEATHER-SYMPHONY WOODS NEIGHBORHOOD O.S. LOT 1 AND NON-BUILDABLE BULK PARCEL A
ELECTION DISTRICT No. 5 — HOWARD COUNTY, MARYLAND

SCALE	ZONING	G. L. W. FILE No.
AS SHOWN	NT	11071
DATE	TAX MAP – GRID	SHEET
JUNE, 2016	36 – 01	4 OF 102

F 15-106

L:\CADD\DRAWINGS\11071\PLANS BY GLW\Finals\PHASE 1\11071_04-05_ROADS.dwg, PLOTTED: 6/24/2016 1:28 PM, LAST SAVED: 6/24/2016 1:27 PM, PLOTTED BY: Andrew Larson

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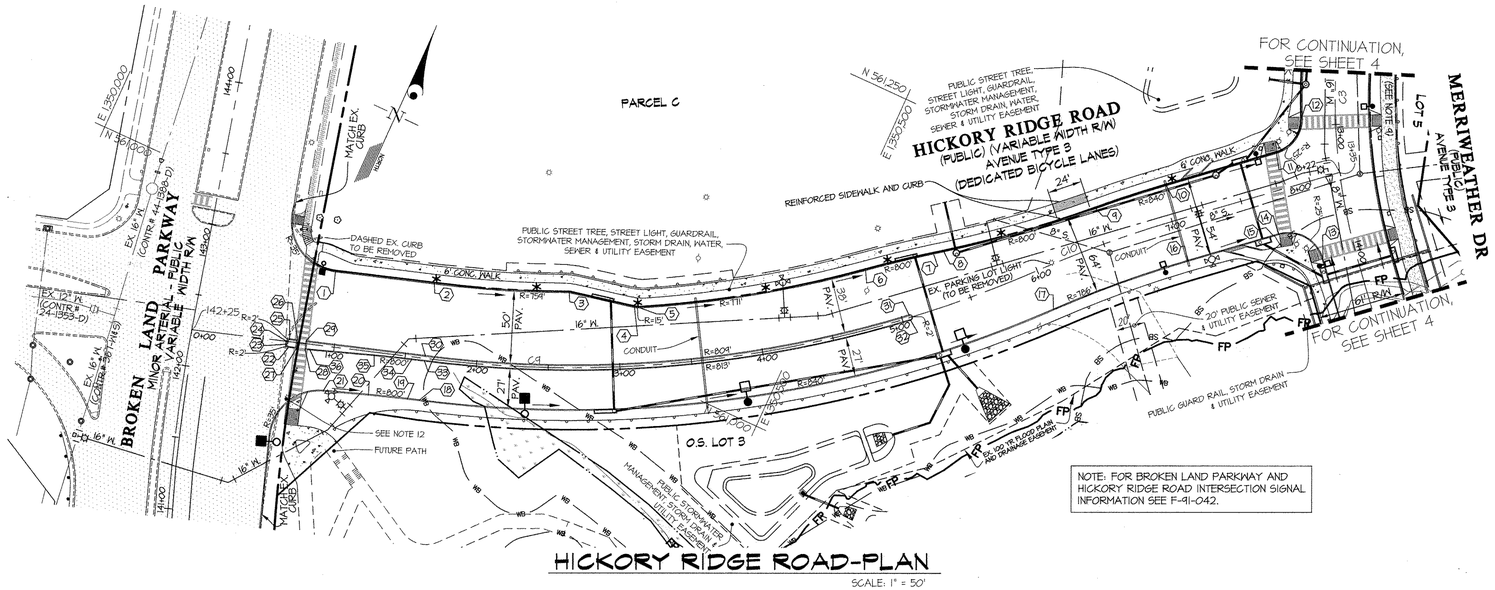
HICKORY RIDGE ROAD CURB FLOW LINE ELEVATION TABLE			
PT. NO	STATION	OFFSET	ELEV.
(1)	0+44.35'	52.01' L.	357.31
(2)	1+63.90	52.01' L.	355.27
(3)	2+64.43	52.00' L.	350.84
(4)	3+12.31	40.58' L.	348.65
(5)	3+16.71	40.00' L.	348.45
(6)	4+84.36	40.00' L.	344.26
(7)	5+35.38	36.99' L.	343.53
(8)	5+43.04	36.04' L.	343.43
(9)	6+53.06	25.00' L.	341.96
(10)	7+02.86	25.00' L.	341.20
(11)	7+82.99	25.00' L.	340.25
(12)	8+07.52	45.13' L.	339.96
(13)	7+93.71	54.00' R.	341.26
(14)	7+68.71	29.00' R.	341.00
(15)	7+64.81	29.00' R.	340.85
(16)	7+02.86	29.00' R.	341.12
(17)	5+99.73	29.00' R.	342.70
(18)	1+63.71	28.99' R.	355.73
(19)	1+55.25	28.99' R.	355.94
(20)	1+27.75	29.41' R.	356.56
(21)	0+96.27	30.55' R.	357.10
(22)	0+68.47	4.00' R.	358.99
(23)	0+66.47	1.45' R.	359.09
(24)	0+66.52	0.05' L.	359.11
(25)	0+68.52	2.00' L.	357.03
(26)	0+74.00	2.00' L.	358.89
(27)	0+74.00	4.00' R.	358.85
(28)	0+80.02	4.00' R.	358.69
(29)	0+80.02	2.00' L.	358.73
(30)	1+63.78	2.01' L.	356.32
(31)	5+05.41	2.00' L.	344.73
(32)	5+05.41	2.00' R.	344.73
(33)	1+63.77	1.99' R.	356.32
(34)	1+54.59	1.99' R.	356.54
(35)	1+28.40	2.42' R.	357.13
(36)	0+83.51	4.00' R.	358.60



HICKORY RIDGE ROAD-PLAN

SCALE: 1" = 50'

NOTE: FOR BROKEN LAND PARKWAY AND HICKORY RIDGE ROAD INTERSECTION SIGNAL INFORMATION SEE F-11-042.

NOTES:
1. SEE SHEET 6 FOR TYPICAL ROAD SECTIONS
2. SEE SHEET 6 FOR CURB DETAILS
3. SEE SHEETS 11 AND12 FOR FLOODPLAIN CROSS SECTION LOCATIONS AND WSEL's.
4. SEE SHEETS 9 AND 10 FOR EXISTING ITEMS TO BE REMOVED AND BEARINGS AND DISTANCES.
5. SEE SHEET 14 FOR STORM DRAIN INFORMATION
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8. FOR LIMITS OF WORK, SEE SHEET 3: "LIMITS OF WORK - THIS PLAN"
9. TYPICAL SECTIONS FOR THE PERMEABLE ASPHALT MULTI-USE PATH HAVE BEEN PROVIDED ON SHEET 11.
10. THE ENDS OF GUARDRAIL SEGMENTS SHALL HAVE TYPE I END TREATMENT PER MD 605.10-01. SEE DETAIL, THIS SHEET.
11. SEE SHEETS 60-61 FOR STRIPING AND SIGNING.
12. EXISTING LIGHT POLE WILL BE REMOVED AND NEW LIGHT INSTALLED ON TOP OF INTERSECTION SIGNAL POLE PER F-91-042.

Guardrail stations			
Left side		Right side	
Starting sta.:	Ending sta.:	Starting sta.:	Ending sta.:
2+22	3+82	1+06	7+79

CURVE DATA CHART									
CURVE	STREET NAME	PC STA.	PT STA.	RADIUS	TANGENT	ARC	CHORD	BEARING	DELTA
C9	HICKORY RIDGE	1+67.68	5+99.73	811.00'	221.29'	432.05'	426.96'	N57°12'21"E	30°31'26"
C10	HICKORY RIDGE	5+99.73	7+02.86	815.00'	51.63'	103.13'	103.06'	N45°34'08"E	7°15'00"

STREET LIGHT SCHEDULE			
LOCATION			TYPE
℄ STA. 141+50.0	BROKEN LAND PKWY.	10.30' RT.	G
℄ STA. 0+85.1	HICKORY RIDGE	56.90' LT.	F
℄ STA. 1+65.0	HICKORY RIDGE	55.67' LT.	A
℄ STA. 2+35.0	HICKORY RIDGE	32.67' RT.	G
℄ STA. 2+40.0	HICKORY RIDGE	55.67' LT.	A
℄ STA. 3+15.0	HICKORY RIDGE	43.78' LT.	A
℄ STA. 3+85.0	HICKORY RIDGE	32.67' RT.	G
℄ STA. 4+40.0	HICKORY RIDGE	43.78' LT.	A
℄ STA. 5+04.4	HICKORY RIDGE	43.21' LT.	A
℄ STA. 5+35.0	HICKORY RIDGE	32.67' RT.	G
℄ STA. 5+86.9	HICKORY RIDGE	34.08' LT.	A
℄ STA. 6+85.0	HICKORY RIDGE	32.67' RT.	B
℄ STA. 7+08.2	HICKORY RIDGE	28.67' LT.	A
℄ STA. 7+72.0	HICKORY RIDGE	28.82' LT.	B

LEGEND:
- A) LED-100 MODERN POST-TOP FIXTURE MOUNTED ON A 14' BLACK FIBERGLASS POLE
- B) LED-200 COBRA FIXTURE MOUNTED AT 30' ON A BRONZE FIBERGLASS POLE USING A 6' ARM
- C) LED-200 COBRA FIXTURE MOUNTED AT 30' ON A BRONZE FIBERGLASS POLE USING A 12' ARM
- F) LED-250 COBRA FIXTURE MOUNTED AT 30' ON A BRONZE FIBERGLASS POLE USING A 6' ARM
- G) LED-250 COBRA FIXTURE MOUNTED AT 30' ON A BRONZE FIBERGLASS POLE USING A 12' ARM

LEGEND
- EXISTING PAVING
- CONCRETE WALKS
- ASPHALT MULTI-USE PATH - SEE NOTE 9
- PUBLIC LIGHT AND UTILITY EASEMENT
- PUBLIC STORM DRAIN, STORMWATER MANAGEMENT AND UTILITY EASEMENT
- PUBLIC WATER AND UTILITY EASEMENT
- PUBLIC SEWER AND UTILITY EASEMENT
- SB — 50' STREAM / BANK BUFFER
- WB — 25' WETLAND BUFFER
- EXISTING PARKING LOT / STREET LIGHT

HICKORY RIDGE ROAD-PROFILE

SCALE: (H) 1" = 50'
SCALE: (V) 1" = 5'

NOTES
1. NOTES ON STD. MD 605.10 APPLY TO OPTION 2 & 3.
2. IF THE FOUNDATION TUBE AND SOIL PLATE (OPTION 2) ARE DRIVEN INTO THE SOIL, PROPER CARE SHOULD BE TAKEN TO ENSURE THAT THE SOIL PLATE FASTENERS ARE NOT BROKEN DURING THE DRIVING PROCESS.
3. SECURE BEARING PLATE WITH 16 PENNY GALVANIZED NAIL TO PREVENT ROTATION OF PLATE.
4. SAME AS MD 605.01 NOTE 6

SPECIFICATION	CATEGORY CODE ITEMS
605	

APPROVED: Kat G. McCall, DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT

SHA REVISIONS	APPROVAL • SHA	APPROVAL • FEDERAL HIGHWAY ADMINISTRATION
APPROVAL	11-10-99	7-2-99
REVISED	2-15-06	4-5-06
REVISED		
REVISED		

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES

TYPE K TRAFFIC BARRIER END TREATMENT OPTION 2 & 3 ANCHORAGE

STANDARD NO. MD 605.10-01

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
Chief, Bureau of Highways — Date 7/12/2016

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
Chief, Division of Land Development — Date 9.2.16
Chief, Development Engineering Division — Date 7-26-16

GLW GUTSCHICK LITTLE & WEBER, P.A.
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L:\CADD\DRAWINGS\11071\PLANS BY GLW\Finals\PHASE 1\11071_04-05_ROADS.dwg | DES. MJT | DRN. WSJ | CHK. MJT

DATE	REVISION	BY	APP'R.

PREPARED FOR:
THE HOWARD HUGHES CORPORATION
10480 LITTLE PATUXENT PARKWAY
SUITE 400
COLUMBIA, MD 21044
ATTN: BOB JENKINS
410-964-5443

PROFESSIONAL CERTIFICATION
I HEREBY CERTIFY THAT THESE PLANS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 12975
EXPIRATION DATE: MAY 26, 2018
6/6/16

HICKORY RIDGE ROAD - PLAN AND PROFILE
DOWNTOWN COLUMBIA
CRESCENT NEIGHBORHOOD
PARCELS B THRU H, NON-BUILDABLE BULK PARCELS J THRU R, O.S. LOTS 1 THRU 8 AND MERRIWEATHER-SYMPHONY WOODS NEIGHBORHOOD O.S. LOT 1 AND NON-BUILDABLE BULK PARCEL A
ELECTION DISTRICT No. 5 — HOWARD COUNTY, MARYLAND

SCALE	ZONING	G. L. W. FILE No.
AS SHOWN	NT	11071
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F 15-106

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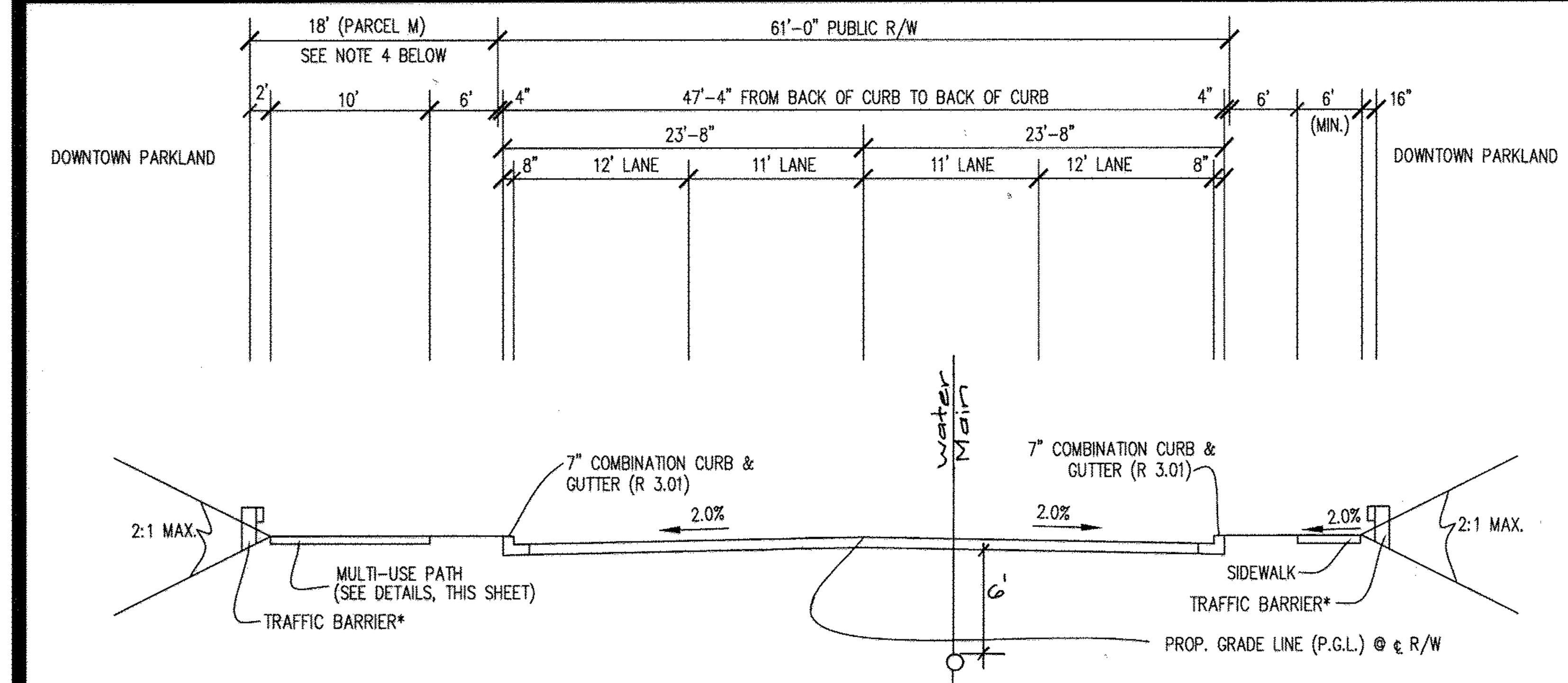
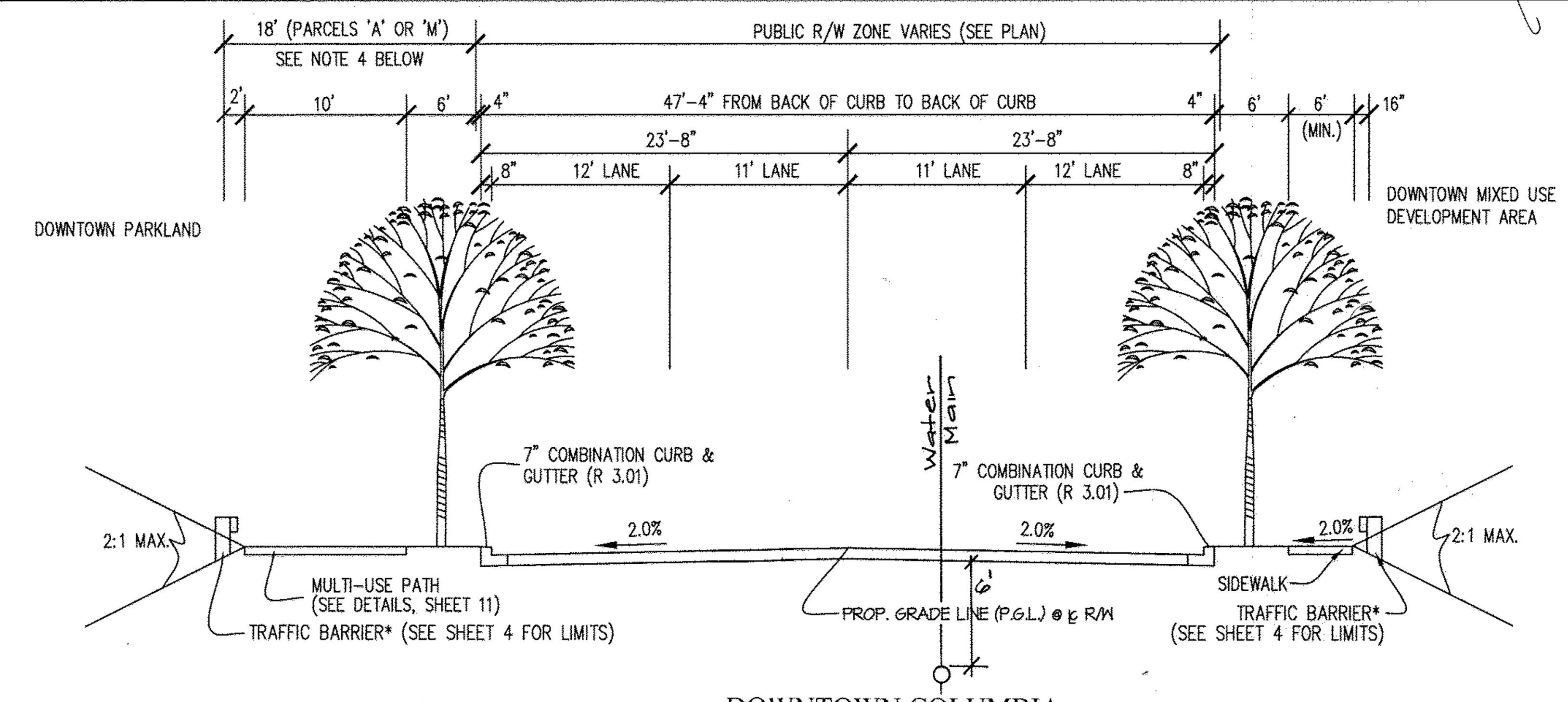
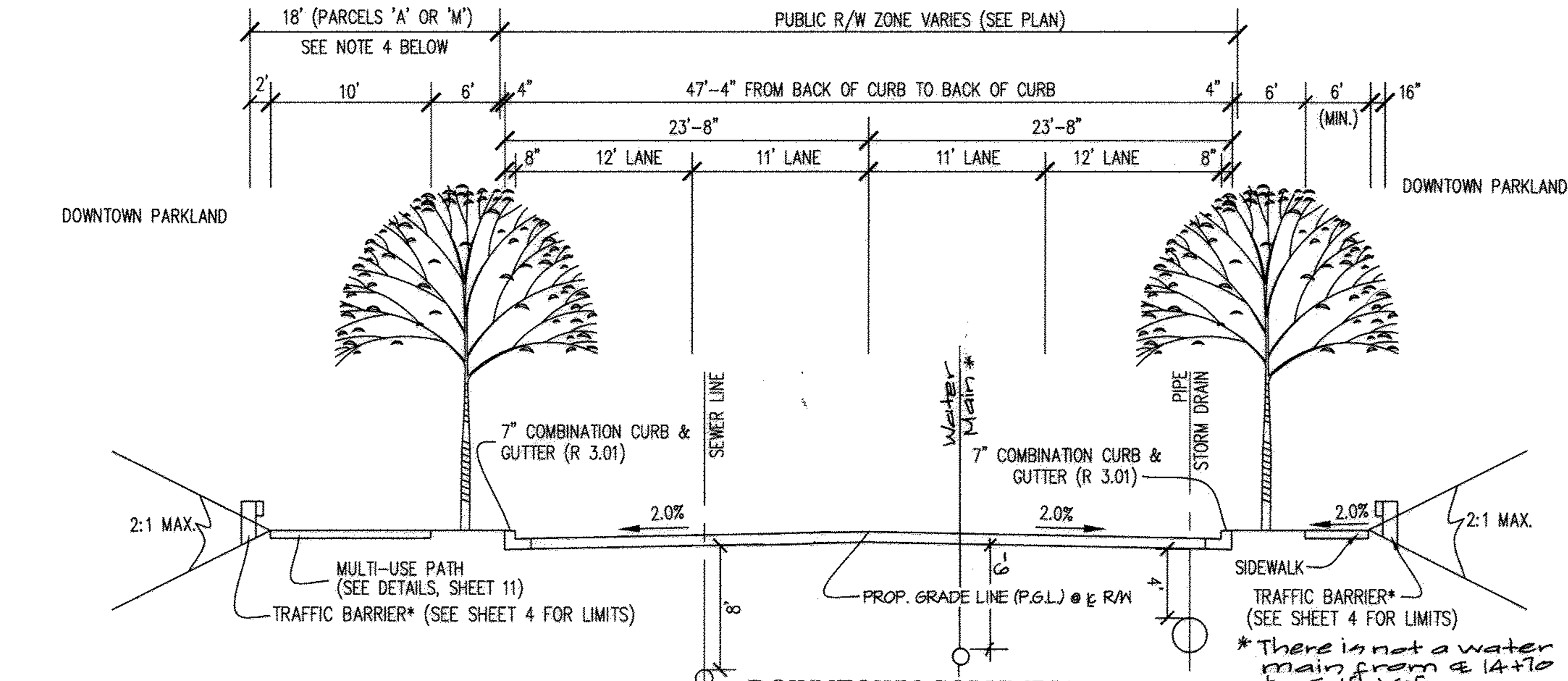


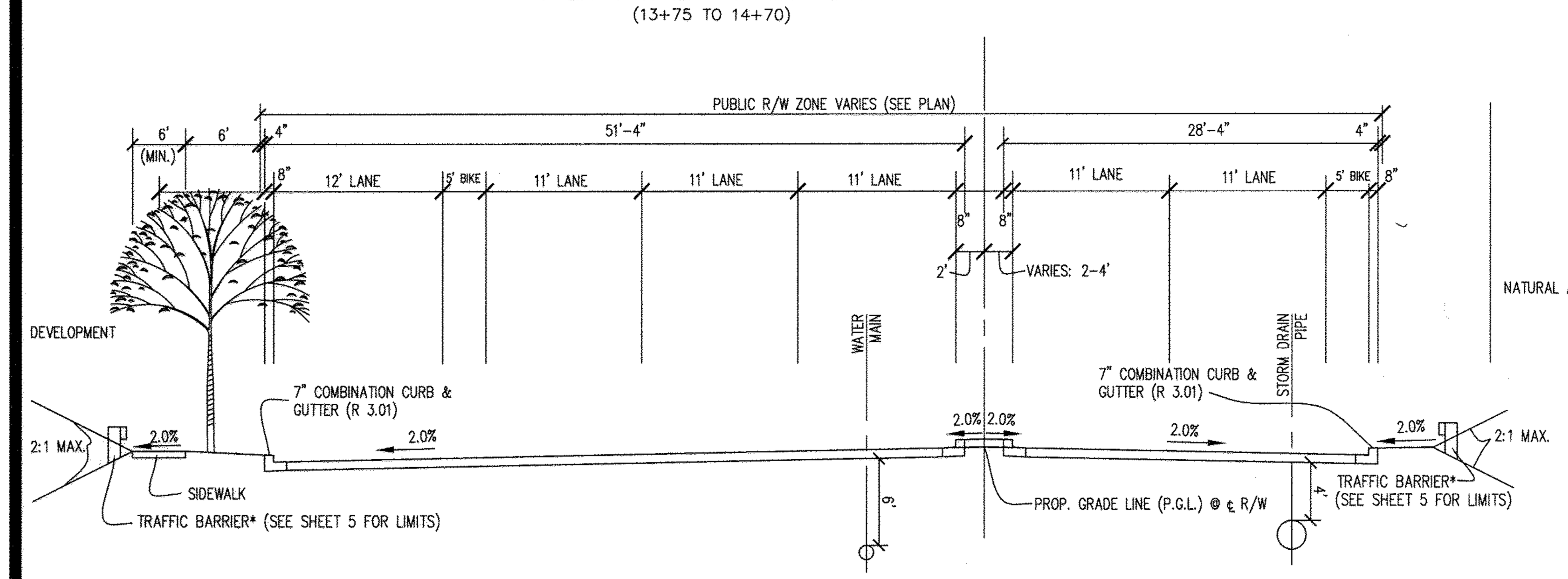
DOWNTOWN COLUMBIA
(1) TYPICAL AVENUE TYPE 3 (4 LANE) ROAD SECTION and MULTI-USE PATH
NOT TO SCALE
MERRIWEATHER DR
(13+75 TO 14+70)



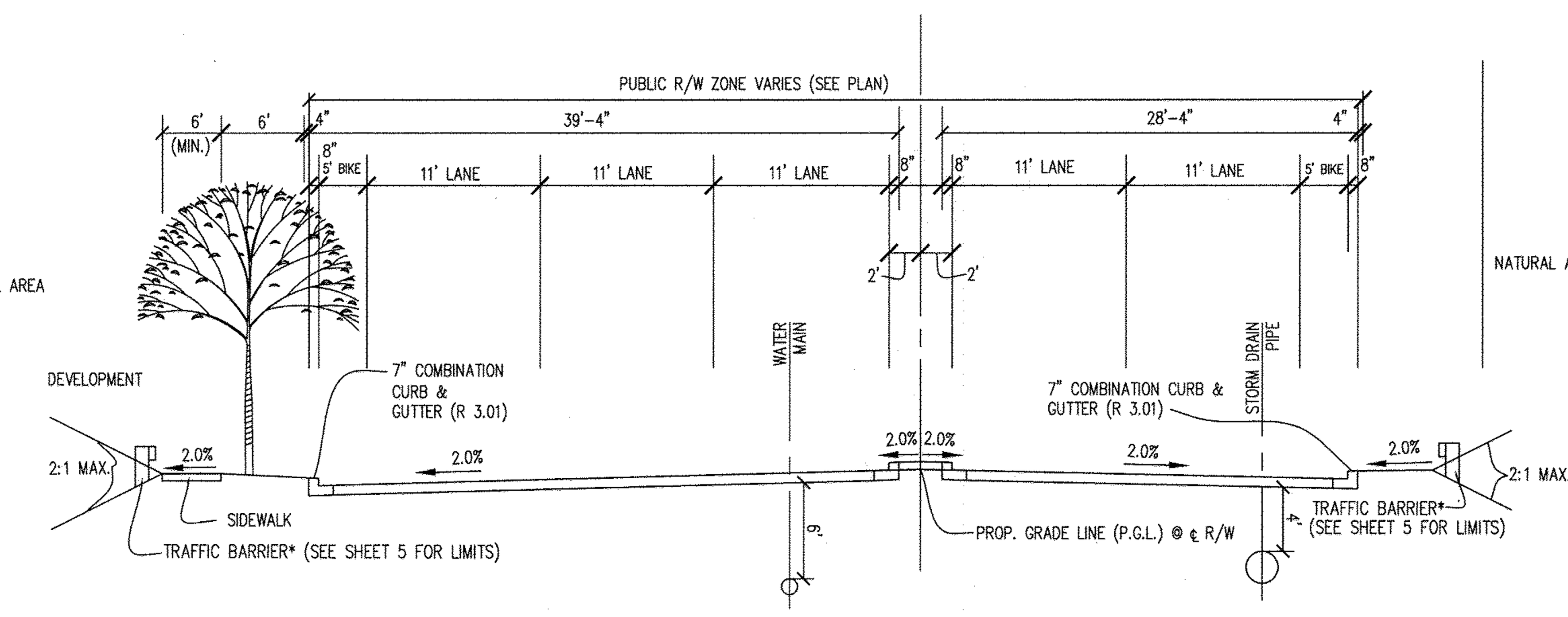
DOWNTOWN COLUMBIA
(2) TYPICAL AVENUE TYPE 3 (4 LANE) ROAD SECTION and MULTI-USE PATH
NOT TO SCALE
MERRIWEATHER DR
(10+28 TO 13+20, 15+65 TO 19+10)



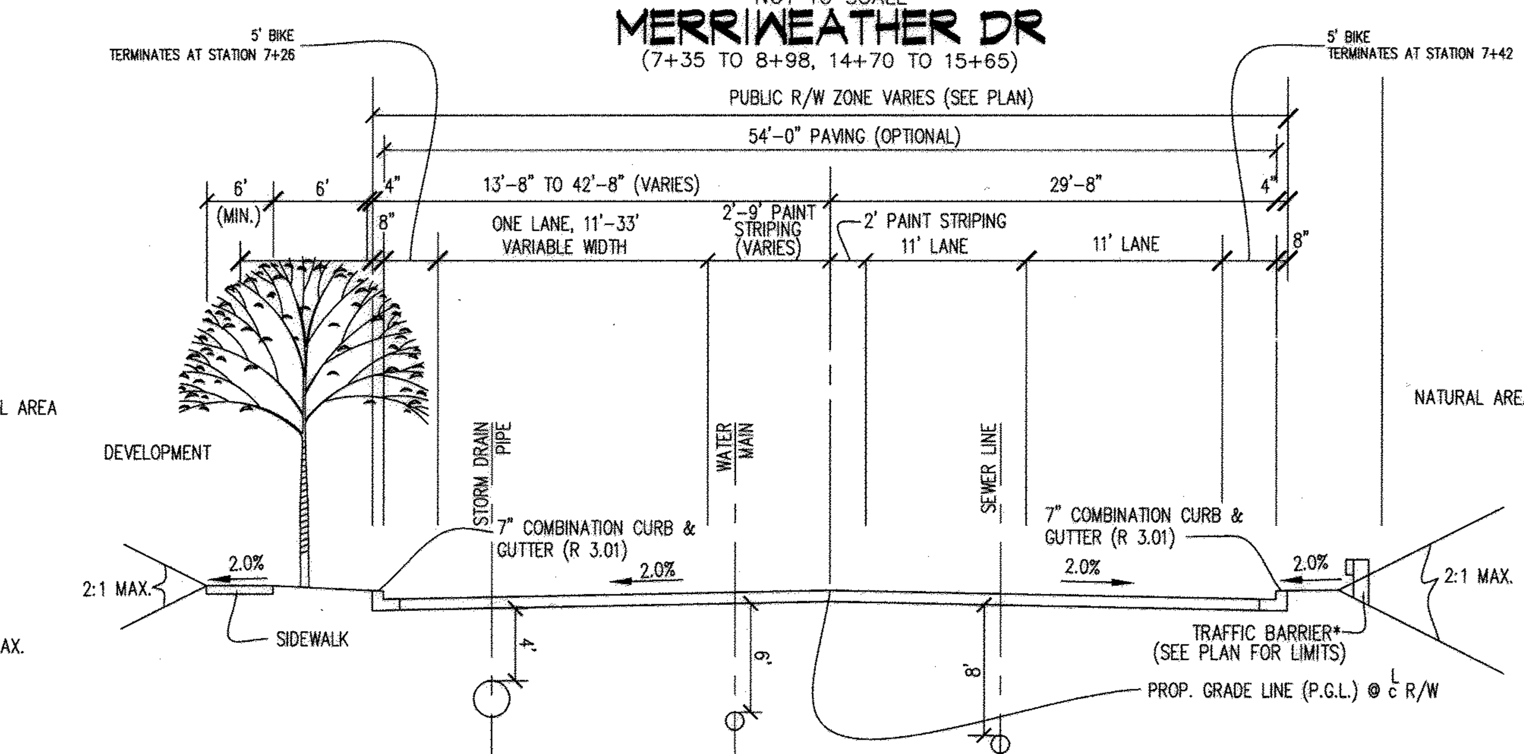
DOWNTOWN COLUMBIA
(3) TYPICAL AVENUE TYPE 3 (4 LANE) ROAD SECTION and MULTI-USE PATH
NOT TO SCALE
MERRIWEATHER DR
(7+35 TO 8+98, 14+70 TO 15+65)



DOWNTOWN COLUMBIA
(4) TYPICAL AVENUE TYPE 3 (4 LANE) ROAD
NOT TO SCALE
HICKORY RIDGE ROAD
(0+00 TO 3+15)



DOWNTOWN COLUMBIA
(5) TYPICAL AVENUE TYPE 3 (4 LANE) ROAD
NOT TO SCALE
HICKORY RIDGE ROAD
(3+15 TO 5+07)

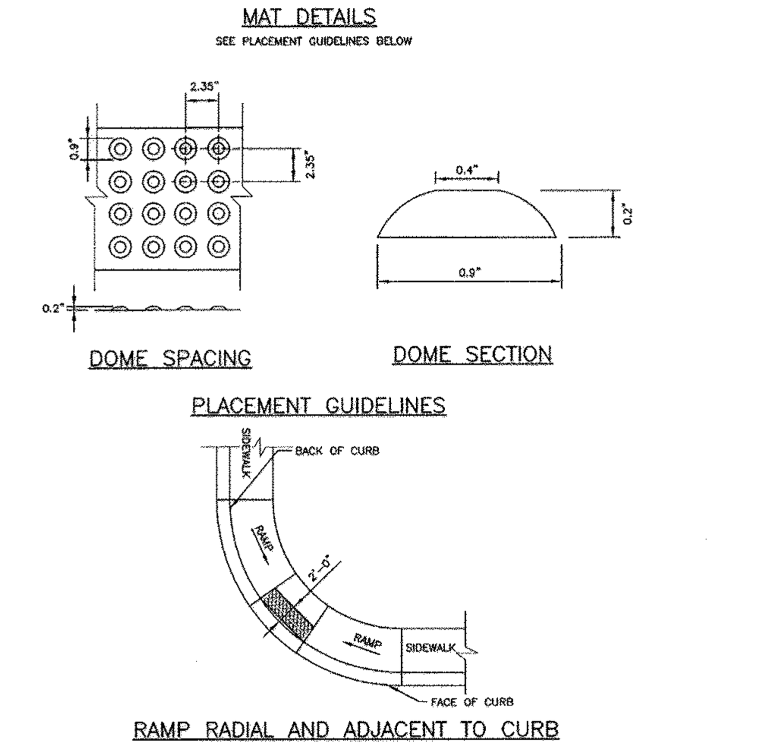


DOWNTOWN COLUMBIA
(6) TYPICAL AVENUE TYPE 3 (4 LANE) ROAD
NOT TO SCALE
HICKORY RIDGE ROAD
(5+07 TO 8+22)

* TRAFFIC BARRIER TO BE POWDER COATED BRONZE; STYLE AND MATERIAL TO BE SPECIFIED BY GRAPHIC DESIGNER PRIOR TO FABRICATION
** TRAFFIC BARRIER DETAIL FOR ALL BARRIERS INCLUDING THOSE OVER CULVERTS UNLESS OTHERWISE SPECIFIED

NOTE:
1. HICKORY RIDGE ROAD TRANSITIONS BETWEEN CENTERLINE STATIONS 5+02 AND 6+97.
2. ALL TYPICAL SECTIONS ARE DRAWN LOOKING UP STATION.
3. SEE SHEET 35 FOR TYPICAL SECTIONS ACROSS THE BRIDGE (STA. 8+98 THRU 10+28).
4. THE MULTI-USE PATH FROM CENTERLINE STATION 0+00 THRU 10+50 OF MERRIWEATHER DRIVE WILL BE WITHIN NON-BUILDABLE BULK PARCLE 'A'. FROM CENTERLINE STATION 10+50 THROUGH 19+10 OF MERRIWEATHER DRIVE, THE MULTI-USE PATH WILL BE WITHIN NON-BUILDABLE BULK PARCEL 'M'.
5. CENTERLINE STATIONS 13+20 THROUGH 13+75 HAVE NOT BEEN IDENTIFIED SINCE THAT IS THE RANGE IN WHICH HICKORY RIDGE ROAD R/W WILL BE ON THE RIGHT SIDE OF THE SECTION AND NOT A PARCEL OR LOT.

MAT DETAILS
SEE PLACEMENT GUIDELINES BELOW

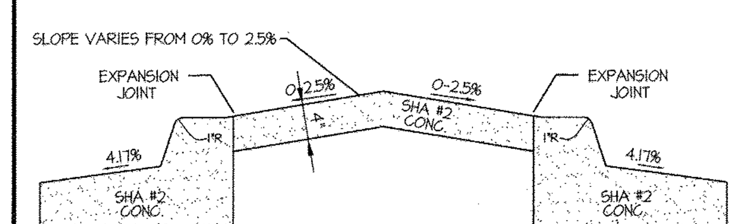


RAMP RADIAL AND ADJACENT TO CURB

NOTES:
1. THE DETECTABLE WARNING SURFACE SHALL BE LOCATED SO THAT THE EDGE NEAREST THE CURB LINE IS 6 TO 8 INCHES FROM THE FACE OF THE CURB.
2. FOR SKEWED APPLICATIONS DETECTABLE WARNING SHALL BE PLACED SUCH THAT THE DOMES CLOSEST TO THE BACK OF THE CURB ARE NO LESS THAN 0.5" AND NO MORE 3.0" FROM THE BACK OF THE CURB. TRUNCATED DOME SURFACES SHALL BE FABRICATED TO PROVIDE FULL DOMES ONLY.

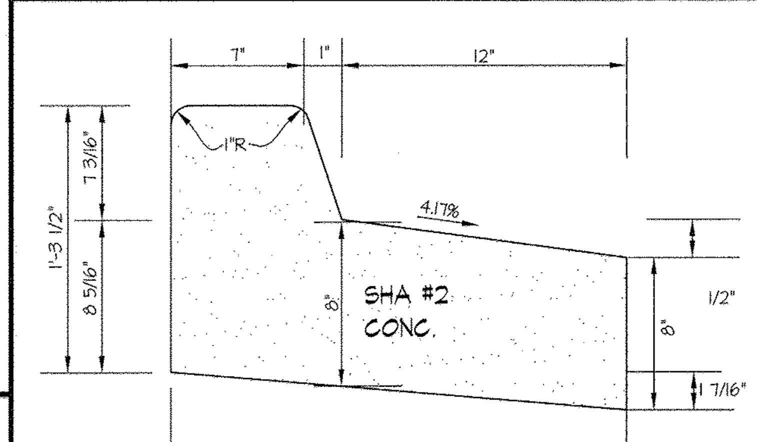
TO BE PROVIDED AT ALL RAMPS CONSTRUCTED UNDER THESE PLANS

Revised / Revised 5/7/2007 / Approved	Howard County, Maryland Department of Public Works — Approved: Chief, Bureau of Engineering	SIDEWALK RAMP Detectable Warning Truncated Domes	Detail R-4.07



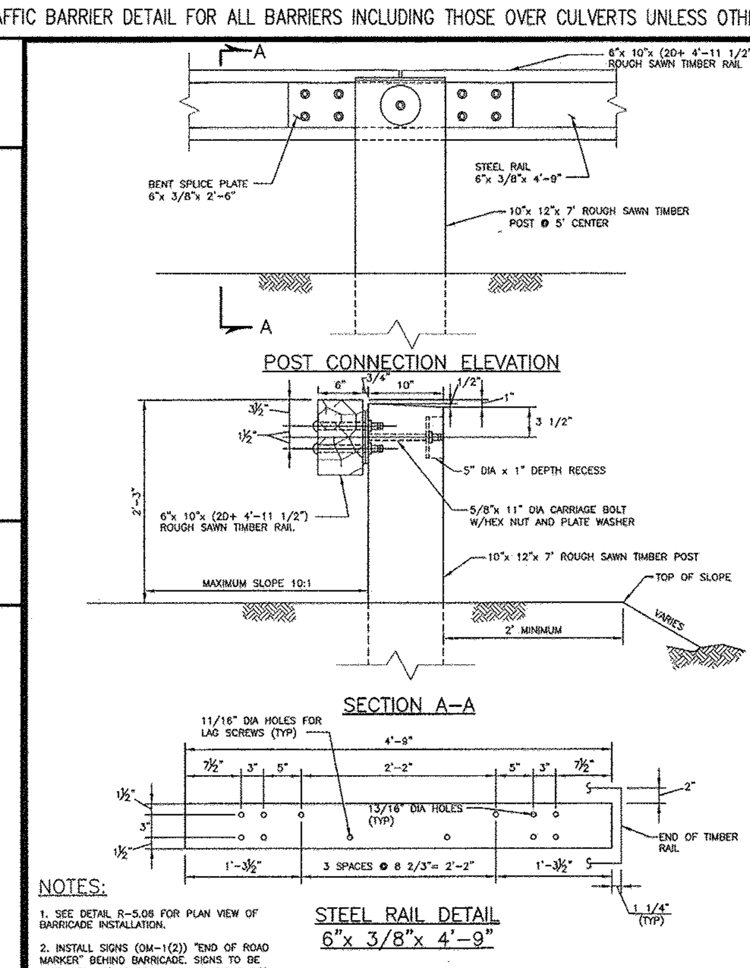
NOTE:
1. VIEW IS LOOKING UPSTATION (NORTHEAST) ON HICKORY RIDGE RD.

MEDIAN DETAIL
NOT TO SCALE



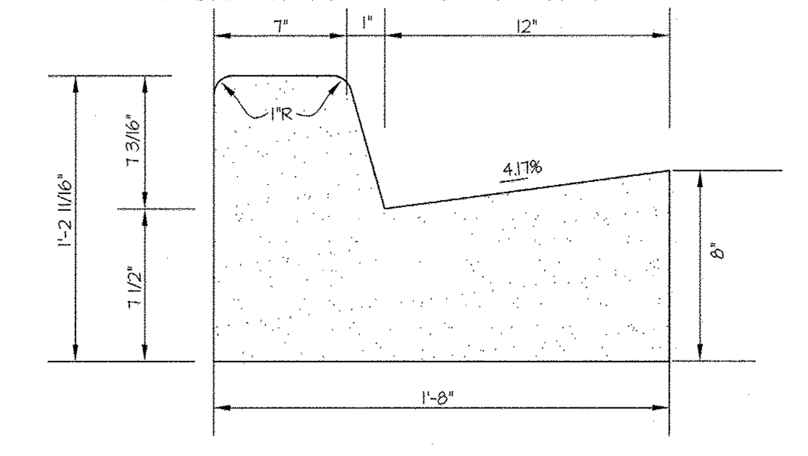
NOTES:
1. 50' MAX. BETWEEN EXPANSION JOINTS & 10' MAX. BETWEEN CONTROL JOINTS.
2. ALL ON-SITE CURB & GUTTER SHALL BE 6" HIGH.
3. STANDARD CURB & GUTTER SHALL BE USED WHERE THE DRIVEWAY SLOPES TOWARDS THE CURB & GUTTER. REVERSE CURB & GUTTER SHALL BE USED WHERE THE DRIVEWAY SLOPES AWAY FROM THE CURB & GUTTER.
4. PROVIDE A 5' TRANSITION TO OPEN SECTION.

TYPE-A REVERSE CONCRETE CURB AND GUTTER
NOT TO SCALE

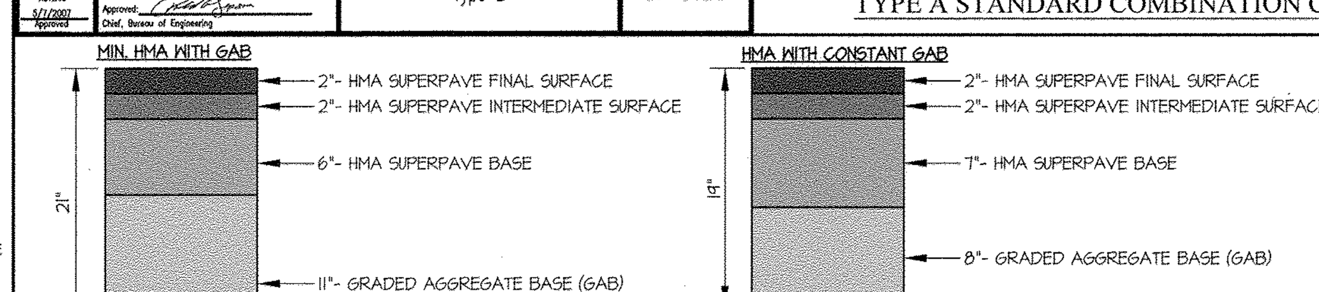


NOTES:
1. SEE DETAIL R-5.06 FOR PLAN VIEW OF BARRICADE INSTALLATION.
2. INSTALL SIGNS (OM-1(2)) "END OF ROAD MARKER" BEHIND BARRICADE. SIGNS TO BE INSTALLED 12' APART MINIMUM 2 SIGNS PER LOCATION.

Revised / Revised 5/7/2007 / Approved	Howard County, Maryland Department of Public Works — Approved: Chief, Bureau of Engineering	DEAD END BARRICADE Type B	Detail R-5.10

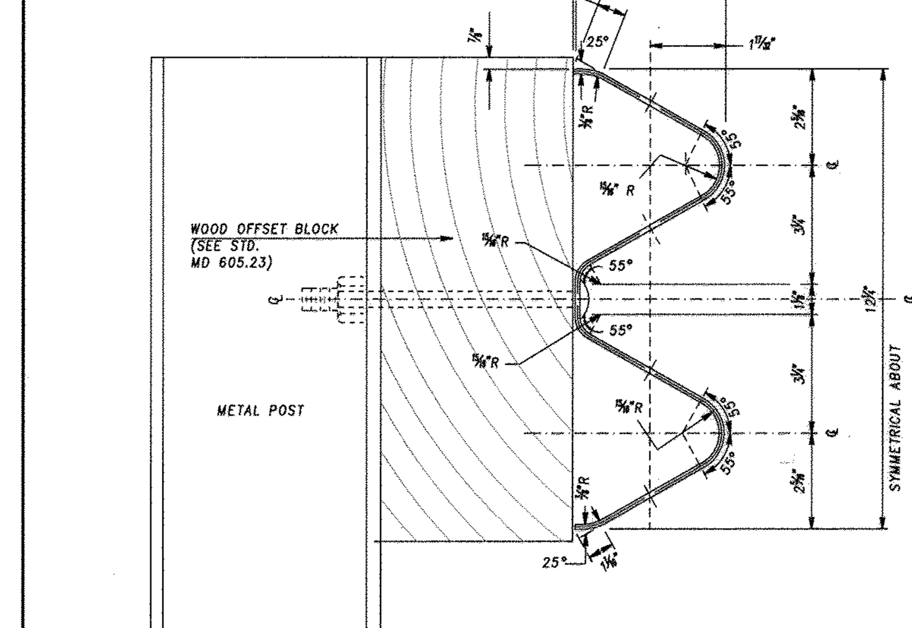


TYPE A STANDARD COMBINATION CURB AND GUTTER
NOT TO SCALE



P-5 PAVING SECTION
NO SCALE

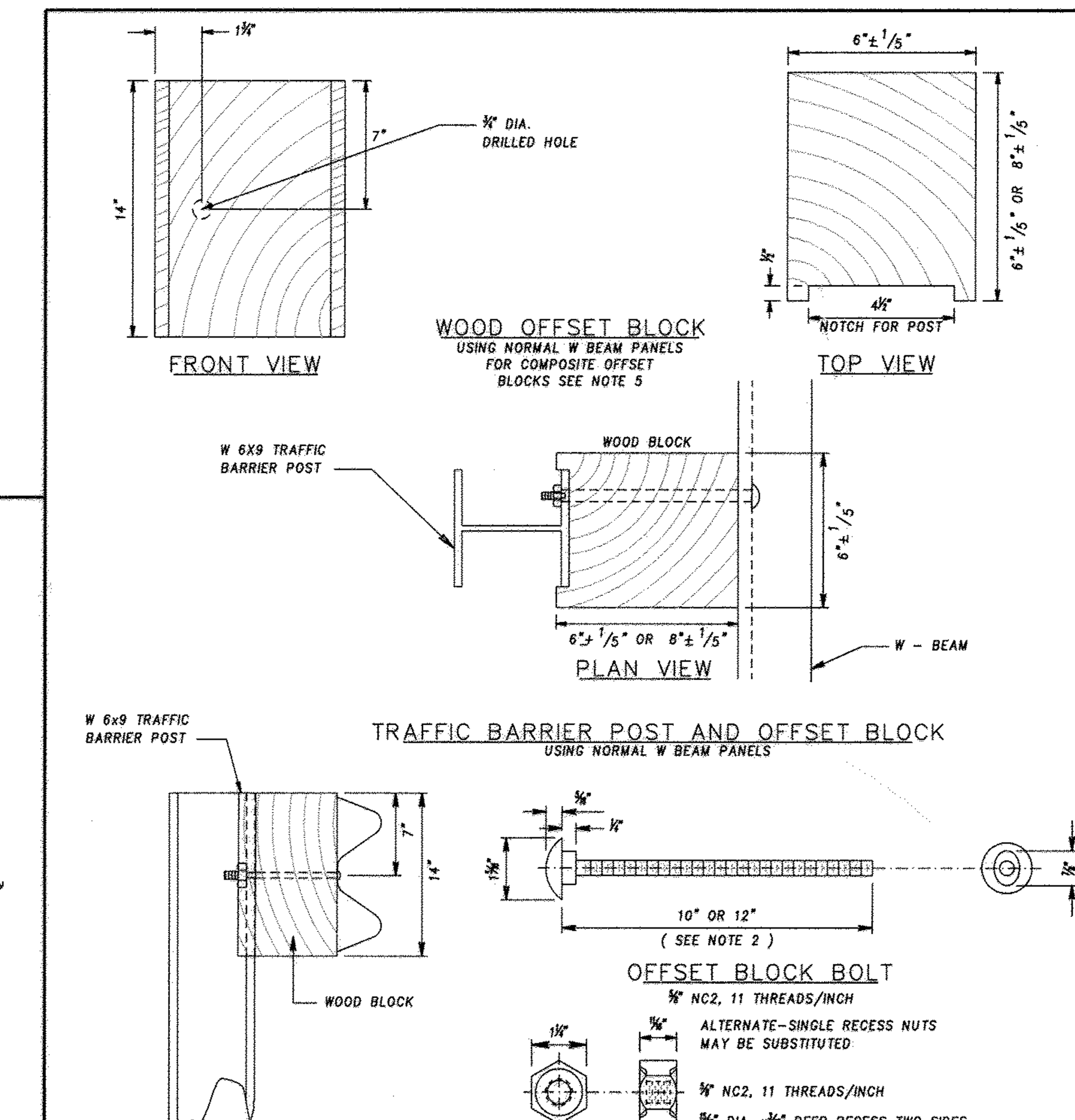
NOTES:
1. DEPENDING ON THE CBR VALUES OBTAINED IN THE FIELD, THE PAVING SECTIONS MAY BE REVISED, IF APPROVED BY A PROFESSIONAL SOILS ENGINEER. THESE SUBSTITUTIONS MUST ALSO BE APPROVED BY THE HOWARD COUNTY DEPT. OF PUBLIC WORKS.
2. ALL ROADS TO BE P-5 PAVING.



W BEAM DETAIL
(MATERIAL: 12 GA. STEEL)

NOTES
1. RAIL ELEMENTS ARE FURNISHED SHOP CURVED, CONCAVE OR CONVEX TO RADII BETWEEN 20 FT. & 150 FT.
2. BARRIER SECTIONS SHALL BE 12'-6" OR 25'-0" LENGTHS.
3. FOR COMPOSITE OFFSET BLOCKS SEE NOTE 5 ON MD 605.21

MD SHA: TRAFFIC BARRIER W BEAM SINGLE FACE
STANDARD NO. MD 605.22



NOTES
1. WOOD OFFSET BLOCKS 8x6x14 INCHES TO BE USED ON ALL NEW CONSTRUCTION AND WHEN THE EXISTING TRAFFIC BARRIER WITH METAL OFFSET BLOCKS IS TO BE REMOVED AND RESET.
2. THE CONTRACTOR HAS THE OPTION TO USE SHORTER BOLTS WITH A MINIMUM OF ½" PROTRUSION BEYOND NUT.
3. WOOD BLOCKS FOR THRIE BEAM PANELS SHALL BE 8x6x22½ INCHES AND NOTCHED AS SHOWN IN THE TOP VIEW. TWO BOLTS ARE REQUIRED FOR ATTACHMENT TO THE POSTS.
4. THE 6x6x14 INCH WOOD OFFSET BLOCKS ARE TO BE USED FOR REPAIR WORK ONLY.
5. WHEN DIRECTED BY THE ENGINEER OR WHEN SPECIFIED IN THE CONTRACT DOCUMENTS, COMPOSITE OFFSET BLOCKS THAT ARE APPROVED BY THE ADMINISTRATION CAN BE USED IN LIEU OF THE WOOD BLOCKS. FOR THE APPROVED SUBSTITUTES LIST SEE SHEET 1 OF 1 APPROVED SUBSTITUTES FOR WOOD OFFSET BLOCKS.

MD SHA: TRAFFIC BARRIER W BEAM W WOOD OFFSET BLOCK
STANDARD NO. MD 605.21

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
Chief, Bureau of Highways — Date 7/12/2016

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
Chief, Division of Land Development — Date 8-3-16
Chief, Development Engineering Division — Date 8/3/16

GLW GUTSCHICK LITTLE & WEBER, P.A.
CIVIL ENGINEERS, LAND SURVEYORS, LAND PLANNERS, LANDSCAPE ARCHITECTS
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BURTONSVILLE, MARYLAND 20866
TEL: 301-421-4024 BALT: 410-880-1820 DC/VA: 301-989-2524 FAX: 301-421-4186

L:\CADD\DRAWINGS\11071\PLANS BY GLW\Finals\PHASE 1\11071_06_ROAD DETAILS.dwg | DES. MJT | DRN. MJT | CHK. MJT

DATE	REVISION	BY	APP'R.

PREPARED FOR:
THE HOWARD HUGHES CORPORATION
10480 LITTLE PATUXENT PARKWAY
SUITE 400
COLUMBIA, MD 21044
ATTN: BOB JENKINS
410-964-5443

PROFESSIONAL CERTIFICATION
I HEREBY CERTIFY THAT THESE PLANS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 12975 EXPIRATION DATE: MAY 26, 2018
6/9/16

TYPICAL ROAD SECTION & CURB DETAILS
DOWNTOWN COLUMBIA
CRESCENT NEIGHBORHOOD
PARCELS B THRU H, NON-BULDABLE BULK PARCELS J THRU R, O.S. LOTS 1 THRU 8 AND MERRIWEATHER-SYMPHONY WOODS NEIGHBORHOOD O.S. LOT 1 AND NON-BUILDABLE BULK PARCEL A
ELECTION DISTRICT No. 5 — HOWARD COUNTY, MARYLAND

SCALE	ZONING	G. L. W. FILE No.
AS SHOWN	NT	11071
DATE	TAX MAP - GRID	SHEET
JUNE, 2016	36 - 01	6 OF 102

F 15-106

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© GLW 2014

LEGEND

- PROPOSED DOWNTOWN PARKLAND (COUNTY)
- EXISTING, APPROVED AND PLANNED PARKING ON DOWNTOWN PARKLAND PROPERTY.
- PROPOSED DOWNTOWN PARKLAND (COLUMBIA ASSOCIATION, INC.)
- LIMIT OF STEEP SLOPES (SLOPES THAT AVERAGE 25% OR GREATER OVER 10 VERTICAL FEET)
- EXISTING LIMIT OF WETLANDS
- EXISTING WETLANDS
- LIMIT OF FLOOD PLAIN
- EX. & PROP. PROPERTY LINES
- EX. STREAM BANK
- SB — SB — 50' STREAM BUFFER
- WB — WB — 25' WETLAND BUFFER

ON JUNE 1, 2012 A MEMORANDUM OF UNDERSTANDING BETWEEN HOWARD COUNTY AND HOWARD HUGHES WAS ISSUED TO ADDRESS WHAT CONSTITUTES ALLOWABLE LAND AREA FOR PARKLAND REPLACEMENT. THE MOU STATES "THE COUNTY UNDERSTANDS THAT HRD HAS IDENTIFIED AREAS OF NON-DOWNTOWN ENVIRONMENTALLY SENSITIVE LAND AREA (DESA) IN THE CRESCENT NEIGHBORHOOD THAT ADJOIN SYMPHONY WOODS FOR POTENTIAL REPLACEMENT OF DOWNTOWN PARKLAND. WHILE SOME OF THESE AREAS ARE SMALLER THAN ONE ACRE, THEY ARE INTEGRATED INTO LARGER OPEN SPACE AREAS THAT INCLUDE DESA LAND. THE ACREAGE OF THESE NON-DESA AREAS CAN BE COUNTED TOWARDS THE ACREAGE NEEDED FOR DOWNTOWN PARKLAND REPLACEMENT UNDER SECTION 125.A.9.6.(5), AS LONG AS THE AREAS ARE INCORPORATED INTO PARCELS OF AT LEAST ONE CONTIGUOUS ACRE (WHICH MAY INCLUDE DESA AND NON-DESA LAND). THESE NON-DESA AREAS MAY ALSO BE USED FOR ENVIRONMENTAL ENHANCEMENT, ENVIRONMENTAL RESTORATION AND ENVIRONMENTAL SITE DESIGN FOR STORMWATER MANAGEMENT AND WATER QUALITY PURPOSES. THE USE OF NON-DESA LAND FOR ENVIRONMENTAL ENHANCEMENT, ENVIRONMENTAL RESTORATION AND ENVIRONMENTAL SITE DESIGN FOR STORMWATER MANAGEMENT AND WATER QUALITY PURPOSES WILL NOT CONVERT THE NON-DESA LAND INTO DESA LAND, AND ANY NON-DESA LAND SO USED WILL STILL BE COUNTED TOWARD THE ACREAGE NEEDED FOR DOWNTOWN PARKLAND REPLACEMENT."

Downtown Columbia Replacement Parkland Tabulation

Neighborhood	Lot	Area - Envir (Ac.)	Area - Non-envir (Ac.)	Total Area (Ac.)
Crescent	1	1.34	0.94	2.28
Crescent	2	3.06	1.00	4.06
Crescent	3	4.10	2.12	6.22
Crescent	5	0.23	1.71	1.94
Crescent	6	0.20	0.14	0.39
Total		8.93	**5.92**	14.89

A total of 14.89 acres, of which 5.92 acres will be non-environmental Downtown Parkland, is to be transferred to The Columbia Association, Inc.

Downtown Columbia Existing Parkland Tabulation - Lots

Neighborhood	Lot or Parcel	Downtown Parkland Area - Non-credited* (Ac.)	Downtown Parkland Area - Credited (Ac.)	Downtown Parkland Total Area (Ac.)	Notes
MSW	1	0.56	32.00	32.56	Formerly P/O Lot 23, non-credited areas identified as circled nos. 1-6
MSW	A	0.25	0.00	0.25	Formerly P/O Lot 23, non-credited areas identified as circled no. 7b
Crescent	8	0.00	2.47	2.47	Formerly P/O Lot 23
Crescent	Merriweather Dr.	0.95	0.00	0.95	Formerly P/O Lot 23, non-credited area identified as circled no. 7a
Total		**1.76**	34.47	36.23	

Total area to be exchanged with non-environmental Downtown Parkland from the Crescent is 1.61 acres.

* Area for parking** and public roadways and apurtenences and multi-use path.
** The area for handicap parking includes the handicap transfer space. When parking is within a parking lot, the area of parking spaces and the drive isles are included in the area. When parking is adjacent to a circulation route, only the area of the parking spaces is included.

SCALE: 1" = 150'
0' 75' 150' 300' 600'

THIS PLAN DEMONSTRATES THE AREAS WHICH ARE USED TO OFFSET THE LOSS OF CREDITED DOWNTOWN PARKLAND.

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
Chief, Bureau of Highways — Date 2/12/2016

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
Chief, Division of Land Development — Date 2.3.16
Chief, Development Engineering Division — Date 1.26.16

GLW GUTSCHICK LITTLE & WEBER, P.A.
CIVIL ENGINEERS, LAND SURVEYORS, LAND PLANNERS, LANDSCAPE ARCHITECTS
3909 NATIONAL DRIVE – SUITE 250 – BURTONSVILLE OFFICE PARK
BURTONSVILLE, MARYLAND 20866
TEL: 301-421-4024 BALT: 410-880-1820 DC/VA: 301-989-2524 FAX: 301-421-4186

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DATE	REVISION	BY	APP'R.

PREPARED FOR:
THE HOWARD HUGHES CORPORATION
10480 LITTLE PATUXENT PARKWAY
SUITE 400
COLUMBIA, MD 21044
ATTN: BOB JENKINS
410-964-5443

PROFESSIONAL CERTIFICATION
I HEREBY CERTIFY THAT THESE PLANS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 12975
EXPIRATION DATE: MAY 28, 2018
6/1/16

STATE OF MARYLAND — MICHAEL JAMES TROSTLE — 12975 — REGISTERED PROFESSIONAL ENGINEER

PARKLAND REPLACEMENT PLAN
DOWNTOWN COLUMBIA
CRESCENT NEIGHBORHOOD
PARCELS B THRU H, NON-BUILDABLE BULK PARCELS J THRU R, O.S. LOTS 1 THRU 8 AND MERRIWEATHER-SYMPHONY WOODS NEIGHBORHOOD O.S. LOT 1 AND NON-BUILDABLE BULK PARCEL A

ELECTION DISTRICT No. 5 — HOWARD COUNTY, MARYLAND

SCALE	ZONING	G. L. W. FILE No.
1"=150'	NT	11071
DATE	TAX MAP – GRID	SHEET
JUNE, 2016	36 – 01	7 OF 102

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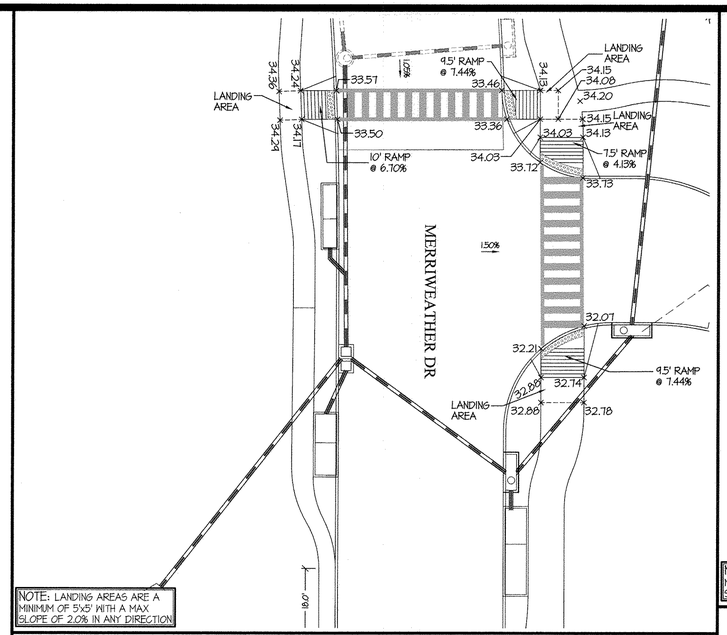
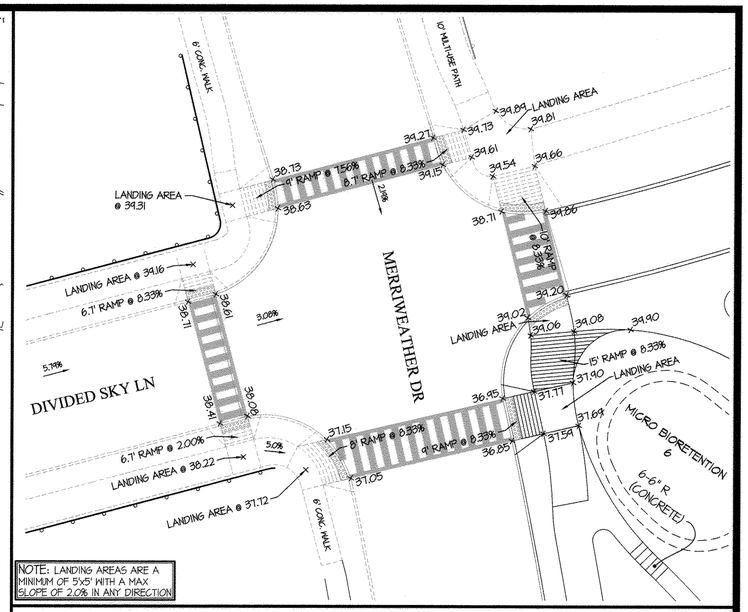


INTERSECTION 'J'

SCALE: 1" = 20'

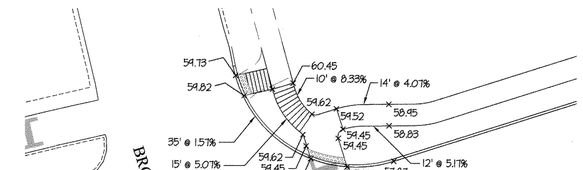


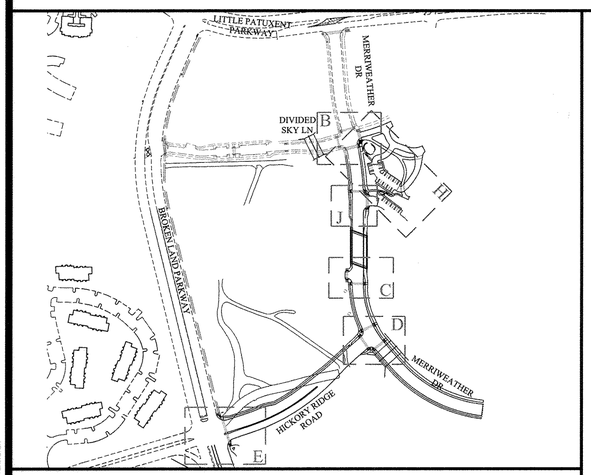
INTERSECTION 'B'

SCALE: 1" = 20'

SCALE: 1" = 20'

0' 10' 20' 40' 80'





LOCATION MAP

SCALE: 1" = 300'

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

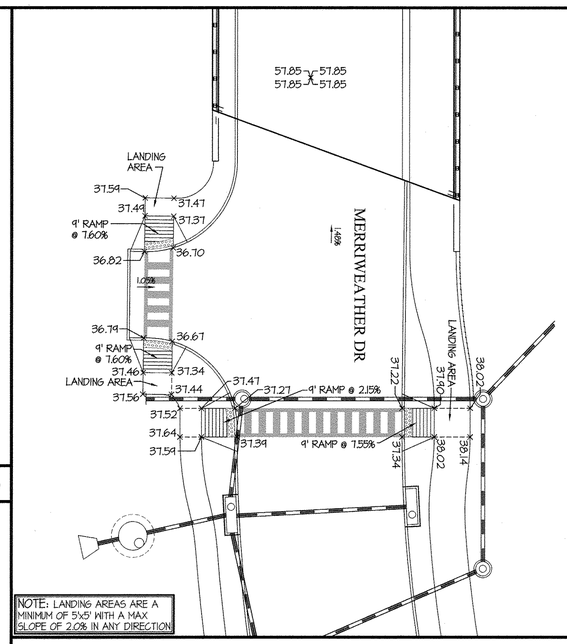
Chief, Bureau of Highways — Date 7/12/2016

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

Chief, Division of Land Development — Date 7.26.16

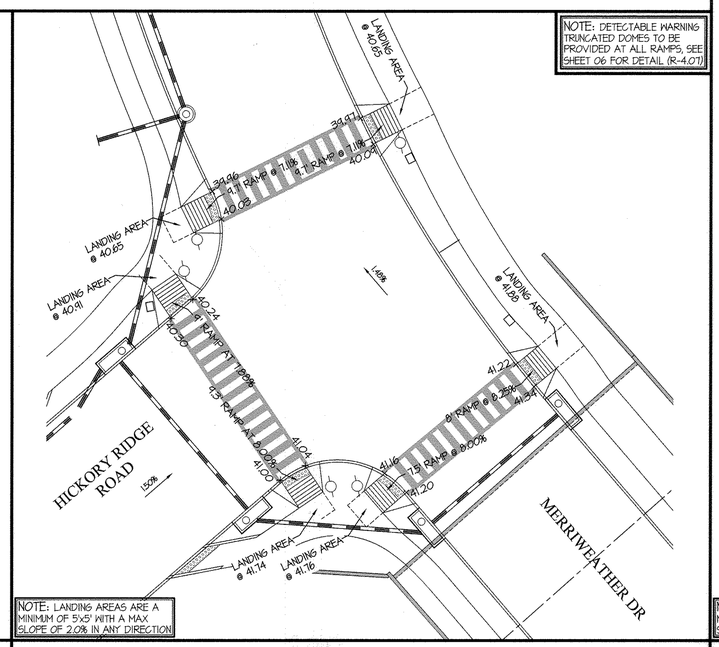
Chief, Development Engineering Division — Date 7-28-16

NOTE: SEE SHEET 28 FOR GRADING, PAVING, LAYOUT, AND TREE REPLACEMENT OCCURRING IN THE HANDICAP PARKING LOT IN AREA H.



INTERSECTION 'C'

SCALE: 1" = 20'



INTERSECTION 'D'

SCALE: 1" = 20'

INTERSECTION 'E'

SCALE: 1" = 20'

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BURTONSVILLE, MARYLAND 20866
TEL: 301-421-4024 BALT: 410-880-1820 DC/VA: 301-989-2524 FAX: 301-421-4186

L:\CADD\DRAWINGS\11071\PLANS BY GLW\Finals\PHASE 1\11071_08_ADA Ramps.dwg | DES. XXX | DRN. XXX | CHK. XXX

DATE	REVISION	BY	APP'R.

PREPARED FOR:
THE HOWARD HUGHES CORPORATION
10480 LITTLE PATUXENT PARKWAY
SUITE 400
COLUMBIA, MD 21044
ATTN: BOB JENKINS
410-964-5443

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE PLANS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 12975
EXPIRATION DATE: MAY 26, 2018

6/9/16

STATE OF MARYLAND — ROBERT JENKINS BURNSIDE — 12975 — REGISTERED PROFESSIONAL ENGINEER

ADA RAMPS

DOWNTOWN COLUMBIA

CRESCENT NEIGHBORHOOD

PARCELS B THRU H, NON-BULDABLE BULK PARCELS J THRU R, O.S. LOTS 1 THRU 8 AND MERRIWEATHER-SYMPHONY WOODS NEIGHBORHOOD O.S. LOT 1 AND NON-BUILDABLE BULK PARCEL A

ELECTION DISTRICT No. 5 — HOWARD COUNTY, MARYLAND

SCALE	ZONING	G. L. W. FILE No.
AS SHOWN	NT	11071
DATE	TAX MAP – GRID	SHEET
JUNE, 2016	36 – 01	8 OF 102

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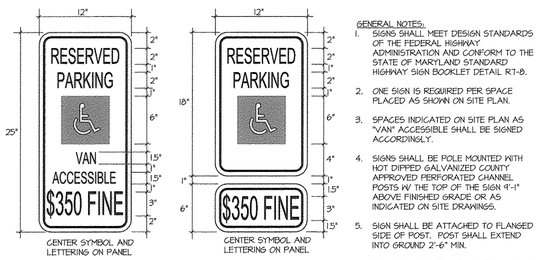
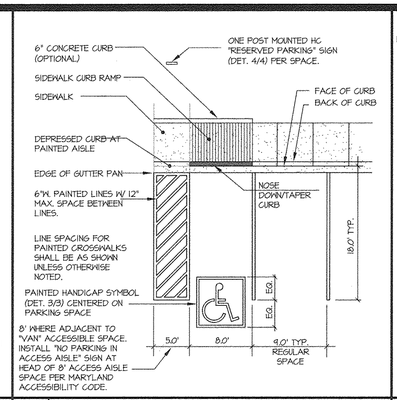


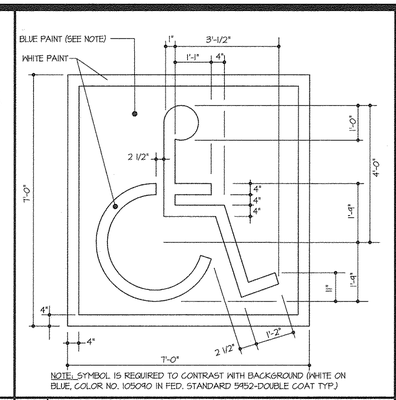
GENERAL NOTES:

1. SIGNS SHALL MEET DESIGN STANDARDS OF THE FEDERAL HIGHWAY ADMINISTRATION AND CONFORM TO THE STATE OF MARYLAND STANDARD HIGHWAY SIGN BOOKLET DETAIL R7-8.
2. ONE SIGN IS REQUIRED PER SPACE PLACED AS SHOWN ON SITE PLAN.
3. SPACES INDICATED ON SITE PLAN AS "VAN" ACCESSIBLE SHALL BE SIGNED ACCORDINGLY.
4. SIGNS SHALL BE POLE MOUNTED WITH HOT DIPPED GALVANIZED COUNTY APPROVED PERFORATED CHANNEL POSTS W/ THE TOP OF THE SIGN 4'-1" ABOVE FINISHED GRADE OR AS INDICATED ON SITE DRAWINGS.
5. SIGN SHALL BE ATTACHED TO FLANGED SIDE OF POST. POST SHALL EXTEND INTO GROUND 2'-6" MIN.
6. COLORS: LEGEND AND BORDER - GREEN
   SYMBOL - WHITE ON BLUE BACKGROUND
   BACKGROUND - WHITE

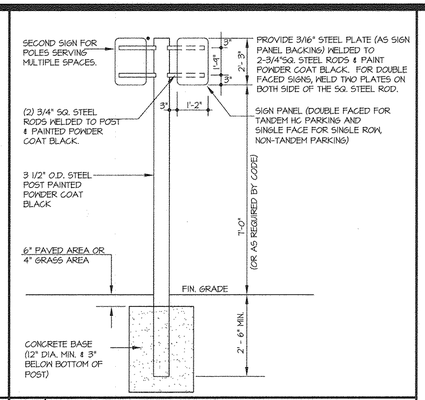
1 **HANDICAP PARKING SIGNS DETAIL** NO SCALE



2 **PARKING SPACE LAYOUT** NO SCALE



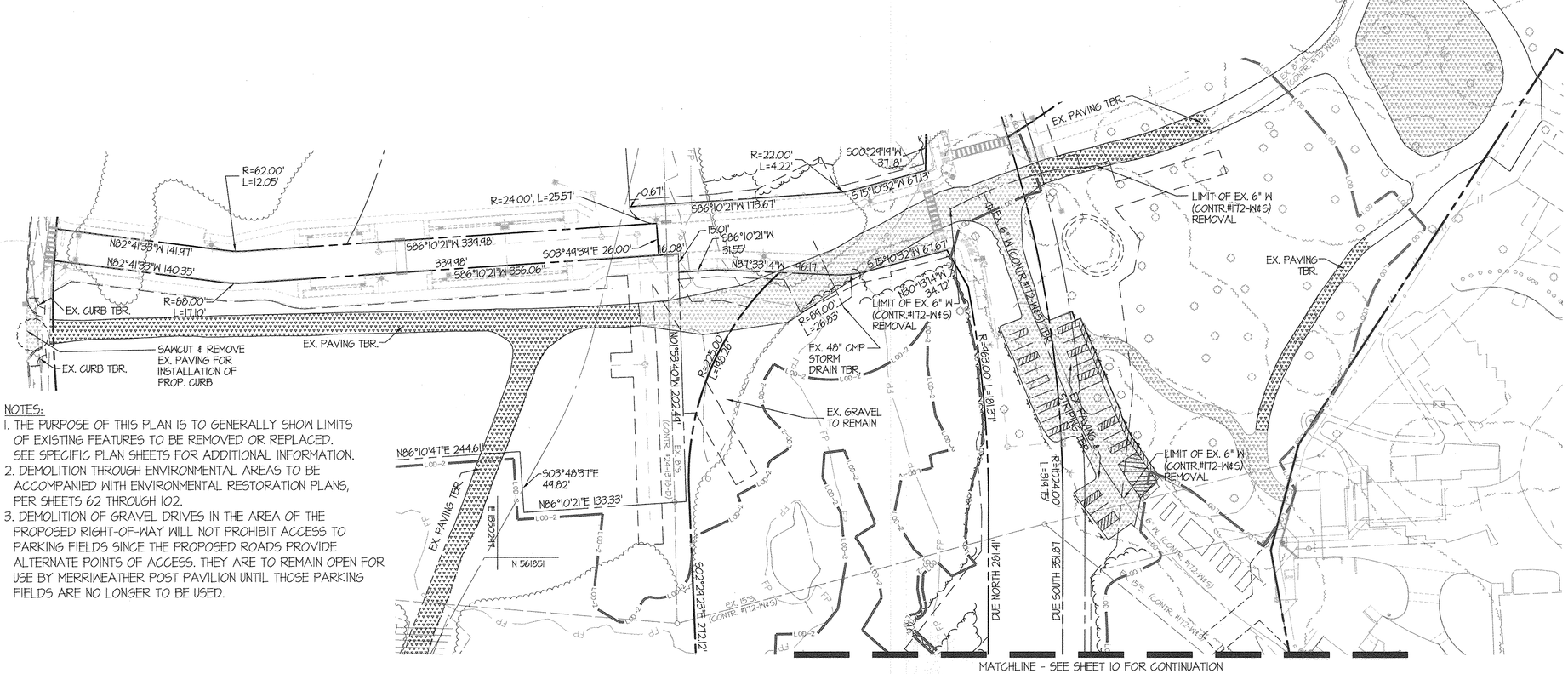
3 **HANDICAP SPACE STENCIL LAYOUT** NO SCALE



4 **POST & SIGN DETAIL FOR PARKING RESTRICTION SIGN** NO SCALE

LEGEND

(T.B.R.)	TO BE REMOVED
LOD	LIMIT OF DISTURBANCE ROAD WORK
LOD-2	LIMIT OF DISTURBANCE STREAM RESTORATION SEE SHEETS 65-105
	WORK IN THIS AREA REQUIRES SDP-15-068
	WORK IN THIS AREA REQUIRES F-15-048
	WORK IN THIS AREA REQUIRES BOTH SDP-15-068 AND F-15-048
	EX. PAVING/GRAVEL TO BE REMOVED
	EX. PAVING/GRAVEL REMOVED UNDER F-15-048



NOTES:

1. THE PURPOSE OF THIS PLAN IS TO GENERALLY SHOW LIMITS OF EXISTING FEATURES TO BE REMOVED OR REPLACED. SEE SPECIFIC PLAN SHEETS FOR ADDITIONAL INFORMATION.
2. DEMOLITION THROUGH ENVIRONMENTAL AREAS TO BE ACCOMPANIED WITH ENVIRONMENTAL RESTORATION PLANS, PER SHEETS 62 THROUGH 102.
3. DEMOLITION OF GRAVEL DRIVES IN THE AREA OF THE PROPOSED RIGHT-OF-WAY WILL NOT PROHIBIT ACCESS TO PARKING FIELDS SINCE THE PROPOSED ROADS PROVIDE ALTERNATE POINTS OF ACCESS. THEY ARE TO REMAIN OPEN FOR USE BY MERRIWEATHER POST PAVILION UNTIL THOSE PARKING FIELDS ARE NO LONGER TO BE USED.

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

Chief, Bureau of Highways — Date 7/12/2016

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

Chief, Division of Land Development — Date 8.3.16

Chief, Development Engineering Division — Date 7.26.16

GLW GUTSCHICK LITTLE & WEBER, P.A.
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DATE	REVISION	BY	APP'R.

PREPARED FOR:
THE HOWARD HUGHES CORPORATION
10480 LITTLE PATUXENT PARKWAY
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410-964-5443

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE PLANS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 12975 EXPIRATION DATE: MAY 26, 2018

6/9/16

STATE OF MARYLAND — CARLOS CHRISTIAN DIETRICH — 12975 — PROFESSIONAL ENGINEER

DEMOLITION PLAN NORTH

DOWNTOWN COLUMBIA

CRESCENT NEIGHBORHOOD

PARCELS B THRU H, NON-BULDABLE BULK PARCELS J THRU R, O.S. LOTS 1 THRU 8 AND MERRIWEATHER-SYMPHONY WOODS NEIGHBORHOOD O.S. LOT 1 AND NON-BUILDABLE BULK PARCEL A

ELECTION DISTRICT No. 5 — HOWARD COUNTY, MARYLAND

SCALE	ZONING	G. L. W. FILE No.
1"=50'	NT	11071
DATE	TAX MAP – GRID	SHEET
JUNE, 2016	36 – 01	9 OF 102

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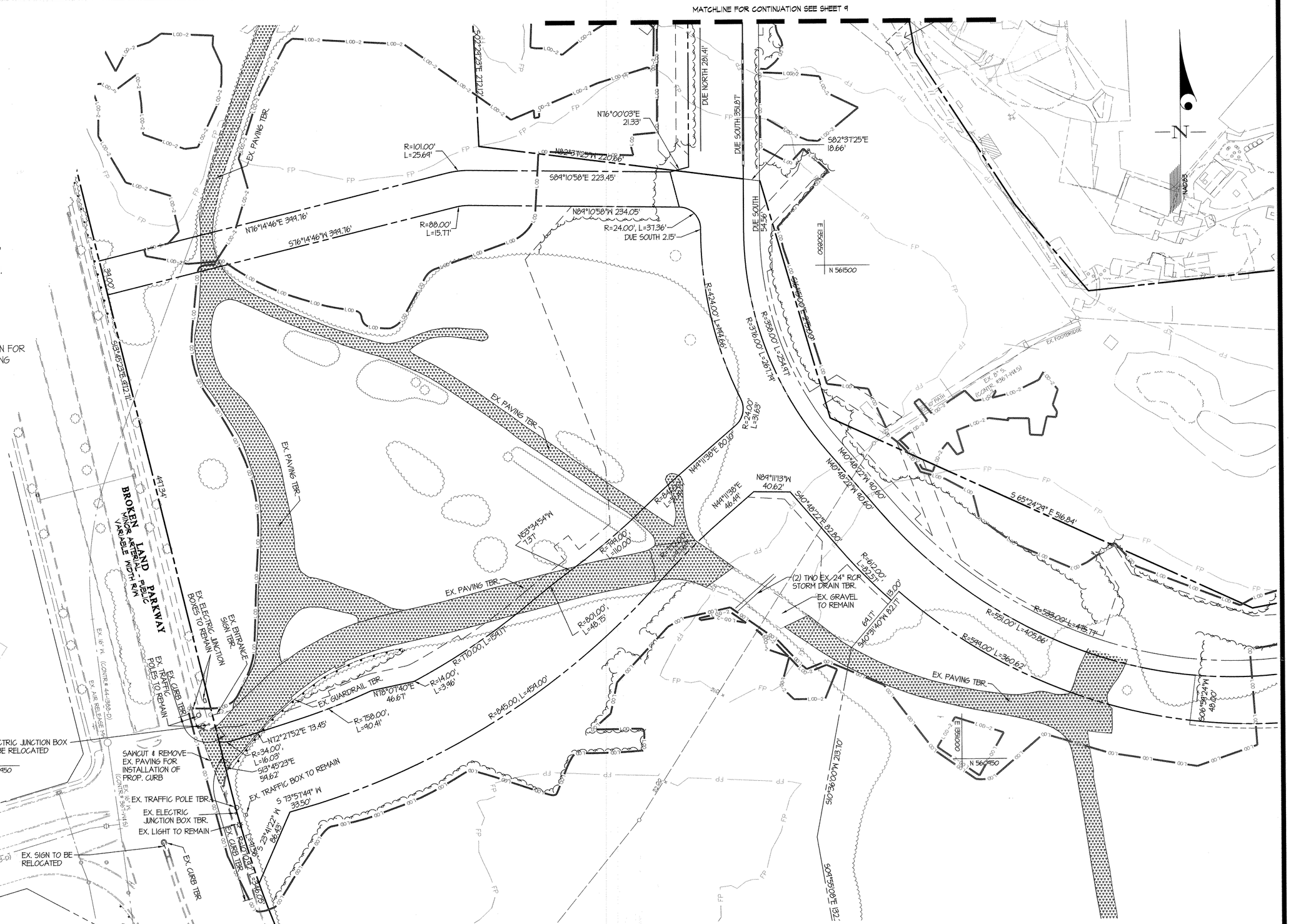
F 15-106

LEGEND

(T.B.R.)	TO BE REMOVED
LOD	LIMIT OF DISTURBANCE ROAD WORK
LOD-2 / LOD	LIMIT OF DISTURBANCE STREAM RESTORATION SEE SHEETS 65-105
	WORK IN THIS AREA REQUIRES SDP-15-088
	WORK IN THIS AREA REQUIRES F-15-048
	WORK IN THIS AREA REQUIRES BOTH SDP-15-088 AND F-15-048
	EX. PAVING TO BE REMOVED

NOTES:

1. THE PURPOSE OF THIS PLAN IS TO GENERALLY SHOW LIMITS OF EXISTING FEATURES TO BE REMOVED OR REPLACED. SEE SPECIFIC PLAN SHEETS FOR ADDITIONAL INFORMATION.
2. DEMOLITION THROUGH ENVIRONMENTAL AREAS TO BE ACCOMPANIED WITH ENVIRONMENTAL RESTORATION PLANS, PER SHEETS 62 THROUGH 102.
3. DEMOLITION OF GRAVEL DRIVES IN THE AREA OF THE PROPOSED RIGHT-OF-WAY WILL NOT PROHIBIT ACCESS TO PARKING FIELDS SINCE THE PROPOSED ROADS PROVIDE ALTERNATE POINTS OF ACCESS. THEY ARE TO REMAIN OPEN FOR USE BY MERRIWEATHER POST PAVILION UNTIL THOSE PARKING FIELDS ARE NO LONGER TO BE USED.



APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
Chief, Bureau of Highways — Date 7/26/2016

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
Chief, Division of Land Development — Date 8.3.16
Chief, Development Engineering Division — Date 7.26.16

GLW GUTSCHICK LITTLE & WEBER, P.A.
CIVIL ENGINEERS, LAND SURVEYORS, LAND PLANNERS, LANDSCAPE ARCHITECTS
3909 NATIONAL DRIVE – SUITE 250 – BURTONSVILLE OFFICE PARK
BURTONSVILLE, MARYLAND 20866
TEL: 301-421-4024 BALT: 410-880-1820 DC/VA: 301-989-2524 FAX: 301-421-4186

L:\CADD\DRAWINGS\11071\PLANS BY GLW\Finals\PHASE 1\11071_09-10_DEMO PLAN.dwg | DES. XXX | DRN. XXX | CHK. XXX

DATE	REVISION	BY	APP'R.

PREPARED FOR:
THE HOWARD HUGHES CORPORATION
10480 LITTLE PATUXENT PARKWAY
SUITE 400
COLUMBIA, MD 21044
ATTN: BOB JENKINS
410-964-5443

PROFESSIONAL CERTIFICATION
I HEREBY CERTIFY THAT THESE PLANS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 12975
EXPIRATION DATE: MAY 26, 2018
6/8/16

DEMOLITION PLAN SOUTH

DOWNTOWN COLUMBIA
CRESCENT NEIGHBORHOOD
PARCELS B THRU H, NON-BULDABLE BULK PARCELS J THRU R, O.S. LOTS 1 THRU 8 AND MERRIWEATHER-SYMPHONY WOODS NEIGHBORHOOD O.S. LOT 1 AND NON-BUILDABLE BULK PARCEL A

ELECTION DISTRICT No. 5 — HOWARD COUNTY, MARYLAND

SCALE	ZONING	G. L. W. FILE No.
1"=50'	NT	11071
DATE	TAX MAP – GRID	SHEET
JUNE, 2016	36 – 01	10 OF 102

F 15-106

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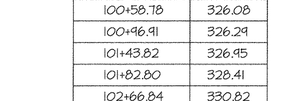
L:\CADD\DRAWINGS\11071\PLANS BY GLW\Finals\PHASE 1\11071_09-10_DEMO PLAN.dwg, 6/8/2016 9:51 AM, JASH, SAVED 6/8/2016 2:50 PM, PLOTTED BY: Jay Hankran

RIVER STATION	WSEL
34+96.69	332.33
34+19.67	331.83
33+22.41	330.57
32+32.74	328.97
32+01.77	
31+68.30	328.62
31+00.39	327.38
30+31.84	326.89
29+23.68	326.47
28+44.01	326.20
27+55.21	325.59
26+76.50	AT CULVERT
26+18.65	322.80
25+79.30	322.18
25+61.75	322.29
25+49.07	322.01
25+33.64	322.01
24+93.75	321.82
100+58.78	326.08
100+96.91	326.29
101+43.82	326.95
101+82.80	328.41
102+66.84	330.82
103+09.19	332.46
104+13.35	AT CULVERT
104+51.07	335.56
104+94.29	335.86
105+58.75	337.29
106+01.37	337.73
106+47.17	338.02
106+94.26	339.23
107+28.60	339.96
107+63.19	341.06
108+03.63	342.88
108+31.44	343.49

LEGEND

- 10-25% SLOPES
- +25% SLOPES
- LOD — LIMIT OF DISTURBANCE ROAD WORK
- LOD-1 / LOD-2 — LIMIT OF DISTURBANCE STREAM RESTORATION SEE SHEETS 65-105
- MULTI-USE PATH LIMITS

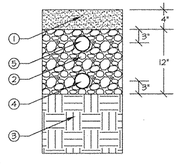
NOTE: 1. HANDICAP PARKING LOT REVIEWED AND APPROVED BY THE PLANNING BOARD WITH SDP 16-018.
2. A RECIPROCAL EASEMENT AGREEMENT BETWEEN INNER ARBOR TRUST, INC., AS EXPRESSLY AUTHORIZED BY COLUMBIA ASSOCIATION INC., AND MERRIWEATHER POST BUSINESS TRUST AND THE HOWARD RESEARCH AND DEVELOPMENT CORPORATION WAS RECORDED ON MAY 27, 2015 AT LIBER 16235, FOLIO 245. EASEMENT AREA B IS FOR THE PURPOSES OF CONSTRUCTING AND PROVIDING A NEW, RE-DESIGNED ADA-COMPLIANT PARKING LOT AND PEDESTRIAN INGRESS AND EGRESS FOR THE PAVILION AND SYMPHONY WOODS FOR SHARED USE.



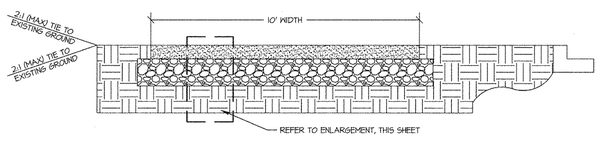
APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
Chief, Bureau of Highways — Date 7/12/2016

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
Chief, Division of Land Development — Date 8.3.16
Chief, Development Engineering Division — Date 7.26.16

TYPICAL SECTION THROUGH MULTI-USE PATH



1. PERMEABLE ASPHALT
2. NO. 2 STONE
3. SOIL SUBGRADE
4. UNDERDRAIN (3") TO BE PROVIDED AS NEEDED OR PLANS AT INTERSECTION AND LOW POINTS IN PATH PROFILE
5. OVERDRAIN (3")



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L:\CADD\DRAWINGS\11071\PLANS BY GLW\Finals\PHASE 1\11071_11-12_GRADING PLAN.dwg | DES. MJT | DRN. WSJ | CHK. MJT

DATE	REVISION	BY	APP'R.

PREPARED FOR:
THE HOWARD HUGHES CORPORATION
10480 LITTLE PATUXENT PARKWAY
SUITE 400
COLUMBIA, MD 21044
ATTN: BOB JENKINS
410-964-5443

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EXPIRATION DATE: MAY 26, 2018
6/9/16

GRADING PLAN
DOWNTOWN COLUMBIA
CRESCENT NEIGHBORHOOD
PARCELS B THRU H, NON-BULDABLE BULK PARCELS J THRU R, O.S. LOTS 1 THRU 8 AND MERRIWEATHER-SYMPHONY WOODS NEIGHBORHOOD O.S. LOT 1 AND NON-BUILDABLE BULK PARCEL A
ELECTION DISTRICT No. 5 — HOWARD COUNTY, MARYLAND

SCALE	ZONING	G. L. W. FILE No.
1"=50'	NT	11071
DATE	TAX MAP – GRID	SHEET
JUNE, 2016	36 – 01	11 OF 102

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RIVER STATION	WSEL
34+96.69	332.33
34+19.67	331.83
33+22.41	330.57
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32+01.77	
31+68.30	328.62
31+00.39	327.38
30+31.84	326.89
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27+55.21	325.59
26+76.50	AT CULVERT
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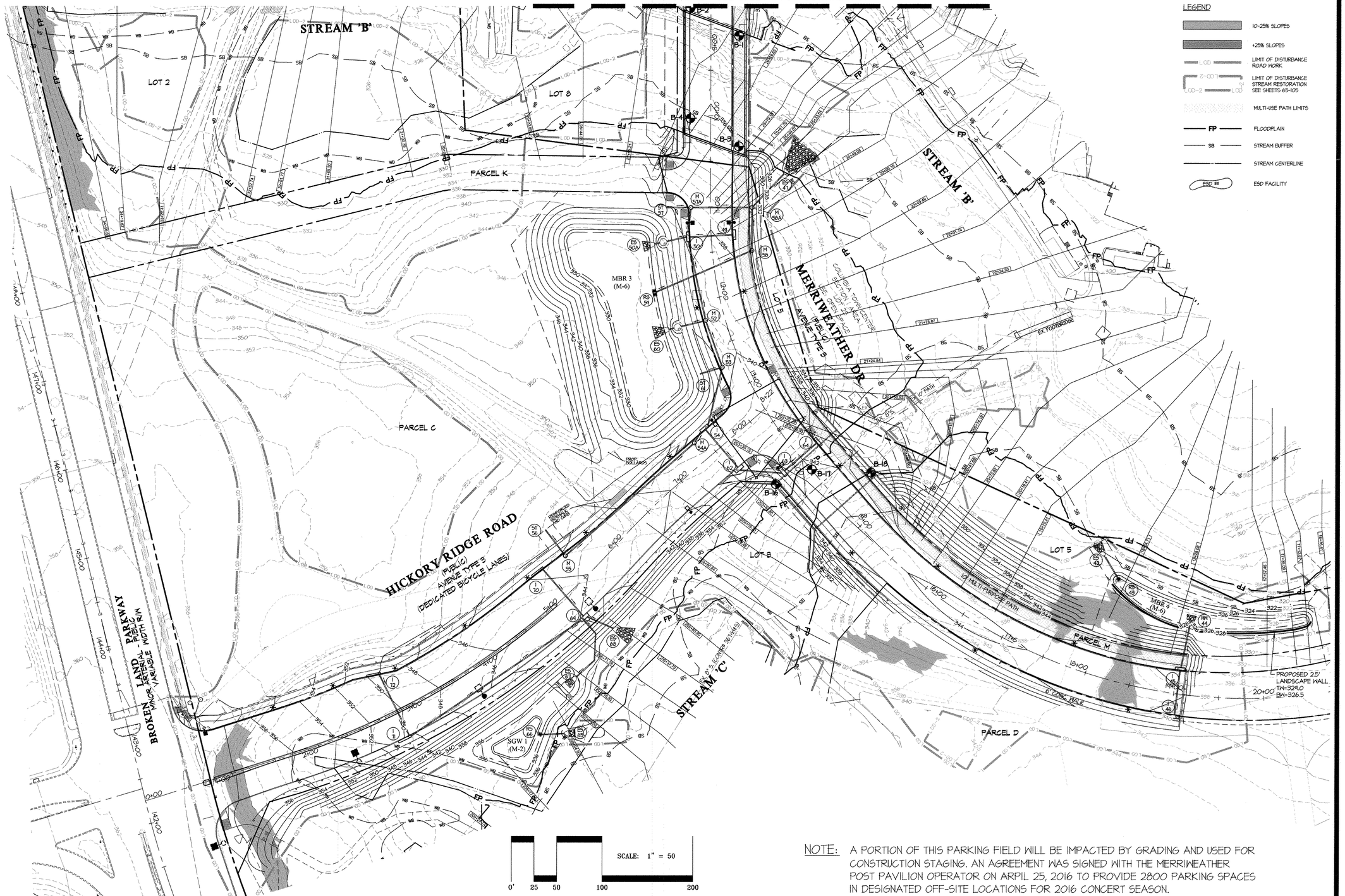
24+93.75	321.82
24+49.08	321.71
23+49.49	320.47
22+91.74	320.15
22+24.30	319.70
21+75.87	319.55
21+24.84	316.70
20+73.62	317.01
20+19.41	316.73
19+75.41	316.56
18+84.71	315.99
18+28.08	315.62
17+57.45	315.50
17+35.09	315.47
17+13.67	315.29
16+76.41	315.19
200+41.69	317.90
200+74.19	318.80
201+13.91	319.66
201+50.93	320.65
201+98.96	322.38
202+32.29	324.30
202+68.03	AT CULVERT
203+30.15	AT CULVERT
203+84.88	326.62
204+09.33	
204+29.48	328.25
204+80.84	
205+85.90	330.74
206+37.79	331.08
206+71.16	331.84
207+16.55	332.07
207+74.53	332.64
208+24.90	333.25
208+77.06	334.15
209+24.74	335.12

MATCHLINE - SEE SHEET 11 FOR CONTINUATION



NOTE: A PORTION OF THIS PARKING FIELD WILL BE IMPACTED BY GRADING AND USED FOR CONSTRUCTION STAGING. AN AGREEMENT WAS SIGNED WITH THE MERRIWEATHER POST PAVILION OPERATOR ON ARPIL 25, 2016 TO PROVIDE 2800 PARKING SPACES IN DESIGNATED OFF-SITE LOCATIONS FOR 2016 CONCERT SEASON.

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
Chief, Bureau of Highways — Date 7/12/2016

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
Chief, Division of Land Development — Date 7-26-16
Chief, Development Engineering Division — Date 7-26-16

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DATE	REVISION	BY	APP'R.

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6/9/16

GRADING PLAN
DOWNTOWN COLUMBIA
CRESCENT NEIGHBORHOOD
PARCELS B THRU H, NON-BULDABLE BULK PARCELS J THRU R, O.S. LOTS 1 THRU 8 AND MERRIWEATHER-SYMPHONY WOODS NEIGHBORHOOD O.S. LOT 1 AND NON-BUILDABLE BULK PARCEL A
ELECTION DISTRICT No. 5 — HOWARD COUNTY, MARYLAND

SCALE	ZONING	G. L. W. FILE No.
1"=50'	NT	11071
DATE	TAX MAP – GRID	SHEET
JUNE, 2016	36 – 01	12 OF 102

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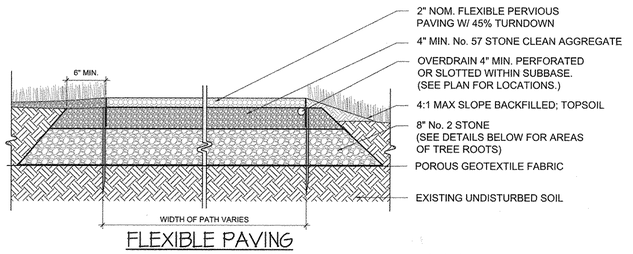
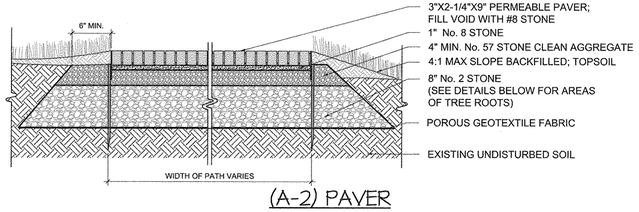
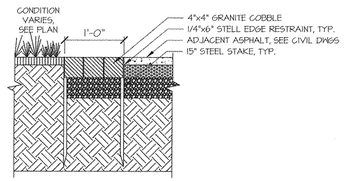


FLEXIBLE PAVING

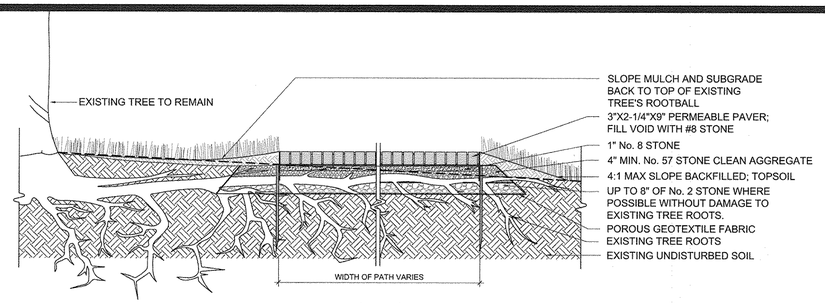


(A-2) PAVER

TYPICAL 12" PERMEABLE PAVEMENT SECTIONS
(FOR ROOT AREAS, SEE DETAILS THIS SHEET) NTS

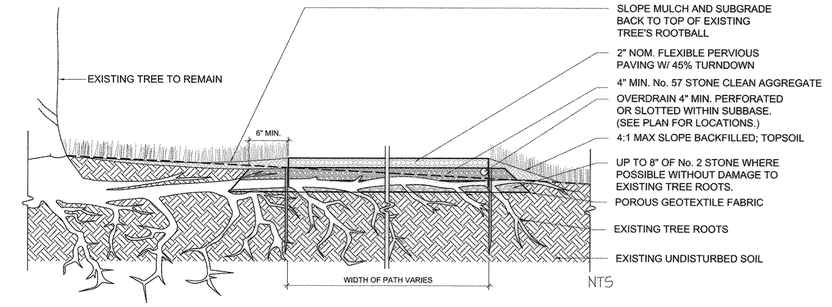


COBBLE BAND @ ASPHALT DETAIL
NTS



PERMEABLE PAVEMENT (A-2)-PAVER IN ROOT AREAS DETAIL

NOTES:
1. INSTALL EDGE RESTRAINT PER MANUFACTURER'S GUIDELINES.
2. USE AIR SPADE TO REMOVE SOIL BETWEEN TREE ROOTS
3. FIELD VERIFY STAKE LOCATIONS TO AVOID MAJOR ROOTS
4. REFER TO SHEET LS105 FOR PAVER SELECTION
5. GRAVEL SUBBASE TO BE INCREASED TO 12" WHERE TREE ROOTS ARE NOT LOCATED.
6. THE PERMEABLE PAVING USED AT SYMPHONY WOODS IS PLACED MAINLY ABOVE THE EXISTING TREE ROTS ON A MINIMUM 4" (UP TO 12") AGGREGATE BASE. THE PAVING SURFACE, JOINT TREATMENT, AND AGGREGATE BASE ARE DESIGNED TO FILTER RAIN WATER THROUGH THEM INTO THE EXISTING SOIL LIMITING OR ELIMINATING ROOT INTRUSION INTO THE PAVING SURFACE. ALL PAVING SURFACES ARE ERGONOMIC AND EXCEED ADA GUIDELINES.
7. AN IMPERMEABLE LINING WILL BE INCORPORATED INTO THE PAVING SECTION OF ANY IMPERMEABLE PAVEMENT WITHIN 10' OF THE BUILDING FOUNDATION. THIS LINING WILL BE INSTALLED BETWEEN THE GRAVEL SUBBASE AND THE EXISTING SUBGRADE AND WILL WRAP UP ALONG THE BUILDING EDGE.



PERMEABLE PAVEMENT-FLEXIBLE PAVING IN ROOT AREAS DETAIL

NOTES:
1. INSTALL EDGE RESTRAINT PER MANUFACTURER'S GUIDELINES.
2. USE AIR SPADE TO REMOVE SOIL BETWEEN TREE ROOTS
3. FIELD VERIFY STAKE LOCATIONS TO AVOID MAJOR ROOTS
4. REFER TO SHEET LS105 FOR PAVER SELECTION
5. GRAVEL SUBBASE TO BE INCREASED TO 12" WHERE TREE ROOTS ARE NOT LOCATED.
6. SINCE FLEXI-PAVE PRODUCTS ARE NON-CRACING, TRIP AND FALL LIABILITIES THAT ARE NORMALLY CAUSED BY SHEERING OR ROOT INTRUSION ARE VASTLY REDUCED. IF NOT COMPLETELY ELIMINATED, FLEXI-PAVE SURFACES ARE ERGONOMIC AND EXCEED ADA. GUIDELINES.
7. AN IMPERMEABLE LINING WILL BE INCORPORATED INTO THE PAVING SECTION OF ANY IMPERMEABLE PAVEMENT WITHIN 10' OF THE BUILDING FOUNDATION. THIS LINING WILL BE INSTALLED BETWEEN THE GRAVEL SUBBASE AND THE EXISTING SUBGRADE AND WILL WRAP UP ALONG THE BUILDING EDGE.

OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED PERMEABLE PAVEMENT (A-2)

a. The Owner shall periodically sweep (or vacuum porous concrete pavement) the pavement surfaces to reduce sediment accumulation and ensure continued surface porosity. Sweeping should be performed at least twice annually with a commercial cleaning unit. Washing or compressed air units should not be used to perform surface cleaning.

b. The Owner shall periodically clean drainage pipes, inlets, stone edge drains and other structures within or draining to the subbase.

c. The Owner shall use deicers in moderation. Deicers should be non-toxic and be applied either as calcium magnesium acetate or as pretreated salt.

d. The Owner shall ensure snow plowing is performed carefully with blades set one inch above the surface. Plowed snow piles and snowmelt should not be directed to permeable pavement.

B.4.B Specifications for Permeable Pavements

These specifications include information on acceptable materials for typical applications and are not exclusive or limiting. The designer is responsible for developing detailed specifications for individual projects and specific conditions.

1. Pervious Concrete Specifications

Design Thickness - Pervious concrete applications shall be designed so that the thickness of the concrete slab shall support the traffic and vehicle types that will be carried. Applications may be designed using either standard pavement procedures (e.g., AASHTO, ACI 325.9R, ACI 330R) or using structural values derived from flexible pavement design procedures.

Mix & Installation - Traditional Portland cements (ASTM C 150, C 1157) may be used in pervious concrete applications. Phosphorus admixtures may also be used. Materials should be tested (e.g., trial batching) prior to construction so that critical properties (e.g., setting time, rate of strength development, porosity, permeability) can be determined.

Aggregate - Pervious concrete contains a limited fine aggregate content. Commonly used gradations include ASTM C 33 No. 67 (¾ in. to No. 4), No. 8 (⅜ in. to No. 16) and No. 89 (½ in. to No. 50) sieves. Single-sized aggregate (up to 1 inch) may also be used.

Water Content - Water-to-cement ratios between 0.27 and 0.30 are used routinely with proper inclusion of chemical admixtures. Water quality should meet ACI 30a. As a general rule, potable water should be used although recycled concrete production water meeting ASTM C 94 or AASHTO M 157 may also be used.

Admixtures - Chemical admixtures (e.g., retarders or hydration-stabilizers) are used to obtain special properties in pervious concrete. Use of admixtures should meet ASTM C 444 (chemical admixtures) and ASTM C 260 (air entraining admixtures) and closely follow manufacturer's recommendations.

Base Course - The base course shall be AASHTO No. 3 or 4 course aggregate with an assumed open pore space of 30% (n = 0.30).

2. Permeable Interlocking Concrete Pavements (PICP)

Paver Blocks - Blocks should be either 3 ⅛ in. or 4 in. thick, and meet ASTM C 936 or CSA A231.2 requirements. Applications should have 20% or more (40% preferred) of the surface area open. Installation should follow manufacturer's instructions, except that infill and base course materials and dimensions specified in this Appendix shall be followed.
Infill Materials and Leveling Course - Openings shall be filled with ASTM C-33 graded sand or sandy loam. PICP blocks shall be placed on a one-inch thick leveling course of ASTM C-33 sand.

Base Course - The base course shall be AASHTO No. 3 or 4 course aggregate with an assumed open pore space of 30% (n = 0.30).
Reinforced Turf

Reinforced Grass Pavement (RGP) - Whether used with grass or gravel, the RGP thickness shall be at least 1 ¾" thick with a load capacity capable of supporting the traffic and vehicle types that will be carried.

BITUMINOUS PAVING SECTION

1.5" HMA SUPERPAVE FINAL SURFACE
1" HMA SUPERPAVE INTERMEDIATE SURFACE
3" HMA SUPERPAVE BASE
3" GRADED AGGREGATE BASE*

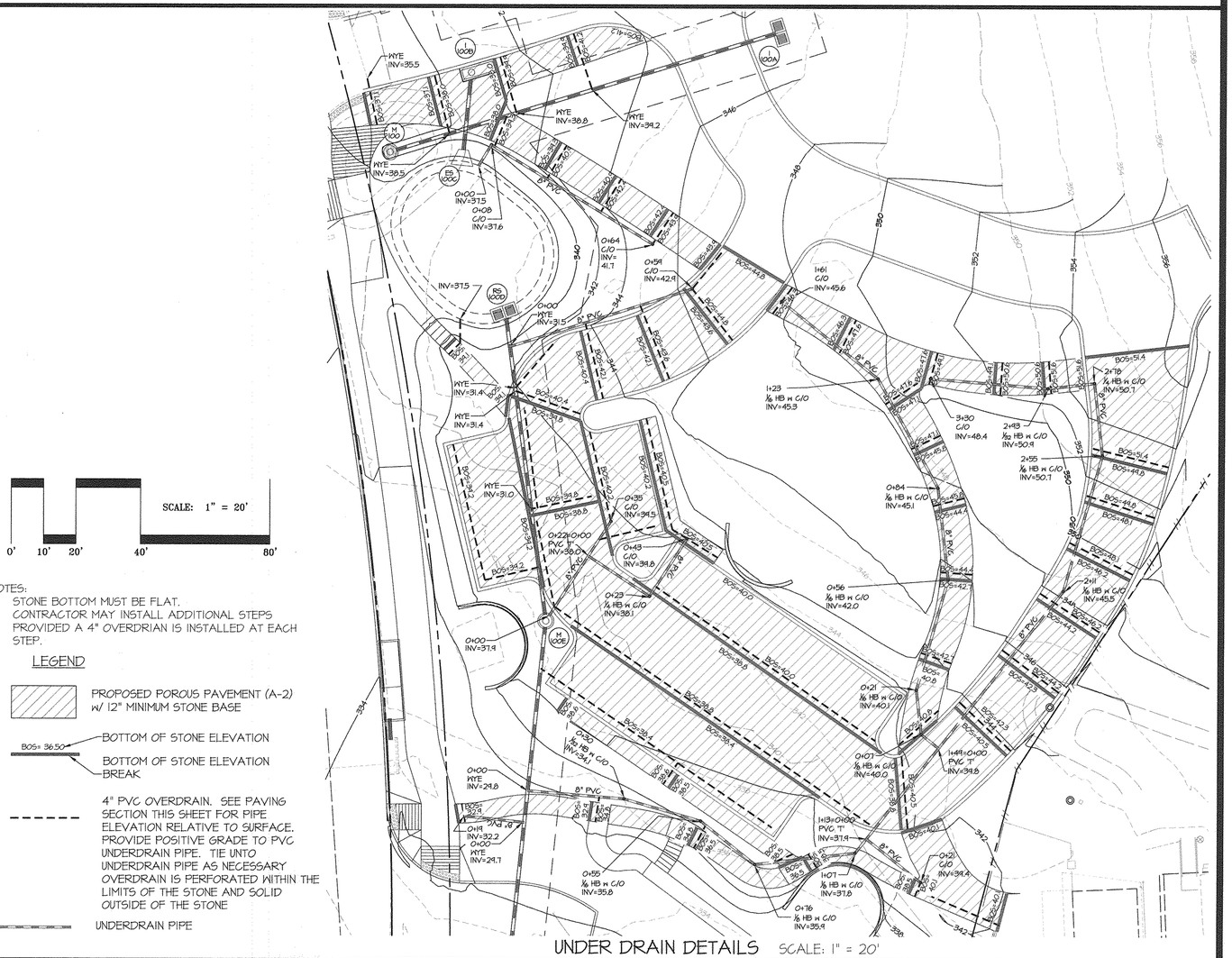
P-3

* NOTE:
FOR CBR 3 TO <5: USE 10" GAB
FOR CBR 5 TO <7: USE 6" GAB
FOR CBR >=7: USE 3" GAB

PAVING NOTES:

1. P-3 IS PER HOWARD COUNTY R-2.01 SECTION DESIGNATIONS

2. OTHER EQUIVALENT PAVING SECTIONS MAY BE USED WHEN APPROVED BY A PROFESSIONAL SOILS ENGINEER.



UNDER DRAIN DETAILS SCALE: 1" = 20'

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
Chief, Bureau of Highways — Date 7/12/2016

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
Chief, Division of Land Development — Date 8.3.16
Chief, Development Engineering Division — Date 7.26.16

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L:\CADD\DRAWINGS\11071\PLANS BY GLW\finals\PHASE 1\11071_17-18_SD DAM.dwg | DES. JH | DRN. JH | CHK. DEV

DATE	REVISION	BY	APP'R.

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ATTN: BOB JENKINS
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EXPIRATION DATE: MAY 26, 2018
6/9/16

STATE OF MARYLAND — CHRISTOPHER KENNETH SUTTER — NO. 12975 — PROFESSIONAL ENGINEER

SITE DETAILS
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CRESCENT NEIGHBORHOOD
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AS SHOWN	NT	11071
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F 15-106

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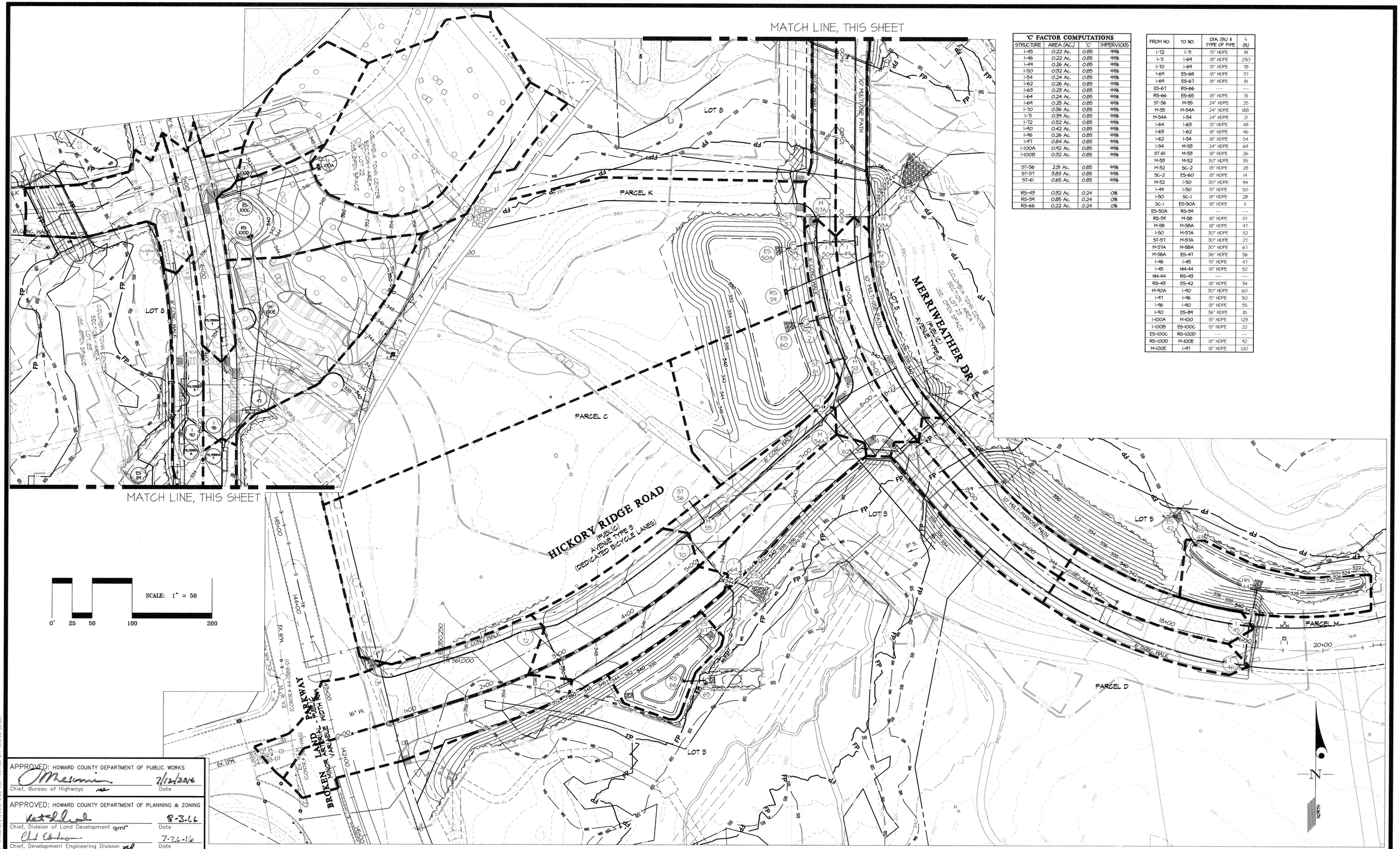

'C' FACTOR COMPUTATIONS			
STRUCTURE	AREA (AC.)	'C'	IMPERVIOUS
I-45	0.22 Ac.	0.85	99%
I-46	0.22 Ac.	0.85	99%
I-49	0.26 Ac.	0.85	99%
I-50	0.32 Ac.	0.85	99%
I-54	0.24 Ac.	0.85	99%
I-62	0.26 Ac.	0.85	99%
I-63	0.23 Ac.	0.85	99%
I-64	0.24 Ac.	0.85	99%
I-69	0.25 Ac.	0.85	99%
I-70	0.36 Ac.	0.85	99%
I-71	0.39 Ac.	0.85	99%
I-72	0.52 Ac.	0.85	99%
I-90	0.42 Ac.	0.85	99%
I-96	0.26 Ac.	0.85	99%
I-97	0.84 Ac.	0.85	99%
I-100A	0.92 Ac.	0.85	99%
I-100B	0.32 Ac.	0.85	99%
ST-56	2.31 Ac.	0.85	99%
ST-57	3.83 Ac.	0.85	99%
ST-61	0.65 Ac.	0.85	99%
RS-43	0.32 Ac.	0.24	0%
RS-54	0.85 Ac.	0.24	0%
RS-66	0.22 Ac.	0.24	0%

FROM NO.	TO NO.	DIA. (IN.) & TYPE OF PIPE	L (ft.)
I-72	I-71	15" HDPE	81
I-71	I-69	18" HDPE	230
I-70	I-69	15" HDPE	78
I-69	ES-68	18" HDPE	37
I-69	ES-67	18" HDPE	81
ES-67	RS-66	----	----
RS-66	ES-65	18" HDPE	31
ST-56	M-55	24" HDPE	25
M-55	M-54A	24" HDPE	188
M-54A	I-54	24" HDPE	21
I-64	I-63	15" HDPE	48
I-63	I-62	18" HDPE	46
I-62	I-54	18" HDPE	54
I-54	M-53	24" HDPE	64
ST-61	M-53	18" HDPE	26
M-53	M-52	30" HDPE	55
M-52	SC-2	15" HDPE	28
SC-2	ES-60	18" HDPE	14
M-52	I-50	30" HDPE	94
I-49	I-50	15" HDPE	50
I-50	SC-1	18" HDPE	28
SC-1	ES-50A	18" HDPE	11
ES-50A	RS-54	----	----
RS-54	M-56	18" HDPE	117
M-56	M-58A	18" HDPE	47
I-50	M-57A	30" HDPE	32
ST-57	M-57A	30" HDPE	27
M-57A	M-58A	30" HDPE	61
M-58A	ES-47	36" HDPE	56
I-46	I-45	15" HDPE	47
I-45	HN-44	15" HDPE	52
HN-44	RS-43	----	----
RS-43	ES-42	18" HDPE	34
M-40A	I-40	30" HDPE	60
I-47	I-46	15" HDPE	50
I-46	I-40	18" HDPE	55
I-40	ES-84	36" HDPE	81
I-100A	M-100	15" HDPE	123
I-100B	ES-100C	15" HDPE	22
ES-100C	RS-100D	----	----
RS-100D	M-100E	18" HDPE	42
M-100E	I-97	18" HDPE	120

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

Chief, Bureau of Highways — Date 7/22/2016

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

Chief, Division of Land Development — Date 8-3-16

Chief, Development Engineering Division — Date 7-26-16

GLW GUTSCHICK LITTLE & WEBER, P.A.
CIVIL ENGINEERS, LAND SURVEYORS, LAND PLANNERS, LANDSCAPE ARCHITECTS
3909 NATIONAL DRIVE – SUITE 250 – BURTONSVILLE OFFICE PARK
BURTONSVILLE, MARYLAND 20866
TEL: 301-421-4024 BALT: 410-880-1820 DC/VA: 301-989-2524 FAX: 301-421-4186

L:\CADD\DRAWINGS\11071\PLANS BY GLW\Finals\PHASE 1\11071_13-14_SD DAM.dwg | DES. JH | DRN. JH | CHK. DEV

DATE	REVISION	BY	APP'R.

