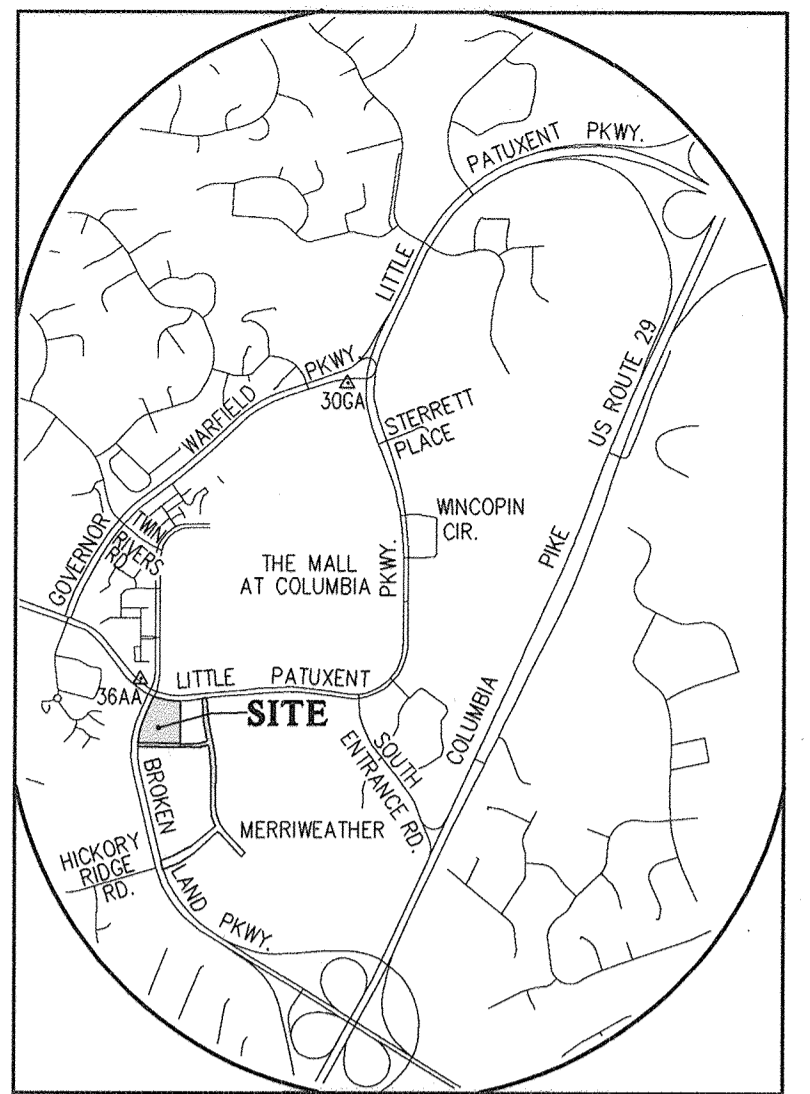


DOWNTOWN COLUMBIA CRESCENT NEIGHBORHOOD

PARCELS A-1 THRU A-3, E, NON-BUILDABLE BULK PARCEL L, OPEN SPACE LOTS 1, 8 & 9 AND MERRIWEATHER-SYMPHONY WOODS NEIGHBORHOOD OPEN SPACE LOT 1 REVISED ROAD CONSTRUCTION PLANS

HOWARD COUNTY CONTROL STATIONS
306A
NORTHING: 566,053.5419
EASTING: 1,352,171.5307
ELEVATION: 334.878
(LATEST ADJ. NOV. 2008)

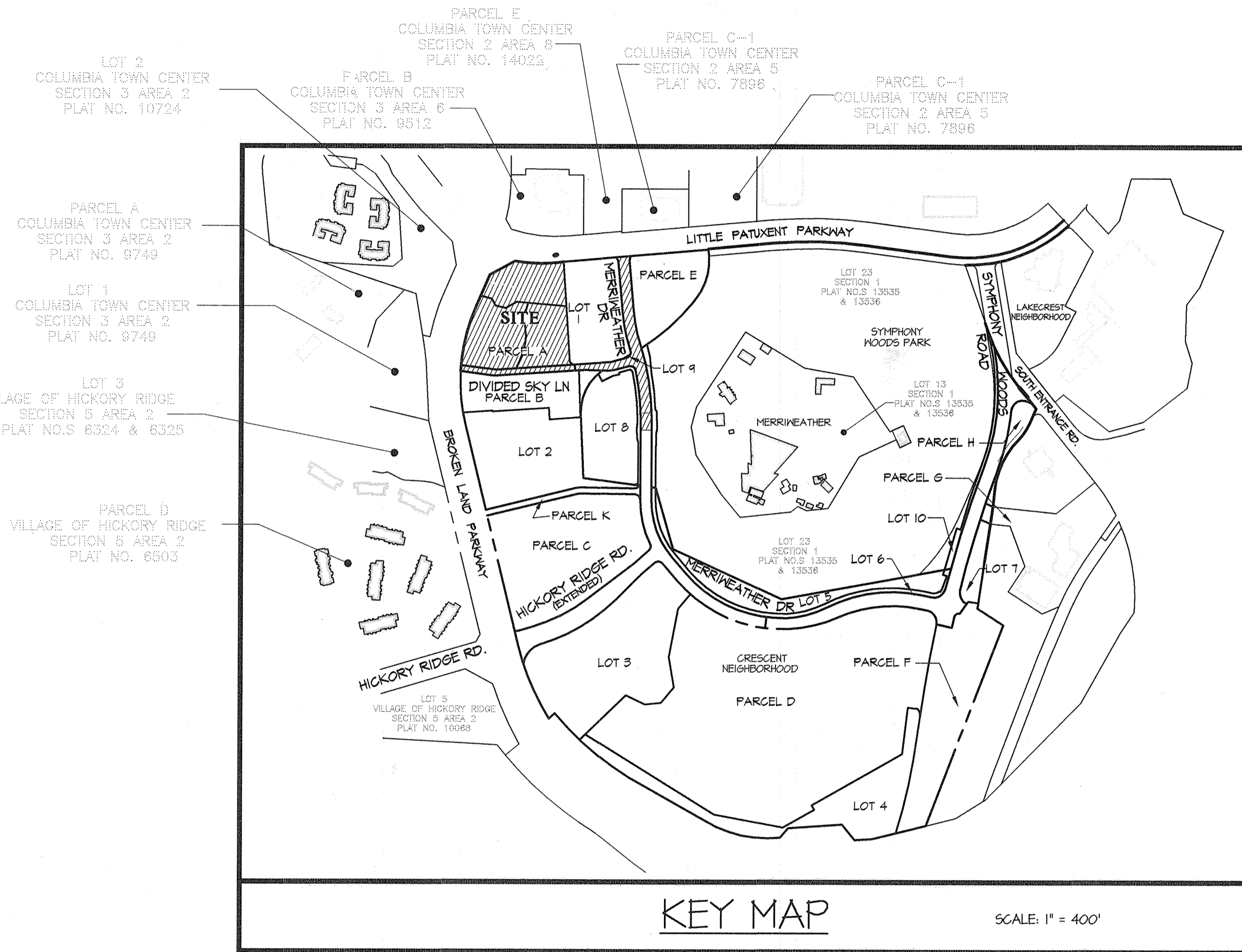
36AA
NORTHING: 562,004.8537
EASTING: 1,344,906.1701
ELEVATION: 354.151
(LATEST ADJ. NOV. 2008)



VICINITY MAP
SCALE: 1" = 2,000'

GENERAL NOTES:

- The property is zoned NT per the October 3, 2013 Comprehensive Zoning Plan.
- Applicable DPZ File References: FDP-DC-Crescent-1, ECP 15-074, SDP 15-068, ECP 15-083.
- The following permits and tracking numbers have been assigned to this project by state and federal agencies:
For the Maryland Department of the Environment: 14-NT-3104/201461063
For the Army Corps of Engineers: CENAB-PP-RHN-2014-61063-M36
- Site Analysis:
Total Area of Site: 1.06 Acres
Area of 100 Year Floodplain: 0.92 Acres
Area of Steep Slopes (outside of Floodplain): 0.00 Acres
Area of Proposed Road Right-of-Way: 1.27 Acres
Total Number of Parcels: 3
Area of Parcels: 4.09 Acres
Approximate Limit of Disturbance: 10.4 Acres (9.9 Acres within Crescent Neighborhood and 0.5 Acres within Merrimweather-Symphony Woods Neighborhood)
- All construction shall be in accordance with the latest standards and specifications of Howard County plus MSHA standards and specifications if applicable.
- The contractor shall notify the Department of Public Works/ Bureau of Engineering/ Construction Inspection Division at (410) 313-1820 at least five (5) working days prior to the start of work.
- The contractor shall notify "Miss Utility" at 1-800-251-7777 at least 48 hours prior to any excavation work being done.
- 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. A minimum of 20' shall be maintained between any street light and any trees.
- Traffic Control Devices: a) The R-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" (MUTCD). 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 gauge) inserted into a 2-1/2" galvanized steel, perforated square tube sleeve (2-gauge) - 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.
- 85% compaction in fill areas shall meet AASHTO T-100 requirements.
- This project is in conformance with the latest Howard County standards unless waivers have been approved. Traffic Impact Study and Traffic Signal Warrant Analysis submitted and approved as a part of the Final Development Plan (FDP-DC-Crescent-1) by Mells and Associates.
- Boundary information is from boundary surveys by Gutschick, Little, and Meber, P.A., dated November, 2011.
- Horizontal and vertical datum is based on Howard County Control Stations: 306A, 36AA.
- Aerial topography by McKenzie Snyder, Inc. on March, 2007 and Gutschick, Little and Meber on August, 2011. Topography north and west of Broken Land Parkway provided by Howard County GIS.
- No grading, removal of vegetative cover or trees, or placement of new structures is permitted within wetlands, streams, 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.
- Vehicle ingress and egress to Broken Land Parkway and Little Patuxent Parkway are restricted except as approved by Howard County Department of Planning and Zoning.
- The Cemetery Inventory Maps do not show any cemeteries within the project limits.
- 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.
- This property is within the Metropolitan District.
- Water and Sewer are Public per Contract No. 24-4926-D and are within the Little Patuxent Sewerage Area (LPSA) as shown on the Howard County Map 16202000000 (LPSA) and 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.
- This site is subject to the Crescent Final Development Plan recorded as plat numbers 23403 thru 23404, the Crescent Neighborhood Concept Plan (NCP) recorded as plat numbers 23341 thru 23402, the Crescent Neighborhood Specific Design Guidelines (NSDG) recorded as Liber 16305 Folio 415 and the Crescent Neighborhood Specific Implementation Plan (NSIP) recorded as Liber 16306 Folio 1.
- There are no known existing dedicated bicycle lanes or narrow bicycle and vehicular travel lanes. However, there is the Downtown Multiuse Path along the road frontage of this property with Little Patuxent Parkway.
- For information on the potential transit route circulation, see the Crescent Neighborhood Specific Implementation Plan pages 16 and 17.
- Street trees 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 in Liber 16306, Folio 001 thru 142.
- A landscape surety in the amount of \$5,700 for 14 street trees not within micro bio-retention facilities will be privately maintained and provided with the Developer's Agreement.
- There are no existing structures, historic structures on site.
- A separate final plan (F-15-106) will be submitted to complete Merrimweather Drive and Phase One of the Crescent Road network.
- The on-street parking on Divided Sky Lane along the frontage of Parcels A-2 and A-3 are being counted toward the parking requirements for Parcels A-1 and A-2. Parcel A-3 has the parking structure on it.
- Stormwater management for this site is provided in accordance with Chapter 5 of the MDE Stormwater Management Design Manual, Volumes 1 and 2. Throughout the site, Micro Bio-Retention (M-B) and Filterbas have been used. All of the stormwater management devices shown on these plans have been designed to treat the stormwater run-off from the public roads. The Micro Bio-Retention facilities will be publicly owned and jointly maintained; DPM will maintain the inlets, and the plantings, etc. will be privately maintained. The Filterbas will be privately owned and maintained.
- 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.
- Public water and sewer allocations will be granted at the time of issuance of building permit, if capacity is available at that time.
- See Sheet 21 for the Stormwater Management Practice Chart.
- A Reciprocal Easement Agreement between The Columbia Association, Merrimweather Business Trust and The Howard Research and Development Corporation was recorded on May 27, 2015 at Liber 16255 Folio 245.
- A determination has been made by the Department of Planning and Zoning that the impacts to environmental features (including steep slopes, streams, wetlands, stream buffers and wetland buffers) for construction of public and private roads, utilities, or stormwater management as shown on this plan to be essential and necessary for the reasonable development of this property and the fulfillment of the Downtown Columbia Plan.
- Stockpile and construction staging south of Divided Sky Lane must be removed prior to the beginning of the 2016 concert season; otherwise a revised redline must be submitted to DPZ by February 24, 2016 to indicate the relocation of 250 displaced Merrimweather Post Pavilion parking spaces in accordance with the parking mitigation requirement per FDP-DC-Crescent-1.



KEY MAP
SCALE: 1" = 400'

LEGEND

366	EXISTING CONTOUR	○	EXISTING POST	---	DRAINAGE DIVIDE	---	LIMIT OF WETLAND
302	PROPOSED CONTOUR	○	EXISTING POLE	---	STABILIZED CONSTRUCTION ENTRANCE	WB	WETLAND AREA
---	EXISTING TREELINE (DOES NOT MEET CRITERIA FOR A FOREST)	○	EXISTING FLAG	---	EARTH DIKE / CLEAN WATER DIVERSION	FP	100 YEAR FLOODPLAIN
---	LIMIT OF EXISTING FOREST	○	EXISTING MANHOLE	---	SILT FENCE	SB	STREAM / BANK BUFFER
---	LIMIT OF ULTIMATE FOREST	○	EXISTING FIRE HYDRANT	---	SUPER SILT FENCE	---	FLOODPLAIN CROSS SECTION
EX. S/S	EXISTING SANITARY SEWER	○	EXISTING SIGN	---	CURB INLET PROTECTION	---	EXISTING TREE
S/S	PROPOSED SANITARY SEWER	○	TO BE REMOVED	---	AT GRADE INLET PROTECTION	---	PROPOSED STREET TREE
EX. W/L	EXISTING WATERLINE	○	PAVEMENT TO BE REMOVED	---	STONE OUTLET STRUCTURE	---	SOIL BORING LOCATION
W/L	PROPOSED WATERLINE	○	EXISTING CURB AND GUTTER	---	GABION OUTLET STRUCTURE	---	EXISTING STREET LIGHT
EX. S/D	PROPOSED FIRE HYDRANT	○	EXISTING EDGE OF PAVEMENT	---	GABION OUTLET STRUCTURE	---	PROPOSED STREET LIGHT
S/D	EXISTING STORM DRAIN	○	PROPOSED CURB AND GUTTER	---	FILTER BAG	---	LIMIT OF DISTURBANCE
---	PROPOSED STORM DRAIN	○	PROPOSED REVERSE CURB AND GUTTER	---	LIMIT OF DISTURBANCE	---	SEDDIMENT TRAP
---	SOIL TYPE BOUNDARY	---	CONCRETE SIDEWALK	---	---	---	---
---	SOIL TYPE / SOIL GROUP	---	PROPOSED SIDEWALK	---	---	---	---
---	---	---	PROPOSED MULTI-PURPOSE PATH	---	---	---	---
---	---	---	MICRO BIO-RETENTION FACILITY (M-B)	---	---	---	---

SHEET INDEX

- COVER SHEET
- LIMITS OF WORK
- DIVIDED SKY LANE PLAN and PROFILE
- MERRIWEATHER DRIVE PLAN and PROFILE
- SIGNING, STREET TREE AND LIGHTING PLAN
- TYPICAL ROAD SECTION AND CURB DETAILS
- ADA RAMP
- DEMOLITION PLAN
- GRADING PLAN
- MASS GRADING AND SEDIMENT CONTROL PLAN
- MASS GRADING AND SEDIMENT CONTROL PLAN
- SEDIMENT TRAP DETAILS
- SEDIMENT CONTROL NOTES AND DETAILS
- SEDIMENT CONTROL NOTES AND DETAILS
- STORM DRAIN DRAINAGE AREA MAP
- STORM DRAIN PROFILES
- STORM DRAIN PROFILES
- STORMWATER MANAGEMENT DRAINAGE AREA MAP
- STORMWATER MANAGEMENT ESD DETAILS
- STORMWATER MANAGEMENT NOTES AND DETAILS
- STORMWATER MANAGEMENT NOTES AND DETAILS ARCH SPAN
- LOCATION PLAN, GENERAL NOTES, DESIGN DATA
- BRIDGE PLAN
- FOUNDATION PLAN
- TYPICAL BRIDGE SECTION, FOUNDATION DETAILS
- WINGWALL SECTIONS
- END ELEVATIONS
- LONGITUDINAL SECTION, HEADWALL DETAILS
- WINGWALL DETAILS
- SPECIFICATIONS FOR MANUFACTURE & INSTALLATION (1)
- SPECIFICATIONS FOR MANUFACTURE & INSTALLATION (2)

THE PURPOSE OF THESE REPLACEMENT SHEETS IS TO REMOVE A PORTION OF THE ROAD CONSTRUCTION PLANS PREVIOUSLY SHOWN ON THE F-15-106 PLANS AND INCLUDE THEM IN THIS PLAN SET.

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
Chief, Bureau of Highways
11/18/2015
Date

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
Chief, Division of Land Development
12-9-15
Date

Chief, Development Engineering Division
11-19-15
Date



GLWGUTSCHICK 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/YA: 301-989-2524 FAX: 301-421-4188

DES. MJT	DRN. WsJ	CHK. MJT	DATE	REVISION	BY	APP'R.

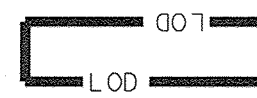
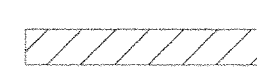
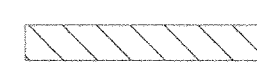

PREPARED FOR:
THE HOWARD HUGHES CORPORATION
10480 LITTLE PATUXENT PARKWAY
SUITE 400
COLUMBIA, MD 21044
ATTN: BOB JENKINS
410-964-5443

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. 13979
EXPIRATION DATE: MAY 26, 2016
11-12-15

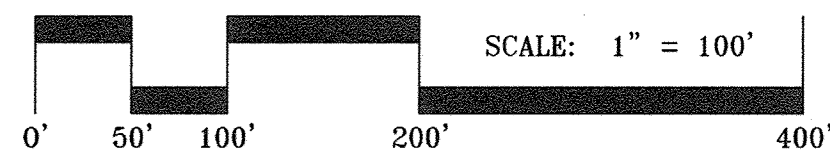
COVER SHEET
DOWNTOWN COLUMBIA
CRESCENT NEIGHBORHOOD PARCELS A-1 THRU A-3, E, NON-BUILDABLE BULK PARCEL L, OPEN SPACE LOTS 1, 8 & 9 AND MERRIWEATHER-SYMPHONY WOODS NEIGHBORHOOD OPEN SPACE LOT 1
ELECTION DISTRICT No. 5
HOWARD COUNTY, MARYLAND

SCALE	ZONING	G. L. W. FILE No.
AS SHOWN	NT	11071
DATE	TAX MAP - GRID	SHEET
NOV., 2015	36 - 01	1 OF 31

LEGEND

-  0071 LIMIT OF DISTURBANCE DUE TO F-15-048 ROAD WORK
-  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

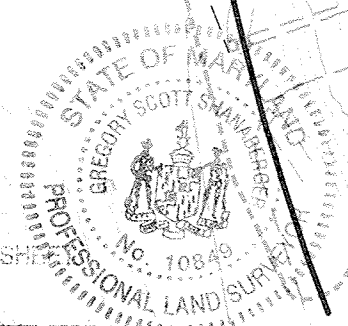
SEE SHEETS 22 THRU 31 FOR ARCH SPAN CONSTRUCTION INFORMATION.



APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
M. Menni 11/18/2015
 Chief, Bureau of Highways Date

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
Kit Sullivan 12-9-15
 Chief, Division of Land Development Date
Chad Gluck 11-19-15
 Chief, Development Engineering Division Date

NOTE: THERE IS NO AS-BUILT INFORMATION PROVIDED ON THIS SHEET.
 G. SCOTT SHAMBERGER
 SHAMBERGER & LANE
 PROFESSIONAL L.S. #10840 Exp. Date: 4/22/17
 AS-BUILT DATE: 12-1-17 to 12-15-17



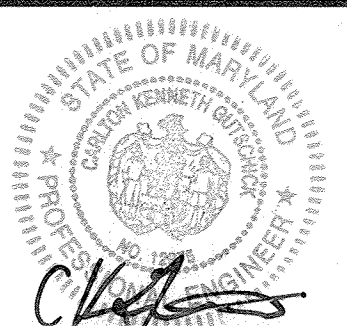
THE PLANS IN THIS REVISED ROAD CONSTRUCTION SET SUPERCEDE PLANS DATED 10/13/2015

GLWGUTSCHICK 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 BAL: 410-880-1820 DC/VA: 301-589-2524 FAX: 301-421-4186

DATE	REVISION	BY	APPR.

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
 11-12-15

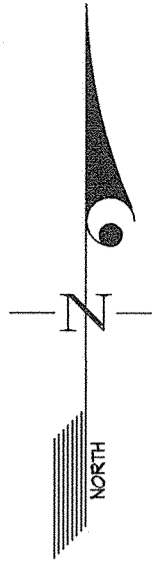


LIMITS OF WORK - THIS PLAN
DOWNTOWN COLUMBIA
 CRESCENT NEIGHBORHOOD PARCELS A-1 THRU A-3, E, NON-BUILDABLE BULK PARCEL L, OPEN SPACE LOTS 1, 8 & 9 AND MERRIWEATHER-SYMPHONY WOODS NEIGHBORHOOD OPEN SPACE LOT 1
 ELECTION DISTRICT No. 5
 HOWARD COUNTY, MARYLAND

SCALE	ZONING	G. L. W. FILE No.
1"=100'	NT	11071
DATE	TAX MAP - GRID	SHEET
NOV., 2015	36 - 01	2 OF 31

LEGEND

- EXISTING PAVING
- CONCRETE WALKS
- ASPHALT MULTI-USE PATH
D.B.O. (DESIGNED BY OTHERS)
- TEMPORARY ASPHALT PATH
- 50' STREAM / BANK BUFFER
- 25' WETLAND BUFFER
- 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



DIVIDED SKY LANE CURB FLOW LINE ELEVATION TABLE

PT. NO	STATION	OFFSET	ELEV.
(1)	0+51.72	46.5' L	344.14
(2)	0+59.71	12.0' L	344.12
(3)	1+45.94	12.0' L	345.45
(4)	1+55.87	20.5' L	345.84
(5)	1+57.88	33.6' L	346.00
(6)	1+45.24	23.5' L	345.95
(7)	1+45.91	21.9' L	346.00
(8)	2+05.14	12.0' L	345.65
(9)	2+16.41	12.0' L	345.44
(10)	2+30.98	12.0' L	345.21
(11)	2+85.04	12.0' L	344.17
(12)	2+85.04	20.0' L	343.94
(13)	3+24.04	20.0' L	343.15
(14)	3+24.04	12.0' L	343.33
(15)	3+84.96	12.0' L	342.25
(16)	3+84.96	20.0' L	342.07
(17)	4+44.96	20.0' L	341.83
(18)	4+44.96	12.0' L	342.01
(19)	4+46.96	12.0' L	342.01
(20)	5+13.96	18.7' L	342.22
(21)	5+21.96	31.0' L	341.94
(22)	5+45.96	31.0' L	342.26
(23)	5+70.96	12.0' L	342.78
(24)	5+70.96	12.0' R	342.78
(25)	4+44.96	12.0' R	342.01
(26)	4+44.96	20.0' R	341.83
(27)	3+84.96	20.0' R	342.07
(28)	3+84.96	12.0' R	342.25
(29)	3+24.04	12.0' R	343.15
(30)	3+24.04	20.0' R	343.16
(31)	2+85.04	20.0' R	344.01
(32)	2+85.04	12.0' R	344.17
(33)	2+30.98	12.0' R	345.21
(34)	2+16.41	12.0' R	345.44
(35)	0+42.71	12.0' R	344.34
(36)	0+51.74	51.0' R	342.64
(37)	1+53.31	53.1' R	341.84
(38)	1+33.23	12.00' L	338.26
(39)	8+00.36	12.00' L	338.40
(40)	8+18.34	14.68' L	338.55
(41)	8+25.34	38.00' L	338.70
(42)	8+25.26	44.08' R	338.74
(43)	8+18.34	30.71' R	337.46
(44)	8+00.24	23.00' R	338.18
(45)	1+33.12	23.00' R	341.38
(46)	1+18.97	23.00' R	342.05
(47)	6+18.47	12.00' R	343.35

NOTES:

- FOR LIMITS OF WORK, SEE SHEET 2: "LIMITS OF WORK - THIS PLAN"
- FOR PAVING DETAILS SEE SHEET 6.
- FOR ROAD TYPICAL SECTION DETAILS SEE SHEET 6.
- FOR CURB DETAILS SEE SHEET 6.
- FOR FLOODPLAIN CROSS SECTION AND WSEL SEE SHEETS 4.
- FOR EXISTING ITEMS TO BE REMOVED AND BEARINGS AND DISTANCES SEE SHEETS 8.
- PROPOSED SIDEWALK RAMPAS ARE HOWARD COUNTY TYPE B R-4.03 RAMPAS UNLESS OTHERWISE NOTED.
- THE PURPOSE OF THE MEDIAN BREAK IN BROKEN LAND PARKWAY IS TO ASSIST PATRONS OF MERRIWEATHER POST PAVILION EVENTS IN LEAVING THE VENUE. ONLY HOWARD COUNTY POLICE PERSONNEL MAY OPEN THE GATE AND DIRECT TRAFFIC DURING THE TIME IN WHICH THE MEDIAN BREAK IS UTILIZED BY PATRONS.
- PARALLEL PARKING COUNT: 14 SPACES (22'x8')
- ALL PLANTERS SHOWN (1 THRU 6) WILL BE CONSTRUCTED UNDER THESE PLANS.
- ALL STORM DRAIN SHOWN WILL BE PUBLICLY MAINTAINED. FOR STORM DRAIN INFORMATION SEE SHEETS 16-17.
- DETAILS FOR GRATES IN THE PLANTER STEP OFF AREA ARE SHOWN ON SHEET 21.
- A SIDEWALK IS BEING CONSTRUCTED NORTH OF THE PLANTERS ON THE NORTH SIDE OF DIVIDED SKY LANE WITH SDP 15-068. THE ASPHALT PATH SHOWN ON THESE PLANS WILL ONLY BE CONSTRUCTED IF A PEDESTRIAN ROUTE IS NEEDED PRIOR TO THE COMPLETION OF THE WORK UNDER SDP 15-068.
- THE CROSSWALK WILL BE DESIGNED AND CONSTRUCTED WITH THE PARCEL 'B' SITE PLAN SUBMISSION.
- CONTRACTOR IS TO INSTALL 2-4" PVC CONDUITS AT A DEPTH OF 36".
- ALL STREET LIGHTS SHOWN WILL BE PUBLIC AND WILL BE WITHIN A PUBLIC STREET LIGHT AND UTILITY EASEMENT. FOR STREET TREES AND STREET LIGHTS INFORMATION SEE SHEETS 5.
- FROM POINT 14 TO POINT 23 THERE WILL BE NO CURB AND GUTTER INSTALLED, ONLY PAVEMENT.
- TRAFFIC BARRIER DETAILS OVER THE CULVERT PROVIDED ON SHEET 6.

(BLP)

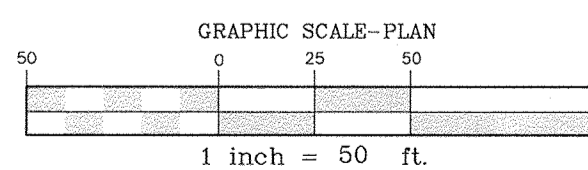
CURVE DATA CHART

CURVE	STREET NAME	PC STA.	PT STA.	RADIUS	TANGENT	ARC	CHORD	BEARING	DELTA
C1	DIVIDED SKY LANE	2+16.41	2+30.98	75.00'	7.31'	14.58'	14.55'	S88°15'31"E	11°08'07"

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
[Signature]
 Chief, Bureau of Highways
 Date: 11/18/2015

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
[Signature]
 Chief, Division of Land Development
 Date: 12-9-15

[Signature]
 Chief, Development Engineering Division
 Date: 11-19-15

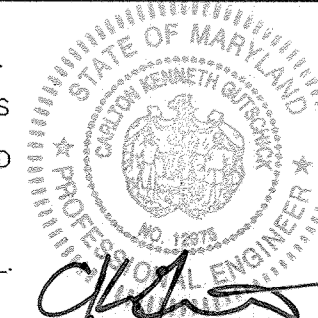


GLWGUTSCHICK LITTLE & WEBER, P.A.
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 3909 NATIONAL DRIVE - SUITE 250 - BURTONSVILLE OFFICE PARK
 BURTONSVILLE, MARYLAND 20886
 TEL: 301-421-4024 BAL: 410-880-1820 DC/VA: 301-989-2524 FAX: 301-421-4186

DATE	BY	APP'R.	REVISION
11-18-15	MLP		rev. storm drain

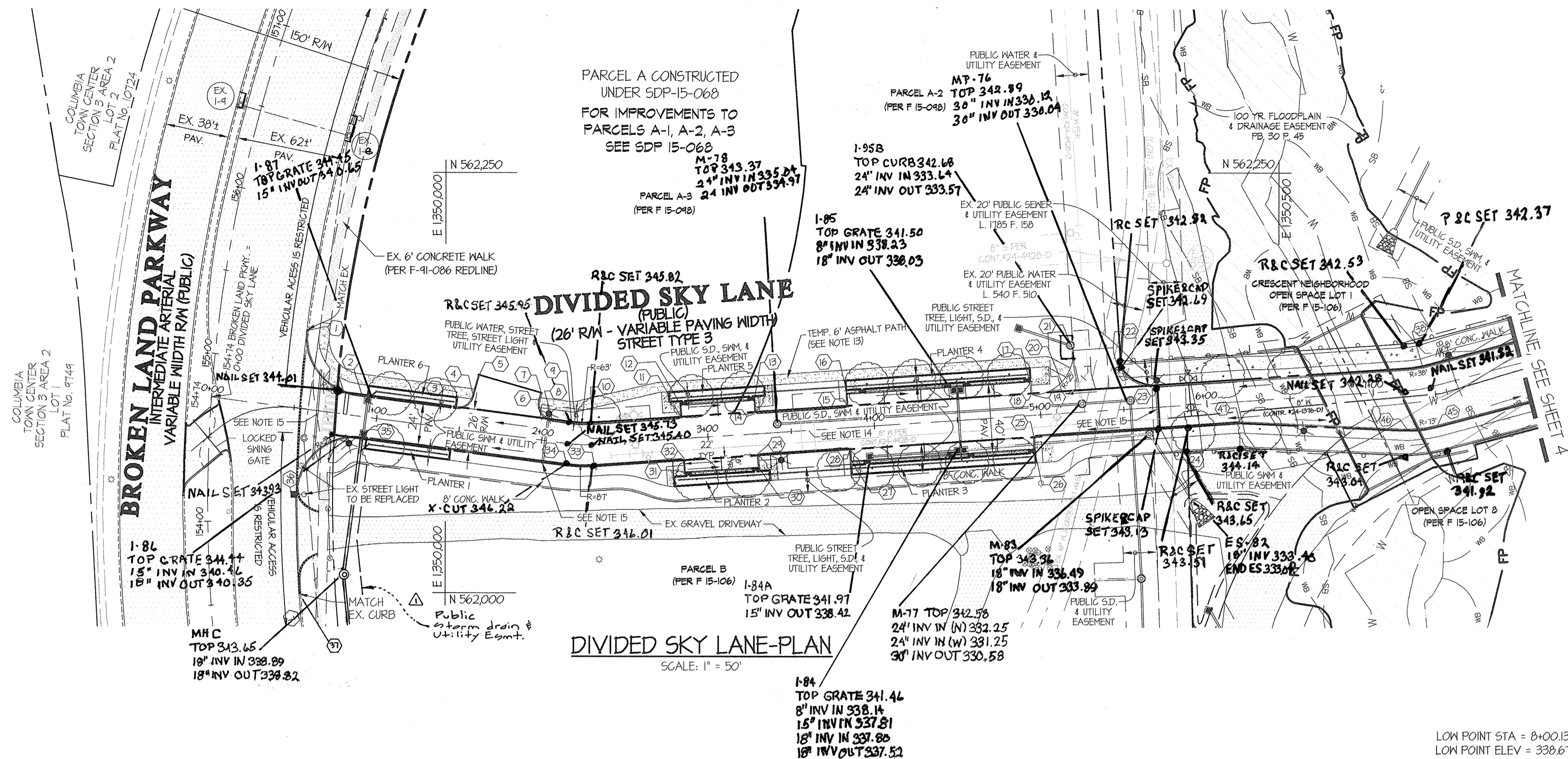
PREPARED FOR:
 THE HOWARD HUGHES CORPORATION
 10480 LITTLE PATUXENT PARKWAY
 SUITE 400
 COLUMBIA, MD 21044
 ATTN: BOB JENKINS
 410-964-5443

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
 11-12-15



DIVIDED SKY LANE PLAN and PROFILE
DOWNTOWN COLUMBIA
 CRESCENT NEIGHBORHOOD PARCELS A-1 THRU A-3, E, NON-BUILDABLE BULK PARCEL L, OPEN SPACE LOTS 1, 8 & 9 AND MERRIWEATHER-SYMPHONY WOODS NEIGHBORHOOD OPEN SPACE LOT 1
 ELECTION DISTRICT No. 5
 HOWARD COUNTY, MARYLAND

SCALE	ZONING	G. L. W. FILE NO.
1" = 50'	NT	11071
DATE	TAX MAP - GRID	SHEET
NOV, 2015	36 - 01	3 OF 31

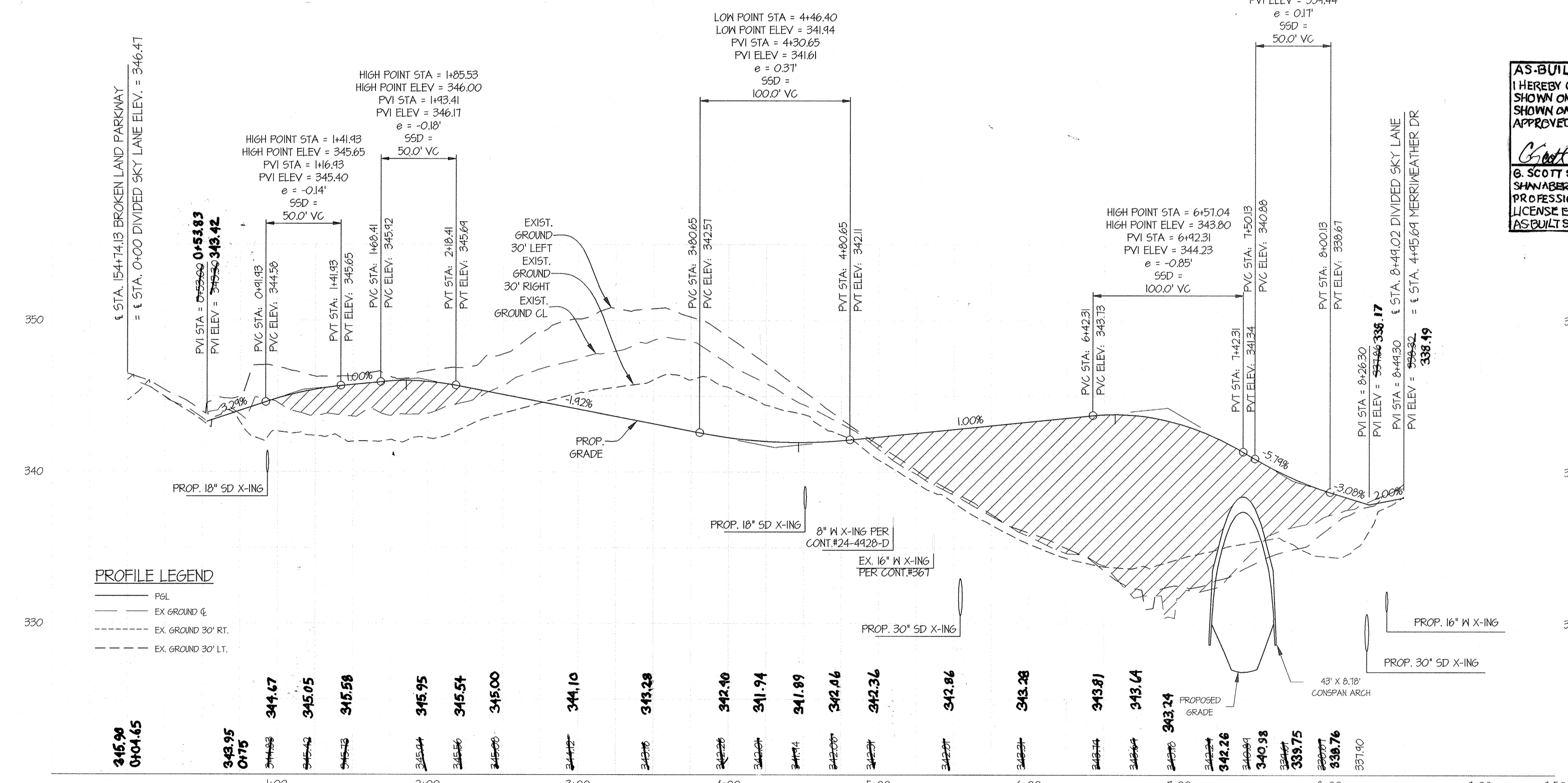


DIVIDED SKY LANE AS-BUILT CURB TOP/FLOWLINE TABLE

AA	0+54.81	34.5' L	344.15 FL
BB	0+80.74	12.4' L	344.14 FL
CC	1+46.72	11.8' L	345.10 FL
DD	1+56.95	24.5' L	345.89 FL
EE	1+45.77	26.9' R	346.02 FL
FF	2+05.58	12.2' L	345.75 FL
GG	2+82.95	12.1' L	344.27 FL
HH	2+85.23	20.0' L	344.09 FL
II	3+28.23	20.1' L	343.30 FL
JJ	3+30.96	12.1' L	343.49 FL
KK	3+81.42	12.1' L	342.53 FL
LL	3+84.02	20.2' L	342.27 FL
MM	4+95.19	19.9' L	342.01 FL
NN	4+97.18	12.1' L	342.14 FL
OO	5+22.35	36.9' L	341.90 FL
PP	5+45.61	38.3' L	342.51 FL
QQ	5+71.40	12.1' L	342.91 FL

DIVIDED SKY LANE AS-BUILT CURB TOP/FLOWLINE TABLE

RR	0+58.69	49.2' R	342.90 FL
SS	0+89.59	12.3' R	344.38 FL
TT	2+02.41	12.5' R	345.70 FL
UU	2+20.85	11.8' R	345.53 FL
VV	2+54.41	11.9' R	344.79 FL
WW	2+82.94	12.0' R	344.32 FL
XX	2+85.04	19.9' R	344.23 FL
YY	3+28.25	19.9' R	343.35 FL
ZZ	3+28.25	12.1' R	343.31 FL
IA	3+82.99	12.0' R	342.33 FL
IB	3+85.10	20.3' R	342.16 FL
IC	4+94.84	20.1' R	341.96 FL
ID	4+97.15	12.3' R	342.19 FL
IE	5+21.87	36.5' R	342.88 FL
IF	5+46.03	37.1' R	342.83 FL
IG	5+75.14	11.9' R	342.82 FL
IH	6+13.12	12.1' R	343.20 FL
II	6+19.57	20.1' R	342.94 FL
IJ	7+32.13	23.0' R	341.39 FL



DIVIDED SKY LANE-PROFILE
 SCALE: (H) 1" = 5'
 SCALE: (V) 1" = 5'

THE PLANS IN THIS REVISED ROAD CONSTRUCTION SET SUPERCEDE PLANS DATED 10/13/2015

AS-BUILT CERTIFICATION
 I HEREBY CERTIFY, BY SEAL, THAT THE FACILITIES SHOWN ON THIS PLAN WERE CONSTRUCTED AS SHOWN ON THIS PLAN MEET THE CURRENT APPROVED PLANS AND SPECIFICATIONS
[Signature]
 G. SCOTT SHANBERGER
 SHANBERGER & LANE
 PROFESSIONAL LAND SURVEYOR #10844
 LICENSE EXPIRATION DATE 4/2/2020
 AS-BUILT SURVEY DATES 12-17 TO 12/15/17

- LEGEND**
- EXISTING PAVING
 - CONCRETE WALKS
 - ASPHALT MULTI-USE PATH - SEE NOTE 12
 - SB 50' STREAM / BANK BUFFER
 - WB 25' WETLAND BUFFER
 - 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

- NOTES:**
- FOR LIMITS OF WORK, SEE SHEET 2, "LIMITS OF WORK - THIS PLAN"
 - FOR PAVING DETAILS SEE SHEET 6.
 - FOR ROAD TYPICAL SECTION DETAILS SEE SHEET 6.
 - FOR CURB DETAILS SEE SHEET 6.
 - FOR FLOODPLAIN CROSS SECTION AND WSEL SEE SHEETS 9.
 - FOR EXISTING ITEMS TO BE REMOVED AND BEARINGS AND DISTANCES SEE SHEETS 8.
 - PROPOSED SIDEWALK RAMPAS ARE HOWARD COUNTY TYPE B R-4.03 RAMPAS UNLESS OTHERWISE NOTED.
 - ALL FILTERRAS SHOWN (1-2) WILL BE CONSTRUCTED UNDER THESE PLANS.
 - ALL STORM DRAIN SHOWN WILL BE PUBLICLY MAINTAINED. FOR STORM DRAIN INFORMATION SEE SHEETS 16-17.
 - DETAILS FOR GRATES IN THE PLANTER STEP OFF AREA ARE SHOWN ON SHEET 21.
 - ALL STREET LIGHTS SHOWN WILL BE PUBLIC AND WILL BE WITHIN A PUBLIC STREET LIGHT AND UTILITY EASEMENT. FOR STREET TREES AND STREET LIGHTS INFORMATION SEE SHEETS 5.
 - ASPHALT MULTI-USE PATH HAS BEEN SHOWN FOR INFORMATIONAL PURPOSES, REFER TO F-15-106 FOR DETAILS AND SPECIFICATIONS
 - DEVELOPER WILL BE RESPONSIBLE TO INSTALL STREET LIGHT CONDUIT AND HAND BOXES TO CONNECT PATHWAY LIGHTING SYSTEM ACROSS NEW PUBLIC ROADWAY AND ACROSS PRIVATE DRIVEWAY GOING INTO SITE FROM LPP FOR SDP-15-068.

MERRIWEATHER DR CURB FLOW LINE ELEVATION TABLE

PT. NO	STATION	OFFSET	ELEV.
1	0+48.11	32.85' L	356.58
2	0+72.44	23.00' L	355.55
3	2+90.11	23.00' L	343.70
4	3+68.15	23.00' L	340.66
5	4+47.80	23.00' L	338.42
6	4+61.45	23.00' L	338.54
7	4+78.13	24.44' L	338.46
8	4+85.33	46.82' L	334.33
9	6+25.91	23.00' L	335.00
10	7+24.43	23.00' L	333.53
11	7+37.43	28.71' L	333.76

MERRIWEATHER DR CURB FLOW LINE ELEVATION TABLE

PT. NO	STATION	OFFSET	ELEV.
39	11+10.03	23.00' R	331.30
40	7+59.16	23.00' R	333.29
41	6+44.74	23.00' R	334.50
42	5+45.83	23.00' R	336.74
43	5+21.22	30.58' R	337.46
44	4+75.24	30.51' R	338.55
45	4+56.67	23.00' R	338.70
46	4+46.91	23.00' R	338.43
47	3+68.15	23.00' R	340.66
48	2+84.34	23.00' R	343.73
49	0+71.66	23.00' R	355.44
50	0+52.35	33.83' R	355.64

MERRIWEATHER DRIVE AS-BUILT CURB TOP/FLOWLINE TABLE

PT	STATION	OFFSET	ELEV.
P	0+42.29	54.8' R	356.05 FL
Q	0+76.71	22.9' R	355.51 FL
R	2+80.92	23.0' R	345.76 TC
S	2+96.92	22.9' R	344.77 TC
T	4+40.06	22.9' R	339.72 TC
U	4+55.78	47.0' R	338.44 FL
V	5+20.04	47.3' R	338.24 FL
W	5+44.11	23.1' R	337.04 FL
X	6+12.94	23.00' L	333.33
Y	6+10.03	23.2' R	335.97 TC
Z	7+43.70	48.4' L	333.92 FL

CURVE DATA CHART

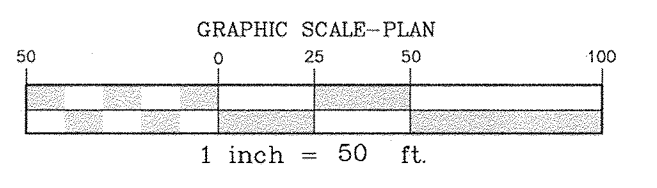
CURVE	STREET NAME	PC STA.	PT STA.	RADIUS	TANGENT	ARC	BEARING	DELTA
C1	MERRIWEATHER DRIVE	2+84.34	4+46.91	649.34'	74.09'	157.51'	S11°26'25"E	12°54'04"
C2	MERRIWEATHER DRIVE	4+46.91	7+59.16	1000.00'	157.41'	312.25'	S10°49'	58°56'44"E

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
 Chief, Bureau of Highways
 Date: 11/18/2015

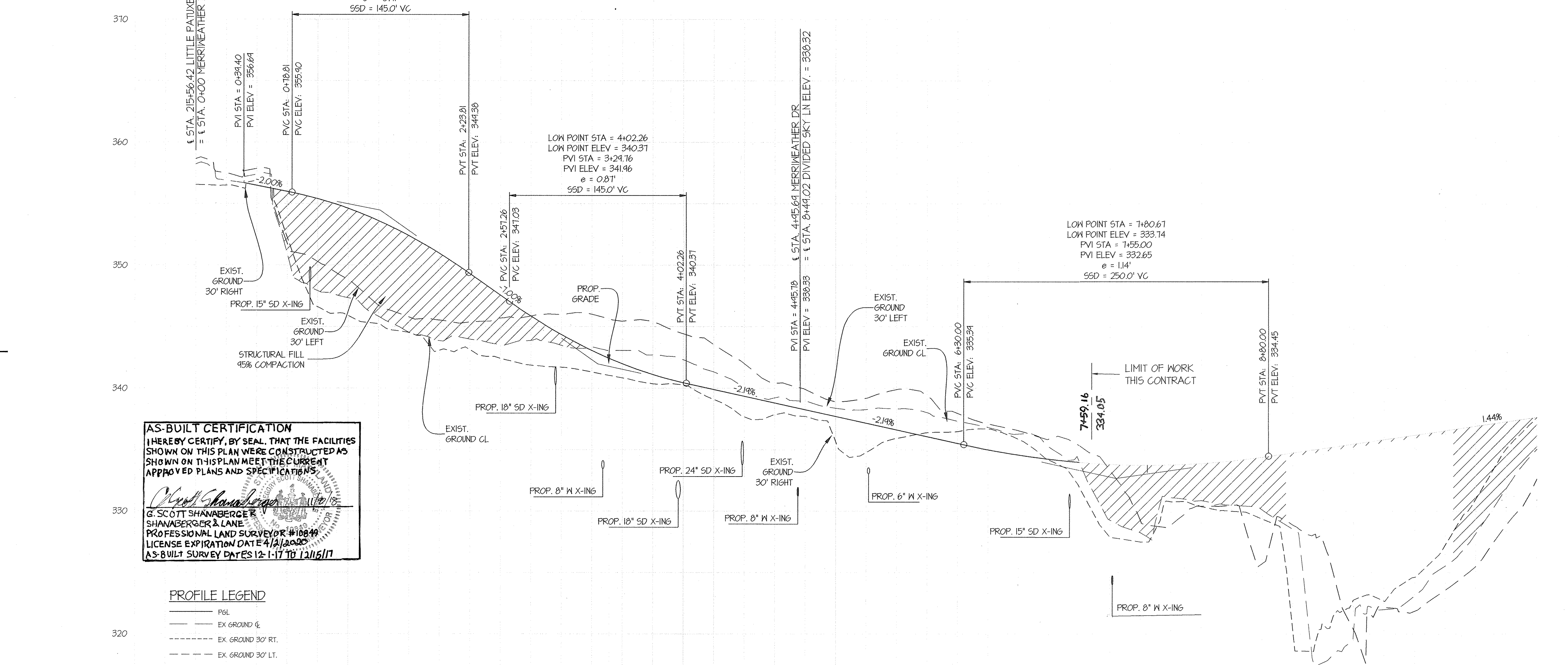
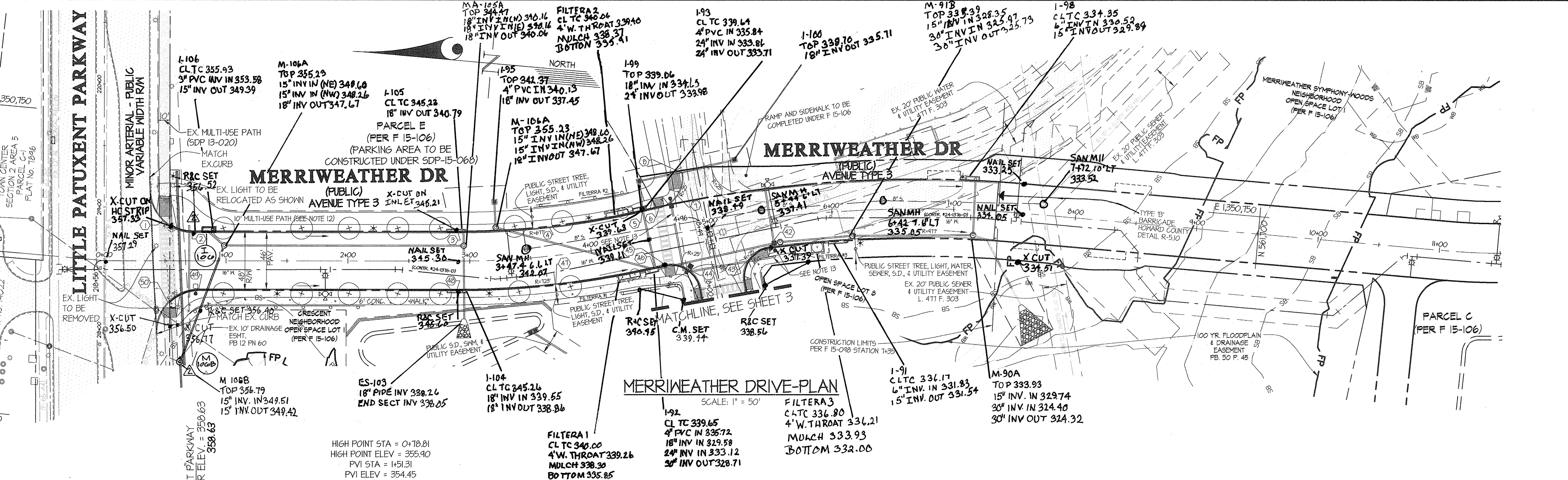
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
 Chief, Division of Land Development
 Date: 12-9-15

Chief, Development Engineering Division
 Date: 11-19-15

GLWGutschick Little & Weber, P.A.
 CIVIL ENGINEERS, LAND SURVEYORS, LAND PLANNERS, LANDSCAPE ARCHITECTS
 3909 NATIONAL DRIVE - SUITE 250 - BURTONTVILLE OFFICE PARK
 BURTONTVILLE, MARYLAND 20866
 TEL: 301-421-4024 FAX: 410-880-1820 DC/WA: 301-989-2524 FAX: 301-421-4186



DES. MJT	DRN. Wsj	CHK. MJT
DATE: 10-5-16	REVISION: Rev storm drains to reflect Ex. dry utilities	BY: Jt
		APPR. DEW



MERRIWEATHER DRIVE PROFILE

STATION	ELEVATION
357.40	0+00
356.40	25.670
355.80	56.19
355.40	355.44
354.61	354.43
353.80	353.58
352.38	352.40
350.85	351.00
349.24	349.33
347.58	347.58
346.13	346.13
344.69	344.69
343.34	343.34
341.91	341.91
340.42	340.42
339.01	339.01
337.54	337.54
336.10	336.10
334.64	334.64
333.24	333.24
331.86	331.86
330.57	330.57
329.24	329.24
327.94	327.94
326.64	326.64
325.30	325.30
324.00	324.00
322.70	322.70
321.46	321.46
320.20	320.20

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, 2016
 11-12-15

MERRIWEATHER DR - PLAN AND PROFILE

DOWNTOWN COLUMBIA

CRESCENT NEIGHBORHOOD PARCELS A-1 THRU A-3, E, NON-BUILDABLE BULK PARCEL L, OPEN SPACE LOTS 1, 8 & 9 AND MERRIWEATHER-SYMPHONY WOODS NEIGHBORHOOD OPEN SPACE LOT 1

ELECTION DISTRICT No. 5

SCALE: AS SHOWN	ZONING: NT	G. L. W. FILE No.: 11071
DATE: NOV., 2015	TAX MAP - GRD: 36 - 01	SHEET: 4 OF 31

PLANT LIST				
SYMBOL	QTY	TYPE	NAMES (BOTANICAL / SCIENTIFIC)	SIZE/COMMENTS
SHADE TREES				
(X)	14	AR	ACER RUBRUM 'OCTOBER GLORY' / OCTOBER GLORY RED MAPLE	4" CAL. B4B
(O)	21	T6	THORNLESS HONEYLOCUST GLEDETZIA	3" CAL. B4B
(O)	3		ACER GINNALA 'AMUR MAPLE'	HEIGHT: 15'-25'; SPREAD: 15'-25'
TOTAL:		38		

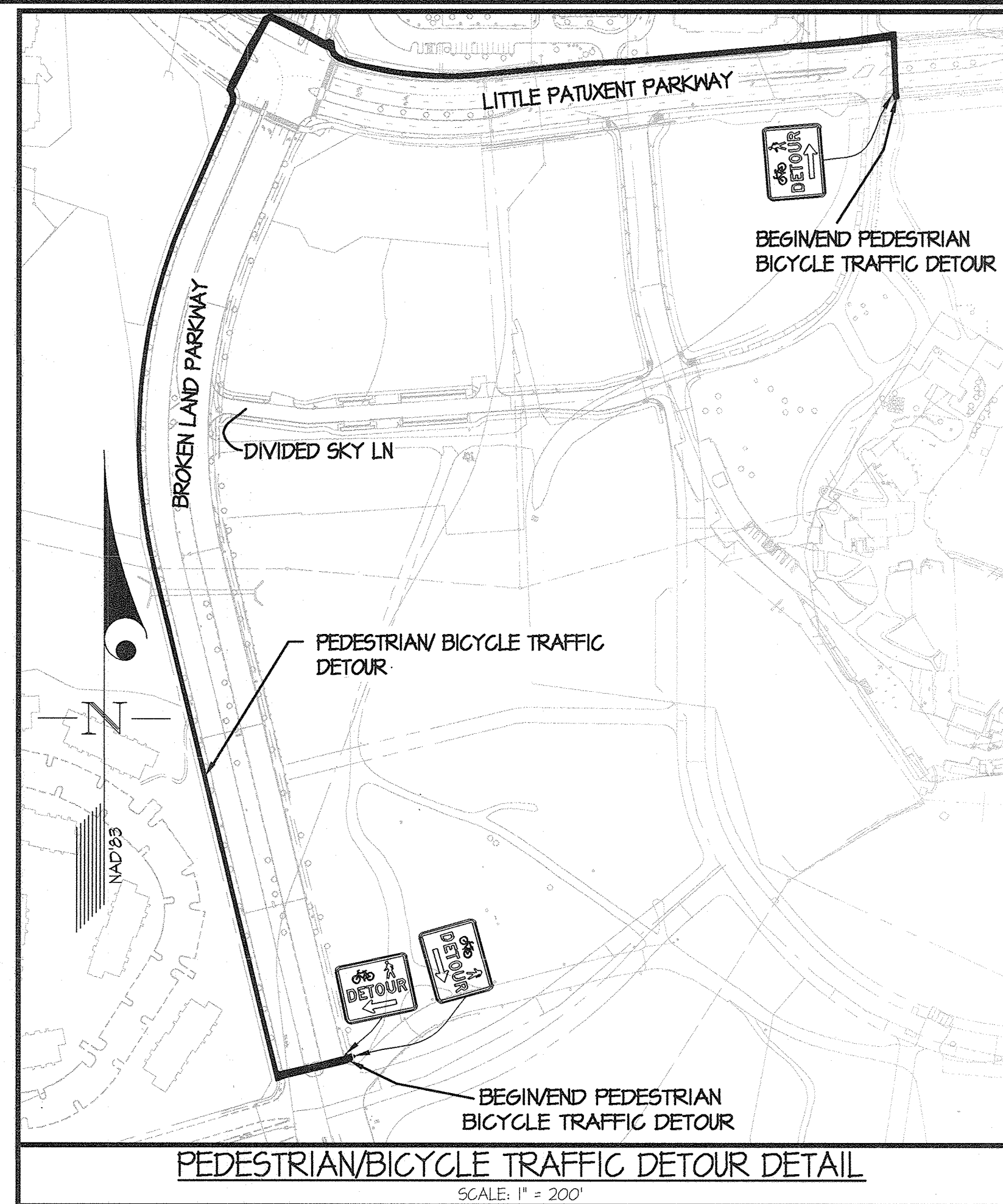
STREET TREE NOTES:
 1) REFER TO SHEET 21 FOR STREET TREE DETAILS.
 2) LENGTH OF ROAD RIGHT-OF-WAY NOT ADJACENT TO OPEN SPACE (PARK) = 144'
 3) REQUIRED NUMBER OF TREES @ 1 PER 40 FEET = 36
 4) INDICATES TREE MUST BE INSPECTED BY THE LANDSCAPE INSPECTOR PRIOR TO THE RELEASE OF THE SURETY.

SIGN SCHEDULE				
TYPE	SIZE	STATION	OFFSET	
R1-1	30" X 30"	0+61	MERRIWEATHER DRIVE	26.9' L.T.
R2-1	24" X 30"	1+18	MERRIWEATHER DRIVE	21.2' R.T.
R3-TR	30" X 30"	1+78	MERRIWEATHER DRIVE	26.2' L.T.
W4-2L	30" X 30"	3+62	MERRIWEATHER DRIVE	26.9' L.T.
W11-2	30" X 30"	4+55	MERRIWEATHER DRIVE	21.8' L.T.
W16-TR(L)	24" X 12"	4+55	MERRIWEATHER DRIVE	21.8' L.T.
W11-2	30" X 30"	4+68	MERRIWEATHER DRIVE	30.0' R.T.
W16-TR(L)	24" X 12"	4+68	MERRIWEATHER DRIVE	30.0' R.T.

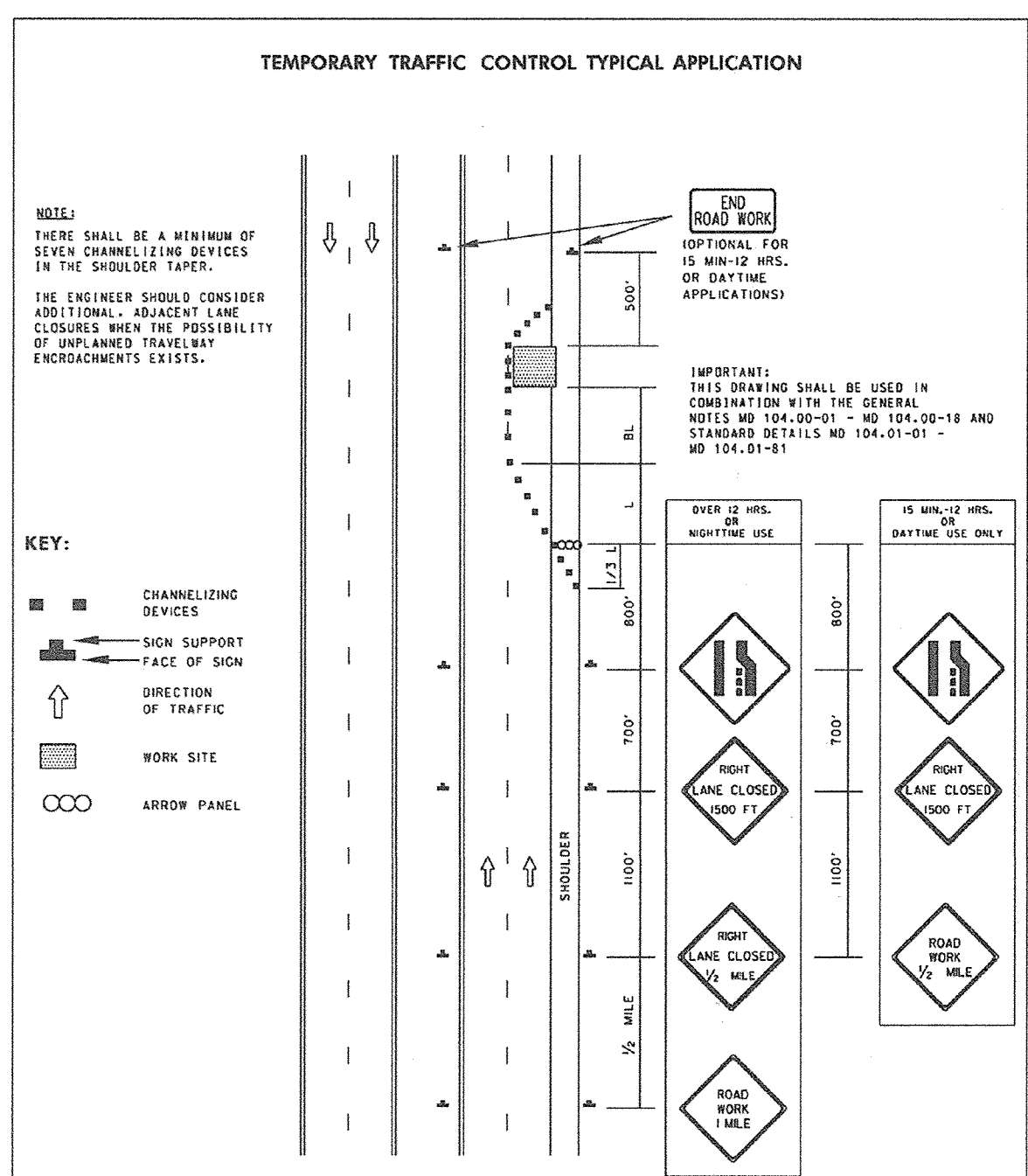
Construction Details

- A. INSTALL 5" WHITE PAVEMENT MARKING.
- B. INSTALL 5" YELLOW PAVEMENT MARKING.
- C. INSTALL 5" WHITE PAVEMENT MARKING. (10' SKIP, 30' SPACING).
- D. INSTALL 24" WHITE PAVEMENT MARKING. (STOP BAR)
- E. INSTALL 5" DOUBLE YELLOW PAVEMENT MARKING. (CENTERLINE)
- F. INSTALL WHITE PAVEMENT LEGEND AS SHOWN.
- G. INSTALL GROUND MOUNTED SIGN.
- H. INSTALL 12" YELLOW PAVEMENT MARKING (45°, 20' SPACING).
- I. INSTALL 5" WHITE PAVEMENT MARKING. (2' SKIP, 6' SPACING)
- J. INSTALL PEDESTRIAN CROSSING PAVEMENT MARKING PER CROSSWALK DETAIL AS SHOWN.
- K. INSTALL 12" WIDE PEDESTRIAN CROSSING PAVEMENT MARKING PER CROSSWALK DETAIL AS SHOWN.
- L. INSTALL 5" WIDE SOLID WHITE PAVEMENT MARKING FOR PARKING SPACE.