PREPARED FOR:
THE HOWARD HUGHES CORPORATION
10480 LITTLE PATUXENT PARKWAY
SUITE 400
COLUMBIA, MD 21044
ATTN: BOB JENKINS
410-964-5443

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE PLANS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 12975, EXPIRATION DATE: MAY 28, 2018.

6/9/16

STATE OF MARYLAND — CHRISTOPHER KENNETH GUTSCHICK — 12975 — PROFESSIONAL ENGINEER

STORM DRAIN DRAINAGE AREA MAP

DOWNTOWN COLUMBIA

CRESCENT NEIGHBORHOOD

PARCELS B THRU H, NON-BUILDABLE BULK PARCELS J THRU R, O.S. LOTS 1 THRU 8 AND MERRIWEATHER-SYMPHONY WOODS NEIGHBORHOOD O.S. LOT 1 AND NON-BUILDABLE BULK PARCEL A

ELECTION DISTRICT No. 5 — HOWARD COUNTY, MARYLAND

SCALE	ZONING	G. L. W. FILE No.
1"=50'	NT	11071
DATE	TAX MAP – GRID	SHEET
JUNE, 2016	36 – 01	14 OF 102

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F 15-106

RIP RAP INFORMATION				
END SECTION	CLASS	LENGTH	D_{50}	THICKNESS
ES-47	CLASS II	32'	13.2"	32"
ES-50A	CLASS I	4'	1.8"	19"
ES-60	CLASS I	15'	6.6"	19"
ES-65	CLASS I	7'	2.4"	19"
ES-67	CLASS I	8'	4.2"	19"
ES-68	CLASS I	18'	9"	19"

STRUCTURE SCHEDULE												
NO	TYPE	WIDTH (INSIDE)	TOP ELEVATION PROPOSED UPPER	TOP ELEVATION PROPOSED LOWER	TOP ELEVATION AS-BUILT UPPER	TOP ELEVATION AS-BUILT LOWER	INVERT PROPOSED UPPER	INVERT PROPOSED LOWER	INVERT AS-BUILT UPPER	INVERT AS-BUILT LOWER	STD. DETAIL	LOCATIONS ⟨1⟩	REMARKS
I-49	A-10 INLET	2'-6"	338.13	337.72			---	334.76			MO.CO. D-4.03	N 561,520 E 1,350,760	
I-50	A-10 INLET	2'-6"	338.29	338.13			332.73	330.52			MO.CO. D-4.03	N 561,518 E 1,350,714	
I-54	A-10 INLET	2'-6"	340.53	340.41			336.10	335.20			MO.CO. D-4.03	N 561,306 E 1,350,731	
I-62	A-10 INLET	2'-6"	340.76	340.73			336.74	336.64			MO.CO. D-4.03	N 561,265 E 1,350,767	
I-63	A-10 INLET	2'-6"	341.99	341.57			337.30	337.20			MO.CO. D-4.03	N 561,261 E 1,350,818	
I-64	A-10 INLET	2'-6"	341.99	341.57			---	337.78			MO.CO. D-4.03	N 561,291 E 1,350,853	
⟨3⟩ I-69	A-10 INLET	2'-6"	344.61	344.44			338.63	335.51			MO.CO. D-4.03	N 561,101 E 1,350,547	
I-70	COG-15 INLET	2'-6"	344.52	344.29			---	340.75			MD 374.31	N 561,148 E 1,350,548	
I-71	COG-15 INLET	2'-6"	350.99	350.20			345.94	345.84			MD 374.31	N 560,967 E 1,350,400	
I-72	COG-15 INLET	2'-6"	350.64	349.88			---	346.75			MD 374.31	N 561,035 E 1,350,366	
RS-59	'55' RISER	2'-7.5"	330.00	---			---	324.50			MO.CO. D-4.23	N 561,457 E 1,350,675	
RS-66	'5' RISER	2'-7.5"	336.00	---			---	331.34			MO.CO. D-4.22	N 560,971 E 1,350,549	
ES-47	END SECTION	3'-0"	323.00	---			---	320.00			MO.CO. D-5.51	N 561,591 E 1,350,820	
ES-50A	END SECTION	1'-6"	332.50	---			---	329.00			MO.CO. D-5.51	N 561,509 E 1,350,670	
ES-60	END SECTION	1'-6"	332.50	---			---	329.00			MO.CO. D-5.51	N 561,414 E 1,350,686	
ES-65	END SECTION	1'-6"	332.50	---			---	331.00			MO.CO. D-5.51	N 560,972 E 1,350,581	
⟨2⟩ ES-67	END SECTION	1'-6"	335.50	---			---	334.00			---	N 561,030 E 1,350,585	
ES-68	END SECTION	1'-6"	334.49	---			---	332.99			MO.CO. D-5.51	N 561,086 E 1,350,634	
M-52	STANDARD MANHOLE	5'-0"	338.95	---			333.11	332.12			MO.CO. G-5.13	N 561,426 E 1,350,731	
M-53	STANDARD MANHOLE	6'-0"	334.71	---			334.91	333.66			MD 384.05	N 561,375 E 1,350,750	
M-54A	STANDARD MANHOLE	5'-0"	340.78	---			335.61	335.51			MO.CO. G-5.13	N 561,291 E 1,350,719	
M-55	STANDARD MANHOLE	5'-0"	343.41	---			337.59	337.49			MO.CO. G-5.13	N 561,167 E 1,350,577	
M-57A	STANDARD MANHOLE	5'-0"	337.56	---			330.41	326.50			MO.CO. G-5.13	N 561,550 E 1,350,715	
M-58	STANDARD MANHOLE	5'-0"	338.04	---			323.33	323.23			MO.CO. G-5.13	N 561,503 E 1,350,782	
M-58A	STANDARD MANHOLE	5'-0"	336.32	---			325.16	321.26			MO.CO. G-5.13	N 561,550 E 1,350,782	
⟨4⟩ SC-1	STORMCEPTOR	8'-0"	330.00	---			330.24	330.14			OSR 560	N 561,512 E 1,350,684	
⟨4⟩ SC-2	STORMCEPTOR	8'-0"	330.00	---			331.56	331.46			OSR 560	N 561,418 E 1,350,700	

⟨1⟩ COORDINATE POINT GIVEN IS TO THE CENTERLINE OF STRUCTURE AT THE FACE OF CURBS FOR INLETS AND TO THE CENTER OF STRUCTURE FOR MANHOLES, 'S' INLETS AND END SECTIONS.

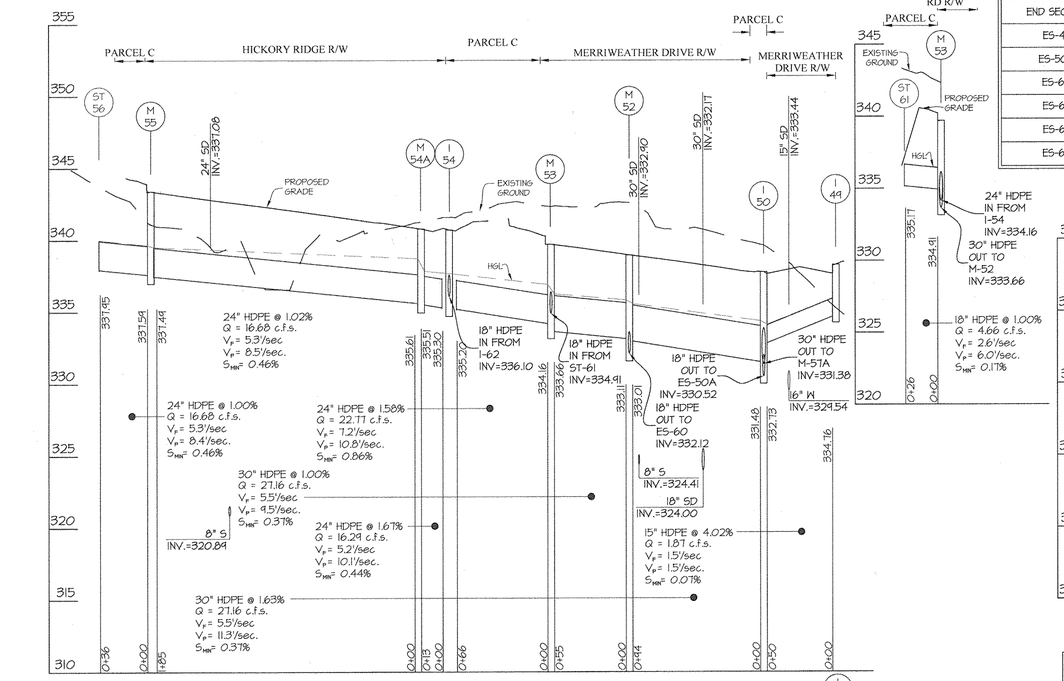
⟨2⟩ END SECTION IS A 12"X8" TRANSITION FITTING FOR STORMWATER MANAGEMENT UNDERDRAIN

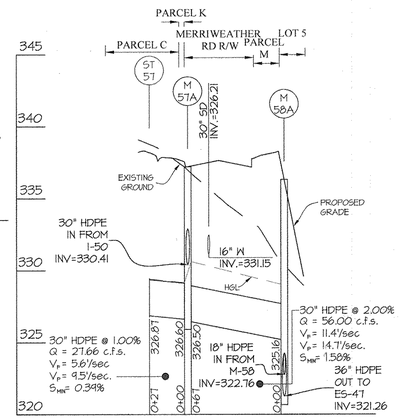
⟨3⟩ SEE SHEET 26 FOR DETAIL OF I-69 SPLITTER STRUCTURE.

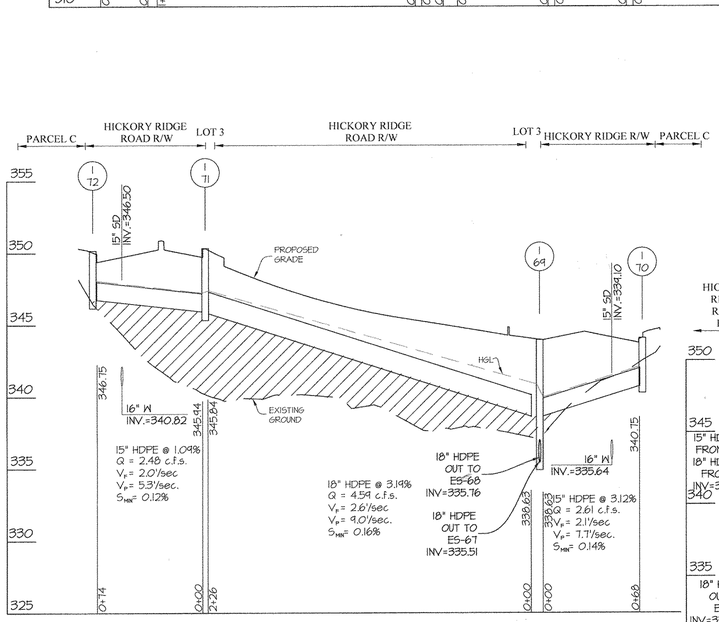
⟨4⟩ SEE SHEET 26 FOR STORMCEPTOR DETAILS.

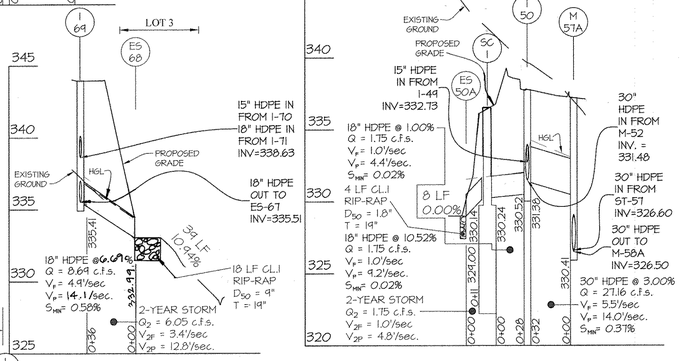
PIPE SCHEDULE			
SIZE	TYPE	QUANTITY (l.f.)	REMARKS
15"	HDPE	257	
18"	HDPE	762	
24"	HDPE	303	
30"	HDPE	275	
36"	HDPE	56	

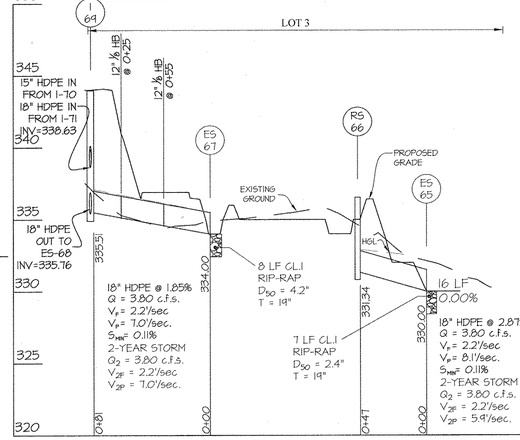
HDPE indicates High Density Polyethylene pipe, such as N-12 by ADS, or Hi-Q by Hancor or an approved equal.
Trench bedding to be provided per Howard County Detail G 2.01, "Trench for P.V.C. pipe and H.D.P.E."

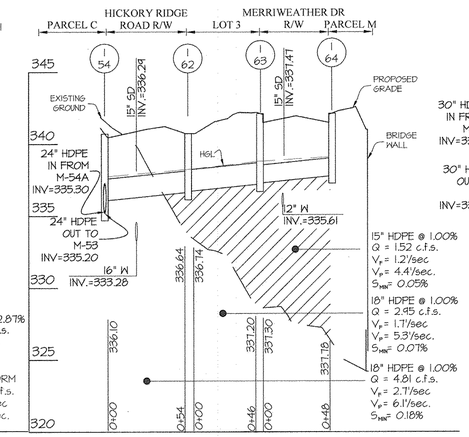


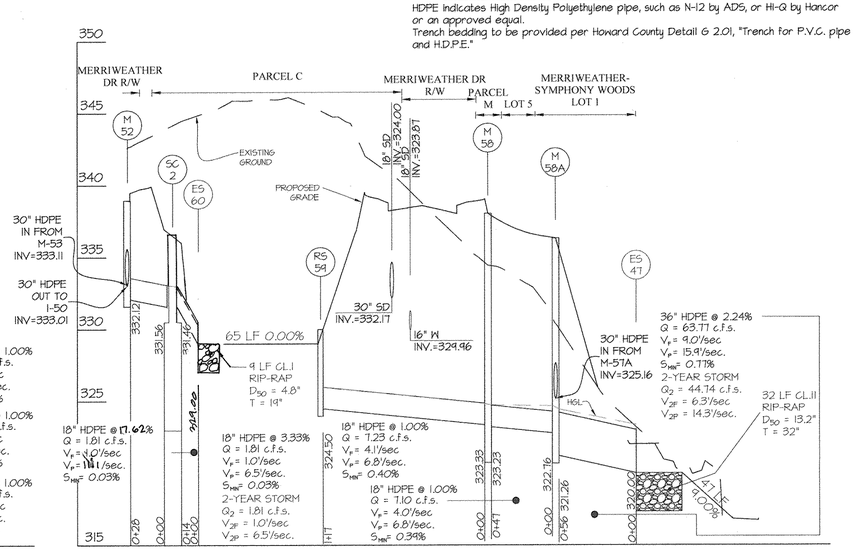












APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

Chief, Bureau of Highways — Date 7/12/2016

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

Chief, Division of Land Development — Date 8.3.16

Chief, Development Engineering Division — Date 8/2/16

GLW GUTSCHICK LITTLE & WEBER, P.A.
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BURTONSVILLE, MARYLAND 20866
TEL: 301-421-4024 BALT: 410-880-1820 DC/VA: 301-989-2524 FAX: 301-421-4186

L:\CADD\DRAWINGS\11071\PLANS BY GLW\Finals\PHASE 1\11071_15-16_SD PROFILES.dwg | DES. JH | DRN. JH | CHK. DEV

DATE	REVISION	BY	APP'R.

PREPARED FOR:
THE HOWARD HUGHES CORPORATION
10480 LITTLE PATUXENT PARKWAY
SUITE 400
COLUMBIA, MD 21044
ATTN: BOB JENKINS
410-964-5443

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE PLANS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 12975 EXPIRATION DATE: MAY 26, 2018

6/9/16

STORM DRAIN PROFILES
DOWNTOWN COLUMBIA
CRESCENT NEIGHBORHOOD
PARCELS B THRU H, NON-BULDABLE BULK PARCELS J THRU R, O.S. LOTS 1 THRU 8 AND MERRIWEATHER-SYMPHONY WOODS NEIGHBORHOOD O.S. LOT 1 AND NON-BUILDABLE BULK PARCEL A
ELECTION DISTRICT No. 5 — HOWARD COUNTY, MARYLAND

SCALE	ZONING	G. L. W. FILE No.
1"=5' (V) 1"=50' (H)	NT	11071
DATE	TAX MAP – GRID	SHEET
JUNE, 2016	36 – 01	15 OF 102

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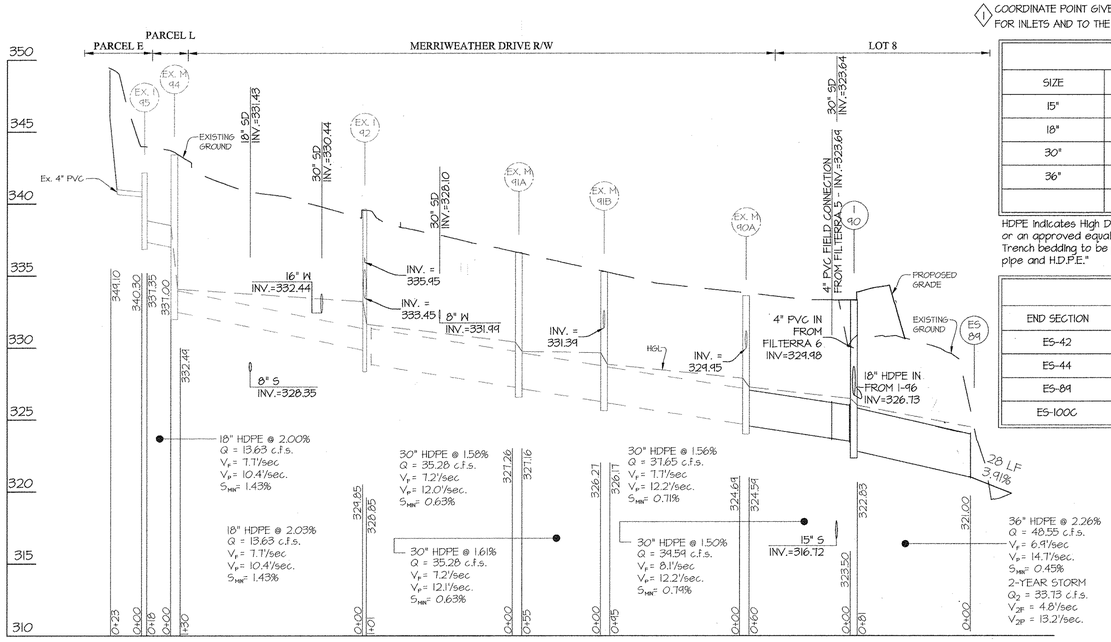


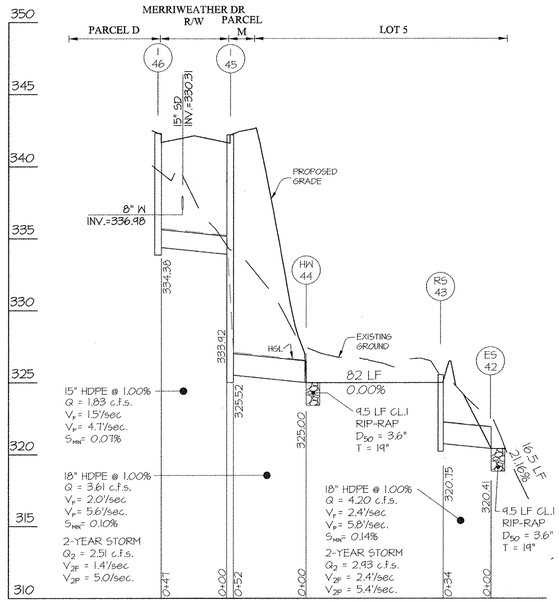
◊1 COORDINATE POINT GIVEN IS TO THE CENTERLINE OF STRUCTURE AT THE FACE OF CURBS FOR INLETS AND TO THE CENTER OF STRUCTURE FOR MANHOLES, 'S' INLETS AND END SECTIONS.

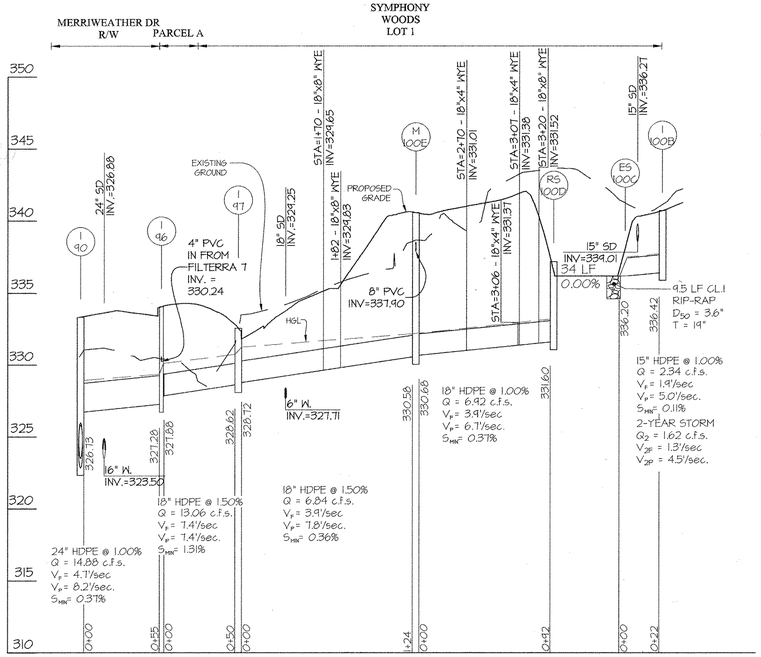
PIPE SCHEDULE			
SIZE	TYPE	QUANTITY (L.F.)	REMARKS
15"	HDPE	97	
18"	HDPE	141	
30"	HDPE	60	
36"	HDPE	81	

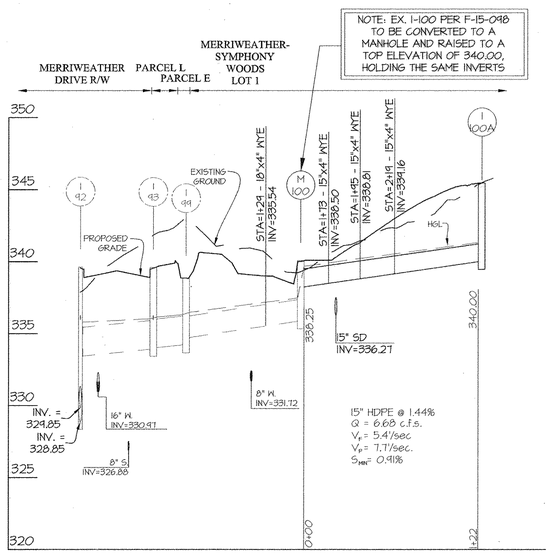
HDPE Indicates High Density Polyethylene pipe, such as N-12 by ADS, or HI-Q by Hancor or an approved equal.
Trench bedding to be provided per Howard County Detail G 2.01, "Trench for P.V.C. pipe and H.D.P.E."

RIP RAP INFORMATION				
END SECTION	CLASS	LENGTH	D_{50}	THICKNESS
ES-42	CLASS I	9.5'	3.6"	19"
ES-44	CLASS I	9.5'	3.6"	19"
ES-89	CLASS II	25'	9.6"	32"
ES-100C	CLASS I	9.5'	3.6"	19"

STRUCTURE SCHEDULE												
NO	TYPE	WIDTH (INSIDE)	TOP ELEVATION				INVERT				STD. DETAIL	◊1 LOCATIONS	REMARKS
			PROPOSED		AS-BUILT		PROPOSED		AS-BUILT				
			UPPER	LOWER	UPPER	LOWER	UPPER	LOWER	UPPER	LOWER			
I-45	A-10 INLET	2'-6"	342.30	342.15			333.92	325.52			HO.CO. D-4.03	N 561,039 E 1,351,255	
I-46	A-10 INLET	2'-6"	342.33	342.18			---	334.38			HO.CO. D-4.03	N 560,993 E 1,351,249	
I-90	S6 INLET	2'-7.5"	333.34	333.32			324.98	322.83			HO.CO. D-4.23	N 561,858 E 1,350,715	
I-96	A-10 INLET	2'-6"	333.46	333.38			330.24	328.96			HO.CO. D-4.03	N 561,826 E 1,350,759	
I-97	A-10 INLET	2'-6"	331.80	331.80			---	329.80			HO.CO. D-4.03	N 561,868 E 1,350,745	
I-100A	S6 INLET	2'-7.5"	345.00	---			---	340.00			HO.CO. D-4.23	N 562,171 E 1,350,879	
I-100B	A-10 INLET	2'-6"	341.96	341.09			---	336.42			HO.CO. D-4.03	N 562,161 E 1,350,785	
RS-43	'S' RISER	2'-7.5"	326.00	---			---	320.75			HO.CO. D-4.22	N 561,942 E 1,351,188	
RS-100D	'S6' RISER	2'-7.5"	337.20	---			---	331.60			HO.CO. D-4.23	N 562,084 E 1,350,795	
ES-42	END SECTION	1'-6"	321.91	---			---	320.41			HO.CO. D-5.51	N 561,968 E 1,351,171	
ES-89	END SECTION	3'-0"	324.00	---			---	321.00			HO.CO. D-5.51	N 561,794 E 1,350,664	
ES-100C	END SECTION	1'-3"	336.20	---			---	331.60			HO.CO. D-5.51	N 562,132 E 1,350,781	
				---			---						
HW-44	'C' ENDWALL	7'-9"	327.00					325.00			HO.CO. D-5.21	N 561,988 E 1,351,266	
M-100E	STANDARD MANHOLE	5'-0"	340.60	---			330.68	330.58			HO.CO. G-5.13	N 561,984 E 1,350,808	







APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
Chief, Bureau of Highways — Date 7/12/2016

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
Chief, Division of Land Development — Date 7.26.16
Chief, Development Engineering Division — Date 7.26.16

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STORM DRAIN PROFILES
DOWNTOWN COLUMBIA
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PARCELS B THRU H, NON-BULDABLE BULK PARCELS J THRU R, O.S. LOTS 1 THRU 8 AND MERRIWEATHER-SYMPHONY WOODS NEIGHBORHOOD O.S. LOT 1 AND NON-BUILDABLE BULK PARCEL A
ELECTION DISTRICT No. 5 — HOWARD COUNTY, MARYLAND

SCALE	ZONING	G. L. W. FILE No.
1"=5' (V) 1"=50' (H)	NT	11071
DATE	TAX MAP – GRID	SHEET
JUNE, 2016	36 – 01	16 OF 102

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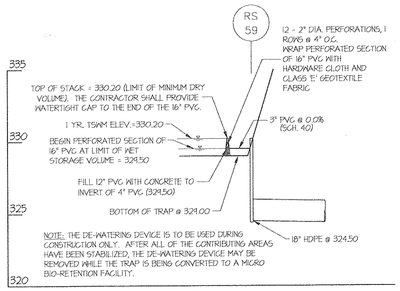
F 15-106

LEGEND

- SCE — STABILIZED CONSTRUCTION ENTRANCE
- EARTH DIKE / CLEAN WATER DIVERSION
- SF — SILT FENCE / SUPER SILT FENCE
- DF — DIVERSION FENCE
- CIP — PROPOSED INLET PROTECTION
- GOS — TEMPORARY GABION OUTLET STRUCTURE
- SANDBAG BARRIER
- LOD — LIMIT OF DISTURBANCE ROAD WORK
- Z-007 / LOD-2 — LIMIT OF DISTURBANCE STREAM RESTORATION SEE SHEETS 65-105
- (#) — EXISTING STRUCTURE
- (#) — PROPOSED STRUCTURE

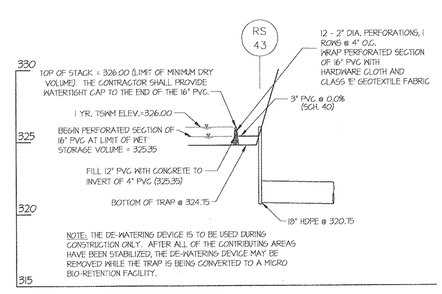
SEE SHEET 1 FOR A SITE LEGEND THAT CONTAINS ADDITIONAL SYMBOLS THAT MAY APPEAR ON THIS SHEET.



NOTE: THE DE-WATERING DEVICE IS TO BE USED DURING CONSTRUCTION ONLY. AFTER ALL OF THE CONTRIBUTING AREAS HAVE BEEN STABILIZED, THE DE-WATERING DEVICE MAY BE REMOVED WHILE THE TRAP IS BEING CONVERTED TO A MICRO BIO-RETENTION FACILITY.

SEDIMENT TRAP 1 - DEWATERING DEVICE - PROFILE TEMPORARY SWM SCALE: 1"=5' (H) 1"=50' (V)

NOTE:
1. CONTRACTOR TO TEMPORARILY BRICK AND MORTAR RISER TO AN ELEVATION OF 330.20.
2. CONTRACTOR TO PROVIDE 1¾" DIA. ORIFICE AT THE END OF THE 3" PVC PIPE INSIDE THE RISER.



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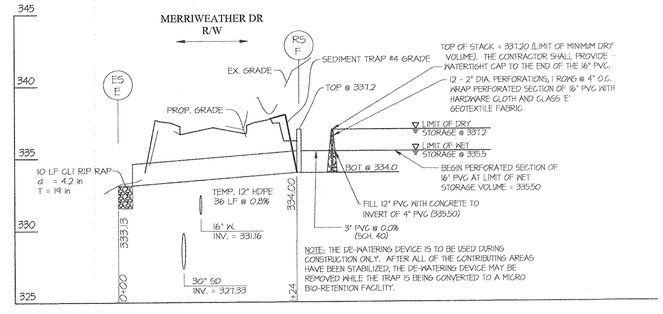
SEDIMENT TRAP 3 - DEWATERING DEVICE - PROFILE TEMPORARY SWM SCALE: 1"=5' (H) 1"=50' (V)

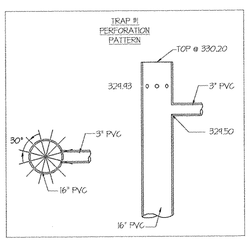
NOTE:
1. CONTRACTOR TO PROVIDE ¾" DIA. ORIFICE AT THE END OF THE 3" PVC PIPE INSIDE THE RISER.

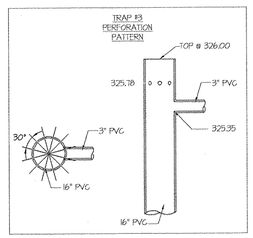


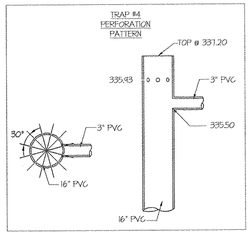
NOTE: THE DE-WATERING DEVICE IS TO BE USED DURING CONSTRUCTION ONLY. AFTER ALL OF THE CONTRIBUTING AREAS HAVE BEEN STABILIZED, THE DE-WATERING DEVICE MAY BE REMOVED WHILE THE TRAP IS BEING CONVERTED TO A MICRO BIO-RETENTION FACILITY.

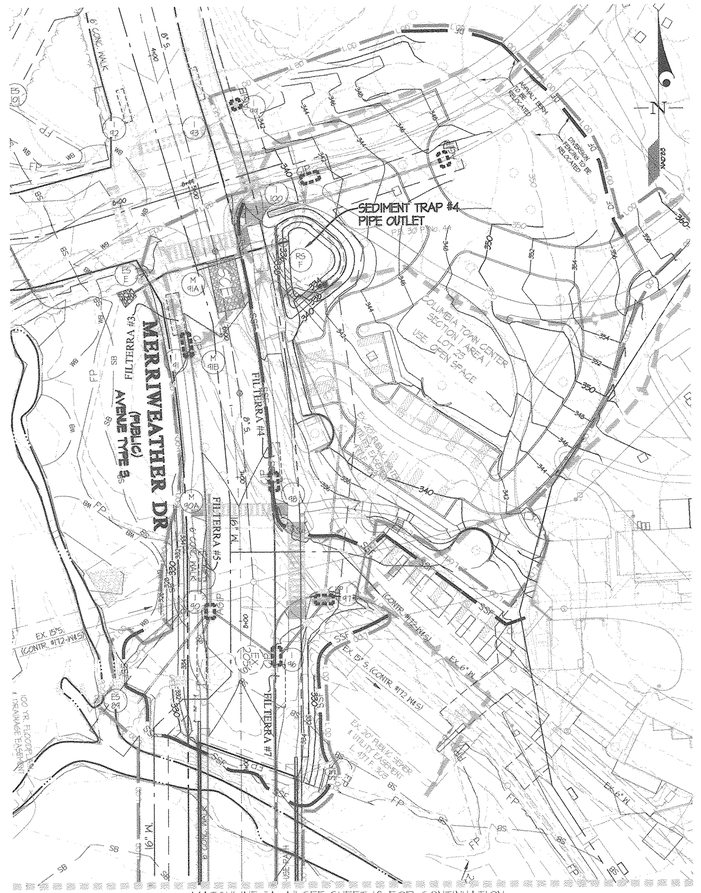
SEDIMENT TRAP 4 - DEWATERING DEVICE - PROFILE TEMPORARY SWM SCALE: 1"=5' (H) 1"=50' (V)

NOTE:
1. CONTRACTOR TO PROVIDE ¾" DIA. ORIFICE AT THE END OF THE 3" PVC PIPE INSIDE THE RISER.









SEDIMENT CONTROL DESIGN INFORMATION	TRAP 1	TRAP 2	TRAP 3	TRAP 4
TYPE OF TRAP	PIPE OUTLET	STONE OUTLET	PIPE OUTLET	PIPE OUTLET
PRE-DEVELOPMENT DRAINAGE AREA	1.5 ACRES	1.7 ACRES	1.0 ACRES	0.6 ACRES
POST DEVELOPMENT DRAINAGE AREA	2.2 ACRES	1.7 ACRES	1.0 ACRES	0.6 ACRES
TOTAL STORAGE REQUIRED (WET AND DRY VOLUME)	12,820 C.F.	6,120 C.F.	3,600 C.F.	2,160 C.F.
TOTAL STORAGE PROVIDED	15,277 C.F.	7,920 C.F.	3,841 C.F.	4,586 C.F.
WET STORAGE REQUIRED	3,960 C.F.	3,060 C.F.	1,800 C.F.	1,080 C.F.
WET STORAGE PROVIDED	6,417 C.F.	4,200 C.F.	1,897 C.F.	1,968 C.F.
DRY STORAGE REQUIRED	8,860 C.F.	3,060 C.F.	1,800 C.F.	1,080 C.F.
DRY STORAGE PROVIDED	8,860 C.F.	3,720 C.F.	1,944 C.F.	2,618 C.F.
EXISTING GROUND ELEV. AT OUTLET (WET STORAGE ELEV.)	329.50	334.00	325.4	335.5
TRAP BOTTOM ELEVATION	329.00	332.00	324.75	334.00
TRAP BOTTOM DIMENSIONS	VARIES	VARIES	VARIES	VARIES
WEIR LENGTH	16.25' (DBL 'S' INLET)	7'	16.25' (DBL 'S' INLET)	16.25' (DBL 'S' INLET)
WEIR CREST (DRY STORAGE) ELEVATION	330.20	335.00	326.00	337.20
CLEANOUT ELEVATION	330.50	333.00	325.38	334.75
TOP OF EMBANKMENT ELEVATION	---	336.42	326.42	338.00
SIDE SLOPE	3:1	3:1	3:1	2:1
EMBANKMENT TOP WIDTH	---	4'	4'	4'
BARREL DIMENSIONS	18"	---	18"	18"
ANTI-SEEP COLLAR	---	---	---	---
RISER DIMENSIONS	5.54' x 2.63'	---	2.77' x 2.63'	5.54' x 2.63'

SCALE: 1" = 50

0' 25 50 100 200

This Development Plan is approved for Soil Erosion and Sediment Control by the Howard Soil Conservation District.

Howard S.C.D. — Date 6/29/16

ENGINEER'S CERTIFICATE

"I HEREBY 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 SOIL CONSERVATION DISTRICT."

ENGINEER'S SIGNATURE — DATE 6/9/16

DEVELOPER'S/BUILDER'S CERTIFICATE

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

SIGNATURE OF DEVELOPER/BUILDER — DATE 6/9/16

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

Chief, Bureau of Highways — Date 7/12/2016

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

Chief, Division of Land Development — Date 7.3.16

Chief, Development Engineering Division — Date 7.26.16

GLW GUTSCHICK LITTLE & WEBER, P.A.
CIVIL ENGINEERS, LAND SURVEYORS, LAND PLANNERS, LANDSCAPE ARCHITECTS
3909 NATIONAL DRIVE – SUITE 250 – BURTONSVILLE OFFICE PARK
BURTONSVILLE, MARYLAND 20866
TEL: 301-421-4024 BALT: 410-880-1820 DC/VA: 301-989-2524 FAX: 301-421-4186

L:\CADD\DRAWINGS\11071\PLANS BY GLW\Finals\PHASE 1\11071_17-19_SC PLAN.dwg | DES. MJT | DRN. WSJ | CHK. MJT

DATE	REVISION	BY	APP'R.

PREPARED FOR:
THE HOWARD HUGHES CORPORATION
10480 LITTLE PATUXENT PARKWAY
SUITE 400
COLUMBIA, MD 21044
ATTN: BOB JENKINS
410-964-5443

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE PLANS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 12975 EXPIRATION DATE: MAY 26, 2016

6/9/16

STATE OF MARYLAND — CHRISTINE KENNEDY GUTSCHICK — REG. NO. 12975 — PROFESSIONAL ENGINEER

SEDIMENT CONTROL PLAN - PHASE A

DOWNTOWN COLUMBIA
CRESCENT NEIGHBORHOOD
PARCELS B THRU H, NON-BULDABLE BULK PARCELS J THRU R, O.S. LOTS 1 THRU 8 AND MERRIWEATHER-SYMPHONY WOODS NEIGHBORHOOD O.S. LOT 1 AND NON-BUILDABLE BULK PARCEL A

ELECTION DISTRICT No. 5 — HOWARD COUNTY, MARYLAND

SCALE	ZONING	G. L. W. FILE No.
1"=50'	NT	11071
DATE	TAX MAP – GRID	SHEET
JUNE, 2016	36 – 01	17 OF 102

F 15-106

L:\CADD\DRAWINGS\11071\PLANS BY GLW\Finals\PHASE 1\11071_17-19_SC PLAN.dwg, PLOTTED: 6/8/2016 4:07 PM, LAST SAVED: 5/17/2016 6:59 PM, PLOTTED BY: Jay Hagharian
© GLW 2014

MATCHLINE "A-A" SEE SHEET 17 FOR CONTINUATION

LEGEND

- SCE — STABILIZED CONSTRUCTION ENTRANCE
- > — EARTH DIKE / CLEAN WATER DIVERSION
- SF — SILT FENCE / SUPER SILT FENCE
- DF — DIVERSION FENCE
- CIP — PROPOSED INLET PROTECTION
- GOS — TEMPORARY GABION OUTLET STRUCTURE
- SANDBAG BARRIER
- LOD — LIMIT OF DISTURBANCE ROAD WORK
- Z-007 / LOD-2 — LIMIT OF DISTURBANCE STREAM RESTORATION SEE SHEETS 69-105
- (#) — EXISTING STRUCTURE
- (#) — PROPOSED STRUCTURE

SEE SHEET 1 FOR A SITE LEGEND THAT CONTAINS ADDITIONAL SYMBOLS THAT MAY APPEAR ON THIS SHEET.

SCALE: 1" = 50'

0' 25 50 100 200

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6/9/16 Date

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SIGNATURE OF DEVELOPER/BUILDER 6/27/16

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

Chief, Bureau of Highways Date 7/12/2016

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

Chief, Division of Land Development Date 8.3.16

Chief, Development Engineering Division Date 7.26.16

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TEL: 301-421-4024 BALT: 410-880-1820 DC/VA: 301-989-2524 FAX: 301-421-4186

L:\CADD\DRAWINGS\11071\PLANS BY GLW\Finals\PHASE 1\11071_17-19_SC PLAN.dwg | DES. MJT | DRN. WsJ | CHK. MJT

DATE	REVISION	BY	APP'R.

PREPARED FOR:
THE HOWARD HUGHES CORPORATION
10480 LITTLE PATUXENT PARKWAY
SUITE 400
COLUMBIA, MD 21044
ATTN: BOB JENKINS
410-964-5443

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6/9/16

SEDIMENT CONTROL PLAN - PHASE A

DOWNTOWN COLUMBIA

CRESCENT NEIGHBORHOOD

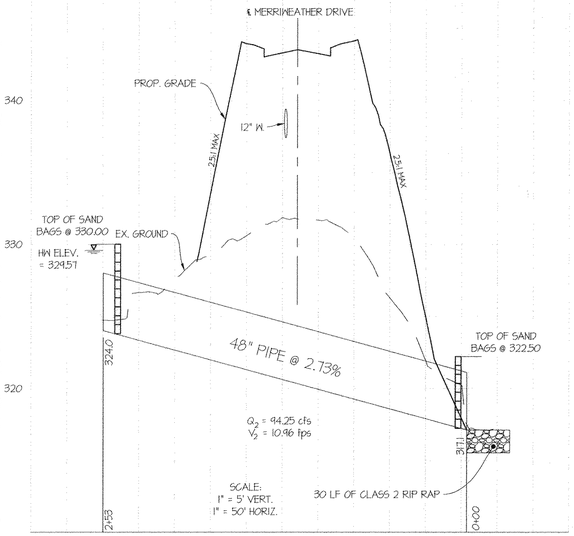
PARCELS B THRU H, NON-BULDABLE BULK PARCELS J THRU R, O.S. LOTS 1 THRU 8 AND MERRIWEATHER-SYMPHONY WOODS NEIGHBORHOOD O.S. LOT 1 AND NON-BUILDABLE BULK PARCEL A

ELECTION DISTRICT No. 5 HOWARD COUNTY, MARYLAND

SCALE	ZONING	G. L. W. FILE No.
1"=50'	NT	11071
DATE	TAX MAP – GRID	SHEET
JUNE, 2016	36 – 01	18 OF 102

F 15-106

DIVERSION PIPE AT ARCH SPAN #2



LEGEND

- SCE — STABILIZED CONSTRUCTION ENTRANCE
- > — EARTH DIKE / CLEAN WATER DIVERSION
- SF — SILT FENCE / SUPER SILT FENCE
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- LOD — LIMIT OF DISTURBANCE ROAD WORK
- Z-001 / LOD-2 / LOD-2 — LIMIT OF DISTURBANCE STREAM RESTORATION SEE SHEETS 65-105
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SIGNATURE OF DEVELOPER/BUILDER — 6/20/16 DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

Chief, Bureau of Highways — 7/12/2016 Date

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

Chief, Division of Land Development — 8-3-16 Date

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6/9/16

STATE OF MARYLAND — CHRISTOPHER M. JAKUBOWSKI — PROFESSIONAL ENGINEER

SEDIMENT CONTROL PLAN - PHASE B

DOWNTOWN COLUMBIA

CRESCENT NEIGHBORHOOD

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ELECTION DISTRICT No. 5 — HOWARD COUNTY, MARYLAND

SCALE	ZONING	G. L. W. FILE No.
1"=50'	NT	11071
DATE	TAX MAP – GRID	SHEET
JUNE, 2016	36 – 01	19 OF 102

F 15-106

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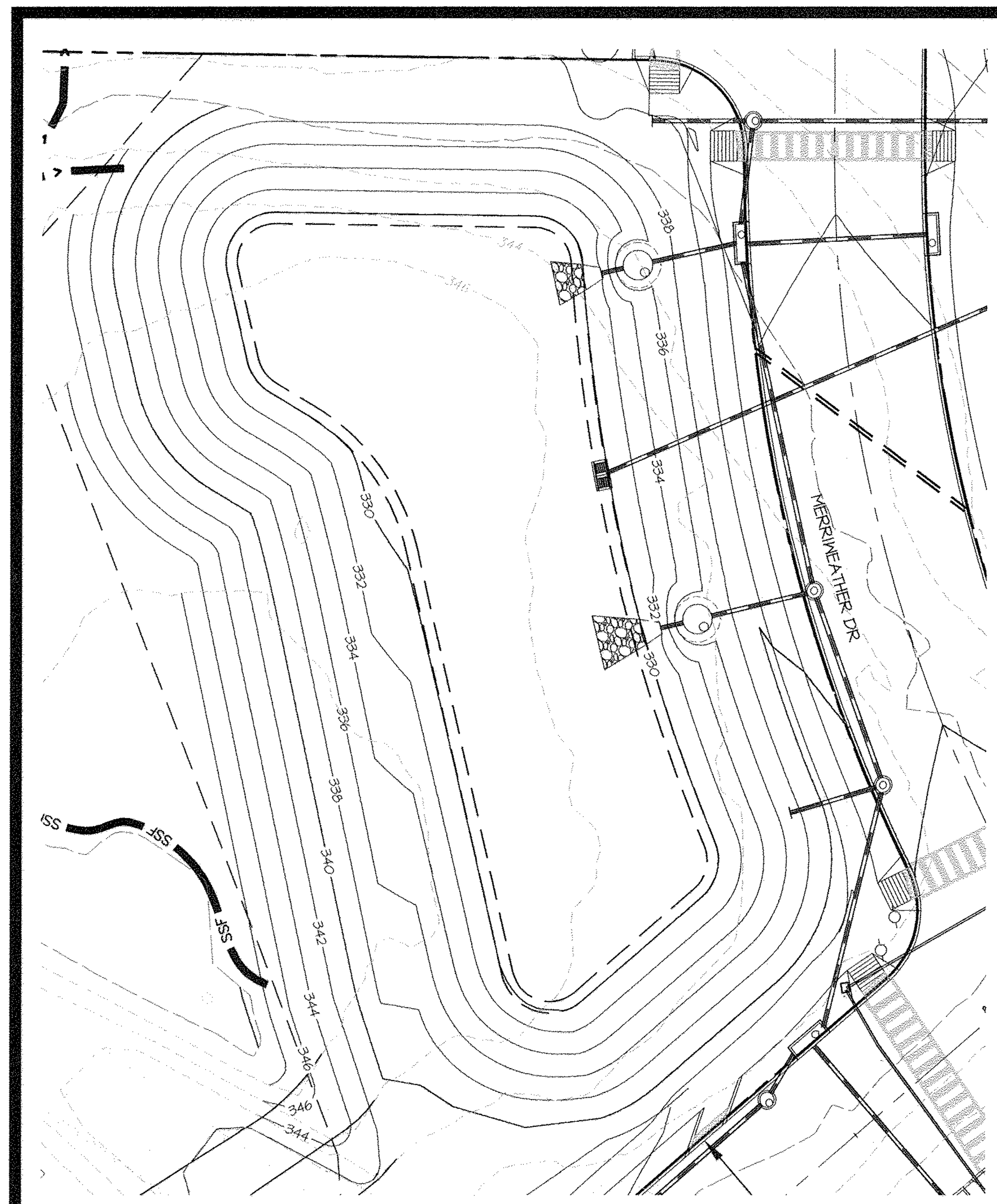
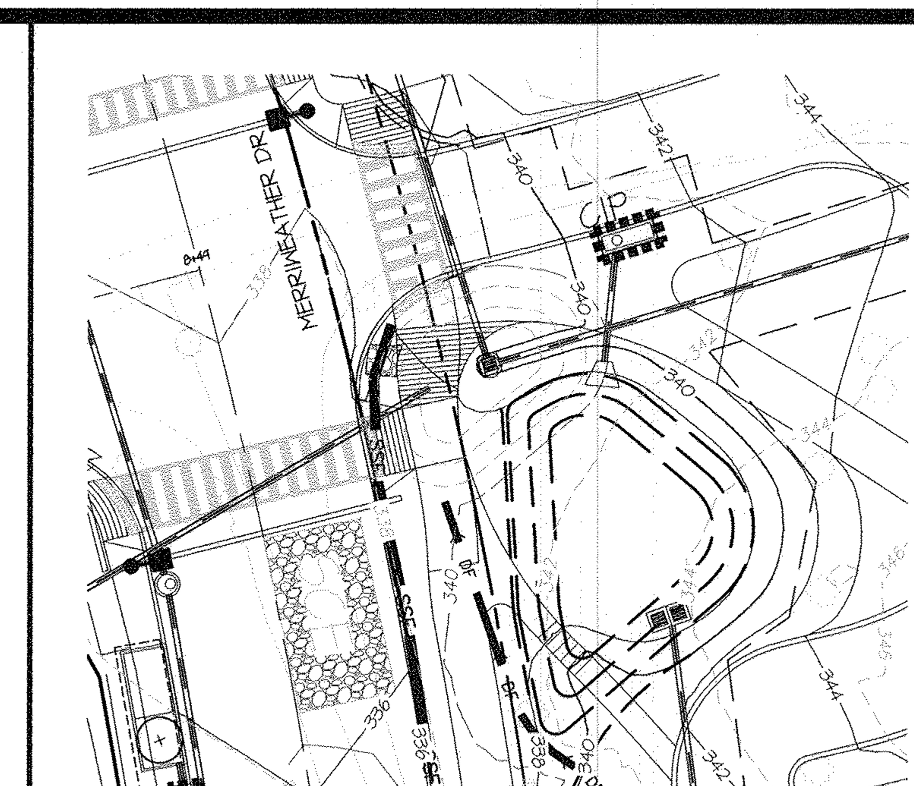
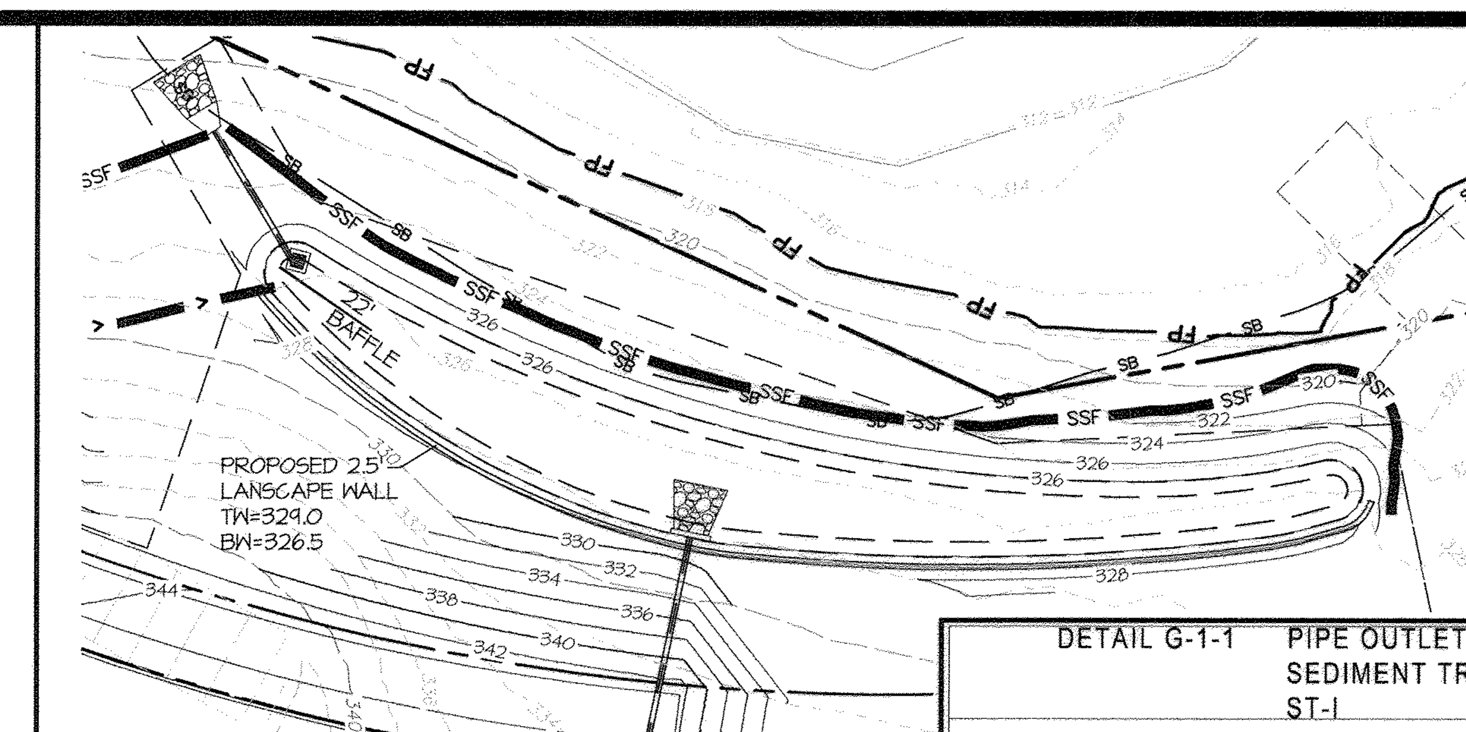


SEDIMENT TRAP 1 - PLAN SCALE: 1"=30'



SEDIMENT TRAP 4 - PLAN SCALE: 1"=30'



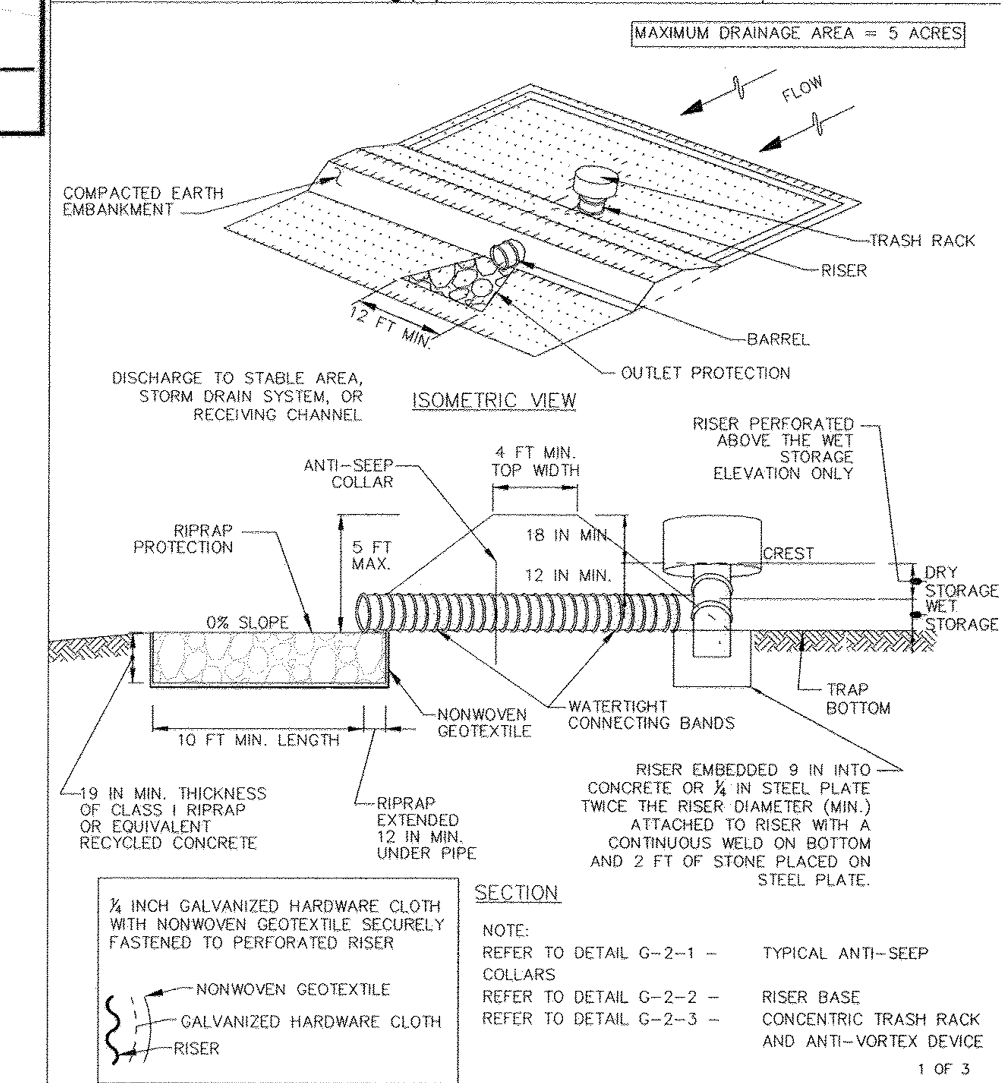
SEDIMENT TRAP 3 - PLAN SCALE: 1"=30'

BAFFLE BOARD DESIGN	TRAP 3
SURFACE AREA AT WET STORAGE ELEVATION	3,945 SQ. FT.
EFFECTIVE WIDTH	44.5 FT.
FLOW LENGTH FROM INFLOW POINT TO OUTLET	5 FT.
BAFFLE BOARD LENGTH	22 FT.
EFFECTIVE FLOW LENGTH	44 FT.

DETAIL G-1-1 PIPE OUTLET SEDIMENT TRAP ST-I

STANDARD SYMBOL: ST-I

MAXIMUM DRAINAGE AREA = 5 ACRES



NOTE:
REFER TO DETAIL G-2-1 – TYPICAL ANTI-SEEP COLLARS
REFER TO DETAIL G-2-2 – RISER BASE
REFER TO DETAIL G-2-3 – CONCENTRIC TRASH RACK AND ANTI-VORTEX DEVICE

1 OF 3

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

DETAIL G-1-1 PIPE OUTLET SEDIMENT TRAP ST-I

STANDARD SYMBOL: ST-I

CONSTRUCTION SPECIFICATIONS

1. CONSTRUCT TRAP IN SUCH A MANNER THAT EROSION AND WATER POLLUTION ARE AVOIDED.
2. CLEAR, GRUB, AND STRIP ANY VEGETATION AND ROOT MAT FROM THE AREA UNDER THE EMBANKMENT AND TRAP BOTTOM.
3. PERFORATE THE RISER WITH 1 INCH DIAMETER HOLES SPACED 6 INCHES ON CENTER WITH THE LOWEST PERFORATIONS AT THE WET STORAGE ELEVATION OR PROVIDE A HORIZONTAL OR VERTICAL DRAW-DOWN DEVICE PERFORATED ACCORDING TO APPROVED PLAN. DO NOT PERFORATE THE RISER WITHIN 6 INCHES OF THE TOP OF THE HORIZONTAL BARREL.
4. SET RISER/BARREL ASSEMBLY PRIOR TO EMBANKMENT CONSTRUCTION. MAKE ALL PIPE CONNECTIONS WATERTIGHT. OFFSET RISER FROM EMBANKEMENT TO ACCOMODATE PLACEMENT OF THE TRASH RACK. ANCHOR THE RISER WITH EITHER A REINFORCED CONCRETE BASE OR STEEL PLATE BASE TO PREVENT FLOTATION. MAKE CONCRETE BASES AT LEAST TWICE THE RISER DIAMETER AND 18 INCHES THICK WITH THE RISER EMBEDDED 9 INCHES.
5. USE FILL MATERIAL FREE OF ROOTS, WOODY VEGETATION, OVERSIZED STONES, ROCKS, ORGANIC MATERIAL, OR OTHER OBJECTIONABLE MATERIAL FOR THE EMBANKMENT.
6. HAND COMPACT IN 4 INCH LAYERS FILL MATERIAL AROUND THE PIPE SPILLWAY. PLACE A MINIMUM OF 2 FEET OF HAND COMPACTED BACKFILL OVER THE PIPE SPILLWAY BEFORE CROSSING IT WITH CONSTRUCTION EQUIPMENT.
7. CONSTRUCT TOP OF EMBANKMENT 1 FOOT MINIMUM ABOVE RISER CREST. COMPACT THE EMBANKMENT BY TRAVERSING WITH EQUIPMENT WHILE IT IS BEING CONSTRUCTED.
8. MAKE ALL CUT AND FILL SLOPES 2:1 OR FLATTER.
9. WRAP THE RISER WITH ¼ INCH GALVANIZED HARDWARE CLOTH THEN WRAP WITH NONWOVEN GEOTEXTILE. DO NOT WRAP WITH MORE THAN ONE LAYER OF GEOTEXTILE. EXTEND HARDWARE CLOTH AND GEOTEXTILE AT LEAST 6 INCHES ABOVE THE HIGHEST PERFORATIONS AND AT LEAST 6 INCHES BELOW THE LOWEST PERFORATIONS. OVERLAP, FOLD AND FASTEN WHERE ENDS OF GEOTEXTILE COME TOGETHER TO PREVENT BYPASS. REPLACE GEOTEXTILE AS NECESSARY TO PREVENT CLOGGING.
10. USE STRAPS OR CONNECTING BANDS AT THE TOP AND BOTTOM OF THE GEOTEXTILE TO HOLD THE GEOTEXTILE AND HARDWARE CLOTH IN PLACE.
11. USE NONWOVEN GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS.
12. STABILIZE THE EMBANKMENT AND INTERIOR SLOPES WITH SEED AND MULCH. STABILIZE POINTS OF CONCENTRATED INFLOW AS SHOWN ON APPROVED PLAN.
13. CONSTRUCT AND MAINTAIN THE OUTLET ACCORDING TO THE APPROVED PLAN AND IN SUCH A MANNER THAT EROSION AT OR BELOW THE OUTLET DOES NOT OCCUR.
14. REMOVE SEDIMENT AND RESTORE TRAP TO ORIGINAL DIMENSIONS WHEN SEDIMENT HAS ACCUMULATED TO CLEANOUT ELEVATION (50% OF WET STORAGE DEPTH). DEPOSIT REMOVED SEDIMENT IN AN APPROVED AREA AND IN SUCH A MANNER THAT IT WILL NOT ERODE. KEEP POINTS OF INFLOW AND OUTFLOW AS WELL AS INTERIOR OF THE TRAP FREE FROM EROSION, AND REMOVE ACCUMULATED DEBRIS. MAINTAIN EMBANKMENTS TO CONTINUOUSLY MEET REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION. REMOVE ANY TREES, BRUSH, OR OTHER WOODY VEGETATION GROWING ON EMBANKMENT OR NEAR PRINCIPAL SPILLWAY. MAINTAIN LINE, GRADE, AND CROSS SECTION. MAINTAIN WATER TIGHT CONNECTIONS. REPLACE GEOTEXTILE AROUND PERFORATED RISER IF DRY STORAGE VOLUME DOES NOT DRAW DOWN WITHIN 10 HOURS.
15. WHEN DEWATERING TRAP, PASS REMOVED WATER THROUGH AN APPROVED SEDIMENT CONTROL PRACTICE.
16. UPON REMOVAL, GRADE AND STABILIZE THE AREA OCCUPIED BY TRAP.

2 OF 3

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

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Howard S.C.D. 6/29/16 Date

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ENGINEER'S SIGNATURE — DATE 6/9/16

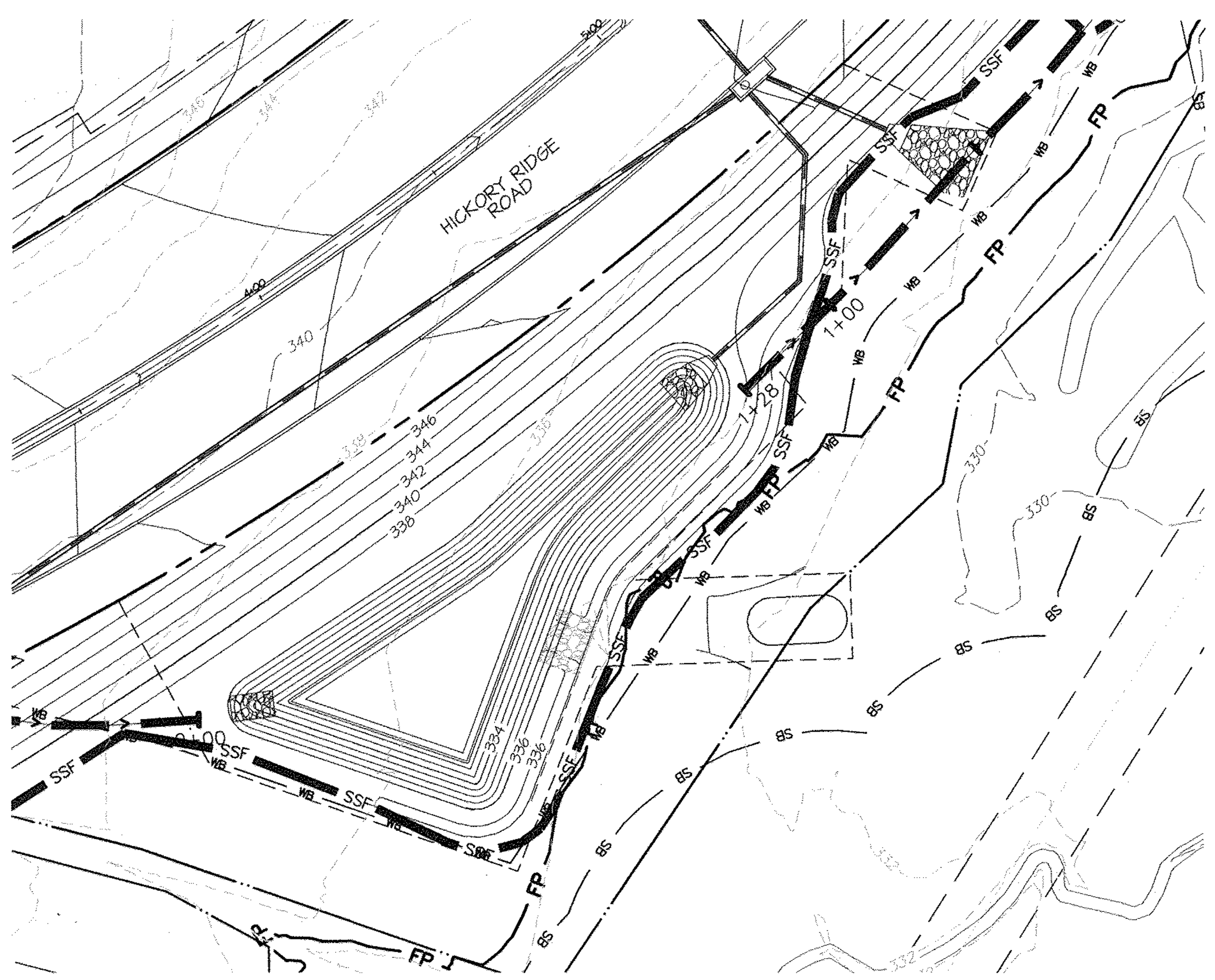
DEVELOPER'S/BUILDER'S CERTIFICATE

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

SIGNATURE OF DEVELOPER/BUILDER — DATE 6/27/16

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
Chief, Bureau of Highways — Date 7/12/2016

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
Chief, Division of Land Development — Date 8-3-16
Chief, Development Engineering Division — Date 7-26-16



NOTE:
CONTROL STRUCTURE FOR MICRO-BIORETENTION TO BE INSTALLED DURING CONVERSION.

SEDIMENT TRAP 2 - PLAN SCALE: 1"=30'

DETAIL G-1-2 STONE/RIPRAP OUTLET SEDIMENT TRAP ST-II

STANDARD SYMBOL: ST-II

CONSTRUCTION SPECIFICATIONS

1. CONSTRUCT TRAP IN SUCH A MANNER THAT EROSION AND WATER POLLUTION ARE AVOIDED.
2. CLEAR, GRUB, AND STRIP ANY VEGETATION AND ROOT MAT FROM THE AREA UNDER THE EMBANKMENT AND TRAP BOTTOM.
3. USE FILL MATERIAL FREE OF ROOTS, WOODY VEGETATION, OVERSIZED STONES, ROCKS, ORGANIC MATERIAL, OR OTHER OBJECTIONABLE MATERIAL FOR THE EMBANKMENT.
4. CONSTRUCT TOP OF EMBANKMENT 1 FOOT MINIMUM ABOVE WEIR CREST. COMPACT THE EMBANKMENT BY TRAVERSING WITH EQUIPMENT WHILE IT IS BEING CONSTRUCTED.
5. MAKE ALL CUT AND FILL SLOPES 2:1 OR FLATTER.
6. PLACE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS, OVER THE BOTTOM AND SIDES OF OUTLET AND APRON PRIOR TO PLACEMENT OF RIPRAP. OVERLAP SECTIONS OF GEOTEXTILE AT LEAST 1 FOOT WITH THE SECTION NEARER TO THE TRAP PLACED ON TOP. EMBED GEOTEXTILE AT LEAST 6 INCHES INTO EXISTING GROUND AT ENTRANCE OF OUTLET CHANNEL.
7. USE CLEAN 4 TO 7 INCH RIPRAP TO CONSTRUCT THE WEIR. USE CLASS I RIPRAP FOR THE APRON. USE OF RECYCLED CONCRETE EQUIVALENT IS ACCEPTABLE.
8. PLACE 1 FOOT OF CLEAN ¾ TO 1½ INCH STONE OR EQUIVALENT RECYCLED CONCRETE ON THE UPSTREAM FACE OF THE WEIR.
9. CONSTRUCT AND MAINTAIN THE OUTLET ACCORDING TO APPROVED PLAN, AND IN SUCH A MANNER THAT EROSION AT OR BELOW THE OUTLET DOES NOT OCCUR.
10. STABILIZE THE EMBANKMENT AND INTERIOR SLOPES WITH SEED AND MULCH. STABILIZE POINTS OF CONCENTRATED INFLOW AS SHOWN ON APPROVED PLAN.
11. REMOVE SEDIMENT AND RESTORE TRAP TO ORIGINAL DIMENSIONS WHEN SEDIMENT HAS ACCUMULATED TO CLEANOUT ELEVATION (50% OF WET STORAGE DEPTH). DEPOSIT REMOVED SEDIMENT IN AN APPROVED AREA AND IN SUCH A MANNER THAT IT WILL NOT ERODE. KEEP POINTS OF INFLOW AND OUTFLOW AS WELL AS INTERIOR OF THE TRAP FREE FROM EROSION, AND REMOVE ACCUMULATED DEBRIS. MAINTAIN EMBANKMENTS TO CONTINUOUSLY MEET REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION. REMOVE ANY TREES, BRUSH, OR OTHER WOODY VEGETATION GROWING ON EMBANKMENT OR NEAR PRINCIPAL SPILLWAY. MAINTAIN LINE, GRADE, AND CROSS SECTION.
12. WHEN DEWATERING TRAP, PASS REMOVED WATER THROUGH AN APPROVED SEDIMENT CONTROL PRACTICE.
13. UPON REMOVAL, GRADE AND STABILIZE THE AREA OCCUPIED BY TRAP.

2 OF 3

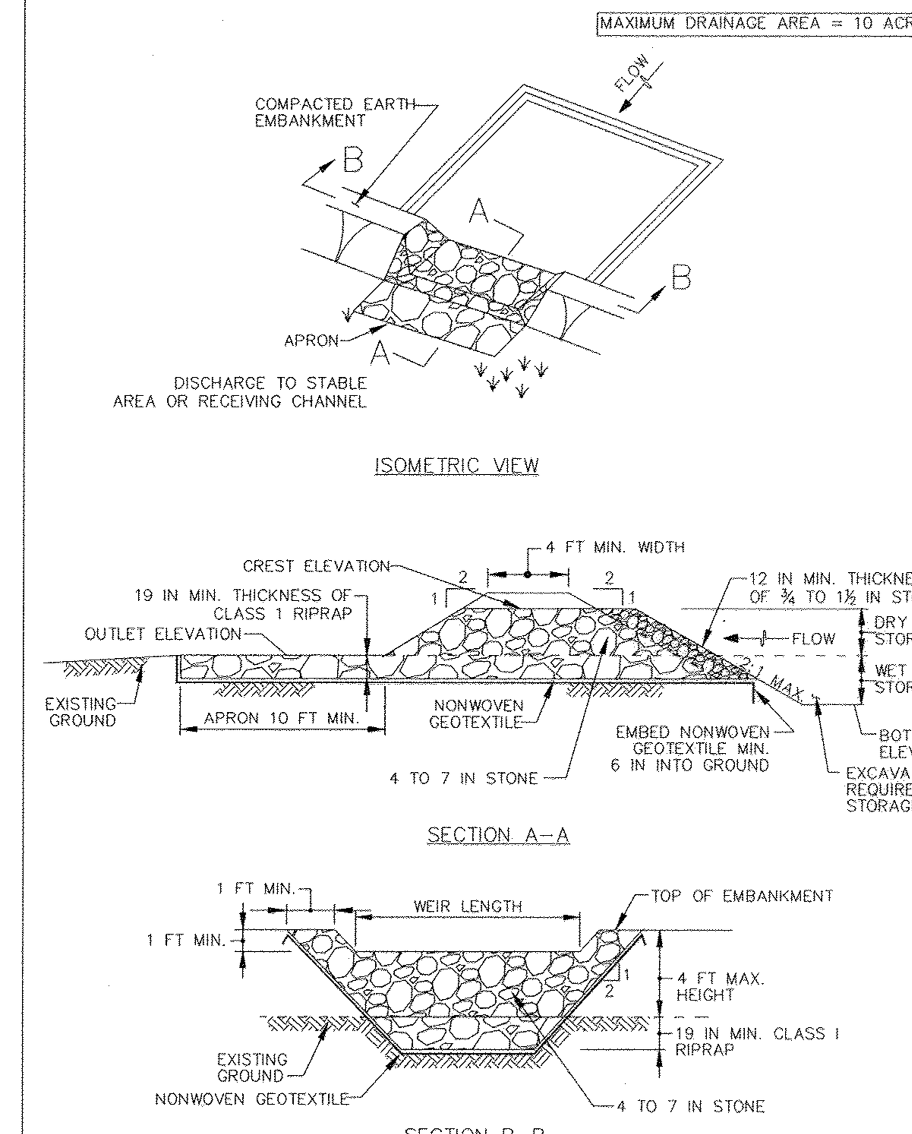
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

DETAIL G-1-2 STONE/RIPRAP OUTLET SEDIMENT TRAP ST-II

STANDARD SYMBOL: ST-II

MAXIMUM DRAINAGE AREA = 10 ACRES



1 OF 3

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

GLW GUTSCHICK LITTLE & WEBER, P.A.
CIVIL ENGINEERS, LAND SURVEYORS, LAND PLANNERS, LANDSCAPE ARCHITECTS
3909 NATIONAL DRIVE – SUITE 250 – BURTONSVILLE OFFICE PARK
BURTONSVILLE, MARYLAND 20866
TEL: 301-421-4024 BALT: 410-880-1820 DC/VA: 301-989-2524 FAX: 301-421-4186

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DATE	REVISION	BY	APP'R.

PREPARED FOR:
THE HOWARD HUGHES CORPORATION
10480 LITTLE PATUXENT PARKWAY
SUITE 400
COLUMBIA, MD 21044
ATTN: BOB JENKINS
410-964-5443

PROFESSIONAL CERTIFICATION
I HEREBY CERTIFY THAT THESE PLANS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 12975, EXPIRATION DATE: MAY 26, 2018
6/9/16

SEDIMENT TRAP DETAILS

DOWNTOWN COLUMBIA
CRESCENT NEIGHBORHOOD
PARCELS B THRU H, NON-BULDABLE BULK PARCELS J THRU R, O.S. LOTS 1 THRU 8 AND MERRIWEATHER-SYMPHONY WOODS NEIGHBORHOOD O.S. LOT 1 AND NON-BUILDABLE BULK PARCEL A

ELECTION DISTRICT No. 5 — HOWARD COUNTY, MARYLAND

SCALE	ZONING	G. L. W. FILE No.
1"=30'	NT	11071
DATE	TAX MAP – GRID	SHEET
JUNE, 2016	36 – 01	20 OF 102

F 15-106

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© GLW 2014

HOWARD SOIL CONSERVATION DISTRICT (HSCD)
STANDARD SEDIMENT CONTROL NOTES

1. 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:

   A. PRIOR TO THE START OF EARTH DISTURBANCE.
   B. UPON COMPLETION OF THE INSTALLATION OF PERIMETER EROSION AND SEDIMENT CONTROLS, BUT BEFORE PROCEEDING WITH ANY OTHER EARTH DISTURBANCE OR GRADING.
   C. PRIOR TO THE START OF ANOTHER PHASE OF CONSTRUCTION OR OPENING OF ANOTHER GRADING UNIT.
   D. PRIOR TO THE REMOVAL OR MODIFICATION OF SEDIMENT CONTROL PRACTICES.

   OTHER BUILDING OR GRADING INSPECTION APPROVALS MAY NOT BE AUTHORIZED UNTIL THIS INITIAL APPROVAL BY THE INSPECTION AGENCY IS MADE. OTHER RELATED STATE AND FEDERAL PERMITS SHALL BE REFERENCED, TO ENSURE COORDINATION AND TO AVOID CONFLICTS WITH THIS PLAN.

2. 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.

3. FOLLOWING INITIAL SOIL DISTURBANCE OR RE-DISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION IS REQUIRED WITHIN THREE (3) CALENDAR DAYS AS TO THE SURFACE OF ALL PERIMETER CONTROLS, DIKES, SWALES, DITCHES, PERIMETER SLOPES, AND ALL SLOPES STEEPER THAN 3 HORIZONTAL TO 1 VERTICAL (3:1); AND SEVEN (7) CALENDAR DAYS AS TO ALL OTHER DISTURBED AREAS ON THE PROJECT SITE EXCEPT FOR THOSE AREAS UNDER ACTIVE GRADING.

4. 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).

5. 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.

6. SITE ANALYSIS:

TOTAL AREA OF SITE	:	31.2 Acres
AREA DISTURBED	:	16.4 Acres ± 6.0
AREA TO BE ROOFED OR PAVED	:	2.8 Acres
AREA TO BE VEGETATIVELY STABILIZED	:	13.6 Acres
TOTAL CUT	:	13,568 Cu. Yds.
TOTAL FILL	:	56,872 Cu. Yds.
OFF-SITE WASTE/BORROW AREA LOCATION	:	N/A

FILL MATERIAL TO BE TAKEN FROM WITHIN THE LIMITS OF THE CRESCENT NEIGHBORHOOD

7. ANY SEDIMENT CONTROL PRACTICE WHICH IS DISTURBED BY GRADING ACTIVITY FOR PLACEMENT OF UTILITIES MUST BE REPAIRED ON THE SAME DAY OF DISTURBANCE.

8. ADDITIONAL SEDIMENT CONTROL MUST BE PROVIDED, IF DEEMED NECESSARY BY THE CID. THE SITE AND ALL CONTROLS SHALL BE INSPECTED BY THE CONTRACTOR WEEKLY, AND THE NEXT DAY AFTER EACH RAIN EVENT. A WRITTEN REPORT BY THE CONTRACTOR, MADE AVAILABLE UPON REQUEST, IS PART OF EVERY INSPECTION AND SHOULD INCLUDE:

- INSPECTION DATE
- INSPECTION TYPE (ROUTINE, PRE-STORM EVENT, DURING RAIN EVENT)
- NAME AND TITLE OF INSPECTOR
- WEATHER INFORMATION (CURRENT CONDITIONS AS WELL AS TIME AND AMOUNT OF LAST RECORDED PRECIPITATION)
- BRIEF DESCRIPTION OF PROJECT'S STATUS (E.G., PERCENT COMPLETE) AND /OR CURRENT ACTIVITIES
- EVIDENCE OF SEDIMENT DISCHARGES
- IDENTIFICATION OF PLAN DEFICIENCIES
- IDENTIFICATION OF SEDIMENT CONTROLS THAT REQUIRE MAINTENANCE
- IDENTIFICATION OF MISSING OR IMPROPERLY INSTALLED SEDIMENT CONTROLS
- COMPLIANCE STATUS REGARDING THE SEQUENCE OF CONSTRUCTION AND STABILIZATION REQUIREMENTS
- PHOTOGRAPHS
- MONITORING/SAMPLING
- MAINTENANCE AND/OR CORRECTIVE ACTION PERFORMED
- OTHER INSPECTION ITEMS AS REQUIRED BY THE "GENERAL PERMIT FOR STORMWATER ASSOCIATED WITH CONSTRUCTION ACTIVITIES" (NPDES, MDE).

9. 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.

10. ANY MAJOR CHANGES OR REVISIONS TO THE PLAN OR SEQUENCE OF CONSTRUCTION MUST BE REVIEWED AND APPROVED BY THE HSCD PRIOR TO PROCEEDING WITH CONSTRUCTION. MINOR REVISIONS MAY BE ALLOWED BY THE CID PER THE LIST OF HSCD-APPROVED FIELD CHANGES.

11. DISTURBANCE SHALL NOT OCCUR OUTSIDE THE LOD. 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 PREGEDING GRADING UNIT HAS BEEN STABILIZED AND APPROVED BY THE CID, UNLESS OTHERWISE SPECIFIED AND APPROVED BY THE CID. NO MORE THAN 30 ACRES CUMULATIVELY MAY BE DISTURBED AT A GIVEN TIME.

12. WASH WATER FROM ANY EQUIPMENT, VEHICLES, WHEELS PAVEMENT, AND OTHER SOURCES MUST BE TREATED IN A SEDIMENT BASIN OR OTHER APPROVED WASHOUT STRUCTURE.

13. TOPSOIL SHALL BE STOCKPILED AND PRESERVED ON-SITE FOR REDISTRIBUTION ONTO FINAL GRADE.

14. ALL SILT FENCE AND SUPER SILT FENCE SHALL BE PLACED ON-THE-CONTOUR, AND BE IMBRICATED AT 25' MINIMUM INTERVALS, WITH LOWER ENDS GURLED UPHILL BY 2' IN ELEVATION.

15. STREAM CHANNELS MUST NOT BE DISTURBED DURING THE FOLLOWING RESTRICTED TIME PERIODS (INCLUSIVE):
- USE I AND IP MARCH 1 - JUNE 15
- USE III AND IIIP OCTOBER 1 - APRIL 30
- USE IV MARCH 1 - MAY 31

16. 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.

PERMANENT SEEDING NOTES

Apply to graded or cleared area not subject to immediate further disturbance where a permanent long-lived vegetative cover is needed.

Seedbed Preparation: Loosen upper three inches of soil by raking, discing or other acceptable means before seeding (unless previously loosened).

Soil Amendments: In lieu of soil test recommendations, use one of the following schedules

1) Preferred - Apply 2 tons per acre dolomitic limestone (92 lbs/1000 square feet) and 600 lbs per acre 10-10-10 fertilizer (14 lbs/1000 sq ft) before seeding. Harrow or disc into upper three inches of soil. At time of seeding, apply 400 lbs per acre 30-0-0 ureaform fertilizer (9 lbs/1000 sq ft).

2) Acceptable - Apply 2 tons per acre dolomitic limestone (92 lbs/1000 sq ft) and 1000 lbs per acre 10-10-10 fertilizer (23 lbs/1000 sq ft) before seeding. Harrow or disc into upper three inches of soil.

Seeding: For the periods March 1 thru April 30, and August 1 thru October 15, seed with 60 lbs per acre (1.4 lbs/1000 sq ft) of Kentucky 31 Tall Fescue. For the period May 1 thru July 31, seed with 60 lbs Kentucky 31 Tall Fescue per acre and 2 lbs per acre (.05 lbs/1000 sq ft) of weeping lovegrass. During the period of October 16 thru February 28, protect site by: Option (1) 2 tons per acre of well anchored straw mulch and seed as soon as possible in the spring. Option (2) Use sod. Option (3) Seed with 60 lbs/acre Kentucky 31 Tall Fescue and mulch with 2 tons/acre well anchored straw.

Mulching: Apply 1-1/2 to 2 tons per acre (70 to 90 lbs/1000 sq ft) of unrotted small grain straw immediately after seeding. Anchor mulch immediately after application using mulch anchoring tool or 218 gallons per acre (5 gal/1000 sq ft) of emulsified asphalt on flat areas. On slopes 8 feet or higher, use 348 gallons per acre (8 gal/1000 sq ft) for anchoring.

Maintenance: Inspect all seeded areas and make needed repairs, replacements and reseedings.

TEMPORARY SEEDING NOTES

Apply to graded or cleared areas likely to be redisturbed where a short-term vegetative cover is needed.

Seedbed Preparation: Loosen upper three inches of soil by raking, discing or other acceptable means before seeding (unless previously loosened).

Soil Amendments: Apply 600 lbs per acre 10-10-10 fertilizer (14 lbs/1000 sq ft).

Seeding: For periods March 1 thru April 30 and from August 15 thru November 15, seed with 2-1/2 bushel per acre of annual rye (3.2 lbs/1000 sq.ft.). For the period May 1 thru August 14, seed with 3 lbs per acre of weeping lovegrass (.07 lbs/1000 sq ft). For the period November 16 thru February 28, protect site by applying 2 tons per acre of well anchored straw mulch and seed as soon as possible in the spring, or use sod.

Mulching: Apply 1-1/2 to 2 tons per acre (70 to 90 lbs/1000 sq ft) of unrotted small grain straw immediately after seeding. Anchor mulch immediately after application using mulch anchoring tool or 218 gal per acre (5 gal/1000 sq ft) of emulsified asphalt on flat areas. On slopes, 8 ft or higher, use 348 gal per acre (8 gal/1000 sq ft) for anchoring.

Refer to the 1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL for rate and methods not covered.

STANDARD AND SPECIFICATIONS FOR TOPSOIL DEFINITION

Placement of topsoil over a prepared subsoil prior to establishment of permanent vegetation.

PURPOSE
To provide a suitable soil medium for vegetative growth. Soils of concern have low moisture content, low nutrient levels, low pH, materials toxic to plants, and/or unacceptable soil gradation.

CONDITIONS WHERE PRACTICE APPLIES

I. This practice is limited to areas having 2:1 or flatter slopes where:
   a. The texture of the exposed subsoil/parent material is not adequate to produce vegetative growth.
   b. The soil material is so shallow that the rooting zone is not deep enough to support plants or furnish continuing supplied of moisture and plant nutrients.
   c. The original soil to be vegetated contains material toxic to plant growth.
   d. The soil is so acidic that treatment with limestone is not feasible.

II. For the purpose of these Standards and Specifications, areas having slopes steeper than 2:1 require special consideration and design for adequate stabilization. Areas having slopes steeper than 2:1 shall have the appropriate stabilization shown on the plans.

CONSTRUCTION AND MATERIAL SPECIFICATIONS

I. Topsoil salvaged from the existing site may be used provided that it meets the standards as set forth in these specifications. Typically, the depth of topsoil to be salvaged for a given soil type can be found in the respective soil profile section in the Soil Survey published by USDA-SCS in cooperation with Maryland Agricultural Experimental Station.

II. Topsoil specifications - soil to be used as topsoil must meet the following:
   a. Topsoil shall be a loam, sandy loam, clay loam, silt loam, sandy clay loam, loamy sand. Other soils may be used if recommended by a agronomist or soil scientist and approved by the appropriate approval authority. Regardless, topsoil shall not be a mixture of contrasting textured subsoils and shall contain less than 5% by volume of cinders, stones, slag, coarse fragments, gravel, sticks, roots, trash, or other materials larger than 1 1/2" in diameter.
   b. Topsoil must be free of plant parts such as bermuda grass, quackgrass, Johnsongrass, nutsedge, poison ivy, thistle, or others as specified.
   c. Where the subsoil is either highly acidic or composed of heavy clays, ground limestone shall be spread at the rate if 4-8 tons/acre (200-400 pounds per 1,000 square feet) prior to the placement of topsoil. Lime shall be distributed uniformly over designated areas and worked into the soil in conjunction with tillage operations as described in the following procedures.

III. For sites having disturbed areas under 5 acres:
   a. Place topsoil (if required) and apply soil amendments as specified in 20.0 Vegetative Stabilization - Section I - Vegetative Stabilization Methods and Materials.

IV. For sites having disturbed areas over 5 acres:
   a. On soil meeting Topsoil specifications, obtain test results dictating fertilizer and lime amendments required to bring the soil into compliance with the following:
      1. pH for topsoil shall be between 6.0 and 7.5. If the tested soil demonstrates a pH of less than 6.0, sufficient lime shall be prescribed to raise the pH to 6.5 or higher.
      2. Organic content of topsoil shall be not less than 1.5 percent by weight.
      3. Topsoil having soluble salt greater than 500 parts per mill shall not be used.
      4. No sod or seed shall be placed on soil which has been with soil sterilants or chemicals used for weed control until sufficient time has elapsed (14 days min.) to permit dissipation of photo-toxic materials.

   Note: Topsoil substitutes or amendments, as recommended by a qualified agronomist or soil scientist and approved by the appropriate approval authority may be used in lieu of natural topsoil.

   b. Place topsoil (if required) and apply soil amendments as specified in 2.0 Vegetative Stabilization - Section I - Vegetative Stabilization Methods and Materials.

V. Topsoil Application
   a. When topsoiling, maintain needed erosion and sediment control practices such as diversion, Grade Stabilization Structures, Earth Dikes, Slope Silt Fence and Sediment Traps and Basins.
   b. Grades on the areas to be topsoiled, which have been previously established, shall be maintained, albeit 4" - 8" higher in elevation.
   c. Topsoil shall be uniformly distributed in a 4" -8" layer and lightly compacted to a minimum thickness of 4". Spreading shall be performed in such a manner that sodding or seeding can proceed with a minimum of additional soil preparation and tillage. Any irregularities in the surface resulting from topsoiling or other operations shall be corrected in order to prevent the formation of depressions or water
   d. Topsoil shall not be placed while the topsoil or subsoil is frozen or muddy condition, when the subsoil is excessively wet or in a condition that may otherwise be detrimental to proper grading and seedbed preparation.

VI. Alternative for Permanent Seeding - Instead of applying the full amounts of lime and commercial fertilizer, composted sludge and amendments may be applied as specified below:
   a. Composted Sludge Material for use as a soil conditioner for sites having disturbed areas over 5 acres shall be tested to prescribe amendments and for sites having disturbed areas under 5 acres shall conform to the following requirements:
      1. Composted sludge shall be supplied by, or originate from, a person or persons that are permitted (at the time of acquisition of the compost) by the Maryland Department of the Environment under COMAR 26.04.06.
      2. Composted sludge shall contain at least 1 percent nitrogen, 1.5 percent phosphorus, and 0.2 percent potassium and have a PH of 7.0 to 8.0. If compost does not meet these requirements, the appropriate prior to use.
      3. Composted sludge shall be applied at a rate of 1 ton/1,000 square feet.
   b. Composted sludge shall be amended with a potassium fertilizer applied at a rate of 41b/1,000 square feet, and 1/3 the normal lime application rate.

References: Guideline Specifications, Soil Preparation and Sodding, MD-VA Pub. #1 , Cooperative Extension Service, University of Maryland and Virginia Polytechnic Institutes. Revised 1973.

DUST CONTROL

Definition

Controlling dust blowing and movement on construction sites and roads.

Purpose

To prevent blowing and movement of dust from exposes soil surfaces, reduce on and off-site damage, health hazards, and improve traffic safety.

Conditions Where Practice Applies

This practice is applicable to areas subject to dust blowing and movements where on and off-site damage is likely without treatment.

Specifications

Temporary Methods

1. Mulches - See standards for vegetative stabilization with mulches only. Mulch should be crimped or tacked to prevent blowing.
2. Vegetative Cover - See standards for temporary vegetative cover.
3. Tillage - To roughen surface and bring clods to the surface. This is an emergency measure which should be used before soil blowing starts. Begin plowing on windward side of site. Chisel-type plows spaces about 12" apart, spring-toothed harrows, and similar plows are examples of equipment which may produce the desired effect.
4. Irrigation - This is generally done as an emergency treatment. Site is sprinkled with water until the surface is moist. Repeat as needed. A no time should the site be irrigated to the point that runoff begins to flow.
5. Barriers - Solid board fences, silt fences, burlap fences, straw bales, and similar material can be used to control air currents and soil blowing. Barriers placed at right angles to prevailing currents at intervals of about 10 times their height are effective in controlling soil blowing.
6. Calcium Chloride - Apply at rates that will keep surface moist. May need retreatment.

Permanent Methods

1. Permanent Vegetation - See standards for permanent vegetative cover, and permanent stabilization with sod. Existing trees or large shrubs may afford valuable protection if left in place.
2. Topsoiling - Covering with less erosive soil materials. See standards for topsoiling.
3. Stone - Cover surface with crushed stone or coarse gravel.

SEQUENCE OF CONSTRUCTION

CRESCENT PROPERTY - PHASE 1

(F 15-106 AND CONT. #24-4491-D)

SEQUENCE OF CONSTRUCTION (2015-08-07)

1. OBTAIN GRADING PERMIT. (1 DAY)
2. ARRANGE FOR AN ON-SITE PRE-CONSTRUCTION MEETING WITH THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR. (1 DAY)

PLEASE NOTE THAT WORK TO THE NORTH AND SOUTH OF THE BRIDGE NEAR CENTERLINE STATION 1+75 OF MERRIWEATHER DRIVE (FORMERLY ROAD 'A') CAN BE PERFORMED CONCURRENTLY. FOR ADDITIONAL SEQUENCING OF THE STREAM RESTORATION AND MITIGATION, SEE PLANS PROVIDED BY BIOHABITATS (SHEETS 85-105).

NORTH OF THE BRIDGE AT CENTERLINE STATION 1+75 (PHASE A)

REFER TO SHEET 17 FOR ITEMS 1 THROUGH 11

1. INSTALL THE STONE CONSTRUCTION ENTRANCE, SUPER SILT FENCE AND DIVERSION FENCE. (1 WEEK)
2. CONSTRUCT SEDIMENT TRAP A. (1 WEEK)
3. ONCE PERMISSION HAS BEEN OBTAINED FROM THE SEDIMENT CONTROL INSPECTOR, BEGIN MASS GRADING THE SITE. THE CONTRACTOR MUST IMPLEMENT DUST CONTROL MEASURES PER THE SPECIFICATIONS ON THIS SHEET. (2 WEEKS)
4. AS AREAS ARE PUT ON GRADE, INSTALL THE STORM DRAIN AS SHOWN ON THESE PLANS AND THE WATER AND SEWER MAINS AS SHOWN ON CONT. # 24-4491-D. IF AT ANY TIME PONDING SHOULD OCCUR PRIOR TO AN INLET BEING CONSTRUCTED, THE CONTRACTOR IS TO "CUT IN" A SWALE TO ALLOW THE RUNOFF TO DRAIN TO A PERIMETER DEVICE. THE CONTRACTOR MAY ALSO HAVE TO USE EARTHEN OR ASPHALT BERMS TO CONTINUE TO HAVE THE ROADWAYS DRAIN TO THE PERIMETER DEVICES THAT WERE INTENDED TO RECEIVE THAT RUNOFF. (1 MONTH)
5. BEGIN FINE GRADING THE AREAS (1 MONTH)
6. INSTALL THE CURB AND GUTTER, SIDEWALKS AND PAVING. (2 WEEKS)
7. ONCE ACCESS TO THE BRIDGE HAS BEEN ESTABLISHED, BEGIN CONSTRUCTION OF THE BRIDGE. (9 MONTHS)
8. ONCE THE EXISTING ROADS FROM BROKEN LAND PARKWAY ARE NO LONGER NEEDED, AND ALTERNATIVE MEANS OF INGRESS AND EGRESS FOR MERRIWEATHER PAVILION PATRONS HAVE BEEN ESTABLISHED, THEY ARE TO BE REMOVED AS SHOWN ON SHEET 17. (2 WEEKS)
9. FLUSH THE STORM DRAIN SYSTEM. (1 DAY)
10. AS AREAS ARE STABILIZED AND PERMISSION IS OBTAINED FROM THE SEDIMENT CONTROL INSPECTOR, THE SEDIMENT CONTROL DEVICES CAN BE REMOVED. THE CONTRACTOR IS TO IMMEDIATELY STABILIZE ANY AREAS THAT ARE DISTURBED AS A RESULT. (1 DAY)
11. WITH THE PERMISSION OF THE SEDIMENT CONTROL INSPECTOR, BEGIN CONSTRUCTION OF THE MICRO BIO-RETENTION FACILITIES. SUPER SILT FENCE DOWNHILL OF THE FACILITY MUST STAY IN PLACE UNTIL THE CONSTRUCTION IS COMPLETE. (1 WEEK)

SOUTH OF THE BRIDGE AT CENTERLINE STATION 1+75 (PHASE A)

REFER TO SHEET 18 FOR ITEMS 12 THROUGH 20

12. INSTALL THE STONE CONSTRUCTION ENTRANCE, SUPER SILT FENCE, TEMPORARY BITUMINOUS CURB, ASPHALT BERM AND CONSTRUCT THE CLEANWATER DIVERSION AS SHOWN ON SHEET 18. (1 WEEK)
13. CONSTRUCT TRAPS 1 THROUGH 3. CONSTRUCT THE E/SITH DIKES DRAINING TO THE TRAPS, BEGINNING AT THE DOWNSTREAM END AND WORKING UPHILL FROM THERE. THE STORM DRAIN RUNS RS-59 TO ES-47 AND RS-66 TO ES-65 HILL NEED TO BE INSTALLED AT THIS TIME. (2 WEEKS)
14. ONCE PERMISSION HAS BEEN OBTAINED FROM THE SEDIMENT CONTROL INSPECTOR, BEGIN MASS GRADING THE SITE. THE CONTRACTOR MUST IMPLEMENT DUST CONTROL MEASURES PER THE SPECIFICATIONS ON THIS SHEET. (2 WEEKS)
15. AS AREAS ARE PUT ON GRADE, INSTALL THE STORM DRAIN AS SHOWN ON THESE PLANS AND THE WATER AND SEWER MAINS AS SHOWN ON CONT. # 24-4491-D. IF AT ANY TIME PONDING SHOULD OCCUR PRIOR TO AN INLET BEING CONSTRUCTED, THE CONTRACTOR IS TO "CUT IN" A SWALE TO ALLOW THE RUNOFF TO DRAIN TO A PERIMETER DEVICE. THE CONTRACTOR MAY ALSO HAVE TO USE EARTHEN OR ASPHALT BERMS TO CONTINUE TO HAVE THE ROADWAYS DRAIN TO THE PERIMETER DEVICES THAT WERE INTENDED TO RECEIVE THAT RUNOFF. (1 MONTH)
16. INSTALL THE CLEANWATER DIVERSIONS, SUPER SILT FENCE AND THE 36" DIVERSION PIPE IN THE AREA OF ARCH SPAN #2 AS SHOWN ON SHEET 18.
17. BEGIN CONSTRUCTION OF ARCH SPAN #2. THE CONTRACTOR IS TO FOLLOW THE PLANS, DETAILS, NOTES AND SPECIFICATIONS PROVIDED ON SHEETS 42 THROUGH 51. (3 MONTHS)
18. ONCE ACCESS TO THE BRIDGE HAS BEEN ESTABLISHED, BEGIN CONSTRUCTION OF THE BRIDGE. (9 MONTHS)
19. ONCE THE EXISTING ROADS IN THE AREA ARE NO LONGER NEEDED, AND ALTERNATIVE MEANS OF INGRESS AND EGRESS FOR MERRIWEATHER PAVILION PATRONS HAS BEEN ACHIEVED, THEY ARE TO BE REMOVED AS SHOWN ON SHEET 10. (1 MONTH)
20. STABILIZE THE DISTURBED AREAS IN ACCORDANCE WITH THE TEMPORARY SEEDING SPECIFICATIONS ON THIS SHEET. (1 DAY)

SOUTH OF THE BRIDGE AT CENTERLINE STATION 1+75 (PHASE B)

REFER TO SHEET 19 FOR ITEMS 21 THROUGH 27

21. BEGIN FINE GRADING THE AREA. (1 MONTH)
22. INSTALL THE CURB AND GUTTER, SIDEWALKS AND PAVING. (2 WEEKS)
23. AS AREAS ARE STABILIZED AND PERMISSION IS OBTAINED FROM THE SEDIMENT CONTROL INSPECTOR, THE SEDIMENT CONTROL DEVICES CAN BE REMOVED. THE CONTRACTOR IS TO IMMEDIATELY STABILIZE ANY AREAS THAT ARE DISTURBED AS A RESULT. THE SUPER SILT FENCE BELOW THE MICRO BIO-RETENTION MUST REMAIN IN PLACE UNTIL THE COMPLETION OF THE FACILITY. (1 WEEK)
24. FLUSH THE STORM DRAIN SYSTEM. (1 DAY)
25. AS AREAS ARE STABILIZED AND PERMISSION IS OBTAINED FROM THE SEDIMENT CONTROL INSPECTOR, THE SEDIMENT CONTROL DEVICES CAN BE REMOVED. THE CONTRACTOR IS TO IMMEDIATELY STABILIZE ANY AREAS THAT ARE DISTURBED AS A RESULT. THIS WILL INCLUDE THE ABANDONMENT OF THE DIVERSION PIPES. THE CONTRATOR IS TO CUT BACK THE PIPE AT BOTH ENDS TO SOME REASONABLE POINT WITHIN THE FILL SLOPES AND CAP THE DOWNSTREAM END, FILL THE PIPE WITH FLOWABLE FILL, AND THEN CAP THE UPSTREAM END. MAKE REPAIRS TO THE SLOPE AND STABILIZE. WITH THE PERMISSION OF THE INSPECTOR, REMOVE THE SANDBAGS. (1 WEEK)
26. WITH THE PERMISSION OF THE SEDIMENT CONTROL INSPECTOR, BEGIN CONSTRUCTION OF THE MICRO BIO-RETENTION FACILITIES. SUPER SILT FENCE DOWNHILL OF THE FACILITY MUST STAY IN PLACE UNTIL THE CONSTRUCTION IS COMPLETE. (1 WEEK)
27. WITH THE PERMISSION OF THE SEDIMENT CONTROL INSPECTOR BEGIN CONSTRUCTION OF THE PLANTERS. (2 WEEKS)

ENGINEER'S CERTIFICATE

"I HEREBY 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 SOIL CONSERVATION DISTRICT."

ENGINEER'S SIGNATURE — DATE 6/9/16

DEVELOPER'S/BUILDER'S CERTIFICATE

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

SIGNATURE OF DEVELOPER/BUILDER — DATE 6/9/16

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

Chief, Bureau of Highways — Date 7/12/2016

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

Chief, Division of Land Development — Date 5-3-16

Chief, Development Engineering Division — Date 7.26.16

This Development Plan is approved for Soil Erosion and Sediment Control by the Howard Soil Conservation District.

Howard S.C.D. — Date 6/29/16

GLW GUTSCHICK LITTLE & WEBER, P.A.
CIVIL ENGINEERS, LAND SURVEYORS, LAND PLANNERS, LANDSCAPE ARCHITECTS
3909 NATIONAL DRIVE – SUITE 250 – BURTONSVILLE OFFICE PARK
BURTONSVILLE, MARYLAND 20866
TEL: 301-421-4024 BALT: 410-880-1820 DC/VA: 301-989-2524 FAX: 301-421-4186

L:\CADD\DRAWINGS\11071\PLANS BY GLW\Final\PHASE 1\11071_21-22_SC NOTES.dwg | DES. WSJ | DRN. WSJ | CHK. MJT

DATE	REVISION	BY	APP'R.

PREPARED FOR:
THE HOWARD HUGHES CORPORATION
10480 LITTLE PATUXENT PARKWAY
SUITE 400
COLUMBIA, MD 21044
ATTN: BOB JENKINS
410-964-5443

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE PLANS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 12975 EXPIRATION DATE: MAY 26, 2018

6/9/16

SEDIMENT CONTROL NOTES AND DETAILS

DOWNTOWN COLUMBIA
CRESCENT NEIGHBORHOOD
PARCELS B THRU H, NON-BULDABLE BULK PARCELS J THRU R, O.S. LOTS 1 THRU 8 AND MERRIWEATHER-SYMPHONY WOODS NEIGHBORHOOD O.S. LOT 1 AND NON-BUILDABLE BULK PARCEL A

ELECTION DISTRICT No. 5 — HOWARD COUNTY, MARYLAND

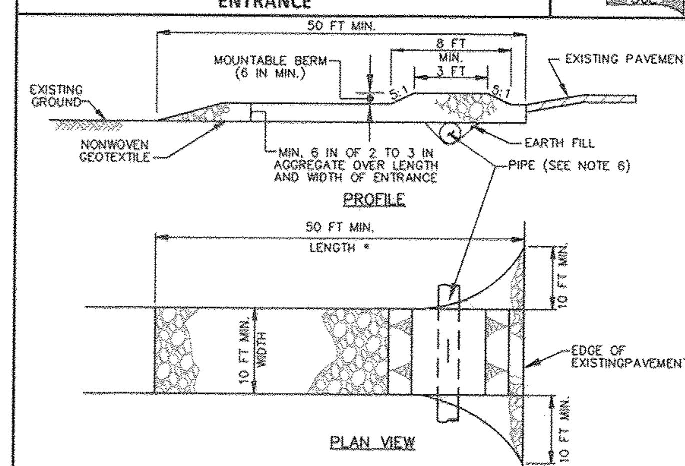
SCALE	ZONING	G. L. W. FILE No.
AS SHOWN	NT	11071
DATE	TAX MAP - GRID	SHEET
JUNE, 2016	36 - 01	21 OF 102

© GLW 2014

F 15-106

DETAIL B-1 STABILIZED CONSTRUCTION ENTRANCE

STANDARD SYMBOL: SCE



CONSTRUCTION SPECIFICATIONS

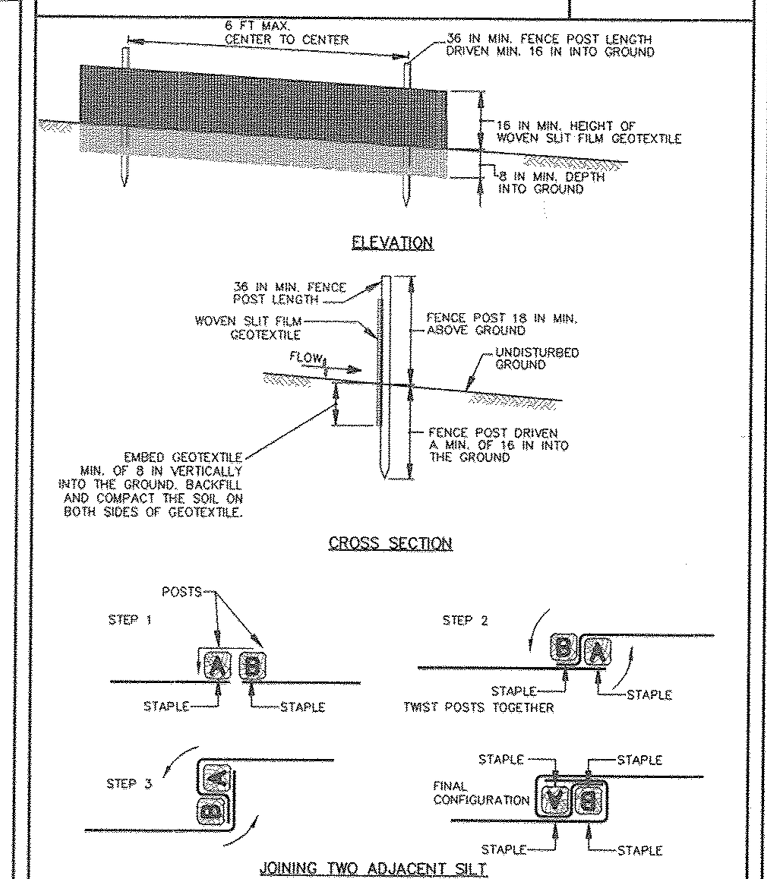
1. PLACE STABILIZED CONSTRUCTION ENTRANCE IN ACCORDANCE WITH THE APPROVED PLAN. VEHICLES MUST TRAVEL OVER THE ENTIRE LENGTH OF THE SCE. USE MINIMUM LENGTH OF 50 FEET (*30 FEET FOR SINGLE RESIDENCE LOT). USE MINIMUM WIDTH OF 10 FEET. FLARE SCE 10 FEET MINIMUM AT THE EXISTING ROAD TO PROVIDE A TURNING RADIUS.
2. PIPE ALL SURFACE WATER FLOWING TO OR DIVERTED TOWARD THE SCE UNDER THE ENTRANCE, MAINTAINING POSITIVE DRAINAGE. PROTECT PIPE INSTALLED THROUGH THE SCE WITH A MOUNTABLE BERM WITH 5:1 SLOPES AND A MINIMUM OF 12 INCHES OF STONE OVER THE PIPE. PROVIDE PIPE AS SPECIFIED ON APPROVED PLAN. WHEN THE SCE IS LOCATED AT A HIGH SPOT AND HAS NO DRAINAGE TO CONVEY, A PIPE IS NOT NECESSARY. A MOUNTABLE BERM IS REQUIRED WHEN SCE IS NOT LOCATED AT A HIGH SPOT.
3. PREPARE SUBGRADE AND PLACE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS.
4. PLACE CRUSHED AGGREGATE (2 TO 3 INCHES IN SIZE) OR EQUIVALENT RECYCLED CONCRETE (WITHOUT REBAR) AT LEAST 6 INCHES DEEP OVER THE LENGTH AND WIDTH OF THE SCE.
5. MAINTAIN ENTRANCE IN A CONDITION THAT MINIMIZES TRACKING OF SEDIMENT. ADD STONE OR MAKE OTHER REPAIRS AS CONDITIONS DEMAND TO MAINTAIN CLEAN SURFACE, MOUNTABLE BERM, AND SPECIFIED DIMENSIONS. IMMEDIATELY REMOVE STONE AND/OR SEDIMENT SPILLED, DROPPED, OR TRACKED ONTO ADJACENT ROADWAY BY VACUUMING, SCRAPING, AND/OR SWEEPING. WASHING ROADWAY TO REMOVE MUD TRACKED ONTO PAVEMENT IS NOT ACCEPTABLE UNLESS WASH WATER IS DIRECTED TO AN APPROVED SEDIMENT CONTROL PRACTICE.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

DETAIL E-1 SILT FENCE

STANDARD SYMBOL: SF



1 OF 2

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

DETAIL E-1 SILT FENCE

STANDARD SYMBOL: SF

CONSTRUCTION SPECIFICATIONS

1. USE WOOD POSTS 1¾ X 1¾ ± 1/16 INCH (MINIMUM) SQUARE CUT OF SOUND QUALITY HARDWOOD. AS AN ALTERNATIVE TO WOODEN POST USE STANDARD "T" OR "U" SECTION STEEL POSTS WEIGHING NOT LESS THAN 1 POUND PER LINEAR FOOT.
2. USE 36 INCH MINIMUM POSTS DRIVEN 16 INCH MINIMUM INTO GROUND NO MORE THAN 6 FEET APART.
3. USE WOVEN SLIT FILM GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS AND FASTEN GEOTEXTILE SECURELY TO UPSLOPE SIDE OF FENCE POSTS WITH WIRE TIES OR STAPLES AT TOP AND MID-SECTION.
4. PROVIDE MANUFACTURER CERTIFICATION TO THE AUTHORIZED REPRESENTATIVE OF THE INSPECTION/ENFORCEMENT AUTHORITY SHOWING THAT THE GEOTEXTILE USED MEETS THE REQUIREMENTS IN SECTION H-1 MATERIALS.
5. EMBED GEOTEXTILE A MINIMUM OF 8 INCHES VERTICALLY INTO THE GROUND. BACKFILL AND COMPACT THE SOIL ON BOTH SIDES OF FABRIC.
6. WHERE TWO SECTIONS OF GEOTEXTILE ADJOIN: OVERLAP, TWIST, AND STAPLE TO POST IN ACCORDANCE WITH THIS DETAIL.
7. EXTEND BOTH ENDS OF THE SILT FENCE A MINIMUM OF FIVE HORIZONTAL FEET UPSLOPE AT 45 DEGREES TO THE MAIN FENCE ALIGNMENT TO PREVENT RUNOFF FROM GOING AROUND THE ENDS OF THE SILT FENCE.
8. REMOVE ACCUMULATED SEDIMENT AND DEBRIS WHEN BULGES DEVELOP IN SILT FENCE OR WHEN SEDIMENT REACHES 25% OF FENCE HEIGHT. REPLACE GEOTEXTILE IF TORN. IF UNDERMINING OCCURS, REINSTALL FENCE.

2 OF 2

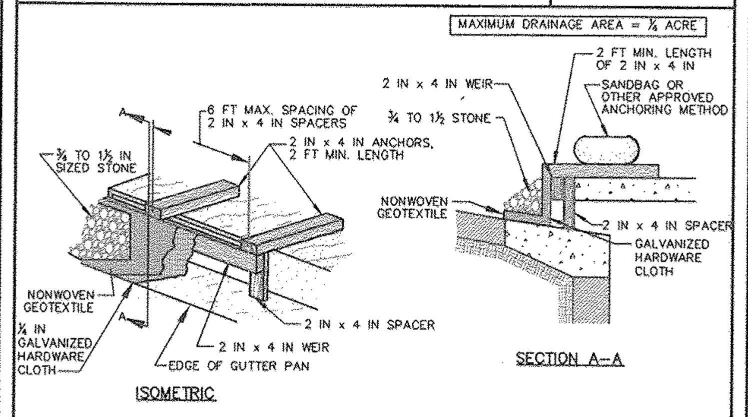
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

DETAIL E-9-3 CURB INLET PROTECTION

STANDARD SYMBOL: CIP

MAXIMUM DRAINAGE AREA = ¼ ACRE



CONSTRUCTION SPECIFICATIONS

1. USE NOMINAL 2 INCH x 4 INCH LUMBER
2. USE NONWOVEN GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS.
3. NAIL THE 2x4 WEIR TO 9 INCH LONG VERTICAL SPACERS (MAXIMUM 6 FEET APART).
4. ATTACH A CONTINUOUS PIECE OF ¼ INCH GALVANIZED HARDWARE CLOTH, WITH A MINIMUM WIDTH OF 30 INCHES AND A MINIMUM LENGTH OF 4 FEET LONGER THAN THE THROAT OPENING, TO THE 2x4 WEIR, EXTENDING IT 2 FEET BEYOND THROAT ON EACH SIDE.
5. PLACE A CONTINUOUS PIECE OF NONWOVEN GEOTEXTILE OF THE SAME DIMENSIONS AS THE HARDWARE CLOTH OVER THE HARDWARE CLOTH AND SECURELY ATTACH TO THE 2x4 WEIR.
6. PLACE THE ASSEMBLY AGAINST THE INLET THROAT AND NAIL TO 2x4 ANCHORS (MINIMUM 2 FEET LENGTH). EXTEND THE ANCHORS ACROSS THE INLET TOP AND HOLD IN PLACE BY SANDBAGS OR OTHER APPROVED ANCHORING METHOD.
7. INSTALL END SPACERS A MINIMUM OF 1 FOOT BEYOND THE ENDS OF THE THROAT OPENING.
8. FORM THE HARDWARE CLOTH AND THE GEOTEXTILE TO THE CONCRETE GUTTER AND FACE OF CURB TO SPAN THE INLET OPENING. COVER THE HARDWARE CLOTH AND GEOTEXTILE WITH CLEAN ¾ TO 1½ INCH STONE OR EQUIVALENT RECYCLED CONCRETE.
9. AT NON-SUMP LOCATIONS, INSTALL A TEMPORARY SANDBAG OR ASPHALT BERM TO PREVENT INLET BYPASS.
10. STORM DRAIN INLET PROTECTION REQUIRES FREQUENT MAINTENANCE. REMOVE ACCUMULATED SEDIMENT AFTER EACH RAIN EVENT TO MAINTAIN FUNCTION AND AVOID PREMATURE CLOGGING. IF INLET PROTECTION DOES NOT COMPLETELY DRAIN WITHIN 24 HOURS AFTER A STORM EVENT, IT IS CLOGGED. WHEN THIS OCCURS, REMOVE ACCUMULATED SEDIMENT AND CLEAN, OR REPLACE GEOTEXTILE AND STONE.

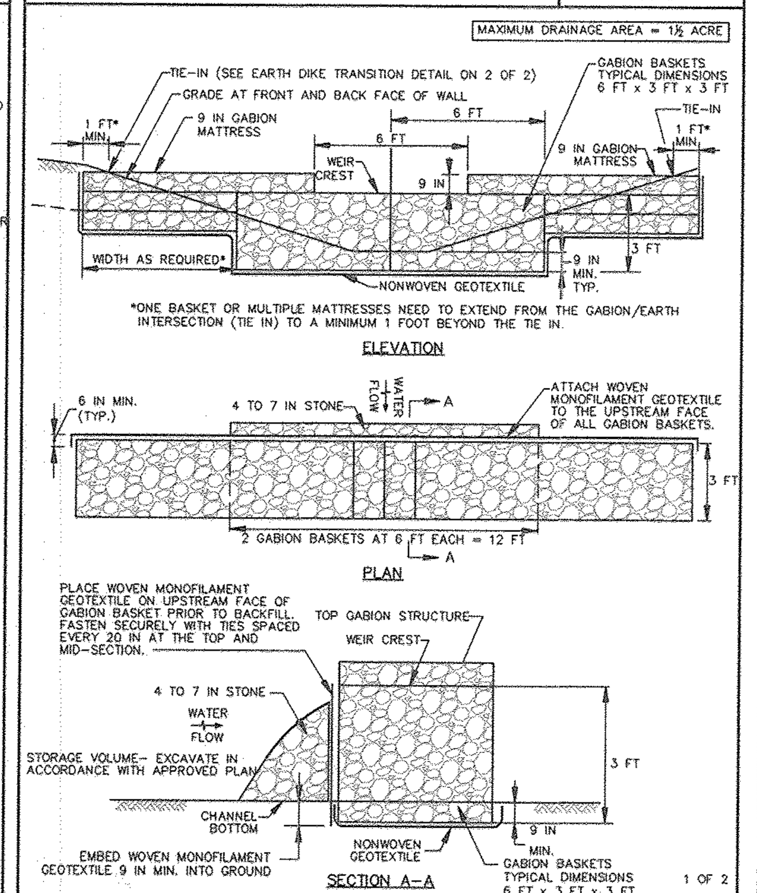
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

DETAIL E-8 TEMPORARY GABION OUTLET STRUCTURE

STANDARD SYMBOL: TGOS

MAXIMUM DRAINAGE AREA = 1½ ACRE



1 OF 2

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

MGWC 1.4: DIVERSION PIPE

DESCRIPTION

The work should consist of installing flow diversion pipes in combination with sandbag or stone diversions when construction activities occur within the stream channel.

EFFECTIVE USES & LIMITATIONS

Diversion pipes with an insufficient flow capacity can cause the channel diversion to fail thereby resulting in severe erosion of the disturbed channel section under construction. Therefore, in-channel construction activities should occur only during periods of low flow.