SIGN SCHEDULE				
TYPE	SIZE	STATION	OFFSET	
R6-1	12" X 36"	0+00	DIVIDED SKY LANE	NO OFFSET
R5-1	36" X 36"	0+14	DIVIDED SKY LANE	53.0' R.T.
R5-1	36" X 36"	0+63	DIVIDED SKY LANE	47.6' R.T.
R1-1	30" X 30"	0+71	DIVIDED SKY LANE	16.1' L.T.
R3-5(L)	30" X 36"	0+71	DIVIDED SKY LANE	16.1' L.T.
R2-1	24" X 30"	2+65	DIVIDED SKY LANE	17.8' R.T.
SPECIAL	30" X 30"	7+27	DIVIDED SKY LANE	26.9' R.T.
R2-1	24" X 30"	7+57	DIVIDED SKY LANE	15.9' L.T.
R1-1	30" X 30"	8+11	DIVIDED SKY LANE	27.0' R.T.
W16-8aP	24" X 48"	15+45	BROKEN LAND PKWY.	57.4' R.T.



48 Hours
 Before You Dig
 Call
"MISS UTILITY"
 Service Protection Center
 MEMBER
 MISS UTILITY
 CALL TOLL FREE
 1-800-257-7777



PAVEMENT MARKING NOTES

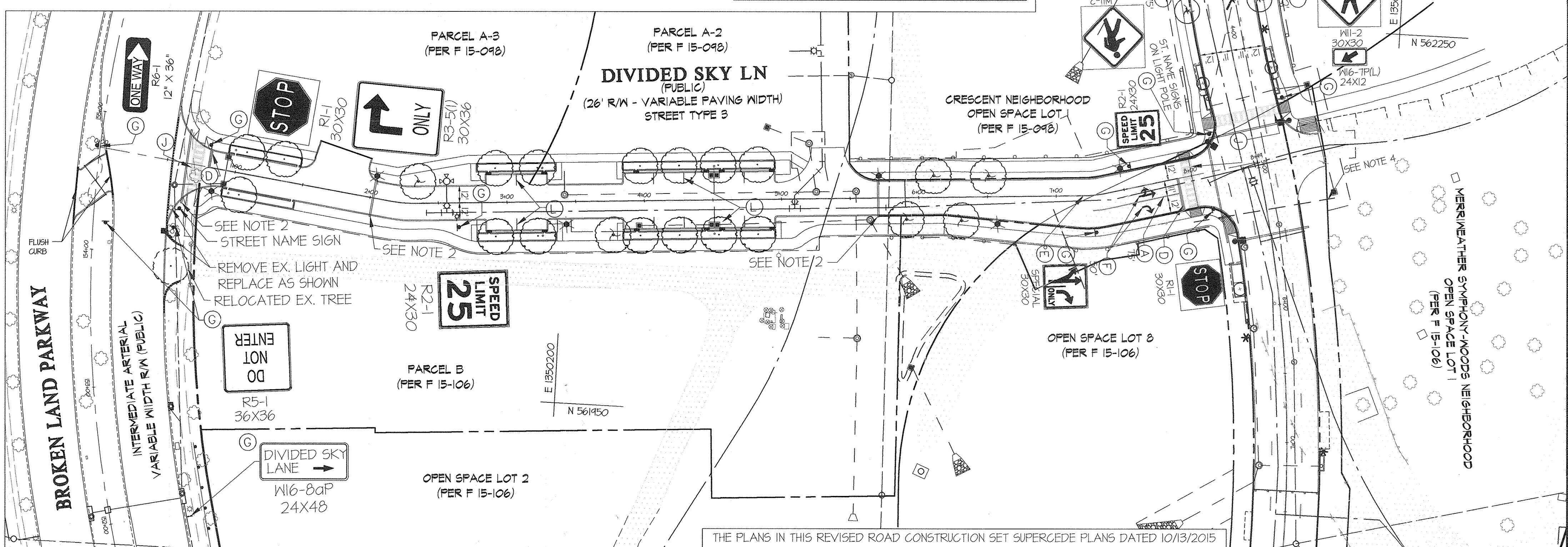
- 1. ALL LONG LINES MARKINGS TO BE APPLIED USING THERMOPLASTIC MATERIAL.
- 2. THE CROSSWALK AND ARROWS TO BE INSTALLED USING PREFORMED HEAT APPLIED TAPE OR THERMOPLASTIC.
- 3. ALL PAVEMENT MARKINGS ARE TO BE LOCATED OR APPROVED BY THE TRAFFIC DIVISION PRIOR TO THE PLACEMENT OF ANY MARKINGS.
- 4. ALL 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 (1/4 GAUGE) INSERTED INTO A 2-1/2" GALVANIZED STEEL, PERFORATED, SQUARE TUBE SLEEVE (1/2 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.

STREET LIGHT SCHEDULE		
LOCATION	TYPE	
§ STA. 0+62.57 DIVIDED SKY LANE	50'41' RT.	A
§ STA. 0+85.40 DIVIDED SKY LANE	16.79' RT.	A
§ STA. 2+02.14 DIVIDED SKY LANE	16.12' LT.	A
§ STA. 3+43.04 DIVIDED SKY LANE	16.62' RT.	A
§ STA. 5+10.85 DIVIDED SKY LANE	15.44' LT.	A
§ STA. 6+51.00 DIVIDED SKY LANE	15.20' RT.	A
§ STA. 7+50.00 DIVIDED SKY LANE	15.20' LT.	A
§ STA. 0+58.46 MERRIWEATHER DR.	169.86' LT.	A
§ STA. 0+75.00 MERRIWEATHER DR.	26.67' RT.	D
§ STA. 1+41.94 MERRIWEATHER DR.	26.67' RT.	A
§ STA. 2+20.90 MERRIWEATHER DR.	26.67' RT.	A
§ STA. 3+15.00 MERRIWEATHER DR.	26.67' RT.	A
§ STA. 4+02.26 MERRIWEATHER DR.	26.67' LT.	A
§ STA. 4+71.80 MERRIWEATHER DR.	28.77' LT.	B
§ STA. 4+75.04 MERRIWEATHER DR.	30.64' RT.	B
§ STA. 5+50.00 MERRIWEATHER DR.	26.67' RT.	B
§ STA. 6+22.00 MERRIWEATHER DR.	26.67' RT.	A
§ STA. 7+06.41 MERRIWEATHER DR.	26.64' LT.	A

- STREET LIGHT 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-50 COBRA FIXTURE MOUNTED AT 30' ON A BRONZE FIBERGLASS POLE USING A 6' ARM
 - E) LED-50 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
- STREET LIGHT NOTES:**
 1. STREET LIGHTS TO BE CONSISTENT THROUGHOUT DOWNTOWN.



APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
 Chief, Bureau of Highways
 Date: 11/18/2015

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
 Chief, Division of Land Development
 Date: 11-19-15

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
 Chief, Development Engineering Division
 Date: 11-19-15

STATE OF MARYLAND
 DEPARTMENT OF TRANSPORTATION
 STATE HIGHWAY ADMINISTRATION
 STANDARDS FOR HIGHWAYS AND INCIDENTAL STRUCTURES
 RIGHT LANE CLOSURE/DIVIDED UNCON.
 GREATER THAN 40 MPH
 STANDARD NO. MD 104.04-05

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
 Chief, Bureau of Highways
 Date: 11/18/2015

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
 Chief, Division of Land Development
 Date: 11-19-15

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
 Chief, Development Engineering Division
 Date: 11-19-15

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 FAX: 301-421-4186

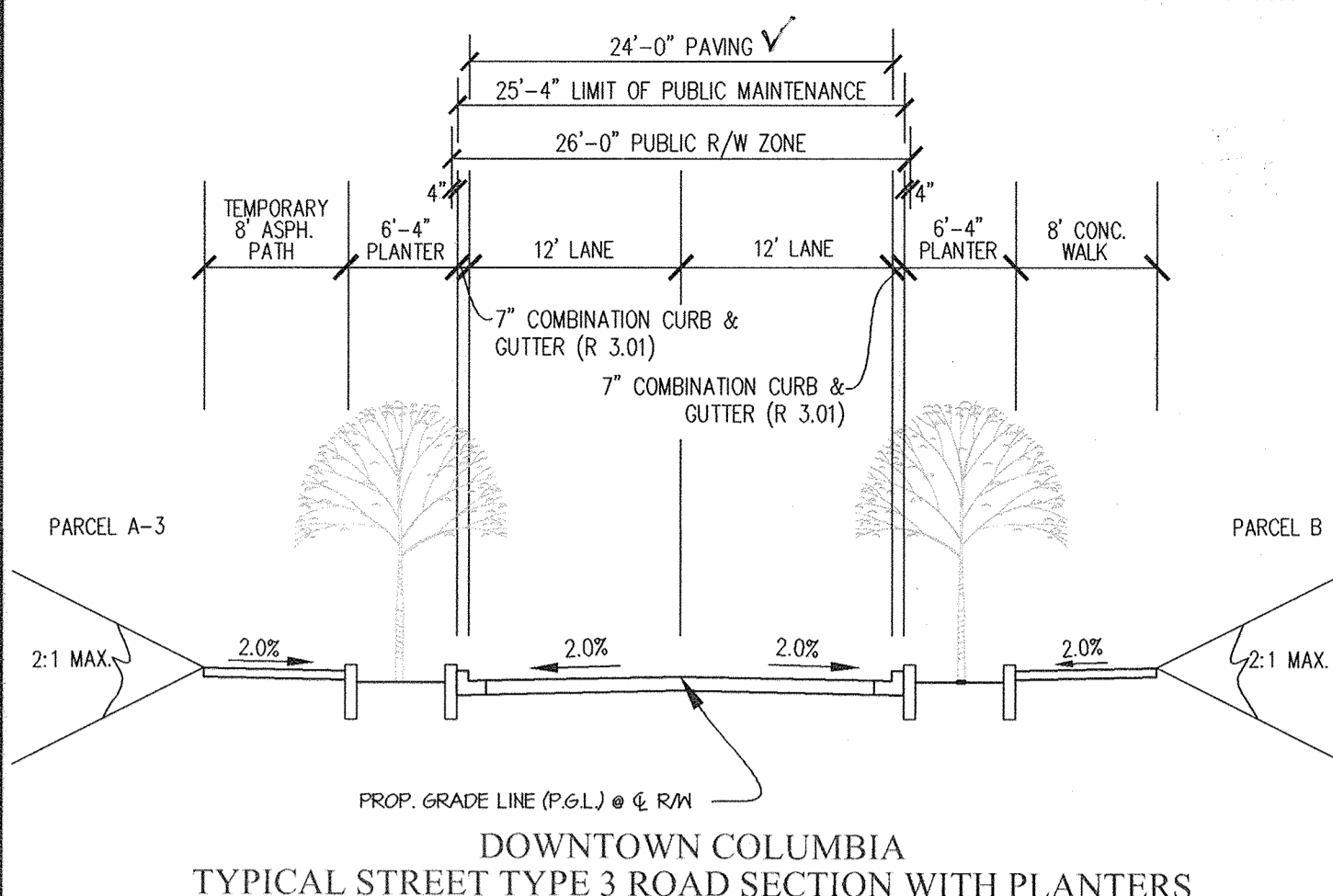
DATE	REVISION	BY	APP'R.

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, 2015
 11-12-15

SIGNING, STREET TREE AND LIGHTING PLAN
DOWNTOWN COLUMBIA
 CRESCENT NEIGHBORHOOD PARCELS A-1 THRU A-3, E, NON-BUILDABLE BULK PARCEL L, OPEN SPACE LOTS 1, 8 & 9 AND MERRIWEATHER-SYMPHONY WOODS NEIGHBORHOOD OPEN SPACE LOT 1
 ELECTION DISTRICT No. 5
 HOWARD COUNTY, MARYLAND

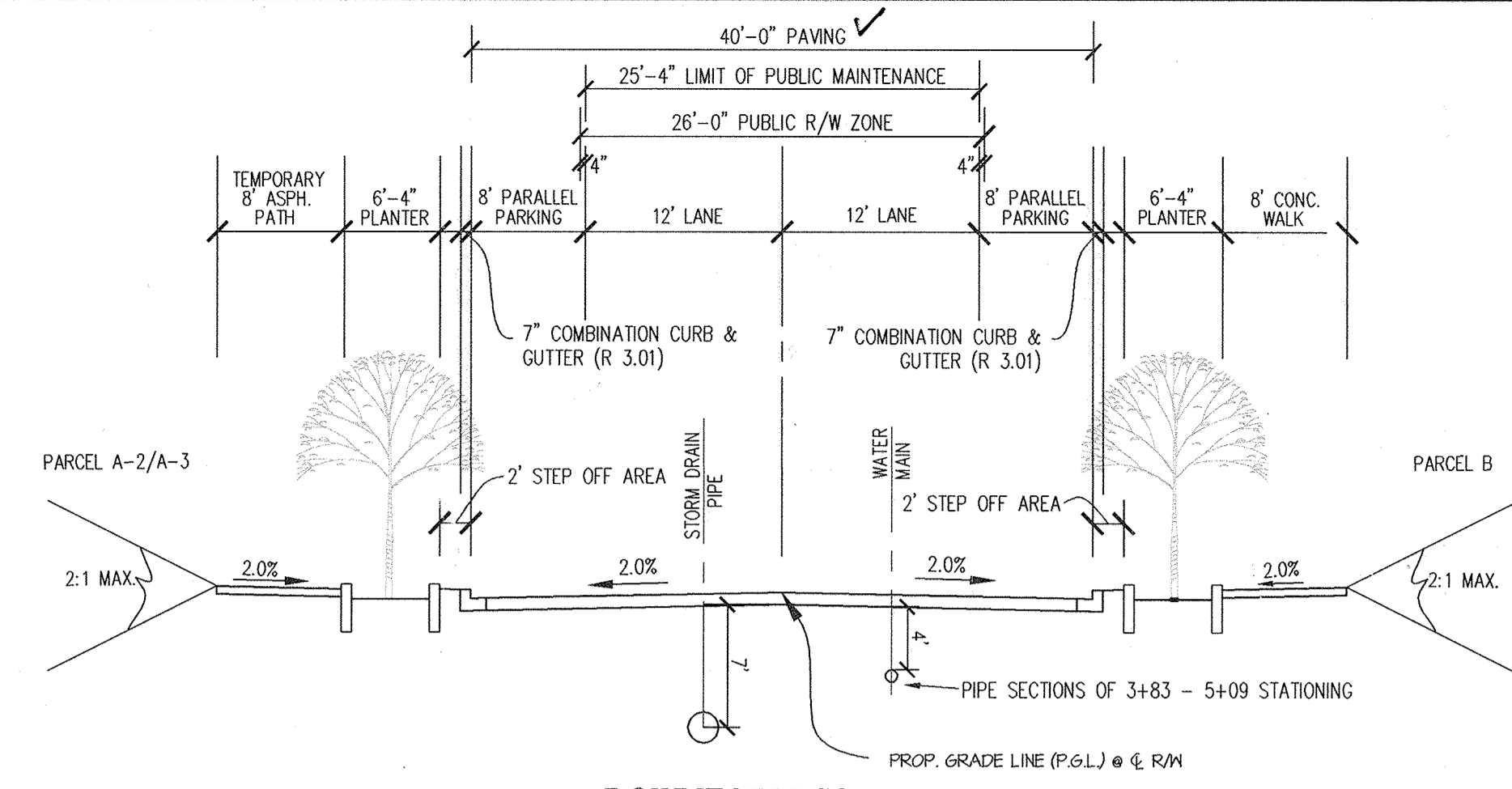
SCALE	ZONING	G. L. W. FILE NO.
1" = 50'	NT	11071
DATE	TAX MAP - GRID	SHEET
NOV, 2015	36 - 01	5 OF 31



DOWNTOWN COLUMBIA
TYPICAL STREET TYPE 3 ROAD SECTION WITH PLANTERS

STA. 0+93 - 1+46
SCALE: 1"=10'

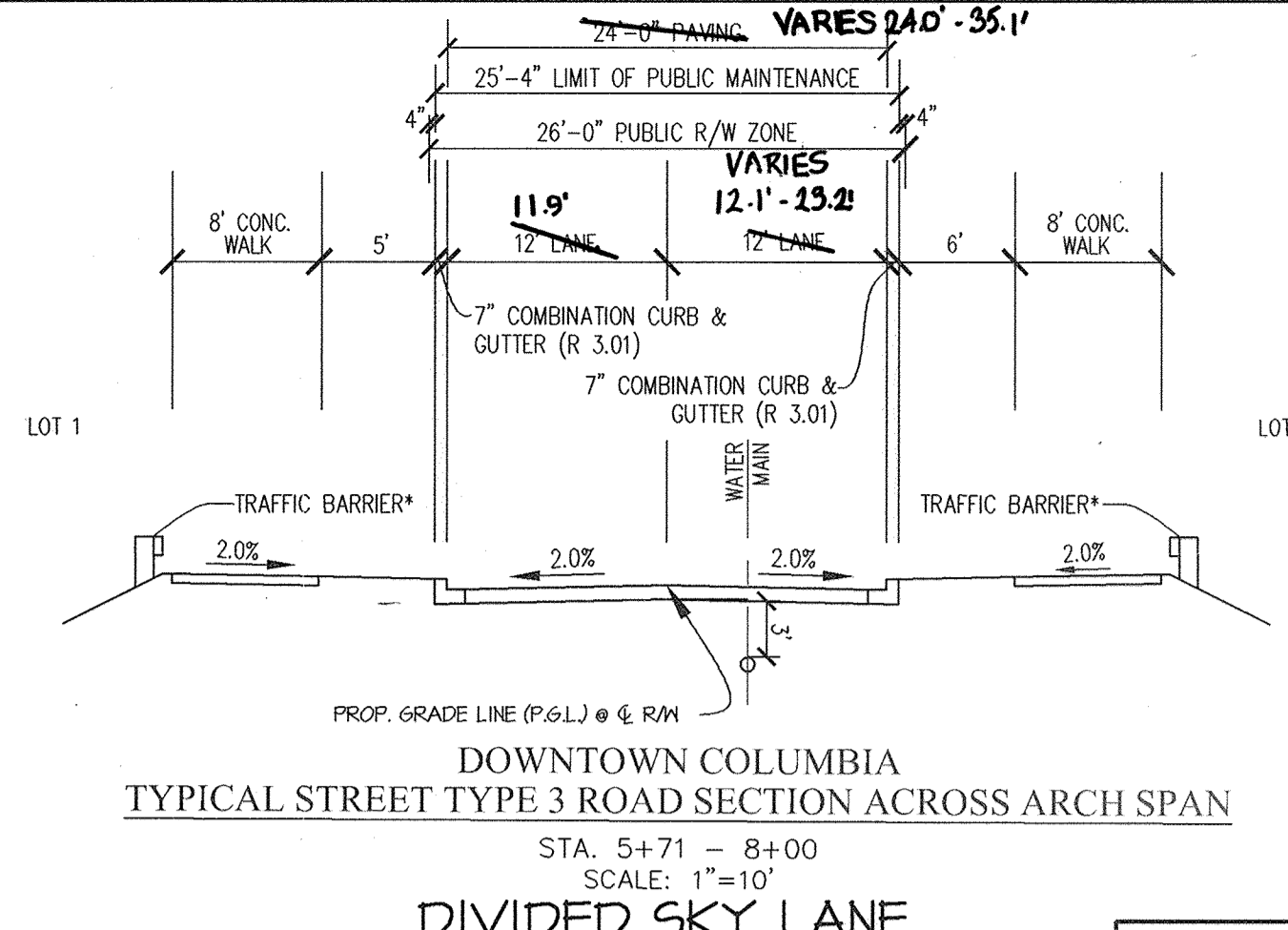
DIVIDED SKY LANE



DOWNTOWN COLUMBIA
TYPICAL STREET TYPE 3 ROAD SECTION WITH PARKING & PLANTERS

STA. 2+77 - 3+37 & 3+83 - 5+09
SCALE: 1"=10'

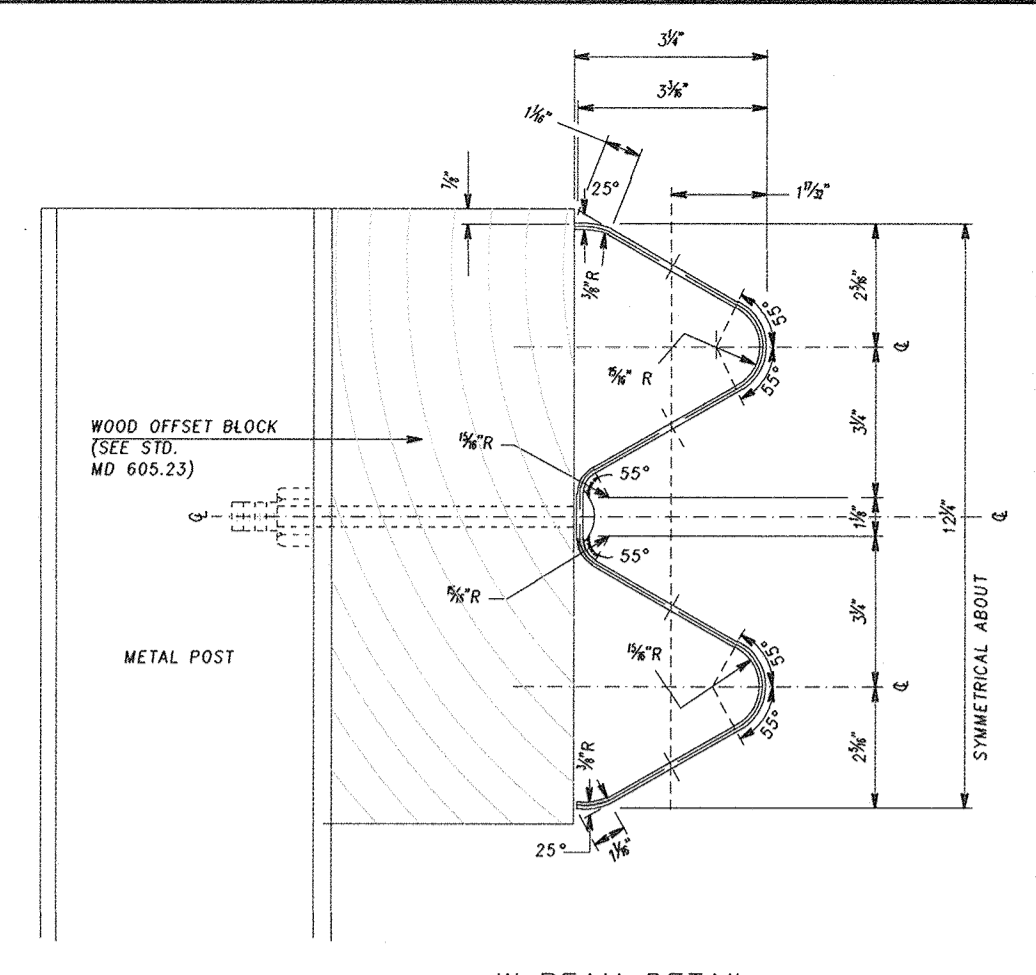
DIVIDED SKY LANE



DOWNTOWN COLUMBIA
TYPICAL STREET TYPE 3 ROAD SECTION ACROSS ARCH SPAN

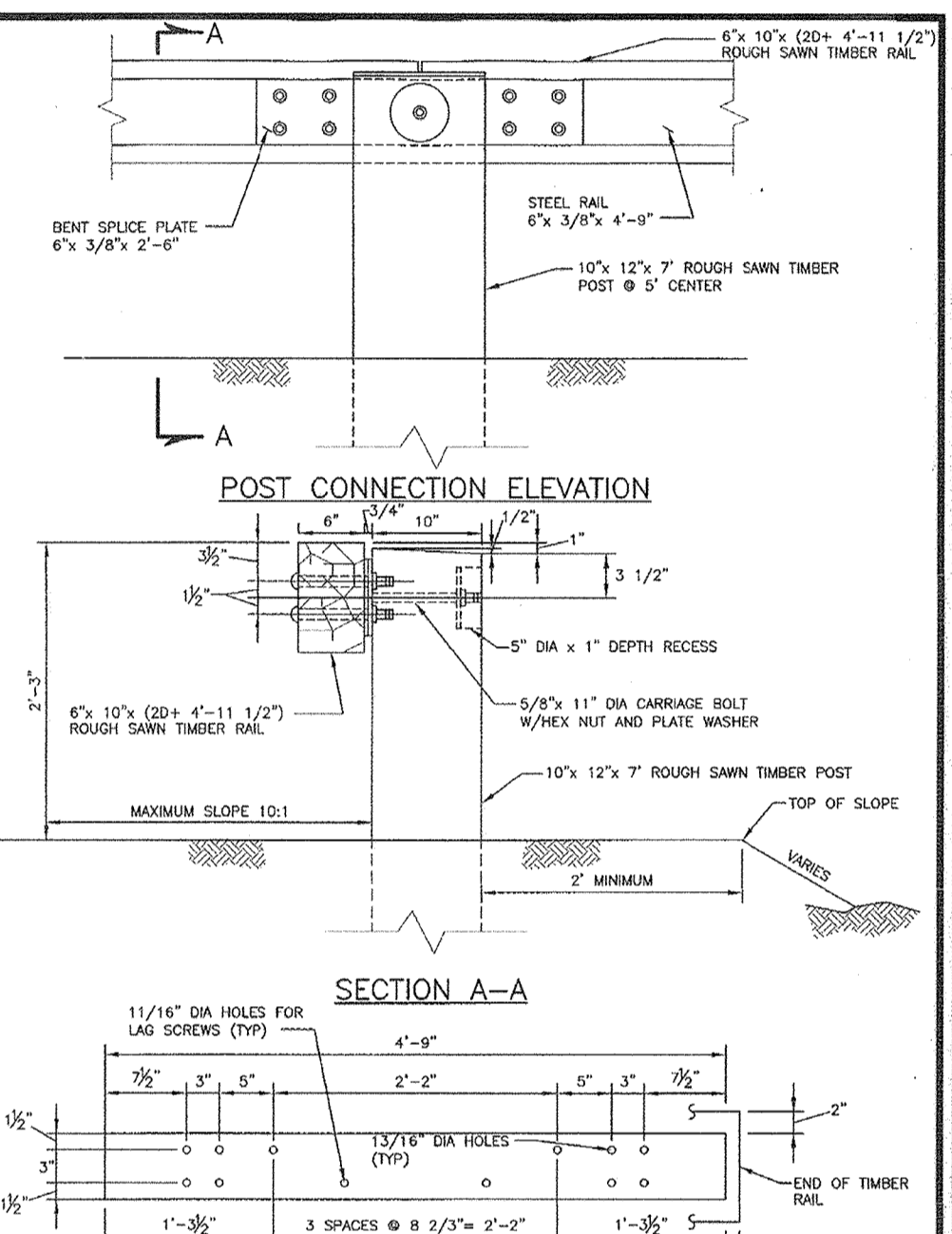
DIVIDED SKY LANE

STA. 5+71 - 8+00
SCALE: 1"=10'



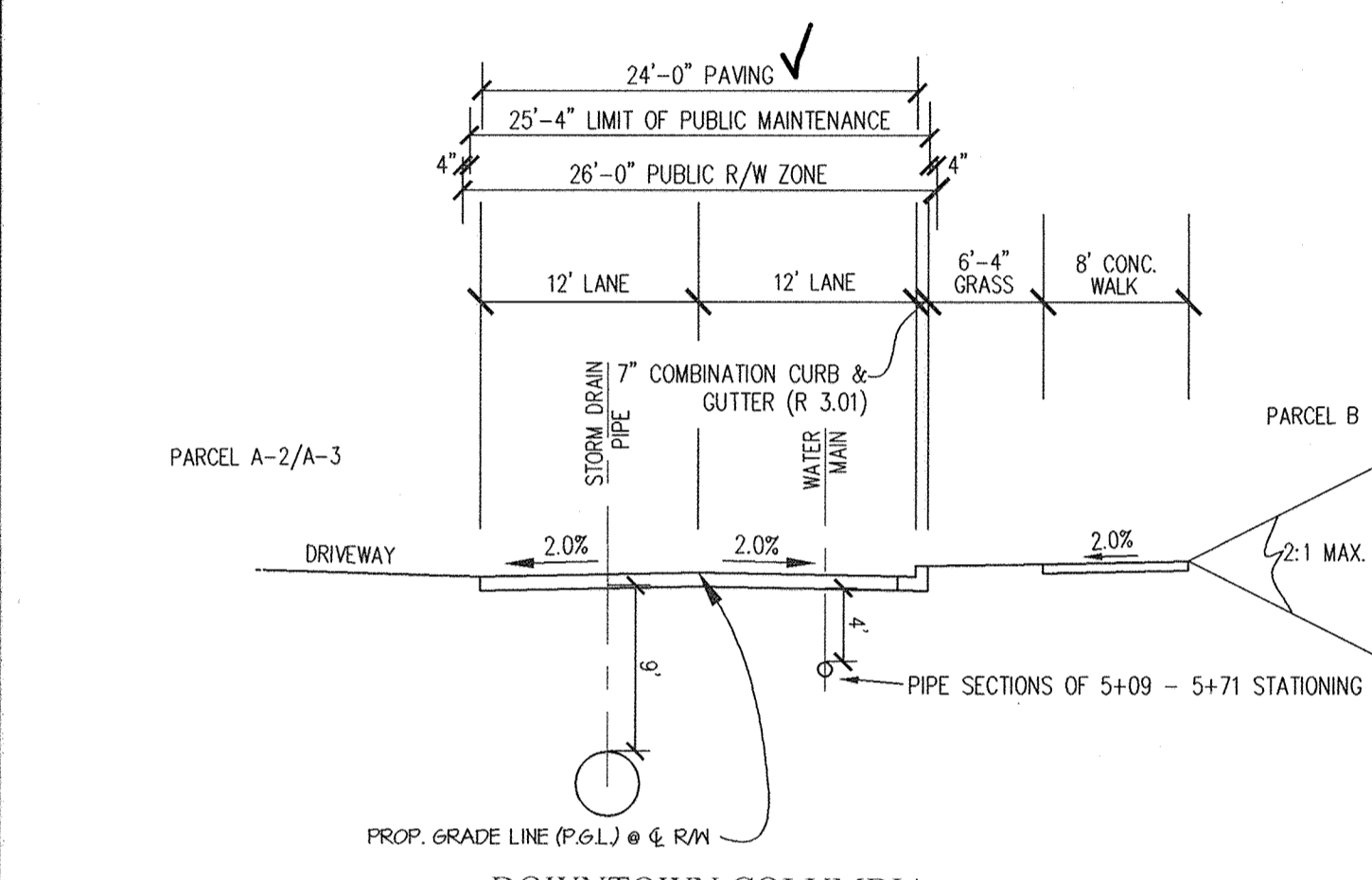
NOTES:
1. RAIL ELEMENTS ARE FURNISHED SHOP CURVED, CONCAVE OR CONVEX TO RADII BETWEEN 20 FT. & 150 FT.
2. BARRIER SECTIONS SHALL BE 12'-0" OR 25'-0" LENGTHS.
3. FOR COMPOSITE OFFSET BLOCKS SEE NOTE 5 ON MD 605.21

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



NOTES:
1. SEE DETAIL R-5.06 FOR PLAN VIEW OF BARRIAGE INSTALLATION.
2. INSTALL SIGNS (DM-102) TOP OF ROAD MARKING BEHIND BARRIAGE SIGNS TO BE INSTALLED 12' FROM MINIMUM 2' SIGN PER LOCATION.
3. SEE DETAIL R-5.06 FOR PLAN VIEW OF BARRIAGE INSTALLATION.

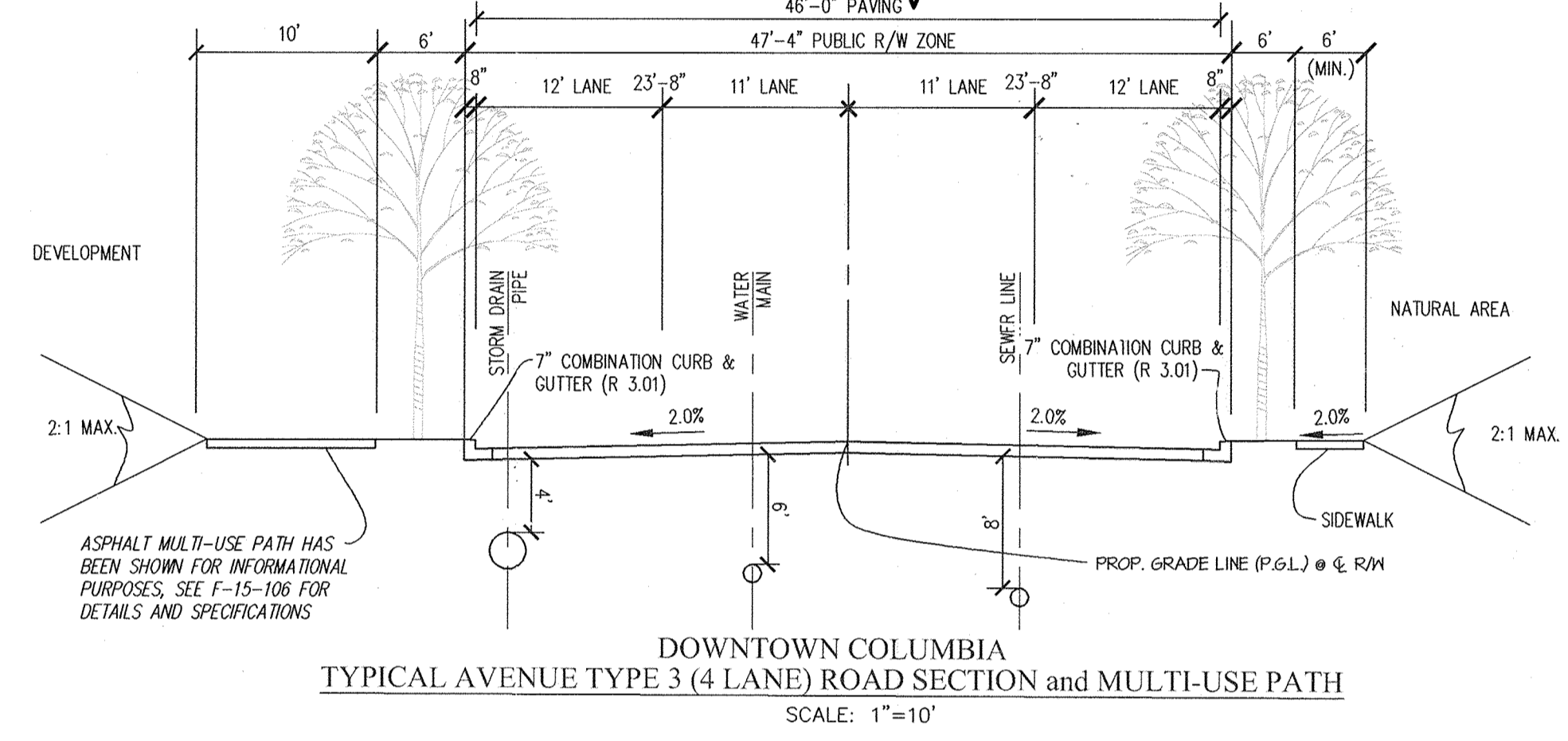
Project	Howard County, Maryland Department of Public Works	Detail	R-5.10
Drawn	[Signature]	Checked	[Signature]
Scale	1/2"=10'	Standard No.	MD 605.22



DOWNTOWN COLUMBIA
TYPICAL STREET TYPE 3 ROAD SECTION WITH DRIVEWAY

STA. 1+46 - 2+03 & 5+09 - 5+71
SCALE: 1"=10'

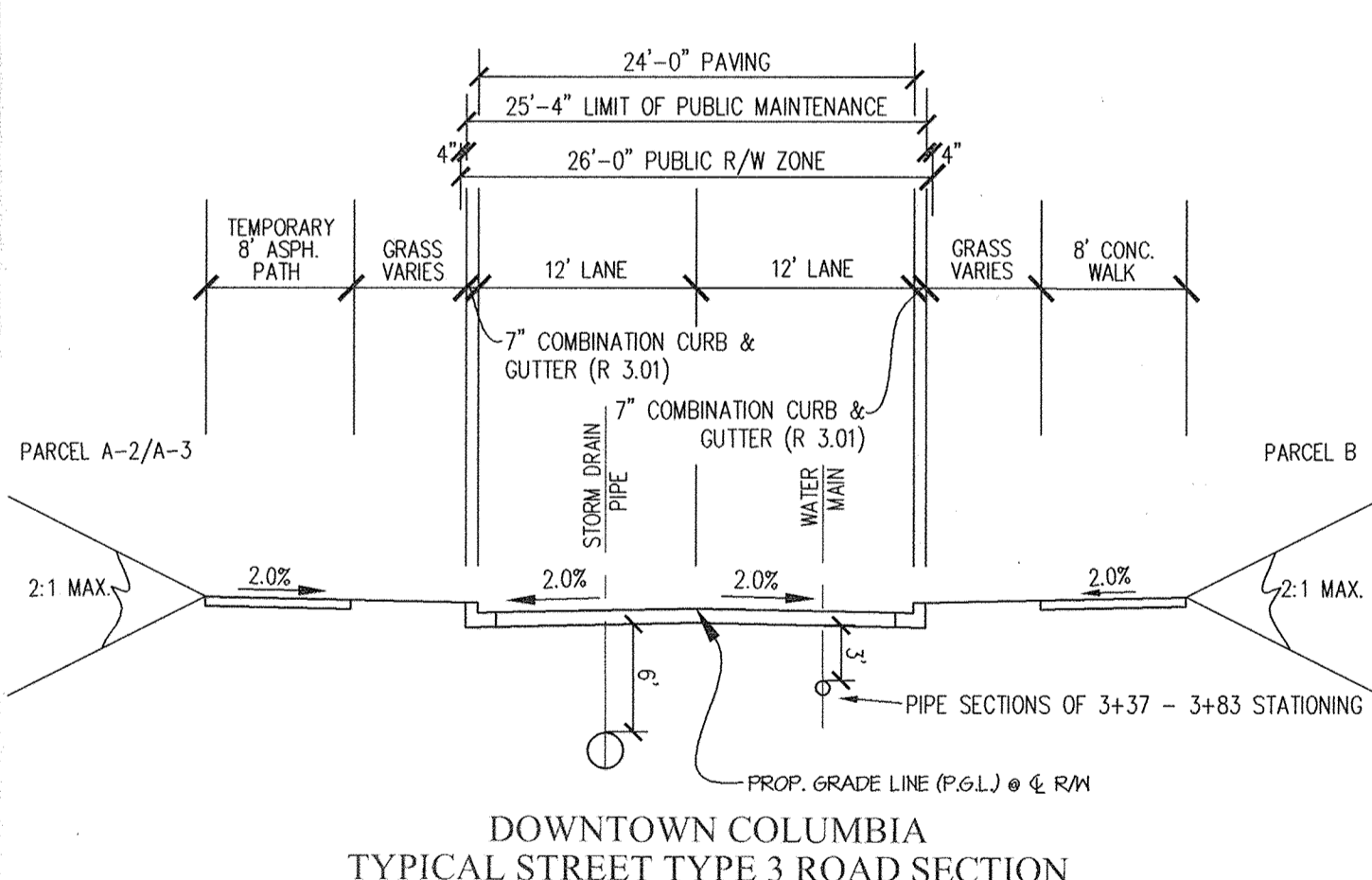
DIVIDED SKY LANE



DOWNTOWN COLUMBIA
TYPICAL AVENUE TYPE 3 (4 LANE) ROAD SECTION and MULTI-USE PATH

MERRIWEATHER DR
(0+63 TO 4+66)
SCALE: 1"=10'

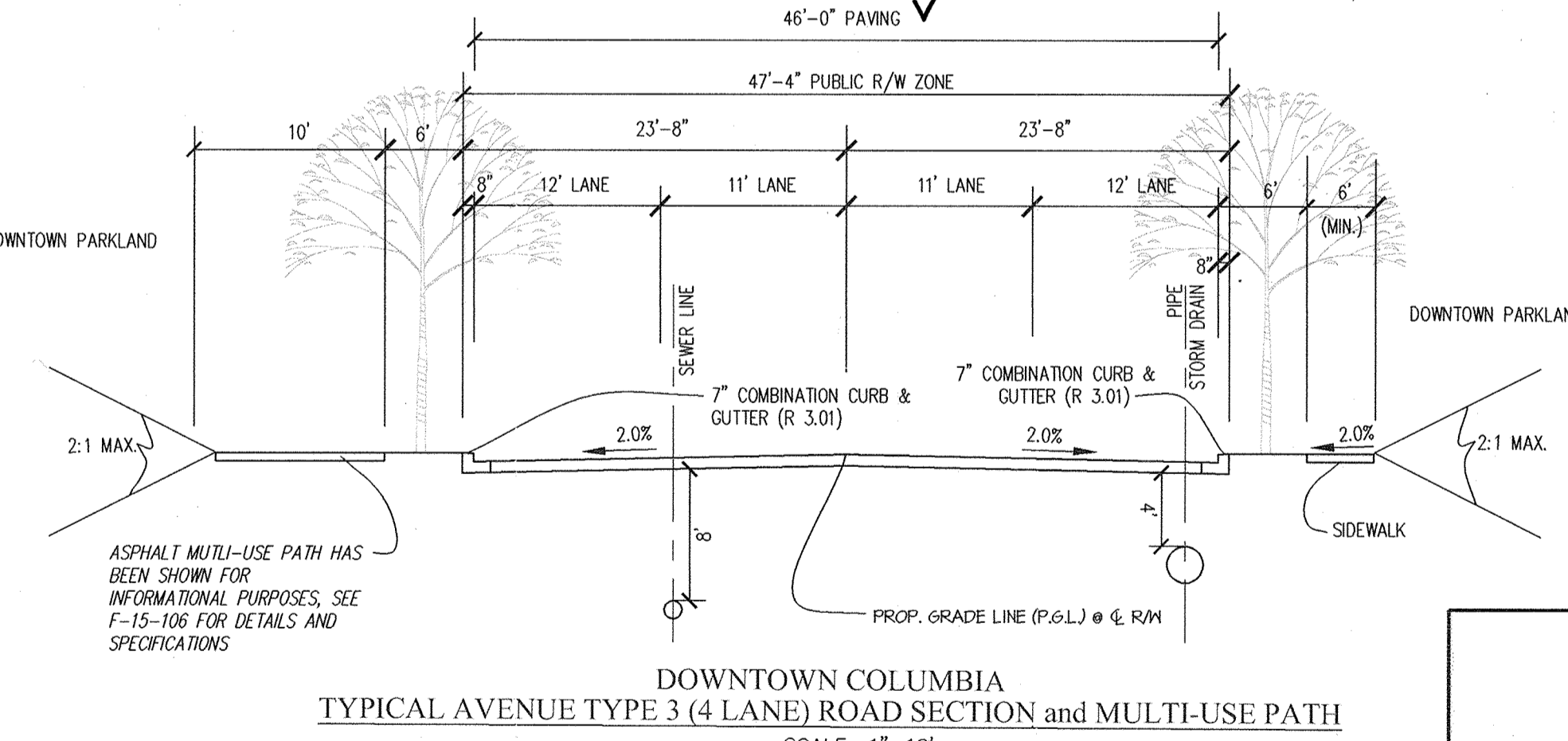
DIVIDED SKY LANE



DOWNTOWN COLUMBIA
TYPICAL STREET TYPE 3 ROAD SECTION

STA. 2+03 - 2+77 & 3+37 - 3+83
SCALE: 1"=10'

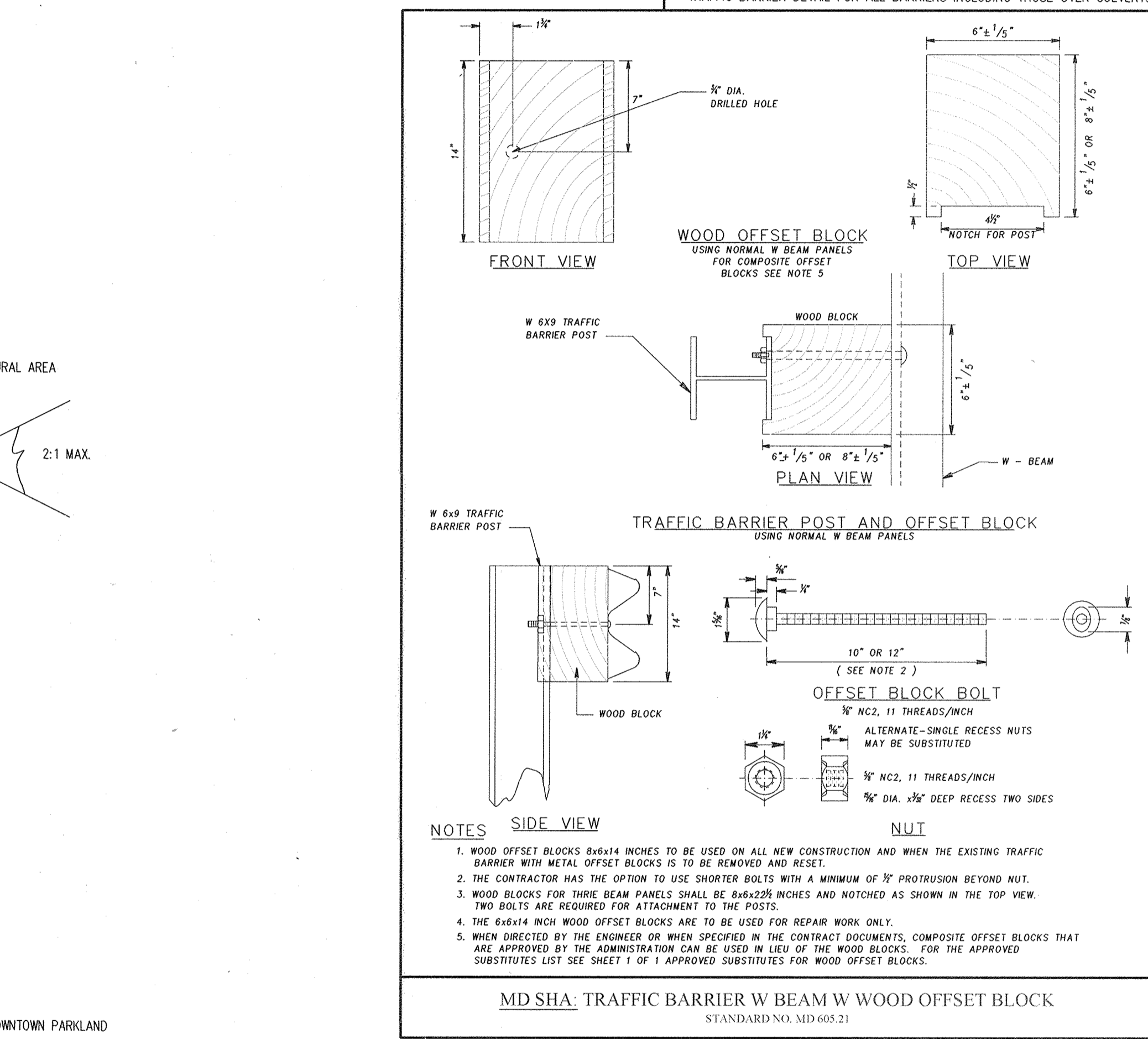
DIVIDED SKY LANE



DOWNTOWN COLUMBIA
TYPICAL AVENUE TYPE 3 (4 LANE) ROAD SECTION and MULTI-USE PATH

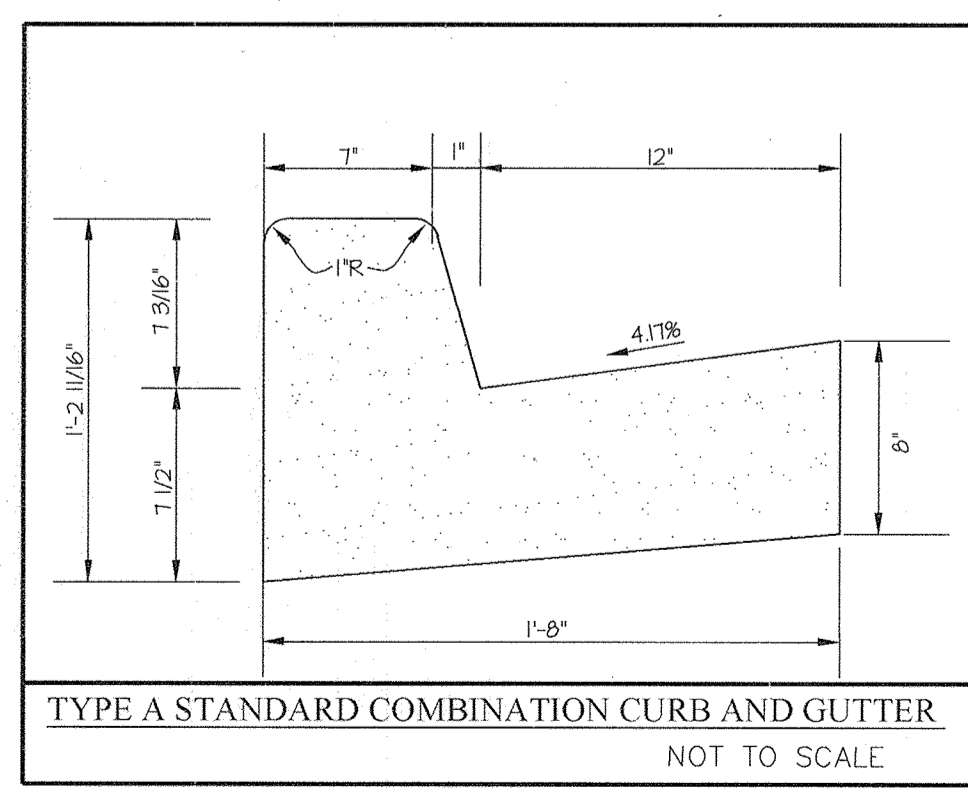
MERRIWEATHER DR
(4+66 TO 7+25)
SCALE: 1"=10'

DIVIDED SKY LANE

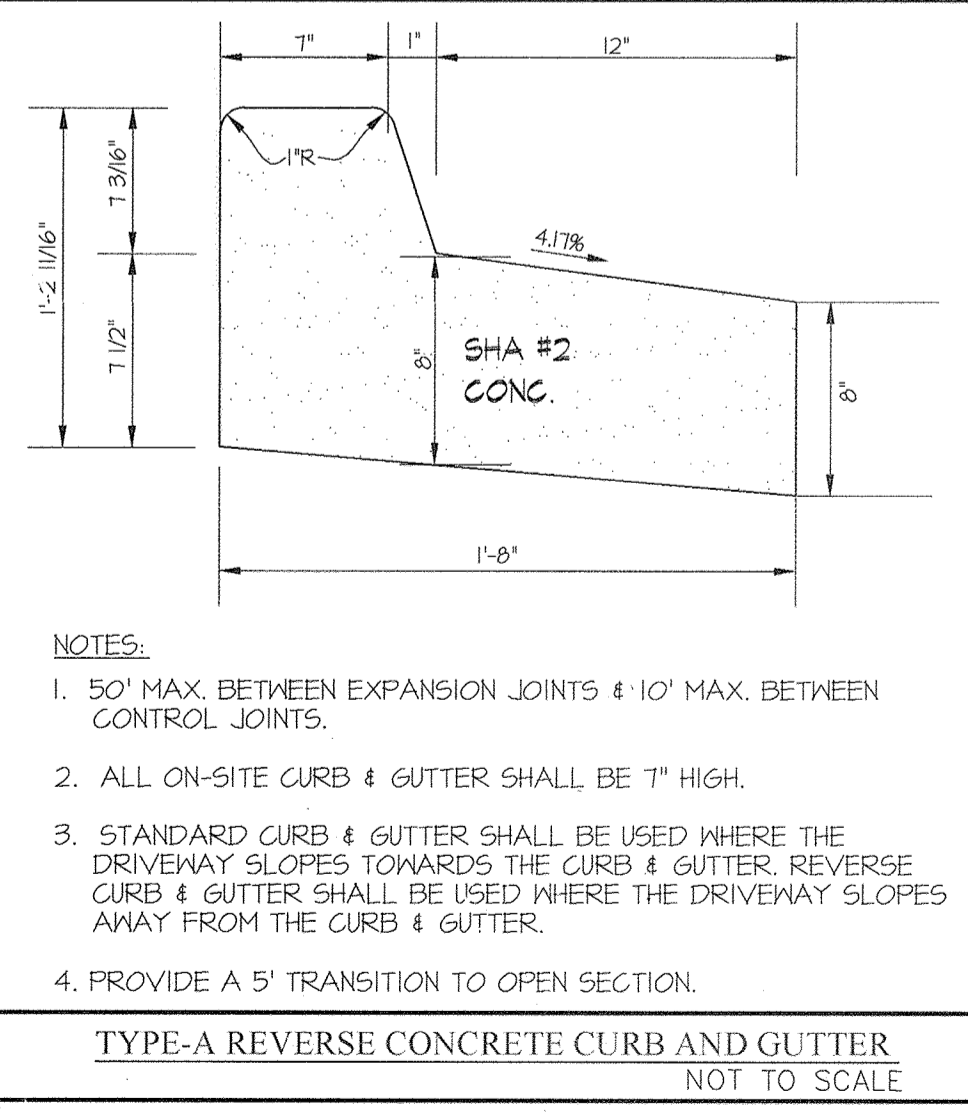


NOTES:
1. WOOD OFFSET BLOCKS 8x8x14 INCHES TO BE USED ON ALL NEW CONSTRUCTION AND WHEN THE EXISTING TRAFFIC BARRIER WITH METAL OFFSET BLOCKS IS TO BE REMOVED AND RESET.
2. THE CONTRACTOR HAS THE OPTION TO USE SHORTER BOLTS WITH A MINIMUM OF 1/2" PROTRUSION BEYOND NUT.
3. WOOD BLOCKS FOR THESE BEAM PANELS SHALL BE 8x8x2 1/2 INCHES AND NOTCHED AS SHOWN IN THE TOP VIEW. TWO BOLTS ARE REQUIRED FOR ATTACHMENT TO THE POSTS.
4. THE 8x8x14 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

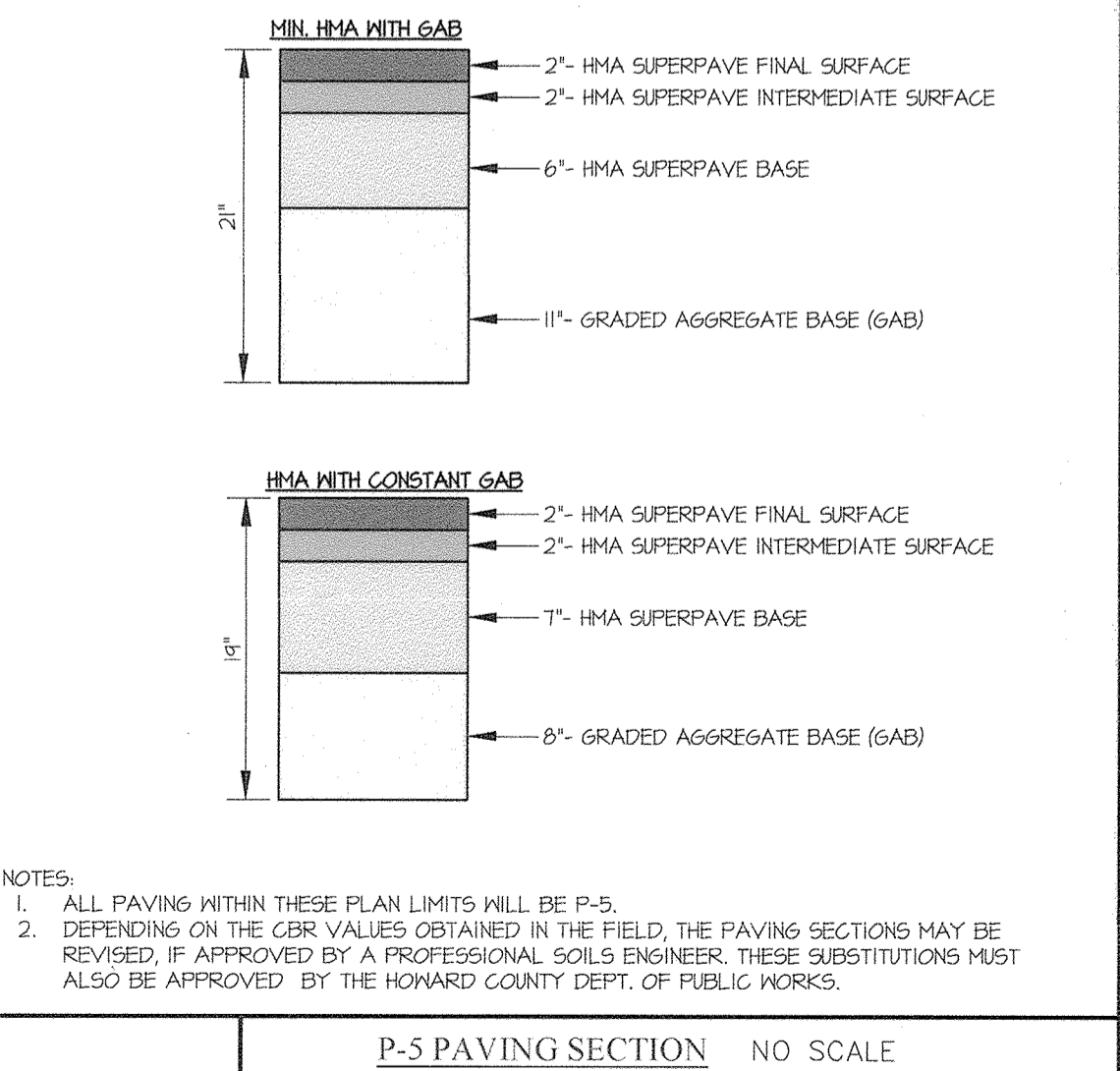


TYPE A STANDARD COMBINATION CURB AND GUTTER
NOT TO SCALE



TYPE-A REVERSE CONCRETE CURB AND GUTTER
NOT TO SCALE

NOTES:
1. 50' MAX. BETWEEN EXPANSION JOINTS & 10' MAX. BETWEEN CONTROL JOINTS.
2. ALL ON-SITE CURB & GUTTER SHALL BE 7" 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.



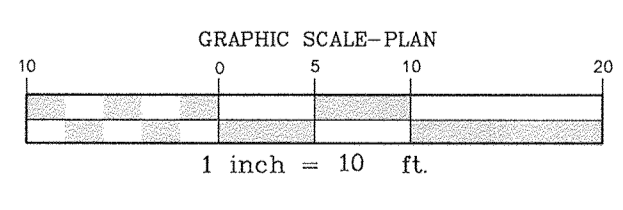
P-5 PAVING SECTION NO SCALE

NOTES:
1. ALL PAVING WITHIN THESE PLAN LIMITS WILL BE P-5.
2. 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.

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
Chief, Bureau of Highways
Date: 11/18/2015

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
Chief, Division of Land Development
Date: 11-19-15

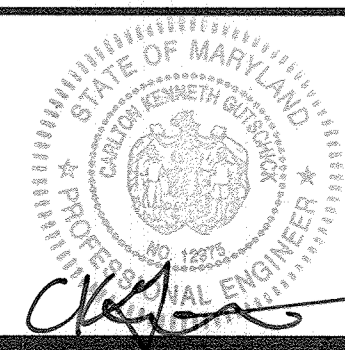
NOTE: ALL SECTIONS DRAWN LOOKING UPSTATION



AS-BUILT CERTIFICATION
I HEREBY CERTIFY, BY SEAL, THAT THE FACILITIES SHOWN ON THIS PLAN WERE CONSTRUCTED AS SHOWN ON THIS PLAN MEET THE CURRENT APPROVED PLANS AND SPECIFICATIONS.