MATERIAL SPECIFICATIONS

Materials for stream diversions should meet the following requirements:

- *Riprap*: Stone should be washed and have a minimum diameter of 6 inches (15 centimeters).
- *Sandbags*: Sandbags should consist of materials which are resistant to ultra-violet radiation, tearing, and puncture and should be woven tightly enough to prevent leakage of fill material (i.e., sand, fine gravel, etc.).
- *Sheeting*: Sheeting should consist of polyethylene or other material which is impervious and resistant to puncture and tearing.

INSTALLATION GUIDELINES

All erosion and sediment control devices including mandatory dewatering basins should be installed as the first order of business according to a plan approved by the WMA or local authority. Installation should proceed from upstream to downstream during low flow conditions. If necessary, silt fence or straw bales should be installed around the perimeter of the work area.

Diversion pipes with sandbag or stone barriers should be completed as follows (refer to Detail 1.4):

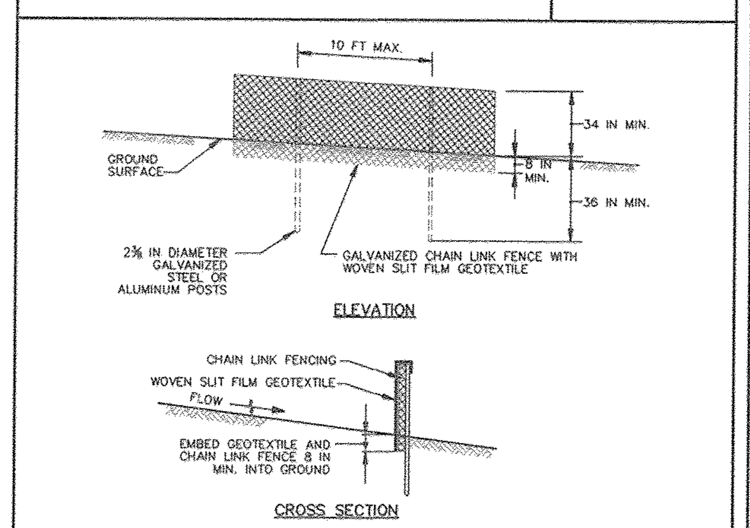
1. Sandbag/stone barriers should be sized and installed as detailed in MGWC 1.5: Sandbag/Stone Diversion. The materials should be sized to withstand baseflow velocities.
2. All excavated material should be deposited and stabilized in an approved area outside the 100-year floodplain unless otherwise authorized by the WMA.
3. Sediment-laden water from the construction area should be pumped to a dewatering basin.
4. The diversion pipe should have a minimum capacity sufficient to convey the 2-year flow for projects with a duration of two weeks or greater. For projects of shorter duration, the capacity of the pipe can be reduced accordingly.
5. If necessary, silt fence or straw bales should be installed around the perimeter of the work area.
6. Sediment control devices are to remain in place until all disturbed areas are stabilized and the inspecting authority approves their removal.

TEMPORARY INSTREAM CONSTRUCTION MEASURES — *MARYLAND DEPARTMENT OF THE ENVIRONMENT WATERWAY CONSTRUCTION GUIDELINES* — *REVISED NOVEMBER 2000*

PAGE 1.4 - 1

DETAIL E-3 SUPER SILT FENCE

STANDARD SYMBOL: SSF



CONSTRUCTION SPECIFICATIONS

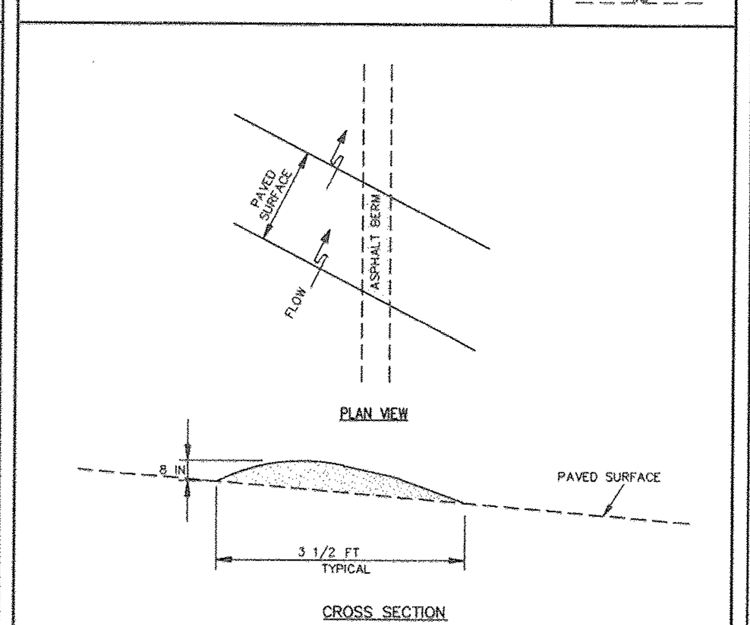
1. INSTALL 2⅜ INCH DIAMETER GALVANIZED STEEL POSTS OF 0.095 INCH WALL THICKNESS AND SIX FOOT LENGTH SPACED NO FURTHER THAN 10 FEET APART. DRIVE THE POSTS A MINIMUM OF 36 INCHES INTO THE GROUND.
2. FASTEN 9 GAUGE OR HEAVIER GALVANIZED CHAIN LINK FENCE (2⅜ INCH MAXIMUM OPENING) 42 INCHES IN HEIGHT SECURELY TO THE FENCE POSTS WITH WIRE TIES OR HUG RINGS.
3. FASTEN WOVEN SLIT FILM GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS, SECURELY TO THE UPSLOPE SIDE OF CHAIN LINK FENCE WITH TIES SPACED EVERY 24 INCHES AT THE TOP AND MID SECTION. EMBED GEOTEXTILE AND CHAIN LINK FENCE A MINIMUM OF 8 INCHES INTO THE GROUND.
4. WHERE ENDS OF THE GEOTEXTILE COME TOGETHER, THE ENDS SHALL BE OVERLAPPED BY 6 INCHES, FOLDED, AND STAPLED TO PREVENT SEDIMENT BY PASS.
5. EXTEND BOTH ENDS OF THE SUPER SILT FENCE A MINIMUM OF FIVE HORIZONTAL FEET UPSLOPE AT 45 DEGREES TO THE MAIN FENCE ALIGNMENT TO PREVENT RUNOFF FROM GOING AROUND THE ENDS OF THE SUPER SILT FENCE.
6. PROVIDE MANUFACTURER CERTIFICATION TO THE INSPECTION/ENFORCEMENT AUTHORITY SHOWING THAT GEOTEXTILE USED MEETS THE REQUIREMENTS IN SECTION H-1 MATERIALS.
7. REMOVE ACCUMULATED SEDIMENT AND DEBRIS WHEN BULGES DEVELOP IN FENCE OR WHEN SEDIMENT REACHES 25% OF FENCE HEIGHT. REPLACE GEOTEXTILE IF TORN. IF UNDERMINING OCCURS, REINSTALL CHAIN LINK FENCING AND GEOTEXTILE.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

DETAIL C-5 TEMPORARY ASPHALT BERM

STANDARD SYMBOL: TAB



CONSTRUCTION SPECIFICATIONS

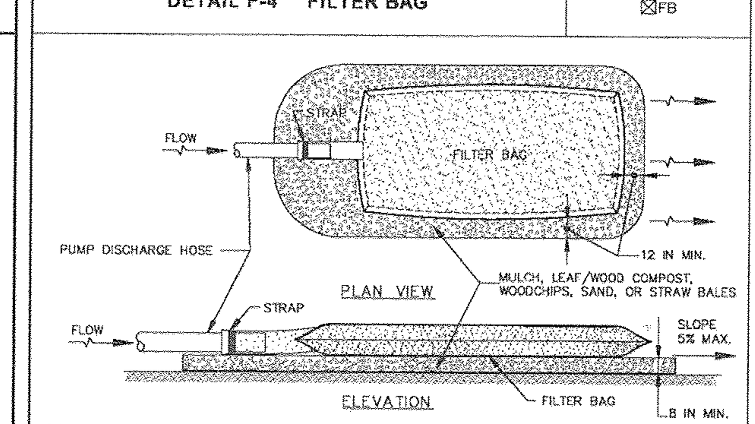
1. CONSTRUCT BERM ON AN UNINTERRUPTED, CONTINUOUS GRADE.
2. INSTALL BERM TO CONFORM TO CROSS SECTION DIMENSIONS OF A UNIFORM HEIGHT OF 8 INCHES MINIMUM AND APPROXIMATE WIDTH OF 3½ FEET.
3. PROVIDE OUTLET PROTECTION AS REQUIRED ON PLAN.
4. COMPACT ASPHALT BERM.
5. REPAIR DAMAGED ASPHALT. REMOVE ACCUMULATED SEDIMENT AND DEBRIS. MAINTAIN POSITIVE DRAINAGE.
6. UPON REMOVAL OF ASPHALT BERM, RETURN TO ORIGINAL CONDITIONS OR AS SPECIFIED ON APPROVED PLAN.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

DETAIL F-4 FILTER BAG

STANDARD SYMBOL: FB



CONSTRUCTION SPECIFICATIONS

1. TIGHTLY SEAL SLEEVE AROUND THE PUMP DISCHARGE HOSE WITH A STRAP OR SIMILAR DEVICE.
2. PLACE FILTER BAG ON SUITABLE BASE (E.G., MULCH, LEAF/WOOD COMPOST, WOODCHIPS, SAND, OR STRAW BALES) LOCATED ON A LEVEL OR 5% MAXIMUM SLOPING SURFACE. DISCHARGE TO A STABILIZED AREA. EXTEND BASE A MINIMUM OF 12 INCHES FROM EDGES OF BAG.
3. CONTROL PUMPING RATE TO PREVENT EXCESSIVE PRESSURE WITHIN THE FILTER BAG IN ACCORDANCE WITH THE MANUFACTURER RECOMMENDATIONS. AS THE BAG FILLS WITH SEDIMENT, REDUCE PUMPING RATE.
4. REMOVE AND PROPERLY DISPOSE OF FILTER BAG UPON COMPLETION OF PUMPING OPERATIONS OR AFTER BAG HAS REACHED CAPACITY, WHICHEVER OCCURS FIRST. SPREAD THE DEWATERED SEDIMENT FROM THE BAG IN AN APPROVED UPLAND AREA AND STABILIZE WITH SEED AND MULCH BY THE END OF THE WORK DAY. RESTORE THE SURFACE AREA BENEATH THE BAG TO ORIGINAL CONDITION UPON REMOVAL OF THE DEVICE.
5. USE NONWOVEN GEOTEXTILE WITH DOUBLE STITCHED SEAMS USING HIGH STRENGTH THREAD. SIZE SLEEVE TO ACCOMMODATE A MAXIMUM 4 INCH DIAMETER PUMP DISCHARGE HOSE. THE BAG MUST BE MANUFACTURED FROM A NONWOVEN GEOTEXTILE THAT MEETS OR EXCEEDS MINIMUM AVERAGE ROLL VALUES (MARV) FOR THE FOLLOWING:

GRAB TENSILE	250 LB	ASTM D-4632
PUNCTURE	150 LB	ASTM D-4833
FLOW RATE	70 GAL/MIN/FT²	ASTM D-4491
PERMITTIVITY (SEC⁻¹)	1.2 SEC⁻¹	ASTM D-4491
UV RESISTANCE	70% STRENGTH @ 500 HOURS	ASTM D-4355
APPARENT OPENING SIZE (AOS)	0.15-0.18 MM	ASTM D-4751
SEAM STRENGTH	90%	ASTM D-4632

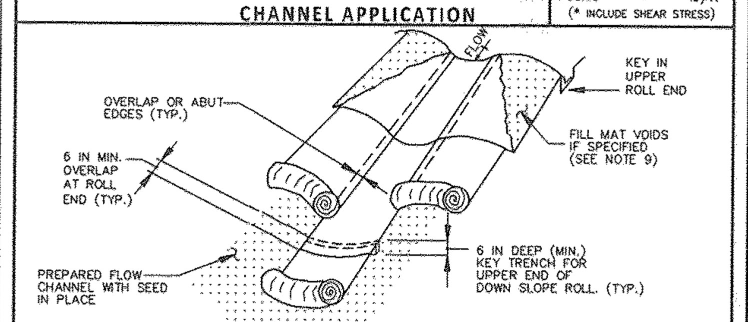
8. REPLACE FILTER BAG IF BAG CLOGS OR HAS RIPS, TEARS, OR PUNCTURES. DURING OPERATION KEEP CONNECTION BETWEEN PUMP HOSE AND FILTER BAG WATER TIGHT. REPLACE BEDDING IF IT BECOMES DISPLACED.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

DETAIL B-4-6-C PERMANENT SOIL STABILIZATION MATTING CHANNEL APPLICATION

STANDARD SYMBOL: PSSMC - * lb/ft² (* INCLUDE SHEAR STRESS)



CONSTRUCTION SPECIFICATIONS

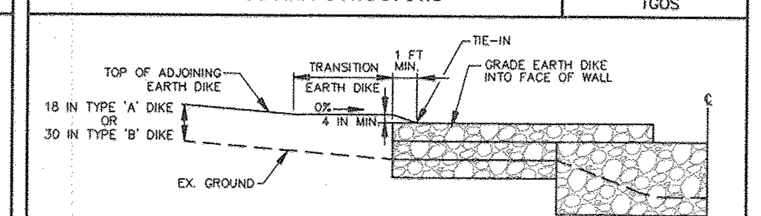
1. USE MATTING THAT HAS A DESIGN VALUE FOR SHEAR STRESS EQUAL TO OR HIGHER THAN THE SHEAR STRESS DESIGNATED ON APPROVED PLANS.
2. USE PERMANENT SOIL STABILIZATION MATTING MADE OF OPEN WEAVE SYNTHETIC, NON-DEGRADABLE FIBERS OR ELEMENTS OF UNIFORM THICKNESS AND DISTRIBUTION THROUGHOUT. CHEMICALS USED IN THE MAT MUST BE NON-LEACHING AND NON-TOXIC TO VEGETATION AND SEED GERMINATION AND NON-INJURIOUS TO THE SKIN. IF PRESENT, NETTING MUST BE EXTRUDED PLASTIC WITH A MAXIMUM MESH OPENING OF 2x2 INCHES AND SUFFICIENTLY BONDED OR SEWN ON 2 INCH CENTERS ALONG LONGITUDINAL AXIS OF THE MATERIAL TO PREVENT SEPARATION OF THE NET FROM THE PARENT MATERIAL.
3. SECURE MATTING USING STEEL STAPLES OR WOOD STAKES. STAPLES MUST BE "U" OR "T" SHAPED STEEL WIRE HAVING A MINIMUM GAUGE OF NO. 11 AND NO. 8 RESPECTIVELY. "U" SHAPED STAPLES MUST AVERAGE 1 TO 1 ½ INCHES WIDE AND BE A MINIMUM OF 6 INCHES LONG. "T" SHAPED STAPLES MUST HAVE A MINIMUM 8 INCH MAIN LEG, A MINIMUM 1 INCH SECONDARY LEG, AND MINIMUM 4 INCH HEAD. WOOD STAKES MUST BE ROUGH-SAWN HARDWOOD, 12 TO 24 INCHES IN LENGTH, 1x3 INCH IN CROSS SECTION, AND WEDGE SHAPE AT THE BOTTOM.
4. PERFORM FINAL GRADING, TOPSOIL APPLICATION, SEEDBED PREPARATION, AND PERMANENT SEEDING IN ACCORDANCE WITH SPECIFICATIONS. PLACE MATTING WITHIN 48 HOURS OF COMPLETING SEEDING OPERATIONS, UNLESS END OF WORKDAY STABILIZATION IS SPECIFIED ON THE APPROVED EROSION AND SEDIMENT CONTROL PLAN.
5. UNROLL MATTING IN DIRECTION OF WATER FLOW, CENTERING THE FIRST ROLL ON THE CHANNEL CENTER LINE. WORK FROM CENTER OF CHANNEL OUTWARD WHEN PLACING ROLLS. LAY MATTING SMOOTHLY AND FIRMLY UPON THE SEEDED SURFACE. AVOID STRETCHING THE MATTING.
6. OVERLAP OR ABUT EDGES OF MATTING ROLLS PER MANUFACTURER RECOMMENDATIONS. OVERLAP ROLL ENDS BY 6 INCHES (MINIMUM), WITH THE UPSTREAM MAT OVERLAPPING ON TOP OF THE NEXT DOWNSTREAM MAT.
7. KEY IN THE TOP OF SLOPE END OF MAT 6 INCHES (MINIMUM) BY DIGGING A TRENCH, PLACING THE MATTING ROLL END IN THE TRENCH, STAPLING THE MAT IN PLACE, REPLACING THE EXCAVATED MATERIAL, AND TAMPING TO SECURE THE MAT END IN THE KEY.
8. STAPLE/STAKE MAT IN A STAGGERED PATTERN ON 4 FOOT (MAXIMUM) CENTERS THROUGHOUT AND 2 FOOT (MAXIMUM) CENTERS ALONG SEAMS, JOINTS, AND ROLL ENDS.
9. IF SPECIFIED BY THE DESIGNER OR MANUFACTURER AND DEPENDING ON THE TYPE OF MAT BEING INSTALLED, ONCE THE MATTING IS KEYED AND STAPLED IN PLACE, FILL THE MAT VOIDS WITH TOP SOIL OR GRANULAR MATERIAL AND LIGHTLY COMPACT OR ROLL TO MAXIMIZE SOIL/MAT CONTACT WITHOUT CRUSHING MAT.
10. ESTABLISH AND MAINTAIN VEGETATION SO THAT REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT ARE CONTINUOUSLY MET IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

DETAIL E-8 TEMPORARY GABION OUTLET STRUCTURE

STANDARD SYMBOL: TGOS



NOTES:

1. PROVIDE TRANSITION LENGTH AND HEIGHT AS SPECIFIED ON PLAN. HEIGHT OF TRANSITION EARTH DIKE MUST EXCEED 4 INCH MINIMUM FREEBOARD ABOVE TOP OF GABION AND EXTEND AT THIS ELEVATION UNTIL IT INTERCEPTS THE TOP OF ADJOINING EARTH DIKE.
2. PROVIDE POSITIVE DRAINAGE ALONG EARTH DIKE TO GABION OUTLET STRUCTURE.
3. COMPACT FILL.
4. SHAPE EARTH DIKE TO LINE, GRADE, AND CROSS SECTION AS SPECIFIED ON PLAN. BANK PROJECTIONS OR IRREGULARITIES ARE NOT ALLOWED.

CONSTRUCTION SPECIFICATIONS

1. PROVIDE STORAGE VOLUME AS SPECIFIED ON APPROVED PLANS.
2. USE BASKETS MADE OF 11 GAUGE WIRE OR HEAVIER.
3. USE NONWOVEN AND WOVEN MONOFILAMENT GEOTEXTILES AS SPECIFIED IN SECTION H-1 MATERIALS.
4. INSTALL GABIONS IN ACCORDANCE WITH MANUFACTURER RECOMMENDATIONS.
5. EMBED THE GABION OUTLET STRUCTURE INTO THE SOIL A MINIMUM OF 9 INCHES. PROVIDE NONWOVEN GEOTEXTILE UNDER ALL GABIONS.
6. FILL GABION BASKETS WITH CLEAN 4 TO 7 INCH STONE OR EQUIVALENT RECYCLED CONCRETE WITHOUT REBAR OR WIRE MESH.
7. MAKE THE WEIR CREST OF THE GABION OUTLET STRUCTURE 9 INCHES LOWER THAN THE TOP OF THE ADJACENT GABIONS.
8. PROVIDE A MINIMUM WEIR CREST OF 6 FEET.
9. ATTACH WOVEN MONOFILAMENT GEOTEXTILE TO THE UPSTREAM FACE OF GABION BASKETS AND COVER WITH 4 TO 7 INCH STONE.
10. REMOVE SEDIMENT WHEN IT HAS ACCUMULATED TO WITHIN 12 INCHES OF THE WEIR CREST. REPLACE GEOTEXTILE AND STONE FACING WHEN STRUCTURE CEASES TO FUNCTION. MAINTAIN LINE, GRADE, AND CROSS SECTION.
11. UPON REMOVAL OF GABION OUTLET STRUCTURE, GRADE AREA FLUSH WITH EXISTING GROUND. WITHIN 24 HOURS STABILIZE DISTURBED AREA WITH TOPSOIL, SEED, AND MULCH, OR AS SPECIFIED ON APPROVED PLAN.

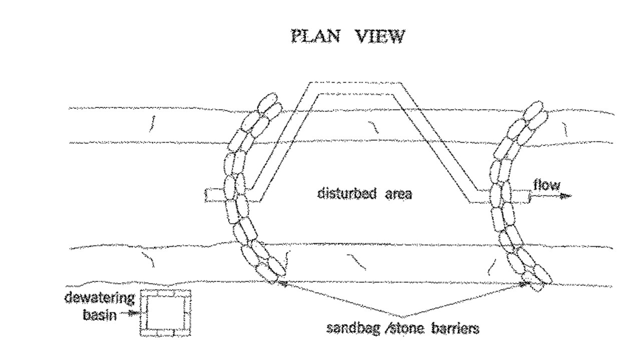
2 OF 2

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

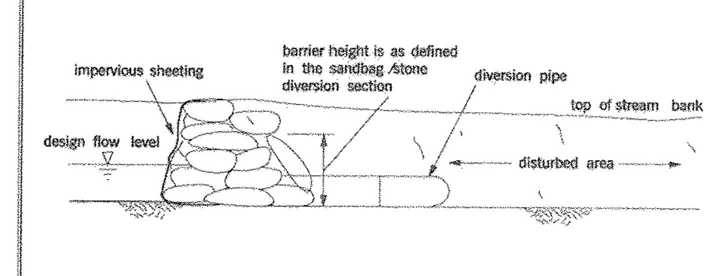
U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

Maryland's Guidelines To Waterway Construction
DETAIL 1.4: DIVERSION PIPE

PLAN VIEW



LONGITUDINAL SECTION VIEW



TEMPORARY INSTREAM CONSTRUCTION MEASURES	REVISED NOVEMBER 2000 PAGE 1.4 - 2	MARYLAND DEPARTMENT OF THE ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

ENGINEER'S CERTIFICATE

"I HEREBY 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 SOIL CONSERVATION DISTRICT."

[signature] 6/9/16
ENGINEER'S SIGNATURE — DATE

DEVELOPER'S/BUILDER'S CERTIFICATE

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

Robert Jenkins 6/9/16
SIGNATURE OF DEVELOPER/BUILDER — DATE

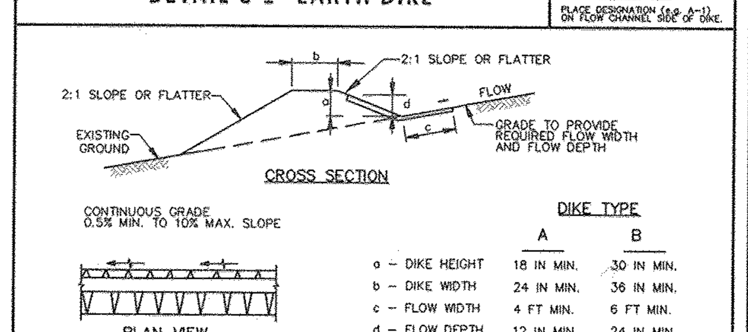
APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
[signature] 7/12/2016
Chief, Bureau of Highways — Date

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
[signature] 8-3-16
Chief, Division of Land Development — Date
[signature] 7-26-16
Chief, Development Engineering Division — Date

This Development Plan is approved for Soil Erosion and Sediment Control by the Howard Soil Conservation District.
John K Robertson 6/29/16
Howard S.C.D. — Date

DETAIL C-1 EARTH DIKE

STANDARD SYMBOL: A-1 (PLACE DESIGNATION (e.g. A-1) ON FLOW CHANNEL SIDE OF DIKE.)



DIKE TYPE

	A	B
a - DIKE HEIGHT	18 IN MIN.	30 IN MIN.
b - DIKE WIDTH	24 IN MIN.	36 IN MIN.
c - FLOW WIDTH	4 FT MIN.	6 FT MIN.
d - FLOW DEPTH	12 IN MIN.	24 IN MIN.

FLOW CHANNEL STABILIZATION

- A-1 — SEED WITH STRAW MULCH AND TACK. (NOT ALLOWED FOR CLEAR WATER DIVERSION.)
- A-2/B-2 — SEED WITH SOIL STABILIZATION MATTING OR LINE WITH SOD.
- A-3/B-3 — 4 TO 7 INCH STONE OR EQUIVALENT RECYCLED CONCRETE PRESSED INTO SOIL A MINIMUM OF 7 INCHES AND FLUSH WITH GROUND.

CONSTRUCTION SPECIFICATIONS

1. REMOVE AND DISPOSE OF ALL TREES, BRUSH, STUMPS, OBSTRUCTIONS, AND OTHER OBJECTIONABLE MATERIAL SO AS NOT TO INTERFERE WITH PROPER FUNCTION OF EARTHDIKE.
2. EXCAVATE OR SHAPE EARTH DIKE TO LINE, GRADE, AND CROSS SECTION AS SPECIFIED. BANK PROJECTIONS OR OTHER IRREGULARITIES ARE NOT ALLOWED.
3. COMPACT FILL.
4. CONSTRUCT FLOW CHANNEL ON AN UNINTERRUPTED, CONTINUOUS GRADE, ADJUSTING THE LOCATION DUE TO FIELD CONDITIONS AS NECESSARY TO MAINTAIN POSITIVE DRAINAGE.
5. PROVIDE OUTLET PROTECTION AS REQUIRED ON APPROVED PLAN.
6. STABILIZE EARTH DIKE WITHIN THREE DAYS OF INSTALLATION. STABILIZE FLOW CHANNEL FOR CLEAR WATER DIVERSION WITHIN 24 HOURS OF INSTALLATION.
7. MAINTAIN LINE, GRADE, AND CROSS SECTION. REMOVE ACCUMULATED SEDIMENT AND DEBRIS, AND MAINTAIN POSITIVE DRAINAGE. KEEP EARTH DIKE AND POINT OF DISCHARGE FREE OF EROSION, AND CONTINUOUSLY MEET REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.
8. UPON REMOVAL OF EARTH DIKE, GRADE AREA FLUSH WITH EXISTING GROUND. WITHIN 24 HOURS OF REMOVAL STABILIZE DISTURBED AREA WITH TOPSOIL, SEED, AND MULCH, OR AS SPECIFIED ON APPROVED PLAN.

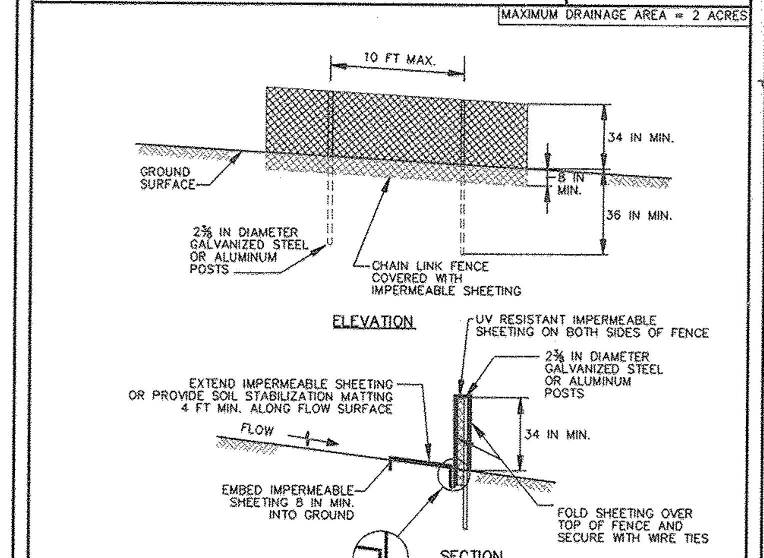
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

DETAIL C-9 DIVERSION FENCE

STANDARD SYMBOL: DF

MAXIMUM DRAINAGE AREA = 2 ACRES



CONSTRUCTION SPECIFICATIONS

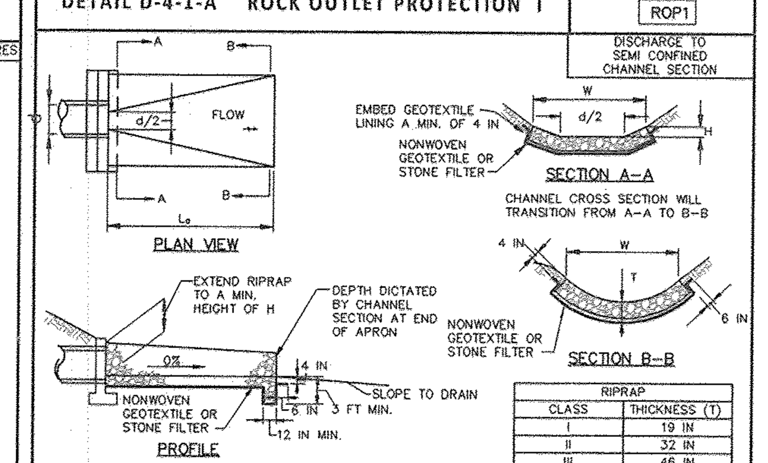
1. USE 42 INCH HIGH, 9 GAUGE OR THICKER CHAIN LINK FENCING (2⅜ INCH MAXIMUM OPENING).
2. USE 2⅜ INCH DIAMETER GALVANIZED STEEL POSTS OF 0.095 INCH WALL THICKNESS AND SIX FOOT LENGTH SPACED NO FURTHER THAN 10 FEET APART. THE POSTS DO NOT NEED TO BE SET IN CONCRETE.
3. FASTEN CHAIN LINK FENCE SECURELY TO THE FENCE POSTS WITH WIRE TIES.
4. SECURE 10 MIL OR THICKER UV RESISTANT, IMPERMEABLE SHEETING TO CHAIN LINK FENCE WITH TIES SPACED EVERY 24 INCHES AT TOP, MID SECTION, AND BELOW GROUND SURFACE.
5. EXTEND SHEETING A MINIMUM OF 4 FEET ALONG FLOW SURFACE AND EMBED END A MINIMUM OF 8 INCHES INTO GROUND. SOIL STABILIZATION MATTING MAY BE USED IN LIEU OF IMPERMEABLE SHEETING ALONG FLOW SURFACE.
6. WHEN TWO SECTIONS OF SHEETING ADJOIN EACH OTHER, OVERLAP BY 6 INCHES AND FOLD WITH SEAM FACING DOWNGRADE.
7. KEEP FLOW SURFACE ALONG DIVERSION FENCE AND POINT OF DISCHARGE FREE OF EROSION. REMOVE ACCUMULATED SEDIMENT AND DEBRIS. MAINTAIN POSITIVE DRAINAGE. REPLACE IMPERMEABLE SHEETING IF TORN. IF UNDERMINING OCCURS, REINSTALL FENCE.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

DETAIL D-4-1-A ROCK OUTLET PROTECTION I

STANDARD SYMBOL: ROP1 — DISCHARGE TO SEMI CONFINED CHANNEL SECTION



RIPRAP	
CLASS	THICKNESS (T)
I	19 IN
II	32 IN
III	46 IN

CONSTRUCTION SPECIFICATIONS

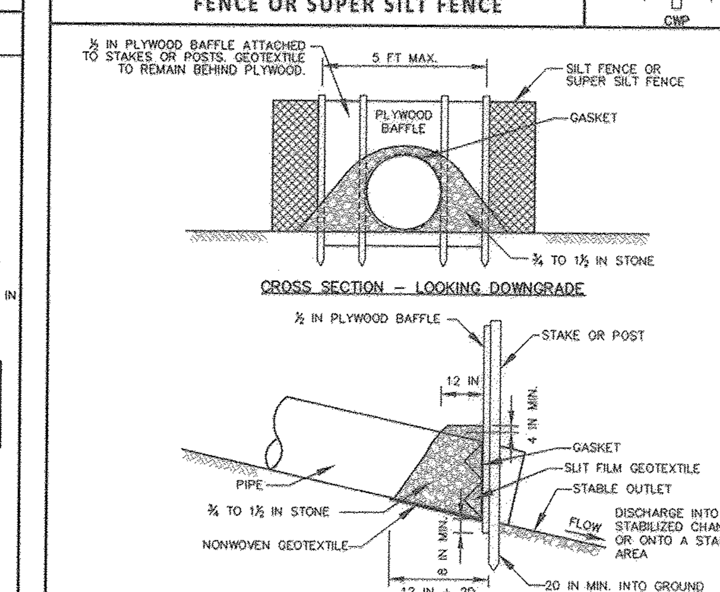
1. RIPRAP AND STONE MUST CONFORM TO THE SPECIFIED CLASS.
2. USE NONWOVEN GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS, AND PROTECT FROM PUNCTURING, CUTTING, OR TEARING. REPAIR ANY DAMAGE OTHER THAN AN OCCASIONAL SMALL HOLE BY PLACING ANOTHER PIECE OF GEOTEXTILE OVER THE DAMAGED PART OR BY COMPLETELY REPLACING THE GEOTEXTILE. PROVIDE A MINIMUM OF ONE FOOT OVERLAP FOR ALL REPAIRS AND FOR JOINING TWO PIECES OF GEOTEXTILE TOGETHER.
3. PREPARE THE SUBGRADE FOR GEOTEXTILE OR STONE FILTER (⅜ TO 1½ INCH STONE FOR 6 INCH MINIMUM DEPTH) AND RIPRAP TO THE REQUIRED LINES AND GRADES. COMPACT ANY FILL REQUIRED IN THE SUBGRADE TO A DENSITY OF APPROXIMATELY THAT OF THE SURROUNDING UNDISTURBED MATERIAL.
4. EXTEND GEOTEXTILE AT LEAST 6 INCHES BEYOND EDGES OF RIPRAP AND EMBED AT LEAST 4 INCHES AT SIDES OF THE RIPRAP.
5. CONSTRUCT RIPRAP OUTLET TO FULL COURSE THICKNESS IN ONE OPERATION AND IN SUCH A MANNER AS TO AVOID DISPLACEMENT OF UNDERLYING MATERIALS. PLACE STONE FOR RIPRAP OUTLET IN A MANNER THAT WILL ENSURE THAT IT IS REASONABLY HOMOGENOUS WITH THE SMALLER STONES AND SPALLS FILLING THE VOIDS BETWEEN THE LARGER STONES. PLACE RIPRAP IN A MANNER TO PREVENT DAMAGE TO THE STONE FILTER BLANKET OR GEOTEXTILE. HAND PLACE TO THE EXTENT NECESSARY.
6. WHERE NO ENDWALL IS USED, CONSTRUCT THE UPSTREAM END OF THE APRON SO THAT THE WIDTH IS TWO TIMES THE DIAMETER OF THE OUTLET PIPE, AND EXTEND THE STONE UNDER THE OUTLET BY A MINIMUM OF 18 INCHES.
7. CONSTRUCT APRON WITH 0% SLOPE ALONG ITS LENGTH AND WITHOUT OBSTRUCTIONS. PLACE STONE SO THAT IT BLENDS IN WITH EXISTING GROUND.
8. MAINTAIN LINE, GRADE, AND CROSS SECTION. KEEP OUTLET FREE OF EROSION. REMOVE ACCUMULATED SEDIMENT AND DEBRIS. AFTER HIGH FLOWS INSPECT FOR SCOUR AND DISLODGED RIPRAP, MAKE NECESSARY REPAIRS IMMEDIATELY.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

DETAIL E-4 CLEAR WATER PIPE THROUGH SILT FENCE OR SUPER SILT FENCE

STANDARD SYMBOL: CWP



CONSTRUCTION SPECIFICATIONS

1. INSTALL SILT FENCE OR SUPER SILT FENCE IN ACCORDANCE WITH DETAIL E-1 OR DETAIL E-2.
2. AT THE PIPE LOCATION, CUT AND PULL BACK THE WOVEN SLIT FILM GEOTEXTILE AND CHAIN LINK FENCING. SECURE GEOTEXTILE TO PIPE WITH GASKET. INSTALL ADDITIONAL STAKES OR POSTS IF NECESSARY TO ACCOMMODATE THE INSTALLATION OF THE BAFFLE BOARD.
3. ENTRENCH ½ INCH PLYWOOD BAFFLE A MINIMUM OF 8 INCHES AND SECURE TO THE UPGRADE SIDE OF THE FENCE STAKES OR POSTS. BAFFLE SHOULD BE AT LEAST THE HEIGHT OF THE FENCE.
4. PLACE ¾ TO 1½ INCH STONE OR EQUIVALENT RECYCLED CONCRETE BEHIND THE PLYWOOD BAFFLE ON NONWOVEN GEOTEXTILE AND EXTEND 12 INCH MIN. ALONG TOP OF PIPE AND TO A HEIGHT OF 4 INCHES ABOVE THE TOP OF PIPE.
5. USE NONWOVEN AND WOVEN SLIT FILM GEOTEXTILES AS SPECIFIED IN SECTION H-1 MATERIALS.
6. REMOVE ACCUMULATED SEDIMENT AND DEBRIS WHEN SEDIMENT REACHES 6 INCHES IN HEIGHT. REPLACE GEOTEXTILE IF TORN. IF UNDERMINING OCCURS, REINSTALL BAFFLE, CHAIN LINK, AND GEOTEXTILE. REPLACE STONE IF DISPLACED. KEEP POINT OF DISCHARGE FREE OF EROSION.

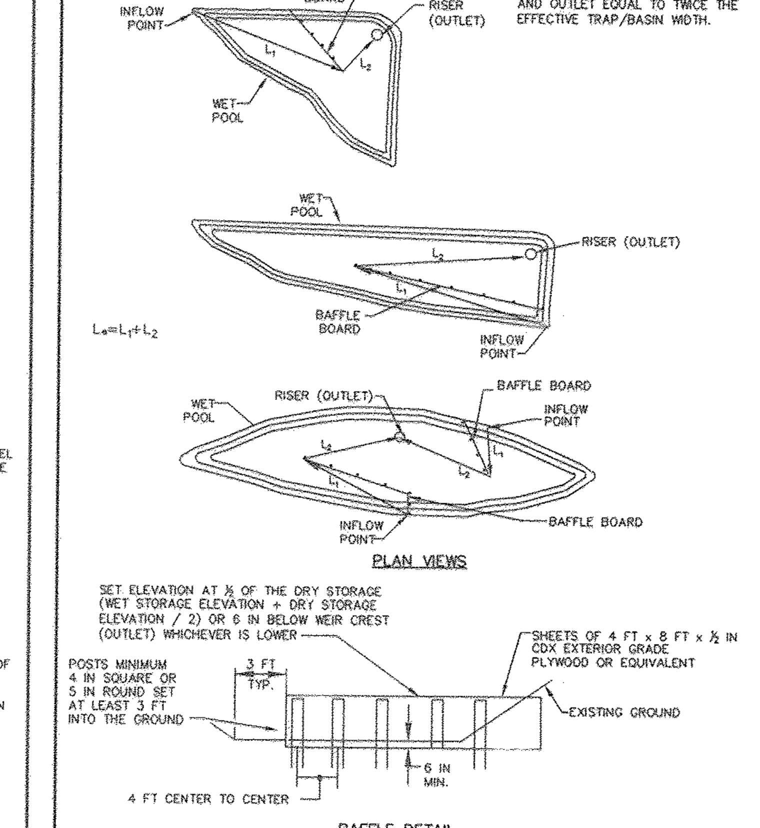
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

DETAIL G-2-4 BAFFLE BOARDS

STANDARD SYMBOL: BB

BAFFLES ARE REQUIRED TO PROVIDE A FLOW LENGTH BETWEEN INFLOW POINT AND OUTLET EQUAL TO TWICE THE EFFECTIVE TRAP/BASIN WIDTH.



MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

GLW GUTSCHICK LITTLE & WEBER, P.A.
CIVIL ENGINEERS, LAND SURVEYORS, LAND PLANNERS, LANDSCAPE ARCHITECTS
3909 NATIONAL DRIVE - SUITE 250 - BURTONSVILLE OFFICE PARK
BURTONSVILLE, MARYLAND 20866
TEL: 301-421-4024 BALT: 410-880-1820 DC/VA: 301-989-2524 FAX: 301-421-4186

L:\CADD\DRAWINGS\11071\PLANS BY GLW\Finals\PHASE 1\11071_21-22_SC NOTES.dwg | DES. WsJ | DRN. WsJ | CHK. MJT

DATE	REVISION	BY	APP'R.

PREPARED FOR:
THE HOWARD HUGHES CORPORATION
10480 LITTLE PATUXENT PARKWAY
SUITE 400
COLUMBIA, MD 21044
ATTN: BOB JENKINS
410-964-5443

PROFESSIONAL CERTIFICATION
I HEREBY CERTIFY THAT THESE PLANS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 12975 EXPIRATION DATE: MAY 26, 2018
6/9/16 [signature]

SEDIMENT CONTROL NOTES AND DETAILS
DOWNTOWN COLUMBIA
CRESCENT NEIGHBORHOOD
PARCELS B THRU H, NON-BULDABLE BULK PARCELS J THRU R, O.S. LOTS 1 THRU 8 AND MERRIWEATHER-SYMPHONY WOODS NEIGHBORHOOD O.S. LOT 1 AND NON-BUILDABLE BULK PARCEL A

ELECTION DISTRICT No. 5 — HOWARD COUNTY, MARYLAND

SCALE	ZONING	G. L. W. FILE No.
AS SHOWN	NT	11071
DATE	TAX MAP - GRID	SHEET
JUNE, 2016	36 - 01	22 OF 102

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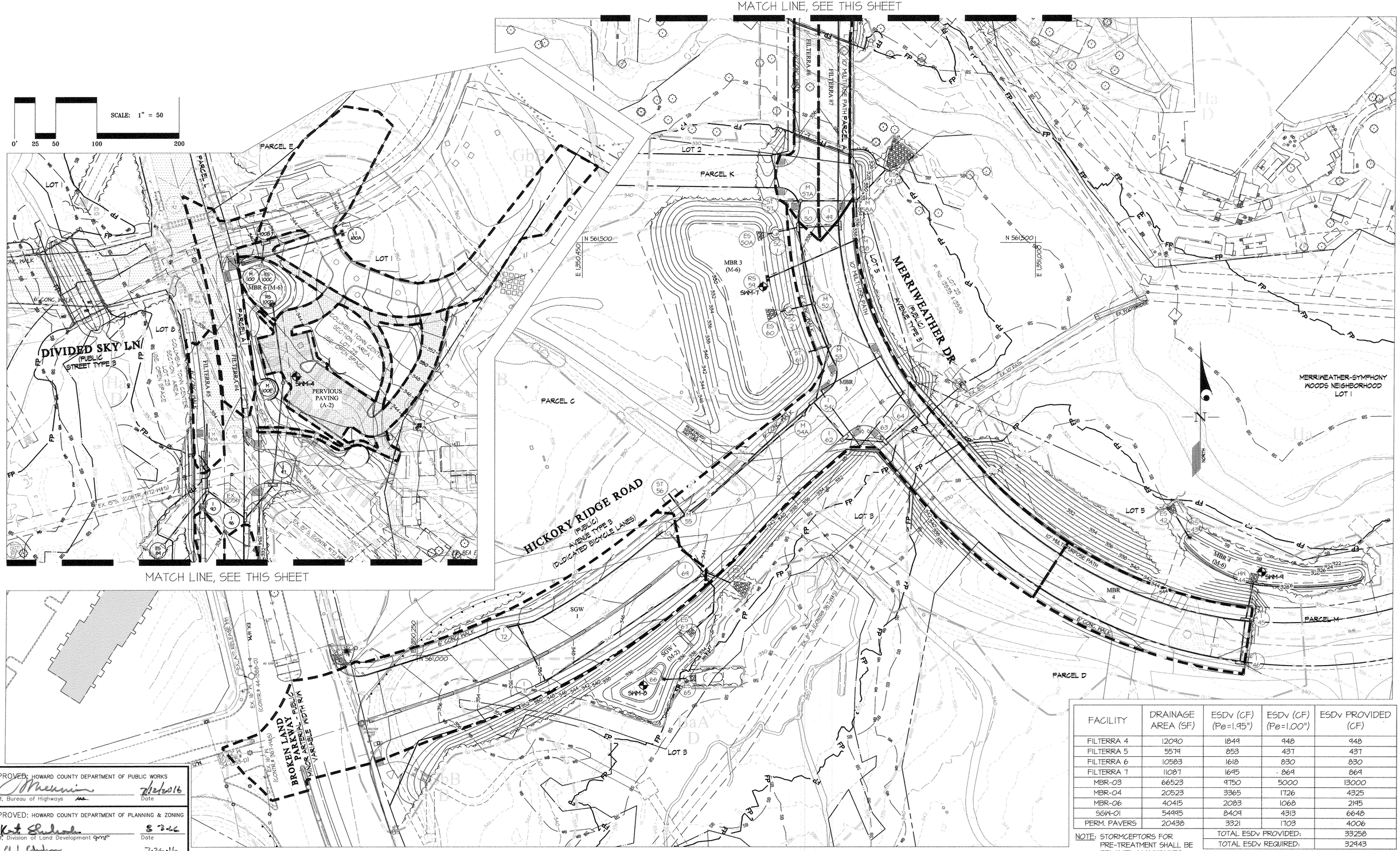

FACILITY	DRAINAGE AREA (SF)	ESDv (CF) (Pe=1.95")	ESDv (CF) (Pe=1.00")	ESDv PROVIDED (CF)
FILTERRA 4	12090	1849	948	948
FILTERRA 5	5579	853	437	437
FILTERRA 6	10583	1618	830	830
FILTERRA 7	11087	1695	869	869
MBR-03	66523	9750	5000	13000
MBR-04	20523	3365	1726	4325
MBR-06	40415	2083	1068	2195
SGW-01	54995	8409	4313	6648
PERM. PAVERS	20438	3321	1703	4006
		TOTAL ESDv PROVIDED:		33258
		TOTAL ESDv REQUIRED:		32943

NOTE: STORMCEPTORS FOR PRE-TREATMENT SHALL BE PRIVATELY MAINTAINED.

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

Chief, Bureau of Highways — Date 7/12/2016

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

Chief, Division of Land Development — Date 8-3-16

Chief, Development Engineering Division — Date 7.26.16

GLW GUTSCHICK LITTLE & WEBER, P.A.

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DES. JH	DRN. JH	CHK. DEV

DATE	REVISION	BY	APP'R.

PREPARED FOR:
THE HOWARD HUGHES CORPORATION
10480 LITTLE PATUXENT PARKWAY
SUITE 400
COLUMBIA, MD 21044
ATTN: BOB JENKINS
410-964-5443

PROFESSIONAL CERTIFICATION
I HEREBY CERTIFY THAT THESE PLANS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 12975
EXPIRATION DATE: MAY 26, 2018
6/9/16

STATE OF MARYLAND — CHRISTOPHER SEBASTIAN GUTSCHICK — PROFESSIONAL ENGINEER

STORMWATER MANAGEMENT DRAINAGE AREA MAP

DOWNTOWN COLUMBIA
CRESCENT NEIGHBORHOOD
PARCELS B THRU H, NON-BULDABLE BULK PARCELS J THRU R, O.S. LOTS 1 THRU 8 AND MERRIWEATHER-SYMPHONY WOODS NEIGHBORHOOD O.S. LOT 1 AND NON-BUILDABLE BULK PARCEL A

ELECTION DISTRICT No. 5 — HOWARD COUNTY, MARYLAND

SCALE	ZONING	G. L. W. FILE No.
1"=50'	NT	11071
DATE	TAX MAP – GRID	SHEET
JUNE, 2016	36 – 01	23 OF 102

L:\CADD\DRAWINGS\11071\PLANS BY GLW\Finals\PHASE 1\11071_23_SWM DAM.dwg
PLOTTED: 6/24/2016 9:37 AM, LAST SAVED: 6/23/2016 2:52 PM, PLOTTED BY: Andrew Larson

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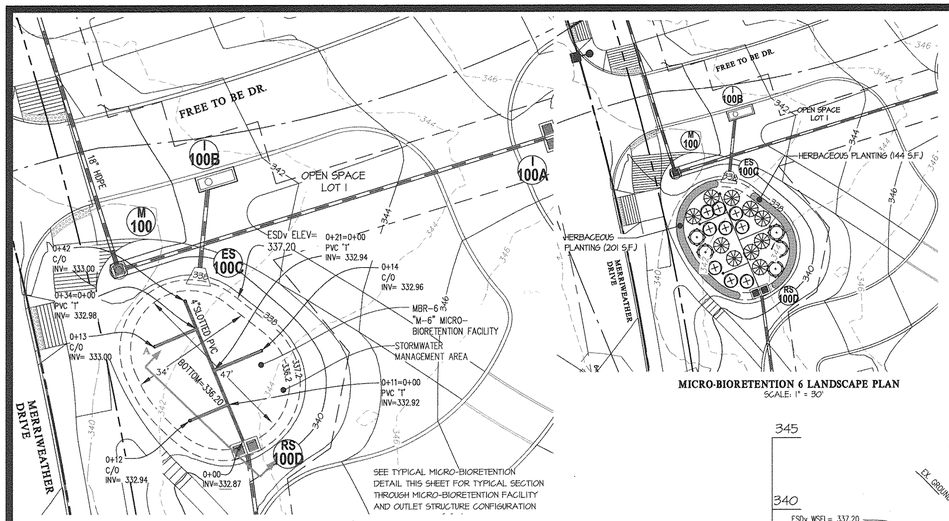
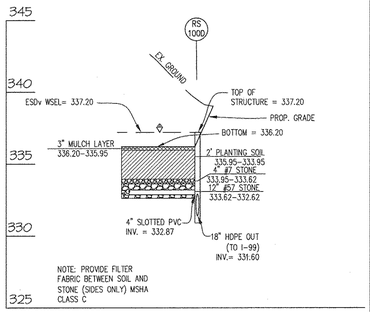
F 15-106



MICRO-BIORETENTION 6 SCALE: 1" = 20'

MICRO-BIORETENTION 6 LANDSCAPE PLAN
SCALE: 1" = 30'

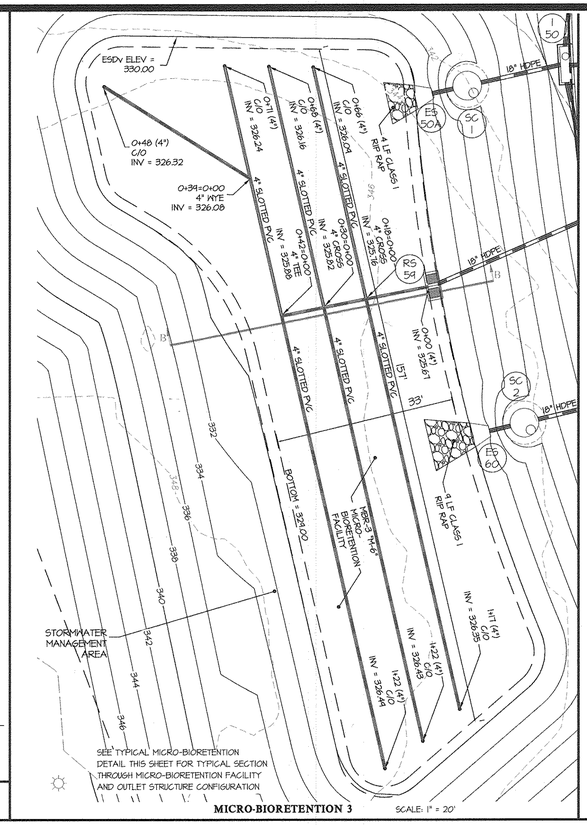


SECTION "A"-"A"
SCALE: 1" = 50' (HORZ.)
1" = 5' (VERT.)

MBR-6
TYPE (PER MDE): MICRO BIORETENTION SYSTEM (M6)
NON - MDE 378 FACILITY
TOTAL DRAINAGE AREA TO FACILITY = 40,415 SF
STORAGE PROVIDED = 1,646 CU-FT (@337.20)
ESDv PROVIDED = 2,195 CU-FT

LOW-FLOW OUTFALL: PERFORATED 4" UNDERDRAIN SYSTEM
BOTTOM OF FACILITY = 332.60
HIGH-FLOW OUTFALL: RS-100D ('S5' INLET, TOP = 337.20

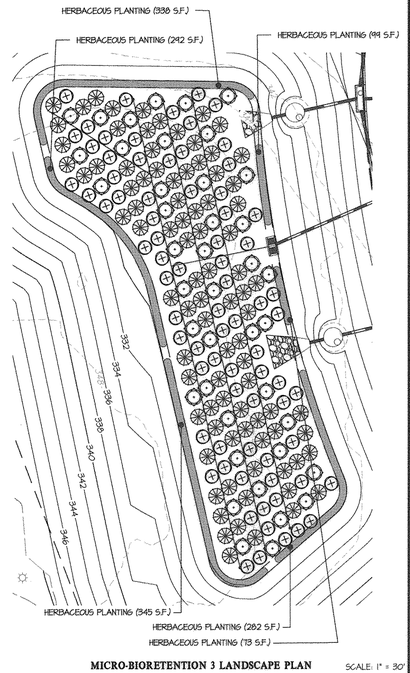
MICRO-BIORETENTION 6 DETAILS



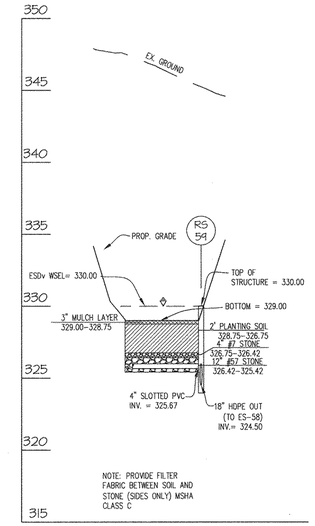
MICRO-BIORETENTION 3 SCALE: 1" = 20'

MBR-3
TYPE (PER MDE): MICRO BIORETENTION SYSTEM (M6)
NON - MDE 378 FACILITY
TOTAL DRAINAGE AREA TO FACILITY = 69,761 SF
STORAGE PROVIDED = 12,842 CU-FT (@330.00)
ESDv PROVIDED = 13,000 CU-FT

LOW-FLOW OUTFALL: PERFORATED 4" UNDERDRAIN SYSTEM
BOTTOM OF FACILITY = 324.00
HIGH-FLOW OUTFALL: RS-5A ('S5' INLET, TOP = 330.00)



MICRO-BIORETENTION 3 LANDSCAPE PLAN SCALE: 1" = 30'

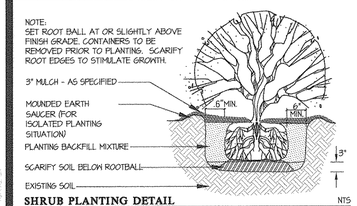


SECTION "B"-"B"
SCALE: 1" = 50' (HORZ.)
1" = 5' (VERT.)

MICRO-BIORETENTION 3 DETAILS

MICRO-BIORETENTION PLANT LIST				
SYMBOL	QTY.	NAMES (BOTANICAL / SCIENTIFIC)	SIZE	ROOT/COMMENTS
SHRUBS *				
	46	LINDERA BENZOIN/ SPICEBUSH	18"-24" SPR.	CONTAINER
	85	CORNUS SERICEA 'RUBY'/ RUBY RED OSIER DOGWOOD	18"-24" SPR.	CONTAINER
	48	ITEA VIRGINICA 'HENRY'S GARNET'/ VIRGINIA SWEETSPIRE	18"-24" SPR.	CONTAINER
HERBACEOUS *				
	1,774 s.f.	CONTRACTOR TO CHOOSE HERBACEOUS PLANTING FROM: -HEMEROCALLIS 'STRAWBERRY CANDY' DAYLILY -HEMEROCALLIS 'JOAN SENIOR' DAYLILY -KALMIA ANGUSTIFOLIA/SHEEP LAUREL -ELEOCHARIS OVATA OBTUSA/BLUNT SPIKE RUSH	18" O.C.	CONTAINER

S.D. PIPE SUMMARY TABLE PRIVATELY OWNED AND MAINTAINED			
SIZE (INCHES)	TYPE	QUANTITY (L.F.)	REMARKS
4	SLOTTED PVC	737	SCHEDULE 40



SHRUB PLANTING DETAIL NTS

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

Chief, Bureau of Highways — Date 7/12/2016

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

Chief, Division of Land Development — Date 8.3.16

Chief, Development Engineering Division — Date 7.26.16

MICRO-BIORETENTION 6 DETAILS

GENERAL NOTES

1. MATERIAL SPECIFICATIONS:
THE ALLOWABLE MATERIALS TO BE USED IN THESE MICRO-BIORETENTION PRACTICES ARE DETAILED IN TABLE B.4.1.

2. PLANTING SOIL:
THE SOIL SHALL BE A UNIFORM MIX, FREE OF STONES, STUMPS, ROOTS OR OTHER SIMILAR OBJECTS LARGER THAN TWO INCHES. NO OTHER MATERIALS OR SUBSTANCES SHALL BE MIXED OR DUMPED WITHIN THE MICRO-BIORETENTION PRACTICE THAT MAY BE HARMFUL TO PLANT GROWTH, OR PROVE A HINDRANCE TO THE PLANTING OR MAINTENANCE OPERATIONS. THE PLANTING SOIL SHALL BE FREE OF BERMUDA GRASS, QUACKGRASS, JOHNSON GRASS, OR OTHER NOXIOUS WEEDS AS SPECIFIED UNDER COMAR 15.OB.O1.05.

THE PLANTING SOIL SHALL BE TESTED AND SHALL MEET THE FOLLOWING CRITERIA:

SOIL COMPONENT - LOAMY SAND OR SANDY LOAM (USDA SOIL TEXTURAL CLASSIFICATION)
ORGANIC CONTENT - MIN. 10% BY DRY WEIGHT (ASTM D 2974). IN GENERAL, THIS CAN BE MET WITH A MIXTURE OF LOAMY SAND (60-65%) AND COMPOST (35-40%) OR SANDY LOAM (30%), COARSE SAND (30%), AND COMPOST (40%).
CLAY CONTENT - MEDIA SHALL HAVE A CLAY CONTENT OF LESS THAN 5%
PH RANGE - SHOULD BE BETWEEN 5.5-7.0. AMENDMENTS (E.G., LIME, IRON SULFATE PLUS SULFUR) MAY BE MIXED INTO THE SOIL TO INCREASE OR DECREASE PH.

THERE SHALL BE AT LEAST ONE SOIL TEST PER PROJECT. EACH TEST SHALL CONSIST OF BOTH THE STANDARD SOIL TEST FOR PH, AND ADDITIONAL TESTS OF ORGANIC MATTER, AND SOLUBLE SALTS. A TEXTURAL ANALYSIS SHALL BE PERFORMED FOR EACH LOCATION WHERE THE TOPSOIL WAS EXCAVATED.

3. COMPACTION:
IT IS VERY IMPORTANT TO MINIMIZE COMPACTION OF BOTH THE BASE OF THE BIORETENTION PRACTICES AND THE REQUIRED BACKFILL. WHEN POSSIBLE, USE EXCAVATION HOES TO REMOVE ORIGINAL SOIL. IF PRACTICES ARE EXCAVATED USING A LOADER, THE CONTRACTOR SHOULD USE WIDE TRACK OR MARSH TRACK EQUIPMENT, OR LIGHT EQUIPMENT WITH TURF TYPE TIRES. USE OF EQUIPMENT WITH NARROW TRACKS OR NARROW TIRES, RUBBER TIRES WITH LARGE LUGS, OR HIGH PRESSURE TIRES WILL CAUSE EXCESSIVE COMPACTION RESULTING IN REDUCED INFILTRATION RATES AND IS NOT ACCEPTABLE. COMPACTION WILL SIGNIFICANTLY CONTRIBUTE TO DESIGN FAILURE.

COMPACTION CAN BE ALLEVIATED AT THE BASE OF THE BIORETENTION FACILITY BY USING A PRIMARY TILLING OPERATION SUCH AS A CHISEL PLOW, RIPPER, OR SUBSOILER. THESE TILLING OPERATIONS ARE TO REFRACTURE THE SOIL PROFILE THROUGH THE 12 INCH COMPACTION ZONE. SUBSTITUTE METHODS MUST BE APPROVED BY THE ENGINEER. ROTOTILLERS TYPICALLY DO NOT TILL DEEP ENOUGH TO REDUCE THE EFFECTS OF COMPACTION FROM HEAVY EQUIPMENT.

ROTOTILL 2 TO 3 INCHES OF SAND INTO THE BASE OF THE BIORETENTION FACILITY BEFORE BACKFILLING THE OPTIONAL SAND LAYER. PUMP ANY PONDED WATER BEFORE PREPARING (ROTOTILLING) BASE.

WHEN BACKFILLING THE TOPSOIL OVER THE SAND LAYER, FIRST PLACE 3 TO 4 INCHES OF TOPSOIL OVER THE SAND, THEN ROTOTILL THE SAND/TOPSOIL TO CREATE A GRADATION ZONE. BACKFILL THE REMAINDER OF THE TOPSOIL TO FINAL GRADE.

WHEN BACKFILLING THE BIORETENTION FACILITY, PLACE SOIL IN LIFTS 12" TO 18". DO NOT USE HEAVY EQUIPMENT WITHIN THE BIORETENTION BASIN. HEAVY EQUIPMENT CAN BE USED AROUND THE PERIMETER OF THE BASIN TO SUPPLY SOILS AND SAND. GRADE BIORETENTION MATERIALS WITH LIGHT EQUIPMENT SUCH AS A COMPACT LOADER OR A DOZER/LOADER WITH MARSH TRACKS.

4. PLANT MATERIAL:
SEE PLANT LIST TABLES, SHEETS 24 AND 25.

5. PLANT INSTALLATION:
MULCH SHOULD BE PLACED TO A UNIFORM THICKNESS OF 2" TO 3". SHREDDED HARDWOOD MULCH IS THE ONLY ACCEPTED MULCH. PINE MULCH AND WOOD CHIPS WILL FLOAT AND MOVE TO THE PERIMETER OF THE BIORETENTION AREA DURING A STORM EVENT AND ARE NOT ACCEPTABLE. SHREDDED MULCH MUST BE WELL AGED (6 TO 12 MONTHS) FOR ACCEPTANCE.

ROOT STOCK OF THE PLANT MATERIAL SHALL BE KEPT MOIST DURING TRANSPORT AND ON-SITE STORAGE. THE PLANT ROOT BALL SHOULD BE PLANTED SO 1/8TH OF THE BALL IS ABOVE FINAL GRADE SURFACE. THE DIAMETER OF THE PLANTING PIT SHALL BE AT LEAST SIX INCHES LARGER THAN THE DIAMETER OF THE PLANTING BALL. SET AND MAINTAIN THE PLANT STRAIGHT DURING THE ENTIRE PLANTING PROCESS. THOROUGHLY WATER GROUND BED COVER AFTER INSTALLATION.

TREES SHALL BE BRACED USING 2" BY 2" STAKES ONLY AS NECESSARY AND FOR THE FIRST GROWING SEASON ONLY. STAKES ARE TO BE EQUALLY SPACED ON THE OUTSIDE OF THE TREE BALL.

GRASSES AND LEGUME SEED SHOULD BE DRILLED INTO THE SOIL TO A DEPTH OF AT LEAST ONE INCH. GRASS AND LEGUME PLUGS SHALL BE PLANTED FOLLOWING THE NON-GRASS GROUND COVER PLANTING SPECIFICATIONS.

THE TOPSOIL SPECIFICATIONS PROVIDE ENOUGH ORGANIC MATERIAL TO ADEQUATELY SUPPLY NUTRIENTS FROM NATURAL CYCLING. THE PRIMARY FUNCTION OF THE BIORETENTION STRUCTURE IS TO IMPROVE WATER QUALITY. ADDING FERTILIZERS DEFEATS, OR AT A MINIMUM, IMPEDES THIS GOAL. ONLY ADD FERTILIZER IF WOOD CHIPS OR MULCH ARE USED TO AMEND THE SOIL. ROTOTILL UREA FERTILIZER AT A RATE OF 2 POUNDS PER 1000 SQUARE FEET.

6. UNDERDRAINS:
UNDERDRAINS ARE TO BE PLACED ON A 3'-0" WIDE SECTION OF FILTER CLOTH. PIPE IS PLACED NEXT, FOLLOWED BY THE GRAVEL BEDDING. THE ENDS OF UNDERDRAIN PIPES NOT TERMINATING IN AN OBSERVATION WELL SHALL BE CAPPED.

THE MAIN COLLECTOR PIPE FOR UNDERDRAIN SYSTEMS SHALL BE CONSTRUCTED AT A MINIMUM SLOPE OF 0.5%. OBSERVATION WELLS AND/OR CLEAN-OUT PIPES MUST BE PROVIDED (ONE MINIMUM PER EVERY 1000 SQUARE FEET OF SURFACE AREA).

MICRO-BIORETENTION 3 DETAILS

APPENDIX B.11 - SUPPLEMENTAL POND SPECIFICATIONS (NON-378)

SUPPLEMENTAL STORMWATER PONDS AND WETLAND SPECIFICATIONS (NON-378)

THESE NOTES AND SPECIFICATIONS ARE IN ADDITION TO THE MD-378 SPECIFICATIONS. IF THERE IS ANY QUESTIONS AS TO THE APPLICABILITY, THE MD-378 SPECIFICATIONS SUPERCEDE.

1. IT IS PREFERRED TO USE THE SAME MATERIAL IN THE EMBANKMENT AS IS BEING INSTALLED FOR THE CORE TRENCH. IF THIS IS NOT POSSIBLE BECAUSE THE APPROPRIATE MATERIAL IS NOT AVAILABLE, A DAM CORE WITH A SHALL MAY BE USED. THE CROSS-SECTION OF THE STORMWATER FACILITY SHOULD SHOW THE LIMITS OF THE DAM CORE (UP TO 10-YEAR PAIER SURFACE ELEVATION) AS WELL AS THE ACCEPTABLE MATERIALS FOR THE SHELL. THE SHAPE OF THE DAM CORE AND THE MATERIAL TO BE USED IN THE SHELL SHOULD BE PROVIDED BY THE GEOTECHNICAL ENGINEER.
2. IF THE COMPACTION TESTS FOR THE SITE IMPROVEMENTS IS USING MODIFIED PROCTOR (AASHTO T-180), THEN TO MAINTAIN ON-SITE CONSISTENCY, THE MODIFIED PROCTOR MAY BE USED IN LIEU OF A STANDARD PROCTOR (AASHTO T-99). THE MINIMUM DENSITY USING THE MODIFIED PROCTOR TEST METHOD SHALL BE AT LEAST 92% OF THE MAXIMUM DRY DENSITY WITH A MOISTURE CONTENT OF 12% OF THE OPTIMUM. THE MINIMUM REQUIRED DENSITY USING THE STANDARD PROCTOR TEST METHOD SHALL BE AT LEAST 95% OF THE MAXIMUM DRY DENSITY WITH A MOISTURE CONTENT OF 12% OF THE OPTIMUM.
3. FOR ALL STORMWATER MANAGEMENT FACILITIES, A GEOTECHNICAL ENGINEER OR THEIR REPRESENTATIVE MUST BE PRESENT TO VERIFY COMPACTION IN ACCORDANCE WITH THE SELECTED TEST METHOD. THIS INFORMATION NEEDS TO BE PROVIDED IN A REPORT TO THE DESIGN ENGINEER, SO THAT CERTIFICATION OF THE CONSTRUCTION OF THE FACILITY, IN ACCORDANCE WITH MD-378 SPECIFICATIONS, CAN BE MADE.
4. A 4-INCH LAYER OF TOPSOIL SHALL BE PLACED ON ALL DISTURBED AREAS OF THE DAM EMBANKMENT. SEEDING, LIMING, FERTILIZING, MULCHING, ETC. SHALL BE IN ACCORDANCE WITH MARYLAND SOIL CONSERVATION SERVICE MD-342 OR THE 1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, PERMANENT SEEDING, SECTION IN CHAPTER 20. THE PURPOSE OF THE TOPSOIL IS TO ESTABLISH A GOOD GROWTH OF GRASS, WHICH IS NOT ALWAYS POSSIBLE WITH SOME OF THE MATERIALS THAT MAY BE PLACED FOR THE EMBANKMENT FILL.
5. GEOTEXTILE PLACED BENEATH RIP-RAP SHALL BE CLASS 'C' GEOTEXTILE OR BETTER (SEE SECTION 24.0, MATERIAL SPECIFICATIONS, 1994 STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL (MDE, 1994). SOME ACCEPTABLE GEOTEXTILES THAT MEET THE CLASS 'C' CRITERIA INCLUDE.

AMOCO 4552	CARTHAGE FX-70S
GEOLON N10	MIRAFI 180-N
WEBTEC N01	

THIS IS ONLY A PARTIAL LISTING OF AVAILABLE GEOTEXTILES BASED ON INFORMATION PROVIDED BY THE MANUFACTURERS OF THE MNT SPECIFIER'S GUIDE DATED DECEMBER 1996. IT IS THE RESPONSIBILITY OF THE ENGINEER TO VERIFY THE ADEQUACY OF THE MATERIAL, AS THERE ARE CHANGES IN THE MANUFACTURING PROCESS AND THE TYPE OF FABRIC USED, WHICH MAY AFFECT THE CONTINUED ACCEPTANCE.

6. A RULE OF THUMB TO DETERMINE WHEN AN EXCAVATED POND MAY NEED TO BE CONSIDERED AN EMBANKMENT POND IS AS FOLLOWS:
PROVIDE CALCULATION OF 1OH + 2OF FEET = L, WHERE H HEIGHT FROM POND BOTTOM TO TOP OF DAM. IF THE PROJECTION OF L, DOWNSTREAM IS A HORIZONTAL LINE FROM THE UPSTREAM TOE OF SLOPE IS BELOW EXISTING GROUND, THE POND CAN BE CONSIDERED AN EXCAVATED POND. IN ADDITION, THE EXISTING GROUND SLOPE, DOWNSTREAM OF THE TOE, MUST BE LESS THAN 10%.
7. THE DESIGN ENGINEER AND GEOTECHNICAL ENGINEER SHOULD MAKE THE DETERMINATION THAT THE SETTLEMENT OF THE POND WILL NOT CAUSE EXCESSIVE JOINT EXTENSION. FOR FURTHER INFORMATION ON JOINT ANALYSIS, SEE NRCE PUBLICATION TR-18.
8. FILL PLACEMENT SHALL NOT EXCEED A MAXIMUM 8-INCH. EACH LIFT SHALL BE CONTINUOUS FOR THE ENTIRE LENGTH OF THE EMBANKMENT.
9. THE EMBANKMENT FILL SHALL NOT BE PLACED HIGHER THAN THE CENTERLINE OF THE PRINCIPAL SPILLWAY UNTIL AFTER THE PRINCIPAL SPILLWAY HAS BEEN INSTALLED. IF THE EMBANKMENT NEEDS TO BE EXCAVATED TO INSTALL THE PRINCIPAL SPILLWAY, THE SIDE SLOPE SHALL BE NO LESS THAN 2:1
10. THE SIDE SLOPES OF A CUT TO REPAIR A DAM, INSTALL A PRINCIPAL SPILLWAY FOR AN EXCAVATED POND, OR OTHER REPAIR WORK, SHALL BE NO LESS THAN 2:1.

OPERATION AND MAINTENANCE SCHEDULE FOR
MICRO-BIORETENTION (M-6)

A. THE OWNER SHALL MAINTAIN THE PLANT MATERIAL, MULCH LAYER AND SOIL LAYER ANNUALLY. MAINTENANCE OF MULCH AND SOIL IS LIMITED TO CORRECTING AREAS OF EROSION OR WASH OUT. ANY MULCH REPLACEMENT SHALL BE DONE IN THE SPRING. PLANT MATERIAL SHALL BE CHECKED FOR DISEASE AND INSECT INFESTATION AND MAINTENANCE WILL ADDRESS DEAD MATERIAL AND PRUNING. ACCEPTABLE REPLACEMENT PLANT MATERIAL IS LIMITED TO THE FOLLOWING: 2000 MARYLAND STORMWATER DESIGN MANUAL VOLUME II, TABLE A.4.1 AND 2.
B. THE OWNER SHALL PERFORM A PLANT INSPECTION IN THE SPRING AND IN THE FALL OF EACH YEAR. DURING THE INSPECTION, THE OWNER SHALL REMOVE DEAD AND DISEASED VEGETATION CONSIDERED BEYOND TREATMENT, REPLACE DEAD PLANT MATERIAL WITH ACCEPTABLE REPLACEMENT PLANT MATERIAL, TREAT DISEASED TREES AND SHRUBS, AND REPLACE ALL DEFICIENT STAKES AND WIRES.
C. THE OWNER SHALL INSPECT THE MULCH EACH SPRING. THE MULCH SHALL BE REPLACED EVERY TWO TO THREE YEARS. THE PREVIOUS MULCH LAYER SHALL BE REMOVED BEFORE THE NEW LAYER IS APPLIED.
D. THE OWNER SHALL CORRECT SOIL EROSION ON AN AS NEEDED BASIS, WITH A MINIMUM OF ONCE PER MONTH AND AFTER EACH HEAVY STORM.
E. THE OWNER SHALL BE RESPONSIBLE FOR THE MAINTENANCE OF THE UNDERDRAINS WITHIN THE BIO-RETENTION LAYERS.
F. HOWARD COUNTY SHALL BE RESPONSIBLE FOR THE MAINTENANCE OF ALL STORM DRAIN PIPES AND STRUCTURES WITHIN PUBLIC EASEMENTS. THE OWNER SHALL BE RESPONSIBLE FOR THE MAINTENANCE OF ALL STORM DRAIN PIPES AND STRUCTURES WITHIN PRIVATE EASEMENTS.

OPERATION AND MAINTENANCE SCHEDULE FOR
SURFACE STORMWATER FILTRATION SYSTEMS (F-1)

A. THE OWNER SHALL INSPECT THE STORMWATER FACILITY ANNUALLY AND AFTER EVERY HEAVY STORM. INSPECTIONS SHALL BE PERFORMED DURING WET WEATHER TO DETERMINE IF THE FACILITY IS FUNCTIONING PROPERLY.

B. THE OWNER SHALL MOW THE TOP AND SIDE SLOPES OF THE EMBANKMENT A MINIMUM OF ONCE PER YEAR, WHEN VEGETATION REACHES 18" IN HEIGHT OR AS NEEDED.

C. THE OWNER SHALL MOW FILTERS THAT HAVE A GRASS COVER A MINIMUM OF THREE (3) TIMES PER GROWING SEASON TO MAINTAIN A MAXIMUM GRASS HEIGHT OF LESS THAN 12 INCHES.

D. THE OWNER SHALL REMOVE ANY DEBRIS AND LITTER FROM THE FACILITY.

E. THE OWNER SHALL REPAIR ANY EROSION IN THE FACILITY AS SOON AS IT IS NOTICED.

F. THE OWNER SHALL REMOVE SILT WHEN IT EXCEEDS FOUR (4) INCHES DEEP IN THE FOREBAY & BE RESPONSIBLE FOR THE MAINTENANCE OF THE RISER, OUTFALL PIPES, AND EMBANKMENT.

G. WHEN WATER PONDS ON THE SURFACE OF THE FILTER BED FOR MORE THAN SEVENTY-TWO HOURS, THE OWNER SHALL REPLACE THE TOP FEW INCHES OF DISCOLORED MATERIAL WITH FRESH MATERIAL. PROPER CLEANING AND DISPOSAL OF THE REMOVED MATERIALS AND LIQUID MUST BE FOLLOWED BY THE OWNER.

H. THE OWNER SHALL MAINTAIN A LOG BOOK TO DETERMINE THE RATE AT WHICH THE FACILITY DRAINS.

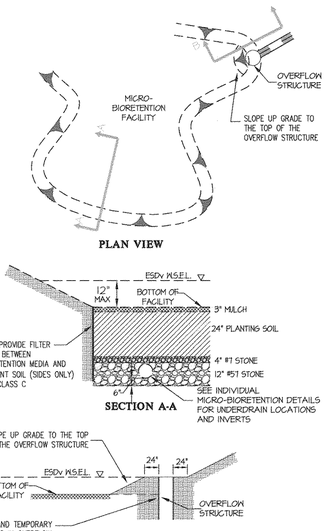
I. THE MAINTENANCE LOG BOOK SHALL BE AVAILABLE TO HOWARD COUNTY FOR INSPECTION TO INSURE COMPLIANCE WITH OPERATION AND MAINTENANCE CRITERIA.

J. ONCE THE PERFORMANCE CHARACTERISTICS OF THE INFILTRATION SYSTEM HAVE BEEN VERIFIED, THE MONITORING SCHEDULE CAN BE REDUCED TO AN ANNUAL BASIS UNLESS THE PERFORMANCE DATA INDICATES THAT A MORE FREQUENT SCHEDULE IS REQUIRED.

OPERATION AND MAINTENANCE SCHEDULE FOR
PRIVATELY OWNED AND MAINTAINED FILTERRA DEVICES

ACTIVATION
A. ACTIVATION OF THE FILTERRA™ UNIT IS PERFORMED ONLY BY THE SUPPLIER. PURCHASER IS RESPONSIBLE FOR FILTERRA™ INLET PROTECTION AND SUBSEQUENT CLEAN OUT COST. THIS PROCESS CANNOT COMMENCE UNTIL THE PROJECT SITE IS FULLY STABILIZED AND CLEANED (FULL LANDSCAPING, GRASS COVER, FINAL PAVING AND STREET SWEEPING COMPLETED), RESULTING THE CHANGE OF CONSTRUCTION MATERIALS CONTAMINATING THE FILTERRA™ SYSTEM. CARE SHALL BE TAKEN DURING CONSTRUCTION NOT TO DAMAGE THE PROTECTIVE THROAT AND TOP PLATES. B. ACTIVATION INCLUDES INSTALLATION OF PLANT(S) AND MULCH LAYERS AS NECESSARY.

MAINTENANCE
A. EACH CORRECTLY INSTALLED FILTERRA™ UNIT IS TO BE MAINTAINED BY THE SUPPLIER, OR A SUPPLIER APPROVED CONTRACTOR FOR A MINIMUM PERIOD OF 1 YEAR. THE COST OF THIS SERVICE IS TO BE INCLUDED IN THE PRICE OF EACH FILTERRA™ UNIT. EXTENDED MAINTENANCE CONTRACTS ARE AVAILABLE AT EXTRA COST UPON REQUEST.
B. ANNUAL MAINTENANCE CONSISTS OF A MAXIMUM OF (2) SCHEDULED VISITS. THE VISITS ARE SCHEDULED SEASONALLY; THE SPRING VISIT AIMS TO CLEAN UP AFTER WINTER LOADS INCLUDING SALTS AND SANDS. THE FALL VISIT PREPARES THE SYSTEM BY REMOVING EXCESSIVE LEAFLITTER.
C. EACH MAINTENANCE VISIT CONSISTS OF THE FOLLOWING TASKS.
1. FILTERRA™ UNIT INSPECTION
2. FOREIGN DEBRIS, SILT, MULCH & TRASH REMOVAL.
3. FILTER MEDIA EVALUATION AND RECHARGE AS NECESSARY
4. PLANT HEALTH EVALUATION AND PRUNING OR REPLACEMENT AS NECESSARY
5. REPLACEMENT OF MULCH
6. DISPOSAL OF ALL MAINTENANCE REFUSE ITEMS
7. MAINTENANCE RECORDS UPDATED AND STORED (REPORTS AVAILABLE UPON REQUEST)
D. THE BEGINNING AND ENDING DATE OF SUPPLIERS OBLIGATION TO MAINTAIN THE INSTALLED SYSTEM SHALL BE DETERMINED BY THE SUPPLIER AT THE TIME THE SYSTEM IS ACTIVATED. OWNERS MUST PROMPTLY NOTIFY THE SUPPLIER OF ANY DAMAGE TO THE PLANT(S), WHICH CONSTITUTE(S) AN INTEGRAL PART OF THE BIORETENTION TECHNOLOGY.



TYPICAL MICRO-BIORETENTION SECTION SCALE: N.T.S.

GLW GUTSCHICK LITTLE & WEBER, P.A.
CIVIL ENGINEERS, LAND SURVEYORS, LAND PLANNERS, LANDSCAPE ARCHITECTS
3909 NATIONAL DRIVE – SUITE 250 – BURTONSVILLE OFFICE PARK
BURTONSVILLE, MARYLAND 20866
TEL: 301-421-4024 BALT: 410-880-1820 DC/VA: 301-989-2524 FAX: 301-421-4186

L:\JOBS\DRAWINGS\11071\PLANS BY GLW\finals\PHASE 1\11071_24-25_ESD DETAILS.dwg | DES. JRD | DRN. JRD | CHK. DEV

DATE	REVISION	BY	APP'R.

PREPARED FOR:
THE HOWARD HUGHES CORPORATION
10480 LITTLE PATUXENT PARKWAY
SUITE 400
COLUMBIA, MD 21044
ATTN: BOB JENKINS
410-964-5443

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE PLANS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 19975
EXPIRATION DATE: MAY 26, 2018
6/9/16

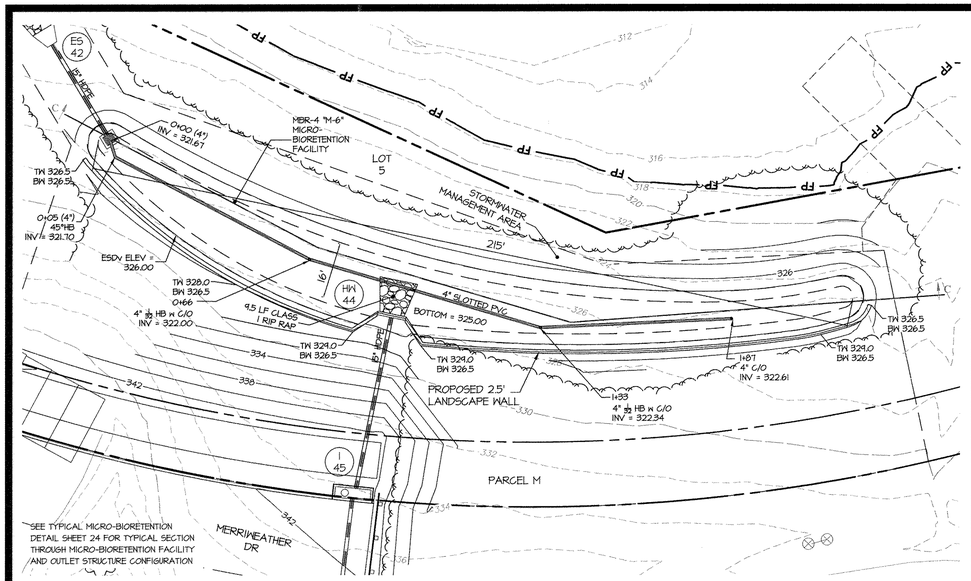
ESD DETAILS
DOWNTOWN COLUMBIA
CRESCENT NEIGHBORHOOD
PARCELS B THRU H, NON-BUILDABLE BULK PARCELS J THRU R, O.S. LOTS 1 THRU 8 AND MERRIWEATHER-SYMPHONY WOODS NEIGHBORHOOD O.S. LOT 1 AND NON-BUILDABLE BULK PARCEL A

ELECTION DISTRICT No. 5 — HOWARD COUNTY, MARYLAND

SCALE	ZONING	G. L. W. FILE No.
AS SHOWN	NT	11071
DATE	TAX MAP – GRID	SHEET
JUNE, 2016	36 – 01	24 OF 102

© GLW 2015

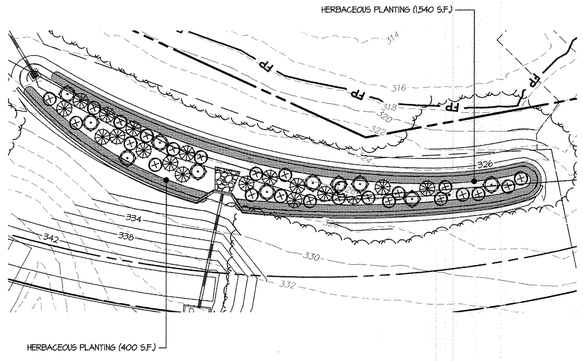
F 15-106



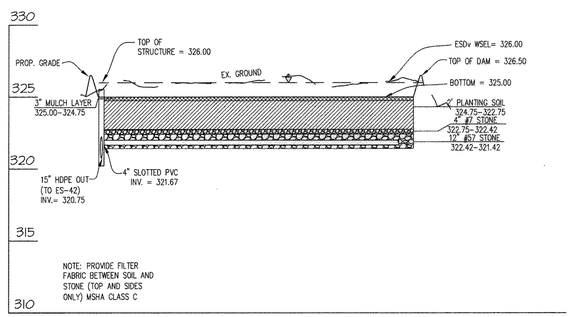
MICRO-BIORETENTION 4 SCALE: 1" = 20'

MBR-4
TYPE (PER MDE): MICRO BIORETENTION SYSTEM (M6)
NON - MDE 318 FACILITY
TOTAL DRAINAGE AREA TO FACILITY = 22,006 SF
STORAGE PROVIDED = 3,244 CU-FT (@326.00)
ESDv PROVIDED = 4,325 CU-FT

LOW-FLOW OUTFALL: PERFORATED 4" UNDERDRAIN SYSTEM
BOTTOM OF FACILITY = 325.00
HIGH-FLOW OUTFALL: RS-43 ('S' INLET, TOP = 326.00)



MICRO-BIORETENTION 4 LANDSCAPE PLAN SCALE: 1" = 30'



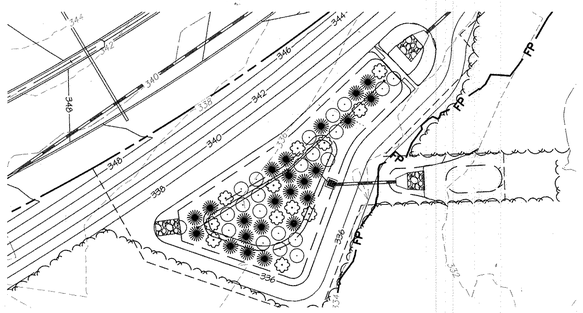
SECTION "C"-"C"
SCALE: 1" = 50' (HORZ.)
1" = 5' (VERT.)

MICRO-BIORETENTION 4 DETAILS

SUBMERGED GRAVEL WETLAND 1 SCALE: 1" = 20'

SGM-1
TYPE (PER MDE): MICRO BIORETENTION SYSTEM (M2)
NON - MDE 318 FACILITY
TOTAL DRAINAGE AREA TO FACILITY = 54,995 SF
STORAGE PROVIDED = 4,986 CU-FT (@336.00)
ESDv PROVIDED = 6,648 CU-FT

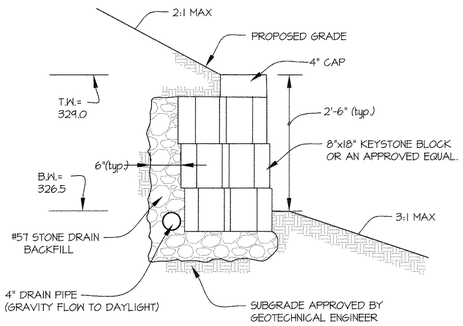
LOW-FLOW OUTFALL: PERFORATED 8" UNDERDRAIN SYSTEM
BOTTOM OF FACILITY = 334.00
HIGH-FLOW OUTFALL: RS-66 ('S' INLET, TOP = 336.00)



SUBMERGED GRAVEL WETLAND 1 LANDSCAPE PLAN SCALE: 1" = 30'

SECTION "D"-"D"
SCALE: 1" = 50' (HORZ.)
1" = 5' (VERT.)

SUBMERGED GRAVEL WETLAND 1 DETAILS



Note:
Drain system is suitable for wall sites where ground water seepage does not exist. A geotechnical engineer shall evaluate the wall site for groundwater conditions and provide alternative wall drain details as needed.

WALL DETAIL
NOT TO SCALE

SUBMERGED GRAVEL WETLAND 1 DETAILS

NOTES:
* SEE SHEET 24 FOR SHRUB DETAILS

SPECIES MAY VARY DEPENDING ON AVAILABILITY AT THE TIME OF CONSTRUCTION.

MICRO-BIORETENTION PLANT LIST				
SYMBOL	QTY.	NAMES (BOTANICAL / SCIENTIFIC)	SIZE	ROOT/COMMENTS
SHRUBS *				
	11	LINDERA BENZOIN/ SPICEBUSH	18"-24" SPR.	CONTAINER
	25	CORNUS SERICEA 'RUBY'/ RUBY RED OSIER DOGWOOD	18"-24" SPR.	CONTAINER
	18	ITEA VIRGINICA 'HENRY'S GARNET/ VIRGINIA SWEETSPIRE	18"-24" SPR.	CONTAINER
HERBACEOUS *				
	1,940 s.f.	CONTRACTOR TO CHOOSE HERBACEOUS PLANTING FROM: -HEMEROCALLIS 'STRAWBERRY CANDY' DAYLILY -HEMEROCALLIS 'JOAN SENIOR' DAYLILY -KALMIA ANGUSTIFOLIA/SHEEP LAUREL -ELEOCHARIS OVATA OBTUSA/BLUNT SPIKE RUSH	18" O.C.	CONTAINER

SUBMERGED GRAVEL WETLAND PLANT LIST				
SYMBOL	QTY.	NAMES (BOTANICAL / SCIENTIFIC)	SIZE	ROOT/COMMENTS
EMERGENTS AND SUBMERGED AQUATICS				
	22	ALISMA PLANTAGO-AQUATICA/ BROAD-LEAF WATER-PLANTAIN	8"-36" SPR.	CONTAINER
	12	ELODEA CANADENSIS/ BROAD WATER-WEED	24" SPR.	CONTAINER
	23	VALLISNERIA AMERICANA/ WILD CELERY	24" SPR.	CONTAINER

S.D. PIPE SUMMARY TABLE PRIVATELY OWNED AND MAINTAINED			
SIZE (INCHES)	TYPE	QUANTITY (L.F.)	REMARKS
4	SLOTTED PVC	187	SCHEDULE 40
8	SLOTTED PVC	154	SCHEDULE 40

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
Chief, Bureau of Highways — Date 7/12/2016

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
Chief, Division of Land Development — Date 6-3-16
Chief, Development Engineering Division — Date 7-26-16

GLW GUTSCHICK LITTLE & WEBER, P.A.
CIVIL ENGINEERS, LAND SURVEYORS, LAND PLANNERS, LANDSCAPE ARCHITECTS
3909 NATIONAL DRIVE – SUITE 250 – BURTONSVILLE OFFICE PARK
BURTONSVILLE, MARYLAND 20866
TEL: 301-421-4024 BALT: 410-880-1820 DC/VA: 301-989-2524 FAX: 301-421-4186

L:\CADD\DRAWINGS\11071\PLANS BY GLW\Finals\PHASE 1\11071_24-25_ESD DETAILS.dwg | DES. JRD | DRN. JRD | CHK. DEV

DATE	REVISION	BY	APP'R.

PREPARED FOR:
THE HOWARD HUGHES CORPORATION
10480 LITTLE PATUXENT PARKWAY
SUITE 400
COLUMBIA, MD 21044
ATTN: BOB JENKINS
410-964-5443

PROFESSIONAL CERTIFICATION
I HEREBY CERTIFY THAT THESE PLANS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 12975, EXPIRATION DATE: MAY 26, 2018.
6/9/16

ESD DETAILS

DOWNTOWN COLUMBIA
CRESCENT NEIGHBORHOOD
PARCELS B THRU H, NON-BULDABLE BULK PARCELS J THRU R, O.S. LOTS 1 THRU 8 AND MERRIWEATHER-SYMPHONY WOODS NEIGHBORHOOD O.S. LOT 1 AND NON-BUILDABLE BULK PARCEL A

ELECTION DISTRICT No. 5 — HOWARD COUNTY, MARYLAND

SCALE	ZONING	G. L. W. FILE No.
AS SHOWN	NT	11071
DATE	TAX MAP – GRID	SHEET
JUNE, 2016	36 – 01	25 OF 102

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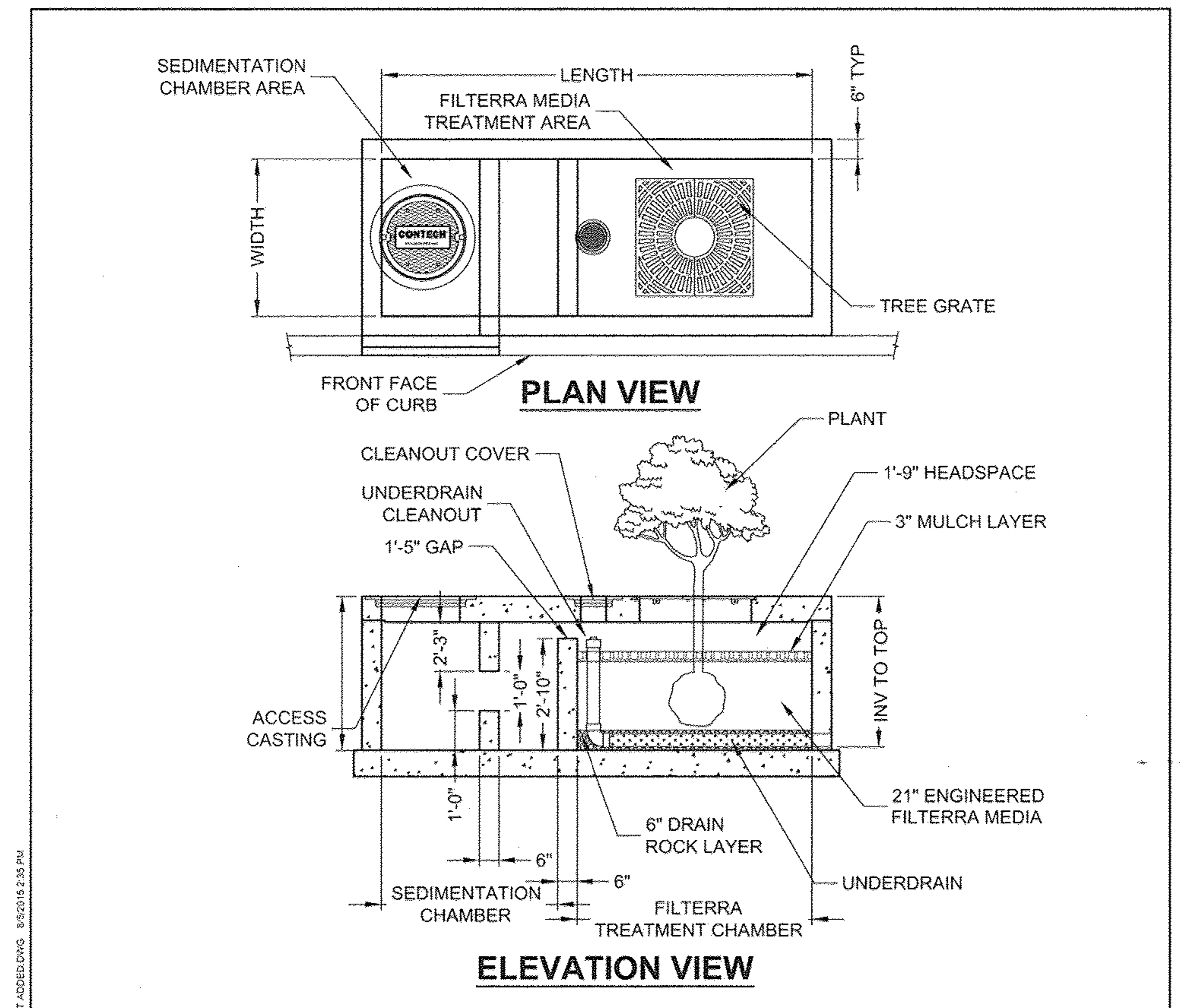
F 15-106



UNIT DESIGNATION	INSIDE VAULT DIMENSIONS	FILTERRA TREATMENT AREA	MAXIMUM DRAINAGE AREA TREATED (SF)	WQv STORAGE CAPACITY (CF)	WQv CREDIT PROVIDED (CF)
MODIFIED FTSC 8' x 6'	17' x 6' x 4.5'	8' x 6'	10,734	212	848

NOTE:
1. MAXIMUM DRAINAGE AREA TREATED ASSUMES 25% WQv AND FILTER SURFACE AREA REQUIREMENTS ARE BOTH MET.
2. STORAGE CAPACITY ASSUMES 40% VOIDS IN UNDERDRAIN STONE AND 30% VOIDS IN MULCH AND MEDIA.
3. ALL INFORMATION IS BASED ON STANDARD 3.83' RIM TO OUTLET DEPTH. CONTACT CONTECH FOR CUSTOM SIZING IF DEPTH IS NOT 3.83'. ACCEPTABLE DEPTH IS 3.33' MIN. TO 5.00' MAX. RIM TO INVERT OUT.

filterra®

CONTECH® ENGINEERED SOLUTIONS LLC
www.ContechES.com
605 Global Way, Suite 113, Linthicum, MD 21090
866-740-3318 OFFICE 866-376-8511 FAX

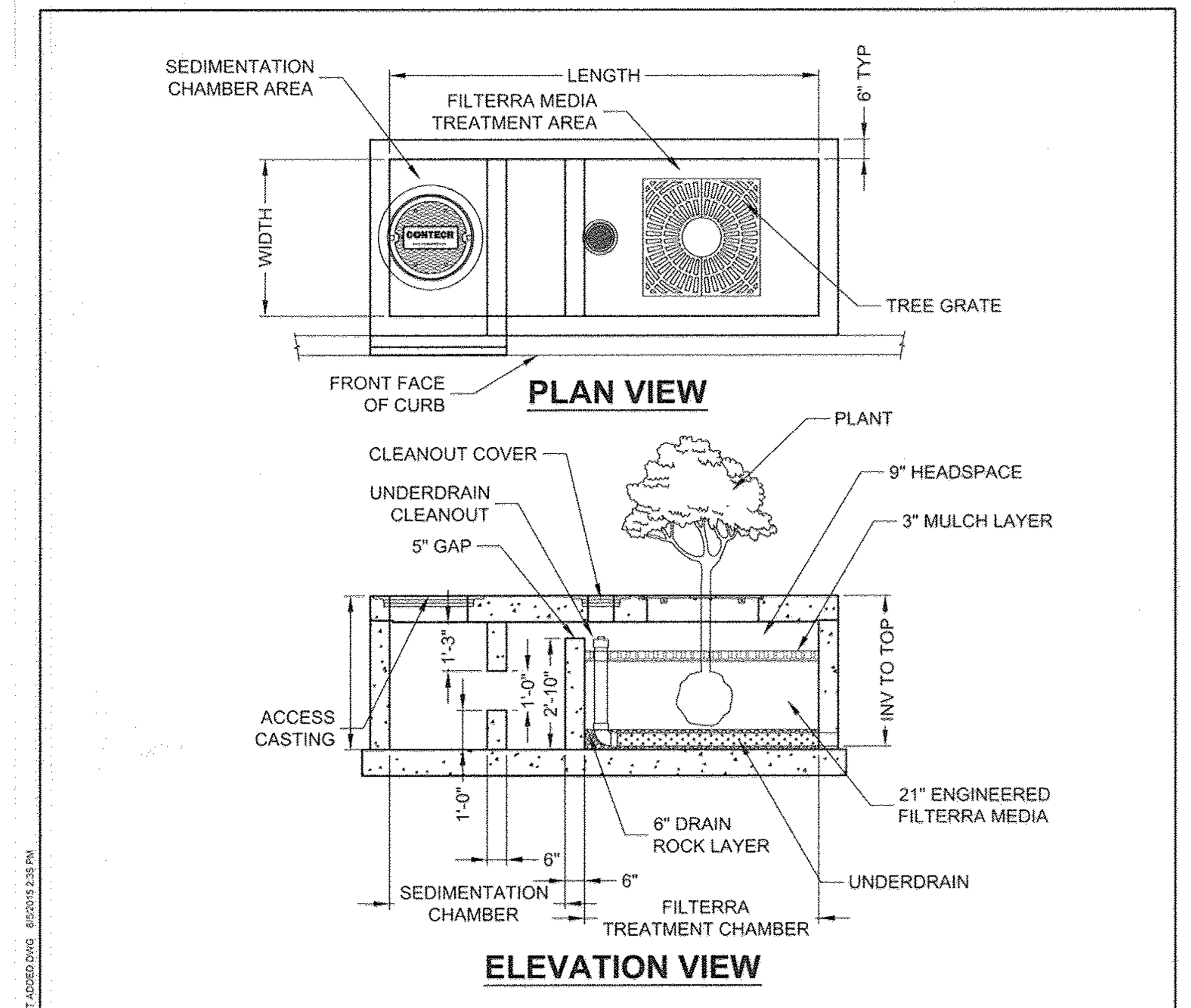
MODIFIED FILTERRA #6 WITH SEDIMENTATION CHAMBER

DATE:3-5-15 | SCALE: NONE | PRODUCT No.: FTSC | DRAWN BY: BCL

I:\STORMWATER\COMMOPS\REGIONAL\BWI ENGINEERING-RULES\BRYNN\MD FTSC\FTSC\FTSC DETAIL WITH WQV CREDIT ADDED.DWG 8/5/2015 2:35 PM

MODIFIED DETAIL FOR FILTERRA #6

NOT TO SCALE



UNIT DESIGNATION	INSIDE VAULT DIMENSIONS	FILTERRA TREATMENT AREA	MAXIMUM DRAINAGE AREA TREATED (SF)	WQv STORAGE CAPACITY (CF)	WQv CREDIT PROVIDED (CF)
FTSC 6' x 4'	12' x 4'	6' x 4'	5,216	103	412
FTSC 8' x 4'	16' x 4'	8' x 4'	7,141	141	564
FTSC 6' x 6'	12' x 6'	6' x 6'	7,847	155	620
FTSC 8' x 6'	16' x 6'	8' x 6'	10,734	212	848
FTSC 10' x 6'	19' x 6'	10' x 6'	12,638	250	1,000
FTSC 10' x 8'	20' x 8'	10' x 8'	18,178	360	1,440
FTSC 11' x 8'	22' x 8'	11' x 8'	20,000	398	1,592

NOTE:
1. MAXIMUM DRAINAGE AREA TREATED ASSUMES 25% WQv AND FILTER SURFACE AREA REQUIREMENTS ARE BOTH MET.
2. STORAGE CAPACITY ASSUMES 40% VOIDS IN UNDERDRAIN STONE AND 30% VOIDS IN MULCH AND MEDIA.
3. ALL INFORMATION IS BASED ON STANDARD 3.83' RIM TO OUTLET DEPTH. CONTACT CONTECH FOR CUSTOM SIZING IF DEPTH IS NOT 3.83'. ACCEPTABLE DEPTH IS 3.33' MIN. TO 5.00' MAX. RIM TO INVERT OUT.

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866-740-3318 OFFICE 866-376-8511 FAX

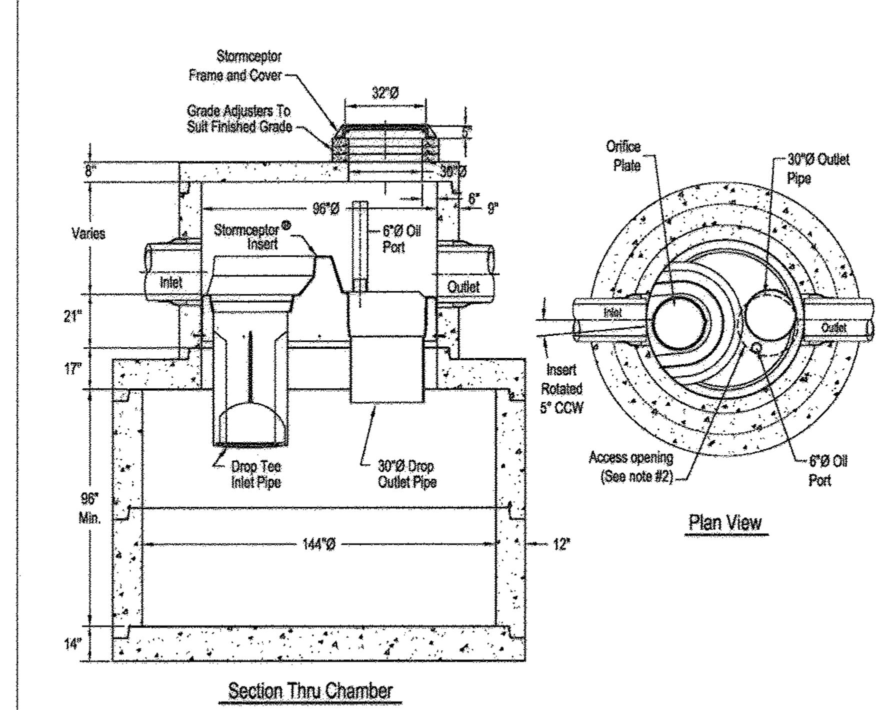
FILTERRA® WITH SEDIMENTATION CHAMBER

DATE:3-5-15 | SCALE: NONE | PRODUCT No.: FTSC | DRAWN BY: BCL

FILTERRA UNIT	INSIDE VAULT DIM.	SEDIMENTATION CHAMBER	FTSC DESIGNATION	INVERT OUT
4	24' x 6'	14' x 6'	FTSC 10' x 6'	330.46
5	17.5' x 4'	9.5' x 4'	FTSC 8' x 4'	330.03
6	17' x 6'	9' x 6'	FTSC 8' x 6'	330.13
7	24' x 6'	14' x 6'	FTSC 10' x 6'	330.23

Rinker MATERIALS™ Concrete Pipe Division

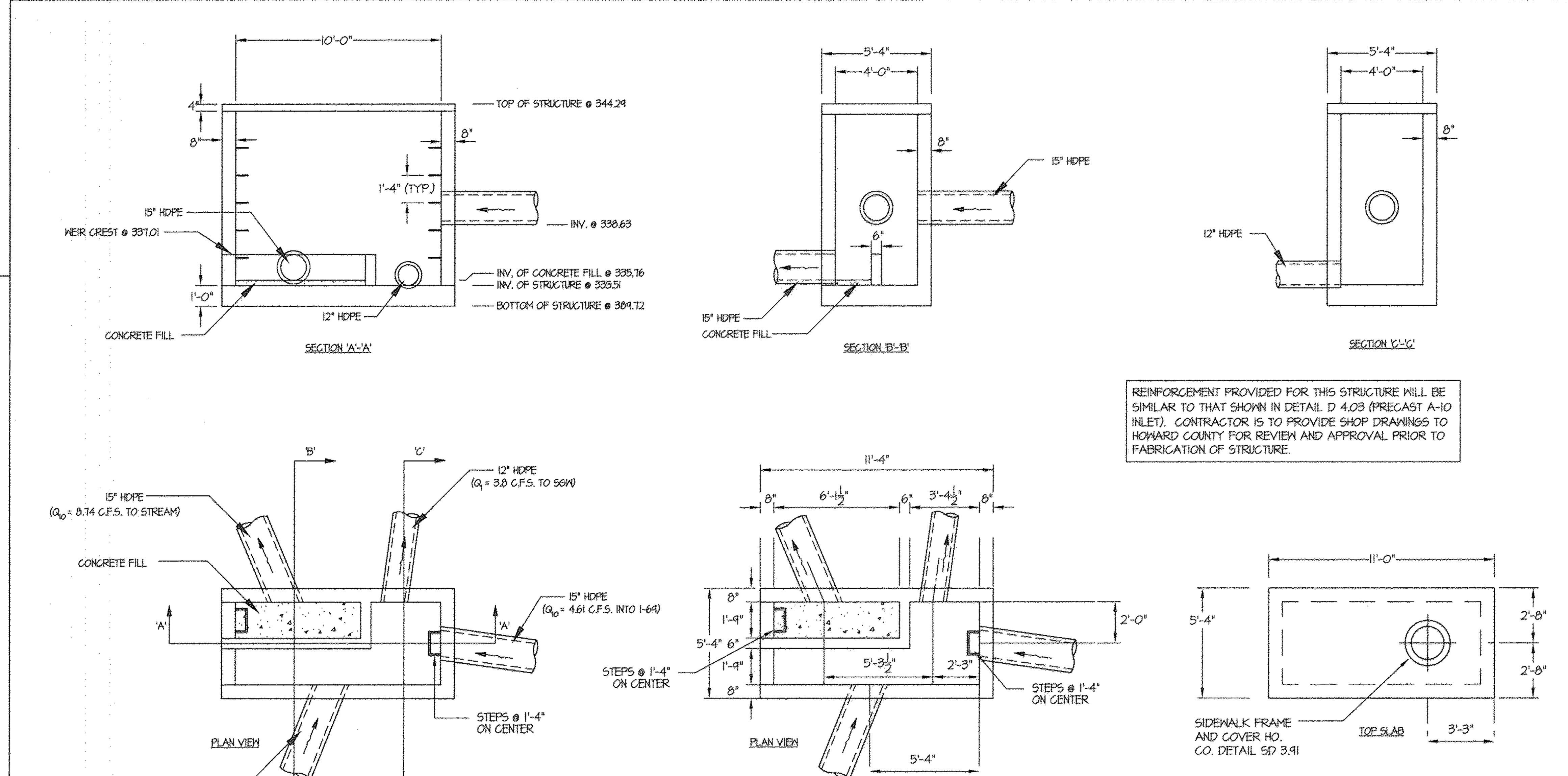
OSR 560 Precast Concrete Stormceptor ® (7200 U.S. Gallon Capacity)



Notes:
1. The Use Of Flexible Connection is Recommended at The Inlet and Outlet Where Applicable.
2. The Cover Should be Positioned Over The Outlet Drop Pipe and The Oil Port.
3. The Stormceptor System is protected by one or more of the following U.S. Patents: #5753115, #5849181, #6068765, #6371690, #7582216, #7666303.
4. Contact a Concrete Pipe Division representative for further details not listed on this drawing.

STORMWATER MANAGEMENT GENERAL NOTES:
1. THE STORMWATER MANAGEMENT OBLIGATION WAS MET WITH ESD PRACTICES INCLUDING: PERVIOUS PAVEMENTS (A-2), MICRO-BIORETENTION FACILITIES (M-6), SUBMERGED GRAVEL WETLANDS (M-2), AND FILTERRAS.

2. SEE GENERAL NOTE #29 ON THE COVER SHEET FOR STORMWATER MANAGEMENT OWNERSHIP AND MAINTENANCE RESPONSILBILITIES



REINFORCEMENT PROVIDED FOR THIS STRUCTURE WILL BE SIMILAR TO THAT SHOWN IN DETAIL D 4.03 (PRECAST A-10 INLET). CONTRACTOR IS TO PROVIDE SHOP DRAWINGS TO HOWARD COUNTY FOR REVIEW AND APPROVAL PRIOR TO FABRICATION OF STRUCTURE.

DETAILS FOR SPLITTER STRUCTURE @ I-69
1" = 5'

ESD COMPUTATION SUMMARY

ESD FACILITY	ESD TYPE	DRAINAGE AREA (AC.)	IMPERVIOUS AREA (AC.)	PERVIOUS AREA (AC.)	Pe PROVIDED (IN.)	ESDv PROVIDED (CF)	Pe REQUIRED (IN.)	ESDv REQUIRED (CF)	WQv STORAGE CAPACITY (CF)	WQv CREDIT PROVIDED (CF)
PLANTER 1*	M-6	0.06	0.06	0.00	1.75	351	1.95	390	---	---
PLANTER 2*	M-6	0.10	0.10	0.00	1.07	380	1.95	693	---	---
PLANTER 3*	M-6	0.24	0.23	0.01	0.91	733	1.95	1,577	---	---
PLANTER 4*	M-6	0.23	0.22	0.01	0.95	733	1.95	1,511	---	---
PLANTER 5*	M-6	0.10	0.10	0.00	1.08	380	1.95	685	---	---
PLANTER 6*	M-6	0.07	0.07	0.00	1.40	351	1.95	490	---	---
MBR 1*	M-6	0.10	0.00	0.10	1.95	2,514	1.95	35	---	---
MBR 2*	M-6	0.68	0.67	0.01	2.60	6,013	1.95	4,510	---	---
MBR 3	M-6	0.80	0.80	0.00	2.60	13,000	1.95	9,750	---	---
MBR 4	M-6	0.51	0.50	0.01	2.50	4,325	1.95	3,365	---	---
MBR 6	M-6	0.93	0.28	0.65	2.05	2,195	1.95	2,083	---	---
SGW 1	M-2	1.26	1.25	0.01	1.54	6,648	1.95	8,409	---	---
PERMEABLE PAVEMENTS	A-2	0.27	0.27	0.00	1.95	4,006	1.95	1,994	---	---
FILTERRA #1 (FTSC 8'x4')*	N/A	0.12	0.12	0.00	1.00	---	1.95	782	119	401
FILTERRA #2 (FTSC 8'x4')*	N/A	0.12	0.12	0.00	1.00	---	1.95	827	119	424
FILTERRA #3 (FTSC 10'x8')*	N/A	0.35	0.35	0.00	1.00	---	1.95	2,340	336	1,200
FILTERRA #4 (FTSC 10'x6')	N/A	0.28	0.27	0.01	1.00	---	1.95	1,849	273	948
FILTERRA #5 (FTSC 8'x4')	N/A	0.13	0.13	0.00	1.00	---	1.95	853	119	437
FILTERRA #6 (FTSC 8'x6')	N/A	0.24	0.24	0.00	1.00	---	1.95	1,618	273	830
FILTERRA #7 (FTSC 10'x6')	N/A	0.25	0.25	0.00	1.00	---	1.95	1,695	273	869
					TOTALS	41,629	---	45,456	1,512	5,109

Pe REQUIRED: 1.95"
TREATMENT REQUIRED FOR ENTIRE SITE: 45,456 CF
TREATMENT PROVIDED FOR ENTIRE SITE: 46,738 CF

TREATMENT REQUIRED FOR F-15-106: 32,943 CF
TREATMENT PROVIDED UNDER F-15-106: 33,258 CF

*EXISTING STORMWATER MANAGEMENT FACILITY CONSTRUCTED UNDER F-15-098

APPROVED: ~~HOWARD~~ HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
[signature] 7/12/2016
Chief, Bureau of Highways — Date

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
[signature] 8.3.16
Chief, Division of Land Development — Date
[signature]
Chief, Development Engineering Division — Date

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L:\CADD\DRAWINGS\11071\PLANS BY GLW\Finals\PHASE 1\11071_26_SWM NOTES and DETAILS.dwg | DES. JRD | DRN. JRD | CHK. DEV

DATE	REVISION	BY	APP'R.

PREPARED FOR:
THE HOWARD HUGHES CORPORATION
10480 LITTLE PATUXENT PARKWAY
SUITE 400
COLUMBIA, MD 21044
ATTN: BOB JENKINS
410-964-5443

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6/9/16 [signature]

STORMWATER MANAGEMENT NOTES AND DETAILS
DOWNTOWN COLUMBIA
CRESCENT NEIGHBORHOOD
PARCELS B THRU H, NON-BULDABLE BULK PARCELS J THRU R, O.S. LOTS 1 THRU 8 AND MERRIWEATHER-SYMPHONY WOODS NEIGHBORHOOD O.S. LOT 1 AND NON-BUILDABLE BULK PARCEL A

ELECTION DISTRICT No. 5 — HOWARD COUNTY, MARYLAND

SCALE	ZONING	G. L. W. FILE No.
AS SHOWN	NT	11071
DATE	TAX MAP - GRID	SHEET
JUNE, 2016	36 - 01	26 OF 102

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F 15-106

L:\CADD\DRAWINGS\11071\PLANS BY GLW\Finals\PHASE 1\11071_26_SWM NOTES and DETAILS.dwg, PLOTTED: 6/9/2016 9:24 AM, LAST SAVED: 5/13/2016 2:35 PM, PLOTTED BY: Jay Harrington

LEGEND

- EXISTING TREE
- PROPOSED STREET TREE
- PROPOSED TREELINE
- EXISTING TREELINE
- EXISTING PAVEMENT
- EXISTING STREET LIGHT
- LED-100 MODERN POST-TOP FIXTURE MOUNTED ON A 14' BLACK FIBERGLASS POLE
- LED-150 MODERN POST-TOP FIXTURE MOUNTED ON A 14' BLACK FIBERGLASS POLE
- LED-250 COBRA FIXTURE MOUNTED AT 30' ON A BRONZE FIBERGLASS POLE USING A 6' ARM
- LED-200 COBRA FIXTURE MOUNTED AT 30' ON A BRONZE FIBERGLASS POLE USING A 6' ARM
- LED-150 COBRA FIXTURE MOUNTED AT 30' ON A BRONZE FIBERGLASS POLE USING A 6' ARM
- LED-200 COBRA FIXTURE MOUNTED AT 30' ON A BRONZE FIBERGLASS POLE USING A 12' ARM
- LED-250 COBRA FIXTURE MOUNTED AT 30' ON A BRONZE FIBERGLASS POLE USING A 12' ARM

STREET LIGHT SCHEDULE

LOCATION			TYPE
℄ STA. 5+26.5	MERRIWEATHER DR	21.05' LT.	A
℄ STA. 7+38.4	MERRIWEATHER DR	21.62' RT.	D
℄ STA. 8+00.2	MERRIWEATHER DR	24.21' LT.	A
℄ STA. 8+01.1	MERRIWEATHER DR	26.67' RT.	A
℄ STA. 8+66.5	MERRIWEATHER DR	26.11' LT.	A
℄ STA. 11+17.4	MERRIWEATHER DR	25.98' RT.	D
℄ STA. 11+17.8	MERRIWEATHER DR	26.00' LT.	D
℄ STA. 12+05.1	MERRIWEATHER DR	26.67' RT.	A
℄ STA. 12+00.0	MERRIWEATHER DR	28.24' LT.	A
℄ STA. 12+61.8	MERRIWEATHER DR	26.00' LT.	B
℄ STA. 13+12.4	MERRIWEATHER DR	26.78' RT.	B
℄ STA. 14+35.0	MERRIWEATHER DR	26.67' LT.	A
℄ STA. 15+15.0	MERRIWEATHER DR	26.67' RT.	A
℄ STA. 15+45.0	MERRIWEATHER DR	26.67' LT.	A
℄ STA. 16+81.1	MERRIWEATHER DR	26.67' RT.	A
℄ STA. 17+67.2	MERRIWEATHER DR	26.67' LT.	A
℄ STA. 18+55.0	MERRIWEATHER DR	26.67' RT.	A
℄ STA. 141+50.0	BROKEN LAND PKWY.	70.70' RT	G
℄ STA. 0+85.1	HICKORY RIDGE	56.90' LT.	F
℄ STA. 1+65.0	HICKORY RIDGE	55.61' LT.	A
℄ STA. 2+35.0	HICKORY RIDGE	32.61' RT.	G
℄ STA. 2+40.0	HICKORY RIDGE	55.61' LT.	A
℄ STA. 3+15.0	HICKORY RIDGE	43.78' LT.	A
℄ STA. 3+85.0	HICKORY RIDGE	32.61' RT.	C
℄ STA. 4+40.0	HICKORY RIDGE	43.78' LT.	A
℄ STA. 5+04.4	HICKORY RIDGE	43.21' LT.	A
℄ STA. 5+35.0	HICKORY RIDGE	32.61' RT.	C
℄ STA. 5+86.9	HICKORY RIDGE	34.08' LT.	A
℄ STA. 6+85.0	HICKORY RIDGE	32.61' RT.	B
℄ STA. 7+08.2	HICKORY RIDGE	28.67' LT.	A
℄ STA. 7+30.0	HICKORY RIDGE	28.82' LT.	B

TYPES:

A) LED-100 MODERN POST-TOP FIXTURE MOUNTED ON A 14' BLACK FIBERGLASS POLE

B) LED-200 COBRA FIXTURE MOUNTED AT 30' ON A BRONZE FIBERGLASS POLE USING A 6' ARM

C) LED-200 COBRA FIXTURE MOUNTED AT 30' ON A BRONZE FIBERGLASS POLE USING A 12' ARM

D) LED-150 COBRA FIXTURE MOUNTED AT 30' ON A BRONZE FIBERGLASS POLE USING A 6' ARM

E) LED-150 MODERN POST-TOP FIXTURE MOUNTED ON A 14' BLACK FIBERGLASS POLE

F) LED-250 COBRA FIXTURE MOUNTED AT 30' ON A BRONZE FIBERGLASS POLE USING A 6' ARM

G) LED-250 COBRA FIXTURE MOUNTED AT 30' ON A BRONZE FIBERGLASS POLE USING A 12' ARM

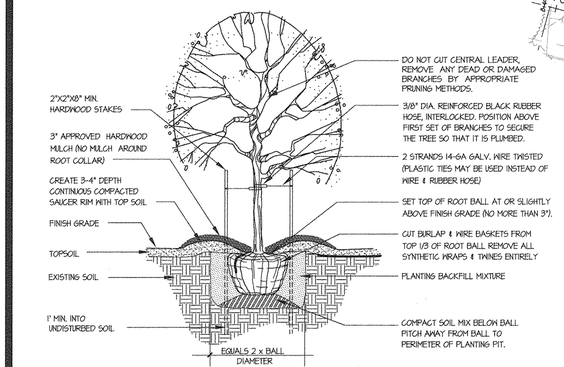
SURETY FOR STREET TREES:

STREET TREES ARE TO BE BONDED WITH THE DPW COST ESTIMATE FOR ROAD CONSTRUCTION

(54) SHADE TREES X $300 = $16,200
TOTAL = $16,200

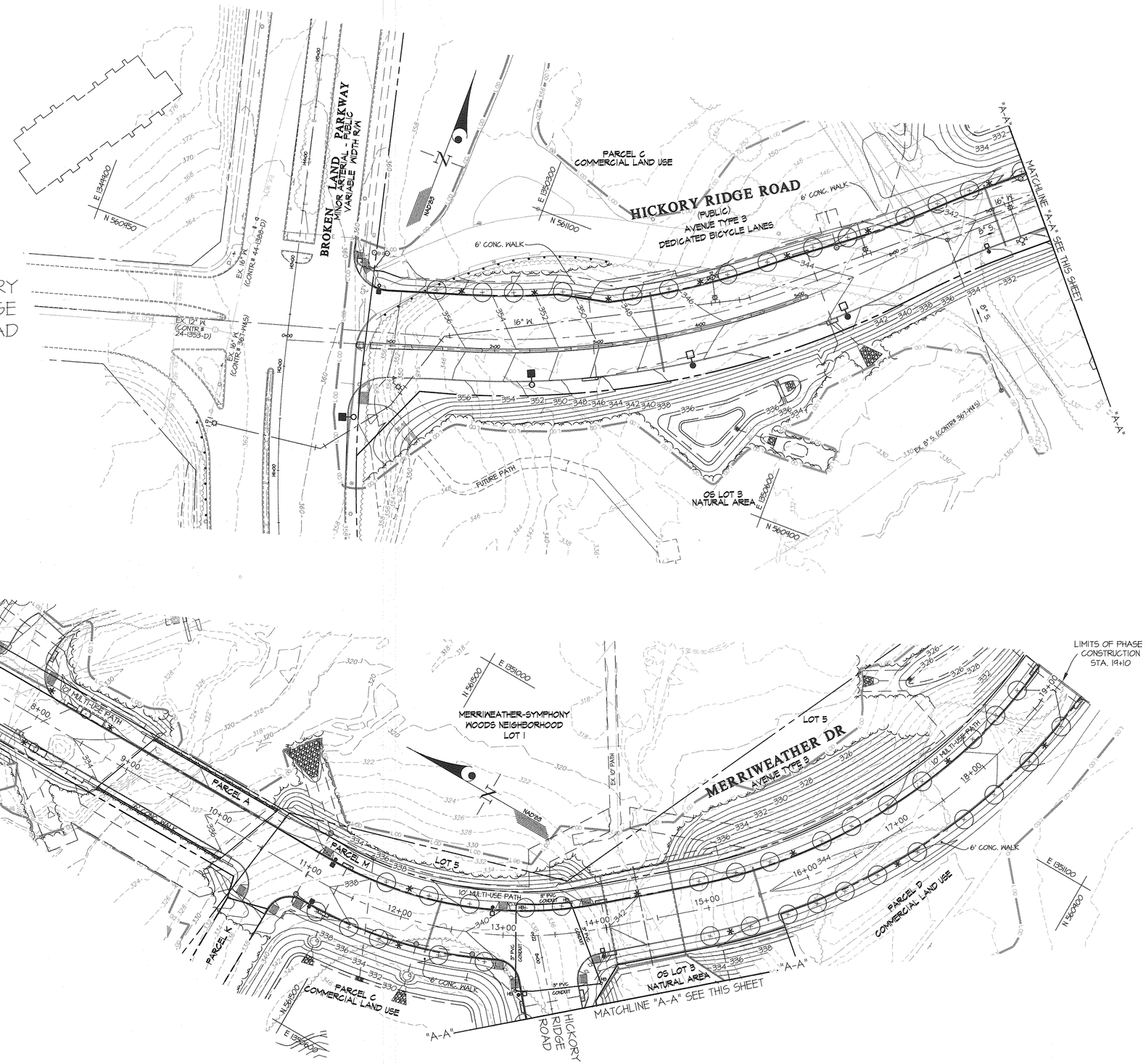
PLANT LIST				
SYMBOL	QTY.	TYPE	NAMES (BOTANICAL / SCIENTIFIC)	SIZE/COMMENTS
	SHADE TREES			
×	50	AR	ACER RUBRUM 'OCTOBER GLORY'/ OCTOBER GLORY RED MAPLE	4" CAL. B&B
⊙	4		ACER GINNALA 'AMUR MAPLE'	HEIGHT:15'-25' AND SPREAD:15'-25'
TOTAL:	54			

TOTAL LENGTH OF ROAD BEING CONSTRUCTED (R/W): 3820'
LENGTH OF ROAD R/W ADJACENT TO NATURAL AREAS (PARKS): 3045'
REMAINDER TO BE PLANTED PER NEIGHBORHOOD DESIGN GUIDELINES (NDG): 725'
NUMBER OF TREES REQUIRED (PER NDG) @ 1 PER 40 FEET: 19
NUMBER OF TREES PROVIDED: 54



NOTE: ALL SUPPORTING DEVICES (STAKES, WIRES, ETC.) SHALL BE REMOVED AFTER 2 GROWING SEASONS.

DECIDUOUS TREE PLANTING DETAIL
FOR PLANTING MATERIAL UP TO 3 1/2" CALIPER



SCALE: 1" = 50

0' 25 50 100 200

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
Chief, Bureau of Highways — Date 7/14/2016

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
Chief, Division of Land Development — Date 5.3.16
Chief, Development Engineering Division — Date 7.26.16

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L:\CADD\DRAWINGS\11071\PLANS BY GLW\finals\PHASE 1\11071_27-28_STREET TREE.dwg | DES. JH | DRN. JH | CHK. DEV

DATE	REVISION	BY	APP'R.

PREPARED FOR:
THE HOWARD HUGHES CORPORATION
10480 LITTLE PATUXENT PARKWAY
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EXPIRATION DATE: MAY 26, 2018
6/9/16

STREET TREE PLAN
DOWNTOWN COLUMBIA
CRESCENT NEIGHBORHOOD
PARCELS B THRU H, NON-BUILDABLE BULK PARCELS J THRU R, O.S. LOTS 1 THRU 8 AND MERRIWEATHER-SYMPHONY WOODS NEIGHBORHOOD O.S. LOT 1 AND NON-BUILDABLE BULK PARCEL A
ELECTION DISTRICT No. 5 — HOWARD COUNTY, MARYLAND

SCALE	ZONING	G. L. W. FILE No.
1"=50'	NT	11071
DATE	TAX MAP – GRID	SHEET
JUNE, 2016	36 – 01	27 OF 102

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Trees to be Removed:				
Tree Number	Common Name	Scientific Name	D.B.H. (Inches)	Condition Rating
Removed by Crescent Roadway				
848	White Oak	Quercus alba	25	Good
844	Red Maple	Acer rubrum	20	Fair
Removed due to MPP PH II Parking Lot				
353			26	
354			20	
840	White Oak	Quercus alba	26	Poor
841	White Oak	Quercus alba	20	Fair
843	Hickory	Carya spp.	11	Good
844	Hickory	Carya spp.	11	Fair
845	Hickory	Carya spp.	21	Fair
861	White Oak	Quercus alba	22	Fair

Trees to Remain:				
Tree Number	Common Name	Scientific Name	D.B.H. (Inches)	Condition Rating
834	White Oak	Quercus alba	30	Fair
842	Cottonwood	Populus spp.	19	Poor
847	White Oak	Quercus alba	32	Good
850	White Oak	Quercus alba	34	Good
851	Hickory	Carya spp.	16	Good
852	White Oak	Quercus alba	28	Poor
853	Red Oak	Quercus rubra	27	Fair
854	Sweetgum	Liquidambar styraciflua	9	Good
855	Hickory	Carya spp.	19	Good
856	White Oak	Quercus alba	28	Good
857	White Oak	Quercus alba	23	Fair
858	White Oak	Quercus alba	24	Fair
859	American Beech	Fagus grandifolia	24	Good
860	White Oak	Quercus alba	26	Good
862	Hickory	Carya spp.	14	Good

LEGEND

- Street Tree per F 15-098
- EXISTING TREE
- EXISTING TREE TO BE REMOVED
- PROPOSED SHADE TREE

GRADING AND PAVING PLAN

LEGEND (SEE DETAILS, SHEET 12)

- P-3 PAVING
- POROUS PAVER CROSSWALK
- PERVIOUS ASPHALT
- PERVIOUS PAVING (FLEXIPAVE)
- (9) PARKING SPACE COUNT

SEE SHEET 20 ON SDP 16-018 (HANDICAP ACCESSIBILITY PLAN, GRADING & PARKLAND PARKING PLAN) FOR HANDICAP ACCESSIBLE ADA ROUTES

SEE SDP-16-18 FOR HANDICAP ACCESSIBILITY DETAILS.

EXISTING PAVING IN PARKING AREAS TO BE REPAVED AND RESTRIPED

32 PARKING SPACES PROVIDED

SCALE: 1" = 30

0' 15 30 60 120

TREE CALCULATIONS

I:

EXISTING TREES TO BE REMOVED: 10
NEW TREES PROVIDED: 20 (2:1 RATIO)

SURETY FOR TREE REPLACEMENT

OPEN SPACE LOT 1:

(20) SHADE TREES X	$300 =	$6,000
(0) ORNAMENTAL TREES X	$150=	$0
(0) EVERGREEN TREES X	$150=	$0
	TOTAL =	$6,000

NOTES:

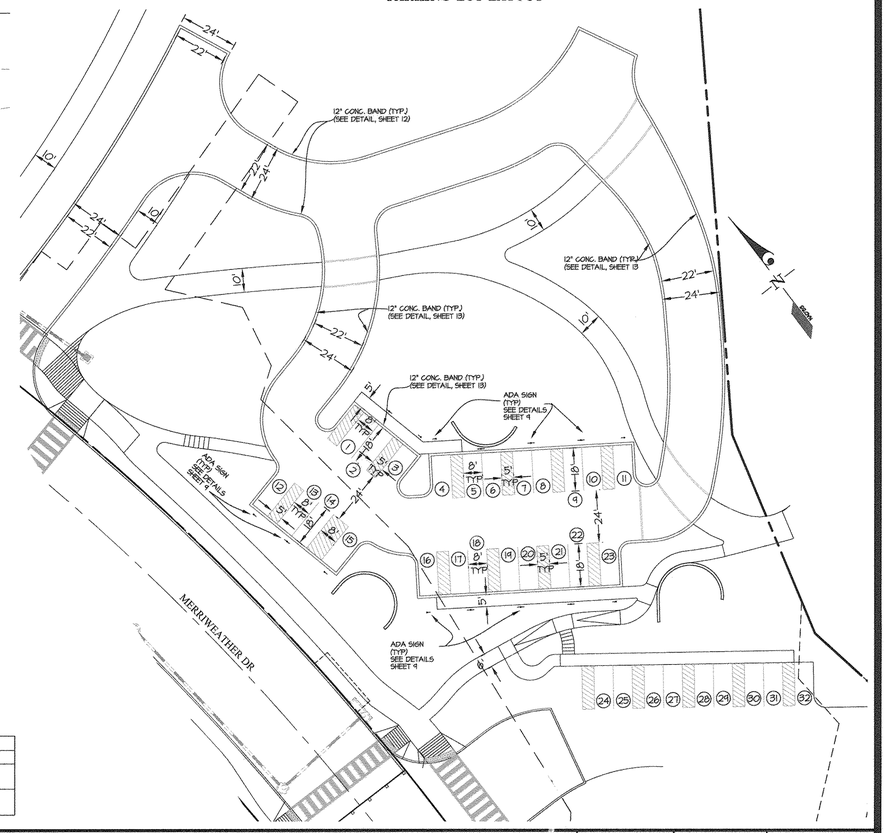
1. REFER TO SHEET 27 FOR ALL PLANTING DETAILS.
2. TREE INVENTORY ANALYSIS PROVIDED BY BIOHABITATS.
3. TREE REPLACEMENT IS BEING PERFORMED IN ACCORDANCE WITH THE MERRIWEATHER-SYMPHONY WOODS DESIGN GUIDELINES WHICH STATE THAT TREES REMOVED DUE TO DEVELOPMENT WITHIN SYMPHONY WOODS PARK MUST BE REPLACED AT A 2:1 RATIO.

TREE REPLACEMENT PLAN

TREE SCHEDULE - OPEN SPACE LOT 1

KEY	QTY.	BOTANICAL NAME	COMMON NAME	SIZE	CONT./ B&B	COMMENTS
SHADE TREES						
CC	5	Carpinus caroliniana	Ironwood	4" Cal. MIN	B&B	Central Leader Full Crown
QR	15	Quercus rubra	Northern Red Oak	4" Cal. MIN	B&B	6' min. branching Ht., Single Stem, Matched, Central Leader w/ Full Crown

MERRIWEATHER POST PAVILION HANDICAP PARKING LOT LAYOUT



APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

Chief, Bureau of Highways — Date 7/12/2016

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

Chief, Division of Land Development — Date 8.3.16

Chief, Development Engineering Division — Date 7.26.16

GLW GUTSCHICK LITTLE & WEBER, P.A.
CIVIL ENGINEERS, LAND SURVEYORS, LAND PLANNERS, LANDSCAPE ARCHITECTS
3909 NATIONAL DRIVE – SUITE 250 – BURTONSVILLE OFFICE PARK
BURTONSVILLE, MARYLAND 20866
TEL: 301-421-4024 BALT: 410-880-1820 DC/VA: 301-989-2524 FAX: 301-421-4186

L:\CADD\DRAWINGS\11071\PLANS BY GLW\mxd\PHASE 1\11071_27-28_STREET TREE.dwg | DES. WSJ | DRN. WSJ | CHK. WSJ

DATE	REVISION	BY	APP'R.

PREPARED FOR:
THE HOWARD HUGHES CORPORATION
10480 LITTLE PATUXENT PARKWAY
SUITE 400
COLUMBIA, MD 21044
ATTN: BOB JENKINS
410-964-5443

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE PLANS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 12975, EXPIRATION DATE: MAY 26, 2018.

6/9/16

PARKING LOT LAYOUT & TREE REPLACEMENT PLAN
DOWNTOWN COLUMBIA
CRESCENT NEIGHBORHOOD
PARCELS B THRU H, NON-BUILDABLE BULK PARCELS J THRU R, O.S. LOTS 1 THRU 8 AND MERRIWEATHER-SYMPHONY WOODS NEIGHBORHOOD O.S. LOT 1 AND NON-BUILDABLE BULK PARCEL A

ELECTION DISTRICT No. 5 — HOWARD COUNTY, MARYLAND

SCALE	ZONING	G. L. W. FILE No.
1"=30'	NT	11071
DATE	TAX MAP – GRID	SHEET
JUNE, 2016	36 – 01	28 OF 102

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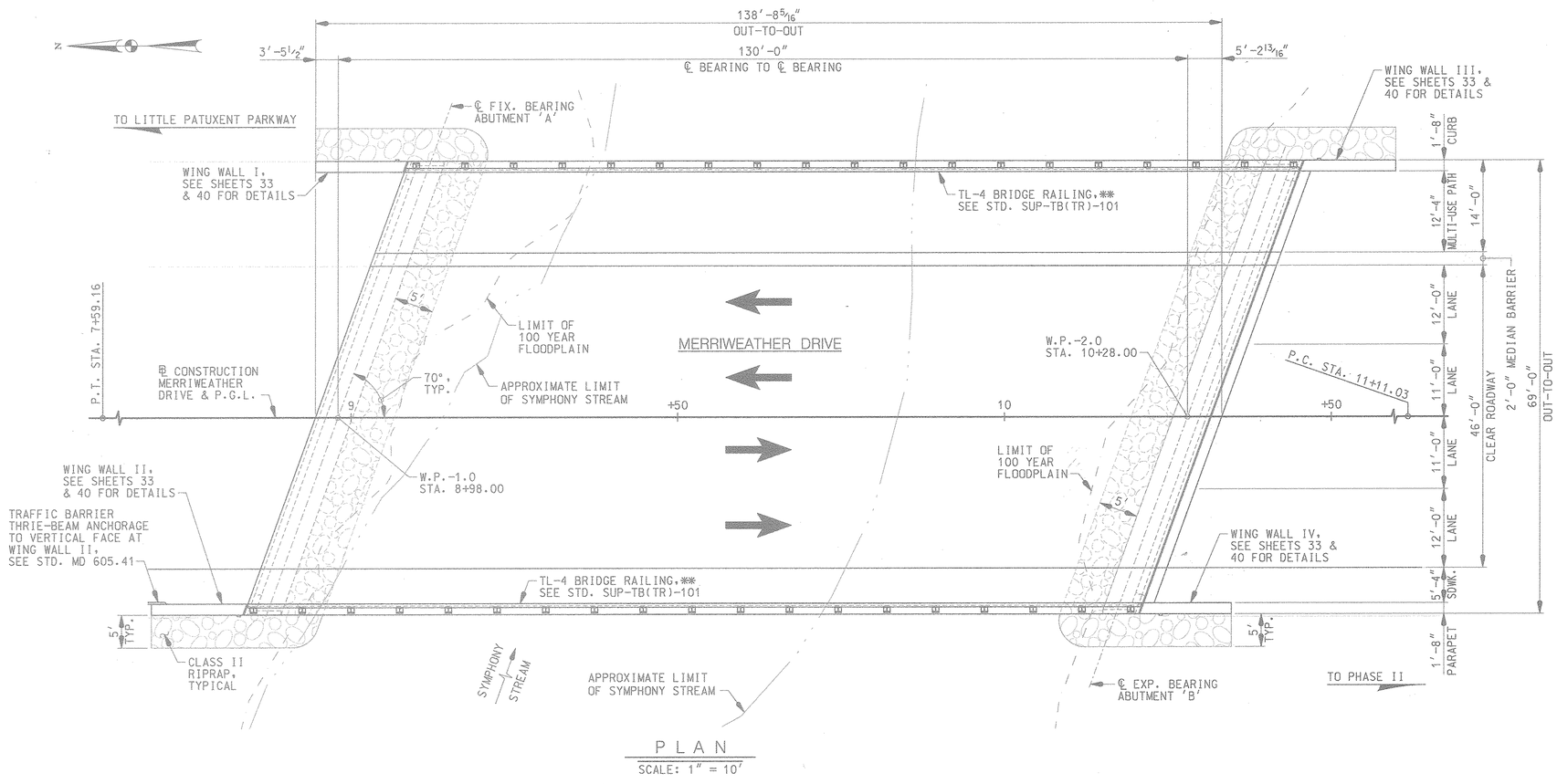
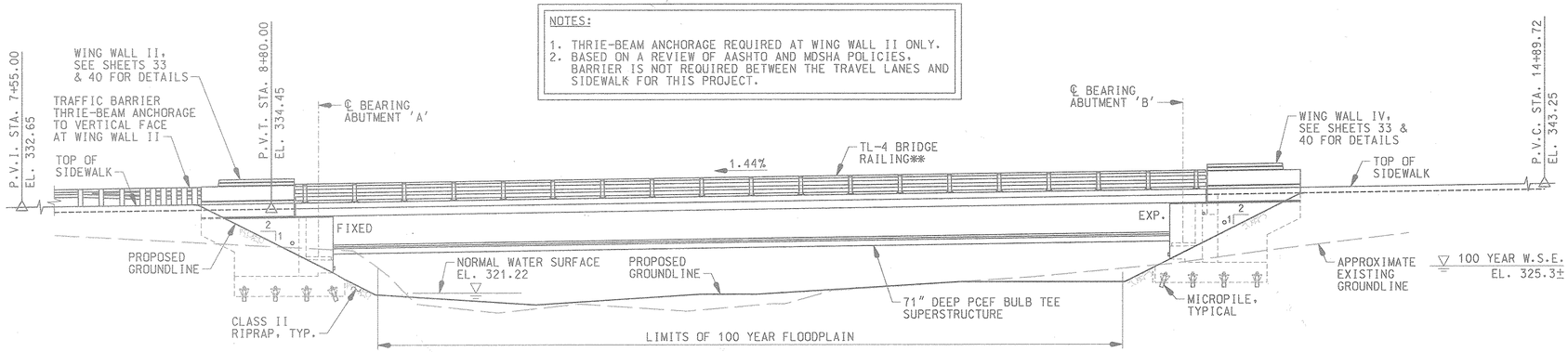


PLAN

SCALE: 1" = 10'

NOTES:

1. THRIE-BEAM ANCHORAGE REQUIRED AT WING WALL II ONLY.
2. BASED ON A REVIEW OF AASHTO AND MDSHA POLICIES, BARRIER IS NOT REQUIRED BETWEEN THE TRAVEL LANES AND SIDEWALK FOR THIS PROJECT.



ELEVATION

SCALE: 1" = 10'

** RAILING TO BE POWDER COATED. COLOR TO MATCH SPECTRACOAT COLOR 7016 (BRONZE) OR APPROVED EQUAL. COLOR TO BE CONFIRMED IN WRITING BY OWNER PRIOR TO FABRICATION.

GENERAL NOTES

SPECIFICATIONS:
- HOWARD COUNTY DESIGN MANUAL: VOLUME IV - STANDARD SPECIFICATIONS & DETAILS FOR CONSTRUCTION, DATED OCTOBER, 1990.
- SHA SPECIFICATIONS DATED JULY, 2008
- REVISIONS THEREOF AND ADDITIONS THERETO AND SPECIAL PROVISIONS FOR MATERIALS AND CONSTRUCTION.

DESIGN: AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS DATED 2014 AND ALL INTERIMS THROUGH 2016.

CONCRETE: LOAD AND RESISTANCE FACTOR DESIGN METHOD. THE DESIGN COMPRESSIVE STRENGTH SHALL BE f'c = 3000 PSI FOR ELEMENTS USING MIX NO. 3 CONCRETE AND f'c = 4000 PSI FOR ELEMENTS USING MIX NO. 6 CONCRETE.

PRESTRESSED CONCRETE: LOAD AND RESISTANCE FACTOR DESIGN METHOD. THE DESIGN COMPRESSIVE STRENGTH SHALL BE f'c = 7000 PSI. THE MINIMUM COMPRESSIVE STRENGTH AT TRANSFER OF PRESTRESS SHALL BE f'ci = 5950 PSI FOR DESIGN.

REINFORCING STEEL: fy = 60000 PSI.

LOADING: HL-93 WITH PROVISIONS FOR FUTURE 2" WEARING SURFACE AND 15 lbs/sq.ft. FOR USE OF STEEL BRIDGE DECK FORMS WHICH REMAIN IN PLACE.

CONCRETE: ALL CONCRETE FOR ABUTMENT BACKWALLS, EXPANSION JOINT CROSS BEAM(S), TOP PORTION OF EXPANSION JOINT CROSS BEAM SUPPORT COLUMN(S), PARAPETS AT WING WALLS & ENTIRE SUPERSTRUCTURE(S) SHALL BE MIX. NO. 6 (4500 PSI). ALL OTHER STRUCTURE CONCRETE EXCEPT PRESTRESSED GIRDERS SHALL BE MIX NO. 3 (3500 PSI).

PRESTRESSED CONCRETE: ALL CONCRETE FOR PRESTRESSED CONCRETE GIRDERS SHALL BE SELF CONSOLIDATING CONCRETE WITH A 28 DAY COMPRESSIVE STRENGTH OF f'c = 8000 PSI.

REINFORCING STEEL: REINFORCING STEEL SHALL CONFORM TO A615, GRADE 60.

ONLY GRADE 60 CAN BE USED ON THIS PROJECT.

ALL SPLICES, NOT SHOWN, SHALL BE LAPPED AS PER BAR LAP CHARTS. MINIMUM COVER FOR ANY BAR SHALL BE 2" UNLESS OTHERWISE NOTED, WITH THE EXCEPTION OF BARS AT THE TOP OF PIERS AND BARS AT THE BOTTOM AND SIDES OF ALL FOOTINGS WHICH SHALL HAVE 3" MINIMUM COVER.

MINIMUM COVER FOR ANY BAR IN THE BOTTOM OF THE BOTTOM FLANGE IN PRESTRESSED CONCRETE GIRDERS SHALL BE 2 1/2" UNLESS OTHERWISE NOTED.

FOR TIES AND STIRRUPS: STANDARD ACI BENDING TOLERANCES ARE MODIFIED TO PLUS (+) ZERO INCHES, MINUS (-) NORMAL ACI BENDING TOLERANCES.

REINFORCING STEEL IN THE FOLLOWING AREAS SHALL BE EPOXY COATED:
- ENTIRE SUPERSTRUCTURE, INCLUDING PARAPETS
- ABUTMENT BACKWALLS
- ALL BEARING SEAT PADS
- ABUTMENT BRIDGE SEAT AREAS
- EXPANSION JOINT CROSS BEAM
- PORTIONS OF EXPANSION JOINT CROSS BEAM SUPPORT COLUMNS
- PARAPET PORTION OF WING WALLS
- EXPOSED FACE OF ABUTMENT STEMS THAT IS LESS THAN 10 FEET FROM THE EDGE OF PAVED SURFACES, INCLUDING SHOULDERS
- PRESTRESSED CONCRETE GIRDERS WITH THE EXCEPTION OF THE PRETENSIONING STEEL

PRETENSIONING STEEL: PRETENSIONING STEEL SHALL CONSIST OF 1/2" DIAMETER 7-WIRE BRIGHT LOW RELAXATION STRANDS CONFORMING TO THE REQUIREMENTS OF M203, GRADE 270. EACH 1/2" STRAND SHALL BE PRETENSIONED TO 31000 LB. (0.75 fpu), HAVE AN ULTIMATE STRENGTH OF 41300 LB. (fpu) AND A YIELD STRENGTH OF 37200 LB. (0.90 fpu).

KEYS: ALL CONCRETE CONSTRUCTION KEYS ARE NOMINAL SIZE.

RESTRICTIONS FOR PLACING AND USING EQUIPMENT ON STRUCTURE/OR STORING MATERIALS ON/OR AGAINST STRUCTURES: THERE ARE RESTRICTIONS ON PLACING EQUIPMENT ON EXISTING AND NEW STRUCTURE(S) AND STORING MATERIALS ON/OR AGAINST EXISTING AND NEW STRUCTURE(S) ELEMENTS. THE LIMITATIONS BASICALLY RELATE TO LOADS THAT ARE BEYOND MARYLAND'S LEGAL VEHICLES AND/OR POSTED LOAD LIMITS (WHERE APPLICABLE) AND MATERIALS STOCKPILED ON/OR AGAINST STRUCTURE'S OR STRUCTURES' ELEMENTS. FOR DETAILS OF SUCH RESTRICTIONS SEE TC6.14 TITLED "RESTRICTIONS FOR PLACING AND USING EQUIPMENT ON STRUCTURES, OR STORING MATERIALS ON/OR AGAINST STRUCTURES" IN THE CONTRACT DOCUMENTS. IN ORDER TO COMPLY WITH THIS ARTICLE, THE CONTRACTOR SHALL READ TC6.14 PRIOR TO COMMENCING ANY WORK ON STRUCTURE(S) IN THIS CONTRACT.

NOTES:

1. FOR ABUTMENT PLANS AND ELEVATIONS, SEE SHEETS 30 & 31.
2. FOR WING WALL ELEVATIONS, SEE SHEET 33.
3. FOR SUPERSTRUCTURE TYPICAL SECTION, SEE SHEET 35.
4. FOR FRAMING PLAN, SEE SHEET 36.
5. FOR BORINGS AND DRIVE TESTS, SEE SHEETS 37-39.

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
Chief, Bureau of Highways — Date 7/12/2016

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
Chief, Division of Land Development — Date 8.3.16
Chief, Development Engineering Division — Date 7.26.16

FOR PERMITTING - COMPLETE BRIDGE CONSTRUCTION PLANS UNDER SEPARATE SUBMITTAL.

WALLACE MONTGOMERY
ENGINEERS-PLANNERS-SURVEYORS-CONSTRUCTION MANAGERS
10150 York Road, Suite 200
Hunt Valley, Maryland 21030
410.494.9083 Tel / 410.667.0925 Fax
www.WallaceMontgomery.com
A Limited Liability Partnership

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DES. GJG	DRN. DED	CHK.

DATE	REVISION	BY	APP'R.

PREPARED FOR:
THE HOWARD HUGHES CORPORATION
LITTLE PATUXENT PARKWAY
COLUMBIA, MARYLAND 21044
ATTN: BOB JENKINS
410-964-5443

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE PLANS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 24748, EXPIRATION DATE: 1-14-18

STATE OF MARYLAND — LINDSEY GORUSHKIN, JR. — 24748 — REGISTERED PROFESSIONAL ENGINEER

GENERAL PLAN AND ELEVATION

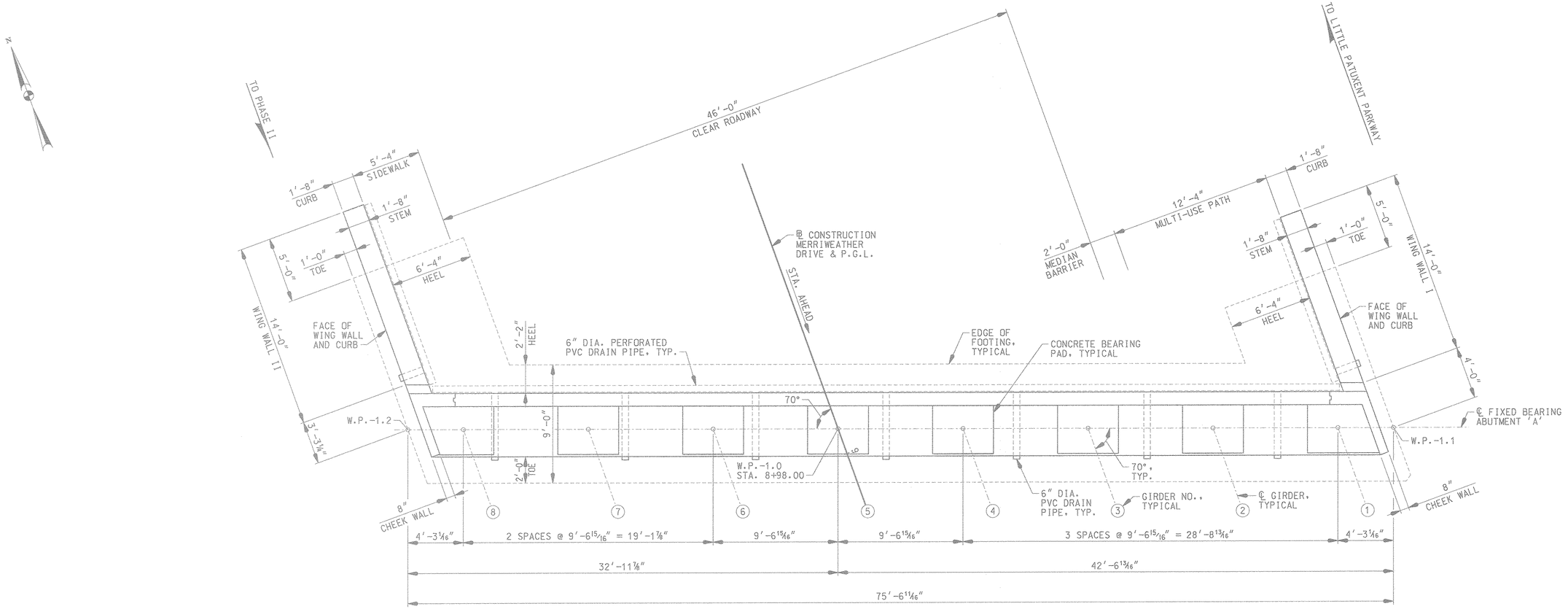
DOWNTOWN COLUMBIA

CRESCENT NEIGHBORHOOD
PARCELS B THRU H, NON-BUILDABLE BULK PARCELS J THRU R, O.S. LOTS 1 THRU 8 AND MERRIWEATHER-SYMPHONY WOODS NEIGHBORHOOD O.S. LOT 1 AND NON-BUILDABLE BULK PARCEL A

ELECTION DISTRICT No. 5 — HOWARD COUNTY, MARYLAND

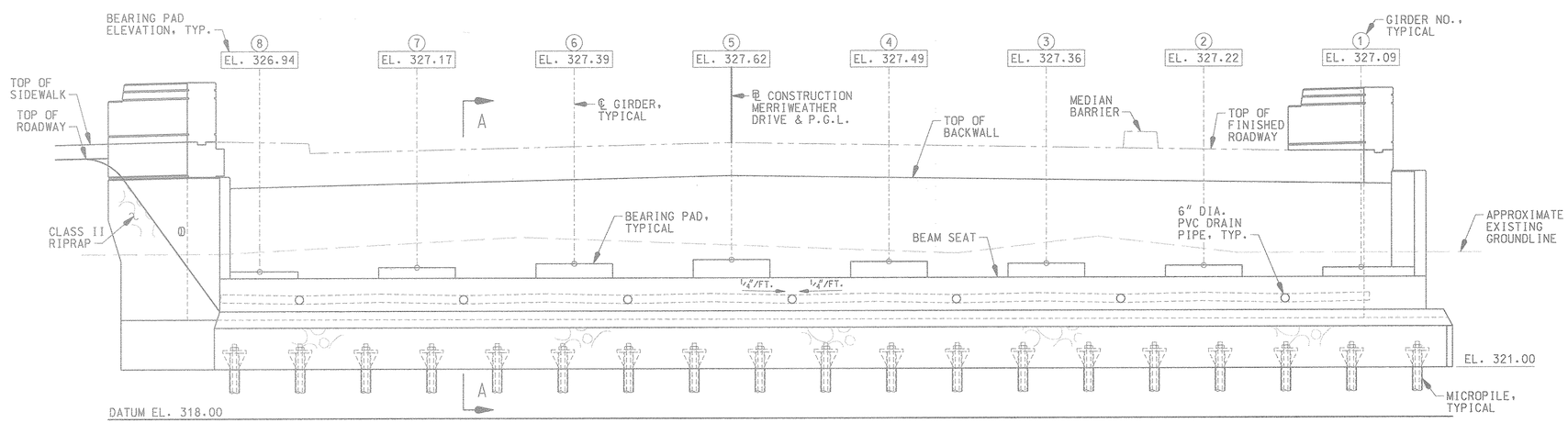
SCALE	ZONING	G. L. W. FILE No.
AS SHOWN	NT	11071
DATE	TAX MAP - GRID	SHEET
JUNE 2016	36 - 01	29 OF 102

F 15-106



PLAN

SCALE: 1/4" = 1'-0"



ELEVATION

SCALE: 1/4" = 1'-0"

NOTES:

1. FENCE NOT SHOWN FOR CLARITY.
2. FOR SECTION A-A & TYPICAL BEARING PAD DETAIL, SEE SHEET 32.
3. FOR WING WALL DETAILS, SEE SHEETS 33 & 34.

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

Chief, Bureau of Highways — Date 7/12/2016

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

Chief, Division of Land Development — Date 8.3.16

Chief, Development Engineering Division — Date 7.26.16

FOR PERMITTING - COMPLETE BRIDGE CONSTRUCTION PLANS UNDER SEPARATE SUBMITTAL.

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ENGINEERS • PLANNERS • SURVEYORS • CONSTRUCTION MANAGERS
10150 York Road, Suite 200
Hunt Valley, Maryland 21030
410.494.9093 Tel / 410.667.0925 Fax
A Limited Liability Partnership
www.WallaceMontgomery.com

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DES. GJG	DRN. DED	CHK.

DATE	REVISION	BY	APP'R.

PREPARED FOR:
THE HOWARD HUGHES CORPORATION
LITTLE PATUXENT PARKWAY
COLUMBIA, MARYLAND 21044
ATTN: BOB JENKINS
410-964-5443

PROFESSIONAL CERTIFICATION

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STATE OF MARYLAND — DAVID LEE BORUSHKO, JR. — NO. 24748 — REGISTERED PROFESSIONAL ENGINEER

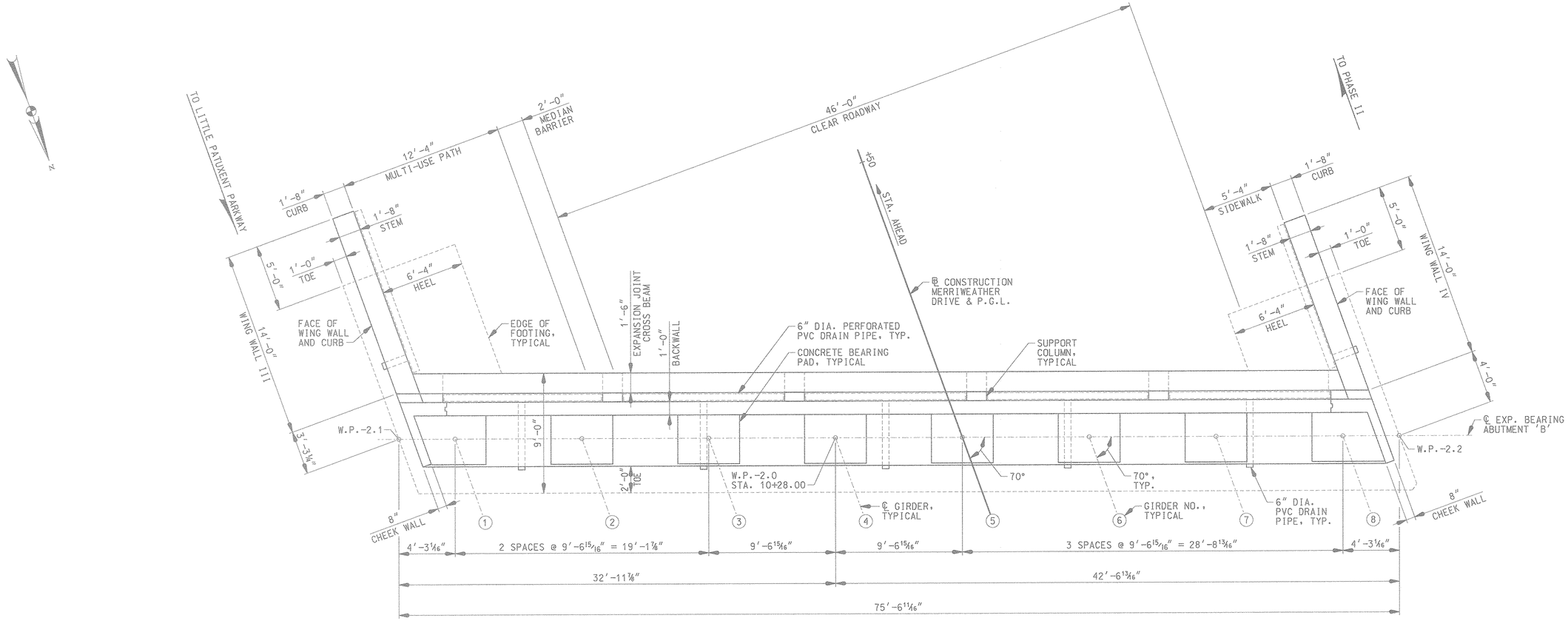
ABUTMENT 'A' PLAN AND ELEVATION

DOWNTOWN COLUMBIA
CRESCENT NEIGHBORHOOD
PARCELS B THRU H, NON-BUILDABLE BULK PARCELS J THRU R, O.S. LOTS 1 THRU 8 AND MERRIWEATHER-SYMPHONY WOODS NEIGHBORHOOD O.S. LOT 1 AND NON-BUILDABLE BULK PARCEL A

ELECTION DISTRICT No. 5 — HOWARD COUNTY, MARYLAND

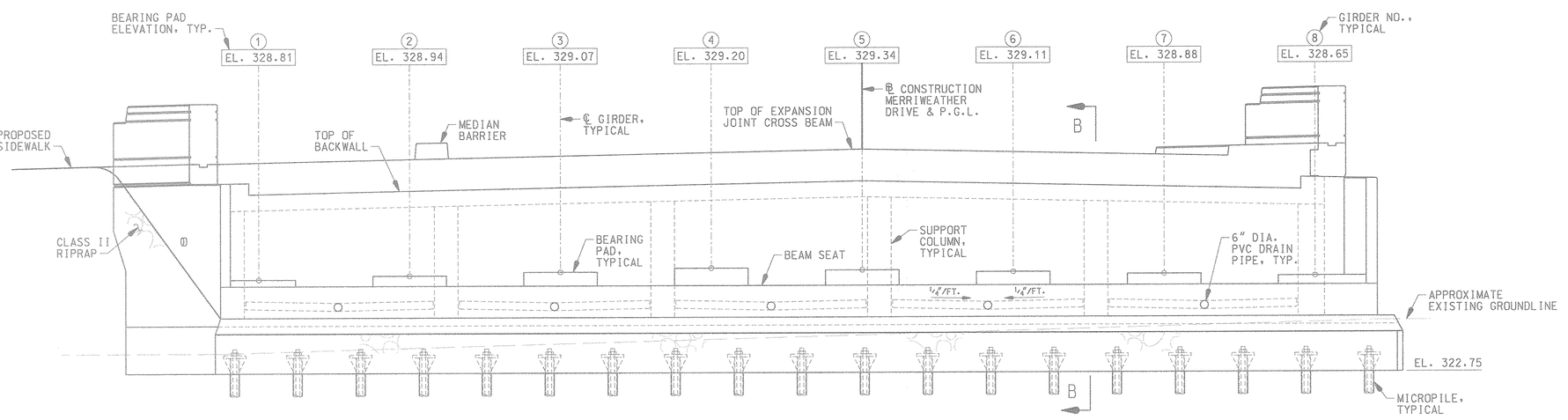
SCALE	ZONING	G. L. W. FILE No.
AS SHOWN	NT	11071
DATE	TAX MAP – GRID	SHEET
JUNE 2016	36 – 01	30 OF 102

F 15-106



PLAN

SCALE: ¼" = 1'-0"



ELEVATION

SCALE: ¼" = 1'-0"

NOTES:

1. FOR SECTION B-B AND TYPICAL BEARING PAD DETAIL, SEE SHEET 32.
2. FOR WING WALL DETAILS, SEE SHEETS 33 & 34.

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

Chief, Bureau of Highways — Date 7/12/2016

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

Chief, Division of Land Development — Date 3-6-16

Chief, Development Engineering Division — Date 7-26-16

FOR PERMITTING - COMPLETE BRIDGE CONSTRUCTION PLANS UNDER SEPARATE SUBMITTAL.

WALLACE MONTGOMERY
ENGINEERS-PLANNERS-SURVEYORS-CONSTRUCTION MANAGERS
10150 York Road, Suite 200
Hunt Valley, Maryland 21030
410.494.9093 Tel / 410.667.0925 Fax
www.WallaceMontgomery.com
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DES. GJG	DRN. DED	CHK.

DATE	REVISION	BY	APP'R.

PREPARED FOR:
THE HOWARD HUGHES CORPORATION
LITTLE PATUXENT PARKWAY
COLUMBIA, MARYLAND 21044
ATTN: BOB JENKINS
410-964-5443

PROFESSIONAL CERTIFICATION
I HEREBY CERTIFY THAT THESE PLANS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 24748
EXPIRATION DATE: 1-14-18

STATE OF MARYLAND — DAVID LEE BORUSIEWICZ, JR. — NO. 24748 — REGISTERED PROFESSIONAL ENGINEER

6-14-16

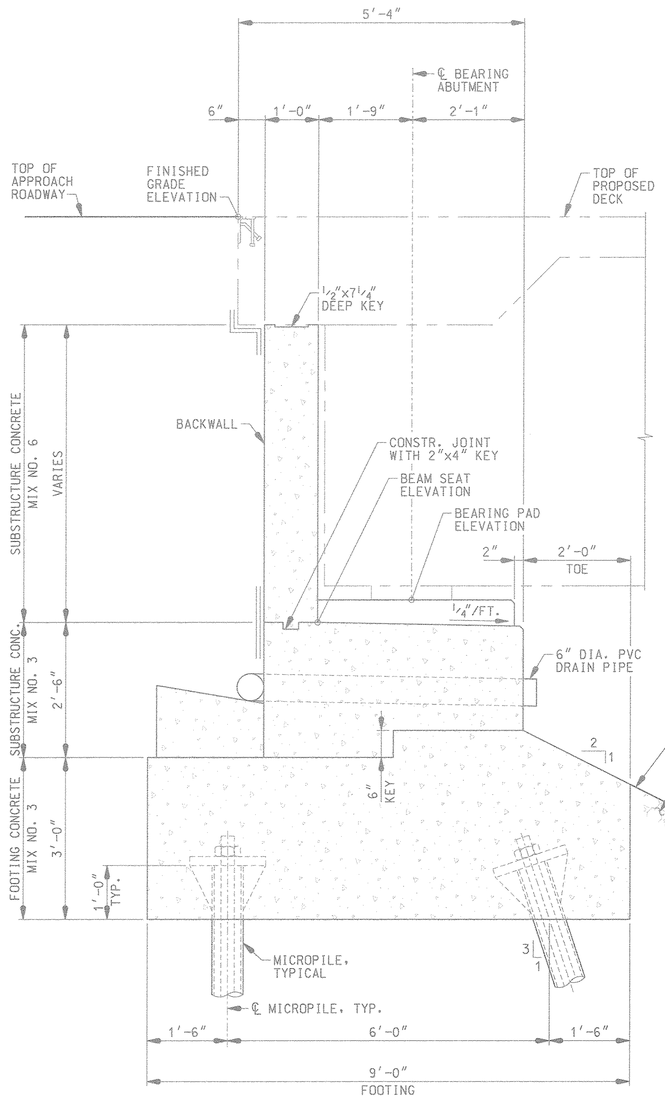
ABUTMENT 'B' PLAN AND ELEVATION

DOWNTOWN COLUMBIA
CRESCENT NEIGHBORHOOD
PARCELS B THRU H, NON-BUILDABLE BULK PARCELS J THRU R, O.S. LOTS 1 THRU 8 AND MERRIWEATHER-SYMPHONY WOODS NEIGHBORHOOD O.S. LOT 1 AND NON-BUILDABLE BULK PARCEL A

ELECTION DISTRICT No. 5 — HOWARD COUNTY, MARYLAND

SCALE	ZONING	G. L. W. FILE No.
AS SHOWN	NT	11071
DATE	TAX MAP - GRID	SHEET
JUNE 2016	36 - 01	31 OF 102

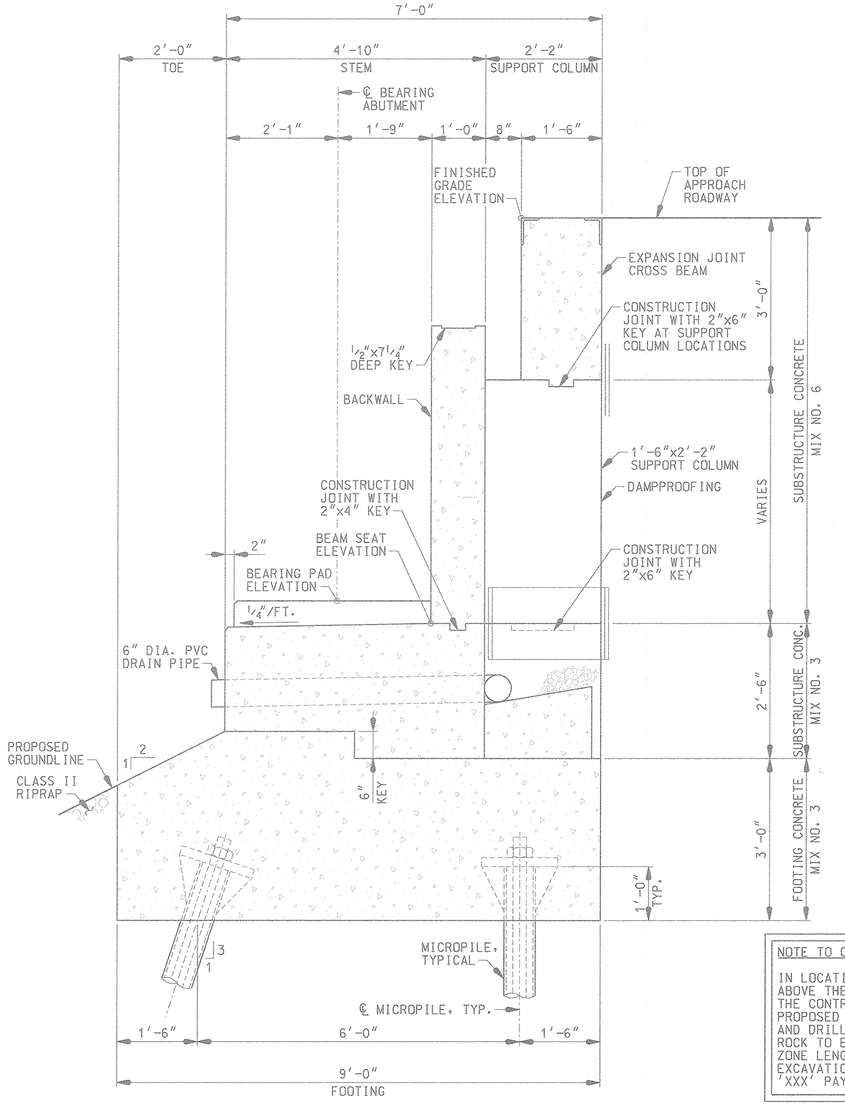
F 15-106



SECTION A-A

ABUTMENT 'A' TYPICAL SECTION

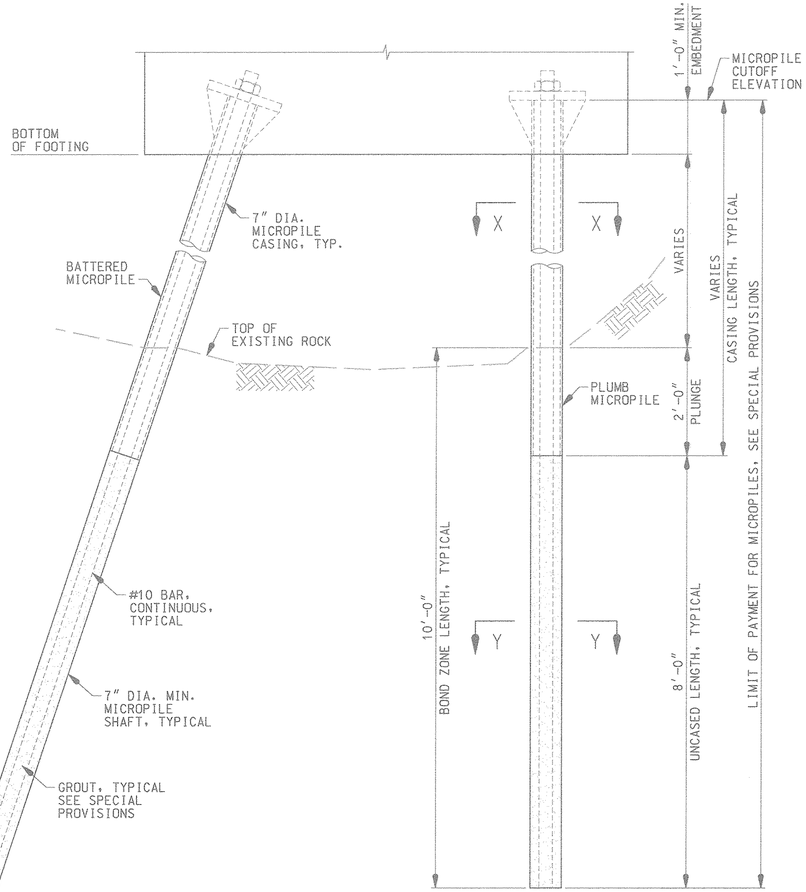
SCALE: 3/4" = 1'-0"



SECTION B-B

ABUTMENT 'B' TYPICAL SECTIONS

SCALE: 3/4" = 1'-0"

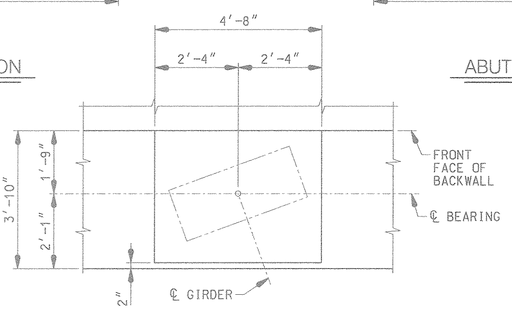


TYPICAL MICROPILE DETAIL

SCALE: 3/4" = 1'-0"

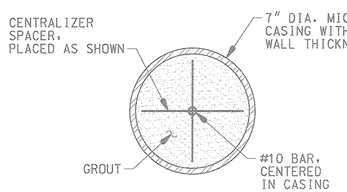
NOTE TO CONTRACTOR:

IN LOCATIONS WHERE ROCK IS ENCOUNTERED ABOVE THE PROPOSED BOTTOM OF FOOTING, THE CONTRACTOR SHALL EXCAVATE TO THE PROPOSED BOTTOM OF FOOTING ELEVATION AND DRILL 10'-0" MIN. INTO EXISTING ROCK TO ESTABLISH THE REQUIRED BOND ZONE LENGTH. COST TO PERFORM ROCK EXCAVATION SHALL BE INCLUDED IN THE 'XXX' PAY ITEM.



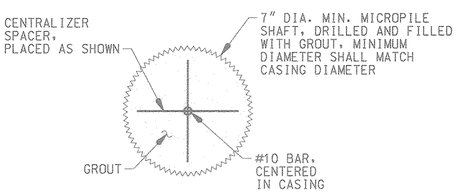
TYPICAL BEARING PAD DETAIL

SCALE: 1/2" = 1'-0"



SECTION X-X

SCALE: 3" = 1'-0"



SECTION Y-Y

SCALE: 3" = 1'-0"

NOTES:

1. FOR LOCATION OF SECTION A-A, SEE SHEET 30.
2. FOR LOCATION OF SECTION B-B, SEE SHEET 31.

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

Chief, Bureau of Highways — Date 7/12/2016

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

Chief, Division of Land Development — Date 8.3.16

Chief, Development Engineering Division — Date 7.26.16

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DES. GJG | DRN. DED | CHK.

DATE	REVISION	BY	APP'R.

PREPARED FOR:

THE HOWARD HUGHES CORPORATION
LITTLE PATUXENT PARKWAY
COLUMBIA, MARYLAND 21044
ATTN: BOB JENKINS
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PROFESSIONAL CERTIFICATION

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STATE OF MARYLAND — DAVID LEE BORUSKI — NO. 24748 — REGISTERED PROFESSIONAL ENGINEER — 6-15-16

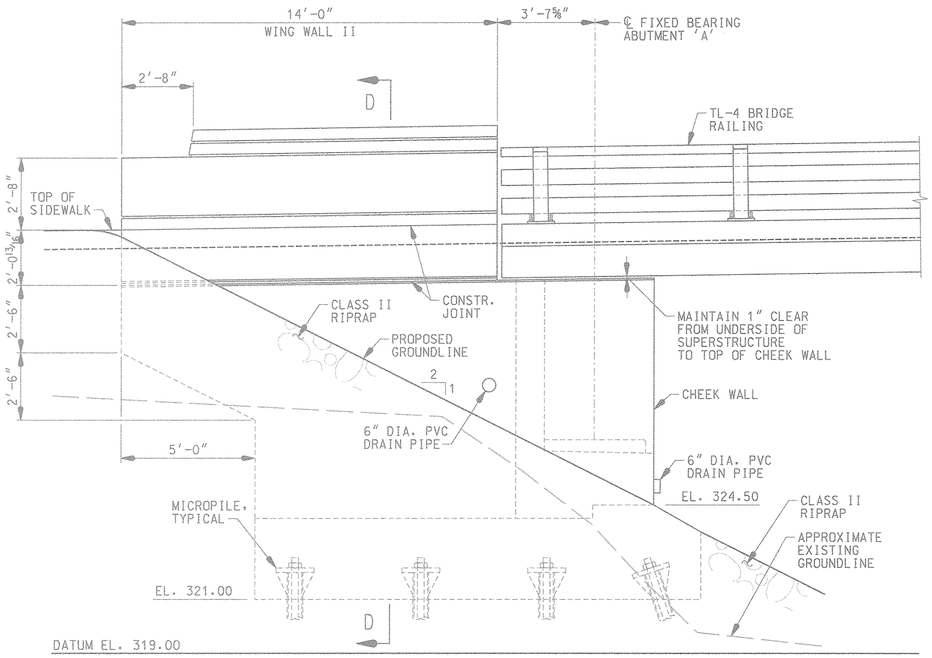
ABUTMENT TYPICAL SECTIONS

DOWNTOWN COLUMBIA
CRESCENT NEIGHBORHOOD
PARCELS B THRU H, NON-BUILDABLE BULK PARCELS J THRU R,
O.S. LOTS 1 THRU 8 AND
MERRIWEATHER-SYMPHONY WOODS NEIGHBORHOOD O.S. LOT 1
AND NON-BUILDABLE BULK PARCEL A

ELECTION DISTRICT No. 5 — HOWARD COUNTY, MARYLAND

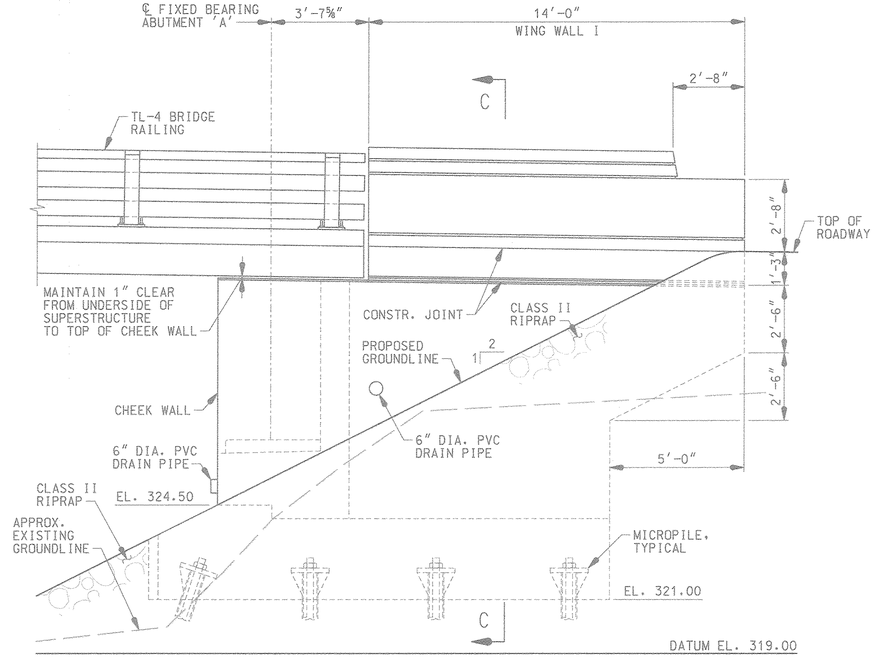
SCALE	ZONING	G. L. W. FILE No.
AS SHOWN	NT	11071
DATE	TAX MAP - GRID	SHEET
JUNE 2016	36 - 01	32 OF 102

F 15-106



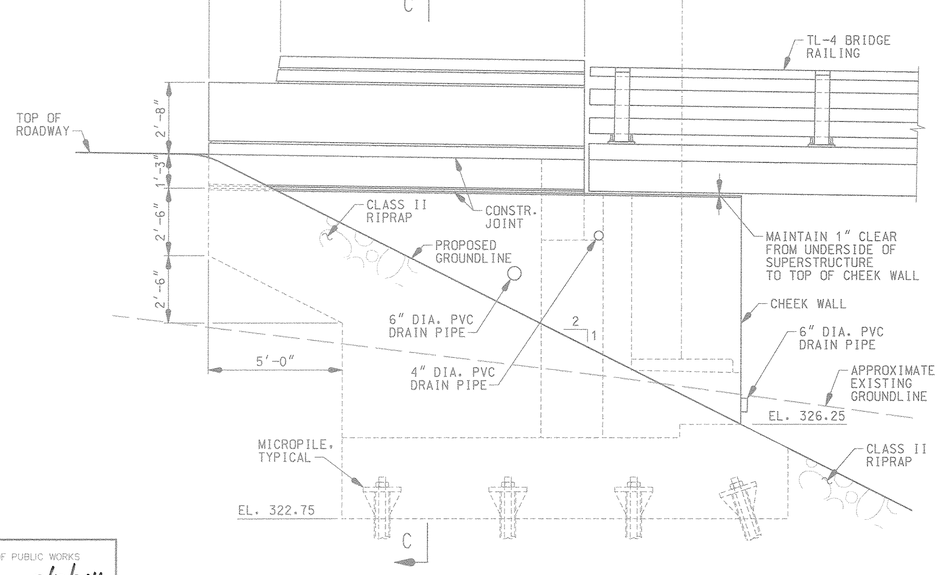
WING WALL II

SCALE: ⅜″ = 1′-0″



WING WALL I

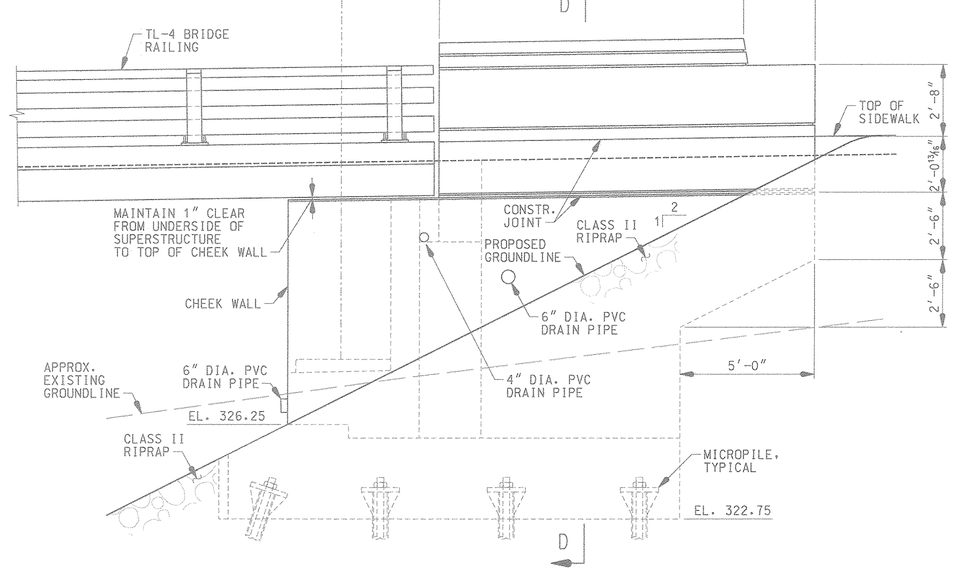
SCALE: ⅜″ = 1′-0″



DATUM EL. 320.00

WING WALL III

SCALE: ⅜″ = 1′-0″



DATUM EL. 320.00

WING WALL IV

SCALE: ⅜″ = 1′-0″

NOTE:

FOR SECTIONS
C-C & D-D,
SEE SHEET 34.

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

Chief, Bureau of Highways — Date 7/12/2016

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

Chief, Division of Land Development — Date 8-3-16

Chief, Development Engineering Division — Date 7-26-16

FOR PERMITTING - COMPLETE BRIDGE CONSTRUCTION PLANS UNDER SEPARATE SUBMITTAL.

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FILE: m:\PROJS\09008.05\Structural_Cadd_L\Hwy Submittal\Dgns_\gSR-WING_GRNT.dgn
DES. GJG | DRN. DED | CHK.

DATE	REVISION	BY	APP'R.

PREPARED FOR:

THE HOWARD HUGHES CORPORATION
LITTLE PATUXENT PARKWAY
COLUMBIA, MARYLAND 21044
ATTN: BOB JENKINS
410-964-5443

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE PLANS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 24748
EXPIRATION DATE: 1-14-18

STATE OF MARYLAND — DAVID LEE BORUSKI, JR. — NO. 24748 — REGISTERED PROFESSIONAL ENGINEER — 6/15/16

WING WALL ELEVATIONS

DOWNTOWN COLUMBIA

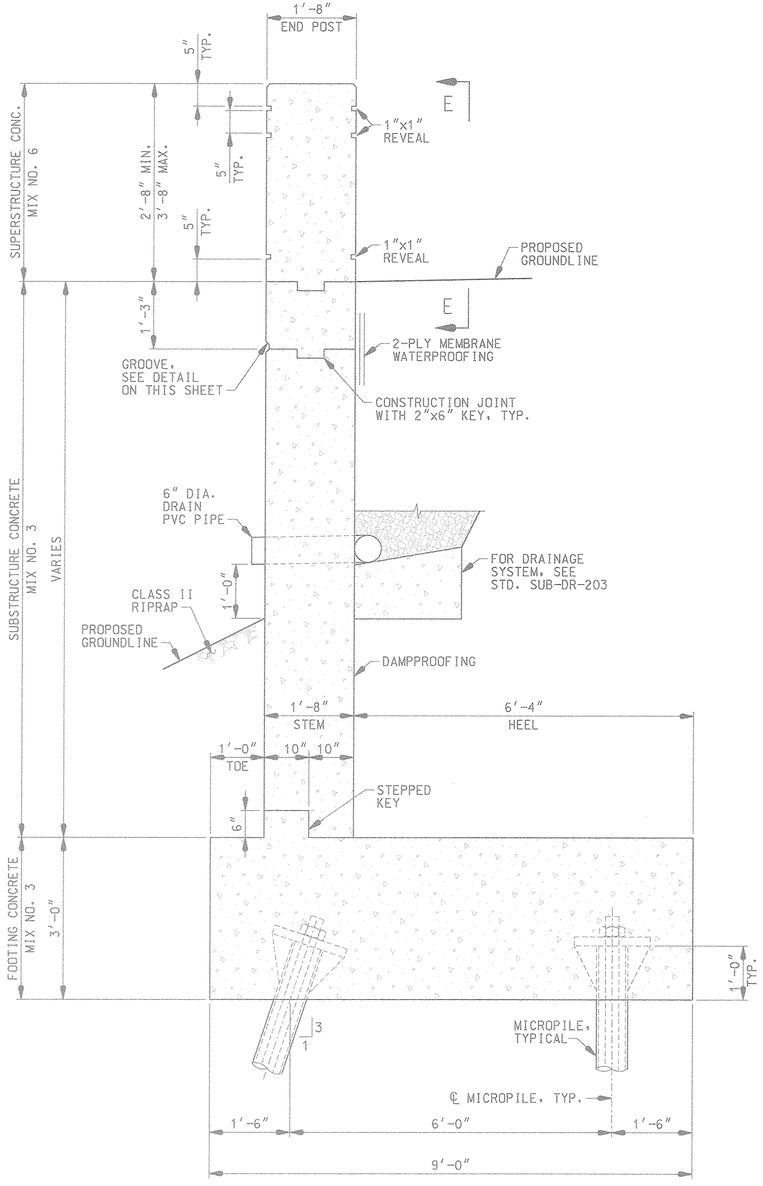
CRESCENT NEIGHBORHOOD

PARCELS B THRU H, NON-BUILDABLE BULK PARCELS J THRU R,
O.S. LOTS 1 THRU 8 AND
MERRIWEATHER-SYMPHONY WOODS NEIGHBORHOOD O.S. LOT 1
AND NON-BUILDABLE BULK PARCEL A

ELECTION DISTRICT No. 5 — HOWARD COUNTY, MARYLAND

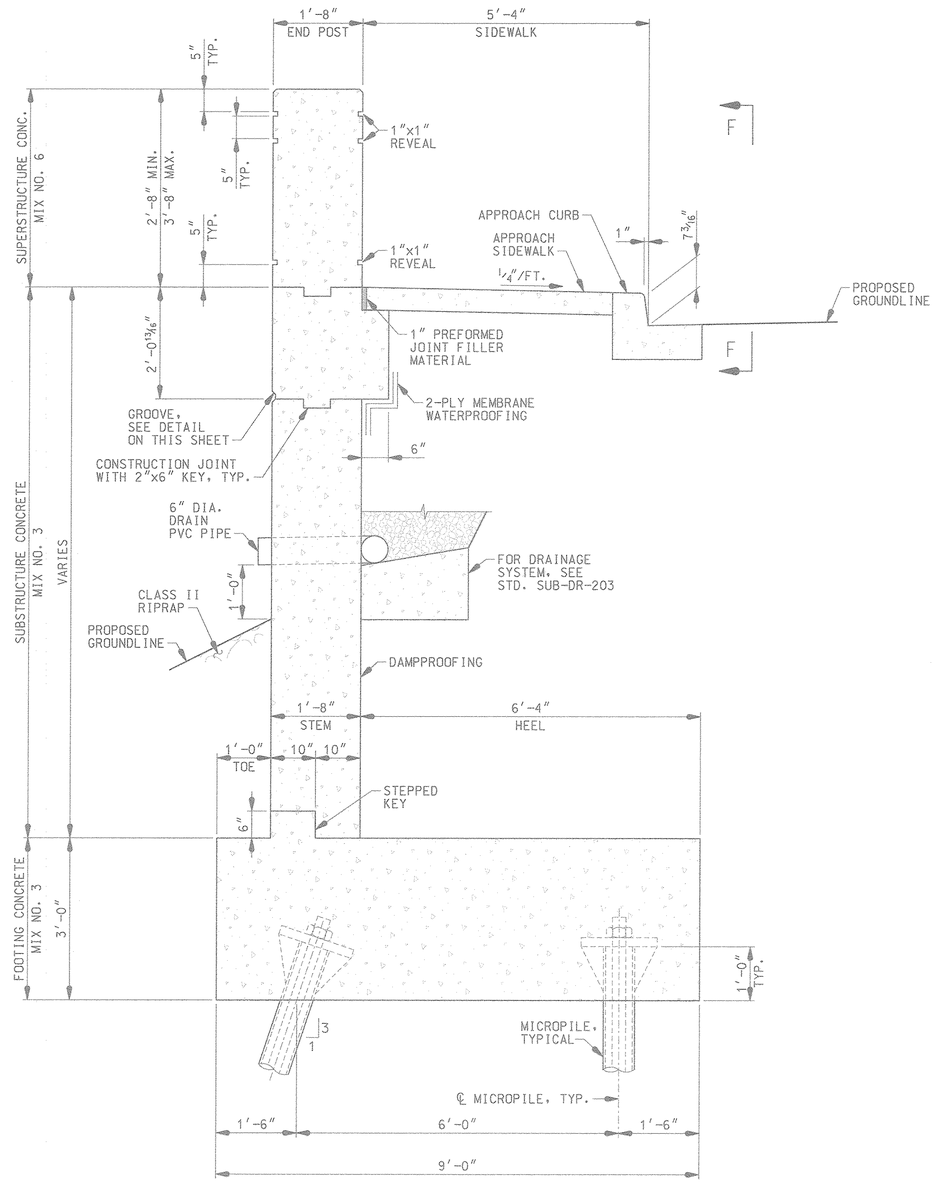
SCALE	ZONING	G. L. W. FILE No.
AS SHOWN	NT	11071
DATE	TAX MAP – GRID	SHEET
JUNE 2016	36 – 01	33 OF 102

F 15-106



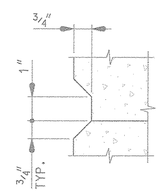
SECTION C-C

SCALE: 3/4" = 1'-0"



SECTION D-D

SCALE: 3/4" = 1'-0"



GROOVE DETAIL

SCALE: 3" = 1'-0"

NOTES:

1. FOR LOCATION OF SECTION C-C AND SECTION D-D, SEE SHEET 33.
2. FOR VIEWS E-E AND F-F, SEE SHEET 40.

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

Chief, Bureau of Highways — Date 7/12/2016

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

Chief, Division of Land Development — Date 8.3.16

Chief, Development Engineering Division — Date 7.26.16

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DES. GJG	DRN. DED	CHK.

DATE	REVISION	BY	APP'R.

PREPARED FOR:

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EXPIRATION DATE: 1-14-18

STATE OF MARYLAND — DAVID LEE BORUSIEWICZ, JR. — NO. 24748 — REGISTERED PROFESSIONAL ENGINEER

6-15-16

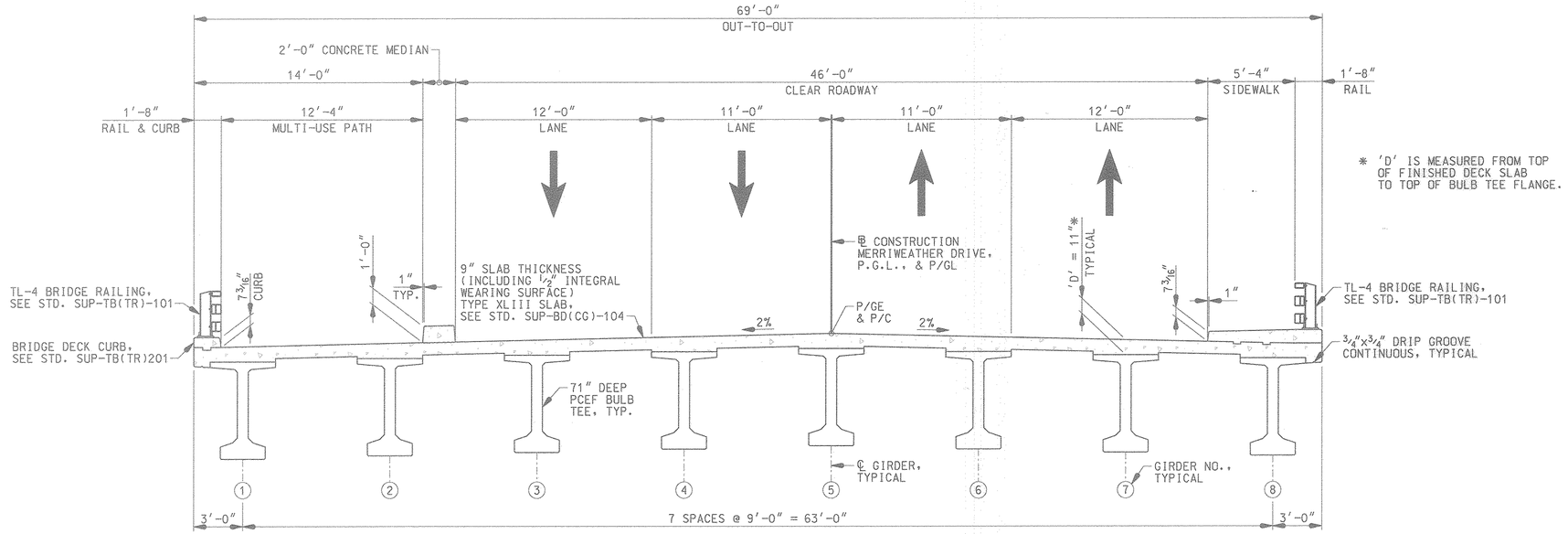
WING WALL TYPICAL SECTIONS

DOWNTOWN COLUMBIA
CRESCENT NEIGHBORHOOD
PARCELS B THRU H, NON-BUILDABLE BULK PARCELS J THRU R, O.S. LOTS 1 THRU 8 AND MERRIWEATHER-SYMPHONY WOODS NEIGHBORHOOD O.S. LOT 1 AND NON-BUILDABLE BULK PARCEL A

ELECTION DISTRICT No. 5 — HOWARD COUNTY, MARYLAND

SCALE	ZONING	G. L. W. FILE No.
AS SHOWN	NT	11071
DATE	TAX MAP - GRID	SHEET
JUNE 2016	36 - 01	34 OF 102

F 15-106



SUPERSTRUCTURE TYPICAL SECTION

SCALE: 1/4" = 1'-0"

NOTE:

INTERMEDIATE CONCRETE DIAPHRAGM NOT SHOWN FOR CLARITY. FOR DETAILS, SEE STD. SUP-CG(DIA)-105.

NOTE:

FOR FRAMING PLAN, SEE SHEET 36.

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

Chief, Bureau of Highways — Date 7/12/2016

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

Chief, Division of Land Development — Date 8.3.16

Chief, Development Engineering Division — Date 7.26.16

FOR PERMITTING - COMPLETE BRIDGE CONSTRUCTION PLANS UNDER SEPARATE SUBMITTAL.

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DES. GJG	DRN. DED	CHK.

DATE	REVISION	BY	APP'R.

PREPARED FOR:

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LITTLE PATUXENT PARKWAY
COLUMBIA, MARYLAND 21044
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EXPIRATION DATE: 1-14-18

STATE OF MARYLAND — DAVID LEE BORUSIEWICZ JR. — NO. 24748 — REGISTERED PROFESSIONAL ENGINEER

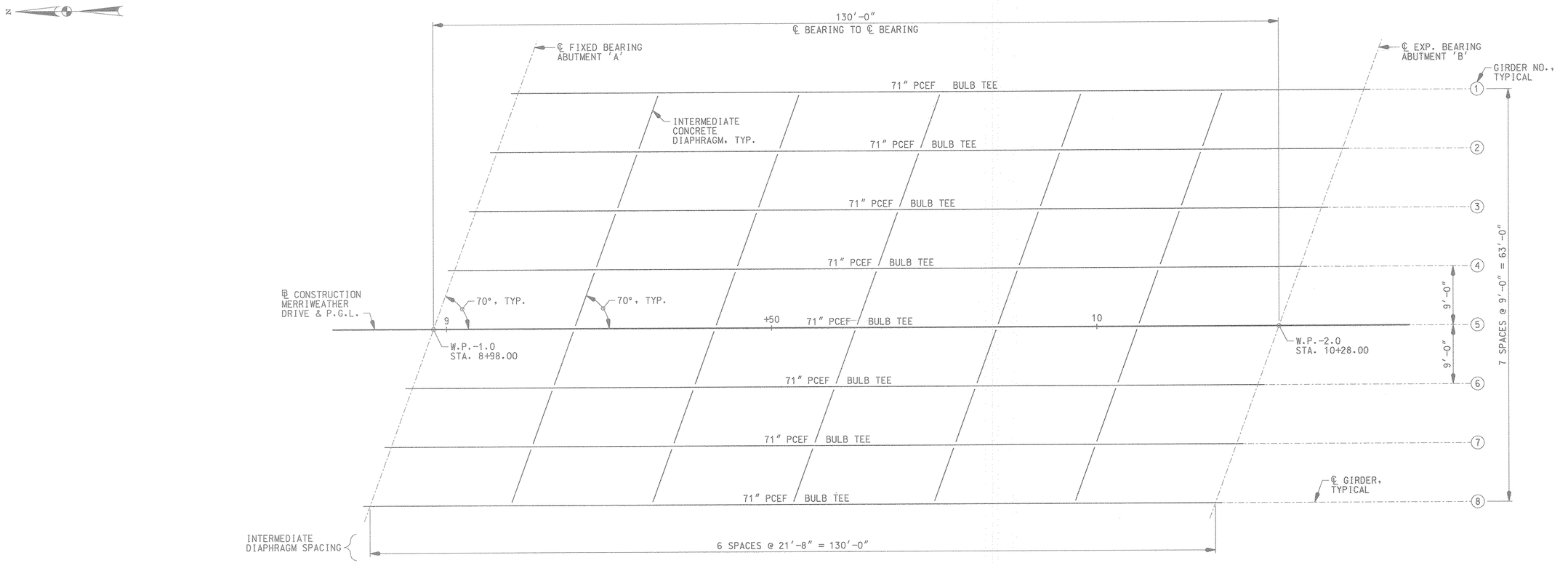
SUPERSTRUCTURE TYPICAL SECTION

DOWNTOWN COLUMBIA
CRESCENT NEIGHBORHOOD
PARCELS B THRU H, NON-BUILDABLE BULK PARCELS J THRU R, O.S. LOTS 1 THRU 8 AND MERRIWEATHER-SYMPHONY WOODS NEIGHBORHOOD O.S. LOT 1 AND NON-BUILDABLE BULK PARCEL A

ELECTION DISTRICT No. 5 — HOWARD COUNTY, MARYLAND

SCALE	ZONING	G. L. W. FILE No.
AS SHOWN	NT	11071
DATE	TAX MAP - GRID	SHEET
JUNE 2016	36 - 01	35 OF 102

F 15-106



FRAMING PLAN

SCALE: 1/8" = 1'-0"

NOTES:

1. FOR SUPERSTRUCTURE TYPICAL SECTION, SEE SHEET 35.
2. FOR INTERMEDIATE CONCRETE DIAPHRAGM, SEE STD. SUP-CG(DIA)-105.

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

Chief, Bureau of Highways — Date 7/12/2016

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

Chief, Division of Land Development — Date 8.3.16

Chief, Development Engineering Division — Date 7.26.16

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DATE	REVISION	BY	APP'R.

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EXPIRATION DATE: 1-14-18

STATE OF MARYLAND — DAVID LEE BORUSIEWICZ, JR. — NO. 24748 — REGISTERED PROFESSIONAL ENGINEER

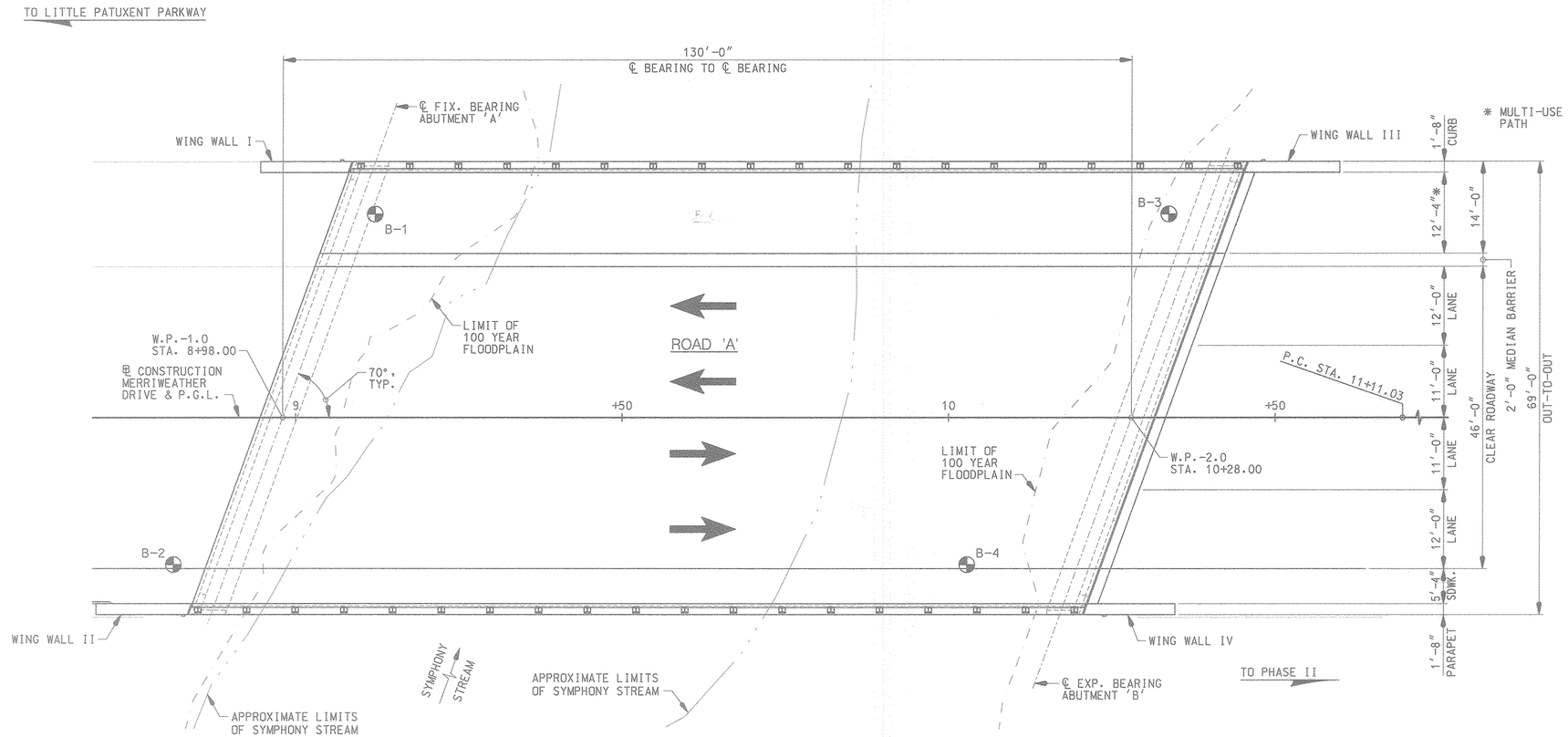
FRAMING PLAN

DOWNTOWN COLUMBIA
CRESCENT NEIGHBORHOOD
PARCELS B THRU H, NON-BUILDABLE BULK PARCELS J THRU R, O.S. LOTS 1 THRU 8 AND MERRIWEATHER-SYMPHONY WOODS NEIGHBORHOOD O.S. LOT 1 AND NON-BUILDABLE BULK PARCEL A

ELECTION DISTRICT No. 5 — HOWARD COUNTY, MARYLAND

SCALE	ZONING	G. L. W. FILE No.
AS SHOWN	NT	11071
DATE	TAX MAP - GRID	SHEET
JUNE 2016	36 - 01	36 OF 102

F 15-106



BORING LOCATION PLAN

SCALE: 1" = 10'

BORING LOCATIONS				
BORING NO.	STATION	OFFSET	NORTHING	EASTING
B-1	9+12.12	31.00' LT.	561,738.8641	1,350,767.3046
B-2	8+81.30	22.40' LT.	561,769.6922	1,350,713.9088
B-3	10+33.67	31.00' LT.	561,617.3171	1,350,767.3046
B-4	10+02.84	22.40' RT.	561,648.1452	1,350,713.9088

NOTES:

1. BORINGS AND DRIVE TESTS TAKEN BY THE ROBERT B. BALTER COMPANY AS FOLLOWS:
   B-1: 01/29/15 & 01/30/15
   B-2: 01/29/15 & 01/30/15
   B-3 01/30/15
   B-4: 01/30/15 & 02/02/15
2. SPT = BLOWS ON SAMPLING SPOON BY 140 POUND WEIGHT FALLING 30" INDICATING SUCCESSIVE 6" INCREMENTS OF PENETRATION. PENETRATION LESS THAN 6" IS INDICATED BY ACTUAL LENGTH IN INCHES (INDICATED % = PERCENT ROCK CORE RECOVERY WITHIN RANGE INDICATED).
3. ▼ INDICATES WATER TABLE LEVEL.
4. ⊕ INDICATES BORING LOCATION.
5. FOR BORINGS B-1 & B-2, SEE SHEET 38.
6. FOR BORINGS B-3 & B-4, SEE SHEET 39.

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

Chief, Bureau of Highways — Date 7/12/2016

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

Chief, Division of Land Development — Date 8.3.16

Chief, Development Engineering Division — Date 7.26.16

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DES. GJC	DRN. DED	CHK.

DATE	REVISION	BY	APP'R.

PREPARED FOR:
THE HOWARD HUGHES CORPORATION
LITTLE PATUXENT PARKWAY
COLUMBIA, MARYLAND 21044
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STATE OF MARYLAND — DAVID LEE BORUSKI, JR. — REG. NO. 24748 — REGISTERED PROFESSIONAL ENGINEER

BORING LOCATION PLAN

DOWNTOWN COLUMBIA
CRESCENT NEIGHBORHOOD
PARCELS B THRU H, NON-BUILDABLE BULK PARCELS J THRU R, O.S. LOTS 1 THRU 8 AND MERRIWEATHER-SYMPHONY WOODS NEIGHBORHOOD O.S. LOT 1 AND NON-BUILDABLE BULK PARCEL A

ELECTION DISTRICT No. 5 — HOWARD COUNTY, MARYLAND

SCALE	ZONING	G. L. W. FILE No.
AS SHOWN	NT	11071
DATE	TAX MAP - GRID	SHEET
JUNE 2016	36 - 01	37 OF 102

F 15-106

The Robert B. Balter Company
Geotechnical and Environmental Engineers
Materials and Construction Inspection and Testing
Telephone No. (410) 363-1555
www.balterco.com

BORING LOG

BORING B-1

PAGE 1 OF 1

CLIENT Howard Hughes — PROJECT NAME The Crescent Bridges and Culverts

PROJECT LOCATION Columbia, MD — PROJECT NUMBER 16617-0 — DATE TESTED

RIG ATV R-Tired CME 750 — METHOD Hollow Stem Auger — SAMPLER: 2-in OD SS/NX Core — HAMMER: 140# — FALL: 30" — AUTO? Yes

DATE STARTED 1/29/15 — COMPLETED 1/29/15

DRILLER Dennis Strawderman — HELPER Blake Strawderman

REVIEWED BY Matt Leone — SITE DELAYS

LOCATION As Staked — BULK SAMPLES

WATER LEVELS

DATE	TIME	ELAPSED HOURS	CASING DEPTH (ft)	HOLE DEPTH (ft)	WATER DEPTH (ft)	WATER ELEV (ft)
1/29/15		0 ▽		11.0	9.0	319.1
1/30/15		24 ▼		9.0	8.5	319.6

EL. 321.00
BOTTOM OF FOOTING ABUTMENT 'A'

EL. 304.00
ESTIMATED PILE TIP

DEPTH (ft)	SAMPLE TYPE AND NUMBER	SPT BLOWS/6" OR REC IN/IN %	N VALUE OR CORE RQD	STRATUM CHANGE DEPTH/EL (ft)	GRAPHIC LOG	USCS	WATER LEVEL	MATERIAL DESCRIPTION	PP (tsf)	NMC %	#200	ATTERBERGS PL	ATTERBERGS LL	ATTERBERGS PI	REMARKS
				0.3 / 327.8				SURFACE EL = 328.1 ft Topsoil = 4-inches Moist, Soft, Brown Silty, Clayey SAND (Residual)							
5	S1	2-2-2	4			SC-SM				14	31	21	27	6	
10	S2	2-2-1	3	12.0 / 316.1						15	42	21	28	7	
15	S3	50/4"	50/4"	14.0 / 314.1		SM		Decomposed Rock sampled as: Very Moist, Very Dense, Brown Silty SAND with Gravel Auger Refusal at 14.0'		20	25	27	32	5	
	C1	58 / 60 97%	58					Extremely Fractured to Sound, Medium to Hard, Moderately to Slightly Weathered, Light Gray, Medium-Grained GNEISS (OELLA)							
20	C2	60 / 60 100%	75	24.0 / 304.1				Terminated at 24.0 feet							

REMARKS:

NEW GEOTECH BH LOG 16617-0 THE CRESCENT BRIDGES AND CULVERTS.GPJ MTA REDLINE.GDT 3/13/15

BORING B-1

DATUM EL. 270.00

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BORING LOG

BORING B-2

PAGE 1 OF 1

CLIENT Howard Hughes — PROJECT NAME The Crescent Bridges and Culverts

PROJECT LOCATION Columbia, MD — PROJECT NUMBER 16617-0 — DATE TESTED

RIG ATV R-Tired CME 750 — METHOD Hollow Stem Auger — SAMPLER: 2-in OD SS/NX Core — HAMMER: 140# — FALL: 30" — AUTO? Yes

DATE STARTED 1/29/15 — COMPLETED 1/29/15

DRILLER Dennis Strawderman — HELPER Blake Strawderman

REVIEWED BY Matt Leone — SITE DELAYS

LOCATION As Staked — BULK SAMPLES

WATER LEVELS

DATE	TIME	ELAPSED HOURS	CASING DEPTH (ft)	HOLE DEPTH (ft)	WATER DEPTH (ft)	WATER ELEV (ft)
1/29/15		0 ▽		12.2	9.0	320.5
1/30/15		24 ▼		10.2	8.5	321.0

EL. 321.00
BOTTOM OF FOOTING ABUTMENT 'A'

EL. 304.00
ESTIMATED PILE TIP

DEPTH (ft)	SAMPLE TYPE AND NUMBER	SPT BLOWS/6" OR REC IN/IN %	N VALUE OR CORE RQD	STRATUM CHANGE DEPTH/EL (ft)	GRAPHIC LOG	USCS	WATER LEVEL	MATERIAL DESCRIPTION	PP (tsf)	NMC %	#200	ATTERBERGS PL	ATTERBERGS LL	ATTERBERGS PI	REMARKS
				0.3 / 329.3				SURFACE EL = 329.5 ft Topsoil = 3-inches Moist, Medium Stiff, Brown Silty SAND (Residual)							
5	S1	3-2-3	5			SM				15	35	22	26	4	
10	S2	2-2-5	7	7.0 / 322.5		CL-ML		Moist, Medium Stiff, Brownish Gray Sandy, Silty CLAY trace mica (Residual)	2.70	17	52	17	22	5	
15	S3	4-50/3"	50/3"	13.0 / 316.5		SM		Highly Weathered Rock sampled as: Very Moist, Very Dense, Grayish Brown Silty SAND trace mica		9					(1)
	C1	58.5 / 60 98%	47	15.0 / 314.5				Auger Refusal at 15.0' Extremely Fractured, Hard, Slightly Weathered, Light Brownish Gray, Medium-Grained GNEISS (Oella)							
20	C2	60 / 60 100%	33	16.5 / 313.0 18.2 / 311.3				Moderately Fractured to Sound, Hard, Slightly Weathered, Light Gray, Medium-Grained GNEISS (Oella) Extremely to Slightly Fractured, Hard, Slightly Weathered, Light Brownish Gray, Medium-Grained GNEISS (Oella)							
25	C3	60 / 60 100%	30	25.0 / 304.5				Extremely Fractured to Sound, Hard, Slightly Weathered, Light Brownish Gray, Medium-Grained GNEISS (Oella)							
30				30.0 / 299.5				Terminated at 30.0 feet							

REMARKS: (1)Water encoutered during drilling at 12'.

NEW GEOTECH BH LOG 16617-0 THE CRESCENT BRIDGES AND CULVERTS.GPJ MTA REDLINE.GDT 3/13/15

BORING B-2

DATUM EL. 270.00

BORINGS AND DRIVE TESTS

SCALE: 3/16" = 1'-0"

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
Chief, Bureau of Highways — Date 7/12/2016

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
Chief, Division of Land Development — Date 8.3.16
Chief, Development Engineering Division — Date 7-26-16

FOR PERMITTING - COMPLETE BRIDGE CONSTRUCTION PLANS UNDER SEPARATE SUBMITTAL.

NOTE:
FOR BORING LOCATION PLAN, SEE SHEET 37.

WALLACE MONTGOMERY
ENGINEERS-PLANNERS-SURVEYORS-CONSTRUCTION MANAGERS
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Hunt Valley, Maryland 21030
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DES. GJG | DRN. DED | CHK.

DATE	REVISION	BY	APP'R.

PREPARED FOR:
THE HOWARD HUGHES CORPORATION
LITTLE PATUXENT PARKWAY
COLUMBIA, MARYLAND 21044
ATTN: BOB JENKINS
410-964-5443

PROFESSIONAL CERTIFICATION

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EXPIRATION DATE: 1-14-18

STATE OF MARYLAND — CHARLES BORUSEWICZ — 24748 — REGISTERED PROFESSIONAL ENGINEER

BORINGS AND DRIVE TESTS
DOWNTOWN COLUMBIA
CRESCENT NEIGHBORHOOD
PARCELS B THRU H, NON-BUILDABLE BULK PARCELS J THRU R, O.S. LOTS 1 THRU 8 AND MERRIWEATHER-SYMPHONY WOODS NEIGHBORHOOD O.S. LOT 1 AND NON-BUILDABLE BULK PARCEL A
ELECTION DISTRICT No. 5 — HOWARD COUNTY, MARYLAND

SCALE	ZONING	G. L. W. FILE No.
AS SHOWN	NT	11071
DATE	TAX MAP - GRID	SHEET
JUNE 2016	36 - 01	38 OF 102

F 15-106

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BORING LOG

BORING B-3

PAGE 1 OF 1

CLIENT Howard Hughes
PROJECT NAME The Crescent Bridges and Culverts
PROJECT LOCATION Columbia, MD
PROJECT NUMBER 16617-0
DATE TESTED
RIG ATV R-Tired CME 750 METHOD Hollow Stem Auger SAMPLER: 2-in OD SS/NX Core HAMMER: 140# FALL: 30" AUTO? Yes
DATE STARTED 1/30/15 COMPLETED 1/30/15
DRILLER Dennis Strawderman HELPER Blake Strawderman
REVIEWED BY Matt Leone SITE DELAYS
LOCATION As Staked BULK SAMPLES

WATER LEVELS

DATE	TIME	ELAPSED HOURS	CASING DEPTH (ft)	HOLE DEPTH (ft)	WATER DEPTH (ft)	WATER ELEV (ft)
1/30/15		0 ▽		6.9	2.4	321.8

DEPTH (ft)	SAMPLE TYPE AND NUMBER	SPT BLOWS/6" OR REC IN/IN %	N VALUE OR CORE ROD	STRATUM CHANGE DEPTH/EL (ft)	GRAPHIC LOG	USCS	WATER LEVEL	MATERIAL DESCRIPTION	PP (tsf)	NMC %	- #200	ATTERBERGS PL	ATTERBERGS LL	ATTERBERGS PI	REMARKS
				0.4 323.8				SURFACE EL = 324.2 ft Topsoil = 4.5-inches							
5	S1	2-5-14	19			SM	▽	Moist, Medium Dense, Yellowish Brown Silty SAND trace mica (Residual)		11	22	NP	NP	NP	
	S2	50/0"	50/0"	6.9 317.3				No recovery at 7.0'							
10	C1	58 / 60 97%	80	7.0 317.2				Auger refusal at 7.0' Extremely Fractured to Sound, Hard, Slightly Weathered, Light Gray, Medium-Grained GNEISS (Oella)							
15	C2	60 / 60 100%	90	17.0 307.2				Terminated at 17.0 feet							

EL. 322.75
BOTTOM OF FOOTING ABUTMENT 'B'

EL. 306.00
ESTIMATED PILE TIP

REMARKS:

BORING B-3

The Robert B. Balter Company
Geotechnical and Environmental Engineers
Materials and Construction Inspection and Testing
Telephone No. (410) 363-1555
www.balterco.com

BORING LOG

BORING B-4

PAGE 1 OF 1

CLIENT Howard Hughes
PROJECT NAME The Crescent Bridges and Culverts
PROJECT LOCATION Columbia, MD
PROJECT NUMBER 16617-0
DATE TESTED
RIG ATV R-Tired CME 750 METHOD Hollow Stem Auger SAMPLER: 2-in OD SS/NX Core HAMMER: 140# FALL: 30" AUTO? Yes
DATE STARTED 1/30/15 COMPLETED 1/30/15
DRILLER Dennis Strawderman HELPER Blake Strawderman
REVIEWED BY Matt Leone SITE DELAYS
LOCATION 6' SE BULK SAMPLES

WATER LEVELS

DATE	TIME	ELAPSED HOURS	CASING DEPTH (ft)	HOLE DEPTH (ft)	WATER DEPTH (ft)	WATER ELEV (ft)
1/30/15		0 ▽		14.6	4.2	320.2
2/2/15		72 ▼		9.5	4.3	320.1

DEPTH (ft)	SAMPLE TYPE AND NUMBER	SPT BLOWS/6" OR REC IN/IN %	N VALUE OR CORE ROD	STRATUM CHANGE DEPTH/EL (ft)	GRAPHIC LOG	USCS	WATER LEVEL	MATERIAL DESCRIPTION	PP (tsf)	NMC %	- #200	ATTERBERGS PL	ATTERBERGS LL	ATTERBERGS PI	REMARKS
				0.4 324.0				SURFACE EL = 324.4 ft Topsoil = 5-inches							
5	S1	5-5-4	9			SM	▽	Moist, Loose, Yellowish Brown Silty SAND trace mica (Residual)		17	22	NP	NP	NP	
	S2	50/1"	50/1"	8.0 316.4		SM		Highly Weathered Rock sampled as: Moist, Very Dense, Pinkish Gray Silty SAND with Rock Fragments							
10	C1	60 / 60 100%	65	8.5 315.9 10.5 313.9				Auger Refusal at 8.5'. Extremely Fractured to Sound, Hard, Slighlty Weathered, Light Gray, Medium-Grained GNEISS (Oella)							
15	C2	59 / 60 98%	52	12.3 312.1 15.5 308.9 16.5 307.9 18.5 305.9				Moderately Fractured to Sound, Hard, Slightly Weathered, Light Pinkish Gray, Medium Grained GRANITE (Guilford Granite) Extremely Fractured to Sound, Hard, Slighlty Weathered, Light Brownish and Pinkish Gray, Fine to Medium-Grained GNEISS (Oella) Extremely to Moderately Fractured, Moderately Hard, Moderately to Highly Weathered, Light Brownish Gray, Medium-Grained GNEISS (Oella) Extremely to Slightly Fractured, Hard, Slightly Weathered, Light Gray, Medium-Grained GNEISS (Oella) Terminated at 18.5 feet							

EL. 322.75
BOTTOM OF FOOTING ABUTMENT 'B'

EL. 306.00
ESTIMATED PILE TIP

REMARKS:

BORING B-4

DATUM EL. 260.00

DATUM EL. 260.00

BORINGS AND DRIVE TESTS

SCALE: 3/16" = 1'-0"

NOTE:

FOR BORING LOCATION PLAN, SEE SHEET 37.

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
Chief, Bureau of Highways — Date 7/12/2016

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
Chief, Division of Land Development — Date 8.3.16
Chief, Development Engineering Division — Date 7.26.16

FOR PERMITTING - COMPLETE BRIDGE CONSTRUCTION PLANS UNDER SEPARATE SUBMITTAL.

WALLACE MONTGOMERY
ENGINEERS • PLANNERS • SURVEYORS • CONSTRUCTION MANAGERS
10150 York Road, Suite 200
Hunt Valley, Maryland 21030
410.494.9093 Tel / 410.667.0925 Fax
www.WallaceMontgomery.com A Limited Liability Partnership

PLOTTED: Tuesday, June 14, 2016 AT 01:10 PM
FILE: m:\PROJ\2006\06185\Structures_Civil_Hwy Submittal\Dgns_\g06h-BL03_CRNT.dgn
DES. GJG | DRN. DED | CHK.

DATE	REVISION	BY	APP'R.

PREPARED FOR:
THE HOWARD HUGHES CORPORATION
LITTLE PATUXENT PARKWAY
COLUMBIA, MARYLAND 21044
ATTN: BOB JENKINS
410-964-5443

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE PLANS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 24748 EXPIRATION DATE: 1-14-18

STATE OF MARYLAND — DAVID LEE BORGERDING — No. 24748 — REGISTERED PROFESSIONAL ENGINEER

BORINGS AND DRIVE TESTS

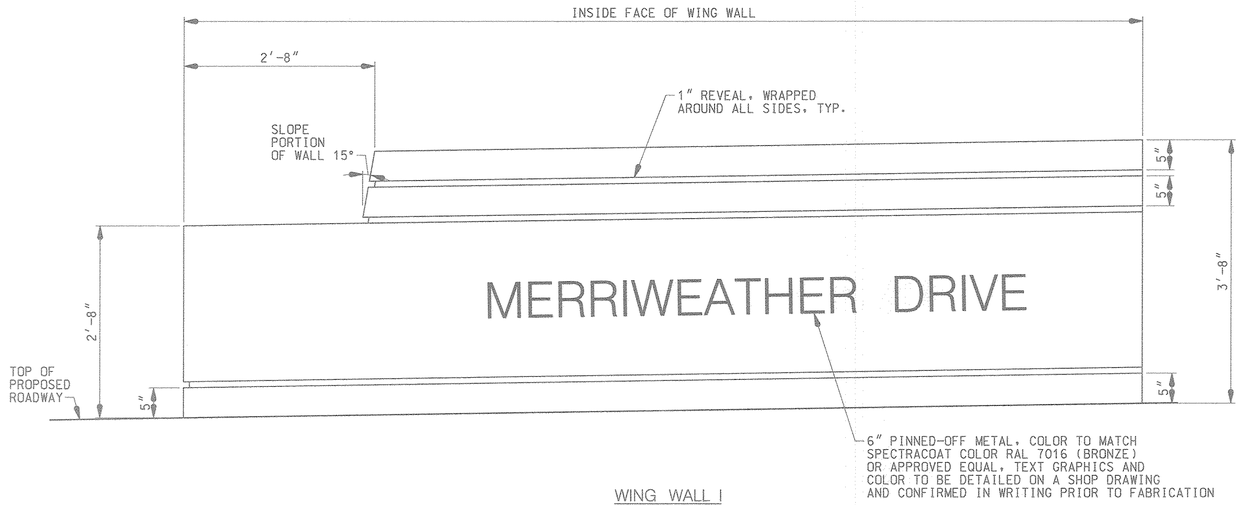
DOWNTOWN COLUMBIA

CRESCENT NEIGHBORHOOD
PARCELS B THRU H, NON-BUILDABLE BULK PARCELS J THRU R, O.S. LOTS 1 THRU 8 AND MERRIWEATHER-SYMPHONY WOODS NEIGHBORHOOD O.S. LOT 1 AND NON-BUILDABLE BULK PARCEL A

ELECTION DISTRICT No. 5 — HOWARD COUNTY, MARYLAND

SCALE	ZONING	G. L. W. FILE No.
AS SHOWN	NT	11071
DATE	TAX MAP – GRID	SHEET
JUNE 2016	36 – 01	39 OF 102

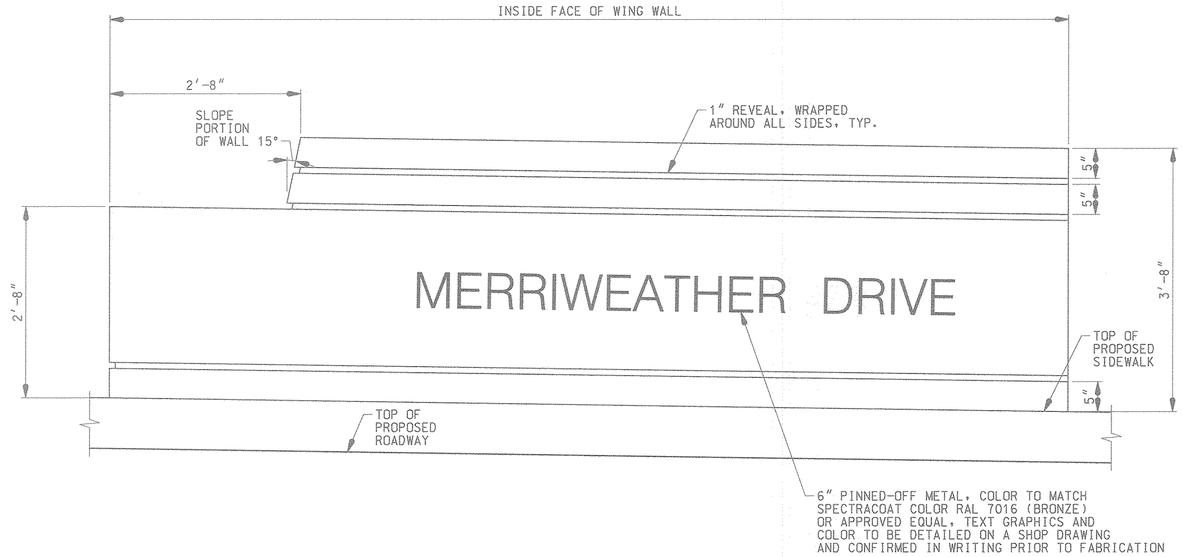
F 15-106



WING WALL I

VIEW E-E

SCALE: 1" = 1'-0"



WING WALL IV

VIEW F-F

SCALE: 1" = 1'-0"

NOTE:

FOR LOCATIONS OF VIEWS E-E AND F-F, SEE SHEET 34.

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

Chief, Bureau of Highways — Date 7/12/2016

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

Chief, Division of Land Development — Date 8-3-16

Chief, Development Engineering Division — Date 7.26.16

FOR PERMITTING - COMPLETE BRIDGE CONSTRUCTION PLANS UNDER SEPARATE SUBMITTAL.

WALLACE MONTGOMERY
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10150 York Road, Suite 200
Hunt Valley, Maryland 21030
410.494.9093 Tel / 410.667.0925 Fax
www.WallaceMontgomery.com
A Limited Liability Partnership

PLOTTED: Tuesday, June 14, 2016 AT 01:10 PM
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DES. GJG	DRN. DED	CHK.

DATE	REVISION	BY	APP'R.

PREPARED FOR:

THE HOWARD HUGHES CORPORATION
LITTLE PATUXENT PARKWAY
COLUMBIA, MARYLAND 21044
ATTN: BOB JENKINS
410-964-5443

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE PLANS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 24748
EXPIRATION DATE: 1-14-18

STATE OF MARYLAND — DAVID LEE BORUSIEWICZ JR. — No. 24748 — REGISTERED PROFESSIONAL ENGINEER

6-15-16

ELECTION DISTRICT No. 5

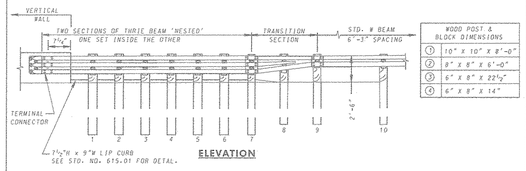
MISCELLANEOUS DETAILS

DOWNTOWN COLUMBIA
CRESCENT NEIGHBORHOOD
PARCELS B THRU H, NON-BUILDABLE BULK PARCELS J THRU R, O.S. LOTS 1 THRU 8 AND MERRIWEATHER-SYMPHONY WOODS NEIGHBORHOOD O.S. LOT 1 AND NON-BUILDABLE BULK PARCEL A

HOWARD COUNTY, MARYLAND

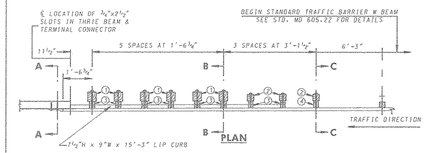
SCALE	ZONING	G. L. W. FILE No.
AS SHOWN	NT	11071
DATE	TAX MAP - GRID	SHEET
JUNE 2016	36 - 01	40 OF 102

F 15-106

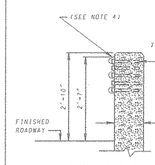


WOOD POST & BLOCK DIMENSIONS
① 10" X 10" X 8'-0"
② 8" X 8" X 6'-0"
③ 6" X 8" X 22½"
④ 6" X 8" X 14"

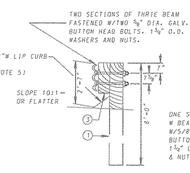
ELEVATION



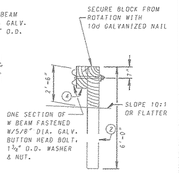
PLAN



SECTION A-A



SECTION B-B



SECTION C-C

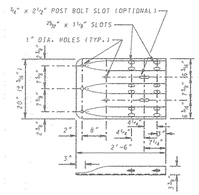
NOTES

1. THRIE BEAM TERMINAL CONNECTOR, THRIE BEAM SECTIONS AND W BEAM SECTIONS SHALL BE LAPPED IN THE DIRECTION OF TRAFFIC.
2. THE WOOD POSTS AND BLOCKS SHALL HAVE A STRESS GRADE OF 1200 PSI OR MORE.
3. SEE STD'S. MD 605.29 & MD 605.41-02 FOR DETAILS OF THRIE BEAM, SPLICE, TERMINAL CONNECTOR, TRANSITION SECTION, AND RECTANGULAR PLATE WASHERS.
4. THE CONTRACTOR SHALL FURNISH AND INSTALL FIVE (5) ⅝" DIA. HEAVY DUTY GALV. THREADED ANCHOR RODS WITH HEX HEAD RECESSED NUTS AND RECTANGULAR PLATE WASHERS. ANCHOR RODS SHALL BE ANCHORED WITH EPOXY GROUT AS SPECIFIED IN SPEC. 902.
5. ALTERNATE ANCHORAGE METHOD "CAST IN CONCRETE" SHOWN ON STD. NO 605.44.

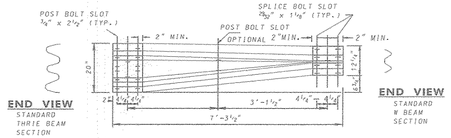
SPECIFICATION 605	CATEGORY CODE ITEMS
APPROVED: DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT	

SHA State Highway Administration	APPROVAL • SHA REVISIONS	APPROVAL • FEDERAL HIGHWAY ADMINISTRATION
	APPROVAL 4-27-89	APPROVAL 5-5-89
	REVISED 11-7-13	REVISED 8-13-12
	REVISED	REVISED
	REVISED	REVISED

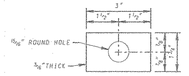
Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
TRAFFIC BARRIER THRIE BEAM ANCHORAGE TO VERTICAL FACE (WOOD POST)
STANDARD NO. MD 605.41



THRIE BEAM TERMINAL CONNECTOR



W BEAM - THRIE BEAM TRANSITION SECTION



RECTANGULAR PLATE WASHER

NOTE

THE RECTANGULAR PLATE WASHER SHALL BE MADE OF STEEL MEETING THE REQUIREMENTS OF ASTM A 36 AND SHALL BE GALVANIZED IN ACCORDANCE WITH THE REQUIREMENTS OF ASTM A 123. HOLE MAY BE PUNCHED OR DRILLED.

SPECIFICATION 605	CATEGORY CODE ITEMS
APPROVED: DIRECTOR - OFFICE OF HIGHWAY DEVELOPMENT	

SHA State Highway Administration	APPROVAL • SHA REVISIONS	APPROVAL • FEDERAL HIGHWAY ADMINISTRATION
	APPROVAL 4-27-89	APPROVAL 5-5-89
	REVISED 8-16-12	REVISED 8-13-12
	REVISED	REVISED
	REVISED	REVISED

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
TRAFFIC BARRIER W BEAM-THRIE BEAM TRANSITION SECTION
STANDARD NO. MD 605.41-02

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
Chief, Bureau of Highways — Date 7/12/2016

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
Chief, Division of Land Development — Date 8-3-16
Chief, Development Engineering Division — Date 7.26.16

FOR PERMITTING - COMPLETE BRIDGE CONSTRUCTION PLANS UNDER SEPARATE SUBMITTAL.

WALLACE MONTGOMERY
ENGINEERS-PLANNERS-SURVEYORS-CONSTRUCTION MANAGERS
10150 York Road, Suite 200
Hunt Valley, Maryland 21030
410.494.9060 Tel / 410.667.0925 Fax
www.WallaceMontgomery.com
A Limited Liability Partnership

PLOTTED: Tuesday, June 14, 2016 AT 03:11 PM
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DES. GJG | DRN. DED | CHK.

DATE	REVISION	BY	APP'R.

PREPARED FOR:
THE HOWARD HUGHES CORPORATION
LITTLE PATUXENT PARKWAY
COLUMBIA, MARYLAND 21044
ATTN: BOB JENKINS
410-964-5443

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE PLANS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 24748, EXPIRATION DATE: 7-14-18

STATE OF MARYLAND — LANCE GORDON JOHNSON — NO. 24748 — REGISTERED PROFESSIONAL ENGINEER

MISCELLANEOUS DETAILS
DOWNTOWN COLUMBIA
CRESCENT NEIGHBORHOOD
PARCELS B THRU H, NON-BUILDABLE BULK PARCELS J THRU R, O.S. LOTS 1 THRU 8 AND MERRIWEATHER-SYMPHONY WOODS NEIGHBORHOOD O.S. LOT 1 AND NON-BUILDABLE BULK PARCEL A
ELECTION DISTRICT No. 5 — HOWARD COUNTY, MARYLAND

SCALE	ZONING	G. L. W. FILE No.
AS SHOWN	NT	11071
DATE	TAX MAP - GRID	SHEET
JUNE 2016	36 - 01	41 OF 102

F 15-106

DOWNTOWN COLUMBIA
CRESCENT NEIGHBORHOOD
MERRIWEATHER DRIVE CROSSING
HOWARD COUNTY, MARYLAND

NOTES

GENERAL NOTES:

1. THIS BRIDGE HAS BEEN DESIGNED FOR GENERAL SITE CONDITIONS. THE PROJECT ENGINEER SHALL BE RESPONSIBLE FOR THE STRUCTURE'S SUITABILITY TO THE EXISTING SITE CONDITIONS AND FOR THE HYDRAULIC EVALUATION -- INCLUDING SCOUR AND CONFIRMATION OF SOIL CONDITIONS.
2. PRIOR TO CONSTRUCTION, CONTRACTOR MUST VERIFY ALL ELEVATIONS SHOWN THROUGH THE ENGINEER.
3. ONLY CONTECH ENGINEERED SOLUTIONS LLC, THE CON/SPAN® APPROVED PRECASTER IN MARYLAND MAY PROVIDE THE STRUCTURE DESIGNED IN ACCORDANCE WITH THESE PLANS.
4. THE USE OF ANOTHER PRECAST STRUCTURE WITH THE DESIGN ASSUMPTIONS USED FOR THE CON/SPAN® STRUCTURE MAY LEAD TO SERIOUS DESIGN ERRORS. USE OF ANY OTHER PRECAST STRUCTURE WITH THIS DESIGN AND DRAWINGS VOIDS ANY CERTIFICATION OF THIS DESIGN AND WARRANTY. CONTECH ENGINEERED SOLUTIONS LLC ASSUMES NO LIABILITY FOR DESIGN OF ANY ALTERNATE OR SIMILAR TYPE STRUCTURES.
5. ALTERNATE STRUCTURES MAY BE CONSIDERED, PROVIDED THAT DRAWINGS AND CALCULATIONS SIGNED AND SEALED BY A PROFESSIONAL ENGINEER, REGISTERED IN THE STATE OF MARYLAND, EMPLOYED BY THE PRECAST CONCRETE BRIDGE SUPPLIER, ARE SUBMITTED TO THE ENGINEER 2 WEEKS PRIOR TO THE BID DATE FOR REVIEW AND APPROVAL.
6. ALTERNATE STRUCTURES MAY BE CONSIDERED, PROVIDED THAT THE ALTERNATE DESIGN DOES NOT REDUCE THE HYDRAULIC OPENING OF THE STRUCTURE AS SHOWN ON THE DRAWINGS. AT A MINIMUM THE ALTERNATE STRUCTURE MUST PROVIDE THE SAME OR LARGER SPAN AND RISE AS THE STRUCTURE SHOWN ON THE DRAWINGS.
7. THE PRECAST ARCH SUPPLIER MUST ATTEND THE PRE-BID MEETING, IF ONE IS HELD.
8. SUPPLIER OF PROPOSED ALTERNATES TO A CON/SPAN® BRIDGE SYSTEM MUST SUBMIT AT LEAST TWO (2) INDEPENDENTLY VERIFIED FULL SCALE LOAD TESTS THAT CONFIRM THE PROPOSED DESIGN METHODOLOGY OF THE THREE SIDED/ARCH STRUCTURE(S). THE PROPOSED ALTERNATE, UPON SATISFACTORY CONFIRMATION OF DESIGN METHODOLOGY, MAY BE CONSIDERED AN ACCEPTABLE ALTERNATE.
9. PROPOSED ALTERNATE STRUCTURES MAY BE CONSIDERED, PROVIDED THAT THE PRECAST CONCRETE BRIDGE STRUCTURES ARE PROVIDED BY A SUPPLIER THAT HAS A MINIMUM OF TWO (2) REGISTERED PROFESSIONAL ENGINEERS ON STAFF THAT ARE DEDICATED TO THE DESIGN OF THESE TYPES OF STRUCTURES. SUPPLIER MUST PROVIDE THESE NAMES, P.E. LICENSE NUMBERS AND DATES OF HIRE AT TIME OF ALTERNATE SUBMITTAL.