G. SCOTT SHANBERGER
SHANBERGER & LANE
PROFESSIONAL LAND SURVEYOR #10844
LICENSE EXPIRATION DATE 4/1/2020
AS-BUILT SURVEY DATES 12-17 TO 13/15/17

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

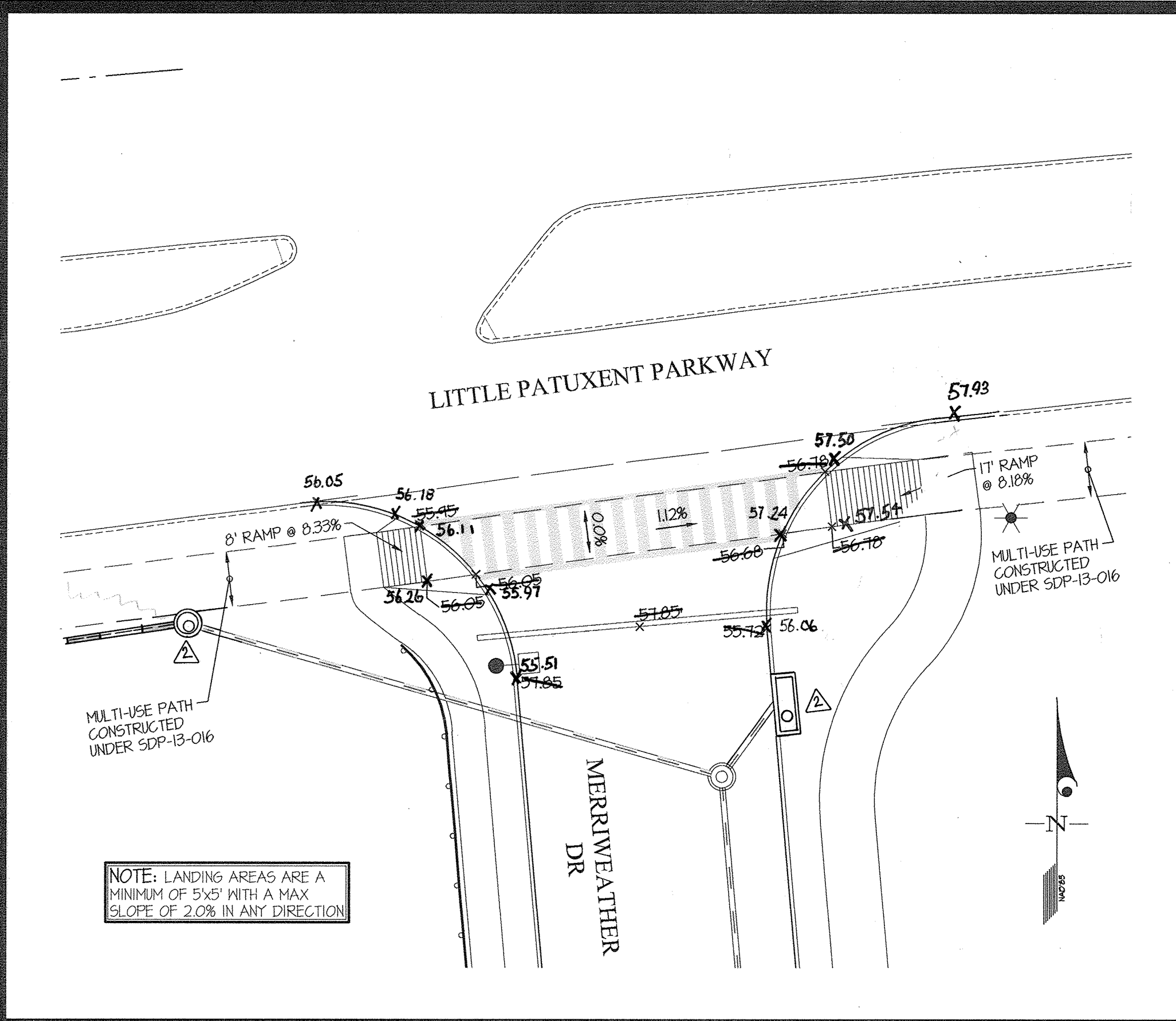


GLW GUTSCHICK LITTLE & WEBER, P.A.
CIVIL ENGINEERS, LAND SURVEYORS, LAND PLANNERS, LANDSCAPE ARCHITECTS
3909 NATIONAL DRIVE - SUITE 250 - BURTONSVILLE OFFICE PARK
BURTONSVILLE, MARYLAND 20986
TEL: 301-421-4024 FAX: 301-421-4196

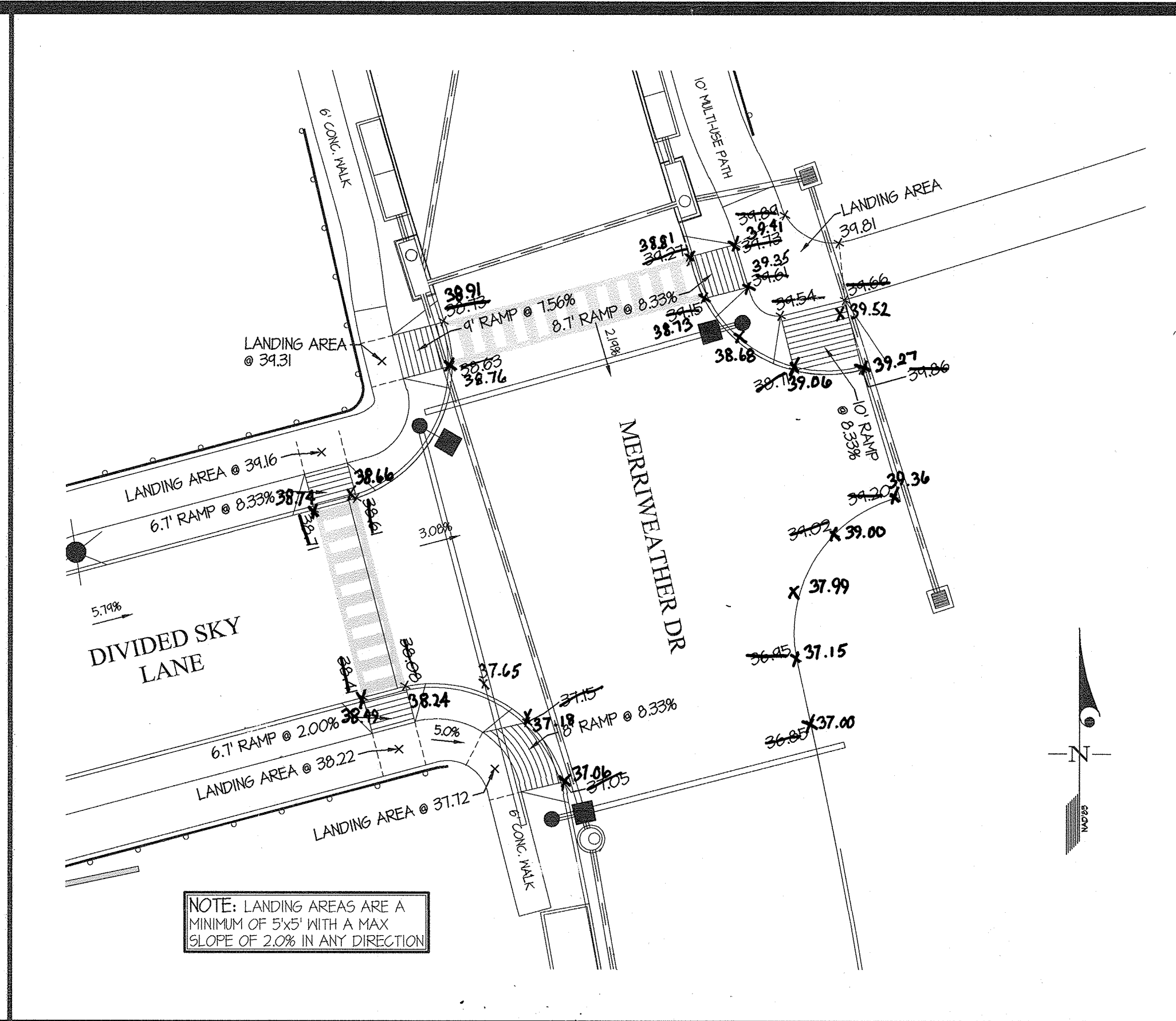
PREPARED FOR:
THE HOWARD HUGHES CORPORATION
10480 LITTLE PATUXENT PARKWAY
SUITE 400
COLUMBIA, MD 21044
ATTN: BOB JENKINS
410-964-5443

TYPICAL ROAD SECTION & CURB DETAILS
DOWNTOWN COLUMBIA
CRESCENT NEIGHBORHOOD PARCELS A-1 THRU A-3, E, NON-BUILDABLE BULK PARCEL L, OPEN SPACE LOTS 1, 8 & 9 AND MERRIWEATHER-SYMPHONY WOODS NEIGHBORHOOD OPEN SPACE LOT 1
ELECTION DISTRICT No. 5

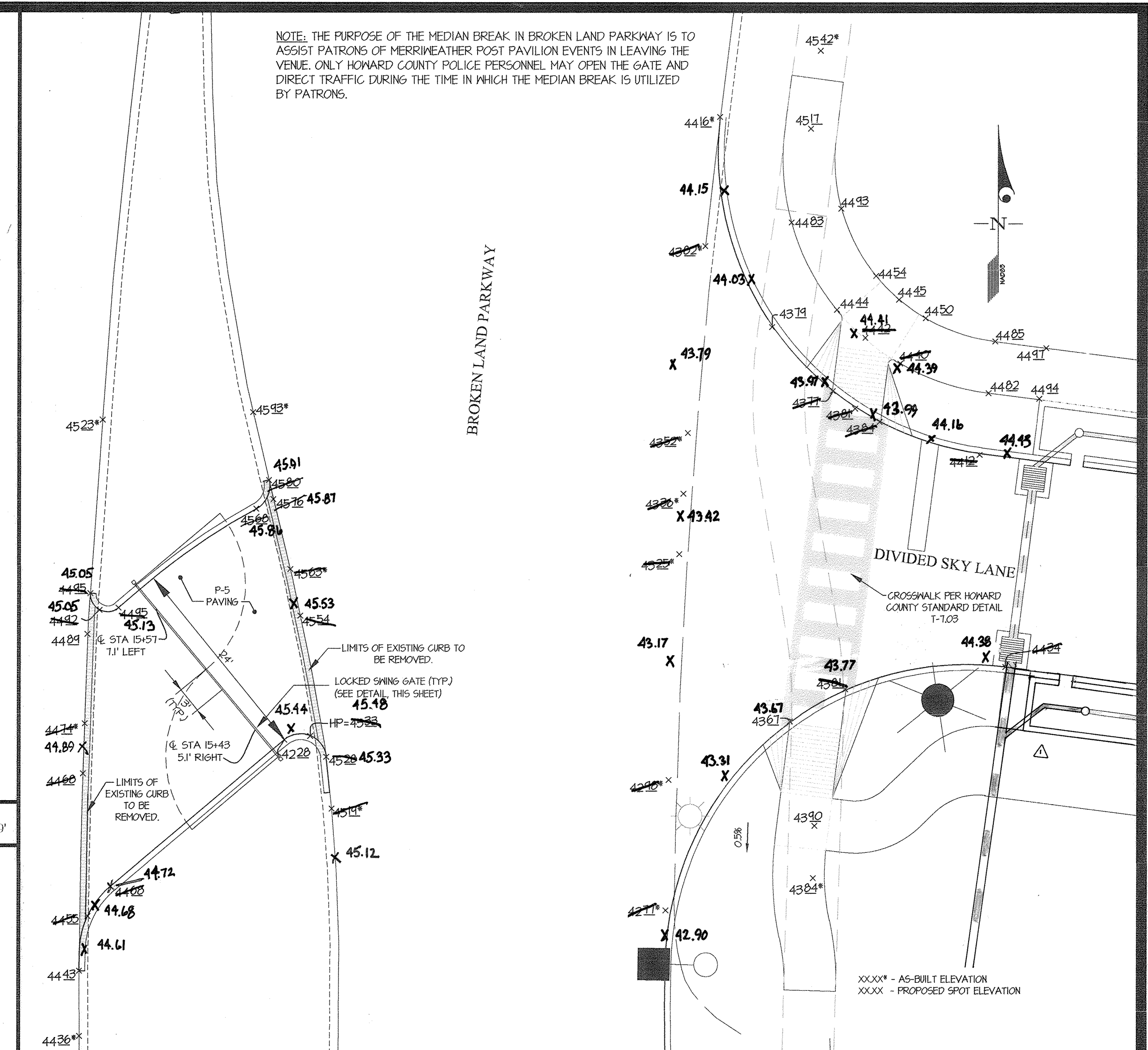
SCALE	ZONING	G. L. W. FILE NO.
AS SHOWN	NT	11071
DATE	TAX MAP - GRID	SHEET
NOV, 2015	36 - 01	6 OF 31



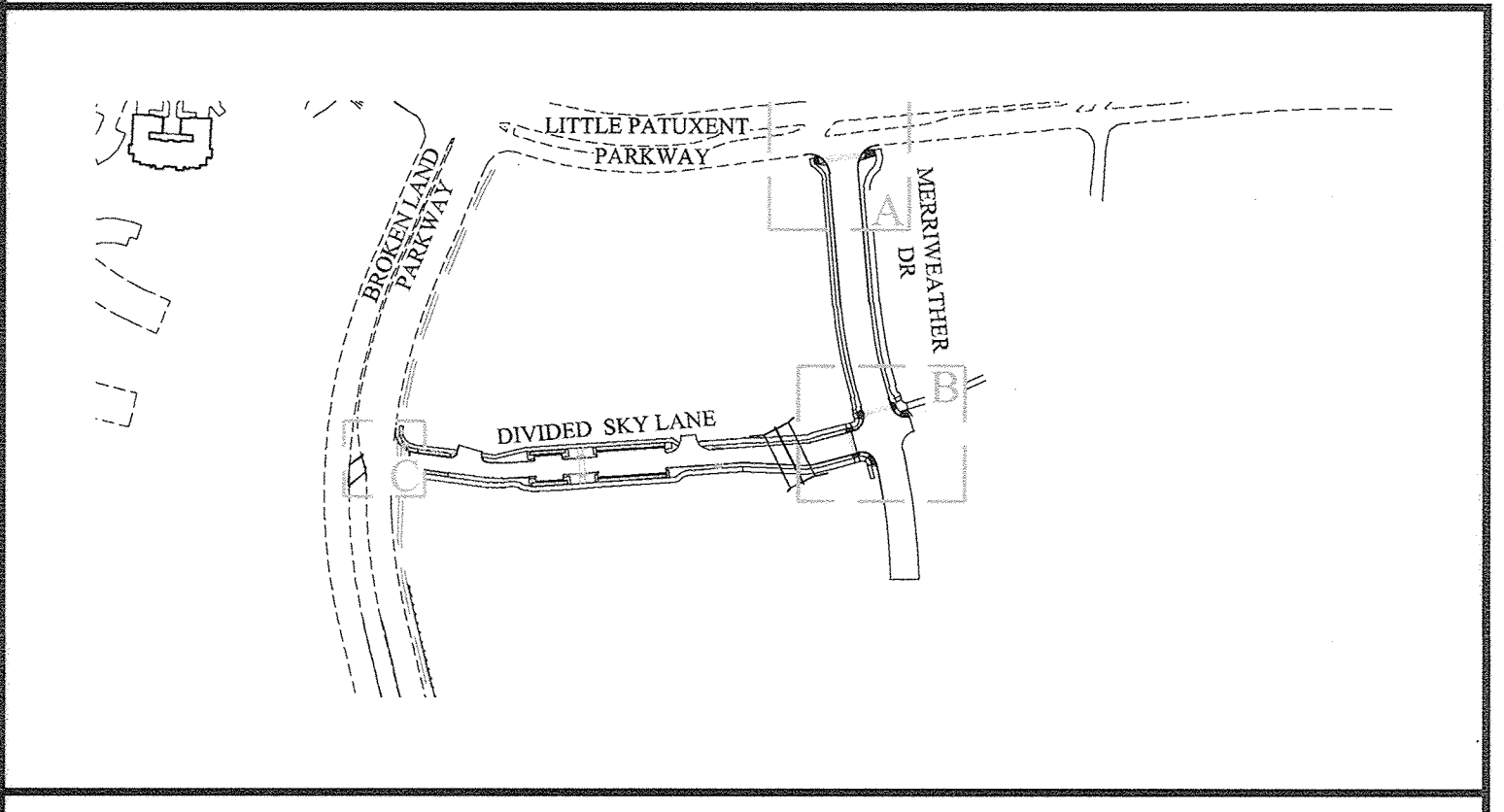
INTERSECTION 'A' SCALE: 1" = 20'



INTERSECTION 'B' SCALE: 1" = 20'



INTERSECTION 'C' SCALE: 1" = 10'



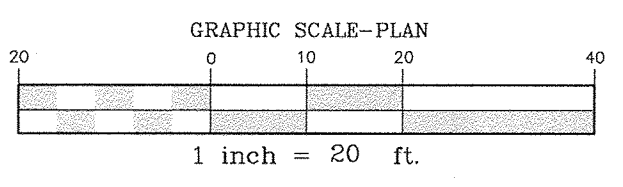
LOCATION MAP SCALE: 1" = 300'

- LIGHT LEGEND**
- 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

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
M. M... 11/18/2015
 Chief, Bureau of Highways Date

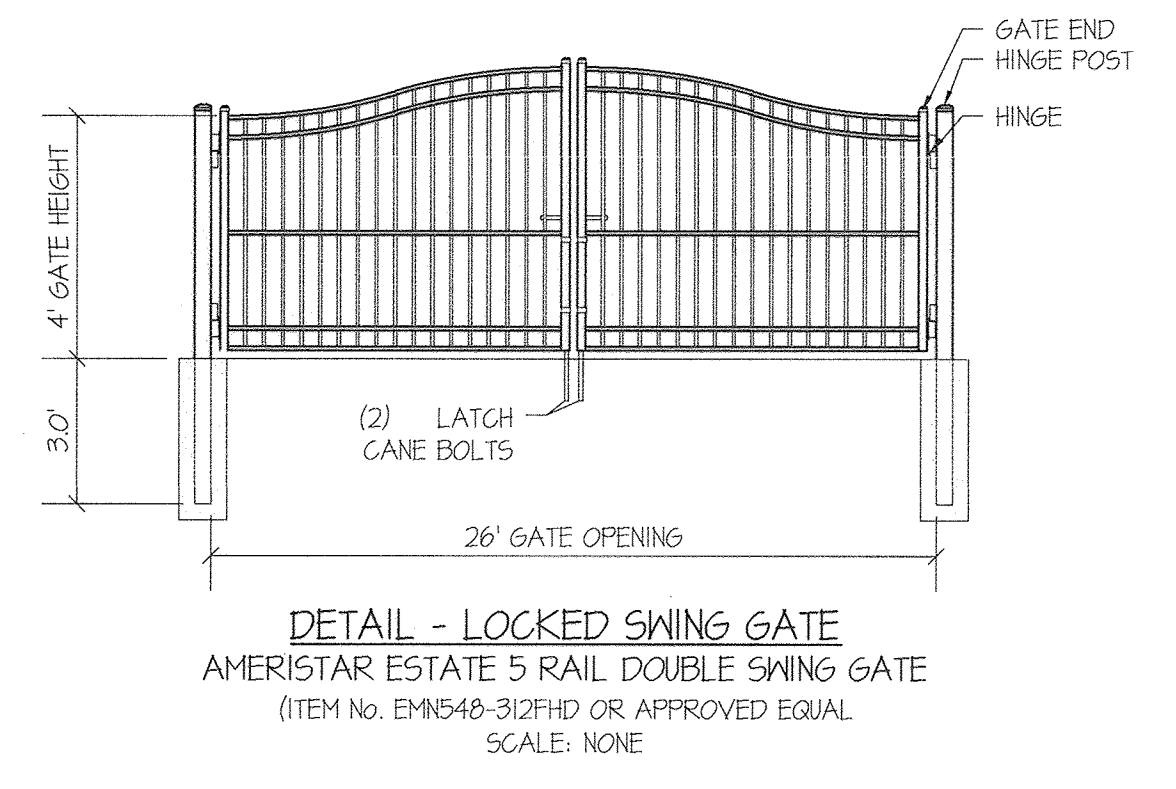
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
K. S... 12-9-15
 Chief, Division of Land Development Date

C. C... 11-19-15
 Chief, Development Engineering Division Date



AS-BUILT CERTIFICATION
 I HEREBY CERTIFY, BY SEAL, THAT THE FACILITIES SHOWN ON THIS PLAN WERE CONSTRUCTED AS SHOWN ON THIS PLAN MEET THE CURRENT APPROVED PLANS AND SPECIFICATIONS.

G. Scott Shanaberger 11/14/15
 G. SCOTT SHANABERGER
 SHANABERGER & LANE
 PROFESSIONAL LAND SURVEYOR #10849
 LICENSE EXPIRATION DATE 4/2/2020
 AS-BUILT SURVEY DATES 12-1-11 TO 12/15/17



GLWGUTSCHICK 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: 410-886-1820 DC/VA: 301-589-2524 FAX: 301-421-4186

DATE	REVISION	BY	APP'R.
10-5-2016	Rev storm drains to reflect ex. dry utilities	gt	DEV
7-5-2016	rev storm drain	kjp	

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

11-12-15 *[Signature]*



THE PLANS IN THIS REVISED ROAD CONSTRUCTION SET SUPERCEDE PLANS DATED 10/13/2015

ADA RAMP

DOWNTOWN COLUMBIA

CRESCENT NEIGHBORHOOD PARCELS A-1 THRU A-3, E, NON-BUILDABLE BULK PARCEL L, OPEN SPACE LOTS 1, 8 & 9 AND MERRIWEATHER-SYMPHONY WOODS NEIGHBORHOOD OPEN SPACE LOT 1

ELECTION DISTRICT No. 5

SCALE	ZONING	G. L. W. FILE No.
AS SHOWN	NT	11071
DATE	TAX MAP - GRID	SHEET
NOV., 2015	36 - 01	7 OF 31

RIVER STATION	WSEL
34+96.64	332.33
34+94.67	331.83
33+22.41	330.51
32+32.74	328.97
32+01.77	
31+68.30	328.62
31+00.39	327.38
30+31.84	326.84
29+23.68	326.47
28+44.01	326.20
27+55.21	325.54
26+76.50	AT CULVERT
26+18.65	322.80
25+74.30	322.18
25+61.75	322.24
25+44.07	322.01
25+33.64	322.01
24+43.75	321.82
100+58.78	326.08
100+46.91	326.24
101+43.82	326.45
101+82.80	328.41
102+66.84	330.82
103+04.19	332.46
104+13.35	AT CULVERT
104+51.07	335.56
104+44.24	335.86
105+58.75	331.24
106+01.37	331.73
106+47.17	338.02
106+44.26	334.23
107+28.60	334.46
107+63.14	341.06
108+03.63	342.88
108+31.44	343.44

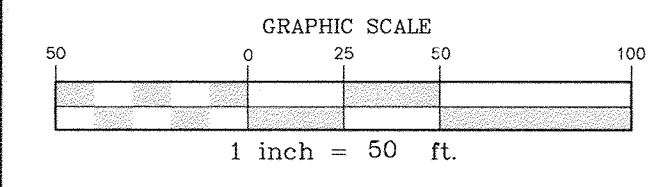
STATE OF MARYLAND
 PROFESSIONAL LAND SURVEYOR
 G. SCOTT GUTSCHICK
 SHAWAPR050181430
 Professional L.S. #181430 Exp. Date 4/2/20
 AS-BUILT DATE: 12-1-17 to 12-15-17

LEGEND

	10-25% SLOPES
	>25% SLOPES
	LIMIT OF DISTURBANCE ROAD WORK

GRADING NOTES:

- 1) LIMITS OF DISTURBANCE - LOD IS SHOWN OFFSET FOR VISUAL CLARITY. LOD SHALL NOT EXTEND BEYOND THE SEDIMENT CONTROL LIMITS, PROPERTY LINE BOUNDARIES OR OTHER ENVIRONMENTAL CONSTRAINTS.
- 2) WETLAND PERMIT - CONSTRUCTION WITHIN THE LIMITS OF THE EXISTING WETLANDS CANNOT BEGIN UNTIL PROPER PERMITS & APPROVALS HAVE BEEN OBTAINED.
- 3) ACCESS ROAD - EXISTING GRAVEL ACCESS ROAD RUNNING SOUTH OF AND PARALLEL WITH DIVIDED SKY LANE IS TO REMAIN OPEN AND USABLE SO LONG AS CONSTRUCTION WILL ALLOW TO PROVIDE CROSS SITE ACCESS UNTIL DIVIDED SKY LANE CAN BE COMPLETED.
- 3) LIMITS OF WORK - FOR LIMITS OF WORK SEE SHEET 2.
- 4) SOIL BORINGS - FOR SOIL BORING LOGS SEE SHEET II.



APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
 Chief, Bureau of Highways *M. Munn* 11/18/2015 Date
 APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
 Chief, Division of Land Development *V. Salcedo* 12-9-15 Date
 Chief, Development Engineering Division *C. Baker* 11-19-15 Date

GLWGUTSCHICK LITTLE & WEBER, P.A.
 CIVIL ENGINEERS, LAND SURVEYORS, LAND PLANNERS, LANDSCAPE ARCHITECTS
 3909 NATIONAL DRIVE - SUITE 250 - BURTONSVILLE OFFICE PARK
 BURTONSVILLE, MARYLAND 20886
 TEL: 301-421-4024 FAX: 410-886-1820 301-589-2524 FAX: 301-421-4186

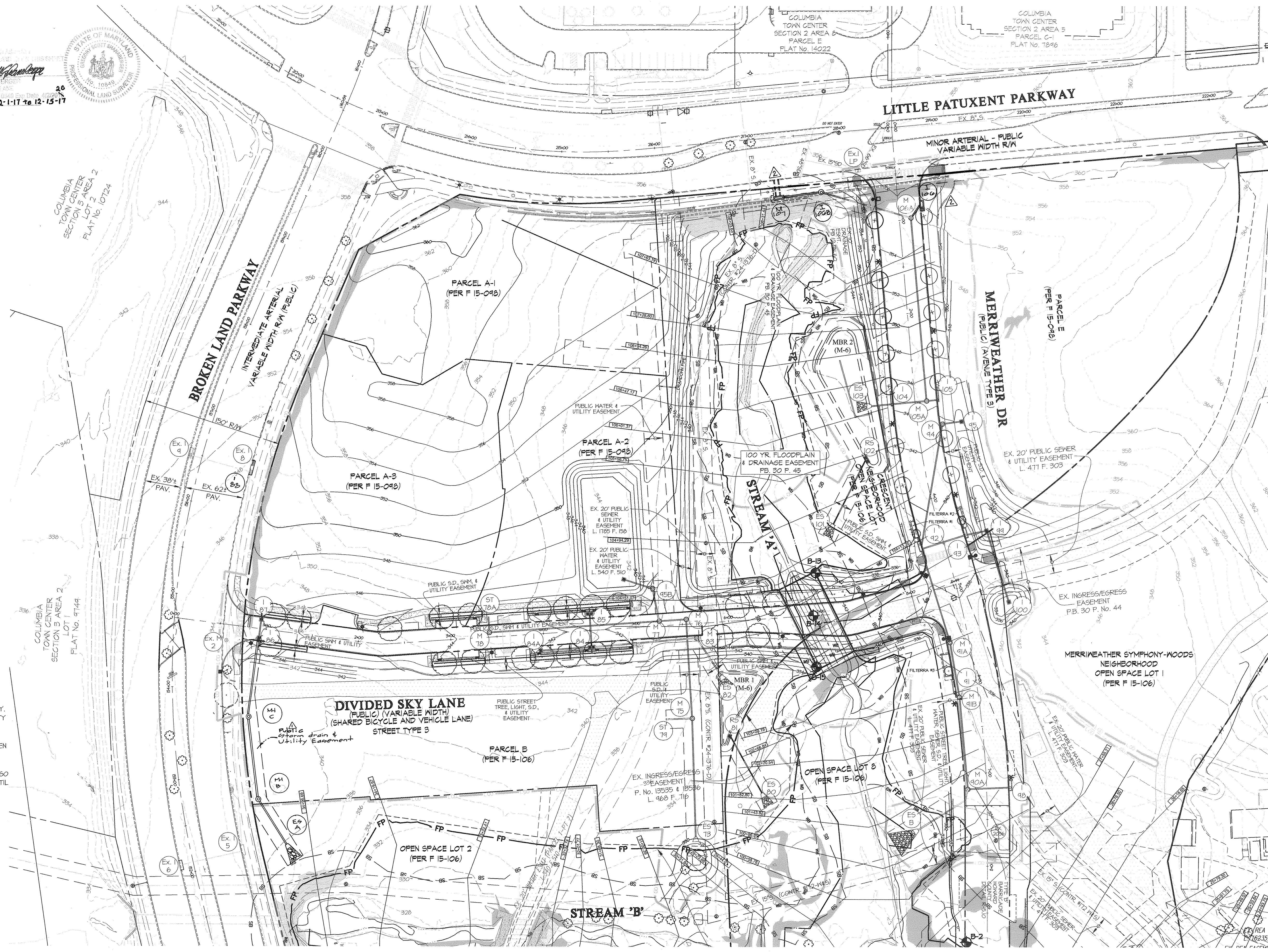
NO.	DATE	REVISION	BY	APP'R.
1.0.5.2016		Rev. storm drains to reflect ex. dry utilities	gt	DEV
1.6.2016		Rev. storm drain	kjp	

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. 12875
 EXPIRATION DATE: MAY 26, 2016
G. Gutschick
 11-12-15

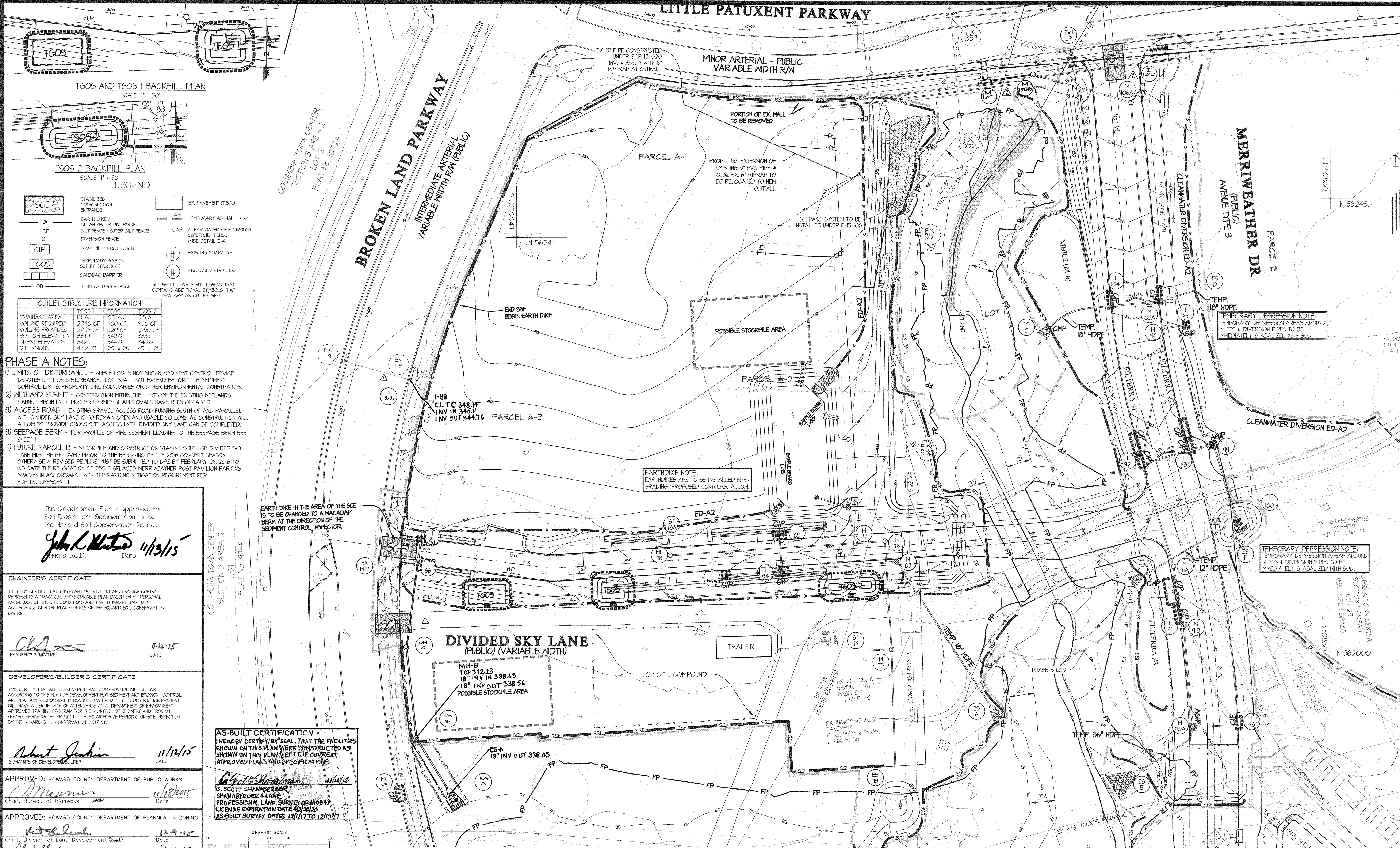
GRADING PLAN
DOWNTOWN COLUMBIA
 CRESCENT NEIGHBORHOOD PARCELS A-1 THRU A-3, E, NON-BUILDABLE BULK PARCEL L, OPEN SPACE LOTS 1, 8 & 9 AND MERRIWEATHER-SYMPHONY WOODS NEIGHBORHOOD OPEN SPACE LOT 1
 ELECTION DISTRICT No. 5
 HOWARD COUNTY, MARYLAND

SCALE	ZONING	G. L. W. FILE NO.
1" = 50'	NT	11071
DATE	TAX MAP - GRID	SHEET
NOV., 2015	36 - 01	9 OF 31



THE PLANS IN THIS REVISED ROAD CONSTRUCTION SET SUPERCEDE PLANS DATED 10/13/2015

I, GUYD W. WAINWRIGHT, DESIGNER, HAVE PREPARED THESE PLANS BY ME OR UNDER MY CLOSE PERSONAL SUPERVISION AND I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 12875, EXPIRATION DATE: MAY 26, 2016.



TG05 AND T505 | BACKFILL PLAN
SCALE: 1" = 30'

T505 2 BACKFILL PLAN
SCALE: 1" = 30'

LEGEND

	STABILIZED CONSTRUCTION ENTRANCE		EX. PAVEMENT (T.B.R.)
	EARTH DIKE / CLEAN WATER DIVERSION		TEMPORARY ASPHALT BERM
	SILT FENCE / SUPER SILT FENCE		CLEAR WATER PIPE THROUGH SUPER SILT FENCE (SEE DETAIL E-4)
	DIVERSION FENCE		EXISTING STRUCTURE
	PROP. INLET PROTECTION		PROPOSED STRUCTURE
	TEMPORARY GABION OUTLET STRUCTURE		
	SANDBAG BARRIER		
	LIMIT OF DISTURBANCE		

OUTLET STRUCTURE INFORMATION

DRAINAGE AREA	TG05 1	T505 1	T505 2
VOLUME REQUIRED	13 AC.	0.5 AC.	0.5 AC.
VOLUME PROVIDED	2340 CF	100 CF	900 CF
BOTTOM ELEVATION	339.24	342.0	338.0
GREST ELEVATION	342.7	344.0	340.0
DIMENSIONS	41' x 23'	20' x 28'	45' x 12'

- PHASE A NOTES:**
- 1) LIMITS OF DISTURBANCE - WHERE LOD IS NOT SHOWN, SEDIMENT CONTROL DEVICE DENOTES LIMIT OF DISTURBANCE. LOD SHALL NOT EXTEND BEYOND THE SEDIMENT CONTROL LIMITS, PROPERTY LINE BOUNDARIES OR OTHER ENVIRONMENTAL CONSTRAINTS.
 - 2) WETLAND PERMIT - CONSTRUCTION WITHIN THE LIMITS OF THE EXISTING WETLANDS CANNOT BEGIN UNTIL PROPER PERMITS & APPROVALS HAVE BEEN OBTAINED.
 - 3) ACCESS ROAD - EXISTING GRAVEL ACCESS ROAD RUNNING SOUTH OF AND PARALLEL WITH DIVIDED SKY LANE IS TO REMAIN OPEN AND USABLE SO LONG AS CONSTRUCTION WILL ALLOW TO PROVIDE CROSS SITE ACCESS UNTIL DIVIDED SKY LANE CAN BE COMPLETED.
 - 3) SEEPAGE BERM - FOR PROFILE OF PIPE SEGMENT LEADING TO THE SEEPAGE BERM SEE SHEET II.
 - 4) FUTURE PARCEL B - STOCKPILE AND CONSTRUCTION STAGING SOUTH OF DIVIDED SKY LANE MUST BE REMOVED PRIOR TO THE BEGINNING OF THE 2016 CONCERT SEASON. OTHERWISE A REVISED REDLINE MUST BE SUBMITTED TO DPZ BY FEBRUARY 24, 2016 TO INDICATE THE RELOCATION OF 250 DISPLACED MERRIWEATHER POST PAVILION PARKING SPACES IN ACCORDANCE WITH THE PARKING MITIGATION REQUIREMENT PER FDP-DC-CRESCENT-I.

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

John K. Jenkins 11/13/15
Date

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.

John K. Jenkins 11-12-15
DATE

DEVELOPER'S/BUILDER'S CERTIFICATE

I HEREBY 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.

Robert Jenkins 11/12/15
DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

Maurice 11/18/2015
DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

Cheryl 11-19-15
DATE

AS-BUILT CERTIFICATION

I HEREBY CERTIFY, BY SEAL, THAT THE FACILITIES SHOWN ON THIS PLAN WERE CONSTRUCTED AS SHOWN ON THIS PLAN MEET THE CURRENT APPROVED PLANS AND SPECIFICATIONS

Scott Shanaberger 11/14/15
DATE

S. SCOTT SHANABERGER
PROFESSIONAL LAND SURVEYOR #10843
LICENSE EXPIRATION DATE 12/31/2023
AS-BUILT SURVEY DATES 12/11/17 TO 12/15/17

GLWGUTSCHICK 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 FAX: 410-880-1820 DC/VA: 301-989-2524 FAX: 301-421-4186

GRAPHIC SCALE
1 inch = 40 ft.

DATE	REVISION
10.23.2014	Rev. storm drains to reflect ex. dry utilities
11.5.2014	Rev. storm drain

DATE	DES.	M.S.J.	DRN.	W.S.J.	CHK.	MJT

DATE	BY	APPR.

SEDIMENT CONTROL PLAN
SCALE: 1" = 40'

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. 12535 & 13536 L. 968 F. 116

11-12-15
John K. Jenkins

THE PLANS IN THIS REVISED ROAD CONSTRUCTION SET SUPERCEDE PLANS DATED 10/13/2015
MASS GRADING AND SEDIMENT CONTROL PLAN - PHASE A

DOWNTOWN COLUMBIA
CRESCENT NEIGHBORHOOD PARCELS A-1 THRU A-3, E, NON-BUILDABLE BULK PARCEL L, OPEN SPACE LOTS 1, 8 & 9 AND MERRIWEATHER-SYMPHONY WOODS NEIGHBORHOOD OPEN SPACE LOT 1
ELECTION DISTRICT No. 5

SCALE	ZONING	G. L. W. FILE NO.
1" = 40'	NT	11071
DATE	TAX MAP - GRID	SHEET
NOV., 2015	36 - 01	10 OF 31

SEDIMENT CONTROL DESIGN INFORMATION	
TRAP 1	PIPE OUTLET
TYPE OF TRAP	PIPE OUTLET
PRE-DEVELOPMENT DRAINAGE AREA	3.8 ACRES
POST DEVELOPMENT DRAINAGE AREA	3.8 ACRES
TOTAL STORAGE REQUIRED (WET AND DRY VOLUME)	22,028 C.F.
TOTAL STORAGE PROVIDED	23,668 C.F.
NET STORAGE REQUIRED	6840 C.F.
NET STORAGE PROVIDED	11,174 C.F.
DRY STORAGE REQUIRED	15,188 C.F.
DRY STORAGE PROVIDED	16,444 C.F.
EXISTING GROUND ELEV. AT OUTLET (NET STORAGE ELEV.)	340.20
TRAP BOTTOM ELEVATION	339.00
TRAP BOTTOM DIMENSIONS	48"x14"
WEIR LENGTH	---
WEIR CREST (DRY STORAGE) ELEVATION	342.50
CLEANOUT ELEVATION	339.60
TOP OF EMBANKMENT ELEVATION	344.00
SIDE SLOPE	2:1
EMBANKMENT TOP WIDTH	4'

- PHASE B NOTES:**
- LIMITS OF DISTURBANCE - WHERE LOD IS NOT SHOWN, SEDIMENT CONTROL DEVICE DENOTES LIMIT OF DISTURBANCE. LOD SHALL NOT EXTEND BEYOND THE SEDIMENT CONTROL LIMITS, PROPERTY LINE BOUNDARIES OR OTHER ENVIRONMENTAL CONSTRAINTS.
 - WETLAND PERMIT - CONSTRUCTION WITHIN THE LIMITS OF THE EXISTING WETLANDS CANNOT BEGIN UNTIL PROPER PERMITS & APPROVALS HAVE BEEN OBTAINED.
 - ACCESS ROAD - EXISTING GRAVEL ACCESS ROAD RUNNING SOUTH OF AND PARALLEL WITH DIVIDED SKY LANE IS TO REMAIN OPEN AND USABLE SO LONG AS CONSTRUCTION WILL ALLOW TO PROVIDE CROSS SITE ACCESS UNTIL DIVIDED SKY LANE CAN BE COMPLETED.
 - FUTURE PARCEL B - STOCKPILE AND CONSTRUCTION STAGING SOUTH OF DIVIDED SKY LANE MUST BE REMOVED PRIOR TO THE BEGINNING OF THE 2016 CONCERT SEASON. OTHERWISE A REVISED REDLINE MUST BE SUBMITTED TO DPZ BY FEBRUARY 24, 2016 TO INDICATE THE RELOCATION OF 250 DISPLACED MERRIWEATHER POST PAVILION PARKING SPACES IN ACCORDANCE WITH THE PARKING MITIGATION REQUIREMENT PER FDP-DC-CR-SCENT-1.

LEGEND

	STABILIZED CONSTRUCTION ENTRANCE		EX. PAVEMENT (T.B.R.)
	EARTH DIKE / CLEAN WATER DIVERSION		TEMPORARY ASPHALT BERM
	SILT FENCE / SUPER SILT FENCE		EXISTING STRUCTURE
	DIVERSION FENCE		PROPOSED STRUCTURE
	PROP. INLET PROTECTION		
	TEMPORARY GABION		
	OUTLET STRUCTURE		
	SANDBAG BARRIER		
	LIMIT OF DISTURBANCE		

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

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

John C. Motta 11/12/15
Date
Howard S.C.D.

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.

John C. Motta
ENGINEER'S SIGNATURE
11-12-15
DATE

DEVELOPER'S/BUILDER'S CERTIFICATE

I HEREBY 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.

Robert Jenkins
SIGNATURE OF DEVELOPER/BUILDER
11-12-15
DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

M. M. M.
Chief, Bureau of Highways
11/18/2015
Date

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

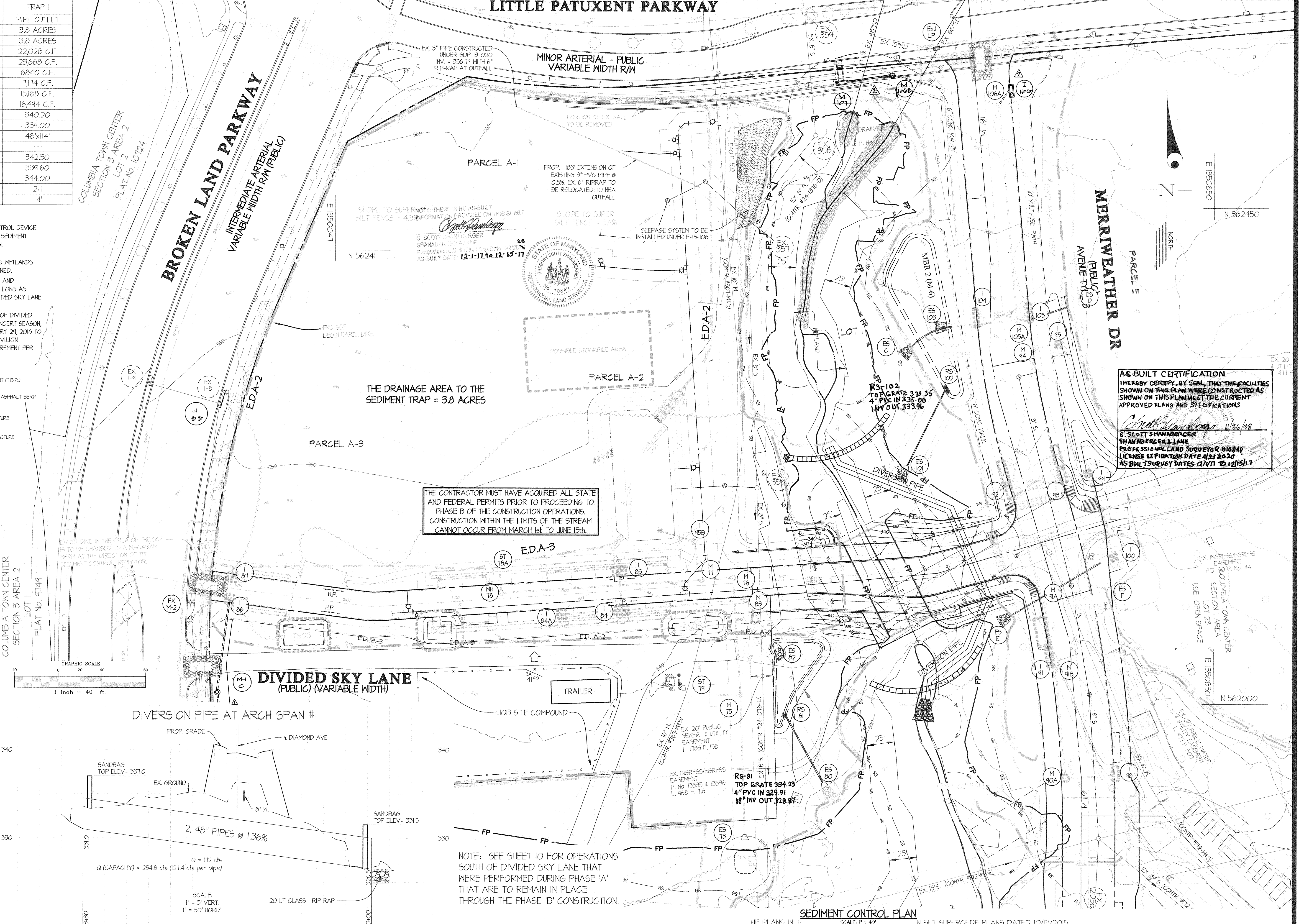
K. M. M.
Chief, Division of Land Development
12-9-15
Date

C. M. M.
Chief, Development Engineering Division
11-19-15
Date

GLWGUTSCHICK LITTLE & WEBER, P.A.

CIVIL ENGINEERS, LAND SURVEYORS, LAND PLANNERS, LANDSCAPE ARCHITECTS
3909 NATIONAL DRIVE - SUITE 250 - BURTONVILLE OFFICE PARK
BURTONVILLE, MARYLAND 20866
TEL: 301-421-4024 FAX: 301-421-4186

DATE	REVISION	BY	APP'R.
10-5-2016	Rev. storm drains to reflect ex. dry utilities	gl	DEV
1-5-2016	Rev. storm drain	klp	



THE CONTRACTOR MUST HAVE ACQUIRED ALL STATE AND FEDERAL PERMITS PRIOR TO PROCEEDING TO PHASE B OF THE CONSTRUCTION OPERATIONS. CONSTRUCTION WITHIN THE LIMITS OF THE STREAM CANNOT OCCUR FROM MARCH 1st TO JUNE 15th.

AS-BUILT CERTIFICATION

I HEREBY CERTIFY, BY SEAL, THAT THE FACILITIES SHOWN ON THIS PLAN WERE CONSTRUCTED AS SHOWN ON THIS PLAN MEET THE CURRENT APPROVED PLANS AND SPECIFICATIONS

John C. Motta 11/26/18
11/26/18
6 SCOTT SHAWMANGER
SHAWMANGER & LANE
PUBLIC LAND SURVEYOR #18849
LICENSE EXPIRATION DATE 12/31/2024
AS-BUILT SURVEY DATES 12/11/18 & 12/15/18

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. 12974, EXPIRATION DATE: MAY 26, 2016

11-12-15
John C. Motta

PREPARED FOR:

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

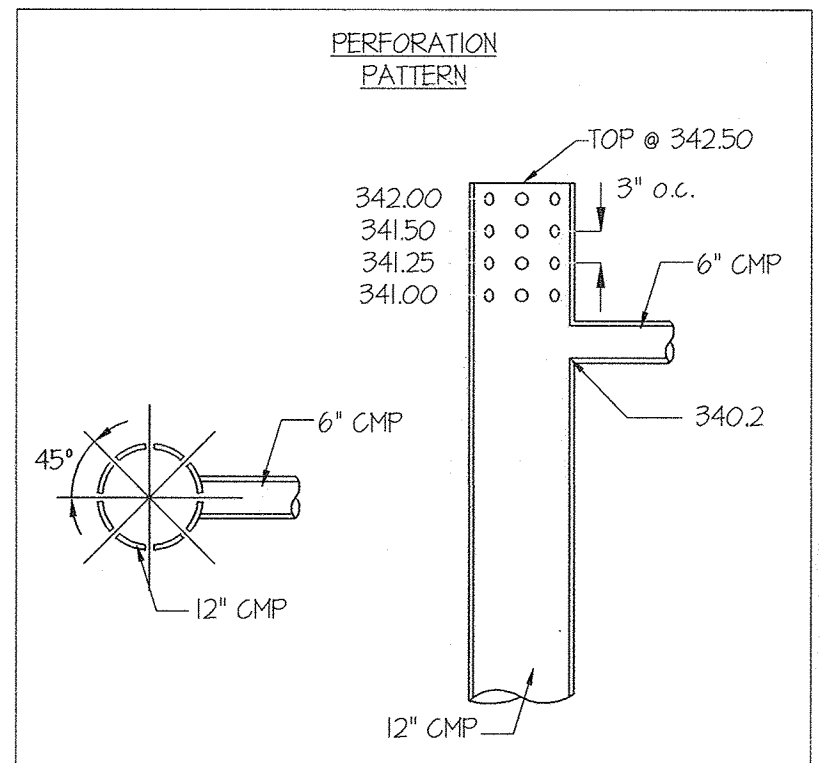
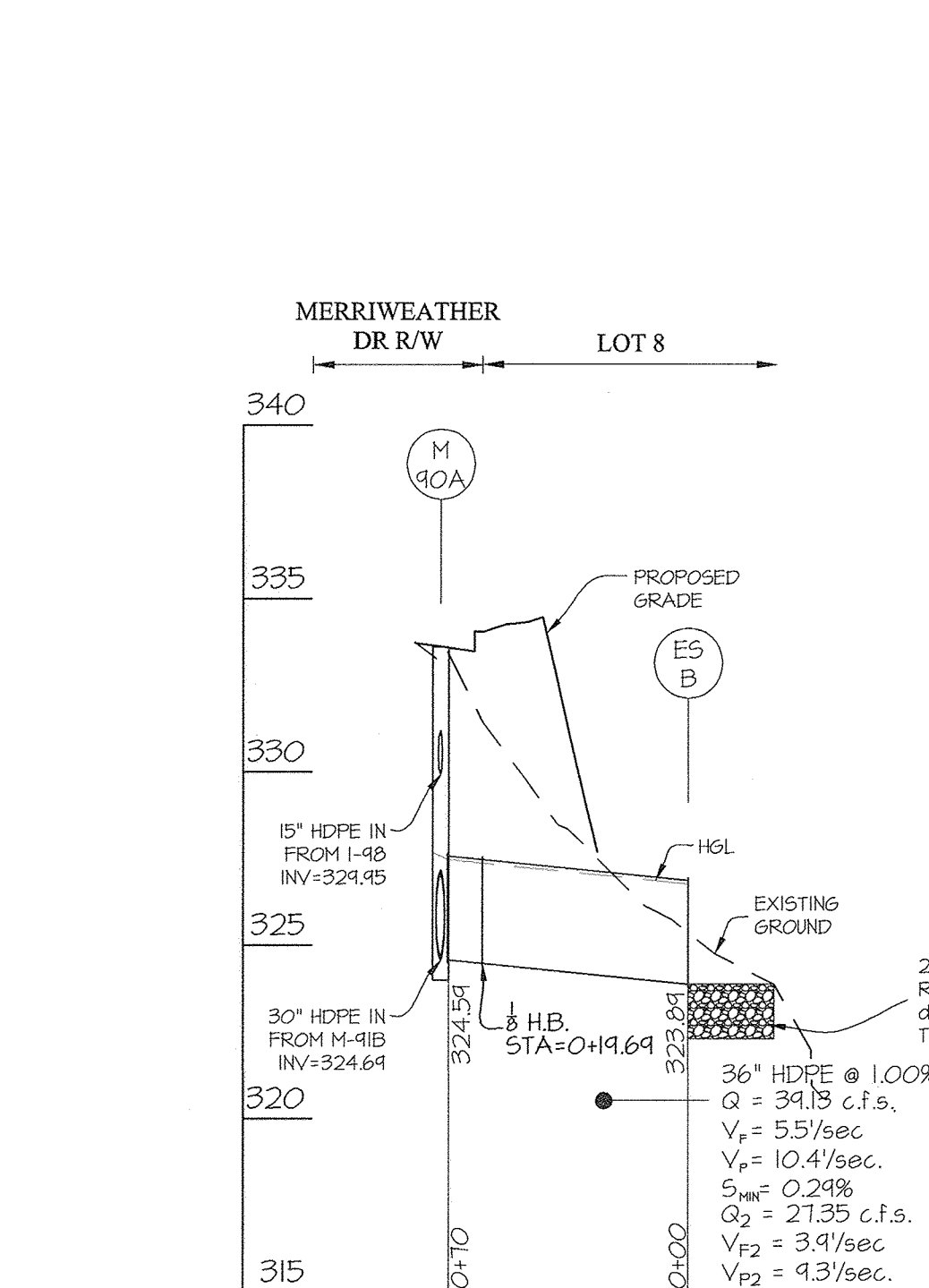
B-4-B STANDARDS AND SPECIFICATIONS FOR STOCKPILE AREA

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

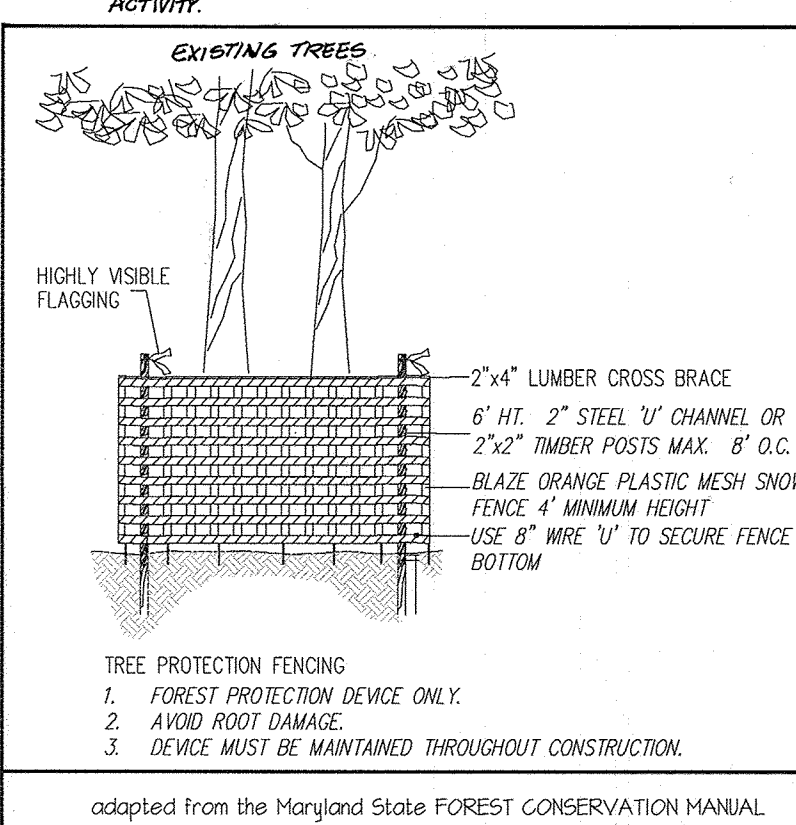
Maintenance
The stockpile area must continuously meet the requirements for Adequate Vegetative Establishment in accordance with Section B-4 Vegetative Stabilization. Side slopes must be maintained at no steeper than a 2:1 ratio. The stockpile area must be kept free of erosion. If the vertical height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

355
350
345
340
335
330
325

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

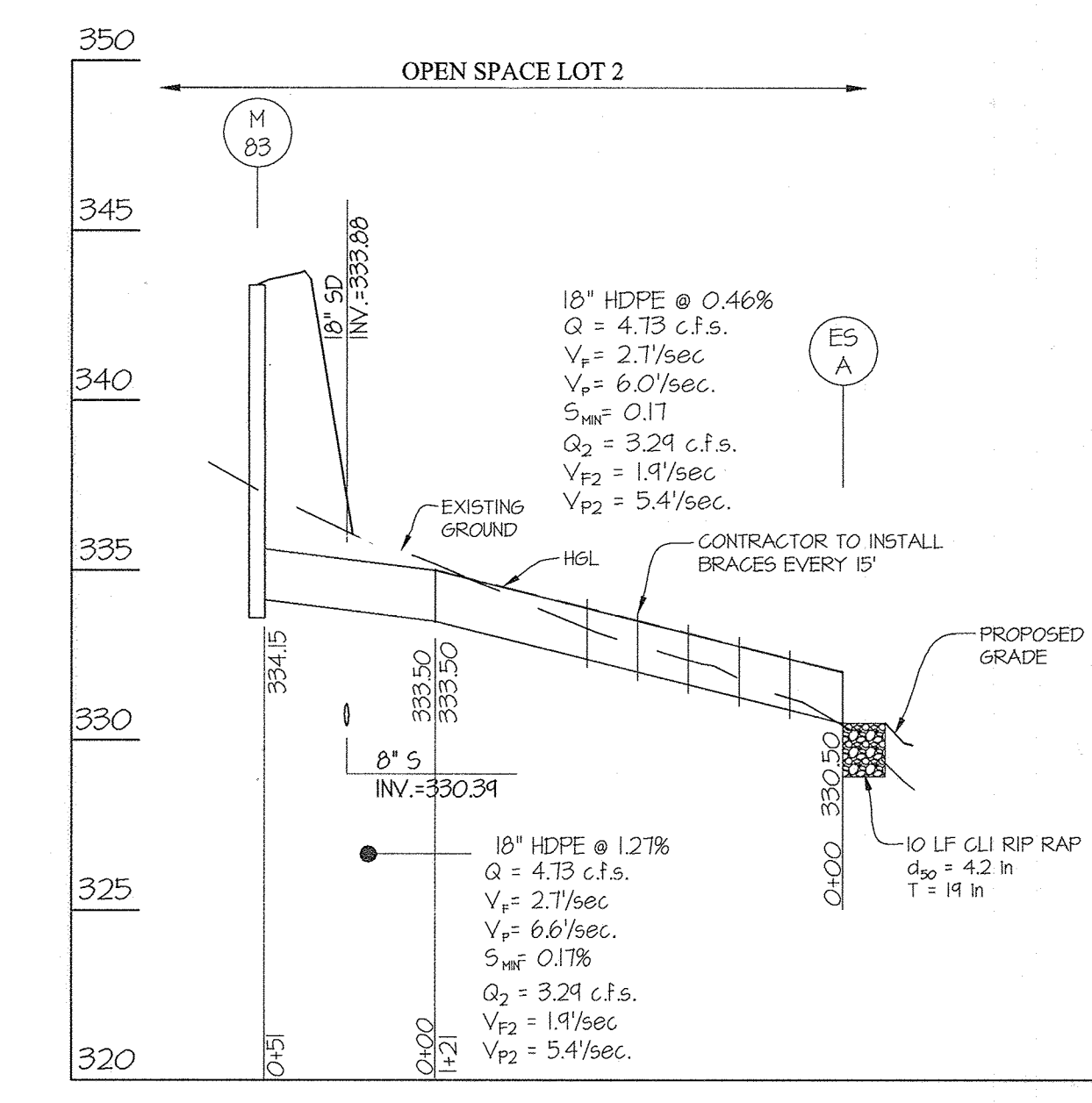
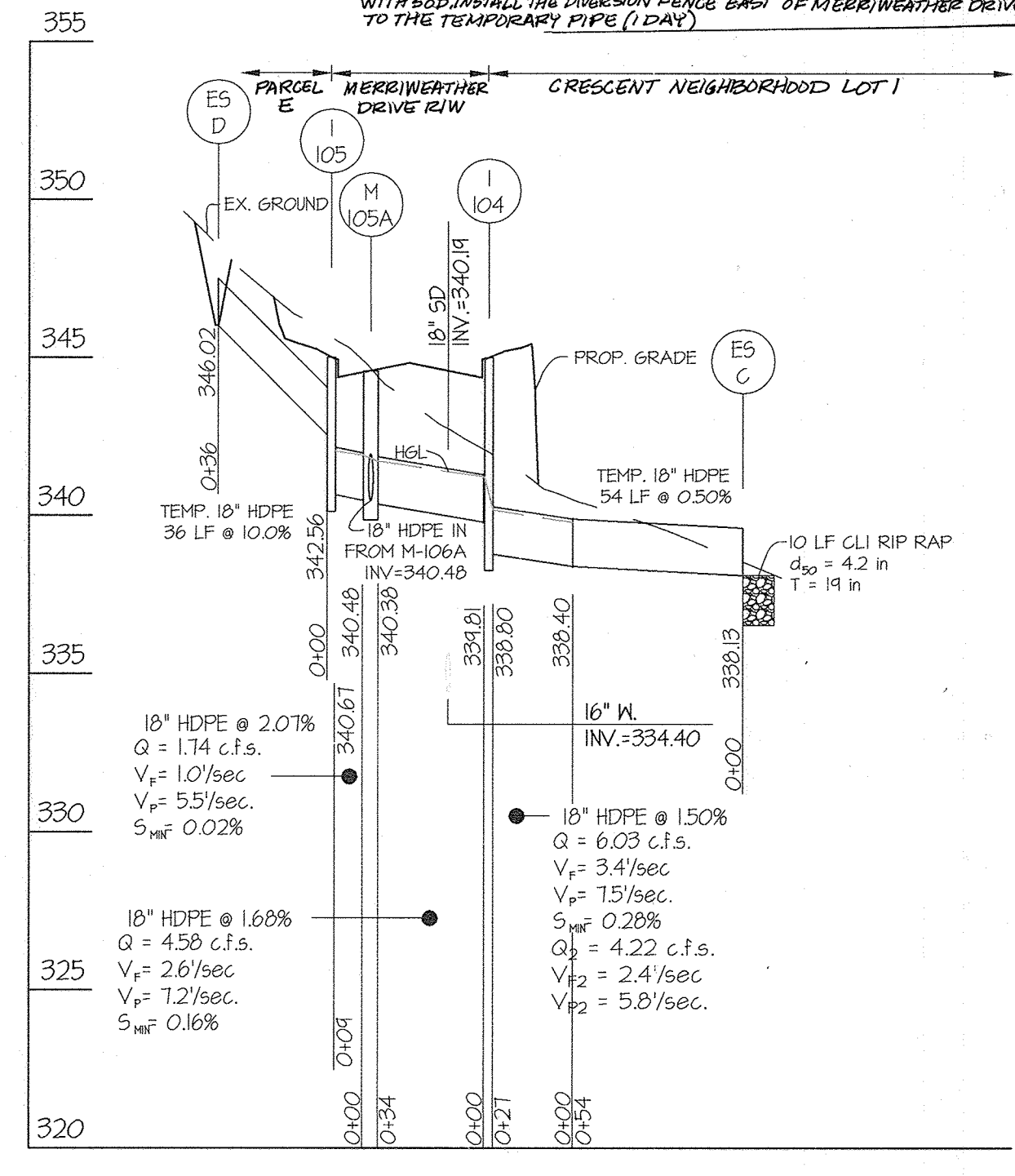


NOTE: THE TREE PROTECTION FENCING SHOWN ON THESE PLANS IS TEMPORARY AND SHALL REMAIN IN PLACE DURING CONSTRUCTION PERIOD.