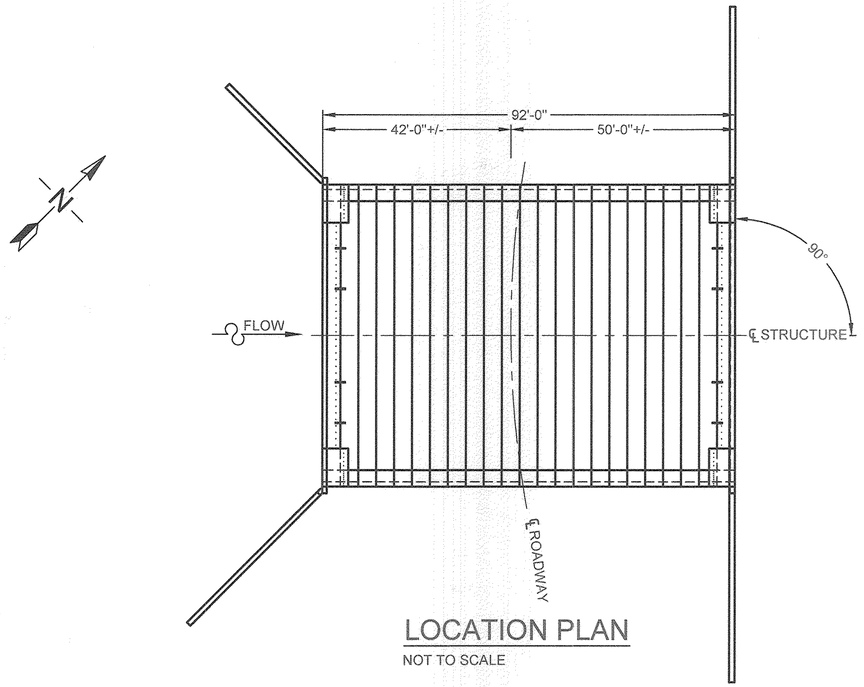
DESIGN DATA

DESIGN LOADING:
BRIDGE UNITS: HL-93
HEADWALLS: EARTH PRESSURE + LIVE LOAD SURCHARGE
WINGWALLS: EARTH PRESSURE + LIVE LOAD SURCHARGE
DESIGN FILL HEIGHT: 5'-0" MIN. TO 7'-0" MAX.
FROM TOP OF CROWN TO TOP OF PAVEMENT.
DESIGN METHOD: LOAD RESISTANCE FACTOR DESIGN PER AASHTO LRFD SPECIFICATION
FACTORED BEARING RESISTANCE: 12000PSF*

*FOUNDATION EXCAVATION AND SUBGRADE PREPARATION SHALL BE IN ACCORDANCE WITH THE GEOTECHNICAL REPORT FOR THIS PROJECT PREPARED BY ROBERT B BALTER COMPANY DATED APRIL 2, 2015 WITH UPDATED FACTORED BEARING RESISTANCE PROVIDED BY EMAIL ON JUNE 2, 2015

MATERIALS

PRECAST UNITS SHALL BE CONSTRUCTED AND INSTALLED IN ACCORDANCE WITH CON/SPAN® SPECIFICATIONS. CONCRETE FOR FOOTINGS SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3500 PSI (MSHA MIX NO. 3). REINFORCING STEEL FOR FOOTINGS SHALL CONFORM TO ASTM A615 OR A996-GRADE 60.



LOCATION PLAN
NOT TO SCALE

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
Chief, Bureau of Highways — Date 7/12/2016

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
Chief, Division of Land Development — Date 7.13.16
Chief, Development Engineering Division — Date 7.26.16

CONTECH ENGINEERED SOLUTIONS LLC
9604 MORNING GLEN COURT
NEW MARKET, MARYLAND 21774
443-437-1007

DES. JMF | DRN. ACR | CHK. DN

DATE	REVISION	BY	APP'R.

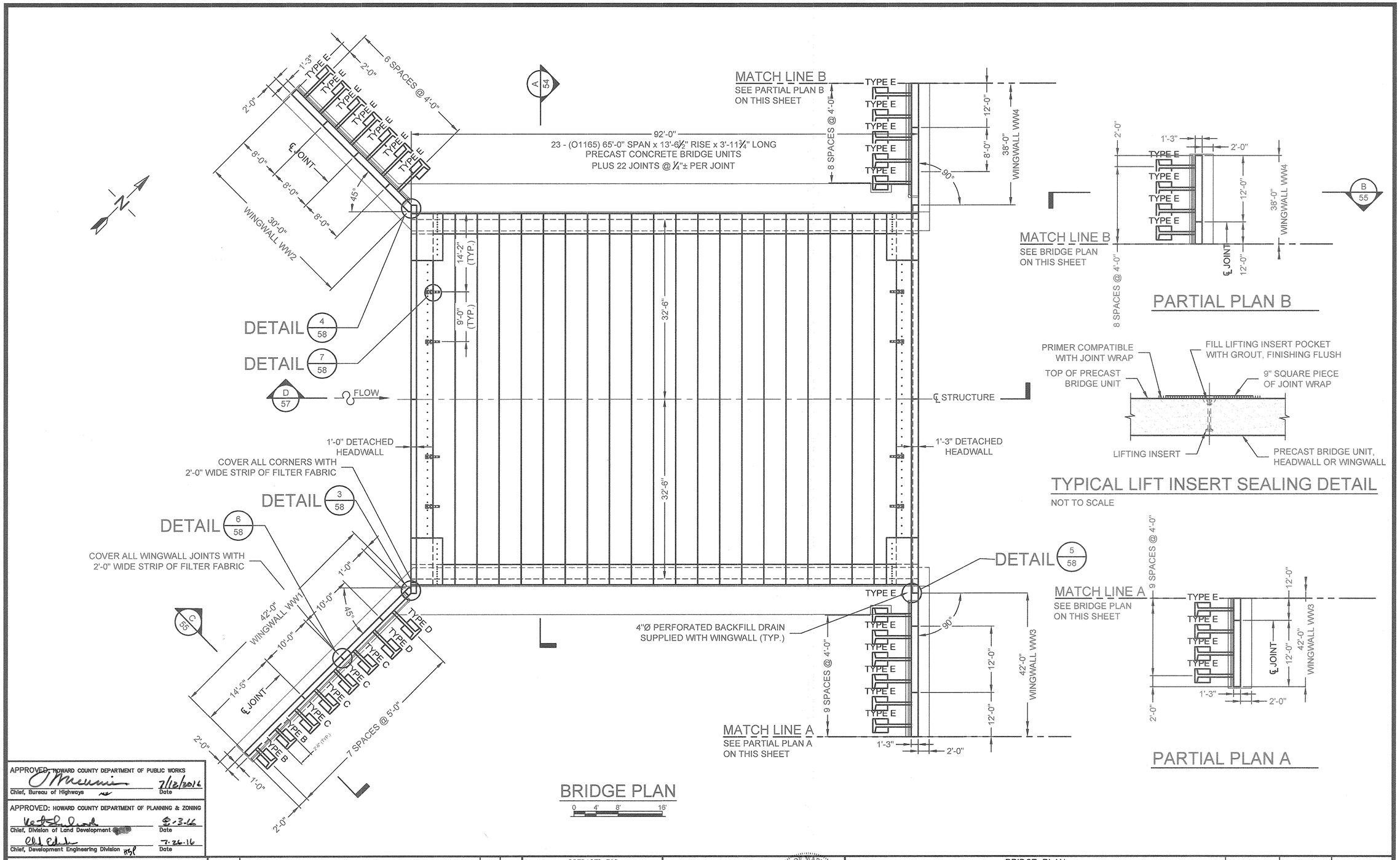
PREPARED FOR:
THE HOWARD HUGHES CORPORATION
10480 LITTLE PATUXENT PARKWAY
SUITE 400
COLUMBIA, MD 21044
ATTN: BOB JENKINS
410-964-5443

PROFESSIONAL CERTIFICATION
I HEREBY CERTIFY THAT THESE PLANS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 36225, EXPIRATION DATE: 8/19/2016.
6/10/16

STATE OF MARYLAND — JAMES M. FREDERICK — No. 36225 — PROFESSIONAL ENGINEER

LOCATION PLAN, GENERAL NOTES, DESIGN DATA
DOWNTOWN COLUMBIA
CRESCENT NEIGHBORHOOD
PARCELS B THRU H, NON-BUILDABLE BULK PARCELS J THRU R, O.S. LOTS 1 THRU 8 AND MERRIWEATHER-SYMPHONY WOODS NEIGHBORHOOD O.S. LOT 1 AND NON-BUILDABLE BULK PARCEL A
ELECTION DISTRICT No. 5 — HOWARD COUNTY, MARYLAND

SCALE	ZONING	
AS NOTED	NT	
DATE	TAX/ZILE	SHEET
JUNE, 2016	36 - 01	42 OF 102



APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
Chief, Bureau of Highways — Date 7/12/2016

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
Chief, Division of Land Development — Date 8-3-16
Chief, Development Engineering Division — Date 7-26-16

CONTECH ENGINEERED SOLUTIONS LLC

DES. JMF	DRN. ACR	CHK. DN

DATE	REVISION	BY	APP'R.

PREPARED FOR:
THE HOWARD HUGHES CORPORATION
10480 LITTLE PATUXENT PARKWAY
SUITE 400
COLUMBIA, MD 21044
ATTN: BOB JENKINS
410-964-5443

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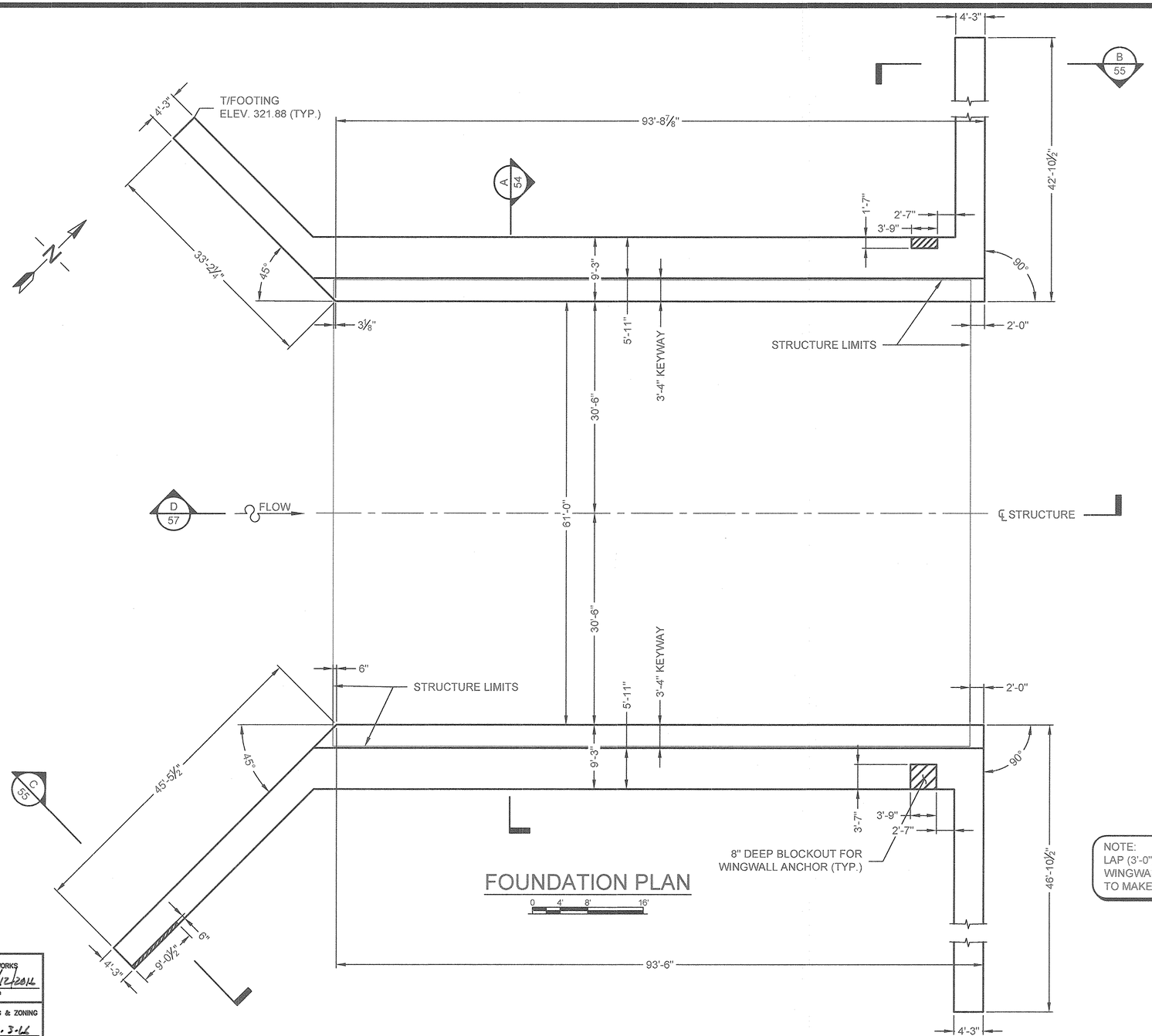
6/10/16

STATE OF MARYLAND — PROFESSIONAL ENGINEER — Lic. No. 36225

BRIDGE PLAN
DOWNTOWN COLUMBIA
CRESCENT NEIGHBORHOOD
PARCELS B THRU H, NON-BUILDABLE BULK PARCELS J THRU R, O.S. LOTS 1 THRU 8 AND MERRIWEATHER-SYMPHONY WOODS NEIGHBORHOOD O.S. LOT 1 AND NON-BUILDABLE BULK PARCEL A
ELECTION DISTRICT No. 5 — HOWARD COUNTY, MARYLAND

SCALE	ZONING	
AS NOTED	NT	
DATE	TAXTITLE	SHEET
JUNE, 2016	36 – 01	43 OF 102



FOUNDATION PLAN

0 4' 8' 16'

NOTE:
LAP (3'-0") #6 LONGITUDINAL BARS IN WINGWALL AND BRIDGE FOOTINGS TO MAKE CONTINUOUS

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
Chief, Bureau of Highways — Date 7/12/2016

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
Chief, Division of Land Development — Date 8.3.16
Chief, Development Engineering Division — Date 7.26.16

CONTECH ENGINEERED SOLUTIONS LLC
5604 MORNING GATE COURT
NEW MARKET, MARYLAND 21774
443-457-1907

DES. JMF | DRN. ACR | CHK. DN

DATE	REVISION	BY	APP'R.

PREPARED FOR:
THE HOWARD HUGHES CORPORATION
10480 LITTLE PATUXENT PARKWAY
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COLUMBIA, MD 21044
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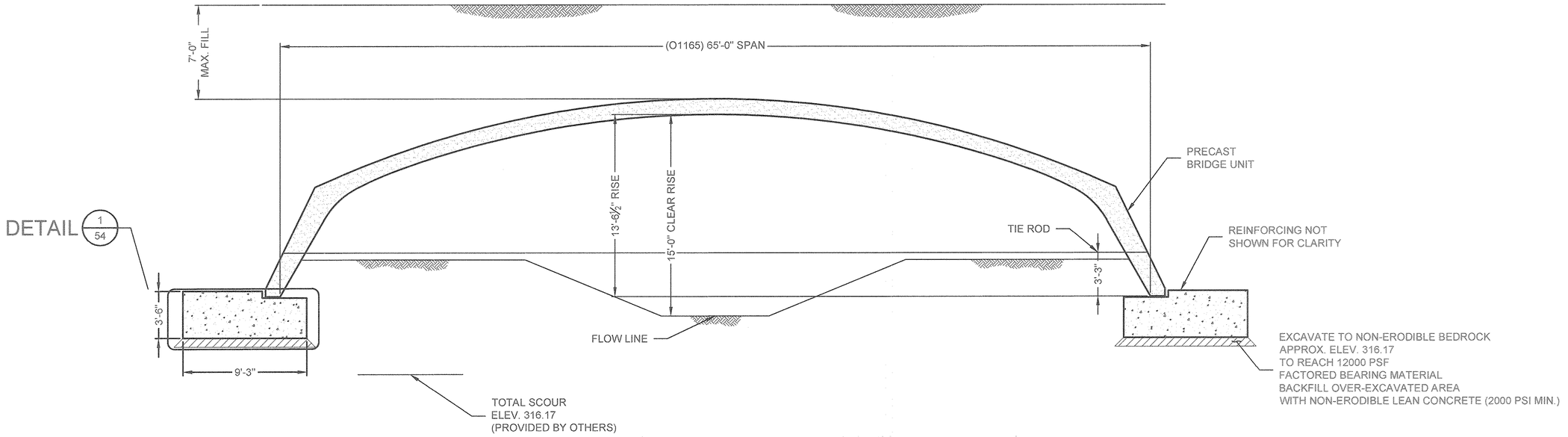
410-964-5443

PROFESSIONAL CERTIFICATION
I HEREBY CERTIFY THAT THESE PLANS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 36225, EXPIRATION DATE: 8/19/2016.
6/10/16

STATE OF MARYLAND — JOHN M. FRIEDMAN — Lic. No. 36225 — PROFESSIONAL ENGINEER

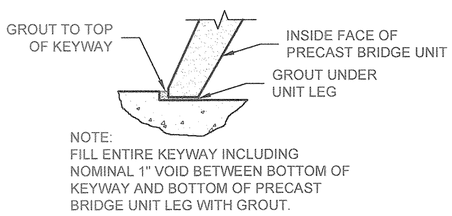
FOUNDATION PLAN
DOWNTOWN COLUMBIA
CRESCENT NEIGHBORHOOD
PARCELS B THRU H, NON-BULDABLE BULK PARCELS J THRU R, O.S. LOTS 1 THRU 8 AND MERRIWEATHER-SYMPHONY WOODS NEIGHBORHOOD O.S. LOT 1 AND NON-BUILDABLE BULK PARCEL A
ELECTION DISTRICT No. 5 — HOWARD COUNTY, MARYLAND

SCALE	ZONING	
AS NOTED	NT	
DATE	TAXTITLE	SHEET
JUNE, 2016	36 – 01	44 OF 102



SECTION A/52

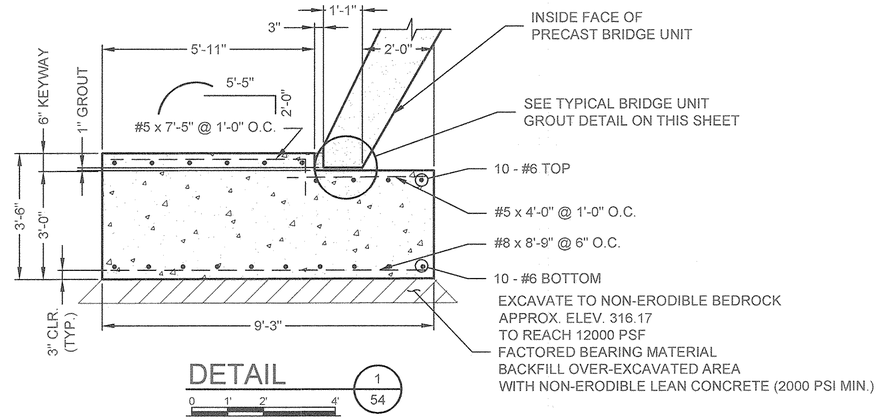
0 2' 4' 8'



NOTE:
FILL ENTIRE KEYWAY INCLUDING NOMINAL 1" VOID BETWEEN BOTTOM OF KEYWAY AND BOTTOM OF PRECAST BRIDGE UNIT LEG WITH GROUT.

TYPICAL BRIDGE UNIT GROUT DETAIL

NOT TO SCALE



DETAIL 1/54

0 1' 2' 4'

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
Chief, Bureau of Highways — Date 7/12/2016

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
Chief, Division of Land Development — Date 8-3-16
Chief, Development Engineering Division — Date 7-26-16

CONTECH ENGINEERED SOLUTIONS LLC

DES. JMF	DRN. ACR	CHK. DN

DATE	REVISION	BY	APP'R.

PREPARED FOR:
THE HOWARD HUGHES CORPORATION
10480 LITTLE PATUXENT PARKWAY
SUITE 400
COLUMBIA, MD 21044
ATTN: BOB JENKINS
410-964-5443

PROFESSIONAL CERTIFICATION
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6/10/16

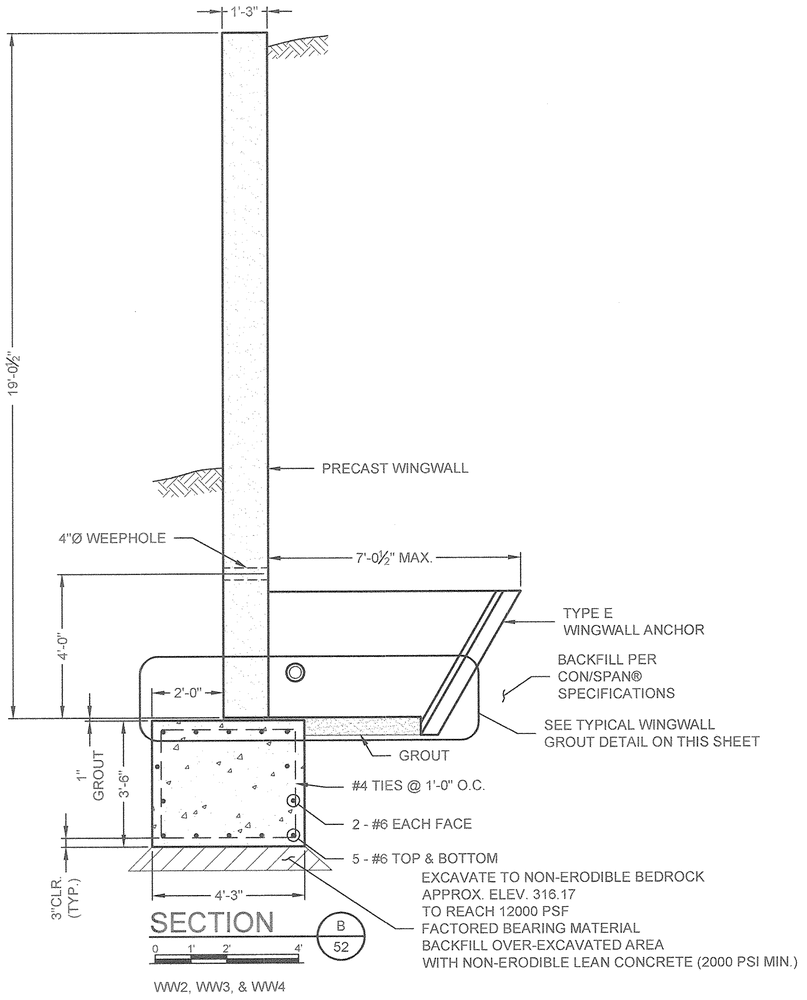
STATE OF MARYLAND — JOHN F. CRESCENT — LIC. No. 36225 — PROFESSIONAL ENGINEER

TYPICAL BRIDGE SECTION, FOUNDATION DETAILS

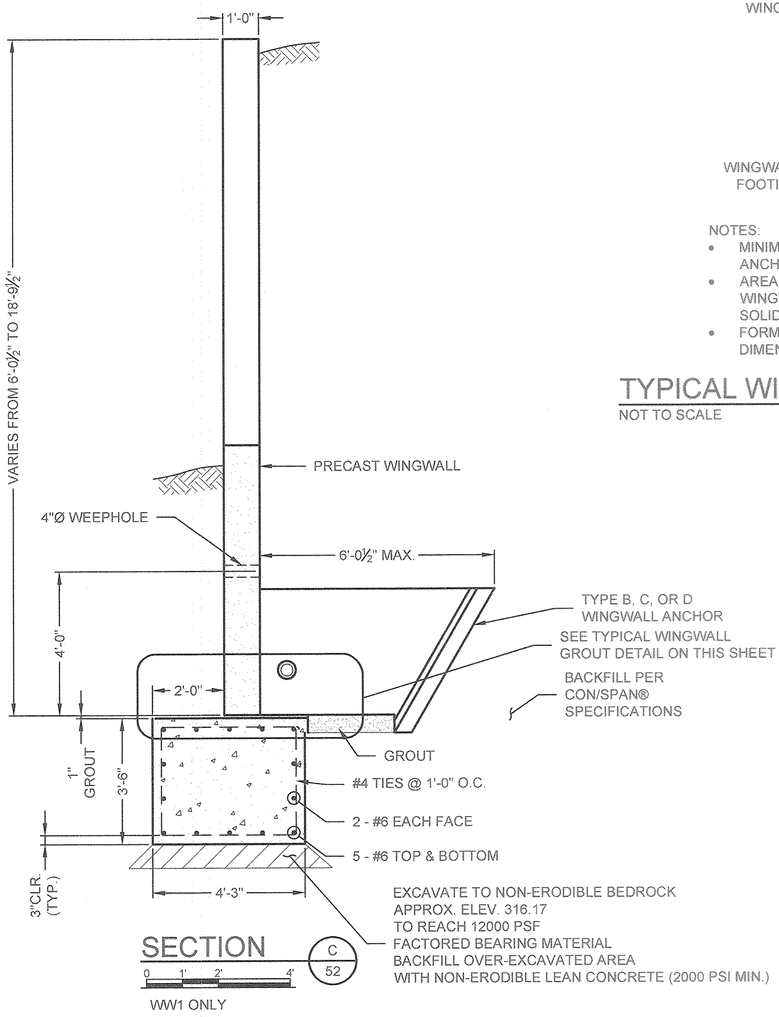
DOWNTOWN COLUMBIA
CRESCENT NEIGHBORHOOD
PARCELS B THRU H, NON-BUILDABLE BULK PARCELS J THRU R, O.S. LOTS 1 THRU 8 AND MERRIWEATHER-SYMPHONY WOODS NEIGHBORHOOD O.S. LOT 1 AND NON-BUILDABLE BULK PARCEL A

ELECTION DISTRICT No. 5 — HOWARD COUNTY, MARYLAND

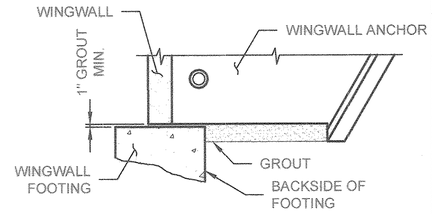
SCALE	ZONING	
AS NOTED	NT	
DATE	TAXTITLE	SHEET
JUNE, 2016	36 – 01	45 OF 102



WW2, WW3, & WW4



WW1 ONLY



NOTES:

- MINIMUM 1" GROUT UNDER WINGWALL LEG & ANCHOR STEM.
- AREA BETWEEN WINGWALL FOOTING AND WINGWALL ANCHOR SHALL BE GROUTED SOLID BEFORE BACKFILL.
- FORM BACKSIDE OF FOOTING TO DIMENSIONS SHOWN ON FOUNDATION PLAN.

TYPICAL WINGWALL GROUT DETAIL

NOT TO SCALE

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

Chief, Bureau of Highways — Date 7/12/2016

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

Chief, Division of Land Development — Date 8.3.16

Chief, Development Engineering Division — Date 7.26.16

CONTECH ENGINEERED SOLUTIONS LLC
9604 NORTHAVEN GATE COURT
NEW MARKET, MARYLAND 21774
443-451-1767

DES. JMF | DRN. ACR | CHK. DN

DATE	REVISION	BY	APP'R.

PREPARED FOR:
THE HOWARD HUGHES CORPORATION
10480 LITTLE PATUXENT PARKWAY
SUITE 400
COLUMBIA, MD 21044
ATTN: BOB JENKINS
410-964-5443

PROFESSIONAL CERTIFICATION

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8/10/16

STATE OF MARYLAND · JAMES M. FREDERICK · 36225 · PROFESSIONAL ENGINEER

WINGWALL SECTIONS

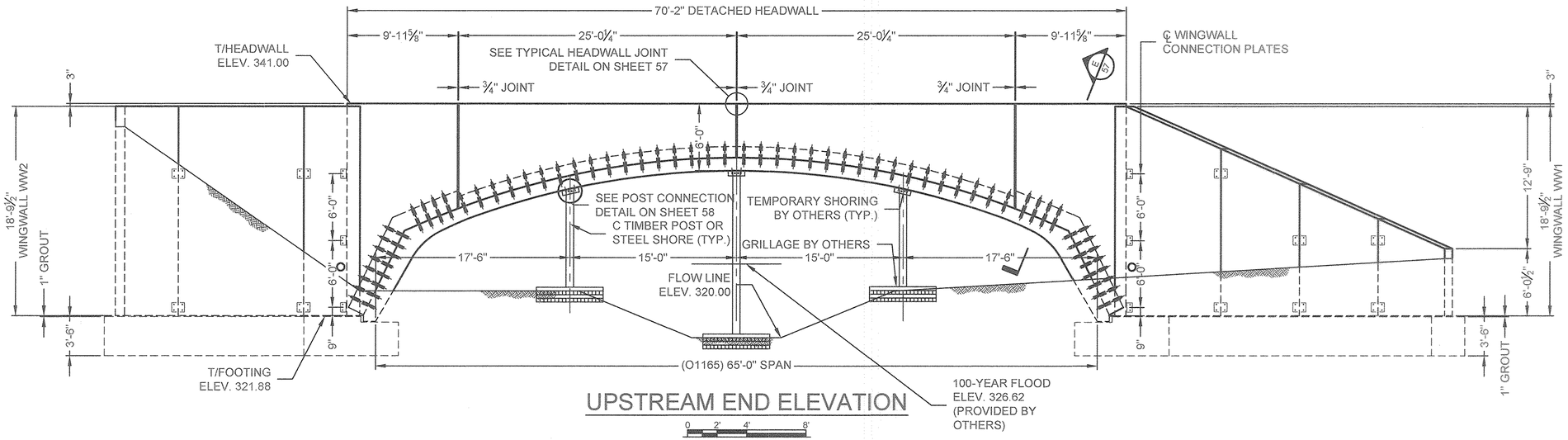
DOWNTOWN COLUMBIA

CRESCENT NEIGHBORHOOD

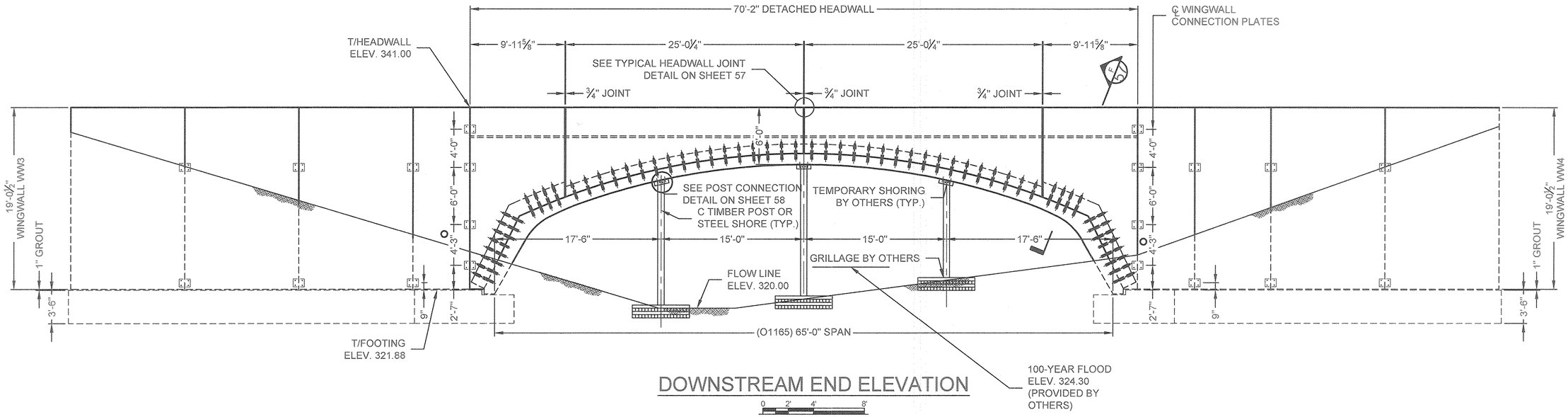
PARCELS B THRU H, NON-BULDABLE BULK PARCELS J THRU R, O.S. LOTS 1 THRU 8 AND MERRIWEATHER-SYMPHONY WOODS NEIGHBORHOOD O.S. LOT 1 AND NON-BUILDABLE BULK PARCEL A

ELECTION DISTRICT No. 5 — HOWARD COUNTY, MARYLAND

SCALE	ZONING	
AS NOTED	NT	
DATE	TAX/TITLE	SHEET
JUNE, 2016	36 – 01	46 OF 102



UPSTREAM END ELEVATION



DOWNSTREAM END ELEVATION

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

Chief, Bureau of Highways — Date 7/12/2016

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

Chief, Division of Land Development — Date 8.3.16

Chief, Development Engineering Division — Date 7.26.16

CONTECH ENGINEERED SOLUTIONS LLC

DES. JMF	DRN. ACR	CHK. DN

DATE	REVISION	BY	APP'R.

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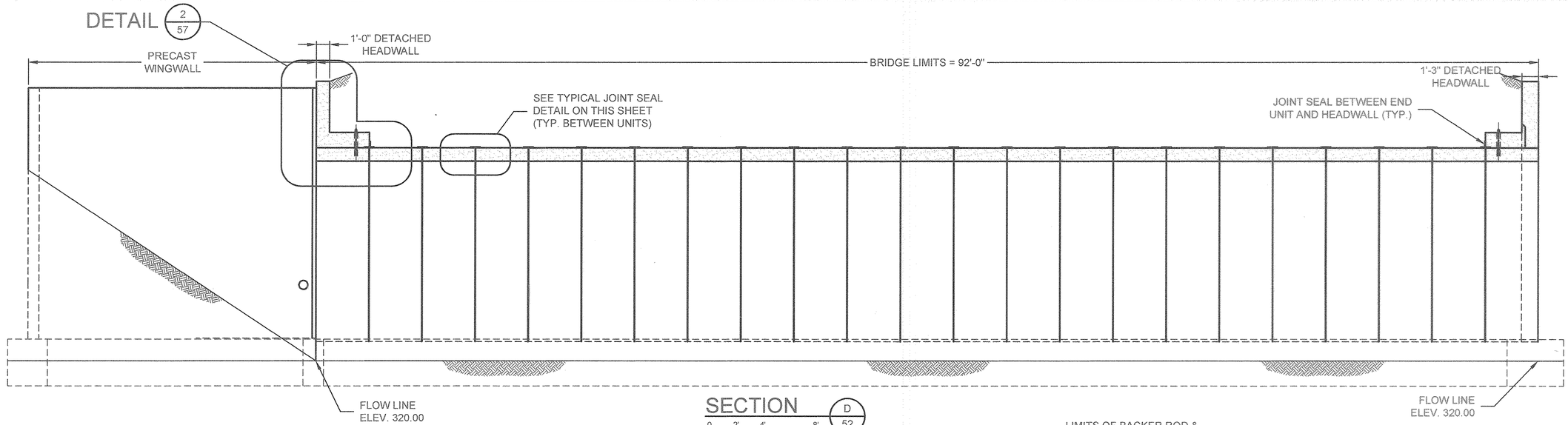
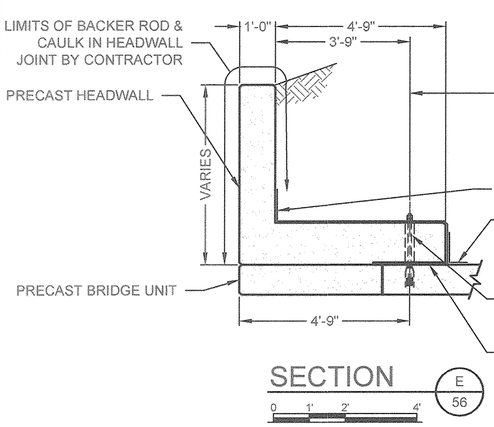
6/10/16

END ELEVATIONS
DOWNTOWN COLUMBIA
CRESCENT NEIGHBORHOOD
PARCELS B THRU H, NON-BUILDABLE BULK PARCELS J THRU R, O.S. LOTS 1 THRU 8 AND MERRIWEATHER-SYMPHONY WOODS NEIGHBORHOOD O.S. LOT 1 AND NON-BUILDABLE BULK PARCEL A
ELECTION DISTRICT No. 5 — HOWARD COUNTY, MARYLAND

SCALE	ZONING	
AS NOTED	NT	
DATE	TAXTITLE	SHEET
JUNE, 2016	36 - 01	47 OF 102





SECTION E/56
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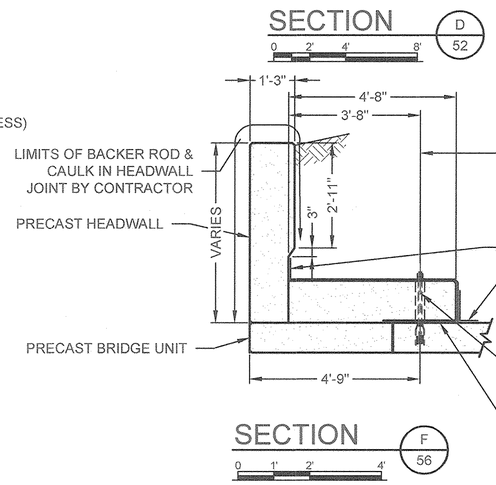
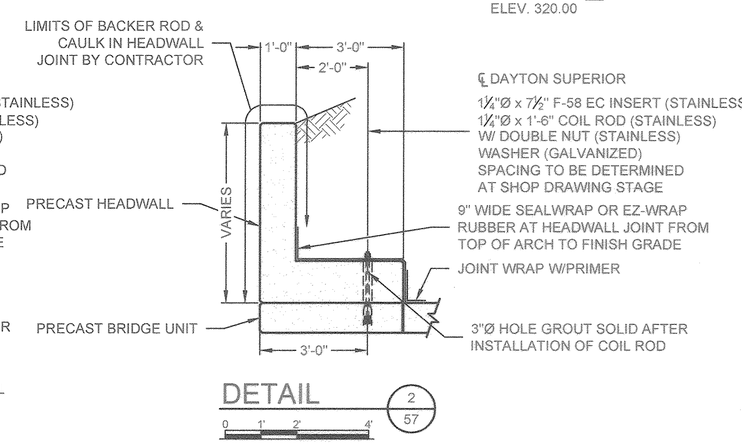
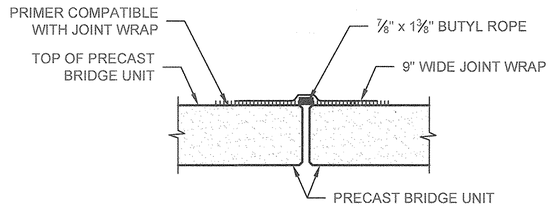


SECTION F/56
0 1' 2' 4'

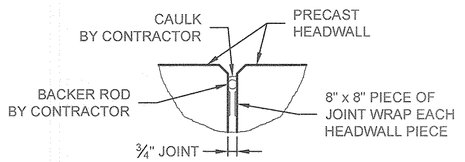


DETAIL 2/57
0 1' 2' 4'



TYPICAL JOINT SEAL DETAIL

NOT TO SCALE



TYPICAL HEADWALL JOINT DETAIL

NOT TO SCALE

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
Chief, Bureau of Highways — Date 7/12/2016

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
Chief, Division of Land Development — Date 8.3.16
Chief, Development Engineering Division — Date 7.26.16

CONTECH ENGINEERED SOLUTIONS LLC
9604 MORNING GLORY COURT
NEW MARKET, MARYLAND 21774
443-451-1501

DES. JMF | DRN. ACR | CHK. DN

DATE	REVISION	BY	APP'R.

PREPARED FOR:
THE HOWARD HUGHES CORPORATION
10480 LITTLE PATUXENT PARKWAY
SUITE 400
COLUMBIA, MD 21044
ATTN: BOB JENKINS
410-964-5443

PROFESSIONAL CERTIFICATION.
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6/10/16

STATE OF MARYLAND — JAMES M. FOX — LIC. NO. 36225 — PROFESSIONAL ENGINEER

LONGITUDINAL SECTION, HEADWALL DETAILS

DOWNTOWN COLUMBIA

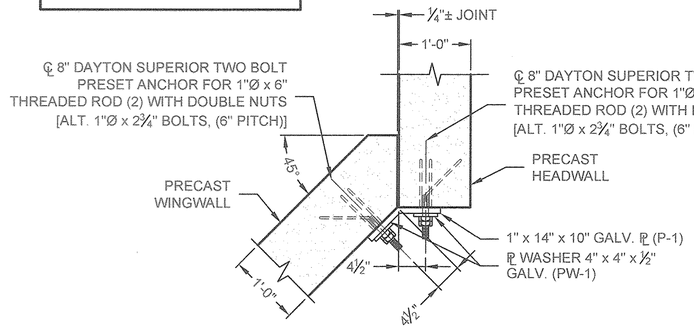
CRESCENT NEIGHBORHOOD

PARCELS B THRU H, NON-BUILDABLE BULK PARCELS J THRU R, O.S. LOTS 1 THRU 8 AND MERRIWEATHER-SYMPHONY WOODS NEIGHBORHOOD O.S. LOT 1 AND NON-BUILDABLE BULK PARCEL A

ELECTION DISTRICT No. 5 — HOWARD COUNTY, MARYLAND

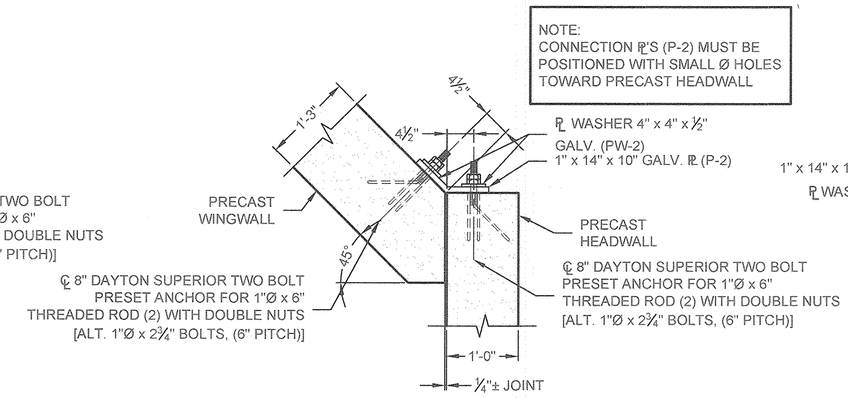
SCALE	ZONING	
AS NOTED	NT	
DATE	TAX/TILE	SHEET
JUNE, 2016	36 - 01	48 OF 102

NOTE:
CONNECTION ℙ'S (P-1) MUST BE POSITIONED WITH SMALL Ø HOLES TOWARD PRECAST HEADWALL



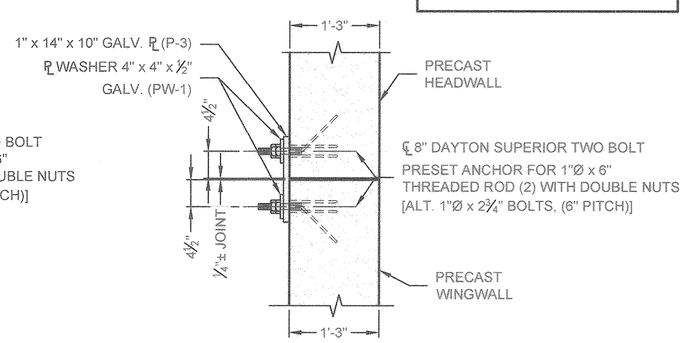
DETAIL @ HEADWALL 3/52

NOTE:
CONNECTION ℙ'S (P-2) MUST BE POSITIONED WITH SMALL Ø HOLES TOWARD PRECAST HEADWALL

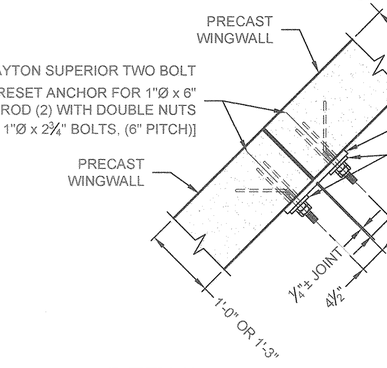


DETAIL @ HEADWALL 4/52

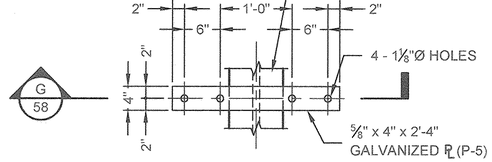
NOTE:
CONNECTION ℙ'S (P-3) MUST BE POSITIONED WITH SMALL Ø HOLES TOWARD PRECAST HEADWALL



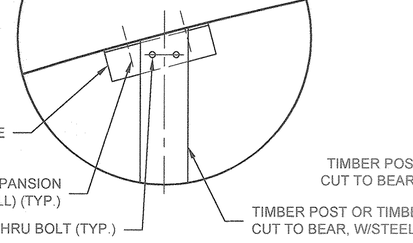
DETAIL @ HEADWALL 5/52



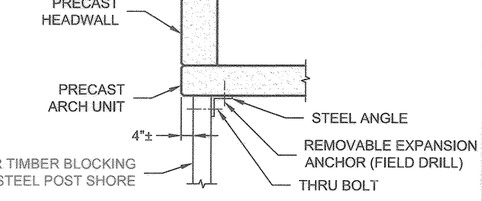
DETAIL 6/52



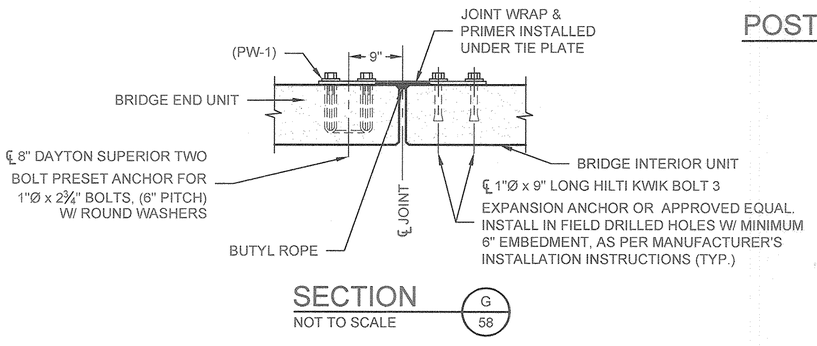
DETAIL NOT TO SCALE 7/52



POST CONNECTION DETAIL



HEADWALL SECTION



SECTION NOT TO SCALE G/58

TEMPORARY SHORING DETAIL & SECTION

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
Chief, Bureau of Highways — Date 7/12/2016

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
Chief, Division of Land Development — Date 8.3.16
Chief, Development Engineering Division — Date 7.26.16

CONTECH ENGINEERED SOLUTIONS LLC
9634 MORNING GATE COURT
NEW MARKET, MARYLAND 21774
443-457-1527

DES. JMF | DRN. ACR | CHK. DN

DATE	REVISION	BY	APP'R.

PREPARED FOR:
THE HOWARD HUGHES CORPORATION
10480 LITTLE PATUXENT PARKWAY
SUITE 400
COLUMBIA, MD 21044
ATTN: BOB JENKINS
410-964-5443

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6/10/16

STATE OF MARYLAND — JAMES M. FREDERICK — No. 38225 — PROFESSIONAL ENGINEER

WINGWALL DETAILS
DOWNTOWN COLUMBIA
CRESCENT NEIGHBORHOOD
PARCELS B THRU H, NON-BUILDABLE BULK PARCELS J THRU R, O.S. LOTS 1 THRU 8 AND MERRIWEATHER-SYMPHONY WOODS NEIGHBORHOOD O.S. LOT 1 AND NON-BUILDABLE BULK PARCEL A
ELECTION DISTRICT No. 5 — HOWARD COUNTY, MARYLAND

SCALE	ZONING	
AS NOTED	NT	
DATE	TAX/TITLE	SHEET
JUNE, 2016	36 - 01	49 OF 102

SPECIFICATIONS FOR MANUFACTURE AND INSTALLATION OF CON/SPAN® BRIDGE SYSTEMS

1. DESCRIPTION
   - 1.1. TYPE - THIS WORK SHALL CONSIST OF FURNISHING AND CONSTRUCTING A CON/SPAN® BRIDGE SYSTEM IN ACCORDANCE WITH THESE SPECIFICATIONS AND IN REASONABLY CLOSE CONFORMITY WITH THE LINES, GRADES, DESIGN AND DIMENSIONS SHOWN ON THE PLANS OR AS ESTABLISHED BY THE ENGINEER. IN SITUATIONS WHERE TWO OR MORE SPECIFICATIONS APPLY TO THIS WORK, THE MOST STRINGENT REQUIREMENTS SHALL GOVERN.
   - 1.2. DESIGNATION - PRECAST REINFORCED CONCRETE CON/SPAN® BRIDGE UNITS MANUFACTURED IN ACCORDANCE WITH THIS SPECIFICATION SHALL BE DESIGNATED BY SPAN AND RISE. PRECAST REINFORCED CONCRETE WINGWALLS AND HEADWALLS MANUFACTURED IN ACCORDANCE WITH THIS SPECIFICATION SHALL BE DESIGNATED BY LENGTH, HEIGHT, AND DEFLECTION ANGLE. PRECAST REINFORCED CONCRETE EXPRESS™ FOUNDATION UNITS MANUFACTURED IN ACCORDANCE WITH THIS SPECIFICATION SHALL BE DESIGNATED BY LENGTH, HEIGHT AND WIDTH.

2. DESIGN
   - 2.1. SPECIFICATIONS - THE PRECAST ELEMENTS ARE DESIGNED IN ACCORDANCE WITH THE "AASHTO LRFD BRIDGE SPECIFICATION" 6TH EDITION, ADOPTED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS, 2012. A MINIMUM OF ONE FOOT OF COVER ABOVE THE CROWN OF THE BRIDGE UNITS IS REQUIRED IN THE INSTALLED CONDITION. (UNLESS NOTED OTHERWISE ON THE SHOP DRAWINGS AND DESIGNED ACCORDINGLY.)

3. MATERIALS
   - 3.1. CONCRETE - THE CONCRETE FOR THE PRECAST ELEMENTS SHALL BE AIR-ENTRAINED WHEN INSTALLED IN AREAS SUBJECT TO FREEZE-THAW CONDITIONS, COMPOSED OF PORTLAND CEMENT, FINE AND COARSE AGGREGATES, ADMIXTURES AND WATER. AIR-ENTRAINED CONCRETE SHALL CONTAIN 6 ± 2 PERCENT AIR. THE AIR- ENTRAINING ADMIXTURE SHALL CONFORM TO AASHT0 M154. THE MINIMUM CONCRETE COMPRESSIVE STRENGTH SHALL BE AS SHOWN ON THE SHOP DRAWINGS.
     - 3.1.1. PORTLAND CEMENT - SHALL CONFORM TO THE REQUIREMENTS OF ASTM SPECIFICATIONS C150-TYPE I, TYPE II, OR TYPE III CEMENT.
     - 3.1.2. COARSE AGGREGATE - SHALL CONSIST OF STONE HAVING A MAXIMUM SIZE OF 1 INCH. AGGREGATE SHALL MEET REQUIREMENTS FOR ASTM C33.
     - 3.1.3. WATER REDUCING ADMIXTURE - THE MANUFACTURER MAY SUBMIT, FOR APPROVAL BY THE ENGINEER, A WATER-REDUCING ADMIXTURE FOR THE PURPOSE OF INCREASING WORKABILITY AND REDUCING THE WATER REQUIREMENT FOR THE CONCRETE.
     - 3.1.4. CALCIUM CHLORIDE - THE ADDITION TO THE MIX OF CALCIUM CHLORIDE OR ADMIXTURES CONTAINING CALCIUM CHLORIDE WILL NOT BE PERMITTED.
     - 3.1.5. MIXTURE - THE AGGREGATES, CEMENT AND WATER SHALL BE PROPORTIONED AND MIXED IN A BATCH MIXER TO PRODUCE A HOMOGENEOUS CONCRETE MEETING THE STRENGTH REQUIREMENTS OF THIS SPECIFICATION. THE PROPORTION OF PORTLAND CEMENT IN THE MIXTURE SHALL NOT BE LESS THAN 564 POUNDS (6 SACKS) PER CUBIC YARD OF CONCRETE.
   - 3.2. STEEL REINFORCEMENT
     - 3.2.1. THE MINIMUM STEEL YIELD STRENGTH SHALL BE 60,000 PSI, UNLESS OTHERWISE NOTED ON THE SHOP DRAWINGS.
     - 3.2.2. ALL REINFORCING STEEL FOR THE PRECAST ELEMENTS SHALL BE FABRICATED AND PLACED IN ACCORDANCE WITH THE DETAILED SHOP DRAWINGS SUBMITTED BY THE MANUFACTURER.
     - 3.2.3. REINFORCEMENT SHALL CONSIST OF WELDED WIRE FABRIC CONFORMING TO ASTM SPECIFICATION A 185 OR A 497, OR DEFORMED BILLET STEEL BARS CONFORMING TO ASTM SPECIFICATION A 615, GRADE 60. LONGITUDINAL DISTRIBUTION REINFORCEMENT MAY CONSIST OF WELDED WIRE FABRIC OR DEFORMED BILLET-STEEL BARS.
   - 3.3. STEEL HARDWARE
     - 3.3.1. BOLTS AND THREADED RODS FOR WINGWALL CONNECTIONS SHALL CONFORM TO ASTM A 307. NUTS SHALL CONFORM TO AASHTO M292 (ASTM A194) GRADE 2H. ALL BOLTS, THREADED RODS AND NUTS USED IN WINGWALL CONNECTIONS SHALL BE MECHANICALLY ZINC COATED IN ACCORDANCE WITH ASTM B695 CLASS 50.
     - 3.3.2. STRUCTURAL STEEL FOR WINGWALL CONNECTION PLATES AND PLATE WASHERS SHALL CONFORM TO AASHTO M 270 (ASTM A 709) GRADE 36 AND SHALL BE HOT DIP GALVANIZED AS PER AASHTO M111 (ASTM A123).
     - 3.3.3. INSERTS FOR WINGWALLS SHALL BE 1" DIAMETER TWO-BOLT PRESET WINGWALL ANCHORS AS MANUFACTURED BY DAYTON SUPERIOR CONCRETE ACCESSORIES, MIAMISBURG, OHIO, (800) 745-3700 AND SHALL BE MECHANICALLY ZINC COATED IN ACCORDANCE WITH ASTM B695 CLASS 50.
     - 3.3.4. FERRULE LOOP INSERTS SHALL BE F-64 FERRULE LOOP INSERTS AS MANUFACTURED BY DAYTON SUPERIOR CONCRETE ACCESSORIES, MIAMISBURG, OHIO, (800) 745-3700.
     - 3.3.5. HOOK BOLTS USED IN ATTACHED HEADWALL CONNECTIONS SHALL BE ASTM A307.
     - 3.3.6. INSERTS FOR DETACHED HEADWALL CONNECTIONS SHALL BE AISI TYPE 304 STAINLESS STEEL, EXPANDED COIL INSERTS AS MANUFACTURED BY DAYTON SUPERIOR CONCRETE ACCESSORIES, MIAMISBURG, OHIO, (800) 745-3700. COIL RODS AND NUTS USED IN HEADWALL CONNECTIONS SHALL BE AISI TYPE 304 STAINLESS STEEL. WASHERS USED IN HEADWALL CONNECTIONS SHALL BE EITHER AISI TYPE 304 STAINLESS STEEL PLATE WASHERS OR AASHTO M270 (ASTM A709) GRADE 36 PLATE WASHERS HOT DIP GALVANIZED AS PER AASHTO M111 (ASTM A123).
     - 3.3.7. MECHANICAL SPLICES OF REINFORCING BARS SHALL BE MADE USING THE DOWEL BAR SPLICER SYSTEM AS MANUFACTURED BY DAYTON SUPERIOR CONCRETE ACCESSORIES, MIAMISBURG, OHIO, (800) 745-3700, AND SHALL CONSIST OF THE DOWEL BAR SPLICER (DB-SAE) AND DOWEL-IN (DI).

4. MANUFACTURE OF PRECAST ELEMENTS - SUBJECT TO THE PROVISIONS OF SECTION 5, BELOW, THE PRECAST ELEMENT DIMENSION AND REINFORCEMENT DETAILS SHALL BE AS PRESCRIBED IN THE PLAN AND SHOP DRAWINGS PROVIDED BY THE MANUFACTURER.
   - 4.1. FORMS - THE FORMS USED IN MANUFACTURE SHALL BE SUFFICIENTLY RIGID AND ACCURATE TO MAINTAIN THE REQUIRED PRECAST ELEMENT DIMENSIONS WITHIN THE PERMISSIBLE VARIATIONS GIVEN IN SECTION 5 OF THESE SPECIFICATIONS. ALL CASTING SURFACES SHALL BE OF A SMOOTH MATERIAL.
   - 4.2. PLACEMENT OF REINFORCEMENT
     - 4.2.1. PLACEMENT OF REINFORCEMENT IN PRECAST BRIDGE UNITS - THE COVER OF CONCRETE OVER THE OUTSIDE CIRCUMFERENTIAL REINFORCEMENT SHALL BE 2" MINIMUM. THE COVER OF CONCRETE OVER THE INSIDE CIRCUMFERENTIAL REINFORCEMENT SHALL BE 1½" MINIMUM, UNLESS OTHERWISE NOTED ON THE SHOP DRAWINGS. THE CLEAR DISTANCE OF THE END CIRCUMFERENTIAL WIRES SHALL NOT BE LESS THAN 1" NOR MORE THAN 2" FROM THE ENDS OF EACH SECTION. REINFORCEMENT SHALL BE ASSEMBLED UTILIZING SINGLE OR MULTIPLE LAYERS OF WELDED WIRE FABRIC (NOT TO EXCEED 3 LAYERS), SUPPLEMENTED WITH A SINGLE LAYER OF DEFORMED BILLET-STEEL BARS, WHEN NECESSARY. WELDED WIRE FABRIC SHALL BE COMPOSED OF CIRCUMFERENTIAL AND LONGITUDINAL WIRES MEETING THE SPACING REQUIREMENTS OF 4.3, BELOW, AND SHALL CONTAIN SUFFICIENT LONGITUDINAL WIRES EXTENDING THROUGH THE BRIDGE UNIT TO MAINTAIN THE SHAPE AND POSITION OF THE REINFORCEMENT. LONGITUDINAL DISTRIBUTION REINFORCEMENT MAY BE WELDED WIRE FABRIC OR DEFORMED BILLET-STEEL BARS AND SHALL MEET THE SPACING REQUIREMENTS OF 4.3, BELOW. THE ENDS OF THE LONGITUDINAL DISTRIBUTION REINFORCEMENT SHALL BE NOT MORE THAN 3" AND NOT LESS THAN 1½" FROM THE ENDS OF THE BRIDGE UNIT.
     - 4.2.2. BENDING OF REINFORCEMENT FOR PRECAST BRIDGE UNITS - THE OUTSIDE AND INSIDE CIRCUMFERENTIAL REINFORCING STEEL FOR THE CORNERS OF THE BRIDGE SHALL BE BENT TO SUCH AN ANGLE THAT IS APPROXIMATELY EQUAL TO THE CONFIGURATION OF THE BRIDGE'S OUTSIDE CORNER.
     - 4.2.3. PLACEMENT OF REINFORCEMENT FOR PRECAST WINGWALLS AND HEADWALLS - THE COVER OF CONCRETE OVER THE LONGITUDINAL AND TRANSVERSE REINFORCEMENT SHALL BE 2" MINIMUM. THE CLEAR DISTANCE FROM THE END OF EACH PRECAST ELEMENT TO THE END OF REINFORCING STEEL SHALL NOT BE LESS THAN 1½" NOR MORE THAN 3". REINFORCEMENT SHALL BE ASSEMBLED UTILIZING A SINGLE LAYER OF WELDED WIRE FABRIC, OR A SINGLE LAYER OF DEFORMED BILLET-STEEL BARS. WELDED WIRE FABRIC SHALL BE COMPOSED OF TRANSVERSE AND LONGITUDINAL WIRES MEETING THE SPACING REQUIREMENTS OF 4.3, BELOW, AND SHALL CONTAIN SUFFICIENT LONGITUDINAL WIRES EXTENDING THROUGH THE ELEMENT TO MAINTAIN THE SHAPE AND POSITION OF THE REINFORCEMENT. LONGITUDINAL REINFORCEMENT MAY BE WELDED WIRE FABRIC OR DEFORMED BILLET-STEEL BARS AND SHALL MEET THE SPACING REQUIREMENTS OF 4.3, BELOW.
     - 4.2.4. PLACEMENT OF REINFORCMENT FOR PRECAST FOUNDATION UNITS - THE COVER OF CONCRETE OVER THE BOTTOM REINFORCEMENT SHALL BE 3 INCHES MINIMUM. THE COVER OF CONCRETE FOR ALL OTHER REINFORCEMENT SHALL BE 2 INCHES MINIMUM. THE CLEAR DISTANCE FROM THE END OF EACH PRECAST ELEMENT TO THE END OF REINFORCING STEEL SHALL NOT BE LESS THAN 2 INCHES NOR MORE THAN 3 INCHES. REINFORCEMENT SHALL BE ASSEMBLED UTILIZING A SINGLE LAYER OF WELDED WIRE FABRIC OR A SINGLE LAYER OF DEFOREMED BILLET-STEEL BARS. WELDED WIRE FABRIC SHALL BE COMPOSED OF TRANSVERSE AND LONGITUDINAL WIRES MEETING THE SPACING REQUIREMENTS OF 4.3, BELOW, AND SHALL CONTAIN SUFFICIENT LONGITUDINAL WIRES EXTENDING THROUGH THE ELEMENT TO MAINTAIN THE SHAPE AND POSITION OF THE REINFORCEMENT. LONGITUDINAL REINFORCEMENT MAY BE WELDED WIRE FABRIC OR DEFORMED BILLET-STEEL BARS AND SHALL MEET THE SPACING REQUIREMENTS OF 4.3, BELOW.
   - 4.3. LAPS, WELDS, SPACING
     - 4.3.1. LAPS, WELDS, AND SPACING FOR PRECAST BRIDGE UNITS - TENSION SPLICES IN THE CIRCUMFERENTIAL REINFORCEMENT SHALL BE MADE BY LAPPING. LAPS MAY BE TACK WELDED TOGETHER FOR ASSEMBLY PURPOSES. FOR SMOOTH WELDED WIRE FABRIC, THE OVERLAP SHALL MEET THE REQUIREMENTS OF AASHTO 5.11.2.5.2 AND 5.11.6.2. FOR DEFORMED WELDED WIRE FABRIC, THE OVERLAP SHALL MEET THE REQUIREMENTS OF AASHTO 5.11.2.5.1 AND 5.11.6.1. THE OVERLAP OF WELDED WIRE FABRIC SHALL BE MEASURED BETWEEN THE OUTER-MOST LONGITUDINAL WIRES OF EACH FABRIC SHEET. FOR DEFORMED BILLET-STEEL BARS, THE OVERLAP SHALL MEET THE REQUIREMENTS OF AASHTO 5.11.2.1 FOR SPLICES OTHER THAN TENSION SPLICES, THE OVERLAP SHALL BE A MINIMUM OF 1'-0" FOR WELDED WIRE FABRIC OR DEFORMED BILLET-STEEL BARS. THE SPACING CENTER TO CENTER OF THE CIRCUMFERENTIAL WIRES IN A WIRE FABRIC SHEET SHALL BE NOT LESS THAN 2" NOR MORE THAN 4". THE SPACING CENTER TO CENTER OF THE LONGITUDINAL WIRES SHALL NOT BE MORE THAN 8". THE SPACING CENTER TO CENTER OF THE LONGITUDINAL DISTRIBUTION STEEL FOR EITHER LINE OF REINFORCING IN THE TOP SLAB SHALL BE NOT MORE THAN 1'-4".
     - 4.3.2. LAPS, WELDS, AND SPACING FOR PRECAST WINGWALLS, HEADWALLS AND FOUNDATIONS - SPLICES IN THE REINFORCEMENT SHALL BE MADE BY LAPPING. LAPS MAY BE TACK WELDED TOGETHER FOR ASSEMBLY PURPOSES. FOR SMOOTH WELDED WIRE FABRIC, THE OVERLAP SHALL MEET THE REQUIREMENTS OF AASHTO 5.11.2.5.2 AND 5.11.6.2. FOR DEFORMED WELDED WIRE FABRIC, THE OVERLAP SHALL MEET THE REQUIREMENTS OF AASHTO 5.11.2.5.1 AND 5.11.6.1. FOR DEFORMED BILLET-STEEL BARS, THE OVERLAP SHALL MEET THE REQUIREMENTS OF AASHTO 5.11.2.1. THE SPACING CENTER-TO-CENTER OF THE WIRES IN A WIRE FABRIC SHEET SHALL BE NOT LESS THAN 2" NOR MORE THAN 8".
   - 4.4. CURING - THE PRECAST CONCRETE ELEMENTS SHALL BE CURED FOR A SUFFICIENT LENGTH OF TIME SO THAT THE CONCRETE WILL DEVELOP THE SPECIFIED COMPRESSIVE STRENGTH IN 28 DAYS OR LESS. ANY ONE OF THE FOLLOWING METHODS OF CURING OR COMBINATIONS THEREOF SHALL BE USED:
     - 4.4.1. STEAM CURING - THE PRECAST ELEMENTS MAY BE LOW-PRESSURE STEAM CURED BY A SYSTEM THAT WILL MAINTAIN A MOIST ATMOSPHERE.
     - 4.4.2. WATER CURING - THE PRECAST ELEMENTS MAY BE WATER CURED BY ANY METHOD THAT WILL KEEP THE SECTIONS MOIST.
     - 4.4.3. MEMBRANE CURING - A SEALING MEMBRANE CONFORMING TO THE REQUIREMENTS OF ASTM SPECIFICATION C309 MAY BE APPLIED AND SHALL BE LEFT INTACT UNTIL THE REQUIRED CONCRETE COMPRESSIVE STRENGTH IS ATTAINED. THE CONCRETE TEMPERATURE AT THE TIME OF APPLICATION SHALL BE WITHIN +/- 10 DEGREES F OF THE ATMOSPHERIC TEMPERATURE. ALL SURFACES SHALL BE KEPT MOIST PRIOR TO THE APPLICATION OF THE COMPOUNDS AND SHALL BE DAMP WHEN THE COMPOUND IS APPLIED.
   - 4.5. STORAGE, HANDLING & DELIVERY
     - 4.5.1. STORAGE - PRECAST CONCRETE BRIDGE ELEMENTS SHALL BE LIFTED AND STORED IN "AS-CAST" POSITION. PRECAST CONCRETE HEADWALL AND WINGWALL UNITS ARE CAST, STORED AND SHIPPED IN A FLAT POSITION. THE PRECAST ELEMENTS SHALL BE STORED IN SUCH A MANNER TO PREVENT CRACKING OR DAMAGE. STORE ELEMENTS USING TIMBER SUPPORTS AS APPROPRIATE. THE UNITS SHALL NOT BE MOVED UNTIL THE CONCRETE COMPRESSIVE STRENGTH HAS REACHED A MINIMUM OF 2500 PSI, AND THEY SHALL NOT BE STORED IN AN UPRIGHT POSITION.
     - 4.5.2. HANDLING - HANDLING DEVICES SHALL BE PERMITTED IN EACH PRECAST ELEMENT FOR THE PURPOSE OF HANDLING AND SETTING. SPREADER BEAMS MAY BE REQUIRED FOR THE LIFTING OF PRECAST CONCRETE BRIDGE ELEMENTS TO PRECLUDE DAMAGE FROM BENDING OR TORSION FORCES.
     - 4.5.3. DELIVERY - PRECAST CONCRETE ELEMENTS MUST NOT BE SHIPPED UNTIL THE CONCRETE HAS ATTAINED THE SPECIFIED DESIGN COMPRESSIVE STRENGTH, OR AS DIRECTED BY THE DESIGN ENGINEER. PRECAST CONCRETE ELEMENTS MAY BE UNLOADED AND PLACED ON THE GROUND AT THE SITE UNTIL INSTALLED. STORE ELEMENTS USING TIMBER SUPPORTS AS APPROPRIATE.
   - 4.6. QUALITY ASSURANCE - THE PRECASTER SHALL DEMONSTRATE ADHERENCE TO THE STANDARDS SET FORTH IN THE NPCA QUALITY CONTROL MANUAL. THE PRECASTER SHALL MEET EITHER SECTION 4.6.1 OR 4.6.2
     - 4.6.1. CERTIFICATION - THE PRECASTER SHALL BE CERTIFIED BY THE PRECAST/PRESTRESSED CONCRETE INSTITUTE PLANT CERTIFICATION PROGRAM OR THE NATIONAL PRECAST CONCRETE ASSOCIATION'S PLANT CERTIFICATION PROGRAM PRIOR TO AND DURING PRODUCTION OF THE PRODUCTS COVERED BY THIS SPECIFICATION.
     - 4.6.2. QUALIFICATIONS, TESTING AND INSPECTION
       - 4.6.2.1. THE PRECASTER SHALL HAVE BEEN IN THE BUSINESS OF PRODUCING PRECAST CONCRETE PRODUCTS SIMILAR TO THOSE SPECIFIED FOR A MINIMUM OF THREE YEARS. HE SHALL MAINTAIN A PERMANENT QUALITY CONTROL DEPARTMENT OR RETAIN AN INDEPENDENT TESTING AGENCY ON A CONTINUING BASIS. THE AGENCY SHALL ISSUE A REPORT, CERTIFIED BY A LICENSED ENGINEER, DETAILING THE ABILITY OF THE PRECASTER TO PRODUCE QUALITY PRODUCTS CONSISTENT WITH INDUSTRY STANDARDS.
       - 4.6.2.2. THE PRECASTER SHALL SHOW THAT THE FOLLOWING TESTS ARE PERFORMED IN ACCORDANCE WITH THE ASTM STANDARDS INDICATED. TESTS SHALL BE PERFORMED AS INDICATED IN SECTION 6 OF THESE SPECIFICATIONS.
         - 4.6.2.2.1. AIR CONTENT: C231 OR C173
         - 4.6.2.2.2. COMPRESSIVE STRENGTH: C31,C39,C497
       - 4.6.2.3. THE PRECASTER SHALL PROVIDE DOCUMENTATION DEMONSTRATING COMPLIANCE WITH THIS SECTION TO CONTECH® ENGINEERED SOLUTIONS AT REGULAR INTERVALS OR UPON REQUEST.
       - 4.6.2.4. THE OWNER MAY PLACE AN INSPECTOR IN THE PLANT WHEN THE PRODUCTS COVERED BY THIS SPECIFICATION ARE BEING MANUFACTURED.
     - 4.6.3. DOCUMENTATION - THE PRECASTER SHALL SUBMIT PRECAST PRODUCTION REPORTS TO CONTECH® ENGINEERED SOLUTIONS AS REQUIRED.

5. PERMISSIBLE VARIATIONS
   - 5.1. BRIDGE UNITS
     - 5.1.1. INTERNAL DIMENSIONS - THE INTERNAL DIMENSION SHALL VARY NOT MORE THAN 1% FROM THE DESIGN DIMENSIONS NOR MORE THAN 1½" WHICHEVER IS LESS.
     - 5.1.2. SLAB AND WALL THICKNESS - THE SLAB AND WALL THICKNESS SHALL NOT BE LESS THAN THAT SHOWN IN THE DESIGN BY MORE THAN ¼". A THICKNESS MORE THAN THAT REQUIRED IN THE DESIGN SHALL NOT BE CAUSE FOR REJECTION.
     - 5.1.3. LENGTH OF OPPOSITE SURFACES - VARIATIONS IN LAYING LENGTHS OF TWO OPPOSITE SURFACES OF THE BRIDGE UNIT SHALL NOT BE MORE THAN ½" IN ANY SECTION, EXCEPT WHERE BEVELED ENDS FOR LAYING OF CURVES ARE SPECIFIED BY THE PURCHASER.
     - 5.1.4. LENGTH OF SECTION - THE UNDERRUN IN LENGTH OF A SECTION SHALL NOT BE MORE THAN ½" IN ANY BRIDGE UNIT.
     - 5.1.5. POSITION OF REINFORCEMENT - THE MAXIMUM VARIATION IN POSITION OF THE REINFORCEMENT SHALL BE ± ½". IN NO CASE SHALL THE COVER OVER THE REINFORCEMENT BE LESS THAN 1½" FOR THE OUTSIDE CIRCUMFERENTIAL STEEL OR BE LESS THAN 1" FOR THE INSIDE CIRCUMFERENTIAL STEEL AS MEASURED TO THE EXTERNAL OR INTERNAL SURFACE OF THE BRIDGE. THESE TOLERANCES OR COVER REQUIREMENTS DO NOT APPLY TO MATING SURFACES OF THE JOINTS.
     - 5.1.6. AREA OF REINFORCEMENT - THE AREAS OF STEEL REINFORCEMENT SHALL BE THE DESIGN STEEL AREAS AS SHOWN IN THE MANUFACTURER'S SHOP DRAWINGS. STEEL AREAS GREATER THAN THOSE REQUIRED SHALL NOT BE CAUSE FOR REJECTION. THE PERMISSIBLE VARIATION IN DIAMETER OF ANY REINFORCEMENT SHALL CONFORM TO THE TOLERANCES PRESCRIBED IN THE ASTM SPECIFICATION FOR THAT TYPE OF REINFORCEMENT.
   - 5.2. WINGWALLS & HEADWALLS
     - 5.2.1. WALL THICKNESS - THE WALL THICKNESS SHALL NOT VARY FROM THAT SHOWN IN THE DESIGN BY MORE THAN ½".
     - 5.2.2. LENGTH/HEIGHT OF WALL SECTIONS - THE LENGTH AND HEIGHT OF THE WALL SHALL NOT VARY FROM THAT SHOWN IN THE DESIGN BY MORE THAN ½".
     - 5.2.3. POSITION OF REINFORCEMENT - THE MAXIMUM VARIATION IN THE POSITION OF THE REINFORCEMENT SHALL BE ± ½". IN NO CASE SHALL THE COVER OVER THE REINFORCEMENT BE LESS THAN 1½".
     - 5.2.4. SIZE OF REINFORCEMENT - THE PERMISSIBLE VARIATION IN DIAMETER OF ANY REINFORCING SHALL CONFORM TO THE TOLERANCES PRESCRIBED IN THE ASTM SPECIFICATION FOR THAT TYPE OF REINFORCING. STEEL AREA GREATER THAN THAT REQUIRED SHALL NOT BE CAUSE FOR REJECTION.
   - 5.3. FOUNDATION UNITS
     - 5.3.1. WALL THICKNESS - THE WALL THICKNESS SHALL NOT VARY FROM THAT SHOWN IN THE DESIGN BY MORE THAN ½".
     - 5.3.2. LENGTH/ HEIGHT/WIDTH OF FOUNDATION SECTIONS - THE LENGTH, HEIGHT AND WIDTH OF THE FOUNDATION UNITS SHALL NOT VARY FROM THAT SHOWN IN THE DESIGN BY MORE THAN ½".
     - 5.3.3. POSITION OF REINFORCEMENT - THE MAXIMUM VARIATION IN THE POSITION OF THE REINFORCEMENT SHALL BE ± ½". IN NO CASE SHALL THE COVER OVER THE REINFORCEMENT BE LESS THAN 1½".
     - 5.3.4. SIZE OF REINFORCEMENT - THE PERMISSIBLE VARIATION IN DIAMETER OF ANY REINFORCING SHALL CONFORM TO THE TOLERANCES PRESCRIBED IN THE ASTM SPECIFICATION FOR THAT TYPE OF REINFORCING. STEEL AREA GREATER THAN THAT REQUIRED SHALL NOT BE CAUSE FOR REJECTION.

6. TESTING/ INSPECTION
   - 6.1. TESTING
     - 6.1.1. TYPE OF TEST SPECIMEN - CONCRETE COMPRESSIVE STRENGTH SHALL BE DETERMINED FROM COMPRESSION TESTS MADE ON CYLINDERS OR CORES. FOR CYLINDER TESTING, A MINIMUM OF 4 CYLINDERS SHALL BE TAKEN FOR EACH BRIDGE ELEMENT. EACH ELEMENT SHALL BE CONSIDERED SEPARATELY FOR THE PURPOSE OF TESTING AND ACCEPTANCE.
     - 6.1.2. COMPRESSION TESTING - CYLINDERS SHALL BE MADE AND TESTED AS PRESCRIBED BY THE ASTM C39 SPECIFICATION. CYLINDERS SHALL BE CURED IN THE SAME ENVIRONMENT AS THE BRIDGE ELEMENTS. CORES SHALL BE OBTAINED AND TESTED FOR COMPRESSIVE STRENGTH IN ACCORDANCE WITH THE PROVISIONS OF THE ASTM C42 SPECIFICATION.
     - 6.1.3. ACCEPTABILITY OF CYLINDER TESTS - WHEN THE AVERAGE COMPRESSIVE STRENGTH OF ALL CYLINDERS TESTED IS EQUAL TO OR GREATER THAN THE DESIGN COMPRESSIVE STRENGTH, AND NOT MORE THAN 10% OF THE CYLINDERS TESTED HAVE A COMPRESSIVE STRENGTH LESS THAN THE DESIGN CONCRETE STRENGTH, AND NO CYLINDER TESTED HAS A COMPRESSIVE STRENGTH LESS THAN 80% OF THE DESIGN COMPRESSIVE STRENGTH, THEN THE ELEMENT SHALL BE ACCEPTED. WHEN THE COMPRESSIVE STRENGTH OF THE CYLINDERS TESTED DOES NOT CONFORM TO THESE ACCEPTANCE CRITERIA, THE ACCEPTABILITY OF THE ELEMENT MAY BE DETERMINED AS DESCRIBED IN SECTION 6.1.4, BELOW.
     - 6.1.4. ACCEPTABILITY OF CORE TESTS - THE COMPRESSIVE STRENGTH OF THE CONCRETE IN A BRIDGE ELEMENT IS ACCEPTABLE WHEN THE AVERAGE CORE TEST STRENGTH IS EQUAL TO OR GREATER THAN THE DESIGN CONCRETE STRENGTH. WHEN THE COMPRESSIVE STRENGTH OF A CORE TESTED IS LESS THAN THE DESIGN CONCRETE STRENGTH, THE PRECAST ELEMENT FROM WHICH THAT CORE WAS TAKEN MAY BE RE-CORED. WHEN THE COMPRESSIVE STRENGTH OF THE RE-CORE IS EQUAL TO OR GREATER THAN THE DESIGN CONCRETE STRENGTH, THE COMPRESSIVE STRENGTH OF THE CONCRETE IN THAT BRIDGE ELEMENT IS ACCEPTABLE.
       - 6.1.4.1. WHEN THE COMPRESSIVE STRENGTH OF ANY RECORE IS LESS THAN THE DESIGN CONCRETE STRENGTH, THE PRECAST ELEMENT FROM WHICH THAT CORE WAS TAKEN SHALL BE REJECTED.
       - 6.1.4.2. PLUGGING CORE HOLES - THE CORE HOLES SHALL BE PLUGGED AND SEALED BY THE MANUFACTURER IN A MANNER SUCH THAT THE ELEMENTS WILL MEET ALL OF THE TEST REQUIREMENTS OF THIS SPECIFICATION. PRECAST ELEMENTS SO SEALED SHALL BE CONSIDERED SATISFACTORY FOR USE.
       - 6.1.4.3. TEST EQUIPMENT - EVERY MANUFACTURER FURNISHING PRECAST ELEMENTS UNDER THIS SPECIFICATION SHALL FURNISH ALL FACILITIES AND PERSONNEL NECESSARY TO CARRY OUT THE TEST REQUIRED.
   - 6.2. INSPECTION - THE QUALITY OF MATERIALS, THE PROCESS OF MANUFACTURE, AND THE FINISHED PRECAST ELEMENTS SHALL BE SUBJECT TO INSPECTION BY THE PURCHASER.

7. JOINTS
   THE BRIDGE UNITS SHALL BE PRODUCED WITH FLAT BUTT ENDS. THE ENDS OF THE BRIDGE UNITS SHALL BE SUCH THAT WHEN THE SECTIONS ARE LAID TOGETHER THEY WILL MAKE A CONTINUOUS LINE WITH A SMOOTH INTERIOR FREE OF APPRECIABLE IRREGULARITIES, ALL COMPATIBLE WITH THE PERMISSIBLE VARIATIONS IN SECTION 5, ABOVE. THE JOINT WIDTH BETWEEN ADJACENT PRECAST UNITS SHALL NOT EXCEED ¾".

8. WORKMANSHIP/ FINISH
   THE BRIDGE UNITS, WINGWALLS, HEADWALLS AND FOUNDATION UNITS SHALL BE SUBSTANTIALLY FREE OF FRACTURES. THE ENDS OF THE BRIDGE UNITS SHALL BE NORMAL TO THE WALLS AND CENTERLINE OF THE BRIDGE SECTION, WITHIN THE LIMITS OF THE VARIATIONS GIVEN IN SECTION 5, ABOVE, EXCEPT WHERE BEVELED ENDS ARE SPECIFIED. THE FACES OF THE WINGWALLS AND HEADWALLS SHALL BE PARALLEL TO EACH OTHER, WITHIN THE LIMITS OF VARIATIONS GIVEN IN SECTION 5, ABOVE. THE SURFACE OF THE PRECAST ELEMENTS SHALL BE A SMOOTH STEEL FORM OR TROWELED SURFACE. TRAPPED AIR POCKETS CAUSING SURFACE DEFECTS SHALL BE CONSIDERED AS PART OF A SMOOTH, STEEL FORM FINISH.

9. REPAIRS
   PRECAST ELEMENTS MAY BE REPAIRED, IF NECESSARY, BECAUSE OF IMPERFECTIONS IN MANUFACTURE OR HANDLING DAMAGE AND WILL BE ACCEPTABLE IF, IN THE OPINION OF THE PURCHASER, THE REPAIRS ARE SOUND, PROPERLY FINISHED AND CURED, AND THE REPAIRED SECTION CONFORMS TO THE REQUIREMENTS OF THIS SPECIFICATION.

10. REJECTION
   THE PRECAST ELEMENTS SHALL BE SUBJECT TO REJECTION ON ACCOUNT OF ANY OF THE SPECIFICATION REQUIREMENTS. INDIVIDUAL PRECAST ELEMENTS MAY BE REJECTED BECAUSE OF ANY OF THE FOLLOWING:
   - 10.1. FRACTURES OR CRACKS PASSING THROUGH THE WALL, EXCEPT FOR A SINGLE END CRACK THAT DOES NOT EXCEED ONE HALF THE THICKNESS OF THE WALL.
   - 10.2. DEFECTS THAT INDICATE PROPORTIONING, MIXING, AND MOLDING NOT IN COMPLIANCE WITH SECTION 4 OF THESE SPECIFICATIONS.
   - 10.3. HONEYCOMBED OR OPEN TEXTURE.
   - 10.4. DAMAGED ENDS, WHERE SUCH DAMAGE WOULD PREVENT MAKING A SATISFACTORY JOINT.

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
Chief, Bureau of Highways — Date 7/12/2016

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
Chief, Division of Land Development — Date 8.3.16
Chief, Development Engineering Division — Date 7.26.16

CONTECH®
ENGINEERED SOLUTIONS LLC
5604 MORNING GATE COURT
NEW MARKET, MARYLAND 21774
443-457-1807

DES. JMF | DRN. ACR | CHK. DN

DATE	REVISION	BY	APP'R.

PREPARED FOR:
THE HOWARD HUGHES CORPORATION
10480 LITTLE PATUXENT PARKWAY
SUITE 400
COLUMBIA, MD 21044
ATTN: BOB JENKINS
410-964-5443

PROFESSIONAL CERTIFICATION
I HEREBY CERTIFY THAT THESE PLANS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 36225, EXPIRATION DATE: 8/19/2016.
6/10/16

STATE OF MARYLAND — PHILIP A. CREAMER — Lic. No. 36225 — PROFESSIONAL ENGINEER

SPECIFICATIONS FOR MANUFACTURE & INSTALLATION (1)

DOWNTOWN COLUMBIA
CRESCENT NEIGHBORHOOD
PARCELS B THRU H, NON-BULDABLE BULK PARCELS J THRU R, O.S. LOTS 1 THRU 8 AND MERRIWEATHER-SYMPHONY WOODS NEIGHBORHOOD O.S. LOT 1 AND NON-BUILDABLE BULK PARCEL A

ELECTION DISTRICT No. 5 — HOWARD COUNTY, MARYLAND

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SPECIFICATIONS FOR MANUFACTURE AND INSTALLATION OF CON/SPAN® BRIDGE SYSTEMS (CONT'D)

11. MARKING
EACH BRIDGE UNIT SHALL BE CLEARLY MARKED BY WATERPROOF PAINT. THE FOLLOWING SHALL BE SHOWN ON THE INSIDE OF THE VERTICAL LEG OF THE BRIDGE SECTION:
BRIDGE SPAN x BRIDGE RISE
DATE OF MANUFACTURE
NAME OR TRADEMARK OF THE MANUFACTURER

12. INSTALLATION PREPARATION
TO ENSURE CORRECT INSTALLATION OF THE PRECAST CONCRETE BRIDGE SYSTEM, CARE AND CAUTION MUST BE EXERCISED IN FORMING THE SUPPORT AREAS FOR BRIDGE UNITS, HEADWALL, AND WINGWALL ELEMENTS. EXERCISING SPECIAL CARE WILL FACILITATE THE RAPID INSTALLATION OF THE PRECAST COMPONENTS.

12.1. FOOTINGS
DO NOT OVER EXCAVATE FOUNDATIONS UNLESS DIRECTED BY SITE SOIL ENGINEER TO REMOVE UNSUITABLE SOIL.

THE SITE SOILS ENGINEER SHALL CERTIFY THAT THE BEARING CAPACITY MEETS OR EXCEEDS THE FOOTING DESIGN REQUIREMENTS, PRIOR TO THE CONTRACTOR POURING OF THE FOOTINGS.

THE BRIDGE UNITS AND WINGWALLS SHALL BE INSTALLED ON EITHER PRECAST OR CAST-IN-PLACE CONCRETE FOOTINGS. THE SIZE AND ELEVATION OF THE FOOTINGS SHALL BE AS DESIGNED BY THE ENGINEER. A KEYWAY SHALL BE FORMED IN THE TOP SURFACE OF THE BRIDGE FOOTING AS SPECIFIED ON THE PLANS. NO KEYWAY IS REQUIRED IN THE WINGWALL FOOTINGS, UNLESS OTHERWISE SPECIFIED ON THE PLANS.

THE FOOTINGS SHALL BE GIVEN A SMOOTH FLOAT FINISH AND SHALL REACH A COMPRESSIVE STRENGTH OF 2,000 PSI BEFORE PLACEMENT OF THE BRIDGE AND WINGWALL ELEMENTS. BACKFILLING SHALL NOT BEGIN UNTIL THE FOOTING HAS REACHED THE FULL DESIGN COMPRESSIVE STRENGTH.

THE FOOTING SURFACE SHALL BE CONSTRUCTED IN ACCORDANCE WITH GRADES SHOWN ON THE PLANS. WHEN TESTED WITH A 10'-0" STRAIGHT EDGE, THE SURFACE SHALL NOT VARY MORE THAN ¼" IN 10'-0".

IF A PRECAST CONCRETE FOOTING IS USED, THE CONTRACTOR SHALL PREPARE A 4" THICK BASE LAYER OF COMPACTED GRANULAR MATERIAL THE FULL WIDTH OF THE FOOTING PRIOR TO PLACING THE PRECAST FOOTING.

THE FOUNDATIONS FOR PRECAST CONCRETE BRIDGE ELEMENTS AND WINGWALLS MUST BE CONNECTED BY REINFORCEMENT TO FORM ONE MONOLITHIC BODY. EXPANSION JOINTS SHALL NOT BE USED.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE CONSTRUCTION OF THE FOUNDATIONS PER THE PLANS AND SPECIFICATIONS.

13. INSTALLATION
13.1. GENERAL - THE INSTALLATION OF THE PRECAST CONCRETE ELEMENTS SHALL BE AS EXPLAINED IN THE PUBLICATION CON/SPAN BRIDGE SYSTEMS INSTALLATION HANDBOOK.
13.1.1. LIFTING - IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ENSURE THAT A CRANE OF THE CORRECT LIFTING CAPACITY IS AVAILABLE TO HANDLE THE PRECAST CONCRETE UNITS. THIS CAN BE ACCOMPLISHED BY USING THE WEIGHTS GIVEN FOR THE PRECAST CONCRETE COMPONENTS AND BY DETERMINING THE LIFTING REACH FOR EACH CRANE UNIT. SITE CONDITIONS MUST BE CHECKED WELL IN ADVANCE OF SHIPPING TO ENSURE PROPER CRANE LOCATION AND TO AVOID ANY LIFTING RESTRICTIONS. THE LIFT ANCHORS OR HOLES PROVIDED IN EACH UNIT ARE THE ONLY MEANS TO BE USED TO LIFT THE ELEMENTS. THE PRECAST CONCRETE ELEMENTS MUST NOT BE SUPPORTED OR RAISED BY OTHER MEANS THAN THOSE GIVEN IN THE MANUALS AND DRAWINGS WITHOUT WRITTEN APPROVAL FROM CONTECH® ENGINEERED SOLUTIONS.
13.1.2. CONSTRUCTION EQUIPMENT WEIGHT RESTRICTIONS - IN NO CASE SHALL EQUIPMENT OPERATING IN EXCESS OF THE DESIGN LOAD (HL-93) BE PERMITTED OVER THE BRIDGE UNITS UNLESS APPROVED BY CONTECH® ENGINEERED SOLUTIONS.
13.1.2.1. IN THE IMMEDIATE AREA OF THE BRIDGE UNITS, THE FOLLOWING RESTRICTIONS FOR THE USE OF HEAVY CONSTRUCTION MACHINERY DURING BACKFILLING OPERATIONS APPLY:
NO CONSTRUCTION EQUIPMENT SHALL CROSS THE BARE PRECAST CONCRETE BRIDGE UNIT.
AFTER THE COMPACTED FILL LEVEL HAS REACHED A MINIMUM OF 4" OVER THE CROWN OF THE BRIDGE, CONSTRUCTION EQUIPMENT WITH A WEIGHT OF LESS THAN 10 TONS MAY CROSS THE BRIDGE.
AFTER THE COMPACTED FILL LEVEL HAS REACHED A MINIMUM OF 1'-0" OVER THE CROWN OF THE BRIDGE, CONSTRUCTION EQUIPMENT WITH A WEIGHT OF LESS THAN 30 TONS MAY CROSS THE BRIDGE.
AFTER THE COMPACTED FILL LEVEL HAS REACHED THE DESIGN COVER, OR 2'-0" MINIMUM, OVER THE CROWN OF THE PRECAST CONCRETE BRIDGE, CONSTRUCTION EQUIPMENT WITHIN THE DESIGN LOAD LIMITS FOR THE ROAD MAY CROSS THE PRECAST CONCRETE BRIDGE.
13.2. LEVELING PAD/SHIMS - THE BRIDGE UNITS AND WINGWALLS SHALL BE SET ON HARDBOARD SHIMS CONFORMING TO ASTM D1037 OR PLASTIC SHIMS (DAYTON SUPERIOR P-80, P-81 OR APPROVED EQUAL) MEASURING 5" x 5", MINIMUM, UNLESS SHOWN OTHERWISE ON THE PLANS. A MINIMUM GAP OF ½" SHALL BE PROVIDED BETWEEN THE FOOTING AND THE BOTTOM OF THE BRIDGE'S VERTICAL LEGS OR THE BOTTOM OF THE WINGWALL. ALSO, A SUPPLY OF ¼", ½" AND ⅛" THICK HARDBOARD OR PLASTIC SHIMS FOR VARIOUS SHIMMING PURPOSES SHALL BE ON SITE.
13.3. PLACEMENT OF BRIDGE UNITS - THE BRIDGE UNITS SHALL BE PLACED AS SHOWN ON THE ENGINEER'S PLAN DRAWINGS. SPECIAL CARE SHALL BE TAKEN IN SETTING THE ELEMENTS TO THE TRUE LINE AND GRADE. THE JOINT WIDTH BETWEEN ADJACENT PRECAST UNITS SHALL NOT EXCEED ¾".

13.4. IT IS THE CONTRACTOR'S RESPONSIBILITY TO MAINTAIN THE STRUCTURE SPAN DURING ALL PHASES OF INSTALLATION. DUE TO THE ARCH SHAPE, BRIDGE ELEMENTS WILL TEND TO SPREAD UNDER SELF-WEIGHT. IT IS IMPERATIVE THAT ANY LATERAL SPREADING OF THE BRIDGE ELEMENTS BE AVOIDED DURING AND AFTER THEIR PLACEMENT. GENERALLY, HORIZONTAL CABLE TIES OR TIE RODS ARE SHIPPED IN THE LARGER BRIDGE ELEMENTS TO ASSIST IN PREVENTING THIS SPREADING. CABLE TIES/TIE RODS SHALL NOT BE REMOVED UNTILL BRIDGE UNITS ARE GROUTED AND GROUT HAS CURED. IT IS RECOMMENDED THAT TEMPORARY HARDWOOD BLOCKS BE USED IN CONJUNCTION WITH THE CABLE TIES/TIE RODS TO MAINTAIN SPAN. IF, HOWEVER, DUE TO SITE RESTRICTIONS, THESE CABLE TIES/TIE RODS MUST BE REMOVED PRIOR TO PLACEMENT OF THE BRIDGE ELEMANTS, THE CONTRACTOR MUST NOTIFY CONTECH (MANUFACTURER) AND REQUEST A SUGGESTED INSTALLATION PROCEDURE.

IN ADDITION, IF THE CABLE TIES/TIE RODS MUST BE REMOVED PRIOR TO SETTING ARCH UNITS, THE FOLLOWING QUALITY CONTROL PROCEDURE MUST BE FOLLOWED:
1) FIND "MEASURED SPAN" UPON ARCH UNIT'S DELIVERY TO SITE, PRIOR TO LIFTING FROM TRUCK AND REMOVING CABLE TIES/TIE RODS. "MEASURED SPAN" SHALL BE THE AVERAGE OF (3) SPAN MEASUREMENTS ALONG THE LAY LENGTH OF THE ARCH UNIT.
2) AFTER SETTING OF BRIDGE UNIT ON THE FOUNDATION, VERIFY THE SPAN. THIS "INSTALLED SPAN MEASUREMENT" SHALL NOT EXCEED THE MAXIMUM OF:
A) THE NOMINAL SPAN +½" OR
B) THE "MEASURED SPAN"
IF THE "INSTALLED SPAN MEASUREMENT" EXCEEDS THIS AMOUNT, THE ARCH UNIT SHALL BE LIFTED AND RE-SET UNTIL THE "INSTALLED SPAN MEASUREMENT" MEETS THE LIMITS.

13.5. PLACEMENT OF WINGWALLS, HEADWALLS AND FOUNDATION UNITS - THE WINGWALLS, HEADWALLS AND FOUNDATIONS SHALL BE PLACED AS SHOWN ON THE PLAN DRAWINGS. SPECIAL CARE SHALL BE TAKEN IN SETTING THE ELEMENTS TO THE TRUE LINE AND GRADE.
13.6. WATERPROOFING/JOINT PROTECTION AND SUBSURFACE DRAINAGE
13.6.1. EXTERNAL PROTECTION OF JOINTS - THE BUTT JOINT MADE BY TWO ADJOINING BRIDGE UNITS SHALL BE COVERED WITH A ⅞" x 1⅜" PREFORMED BITUMINOUS JOINT SEALANT AND A MINIMUM OF A 9" WIDE JOINT WRAP. THE SURFACE SHALL BE FREE OF DIRT BEFORE APPLYING THE JOINT MATERIAL. A PRIMER COMPATIBLE WITH THE JOINT WRAP TO BE USED SHALL BE APPLIED FOR A MINIMUM WIDTH OF 9" ON EACH SIDE OF THE JOINT. THE EXTERNAL WRAP SHALL BE CS212 BY CONCRETE SEALANTS INC., EZ-WRAP RUBBER BY PRESS-SEAL GASKET CORPORATION, SEAL WRAP BY MAR MAC MANUFACTURING CO. INC. OR APPROVED EQUAL. THE JOINT SHALL BE COVERED CONTINUOUSLY FROM THE BOTTOM OF ONE BRIDGE SECTION LEG, ACROSS THE TOP OF THE BRIDGE AND TO THE OPPOSITE BRIDGE SECTION LEG. ANY LAPS THAT RESULT IN THE JOINT WRAP SHALL BE A MINIMUM OF 6" LONG WITH THE OVERLAP RUNNING DOWNHILL.
13.6.2. IN ADDITION TO THE JOINTS BETWEEN BRIDGE UNITS, THE JOINT BETWEEN THE END BRIDGE UNIT AND THE HEADWALL SHALL ALSO BE SEALED AS DESCRIBED ABOVE. IF PRECAST WINGWALLS ARE USED, THE JOINT BETWEEN THE END BRIDGE UNIT AND THE WINGWALL SHALL BE SEALED WITH A 2'-0" STRIP OF FILTER FABRIC. ALSO, IF LIFT HOLES ARE FORMED IN THE BRIDGE UNITS, THEY SHALL BE PRIMED AND COVERED WITH A 9" x 9" SQUARE OF JOINT WRAP.
13.6.3. DURING THE BACKFILLING OPERATION, CARE SHALL BE TAKEN TO KEEP THE JOINT WRAP IN ITS PROPER LOCATION OVER THE JOINT.
13.6.4. SUBSOIL DRAINAGE SHALL BE AS DIRECTED BY THE ENGINEER.

13.7. GROUTING
13.7.1. GROUTING SHALL NOT BE PERFORMED WHEN TEMPERATURES ARE EXPECTED TO GO BELOW 35° FOR A PERIOD OF 72 HOURS. FILL THE BRIDGE-FOUNDATION KEYWAY WITH CEMENT GROUT (PORTLAND CEMENT AND WATER OR CEMENT MORTAR COMPOSED OF PORTLAND CEMENT, SAND AND WATER) WITH A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 3000 PSI. VIBRATE AS REQUIRED TO ENSURE THAT THE ENTIRE KEY AROUND THE BRIDGE ELEMENT IS COMPLETELY FILLED. IF BRIDGE ELEMENTS HAVE BEEN SET WITH TEMPORARY TIES (CABLES, BARS, ETC.) GROUT MUST ATTAIN A MINIMUM COMPRESSIVE STRENGTH OF 1500 PSI BEFORE TIES MAY BE REMOVED.
13.7.2. ALL GROUT SHALL HAVE A MAXIMUM AGGREGATE SIZE OF ¼".
13.7.3. LIFTING AND ERECTION ANCHOR RECESSES SHALL BE FILLED WITH GROUT.
13.7.4. AFTER GROUT HAS REACHED ITS DESIGN STRENGTH THE TEMPORARY HARDWOOD WEDGES SHALL BE REMOVED AND THEIR HOLES FILLED WITH GROUT.
13.8. BACKFILL
13.8.1. DO NOT PERFORM BACKFILLING DURING WET OR FREEZING WEATHER.
13.8.2. NO BACKFILL SHALL BE PLACED AGAINST ANY STRUCTURAL ELEMENTS UNTIL THEY HAVE BEEN APPROVED BY THE ENGINEER.
13.8.3. BACKFILL SHALL BE CONSIDERED AS ALL REPLACED EXCAVATION AND NEW EMBANKMENT ADJACENT TO THE PRECAST CONCRETE ELEMENTS. THE PROJECT CONSTRUCTION AND MATERIAL SPECIFICATIONS, WHICH INCLUDE THE SPECIFICATIONS FOR EXCAVATION FOR STRUCTURES AND ROADWAY EXCAVATION AND EMBANKMENT CONSTRUCTION, SHALL APPLY EXCEPT AS MODIFIED IN THIS SECTION.
13.8.4. BACKFILL ZONES:
IN-SITU SOIL
ZONE A: CONSTRUCTED EMBANKMENT OR OVERFILL.
ZONE B: FILL THAT IS DIRECTLY ASSOCIATED WITH PRECAST CONCRETE BRIDGE INSTALLATION.
ZONE C: ROAD STRUCTURE.
13.8.5. REQUIRED BACKFILL PROPERTIES
13.8.5.1. IN-SITU SOIL - NATURAL GROUND IS TO BE SUFFICIENTLY STABLE TO ALLOW EFFECTIVE SUPPORT TO THE PRECAST CONCRETE BRIDGE UNITS. AS A GUIDE, THE EXISTING NATURAL GROUND SHOULD BE OF SIMILAR QUALITY AND DENSITY TO ZONE B MATERIAL FOR MINIMUM LATERAL DIMENSION OF ONE BRIDGE SPAN OUTSIDE OF THE BRIDGE FOOTING.
13.8.5.2. ZONE A - ZONE A REQUIRES FILL MATERIAL WITH SPECIFICATIONS AND COMPACTING PROCEDURES EQUAL TO THAT FOR NORMAL ROAD EMBANKMENTS.
13.8.5.3. ZONE B - GENERALLY, SOILS SHALL BE REASONABLY FREE OF ORGANIC MATTER, AND, NEAR CONCRETE SURFACES, FREE OF STONES LARGER THAN 3" IN DIAMETER. SEE CHARTS FOR DETAILED DESCRIPTIONS OF ACCEPTABLE SOILS.
13.8.5.4. ZONE C - ZONE C IS THE ROAD SECTION OF GRAVEL, ASPHALT OR CONCRETE BUILT IN COMPLIANCE WITH LOCAL ENGINEERING PRACTICES.
13.8.5.5. GEOTECHNICAL ENGINEER SHALL REVIEW GRADATIONS OF ALL INTERFACING MATERIALS AND, IF NECESSARY, RECOMMEND GEOTEXTILE FILTER FABRIC (PROVIDED BY CONTRACTOR)

13.8.6. PLACING AND COMPACTING BACKFILL
DUMPING FOR BACKFILLING IS NOT ALLOWED ANY NEARER THAN 3'-0" FROM THE BRIDGE LEG.

THE FILL MUST BE PLACED AND COMPACTED IN LAYERS NOT EXCEEDING 8". THE MAXIMUM DIFFERENCE IN THE SURFACE LEVELS OF THE FILL ON OPPOSITE SIDES OF THE BRIDGE MUST NOT EXCEED 2'-0".

THE FILL BEHIND WINGWALLS MUST BE PLACED AT THE SAME TIME AS THAT OF THE BRIDGE FILL. IT MUST BE PLACED IN PROGRESSIVELY PLACED HORIZONTAL LAYERS NOT EXCEEDING 8" PER LAYER.

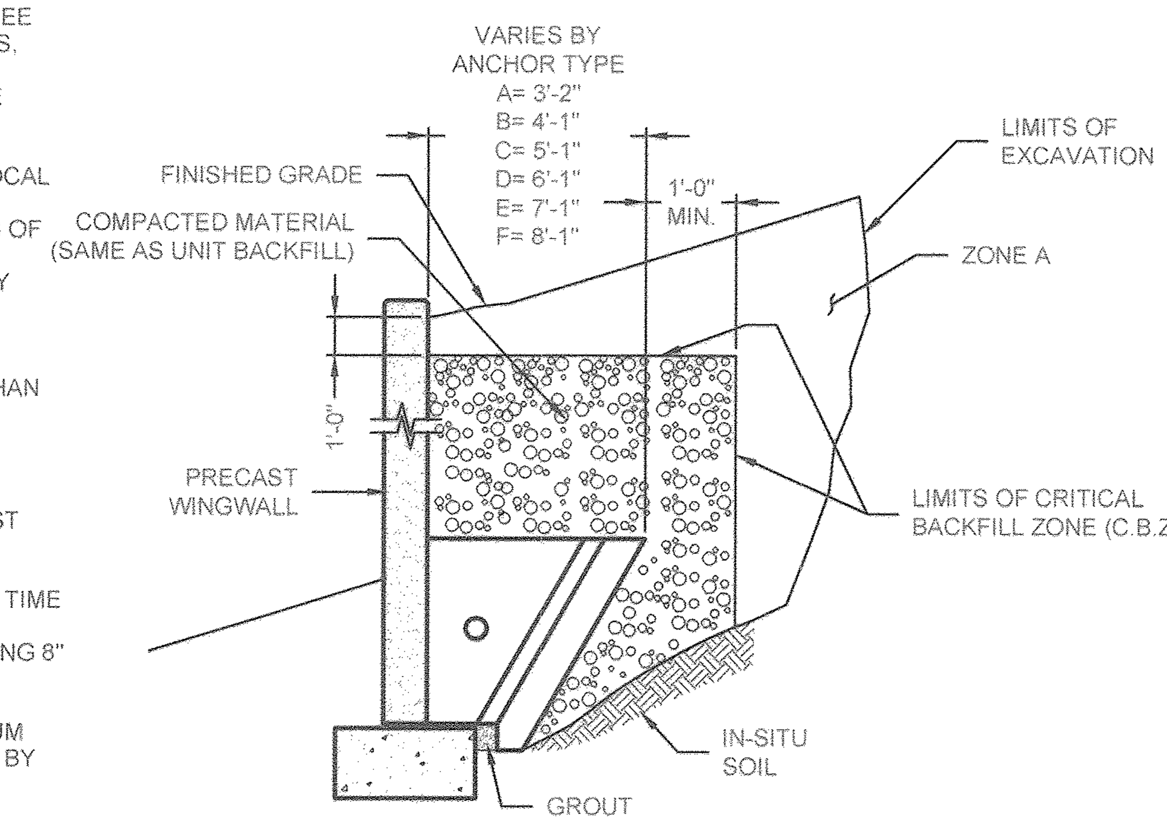
THE BACKFILL OF ZONE B SHALL BE COMPACTED TO A MINIMUM DENSITY OF 95% OF THE STANDARD PROCTOR, AS REQUIRED BY AASHTO T-99.

SOIL WITHIN 1'-0" OF CONCRETE SURFACES SHALL BE HAND-COMPACTED. ELSEWHERE, USE OF ROLLERS IS ACCEPTABLE. IF VIBRATING ROLLER-COMPACTORS ARE USED, THEY SHALL NOT BE STARTED OR STOPPED WITHIN ZONE B AND THE VIBRATION FREQUENCY SHOULD BE AT LEAST 30 REVOLUTIONS PER SECOND.

THE BACKFILL MATERIAL AND COMPACTING BEHIND WINGWALLS SHALL SATISFY THE CRITERIA FOR THE BRIDGE BACKFILL, ZONE B.

BACKFILL AGAINST A WATERPROOFED SURFACE SHALL BE PLACED CAREFULLY TO AVOID DAMAGE TO THE WATERPROOFING MATERIAL.
13.8.7. BRIDGE UNITS
FOR FILL HEIGHTS OVER 12 FEET (AS MEASURED FROM TOP CROWN OF BRIDGE TO FINISHED GRADE), NO BACKFILLING MAY BEGIN UNTIL A BACKFILL COMPACTION TESTING PLAN HAS BEEN COORDINATED WITH AND APPROVED BY CONTECH® ENGINEERED SOLUTIONS.
13.8.8. WINGWALLS
BACKFILL IN FRONT OF WINGWALLS SHALL BE CARRIED TO GROUND LINES SHOWN IN THE PLANS.
13.8.9. MONITORING
THE CONTRACTOR SHALL CHECK SETTLEMENTS AND HORIZONTAL DISPLACEMENT OF FOUNDATION TO ENSURE THAT THEY ARE WITHIN THE ALLOWABLE LIMIT PROVIDED BY THE ENGINEER. THESE MEASUREMENTS SHOULD GIVE AN INDICATION OF THE SETTLEMENTS AND DEFORMATIONS ALONG THE LENGTH OF THE FOUNDATIONS.

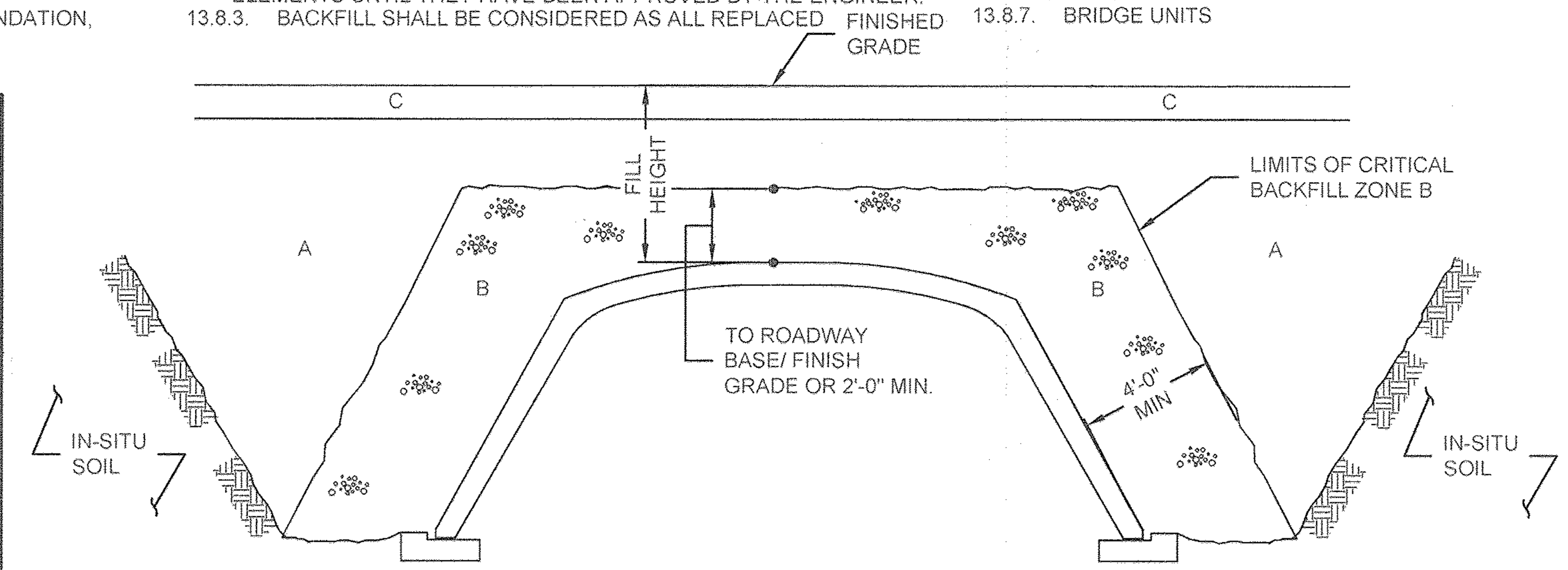
THE FIRST MEASUREMENT SHOULD TAKE PLACE AFTER THE ERECTION OF ALL PRECAST BRIDGE SYSTEM ELEMENTS, A SECOND AFTER COMPLETION OF BACKFILLING, AND A THIRD BEFORE OPENING OF THE BRIDGE TO TRAFFIC. FURTHER MEASUREMENTS MAY BE MADE ACCORDING TO LOCAL CONDITIONS.



WALL BACKFILL REQUIREMENTS

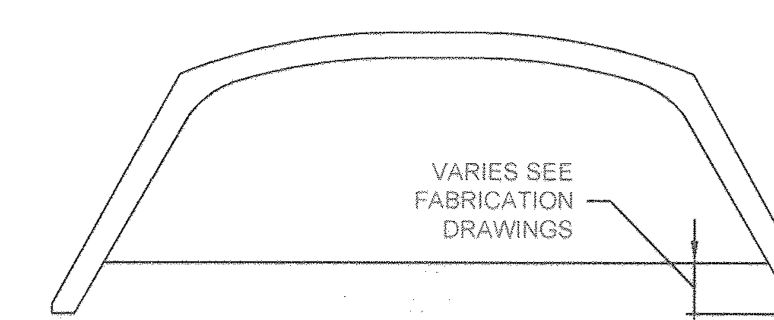
ACCEPTABLE SOILS FOR USE IN ZONE B BACKFILL

TYPICAL USCS MATERIALS	AASHTO GROUP	AASHTO SUBGROUP	PERCENT PASSING US SIEVE NO. #10	#40	#200	CHARACTER OF FRACTION PASSING NO. 40 SIEVE LIQUID LIMIT	PLASTICITY INDEX	SOIL DESRIPTION
GW, GP, SP	A1	A-1a	50 MAX	30 MAX	15 MAX		6 MAX	LARGELY GRAVEL BUT CAN INCLUDE SAND AND FINES
GM, SW, SP, SM		A-1b		50 MAX	25 MAX		6 MAX	GRAVELLY SAND OR GRADED SAND, MAY INCLUDE FINES
GM, SM, ML, SP, GP	A2	A-2-4			35 MAX	40 MAX	10 MAX	SANDS, GRAVELS WITH LOW-PLASTICITY SILT FINES
SC, GC, GM		A-2-5			35 MAX	41 MIN	10 MAX	SANDS, GRAVELS WITH PLASTIC SILT FINES
SP, SM, SW	A3			51 MIN	10 MAX		NON-PLASTIC	FINE SANDS
ML, SM, SC	A4				36 MIN	40 MAX	10 MAX	LOW-COMPRESSIBILTY SILTS



SPAN	FILL HEIGHT	ACCEPTABLE MATERIAL INSIDE ZONE B
≤ 24'-0"	≥ 12'-0"	A1, A3
≤ 24'-0"	< 12'-0"	A1, A2, A3, A4
> 24'-0"	ALL	A1, A3

BACKFILL REQUIREMENTS



TIE RODS

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
[signature] 7/12/2016
Chief, Bureau of Highways — Date

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
[signature] 8.3.16
Chief, Division of Land Development — Date
[signature] 7.26.16
Chief, Development Engineering Division — Date

CONTECH® ENGINEERED SOLUTIONS LLC
9025 MORNING GATE COURT
NEW MARKET, MARYLAND 21774
443-457-1507

DES. JMF | DRN. ACR | CHK. DN

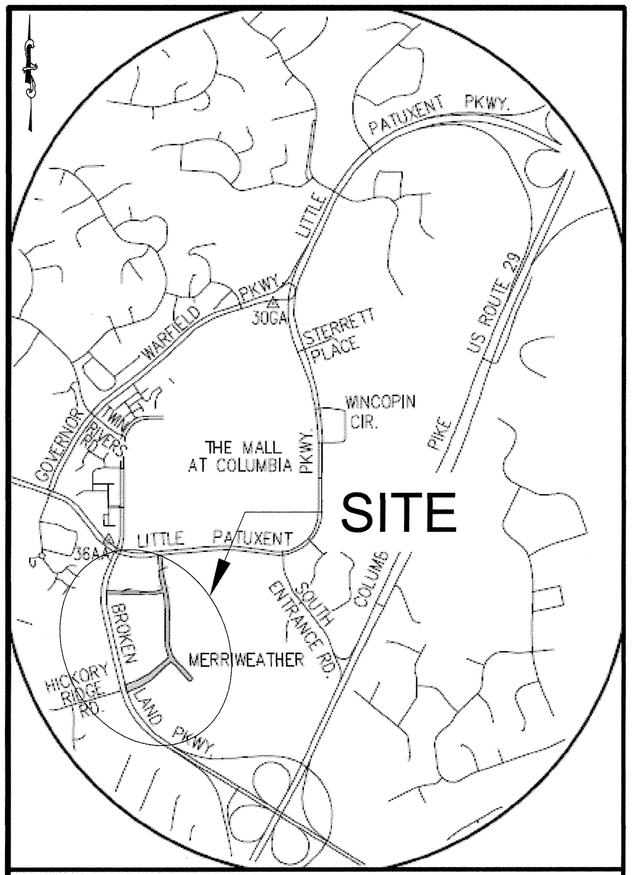
DATE	REVISION	BY	APP'R.

PREPARED FOR:
THE HOWARD HUGHES CORPORATION
10480 LITTLE PATUXENT PARKWAY
SUITE 400
COLUMBIA, MD 21044
ATTN: BOB JENKINS
410-964-5443

PROFESSIONAL CERTIFICATION
I HEREBY CERTIFY THAT THESE PLANS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 36225, EXPIRATION DATE: 8/19/2016.
6/10/16

SPECIFICATIONS FOR MANUFACTURE & INSTALLATION (2)
DOWNTOWN COLUMBIA
CRESCENT NEIGHBORHOOD
PARCELS B THRU H, NON-BULDABLE BULK PARCELS J THRU R, O.S. LOTS 1 THRU 8 AND MERRIWEATHER-SYMPHONY WOODS NEIGHBORHOOD O.S. LOT 1 AND NON-BUILDABLE BULK PARCEL A
ELECTION DISTRICT No. 5 — HOWARD COUNTY, MARYLAND

SCALE	ZONING	
AS NOTED	NT	
DATE	TAXTITLE	SHEET
JUNE, 2016	36 – 01	51 OF 102



VICINITY MAP

TRAFFIC CONTROL NOTES

1. ALL TEMPORARY TRAFFIC SIGNS, BARRICADES AND OTHER TRAFFIC CONTROL DEVICES USED FOR MAINTENANCE OF TRAFFIC SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE MARYLAND MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, AND THE MARYLAND STATE HIGHWAY ADMINISTRATION (MDSHA) BOOK OF STANDARDS AND SPECIFICATIONS.

2. ALL TEMPORARY TRAFFIC SIGNS SHALL BE INSTALLED IN ACCORDANCE TO MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION STANDARD SPECIFICATIONS FOR CONSTRUCTION ON MATERIALS, SECTION 104.08

3. WARNING SIGNS SHALL BE PLACED SO THAT THEY DO NOT OBSTRUCT EXISTING TRAFFIC CONTROL DEVICES.

4. ANY CORRECTIONS, MODIFICATIONS, OR ADDITIONS TO THE PLAN SHALL BE APPROVED BY HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS, TRAFFIC DIVISION.

5. MISS UTILITY SHALL BE NOTIFIED PRIOR TO PLACEMENT OF SIGNING, IF MOUNTING ON POSTS.

6. HOWARD COUNTY BUREAU OF ENGINEERING/TRANSPORTATION PROJECTS DIVISION (410-313-2014) SHALL BE NOTIFIED 24 HOURS PRIOR TO ANY WORK.

7. THE HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS TRAFFIC DIVISION RESERVES THE RIGHT TO MODIFY OR ADJUST THE PLAN TO FIT SITE CONDITIONS AT ANY TIME.

8. SIGN INSTALLATION SHALL NOT LAST ANY LONGER THAN 15 MINUTES PER LOCATION. IF LONGER THAN 15 MINUTES APPROPRIATE TRAFFIC CONTROL AND PERMITS SHALL BE USED.

9. ALL SIGNS SHALL CONFORM TO CURRENT MDSHA MATERIAL AND REFLECTIVITY REQUIREMENTS.

10. ACCESS SHALL BE MAINTAINED TO ALL DRIVEWAYS UNLESS PERMISSION FOR CLOSURE IS GRANTED BY THE PROPERTY OWNER/MANAGER. HOWEVER, ACCESSIBILITY FOR EMERGENCY VEHICLES SHALL BE MAINTAINED AT ALL TIMES.

11. ALL FLAGGERS SHALL BE CERTIFIED BY THE AMERICAN TRAFFIC SAFETY SERVICES ASSOCIATION.

12. ALL TRAFFIC CONTROL DEVICES SHALL BE REMOVED FROM VIEW TO ONCOMING TRAFFIC WHEN NOT IN USE.

13. NO HAZARDOUS MATERIALS SHALL BE STORED WITHIN THE PUBLIC RIGHT-OF-WAY.

14. ANY TEMPORARY TRAFFIC SIGNING AND MARKINGS THAT MAY CONFLICT WITH NORMAL TRAFFIC FLOW SHALL BE REMOVED OR COVERED AT THE END OF EACH DAY DURING CONSTRUCTION ON THIS PROJECT.

15. ALL EXISTING TRAFFIC CONTROL DEVICES THAT MUST BE REMOVED SHALL BE REPLACED IN THEIR PROPER LOCATION PRIOR TO THE COMPLETION OF THE PROJECT. COST FOR THE REPLACEMENT AND/OR REPAIR OF DEVICES DAMAGED AS A RESULT OF THE PROJECT SHALL BE ASSESSED TO THE CONTRACTOR.

16. AT THE COMPLETION OF THE PERMITTED WORK ACTIVITY, CONDITIONS WITHIN THE PUBLIC SPACE SHALL BE FULLY RESTORED TO THOSE WHICH EXISTED PRIOR TO THE WORK ACTIVITY.

17. WHEN PAVEMENT MARKINGS HAVE BEEN OBLITERATED BY THE WORK ACTIVITY, THE CONTRACTOR SHALL INSTALL ANY CRITICAL INTERIM PAVEMENT MARKING PRIOR TO THE END OF THE WORK DAY.

18. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING ALL TRAFFIC CONTROL DEVICES. AT ANYTIME THE CONTRACTOR DOES NOT MAKE NECESSARY REPAIRS WITHIN 24 HOURS OF NOTIFICATION, APPROXIMATE WORK TIME REDUCTION AND/OR FINES MAY APPLY.

19. ALL WORK WITHIN PUBLIC RIGHT OF WAY AND/OR LANE CLOSURE MUST ONLY BE PERFORMED DURING THE HOURS OF 9AM TO 3PM.

20. NO LANE CLOSURES PERMITTED DURING SPECIAL MERRIWEATHER EVENTS AND CONCERTS AND MAJOR HOLIDAYS.

21. THE CONTRACTOR AND/OR THE DEVELOPER MUST COORDINATE WITH MERRIWEATHER POST PAVILION DURING SPECIAL EVENTS AND CONCERTS. WORK MUST BE RESTRICTED TO AVOID CONFLICTS DURING THESE TIMES, AS DETERMINED BY HOWARD COUNTY TRAFFIC DIVISION.