TREE PROTECTION FENCE DETAIL
NO SCALE

13. INSTALL THE CLEAN WATER DIVERSION EAST OF MERRIWEATHER DRIVE, DIRECTING THE RUNOFF FROM THE OPPOSITE AREA TO ES-D. BEGIN THE CONSTRUCTION OF THE CLEAN WATER DIVERSION AT ES-D AND WORK UPWIND (1 WEEK)
14. INSTALL THE TEMPORARY PIPE (ES-F TO ES-G) UNDER MERRIWEATHER DRIVE NEAR CENTERLINE STATION 0+38.40 AND GRADE THE SHALLOW DEPRESSION AT THE UPSTREAM END OF THE PIPE. THE SEEPAGE BERM LOCATED IN THE SOUTHWEST CORNER OF THE PRIVATE ROAD WITH LITTLE PATUXENT PARKWAY ON GRADE. THE SEEPAGE BERM WILL BE CONSTRUCTED UNDER MERRIWEATHER DRIVE AND SHALL BE IMMEDIATELY STABILIZED WITH TOP SOIL. THE DIVERSION FENCE EAST OF MERRIWEATHER DRIVE AND CURB CUT TO THE TEMPORARY PIPE (1 DAY)



SEQUENCE OF CONSTRUCTION

- CRESCENT PROPERTY - PHASE I (F15008 AND CONT. #24-4931-D)**
NOTE: THE CONTRACTOR MUST HAVE ACQUIRED ALL STATE AND FEDERAL PERMITS PRIOR TO CONDUCTING ANY WORK WITHIN THE STREAM CONSTRUCTION WITHIN THE LIMITS OF THE STREAM CANOPY OCCUR FROM MARCH 15 TO JUNE 15th.
- OBTAIN GRADING PERMIT. (1 DAY)
 - ARRANGE FOR AN ON-SITE PRE-CONSTRUCTION MEETING WITH THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR. (1 DAY)
 - THE MULTI-USE PATH AND THE ACCESS ROAD FROM BROKEN LAND PARKWAY AND LITTLE PATUXENT PARKWAY TO MERRIWEATHER POST PAVILION ARE TO REMAIN OPEN WHILE THIS SEQUENCE OF CONSTRUCTION IS IMPLEMENTED. THE ENGINEER AND OWNER MUST BE NOTIFIED IF THE CONTRACTOR BELIEVES A CLOSURE LONGER THAN 1 DAY TO EITHER ONE OF THESE ITEMS IS NEEDED. PROVISIONS MUST BE MADE AT THE END OF EACH WORKING DAY TO ALLOW ACCESS TO MERRIWEATHER POST PAVILION.
 - INSTALL THE STONE CONSTRUCTION ENTRANCE AT DIVIDED SKY LANE, SUPER SILT FENCE, DRAINAGE SAFETY FENCE, AND THE TREE PROTECTION FENCING AS SHOWN ON SHEET 0-16. THE CONSTRUCTION ENTRANCE AT LITTLE PATUXENT PARKWAY WILL BE INSTALLED WHEN THE CURB CUT AT LITTLE PATUXENT PARKWAY IS MADE. (1 WEEK)
 - THE SET UP OF THE CHAIN LINK FENCE AND TRAILER ON THE SOUTH SIDE OF THE EXISTING GRAVEL ROAD CAN BE DONE AT THIS TIME (1 WEEK)
 - INSTALL THE TEMPORARY GABION OUTLET STRUCTURE AND THE TEMPORARY STONE OUTLET STRUCTURES ALONG DIVIDED SKY LANE. (2 WEEKS)
 - INSTALL THE EARTH DIKES ALONG BROKEN LAND PARKWAY AND DIVIDED SKY LANE, DIRECTING THE RUNOFF TO THE GABION AND STONE STRUCTURES. BEGIN THE CONSTRUCTION OF THE EARTH DIKES AT EACH DEVICE AND WORK UPWIND. (1 WEEK)
 - AFTER HAVING INSTALLED THE SUPER SILT FENCE TO THE WEST OF MERRIWEATHER DRIVE UNDER ITEM 14 ABOVE, AND OBTAINING PERMISSION FROM THE SEDIMENT CONTROL INSPECTOR, BEGIN MASS GRADING ON PARCELS A-1 THROUGH A-3 AND BEGIN PLACING MERRIWEATHER DRIVE ON GRADE. AS GRADING ALLOWS, INSTALL EARTH DIKES AND SEDIMENT TRAP ON PARCELS A-1 THROUGH A-3, DIRECTING RUNOFF TO THE SEDIMENT TRAP. (1 MONTH)
 - INSTALL 24\"/>

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
 11-12-15
 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 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
 11/14/15
 DATE



NOTE: THERE IS NO AS-BUILT INFORMATION PROVIDED ON THIS PLAN

G. SCOTT SHANKS
 PROFESSIONAL LAND SURVEYOR
 License No. 19442
 AS-BUILT DATE: 12-17-14, 12-15-17

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

 Chief, Bureau of Highways
 11/18/2015
 Date

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

 Chief, Division of Land Development QMP
 12-9-15
 Date

 Chief, Development Engineering Division vsp
 11-19-15
 Date

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

Howard S.C.D. Date

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 FAX: 410-880-1820 DC/YA: 301-989-2524 FAX: 301-421-4186

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: MAY 26, 2016

 11-12-15

SEDIMENT CONTROL NOTES AND DETAILS

CRESCENT NEIGHBORHOOD PARCELS A-1 THRU A-3, E, NON-BUILDABLE BULK PARCEL L, OPEN SPACE LOTS 1, 8 & 9 AND MERRIWEATHER-SYMPHONY WOODS NEIGHBORHOOD OPEN SPACE LOT 1

ELECTION DISTRICT NO. 5
 HOWARD COUNTY, MARYLAND

BORING LOG
 PROJECT NAME: The Crescent Region and Corridor
 PROJECT LOCATION: Columbia, MD
 DATE TESTED: 10/15/15
 METHOD: Shelby Stone Super
 SAMPLER: 2.5\"/>

DEPTH (FEET)	CORRECTION	CORRECTED LOG	PENETRATION	RESISTANCE	REMARKS
1.5	0.00	1.50	50	10	Very Silty Sand (red) and Tan Clay (red) with some black mica
3.0	0.00	3.00	100	20	Very Silty Sand (red) and Tan Clay (red) with some black mica
4.5	0.00	4.50	150	30	Very Silty Sand (red) and Tan Clay (red) with some black mica
6.0	0.00	6.00	200	40	Very Silty Sand (red) and Tan Clay (red) with some black mica
7.5	0.00	7.50	250	50	Very Silty Sand (red) and Tan Clay (red) with some black mica
9.0	0.00	9.00	300	60	Very Silty Sand (red) and Tan Clay (red) with some black mica
10.5	0.00	10.50	350	70	Very Silty Sand (red) and Tan Clay (red) with some black mica
12.0	0.00	12.00	400	80	Very Silty Sand (red) and Tan Clay (red) with some black mica

BORING LOG
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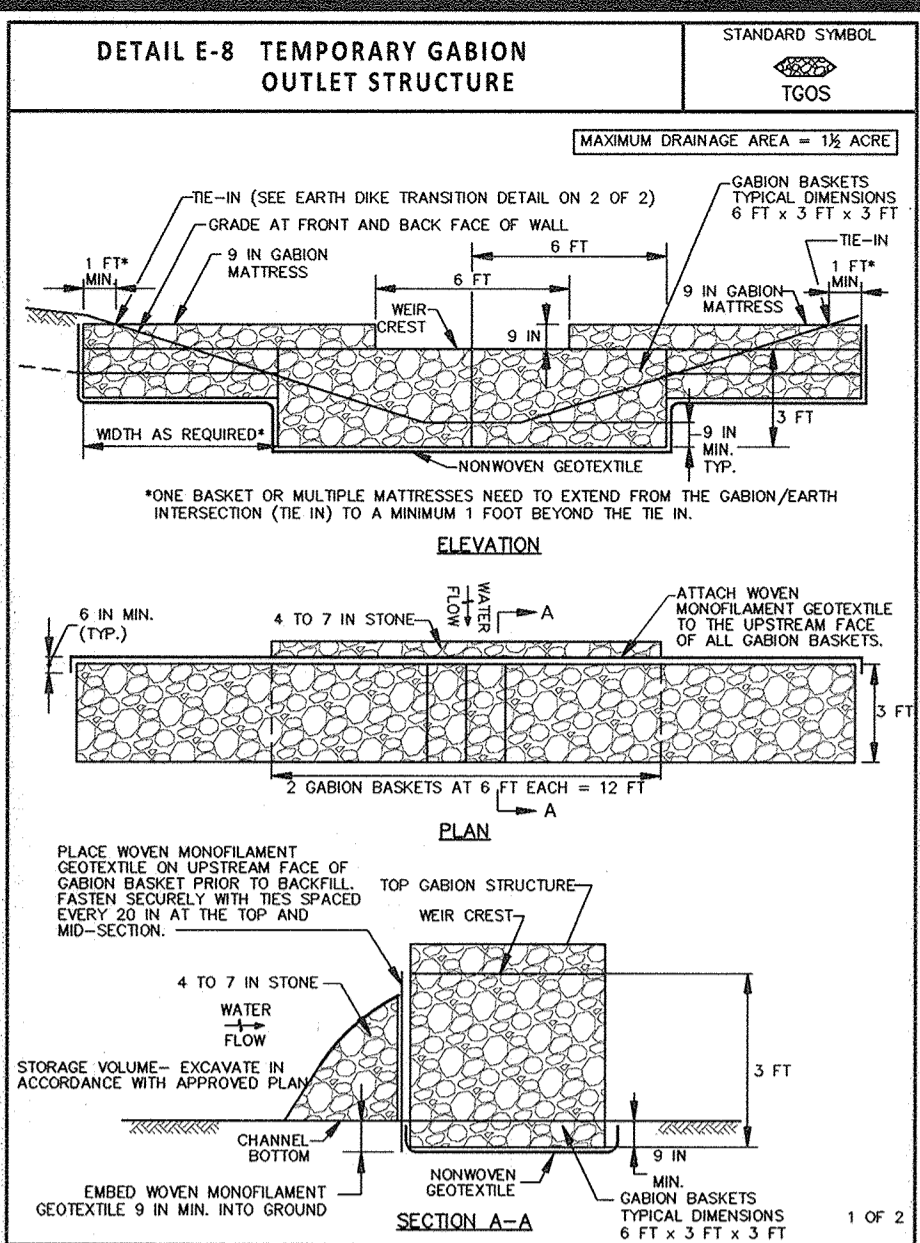
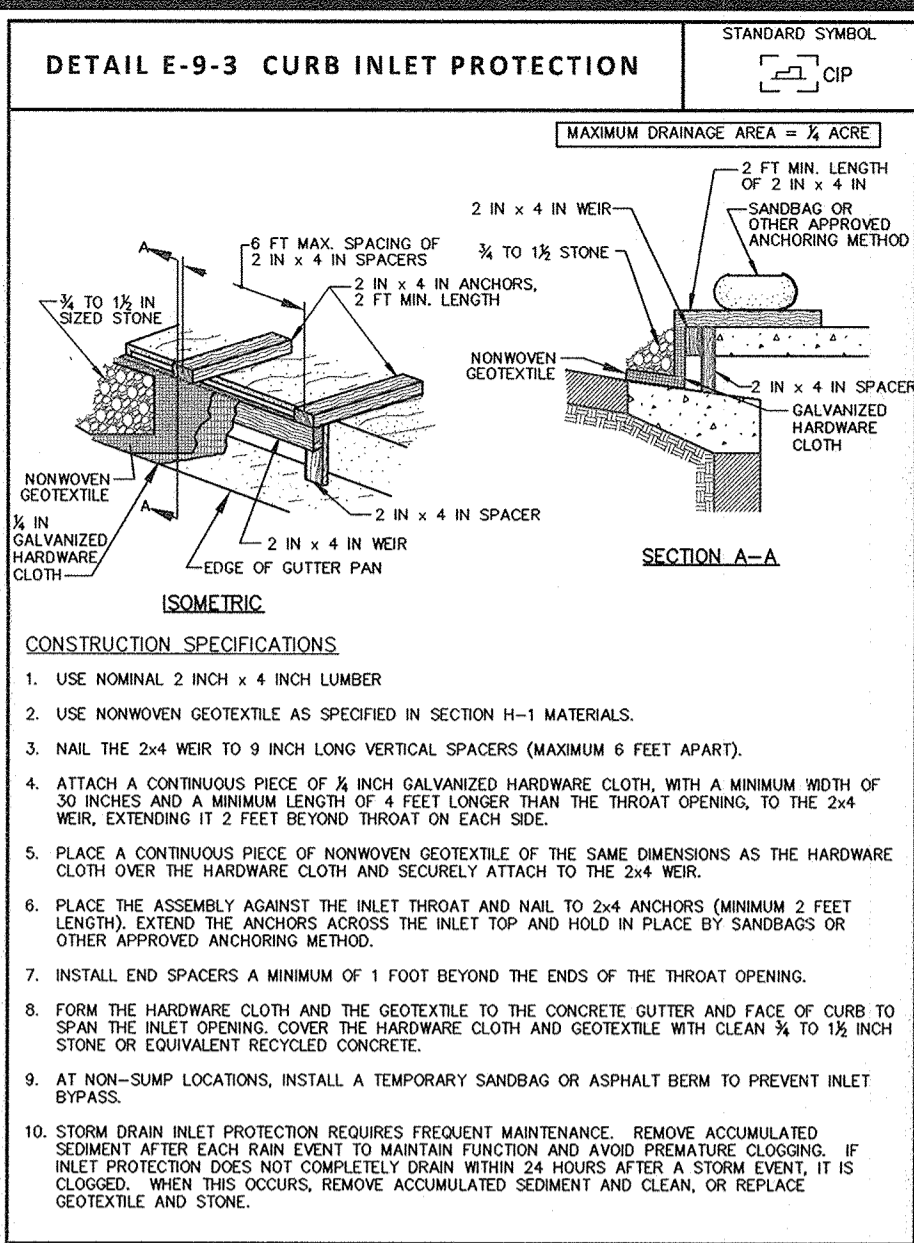
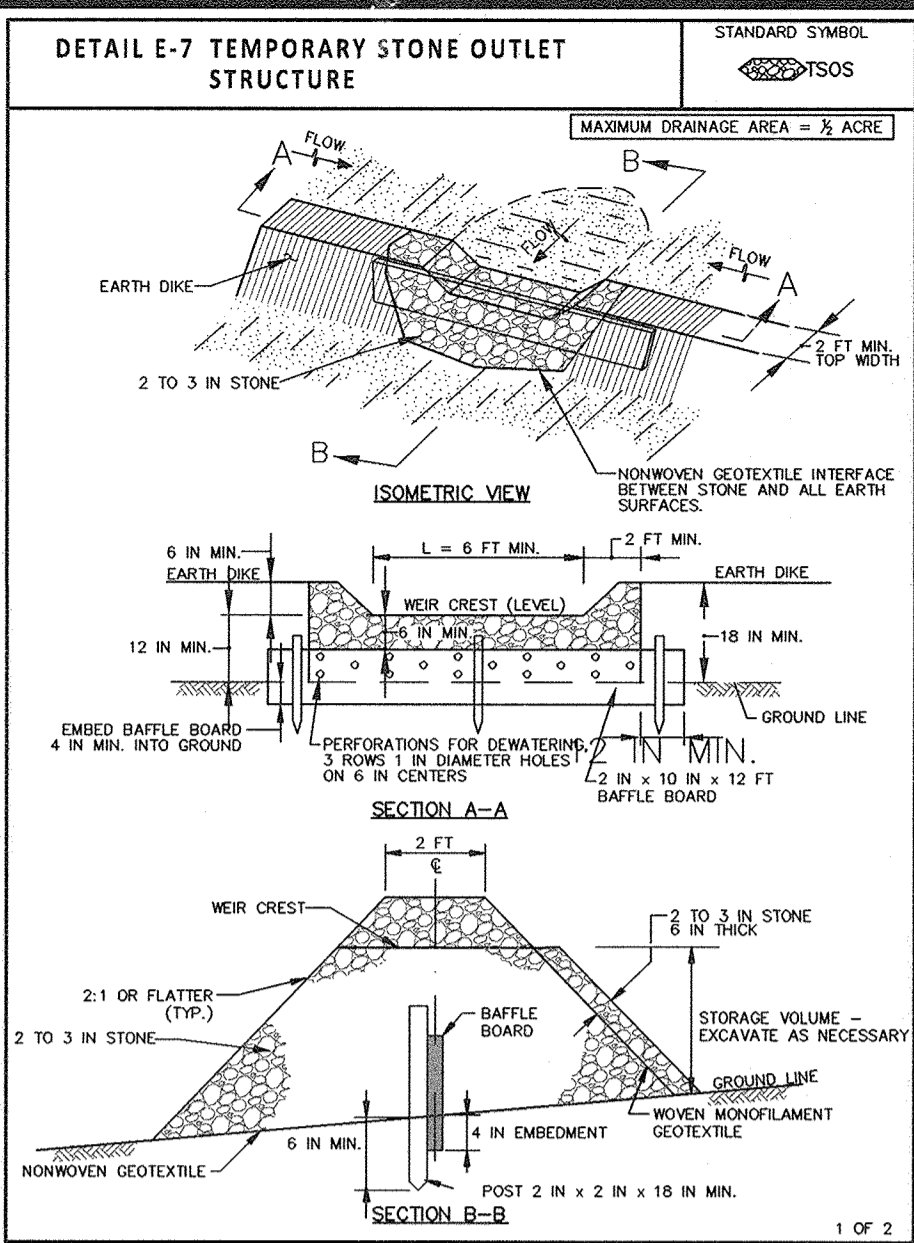
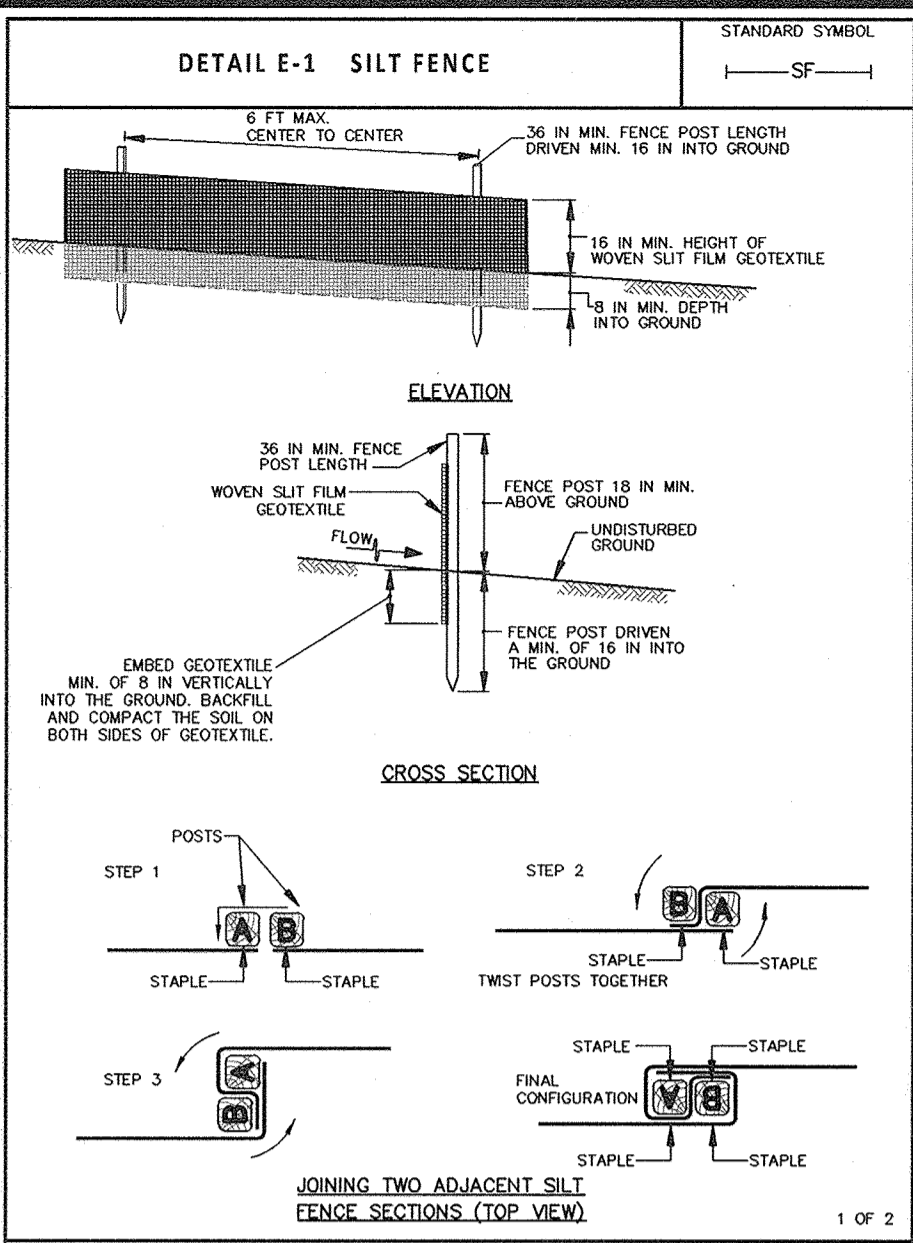
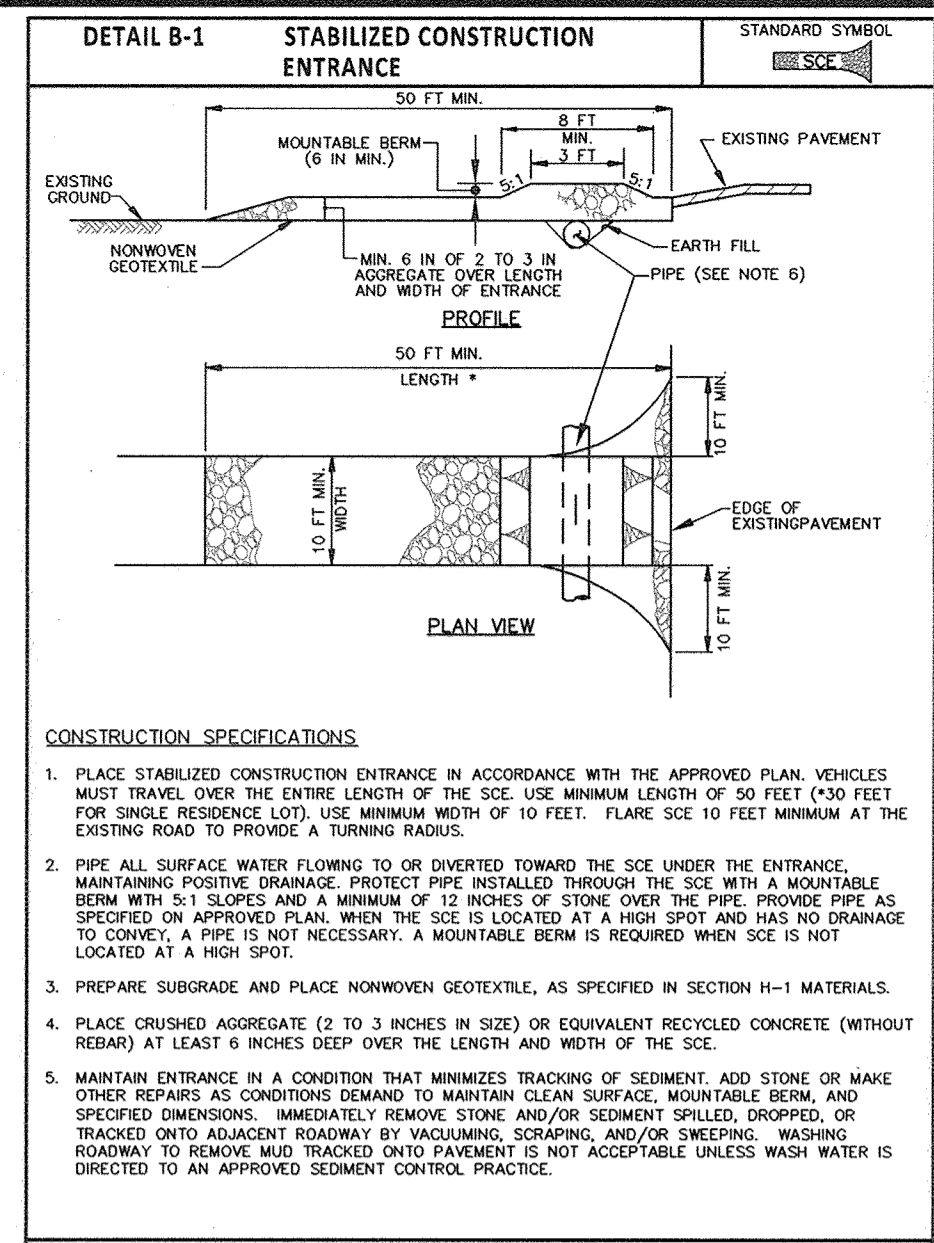
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DATE	REVISED SEQUENCE OF CONSTRUCTION	BY	APP'R.
08-09-2016		HKJ	

SCALE	ZONING	G. L. W. FILE NO.
AS SHOWN	NT	11071
DATE	TAX MAP - GRID	SHEET
NOV., 2015	36 - 01	13 OF 31



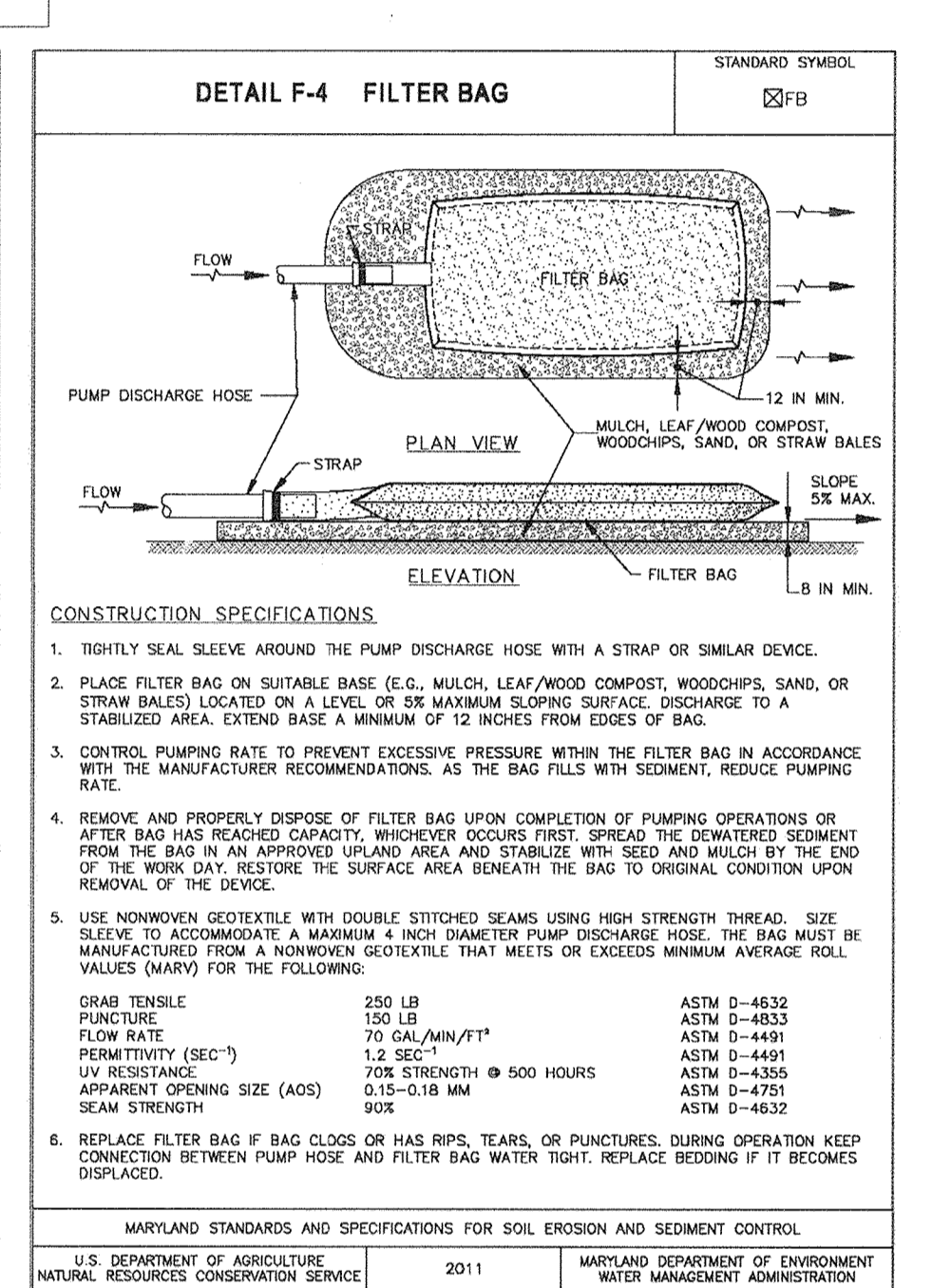
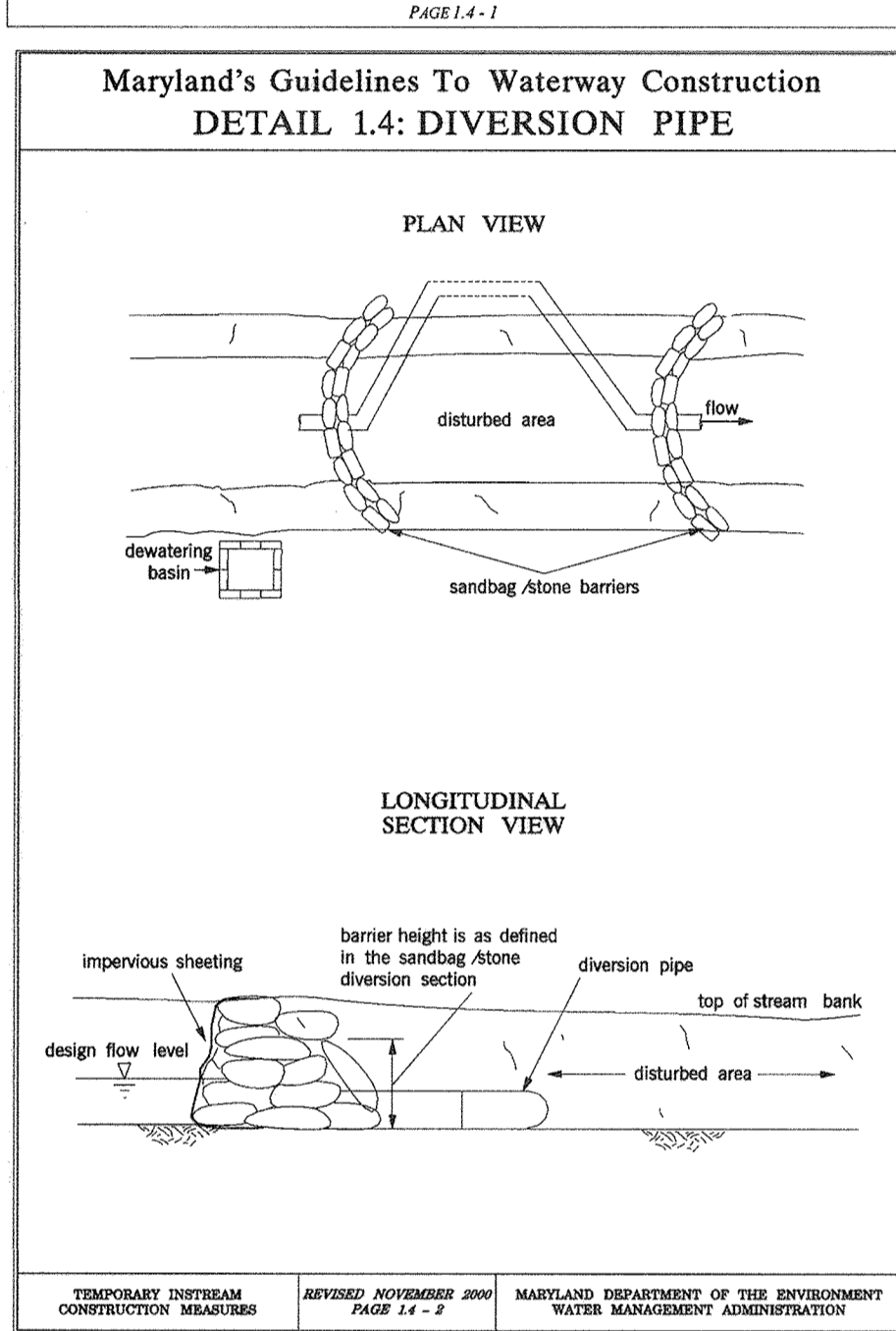
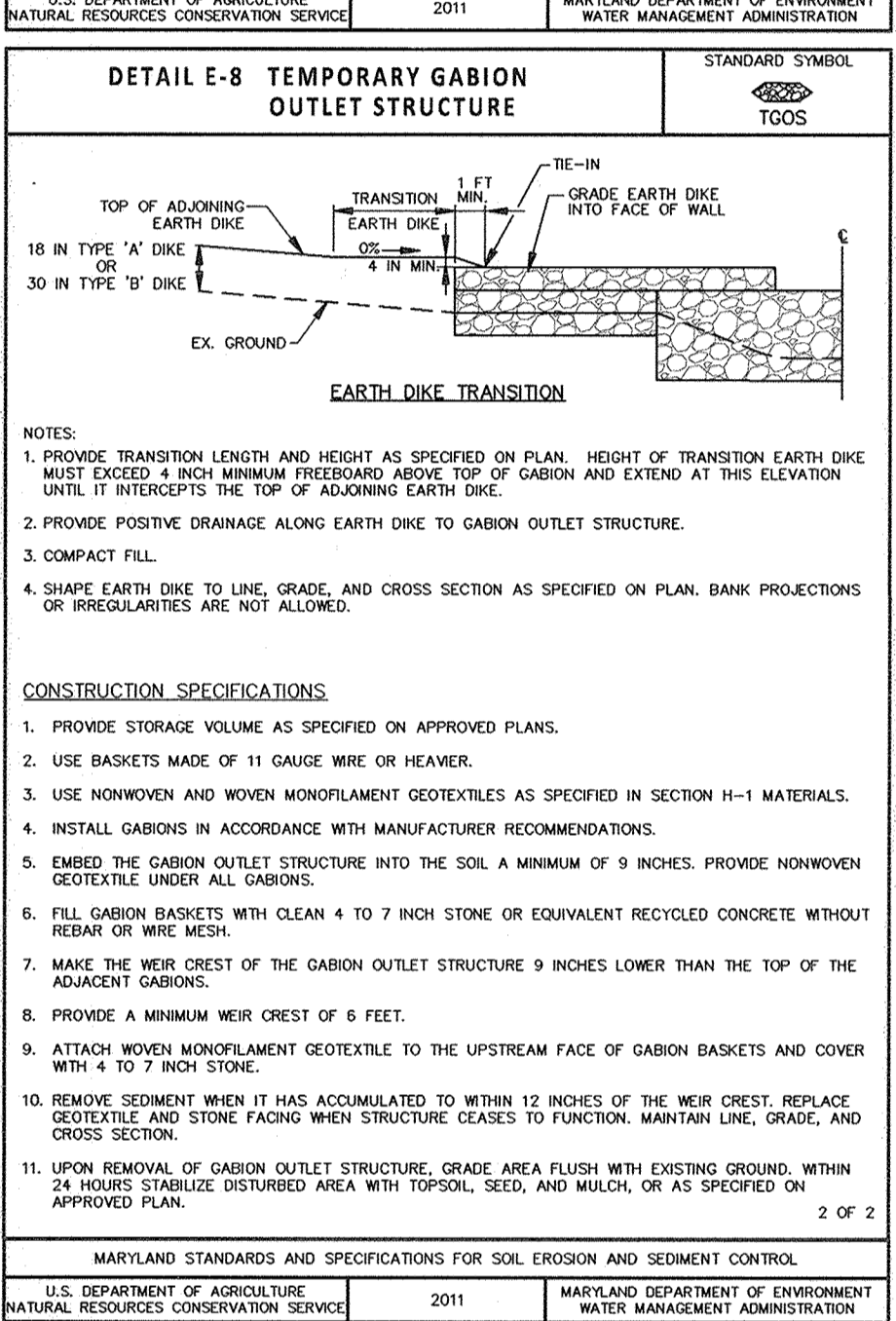
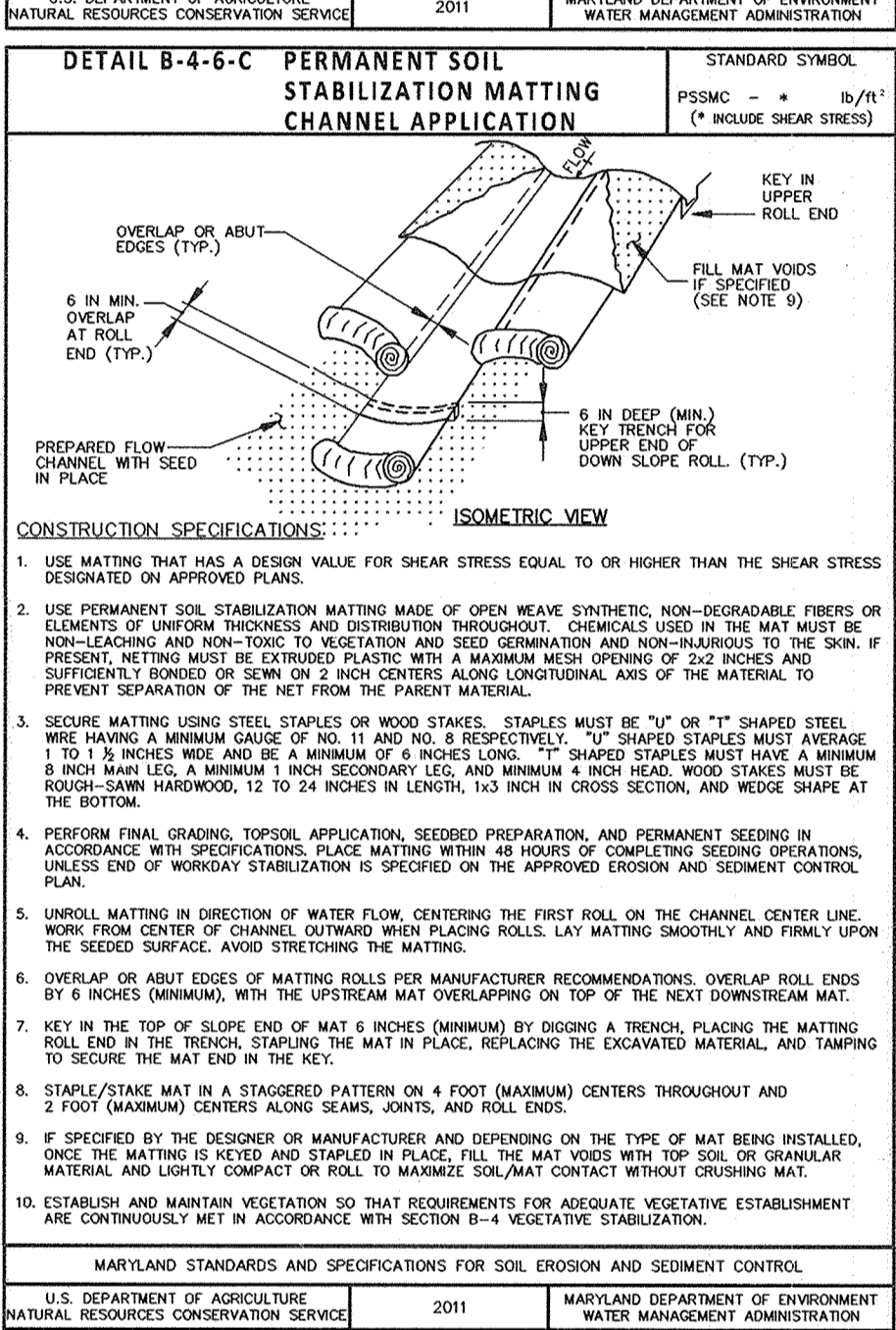
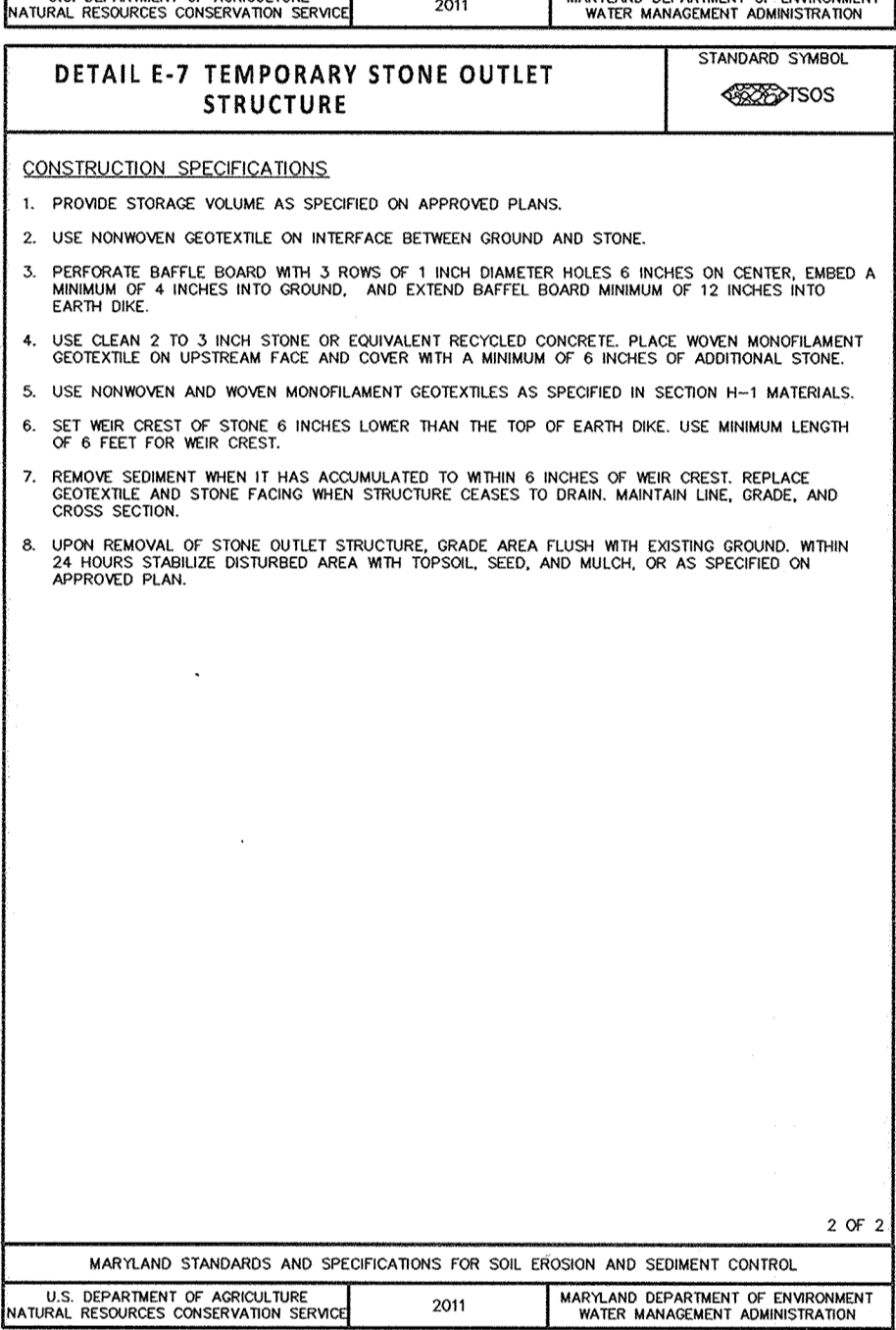
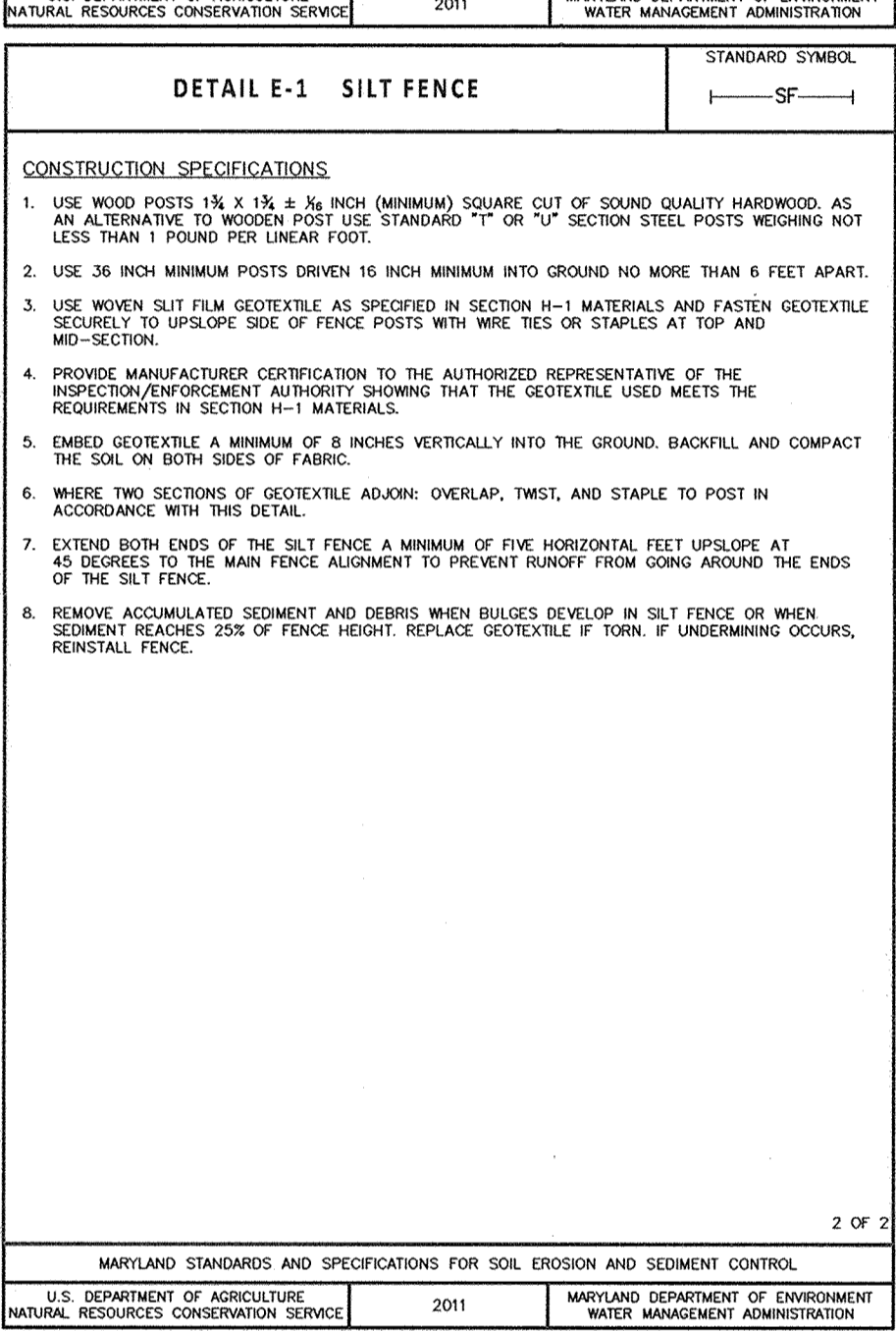
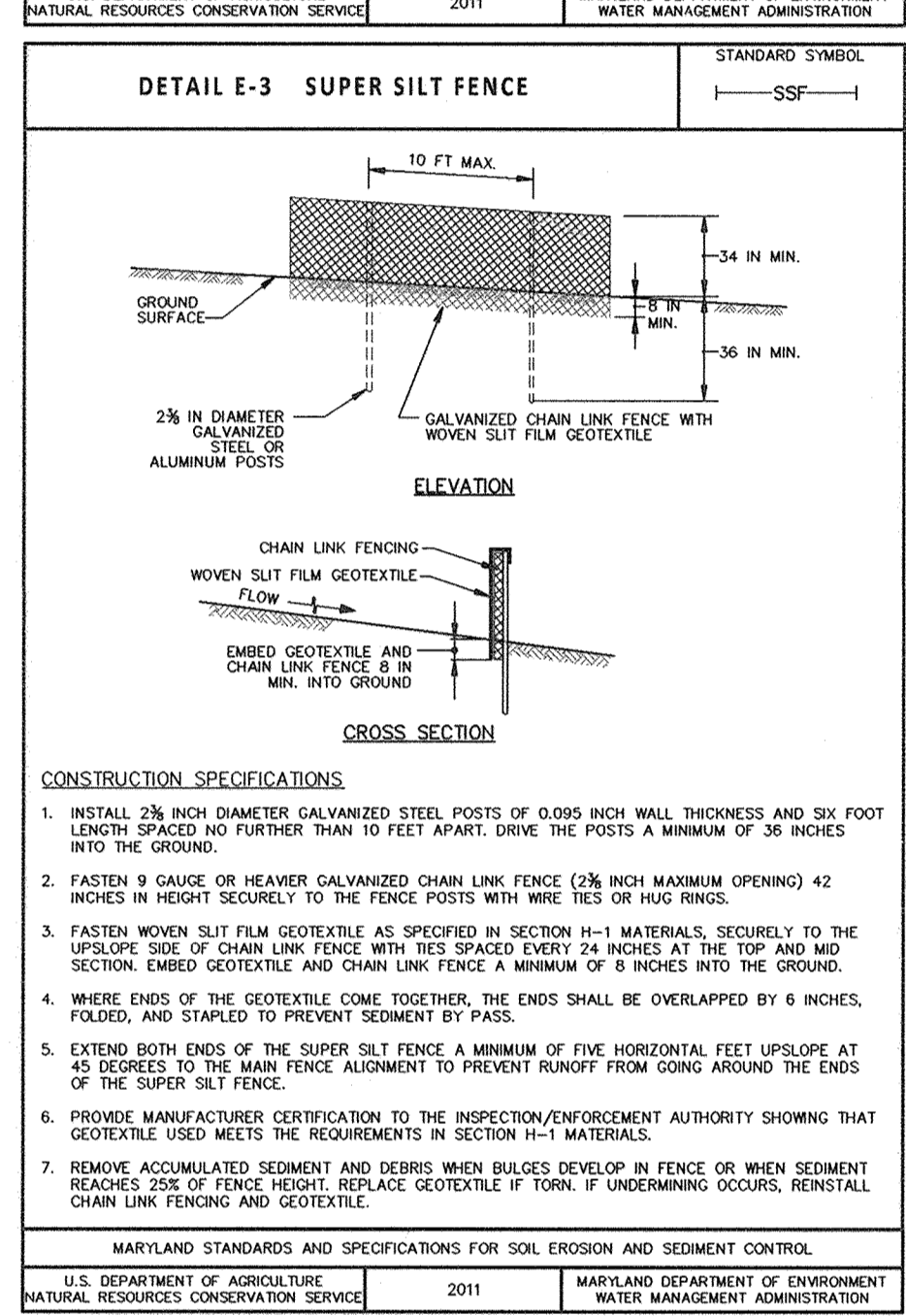
MGWC 1.4: DIVERSION PIPE

Temporary measure for diverting in-channel construction flow

DESCRIPTION:
The work shall consist of installing flow diversion pipes in combination with sandbags or stone diversions when construction activities occur within the stream channel.

PURPOSE 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 flow diversion. Therefore, the channel construction activities shall be completed only during periods of low flow.

MATERIAL SPECIFICATIONS:
Materials for stream diversions should meet the following requirements:
 1. Riprap: Stone should be washed and have a minimum diameter of 6 inches (15 centimeters).
 2. Sandbags: Sandbags should consist of materials which are resistant to ultraviolet radiation, tearing, and puncture and should be tightly fluffed to prevent leakage of fill material (i.e., sand, flow gravel, etc.).
 3. Shoring: Shoring 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 diverting 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, all fence or straw bales should be installed around the perimeter of the work area.
 Diversion pipes with sandbags or stone barriers should be completed as follows (refer to Detail 1.4):
 1. Sandbags/stone barriers should be sized and installed as detailed in MGWC 1.5: Sandbag/Stone Diversion. The materials should be stored in a shaded area.
 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.



ENGINEER'S CERTIFICATE

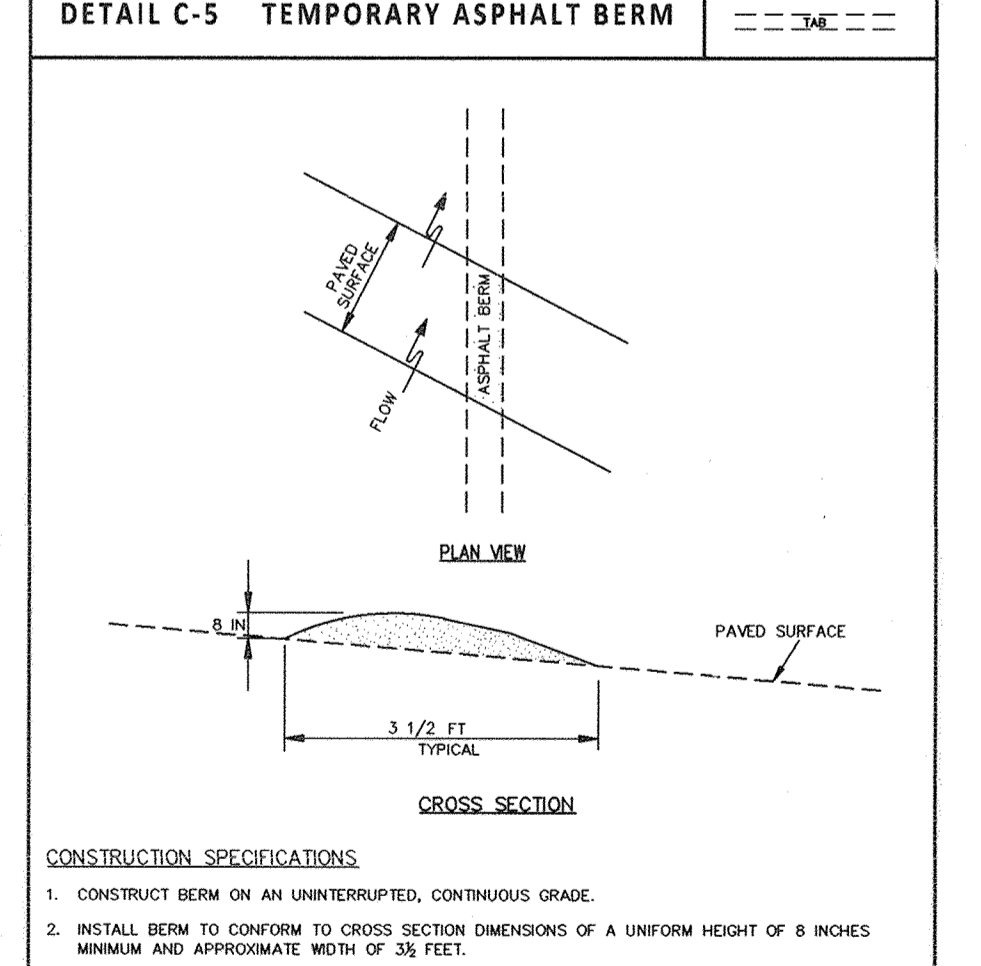
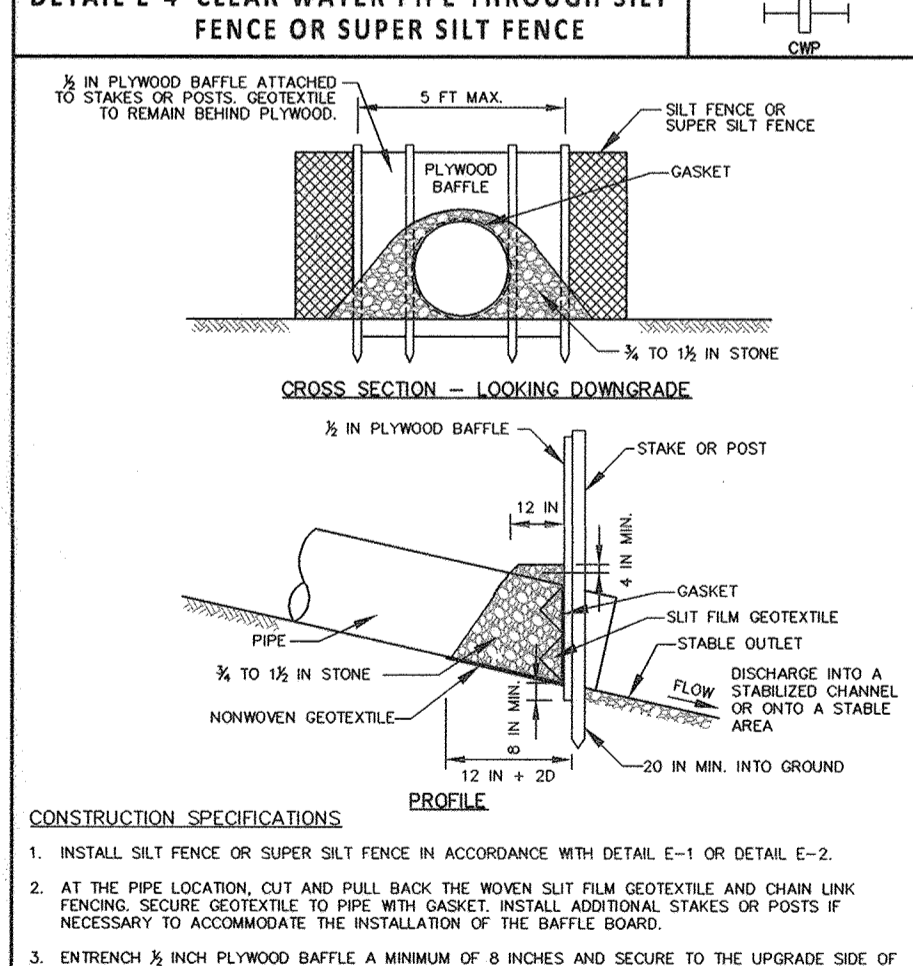
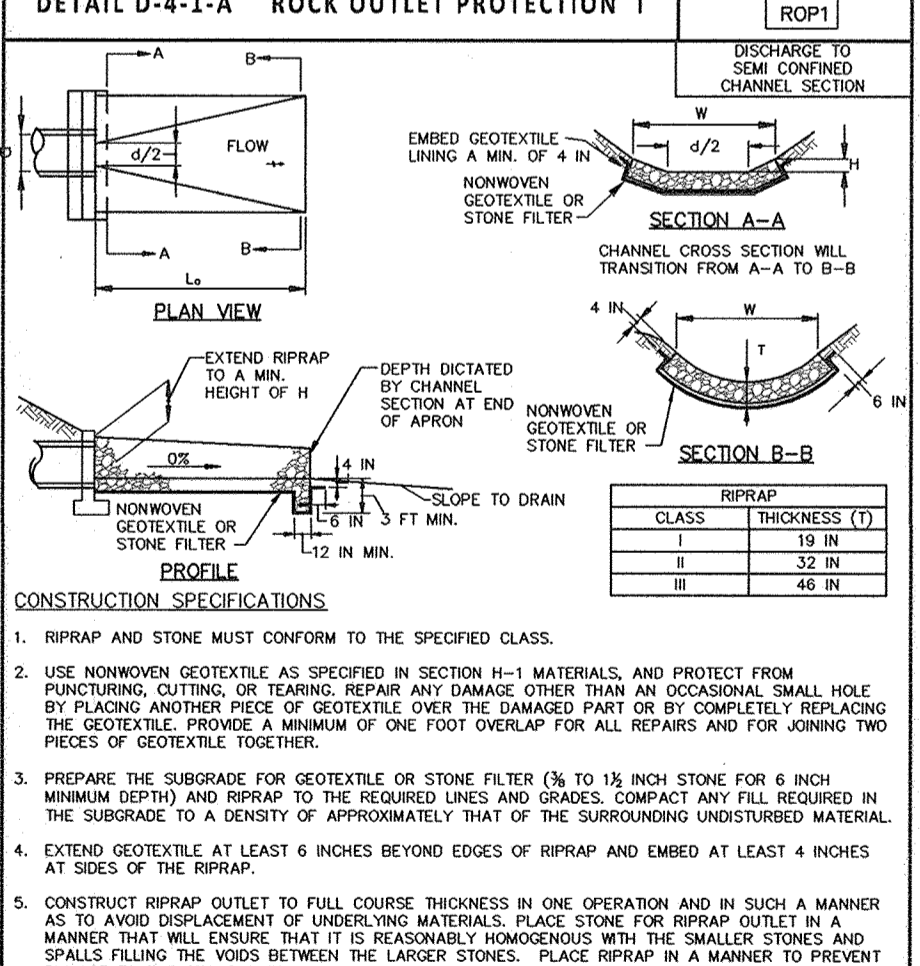
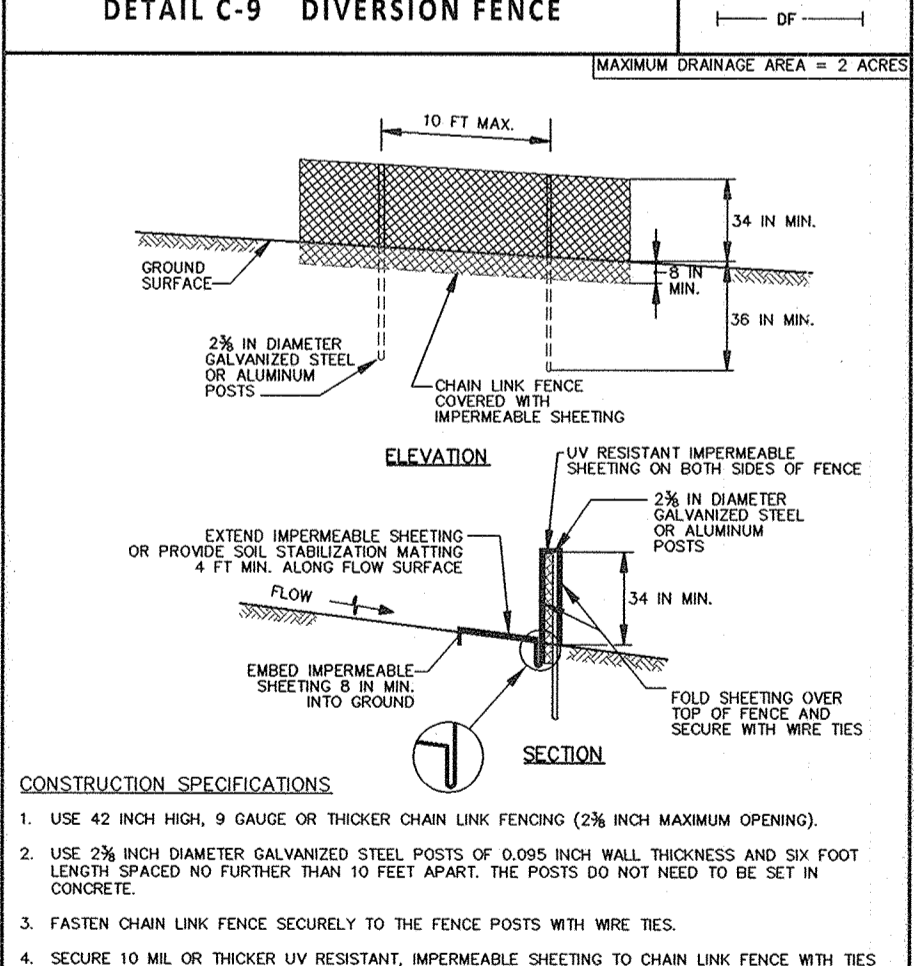
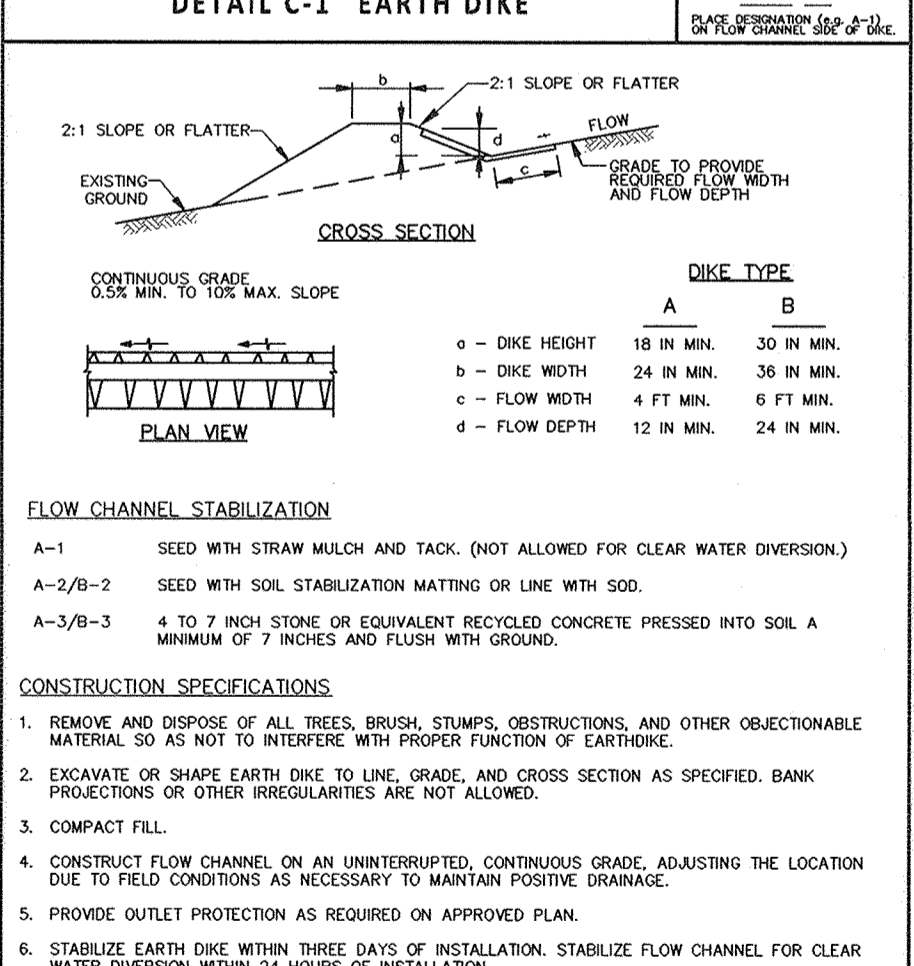
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Signature: *[Signature]* DATE: 11-12-15

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 DEVELOPMENT OR ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT.

Signature: *[Signature]* DATE: 11/12/15



APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

Signature: *[Signature]* DATE: 11/12/15

Chief, Bureau of Highways

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

Signature: *[Signature]* DATE: 12-19-15

Chief, Development Engineering Division

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE, NATURAL RESOURCES CONSERVATION SERVICE, 2011

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GLW GUTSCHICK LITTLE & WEBER, P.A.

CIVIL ENGINEERS, LAND SURVEYORS, LAND PLANNERS, LANDSCAPE ARCHITECTS
 3909 NATIONAL DRIVE - SUITE 250 - BURTENVILLE OFFICE PARK
 BURTENVILLE, MARYLAND 20868
 TEL: 301-421-4024 FAX: 301-421-4186

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.