FLAGGING OPERATION

1. FLAGGING OPERATIONS SHALL BE LIMITED TO ASSIST PEDESTRIANS IN CROSSING BROKEN LAND PARKWAY AT HICKORY RIDGE ROAD DURING CONSTRUCTION OF THE LEFT-TURN LANE.

2. FLAGGING OPERATIONS SHALL BE UTILIZED IN ACCORDANCE WITH MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION STANDARD SPECIFICATIONS AND MATERIALS, SECTION 104.31-01 AND SECTION 9.0 ON MARYLAND STANDARD MD 104.00-11 AND MD 104.00-12.

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
Chief, Bureau of Highways — Date 7/12/2016

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
Chief, Division of Land Development — Date 8.3.16
Chief, Development Engineering Division — Date 7.26.16

CALL "MISS UTILITY" AT 1-800-257-7777, 48 HOURS PRIOR TO THE START OF WORK. THE EXCAVATOR MUST NOTIFY ALL PUBLIC UTILITY COMPANIES WITH UNDER GROUND FACILITIES IN THE AREA OF PROPOSED EXCAVATION AND HAVE THOSE FACILITIES LOCATED BY THE UTILITY COMPANIES PRIOR TO COMMENCING EXCAVATION. THE EXCAVATOR IS RESPONSIBLE FOR COMPLIANCE WITH REQUIREMENTS OF THE HOWARD COUNTY CODE.

48 Hours
Before You Dig Call
"MISS UTILITY"
Service Protection Center
MEMBER ONE CALL SYSTEM INTERNATIONAL
CALL TOLL FREE
1 - 800 - 257 - 7777

WELLS + ASSOCIATES, INC
1420 Spring Hill Road, Suite 610, Tysons, Virginia 22102
Phone: 703/917-6620 Facsimile: 703/917-0739

DES.	DRN.	CHK.

DATE	REVISION	BY	APP'R.

PREPARED FOR:
THE HOWARD HUGHES CORPORATION
10480 LITTLE PATUXENT PARKWAY
SUITE 400
COLUMBIA, MD 21044
ATTN: BOB JENKINS
410-964-5443

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 37882, EXPIRATION DATE: 10/16/2017

STATE OF MARYLAND — CHRISTOPHER JAMES CUMMINGS — No. 37882 — REGISTERED PROFESSIONAL ENGINEER

TEMPORARY TRAFFIC CONTROL PLAN (TTC) GENERAL NOTES
DOWNTOWN COLUMBIA
CRESCENT NEIGHBORHOOD
PARCELS B THRU H, NON-BUILDABLE BULK PARCELS J THRU R,
O.S. LOTS 1 THRU 8 AND
MERRIWEATHER-SYMPHONY WOODS NEIGHBORHOOD O.S. LOT 1
AND NON-BUILDABLE BULK PARCEL A
ELECTION DISTRICT No. 5 — HOWARD COUNTY, MARYLAND

SCALE	ZONING	
NTS	NT	11071
DATE		SHEET
JUNE, 2016	36 - 01	52 OF 102

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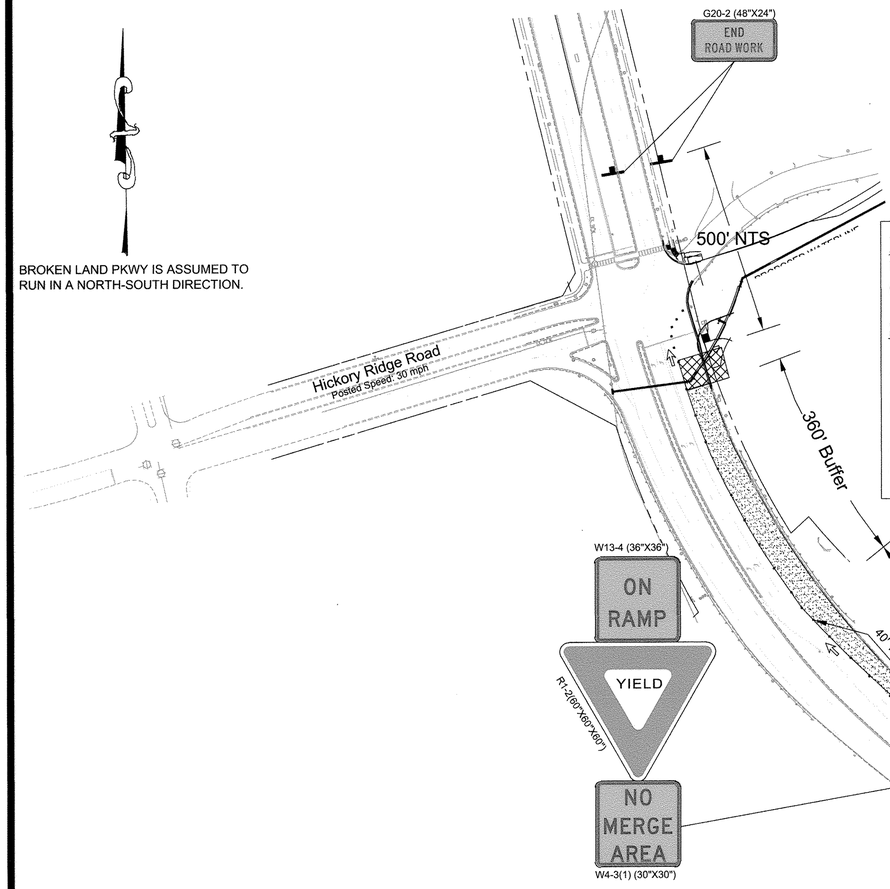
O:\PROJECTS\6001-6500\6489 HICKORY RIDGE RD SIGNAL MODIFICATION\DRAWINGS\DESIGN PLANS\#6489 - HICKORY RIDGE RD @ BROKEN LAND PKWY MOT PLAN_JUNE 2016_2.DWG

BROKEN LAND PKWY IS ASSUMED TO RUN IN A NORTH-SOUTH DIRECTION.

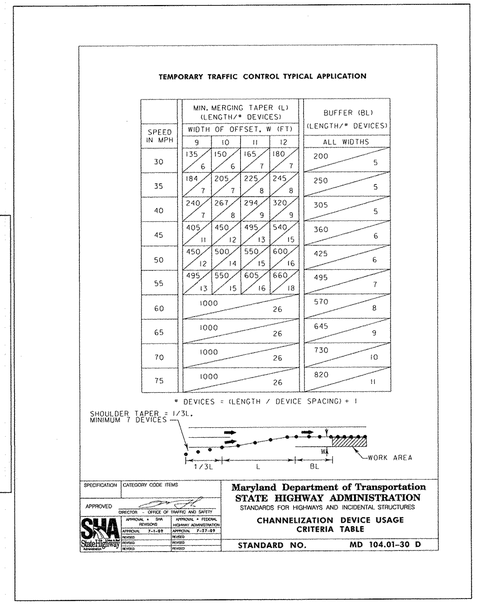


PHASE I

PHASE I
UTILITY IMPROVEMENT AT INTERSECTION
(EAST SIDE–NORTHBOUND DIRECTION)

SEQUENCE OF CONSTRUCTION:
1. INSTALL TRAFFIC CONTROL DEVICES AS SHOWN ON PLAN AND IN ACCORDANCE WITH HOWARD COUNTY SPECIFICATIONS AND REQUIREMENTS, OR AS DIRECTED BY THE COUNTY ENGINEER IN FIELD.

2. BEGIN CONSTRUCTION OF UTILITY IMPROVEMENT ON THE SOUTH/EAST SIDE OF THE INTERSECTION IN THE NORTHBOUND DIRECTION.



TEMPORARY TRAFFIC CONTROL TYPICAL APPLICATION

SPEED IN MPH	MIN. MERGING TAPER (L) (LENGTH/* DEVICES) WIDTH OF OFFSET, W (FT) 9	10	11	12	BUFFER (BL) (LENGTH/* DEVICES) ALL WIDTHS
30	135 / 6	150 / 6	165 / 7	180 / 7	200 / 5
35	184 / 7	205 / 7	225 / 8	245 / 8	250 / 5
40	240 / 7	267 / 8	294 / 9	320 / 9	305 / 5
45	405 / 11	450 / 12	495 / 13	540 / 15	360 / 6
50	450 / 12	500 / 14	550 / 15	600 / 16	425 / 6
55	495 / 13	550 / 15	605 / 16	660 / 18	495 / 7
60	1000 / 26				570 / 8
65	1000 / 26				645 / 9
70	1000 / 26				730 / 10
75	1000 / 26				820 / 11

* DEVICES = (LENGTH / DEVICE SPACING) + 1

SHOULDER TAPER = 1/3L, MINIMUM 7 DEVICES

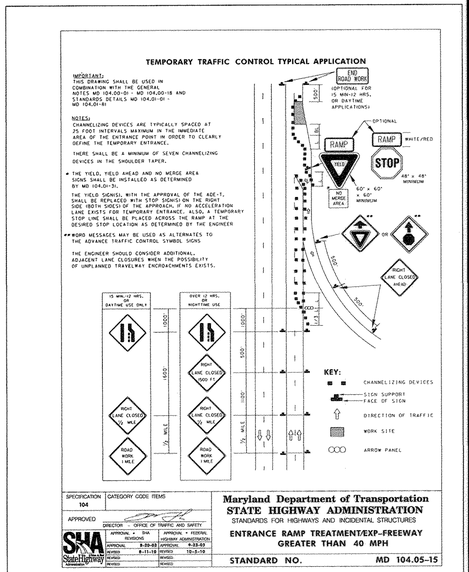
1/3L L BL WA WORK AREA

SPECIFICATION	CATEGORY CODE ITEMS
APPROVED	DIRECTOR – OFFICE OF TRAFFIC AND SAFETY
SHA	APPROVAL + SHA REVISIONS; APPROVAL + FEDERAL HIGHWAY ADMINISTRATION: APPROVAL 7-1-99; APPROVAL 7-17-09; REVISED; REVISED

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES

CHANNELIZATION DEVICE USAGE CRITERIA TABLE

STANDARD NO. MD 104.01-30 D



TEMPORARY TRAFFIC CONTROL TYPICAL APPLICATION

IMPORTANT:
THIS DRAWING SHALL BE USED IN CONJUNCTION WITH THE GENERAL NOTES AND MD 104.00-01, MD 104.00-18 AND STANDARDS DETAILS MD 104.01-01 - MD 104.01-81

NOTES:
CHANNELIZING DEVICES ARE TYPICALLY SPACED AT 25 FOOT INTERVALS MAXIMUM IN THE IMMEDIATE AREA OF THE ENTRANCE POINT IN ORDER TO CLEARLY DEFINE THE TEMPORARY ENTRANCE.

THERE SHALL BE A MINIMUM OF SEVEN CHANNELIZING DEVICES IN THE SHOULDER TAPER.

* THE YIELD, YIELD AHEAD AND NO MERGE AREA SIGNS SHALL BE INSTALLED AS DETERMINED BY MD 104.01-3L.
THE YIELD SIGN(S), WITH THE APPROVAL OF THE ADE-T, SHALL BE REPLACED WITH STOP SIGN(S) OR THE RIGHT LANE CLOSED SIGN(S) WHEN THE VOLUME OF INTERSECTION LANE EXISTS FOR TEMPORARY ENTRANCE. ALSO, A TEMPORARY STOP LINE SHALL BE PLACED ACROSS THE RAMP AT THE DESIRED STOP LOCATION AS DETERMINED BY THE ENGINEER

** CMS MESSAGES MAY BE USED AS ALTERNATES TO THE ADVANCE TRAFFIC CONTROL SYMBOL SIGNS

THE ENGINEER SHOULD CONSIDER ADDITIONAL ADJACENT LANE CLOSURES WHEN THE POSSIBILITY OF UNPLANNED TRAVELWAY ENCROACHMENTS EXISTS.

OPTIONAL END ROAD WORK (OPTIONAL FOR 15 MIN/12 HRS, DAYTIME USE ONLY)
RAMP YIELD OPTIONAL RAMP WHITE/RED STOP
48" x 48" MINIMUM
60" x 60" x 60" MINIMUM
NO MERGE AREA
RIGHT LANE CLOSED 1/2 MILE
ROAD WORK 1 MILE
15 MIN/12 HRS, DAYTIME USE ONLY
OVER 12 HRS, NIGHTTIME USE
WORK ZONE

KEY:
CHANNELIZING DEVICES
SIGN SUPPORT / FACE OF SIGN
DIRECTION OF TRAFFIC
WORK SITE
ARROW PANEL

SPECIFICATION	CATEGORY CODE ITEMS
104	
APPROVED	DIRECTOR – OFFICE OF TRAFFIC AND SAFETY
SHA	APPROVAL + SHA REVISIONS; APPROVAL + FEDERAL HIGHWAY ADMINISTRATION: APPROVAL 8-20-03; APPROVAL 4-23-03; REVISED 8-11-16; REVISED 10-5-10; REVISED; REVISED

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES

ENTRANCE RAMP TREATMENT/EXP-FREEWAY GREATER THAN 40 MPH

STANDARD NO. MD 104.05-15

LEGEND

- CHANNELIZING DEVICES
- SIGN SUPPORT / FACE OF SIGN
- DIRECTION OF TRAFFIC
- WORK SITE
- ARROW PANEL
- LANE CLOSURE

48 Hours
Before You Dig Call
"MISS UTILITY"
Service Protection Center
MEMBER ONE CALL SYSTEM INTERNATIONAL
CALL TOLL FREE
1 - 800 - 257 - 7777

CALL "MISS UTILITY" AT 1-800-257-7777, 48 HOURS PRIOR TO THE START OF WORK. THE EXCAVATOR MUST NOTIFY ALL PUBLIC UTILITY COMPANIES WITH UNDER GROUND FACILITIES IN THE AREA OF PROPOSED EXCAVATION AND HAVE THOSE FACILITIES LOCATED BY THE UTILITY COMPANIES PRIOR TO COMMENCING EXCAVATION. THE EXCAVATOR IS RESPONSIBLE FOR COMPLIANCE WITH REQUIREMENTS OF THE HOWARD COUNTY CODE.

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
Chief, Bureau of Highways — Date 7/12/2016

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
Chief, Division of Land Development — Date 8-3-16
Chief, Development Engineering Division — Date 7-26-16

WELLS + ASSOCIATES, INC
1420 Spring Hill Road, Suite 610, Tysons, Virginia 22102
Phone: 703/917-6620 Facsimile: 703/917-0739

DES. DRN. CHK.

DATE	REVISION	BY	APP'R.

PREPARED FOR:
THE HOWARD HUGHES CORPORATION
10480 LITTLE PATUXENT PARKWAY
SUITE 400
COLUMBIA, MD 21044
ATTN: BOB JENKINS
410-964-5443

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 37882, EXPIRATION DATE: 10/16/2017

STATE OF MARYLAND — CHRISTOPHER L. WELLS — No. 37882 — PROFESSIONAL ENGINEER

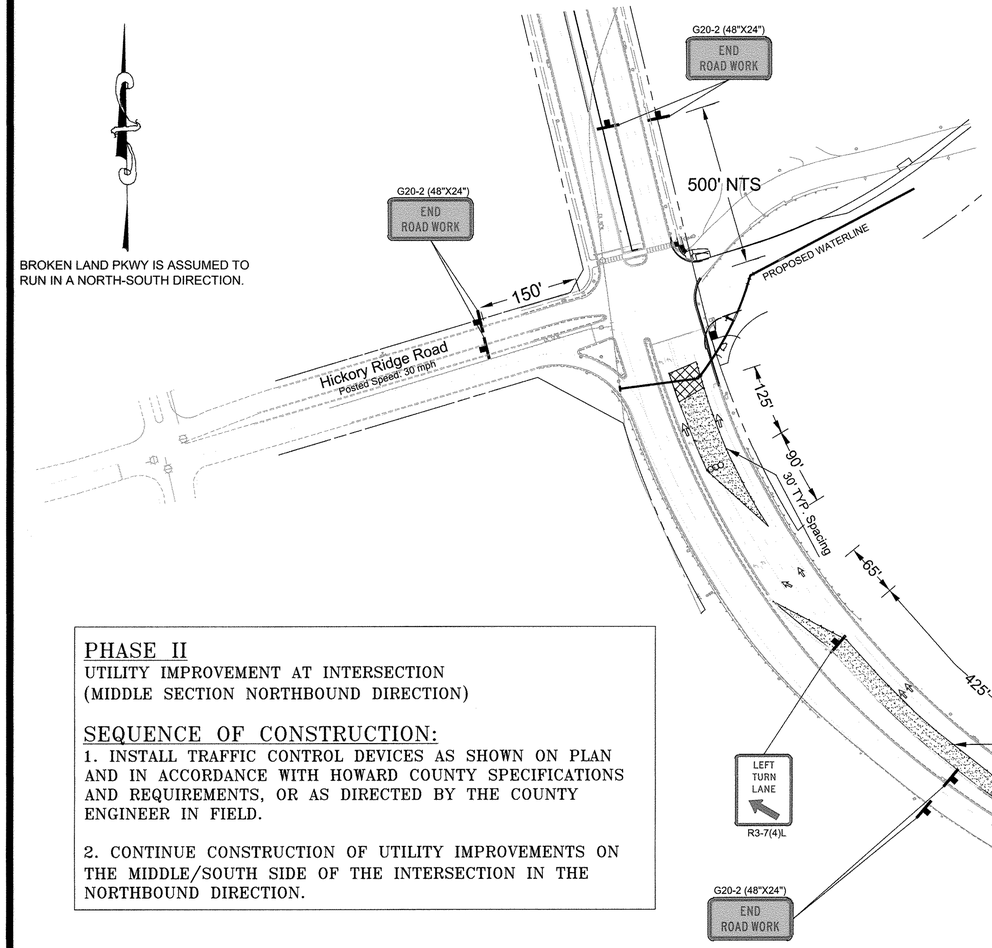
TEMPORARY TRAFFIC CONTROL PLAN (TTC) PHASE I
DOWNTOWN COLUMBIA
CRESCENT NEIGHBORHOOD
PARCELS B THRU H, NON-BULDABLE BULK PARCELS J THRU R, O.S. LOTS 1 THRU 8 AND MERRIWEATHER-SYMPHONY WOODS NEIGHBORHOOD O.S. LOT 1 AND NON-BUILDABLE BULK PARCEL A
ELECTION DISTRICT No. 5 HOWARD COUNTY, MARYLAND

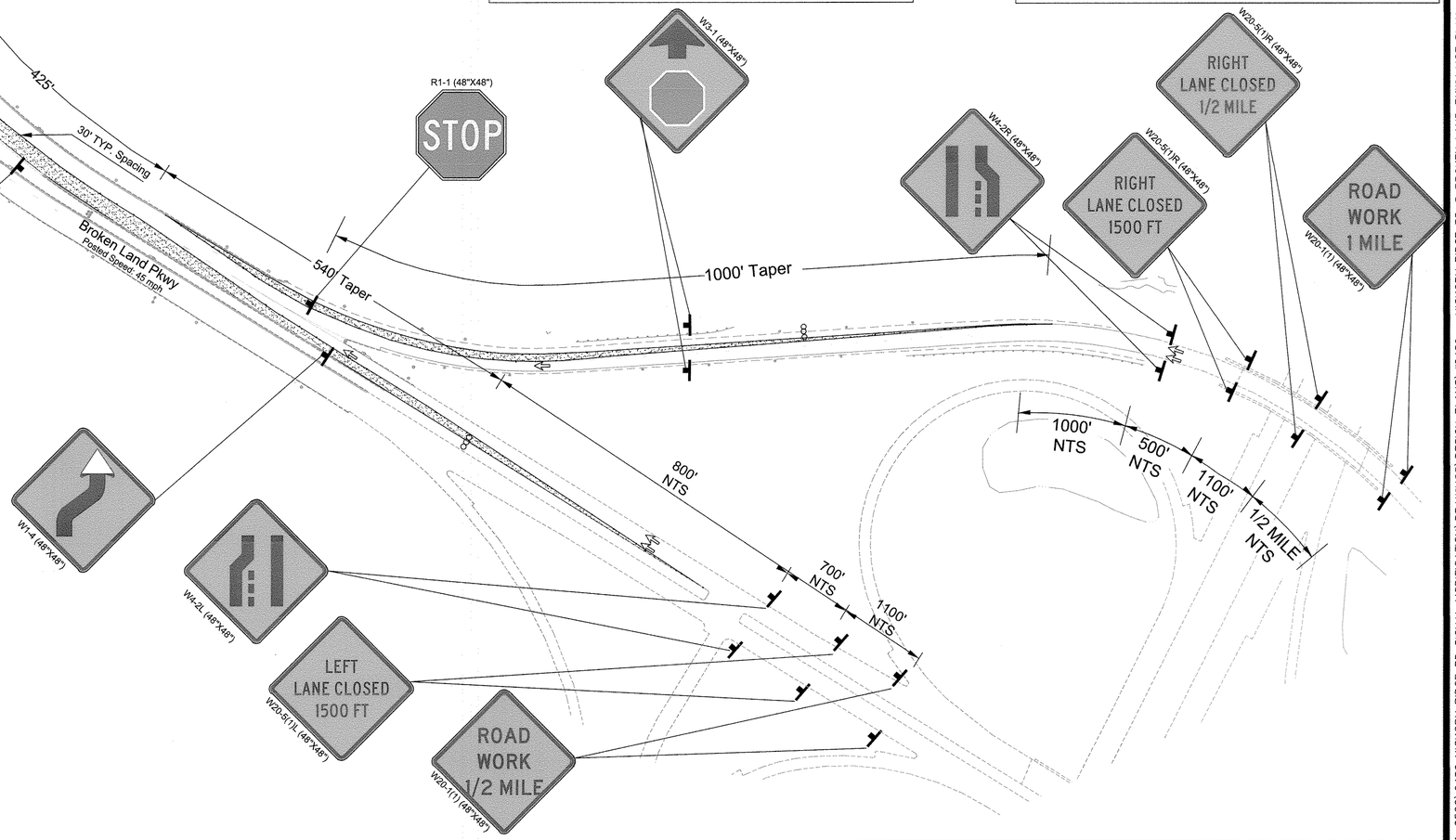
SCALE	ZONING	
1"=100'	NT	11071
DATE		SHEET
JUNE, 2016	36 - 01	53 OF 102

F 15-106

O:\PROJECTS\6001-6500\6489 HICKORY RIDGE RD SIGNAL MODIFICATION\DRAWINGS\DESIGN PLANS\#6489 - HICKORY RIDGE RD @ BROKEN LAND PKWY MOT PLAN_JUNE 2016_2.DWG

PHASE II





PHASE II
UTILITY IMPROVEMENT AT INTERSECTION
(MIDDLE SECTION NORTHBOUND DIRECTION)

SEQUENCE OF CONSTRUCTION:
1. INSTALL TRAFFIC CONTROL DEVICES AS SHOWN ON PLAN AND IN ACCORDANCE WITH HOWARD COUNTY SPECIFICATIONS AND REQUIREMENTS, OR AS DIRECTED BY THE COUNTY ENGINEER IN FIELD.

2. CONTINUE CONSTRUCTION OF UTILITY IMPROVEMENTS ON THE MIDDLE/SOUTH SIDE OF THE INTERSECTION IN THE NORTHBOUND DIRECTION.

LEGEND

- CHANNELIZING DEVICES
- SIGN SUPPORT FACE OF SIGN
- DIRECTION OF TRAFFIC
- WORK SITE
- ARROW PANEL
- LANE CLOSURE

48 Hours
Before You Dig Call
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Service Protection Center
MEMBER ONE CALL SYSTEM INTERNATIONAL
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APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
Chief, Bureau of Highways — Date 7/12/2016

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
Chief, Division of Land Development — Date 8-3-16
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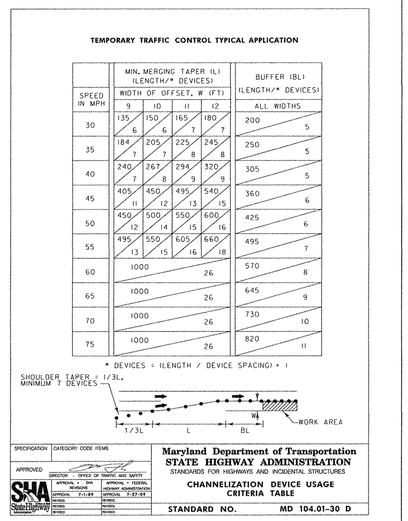

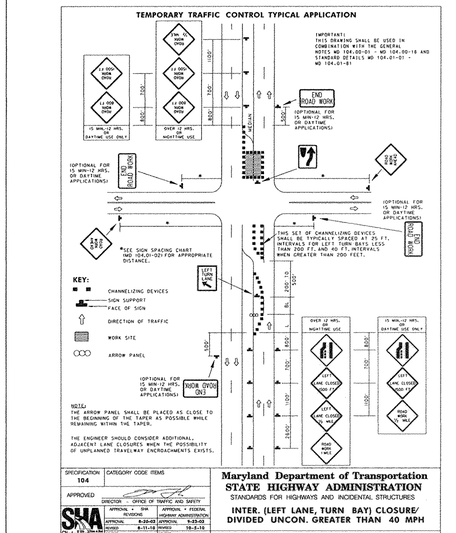

WELLS + ASSOCIATES, INC
1420 Spring Hill Road, Suite 610, Tysons, Virginia 22102
Phone: 703/917-6620 Facsimile: 703/917-0739

DES.	DRN.	CHK.

DATE	REVISION	BY	APP'R.

PREPARED FOR:
THE HOWARD HUGHES CORPORATION
10480 LITTLE PATUXENT PARKWAY
SUITE 400
COLUMBIA, MD 21044
ATTN: BOB JENKINS
410-964-5443

PROFESSIONAL CERTIFICATION

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STATE OF MARYLAND — CHRISTOPHER G. CLARK — 37882 — PROFESSIONAL ENGINEER

TEMPORARY TRAFFIC CONTROL PLAN (TTC) PHASE II
DOWNTOWN COLUMBIA
CRESCENT NEIGHBORHOOD
PARCELS B THRU H, NON-BUILDABLE BULK PARCELS J THRU R, O.S. LOTS 1 THRU 8 AND MERRIWEATHER-SYMPHONY WOODS NEIGHBORHOOD O.S. LOT 1 AND NON-BUILDABLE BULK PARCEL A
ELECTION DISTRICT No. 5 — HOWARD COUNTY, MARYLAND

SCALE	ZONING	
1"=100'	NT	11071
DATE		SHEET
JUNE, 2016	36 - 01	54 OF 102

O:\PROJECTS\6001-6500\6489 HICKORY RIDGE RD SIGNAL MODIFICATION\DRAWINGS\DESIGN PLANS\#6489 - HICKORY RIDGE RD @ BROKEN LAND PKWY MOT PLAN_JUNE 2016_2.DWG

F 15-106

PHASE III

BROKEN LAND PKWY IS ASSUMED TO RUN IN A NORTH-SOUTH DIRECTION.

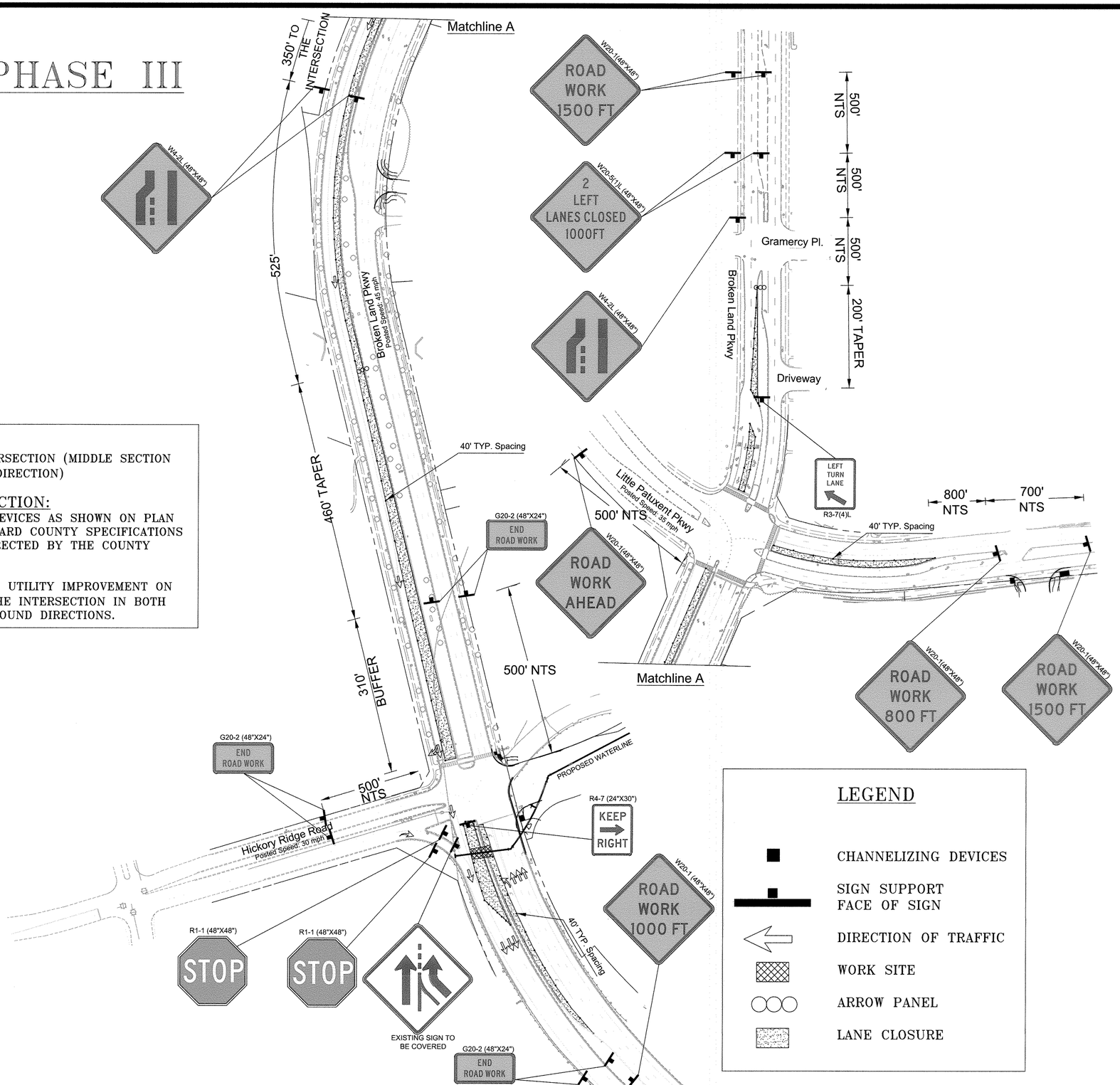
PHASE III

UTILITY IMPROVEMENT AT INTERSECTION (MIDDLE SECTION NORTHBOUND & SOUTHBOUND DIRECTION)

SEQUENCE OF CONSTRUCTION:

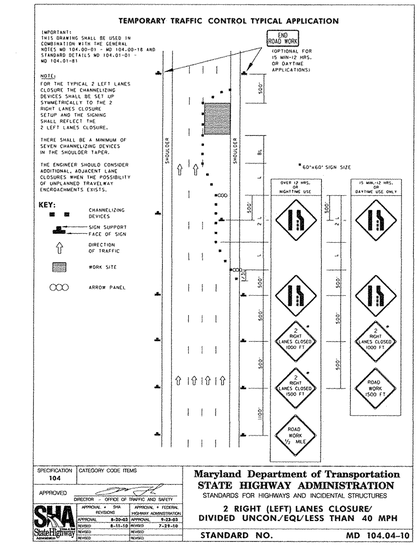
1. INSTALL TRAFFIC CONTROL DEVICES AS SHOWN ON PLAN AND IN ACCORDANCE WITH HOWARD COUNTY SPECIFICATIONS AND REQUIREMENTS, OR AS DIRECTED BY THE COUNTY ENGINEER IN FIELD.

2. CONTINUE CONSTRUCTION OF UTILITY IMPROVEMENT ON THE MIDDLE/SOUTH SIDE OF THE INTERSECTION IN BOTH THE NORTHBOUND AND SOUTHBOUND DIRECTIONS.



LEGEND

- CHANNELIZING DEVICES
- SIGN SUPPORT FACE OF SIGN
- DIRECTION OF TRAFFIC
- WORK SITE
- ARROW PANEL
- LANE CLOSURE

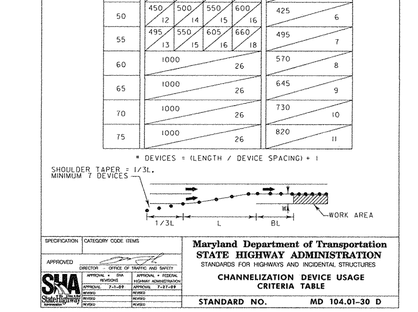


SPECIFICATION	CATEGORY CODE ITEMS
104	

APPROVED — DIRECTOR, OFFICE OF TRAFFIC AND SAFETY

	APPROVAL + DATE	APPROVAL + FEDERAL HIGHWAY ADMINISTRATION
ORIGINAL	8-20-02	APPROVAL 7-31-03
REVISED	6-11-10	REVISED 7-29-10
REVISED		REVISED
REVISED		REVISED

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
2 RIGHT (LEFT) LANES CLOSURE/ DIVIDED UNCON./EQU/LESS THAN 40 MPH
STANDARD NO. MD 104.04-10



SPEED IN MPH	MIN. MERGING TAPER (L) (LENGTH/* DEVICES) WIDTH OF OFFSET, W (FT) 9	10	11	12	BUFFER (BL) (LENGTH/* DEVICES) ALL WIDTHS
30	135 / 6	150 / 6	165 / 7	180 / 7	200 / 5
35	184 / 7	205 / 7	225 / 8	245 / 8	250 / 5
40	240 / 7	267 / 8	294 / 9	320 / 9	305 / 5
45	405 / 11	450 / 12	495 / 13	540 / 15	360 / 6
50	450 / 12	500 / 14	550 / 15	600 / 16	425 / 6
55	495 / 13	550 / 15	605 / 16	660 / 18	495 / 7
60	1000 / 26				570 / 8
65	1000 / 26				645 / 9
70	1000 / 26				730 / 10
75	1000 / 26				820 / 11

* DEVICES = (LENGTH / DEVICE SPACING) + 1

SPECIFICATION	CATEGORY CODE ITEMS
104	

APPROVED — DIRECTOR, OFFICE OF TRAFFIC AND SAFETY

	APPROVAL + DATE	APPROVAL + FEDERAL HIGHWAY ADMINISTRATION
ORIGINAL	8-20-02	APPROVAL 7-31-03
REVISED		REVISED
REVISED		REVISED
REVISED		REVISED

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
CHANNELIZATION DEVICE USAGE CRITERIA TABLE
STANDARD NO. MD 104.01-30 D

48 Hours
Before You Dig Call
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APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
Chief, Bureau of Highways — Date 7/12/2016

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
Chief, Division of Land Development — Date 8.3.16
Chief, Development Engineering Division — Date 7.26.16

WELLS + ASSOCIATES, INC
1420 Spring Hill Road, Suite 610, Tysons, Virginia 22102
Phone: 703/917-6620 Facsimile: 703/917-0739

DES.	DRN.	CHK.

DATE	REVISION	BY	APP'R.

PREPARED FOR:
THE HOWARD HUGHES CORPORATION
10480 LITTLE PATUXENT PARKWAY
SUITE 400
COLUMBIA, MD 21044
ATTN: BOB JENKINS
410-964-5443

PROFESSIONAL CERTIFICATION

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STATE OF MARYLAND — CHRISTOPHER T. PHILLIPS — 37882 — PROFESSIONAL ENGINEER

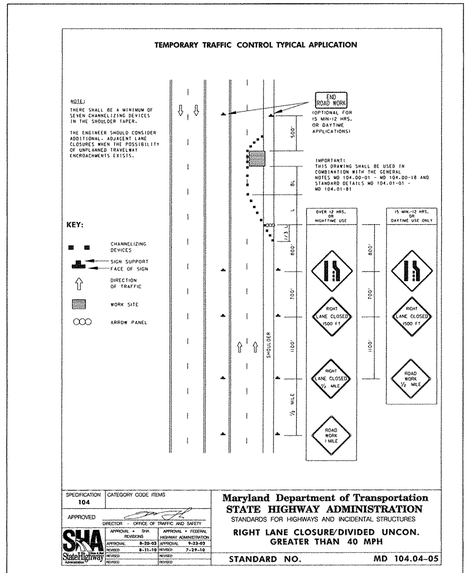
TEMPORARY TRAFFIC CONTROL PLAN (TTC) PHASE III
DOWNTOWN COLUMBIA
CRESCENT NEIGHBORHOOD
PARCELS B THRU H, NON-BUILDABLE BULK PARCELS J THRU R, O.S. LOTS 1 THRU 8 AND MERRIWEATHER-SYMPHONY WOODS NEIGHBORHOOD O.S. LOT 1 AND NON-BUILDABLE BULK PARCEL A
ELECTION DISTRICT No. 5 — HOWARD COUNTY, MARYLAND

SCALE	ZONING	
1"=100'	NT	11071
DATE		SHEET
JUNE, 2016	36 - 01	55 OF 102

F 15-106

O:\PROJECTS\6001-6500\6489 HICKORY RIDGE RD SIGNAL MODIFICATION\DRAWINGS\DESIGN PLANS\#6489 - HICKORY RIDGE RD @ BROKEN LAND PKWY MOT PLAN_JUNE 2016_2.DWG

BROKEN LAND PKWY IS ASSUMED TO RUN IN A NORTH-SOUTH DIRECTION.



PHASE IV

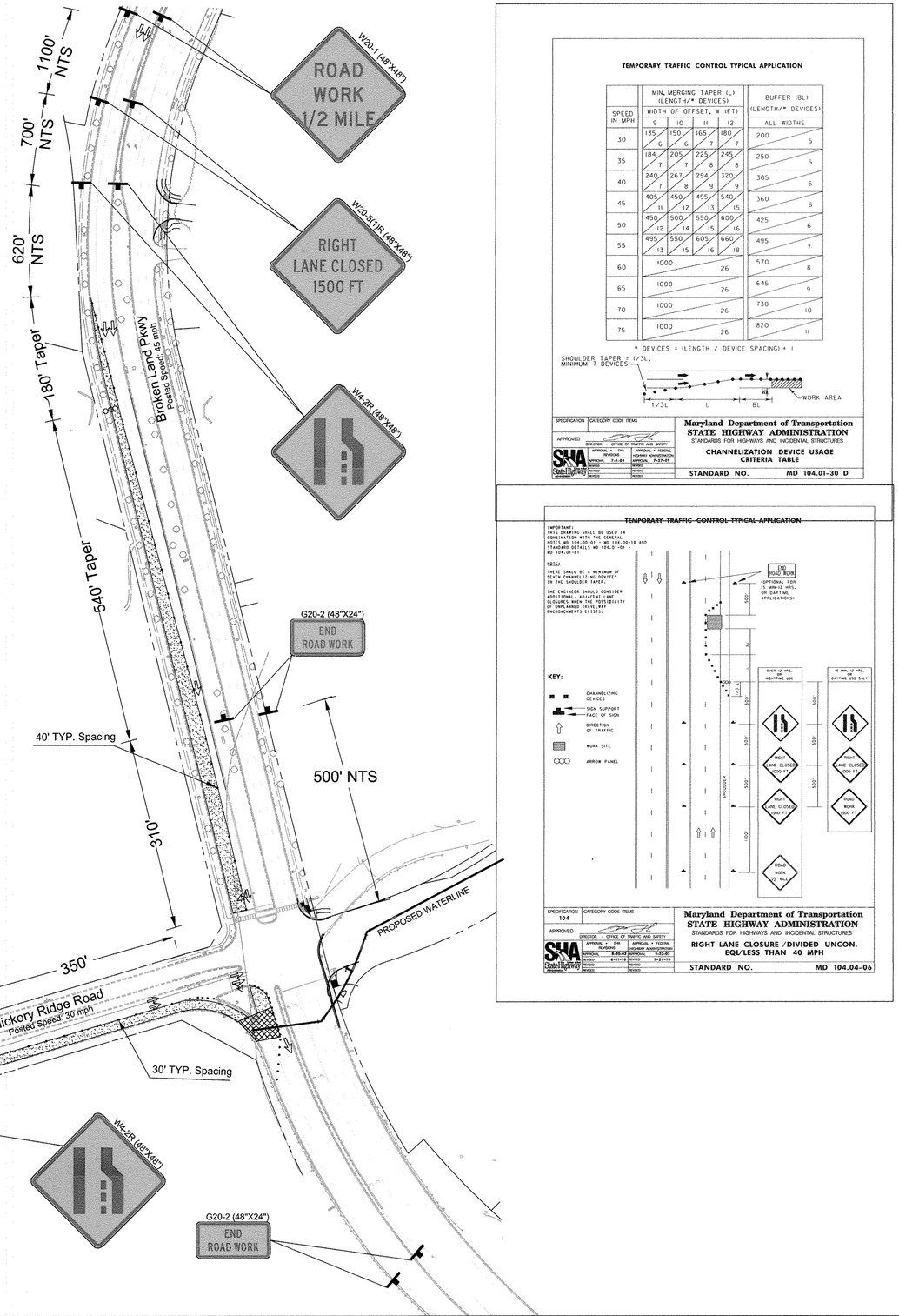
PHASE IV

UTILITY IMPROVEMENT AT INTERSECTION (WEST SIDE-SOUTHBOUND DIRECTION)

SEQUENCE OF CONSTRUCTION:

1. INSTALL TRAFFIC CONTROL DEVICES AS SHOWN ON PLAN AND IN ACCORDANCE WITH HOWARD COUNTY SPECIFICATIONS AND REQUIREMENTS, OR AS DIRECTED BY THE COUNTY ENGINEER IN FIELD.

2. FINISH CONSTRUCTION OF UTILITY IMPROVEMENT ON THE SOUTH WEST/SOUTH SIDE OF THE INTERSECTION IN THE NORTHBOUND DIRECTION.



LEGEND

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APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
Chief, Bureau of Highways — Date 7/12/2016

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Chief, Division of Land Development — Date 8/3/16
Chief, Development Engineering Division — Date 7-26-16

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Phone: 703/917-6620 Facsimile: 703/917-0739

DES. | DRN. | CHK.

DATE	REVISION	BY	APP'R.

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STATE OF MARYLAND — CHRISTOPHER J. WELLS — No. 37882 — PROFESSIONAL ENGINEER

TEMPORARY TRAFFIC CONTROL PLAN (TTC) - PHASE IV
DOWNTOWN COLUMBIA
CRESCENT NEIGHBORHOOD
PARCELS B THRU H, NON-BUILDABLE BULK PARCELS J THRU R, O.S. LOTS 1 THRU 8 AND MERRIWEATHER-SYMPHONY WOODS NEIGHBORHOOD O.S. LOT 1 AND NON-BUILDABLE BULK PARCEL A
ELECTION DISTRICT No. 5 — HOWARD COUNTY, MARYLAND

SCALE	ZONING	
1"=100'	NT	11071
DATE		SHEET
JUNE, 2016	36 - 01	56 OF 102

F 15-106

O:\PROJECTS\6001-6500\6489 HICKORY RIDGE RD SIGNAL MODIFICATION\DRAWINGS\DESIGN PLANS\#6489 - HICKORY RIDGE RD @ BROKEN LAND PKWY MOT PLAN_JUNE 2016_2.DWG

PHASE V

BROKEN LAND PKWY IS ASSUMED TO RUN IN A NORTH-SOUTH DIRECTION.

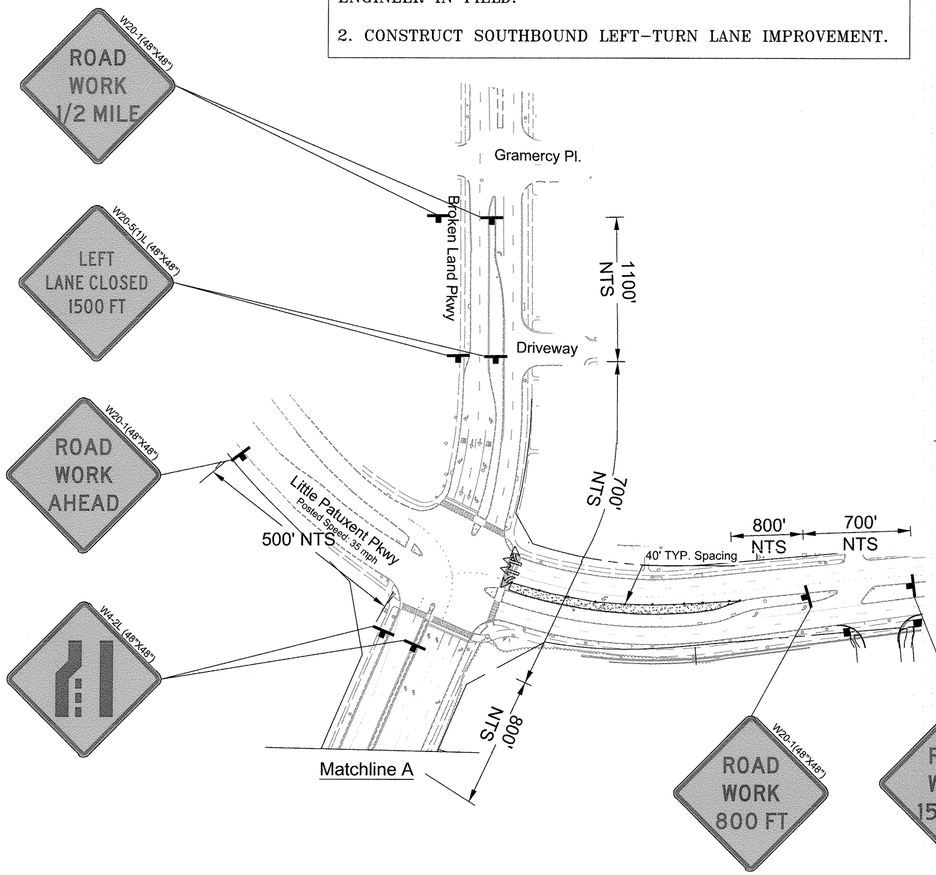
PHASE V

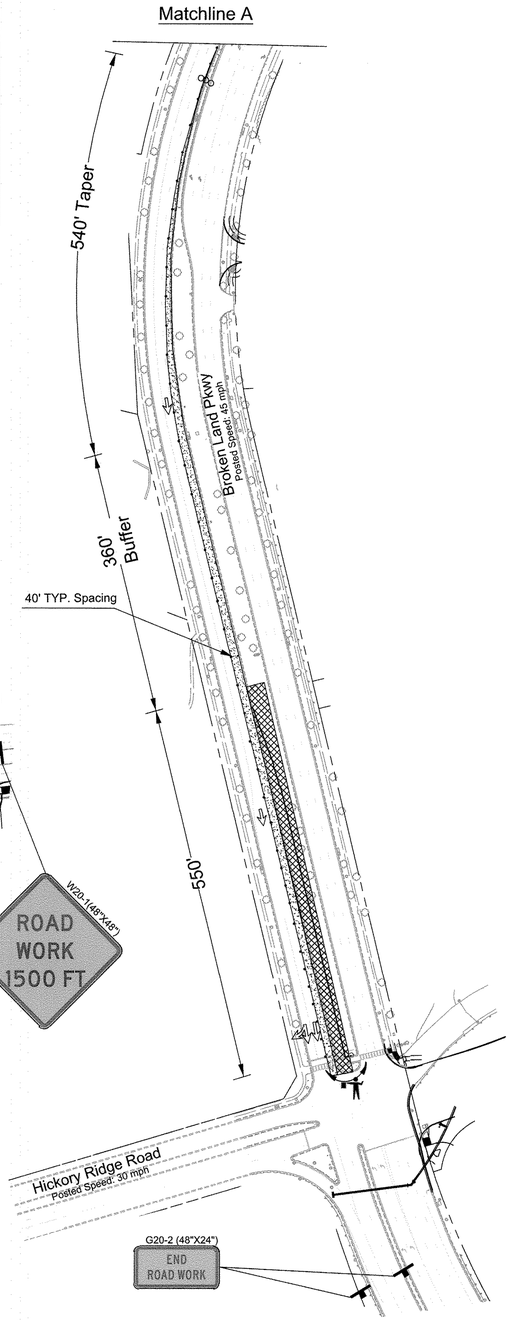
ROAD GEOMETRY IMPROVEMENT (LEFT-TURN LANE) ON SOUTHBOUND BROKEN LAND PKWY AT HICKORY RIDGE ROAD INTERSECTION.

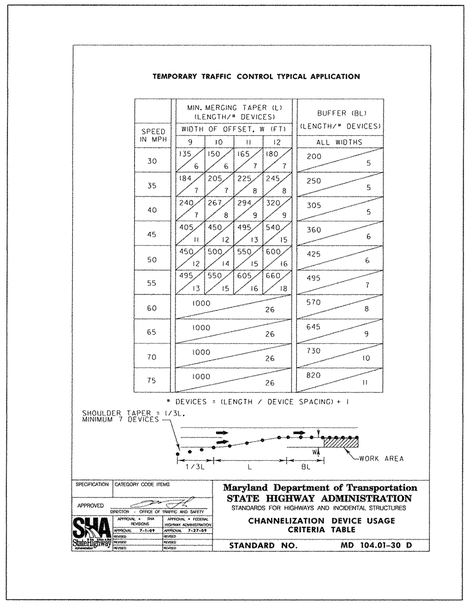
SEQUENCE OF CONSTRUCTION:

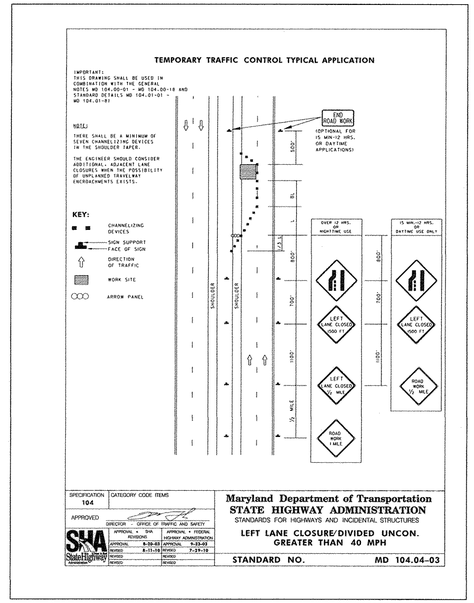
1. INSTALL TRAFFIC CONTROL DEVICES AS SHOWN ON PLAN AND IN ACCORDANCE WITH HOWARD COUNTY SPECIFICATIONS AND REQUIREMENTS, OR AS DIRECTED BY THE COUNTY ENGINEER IN FIELD.

2. CONSTRUCT SOUTHBOUND LEFT-TURN LANE IMPROVEMENT.









LEGEND

- CHANNELIZING DEVICES
- SIGN SUPPORT FACE OF SIGN
- DIRECTION OF TRAFFIC
- WORK SITE
- ARROW PANEL
- LANE CLOSURE
- FLAGGER TO ASSIST AND DIRECT PEDESTRIANS TO CROSS BROKEN LAND PKWY

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APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
Chief, Bureau of Highways — Date 7/12/2016

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
Chief, Division of Land Development — Date 8/3/16
Chief, Development Engineering Division — Date 7.26.16

WELLS + ASSOCIATES, INC
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DES.	DRN.	CHK.

DATE	REVISION	BY	APP'R.

PREPARED FOR:
THE HOWARD HUGHES CORPORATION
10480 LITTLE PATUXENT PARKWAY
SUITE 400
COLUMBIA, MD 21044
ATTN: BOB JENKINS
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STATE OF MARYLAND — CHRISTOPHER T. PHILLIPS — No. 37892 — PROFESSIONAL ENGINEER

TEMPORARY TRAFFIC CONTROL PLAN (TTC) PHASE V
DOWNTOWN COLUMBIA
CRESCENT NEIGHBORHOOD
PARCELS B THRU H, NON-BULDABLE BULK PARCELS J THRU R, O.S. LOTS 1 THRU 8 AND MERRIWEATHER-SYMPHONY WOODS NEIGHBORHOOD O.S. LOT 1 AND NON-BUILDABLE BULK PARCEL A
ELECTION DISTRICT No. 5 HOWARD COUNTY, MARYLAND

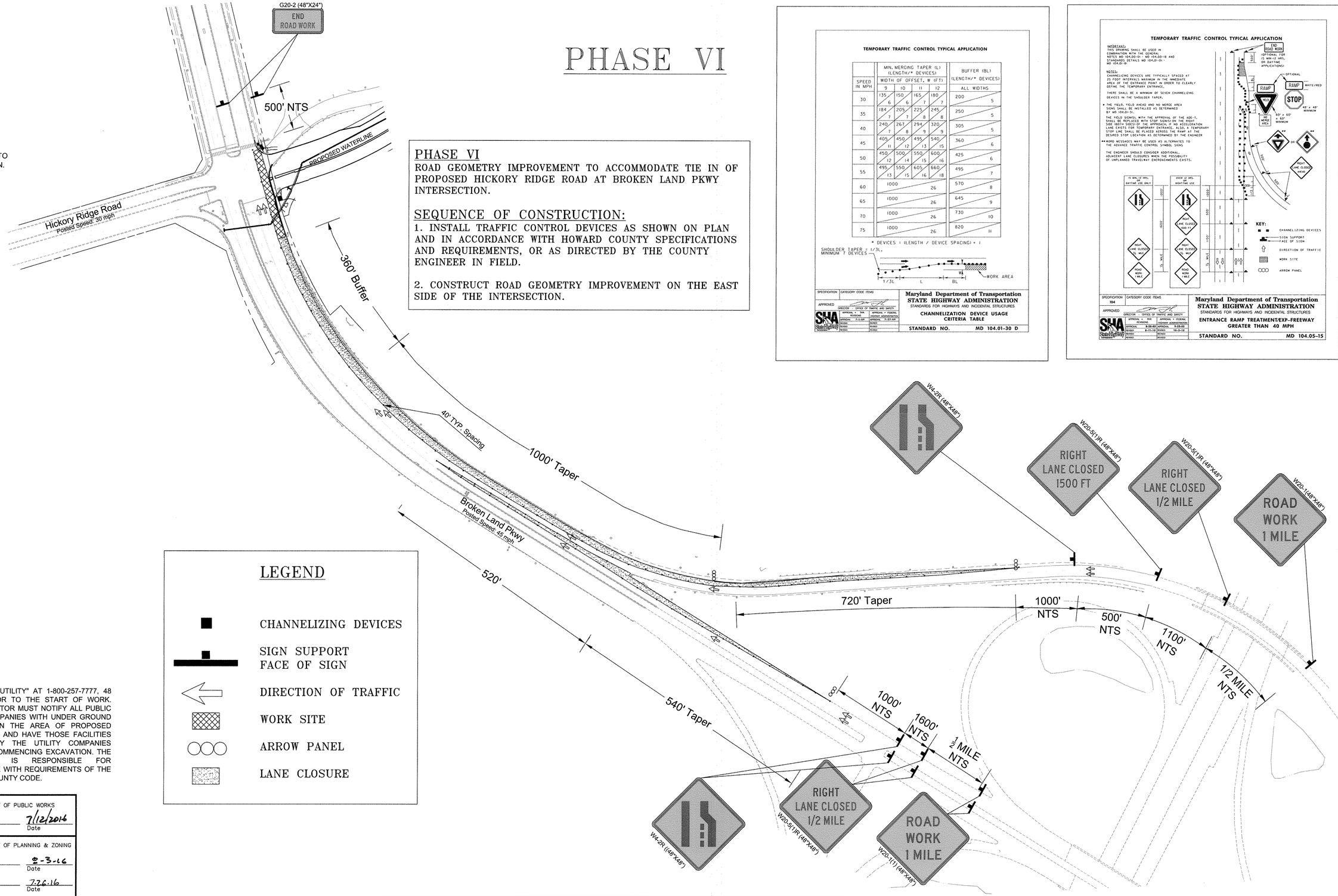
SCALE	ZONING	
1"=100'	NT	11071
DATE		SHEET
JUNE, 2016	36 - 01	57 OF 102

F 15-106

O:\PROJECTS\6001-6500\6489 HICKORY RIDGE RD SIGNAL MODIFICATION\DRAWINGS\DESIGN PLANS\#6489 - HICKORY RIDGE RD @ BROKEN LAND PKWY MOT PLAN_JUNE 2016_2.DWG

PHASE VI

BROKEN LAND PKWY IS ASSUMED TO RUN IN A NORTH-SOUTH DIRECTION.



PHASE VI

ROAD GEOMETRY IMPROVEMENT TO ACCOMMODATE TIE IN OF PROPOSED HICKORY RIDGE ROAD AT BROKEN LAND PKWY INTERSECTION.

SEQUENCE OF CONSTRUCTION:

1. INSTALL TRAFFIC CONTROL DEVICES AS SHOWN ON PLAN AND IN ACCORDANCE WITH HOWARD COUNTY SPECIFICATIONS AND REQUIREMENTS, OR AS DIRECTED BY THE COUNTY ENGINEER IN FIELD.

2. CONSTRUCT ROAD GEOMETRY IMPROVEMENT ON THE EAST SIDE OF THE INTERSECTION.

LEGEND

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- WORK SITE
- ARROW PANEL
- LANE CLOSURE

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APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
Chief, Bureau of Highways — Date 7/12/2016

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
Chief, Division of Land Development — Date 8-3-16
Chief, Development Engineering Division — Date 7.26.16

WELLS + ASSOCIATES, INC
1420 Spring Hill Road, Suite 610, Tysons, Virginia 22102
Phone: 703/917-6620 Facsimile: 703/917-0739

DES.	DRN.	CHK.

DATE	REVISION	BY	APP'R.

PREPARED FOR:
THE HOWARD HUGHES CORPORATION
10480 LITTLE PATUXENT PARKWAY
SUITE 400
COLUMBIA, MD 21044
ATTN: BOB JENKINS
410-964-5443

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 37884, EXPIRATION DATE: 10/16/2017.

STATE OF MARYLAND — CHRISTOPHER [illegible] — No. 37884 — PROFESSIONAL ENGINEER

TEMPORARY TRAFFIC CONTROL PLAN (TTC) PHASE VI
DOWNTOWN COLUMBIA
CRESCENT NEIGHBORHOOD
PARCELS B THRU H, NON-BULDABLE BULK PARCELS J THRU R, O.S. LOTS 1 THRU 8 AND MERRIWEATHER-SYMPHONY WOODS NEIGHBORHOOD O.S. LOT 1 AND NON-BUILDABLE BULK PARCEL A
ELECTION DISTRICT No. 5 — HOWARD COUNTY, MARYLAND

SCALE	ZONING	
1"=100'	NT	11071
DATE		SHEET
JUNE, 2016	36 - 01	58 OF 102

F 15-106

TEMPORARY TRAFFIC CONTROL TYPICAL APPLICATION

SPEED IN MPH	MIN. MERGING TAPER (L) (LENGTH/* DEVICES) WIDTH OF OFFSET, W (FT) 9	10	11	12	BUFFER (BL) (LENGTH/* DEVICES) ALL WIDTHS
30	135 / 6	150 / 6	165 / 7	180 / 7	200 / 5
35	184 / 7	205 / 7	225 / 8	245 / 8	250 / 5
40	240 / 7	267 / 8	294 / 9	320 / 9	305 / 5
45	405 / 11	450 / 12	495 / 13	540 / 15	360 / 6
50	450 / 12	500 / 14	550 / 15	600 / 16	425 / 6
55	495 / 13	550 / 15	605 / 16	660 / 18	495 / 7
60	1000 / 26				570 / 8
65	1000 / 26				645 / 9
70	1000 / 26				730 / 10
75	1000 / 26				820 / 11

* DEVICES = (LENGTH / DEVICE SPACING) + 1

SHOULDER TAPER = 1/3L, MINIMUM 7 DEVICES
1/3L | L | BL | WORK AREA

SPECIFICATION	CATEGORY CODE ITEMS
APPROVED	DIRECTOR - OFFICE OF TRAFFIC AND SAFETY
SHA	APPROVAL + SHA REVISIONS: APPROVED 7-1-09 REVISED
	APPROVAL + FEDERAL HIGHWAY ADMINISTRATION: APPROVED 7-27-09 REVISED

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
CHANNELIZATION DEVICE USAGE CRITERIA TABLE
STANDARD NO. MD 104.01-30 D

TEMPORARY TRAFFIC CONTROL TYPICAL APPLICATION

UNIFORM:
THIS DRAWING SHALL BE USED IN COMBINATION WITH THE GENERAL NOTES MD 104.00-01 & MD 104.00-18 AND STANDARDS DETAILS MD 104.01-01 & MD 104.01-81.

NOTES:
CHANNELIZING DEVICES ARE TYPICALLY SPACED AT 25 FOOT INTERVALS MAXIMUM IN THE IMMEDIATE AREA OF THE ENTRANCE POINT IN ORDER TO CLEARLY DEFINE THE TEMPORARY ENTRANCE.

THERE SHALL BE A MINIMUM OF SEVEN CHANNELIZING DEVICES IN THE SHOULDER TAPER.

* THE YIELD, YIELD AHEAD AND NO MERGE AREA SIGNS SHALL BE INSTALLED AS DETERMINED BY MD 104.01-3L.

THE YIELD SIGNS, WITH THE APPROVAL OF THE ADE-T, SHALL BE REPLACED WITH STOP SIGNS ON THE RIGHT SIDE (BOTH SIDES) OF THE APPROACH, IF NO ACCELERATION LANE EXISTS FOR TEMPORARY ENTRANCE, ALSO, A TEMPORARY STOP LINE SHALL BE PLACED ACROSS THE RAMP AT THE DESIRED STOP LOCATION AS DETERMINED BY THE ENGINEER

** ROAD NICKNAMES MAY BE USED AS ALTERNATIVES TO THE ADVANCE TRAFFIC CONTROL SYMBOL SIGNS

THE ENGINEER SHOULD CONSIDER ADDITIONAL ADJACENT LANE CLOSURES WHEN THE POSSIBILITY OF UNPLANNED TRAVELWAY ENCROACHMENTS EXISTS.

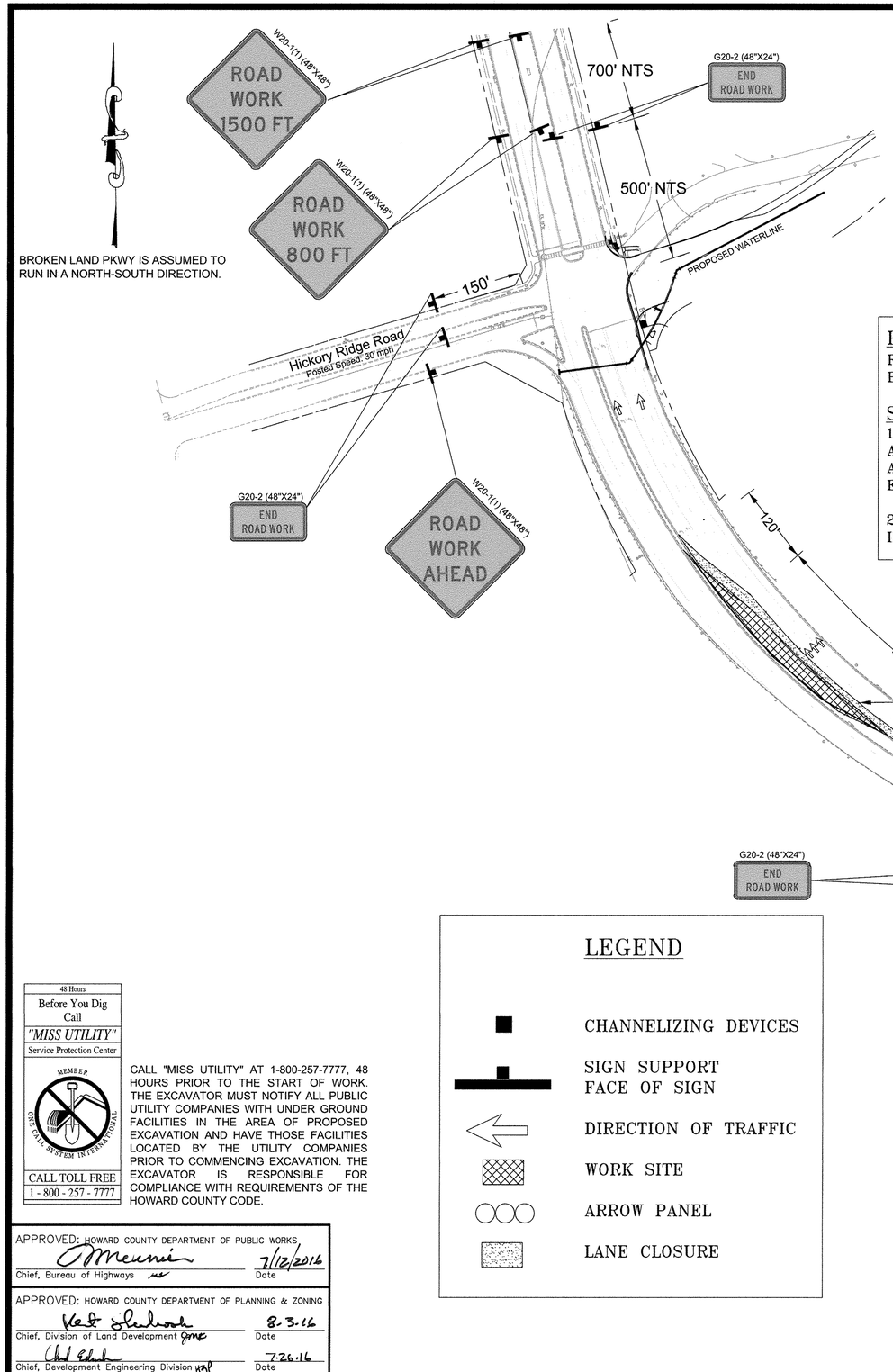
OPTIONAL
END ROAD WORK
(OPTIONAL FOR 15 MIN-12 HRS, OR DAYTIME APPLICATIONS)
RAMP
RAMP
YIELD
STOP
NO MERGE AREA
48" x 48" MINIMUM
40' x 60' x 60' MINIMUM
ROAD WORK ONE MILE
15 MIN.-12 HRS. DAYTIME USE ONLY
OVER 12 HRS. NIGHTTIME USE
RAMP ONE CLOSED 1000 FT
RAMP ONE CLOSED TO MILE
ROAD WORK ONE MILE
½ MILE
1000'
800'
600'
400'
200'
KEY:
CHANNELIZING DEVICES
SIGN SUPPORT FACE OF SIGN
DIRECTION OF TRAFFIC
WORK SITE
ARROW PANEL

SPECIFICATION	CATEGORY CODE ITEMS
104	
APPROVED	DIRECTOR - OFFICE OF TRAFFIC AND SAFETY
SHA	APPROVAL + SHA REVISIONS: APPROVED 4-28-05 REVISED 8-17-06 REVISED
	APPROVAL + FEDERAL HIGHWAY ADMINISTRATION: APPROVED 9-23-05 REVISED 10-3-16 REVISED

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
ENTRANCE RAMP TREATMENT/EXP-FREEWAY GREATER THAN 40 MPH
STANDARD NO. MD 104.05-15

O:\PROJECTS\6001-6500\6489 HICKORY RIDGE RD SIGNAL MODIFICATION\DRAWINGS\DESIGN PLANS\#6489 - HICKORY RIDGE RD @ BROKEN LAND PKWY MOT PLAN_JUNE 2016_2.DWG

PHASE VII



BROKEN LAND PKWY IS ASSUMED TO RUN IN A NORTH-SOUTH DIRECTION.

PHASE VII

ROAD GEOMETRY IMPROVEMENT (LEFT-TURN LANE) ON BROKEN LAND PKWY AT HICKORY RIDGE ROAD INTERSECTION.

SEQUENCE OF CONSTRUCTION:

1. INSTALL TRAFFIC CONTROL DEVICES AS SHOWN ON PLAN AND IN ACCORDANCE WITH HOWARD COUNTY SPECIFICATIONS AND REQUIREMENTS, OR AS DIRECTED BY THE COUNTY ENGINEER IN FIELD.

2. CONSTRUCT LEFT-TURN LANE EXTENSION GEOMETRY IMPROVEMENTS IN THE NORTHBOUND DIRECTION.

LEGEND

- CHANNELIZING DEVICES
- SIGN SUPPORT FACE OF SIGN
- DIRECTION OF TRAFFIC
- WORK SITE
- ARROW PANEL
- LANE CLOSURE

TEMPORARY TRAFFIC CONTROL TYPICAL APPLICATION

SPEED IN MPH	MIN. MERGING TAPER (L) (LENGTH/* DEVICES) WIDTH OF OFFSET, W (FT) 9	10	11	12	BUFFER (BL) (LENGTH/* DEVICES) ALL WIDTHS
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50	450 / 12	500 / 14	550 / 15	600 / 16	425 / 6
55	495 / 13	550 / 15	605 / 16	660 / 18	495 / 7
60	1000 / 26				570 / 8
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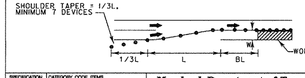
75	1000 / 26				820 / 11

* DEVICES = (LENGTH / DEVICE SPACING) + 1

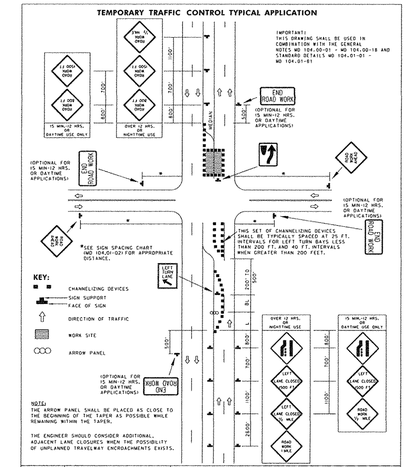
SHOULDER TAPER = 1/3L. MINIMUM 7 DEVICES



SPECIFICATION	CATEGORY CODE ITEMS
APPROVED	DIRECTOR, OFFICE OF TRAFFIC AND SAFETY
APPROVAL + DATE: 7-1-09	APPROVAL + FEDERAL HIGHWAY ADMINISTRATION: 7-27-09
REVISED	REVISED
REVISED	REVISED
REVISED	REVISED

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
CHANNELIZATION DEVICE USAGE CRITERIA TABLE
STANDARD NO. MD 104.01-30 D

TEMPORARY TRAFFIC CONTROL TYPICAL APPLICATION



SPECIFICATION 104	CATEGORY CODE ITEMS
APPROVED	DIRECTOR, OFFICE OF TRAFFIC AND SAFETY
APPROVAL + DATE: 9-20-05	APPROVAL + FEDERAL HIGHWAY ADMINISTRATION: 9-30-05
REVISED 8-17-10	REVISED 10-3-10
REVISED	REVISED
REVISED	REVISED

Maryland Department of Transportation
STATE HIGHWAY ADMINISTRATION
STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
INTER. (LEFT LANE, TURN BAY) CLOSURE/ DIVIDED UNCON. GREATER THAN 40 MPH
STANDARD NO. MD 104.04-15

48 Hours
Before You Dig Call
"MISS UTILITY"
Service Protection Center
MEMBER ONE CALL SYSTEM INTERNATIONAL
CALL TOLL FREE
1 - 800 - 257 - 7777

CALL "MISS UTILITY" AT 1-800-257-7777, 48 HOURS PRIOR TO THE START OF WORK. THE EXCAVATOR MUST NOTIFY ALL PUBLIC UTILITY COMPANIES WITH UNDER GROUND FACILITIES IN THE AREA OF PROPOSED EXCAVATION AND HAVE THOSE FACILITIES LOCATED BY THE UTILITY COMPANIES PRIOR TO COMMENCING EXCAVATION. THE EXCAVATOR IS RESPONSIBLE FOR COMPLIANCE WITH REQUIREMENTS OF THE HOWARD COUNTY CODE.

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
Chief, Bureau of Highways — Date 7/12/2016

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
Chief, Division of Land Development — Date 8.3.16
Chief, Development Engineering Division — Date 7.26.16

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DES.	DRN.	CHK.

DATE	REVISION	BY	APP'R.

PREPARED FOR:
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10480 LITTLE PATUXENT PARKWAY
SUITE 400
COLUMBIA, MD 21044
ATTN: BOB JENKINS
410-964-5443

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I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 37882 EXPIRATION DATE: 10/16/2017

STATE OF MARYLAND — CHRISTOPHER T. PHILLIPS — No. 37882 — PROFESSIONAL ENGINEER

TEMPORARY TRAFFIC CONTROL PLAN (TTC) PHASE VII
DOWNTOWN COLUMBIA
CRESCENT NEIGHBORHOOD
PARCELS B THRU H, NON-BUILDABLE BULK PARCELS J THRU R, O.S. LOTS 1 THRU 8 AND MERRIWEATHER-SYMPHONY WOODS NEIGHBORHOOD O.S. LOT 1 AND NON-BUILDABLE BULK PARCEL A
ELECTION DISTRICT No. 5 — HOWARD COUNTY, MARYLAND

SCALE	ZONING	
1"=100'	NT	11071
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JUNE, 2016	36 - 01	59 OF 102

O:\PROJECTS\6001-6500\6489 HICKORY RIDGE RD SIGNAL MODIFICATION\DRAWINGS\DESIGN PLANS\#6489 - HICKORY RIDGE RD @ BROKEN LAND PKWY MOT PLAN_JUNE 2016_2.DWG

F 15-106

PAVEMENT MARKINGS NOTES

1. ALL LONG LINES MARKINGS TO BE APPLIED USING THERMOPLACTIC MATERIAL.
2. THE CROSSWALK AND ARROWS TO BE INSTALLED USING PREFORMED HEAT APPLIED TAPE OR THERMOPLASTIC.
3. ALL PAVEMENT MARKINGS ARE TO BE LOCATED OR APPROVED BY THE TRAFFIC DIVISION PRIOR TO THE PLACEMENT OF ANY MARKINGS.
4. ALL EXISTING PAVEMENT MARKING IN CONFLICT WITH THE PROPOSED PAVEMENT MARKINGS ARE TO BE REMOVED BY GRINDING ONLY. HOWARD COUNTY TRAFFIC (410-313-5752) WILL DETERMINE WHICH EXISTING MARKINGS SHALL BE REMOVED.

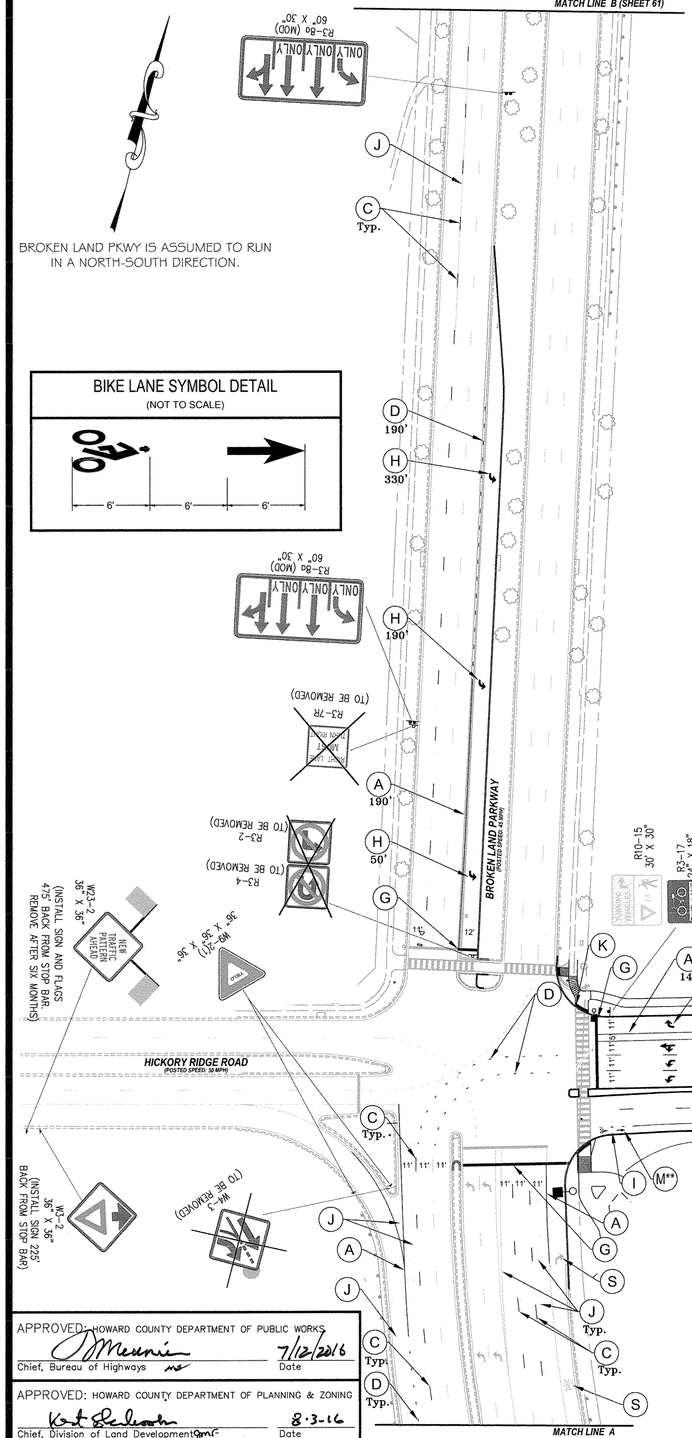
SIGNING NOTES

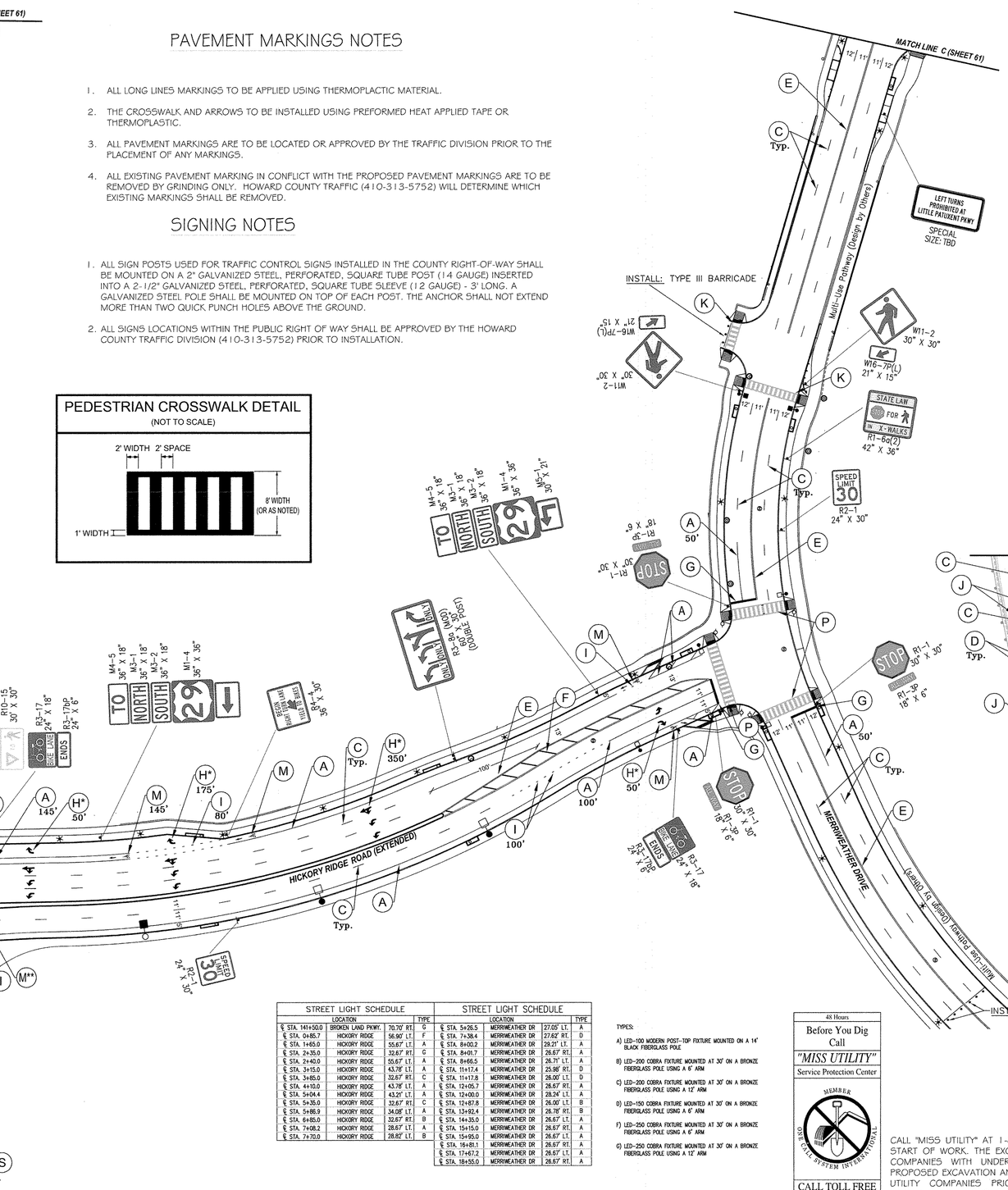
1. ALL SIGN POSTS USED FOR TRAFFIC CONTROL SIGNS INSTALLED IN THE COUNTY RIGHT-OF-WAY SHALL BE MOUNTED ON A 2" GALVANIZED STEEL, PERFORATED, SQUARE TUBE POST (14 GAUGE) INSERTED INTO A 2-1/2" GALVANIZED STEEL, PERFORATED, SQUARE TUBE SLEEVE (12 GAUGE) - 3' LONG. A GALVANIZED STEEL POLE SHALL BE MOUNTED ON TOP OF EACH POST. THE ANCHOR SHALL NOT EXTEND MORE THAN TWO QUICK PUNCH HOLES ABOVE THE GROUND.
2. ALL SIGNS LOCATIONS WITHIN THE PUBLIC RIGHT OF WAY SHALL BE APPROVED BY THE HOWARD COUNTY TRAFFIC DIVISION (410-313-5752) PRIOR TO INSTALLATION.

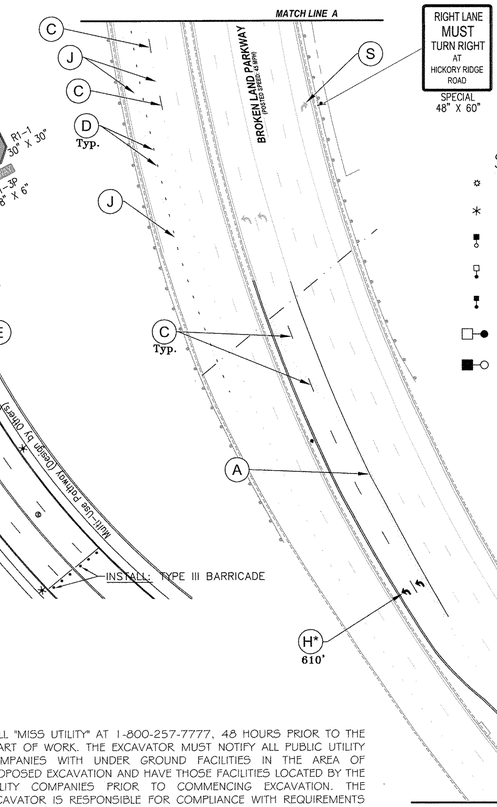
BROKEN LAND PKWY IS ASSUMED TO RUN IN A NORTH-SOUTH DIRECTION.

BIKE LANE SYMBOL DETAIL
(NOT TO SCALE)

PEDESTRIAN CROSSWALK DETAIL
(NOT TO SCALE)







PAVEMENT MARKING INSTALLATION NOTES

- (A) INSTALL 5" WHITE PAVEMENT MARKING.
- (B) INSTALL 5" YELLOW PAVEMENT MARKING.
- (C) INSTALL 5" WHITE PAVEMENT MARKING. (10' SKIP, 30' SPACING).
- (D) INSTALL 5" WHITE PAVEMENT MARKING. (3' SKIP, 9' SPACING)
- (E) INSTALL 5" DOUBLE YELLOW PAVEMENT MARKING. (CENTERLINE)
- (F) INSTALL 12" YELLOW PAVEMENT MARKING (45°, 20' SPACING).
- (G) INSTALL 24" WHITE PAVEMENT MARKING. (STOP BAR)
- (H) INSTALL WHITE PAVEMENT LEGEND AS SHOWN.
- (I) INSTALL 5" WHITE PAVEMENT MARKING. (2' SKIP, 6' SPACING)
- (J) ERADICATE EXISTING PAVEMENT MARKING AS SHOWN.
- (K) INSTALL PEDESTRIAN CROSSING PAVEMENT MARKING PER CROSSWALK DETAIL AS SHOWN.
- (M) INSTALL BIKE LANE SYMBOL AS SHOWN.
- (N) INSTALL 12' WIDE PEDESTRIAN CROSSING PAVEMENT MARKING PER CROSSWALK DETAIL AS SHOWN.
- (P) INSTALL 10' WIDE PEDESTRIAN CROSSING PAVEMENT MARKING PER CROSSWALK DETAIL AS SHOWN.
- (R) INSTALL 12" YELLOW PAVEMENT MARKING (45°, 10' SPACING).
- (S) REPAINT EXISTING PAVEMENT MARKING LEGEND.

* ALL ARROWS
** INSTALL AT BEGINING OF BIKE LANE

STREETLIGHT LEGEND

- EXISTING STREET LIGHT
- LED-100 MODERN POST-TOP FIXTURE MOUNTED ON A 14' BLACK FIBERGLASS POLE
- LED-250 COBRA FIXTURE MOUNTED AT 30' ON A BRONZE FIBERGLASS POLE USING A 6' ARM
- LED-200 COBRA FIXTURE MOUNTED AT 30' ON A BRONZE FIBERGLASS POLE USING A 6' ARM
- LED-150 COBRA FIXTURE MOUNTED AT 30' ON A BRONZE FIBERGLASS POLE USING A 6' ARM
- LED-200 COBRA FIXTURE MOUNTED AT 30' ON A BRONZE FIBERGLASS POLE USING A 12' ARM
- LED-250 COBRA FIXTURE MOUNTED AT 30' ON A BRONZE FIBERGLASS POLE USING A 12' ARM

STREET LIGHT SCHEDULE			
LOCATION			TYPE
℄ STA. 141+50.0	BROKEN LAND PKWY.	70.70' RT.	G
℄ STA. 0+85.7	HICKORY RIDGE	56.90' LT.	F
℄ STA. 1+65.0	HICKORY RIDGE	55.67' LT.	A
℄ STA. 2+35.0	HICKORY RIDGE	32.67' RT.	G
℄ STA. 2+40.0	HICKORY RIDGE	55.67' LT.	A
℄ STA. 3+15.0	HICKORY RIDGE	43.78' LT.	A
℄ STA. 3+85.0	HICKORY RIDGE	32.67' RT.	C
℄ STA. 4+10.0	HICKORY RIDGE	43.78' LT.	A
℄ STA. 5+04.4	HICKORY RIDGE	43.20' LT.	A
℄ STA. 5+35.0	HICKORY RIDGE	32.67' RT.	C
℄ STA. 5+86.9	HICKORY RIDGE	34.08' LT.	A
℄ STA. 6+85.0	HICKORY RIDGE	32.67' RT.	B
℄ STA. 7+08.2	HICKORY RIDGE	28.67' LT.	A
℄ STA. 7+70.0	HICKORY RIDGE	28.82' LT.	B

STREET LIGHT SCHEDULE			
LOCATION			TYPE
℄ STA. 5+26.5	MERRIWEATHER DR	27.05' LT.	A
℄ STA. 7+38.4	MERRIWEATHER DR	27.62' RT.	D
℄ STA. 8+00.2	MERRIWEATHER DR	29.21' LT.	A
℄ STA. 8+01.7	MERRIWEATHER DR	26.67' RT.	A
℄ STA. 8+66.5	MERRIWEATHER DR	26.71' LT.	A
℄ STA. 11+17.4	MERRIWEATHER DR	25.98' RT.	D
℄ STA. 11+17.8	MERRIWEATHER DR	26.00' LT.	D
℄ STA. 12+05.7	MERRIWEATHER DR	26.67' RT.	A
℄ STA. 12+00.0	MERRIWEATHER DR	28.24' LT.	A
℄ STA. 12+87.8	MERRIWEATHER DR	26.00' LT.	B
℄ STA. 13+92.4	MERRIWEATHER DR	26.78' RT.	B
℄ STA. 14+35.0	MERRIWEATHER DR	26.67' LT.	A
℄ STA. 15+15.0	MERRIWEATHER DR	26.67' RT.	A
℄ STA. 15+95.0	MERRIWEATHER DR	26.67' LT.	A
℄ STA. 16+81.1	MERRIWEATHER DR	26.67' RT.	A
℄ STA. 17+67.2	MERRIWEATHER DR	26.67' LT.	A
℄ STA. 18+55.0	MERRIWEATHER DR	26.67' RT.	A

TYPES:

A) LED-100 MODERN POST-TOP FIXTURE MOUNTED ON A 14' BLACK FIBERGLASS POLE

B) LED-200 COBRA FIXTURE MOUNTED AT 30' ON A BRONZE FIBERGLASS POLE USING A 6' ARM

C) LED-200 COBRA FIXTURE MOUNTED AT 30' ON A BRONZE FIBERGLASS POLE USING A 12' ARM

D) LED-150 COBRA FIXTURE MOUNTED AT 30' ON A BRONZE FIBERGLASS POLE USING A 6' ARM

F) LED-250 COBRA FIXTURE MOUNTED AT 30' ON A BRONZE FIBERGLASS POLE USING A 6' ARM

G) LED-250 COBRA FIXTURE MOUNTED AT 30' ON A BRONZE FIBERGLASS POLE USING A 12' ARM

48 Hours
Before You Dig Call
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APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
Chief, Bureau of Highways — Date 7/12/2016

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
Chief, Division of Land Development — Date 8.3.16
Chief, Development Engineering Division — Date 7.26.16

WELLS + ASSOCIATES, INC
1420 Spring Hill Road, Suite 610, Tysons, Virginia 22102
Phone: 703/917-6620 Facsimile: 703/917-0739

DES.	DRN.	CHK.

DATE	REVISION	BY	APP'R.

PREPARED FOR:
THE HOWARD HUGHES CORPORATION
10480 LITTLE PATUXENT PARKWAY
SUITE 400
COLUMBIA, MD 21044
ATTN: BOB JENKINS
410-964-5443

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 37882 EXPIRATION DATE: 10/16/2017

STATE OF MARYLAND — CHRISTOPHER LAMOTTE CARLSON — No. 37882 — PROFESSIONAL ENGINEER

SIGNING AND STRIPING PLAN 1 OF 2

DOWNTOWN COLUMBIA
CRESCENT NEIGHBORHOOD
PARCELS B THRU H, NON-BUILDABLE BULK PARCELS J THRU R, O.S. LOTS 1 THRU 8 AND MERRIWEATHER-SYMPHONY WOODS NEIGHBORHOOD O.S. LOT 1 AND NON-BUILDABLE BULK PARCEL A

ELECTION DISTRICT No. 5 — HOWARD COUNTY, MARYLAND

SCALE	ZONING	
1"=50'	NT	11071
DATE		SHEET
JUNE, 2016	36 - 01	60 OF 102

F 15-106

O:\PROJECTS\6001-6500\6489 HICKORY RIDGE RD SIGNAL MODIFICATION\DRAWINGS\DESIGN PLANS\#6489 - HICKORY RIDGE RD @ BROKEN LAND PKWY S+S JUNE 2016.DWG

BROKEN LAND PKWY IS ASSUMED TO RUN IN A NORTH-SOUTH DIRECTION.

PEDESTRIAN CROSSWALK DETAIL
(NOT TO SCALE)

PAVEMENT MARKING INSTALLATION NOTES

- (A) INSTALL 5" WHITE PAVEMENT MARKING.
- (B) INSTALL 5" YELLOW PAVEMENT MARKING.
- (C) INSTALL 5" WHITE PAVEMENT MARKING. (10' SKIP, 30' SPACING).
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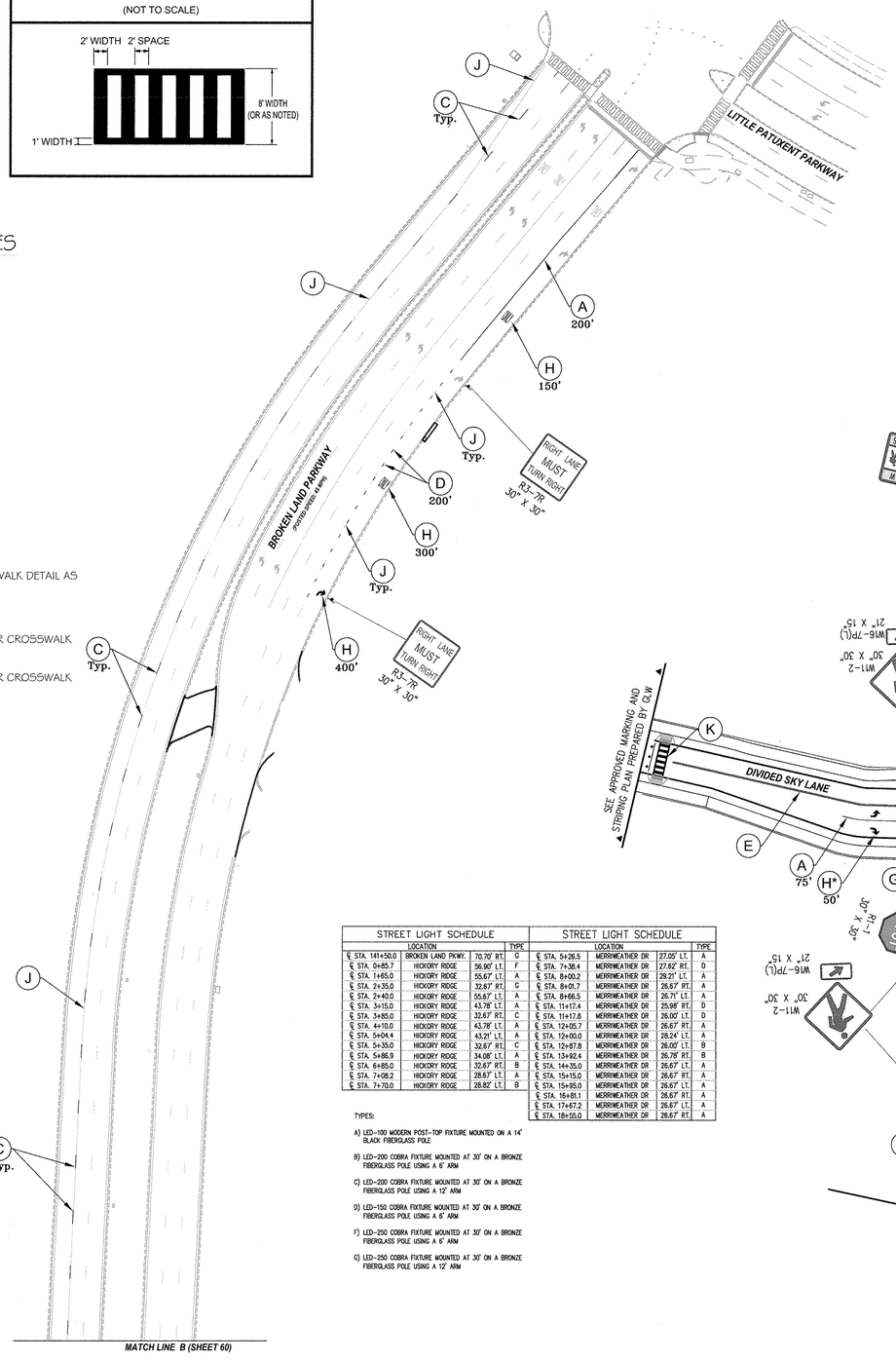
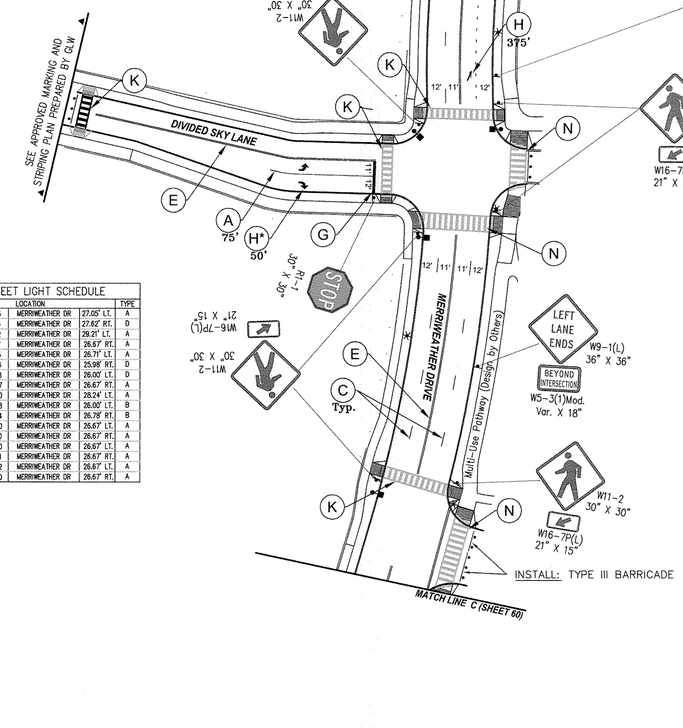
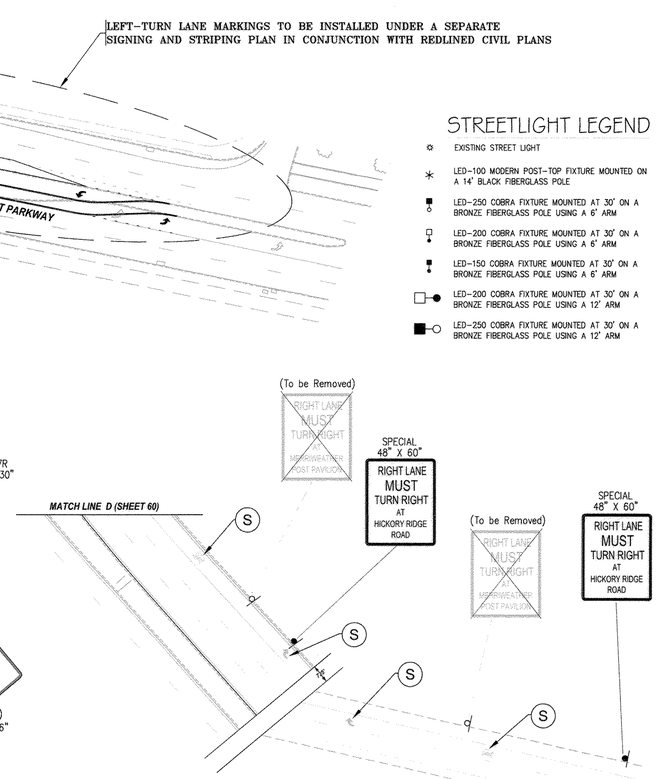
** INSTALL AT BEGINING OF BIKE LANE







STREETLIGHT LEGEND

- EXISTING STREET LIGHT
- LED-100 MODERN POST-TOP FIXTURE MOUNTED ON A 14' BLACK FIBERGLASS POLE
- LED-250 COBRA FIXTURE MOUNTED AT 30' ON A BRONZE FIBERGLASS POLE USING A 6' ARM
- LED-200 COBRA FIXTURE MOUNTED AT 30' ON A BRONZE FIBERGLASS POLE USING A 6' ARM
- LED-150 COBRA FIXTURE MOUNTED AT 30' ON A BRONZE FIBERGLASS POLE USING A 6' ARM
- LED-200 COBRA FIXTURE MOUNTED AT 30' ON A BRONZE FIBERGLASS POLE USING A 12' ARM
- LED-250 COBRA FIXTURE MOUNTED AT 30' ON A BRONZE FIBERGLASS POLE USING A 12' ARM

STREET LIGHT SCHEDULE				STREET LIGHT SCHEDULE			
	LOCATION		TYPE		LOCATION		TYPE
℄ STA. 141+50.0	BROKEN LAND PKWY.	70.70' RT.	G	℄ STA. 5+26.5	MERRIWEATHER DR	27.05' LT.	A
℄ STA. 0+85.7	HICKORY RIDGE	56.90' LT.	F	℄ STA. 7+38.4	MERRIWEATHER DR	27.62' RT.	D
℄ STA. 1+65.0	HICKORY RIDGE	55.67' LT.	A	℄ STA. 8+00.2	MERRIWEATHER DR	29.21' LT.	A
℄ STA. 2+35.0	HICKORY RIDGE	32.67' RT.	C	℄ STA. 8+01.7	MERRIWEATHER DR	26.67' RT.	A
℄ STA. 2+40.0	HICKORY RIDGE	55.67' LT.	A	℄ STA. 8+66.5	MERRIWEATHER DR	26.71' LT.	A
℄ STA. 3+15.0	HICKORY RIDGE	43.78' LT.	A	℄ STA. 11+17.4	MERRIWEATHER DR	25.98' RT.	D
℄ STA. 3+85.0	HICKORY RIDGE	32.67' RT.	C	℄ STA. 11+17.8	MERRIWEATHER DR	26.00' LT.	D
℄ STA. 4+10.0	HICKORY RIDGE	43.78' LT.	A	℄ STA. 12+05.7	MERRIWEATHER DR	26.67' RT.	A
℄ STA. 5+04.4	HICKORY RIDGE	43.21' LT.	A	℄ STA. 12+60.0	MERRIWEATHER DR	28.24' LT.	A
℄ STA. 5+35.0	HICKORY RIDGE	32.67' RT.	C	℄ STA. 12+87.8	MERRIWEATHER DR	26.00' LT.	B
℄ STA. 5+86.9	HICKORY RIDGE	34.08' LT.	A	℄ STA. 13+92.4	MERRIWEATHER DR	26.78' RT.	B
℄ STA. 6+85.0	HICKORY RIDGE	32.67' RT.	B	℄ STA. 14+35.0	MERRIWEATHER DR	26.67' LT.	A
℄ STA. 7+08.2	HICKORY RIDGE	28.67' LT.	A	℄ STA. 15+15.0	MERRIWEATHER DR	26.67' RT.	A
℄ STA. 7+70.0	HICKORY RIDGE	28.82' LT.	B	℄ STA. 15+95.0	MERRIWEATHER DR	26.67' LT.	A
				℄ STA. 16+81.1	MERRIWEATHER DR	26.67' RT.	A
				℄ STA. 17+67.2	MERRIWEATHER DR	26.67' LT.	A
				℄ STA. 18+55.0	MERRIWEATHER DR	26.67' RT.	A

TYPES:

A) LED-100 MODERN POST-TOP FIXTURE MOUNTED ON A 14' BLACK FIBERGLASS POLE

B) LED-200 COBRA FIXTURE MOUNTED AT 30' ON A BRONZE FIBERGLASS POLE USING A 6' ARM

C) LED-200 COBRA FIXTURE MOUNTED AT 30' ON A BRONZE FIBERGLASS POLE USING A 12' ARM

D) LED-150 COBRA FIXTURE MOUNTED AT 30' ON A BRONZE FIBERGLASS POLE USING A 6' ARM

F) LED-250 COBRA FIXTURE MOUNTED AT 30' ON A BRONZE FIBERGLASS POLE USING A 6' ARM

G) LED-250 COBRA FIXTURE MOUNTED AT 30' ON A BRONZE FIBERGLASS POLE USING A 12' ARM

PAVEMENT MARKINGS NOTES

1. ALL LONG LINES MARKINGS TO BE APPLIED USING THERMOPLACTIC MATERIAL.
2. THE CROSSWALK AND ARROWS TO BE INSTALLED USING PREFORMED HEAT APPLIED TAPE OR THERMOPLASTIC.
3. ALL PAVEMENT MARKINGS ARE TO BE LOCATED OR APPROVED BY THE TRAFFIC DIVISION PRIOR TO THE PLACEMENT OF ANY MARKINGS.
4. ALL EXISTING PAVEMENT MARKING IN CONFLICT WITH THE PROPOSED PAVEMENT MARKINGS ARE TO BE REMOVED BY GRINDING ONLY. HOWARD COUNTY TRAFFIC (410-313-5752) WILL DETERMINE WHICH EXISTING MARKINGS SHALL BE REMOVED.

SIGNING NOTES

1. ALL SIGN POSTS USED FOR TRAFFIC CONTROL SIGNS INSTALLED IN THE COUNTY RIGHT-OF-WAY SHALL BE MOUNTED ON A 2" GALVANIZED STEEL, PERFORATED, SQUARE TUBE POST (14 GAUGE) INSERTED INTO A 2-1/2" GALVANIZED STEEL, PERFORATED, SQUARE TUBE SLEEVE (12 GAUGE) - 3' LONG. A GALVANIZED STEEL POLE SHALL BE MOUNTED ON TOP OF EACH POST. THE ANCHOR SHALL NOT EXTEND MORE THAN TWO QUICK PUNCH HOLES ABOVE THE GROUND.
2. ALL SIGNS LOCATIONS WITHIN THE PUBLIC RIGHT OF WAY SHALL BE APPROVED BY THE HOWARD COUNTY TRAFFIC DIVISION (410-313-5752) PRIOR TO INSTALLATION.

48 Hours
Before You Dig Call
"MISS UTILITY"
Service Protection Center
MEMBER ONE CALL SYSTEM INTERNATIONAL
CALL TOLL FREE
1 - 800 - 257 - 7777

CALL "MISS UTILITY" AT 1-800-257-7777, 48 HOURS PRIOR TO THE START OF WORK. THE EXCAVATOR MUST NOTIFY ALL PUBLIC UTILITY COMPANIES WITH UNDER GROUND FACILITIES IN THE AREA OF PROPOSED EXCAVATION AND HAVE THOSE FACILITIES LOCATED BY THE UTILITY COMPANIES PRIOR TO COMMENCING EXCAVATION. THE EXCAVATOR IS RESPONSIBLE FOR COMPLIANCE WITH REQUIREMENTS OF THE HOWARD COUNTY CODE.

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
Chief, Bureau of Highways — Date 7/12/2016

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
Chief, Division of Land Development — Date 8.3.16
Chief, Development Engineering Division — Date 7.26.16

WELLS + ASSOCIATES, INC
1420 Spring Hill Road, Suite 610, Tysons, Virginia 22102
Phone: 703/917-6620 Facsimile: 703/917-0739

DES.	DRN.	CHK.

DATE	REVISION	BY	APP'R.

PREPARED FOR:
THE HOWARD HUGHES CORPORATION
10480 LITTLE PATUXENT PARKWAY
SUITE 400
COLUMBIA, MD 21044
ATTN: BOB JENKINS
410-964-5443

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 32882, EXPIRATION DATE: 10/16/2017.

STATE OF MARYLAND — CHRISTOPHER L. GLW — No. 32882 — PROFESSIONAL ENGINEER

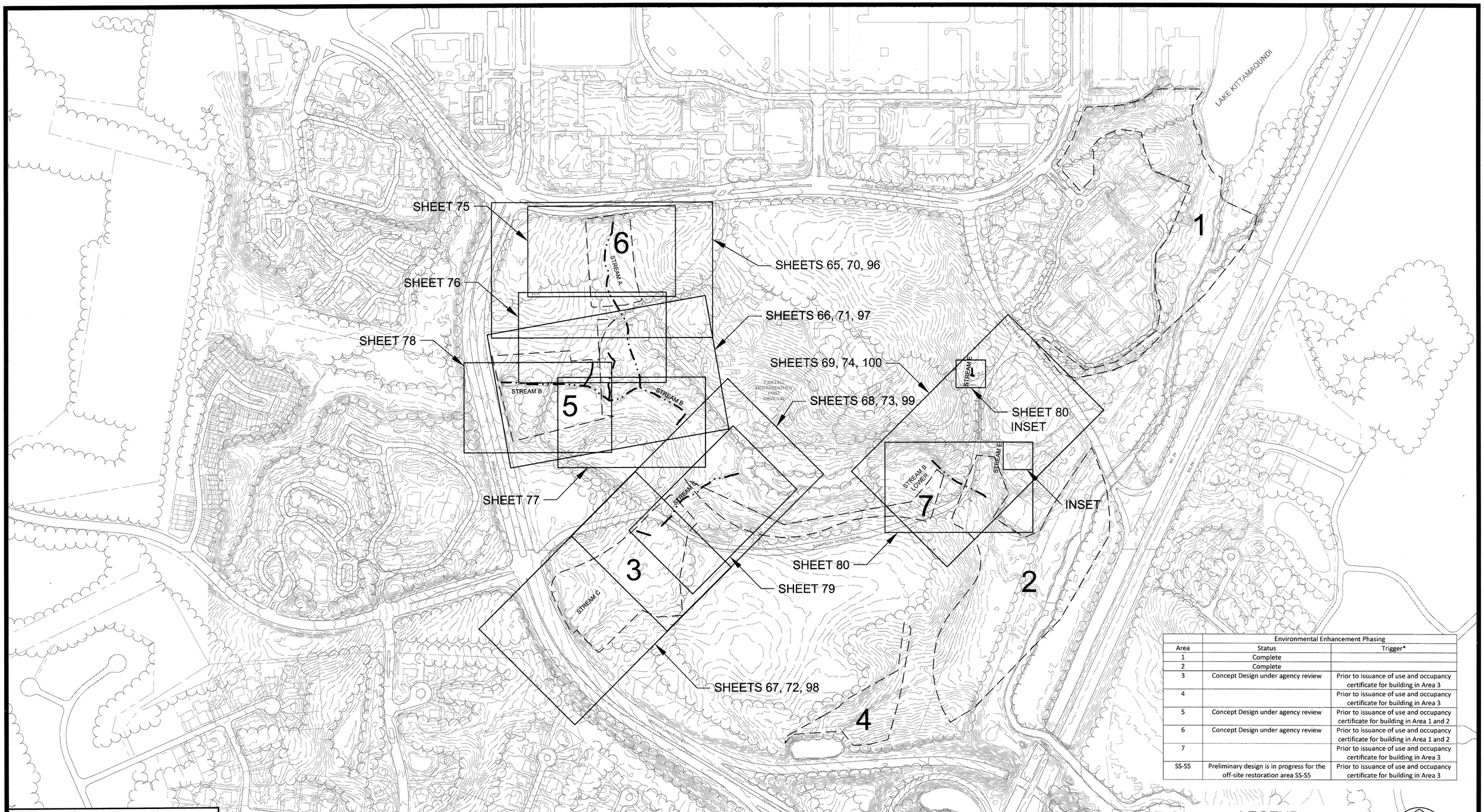
SIGNING AND STRIPING PLAN 2 OF 2

DOWNTOWN COLUMBIA
CRESCENT NEIGHBORHOOD
PARCELS B THRU H, NON-BUILDABLE BULK PARCELS J THRU R,
O.S. LOTS 1 THRU 8 AND
MERRIWEATHER-SYMPHONY WOODS NEIGHBORHOOD O.S. LOT 1
AND NON-BUILDABLE BULK PARCEL A
ELECTION DISTRICT No. 5 — HOWARD COUNTY, MARYLAND

SCALE	ZONING	
1"=50'	NT	11071
DATE		SHEET
JUNE, 2016	36 - 01	61 OF 102

C:\PROJECTS\6001-6500\6489 HICKORY RIDGE RD SIGNAL MODIFICATION\DRAWINGS\DESIGN PLANS\#6489 - HICKORY RIDGE RD @ BROKEN LAND PKWY S+S JUNE 2016.DWG

F 15-106



	Environmental Enhancement Phasing	
Area	Status	Trigger*
1	Complete	
2	Complete	
3	Concept Design under agency review	Prior to issuance of use and occupancy certificate for building in Area 3
4		Prior to issuance of use and occupancy certificate for building in Area 3
5	Concept Design under agency review	Prior to issuance of use and occupancy certificate for building in Area 1 and 2
6	Concept Design under agency review	Prior to issuance of use and occupancy certificate for building in Area 1 and 2
7		Prior to issuance of use and occupancy certificate for building in Area 3
SS-S5	Preliminary design is in progress for the off-site restoration area SS-S5	Prior to issuance of use and occupancy certificate for building in Area 3

LEGEND

STREAM CENTERLINE

1 PHASING AREA

HORIZONTAL SCALE

0 200 400

NOTE: PHASE 1 AND 2 SITE RESTORATIONS COMPLETED UNDER SDP-13-026

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

Chief, Bureau of Highways — Date

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

Chief, Division of Land Development — Date 8.3.16

Chief, Development Engineering Division — Date 7.26.16

Biohabitats

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

DES.	DRN.	CHK.

DATE	REVISION	BY	APP'R.

PREPARED FOR:

THE HOWARD HUGHES CORPORATION
10480 LITTLE PATUXENT PARKWAY
SUITE 400
COLUMBIA, MD 21044
ATTN: BOB JENKINS
410-964-5443

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE PLANS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 26980
EXPIRATION DATE: FEBRUARY 2018

CHRISTOPHER JAN STREB No. 26980 PROFESSIONAL ENGINEER

INDEX SHEET

DOWNTOWN COLUMBIA
CRESCENT NEIGHBORHOOD
PARCELS B THRU H, NON-BULDABLE BULK PARCELS J THRU R,
O.S. LOTS 1 THRU 8 AND
MERRIWEATHER-SYMPHONY WOODS NEIGHBORHOOD O.S. LOT 1
AND NON-BUILDABLE BULK PARCEL A

ELECTION DISTRICT No. 5 — HOWARD COUNTY, MARYLAND

SCALE	ZONING	
1" = 200'	NT	11071
DATE	TAXTITLE	SHEET
JUNE, 2016	36 - 01	63 OF 102

F 15-106

STREAM AND WETLAND RESTORATION AND MITIGATION

STREAM & WETLAND RESTORATION LEGEND

EXISTING		PROPOSED	
	MAJOR CONTOUR	425	MAJOR CONTOUR
	MINOR CONTOUR	424	MINOR CONTOUR
	STREAM CENTERLINE		THALWEG
100YR EX	100 - YEAR FLOODPLAIN	100YR	100 - YEAR FLOODPLAIN
	WETLAND	LOD	LIMIT OF DISTURBANCE
WB	WETLAND BUFFER	LVM	LIMIT OF VEGETATION MANAGEMENT
SB	STREAM BUFFER	SSF	SUPER SILT FENCE
SS	SANITARY SEWER	BOF	BLAZE ORANGE FENCE
SD	STORM DRAIN		ROAD
W	WATER SUPPLY		TRAIL
	TREELINE		COBBLE RIFFLE
	PROPERTY LINE		BOULDER RIFFLE
	TREE		BURIED SILL
	TRAVERSE POINT		STORMWATER SEEPAGE BERM
TFP	TRAFFIC POLE		LARGE WOODY DEBRIS
EJB	ELECTRIC JUNCTION BOX		STANDING SNAG
	STORMDRAIN MANHOLE		TREE REMOVAL
	GAS METER		STAGING AND STOCKPILING AREA
	GAS VALVE		MULCH ACCESS ROAD
	WATER METER		STABILIZED CONSTRUCTION ENTRANCE
	WATER VALVE		SANDBAGS
	FIRE HYDRANT		DIRTBAG OR OTHER APPROVED SEC DEVICE
	SEWER MANHOLE		DEWATERING DEVICE
	SEWER CLEAN OUT		PUMP AROUND PIPE
	TELCO MANHOLE		
TRP	TELCO RISER		
	SIGN		
	LIGHT POLE		
	UTILITY POLE		
	GUY WIRE		
	ELECTRIC MANHOLE		
T	TRANSFORMER		
	CONCRETE SIDEWALK		
	ASPHALT WALK/PATH		

NOTE: LEGEND APPLIES TO SHEETS 63 THROUGH 102

SPECIAL CONTRACTOR NOTES

1. 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.

2. PRIOR TO BEGINNING ANY CONSTRUCTION ACTIVITIES, PHOTOGRAPHS OF THE PROPOSED WORK AREA AND ACCESS SHALL BE TAKEN.

NOTES

1. THE PROPERTY IS ZONED NT PER THE OCTOBER 6, 2013 COMPREHENSIVE ZONING PLAN.
2. 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.
3. THERE ARE NO BURIAL GROUNDS OR CEMETERY SITES LOCATED ON THE PROJECT SITE.
4. 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.
5. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY CONTAINED HEREIN PLUS MSHA STANDARDS AND SPECIFICATIONS, IF APPLICABLE.
6. 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.
7. THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION WORK BEING DONE.
8. 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 30GA WERE USED FOR THIS SITE.
9. WATER IS PUBLIC.
10. SEWER IS PUBLIC.
11. STORMWATER MANAGEMENT IS NOT REQUIRED FOR STREAM AND WETLAND RESTORATION.
12. EXISTING UTILITIES ARE BASED ON FIELD SURVEYS AND AVAILABLE RECORD DRAWINGS.
13. THE TOPOGRAPHIC AERIAL SURVEY WAS PERFORMED ON MARCH 2007 BY MCKENZIE SNYDER AND TOPOGRAPHIC FIELD SURVEY IN AUGUST 2011 BY GUTSHICK, LITTLE AND WEBER.
14. NO TRAFFIC STUDY IS REQUIRED FOR THIS PROJECT.
15. 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.
16. 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.
17. SOILS DATA WAS ACQUIRED USING HOWARD COUNTY GIS.
18. THE TRIGGER FOR RESTORATION AREA 3 IS PRIOR TO ISSUANCE OF USE AND OCCUPANCY CERTIFICATE FOR BUILDING IN AREA 3. THE TRIGGER FOR RESTORATION AREA 5 IS PRIOR TO ISSUANCE OF USE AND OCCUPANCY CERTIFICATE FOR BUILDING IN AREA 1 AND 2. THE TRIGGER FOR RESTORATION AREA 6 IS PRIOR TO ISSUANCE OF USE AND OCCUPANCY CERTIFICATE FOR BUILDING IN AREA 1 AND 2. REFER TO F-16-107 FOR DETAILS ON RESTORATION AREA 7.

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66	EXISTING CONDITIONS & GEOMETRY
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68	EXISTING CONDITIONS & GEOMETRY
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APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

Chief, Bureau of Highways — Date

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

Chief, Division of Land Development — Date 8.3.16

Chief, Development Engineering Division — Date 7.26.16

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

Howard SCD — Date

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

DES. | DRN. | CHK.

DATE	REVISION	BY	APP'R.

PREPARED FOR:
THE HOWARD HUGHES CORPORATION
10480 LITTLE PATUXENT PARKWAY
SUITE 400
COLUMBIA, MD 21044
ATTN: BOB JENKINS
410-964-5443

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE PLANS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 26980, EXPIRATION DATE: FEBRUARY 2018.

STATE OF MARYLAND — CHRISTOPHER ALAN STRIEBY — No. 26980 — PROFESSIONAL ENGINEER

GENERAL NOTES

DOWNTOWN COLUMBIA
CRESCENT NEIGHBORHOOD
PARCELS B THRU H, NON-BUILDABLE BULK PARCELS J THRU R, O.S. LOTS 1 THRU 8 AND MERRIWEATHER-SYMPHONY WOODS NEIGHBORHOOD O.S. LOT 1 AND NON-BUILDABLE BULK PARCEL A

ELECTION DISTRICT No. 5 — HOWARD COUNTY, MARYLAND

SCALE	ZONING	
AS SHOWN	NT	11071
DATE	TAX TITLE	SHEET
JUNE, 2016	36 - 01	62 OF 102

F 15-106

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

Chief, Bureau of Highways — Date

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

Chief, Division of Land Development — Date 8-3-16

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DES.	DRN.	CHK.	DATE	REVISION	BY	APP'R.