Signature: *[Signature]* DATE: 11-12-15

SEDIMENT CONTROL NOTES AND DETAILS

DOWNTOWN COLUMBIA

CRESCENT NEIGHBORHOOD PARCELS A-1 THRU A-3, E, NON-BUILDABLE BULK PARCEL L, OPEN SPACE LOTS 1, 8 & 9 AND MERRIWEATHER-SYMPHONY WOODS NEIGHBORHOOD OPEN SPACE LOT 1

ELECTION DISTRICT No. 5

SCALE: AS SHOWN ZONING: NT G. L. W. FILE No.: 11071

DATE: NOV, 2015 TAX MAP - GRID: 36-01 SHEET: 14 OF 31

FROM NO.	TO NO.	DIA. (IN) 4 TYPE OF PIPE	L (FT)
ST-18A	M-76	24" HDPE	15
M-76	M-77	24" HDPE	17
M-77	M-78	30" HDPE	26
M-78	M-75	30" HDPE	102
M-75	M-75	24" HDPE	26
M-75	ES-13	30" HDPE	164
I-85	I-84	18" HDPE	93
I-84A	I-84	18" HDPE	50
I-84	M-83	18" HDPE	108
M-83	ES-82	18" HDPE	65
ES-82	RS-81	---	---
RS-81	ES-80	18" HDPE	14
I-87	I-86	18" HDPE	17
I-106	M-106A	15" HDPE	11
I-107	M-106A	15" HDPE	146
M-106A	M-105A	18" HDPE	181
I-105	M-105A	15" HDPE	13
M-105A	I-104	18" HDPE	36
I-104	ES-103	18" HDPE	27
ES-103	RS-102	---	---
RS-102	ES-101	15" HDPE	81
I-100	I-99	18" HDPE	11
I-99	I-98	24" HDPE	18
I-98	M-94	18" HDPE	18
M-94	I-92	18" HDPE	132
I-92	I-92	24" HDPE	48
I-92	M-91A	30" HDPE	106
M-91A	M-91B	30" HDPE	54
I-91	M-91B	15" HDPE	10
M-91B	M-90A	30" HDPE	49
I-90	M-90A	15" HDPE	44
M-90A	ES-8	36" HDPE	10
M-9	ES-8	18" HDPE	104

C FACTOR COMPUTATIONS			
STRUCTURE	AREA (AC.)	C	IMPERVIOUS
I-91	0.31 Ac.	0.85	49%
I-92	0.15 Ac.	0.85	49%
I-93	0.15 Ac.	0.85	49%
I-94	0.28 Ac.	0.85	49%
I-95	0.28 Ac.	0.85	49%
I-96	0.22 Ac.	0.85	49%
I-97	0.22 Ac.	0.85	49%
I-98	0.22 Ac.	0.85	49%
I-99	0.22 Ac.	0.85	49%
I-100	0.22 Ac.	0.85	49%
I-101	0.22 Ac.	0.85	49%
I-102	0.22 Ac.	0.85	49%
I-103	0.22 Ac.	0.85	49%
I-104	0.22 Ac.	0.85	49%
I-105	0.24 Ac.	0.85	49%
I-106	0.22 Ac.	0.85	49%
I-107	0.22 Ac.	0.85	49%
RS-102	0.18 Ac.	0.24	0%
I-80	0.68 Ac.	0.85	49%
I-81	0.08 Ac.	0.85	49%
I-86	0.07 Ac.	0.85	49%
I-85	0.31 Ac.	0.85	49%
I-84A	0.16 Ac.	0.85	49%
I-84	0.14 Ac.	0.85	49%
ST-18A	2.58 Ac.	0.86	49%
ST-74	1.11 Ac.	0.85	49%
RS-81	0.16 Ac.	0.24	0%
I-95B	3.40 Ac.	0.86	49%
EX. I-5	1.91 Ac.	0.85	49%

From No.	To No.	Dia. (in) & Type of Pipe	L (ft)
I-80	MH-C	18" HDPE	82
M-90A	MH-B	18" HDPE	87
M-9	ES-A	18" HDPE	57

NOTES:
 1. STRUCTURE 74 HAS BEEN OMITTED INTENTIONALLY.
 2. I-95B IS TO BE CONSTRUCTED AS A MANHOLE UNDER THIS PLAN. THE TOP WILL BE CONVERTED TO AN INLET UNDER SDP-15-068.

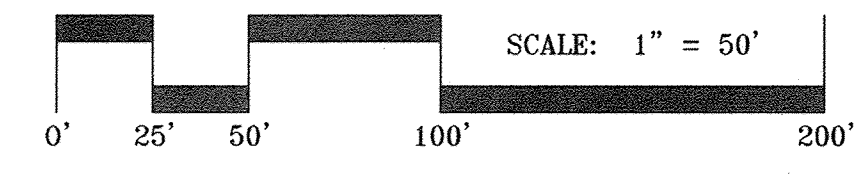
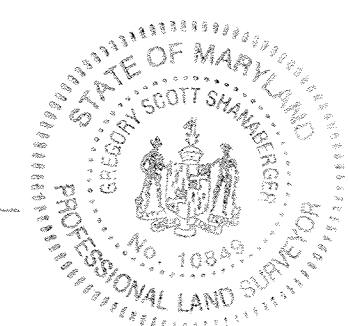
LEGEND

- LIMIT OF DISTURBANCE
- - - - - EXISTING MAJOR CONTOUR
- - - - - EXISTING MINOR CONTOUR
- - - - - PROPOSED MAJOR CONTOUR
- - - - - PROPOSED MINOR CONTOUR
- - - - - DRAINAGE DIVIDE - ULTIMATE CONDITIONS PER SDP 15-068

- NOTES:
- THIS MANHOLE IS TO BE REPLACED WITH AN INLET UNDER THE SDP-15-068 CONTRACT AND WILL CAPTURE THE WATER FLOWING TO THIS POINT FOR THE ULTIMATE CONDITIONS ON THE SITE
 - ALL STORM DRAIN THAT TREATS THE ROAD IS TO BE PUBLICLY OWNED AND MAINTAINED
 - Existing I-8 to be removed and replaced by inlet 82.

NOTE: THERE IS NO AS-BUILT INFORMATION PROVIDED ON THIS SHEET

Shanaberg & Lane
 G. SCOTT SHANABERG
 SHANABERG & LANE
 PROFESSIONAL LAND SURVEYORS
 License No. 12845
 AS-BUILT DATE: 12-1-11 to 12-15-11



APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
[Signature] 11/18/2015
 Chief, Bureau of Highways

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
[Signature] 12-9-15
 Chief, Division of Land Development

[Signature] 11-19-15
 Chief, Development Engineering Division

GLWGUTSCHICK LITTLE & WEBER, P.A.
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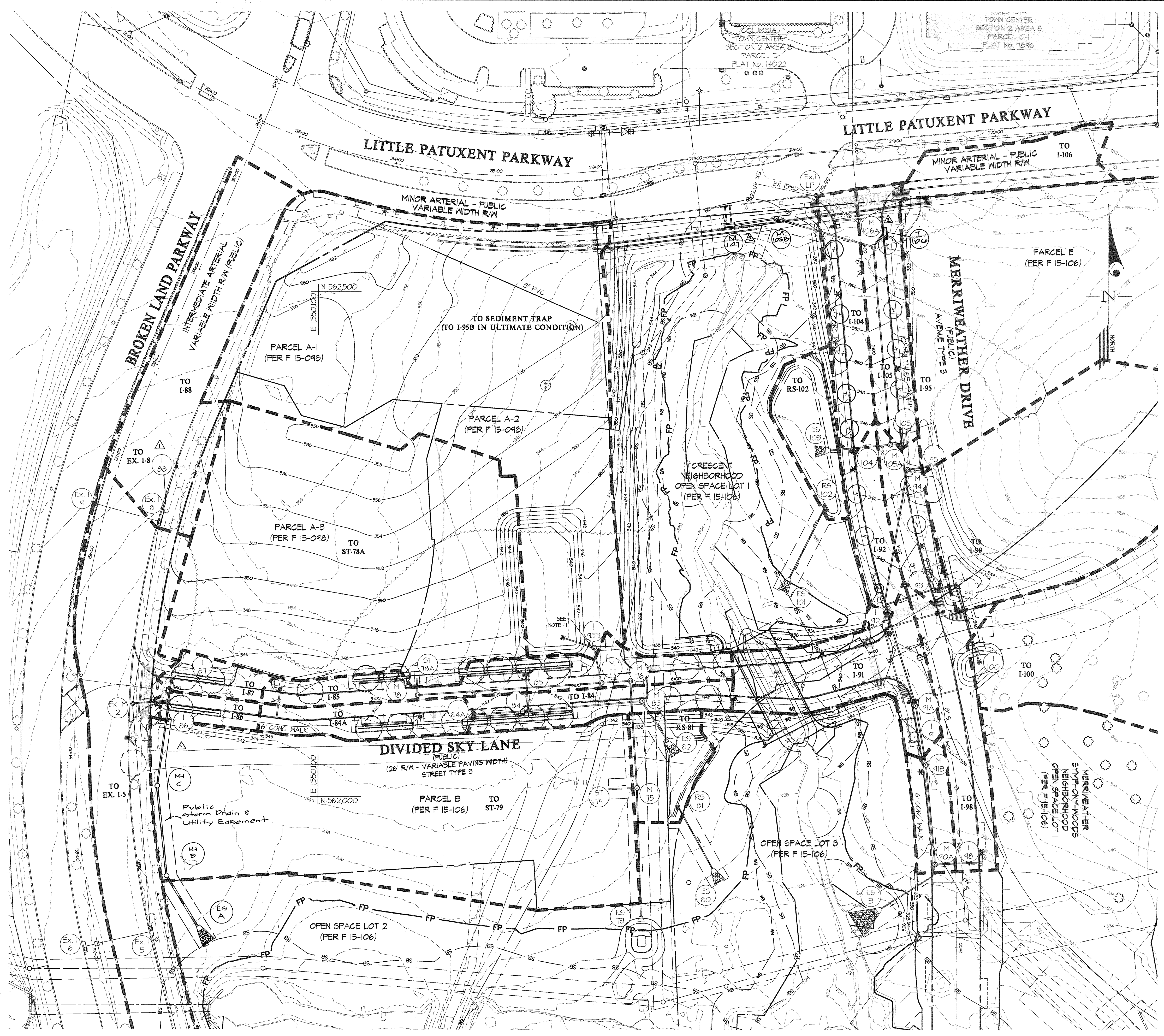
DATE	REVISION	BY	APP'R.
12-2-2015	Rev. storm drains to reflect ex. dry utilities	klp	DEV
7-5-2016	Rev. storm drain	klp	DEV

PREPARED FOR:
 THE HOWARD HUGHES CORPORATION
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[Signature]

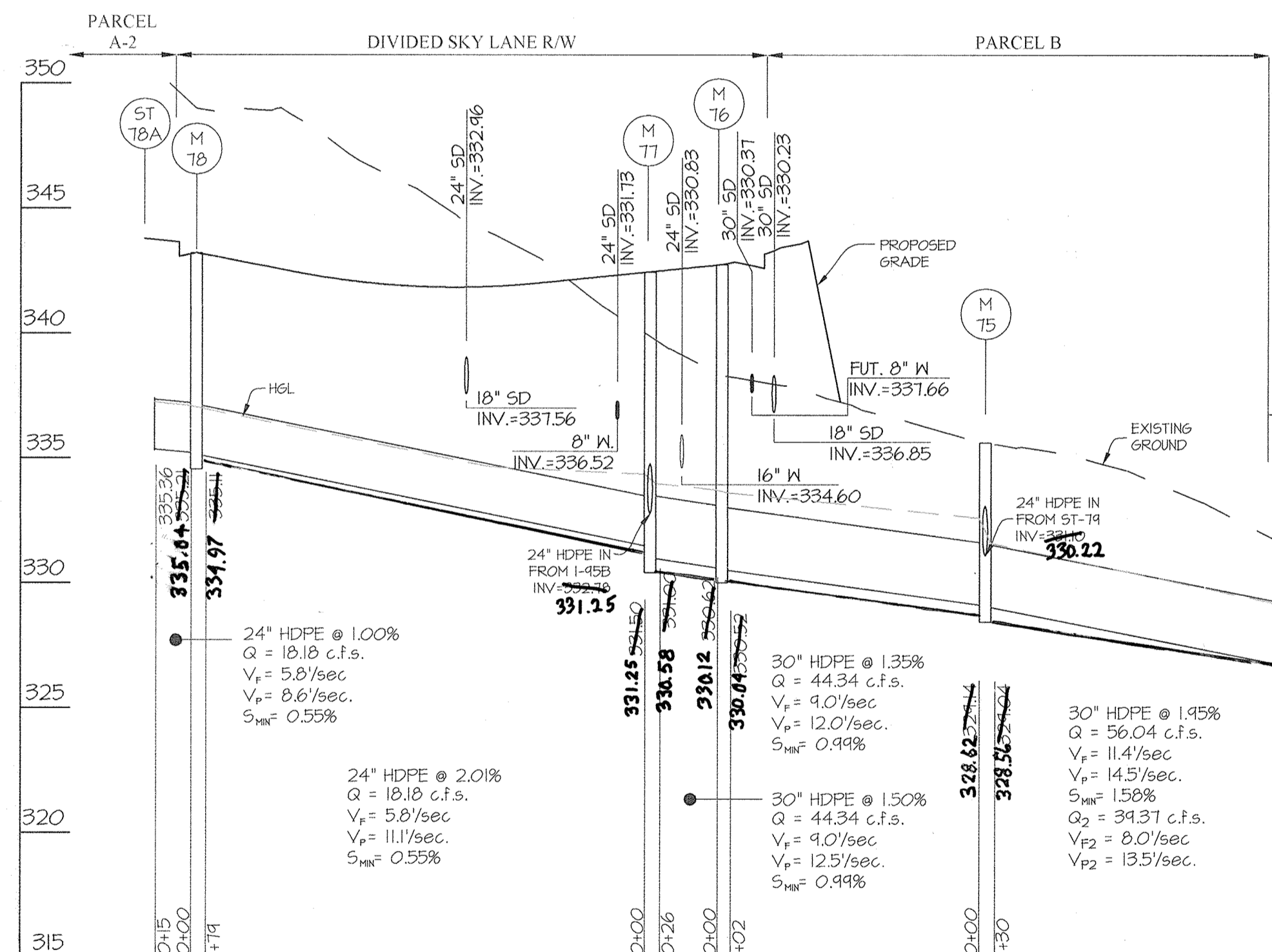
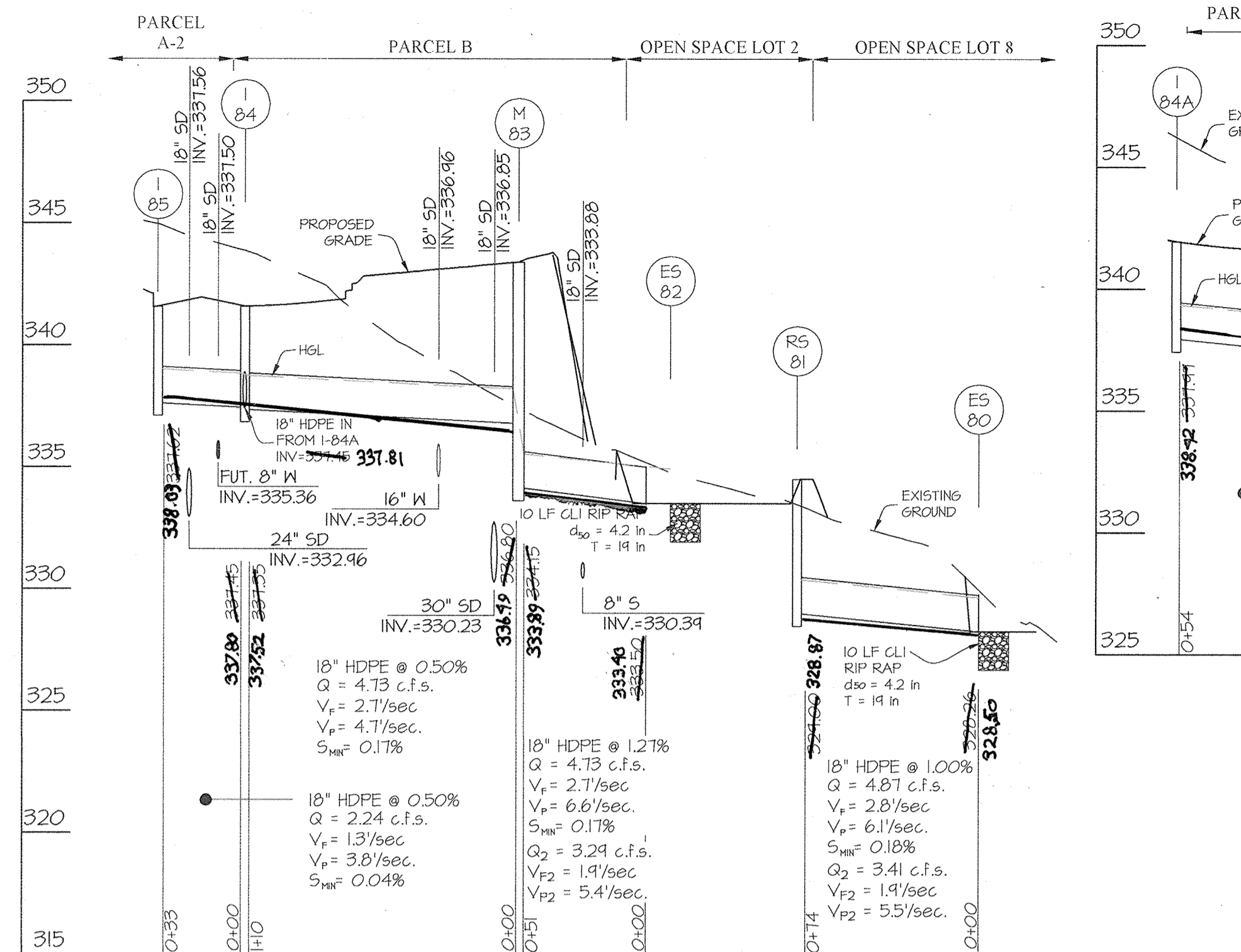
STORM DRAIN DRAINAGE AREA MAP
DOWNTOWN COLUMBIA
 CRESCENT NEIGHBORHOOD PARCELS A-1 THRU A-3, E, NON-BUILDABLE BULK PARCEL L, OPEN SPACE LOTS 1, 8 & 9 AND MERRIWEATHER-SYMPHONY WOODS NEIGHBORHOOD OPEN SPACE LOT 1

SCALE	ZONING	G. L. W. FILE NO.
1" = 50'	NT	11071
DATE	TAX MAP - GRID	SHEET
NOV, 2015	36 - 01	15 OF 31



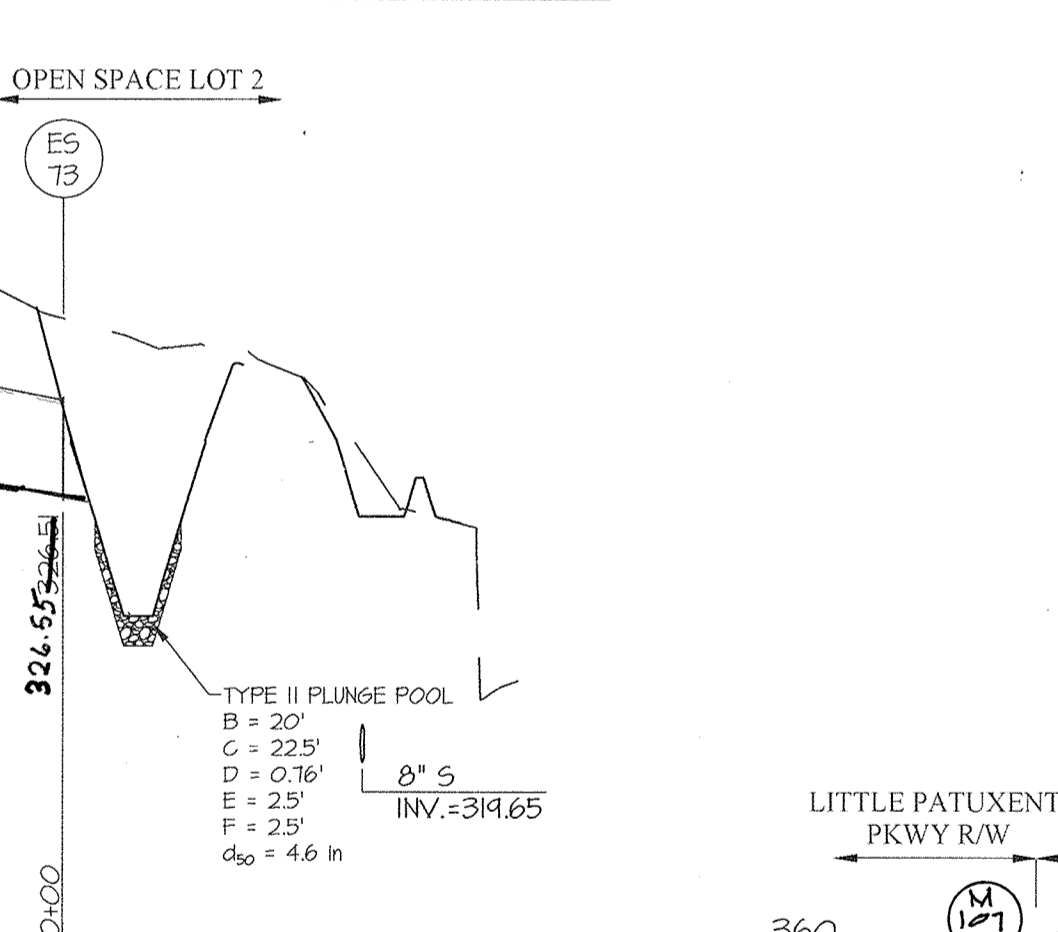
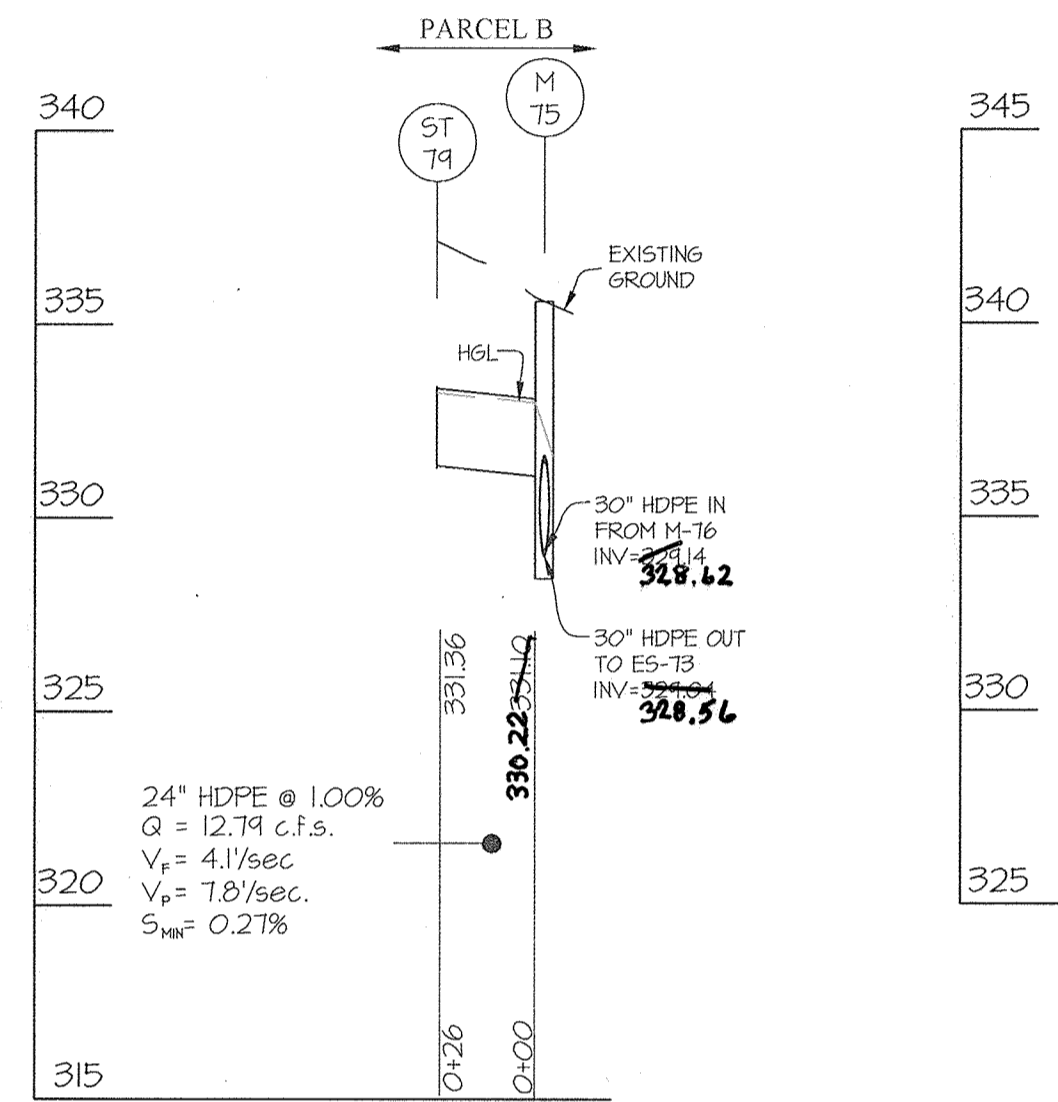
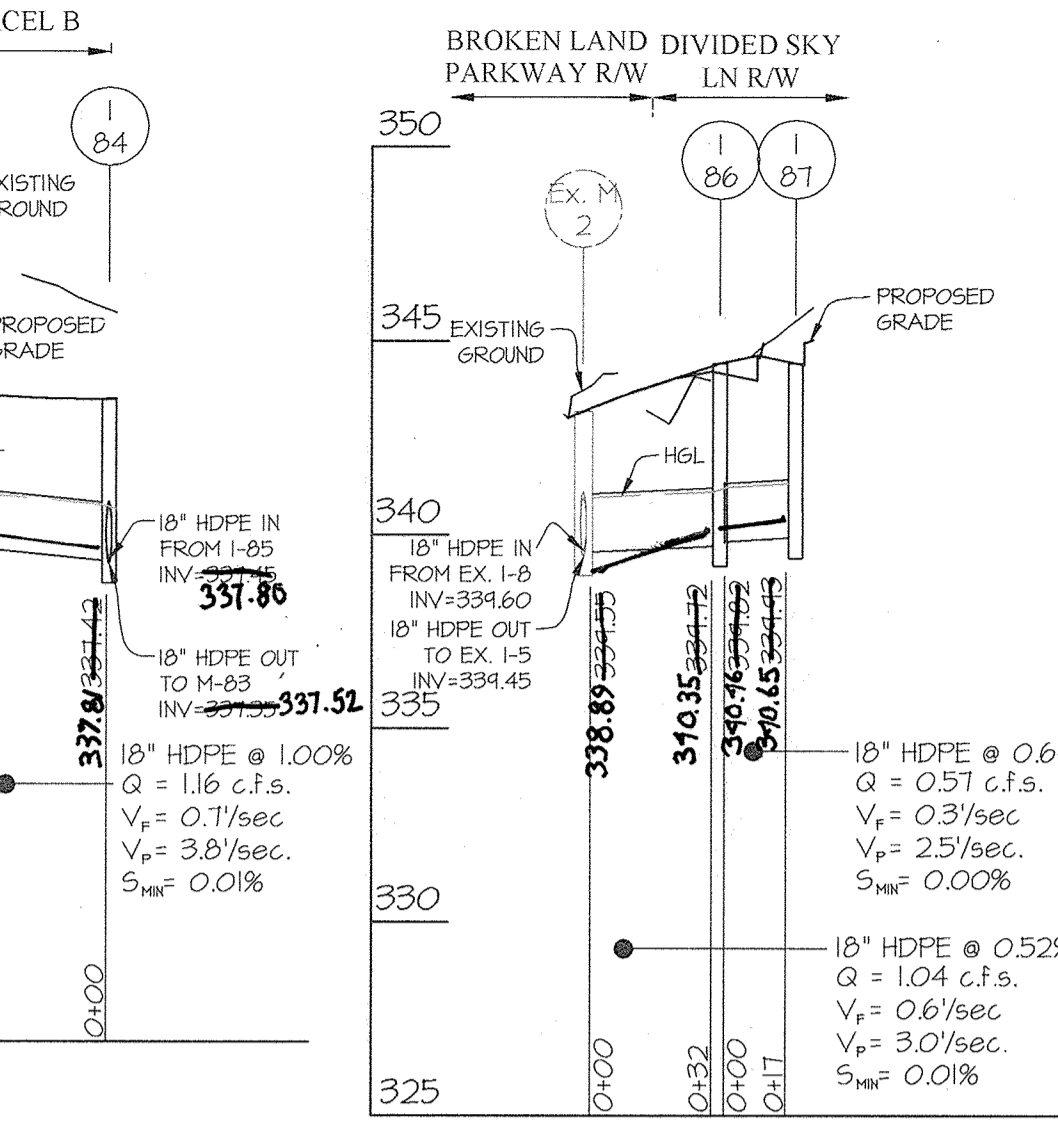
THE PLANS IN THIS REVISED ROAD CONSTRUCTION SET SUPERCEDE PLANS DATED 10/13/2015

L:\CADD\DRAWINGS\1074\PLANS BY GUTSCHICK\PARCEL A\1074_15_SD_DRM.dwg
 PLOTTED: 11/17/2015 2:53 PM, LAST SAVED: 11/17/2015 11:51 AM, PLOTTED BY: jay.harrison

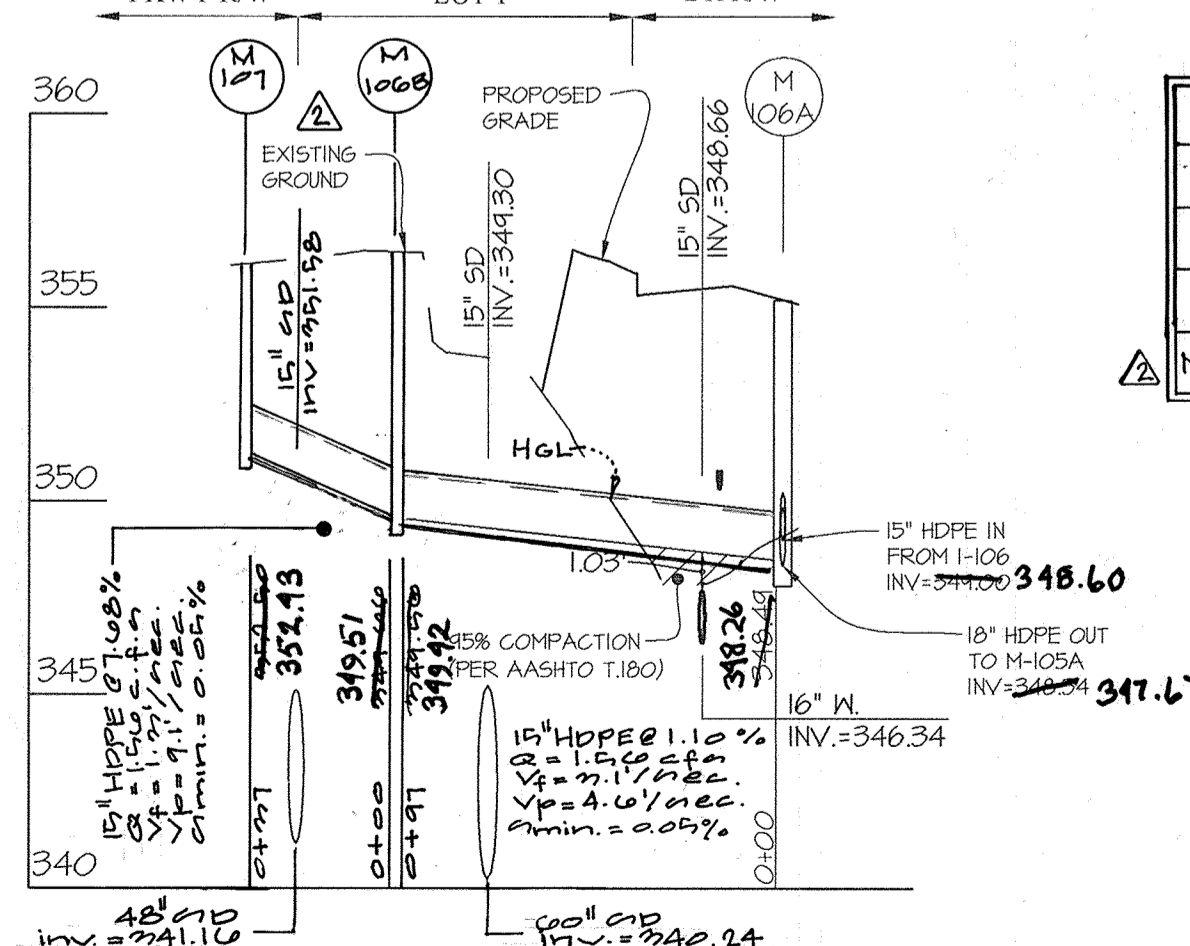


SIZE	TYPE	QUANTITY (LF)	REMARKS
6"	PVC	120	DRAWDOWN PIPE
18"	HDPE	1019	
24"	HDPE	321	
30"	HDPE	504	
36"	HDPE	10	

HDPE indicates High Density Polyethylene pipe, such as N-12 by ADS, or HI-Q by Hanco or an approved equal. Trench bedding to be provided per Howard County Detail G.201, *Trench for P.V.C. pipe and HD.P.E.*



CRESCENT NEIGHBORHOOD LOT 1
LITTLE PATUXENT PKWY R/W MERRIWEATHER DR R/W



NO	TYPE	WIDTH (INSIDE)	TOP ELEVATION				INVERT				STD. DETAIL	LOCATIONS	REMARKS
			PROPOSED		AS-BUILT		PROPOSED		AS-BUILT				
			UPPER	LOWER	UPPER	LOWER	UPPER	LOWER	UPPER	LOWER			
M-101	A-10 BOX	2'-6"	345.50	345.50	336.69	336.61	345.50	345.50	335.43	HO.CO. D-4.03	N 562,567 E 1,350,509		
I-106	A-10 INLET	2'-6"	345.50	345.64	336.09	335.72	345.50	349.39	HO.CO. D-4.03	N 562,558 E 1,350,662			
I-105	COG-15 INLET	2'-6"	345.78	344.85	345.25	344.70	340.67	340.79	MD 374.31	N 562,358 E 1,350,680			
I-104	COG-15 INLET	2'-6"	345.78	344.85	345.56	344.77	339.81	338.80	339.55	338.86	MD 374.31	N 562,351 E 1,350,634	
I-100	S INLET	2'-15"	---	---	333.90	338.70	---	335.88	335.52	HO.CO. D-4.22	N 562,134 E 1,350,754		
I-91	S INLET	2'-15"	342.26	342.07	339.06	339.06	334.73	334.23	334.45	333.98	HO.CO. D-4.22	N 562,210 E 1,350,737	
I-98	A-10 INLET	2'-6"	334.23	334.12	334.36	334.23	330.43	330.34	330.52	329.89	HO.CO. D-4.03	N 561,948 E 1,350,758	
I-95	S INLET	2'-15"	342.26	342.07	342.37	342.37	340.30	337.35	340.43	337.45	HO.CO. D-4.22	N 562,327 E 1,350,708	
I-93	A-10 INLET	2'-6"	339.67	339.43	339.70	339.57	335.95	333.43	333.86	333.71	HO.CO. D-4.03	N 562,207 E 1,350,710	
I-92	A-10 INLET	2'-6"	339.67	339.43	339.72	339.58	333.45	328.85	332.12	328.71	HO.CO. D-4.03	N 562,194 E 1,350,687	
I-91	A-15 INLET*	2'-6"	336.27	335.91	336.37	335.97	332.50	331.58	331.83	331.54	HO.CO. D-4.03	N 562,047 E 1,350,701	
I-88	COG-15 INLET	2'-0"	342.42	347.92	343.45	347.84	344.00	344.82	345.11	344.76	MD SHA 374.62	N 562,177 E 1,349,944	
I-87	S INLET	2'-15"	344.42	344.30	344.46	344.44	---	339.43	340.05	340.05	HO.CO. D-4.22	N 562,194 E 1,349,944	
I-86	S INLET	2'-15"	344.42	344.30	344.46	344.44	---	339.42	340.46	340.45	HO.CO. D-4.22	N 562,044 E 1,349,944	
I-85	S INLET	2'-15"	341.52	---	---	---	---	337.62	338.28	338.05	HO.CO. D-4.23	N 562,083 E 1,350,307	
I-84	S INLET	2'-15"	341.52	---	---	---	---	337.45	337.35	337.88	337.52	HO.CO. D-4.23	N 562,123 E 1,350,307
I-84A	S INLET	2'-15"	341.92	341.82	341.99	341.96	---	337.47	---	338.12	HO.CO. D-4.22	N 562,081 E 1,350,237	
RS-102	'S' RISER	2'-15"	339.40	---	339.95	---	---	334.15	335.05	333.96	HO.CO. D-4.23	N 562,286 E 1,350,605	
RS-81	'S' RISER	2'-15"	334.50	---	334.23	---	---	329.00	329.91	328.87	HO.CO. D-4.22	N 561,990 E 1,350,458	
ES-103	END SECTION	1'-6"	339.40	---	---	---	---	338.40	338.28	HO.CO. D-5.1	N 562,348 E 1,350,677		
ES-101	END SECTION	1'-3"	334.59	---	---	---	---	333.34	333.44	HO.CO. D-5.1	N 562,212 E 1,350,567		
ES-82	END SECTION	1'-6"	334.75	---	---	---	---	333.50	333.45	HO.CO. D-5.1	N 562,038 E 1,350,437		
ES-80	END SECTION	1'-6"	329.76	---	---	---	---	328.26	328.35	HO.CO. D-5.1	N 561,928 E 1,350,496		
ES-T3	END SECTION	2'-6"	328.42	---	---	---	---	326.51	326.55	HO.CO. D-5.1	N 561,893 E 1,350,427		
ES-A	END SECTION	1'-6"	334.50	---	---	---	---	333.00	338.03	HO.CO. D-5.1	N 561,972 E 1,349,880		
ES-B	END SECTION	3'-0"	326.84	---	---	---	---	323.84	320.84	HO.CO. D-5.1	N 561,840 E 1,350,662		
M-106A	STANDARD MANHOLE	4'-0"	355.19	---	355.23	349.00	348.34	348.26	347.67	HO.CO. G-5.12	N 562,547 E 1,350,637		
M-105A	STANDARD MANHOLE	4'-0"	344.59	---	344.47	340.48	340.38	340.16	340.06	HO.CO. G-5.12	N 562,348 E 1,350,678		
I-45B	STANDARD MANHOLE	4'-0"	341.44	---	342.61	342.65	---	333.31	333.1A	333.51	HO.CO. G-5.12	N 562,148 E 1,350,376	
M-94	STANDARD MANHOLE	4'-0"	343.48	---	343.35	337.00	332.44	336.12	332.15	HO.CO. G-5.12	N 562,324 E 1,350,687		
M-91A	STANDARD MANHOLE	4'-0"	336.62	---	336.87	327.26	327.16	326.89	326.81	HO.CO. G-5.12	N 562,048 E 1,350,696		
M-91B	STANDARD MANHOLE	4'-0"	335.29	---	335.35	326.27	326.17	325.97	325.73	HO.CO. G-5.12	N 562,032 E 1,350,708		
M-90A	STANDARD MANHOLE	5'-0"	333.63	---	333.93	329.95	324.54	329.94	324.32	HO.CO. G-5.13	N 561,938 E 1,350,716		
M-83	STANDARD MANHOLE	4'-0"	343.29	---	343.36	336.80	334.15	334.49	333.89	HO.CO. G-5.12	N 562,045 E 1,350,422		
M-78	STANDARD MANHOLE	5'-0"	343.22	---	343.39	335.21	335.11	335.04	334.97	HO.CO. G-5.13	N 562,108 E 1,350,999		
M-77	STANDARD MANHOLE	5'-0"	342.46	---	342.58	332.78	331.00	332.26	332.58	HO.CO. G-5.13	N 562,118 E 1,350,388		
M-76	STANDARD MANHOLE	5'-0"	342.75	---	347.89	330.62	330.52	332.12	330.04	HO.CO. G-5.13	N 562,118 E 1,350,411		
M-75	STANDARD MANHOLE	5'-0"	335.62	---	346.72	329.14	329.04	328.62	328.54	HO.CO. G-5.13	N 562,007 E 1,350,480		
M-A	STANDARD MANHOLE	4'-0"	336.00	---	---	333.50	333.50	---	---	HO.CO. G-5.12	N 562,051 E 1,350,451		

At the time of fabrication it was determined that the difference in height between the top curb and top of pipe was insufficient for a CO type inlet. Therefore, an A-Type inlet was proposed. The Howard County Detail D-4.03 was modified to provide a 15" throat opening.

Notes:
1. Structure T4 has been omitted intentionally.
2. See sheets 13-14 for profiles and structure schedule of storm drain within stormwater management areas (micro-bioremediation and planters).
3. I-45B is constructed under this plan as a manhole and will have the top converted to an inlet under SDR-10-06B.

Structure schedule (cont.)

EP-A	End section	1'-6"	339.50	---	338.00	338.03	HO.CO. D-5.51	N 561,068 E 1,349,982			
MH-B	std. Manhole	4'-0"	341.00	---	342.23	338.50	338.46	338.63	338.56	HO.CO. G-5.12	N 561,928 E 1,349,949
MH-c	std. Manhole	4'-0"	342.50	---	343.65	339.10	339.10	338.89	338.82	HO.CO. G-5.12	N 562,012 E 1,349,939
M-106B	std. Manhole	4'-0"	339.50	---	351.79	349.00	349.50	349.51	349.42	HO.CO. G-5.12	N 562,348 E 1,350,678

N 562,573 E 1,350,522

AS-BUILT CERTIFICATION
I HEREBY CERTIFY, BY SEAL, THAT THE FACILITIES SHOWN ON THIS PLAN WERE CONSTRUCTED AS SHOWN ON THIS PLAN MEET THE CURRENT APPROVED PLANS AND SPECIFICATIONS.

G. SCOTT SHANBERGER
SHANBERGER & LANE
PROFESSIONAL LAND SURVEYOR #10849
LICENSE EXPIRATION DATE 12/31/2020
AS-BUILT SURVEY DATES 12/11/17 TO 12/15/17

THE PLANS IN THIS REVISED ROAD CONSTRUCTION SET SUPERCEDE PLANS DATED 10/13/2015

STORM DRAIN PROFILES
DOWNTOWN COLUMBIA

CRESCENT NEIGHBORHOOD PARCELS A-1 THRU A-3, E, NON-BUILDABLE BULK PARCEL L, OPEN SPACE LOTS 1, 8 & 9 AND MERRIWEATHER-SYMPHONY WOODS NEIGHBORHOOD OPEN SPACE LOT 1

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
Chief, Bureau of Highways
Date: 11/18/2015

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
Chief, Division of Land Development
Date: 12/9/15

Chief, Development Engineering Division
Date: 11/19/15

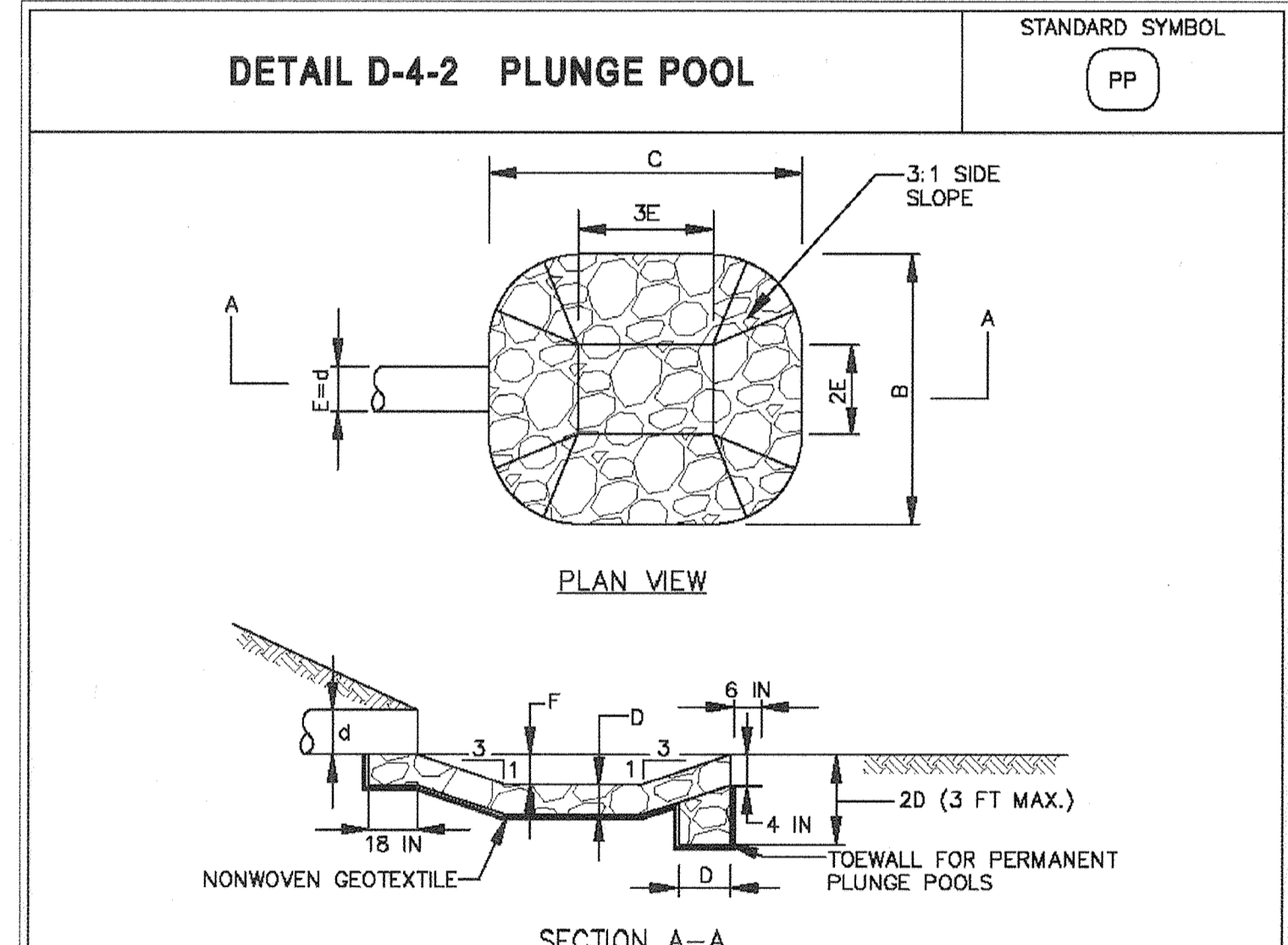
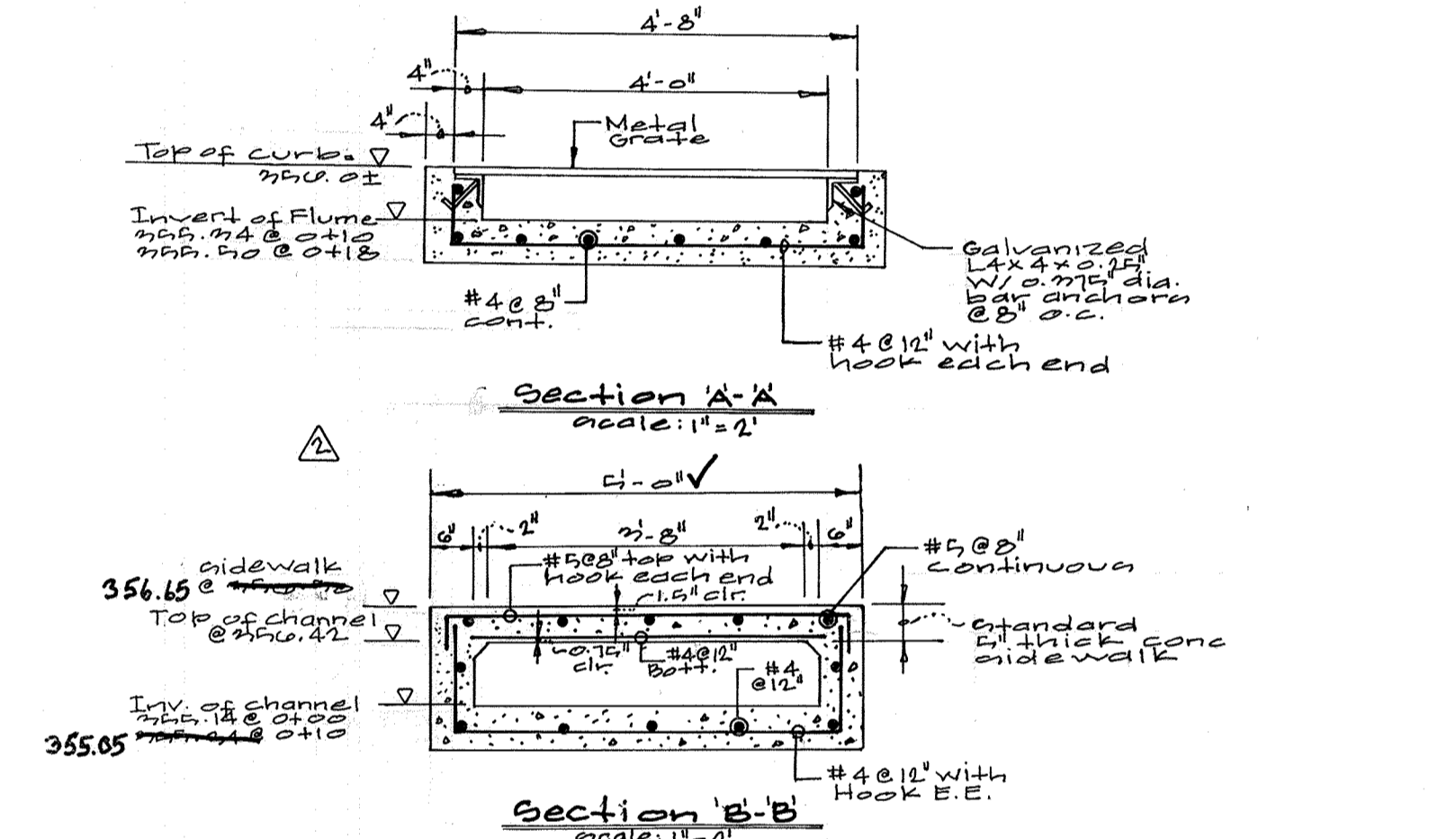
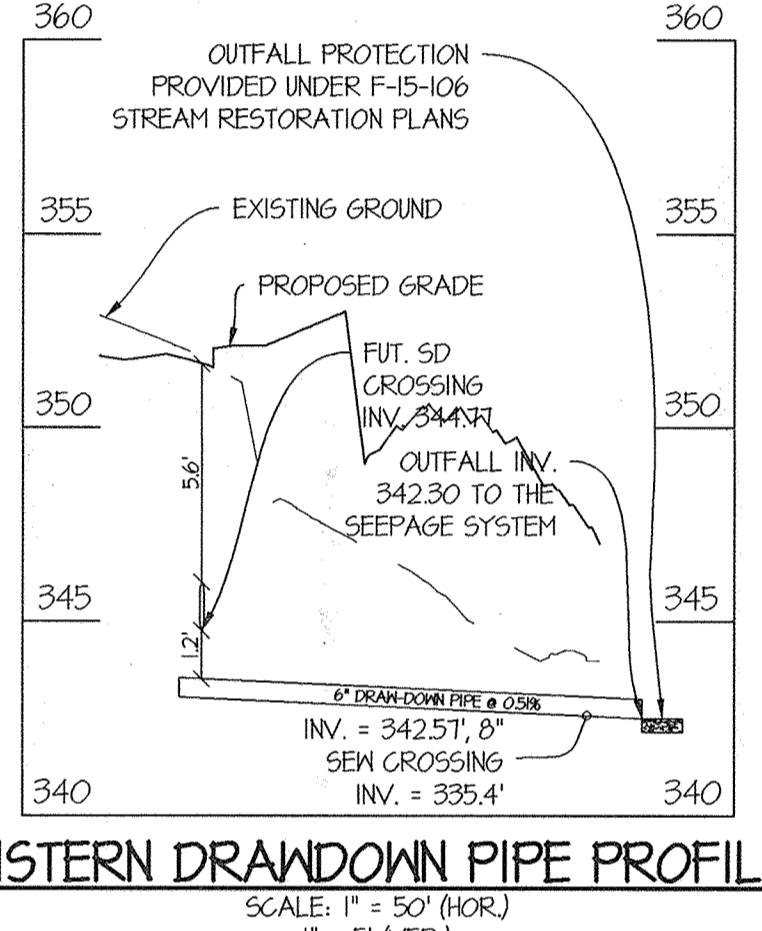
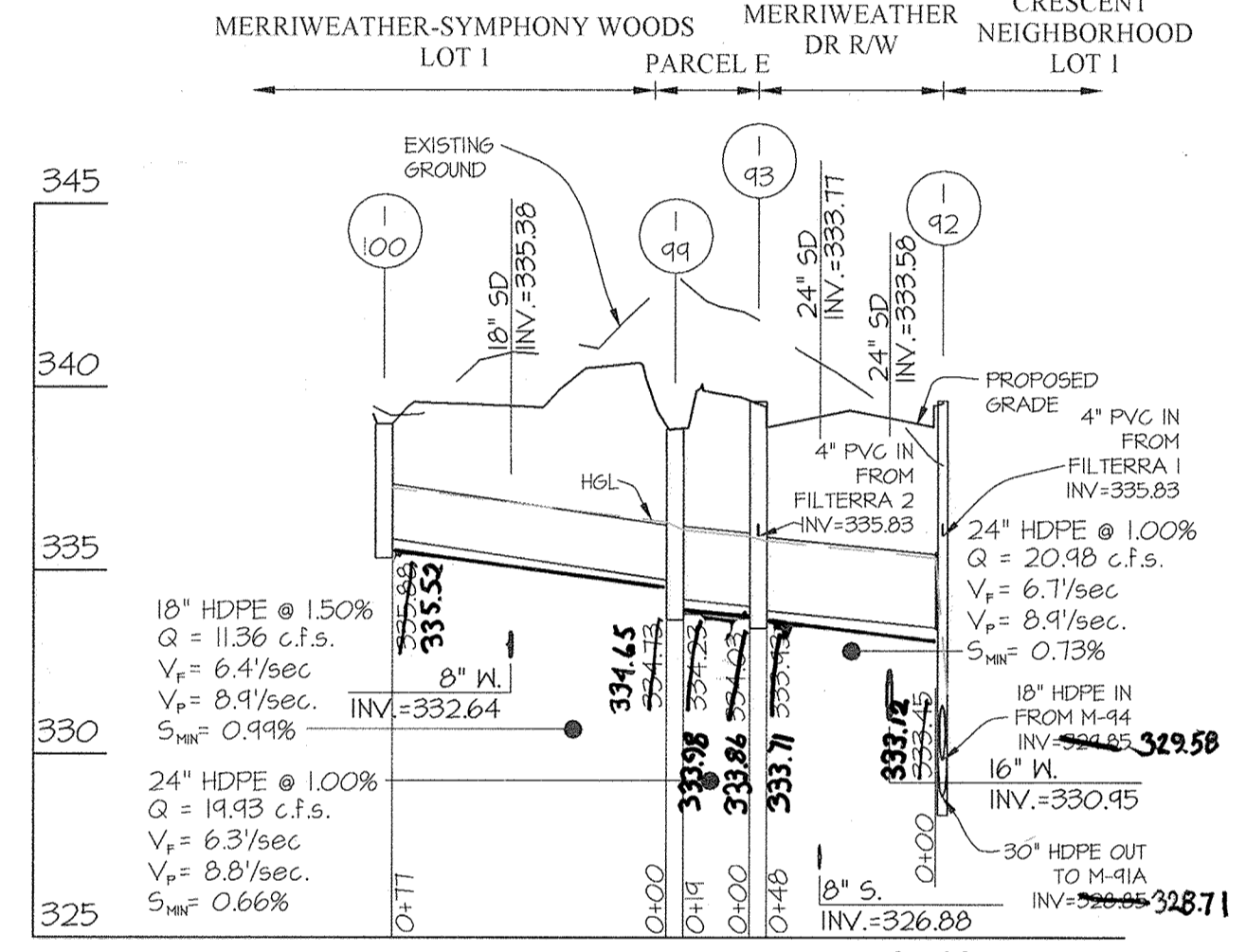
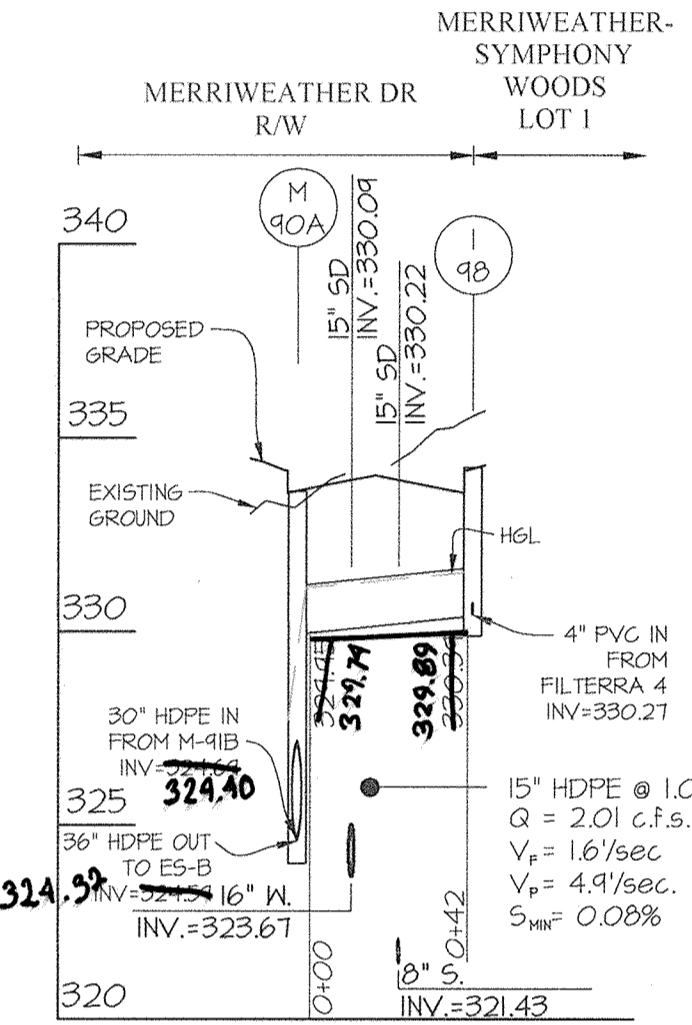
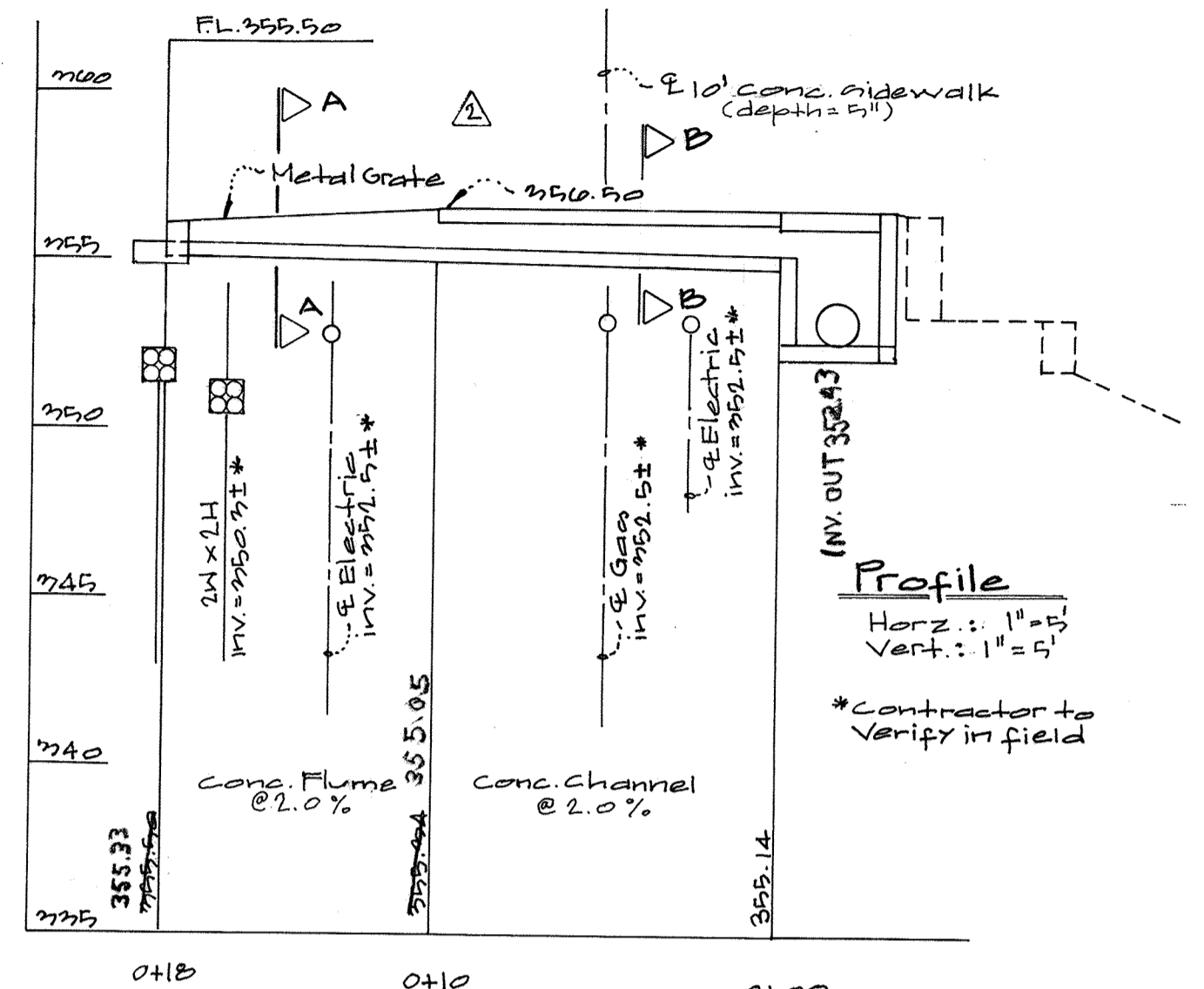
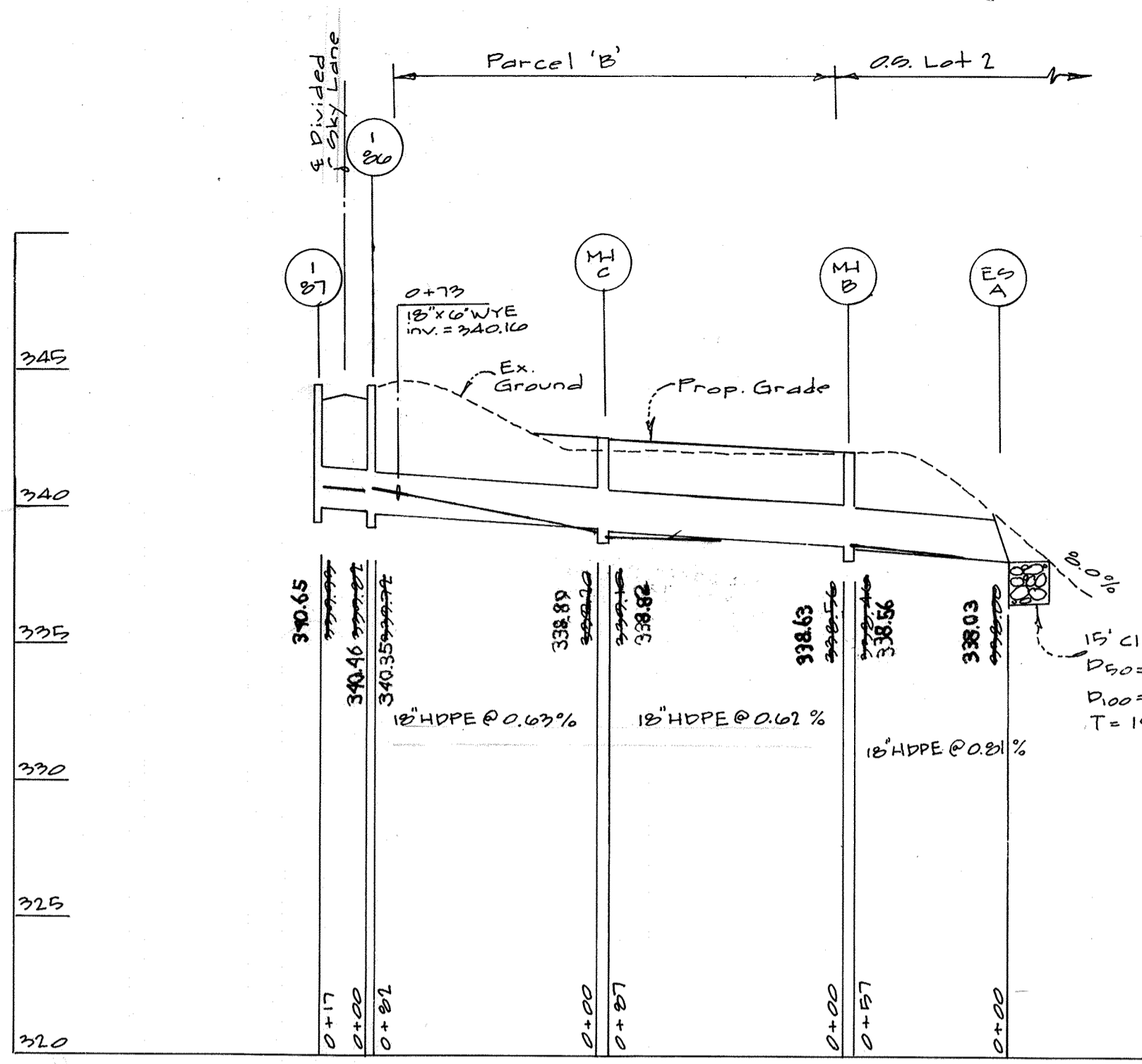
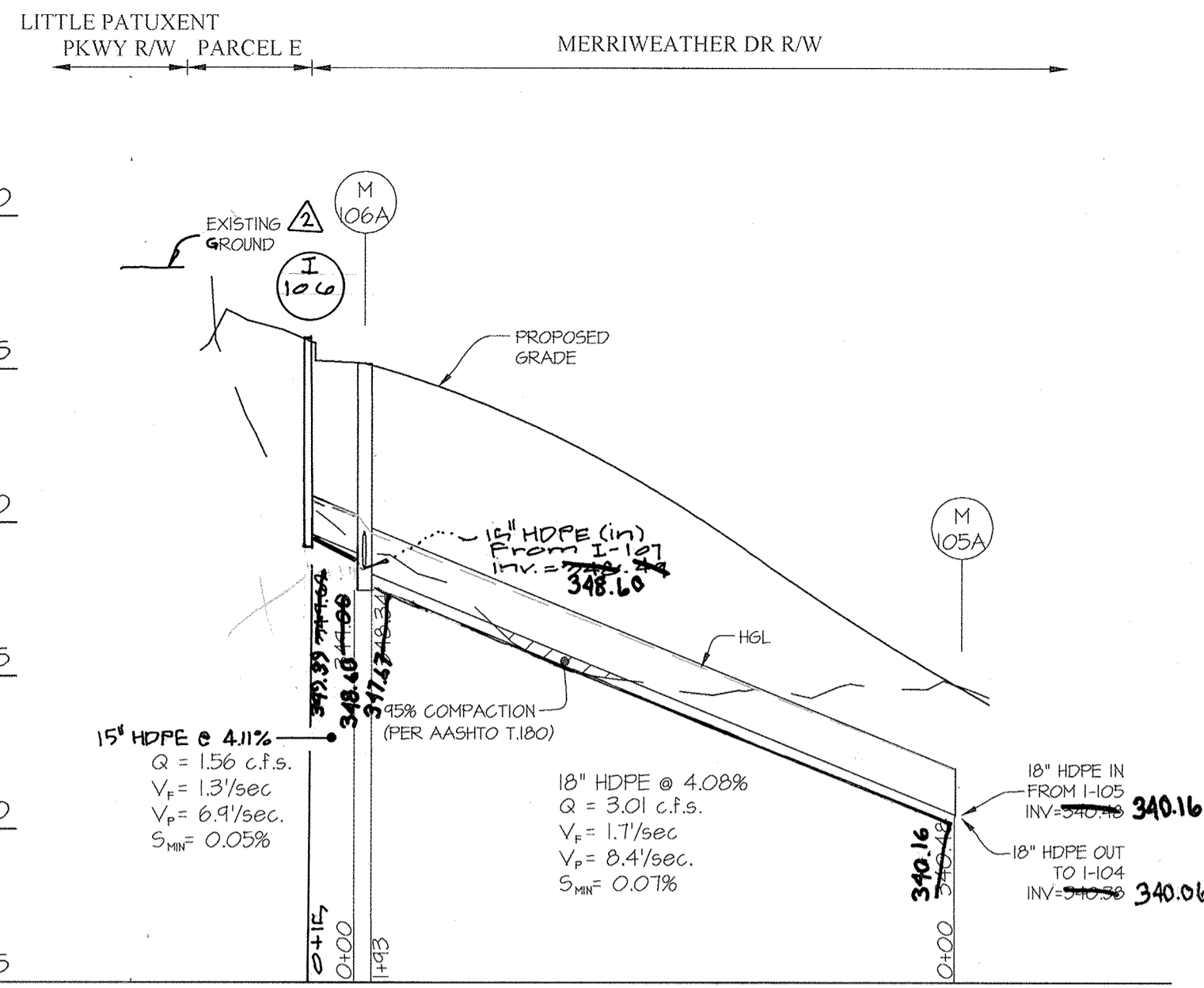
DATE	REVISION	BY	APPR.
12-9-15	Rev. storm drain schedule	JT	DEV
12-9-15	Rev. storm drain to reflect ex. dry utilities	JP	DEV
1-5-2016	Rev. storm drain	klp	

PREPARED FOR:
THE HOWARD HUGHES CORPORATION
10480 LITTLE PATUXENT PARKWAY
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EXPIRATION DATE: MAY 26, 2016
11-12-15

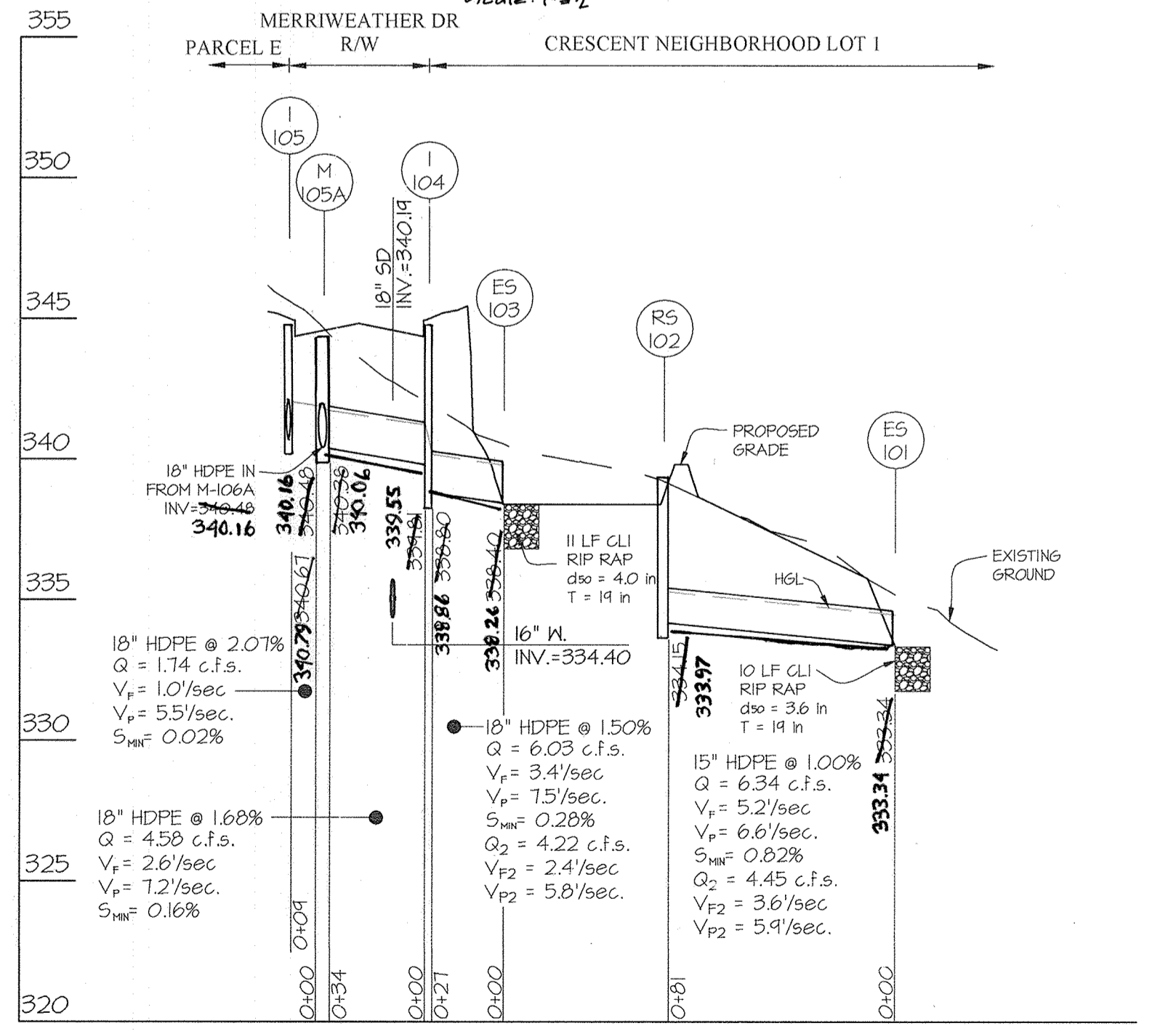
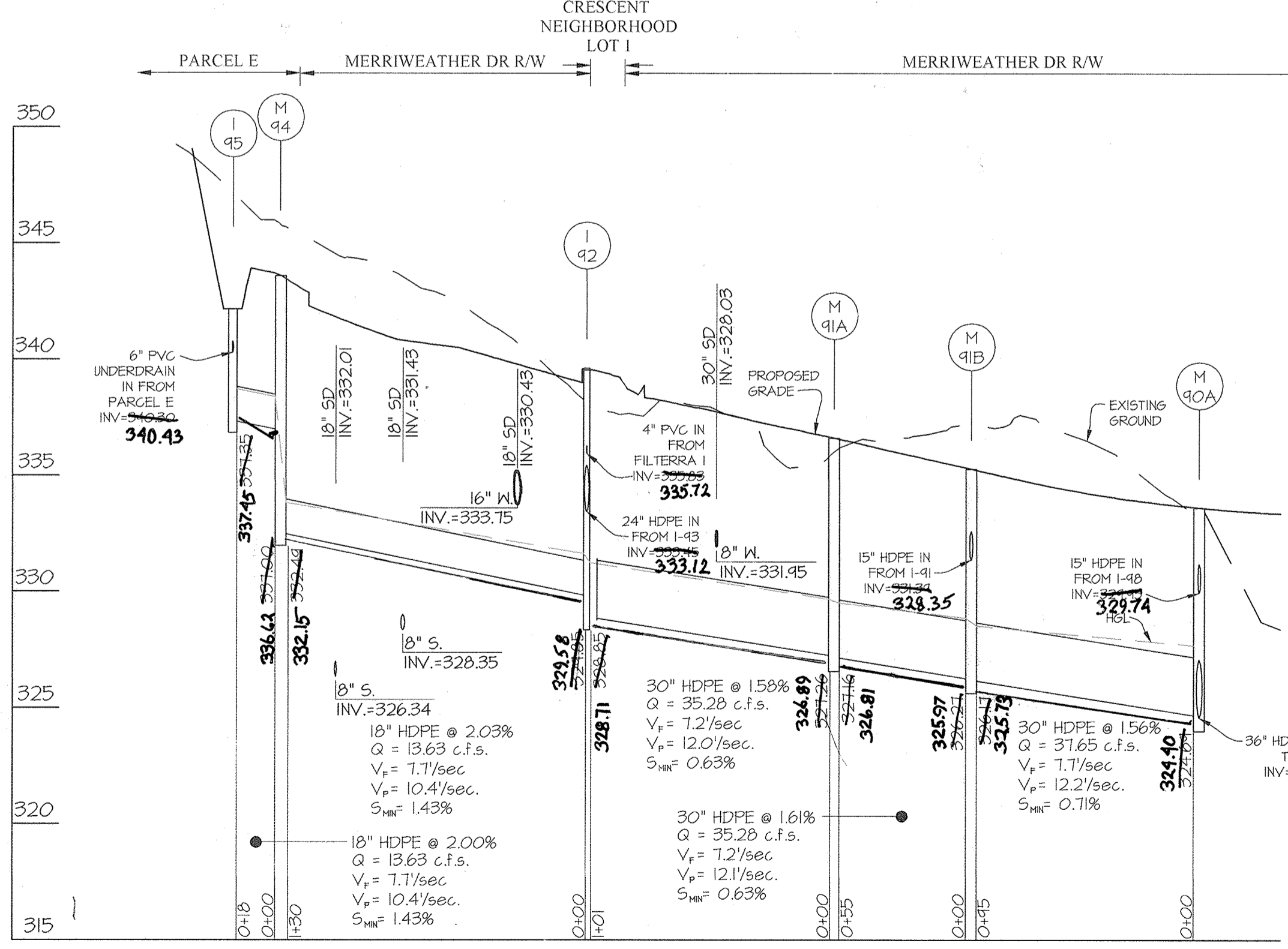
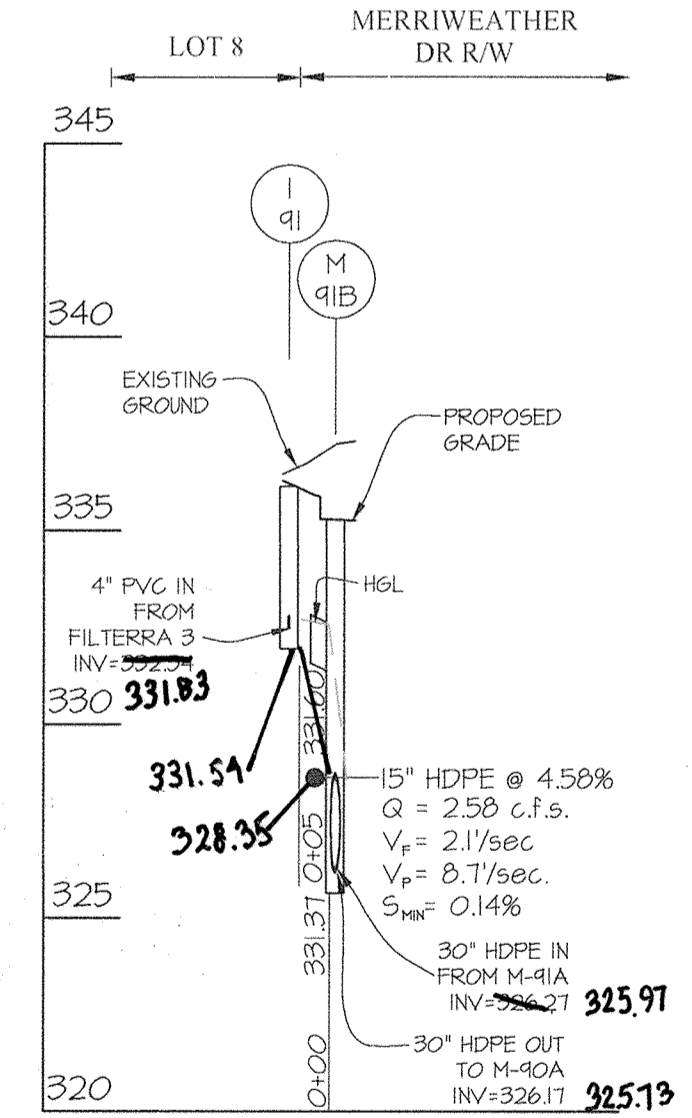
SCALE	ZONING	G. L. W. FILE NO.
1"=50' (H) 1"=5' (V)	NT	11071
DATE	TAX MAP - GRID	SHEET
NOV., 2015	36 - 01	16 OF 31

AS-BUILT CERTIFICATION
 I HEREBY CERTIFY, BY SEAL, THAT THE FACILITIES SHOWN ON THIS PLAN WERE CONSTRUCTED AS SHOWN ON THIS PLAN MEET THE CURRENT APPROVED PLANS AND SPECIFICATIONS.
 G. SCOTT SHANBERGER
 SHANBERGER & LANE
 PROFESSIONAL LAND SURVEYOR #10849
 LICENSE EXPIRATION DATE 4/1/2020
 AS-BUILT SURVEY DATES 12/11/17 TO 12/15/17



- CONSTRUCTION SPECIFICATIONS**
- USE SPECIFIED CLASS OF RIPRAP.
 - USE NONWOVEN GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS, AND PROTECT FROM PUNCHING, 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.
 - PREPARE THE SUBGRADE FOR THE PLUNGE POOL TO THE REQUIRED LINES AND GRADES. COMPACT ANY FILL REQUIRED IN THE SUBGRADE TO A DENSITY OF APPROXIMATELY THAT OF THE SURROUNDING UNDISTURBED MATERIAL.
 - EMBED THE GEOTEXTILE A MINIMUM OF 4 INCHES AND EXTEND THE GEOTEXTILE A MINIMUM OF 6 INCHES BEYOND THE EDGE OF THE SCOUR HOLE.
 - STONE FOR THE PLUNGE POOL MAY BE PLACED BY EQUIPMENT. CONSTRUCT TO THE FULL COURSE THICKNESS IN ONE OPERATION AND IN SUCH A MANNER AS TO AVOID DISPLACEMENT OF UNDERLYING MATERIALS. DELIVER AND PLACE THE STONE FOR THE PLUNGE POOL IN A MANNER THAT WILL ENSURE THAT IT IS REASONABLY HOMOGENEOUS WITH THE SMALLER STONES AND SPALLS FILLING THE VOIDS BETWEEN THE LARGER STONES. PLACE STONE FOR THE PLUNGE POOL IN A MANNER TO PREVENT DAMAGE TO THE GEOTEXTILE. HAND PLACE TO THE EXTENT NECESSARY.
 - AT THE PLUNGE POOL OUTLET, PLACE THE STONE SO THAT IT MEETS THE EXISTING GRADE.
 - MAINTAIN LINE, GRADE, AND CROSS SECTION. KEEP OUTLET FREE OF EROSION. REMOVE ACCUMULATED SEDIMENT AND DEBRIS. AFTER HIGH FLOWS INSPECT FOR SCOUR AND DISLOGGED 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
D.25		



APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
 Chief, Bureau of Highways
 Date: 11/18/2015

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
 Chief, Division of Land Development
 Date: 12-9-15

Chief, Development Engineering Division
 Date: 11-19-15

GLWGUTSCHICK 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 FAX: 410-880-1820 DC/VA: 301-989-2524 FAX: 301-421-4186				
DES. JRD	DRN. JRD	CHK. DEV		
DATE: 10.5.2016	REVISION: Rev storm drains to reflect ex. dry utilities	BY: g1	APP'R.:	DEV
DATE: 7.5.2010	REVISION: Rev storm Drain	BY: klp	APP'R.:	

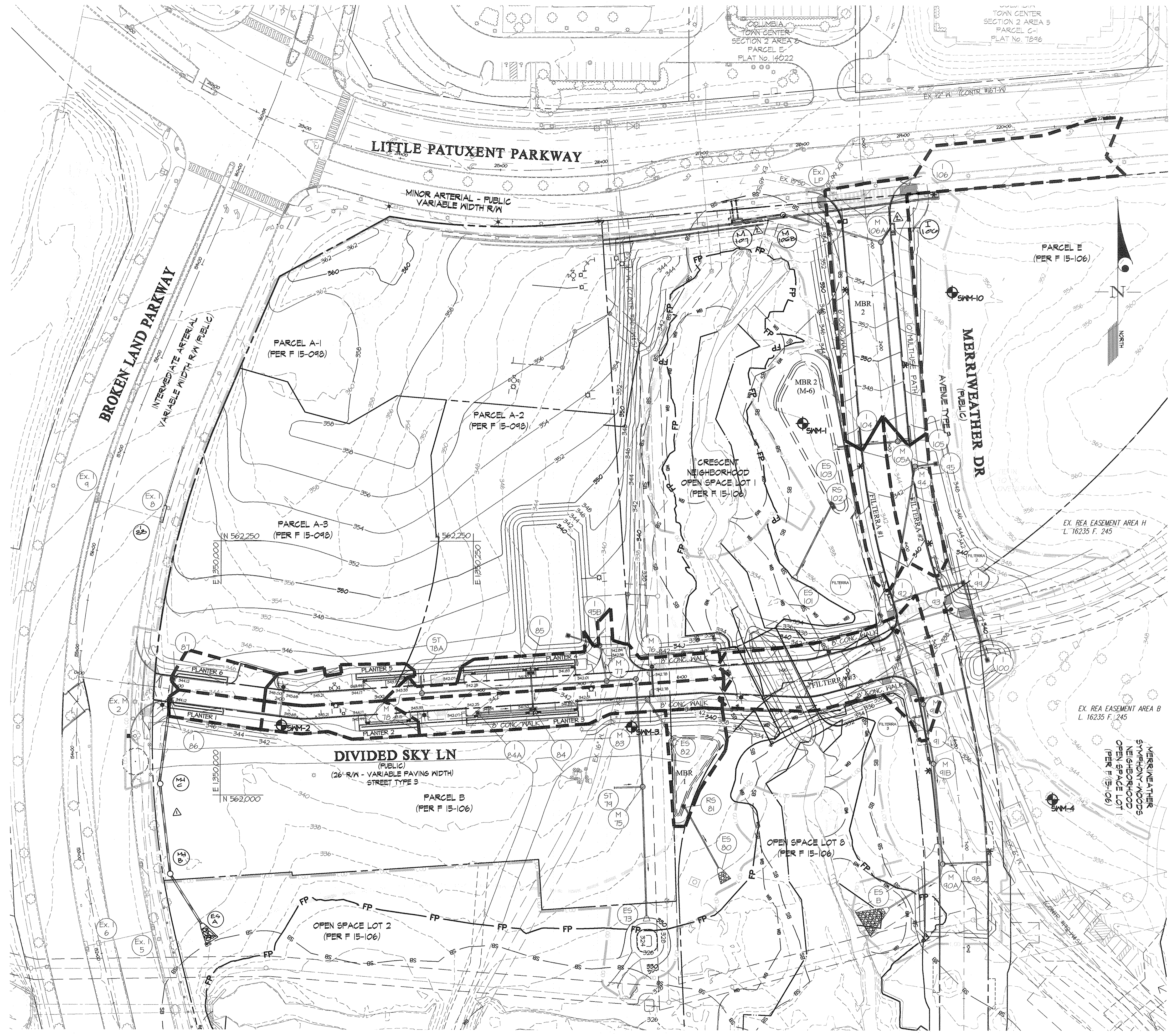
PREPARED FOR:
 THE HOWARD HUGHES CORPORATION
 10480 LITTLE PATUXENT PARKWAY
 SUITE 400
 COLUMBIA, MD 21044
 ATTN: BOB JENKINS
 410-964-5443

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. 12075
 EXPIRATION DATE: MAY 26, 2016

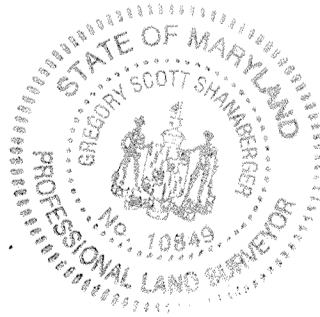
STORM DRAIN PROFILES
DOWNTOWN COLUMBIA
 CRESCENT NEIGHBORHOOD PARCELS A-1 THRU A-3, E, NON-BUILDABLE BULK PARCEL L, OPEN SPACE LOTS 1, 8 & 9 AND MERRIWEATHER-SYMPHONY WOODS NEIGHBORHOOD OPEN SPACE LOT 1
 ELECTION DISTRICT No. 5
 HOWARD COUNTY, MARYLAND

SCALE 1"=50' (H) 1"=5' (V)	ZONING NT	G. L. W. FILE NO. 11071
DATE NOV, 2015	TAX MAP - GRID 36 - 01	SHEET 17 OF 31

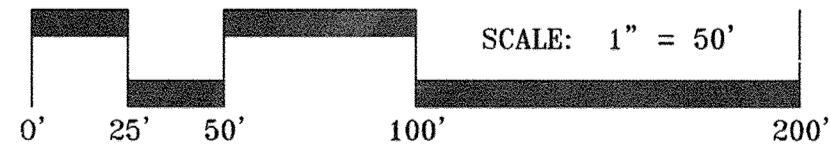
FACILITY	DRAINAGE AREA (SQ. FT.)	ESDV (CU. FT.) (Pe = 1.95")	ESDV (CU. FT.) (Pe = 1.00")	ESDV PROVIDED (CU. FT.)
PLANTER 1	2550	340	200	351
PLANTER 2	4524	643	355	380
PLANTER 3	10313	1511	804	133
PLANTER 4	4084	1511	115	133
PLANTER 5	4474	685	351	380
PLANTER 6	3203	440	251	351
MBR-01	4300	35	18	2514
MBR-02	29441	4510	2313	6013
FILTERRA 1	5111	782	401	401
FILTERRA 2	5411	827	424	424
FILTERRA 3	15305	2340	1200	1200
TOTAL ESDV PROVIDED				13480
TOTAL ESDV REQUIRED				13834



FOR STORM DRAIN INFORMATION, SEE SHEET 15



NOTE: THERE IS NO AS-BUILT INFORMATION PROVIDED ON THIS SHEET
 G. SCOTT SHABERGER
 SHABERGER & JAME
 Professional L.S. #19849 Exp. Date: 4/22/21
 AS-BUILT DATE: 12-1-17 + 12-15-17



APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
 Chief, Bureau of Highways
 Date: 11/18/2015

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
 Chief, Division of Land Development
 Date: 12-9-15

Chief, Development Engineering Division
 Date: 11-19-15

GLWGUTSCHICK LITTLE & WEBER, P.A.
 CIVIL ENGINEERS, LAND SURVEYORS, LAND PLANNERS, LANDSCAPE ARCHITECTS
 3909 NATIONAL DRIVE - SUITE 250 - BURTONSVILLE OFFICE PARK
 BURTONSVILLE, MARYLAND 20886
 TEL: 301-421-4024 BALT: 410-860-1820 DC/VA: 301-889-2524 FAX: 301-421-4186

DATE	REVISION	BY	APP'R
12-1-17	Rev. storm drains to reflect ex. dry utilities	WJP	DEV
7-5-2016	Rev. storm drain	WJP	DEV

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, 2016
 11-12-15

THE PLANS IN THIS REVISED ROAD CONSTRUCTION SET SUPERCEDE PLANS DATED 10/13/2015

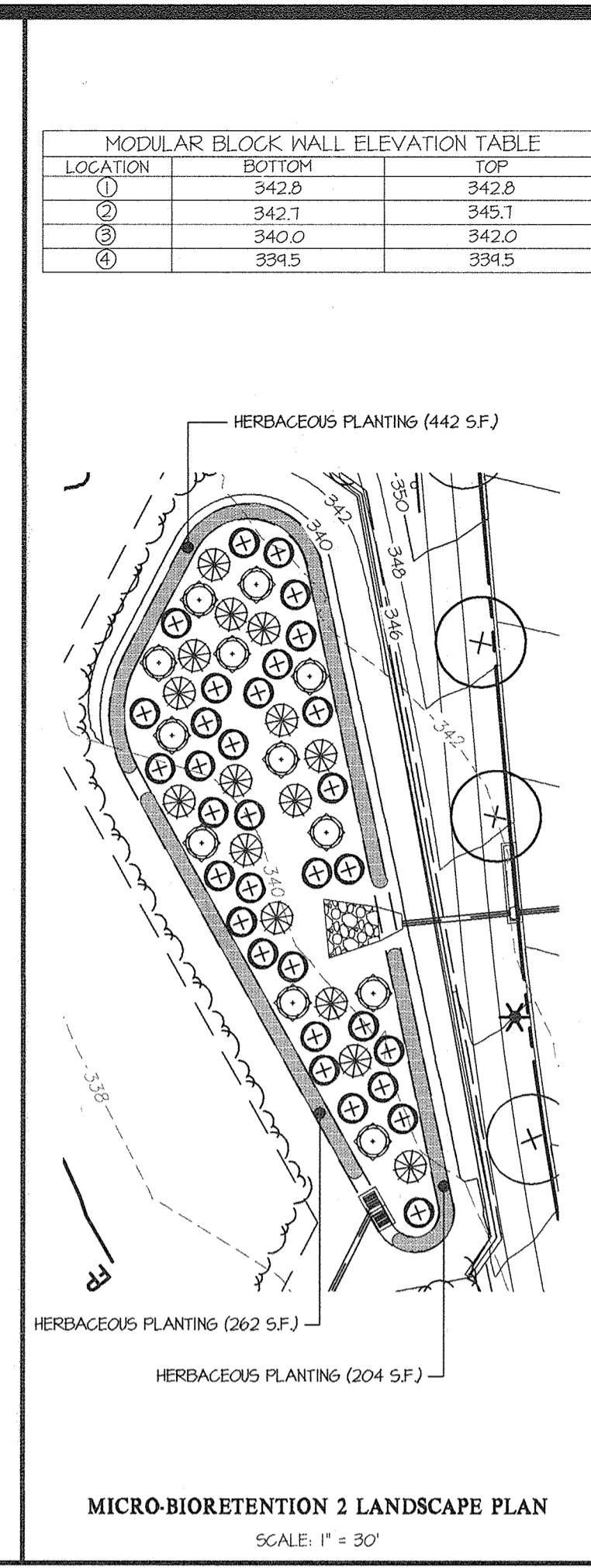
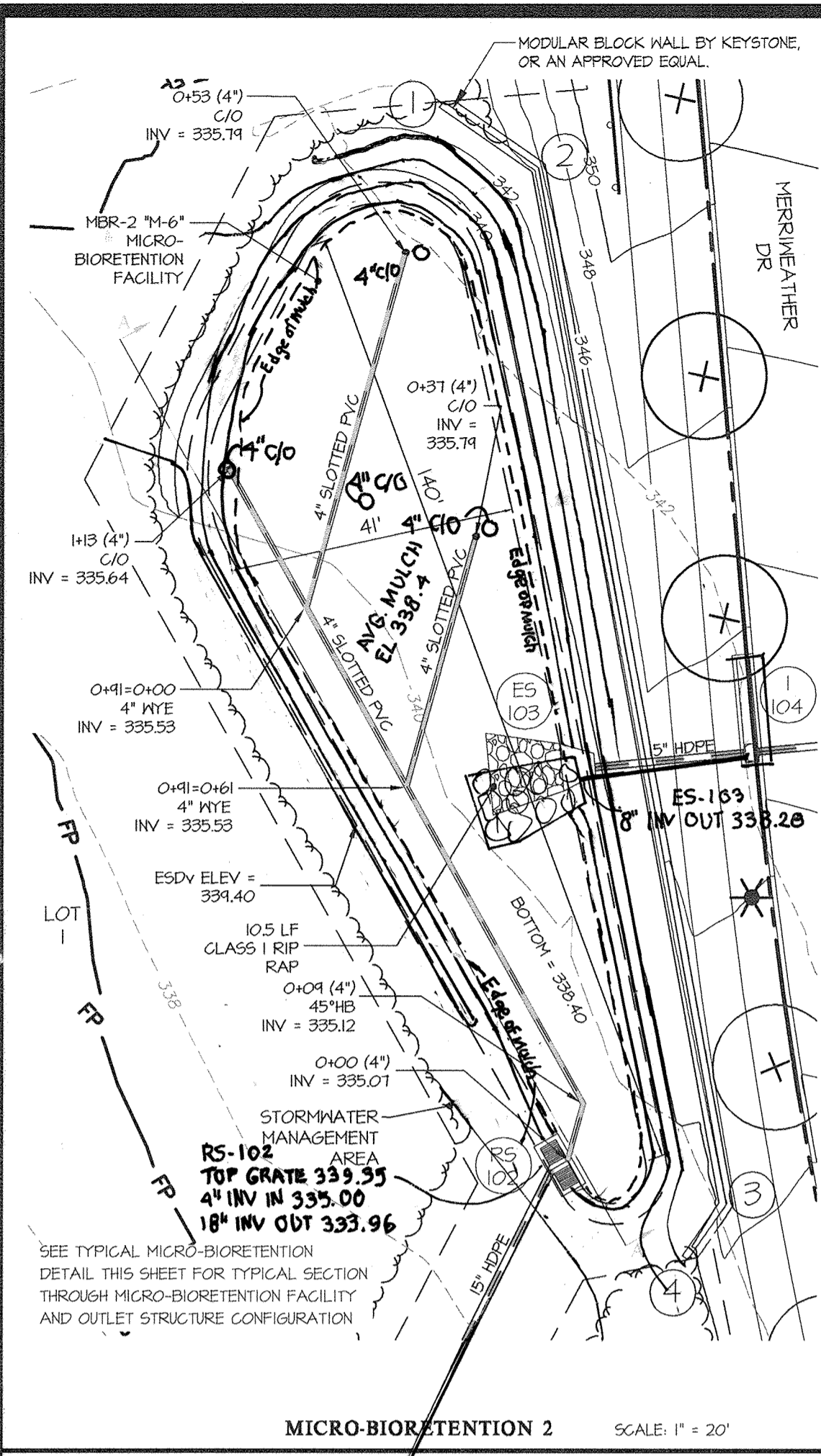
STORMWATER MANAGEMENT DRAINAGE AREA MAP

DOWNTOWN COLUMBIA

CRESCENT NEIGHBORHOOD PARCELS A-1 THRU A-3, E, NON-BUILDABLE BULK PARCEL L, OPEN SPACE LOTS 1, 8 & 9 AND MERRIVEATHER-SYMPHONY WOODS NEIGHBORHOOD OPEN SPACE LOT 1

ELECTION DISTRICT No. 5

SCALE	ZONING	G. L. W. FILE No.
1"=50'	NT	11071
DATE	TAX MAP - GRID	SHEET
NOV, 2015	36 - 01	18 OF 31



MICRO-BIORETENTION 2 LANDSCAPE PLAN
SCALE: 1" = 30'

MICRO-BIORETENTION 2 DETAILS

SYMBOL	QTY.	NAMES (BOTANICAL / SCIENTIFIC)	SIZE	ROOT/COMMENTS
SHRUBS *				
⊗	32	CORNUS SERICEA 'RUBY' / RUBY RED OSIER DOGWOOD	18"-24" SPR.	CONTAINER
⊗	15	ITEA VIRGINICA 'HENRY'S GARNET' / VIRGINIA SWEETSPIRE	18"-24" SPR.	CONTAINER
⊗	12	LINDERA BENZONIV / SPICEBUSH	18"-24" SPR.	CONTAINER
HERBACEOUS *				
■	908 s.f.	CONTRACTOR TO CHOOSE HERBACEOUS PLANTING FROM: -HERBEROGALLIS 'STRAWBERRY CANDY' DAYLILY -HERBEROGALLIS 'JOAN SENIOR' DAYLILY -KALMA ANGUSTIFOLIA/SHEEP LAUREL -ELEGCHARIS OVATA OBTUSABLINT SPIKE RUSH	18" O.G.	CONTAINER

SIZE (INCHES)	TYPE	QUANTITY (L.F.)	REMARKS
4	SLOTTED PVC	201	SCHEDULE 40

AS-BUILT CERTIFICATION
I HEREBY CERTIFY, BY SEAL, THAT THE FACILITIES SHOWN ON THIS PLAN WERE CONSTRUCTED AS SHOWN ON THIS PLAN MEET THE CURRENT APPROVED PLANS AND SPECIFICATIONS.

G. Scott Shanaberger 12/16/18
G. SCOTT SHANABERGER
SHANABERGER & LANE
PROFESSIONAL LAND SURVEYOR #10849
LICENSE EXPIRATION DATE 4/12/2020
AS-BUILT SURVEY DATES 11-17 TO 12/15/17

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
Chief, Bureau of Highways
Date: 11/19/15

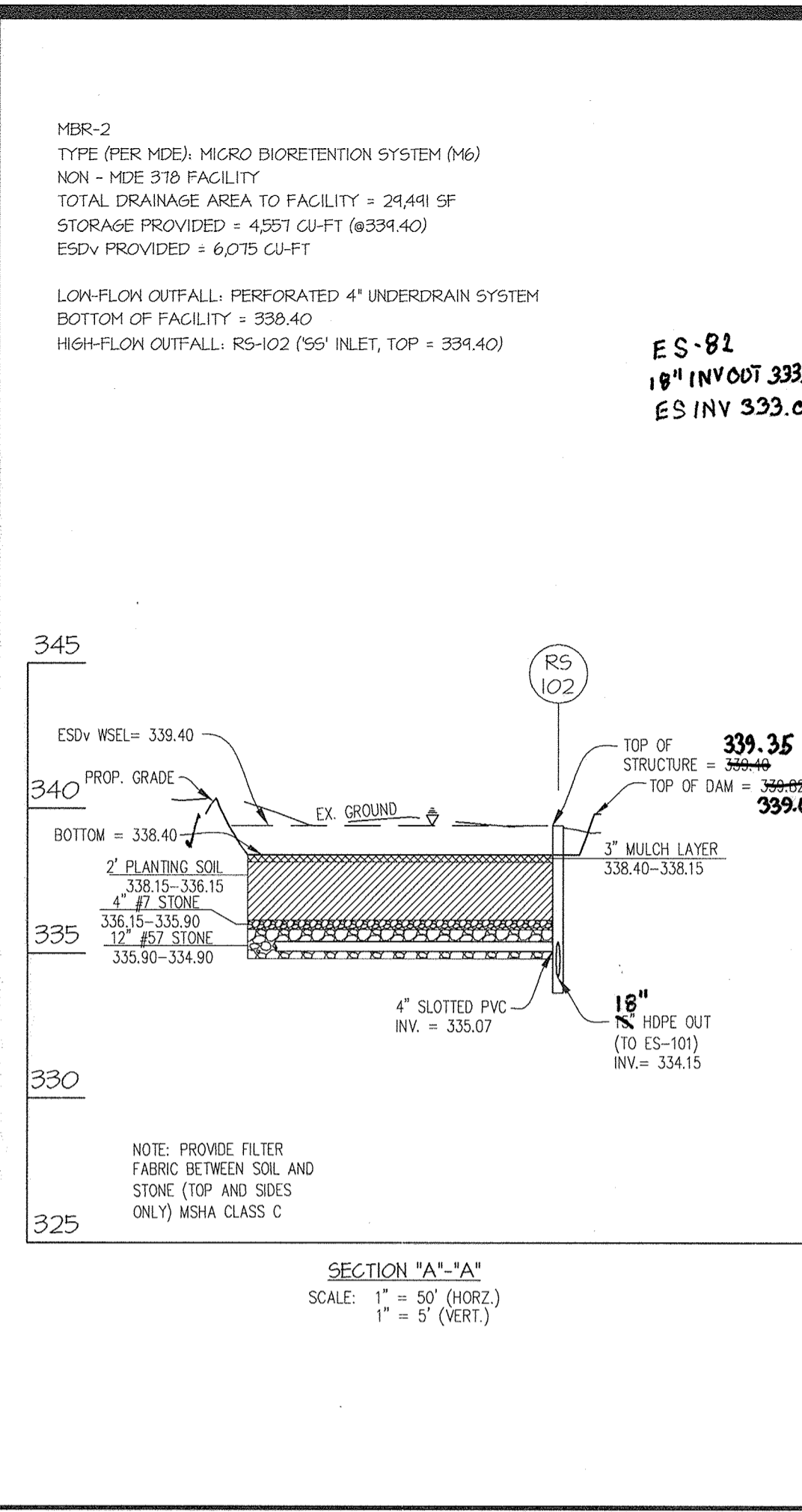
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
Chief, Division of Land Development
Date: 12-9-15

Chief, Development Engineering Division
Date: 11-19-15

DATE	REVISION	BY	APPR.

GLWGUTSCHICK LITTLE & WEBER, P.A.
CIVIL ENGINEERS, LAND SURVEYORS, LAND PLANNERS, LANDSCAPE ARCHITECTS
3909 NATIONAL DRIVE - SUITE 250 - BURTONSVILLE OFFICE PARK
BURTONSVILLE, MARYLAND 20886
TEL: 301-421-4024 FAX: 410-880-1820 DC/VA: 301-989-2524 FAX: 301-421-4186

DES. JRD DRN. JRD CHK. DEV



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

NOTE: PROVIDE FILTER FABRIC BETWEEN SOIL AND STONE (TOP AND SIDES ONLY) MSHA CLASS C

LOCATION	BOTTOM	TOP
①	342.9	342.8
②	342.1	345.1
③	340.0	342.0
④	339.5	339.5

ME-2 TYPE (FER MDE): MICRO BIORETENTION SYSTEM (M6)
NON - MDE 318 FACILITY
TOTAL DRAINAGE AREA TO FACILITY = 24,481 SF
STORAGE PROVIDED = 4,351 CU-FT (@394.40)
ESDV PROVIDED = 6,075 CU-FT

LOW-FLOW OUTFALL: PERFORATED 4" UNDERDRAIN SYSTEM
BOTTOM OF FACILITY = 338.40
HIGH-FLOW OUTFALL: RS-102 (195' INLET, TOP = 339.40)



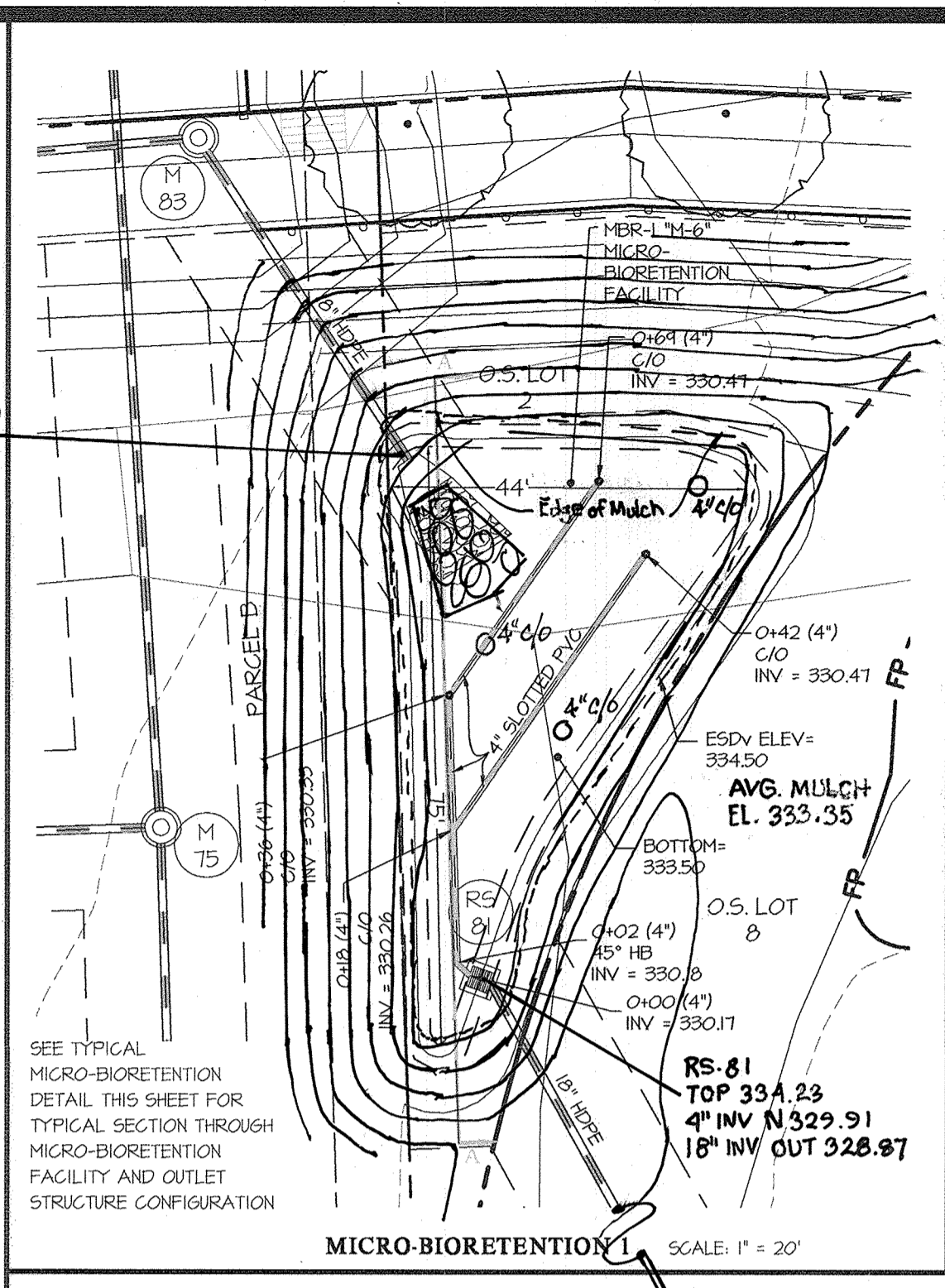
MICRO-BIORETENTION 1 LANDSCAPE PLAN
SCALE: 1" = 20'

MICRO-BIORETENTION 1 DETAILS

SYMBOL	QTY.	NAMES (BOTANICAL / SCIENTIFIC)	SIZE	ROOT/COMMENTS
SHRUBS *				
⊗	4	CORNUS SERICEA 'RUBY' / RUBY RED OSIER DOGWOOD	18"-24" SPR.	CONTAINER
⊗	4	ITEA VIRGINICA 'HENRY'S GARNET' / VIRGINIA SWEETSPIRE	18"-24" SPR.	CONTAINER
⊗	4	LINDERA BENZONIV / SPICEBUSH	18"-24" SPR.	CONTAINER
HERBACEOUS *				
■	580 s.f.	CONTRACTOR TO CHOOSE HERBACEOUS PLANTING FROM: -HERBEROGALLIS 'STRAWBERRY CANDY' DAYLILY -HERBEROGALLIS 'JOAN SENIOR' DAYLILY -KALMA ANGUSTIFOLIA/SHEEP LAUREL -ELEGCHARIS OVATA OBTUSABLINT SPIKE RUSH	18" O.G.	CONTAINER

SIZE (INCHES)	TYPE	QUANTITY (L.F.)	REMARKS
4	SLOTTED PVC	III	SCHEDULE 40

CONTRACTOR TO CHOOSE HERBACEOUS PLANTING FROM:
-HERBEROGALLIS 'STRAWBERRY CANDY' DAYLILY
-HERBEROGALLIS 'JOAN SENIOR' DAYLILY
-KALMA ANGUSTIFOLIA/SHEEP LAUREL
-ELEGCHARIS OVATA OBTUSABLINT SPIKE RUSH



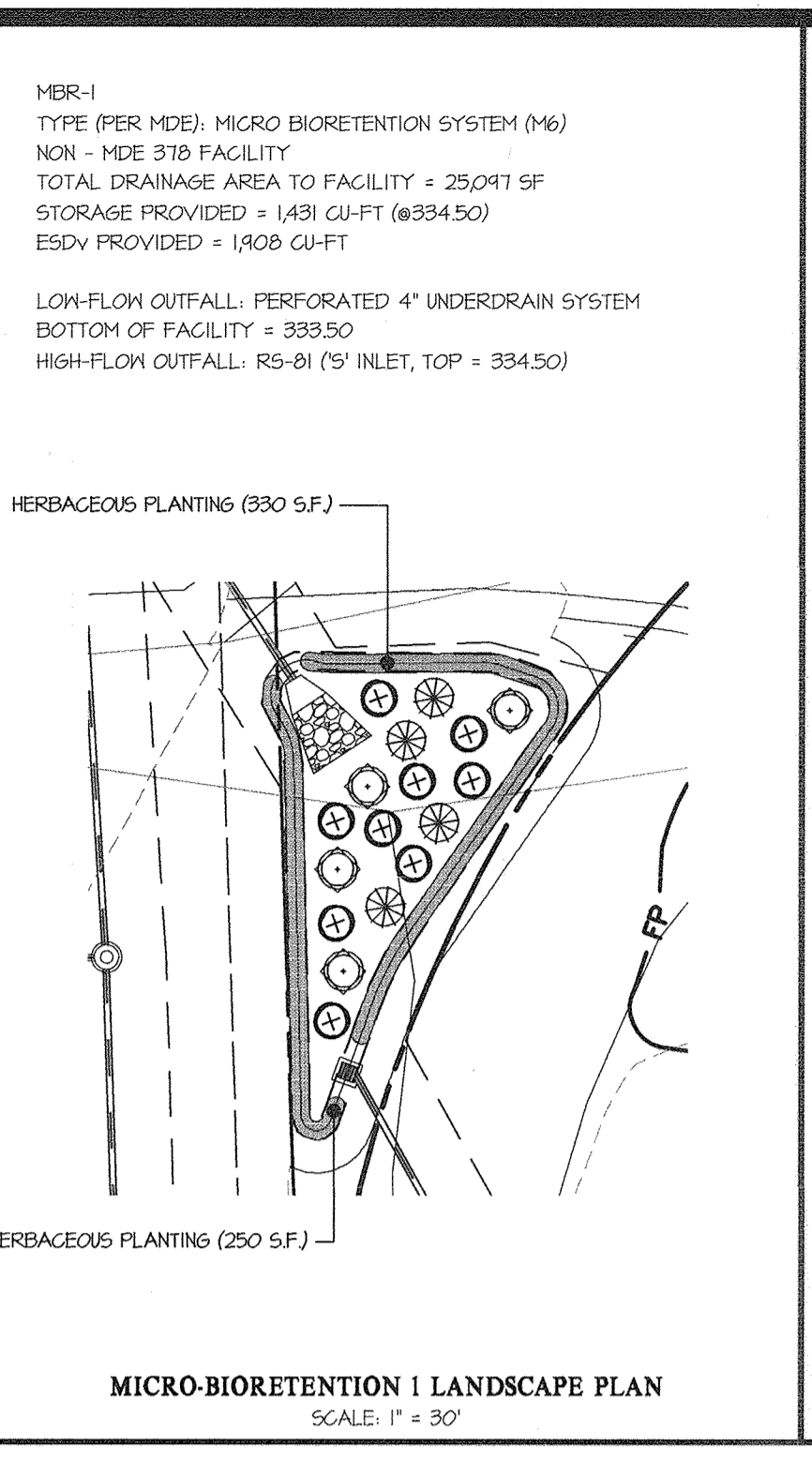
MICRO-BIORETENTION 1 LANDSCAPE PLAN
SCALE: 1" = 30'

MICRO-BIORETENTION 1 DETAILS

SYMBOL	QTY.	NAMES (BOTANICAL / SCIENTIFIC)	SIZE	ROOT/COMMENTS
SHRUBS *				
⊗	4	CORNUS SERICEA 'RUBY' / RUBY RED OSIER DOGWOOD	18"-24" SPR.	CONTAINER
⊗	4	ITEA VIRGINICA 'HENRY'S GARNET' / VIRGINIA SWEETSPIRE	18"-24" SPR.	CONTAINER
⊗	4	LINDERA BENZONIV / SPICEBUSH	18"-24" SPR.	CONTAINER
HERBACEOUS *				
■	580 s.f.	CONTRACTOR TO CHOOSE HERBACEOUS PLANTING FROM: -HERBEROGALLIS 'STRAWBERRY CANDY' DAYLILY -HERBEROGALLIS 'JOAN SENIOR' DAYLILY -KALMA ANGUSTIFOLIA/SHEEP LAUREL -ELEGCHARIS OVATA OBTUSABLINT SPIKE RUSH	18" O.G.	CONTAINER

SIZE (INCHES)	TYPE	QUANTITY (L.F.)	REMARKS
4	SLOTTED PVC	III	SCHEDULE 40

CONTRACTOR TO CHOOSE HERBACEOUS PLANTING FROM:
-HERBEROGALLIS 'STRAWBERRY CANDY' DAYLILY
-HERBEROGALLIS 'JOAN SENIOR' DAYLILY
-KALMA ANGUSTIFOLIA/SHEEP LAUREL
-ELEGCHARIS OVATA OBTUSABLINT SPIKE RUSH



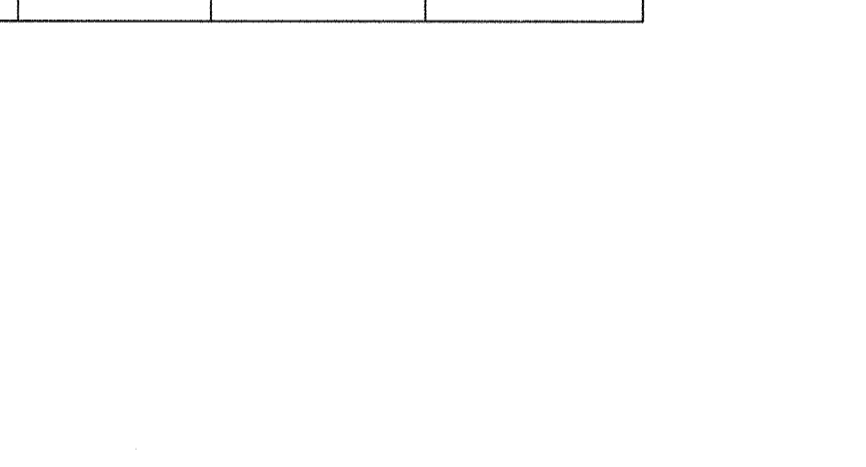
SECTION "A"-A"
SCALE: 1" = 50' (HORZ.)
1" = 5' (VERT.)

NOTE: PROVIDE FILTER FABRIC BETWEEN SOIL AND STONE (TOP AND SIDES ONLY) MSHA CLASS C

LOCATION	BOTTOM	TOP
①	342.9	342.8
②	342.1	345.1
③	340.0	342.0
④	339.5	339.5

ME-1 TYPE (FER MDE): MICRO BIORETENTION SYSTEM (M6)
NON - MDE 318 FACILITY
TOTAL DRAINAGE AREA TO FACILITY = 25,041 SF
STORAGE PROVIDED = 1,431 CU-FT (@394.50)
ESDV PROVIDED = 1,408 CU-FT

LOW-FLOW OUTFALL: PERFORATED 4" UNDERDRAIN SYSTEM
BOTTOM OF FACILITY = 333.50
HIGH-FLOW OUTFALL: RS-81 (19' INLET, TOP = 334.50)



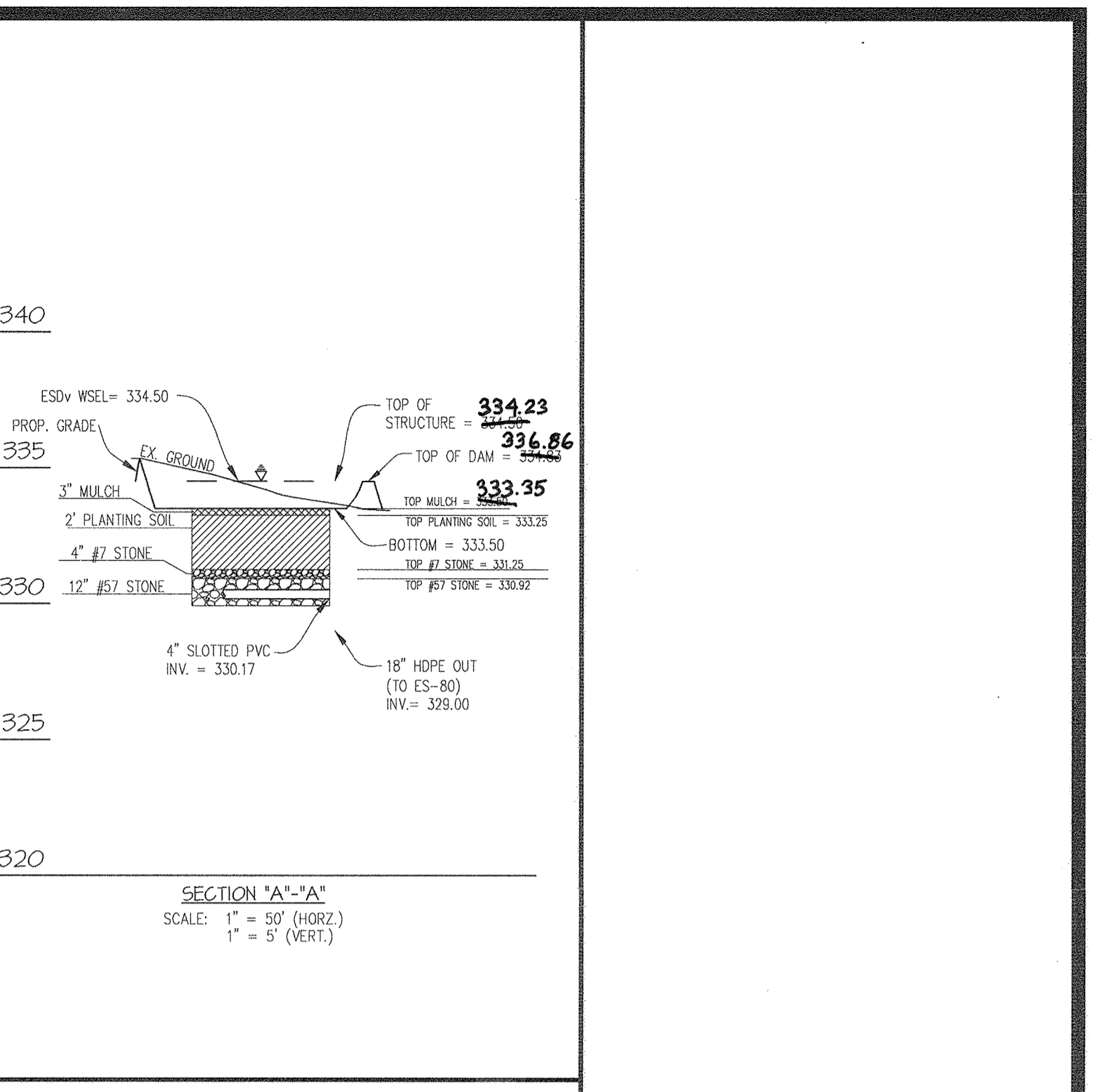
MICRO-BIORETENTION 1 LANDSCAPE PLAN
SCALE: 1" = 30'

MICRO-BIORETENTION 1 DETAILS

SYMBOL	QTY.	NAMES (BOTANICAL / SCIENTIFIC)	SIZE	ROOT/COMMENTS
SHRUBS *				
⊗	4	CORNUS SERICEA 'RUBY' / RUBY RED OSIER DOGWOOD	18"-24" SPR.	CONTAINER
⊗	4	ITEA VIRGINICA 'HENRY'S GARNET' / VIRGINIA SWEETSPIRE	18"-24" SPR.	CONTAINER
⊗	4	LINDERA BENZONIV / SPICEBUSH	18"-24" SPR.	CONTAINER
HERBACEOUS *				
■	580 s.f.	CONTRACTOR TO CHOOSE HERBACEOUS PLANTING FROM: -HERBEROGALLIS 'STRAWBERRY CANDY' DAYLILY -HERBEROGALLIS 'JOAN SENIOR' DAYLILY -KALMA ANGUSTIFOLIA/SHEEP LAUREL -ELEGCHARIS OVATA OBTUSABLINT SPIKE RUSH	18" O.G.	CONTAINER

SIZE (INCHES)	TYPE	QUANTITY (L.F.)	REMARKS
4	SLOTTED PVC	III	SCHEDULE 40

CONTRACTOR TO CHOOSE HERBACEOUS PLANTING FROM:
-HERBEROGALLIS 'STRAWBERRY CANDY' DAYLILY
-HERBEROGALLIS 'JOAN SENIOR' DAYLILY
-KALMA ANGUSTIFOLIA/SHEEP LAUREL
-ELEGCHARIS OVATA OBTUSABLINT SPIKE RUSH



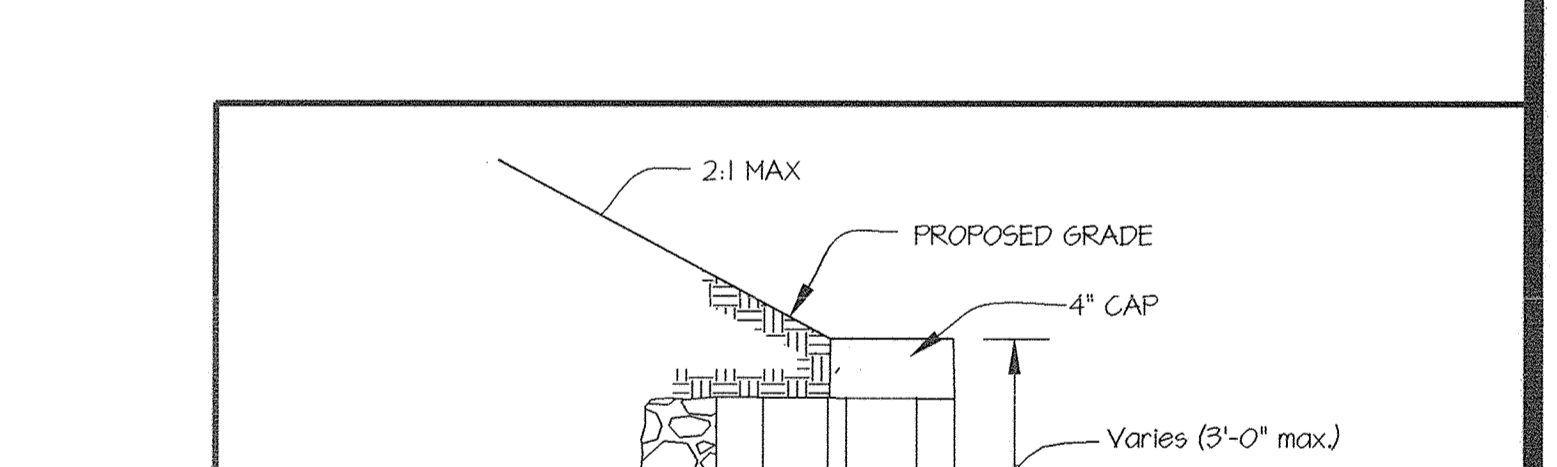
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SCALE: 1" = 50' (HORZ.)
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NOTE: PROVIDE FILTER FABRIC BETWEEN SOIL AND STONE (TOP AND SIDES ONLY) MSHA CLASS C

LOCATION	BOTTOM	TOP
①	342.9	342.8
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STORAGE PROVIDED = 1,431 CU-FT (@394.50)
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LOW-FLOW OUTFALL: PERFORATED 4" UNDERDRAIN SYSTEM
BOTTOM OF FACILITY = 333.50
HIGH-FLOW OUTFALL: RS-81 (19' INLET, TOP = 334.50)



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

MICRO-BIORETENTION 1 DETAILS

SYMBOL	QTY.	NAMES (BOTANICAL / SCIENTIFIC)	SIZE	ROOT/COMMENTS
SHRUBS *				
⊗	4	CORNUS SERICEA 'RUBY' / RUBY RED OSIER DOGWOOD	18"-24" SPR.	CONTAINER
⊗	4	ITEA VIRGINICA 'HENRY'S GARNET' / VIRGINIA SWEETSPIRE	18"-24" SPR.	CONTAINER
⊗	4	LINDERA BENZONIV / SPICEBUSH	18"-24" SPR.	CONTAINER
HERBACEOUS *				
■	580 s.f.	CONTRACTOR TO CHOOSE HERBACEOUS PLANTING FROM: -HERBEROGALLIS 'STRAWBERRY CANDY' DAYLILY -HERBEROGALLIS 'JOAN SENIOR' DAYLILY -KALMA ANGUSTIFOLIA/SHEEP LAUREL -ELEGCHARIS OVATA OBTUSABLINT SPIKE RUSH	18" O.G.	CONTAINER

SIZE (INCHES)	TYPE	QUANTITY (L.F.)	REMARKS
4	SLOTTED PVC	III	SCHEDULE 40

CONTRACTOR TO CHOOSE HERBACEOUS PLANTING FROM:
-HERBEROGALLIS 'STRAWBERRY CANDY' DAYLILY
-HERBEROGALLIS 'JOAN SENIOR' DAYLILY
-KALMA ANGUSTIFOLIA/SHEEP LAUREL
-ELEGCHARIS OVATA OBTUSABLINT SPIKE RUSH

THE PLANS IN THIS REVISED ROAD CONSTRUCTION SET SUPERCEDE PLANS DATED 10/13/2015

STORMWATER MANAGEMENT ESD DETAILS

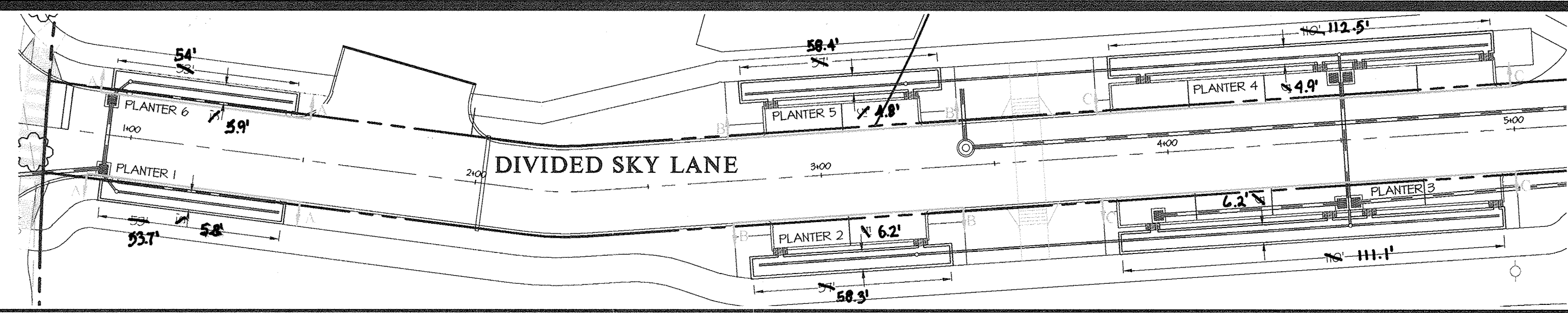
DOWNTOWN COLUMBIA

CRESCENT NEIGHBORHOOD PARCELS A-1 THRU A-3, E, NON-BUILDABLE BULK PARCEL L, OPEN SPACE LOTS 1, 8 & 9 AND MERRIWEATHER-SYMPHONY WOODS NEIGHBORHOOD OPEN SPACE LOT 1