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STATE OF MARYLAND — CHRISTOPHER LAN STREB — No. 26980 — PROFESSIONAL ENGINEER

DELINEATION PLAN

DOWNTOWN COLUMBIA
CRESCENT NEIGHBORHOOD
PARCELS B THRU H, NON-BULDABLE BULK PARCELS J THRU R,
O.S. LOTS 1 THRU 8 AND
MERRIWEATHER-SYMPHONY WOODS NEIGHBORHOOD O.S. LOT 1
AND NON-BUILDABLE BULK PARCEL A

ELECTION DISTRICT No. 5 — HOWARD COUNTY, MARYLAND

SCALE	ZONING	
1" = 100'	NT	11071
DATE	TAXTITLE	SHEET
JUNE, 2016	36 - 01	64 OF 102

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GEOMETRY TABLE		
LINE #	LENGTH	DIRECTION
L45	85.7	S31° 04' 22"E
L46	15.0	S29° 20' 09"E
L47	18.9	S39° 24' 30"E
L48	13.0	S12° 48' 03"E
L49	15.0	S27° 44' 14"E
L50	12.6	S30° 52' 14"E
L51	15.4	S12° 54' 14"E
L52	9.5	S07° 27' 15"W
L53	15.0	S07° 27' 06"W
L54	22.8	S16° 53' 29"W
L55	18.9	S01° 27' 34"W
L56	24.8	S29° 29' 54"E
L57	15.0	S16° 59' 14"E
L58	13.1	S11° 38' 02"E
L59	15.5	S02° 20' 17"W
L60	15.0	S04° 51' 26"W
L61	19.1	S04° 03' 37"W
L62	15.0	S10° 18' 50"W
L63	20.1	S17° 53' 34"W
L64	15.0	S19° 38' 37"W
L65	24.9	S24° 12' 47"W
L66	15.0	S32° 16' 21"W
L67	18.6	S02° 05' 47"W
L68	30.8	S08° 08' 33"W

LITTLE PATUXENT PARKWAY

BUILDING 'A'
FFE=358.00

PARKING STRUCTURE
FFE=358.00
LLE=346.00

BUILDING 'B'
FFE=357.00
LLE=344.00

DIVIDED SKY LANE

N 562537.9
E 1350518.1

PI: 100+30.8
PI: 100+49.4
PI: 100+64.4
PI: 100+89.3
PI: 101+04.3
PI: 101+24.4
PI: 101+39.4
PI: 101+58.5
PI: 101+73.5
PI: 101+89.0
PI: 102+02.1
PI: 102+17.4
PI: 102+41.9
PI: 102+60.8
PI: 102+83.7
PI: 102+98.7
PI: 103+08.1
PI: 103+23.5
PI: 103+36.2
PI: 103+51.2
PI: 103+64.2
PI: 103+83.1
PI: 103+98.1

100+00
101+00
102+00
103+00
104+00

STREAM A

MERRIWEATHER DRIVE

DIVIDED SKY LANE

E 1350750
N 562500

E 1350700
N 562250

E 1350650
N 562200

20' PUBLIC WATER & UTILITY EASEMENT

48" RCP

EX. 48" SD

EX. 15" SD

EX. 8" W

EX. 12" W

EX. 6" W

EX. 8" W (CONTR. #17-WAS)

EX. 8" W (CONTR. #17-WAS)

PAVED ROAD

MATCHLINE SEE SHEET 66

N 35°00'37" E 665.90'

S 30°00'37" W 20.04'

HORIZONTAL SCALE
0 30 60

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

Chief, Bureau of Highways — Date

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

Chief, Division of Land Development — Date 8.3.16

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Restore the Earth & Inspire Ecological Stewardship

DES. | DRN. | CHK.

DATE	REVISION	BY	APP'R.

PREPARED FOR:
THE HOWARD HUGHES CORPORATION
10480 LITTLE PATUXENT PARKWAY
SUITE 400
COLUMBIA, MD 21044
ATTN: BOB JENKINS
410-964-5443

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE PLANS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 26980 EXPIRATION DATE: FEBRUARY 2018

EXISTING CONDITIONS & GEOMETRY

DOWNTOWN COLUMBIA
CRESCENT NEIGHBORHOOD

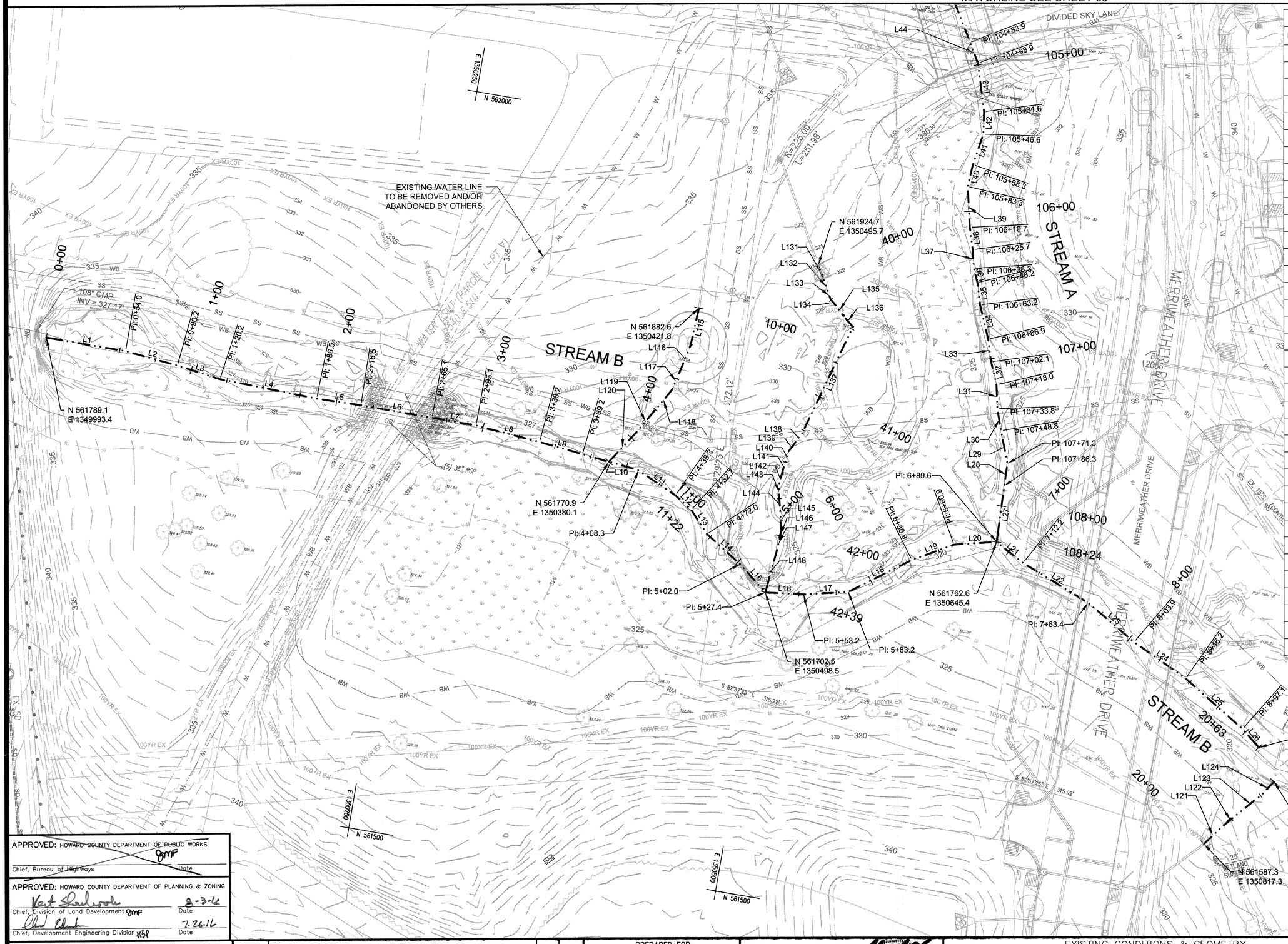
PARCELS B THRU H, NON-BUILDABLE BULK PARCELS J THRU R,
O.S. LOTS 1 THRU 8 AND
MERRIWEATHER-SYMPHONY WOODS NEIGHBORHOOD O.S. LOT 1
AND NON-BUILDABLE BULK PARCEL A

ELECTION DISTRICT No. 5 — HOWARD COUNTY, MARYLAND

SCALE	ZONING	
1" = 30'	NT	11071
DATE	TAX TITLE	SHEET
JUNE, 2016	36 - 01	65 OF 102

F 15-106

MATCHLINE SEE SHEET 65



GEOMETRY TABLE		
LINE #	LENGTH	DIRECTION
L1	54.0	N90° 00' 00"E
L2	36.2	S84° 14' 27"E
L3	30.0	S81° 50' 56"E
L4	66.4	S88° 29' 38"E
L5	30.0	N88° 47' 48"E
L6	48.5	S89° 49' 47"E
L7	30.0	S89° 38' 19"E
L8	44.1	S85° 09' 11"E
L9	30.0	S83° 56' 14"E
L10	39.1	S83° 49' 05"E
L11	30.0	S65° 32' 05"E
L12	14.4	S57° 32' 24"E
L13	19.3	S42° 53' 38"E
L14	30.0	S57° 42' 35"E
L15	25.5	S51° 36' 33"E
L16	25.7	N83° 11' 39"E
L17	30.0	N76° 47' 27"E
L18	47.7	N53° 23' 42"E
L19	30.0	N60° 09' 10"E
L20	28.7	N76° 25' 03"E
L21	22.6	S61° 21' 28"E
L22	51.2	S68° 27' 39"E
L23	40.5	S59° 30' 42"E
L24	42.3	S64° 46' 21"E
L25	51.0	S58° 28' 37"E
L26	16.5	S51° 15' 36"E
L27	37.9	S02° 11' 11"E
L28	15.0	S01° 43' 58"E
L29	22.5	S21° 02' 25"E
L30	15.0	S19° 13' 44"E
L31	15.8	S11° 57' 47"E
L32	15.9	S23° 02' 38"E
L33	15.2	S17° 27' 33"E
L34	23.7	S23° 05' 19"E
L35	15.0	S16° 45' 58"E
L36	9.9	S23° 50' 39"E

GEOMETRY TABLE		
LINE #	LENGTH	DIRECTION
L37	12.6	S13° 36' 24"E
L38	15.0	S17° 16' 28"E
L39	27.4	S12° 51' 21"E
L40	15.1	S03° 12' 03"W
L41	21.6	S08° 47' 50"W
L42	15.0	S08° 10' 55"E
L43	32.7	S17° 16' 44"E
L44	15.0	S30° 27' 23"E
L115	25.4	S02° 45' 54"W
L116	20.0	S12° 04' 59"W
L117	12.3	S13° 37' 27"W
L118	17.8	S30° 05' 53"W
L119	20.0	S30° 14' 52"W
L120	26.4	S33° 08' 50"W
L121	16.6	N36° 19' 58"E
L122	14.9	N40° 48' 23"E
L123	19.5	N41° 33' 10"E
L124	12.0	N33° 25' 54"E
L131	11.2	S29° 48' 47"E
L132	8.1	S29° 52' 03"E
L133	5.2	S28° 44' 11"E
L134	5.4	S51° 09' 28"E
L135	8.0	S45° 16' 03"E
L136	10.5	S50° 34' 00"E
L137	78.8	S15° 42' 06"W
L138	8.0	S26° 32' 20"W
L139	7.7	S26° 23' 57"W
L140	6.5	S06° 06' 35"W
L141	8.0	S06° 31' 58"W
L142	8.9	S05° 18' 59"W
L143	8.7	S12° 37' 53"E
L144	8.0	S14° 12' 08"E
L145	13.8	S13° 02' 12"E
L146	4.6	S01° 50' 00"W
L147	8.0	S03° 21' 29"W
L148	30.0	S05° 29' 14"W

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

Chief, Bureau of Highways — Date

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

Chief, Division of Land Development — Date 8-3-16

Chief, Development Engineering Division — Date 7.26.16

Biohabitats
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DES. | DRN. | CHK.

DATE	REVISION	BY	APP'R.

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EXISTING CONDITIONS & GEOMETRY

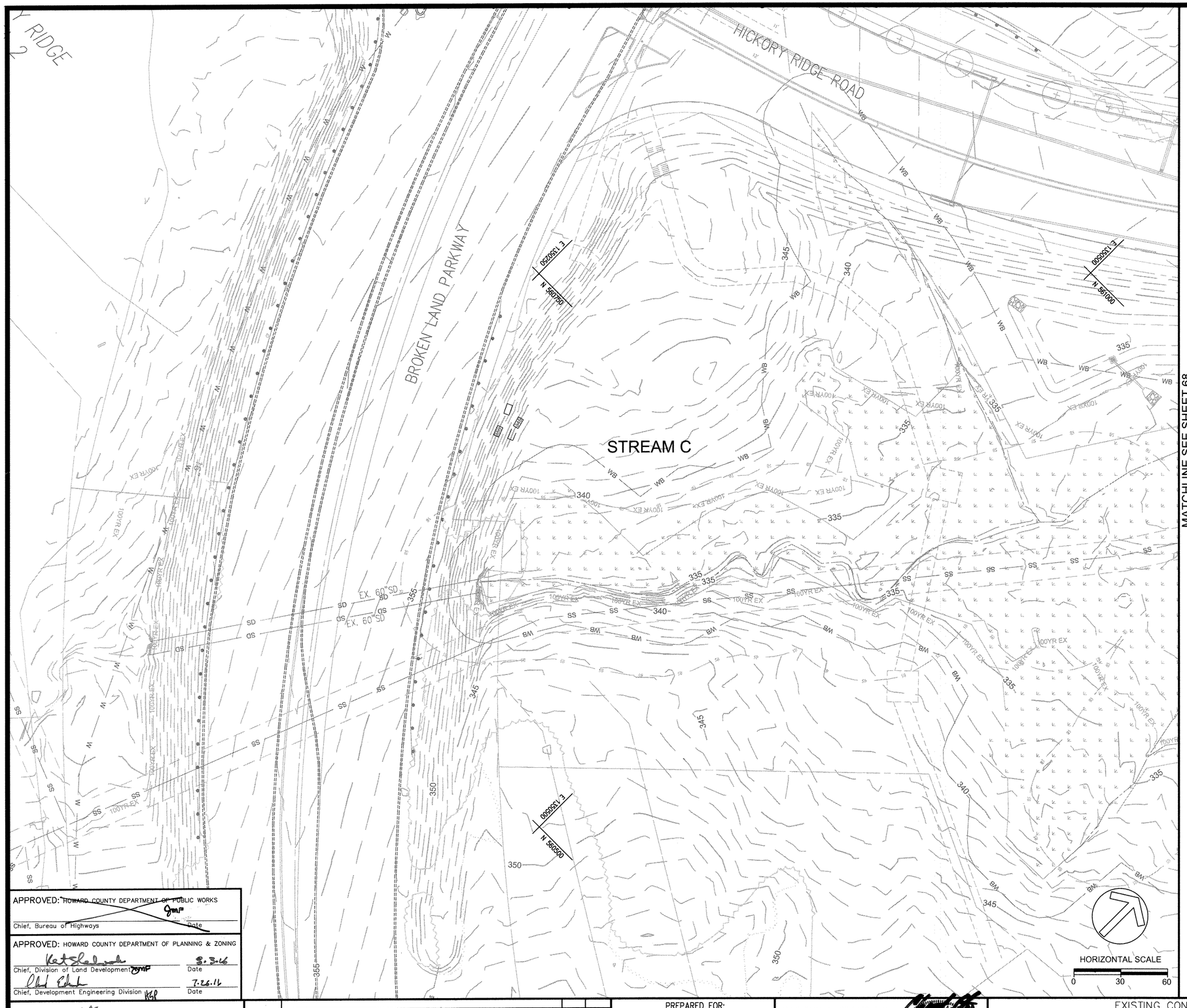
DOWNTOWN COLUMBIA

CRESCENT NEIGHBORHOOD
PARCELS B THRU H, NON-BUILDABLE BULK PARCELS J THRU R,
O.S. LOTS 1 THRU 8 AND
MERRIWEATHER-SYMPHONY WOODS NEIGHBORHOOD O.S. LOT 1
AND NON-BUILDABLE BULK PARCEL A

ELECTION DISTRICT No. 5 — HOWARD COUNTY, MARYLAND

SCALE	ZONING	11071
1" = 30'	NT	
DATE	TAX/TILE	SHEET
JUNE, 2016	36 - 01	66 OF 102

F 15-106



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Chief, Bureau of Highways — Date

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Chief, Division of Land Development — Date 8.3.16

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DES.	DRN.	CHK.

DATE	REVISION	BY	APP'R.

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EXPIRATION DATE: FEBRUARY 2018.

CHRISTOPHER LAN STREB No. 26980 PROFESSIONAL ENGINEER

EXISTING CONDITIONS & GEOMETRY

DOWNTOWN COLUMBIA
CRESCENT NEIGHBORHOOD
PARCELS B THRU H, NON-BUILDABLE BULK PARCELS J THRU R,
O.S. LOTS 1 THRU 8 AND
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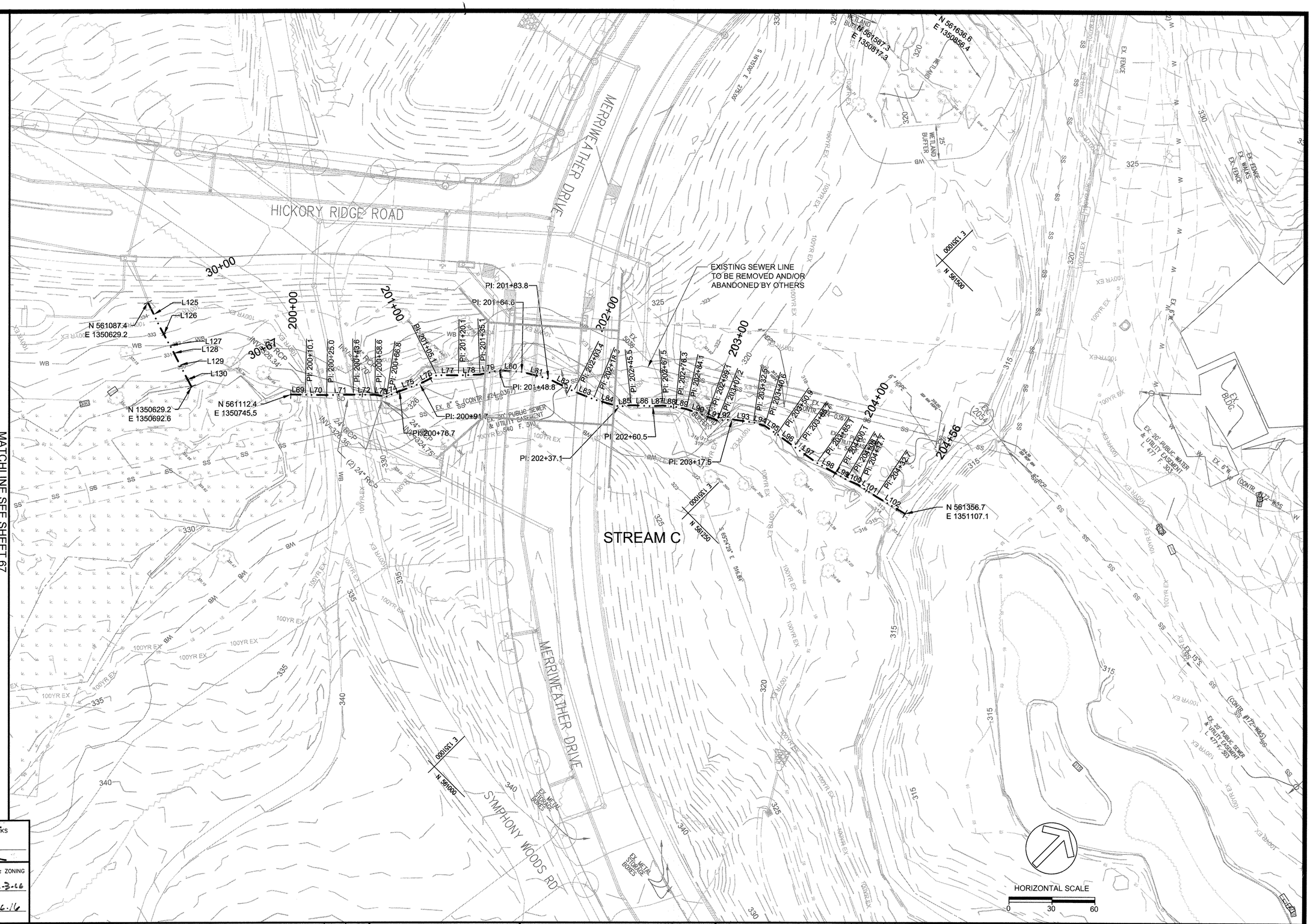
ELECTION DISTRICT No. 5 — HOWARD COUNTY, MARYLAND

SCALE	ZONING	
1" = 30'	NT	11071
DATE	TAXTITLE	SHEET
JUNE, 2016	36 - 01	67 OF 102

F 15-106

GEOMETRY TABLE		
LINE #	LENGTH	DIRECTION
L69	10.1	N46° 10' 51"E
L70	14.9	N45° 49' 01"E
L71	18.6	N44° 11' 29"E
L72	15.0	N45° 35' 05"E
L73	8.2	N53° 38' 24"E
L74	9.9	N22° 40' 34"E
L75	15.0	N24° 59' 07"E
L76	13.4	N18° 11' 12"E
L77	15.0	N45° 29' 00"E
L78	15.0	N42° 47' 39"E
L79	13.7	N32° 38' 37"E
L80	15.8	N48° 49' 12"E
L81	19.2	N59° 06' 32"E
L82	19.5	N71° 33' 08"E
L83	14.9	N66° 56' 21"E
L84	18.8	N60° 39' 29"E
L85	8.5	N38° 33' 27"E
L86	15.0	N47° 23' 17"E
L87	7.0	N41° 29' 27"E
L88	8.8	N50° 33' 40"E
L89	7.8	N56° 46' 00"E
L90	15.0	N64° 35' 31"E
L91	8.0	N66° 12' 58"E
L92	10.3	N40° 51' 30"E
L93	15.0	N53° 03' 00"E
L94	8.1	N61° 24' 10"E
L95	10.3	N79° 25' 39"E
L96	14.8	N80° 59' 31"E
L97	19.5	N80° 29' 00"E
L98	15.0	N74° 06' 14"E
L99	8.6	N75° 35' 28"E
L100	9.0	N68° 15' 09"E
L101	15.0	N78° 14' 22"E
L102	23.7	N75° 42' 28"E
L125	19.1	S71° 03' 28"E
L126	12.0	S73° 18' 12"E
L127	5.6	S74° 28' 44"E
L128	6.6	S71° 31' 27"E
L129	12.0	S72° 21' 34"E
L130	11.4	S73° 03' 36"E



APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

Chief, Bureau of Highways — Date

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

Chief, Division of Land Development — Date 8-3-16

Chief, Development Engineering Division — Date 7-26-16

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DES.	DRN.	CHK.

DATE	REVISION	BY	APP'R.

PREPARED FOR:

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SUITE 400
COLUMBIA, MD 21044
ATTN: BOB JENKINS
410-964-5443

PROFESSIONAL CERTIFICATION

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EXPIRATION DATE: FEBRUARY 2018

STATE OF MARYLAND — CHRISTOPHER WYNN STREET — No. 26980 — PROFESSIONAL ENGINEER

EXISTING CONDITIONS & GEOMETRY

DOWNTOWN COLUMBIA
CRESCENT NEIGHBORHOOD
PARCELS B THRU H, NON-BULDABLE BULK PARCELS J THRU R,
O.S. LOTS 1 THRU 8 AND
MERRIWEATHER-SYMPHONY WOODS NEIGHBORHOOD O.S. LOT 1
AND NON-BUILDABLE BULK PARCEL A

ELECTION DISTRICT No. 5 — HOWARD COUNTY, MARYLAND

SCALE	ZONING	
1" = 30'	NT	11071
DATE	TAXTITLE	SHEET
JUNE, 2016	36 - 01	68 OF 102

F 15-106

GEOMETRY TABLE		
LINE #	LENGTH	DIRECTION
L103	5.6	S55° 45' 31"E
L104	26.0	S45° 57' 17"E
L105	30.0	S43° 35' 06"E
L106	52.0	S49° 55' 50"E
L107	41.2	S54° 30' 47"E
L108	37.4	S65° 05' 56"E
L109	30.0	S62° 47' 46"E
L110	41.3	S63° 57' 24"E
L111	30.0	S62° 47' 46"E
L112	13.1	S45° 27' 27"E
L113	33.7	S00° 30' 45"E
L114	6.8	S74° 19' 47"E

STREAM B LOWER

STREAM E

SYMPHONY WOODS ROAD

SOUTH ENTRANCE ROAD

ROAD A

N 561851.0
E 1352206.4

N 561815.4
E 1352213.3

N 561415.3
E 1352018.0

N 561244.5
E 1352269.0

300+00
301+00
302+00
303+00
303+07
400+00
400+41

PI: 300+05.6
PI: 300+31.6
PI: 300+61.6
PI: 301+13.6
PI: 301+54.8
PI: 301+92.2
PI: 302+22.2
PI: 302+63.4
PI: 302+93.4

R=760.00'
L=295.77

S 23°45'29" W 200.00'

LOT 11-C PB 30 PN 45

LOT 11-B PB 30 PN 45

LOT 11-A PB 30 PN 45

LOT 1 PB 15 PN 48

PARCEL A PN 66

EX. BUILDING

WETLAND BUFFER

EX. PERPETUAL DRAINAGE EASMT. PB. 30 P. 45

EX. 20' WATER EASEMENT PB. 21 P.54

EX. 25' WATER EASEMENT PB. 21 P.54

24" CMP INV = 311.07

24" CMP INV = 307.66

48" RCP INV = 303.16'

48" RCP INV = 302.45'

54" CMP INV = 299.49

54" CMP INV = 299.23

72" CMP INV = 298.14

72" WATER

18" RCP

INGRESS/EGRESS EASEMENT L. 968 F. 722

EASEMENT PARCEL D L. 968 F. 722

EX. V.P.

HORIZONTAL SCALE
0 30 60

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

Chief, Bureau of Highways — Date

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

Chief, Division of Land Development — Date 8-3-16

Chief, Development Engineering Division — Date 7.26.16

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CHRISTOPHER M. STREETS — No. 26980 — PROFESSIONAL ENGINEER — STATE OF MARYLAND

EXISTING CONDITIONS & GEOMETRY

DOWNTOWN COLUMBIA
CRESCENT NEIGHBORHOOD

PARCELS B THRU H, NON-BUILDABLE BULK PARCELS J THRU R,
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ELECTION DISTRICT No. 5 — HOWARD COUNTY, MARYLAND

SCALE	ZONING	
1" = 30'	NT	11071
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JUNE, 2016	36 - 01	69 OF 102

F 15-106

Wetand Mitigation Areas		
Site	Type	Area (SF)
A-1	PFO	820
A-2	PFO	243
A-3	PFO	49
A-4	PFO	658
A-5	PFO	518

WETLAND MITIGATION LEGEND

- PFO WETLAND CREATION
- PFO WETLAND ENHANCEMENT
- PEM WETLAND CREATION
- CULVERT REMOVAL & RESTORATION
- PFO WETLAND CREATION WITH STORMWATER AUGMENTATION
- STORMWATER AUGMENTATION
- ADDITIONAL PFO WETLAND CREATION
- ADDITIONAL PEM WETLAND CREATION
- EXISTING WETLAND
- STREAM CROSS SECTION
- GROUNDWATER WELL
- FLOW LOGGER

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"

Jennifer Zielinski Missett — 6/17/16

SIGNATURE OF ENGINEER (PRINTNAME BELOW SIGNATURE) — DATE

Jennifer Zielinski Missett, PE

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"

6.17.16

SIGNATURE OF DEVELOPER (PRINTNAME BELOW SIGNATURE) — DATE

WILLIAM T. ROWE

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

Howard SCD — DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

Chief, Bureau of Highways — Date

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

Chief, Division of Land Development — Date 8.3.16

Chief, Development Engineering Division — Date 7.26.16

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DES.	DRN.	CHK.	DATE	REVISION	BY	APP'R.

PREPARED FOR:

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STATE OF MARYLAND — PROFESSIONAL ENGINEER — No. 26980

WETLAND MITIGATION PLAN

DOWNTOWN COLUMBIA

CRESCENT NEIGHBORHOOD
PARCELS B THRU H, NON-BULDABLE BULK PARCELS J THRU R,
O.S. LOTS 1 THRU 8 AND
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ELECTION DISTRICT No. 5 — HOWARD COUNTY, MARYLAND

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DATE	TAXTITLE	SHEET
JUNE, 2016	36 - 01	70 OF 102

F 15-106

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Jennifer Zielinski Massett — 6/17/16

SIGNATURE OF ENGINEER (PRINTNAME BELOW SIGNATURE) — DATE

Jennifer Zielinski Massett, PE

DEVELOPERS CERTIFICATE

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SIGNATURE OF DEVELOPER (PRINTNAME BELOW SIGNATURE) — DATE

William T. Rowe — 6.17.16

MATCHLINE SEE SHEET 70

Wetand Mitigation Areas		
Site	Type	Area (SF)
A-6	PFO	750
A-7	PFO	86
A-8	PFO	485
A-9	PEM	15
A-10	PFO	261
B-1A	PFO	9172
B-1B	PEM	11354
B-1C	PFO	11362
B-2	PFO	19307
B-3A	PFO	16089
B-4	PFO	1253
B-5	PFO	12671
B-6	PEM	224
B-7	PEM	211
B-8	PFO	133
B-9	PFO	342
B-10	PFO	181
B-11	PFO	369
WETLAND 3		28184

WETLAND MITIGATION LEGEND

- PFO WETLAND CREATION [1]
- PFO WETLAND ENHANCEMENT [1]
- PEM WETLAND CREATION
- CULVERT REMOVAL & RESTORATION
- PFO WETLAND CREATION
- ADDITIONAL PFO WETLAND CREATION [1]
- ADDITIONAL PEM WETLAND CREATION [2]
- EXISTING WETLAND
- STREAM CROSS SECTION
- GROUNDWATER WELL
- FLOW LOGGER

1. LABELS AND AREAS WERE BASED ON VEGETATION TYPE AND LOCATION ON STREAM BANK (I.E. RIGHT VS. LEFT BANK).
2. LABEL AND AREA BASED ON UTILITY EASEMENT REGARDLESS OF LOCATION ON THE STREAM BANK.

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

Chief, Bureau of Highways — Date

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

Chief, Division of Land Development — Date 8-3-16

Chief, Development Engineering Division — Date 7-26-16

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

Howard SCD — Date

HORIZONTAL SCALE 0 30 60

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STATE OF MARYLAND — JENNIFER ZIELINSKI MASSETT — No. 26980 — PROFESSIONAL ENGINEER

WETLAND MITIGATION PLAN

DOWNTOWN COLUMBIA

CRESCENT NEIGHBORHOOD

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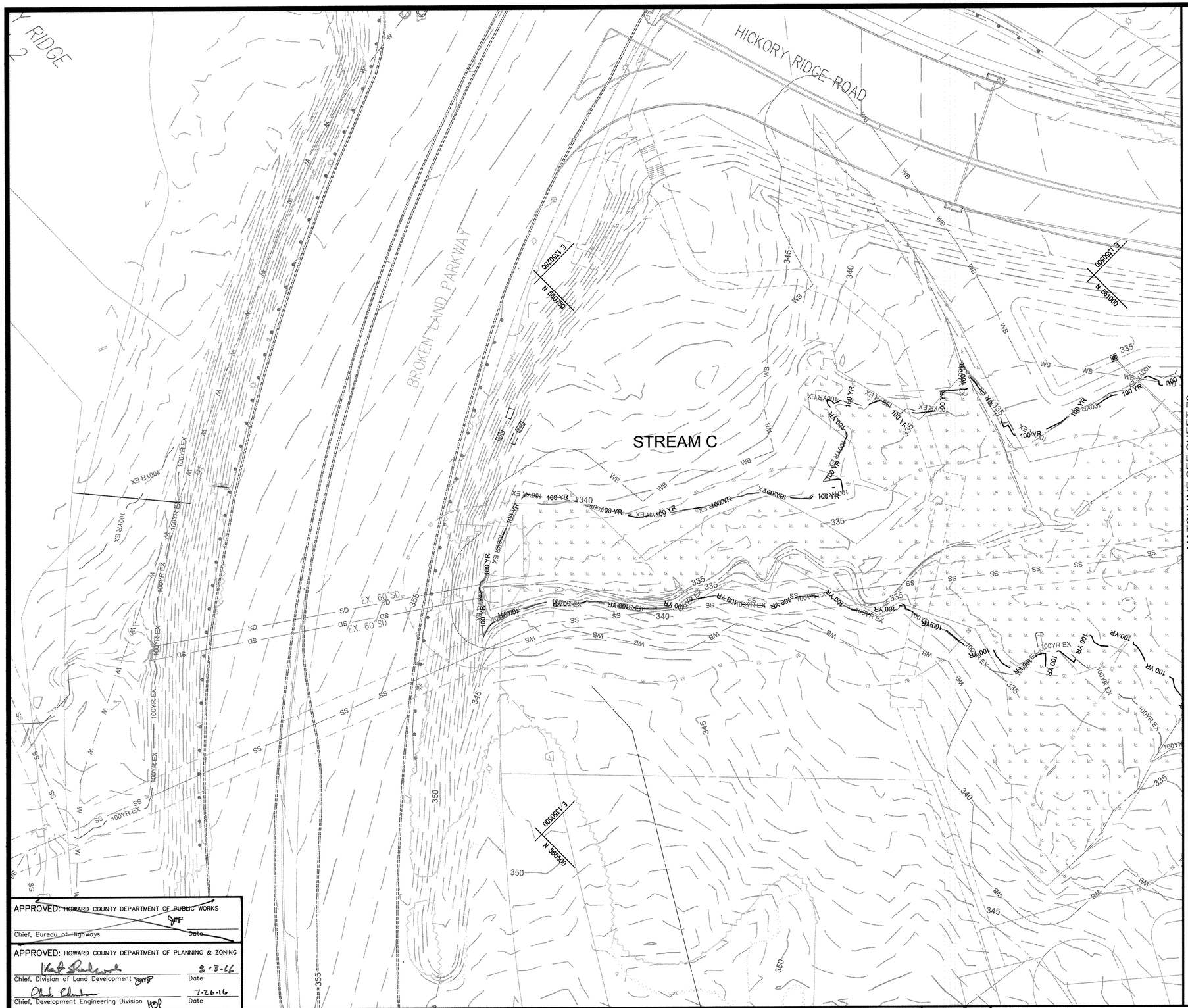

WETLAND MITIGATION LEGEND

- PFO WETLAND CREATION
- PFO WETLAND ENHANCEMENT
- PEM WETLAND CREATION
- CULVERT REMOVAL & RESTORATION
- PFO WETLAND CREATION WITH STORMWATER AUGMENTATION
- STORMWATER AUGMENTATION
- ADDITIONAL PFO WETLAND CREATION
- ADDITIONAL PEM WETLAND CREATION
- EXISTING WETLAND
- STREAM CROSS SECTION
- GROUNDWATER WELL
- FLOW LOGGER

HORIZONTAL SCALE
0 30 60

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

Howard SCD DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

Chief, Bureau of Highways Date

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

Chief, Division of Land Development Date 8.3.16

Chief, Development Engineering Division Date 7.26.16

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 6/17/16

Jennifer Zielinski Missett, PE

DEVELOPERS CERTIFICATE

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SIGNATURE OF DEVELOPER (PRINTNAME BELOW SIGNATURE) DATE 6.17.16

WILLIAM T. ROWE

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Baltimore, MD 21211 / ph: 410 554 0156
fx: 410.554.0168 / www.bio-habitats.com
Restore the Earth & Inspire Ecological Stewardship

DES. DRN. CHK.

DATE	REVISION	BY	APP'R.

PREPARED FOR:
THE HOWARD HUGHES CORPORATION
10480 LITTLE PATUXENT PARKWAY
SUITE 400
COLUMBIA, MD 21044
ATTN: BOB JENKINS
410-964-5443

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE PLANS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 26980, EXPIRATION DATE: FEBRUARY 2018

MARYLAND REGISTERED PROFESSIONAL ENGINEER NO. 26980

WETLAND MITIGATION PLAN

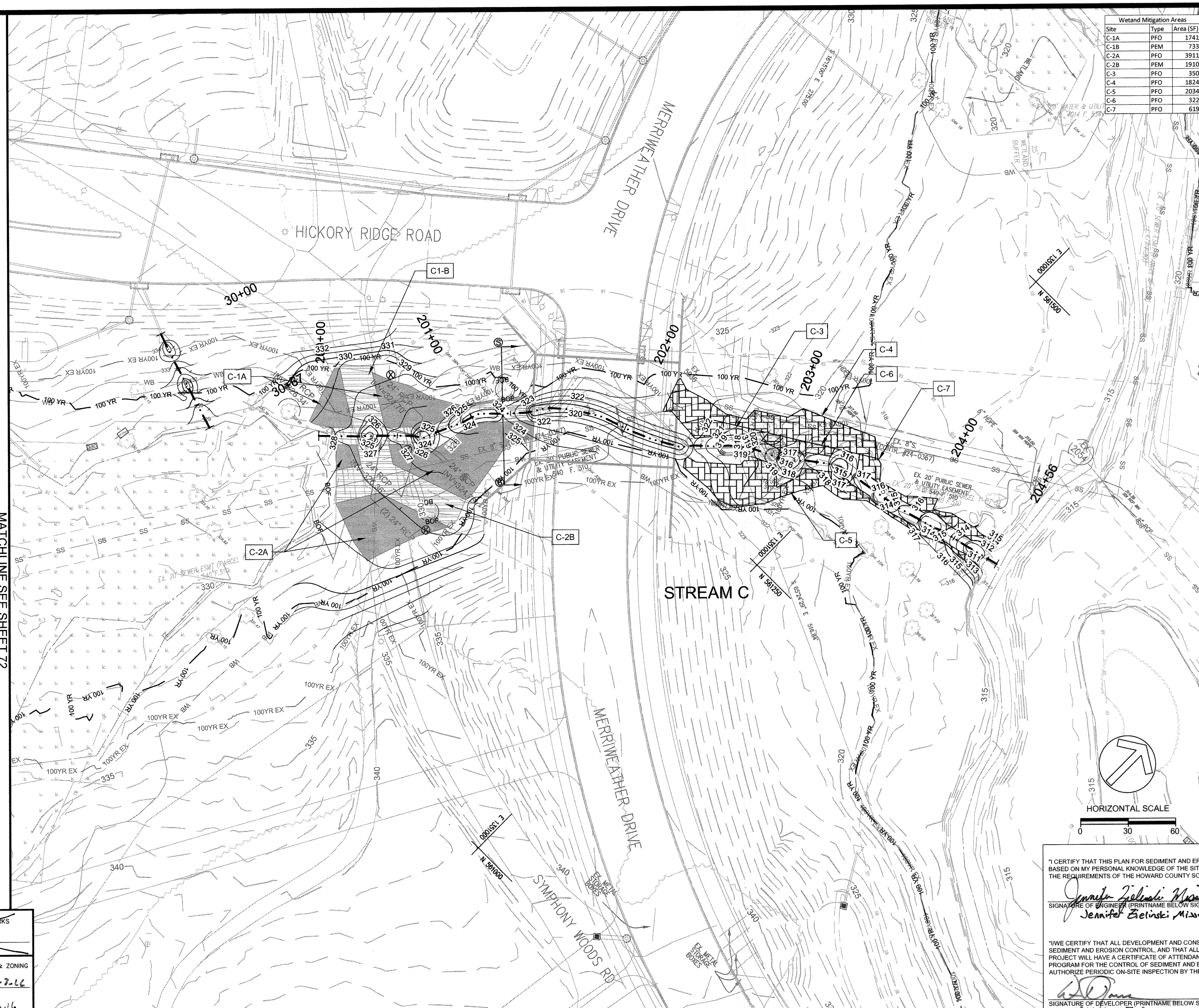
DOWNTOWN COLUMBIA

CRESCENT NEIGHBORHOOD
PARCELS B THRU H, NON-BUILDABLE BULK PARCELS J THRU R,
O.S. LOTS 1 THRU 8 AND
MERRIWEATHER-SYMPHONY WOODS NEIGHBORHOOD O.S. LOT 1
AND NON-BUILDABLE BULK PARCEL A

ELECTION DISTRICT No. 5 HOWARD COUNTY, MARYLAND

SCALE	ZONING	
1" = 30'	NT	11071
DATE	TAX/TITLE	SHEET
JUNE, 2016	36 - 01	72 OF 102

F 15-106



MATCHLINE SEE SHEET 72

Wetand Mitigation Areas		
Site	Type	Area (SF)
C-1A	PFO	1741
C-1B	PEM	733
C-2A	PFO	3911
C-2B	PEM	1910
C-3	PFO	350
C-4	PFO	1824
C-5	PFO	2034
C-6	PFO	322
C-7	PFO	619

WETLAND MITIGATION LEGEND

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Howard SCD

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Jennifer Zielinski Missett — 6/17/16
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6-17-16
SIGNATURE OF DEVELOPER (PRINTNAME BELOW SIGNATURE) DATE
William T. Rowe

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
JMF
Chief, Bureau of Highways — Date

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
Chief, Division of Land Development JMF — Date 8-3-16
Chief, Development Engineering Division HJP — Date 7-26-16

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DES.	DRN.	CHK.	DATE	REVISION	BY	APP'R.

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STATE OF MARYLAND — CHRISTOPHER ALAN STREB — No. 26980 — PROFESSIONAL ENGINEER

WETLAND MITIGATION PLAN
DOWNTOWN COLUMBIA
CRESCENT NEIGHBORHOOD
PARCELS B THRU H, NON-BULDABLE BULK PARCELS J THRU R,
O.S. LOTS 1 THRU 8 AND
MERRIWEATHER-SYMPHONY WOODS NEIGHBORHOOD O.S. LOT 1
AND NON-BUILDABLE BULK PARCEL A
ELECTION DISTRICT No. 5 — HOWARD COUNTY, MARYLAND

SCALE	ZONING	
1" = 30'	NT	11071
DATE	TAXTITLE	SHEET
JUNE, 2016	36 - 01	73 OF 102

F 15-106

WETLAND MITIGATION LEGEND

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- PFO WETLAND ENHANCEMENT
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- EXISTING WETLAND
- STREAM CROSS SECTION
- GROUNDWATER WELL
- FLOW LOGGER

STREAM B LOWER

STREAM E

STREAM E INLET CONTROL

SYMPHONY WOODS ROAD

SYMPHONY WOODS RD

LOT 11-C

LOT 11-A

LOT 11-B

LOT 11

PB 30 PN 45

PB 315 PN 45

PB 15 PN 48

PARCEL A

EASEMENT PARCEL D

EASEMENT PARCEL B

EX. BUILDING

SOUTH ENTRANCE ROAD

HORIZONTAL SCALE

0 30 60

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Howard SCD DATE

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Jennifer Zielinski Missett — 6/17/16

SIGNATURE OF ENGINEER (PRINTNAME BELOW SIGNATURE) DATE

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WILLIAM T. ROWE

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

Chief, Bureau of Highways — Date

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

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Chief, Development Engineering Division — 7.26.16 Date

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WETLAND MITIGATION PLAN

DOWNTOWN COLUMBIA

CRESCENT NEIGHBORHOOD

PARCELS B THRU H, NON-BULDABLE BULK PARCELS J THRU R, O.S. LOTS 1 THRU 8 AND MERRIWEATHER-SYMPHONY WOODS NEIGHBORHOOD O.S. LOT 1 AND NON-BUILDABLE BULK PARCEL A

ELECTION DISTRICT No. 5 HOWARD COUNTY, MARYLAND

SCALE	ZONING	
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JUNE, 2016	36 - 01	74 OF 102

F 15-106

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

Howard SCD — Date 6/29/16

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

Chief, Bureau of Highways — Date

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

Chief, Division of Land Development — Date 8-3-16

Chief, Development Engineering Division — Date 7-26-16

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EXPIRATION DATE: FEBRUARY 2018

STATE OF MARYLAND — CHRISTOPHER PAUL STREET — No. 26980 — PROFESSIONAL ENGINEER

GRADING & EROSION AND SEDIMENT CONTROL

DOWNTOWN COLUMBIA
CRESCENT NEIGHBORHOOD
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ELECTION DISTRICT No. 5 — HOWARD COUNTY, MARYLAND

SCALE	ZONING	
1" = 20'	NT	11071
DATE	TAXTITLE	SHEET
JUNE, 2016	36 - 01	75 OF 102

F 15-106

MATCHLINE SEE SHEET 75

DIVIDED SKY LANE

20' PUBLIC WATER & UTILITY EASEMENT

E 1350250

N 562000

MICROTOPOGRAPHY SHALL BE CREATED WITHIN THE FLOODPLAIN +/- 0.5 FEET FROM PROPOSED GRADE

SEEPAGE WETLAND BERM, SEE DETAIL - SHEET 93

BOTTOM AND SIDES OF POOLS DIRECTLY DOWNSTREAM FROM OUTFALLS SHALL BE LINED WITH SUBSTRATE MATERIAL , SEE TABLE ON DETAIL SHEET

BOULDER BANK STABILIZATION

R=225.00'
L=251.98'

MERRIWEATHER DRIVE (EX. 2056)

EX. V/E ESMT PT 4 L. 4618 F. 671

104+00

105+00

106+00

107+00

10+00

40+00

41+00

HORIZONTAL SCALE
0 20 40

MATCHLINE SEE SHEET 78

MATCHLINE SEE SHEET 77

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

Chief, Bureau of Highways — Date

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

Chief, Division of Land Development — Date 8.2.16

Chief, Development Engineering Division — Date 7.26.16

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

Howard SCD — Date 6/29/16

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DATE	REVISION	BY	APP'R.

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STATE OF MARYLAND — ROBERT CHARLES STRUSE — No. 26980 — PROFESSIONAL ENGINEER

GRADING & EROSION AND SEDIMENT CONTROL

DOWNTOWN COLUMBIA
CRESCENT NEIGHBORHOOD

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ELECTION DISTRICT No. 5 — HOWARD COUNTY, MARYLAND

SCALE	ZONING	
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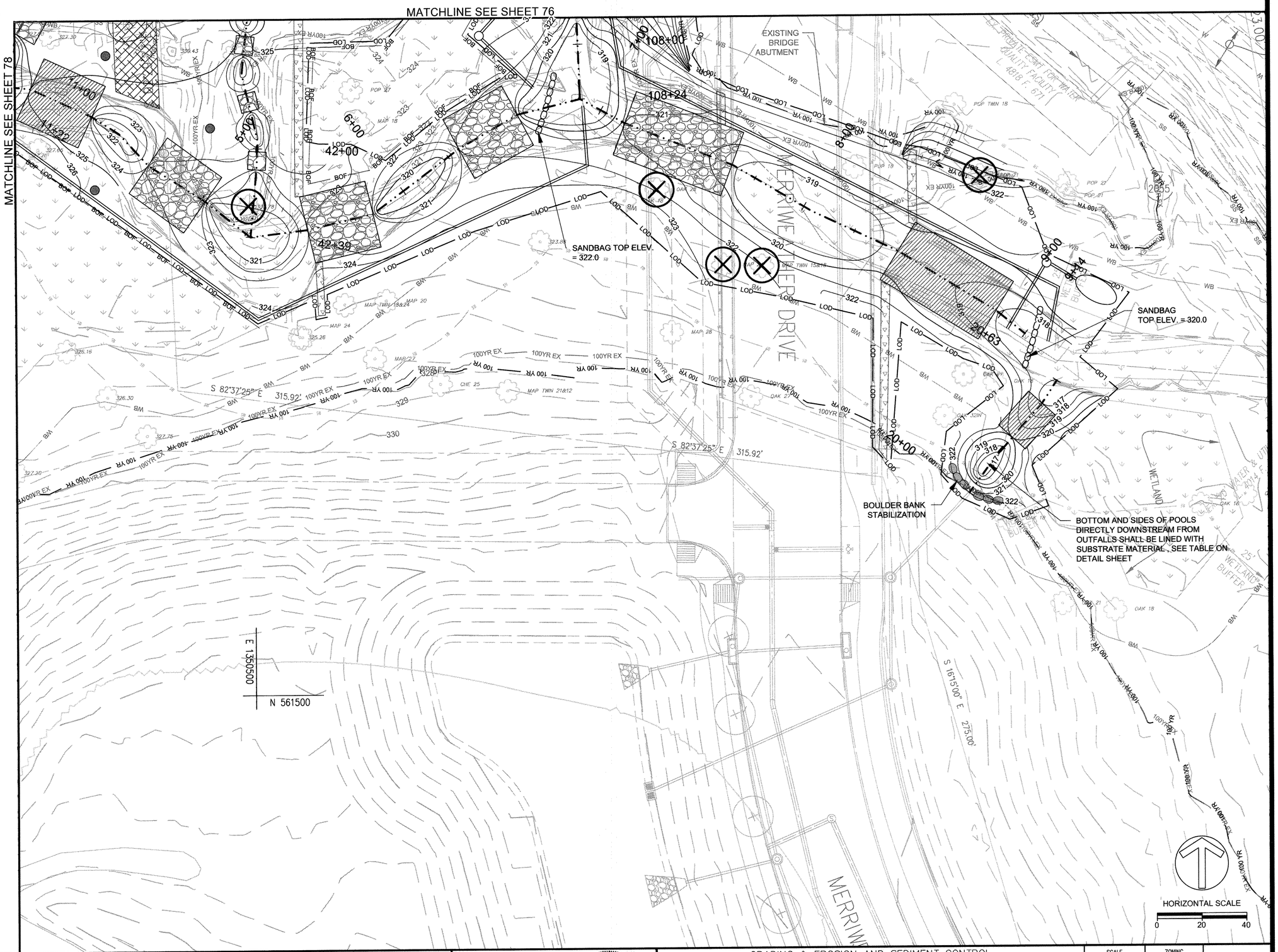
JUNE, 2016	36 - 01	76 OF 102

F 15-106



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Howard SCD — Date 6/29/16

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

Chief, Bureau of Highways — Date

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

Chief, Division of Land Development — Date 8.3.16

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STATE OF MARYLAND — ROBERT STEVEN STRAUSS — No. 26980 — PROFESSIONAL ENGINEER

GRADING & EROSION AND SEDIMENT CONTROL

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CRESCENT NEIGHBORHOOD

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ELECTION DISTRICT No. 5 — HOWARD COUNTY, MARYLAND

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DATE	TAX/TITLE	SHEET
JUNE, 2016	36 - 01	77 OF 102

F 15-106

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

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Chief, Division of Land Development — Date 8-3-16

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STATE OF MARYLAND — JOSHUA MARK GREENBERG — NO. 26980 — PROFESSIONAL ENGINEER

GRADING & EROSION AND SEDIMENT CONTROL

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CRESCENT NEIGHBORHOOD

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ELECTION DISTRICT No. 5 — HOWARD COUNTY, MARYLAND

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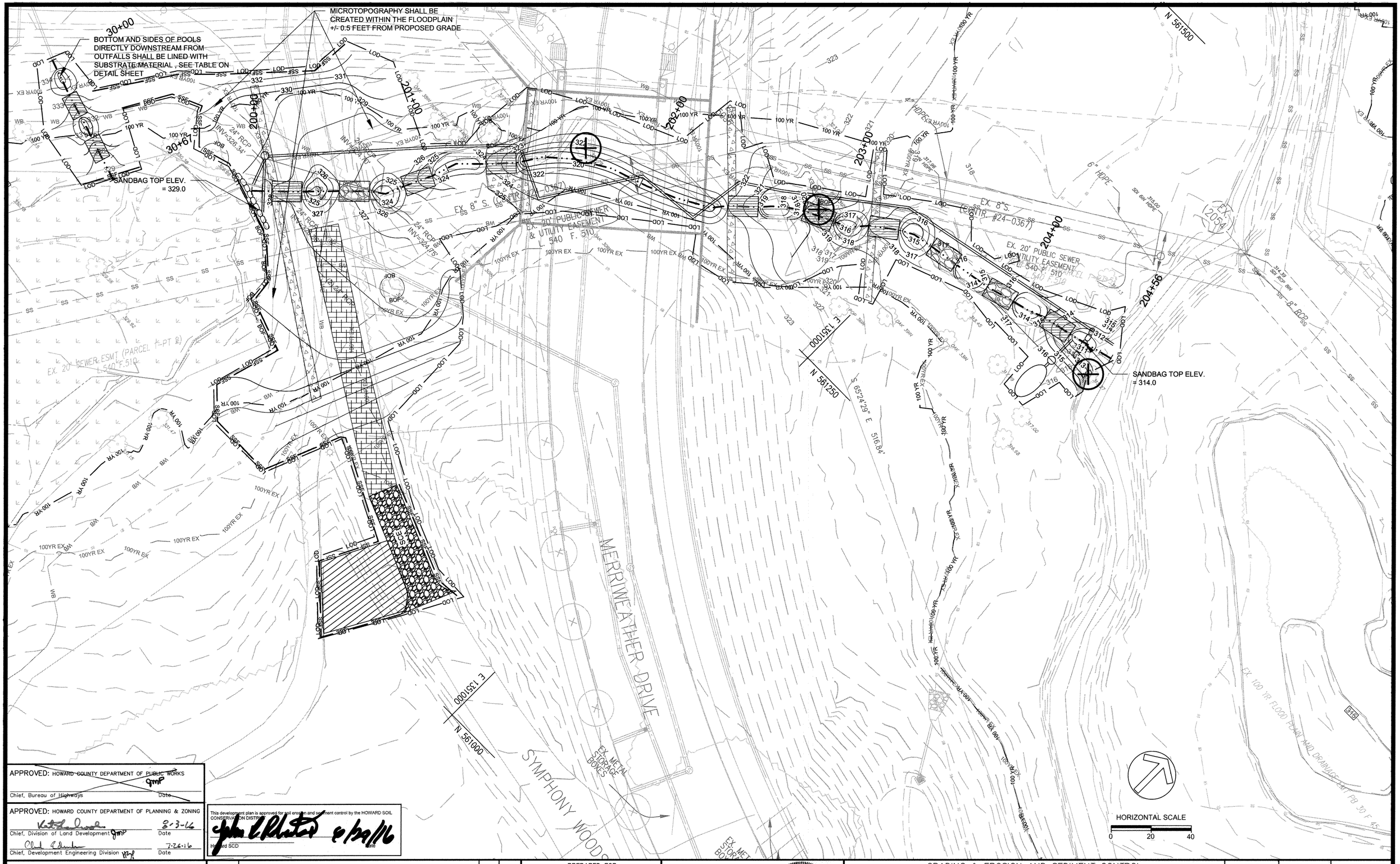

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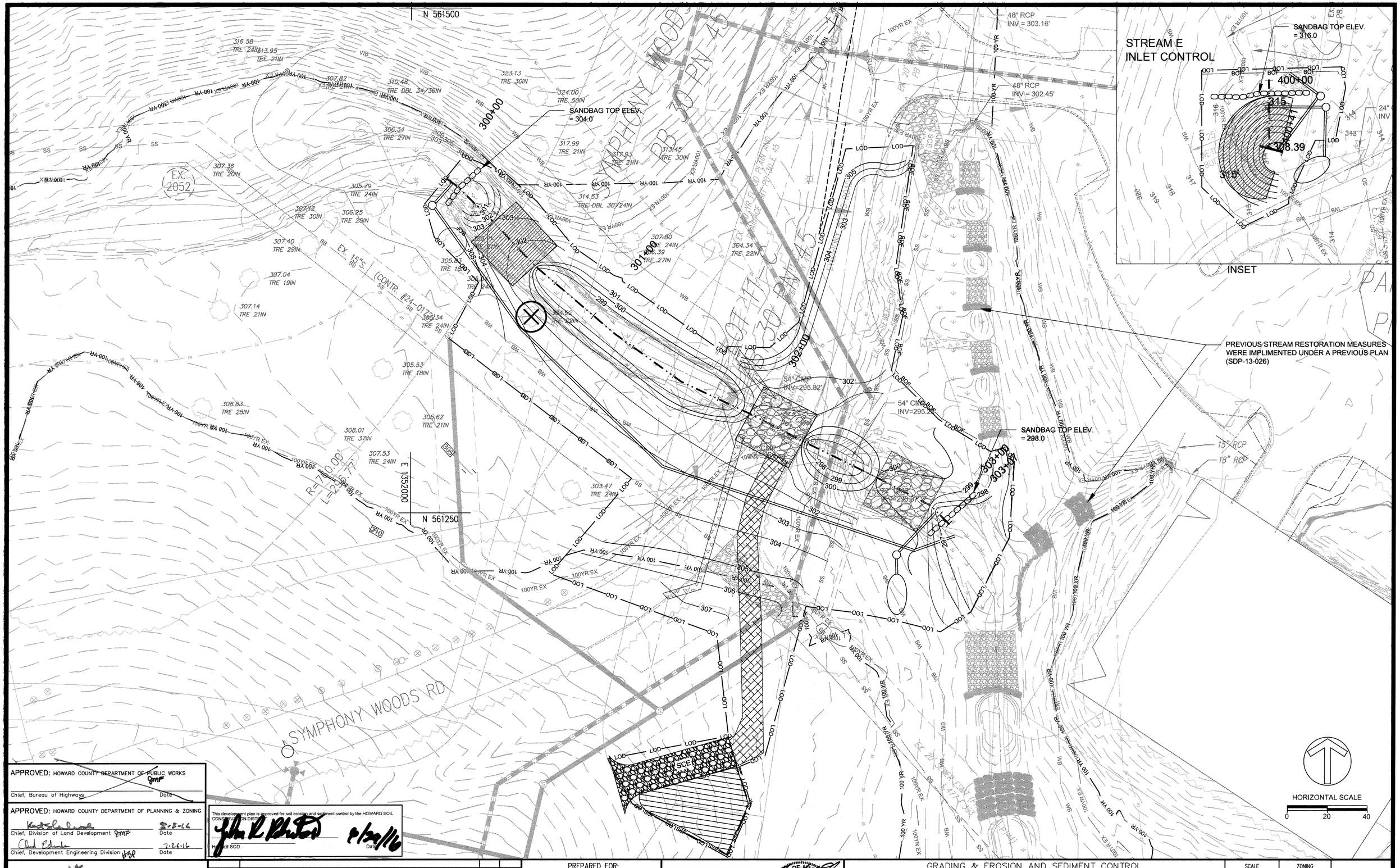

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GRADING & EROSION AND SEDIMENT CONTROL

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ELECTION DISTRICT No. 5 — HOWARD COUNTY, MARYLAND

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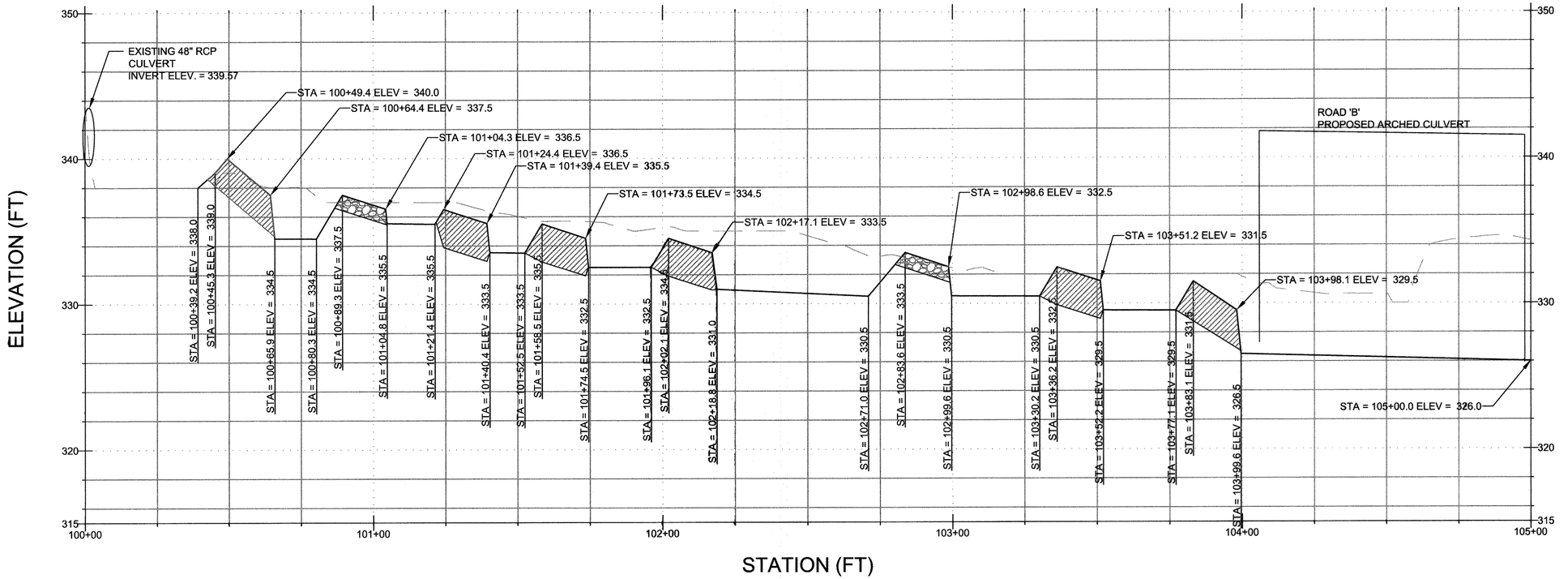
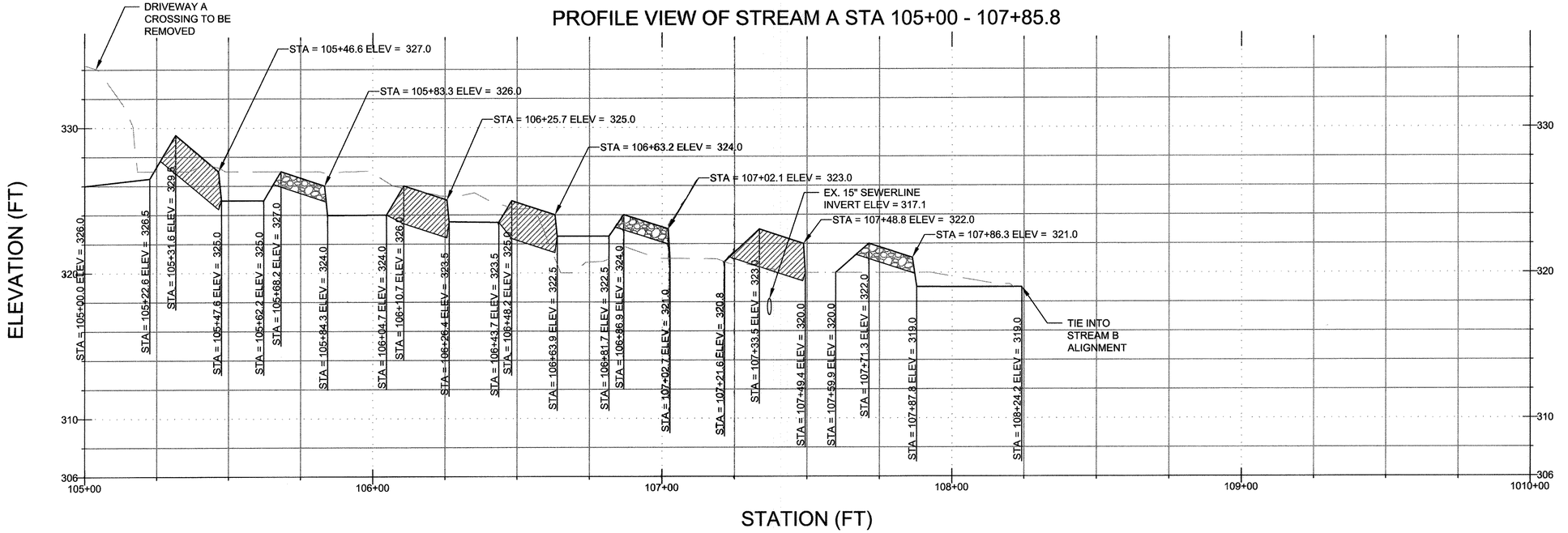
PROFILE VIEW OF STREAM A STA 100+00 - 105+00



PROFILE VIEW OF STREAM A STA 105+00 - 107+85.8



VERTICAL SCALE (FT): 8, 4, 0

HORIZONTAL SCALE (FT): 0, 20, 40

PROFILE LEGEND

- EXISTING GROUND
- PROPOSED GRADE
- BOULDER RIFFLE
- COBBLE RIFFLE

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

Chief, Bureau of Highways — Date

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

Chief, Division of Land Development — Date 8-8-16

Chief, Development Engineering Division — Date 7.26.16

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DES. | DRN. | CHK.

DATE	REVISION	BY	APP'R.

PREPARED FOR:
THE HOWARD HUGHES CORPORATION
10480 LITTLE PATUXENT PARKWAY
SUITE 400
COLUMBIA, MD 21044
ATTN: BOB JENKINS
410-964-5443

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE PLANS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 26980, EXPIRATION DATE: FEBRUARY 2018.

STATE OF MARYLAND — ROBERT STRUSE — No. 26980 — PROFESSIONAL ENGINEER

PROFILE

DOWNTOWN COLUMBIA
CRESCENT NEIGHBORHOOD

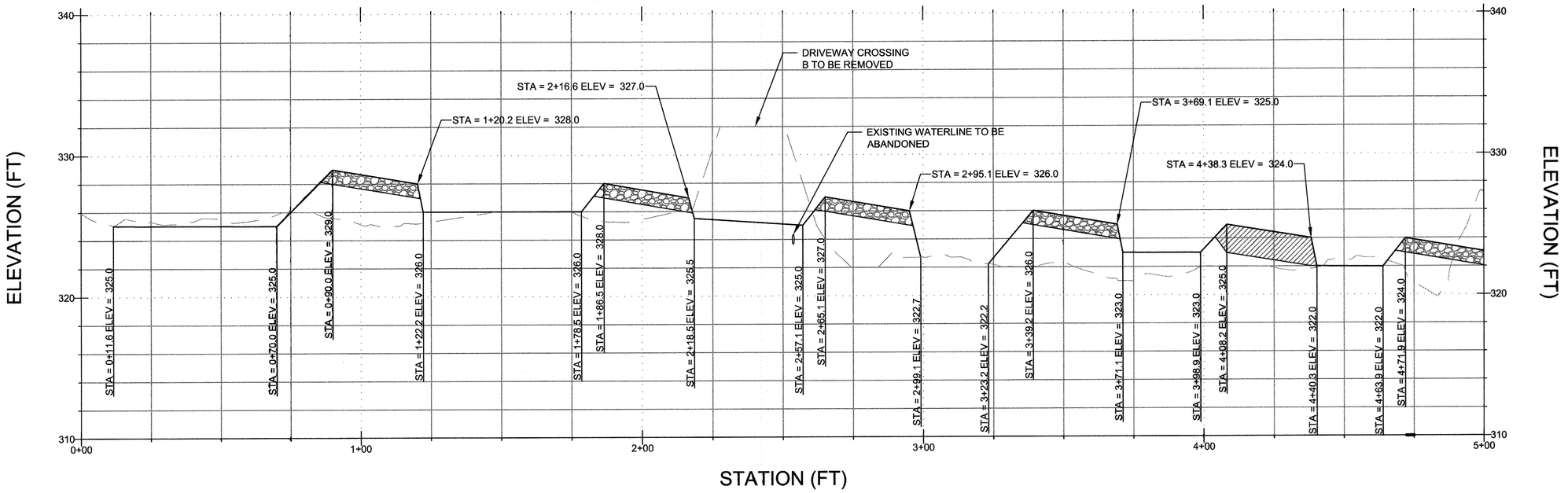
PARCELS B THRU H, NON-BULDABLE BULK PARCELS J THRU R,
O.S. LOTS 1 THRU 8 AND
MERRIWEATHER-SYMPHONY WOODS NEIGHBORHOOD O.S. LOT 1
AND NON-BUILDABLE BULK PARCEL A

ELECTION DISTRICT No. 5 — HOWARD COUNTY, MARYLAND

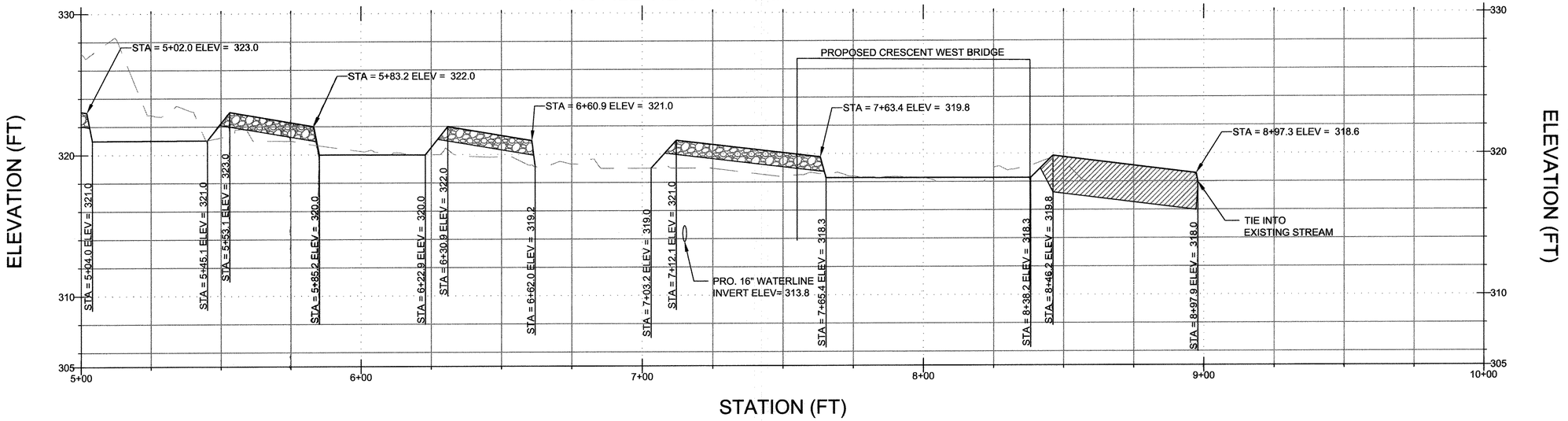
SCALE	ZONING	
AS SHOWN	NT	11071
DATE	TAX/TITLE	SHEET
JUNE, 2016	36 - 01	81 OF 102

F 15-106

PROFILE VIEW OF STREAM B STA 0+00 - 5+00



PROFILE VIEW OF STREAM B STA 5+00 - 8+84.8



VERTICAL SCALE (FT) 8 4 0

HORIZONTAL SCALE (FT) 0 20 40

PROFILE LEGEND

EXISTING GROUND

PROPOSED GRADE

BOULDER RIFFLE

COBBLE RIFFLE

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

Chief, Bureau of Highways — Date

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

Chief, Division of Land Development — Date 8-3-16

Chief, Development Engineering Division — Date 7-26-16

Biohabitats

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Restore the Earth & Inspire Ecological Stewardship

DES.	DRN.	CHK.	DATE	REVISION	BY	APP'R.

PREPARED FOR:

THE HOWARD HUGHES CORPORATION
10480 LITTLE PATUXENT PARKWAY
SUITE 400
COLUMBIA, MD 21044
ATTN: BOB JENKINS
410-964-5443

PROFESSIONAL CERTIFICATION

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EXPIRATION DATE: FEBRUARY 2018

STATE OF MARYLAND — CHRISTOPHER ALAN STREET — No. 26980 — PROFESSIONAL ENGINEER

PROFILE

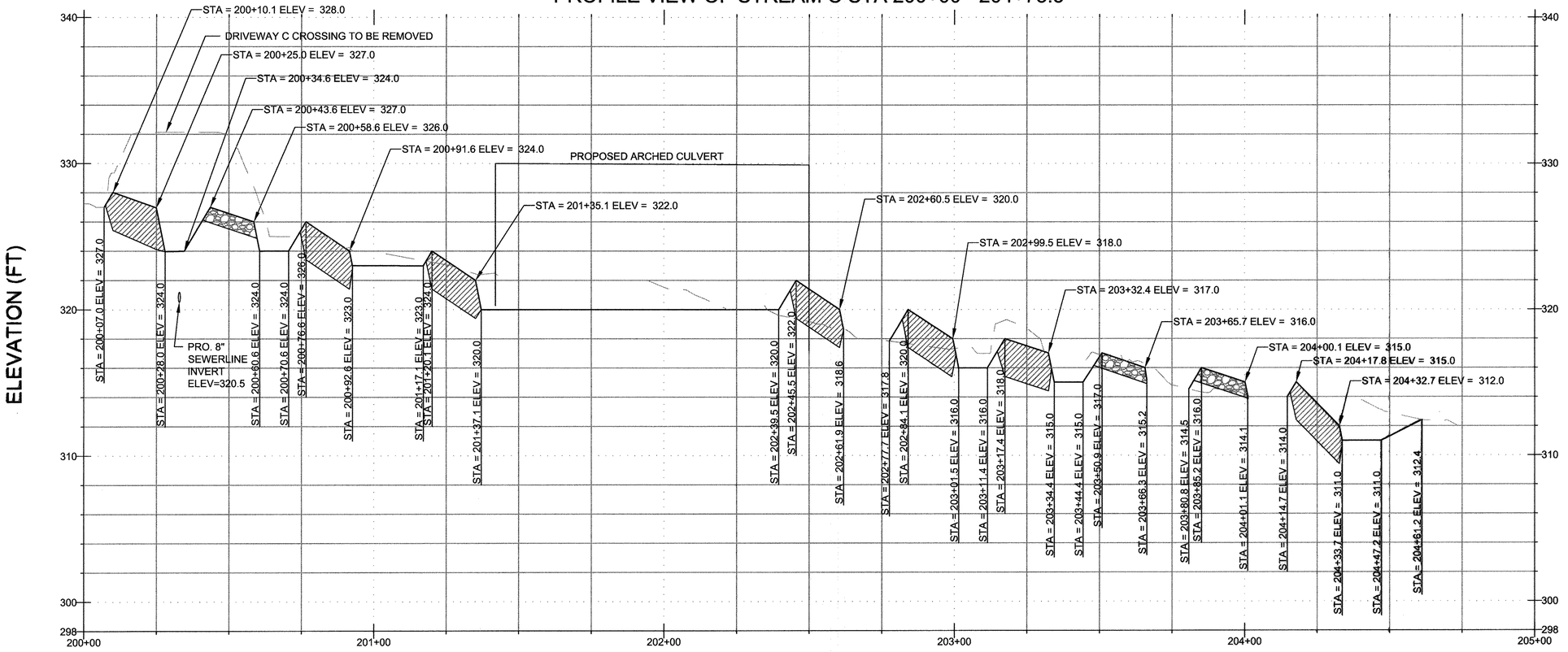
DOWNTOWN COLUMBIA
CRESCENT NEIGHBORHOOD
PARCELS B THRU H, NON-BUILDABLE BULK PARCELS J THRU R, O.S. LOTS 1 THRU 8 AND MERRIWEATHER-SYMPHONY WOODS NEIGHBORHOOD O.S. LOT 1 AND NON-BUILDABLE BULK PARCEL A

ELECTION DISTRICT No. 5 — HOWARD COUNTY, MARYLAND

SCALE	ZONING	
AS SHOWN	NT	11071
DATE	TAXTITLE	SHEET
JUNE, 2016	36 - 01	82 OF 102

F 15-106

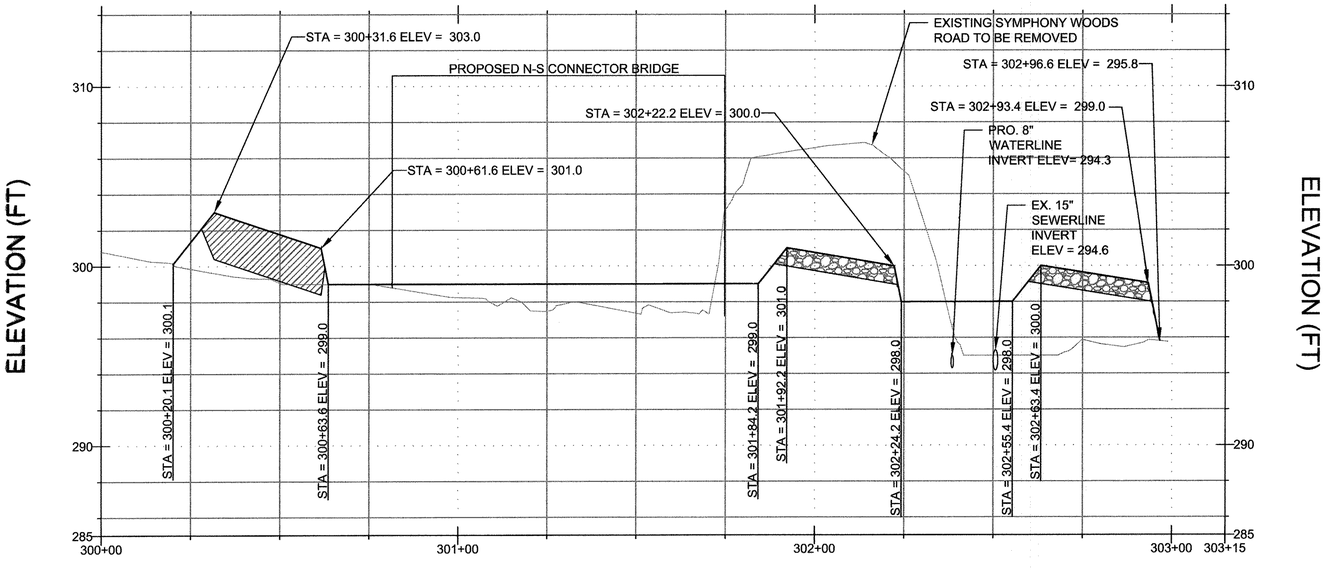
PROFILE VIEW OF STREAM C STA 200+00 - 204+73.5



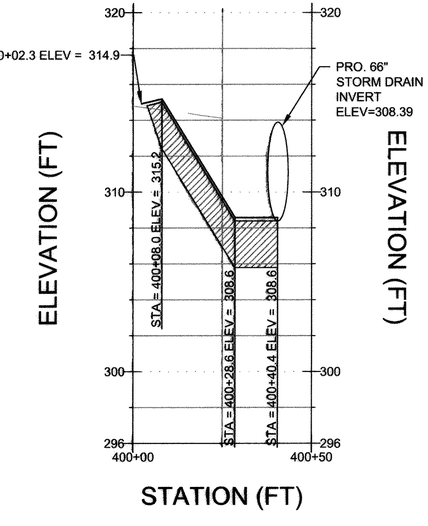
VERTICAL SCALE (FT) 8 4 0

HORIZONTAL SCALE (FT) 0 20 40

PROFILE VIEW OF PV - STREAM B LOWER STA 300+00 - 302+96.6



PROFILE VIEW OF STREAM E STA 400+00 - 400+40



PROFILE LEGEND

EXISTING GROUND

PROPOSED GRADE

BOULDER RIFFLE

COBBLE RIFFLE

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

Chief, Bureau of Highways — Date

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

Chief, Division of Land Development — Date 8.3.16

Chief, Development Engineering Division — Date 7.26.16

Biohabitats
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Baltimore, MD 21211 / ph: 410.554.0156
fx: 410.554.0168 / www.biohabitats.com
Restore the Earth & Inspire Ecological Stewardship

DES. | DRN. | CHK.

DATE	REVISION	BY	APP'R.

PREPARED FOR:

THE HOWARD HUGHES CORPORATION
10480 LITTLE PATUXENT PARKWAY
SUITE 400
COLUMBIA, MD 21044
ATTN: BOB JENKINS
410-964-5443

PROFESSIONAL CERTIFICATION

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STATE OF MARYLAND — KRISTIN L. STREET — REG. NO. 26980 — PROFESSIONAL ENGINEER

PROFILE

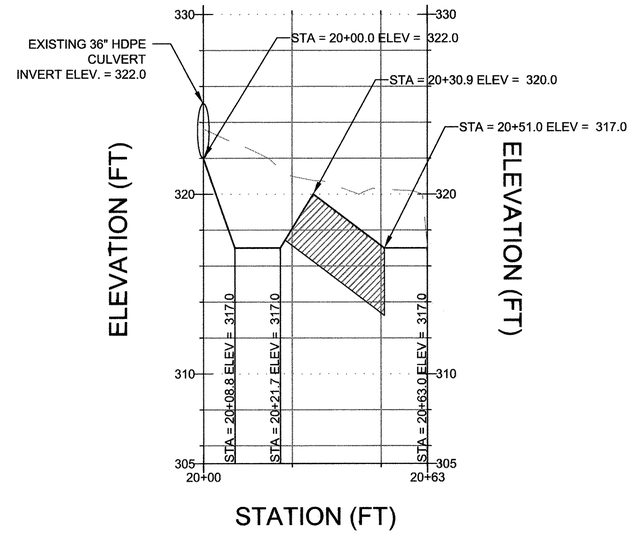
DOWNTOWN COLUMBIA
CRESCENT NEIGHBORHOOD
PARCELS B THRU H, NON-BULDABLE BULK PARCELS J THRU R,
O.S. LOTS 1 THRU 8 AND
MERRIWEATHER-SYMPHONY WOODS NEIGHBORHOOD O.S. LOT 1
AND NON-BUILDABLE BULK PARCEL A

ELECTION DISTRICT No. 5 — HOWARD COUNTY, MARYLAND

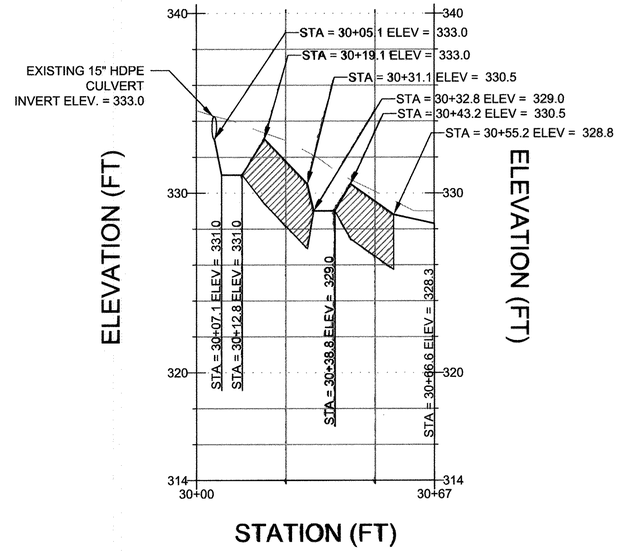
SCALE	ZONING	
AS SHOWN	NT	11071
DATE	TAX/TILE	SHEET
JUNE, 2016	36 - 01	83 OF 102

F 15-106

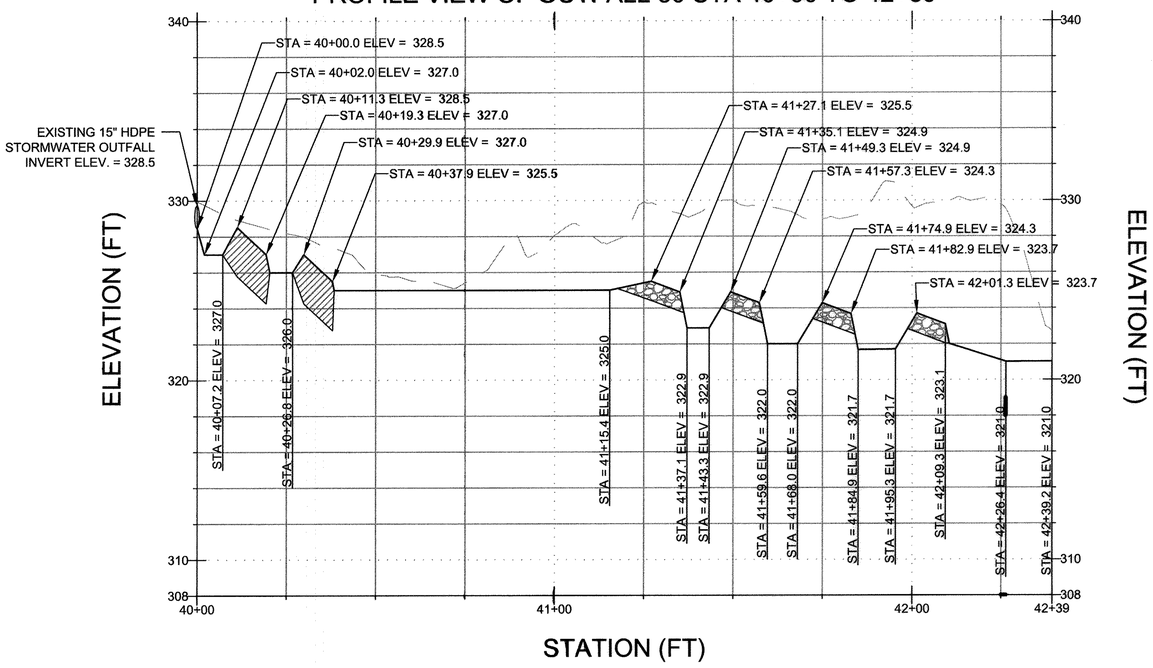
PROFILE VIEW OF OUTFALL 47 STA 20+00 TO 20+63



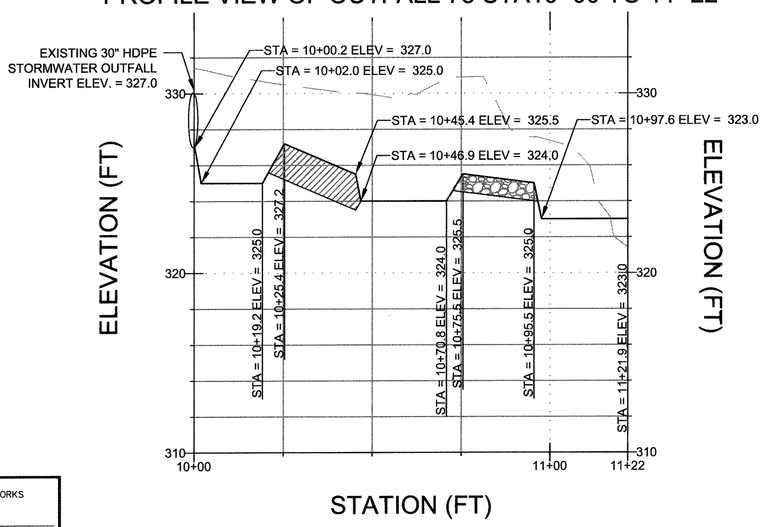
PROFILE VIEW OF OUTFALL 68 STA 30+00 TO 30+67



PROFILE VIEW OF OUTFALL 80 STA 40+00 TO 42+39



PROFILE VIEW OF OUTFALL 73 STA10+00 TO 11+22



VERTICAL SCALE (FT): 8, 4, 0

HORIZONTAL SCALE (FT): 0, 20, 40

PROFILE LEGEND

- EXISTING GROUND
- PROPOSED GRADE
- BOULDER RIFFLE
- COBBLE RIFFLE

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

Chief, Bureau of Highways — Date

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

Chief, Division of Land Development — Date 8.3.16

Chief, Development Engineering Division — Date 7.26.16

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DES. | DRN. | CHK.

DATE	REVISION	BY	APP'R.

PREPARED FOR:
THE HOWARD HUGHES CORPORATION
10480 LITTLE PATUXENT PARKWAY
SUITE 400
COLUMBIA, MD 21044
ATTN: BOB JENKINS
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PROFESSIONAL CERTIFICATION

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STATE OF MARYLAND — JAMES R. STREET — No. 26980 — PROFESSIONAL ENGINEER

PROFILE

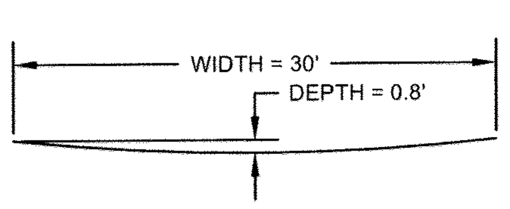
DOWNTOWN COLUMBIA
CRESCENT NEIGHBORHOOD
PARCELS B THRU H, NON-BULDABLE BULK PARCELS J THRU R,
O.S. LOTS 1 THRU 8 AND
MERRIWEATHER-SYMPHONY WOODS NEIGHBORHOOD O.S. LOT 1
AND NON-BUILDABLE BULK PARCEL A

ELECTION DISTRICT No. 5 — HOWARD COUNTY, MARYLAND

SCALE	ZONING	
AS SHOWN	NT	11071
DATE	TAX/TITLE	SHEET
JUNE, 2016	36 - 01	84 OF 102

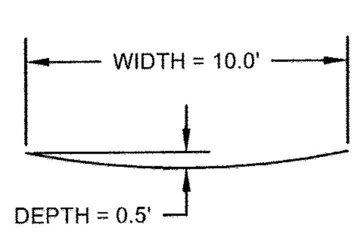
F 15-106

STREAM B STATION 0+00 to 8+97.9 STRUCTURE TABLE				
BOULDER RIFFLES				
Station	Node	Easting	Northing	Elevation
4+08.2	USR	1350394.4155'	561755.1470'	325.8'
	USC	1350400.6020'	561768.6833'	325.0'
	USL	1350406.7885'	561782.2196'	325.8'
	DSR	1350421.7219'	561742.7227'	324.8'
	DSC	1350427.9083'	561756.2590'	324.0'
	DSL	1350434.0948'	561769.7953'	324.8'
8+46.2	USR	1350778.1181'	561681.7339'	320.6'
	USC	1350786.0850'	561694.3533'	319.8'
	USL	1350793.9843'	561707.0160'	320.6'
	DSR	1350821.5916'	561655.0682'	319.4'
	DSC	1350829.5507'	561667.7281'	318.6'
	DSL	1350837.4578'	561680.3504'	319.4'
COBBLE RIFFLES				
0+90	USR	1350081.0148'	561770.6829'	329.8'
	USC	1350083.3777'	561785.4910'	329.0'
	USL	1350085.7407'	561800.2992'	329.8'
	DSR	1350110.7117'	561766.4293'	328.8'
	DSC	1350113.0747'	561781.2375'	328.0'
	DSL	1350115.4376'	561796.0456'	328.8'
1+86.5	USR	1350179.7488'	561764.4724'	328.8'
	USC	1350179.4197'	561779.4932'	328.0'
	USL	1350179.0907'	561794.5139'	328.8'
	DSR	1350209.7422'	561765.1024'	327.8'
	DSC	1350209.4131'	561780.1232'	327.0'
	DSL	1350209.0840'	561795.1439'	327.8'
2+65.1	USR	1350257.9421'	561764.8965'	327.8'
	USC	1350257.9484'	561779.9788'	327.0'
	USL	1350257.9548'	561795.0612'	327.8'
	DSR	1350287.9415'	561764.7073'	326.8'
	DSC	1350287.9478'	561779.7896'	326.0'
	DSL	1350287.9542'	561794.8720'	326.8'
3+39.2	USR	1350330.2461'	561761.0964'	326.8'
	USC	1350331.8816'	561776.0641'	326.0'
	USL	1350333.5170'	561791.0317'	326.8'
	DSR	1350360.0783'	561757.9279'	325.8'
	DSC	1350361.7138'	561772.8955'	325.0'
	DSL	1350363.3492'	561787.8632'	325.8'
4+71.9	USR	1350444.3662'	561722.4174'	324.8'
	USC	1350452.8728'	561734.4619'	324.0'
	USL	1350461.6201'	561746.8288'	324.8'
	DSR	1350468.6148'	561704.7538'	323.8'
	DSC	1350478.5429'	561718.4026'	323.0'
	DSL	1350485.8687'	561729.1652'	323.8'
5+53.1	USR	1350527.6029'	561690.8872'	323.8'
	USC	1350524.0472'	561705.5936'	323.0'
	USL	1350520.5278'	561720.1943'	323.8'
	DSR	1350556.7729'	561697.8481'	322.8'
	DSC	1350553.2535'	561712.4488'	322.0'
	DSL	1350549.7340'	561727.0495'	322.8'
6+30.9	USR	1350598.5555'	561727.7800'	322.8'
	USC	1350591.4066'	561740.9800'	322.0'
	USL	1350584.5498'	561754.0149'	322.8'
	DSR	1350624.7422'	561742.4175'	321.8'
	DSC	1350617.5850'	561755.8348'	321.0'
	DSL	1350610.7365'	561768.6524'	321.8'
7+12.1	USR	1350660.0167'	561737.7606'	321.8'
	USC	1350665.2788'	561751.7363'	321.0'
	USL	1350670.5075'	561765.6536'	321.8'
	DSR	1350707.5568'	561719.2974'	320.6'
	DSC	1350712.9066'	561732.9376'	319.8'
	DSL	1350718.0475'	561747.1904'	320.6'



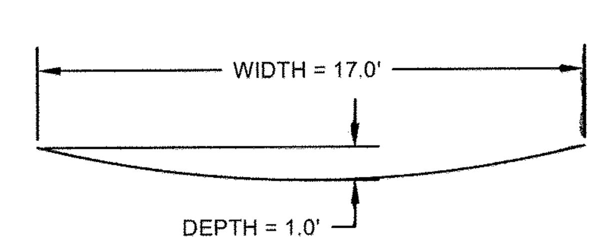
TYPICAL RIFFLE CROSS SECTION
STREAM B
STA. 0+00 TO 8+97.9
SCALE 1" = 2'

STREAM C STATION 200+00 to 204+73.5 STRUCTURE TABLE				
BOULDER RIFFLES				
Station	Node	Easting	Northing	Elevation
200+10.1	USR	1350756.0645'	561115.6266'	328.5'
	USC	1350752.6869'	561119.4979'	328.0'
	USL	1350749.3100'	561123.0334'	328.5'
	DSR	1350766.9097'	561125.9892'	327.5'
	DSC	1350763.3530'	561129.9530'	327.0'
	DSL	1350760.1551'	561133.3961'	327.5'
200+76.6	USR	1350802.0415'	561165.4034'	326.5'
	USC	1350797.5166'	561167.6193'	326.0'
	USL	1350793.0273'	561169.7980'	326.5'
	DSR	1350808.4954'	561178.9441'	324.5'
	DSC	1350803.8751'	561181.2049'	324.0'
	DSL	1350799.4811'	561183.3387'	324.5'
201+20.1	USR	1350822.3507'	561200.9074'	324.5'
	USC	1350818.6680'	561204.4372'	324.0'
	USL	1350815.1280'	561207.8592'	324.5'
	DSR	1350832.5370'	561211.9183'	322.5'
	DSC	1350828.9256'	561215.3942'	322.0'
	DSL	1350825.3143'	561218.8701'	322.5'
202+45.5	USR	1350922.0269'	561271.4182'	322.5'
	USC	1350918.3171'	561275.2244'	322.0'
	USL	1350915.2168'	561278.7772'	322.5'
	DSR	1350932.9347'	561281.7149'	320.5'
	DSC	1350929.5296'	561285.3944'	320.0'
	DSL	1350926.1246'	561289.0739'	320.5'
202+84.1	USR	1350949.4523'	561295.7578'	320.5'
	USC	1350947.4979'	561300.3575'	320.0'
	USL	1350945.5435'	561304.9573'	320.5'
	DSR	1350963.2079'	561301.7397'	318.5'
	DSC	1350961.2536'	561306.3394'	318.0'
	DSL	1350959.2992'	561310.9392'	318.5'
203+17.4	USR	1350978.2228'	561313.9491'	318.5'
	USC	1350975.2866'	561317.8921'	318.0'
	USL	1350972.3112'	561321.9048'	318.5'
	DSR	1350990.2396'	561322.8833'	317.5'
	DSC	1350987.2692'	561326.9025'	317.0'
	DSL	1350984.2987'	561330.9216'	317.5'
204+14.7	USR	1351070.3820'	561342.8771'	315.5'
	USC	1351069.4454'	561347.9194'	315.0'
	USL	1351068.5212'	561352.7279'	315.5'
	DSR	1351085.0672'	561345.9345'	312.5'
	DSC	1351084.1368'	561350.8599'	312.0'
	DSL	1351083.2064'	561355.7853'	312.5'
COBBLE RIFFLES				
200+43.6	USR	1350779.8430'	561139.4823'	327.5'
	USC	1350776.3444'	561143.0544'	327.0'
	USL	1350773.0757'	561146.8783'	327.5'
	DSR	1350790.5574'	561149.9802'	326.5'
	DSC	1350787.2098'	561153.6763'	326.0'
	DSL	1350783.7901'	561157.3761'	326.5'
203+50.9	USR	1351005.5425'	561327.7713'	317.5'
	USC	1351004.5546'	561332.6877'	317.0'
	USR	1351003.5667'	561337.6042'	317.5'
	DSR	1351020.2277'	561330.8287'	316.5'
	DSC	1351019.2398'	561335.7451'	324.0'
	DSL	1351018.2519'	561340.6615'	316.5'
203+85.2	USR	1351039.6367'	561333.2347'	316.5'
	USC	1351038.3721'	561338.2895'	316.0'
	USL	1351037.1501'	561343.0879'	316.5'
	DSR	1351053.9603'	561337.4583'	315.5'
	DSC	1351052.7684'	561342.3273'	315.0'
	DSL	1351051.5766'	561347.1963'	315.5'



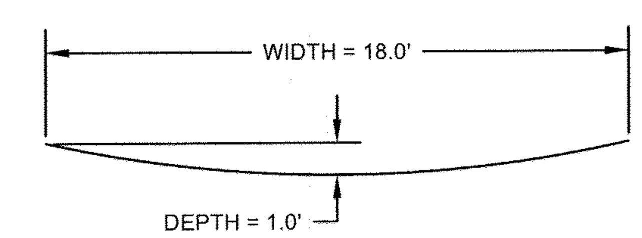
TYPICAL RIFFLE CROSS SECTION
STREAM C
STA. 200+00 TO 204+73.5
SCALE 1" = 1'

STREAM A STATION 100+00 to 105+00 STRUCTURE TABLE				
BOULDER RIFFLES				
Station	Node	Easting	Northing	Elevation
100+49.4	USR	1350505.8585'	562493.4042'	341.0'
	USC	1350511.4404'	562490.0568'	340.0'
	USL	1350520.2152'	562484.2992'	341.0'
	DSR	1350497.8493'	562480.7214'	338.5'
	DSC	1350505.0276'	562476.1689'	337.5'
	DSL	1350512.2059'	562471.6164'	338.5'
101+24.4	USR	1350475.2150'	562421.5722'	337.5'
	USC	1350483.6073'	562420.2361'	336.5'
	USL	1350491.9997'	562418.9000'	337.5'
	DSR	1350472.5293'	562406.8145'	336.5'
	DSC	1350480.9217'	562405.4784'	335.5'
	DSL	1350489.3141'	562404.1423'	336.5'
101+58.5	USR	1350471.0981'	562387.1004'	336.5'
	USC	1350479.5672'	562386.3958'	335.5'
	USL	1350488.0362'	562385.6912'	336.5'
	DSR	1350469.8280'	562372.1542'	335.5'
	DSC	1350478.2971'	562371.4496'	334.5'
	DSL	1350486.7661'	562370.7450'	335.5'
102+02.1	USR	1350472.1961'	562340.5322'	335.5'
	USC	1350480.3138'	562343.0969'	334.5'
	USL	1350488.4167'	562345.6575'	335.5'
	DSR	1350476.5934'	562326.1906'	334.5'
	DSC	1350484.6963'	562328.7513'	333.5'
	DSL	1350492.7991'	562331.3119'	334.5'
103+36.2	USR	1350489.0353'	562212.3207'	333.5'
	USC	1350496.5391'	562216.3118'	332.5'
	USL	1350504.0428'	562220.3028'	333.5'
	DSR	1350496.0166'	562199.0443'	332.5'
	DSC	1350503.5203'	562203.0353'	331.5'
	DSL	1350511.0241'	562207.0263'	332.5'
103+83.1	USR	1350511.0212'	562171.5250'	332.5'
	USC	1350518.4312'	562175.6894'	331.5'
	USL	1350525.9460'	562179.7589'	332.5'
	DSR	1350518.3701'	562158.4486'	330.5'
	DSC	1350525.7801'	562162.6129'	329.5'
	DSL	1350533.1901'	562166.7773'	330.5'
COBBLE RIFFLES				
100+89.3	USR	1350486.7662'	562456.1920'	338.5'
	USC	1350494.8147'	562453.4580'	337.5'
	USL	1350502.8633'	562450.7240'	338.5'
	DSR	1350481.7236'	562442.0649'	337.5'
	DSC	1350489.7722'	562439.3309'	336.5'
	DSL	1350497.8207'	562436.5969'	337.5'
102+83.6	USR	1350481.3654'	562267.4593'	334.5'
	USC	1350489.8016'	562266.4381'	333.5'
	USL	1350498.2378'	562265.4170'	334.5'
	DSR	1350479.4200'	562252.5859'	333.5'
	DSC	1350487.8562'	562251.5648'	332.5'
	DSL	1350496.2925'	562250.5436'	333.5'



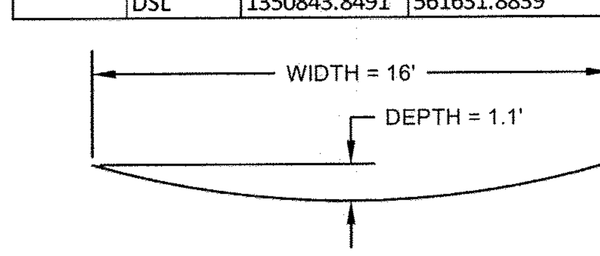
TYPICAL RIFFLE CROSS SECTION
STREAM A
STA. 100+00 TO 105+00
SCALE 1" = 1'

STREAM A STATION 105+00 to 108+24.2 STRUCTURE TABLE				
BOULDER RIFFLES				
Station	Node	Easting	Northing	Elevation
105+31.6	USR	1350578.5794'	562043.8134'	330.5'
	USC	1350587.3821'	562045.0254'	329.5'
	USL	1350596.4199'	562046.2041'	330.5'
	DSR	1350580.5716'	562028.9463'	328.0'
	DSC	1350589.4111'	562030.1140'	327.0'
	DSL	1350598.4121'	562031.3370'	328.0'
106+10.7	USR	1350582.8424'	561964.3626'	327.0'
	USC	1350591.6068'	561967.0065'	326.0'
	USL	1350600.0346'	561969.6554'	327.0'
	DSR	1350587.1418'	561950.1786'	326.0'
	DSC	1350595.9212'	561952.6561'	325.0'
	DSL	1350604.4726'	561955.3270'	326.0'
106+48.2	USR	1350594.0360'	561928.6411'	326.0'
	USC	1350602.7414'	561931.4715'	325.0'
	USL	1350611.2035'	561934.0517'	326.0'
	DSR	1350598.5617'	561914.4213'	325.0'
	DSC	1350607.1754'	561917.0561'	324.0'
	DSL	1350615.8110'	561919.8237'	325.0'
107+33.5	USR	1350622.0299'	561847.6747'	324.0'
	USC	1350630.5403'	561850.7200'	323.0'
	USL	1350639.0307'	561853.5883'	324.0'
	DSR	1350626.9837'	561833.5111'	323.0'
	DSC	1350635.4584'	561836.4641'	322.0'
	DSL	1350643.9588'	561839.4210'	323.0'
COBBLE RIFFLES				
105+68.2	USR	1350577.3058'	562009.1249'	328.0'
	USC	1350586.1477'	562008.7507'	327.0'
	USL	1350595.1743'	562008.3768'	328.0'
	DSR	1350576.5583'	561994.1485'	327.0'
	DSC	1350585.3386'	561993.7674'	326.0'
	DSL	1350594.5423'	561993.3901'	327.0'
106+86.9	USR	1350607.9703'	561892.3470'	325.0'
	USC	1350616.5850'	561895.0273'	324.0'
	USL	1350625.1535'	561897.7078'	325.0'
	DSR	1350612.4637'	561878.0307'	324.0'
	DSC	1350621.0293'	561880.7081'	323.0'
	DSL	1350629.6117'	561883.4255'	324.0'
107+71.3	USR	1350634.5165'	561815.1730'	323.0'
	USC	1350643.5481'	561815.4695'	322.0'
	USL	1350652.5073'	561815.7482'	323.0'
	DSR	1350634.9958'	561800.1807'	322.0'
	DSC	1350643.9912'	561800.4683'	321.0'
	DSL	1350652.9866'	561800.7558'	322.0'



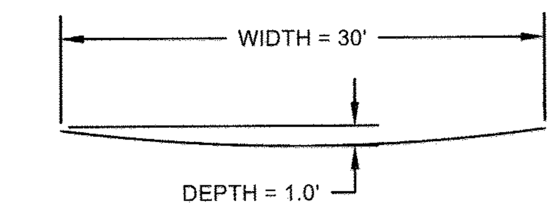
TYPICAL RIFFLE CROSS SECTION
STREAM A
STA. 105+00 TO 108+24.2
SCALE 1" = 1'

OUTFALL 47 STATION 20+00 TO 20+63 STRUCTURE TABLE				
BOULDER RIFFLES				
Station	Node	Easting	Northing	Elevation
20+30.9	USR	1350842.2800'	561606.3195'	321.1'
	USC	1350836.2609'	561611.5625'	320.0'
	USL	1350830.4219'	561617.0613'	321.1'
	DSR	1350855.7072'	561621.1422'	318.1'
	DSC	1350849.7781'	561626.5130'	317.0'
	DSL	1350843.8491'	561631.8839'	318.1'



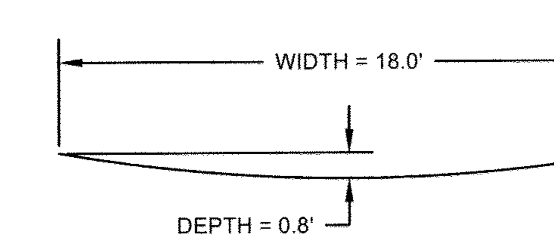
TYPICAL RIFFLE CROSS SECTION
OUTFALL 47
STA. 20+00 TO 20+63
SCALE 1" = 1'

STREAM B LOWER STATION 300+00 to 302+96.6 STRUCTURE TABLE				
BOULDER RIFFLES				
Station	Node	Easting	Northing	Elevation
300+31.6	USR	1352030.1288'	561384.1794'	304.0'
	USC	1352041.3296'	561394.1051'	303.0'
	USL	1352052.5303'	561404.0308'	304.0'
	DSR	1352050.7668'	561362.4382'	302.0'
	DSC	1352061.9974'	561372.4033'	301.0'
	DSL	1352073.2221'	561382.3486'	302.0'
COBBLE RIFFLES				
301+92.2	USR	1352162.1272'	561286.1106'	302.0'
	USC	1352169.2876'	561299.2457'	301.0'
	USL	1352176.4833'	561312.3617'	302.0'
	DSR	1352188.2944'	561272.0057'	301.1'
	DSC	1352195.9637'	561285.5333'	300.0'
	DSL	1352203.1575'	561298.6956'	301.0'
302+63.4	USR	1352225.8581'	561254.2915'	301.0'
	USC	1352232.9638'	561267.3659'	300.0'
	USL	1352240.2468'	561280.4879'	301.0'
	DSR	1352252.5008'	561240.5520'	300.0'
	DSC	1352259.6770'	561253.7238'	299.0'
	DSL	1352266.8885'	561266.8766'	300.0'



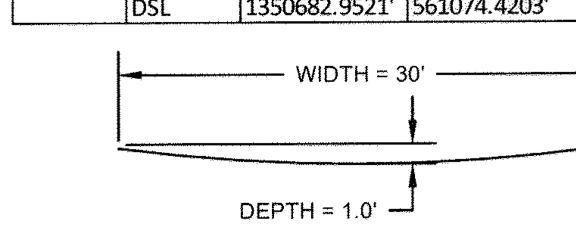
TYPICAL RIFFLE CROSS SECTION
STREAM B LOWER
STA. 300+00 TO 302+96.6
SCALE 1" = 2'

OUTFALL 73 STATION 10+00 to 11+22 STRUCTURE TABLE				
BOULDER RIFFLES				
Station	Node	Easting	Northing	Elevation
10+19.2	USR	1350412.0439'	561859.2210'	328.0'
	USC	1350420.6027'	561857.4289'	327.2'
	USL	1350429.3937'	561855.3452'	328.0'
	DSR	1350407.6058'	561839.5562'	326.3'
	DSC	1350416.4065'	561837.6722'	325.5'
	DSL	1350425.2071'	561835.7883'	326.3'
COBBLE RIFFLES				
10+75.5	USR	1350396.8027'	561814.8178'	326.3'
	USC	1350404.5774'	561810.2841'	325.5'
	USL	1350412.3521'	561805.7505'	326.3'
	DSR	1350386.7279'	561797.5407'	325.8'
	DSC	1350394.5025'	561793.0070'	325.0'
	DSL	1350402.2772'	561788.4734'	325.8'



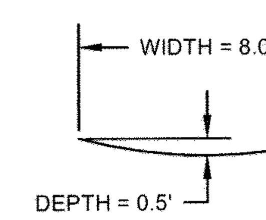
TYPICAL RIFFLE CROSS SECTION
OUTFALL 73
STA. 10+00 TO 11+22
SCALE 1" = 1'

OUTFALL 68 STATION 30+00 TO 30+67 STRUCTURE TABLE				
BOULDER RIFFLES				
Station	Node	Easting	Northing	Elevation
30+19.1	USR	1350646.1045'	561077.4188'	333.5'
	USC	1350647.2543'	561081.2499'	333.0'
	USL	1350648.4041'	561085.0811'	333.5'
	DSR	1350657.5981'	561073.9694'	331.0'
	DSC	1350658.7386'	561077.8052'	330.5'
	DSL	1350659.8791'	561081.6410'	331.0'
30+43.2	USR	1350669.1554'	561070.4400'	331.0'
	USC	1350670.3226'	561074.2373'	330.5'
	USL	1350671.5353'	561078.0491'	331.0'
	DSR	1350680.5450'	561066.7874'	329.3'
	DSC	1350681.7486'	561070.6039'	328.8'
	DSL	1350682.9521'	561074.4203'	329.3'



TYPICAL RIFFLE CROSS SECTION
STREAM B LOWER
STA. 300+00 TO 302+96.6
SCALE 1" = 2'

OUTFALL 80 STATION 40+00 TO 42+39 STRUCTURE TABLE				
BOULDER RIFFLES				
Station	Node	Easting	Northing	Elevation
40+02.0	USR	1350497.8434'	561912.9021'	329.0'
	USC	1350501.2834'	561915.0031'	328.5'
	USL	1350504.7661'	561916.9116'	329.0'
	DSR	1350501.8528'	561905.9794'	327.5'
	DSC	1350505.2432'	561907.9138'	327.0'
	DSL	1350508.7754'	561909.9888'	327.5'
40+29.9	USR	1350509.1891'	561897.1930'	327.5'
	USC	1350512.0043'	561900.0346'	327.0'
	USL	1350514.8195'	561902.8762'	327.5'
	DSR	1350514.8721'	561891.5627'	326.0'
	DSC	1350517.6874'	561894.4042'	325.5'
	DSL	1350520.4891'	561897.2629'	326.0'
COBBLE RIFFLES				
41+27.1	USR	1350500.8676'	561813.7188'	326.0'
	USC	1350504.4461'	561811.9315'	325.5'
	USL	1350508.0246'	561810.1443'	326.0'
	DSR	1350497.2932'	561806.5619'	325.4'
	DSC	1350500.8010'	561804.6876'	324.9'
	DSL	1350504.4501'	561802.9873'	325.4'
41+49.3	USR	1350492.7685'	561791.8547'	325.4'
	USC	1350496.7425'	561791.3996'	324.9'
	USL	1350500.7165'	561790.9445'	325.4'
	DSR	1350491.8583'	561783.9068'	324.9'
	DSC	1350495.8323'	561783.4517'	324.3'
	DSL	1350499.8064'	561782.9965'	324.9'
41+74.9	USR	1350493.0420'	561765.1311'	324.9'
	USC	1350496.9197'	561766.1124'	324.3'
	USL	1350500.7975'	561767.0938'	324.9'
	DSR	1350495.0047'	561757.3758'	324.2'
	DSC	1350498.8825'	561758.3571'	323.7'
	DSL	1350502.7602'	561759.3383'	324.2'
42+01.3	USR	1350497.8468'	561740.5850'	324.2'
	USC	1350501.8400'	561740.3507'	323.7'
	USL	1350505.8331'	561740.1164'	324.2'
	DSR	1350497.3782'	561732.5989'	323.6'
	DSC	1350501.3579'	561732.4222'	323.1'
	DSR	1350505.3645'	561732.1301'	323.6'



TYPICAL RIFFLE CROSS SECTION
OUTFALL 80
STA. 40+00 TO 42+39
SCALE 1" = 1'

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
Chief, Bureau of Highways — Date

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
Chief, Division of Land Development — Date 8-3-16
Chief, Development Engineering Division — Date 7-26-16

This development plan is approved for soil erosion and sediment control by the HOWARD SOIL CONSERVATION DISTRICT.
Howard SCD — Date

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

DES.	DRN.	CHK.	DATE	REVISION	BY	APP'R.

PREPARED FOR:
THE HOWARD HUGHES CORPORATION
10480 LITTLE PATUXENT PARKWAY
SUITE 400
COLUMBIA, MD 21044
ATTN: BOB JENKINS
410-964-5443

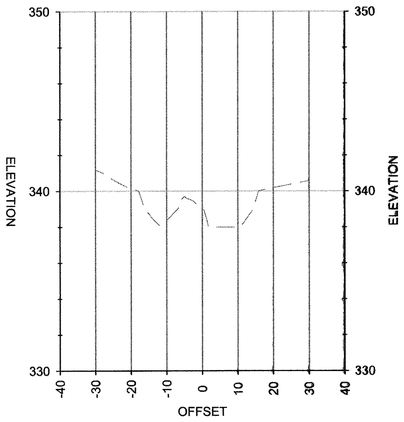
PROFESSIONAL CERTIFICATION
I HEREBY CERTIFY THAT THESE PLANS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 26980, EXPIRATION DATE: FEBRUARY 2018.

STRUCTURE TABLES
DOWNTOWN COLUMBIA
CRESCENT NEIGHBORHOOD
PARCELS B THRU H, NON-BULDABLE BULK PARCELS J THRU R,
O.S. LOTS 1 THRU 8 AND
MERRIWEATHER-SYMPHONY WOODS NEIGHBORHOOD O.S. LOT 1
AND NON-BUILDABLE BULK PARCEL A
ELECTION DISTRICT No. 5 — HOWARD COUNTY, MARYLAND

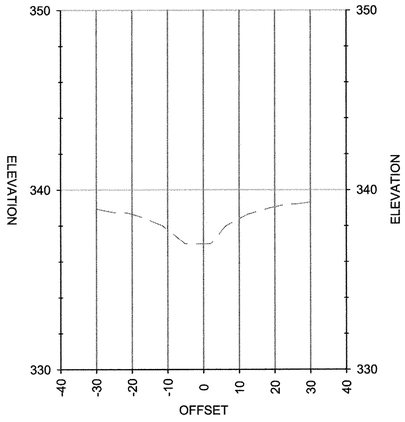
SCALE	ZONING	
VALUE	NT	11071
DATE	TAXTITLE	SHEET
JUNE, 2016	36 - 01	85 OF 102

F 15-106

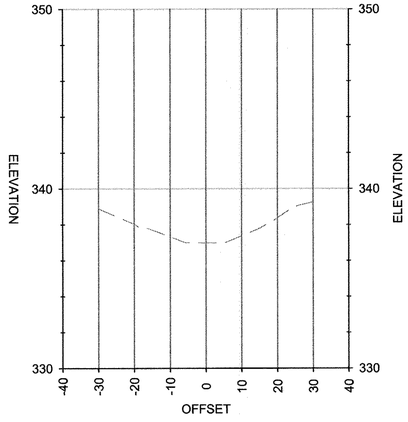
CROSS SECTIONS AT STREAM A



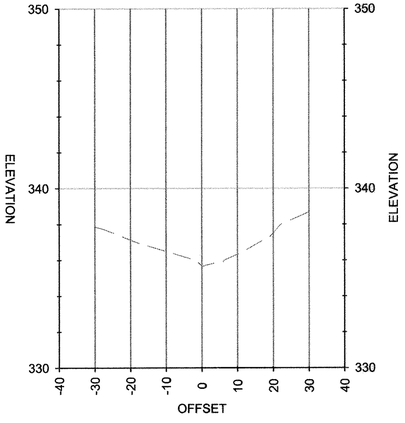
100+50.23



100+89.99



101+25.25



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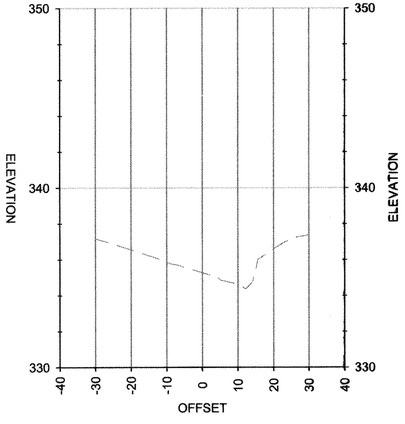
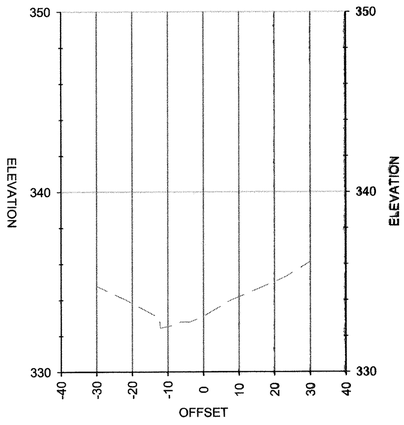


102+03.02



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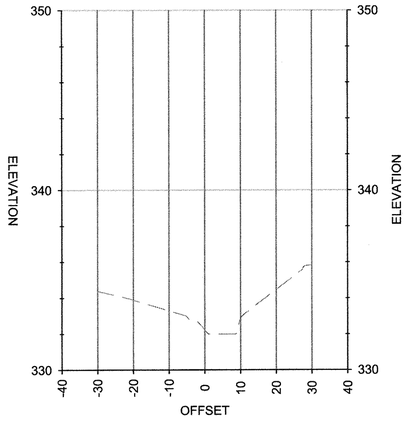
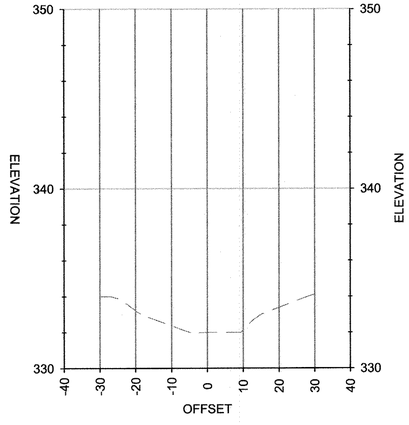


103+36.79



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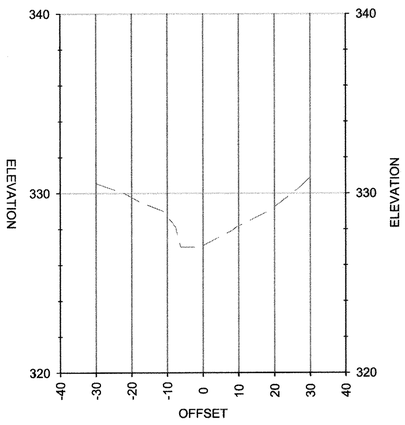

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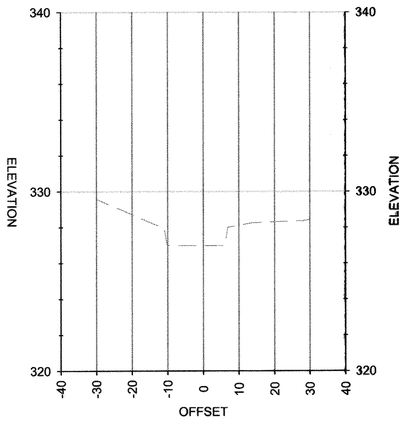

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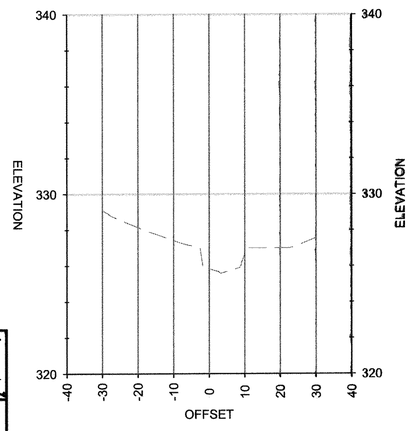
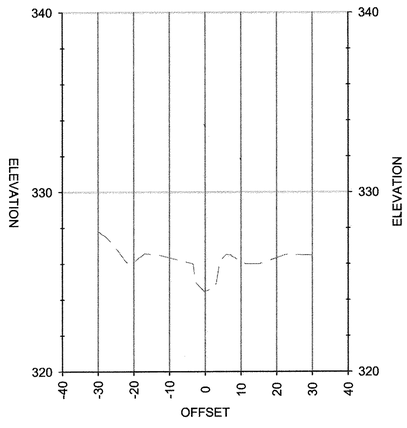
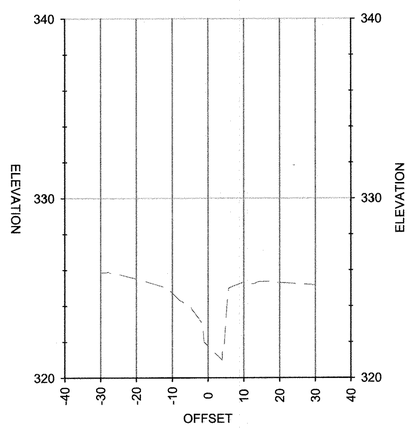


106+11.43



106+48.61



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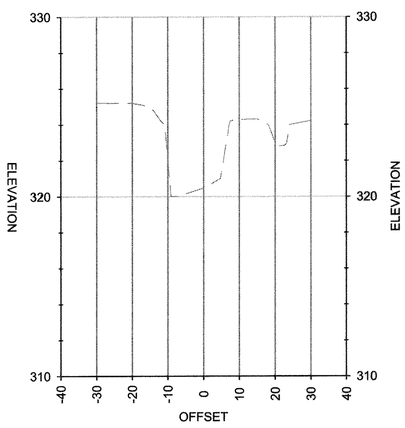
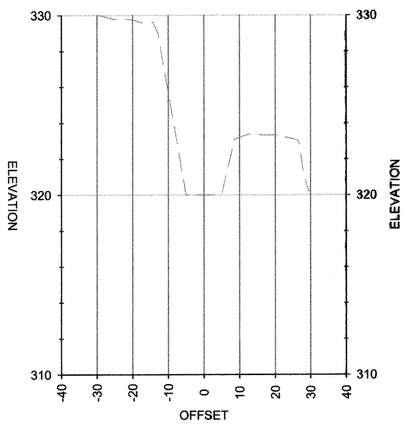
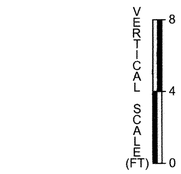


107+34.29



107+71.71



SECTION LEGEND

EXISTING GROUND

PROPOSED GRADE

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

Chief, Bureau of Highways — Date

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

Chief, Division of Land Development — Date 8-10-16

Chief, Development Engineering Division — Date 7.26.16

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

DES. | DRN. | CHK.