ELECTION DISTRICT No. 5

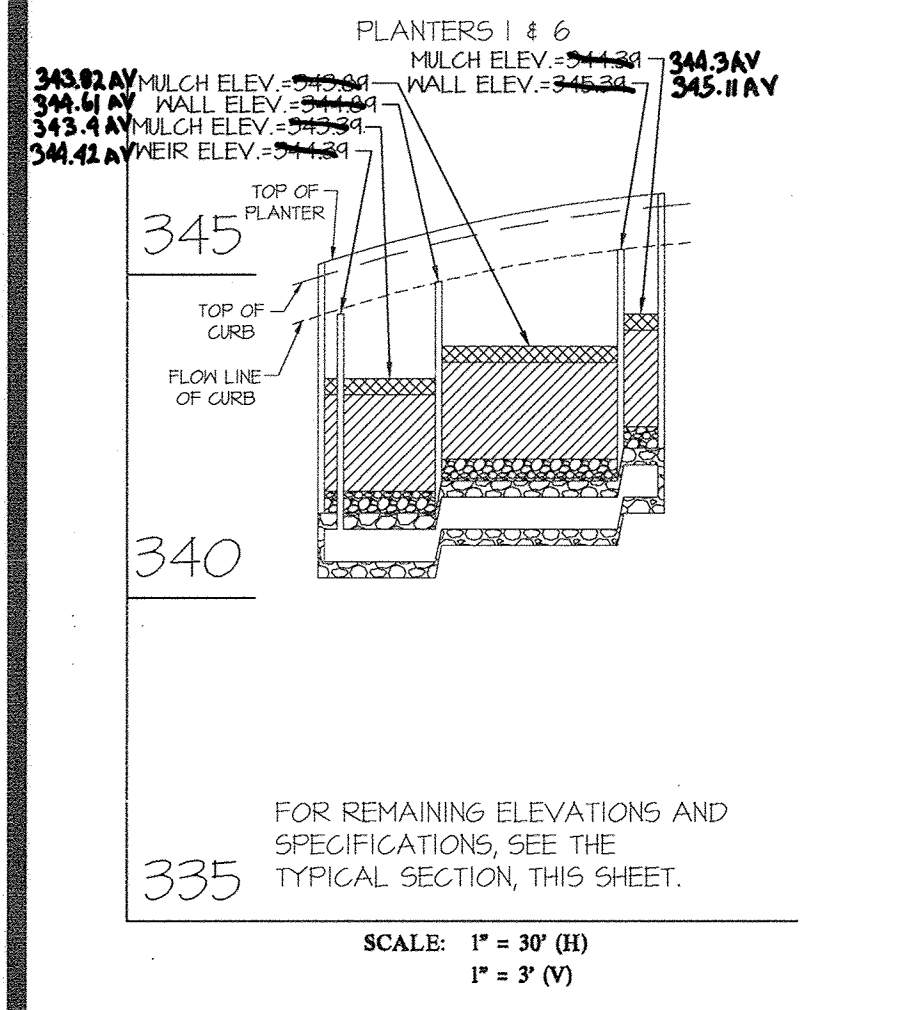
SCALE	ZONING	G. L. W. FILE No.
AS SHOWN	NT	11071
DATE	TAX MAP - GRID	SHEET
NOV, 2015	36 - 01	19 OF 31

HOWARD COUNTY, MARYLAND



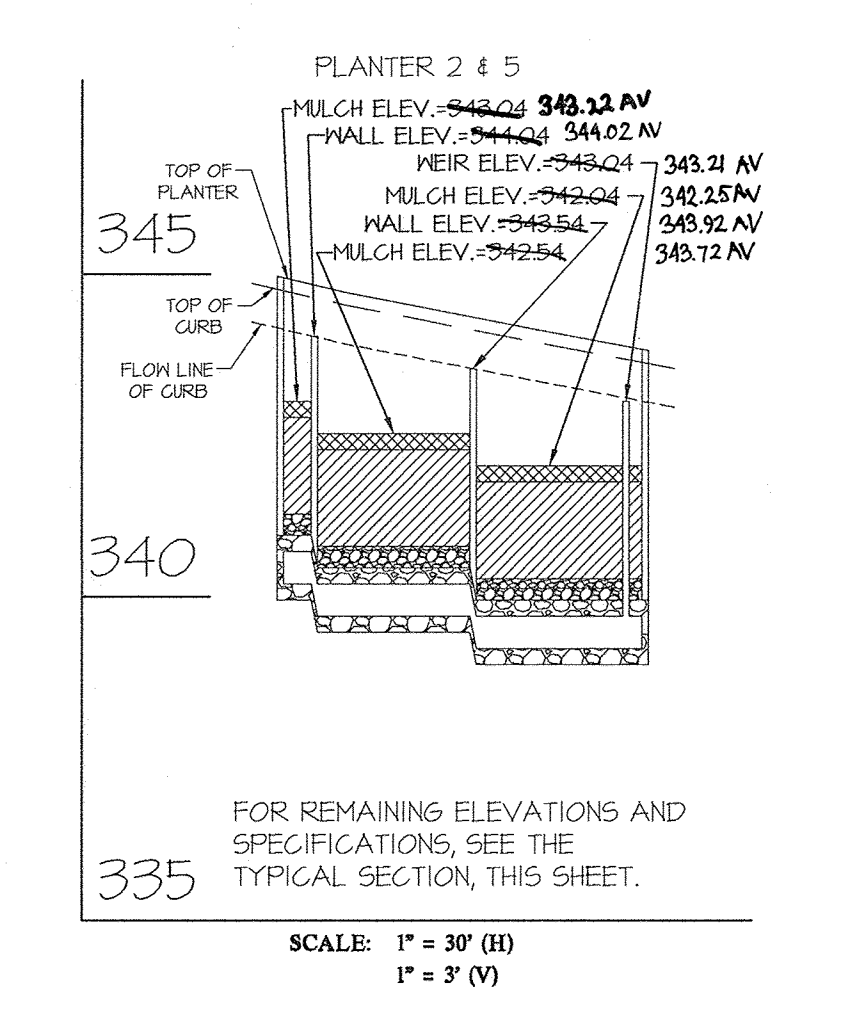
PLANTER DETAIL - PLAN VIEW

SCALE: 1" = 30'



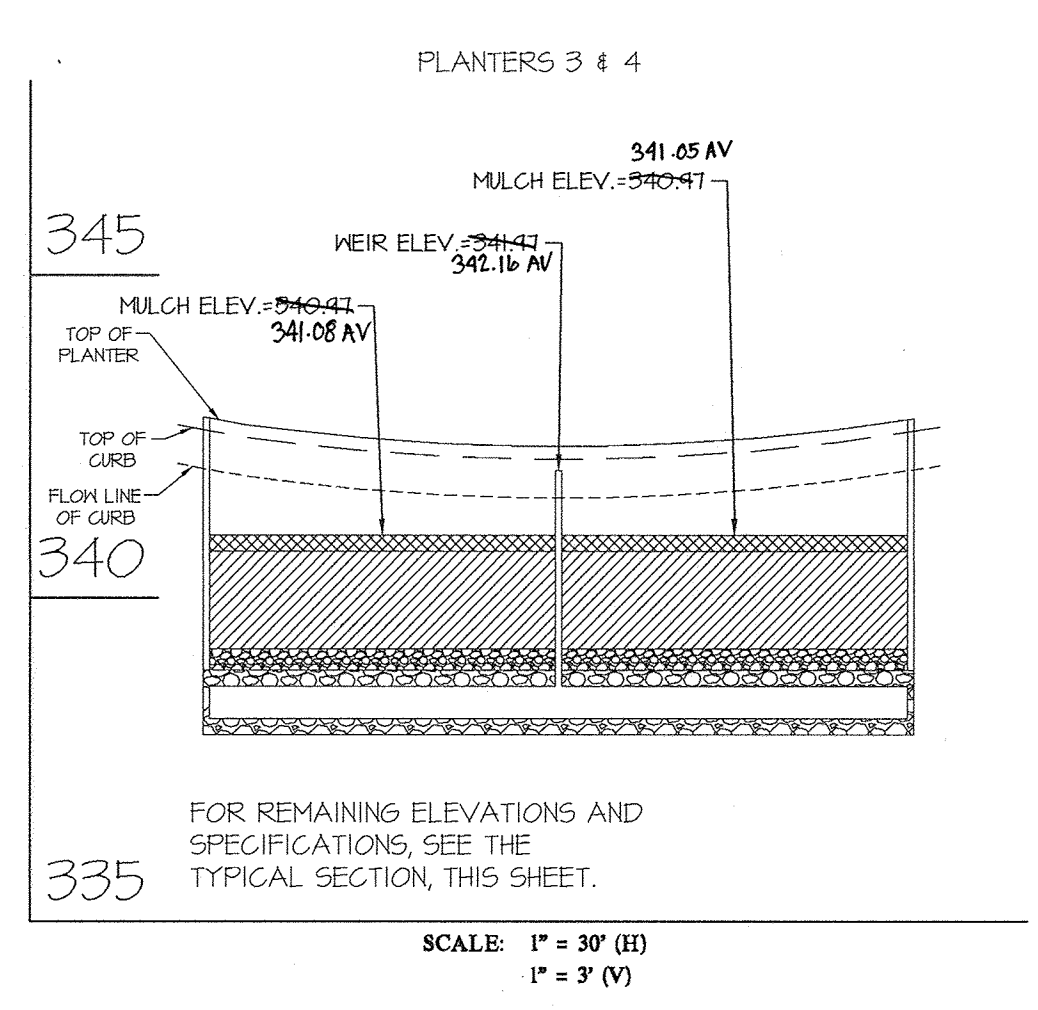
FOR REMAINING ELEVATIONS AND SPECIFICATIONS, SEE THE TYPICAL SECTION, THIS SHEET.

SCALE: 1" = 30' (H)
1" = 3' (V)



FOR REMAINING ELEVATIONS AND SPECIFICATIONS, SEE THE TYPICAL SECTION, THIS SHEET.

SCALE: 1" = 30' (H)
1" = 3' (V)



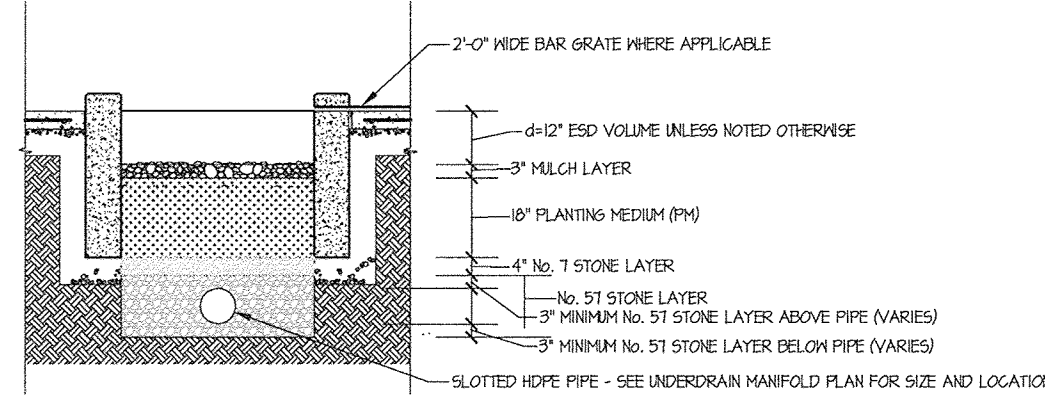
FOR REMAINING ELEVATIONS AND SPECIFICATIONS, SEE THE TYPICAL SECTION, THIS SHEET.

SCALE: 1" = 30' (H)
1" = 3' (V)

SECTION 'A-A' PLANTER DETAIL - PROFILE VIEW

SECTION 'B-B' PLANTER DETAIL - PROFILE VIEW

SECTION 'C-C' PLANTER DETAIL - PROFILE VIEW

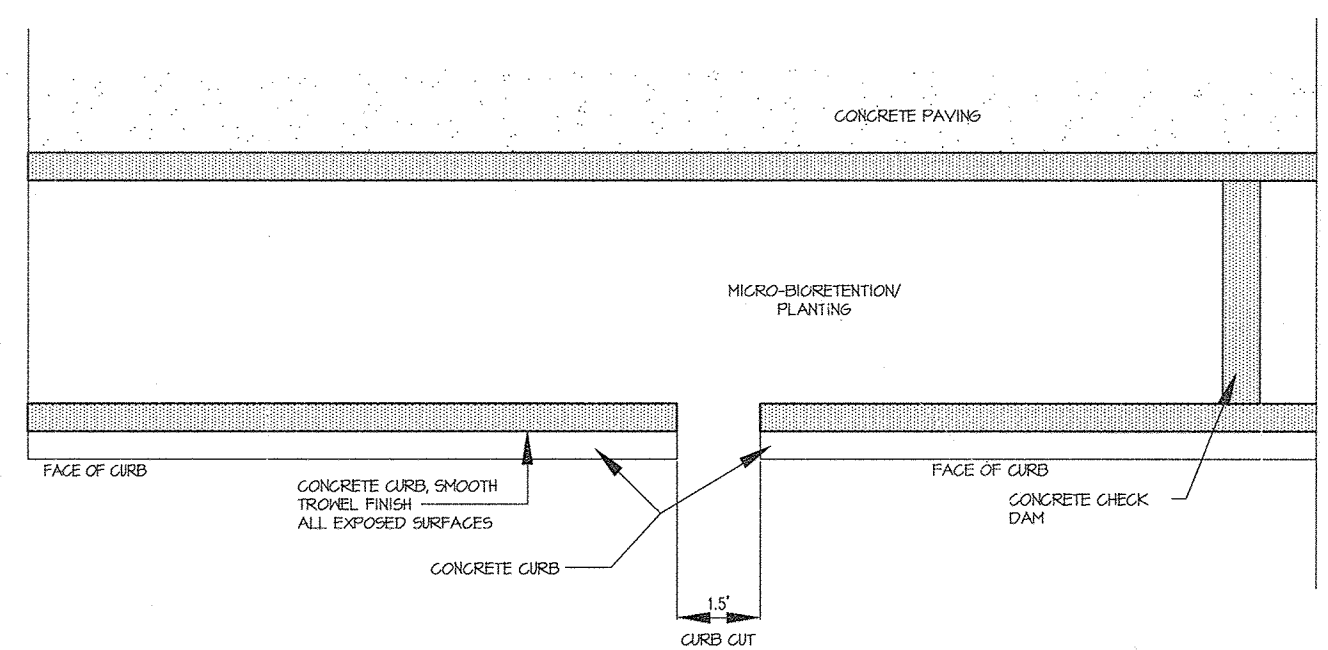


PLANTER DETAIL

NTS

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
Chief, Bureau of Highways
Date: 11/18/2015

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
Chief, Division of Land Development
Date: 12-9-15
Chief, Development Engineering Division
Date: 11-19-15



CURB CUT DETAIL FOR PLANTERS 1 & 6

NTS

AS-BUILT CERTIFICATION
I HEREBY CERTIFY, BY SEAL, THAT THE FACILITIES SHOWN ON THIS PLAN WERE CONSTRUCTED AS SHOWN ON THIS PLAN MEET THE CURRENT APPROVED PLANS AND SPECIFICATIONS.
G. SCOTT SHANBERGER
SHANBERGER & LANE
PROFESSIONAL LAND SURVEYOR #102845
LICENSE EXPIRATION DATE 4/12/2020
AS-BUILT SURVEY DATES 12-17-15 TO 12-15-17

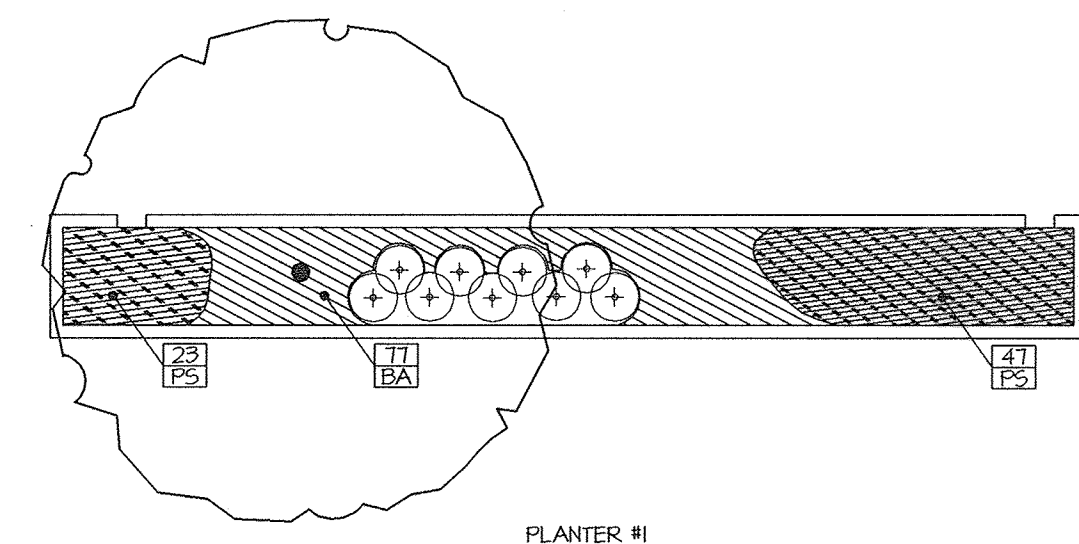
S.D. PIPE SUMMARY TABLE PUBLICLY OWNED AND MAINTAINED

SIZE (INCHES)	TYPE	QUANTITY (L.F.)	REMARKS
6"	SLOTTED PVC	444	SCHEDULE 40
6"	PVC	144	SCHEDULE 40

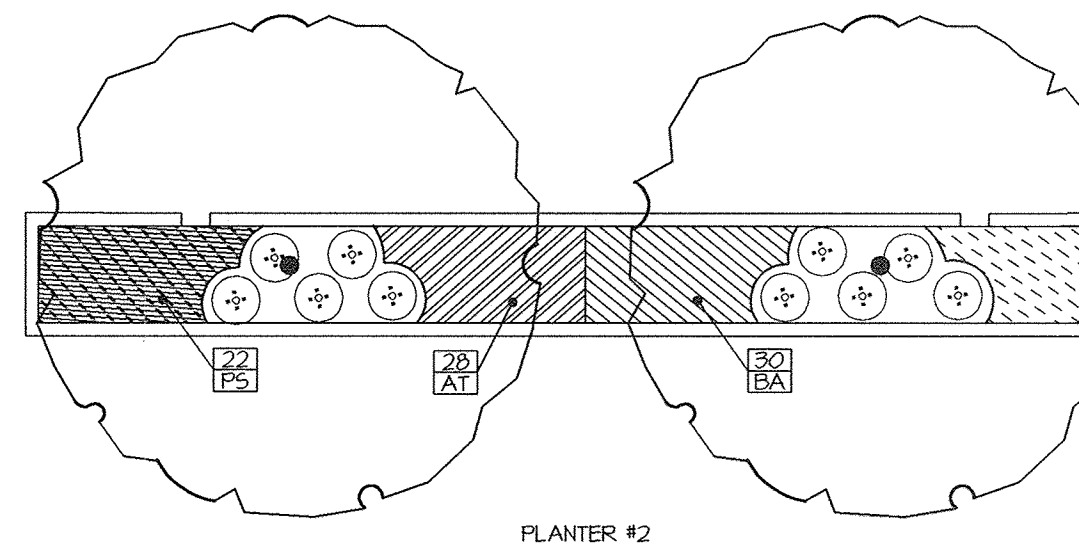
PROFESSIONAL CERTIFICATION

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

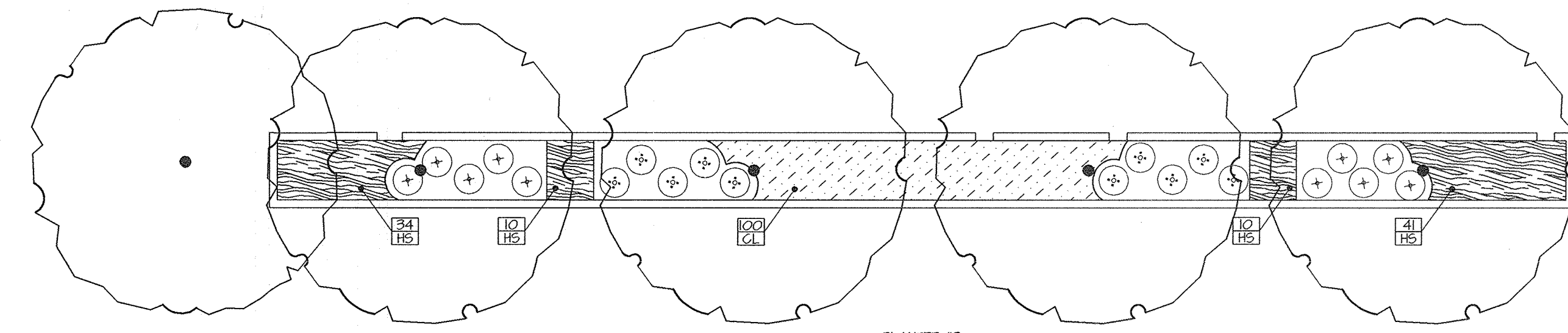
11-12-15



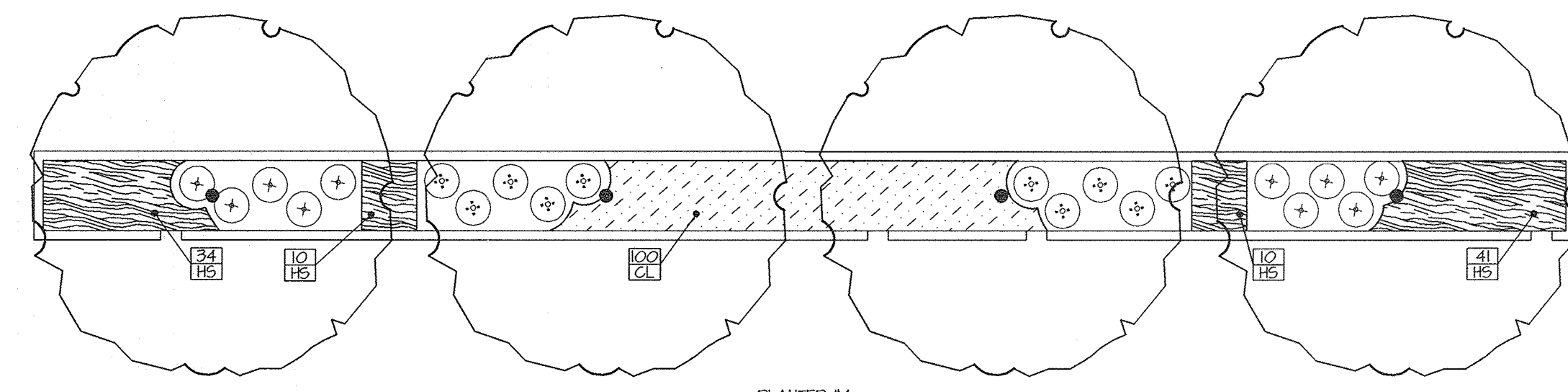
PLANTER #1



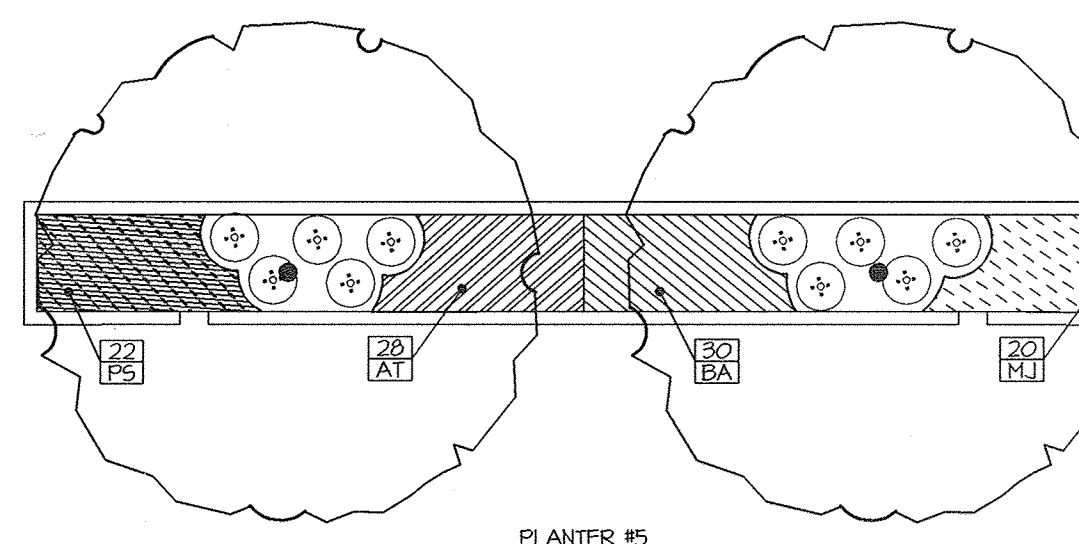
PLANTER #2



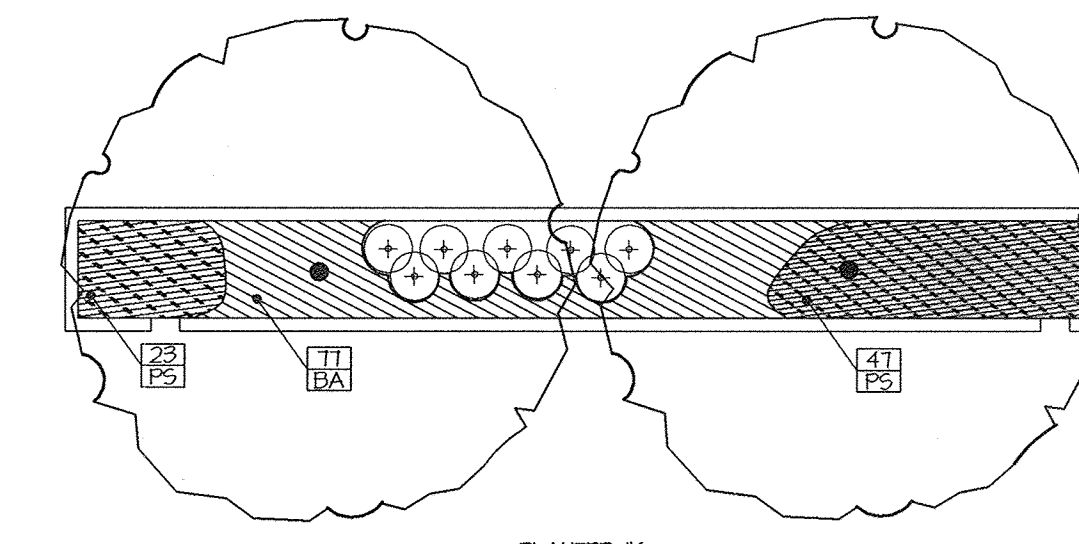
PLANTER #3



PLANTER #4



PLANTER #5

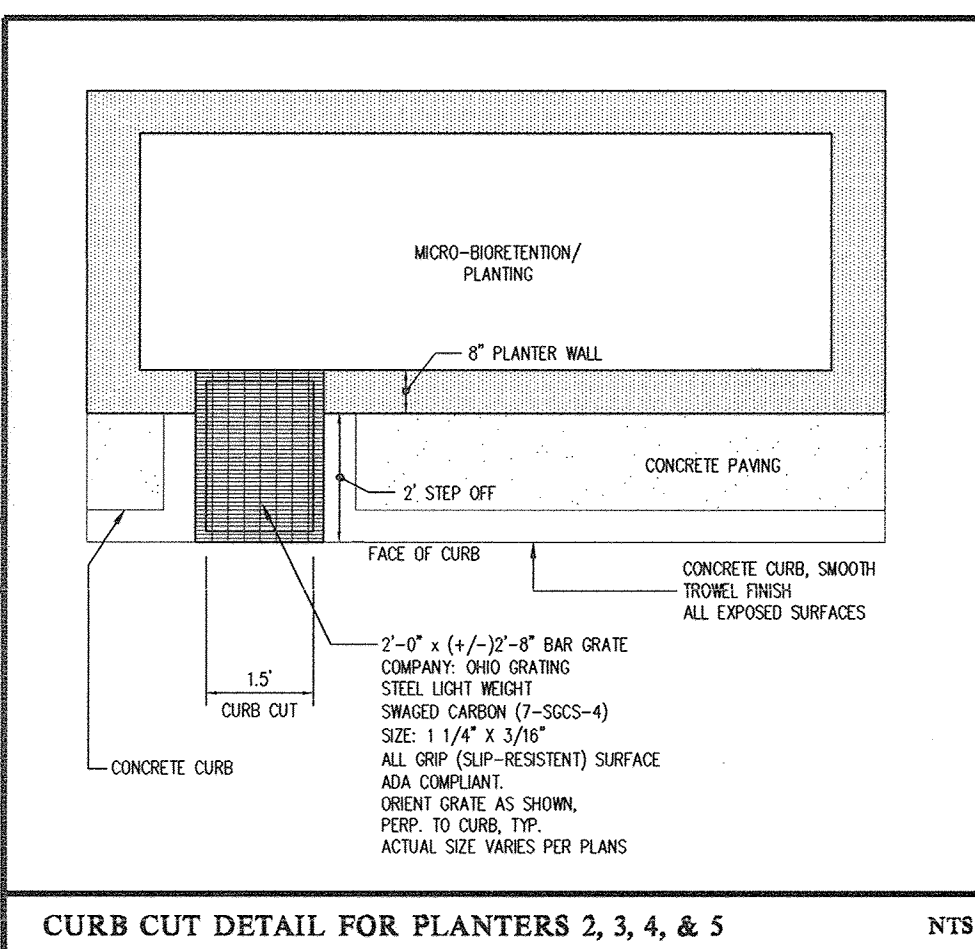


PLANTER #6

PLANTINGS FOR MICRO-BIORETENTION PLANTERS

SCALE: 1" = 10'

* WIDTH OF PLANTING AREA IN ALL PLANTERS IS 5'



CURB CUT DETAIL FOR PLANTERS 2, 3, 4, & 5

NTS

PLANTING LEGEND

SYMBOL	QTY	PLANT SPECIES
(+)	40	ILEX GLABRA 1 GAL. SPACED 36" O.C.
(+)	30	CORNUS BAILEYI 5 GAL. SPACED 42" O.C.
(/)	AT 56	ASCELEPIAS TUBEROSA 1 QT. SPACED 15" O.C.
(/)	BA 214	BAPTISIA AUSTRALIS 1 QT. SPACED 15" O.C.
(/)	CL 200	CHASMANTHUM LATIFOLIUM 1 QT. SPACED 15" O.C.
(/)	HS 190	HELICTOTRICHON SEMPERVIRENS 'BLUE OAT GRASS' 1 QT. SPACED 15" O.C.
(/)	HJ 40	HONARDA DIDYMA 'JACOB GLINE' 1 GAL. SPACED 15" O.C.
(/)	PS 184	PANICUM VIRGATUM 'SHENANDOAH' 1 QT. SPACED 15" O.C.

THE PLANS IN THIS REVISED ROAD CONSTRUCTION SET SUPERCEDE PLANS DATED 10/13/2015

STORMWATER MANAGEMENT NOTES AND DETAILS

DOWNTOWN COLUMBIA

CRESCENT NEIGHBORHOOD PARCELS A-1 THRU A-3, E, NON-BUILDABLE BULK PARCEL L, OPEN SPACE LOTS 1, 8 & 9 AND MERRIWEATHER-SYMPHONY WOODS NEIGHBORHOOD OPEN SPACE LOT 1

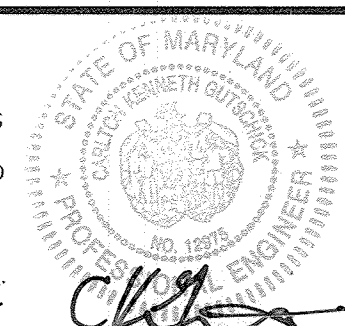
SCALE	ZONING	G. L. W. FILE No.
AS SHOWN	NT	11071
DATE	TAX MAP - GRID	SHEET
NOV., 2015	36 - 01	20 OF 31

GLW GUTSCHICK LITTLE & WEBER, P.A.
CIVIL ENGINEERS, LAND SURVEYORS, LAND PLANNERS, LANDSCAPE ARCHITECTS
3909 NATIONAL DRIVE - SUITE 250 - BURTONSVILLE OFFICE PARK
BURTONSVILLE, MARYLAND 20886
TEL: 301-421-4024 BALG: 410-586-1820 DC/VL: 301-889-2524 FAX: 301-421-4186

DES. JRD DRN. JRD CHK. DEV

DATE REVISION BY APPR.

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



ELECTION DISTRICT No. 5

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

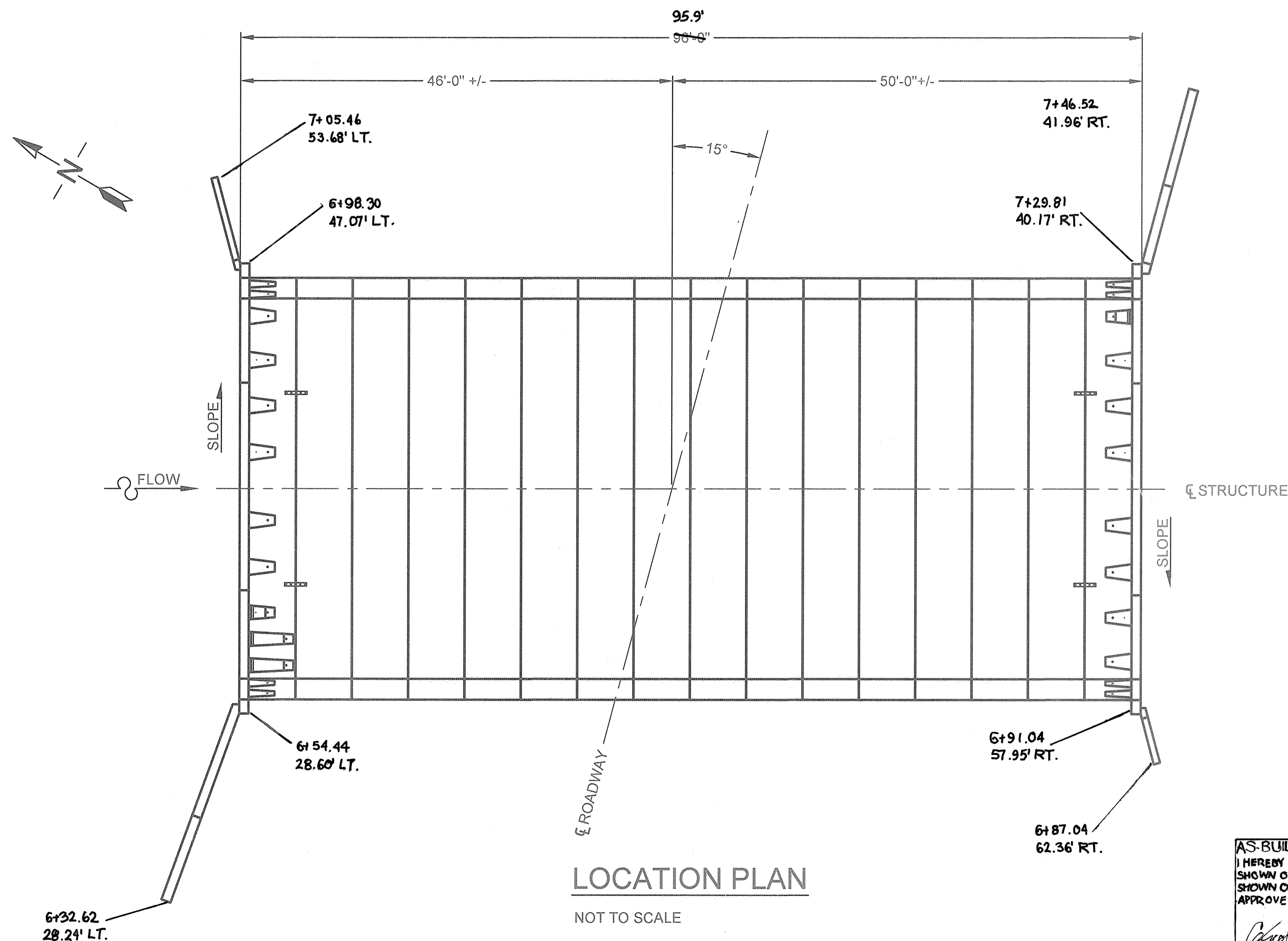
DESIGN LOADING:
 BRIDGE UNITS: HL-93
 HEADWALLS: EARTH PRESSURE ONLY
 WINGWALLS: EARTH PRESSURE ONLY
 DESIGN FILL HEIGHT: 3'-6" MIN. TO 6'-0" MAX. FROM TOP OF CROWN TO TOP OF PAVEMENT.
 DESIGN METHOD: LOAD RESISTANCE FACTOR DESIGN PER AASHTO LRFD SPECIFICATION
 FACTORED BEARING RESISTANCE: 12000 PSF*

*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 OF 12000 PSF 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 4000 PSI. REINFORCING STEEL FOR FOOTINGS SHALL CONFORM TO ASTM A615 OR A996-GRADE 60.

DOWNTOWN COLUMBIA CRESCENT NEIGHBORHOOD DIVIDED SKY LANE CROSSING HOWARD COUNTY, MARYLAND

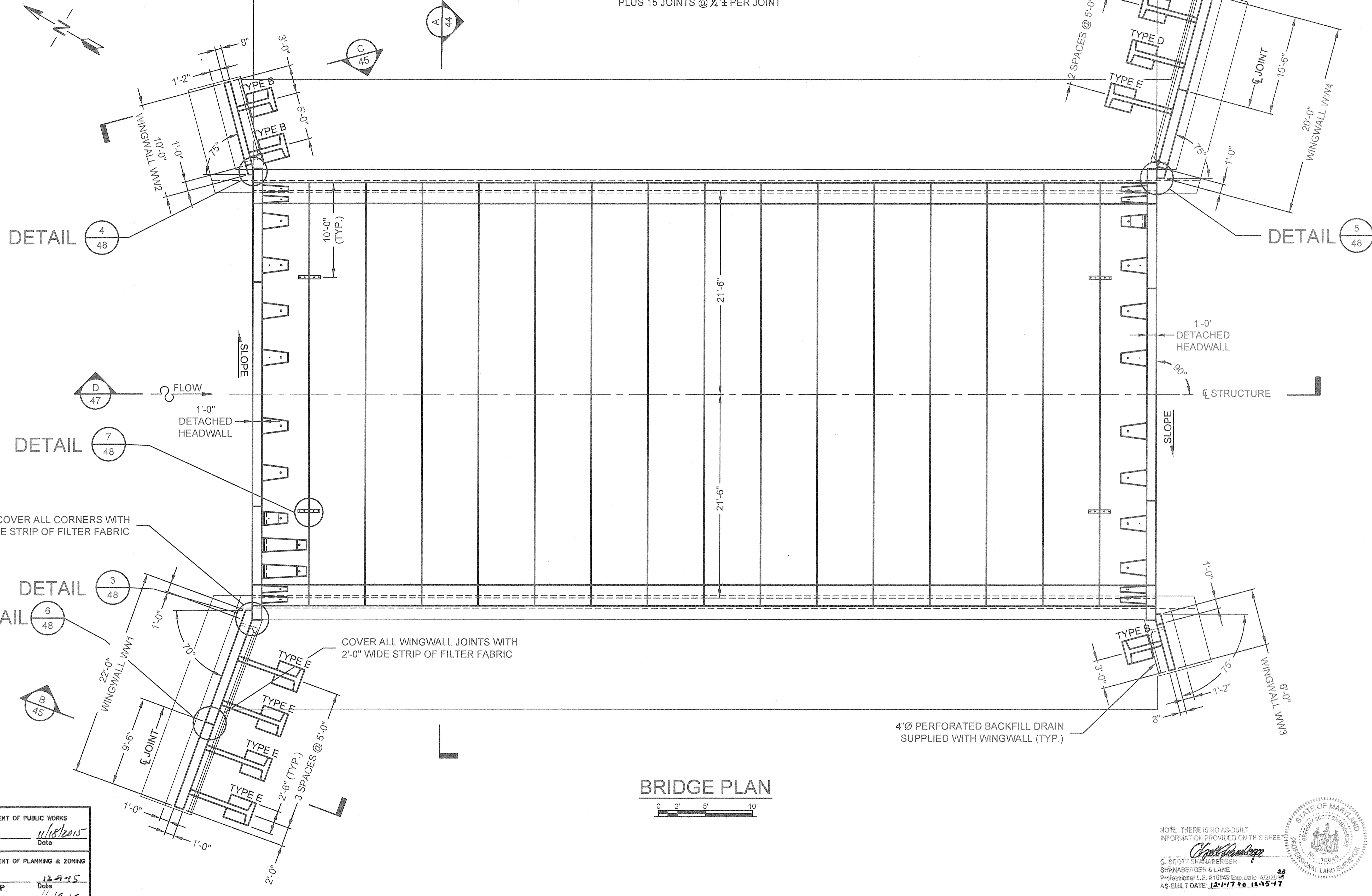


APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS <i>[Signature]</i> Chief, Bureau of Highways Date: 11/18/2015
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING <i>[Signature]</i> Chief, Division of Land Development Group Date: 12-9-15
<i>[Signature]</i> Chief, Development Engineering Division Date: 11-19-15

AS-BUILT CERTIFICATION
 I HEREBY CERTIFY, BY SEAL, THAT THE FACILITIES SHOWN ON THIS PLAN WERE CONSTRUCTED AS SHOWN ON THIS PLAN MEET THE CURRENT APPROVED PLANS AND SPECIFICATIONS.
[Signature]
 G. SCOTT SHAMBERGER
 SHAMBERGER & LANE
 PROFESSIONAL LAND SURVEYOR # 108819
 LICENSE EXPIRATION DATE 12/31/2016
 AS-BUILT SURVEY DATES 12-17-15 TO 12-18-15

	PREPARED FOR: THE HOWARD HUGHES CORPORATION 10480 LITTLE PATUXENT PARKWAY SUITE 400 COLUMBIA, MARYLAND 21044 ATTN: BOB JENKINS 410-984-5443	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. 39225, EXPIRATION DATE: 8/19/2016.	LOCATION PLAN, GENERAL NOTES, DESIGN DATA DOWNTOWN COLUMBIA CRESCENT NEIGHBORHOOD - PH. 1 - PARCELS A-1 THRU A-3 DIVIDED SKY LANE CROSSING ELECTION DISTRICT No. 5 HOWARD COUNTY, MARYLAND	SCALE AS NOTED	ZONING NT	DATE NOV, 2015	TAXITILE 36 - 01	SHEET 22 OF 31
	DES: JMF, DRN: ACR, CHK: KDK DATE: _____ REVISION: _____ BY: _____ APPR: _____							

96'-0"
 16 - (O843) 43'-0" SPAN x 8'-9 $\frac{3}{8}$ " RISE x 5'-11 $\frac{1}{4}$ " LONG
 PRECAST CONCRETE BRIDGE UNITS
 PLUS 15 JOINTS @ $\frac{1}{4}$ " \pm PER JOINT

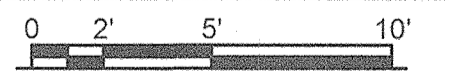


COVER ALL CORNERS WITH
 2'-0" WIDE STRIP OF FILTER FABRIC

COVER ALL WINGWALL JOINTS WITH
 2'-0" WIDE STRIP OF FILTER FABRIC

4"Ø PERFORATED BACKFILL DRAIN
 SUPPLIED WITH WINGWALL (TYP.)

BRIDGE PLAN



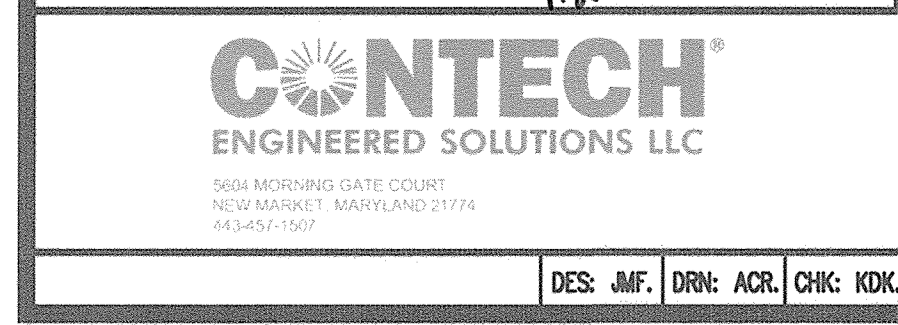
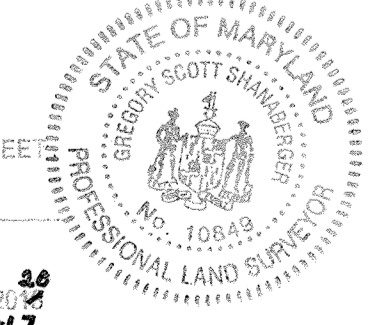
APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
M. M. Williams
 Chief, Bureau of Highways Date 11/18/15

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
K. J. Jenkins
 Chief, Division of Land Development Date 12-2-15

D. J. ...
 Chief, Development Engineering Division Date 11-19-15

NOTE: THERE IS NO AS-BUILT
 INFORMATION PROVIDED ON THIS SHEET

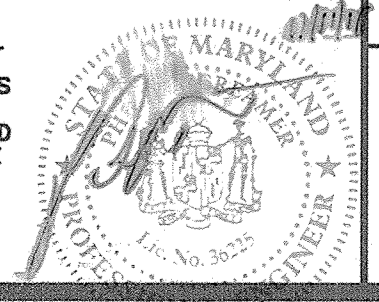
G. Scott Shrabinger
 G. SCOTT SHRABINGER
 SHRABINGER & LAINE
 PROFESSIONAL LAND SURVEYOR
 LICENSE NO. 10849
 AS-BUILT DATE: 12-1-17 to 14-15-17



DES.	DRN.	ACR.	CHK.	KOK.	DATE	REVISION	BY	APPR.

PREPARED FOR:
 THE HOWARD HUGHES CORPORATION
 10480 LITTLE PATUXENT PARKWAY
 SUITE 400
 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. 36525,
 EXPIRATION DATE: 8/19/2016.

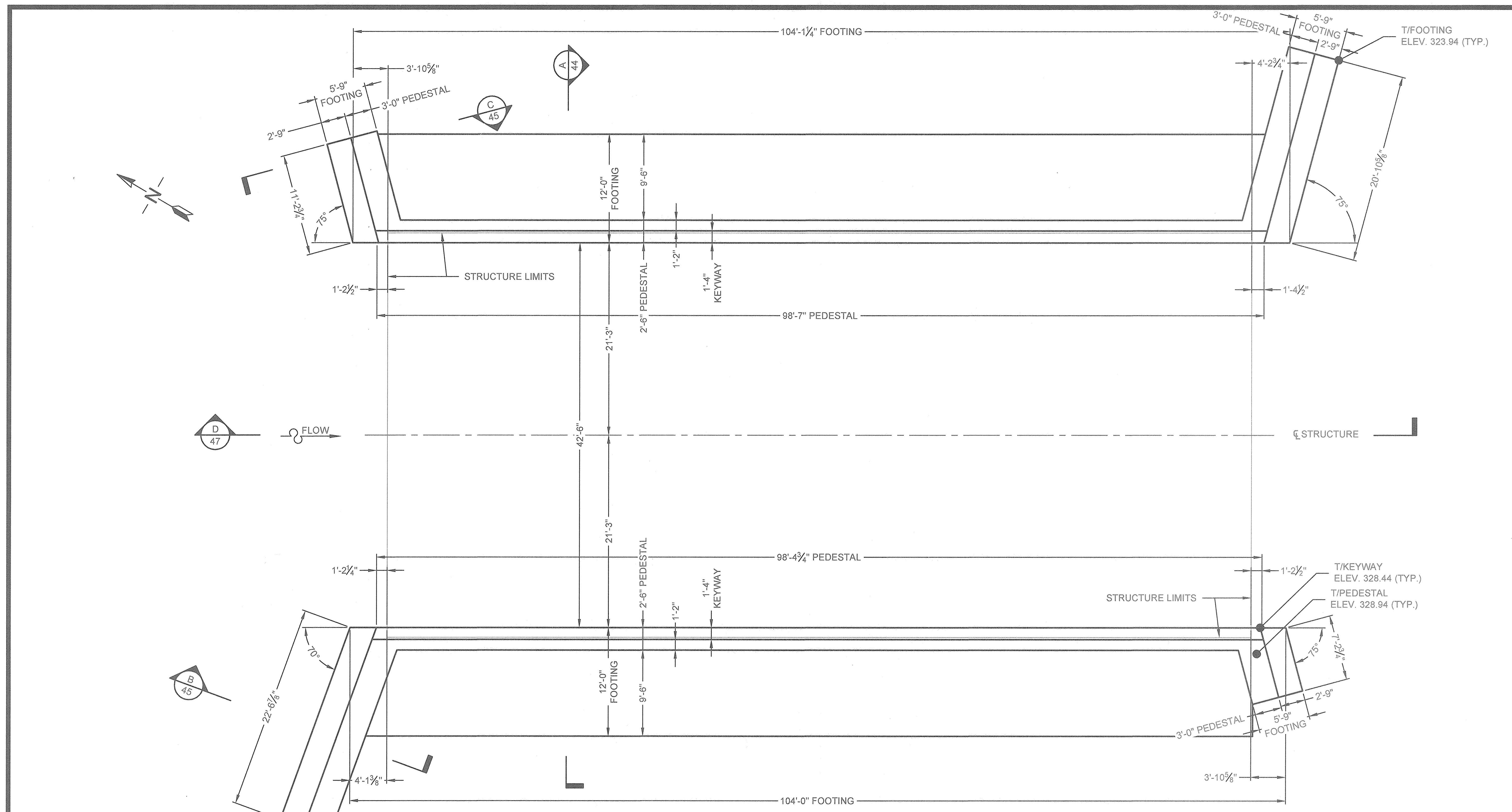


BRIDGE PLAN
 DOWNTOWN COLUMBIA
 CRESCENT NEIGHBORHOOD - PH.1 - PARCELS A-1 THRU A-3
 DIVIDED SKY LANE CROSSING

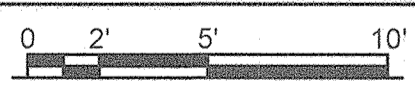
SCALE	ZONING	DATE	TAXITILE	SHEET
AS NOTED	NT	NOV, 2015	36 - 01	23 OF 31

ELECTION DISTRICT No. 5

HOWARD COUNTY, MARYLAND



FOUNDATION PLAN



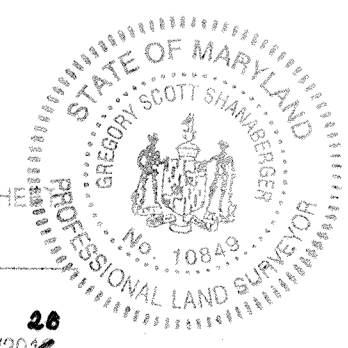
APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
M. McNeil
 Chief, Bureau of Highways
 Date: 11/18/2015

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
K. S. [Signature]
 Chief, Division of Land Development
 Date: 12-5-15

D. [Signature]
 Chief, Development Engineering Division
 Date: 11-19-15

NOTE: THERE IS NO AS-BUILT INFORMATION PROVIDED ON THIS SHEET.

G. Scott Shanberger
 G. SCOTT SHANBERGER
 SHANBERGER & LANE
 PROFESSIONAL L.S. #10845 Exp. Date: 4/2/2017
 AS-BUILT DATE: 12-1-17 to 12-15-17

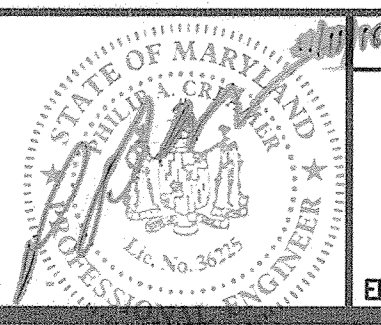


CONTECH
 ENGINEERED SOLUTIONS LLC
 5501 MORNING GATE COURT
 NEW MARKET, MARYLAND 21774
 443-451-1001

NO.	DATE	REVISION	BY	APPR.

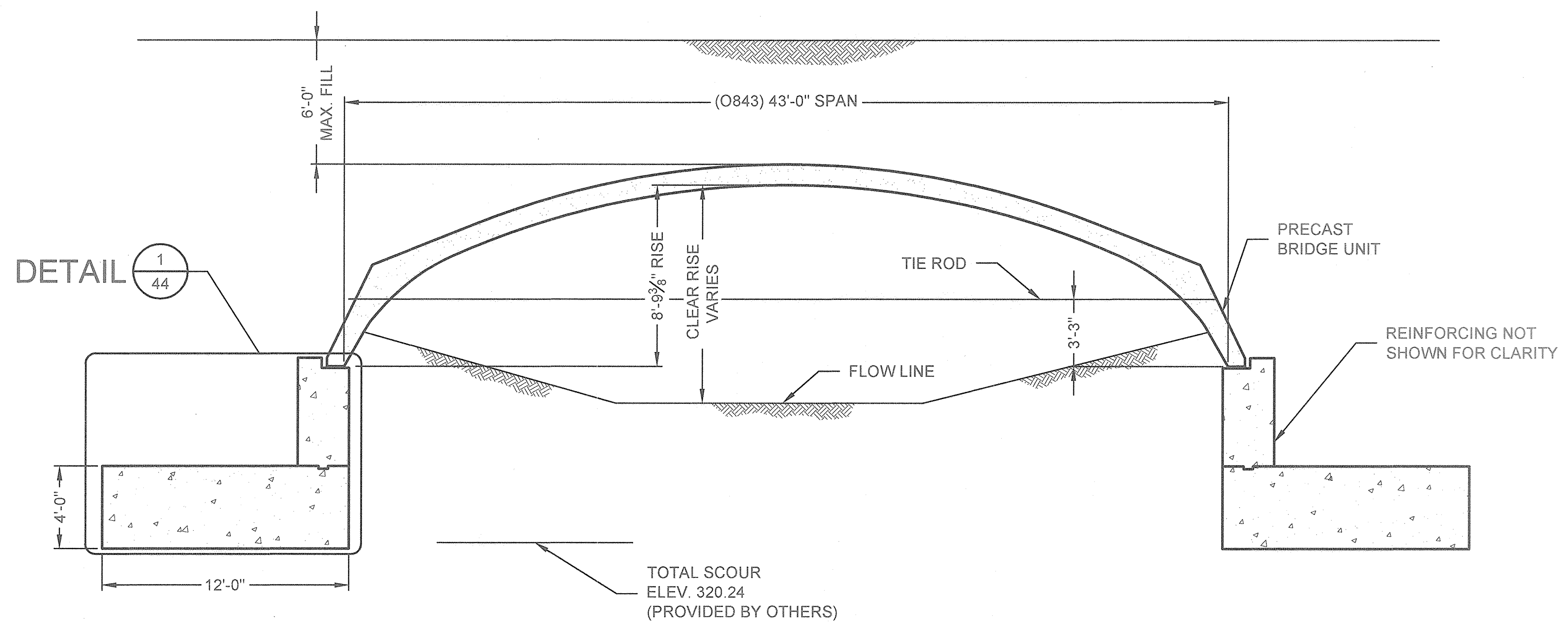
PREPARED FOR:
 THE HOWARD HUGHES CORPORATION
 10480 LITTLE PATUXENT PARKWAY
 SUITE 400
 COLUMBIA, MARYLAND 21044
 ATTN: BOB JENKINS
 410-964-5443

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. 38225, EXPIRATION DATE: 8/19/2018.

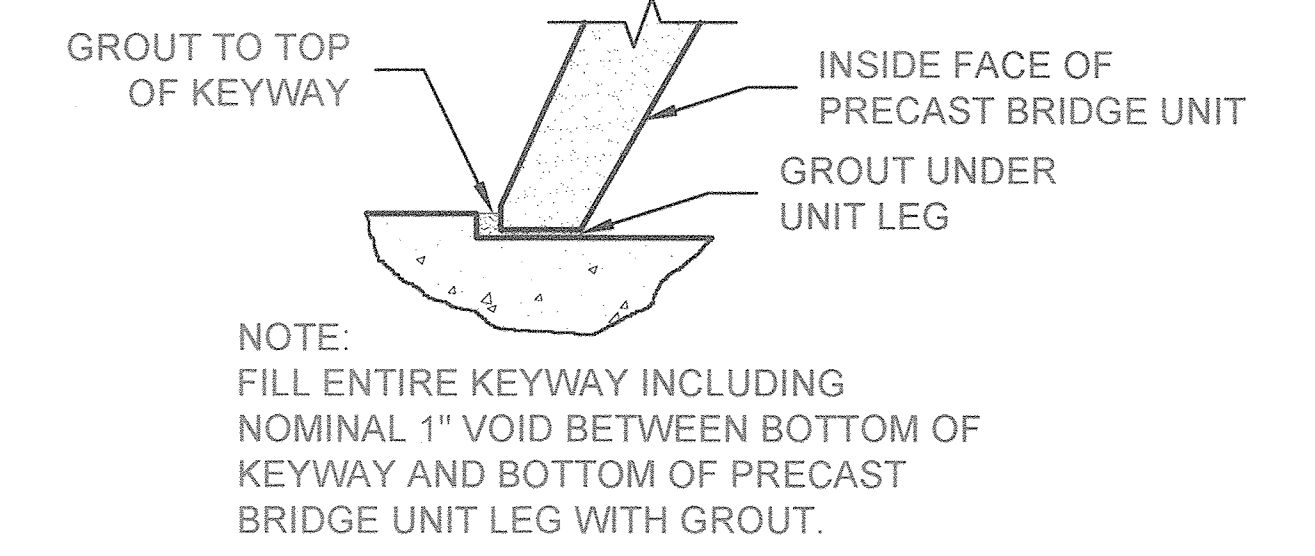
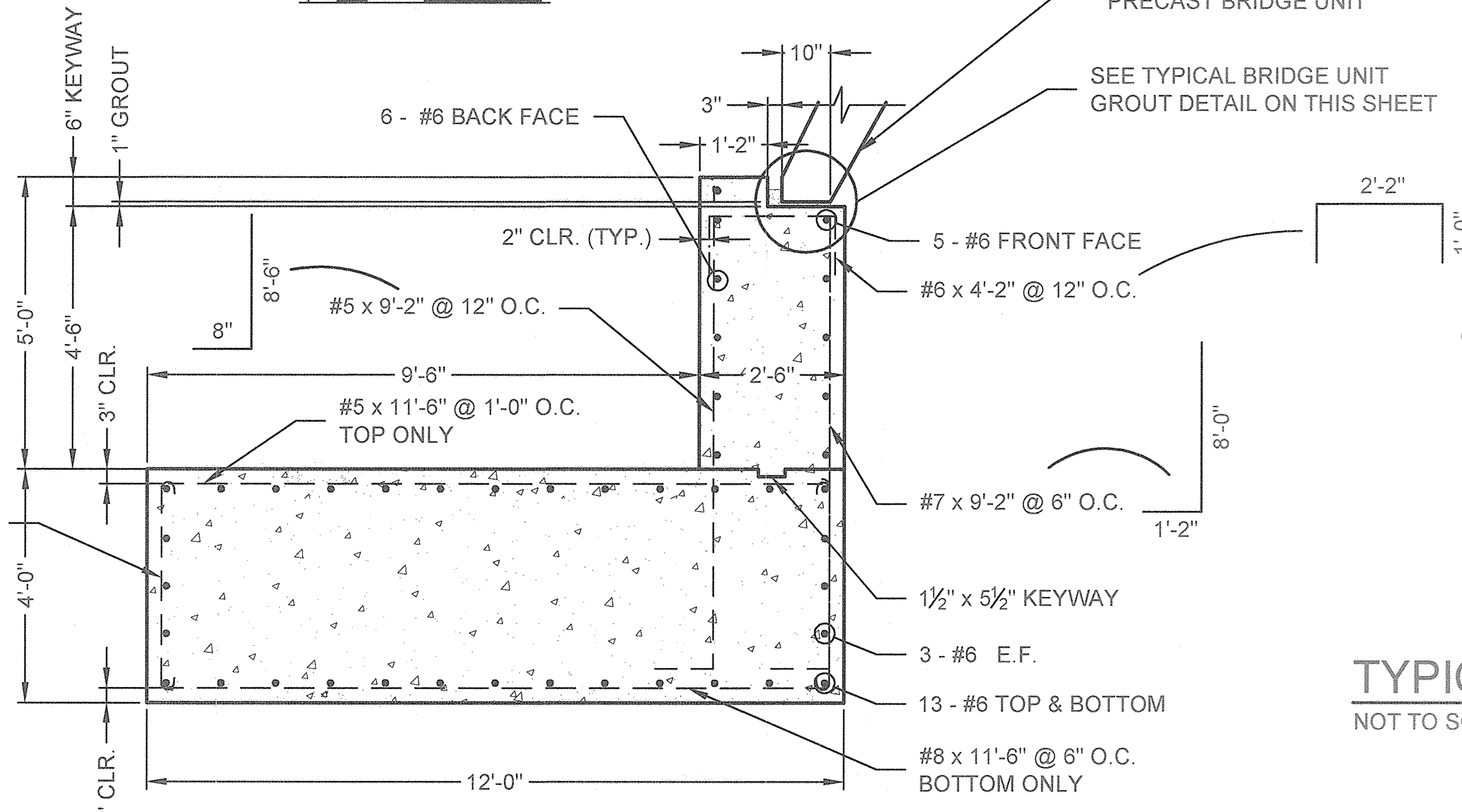


FOUNDATION PLAN
 DOWNTOWN COLUMBIA
 CRESCENT NEIGHBORHOOD - PH.1 - PARCELS A-1 THRU A-3
 DIVIDED SKY LANE CROSSING
 HOWARD COUNTY, MARYLAND

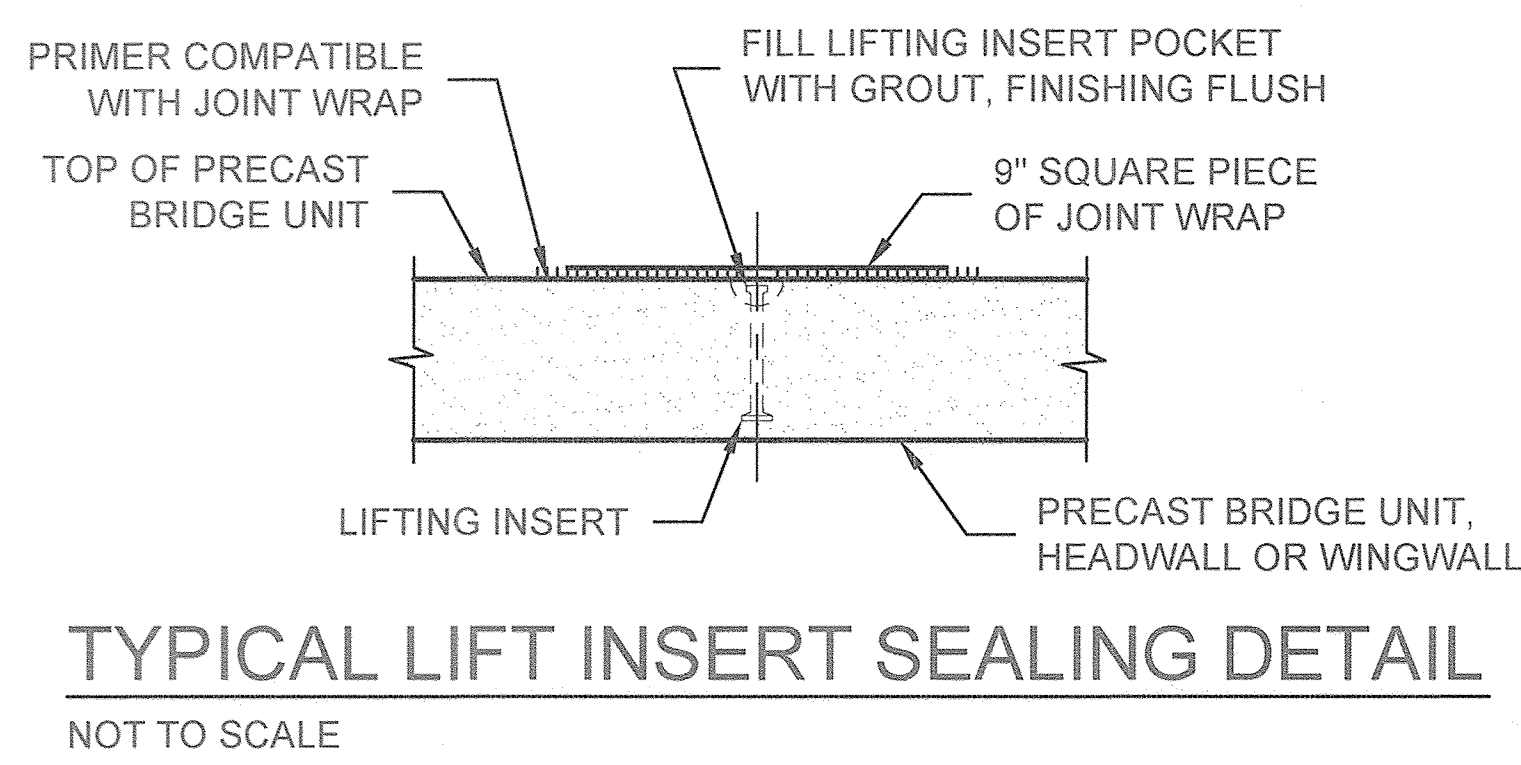
SCALE	ZONING	DATE	TAXITILE	SHEET
AS NOTED	NT	NOV, 2015	36 - 01	24 OF 31



SECTION A



TYPICAL BRIDGE UNIT GROUT DETAIL
NOT TO SCALE



TYPICAL LIFT INSERT SEALING DETAIL
NOT TO SCALE

DETAIL 1/44

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
 Chief, Bureau of Highways *[Signature]* 11/18/2015
 Date

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
 Chief, Division of Land Development *[Signature]* 12-9-15
 Date

Chief, Development Engineering Division *[Signature]* 11-19-15
 Date

NOTE: THERE IS NO AS-BUILT INFORMATION PROVIDED ON THIS SHEET

[Signature]
 G. SCOTT SHMADLER
 SHMADLER & LANE
 Professional L.S. #11048 Exp. Date: 4/2/2017
 AS-BUILT DATE: 12-17-15, 12-15-17

CONTECH
 ENGINEERED SOLUTIONS LLC

1504 MORNING GATE COURT
 NEW MARKET, MARYLAND 21774
 410-531-7517

DES.	JMF	DRN:	ACR	CHK:	KOK	DATE	REVISION	BY	APPR.