DATE	REVISION	BY	APP'R.

PREPARED FOR:

THE HOWARD HUGHES CORPORATION
10480 LITTLE PATUXENT PARKWAY
SUITE 400
COLUMBIA, MD 21044
ATTN: BOB JENKINS
410-964-5443

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE PLANS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 26980, EXPIRATION DATE: FEBRUARY 2018.

STATE OF MARYLAND — PATRICK FEES — No. 26980 — PROFESSIONAL ENGINEER

CROSS SECTIONS

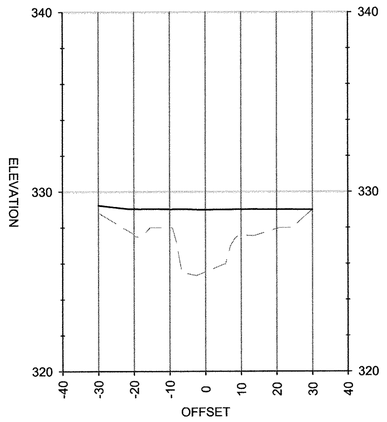
DOWNTOWN COLUMBIA
CRESCENT NEIGHBORHOOD
PARCELS B THRU H, NON-BULDABLE BULK PARCELS J THRU R,
O.S. LOTS 1 THRU 8 AND
MERRIWEATHER-SYMPHONY WOODS NEIGHBORHOOD O.S. LOT 1
AND NON-BUILDABLE BULK PARCEL A

ELECTION DISTRICT No. 5 — HOWARD COUNTY, MARYLAND

SCALE	ZONING	
VALUE	NT	11071
DATE	TAXTITLE	SHEET
JUNE, 2016	36 - 01	86 OF 102

F 15-106

CROSS SECTIONS AT STREAM B



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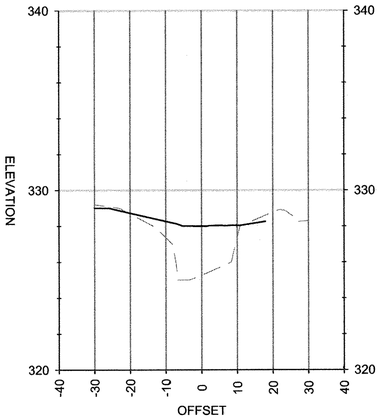

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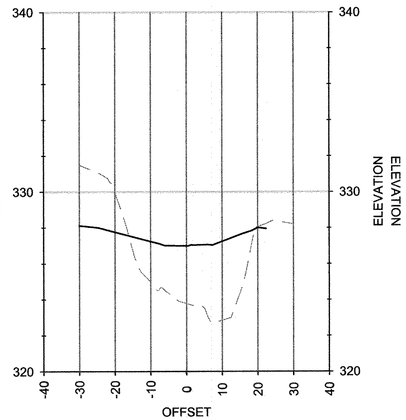

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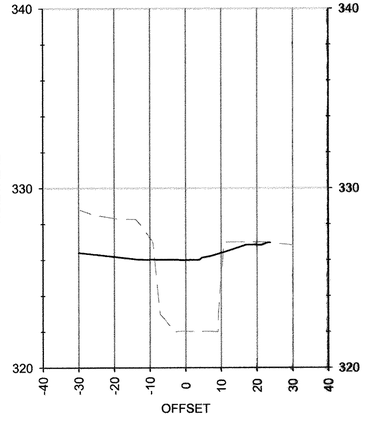

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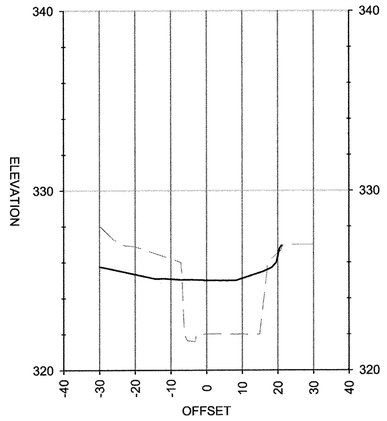

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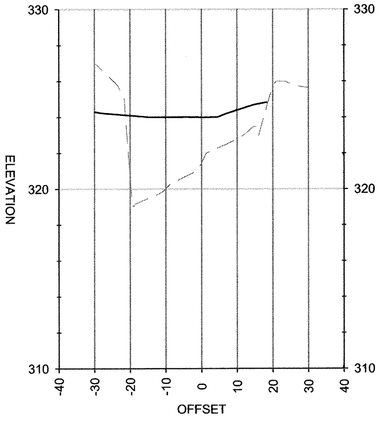

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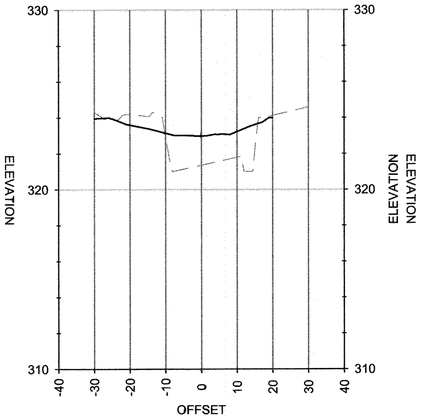

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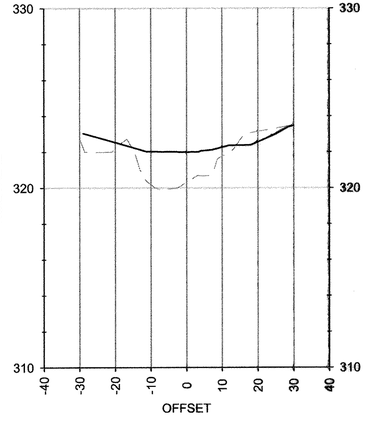

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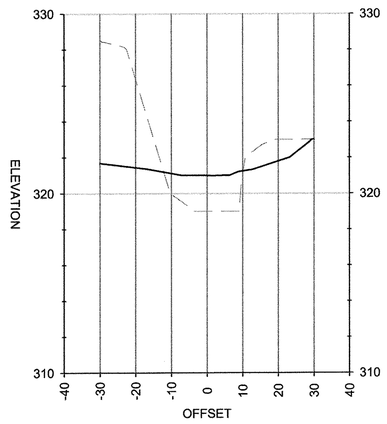

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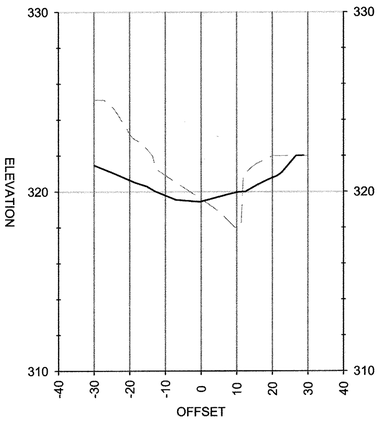

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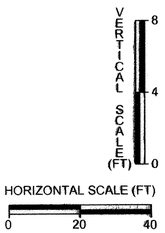

SECTION LEGEND

EXISTING GROUND

PROPOSED GRADE

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

Chief, Bureau of Highways — Date

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

Chief, Division of Land Development — Date 8-3-16

Chief, Development Engineering Division HSP — Date 7-26-16

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DES.	DRN.	CHK.

DATE	REVISION	BY	APP'R.

PREPARED FOR:

THE HOWARD HUGHES CORPORATION
10480 LITTLE PATUXENT PARKWAY
SUITE 400
COLUMBIA, MD 21044
ATTN: BOB JENKINS
410-964-5443

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE PLANS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 26980
EXPIRATION DATE: FEBRUARY 2018

STATE OF MARYLAND — BRIAN STREET — No. 26980 — PROFESSIONAL ENGINEER

CROSS SECTIONS

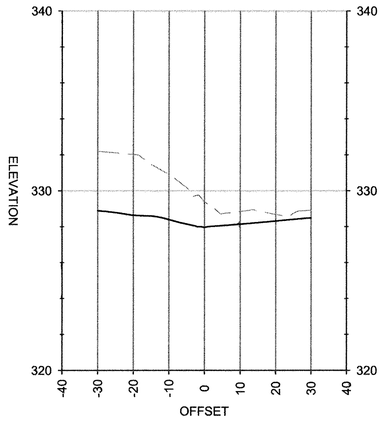
DOWNTOWN COLUMBIA
CRESCENT NEIGHBORHOOD
PARCELS B THRU H, NON-BULDABLE BULK PARCELS J THRU R,
O.S. LOTS 1 THRU 8 AND
MERRIWEATHER-SYMPHONY WOODS NEIGHBORHOOD O.S. LOT 1
AND NON-BUILDABLE BULK PARCEL A

ELECTION DISTRICT No. 5 — HOWARD COUNTY, MARYLAND

SCALE	ZONING	
VALUE	NT	11071
DATE	TAXTITLE	SHEET
JUNE, 2016	36 - 01	87 OF 102

F 15-106

CROSS SECTIONS AT STREAM C



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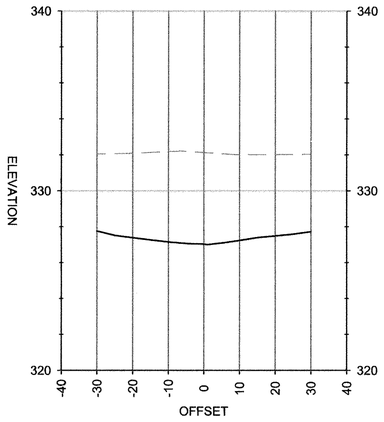

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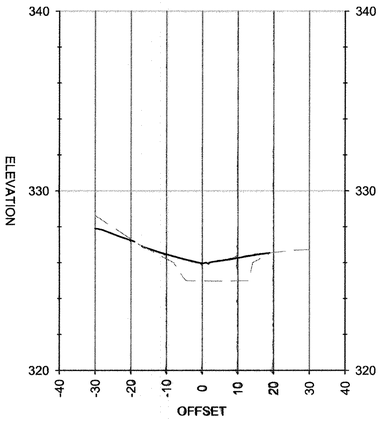

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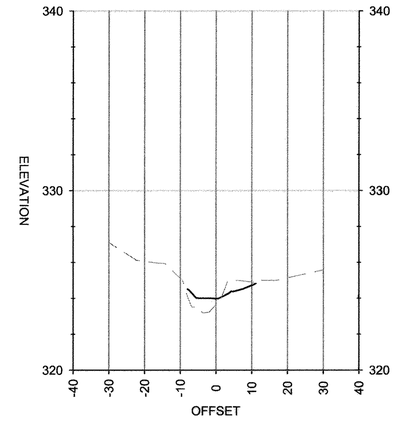

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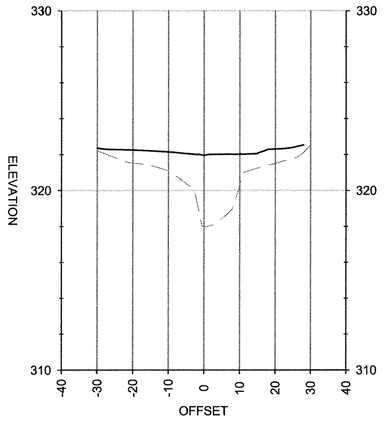

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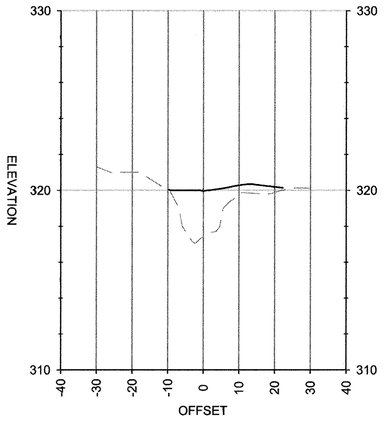

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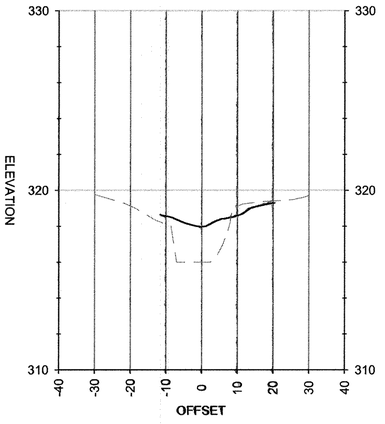

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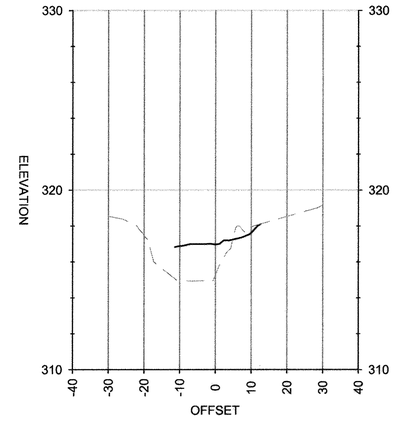

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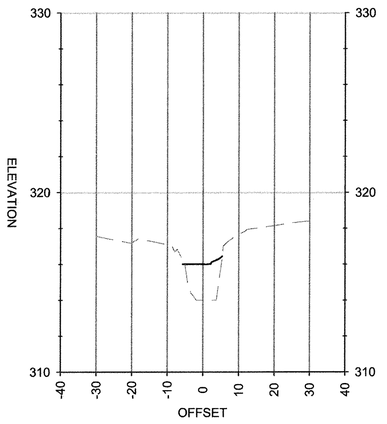

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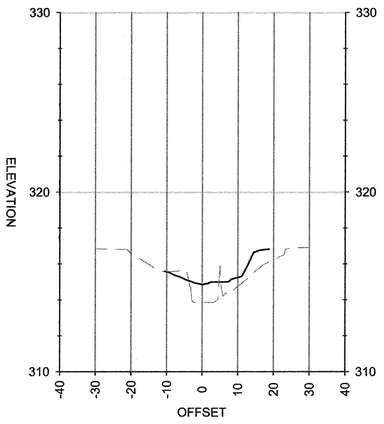

204+18.59

VERTICAL SCALE (FT)
8
4
0

HORIZONTAL SCALE (FT)
0 20 40

SECTION LEGEND

EXISTING GROUND

PROPOSED GRADE

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

Chief, Bureau of Highways — Date

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

Chief, Division of Land Development — Date 8.3.16

Chief, Development Engineering Division — Date 7.26.16

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fx: 410.554.0168 / www.biohabitats.com
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DES. | DRN. | CHK.

DATE	REVISION	BY	APP'R.

PREPARED FOR:

THE HOWARD HUGHES CORPORATION
10480 LITTLE PATUXENT PARKWAY
SUITE 400
COLUMBIA, MD 21044
ATTN: BOB JENKINS
410-964-5443

PROFESSIONAL CERTIFICATION

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STATE OF MARYLAND — ROBERT BRUCE STRETCH — No. 26980 — PROFESSIONAL ENGINEER

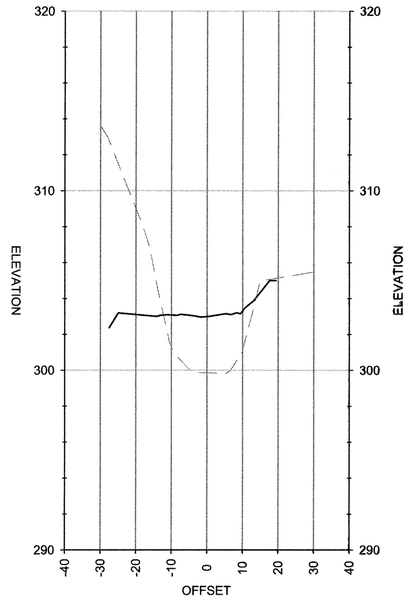
CROSS SECTIONS

DOWNTOWN COLUMBIA
CRESCENT NEIGHBORHOOD
PARCELS B THRU H, NON-BULDABLE BULK PARCELS J THRU R,
O.S. LOTS 1 THRU 8 AND
MERRIWEATHER-SYMPHONY WOODS NEIGHBORHOOD O.S. LOT 1
ELECTION DISTRICT No. 5 — AND NON-BUILDABLE BULK PARCEL A — HOWARD COUNTY, MARYLAND

SCALE	ZONING	
VALUE	NT	11071
DATE	TAX/TITLE	SHEET
JUNE, 2016	36 - 01	88 OF 102

F 15-106

CROSS SECTIONS AT STREAM B LOWER



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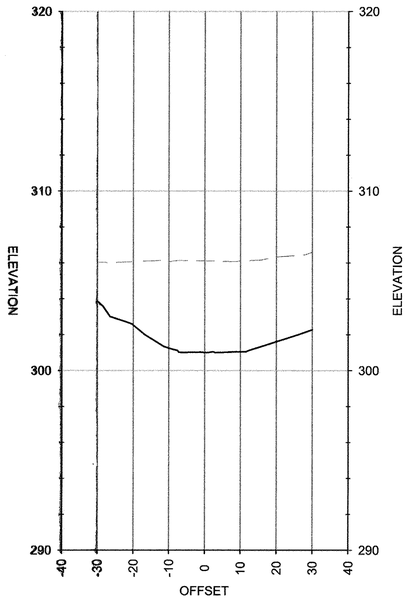

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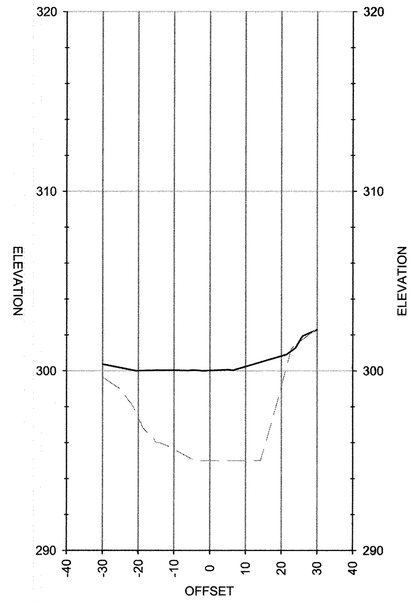
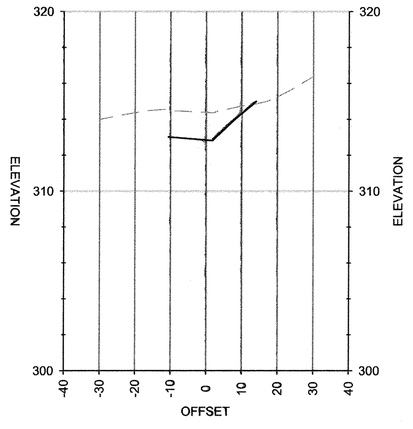


302+63.91

CROSS SECTIONS AT STREAM E



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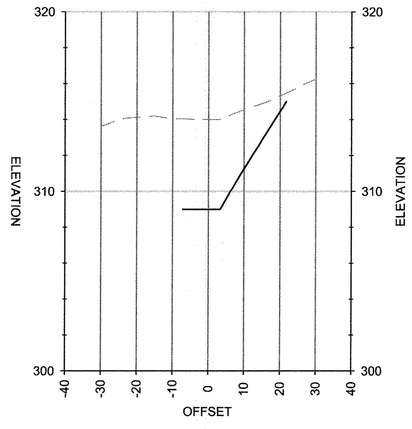

400+30.67

VERTICAL SCALE (FT) 8 4 0

HORIZONTAL SCALE (FT)
0 20 40

SECTION LEGEND

EXISTING GROUND

PROPOSED GRADE

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

Chief, Bureau of Highways — Date

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

Chief, Division of Land Development — Date 8.3.16

Chief, Development Engineering Division — Date 7.26.16

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DATE	REVISION	BY	APP'R.

PREPARED FOR:
THE HOWARD HUGHES CORPORATION
10480 LITTLE PATUXENT PARKWAY
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COLUMBIA, MD 21044
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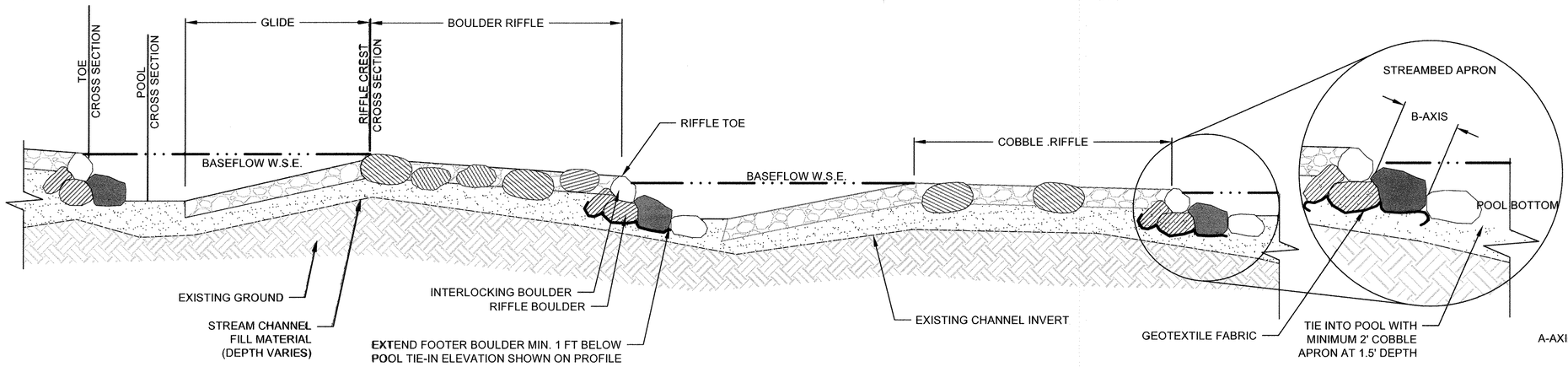
STATE OF MARYLAND — ROBERT WILLIAM BRUSH — NO. 26980 — PROFESSIONAL ENGINEER

CROSS SECTIONS
DOWNTOWN COLUMBIA
CRESCENT NEIGHBORHOOD
PARCELS B THRU H, NON-BULDABLE BULK PARCELS J THRU R,
O.S. LOTS 1 THRU 8 AND
MERRIWEATHER-SYMPHONY WOODS NEIGHBORHOOD O.S. LOT 1
AND NON-BUILDABLE BULK PARCEL A
ELECTION DISTRICT No. 5 — HOWARD COUNTY, MARYLAND

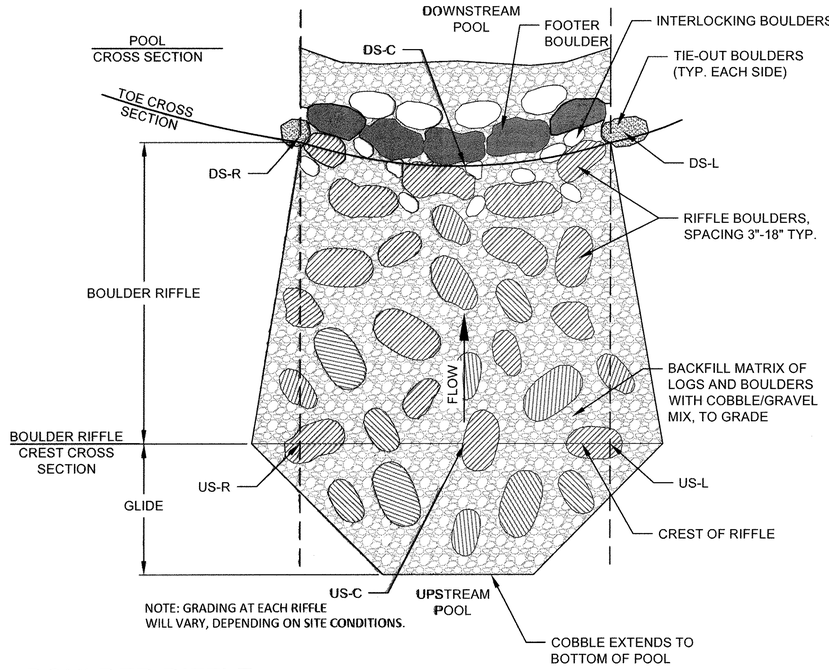
SCALE	ZONING	
VALUE	NT	11071
DATE	TAX/TITLE	SHEET
JUNE, 2016	36 - 01	89 OF 102

F 15-106



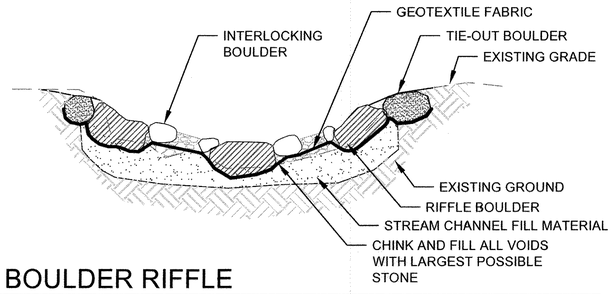
BOULDER RIFFLE - COBBLE RIFFLE PROFILE INDEX

NOT TO SCALE



BOULDER RIFFLE PLAN VIEW

NOT TO SCALE



BOULDER RIFFLE TOE CROSS SECTION

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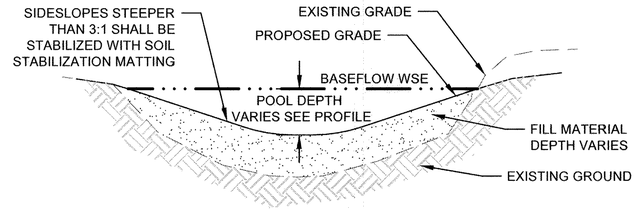

BOULDER RIFFLE POOL CROSS SECTION

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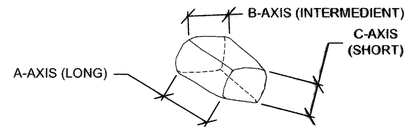


BOULDER RIFFLE BOULDER AXIS

NOT TO SCALE

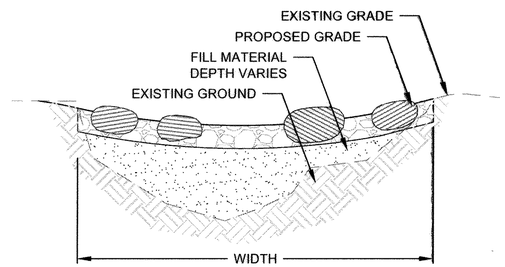
BOULDER DIMENSIONS (FT) - BOULDER RIFFLE			
BOULDER TYPE	A-AXIS	B-AXIS	C-AXIS
RIFFLE	3.5-4.5	2.5-3.5	1.6-2.0
FOOTER	3.5-4.5	2.5-3.5	1.6-2.0
TIE-OUT	3.0-4.0	2.5-3.5	1.6-2.0
INTERLOCKING	2.0-3.0	1.5-2.0	1.2-1.5

BOULDER RIFFLE MATERIAL GRADATION TABLE

CUMULATIVE % FINER	COBBLE SIZE (IN)
100	16
84	13
50	6
16	3
0	1

BOULDER RIFFLE NOTES:
IN AREAS OF CUT, STREAM CHANNEL FILL MATERIAL UNDER BOULDER RIFFLE IS NOT NEEDED. IN AREAS OF FILL, EXISTING STREAM CHANNEL TO BE FILLED IN 8" LIFTS TO ELEVATION SPECIFIED ON PROFILE.

1. 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. SEE GRADING PLAN FOR STRUCTURE TABLES WITH NODE LOCATIONS AND ELEVATIONS DEFINING FOOTPRINT OF BOULDER RIFFLE. GLIDE LIMITS ARE SHOWN ON PROFILE.
2. W.S.E. = WATER SURFACE ELEVATION



BOULDER RIFFLE RIFFLE CREST CROSS SECTION

NOTE: SEE CROSS SECTION TABLE SHEET 16

NOT TO SCALE

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

Chief, Bureau of Highways — Date

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

Chief, Division of Land Development — Date 8-3-16

Chief, Development Engineering Division — Date 7.26.16

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 6/17/16

Jennifer Zielinski Missett, PE

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 OF DEVELOPER (PRINTNAME BELOW SIGNATURE) — DATE 6.17.16

WILLIAM T. ROWE

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

Howard SCD — Date

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Baltimore, MD 21211 / ph: 410.554.0156
fx: 410.554.0168 / www.biohabitats.com
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DES. | DRN. | CHK.

DATE	REVISION	BY	APP'R.

PREPARED FOR:
THE HOWARD HUGHES CORPORATION
10480 LITTLE PATUXENT PARKWAY
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COLUMBIA, MD 21044
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STATE OF MARYLAND — JENNIFER ZIELINSKI MISSETT — No. 26980 — PROFESSIONAL ENGINEER

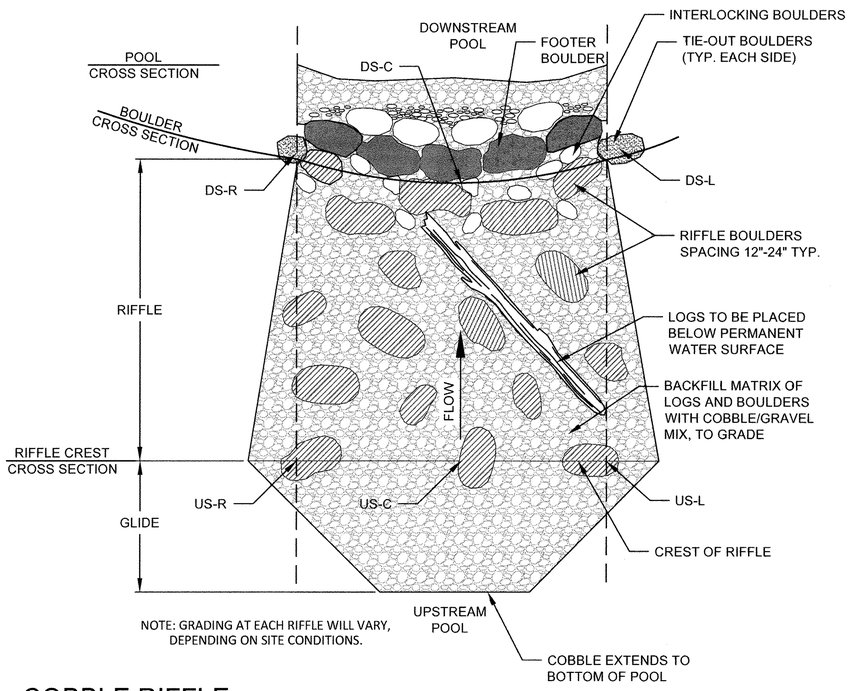
DETAILS

DOWNTOWN COLUMBIA
CRESCENT NEIGHBORHOOD
PARCELS B THRU H, NON-BULDABLE BULK PARCELS J THRU R, O.S. LOTS 1 THRU 8 AND MERRIWEATHER-SYMPHONY WOODS NEIGHBORHOOD O.S. LOT 1 AND NON-BUILDABLE BULK PARCEL A

ELECTION DISTRICT No. 5 — HOWARD COUNTY, MARYLAND

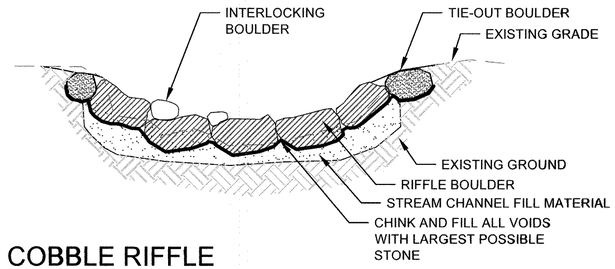
SCALE	ZONING	
N.T.S.	NT	11071
DATE	TAX TITLE	SHEET
JUNE, 2016	36 - 01	90 OF 102

F 15-106



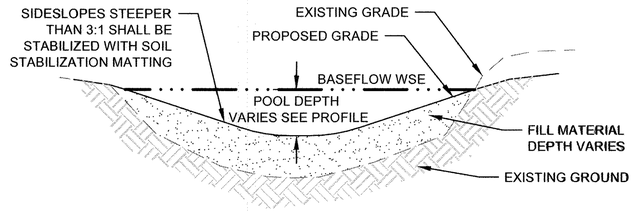
COBBLE RIFFLE
PLAN VIEW

NOT TO SCALE



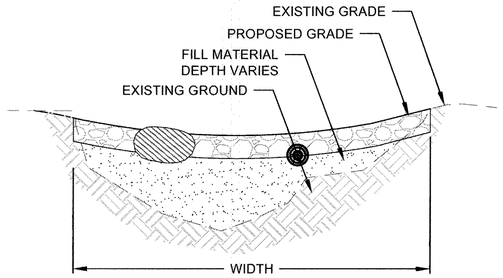
COBBLE RIFFLE
BOULDER CROSS SECTION

NOT TO SCALE



COBBLE RIFFLE
POOL CROSS SECTION

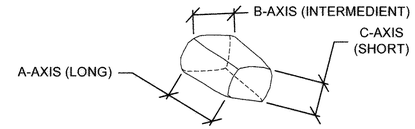
NOT TO SCALE



COBBLE RIFFLE
RIFFLE CREST CROSS SECTION

NOTE: SEE CROSS SECTION TABLE THIS SHEET

NOT TO SCALE



COBBLE RIFFLE
BOULDER AXIS

NOT TO SCALE

BOULDER DIMENSIONS (FT)
COBBLE RIFFLE, ROCK TOE PROTECTION
AND OUTFALL PROTECTION

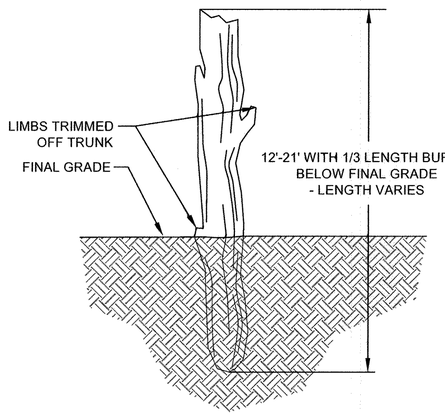
BOULDER TYPE	A-AXIS	B-AXIS	C-AXIS
RIFFLE	3.0-4.0	2.0-3.0	1.6-2.0
TOP	3.0-4.0	2.0-3.0	1.6-2.0
FOOTER	3.0-4.0	2.0-3.0	1.6-2.0
TIE-OUT	3.0-4.0	2.0-3.0	1.6-2.0
INTERLOCKING	2.0-3.0	1.5-2.0	1.2-1.5

COBBLE RIFFLE MATERIAL GRADATION TABLE

CUMULATIVE % FINER	COBBLE SIZE (IN)
100	12
84	9
50	4
16	2
0	1

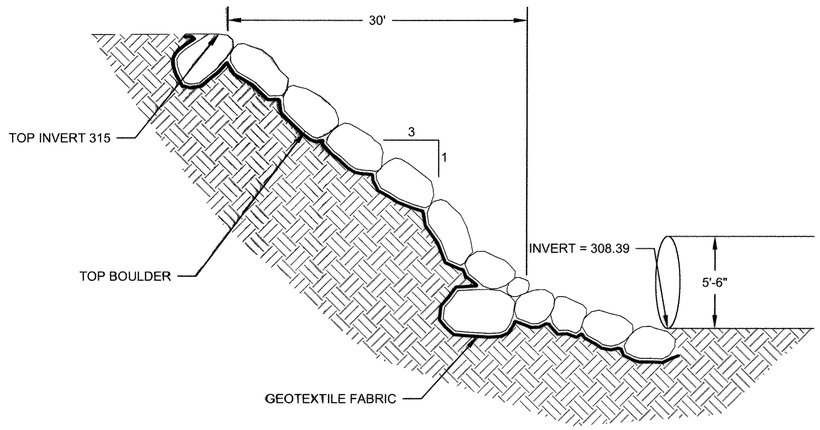
COBBLE RIFFLE NOTES:

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



STANDING SNAG
SECTION VIEW- TYPICAL

NOT TO SCALE



STREAM E INLET CONTROL

NOT TO SCALE

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

Howard SCD — Date

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

Chief, Bureau of Highways — Date

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

Chief, Division of Land Development — Date 8.3.16

Chief, Development Engineering Division — Date 7.26.16

ENGINEERS CERTIFICATE

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SIGNATURE OF ENGINEER (PRINTNAME BELOW SIGNATURE) — DATE 6/17/16

Jennifer Zielinski Missett, PE

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SIGNATURE OF DEVELOPER (PRINTNAME BELOW SIGNATURE) — DATE 6.17.16

William F. Lowe

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Restore the Earth & Inspire Ecological Stewardship

DES. | DRN. | CHK.

DATE	REVISION	BY	APP'R.

PREPARED FOR:
THE HOWARD HUGHES CORPORATION
10480 LITTLE PATUXENT PARKWAY
SUITE 400
COLUMBIA, MD 21044
ATTN: BOB JENKINS
410-964-5443

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STATE OF MARYLAND — JENNIFER ZIELINSKI MISSETT — No. 26980 — PROFESSIONAL ENGINEER

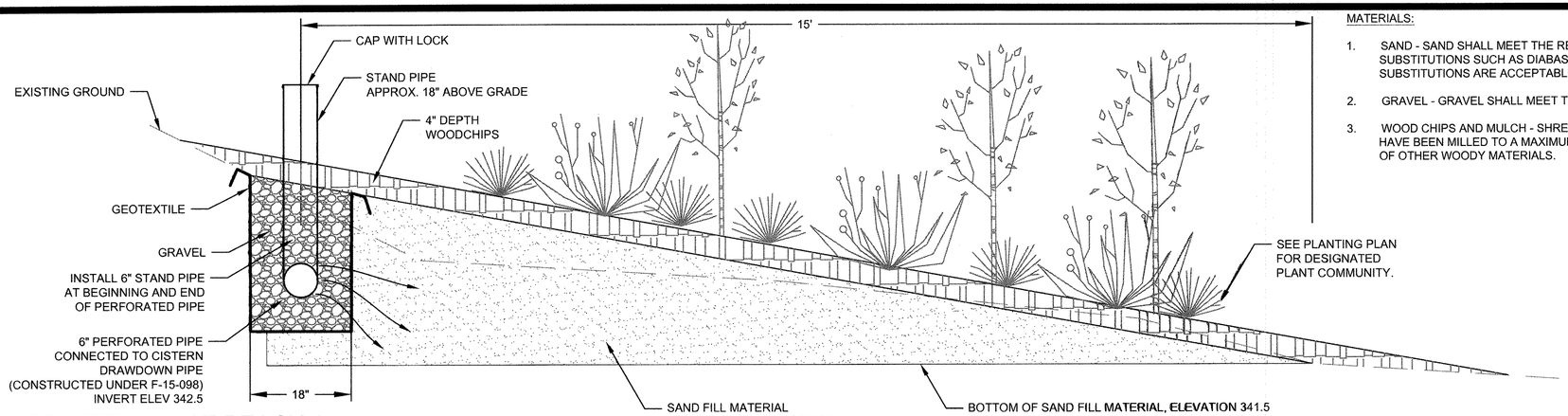
DETAILS

DOWNTOWN COLUMBIA
CRESCENT NEIGHBORHOOD
PARCELS B THRU H, NON-BULDABLE BULK PARCELS J THRU R,
O.S. LOTS 1 THRU 8 AND
MERRIWEATHER-SYMPHONY WOODS NEIGHBORHOOD O.S. LOT 1
AND NON-BUILDABLE BULK PARCEL A

ELECTION DISTRICT No. 5 — HOWARD COUNTY, MARYLAND

SCALE	ZONING	
N.T.S.	NT	11071
DATE	TAX/TITLE	SHEET
JUNE, 2016	36 - 01	91 OF 102

F 15-106

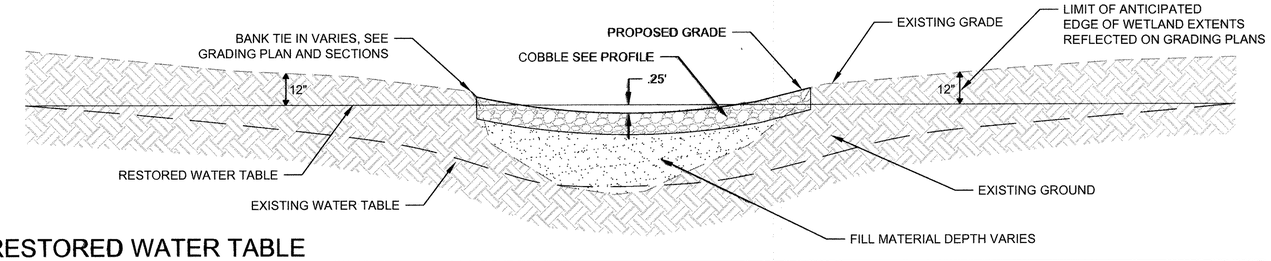


SEEPAGE WETLAND AT REACH A
CROSS SECTION

NOT TO SCALE

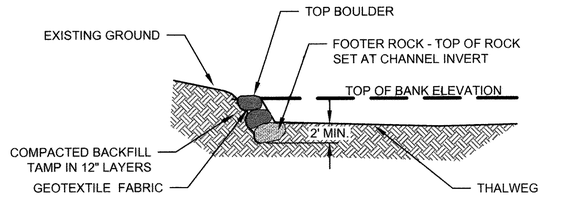
MATERIALS:

1. SAND - SAND SHALL MEET THE REQUIREMENTS OF CLEAN AASHTO M-6 OR ASTM C-33 CONCRETE SAND, 0.02 INCHES TO 0.04 INCHES IN SIZE. SAND SUBSTITUTIONS SUCH AS DIABASE AND GRAYSTONE (AASHTO) #10 ARE NOT ACCEPTABLE. NO CALCIUM CARBONATED OR DOLOMITIC SAND SUBSTITUTIONS ARE ACCEPTABLE. NO "ROCK DUST" CAN BE USED FOR SAND.
2. GRAVEL - GRAVEL SHALL MEET THE REQUIREMENTS OF AASHTO M43 SIZE, #57, 0.25 INCHES TO 0.75 INCHES IN SIZE.
3. WOOD CHIPS AND MULCH - SHREDDED HARDWOOD MULCH (SHM) SHALL CONSIST OF NATURAL WOOD AND BARK FROM HARDWOOD TREES THAT HAVE BEEN MILLED TO A MAXIMUM 4 IN. PARTICLE SIZE. SHM SHALL CONTAIN NO MORE THAN 20% HARDWOOD SAWDUST AND NEGLIGIBLE AMOUNTS OF OTHER WOODY MATERIALS.



RESTORED WATER TABLE
WETLAND CREATION & ENHANCEMENT

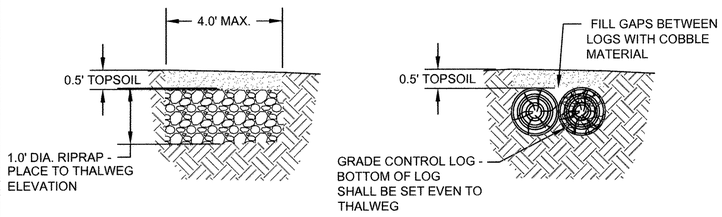
NOT TO SCALE



NOTE:
INCLINATION OF WALL FROM HORIZONTAL SHALL BE 1H:6V

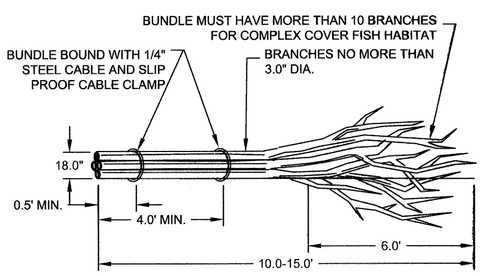
BOULDER TOE PROTECTION
CROSS SECTION

NOT TO SCALE



BURIED SILL
SECTION

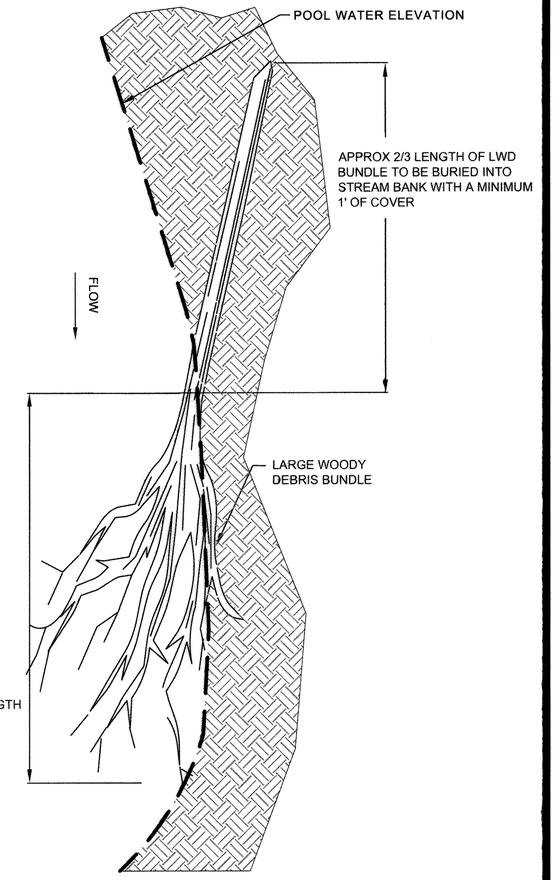
NOT TO SCALE



NOTE:
1. INSTALL IN-STREAM LARGE WOODY DEBRIS, ONE PER POOL AT LOCATIONS DETERMINED BY ENGINEER
2. PARTIALLY BURY ONSITE LWD INTO THE STREAM BANK APPROXIMATELY ⅔ OF TOTAL LENGTH TO SECURE IN PLACE AS DIRECTED BY THE ENGINEER

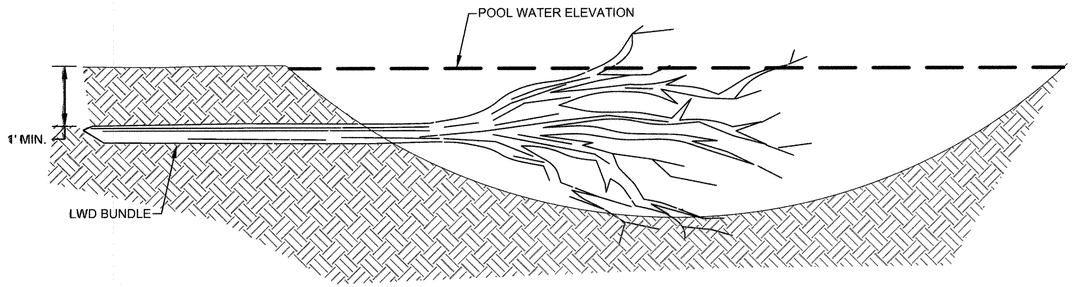
INSTREAM LARGE WOODY DEBRIS (LWD)
LARGE WOODY DEBRIS BUNDLE

NOT TO SCALE



INSTREAM LARGE WOODY DEBRIS (LWD)
PLAN VIEW- TYPICAL

NOT TO SCALE



INSTREAM LARGE WOODY DEBRIS (LWD)
CROSS SECTION

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

Howard SCD — Date

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

Chief, Bureau of Highways — Date

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SIGNATURE OF DEVELOPER (PRINTNAME BELOW SIGNATURE) — DATE 6.17.16

WILLIAM F. ROWE

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fx: 410.554.0168 / www.biohabitats.com
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DES. | DRN. | CHK.

DATE	REVISION	BY	APP'R.

PREPARED FOR:
THE HOWARD HUGHES CORPORATION
10480 LITTLE PATUXENT PARKWAY
SUITE 400
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ELECTION DISTRICT No. 5 — HOWARD COUNTY, MARYLAND

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N.T.S.	NT	11071
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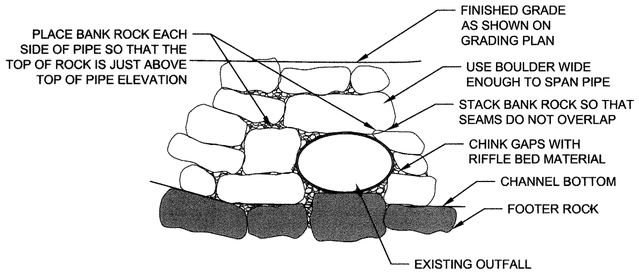
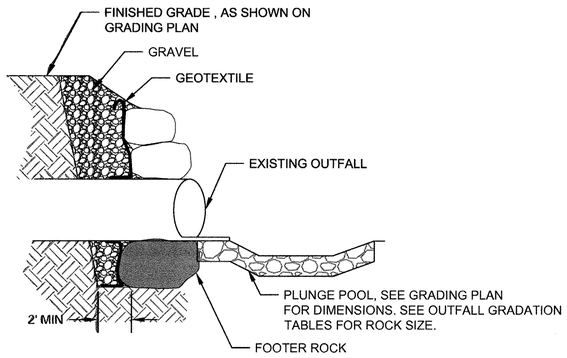


BOULDER BANK STABILIZATION
OUTFALL PROTECTION CROSS SECTION

NOT TO SCALE



BOULDER BANK STABILIZATION
OUTFALL PROTECTION PROFILE

NOT TO SCALE

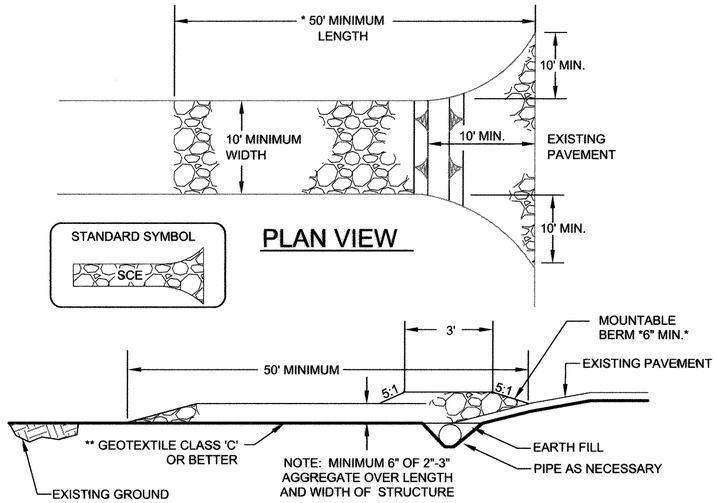
OUTFALL 47 COBBLE GRADATION TABLE

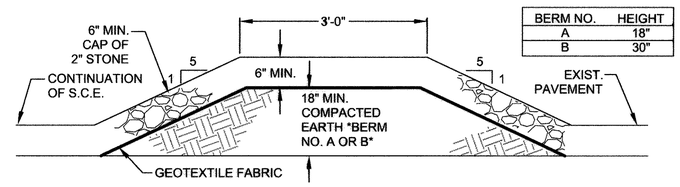
CUMULATIVE % FINER	COBBLE SIZE (IN)
100	36
84	20
50	8
16	2
0	1

OUTFALL 68 COBBLE GRADATION TABLE

CUMULATIVE % FINER	COBBLE SIZE (IN)
100	30
84	15
50	6
16	2
0	1

FOR OUTFALLS 73 AND 80, USE COBBLE RIFFLE GRADATION TABLE





BERM NO.	HEIGHT
A	18"
B	30"

HEAVY DUTY STABILIZED CONSTRUCTION ENTRANCE

NOT TO SCALE

CONSTRUCTION SPECIFICATION - HEAVY DUTY STABILIZED CONSTRUCTION ENTRANCE

1. LENGTH - MINIMUM OF 50' **30' FOR SINGLE RESIDENCE LOT*.

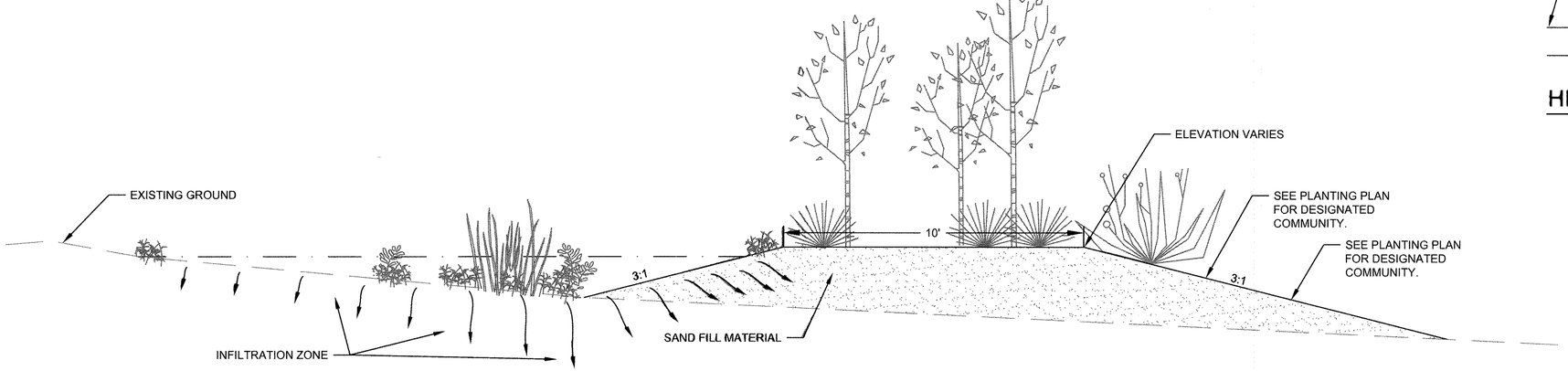
2. WIDTH - 10' MINIMUM, SHOULD BE FLARED AT THE EXISTING ROAD TO PROVIDE A TURNING RADIUS.

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 SCE IS LOCATED AT A HIGH SPOT AND HAS NO DRAINAGE TO CONVEY A PIPE WILL NOT BE NECESSARY. PIPE SHOULD BE SIZED ACCORDING TO THE AMOUNT OF RUNOFF TO BE CONVEYED. A 6" MINIMUM WILL BE REQUIRED.

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.



SEEPAGE WETLAND BERM AT REACH B
CROSS SECTION

NOT TO SCALE

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William T. Rouse

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Howard SCD

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ELECTION DISTRICT No. 5 — HOWARD COUNTY, MARYLAND

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F 15-106

HOWARD SOIL CONSERVATION DISTRICT STANDARD SEDIMENT CONTROL NOTES

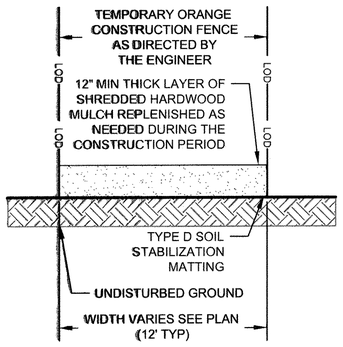
1. A MINIMUM OF 48 HOURS NOTICE MUST BE GIVEN TO THE HOWARD COUNTY DEPARTMENT OF INSPECTIONS, LICENSES AND PERMITS, SEDIMENT CONTROL DIVISION PRIOR TO THE START OF ANY CONSTRUCTION (313-1855).
2. ALL VEGETATIVE AND STRUCTURAL PRACTICES ARE TO BE INSTALLED ACCORDING TO THE PROVISIONS OF THIS PLAN AND ARE TO BE IN CONFORMANCE WITH THE MOST CURRENT MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL AND REVISIONS THERETO.
3. FOLLOWING INITIAL SOIL DISTURBANCE OR RE-DISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN: A) 3 CALENDAR DAYS FOR ALL PERIMETER SEDIMENT CONTROL STRUCTURES, DIKES, PERIMETER SLOPES AND ALL SLOPES GREATER THAN 3:1, B) 7 DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE.
4. 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 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 DONE WHEN RECOMMENDED SEEDING DATES DO NOT ALLOW FOR PROPER GERMINATION AND ESTABLISHMENT OF GRASSES.
5. 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 HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.
6. SITE ANALYSIS:

TOTAL AREA OF SITE	6.44 ACRES
AREA DISTURBED	6.44 ACRES
AREA TO BE ROOFED OR PAVED	0.00 ACRES
AREA TO BE STABILIZED WITH VEGETATION	4.75 ACRES
TOTAL CUT	34262 CU. YDS.
TOTAL FILL	5974 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

7. ANY SEDIMENT CONTROL PRACTICE THAT IS DISTURBED BY GRADING ACTIVITY FOR PLACEMENT OF UTILITIES MUST BE REPAIRED ON THE SAME DAY OF DISTURBANCE.
8. ADDITIONAL SEDIMENT CONTROL MUST BE PROVIDED, IF DEEMED NECESSARY BY THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.
9. ON ALL SITES WITH DISTURBED AREAS IN EXCESS OF 2 ACRES, APPROVAL OF THE INSPECTION AGENCY SHALL BE REQUESTED UPON COMPLETION OF INSTALLATION OF PERIMETER EROSION AND SEDIMENT CONTROLS, BUT BEFORE PROCEEDING WITH ANY OTHER EARTH DISTURBANCE OR GRADING. OTHER BUILDING OR GRADING INSPECTION APPROVALS MAY NOT BE AUTHORIZED UNTIL THIS INITIAL APPROVAL BY THE INSPECTION AGENCY IS MADE.
10. TRENCHES FOR THE CONSTRUCTION OF UTILITIES IS LIMITED TO THREE PIPE LENGTHS OR THAT WHICH SHALL BE BACK-FILLED AND STABILIZED BY THE END OF EACH WORKDAY, WHICHEVER IS SHORTER.
11. ANY CHANGES OR REVISIONS TO THE SEQUENCE OF CONSTRUCTION MUST BE REVIEWED AND APPROVED BY THE PLAN APPROVAL AUTHORITY PRIOR TO PROCEEDING WITH CONSTRUCTION.
12. A PROJECT IS TO BE SEQUENCED SO THAT GRADING ACTIVITIES BEGIN ON ONE GRADING UNIT (MAXIMUM ACREAGE OF 20 AC. PER GRADING UNIT) AT A TIME. WORK MAY PROCEED TO A SUBSEQUENT GRADING UNIT WHEN AT LEAST 50 PERCENT OF THE DISTURBED AREA IN THE PRECEDING GRADING UNIT HAS BE STABILIZED AND APPROVED BY THE ENFORCEMENT AUTHORITY. UNLESS OTHERWISE SPECIFIED AND APPROVED BY THE APPROVAL AUTHORITY, NO MORE THAN 30 ACRES CUMULATIVELY MAY BE DISTURBED AT A GIVEN TIME. *please see sheet 2.1 for current Howard SCD Standard Notes to be used

NOTE: TEMPORARY AND/OR PERMANENT STABILIZATION IS TO BE PERFORMED AT THE DIRECTION OF THE SEDIMENT CONTROL INSPECTOR OR AT THE INTERVALS REQUIRED BY THE 2011 STANDARDS & SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, WHICHEVER IS MORE RESTRICTIVE.

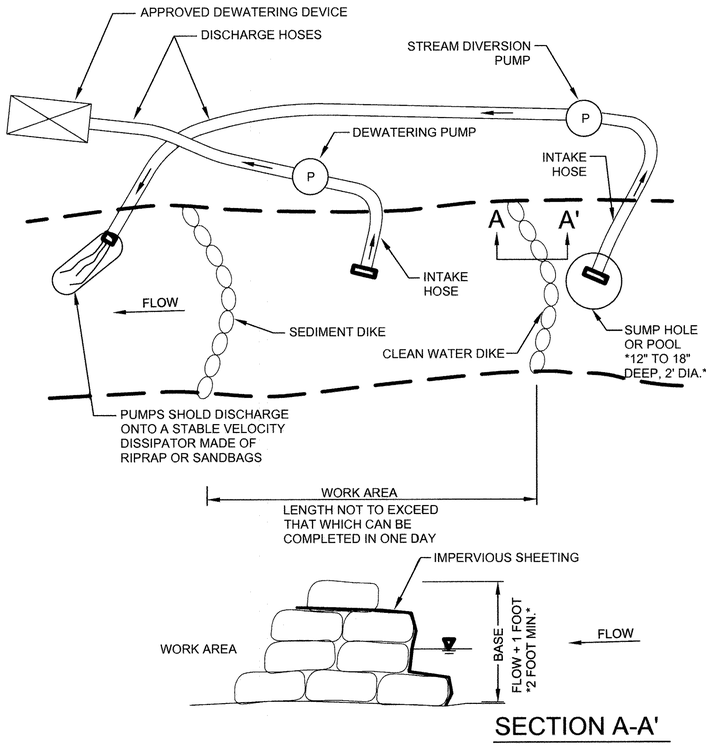
MITIGATION PLAN NOTES:
1. TOPSOIL SHOULD BE SALVAGED AND REPLACED WHENEVER POSSIBLE TO A DEPTH OF AT LEAST 6 INCHES. SITE SHOULD BE GRADED TO BELOW 6 INCHES OF FINAL GRADE, THEN 6 INCHES TOPSOIL SPREAD OVER SITE.
2. A MINIMUM OF 60 CUBIC YARDS OF ORGANIC MATTER AND THREE DUMP TRUCK LOADS OF SUPPLEMENTAL LARGE WOODY DEBRIS IS REQUIRED PER ACRE IN WETLAND MITIGATION AREA.
3. SURFACE OF THE SOIL SHALL NOT BE COMPACTED TO THE EXTENT THAT IT LIMITS PLAN ESTABLISHMENT AND MICROBIAL ACTIVITIY. UPON COMPLETION OF INITIAL GRADING, THE SOIL MUST BE DISKED OR CHISEL PLOWED TO A DEPTH OF 8 INCHES.
4. ALL BOULDERS AND COBBLE IS ANTICIPATED TO BE SUPPLIED BY SAVAGE QUARRY IN SAVAGE, MARYLAND.



MULCH ACCESS ROAD

NOT TO SCALE

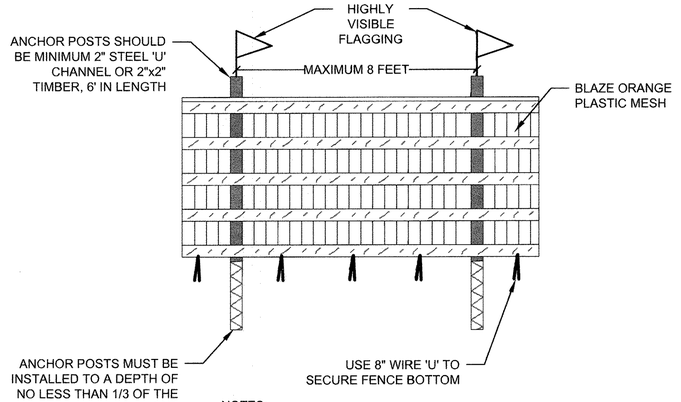
NOTES:
1. ACCESS ROUTES TO BE VERIFIED BY ENGINEER AT EROSION AND SEDIMENT CONTROL MEETING. REVISIONS TO THE ALIGNMENT THAT MINIMIZE TREE DISTURBANCE ARE ENCOURAGED AND REQUIRE REVIEW AND APPROVAL BY THE ENGINEER.
2. SOIL STABILIZATION MATTING SHALL BE PLACED WITH SEAMS PARALLEL TO THE FLOW OF TRAFFIC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



SECTION A-A'

PUMP AROUND

NOT TO SCALE



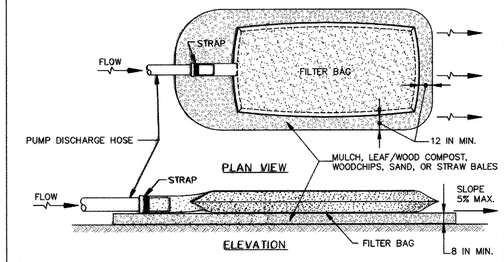
NOTES:
1. PROTECTION AREA WILL BE SET AS PART OF THE REVIEW PROCESS.
2. BOUNDARIES OF PROTECTION AREA SHOULD BE STAKED AND FLAGGED PRIOR TO INSTALLING DEVICES.
3. DEVICE SHOULD BE MAINTAINED THROUGHOUT CONSTRUCTION.

TREE PROTECTION
BLAZE ORANGE PLASTIC FENCE

NOT TO SCALE

DETAIL F-4 FILTER BAG

STANDARD SYMBOL: ☒FB



CONSTRUCTION SPECIFICATIONS

1. TIGHTLY SEAL SLEEVE AROUND THE PUMP DISCHARGE HOSE WITH A STRAP OR SIMILAR DEVICE.
2. PLACE FILTER BAG ON SUITABLE BASE (E.G., MULCH, LEAF/WOOD COMPOST, WOODCHIPS, SAND, OR STRAW BALES) LOCATED ON A LEVEL OR 5% MAXIMUM SLOPING SURFACE. DISCHARGE TO A STABILIZED AREA. EXTEND BASE A MINIMUM OF 12 INCHES FROM EDGES OF BAG.
3. CONTROL PUMPING RATE TO PREVENT EXCESSIVE PRESSURE WITHIN THE FILTER BAG IN ACCORDANCE WITH THE MANUFACTURER RECOMMENDATIONS. AS THE BAG FILLS WITH SEDIMENT, REDUCE PUMPING RATE.
4. REMOVE AND PROPERLY DISPOSE OF FILTER BAG UPON COMPLETION OF PUMPING OPERATIONS OR AFTER BAG HAS REACHED CAPACITY, WHICHEVER OCCURS FIRST. SPREAD THE DEWATERED SEDIMENT FROM THE BAG IN AN APPROVED UPLAND AREA AND STABILIZE WITH SEED AND MULCH BY THE END OF THE WORK DAY. RESTORE THE SURFACE AREA BENEATH THE BAG TO ORIGINAL CONDITION UPON REMOVAL OF THE DEVICE.
5. USE NONWOVEN GEOTEXTILE WITH DOUBLE STITCHED SEAMS USING HIGH STRENGTH THREAD. SIZE SLEEVE TO ACCOMMODATE A MAXIMUM 4 INCH DIAMETER PUMP DISCHARGE HOSE. THE BAG MUST BE MANUFACTURED FROM A NONWOVEN GEOTEXTILE THAT MEETS OR EXCEEDS MINIMUM AVERAGE ROLL VALUES (MARV) FOR THE FOLLOWING:

GRAB TENSILE	250 LB	ASTM D-4632
PUNCTURE	150 LB	ASTM D-4833
FLOW RATE	70 GAL/MIN/FT²	ASTM D-4491
PERMITTIVITY (SEC⁻¹)	1.2 SEC⁻¹	ASTM D-4491
UV RESISTANCE	70% STRENGTH @ 500 HOURS	ASTM D-4355
APPARENT OPENING SIZE (AOS)	0.15-0.18 MM	ASTM D-4751
SEAM STRENGTH	90%	ASTM D-4632

6. REPLACE FILTER BAG IF BAG CLOGS OR HAS RIPS, TEARS, OR PUNCTURES. DURING OPERATION KEEP CONNECTION BETWEEN PUMP HOSE AND FILTER BAG WATER TIGHT. REPLACE BEDDING IF IT BECOMES DISPLACED.

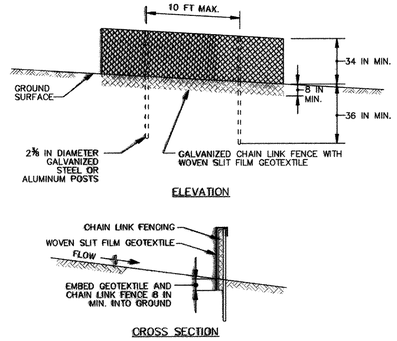
MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

F-9

DETAIL E-3 SUPER SILT FENCE

STANDARD SYMBOL: —SSF—



CONSTRUCTION SPECIFICATIONS

1. INSTALL 2⅜ INCH DIAMETER GALVANIZED STEEL POSTS OF 0.095 INCH WALL THICKNESS AND SIX FOOT LENGTH SPACED NO FURTHER THAN 10 FEET APART. DRIVE THE POSTS A MINIMUM OF 36 INCHES INTO THE GROUND.
2. FASTEN 9 GAUGE OR HEAVIER GALVANIZED CHAIN LINK FENCE (2⅜ INCH MAXIMUM OPENING) 42 INCHES IN HEIGHT SECURELY TO THE FENCE POSTS WITH WIRE TIES OR HUG RINGS.
3. FASTEN WOVEN SLIT FILM GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS, SECURELY TO THE UPSLOPE SIDE OF CHAIN LINK FENCE WITH TIES SPACED EVERY 24 INCHES AT THE TOP AND MID SECTION. EMBED GEOTEXTILE AND CHAIN LINK FENCE A MINIMUM OF 8 INCHES INTO THE GROUND.
4. WHERE ENDS OF THE GEOTEXTILE COME TOGETHER, THE ENDS SHALL BE OVERLAPPED BY 6 INCHES, FOLDED, AND STAPLED TO PREVENT SEDIMENT BY PASS.
5. EXTEND BOTH ENDS OF THE SUPER SILT FENCE A MINIMUM OF FIVE HORIZONTAL FEET UPSLOPE AT 45 DEGREES TO THE MAIN FENCE ALIGNMENT TO PREVENT RUNOFF FROM GOING AROUND THE ENDS OF THE SUPER SILT FENCE.
6. PROVIDE MANUFACTURER CERTIFICATION TO THE INSPECTION/ENFORCEMENT AUTHORITY SHOWING THAT GEOTEXTILE USED MEETS THE REQUIREMENTS IN SECTION H-1 MATERIALS.
7. REMOVE ACCUMULATED SEDIMENT AND DEBRIS WHEN BULGES DEVELOP IN FENCE OR WHEN SEDIMENT REACHES 25% OF FENCE HEIGHT. REPLACE GEOTEXTILE IF TORN. IF UNDERMINING OCCURS, REINSTALL CHAIN LINK FENCING AND GEOTEXTILE.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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

E.7

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

Howard SCD — Date 6/29/16

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

Chief, Bureau of Highways — Date

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

Chief, Division of Land Development — Date 8.3.16

Chief, Development Engineering Division — Date 7.26.16

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 6/17/16

Jennifer Zielinski Missett, PE

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 ONSITE INSPECTION BY THE HOWARD COUNTY SOIL CONSERVATION DISTRICT"

SIGNATURE OF DEVELOPER (PRINTNAME BELOW SIGNATURE) — DATE 6/17/16

WILLIAM T. ROWE

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

DES. | DRN. | CHK.

DATE	REVISION	BY	APP'R.

PREPARED FOR:
THE HOWARD HUGHES CORPORATION
10480 LITTLE PATUXENT PARKWAY
SUITE 400
COLUMBIA, MD 21044
ATTN: BOB JENKINS
410-964-5443

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE PLANS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 26980, EXPIRATION DATE: FEBRUARY 2018

STATE OF MARYLAND — JENNIFER ZIELINSKI MISSETT — No. 26980 — PROFESSIONAL ENGINEER

EROSION AND SEDIMENT CONTROL DETAILS
DOWNTOWN COLUMBIA
CRESCENT NEIGHBORHOOD
PARCELS B THRU H, NON-BUILDABLE BULK PARCELS J THRU R, O.S. LOTS 1 THRU 8 AND MERRIWEATHER-SYMPHONY WOODS NEIGHBORHOOD O.S. LOT 1 AND NON-BUILDABLE BULK PARCEL A
ELECTION DISTRICT No. 5 — HOWARD COUNTY, MARYLAND

SCALE	ZONING	
N.T.S.	NT	11071
DATE	TAX TITLE	SHEET
JUNE, 2016	36 - 01	94 OF 102

F 15-106

SEQUENCE OF CONSTRUCTION

1. CONDUCT ON-SITE PRE-CONSTRUCTION MEETING AND OBTAIN GRADING AND ALL NECESSARY PERMITS FOR CONSTRUCTION FROM THE COUNTY PRIOR TO START OF WORK.
2. NOTIFY THE DEPARTMENT OF PUBLIC WORKS, BUREAU OF ENGINEERING/CONSTRUCTION INSPECITION DIVISON 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.
3. A MINIMUM OF 48 HOURS NOTICE MUST BE GIVEN TO THE HOWARD COUNTY DEPARTMENT OF INSPECTIONS, LICENCES AND PERMITS, SEDIMENT CONTROL DIVISION PRIOR TO THE START OF ANY CONSTRUCTION (410)-313-1855.
4. NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION WORK BEING DONE.
5. 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.
6. 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.
7. CONTRACTOR SHALL CAUTION THE TRUCK DRIVERS TO TAKE EXTRA PRECAUTION WHILE DRIVING ON ALL TEMPORARY ACCESS WAYS TO MINIMIZE THE IMPACTS ON STREAMBEDS, SIDE SLOPES, EXISTING TRESS, U.S. WATERS, AND ANY EXISITING FEATURES.
8. ALL WETLAND AND IN STREAM WORK SHALL BE DONE IN STRICT ACCORDANCE WITH THE PUMP AROUND CRITERIA.
9. EROSION AND SEDIMENT CONTROL SETUP (1 WEEK)
10. CONTRACTOR SHALL STAKE OUT THE LIMITS OF DISTURBANCE, PROPOSED CHANNEL BASELINE STATIONING AS SHOWN ON THE GEOMETRY PLAN, AND STRUCTURE LOCATIONS PER COORDINATE LOCATIONS SHOWN ON THE GRADING PLANS.
11. 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.
12. 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.
13. CONTRACTOR SHALL INSTALL THE STABILIZED CONSTRUCTION ENTRANCES, MULCH ACCESS PATHWAYS, BLAZE ORANGE FENCE, AND TREE PROTECTION AREAS AS SHOWN ON THE GRADING PLANS OR AS DIRECTED BY THE ENGINEER. (SOME STABILIZED CONSTRUCTION ENTRANCES CANNOT BE INSTALLED UNTIL PROPOSED ROADS ARE INSTALLED. SEE PHASING BELOW.)
14. CONTRACTOR SHALL ESTABLISH THE TEMPORARY STOCKPILE AREA IN THE LOCATION INDICATED ON GRADING PLAN (NOTE: INSTALL SILT FENCE AROUND STOCKPILE AREA AS INDICATED ON PLANS).
15. MATERIALS FOR PUMPING STATION AND FILTER BAG SHALL BE LOCATED ON SITE.
16. 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.
17. INSTALL REMAINING EROSION AND SEDIMENT CONTROL DEVICES SHOWN ON THE PLANS.
18. 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.
19. 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.
20. ANY SEDIMENT CONTROL PRACTICE THAT IS DISTURBED BY GRADING ACTIVITY MUSTBE REPAIRED ON THE SAME DAY OF DISTURBANCE.
21. ADDITIONAL SEDIMENT CONTROL MUST BE PROVIDED, IF DEEMED NECESSARY BY THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.

STREAM CONSTRUCTION
NOTE: CONSTRUCTION OF ROADS AND STREAM RESTORATION SHOULD BE DONE CONCURRENTLY. THIS IS TO UTILIZE MATERIALS, BOTH FILL AND WOODY MATERIAL, AVAILABE FROM ROAD CONSTRUCTION. ALL EXISTING ROADS ON SITE SHOULD REMAIN IN PLACE FOR AS LONG AS FEASIBLE TO PROVIDE ADDITIONAL SITE ACCESS.
PHASE I - STREAM 'A' FROM STA 100+00 TO 105+00 (2 WEEKS)

1. CRESCENT WEST ROAD WILL BE CONSTRUCTED FIRST INCLUDING ARCH CULVERTS OVER STREAM 'A' AND STREAM 'C' AND THE SPAN OVER STREAM 'B'.
   NOTE: THIS WILL ALLOW FOR APPROPRIATE CONSTRUCTION EQUIPMENT ACCESS TO THE STREAM RESTORATION AREAS AS WELL AS ENSURE NO DISTURBANCE TO COMPLETED STREAM RESTORATION WORK.
2. AFTER THE ARCH CULVERT OVER STREAM 'A' IS IN PLACE, INSTALL STABILIZED CONSTRUCTION ENTRANCE ON THE NORTH SIDE OF NEW ROAD WEST OF STREAM 'A' AND INSTALL MULCH ACCESS ROAD ALONG SANITARY SEWER LINE TO THE UPSTREAM END OF STREAM 'A'.
3. 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.
4. PLACE FILL MATERIAL, CHANNEL STRUCTURES AND PERFORM GRADING AS DETAILED ON PLANS, WORKING UPSTREAM TO DOWNSTREAM. 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. OTHERWISE TEMPORARILY STABILIZE ALL DISTURBED AREAS AT THE END OF EACH WORKING DAY.
5. UPON COMPLETION OF INSTALLATION, STABILIZE REMAINING DISTURBED AREAS AND SECURE PUMP AROUND DEVICES AT THE END OF EACH DAY.
6. 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.
7. TIE STREAM RESTORATION GRADING INTO UPSTREAM END OF ARCH CULVERT.

PHASE II - STREAM 'A' FROM STA 105+00 TO 108+00 (1 WEEK)

1. INSTALL STABILIZED CONSTRUCTION ENTRANCE ON THE SOUTH SIDE OF NEW ROAD WEST OF STREAM 'A' AND INSTALL MULCH ACCESS ROAD ALONG THE SANITARY SEWER LINE TO STREAM 'B'.
2. 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.
3. PLACE FILL MATERIAL, CHANNEL STRUCTURES AND PERFORM GRADING AS DETAILED ON PLANS, WORKING UPSTREAM TO DOWNSTREAM. 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. OTHERWISE TEMPORARILY STABILIZE ALL DISTURBED AREAS AT THE END OF EACH WORKING DAY.
4. UPON COMPLETION OF INSTALLATION, STABILIZE REMAINING DISTURBED AREAS AND SECURE PUMP AROUND DEVICES AT THE END OF EACH DAY.
5. 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.
6. TIE STREAM RESTORATION GRADING INTO EXISTING STREAM 'B'.

PHASE III - STREAM "B" FROM STA 0+00 TO 9+14 (3 WEEKS)
NOTE: PROPOSED WATERLINE CROSSING STREAM 'B' AND CRESCENT WEST ROAD SPAN MUST BE IN PLACE BEFORE BEGINNING THIS PHASE.

1. UTILIZE SAME STABILIZED CONSTRUCTION ENTRANCE FROM PHASE II. REMOVING EXISTING PIPE CULVERTS FROM STREAM 'B' UTILIZE EXISTING ROAD TO ACCESS GRADING AREA IN SOUTHWEST CORNER OF PHASE III. PERFORM THIS GRADING IN ONE DAY AND PERMANENTLY STABILIZE.
2. 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.
3. STARTING AT UPSTREAM END PLACE FILL MATERIAL, CHANNEL STRUCTURES AND PERFORM GRADING AS DETAILED ON PLANS, WORKING UPSTREAM TO DOWNSTREAM. 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. OTHERWISE TEMPORARILY STABILIZE ALL DISTURBED AREAS AT THE END OF EACH WORKING DAY.
4. DO NOT REMOVE EXISTING PIPE CULVERTS UNTIL THAT SECTION OF STREAM CHANNEL IS TO BE RESTORED. WHEN RESTORATION WORK REACHES THE CONFLUENCE WITH STREAM 'A' TIE GRADING INTO DOWNSTREAM END OF RESTORED STREAM 'A'.
5. UPON COMPLETION OF INSTALLATION, STABILIZE REMAINING DISTURBED AREAS AND SECURE PUMP AROUND DEVICES AT THE END OF EACH DAY.
6. 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.
7. TIE STREAM RESTORATION GRADING INTO EXISTING STREAM 'B' CHANNEL AT STA 9+14.

PHASE IV - STREAM 'C' FROM STA 200+00 TO 204+56 (2 WEEKS)
NOTE: PROPOSED SANITARY SEWER LINE CROSSING STREAM 'C' MUST BE IN PLACE BEFORE BEGINNING THIS PHASE; HOWEVER THE STREAM RESTORATION MUST BE COMPLETED BEFORE THE ARCH CULVERT FOR STREAM 'C' IS INSTALLED.

1. INSTALL STABILIZED CONSTRUCTION ENTRANCE ON THE WEST SIDE OF CRESCENT WEST ROAD SOUTH OF STREAM 'C' AND INSTALL MULCH ACCESS ROAD.
2. 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.
3. PLACE FILL MATERIAL, CHANNEL STRUCTURES AND PERFORM GRADING AS DETAILED ON PLANS, WORKING UPSTREAM TO DOWNSTREAM. 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. OTHERWISE TEMPORARILY STABILIZE ALL DISTURBED AREAS AT THE END OF EACH WORKING DAY.
4. UPON COMPLETION OF INSTALLATION, STABILIZE REMAINING DISTURBED AREAS AND SECURE PUMP AROUND DEVICES AT THE END OF EACH DAY.
5. 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.
6. TIE STREAM RESTORATION GRADING INTO EXISTING STREAM 'B' CHANNEL.

PHASE V - STREAM "B" FROM STA 300+00 TO 303+07 (1 WEEK)
NOTE: PROPOSED SANITARY SEWER LINE TIE-INS TO EXISTING SANITARY SEWERLINE CROSSING AND PROPOSED WATERLINE CROSSING STREAM 'B' AND NORTH SOUTH CONNECTOR SPAN MUST BE IN PLACE BEFORE BEGINNING THIS PHASE.

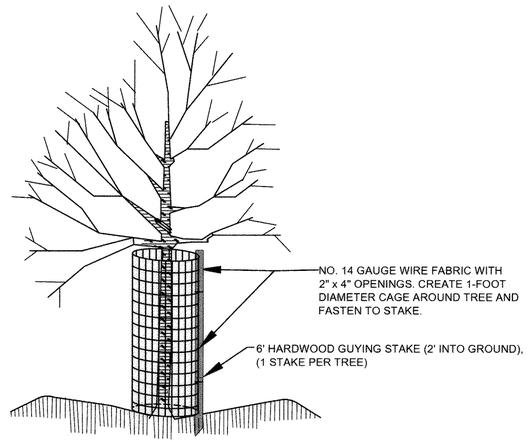
1. INSTALL STABILIZED CONSTRUCTION ENTRANCE AND MULCH ACCES ROAD.
2. DEWATER WORK AREA BEFORE BEGINNING WORK. PUMP AROUND SHOULD OCCUR UPSTREAM TO DOWNSTREAM. SANDBAG DIKES SHOULD BE SITUATED AT UPSTREAM AND DOWNSTREAM ENDS OF WORK AND PUMP SHOULD DISCHARGE ONTO A STABLE VELOCITY DISSIPATOR. WATER FROM 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.
3. STARTING AT UPSTREAM END TIE RESTORATION GRADING INTO EXISTING STREAM 'B' CHANNEL. PLACE FILL MATERIAL, CHANNEL STRUCTURES AND PERFORM GRADING AS DETAILED ON PLANS, WORKING UPSTREAM TO DOWNSTREAM. 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. OTHERWISE TEMPORARILY STABILIZE ALL DISTURBED AREAS AT THE END OF EACH WORKING DAY.
4. UPON COMPLETION OF INSTALLATION, STABILIZE REMAINING DISTURBED AREAS AND SECURE PUMP AROUND DEVICES AT THE END OF EACH DAY.
5. 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.
6. TIE STREAM RESTORATION GRADING INTO EXISTING STREAM 'B' CHANNEL AT STA 303+07.

PHASE VI - PLANTING AND DEMOBILIZATION (2 WEEKS)

1. PLANT STREAM AND WETLAND AREAS ACCORDING TO THE PLANTING PLAN.
2. 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.
3. PERMANENT SEEDING SHALL BE PERFORMED FROM MARCH 1 THROUGH NOVEMBER 30. NO SEEDING SHALL BE PERFORMED ON FROZEN GROUND OR WHEN THE TEMPERATURE IS 320F/00C OR LOWER.
4. WITH THE APPROVAL OF THE SEDIMENT CONTROL INSPECTOR, REMOVE THE SEDIMENT CONTROL DEVICES INCLUDING ALL SILT FENCE ASSOCIATED WITH STREAM AND WETLAND GRADING. STABILIZE ANY AREAS DISTURBED BY SEDIMENT CONTROL REMOVAL.

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:
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 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.



NOTES:
1. HEIGHT OF CAGE SHALL BE 4-FEET (MIN.)
2. CAGE SHALL BE FASTENED TO STAKE WITH TWO (MIN.) 11-INCH RELEASABLE CABLE TIES (ONE AT TOP AND ONE 6" (MIN.) ABOVE THE GROUND.
3. DO NOT DAMAGE TREE DURING INSTALLATION.
4. 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.
5. CAGES TO BE REMOVED AT DIRECTION OF FOREST ECOLOGIST.
6. ENSURE CAGE IS SECURE TO GROUND TO PREVENT UPLIFT BY DEER.

DEER PROTECTION CAGE
NOT TO SCALE

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 6/17/16
Jennifer Zielinski Missett, PE

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 OF DEVELOPER (PRINTNAME BELOW SIGNATURE) — DATE 6.17.16
William T. Roos

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
Chief, Bureau of Highways — Date

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
Chief, Division of Land Development — Date 8-3-16
Chief, Development Engineering Division — Date 7.26.16

This development plan is approved for soil erosion and sediment control by the HOWARD SOIL CONSERVATION DISTRICT
Howard SCD — Date 6/29/16

Biohabitats
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Baltimore, MD 21211 / ph: 410.554.0156
fx: 410.554.0168 / www.biohabitats.com
Restore the Earth & Inspire Ecological Stewardship

DES. | DRN. | CHK.

DATE	REVISION	BY	APP'R.

PREPARED FOR:
THE HOWARD HUGHES CORPORATION
10480 LITTLE PATUXENT PARKWAY
SUITE 400
COLUMBIA, MD 21044
ATTN: BOB JENKINS
410-964-5443

PROFESSIONAL CERTIFICATION
I HEREBY CERTIFY THAT THESE PLANS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 26980, EXPIRATION DATE: FEBRUARY 2018.

STATE OF MARYLAND — JENNIFER ZIELINSKI MISSETT — No. 26980 — PROFESSIONAL ENGINEER

EROSION AND SEDIMENT CONTROL DETAILS
DOWNTOWN COLUMBIA
CRESCENT NEIGHBORHOOD
PARCELS B THRU H, NON-BULDABLE BULK PARCELS J THRU R, O.S. LOTS 1 THRU 8 AND MERRIWEATHER-SYMPHONY WOODS NEIGHBORHOOD O.S. LOT 1 AND NON-BUILDABLE BULK PARCEL A
ELECTION DISTRICT No. 5 — HOWARD COUNTY, MARYLAND

SCALE	ZONING	
N.T.S.	NT	11071
DATE	TAX/TITLE	SHEET
JUNE, 2016	36 - 01	95 OF 102

F 15-106

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

Chief, Bureau of Highways — Date

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

Chief, Division of Land Development — Date 8-3-16

Chief, Development Engineering Division — Date 7-26-16

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EXPIRATION DATE: FEBRUARY 2018

STATE OF MARYLAND · CHRISTOPHER ALAN STREB · No. 26980 · PROFESSIONAL ENGINEER

PLANTING PLAN
DOWNTOWN COLUMBIA
CRESCENT NEIGHBORHOOD
PARCELS B THRU H, NON-BUILDABLE BULK PARCELS J THRU R,
O.S. LOTS 1 THRU 8 AND
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MATCHLINE SEE SHEET 96

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

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LEGEND

- LOD — STREAM RESTORATION LIMIT OF DISTURBANCE
- LVM — LIMIT OF VEGETATION MANAGEMENT (INCLUDES INVASIVES REMOVAL)
- ZONE 1 - MESIC MEADOW SEEDING
- ZONE 2 - FLOODPLAIN FOREST REFORESTATION
- ZONE 3 - UPLAND FOREST REFORESTATION
- ZONE 4 - SUPPLEMENTAL MESIC MEADOW & INVASIVES TREATMENT
- ZONE 5 - SUPPLEMENTAL FLOODPLAIN FOREST REFORESTATION & INVASIVES TREATMENT
- ZONE 6 - SUPPLEMENTAL UPLAND REFORESTATION & INVASIVES TREATMENT
- FOREST RETENTION AREA SIGNAGE
- COBBLE RIFFLE
- BOULDER RIFFLE

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HORIZONTAL SCALE

0 30 60

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PLANTING PLAN

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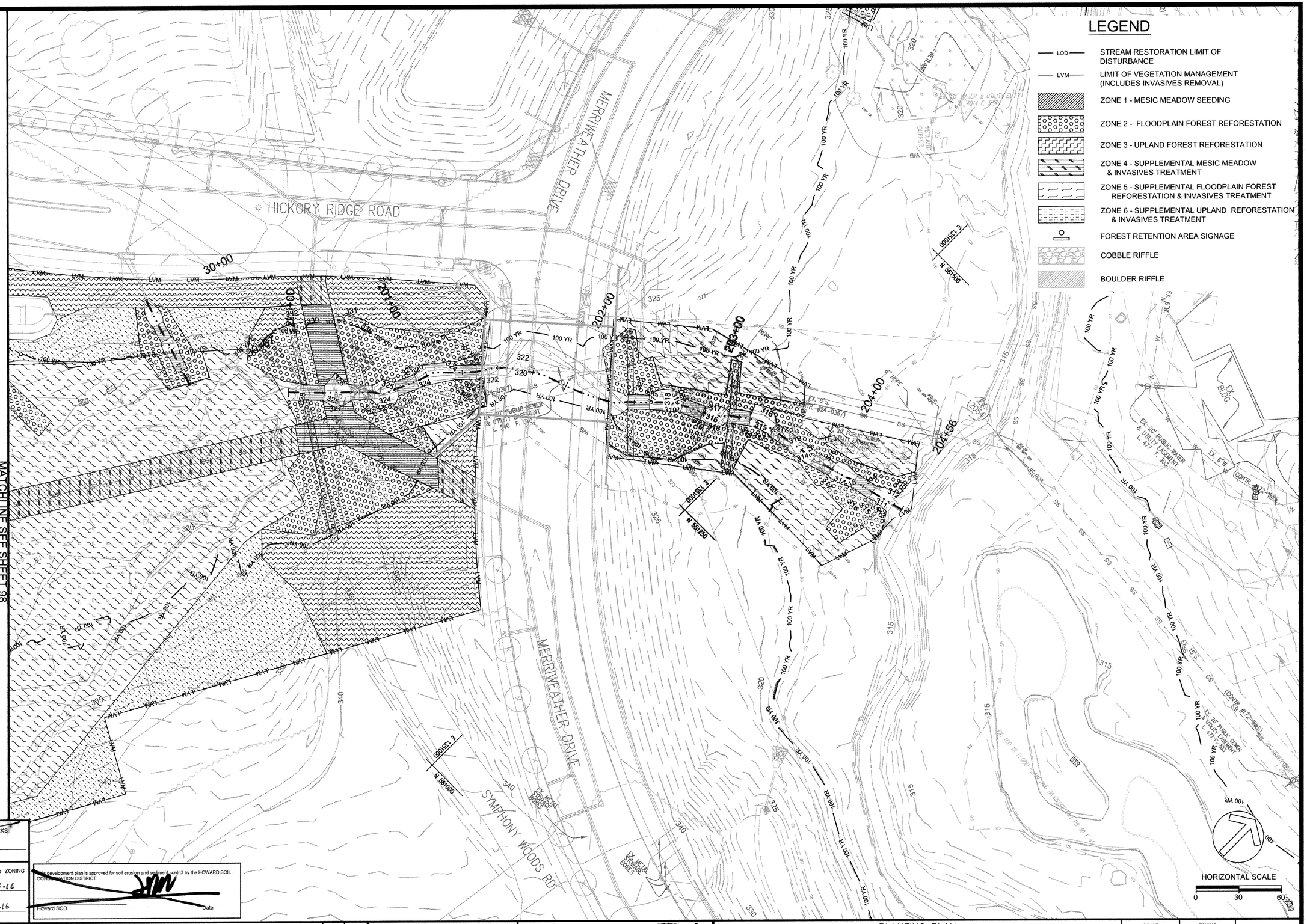

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STATE OF MARYLAND — CHRISTOPHER STREET — No. 26980 — PROFESSIONAL ENGINEER

PLANTING PLAN

DOWNTOWN COLUMBIA

CRESCENT NEIGHBORHOOD

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ELECTION DISTRICT No. 5 — HOWARD COUNTY, MARYLAND

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STATE OF MARYLAND CHRISTOPHER JOHN STREB No. 26980 PROFESSIONAL ENGINEER

PLANTING PLAN

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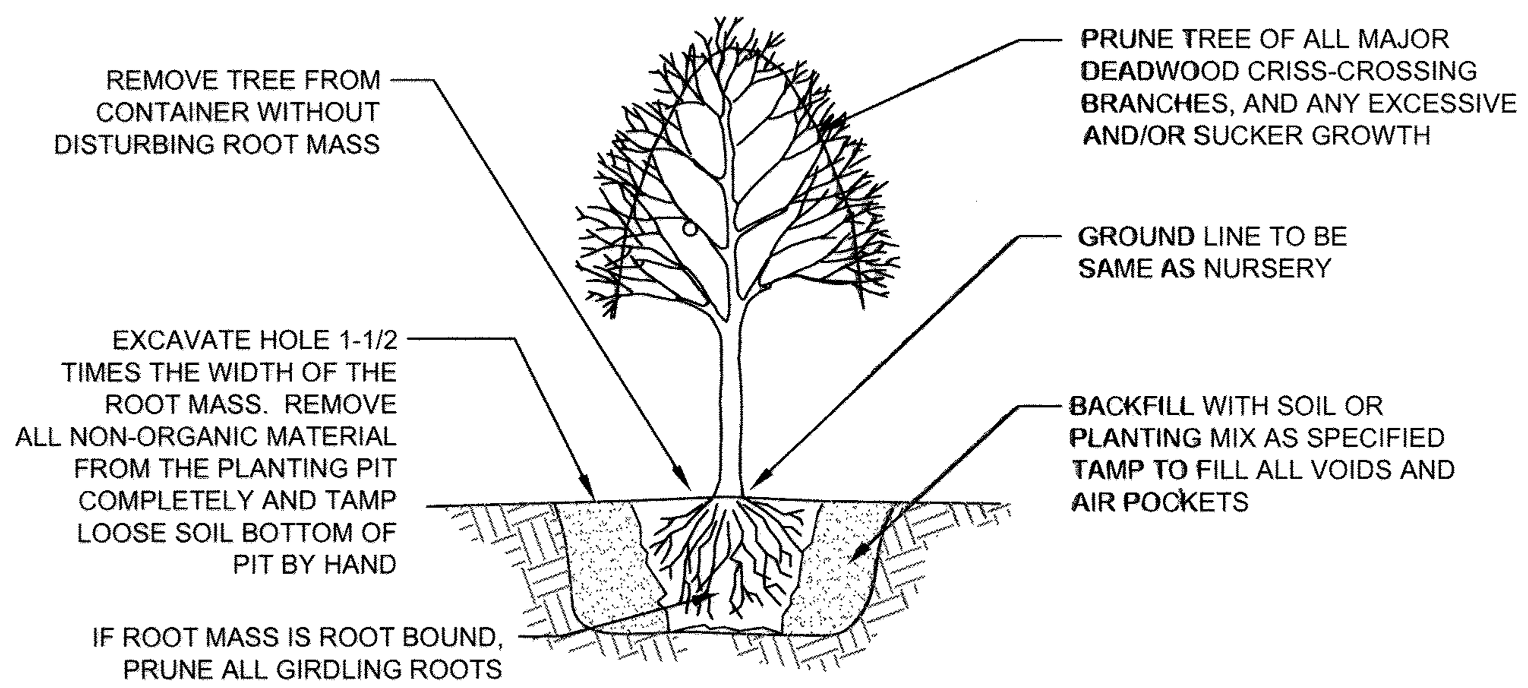
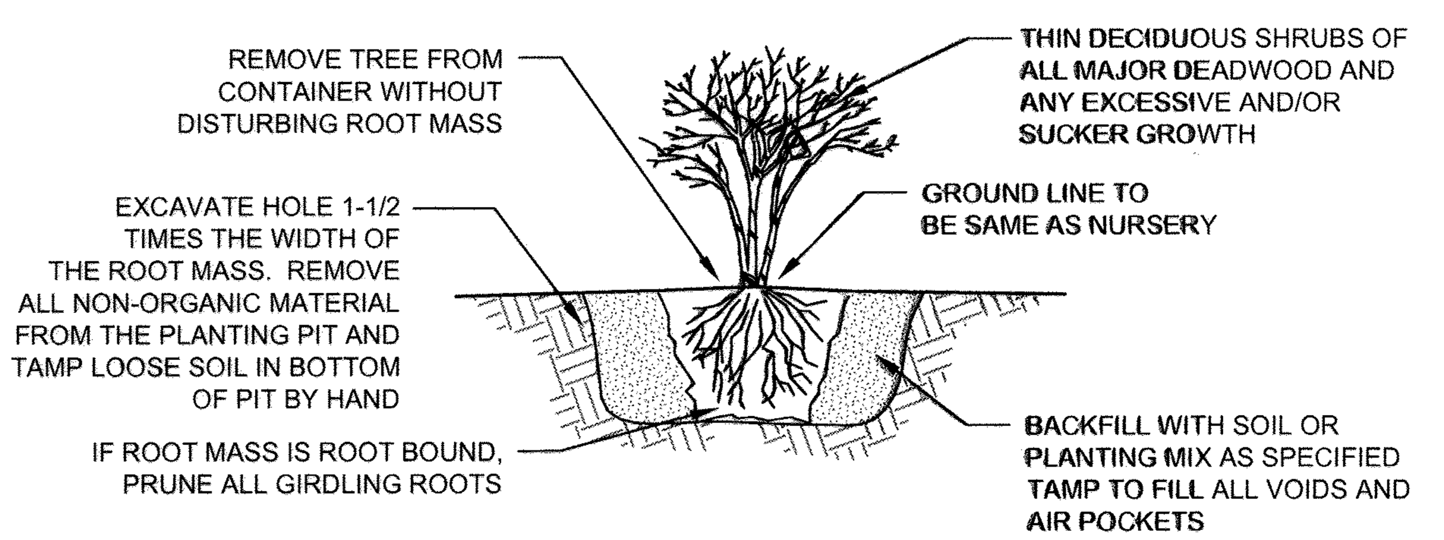


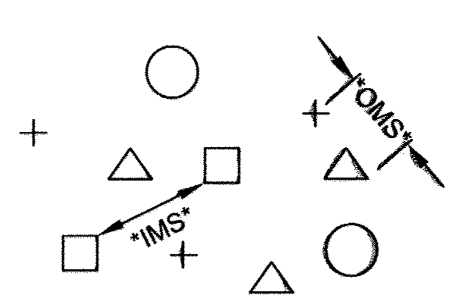
TREE PLANTING - CONTAINER GROWN

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

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
Chief, Bureau of Highways — Date

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Chief, Division of Land Development — Date 8-3-16
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Table B.1: Temporary Seeding for Site Stabilization

Plant Species	Seeding Rate [1/] lb/ac	Seeding Rate [1/] lb/1000 ft²	Seeding Depth [2/] (inches)	Recommended Seeding Dates by Plant Hardiness Zone [3/]: 5b and 6a	6b	7a and 7b
Cool-Season Grasses						
Annual Ryegrass (*Lolium perenne ssp. multiflorum*)	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 (*Hordeum vulgare*)	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 (*Avena sativa*)	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 (*Triticum aestivum*)	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 (*Secale cereale*)	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 (*Setaria italica*)	30	0.7	0.5	Jun 1 to Jul 31	May 16 to Jul 31	May 1 to Aug 14
Pearl Millet (*Pennisetum glaucum*)	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.

PLANT COMPOSITION SCHEDULE

ZONE 1 - Mesic Meadow Seeding

Size (acres): 0.91

Wetland Indicator Status	Quantity per acre	Frequency (%)	Species Quantity	Vegetation Strata/ Species Name	Common Name	Unit	Spacing Type	Size	Individual Minimum Spacing (ft.)
	15			**HERBACEOUS SEED (ERNMX-723 MD Lower Midland FACW Meadow Mix)**					
		30	4.1	*Panicum rigidulum*	Redtop panicgrass	SEED	LB of P.L.S. 76 %	N/A	N/A
FACW		15	2.1	*Elymus virginicus*	Virginia wildrye	SEED	LB of P.L.S. 76 %	N/A	N/A
OBL		12	1.6	*Carex lurida*	Lurid sedge	SEED	LB of P.L.S. 76 %	N/A	N/A
OBL		7	1	*Carex lupulina*	Hop sedge	SEED	LB of P.L.S. 76 %	N/A	N/A
OBL		6	0.8	*Scirpus atrovirens*	Green bulrush	SEED	LB of P.L.S. 76 %	N/A	N/A
FACW		5	0.7	*Carex scoparia*	Blunt broom sedge	SEED	LB of P.L.S. 76 %	N/A	N/A
FACW		3	0.4	*Juncus effusus*	Soft rush	SEED	LB of P.L.S. 76 %	N/A	N/A
FACW		2	0.3	*Eupatorium perfoliatum*	Boneset	SEED	LB of P.L.S. 76 %	N/A	N/A
FACW		2	0.3	*Helenium autumnale*	Common sneezeweed	SEED	LB of P.L.S. 76 %	N/A	N/A
		2	0.3	*Eupatorium maculatum*	Spotted joe-pye weed	SEED	LB of P.L.S. 76 %	N/A	N/A
FACW		2	0.3	*Verbena hastata*	Blue vervain	SEED	LB of P.L.S. 76 %	N/A	N/A
FACW		2	0.3	*Scirpus cyperinus*	Woolgrass	SEED	LB of P.L.S. 76 %	N/A	N/A
FACW		2	0.3	*Onoclea sensibilis*	Sensitive fern	SEED	LB of P.L.S. 76 %	N/A	N/A
OBL		2	0.3	*Bidens cernua*	Nodding bur marigold	SEED	LB of P.L.S. 76 %	N/A	N/A
		1	0.1	*Eupatorium coelestinum*	Mistflower	SEED	LB of P.L.S. 76 %	N/A	N/A
OBL		1	0.1	*Carex crinita*	Fringed sedge	SEED	LB of P.L.S. 76 %	N/A	N/A
OBL		1	0.1	*Asclepias incarnata*	Swamp mikweed	SEED	LB of P.L.S. 76 %	N/A	N/A
FACW		1	0.1	*Vernonia noveboracensis*	New York ironweed	SEED	LB of P.L.S. 76 %	N/A	N/A
OBL		1	0.1	*Glyceria canadensis*	Rattlesnake grass	SEED	LB of P.L.S. 76 %	N/A	N/A
OBL		1	0.1	*Mimulus ringens*	Square stemmed monkeyflower	SEED	LB of P.L.S. 76 %	N/A	N/A
		0.5	0.1	*Aster puniceus*	Purplestem aster	SEED	LB of P.L.S. 76 %	N/A	N/A
FACW		0.5	0.1	*Ludwigia alternifolia*	Seedbox	SEED	LB of P.L.S. 76 %	N/A	N/A
FACW		0.5	0.1	*Lobelia siphilitica*	Great blue lobelia	SEED	LB of P.L.S. 76 %	N/A	N/A
OBL		0.5	0.1	*Iris versicolor*	Blueflag	SEED	LB of P.L.S. 76 %	N/A	N/A
		100	**13.8**						

P.L.S.= Pure Live Seed

PLANT COMPOSITION SCHEDULE

ZONE 2 - Floodplain Forest Reforestation

Size (acres): 2.86

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				**TREES**					
		20	62	FAC	*Acer rubrum*	Red maple	CONT	Random	2" CAL	45
		10	31	FACW	*Quercus palustris*	Pin oak	CONT	Random	1.25" CAL	63
		15	47	FACW	*Quercus bicolor*	Swamp white oak	CONT	Random	1.25" CAL	51
		5	16	OBL	*Salix nigra*	Black willow	CONT	Random	2" CAL	88
		5	16	FAC	*Quercus phellos*	Willow oak	CONT	Random	2" CAL	88
		25	78	FACW	*Platanus occidentalis*	American sycamore	CONT	Random	2" CAL	40
		10	31	FAC	*Nyssa sylvatica*	Black gum	CONT	Random	1.25" CAL	63
			281		**= total**					
					MIDSTORY TREES					
		5	16	FACW	*Betula nigra*	River birch	CONT	Random	1.5" CAL	88
		5	16	FAC	*Carpinus caroliniana*	Ironwood	CONT	Random	1.25" CAL	88
		100	**32**		**= total**					
12	303				**SHRUB**					
		20	173	FACW	*Cornus amomum*	Silky dogwood	CONT	Random	3 GAL	27
		15	130	OBL	*Alnus serrulata*	Smooth alder	CONT	Random	2 GAL	31
		30	260	FAC	*Lindera benzoin*	Common spicebush	CONT	Random	2 GAL	22
		15	130	FACW	*Cornus sericea*	Red osier dogwood	CONT	Random	3 GAL	31
		20	173	FAC	*Viburnum dentatum*	Southern arrowwood	CONT	Random	3 GAL	27
		100	**866**		**= total**					
N/A	35				**HERBACEOUS SEED**					
		10	10	FACW	*Scirpus cyperinus*	Wool grass	SEED	LB of P.L.S. 76 %	N/A	N/A
		25	25	FACW	*Elymus riparius*	Riverbank wild rye	SEED	LB of P.L.S. 76 %	N/A	N/A
		25	25	FACW	*Elymus virginicus*	Virginia wild rye	SEED	LB of P.L.S. 76 %	N/A	N/A
		25	25	OBL	*Calamagrostis canadensis*	Bluejoint reeedgrass	SEED	LB of P.L.S. 76 %	N/A	N/A
		15	15	FAC	*Dichanthelium clandestinum*	Deertongue	SEED	LB of P.L.S. 76 %	N/A	N/A
		100	**100**							

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

PLANT COMPOSITION SCHEDULE

ZONE 3 - Upland Forest Reforestation

Size (acres): 1.90

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				**TREES**					
		10	21	FACU	*Liriodendron tulipifera*	Tulip poplar	CONT	Random	2" CAL	63
		10	21	FACU	*Fagus grandifolia*	American beech	CONT	Random	1.25" CAL	63
		20	41	FACU	*Quercus falcata*	Southern red oak	CONT	Random	2" CAL	45
		25	52		*Quercus velutina*	Black oak	CONT	Random	2" CAL	40
		5	10	FACU	*Quercus alba*	White oak	CONT	Random	1.25" CAL	91
		5	10		*Quercus rubra*	Red oak	CONT	Random	1.25" CAL	91
		10	21	FAC	*Nyssa sylvatica*	Black Gum	CONT	Random	2" CAL	63
			176		**= total**					
					MIDSTORY TREES					
		5	10	FACU	*Cornus florida*	Flowering dogwood	CONT	Random	1.25" CAL	91
		10	21	FAC	*Amelanchier canadensis*	Serviceberry	CONT	Random	1.25" CAL	63
		100	**31**		**= total**					
30	48				**SHRUB**					
		30	27	UPL	*Viburnum acerifolium*	Maple-leaf viburnum	CONT	Random	2 GAL	55
		15	14	FAC	*Viburnum dentatum*	Southern arrowwood	CONT	Random	3 GAL	77
		10	9		*Vaccinium pallidum*	Lowbush blueberry	CONT	Random	2 GAL	96
		25	23		*Hammemelis virginiana*	Witchhazel	CONT	Random	3 GAL	60
		20	18	FACU	*Cercis canadensis*	Redbud	CONT	Random	2 GAL	68
		100	**91**		**= total**					
25	70				**HERBACEOUS**					
		40	53		*Athyrium filix-femina*	Common lady fern	CONT	Random	QUART	39
		40	53	FACU	*Polystichum acrostichoides*	Christmas Fern	CONT	Random	QUART	39
		20	27		*Eurybia divaricata*	White wood aster	CONT	Random	QUART	55
		100	**133**		**= total**					
N/A	35				**HERBACEOUS SEED**					
		10	6.6		*Carex pensylvanica*	Pennsylvania sedge	SEED	LB of P.L.S. 76 %	N/A	N/A
		25	16.6	UPL	*Elymus hystrix*	Bottlebrush grass	SEED	LB of P.L.S. 76 %	N/A	N/A
		25	16.6	FACW	*Elymus virginicus*	Virginia wild rye	SEED	LB of P.L.S. 76 %	N/A	N/A
		25	16.6	FACU	*Tridens flavus*	Purpletop	SEED	LB of P.L.S. 76 %	N/A	N/A
		15	10	FAC	*Dichanthelium clandestinum*	Deertongue	SEED	LB of P.L.S. 76 %	N/A	N/A
		100	**66.4**							

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

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

DES.	DRN.	CHK.

DATE	REVISION	BY	APP'R.

PREPARED FOR:
THE HOWARD HUGHES CORPORATION
10480 LITTLE PATUXENT PARKWAY
SUITE 400
COLUMBIA, MD 21044
ATTN: BOB JENKINS
410-964-5443

PROFESSIONAL CERTIFICATION
I HEREBY CERTIFY THAT THESE PLANS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 26980, EXPIRATION DATE: FEBRUARY 2018.

PLANTING DETAILS & SCHEDULES
DOWNTOWN COLUMBIA
CRESCENT NEIGHBORHOOD
PARCELS B THRU H, NON-BULDABLE BULK PARCELS J THRU R,
O.S. LOTS 1 THRU 8 AND
MERRIWEATHER-SYMPHONY WOODS NEIGHBORHOOD O.S. LOT 1
AND NON-BUILDABLE BULK PARCEL A
ELECTION DISTRICT No. 5 — HOWARD COUNTY, MARYLAND

SCALE	ZONING	
N.T.S.	NT	11071
DATE	TAXTITLE	SHEET
JUNE, 2016	36 - 01	101 OF 102

F 15-106

PLANT COMPOSITION SCHEDULE

ZONE 4 - Supplemental Mesic Meadow Seeding

Size (acres): 0.42

Wetland Indicator Status	Quantity per acre	Frequency (%)	Species Quantity	Vegetation Strata/ Species Name	Common Name	Unit	Spacing Type	Size	Individual Minimum Spacing (ft.)
	8			**HERBACEOUS SEED (ERNMX-723 MD Lower Midland FACW Meadow Mix)**					
		30	1	*Panicum rigidulum*	Redtop panicgrass	SEED	LB of P.L.S. 76 %	N/A	N/A
FACW		15	0.5	*Elymus virginicus*	Virginia wildrye	SEED	LB of P.L.S. 76 %	N/A	N/A
OBL		12	0.4	*Carex lurida*	Lurid sedge	SEED	LB of P.L.S. 76 %	N/A	N/A
OBL		7	0.2	*Carex lupulina*	Hop sedge	SEED	LB of P.L.S. 76 %	N/A	N/A
OBL		6	0.2	*Scirpus atrovirens*	Green bulrush	SEED	LB of P.L.S. 76 %	N/A	N/A
FACW		5	0.2	*Carex scoparia*	Blunt broom sedge	SEED	LB of P.L.S. 76 %	N/A	N/A
FACW		3	0.1	*Juncus effusus*	Soft rush	SEED	LB of P.L.S. 76 %	N/A	N/A
FACW		2	0.1	*Eupatorium perfoliatum*	Boneset	SEED	LB of P.L.S. 76 %	N/A	N/A
FACW		2	0.1	*Helenium autumnale*	Common sneezeweed	SEED	LB of P.L.S. 76 %	N/A	N/A
		2	0.1	*Eupatorium maculatum*	Spotted joe-pye weed	SEED	LB of P.L.S. 76 %	N/A	N/A
FACW		2	0.1	*Verbena hastata*	Blue vervain	SEED	LB of P.L.S. 76 %	N/A	N/A
FACW		2	0.1	*Scirpus cyperinus*	Woolgrass	SEED	LB of P.L.S. 76 %	N/A	N/A
FACW		2	0.1	*Onoclea sensibilis*	Sensitive fern	SEED	LB of P.L.S. 76 %	N/A	N/A
OBL		2	0.1	*Bidens cernua*	Nodding bur marigold	SEED	LB of P.L.S. 76 %	N/A	N/A
		1	0	*Eupatorium coelestinum*	Mistflower	SEED	LB of P.L.S. 76 %	N/A	N/A
OBL		1	0	*Carex crinita*	Fringed sedge	SEED	LB of P.L.S. 76 %	N/A	N/A
OBL		1	0	*Asclepias incarnata*	Swamp milkweed	SEED	LB of P.L.S. 76 %	N/A	N/A
FACW		1	0	*Vernonia noveboracensis*	New York ironweed	SEED	LB of P.L.S. 76 %	N/A	N/A
OBL		1	0	*Glyceria canadensis*	Rattlesnake grass	SEED	LB of P.L.S. 76 %	N/A	N/A
OBL		1	0	*Mimulus ringens*	Square stemmed monkeyflower	SEED	LB of P.L.S. 76 %	N/A	N/A
		0.5	0	*Aster puniceus*	Purplestem aster	SEED	LB of P.L.S. 76 %	N/A	N/A
FACW		0.5	0	*Ludwigia alternifolia*	Seedbox	SEED	LB of P.L.S. 76 %	N/A	N/A
FACW		0.5	0	*Lobelia siphilitica*	Great blue lobelia	SEED	LB of P.L.S. 76 %	N/A	N/A
OBL		0.5	0	*Iris versicolor*	Blueflag	SEED	LB of P.L.S. 76 %	N/A	N/A
		100	**3.3**						

P.L.S.= Pure Live Seed

PLANT COMPOSITION SCHEDULE

ZONE 5 - Supplemental Floodplain Forest Reforestation

Size (acres): 5.06

Overall Minimum Spacing (ft.)	Quantity per acre	Frequency (%)	Species Quantity	Vegetation Strata/ Species Name	Common Name	Unit	Spacing Type	Size	Individual Minimum Spacing (ft.)
25	70			**TREES**					
		20	71	*Acer rubrum*	Red maple	CONT	Random	2" CAL	56
		10	35	*Quercus palustris*	Pin oak	CONT	Random	1.25" CAL	79
		15	53	*Quercus bicolor*	Swamp white oak	CONT	Random	1.25" CAL	64
		5	18	*Quercus phellos*	Willow oak	CONT	Random	1.25" CAL	111
		5	18	*Salix nigra*	Black willow	CONT	Random	2" CAL	111
		25	89	*Platanus occidentalis*	American sycamore	CONT	Random	2" CAL	50
		10	35	*Nyssa sylvatica*	Black gum	CONT	Random	1.25" CAL	79
			319	**= total**					
25	70			**MIDSTORY TREES**					
		5	18	*Betula nigra*	River birch	CONT	Random	1.5" CAL	111
		5	18	*Acer negundo*	Boxelder	CONT	Random	1.25" CAL	111
		100	**36**	**= total**					
12	303			**SHRUB**					
		20	307	*Cornus amomum*	Silky dogwood	CONT	Random	3 GAL	27
		15	230	*Alnus serrulata*	Smooth alder	CONT	Random	2 GAL	31
		30	460	*Lindera benzoin*	Common spicebush	CONT	Random	3 GAL	22
		15	230	*Cornus sericea*	Red osier dogwood	CONT	Random	2 GAL	31
		20	307	*Viburnum dentatum*	Southern arrowwood	CONT	Random	2 GAL	27
		100	**1534**	**= total**					

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

PLANT COMPOSITION SCHEDULE

ZONE 6- Supplemental Upland Forest Reforestation

Size (acres): 2.63

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				**TREES**					
		10	29	FACU	*Liriodendron tulipifera*	Tulip poplar	CONT	Random	2" CAL	63
		10	29	FACU	*Fagus grandifolia*	American beech	CONT	Random	1.25" CAL	63
		20	57	FACU	*Quercus falcata*	Southern red oak	CONT	Random	2" CAL	45
		25	72		*Quercus velutina*	Black oak	CONT	Random	2" CAL	40
		5	14	FACU	*Quercus alba*	White oak	CONT	Random	1.25" CAL	90
		5	14		*Quercus rubra*	Red oak	CONT	Random	1.25" CAL	90
		10	29	FAC	*Nyssa sylvatica*	Black Gum	CONT	Random	2" CAL	63
			244		**= total**					
					MIDSTORY TREES					
		5	14	FACU	*Cornus florida*	Flowering dogwood	CONT	Random	1.25" CAL	90
		10	29	FAC	*Amelanchier canadensis*	Serviceberry	CONT	Random	1.25" CAL	63
		100	**43**		**= total**					
30	48				**SHRUB**					
		30	38	UPL	*Viburnum acerifolium*	Maple-leaf viburnum	CONT	Random	2 GAL	55
		15	19	FAC	*Viburnum dentatum*	Southern arrowwood	CONT	Random	3 GAL	78
		10	13		*Vaccinium pallidum*	Lowbush blueberry	CONT	Random	2 GAL	94
		25	32		*Hammemelis virginiana*	Witchhazel	CONT	Random	3 GAL	60
		20	25	FACU	*Cercis canadensis*	Redbud	CONT	Random	2 GAL	68
		100	**127**		**= total**					
25	70				**HERBACEOUS**					
		40	74		*Athyrium filix-femina*	Common lady fern	CONT	Random	QUART	39
		40	74	FACU	*Polystichum acrostichoides*	Christmas Fern	CONT	Random	QUART	39
		20	37		*Eurybia divaricata*	White wood aster	CONT	Random	QUART	56
		100	**185**		**= total**					
N/A	35				**HERBACEOUS SEED**					
		10	9.2		*Carex pensylvanica*	Pennsylvania sedge	SEED	LB of P.L.S. 76 %	N/A	N/A
		25	23	UPL	*Elymus hystrix*	Bottlebrush grass	SEED	LB of P.L.S. 76 %	N/A	N/A
		25	23	FACW	*Elymus virginicus*	Virginia wild rye	SEED	LB of P.L.S. 76 %	N/A	N/A
		25	23	FACU	*Tridens flavus*	Purpletop	SEED	LB of P.L.S. 76 %	N/A	N/A
		15	13.8	FAC	*Dichanthelium clandestinum*	Deertongue	SEED	LB of P.L.S. 76 %	N/A	N/A
		100	**92**							

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

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

Chief, Bureau of Highways — Date

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

Chief, Division of Land Development — Date 8/3/16

Chief, Development Engineering Division — Date 7.26.16

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

Howard SCD — Date

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

DES. | DRN. | CHK.

DATE	REVISION	BY	APP'R.

PREPARED FOR:
THE HOWARD HUGHES CORPORATION
10480 LITTLE PATUXENT PARKWAY
SUITE 400
COLUMBIA, MD 21044
ATTN: BOB JENKINS
410-964-5443

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE PLANS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 26980 EXPIRATION DATE: FEBRUARY 2018

STATE OF MARYLAND — CHRISTOPHER R. BISHOP — No. 26980 — PROFESSIONAL ENGINEER

PLANTING SCHEDULES
DOWNTOWN COLUMBIA
CRESCENT NEIGHBORHOOD
PARCELS B THRU H, NON-BULDABLE BULK PARCELS J THRU R,
O.S. LOTS 1 THRU 8 AND
MERRIWEATHER-SYMPHONY WOODS NEIGHBORHOOD O.S. LOT 1
AND NON-BUILDABLE BULK PARCEL A
ELECTION DISTRICT No. 5 — HOWARD COUNTY, MARYLAND

SCALE	ZONING	
N.T.S.	NT	11071
DATE	TAX/TITLE	SHEET
JUNE, 2016	36 - 01	102 OF 102

F 15-106