PREPARED FOR:
 THE HOWARD HUGHES CORPORATION
 10480 LITTLE PATUXENT PARKWAY
 SUITE 400
 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. 36325, EXPIRATION DATE: 8/19/2018.

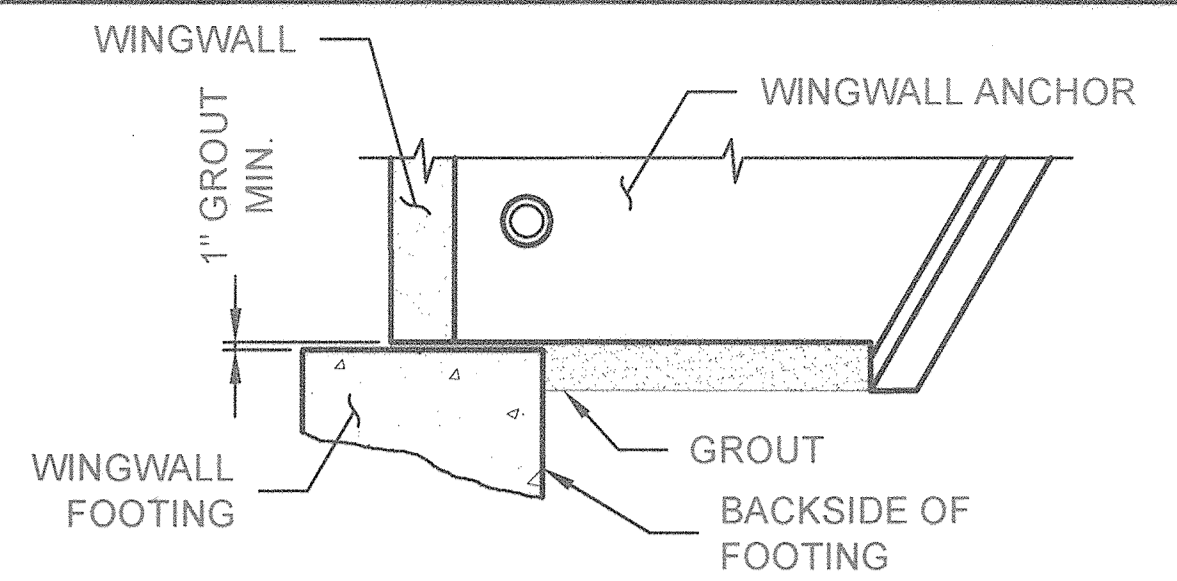
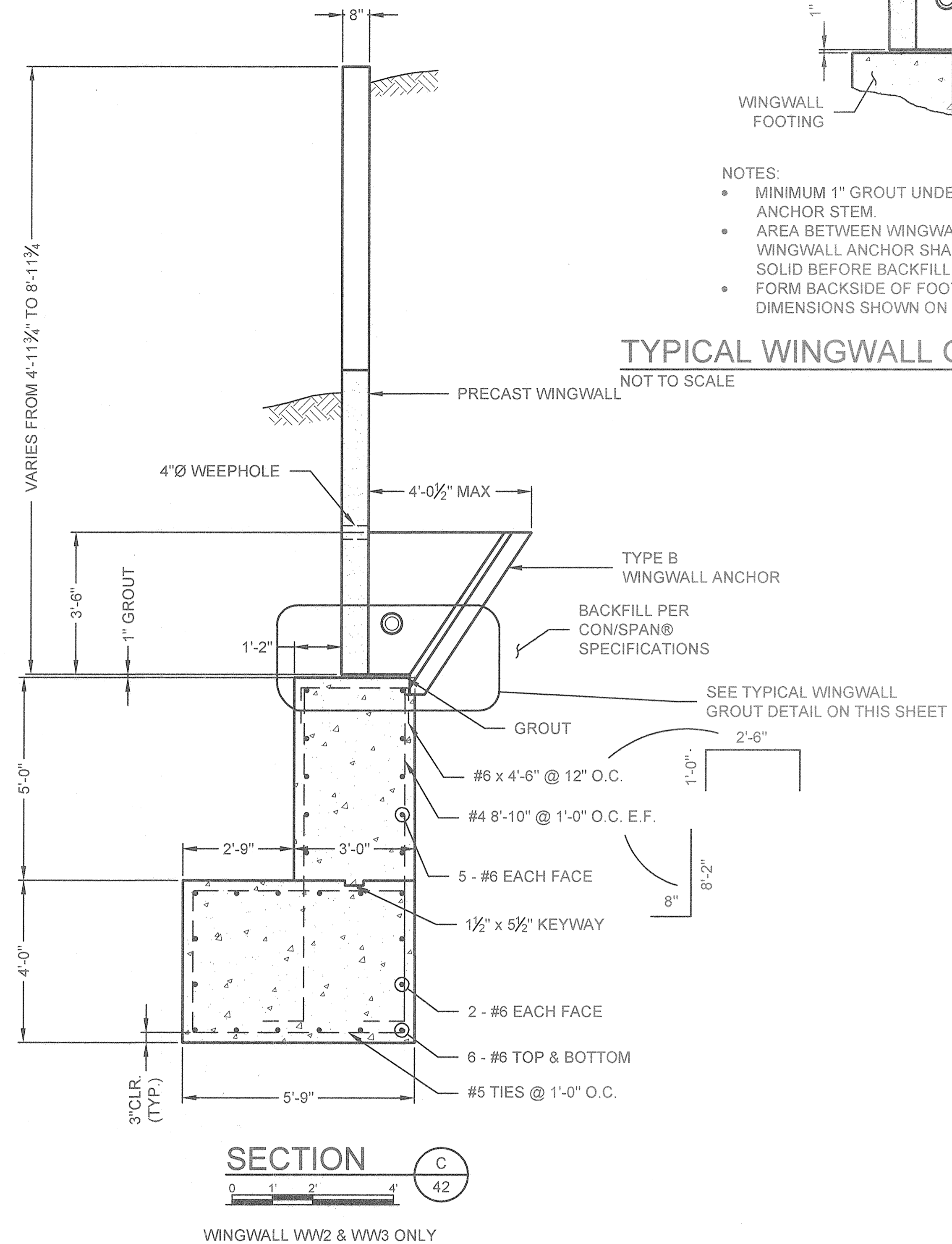
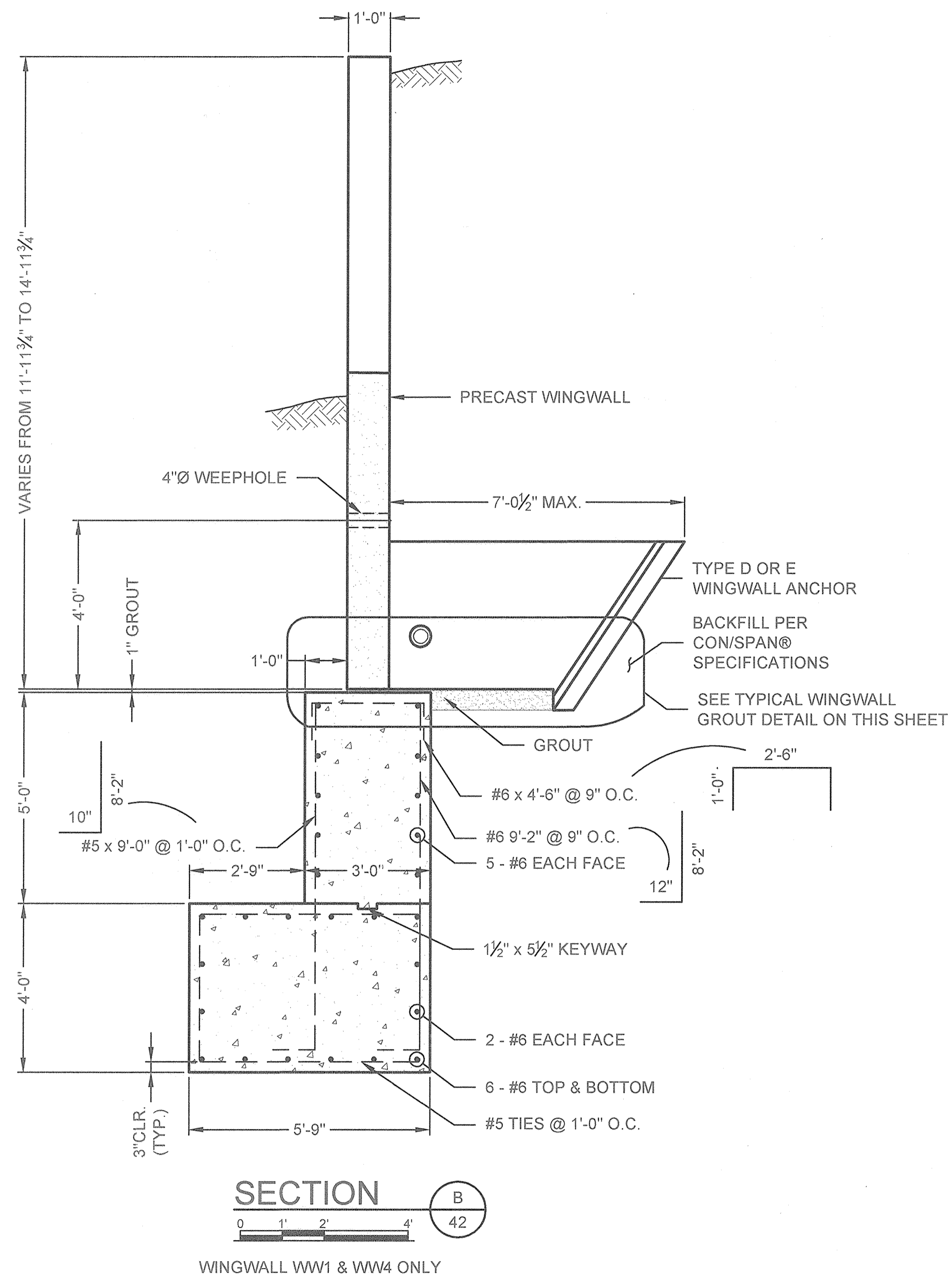
TYPICAL BRIDGE SECTION, FOUNDATION DETAILS

DOWNTOWN COLUMBIA
 CRESCENT NEIGHBORHOOD - PH.1 - PARCELS A-1 THRU A-3
 DIVIDED SKY LANE CROSSING

ELECTION DISTRICT No. 5

HOWARD COUNTY, MARYLAND

SCALE	ZONING	DATE	TAXITILE	SHEET
AS NOTED	NT	NOV, 2015	36 - 01	25 OF 31



- 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 *[Signature]* *[Date]*
 APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
 Chief, Division of Land Development *[Signature]* *[Date]*
 Chief, Development Engineering Division *[Signature]* *[Date]*

NOTE: THERE IS NO AS-BUILT INFORMATION PROVIDED ON THIS SHEET.
 G. SCOTT BRUBAKER
 SHANNONVILLE LANE
 PROFESSIONAL LAND SURVEYOR
 LICENSE NO. 10849
 AS-BUILT DATE: 12-11-14 TO 12-15-17

CONTECH
 ENGINEERED SOLUTIONS LLC
 1604 MORNING GATE COURT
 NEW MARKET, MARYLAND 21774
 410-964-5443

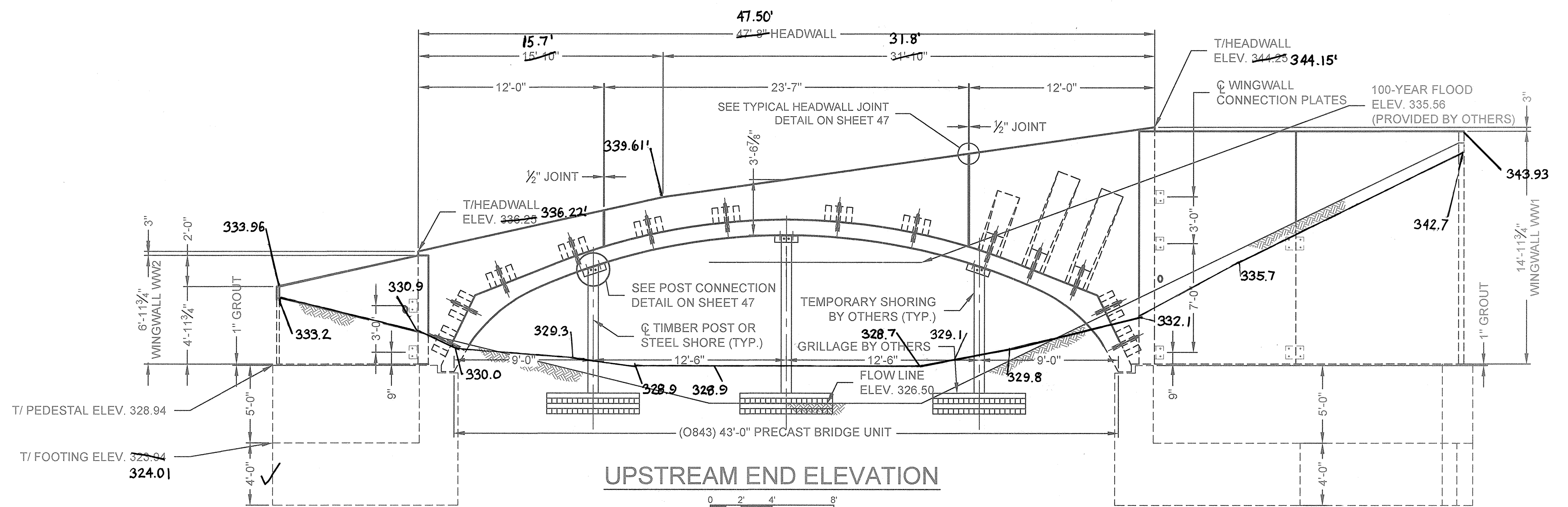
DES:	DRN:	ACR:	CHK:	KDK:	DATE	REVISION	BY	APP'R.

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

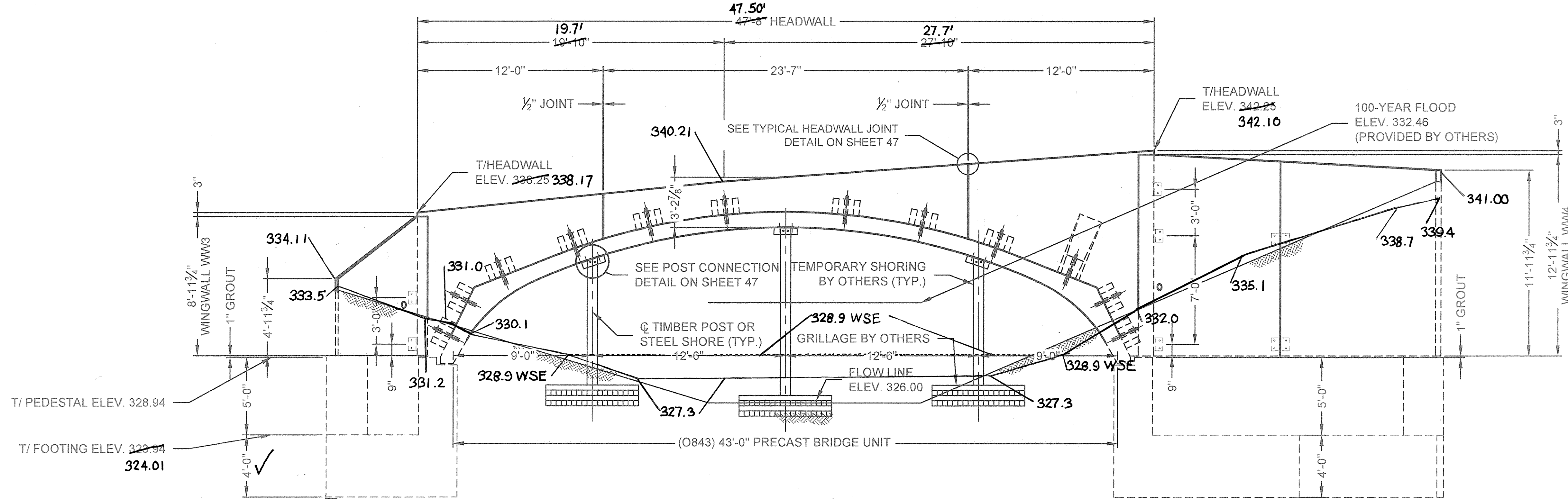
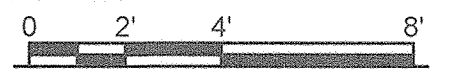
PROFESSIONAL CERTIFICATION
 I HEREBY CERTIFY THAT THESE PLANS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 36225.
 EXPIRATION DATE: 8/19/2016.

WINGWALL SECTIONS
 DOWNTOWN COLUMBIA
 CRESCENT NEIGHBORHOOD - PH.1 - PARCELS A-1 THRU A-3
 DIVIDED SKY LANE CROSSING
 ELECTION DISTRICT No. 5
 HOWARD COUNTY, MARYLAND

SCALE	ZONING	DATE	TAXITLE	SHEET
AS NOTED	NT	NOV, 2015	36 - 01	26 OF 31



UPSTREAM END ELEVATION



DOWNSTREAM END ELEVATION



APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
 Chief, Bureau of Highways
 Date: 12/8/2015

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
 Chief, Division of Land Development
 Date: 12-9-15

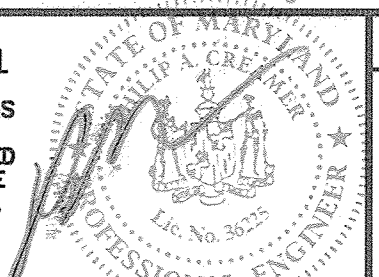
Chief, Development Engineering Division
 Date: 1-18-16

AS-BUILT CERTIFICATION
 I HEREBY CERTIFY, BY SIGNATURE, THAT THE FACILITIES SHOWN ON THIS PLAN WERE CONSTRUCTED AS SHOWN ON THIS PLAN MEET THE CURRENT APPROVED PLANS AND SPECIFICATIONS.

Scott Shanaberger
 12/2/16
 SCOTT SHANABERGER
 SHANABERGER & LANE
 PROFESSIONAL LAND SURVEYOR OR #10849
 LICENSE EXPIRATION DATE 4/2/2020
 AS-BUILT SURVEY DATES 12-1-17 TO 12/15/17

PREPARED FOR:
 THE HOWARD HUGHES CORPORATION
 10480 LITTLE PATUXENT PARKWAY
 SUITE 400
 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 DAILY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 36225, EXPIRATION DATE: 8/19/2016.



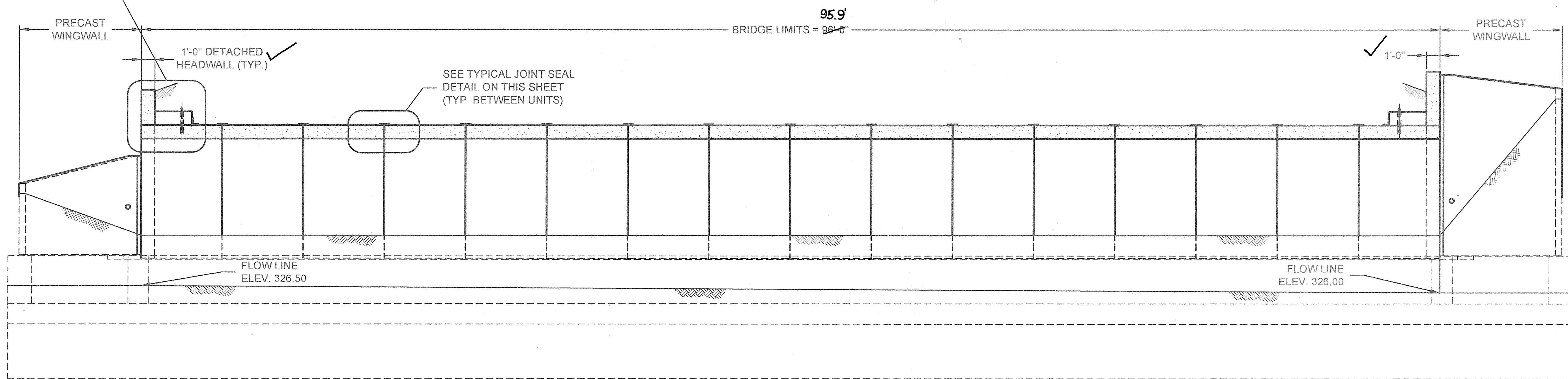
END ELEVATIONS
 DOWNTOWN COLUMBIA
 CRESCENT NEIGHBORHOOD - PH.1 - PARCELS A-1 THRU A-3
 DIVIDED SKY LANE CROSSING
 ELECTION DISTRICT No. 5
 HOWARD COUNTY, MARYLAND

SCALE	ZONING	
AS NOTED	NT	
DATE	TAXTITLE	SHEET
NOV, 2015	36 - 01	27 OF 31

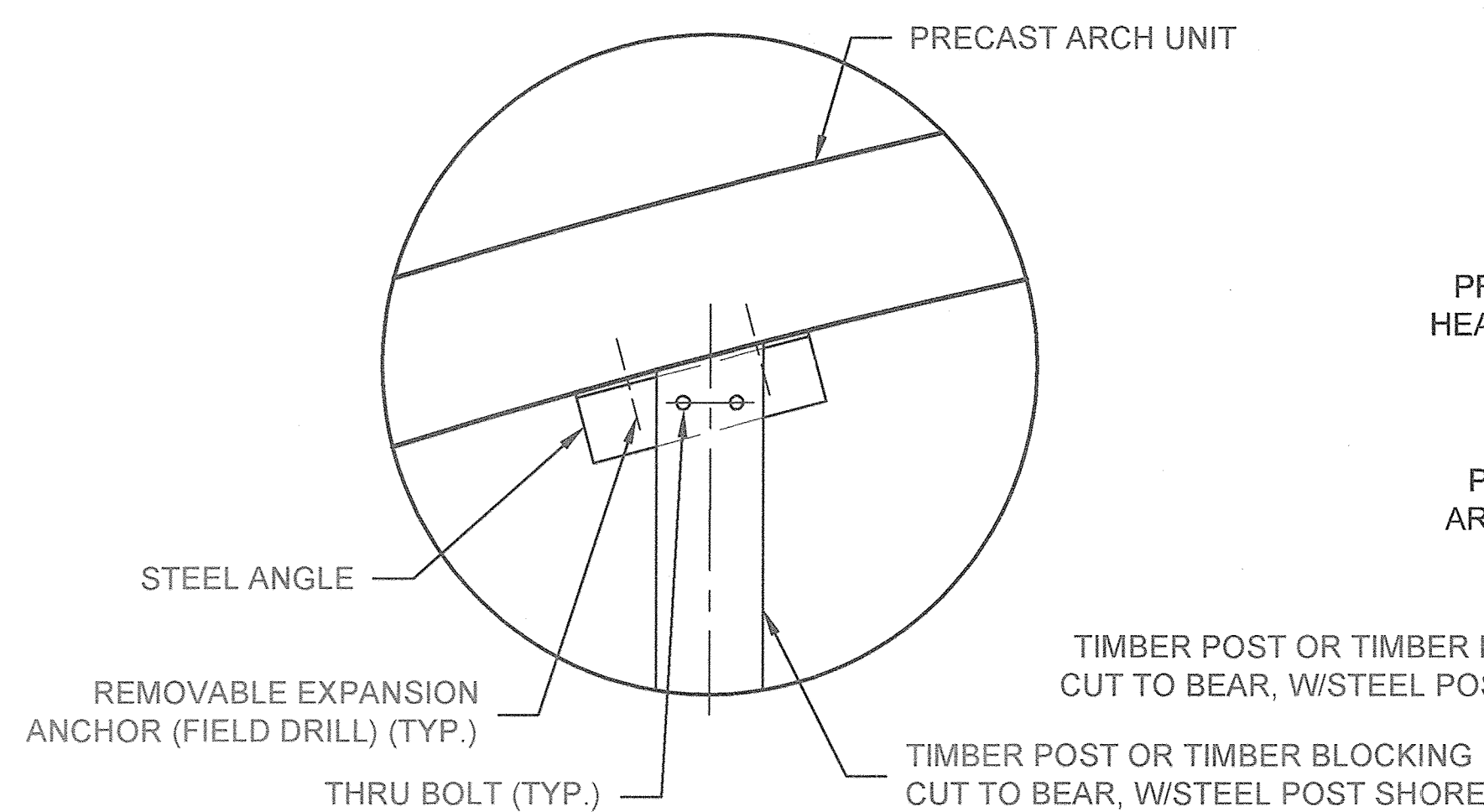


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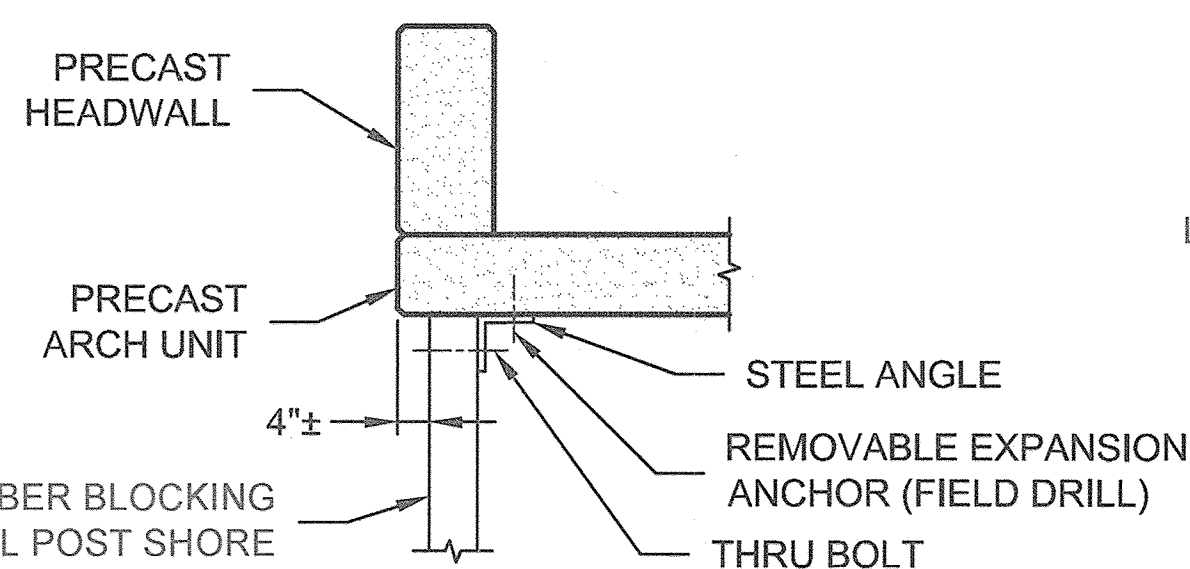
DETAIL 2/47



SECTION D
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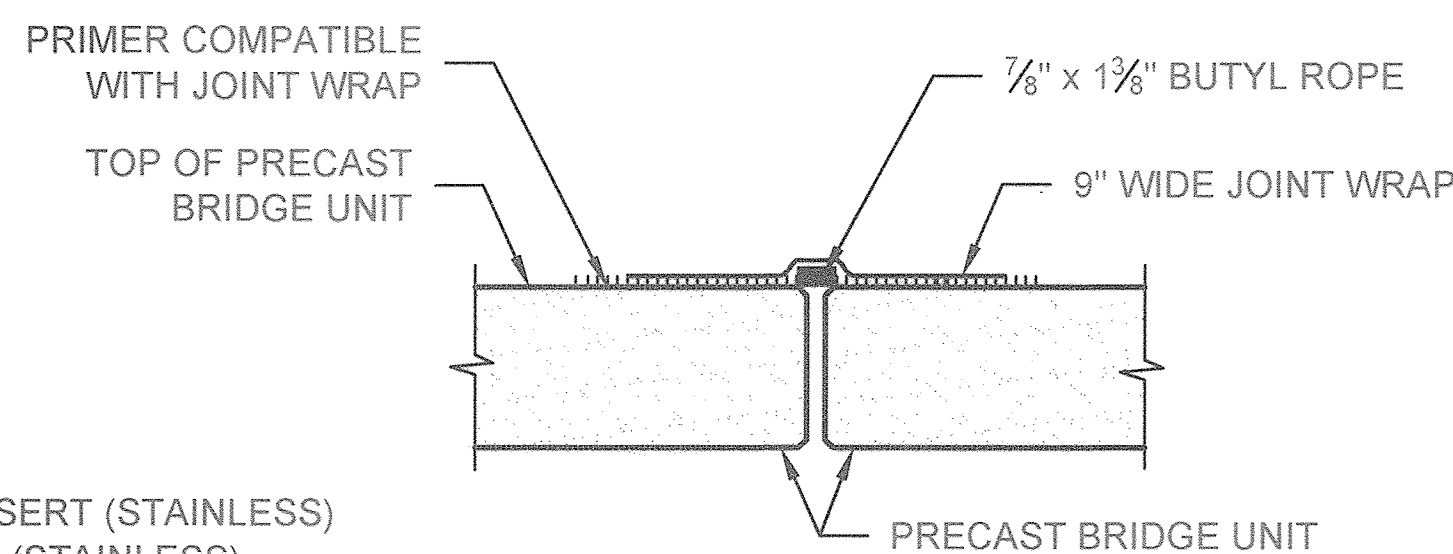


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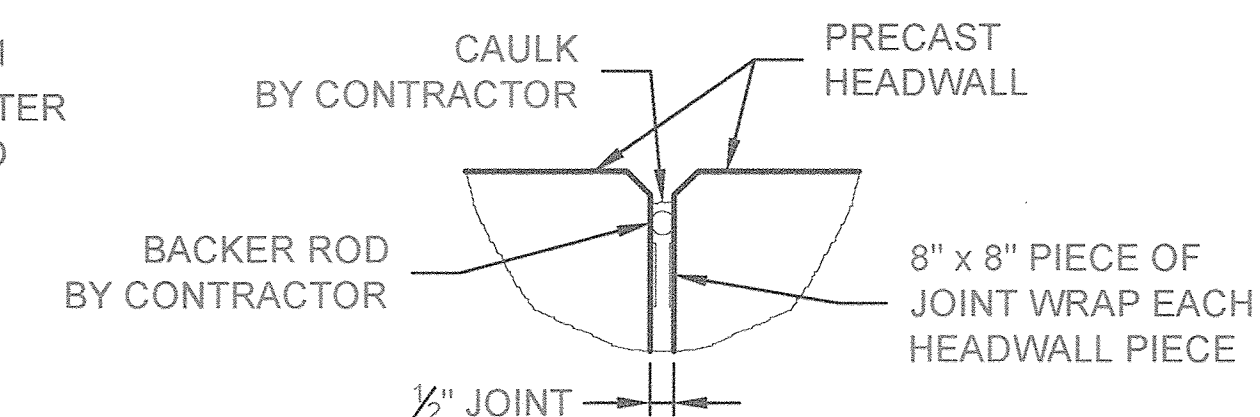
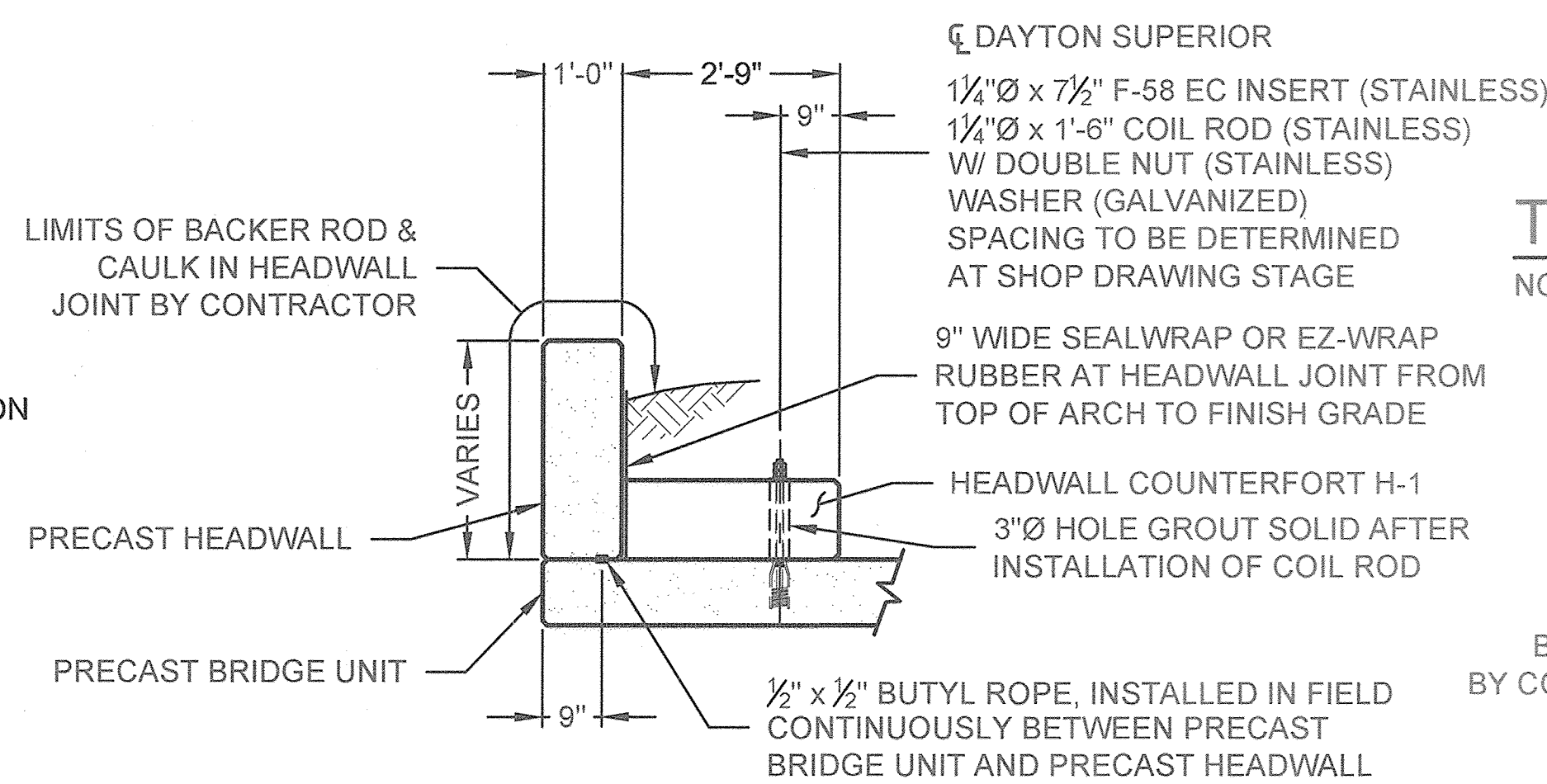


HEADWALL SECTION

TEMPORARY SHORING DETAIL & SECTION



TYPICAL JOINT SEAL DETAIL
NOT TO SCALE



TYPICAL HEADWALL JOINT DETAIL
NOT TO SCALE

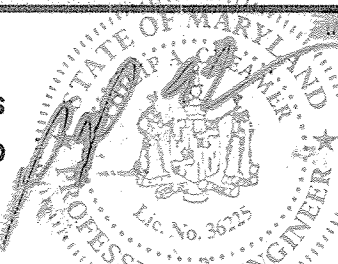
DETAIL 2/47
0 1' 2' 4'

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
M. M... 11/18/2015
 Chief, Bureau of Highways
 APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
K. S... 12-9-15
 Chief, Division of Land Development
D. B... 11-19-15
 Chief, Development Engineering Division

AS-BUILT CERTIFICATION
 I HEREBY CERTIFY, BY SEAL, THAT THE FACILITIES SHOWN ON THIS PLAN WERE CONSTRUCTED AS SHOWN ON THIS PLAN MEETING THE CURRENT APPROVED PLANS AND SPECIFICATIONS.
G. Scott Shanberger
 G. SCOTT SHANBERGER
 SHANBERGER'S LANE
 PROFESSIONAL LAND SURVEYOR #10644
 LICENSE EXPIRATION DATE 4/2/2020
 AS-BUILT SURVEY DATES 12-1-17 TO 11/15/17

PREPARED FOR:
 THE HOWARD HUGHES CORPORATION
 10480 LITTLE PATUXENT PARKWAY
 SUITE 400
 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. 36225, EXPIRATION DATE: 8/19/2018.



LONGITUDINAL SECTION, HEADWALL DETAILS

DOWNTOWN COLUMBIA
 CRESCENT NEIGHBORHOOD - PH. 1 - PARCELS A-1 THRU A-3
 DIVIDED SKY LANE CROSSING

SCALE	ZONING	
AS NOTED	NT	
DATE	TAXITILE	SHEET
NOV, 2015	36 - 01	28 OF 31

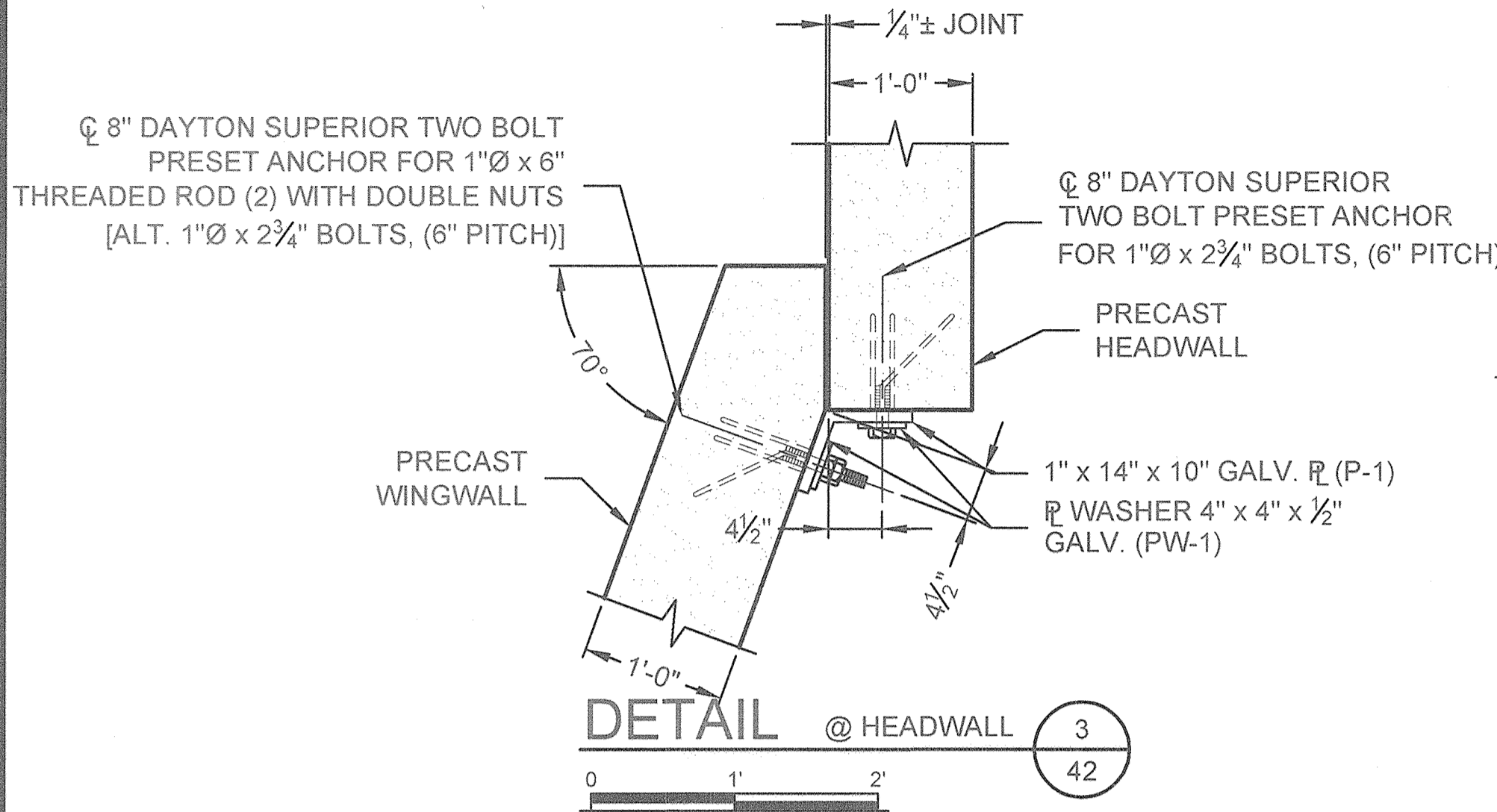
CONTECH
 ENGINEERED SOLUTIONS LLC
 5604 MORNING GATE COURT
 NEW MARKET, MARYLAND 21774
 410-540-7007

DES: JMF, DRN: ACR, CHK: KOK	DATE	REVISION	BY	APPR.

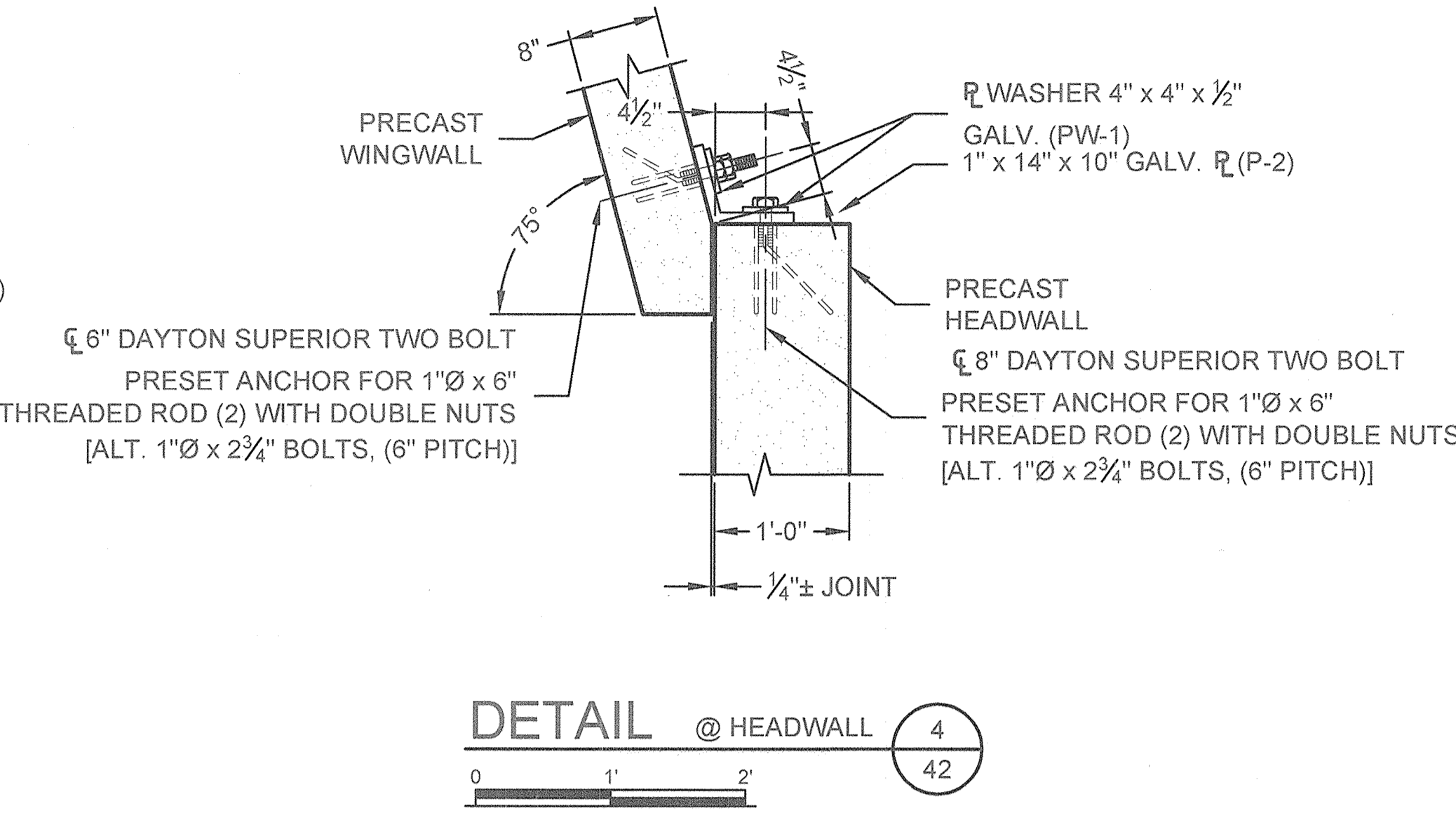
ELECTION DISTRICT No. 5

HOWARD COUNTY, MARYLAND

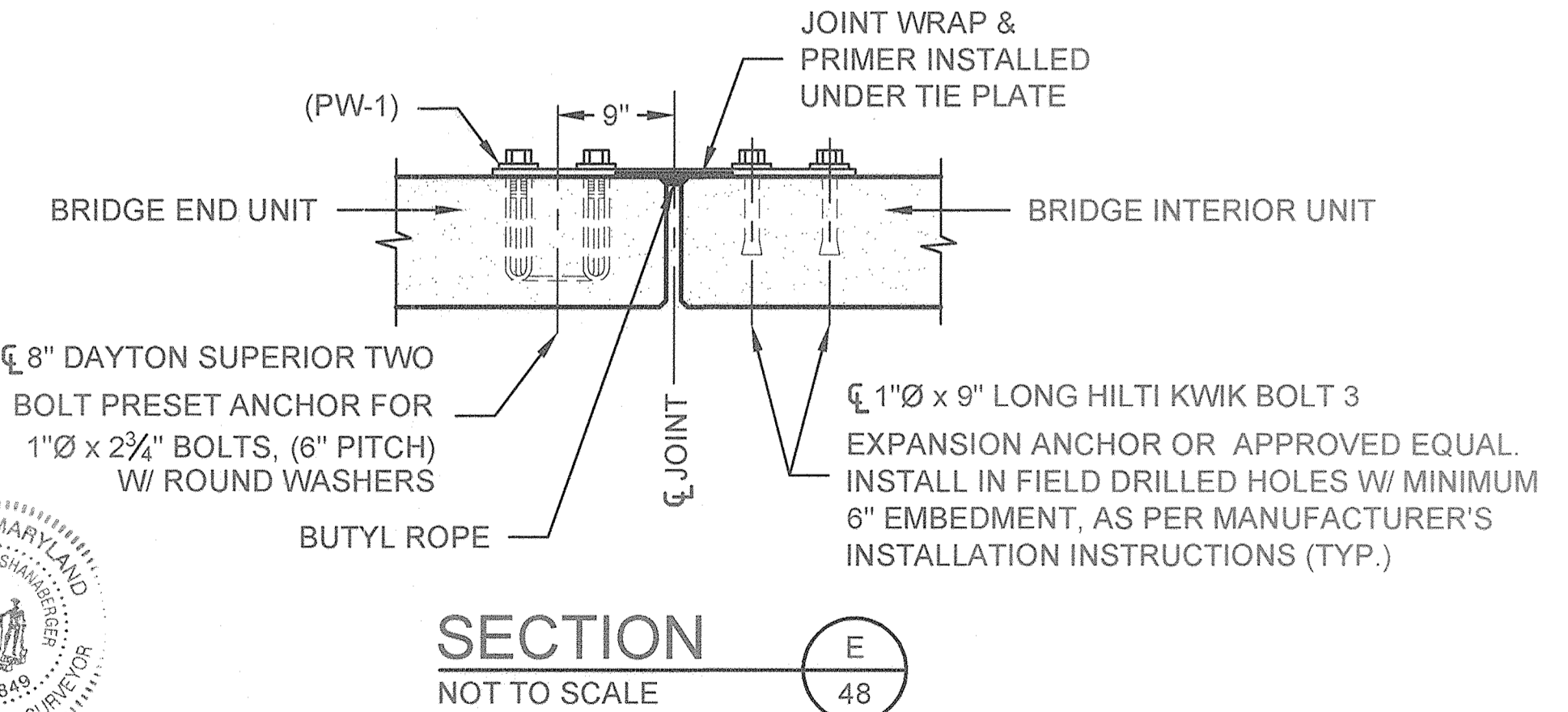
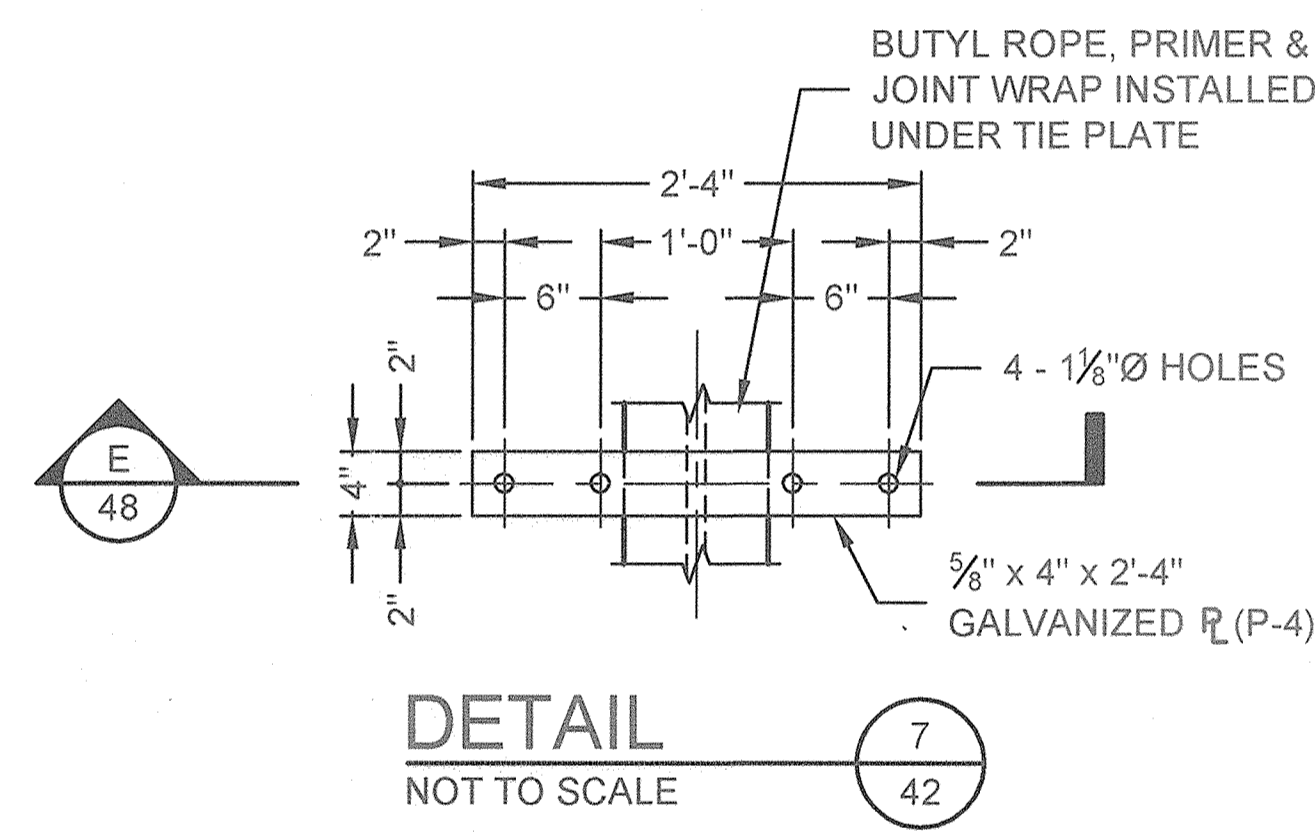
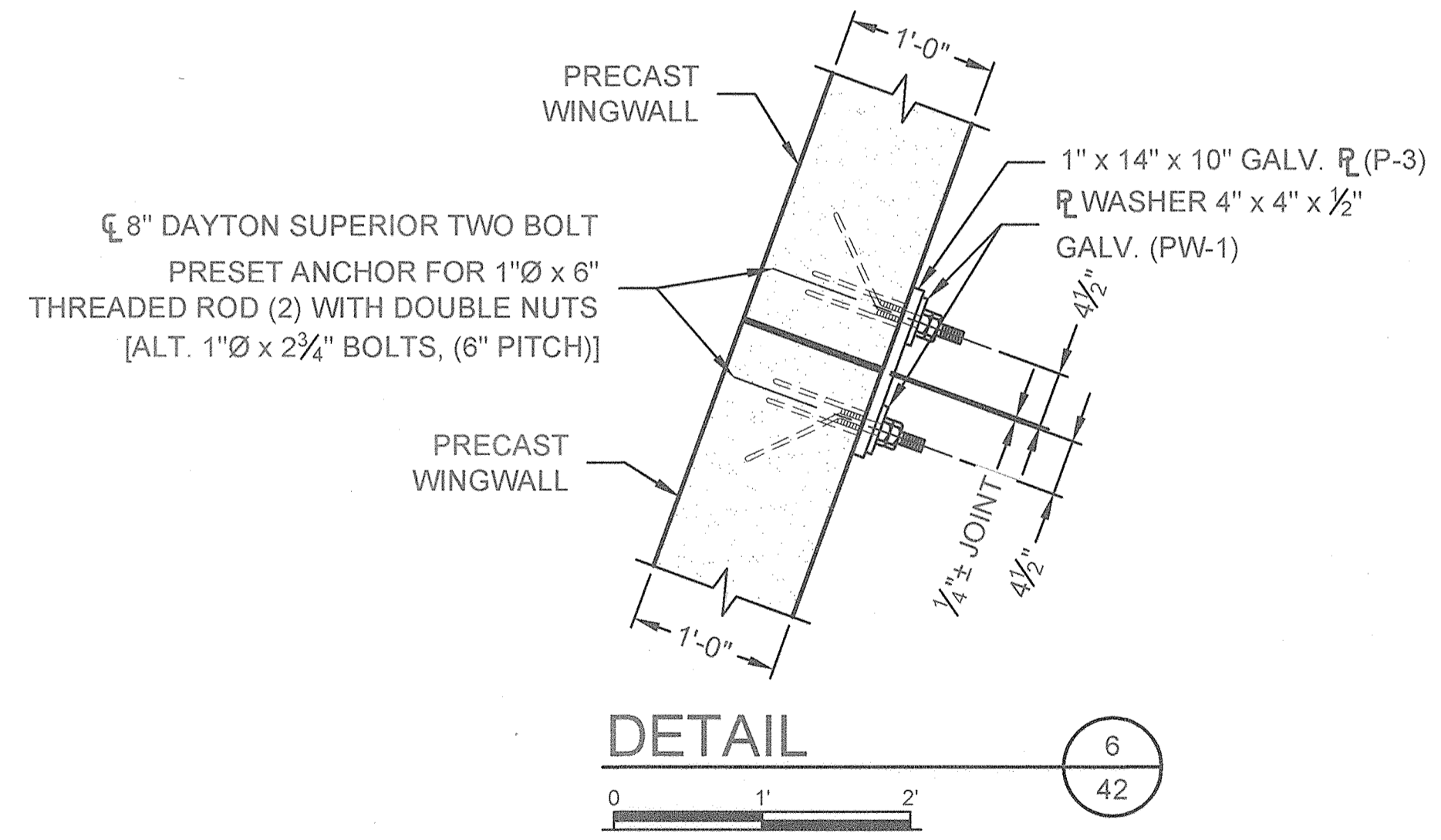
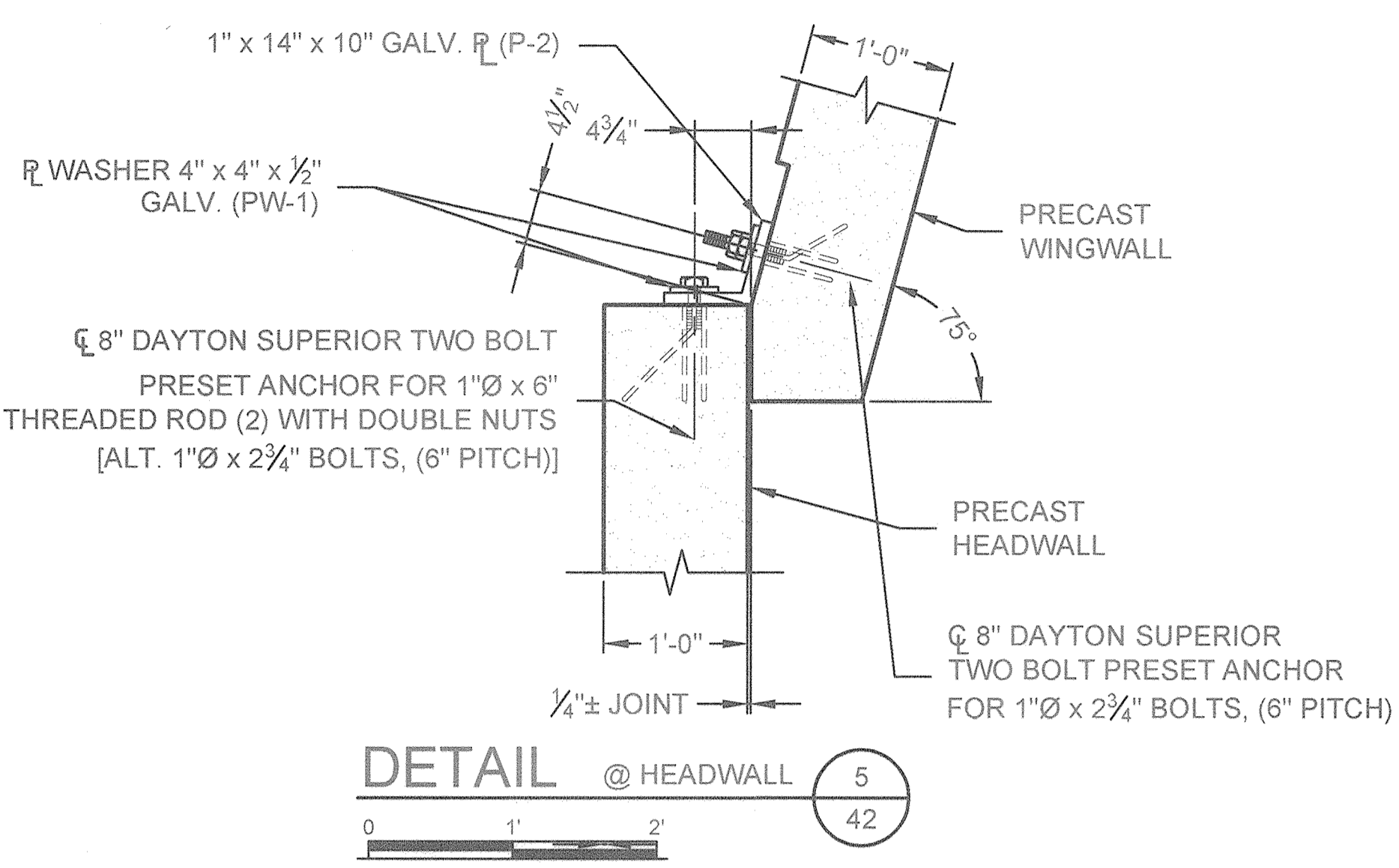
NOTE:
CONNECTION R_L'S (P-1) MUST BE
POSITIONED WITH SMALL Ø HOLES
TOWARD PRECAST HEADWALL



NOTE:
CONNECTION R_L'S (P-2) MUST BE
POSITIONED WITH SMALL Ø HOLES
TOWARD PRECAST HEADWALL



NOTE:
CONNECTION R_L'S (P-2) MUST BE
POSITIONED WITH SMALL Ø HOLES
TOWARD PRECAST HEADWALL



APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
[Signature]
 Chief, Bureau of Highways Date 11/8/2015

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
[Signature]
 Chief, Division of Land Development Date 12-9-15

[Signature]
 Chief, Development Engineering Division Date 11-19-15

NOTE: THERE IS NO AS-BUILT
 INFORMATION PROVIDED ON THIS SHEET

[Signature]
 G. SCOTT SHANABERGER
 SHANABERGER & LANE
 Professional L.S. #10549 Exp. Date 4/2/2022
 AS-BUILT DATE: 12-1-17 TO 12-15-17



DES.	JMF	DRN.	ACR.	CHK.	KDK.	DATE	REVISION	BY	APPR.

PREPARED FOR:
 THE HOWARD HUGHES CORPORATION
 10480 LITTLE PATUXENT PARKWAY
 SUITE 400
 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. 36525
 EXPIRATION DATE: 8/19/2016.

WINGWALL DETAILS
 DOWNTOWN COLUMBIA
 CRESCENT NEIGHBORHOOD - PH.1 - PARCELS A-1 THRU A-3
 DIVIDED SKY LANE CROSSING

SCALE	ZONING	DATE	TAXITILE	SHEET
AS NOTED	NT	NOV, 2015	36 - 01	29 OF 31

1. DESCRIPTION

1.1. TYPE - THIS WORK SHALL CONSIST OF FURNISHING AND CONSTRUCTING A CONSPAN® 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.

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 AASHTO M154. THE MINIMUM CONCRETE COMPRESSIVE STRENGTH SHALL BE AS SHOWN ON THE SHOP DRAWINGS.

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.

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 1 1/2" 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 1 1/2" FROM THE ENDS OF THE BRIDGE UNIT.

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 REINFORCING IN THE TOP SLAB SHALL BE NOT MORE THAN 1'-4".

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 1/2" 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 1/4". 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 1/2" 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 1/2" IN ANY BRIDGE UNIT.
5.1.5. POSITION OF REINFORCEMENT - THE MAXIMUM VARIATION IN POSITION OF THE REINFORCEMENT SHALL BE +/- 1/2" IN NO CASE SHALL THE COVER OVER THE REINFORCEMENT BE LESS THAN 1 1/2" 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 1/2".
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 1/2".
5.2.3. POSITION OF REINFORCEMENT - THE MAXIMUM VARIATION IN THE POSITION OF THE REINFORCEMENT SHALL BE +/- 1/2". IN NO CASE SHALL THE COVER OVER THE REINFORCEMENT BE LESS THAN 1 1/2".
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 1/2".
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 1/2".
5.3.3. POSITION OF REINFORCEMENT - THE MAXIMUM VARIATION IN THE POSITION OF THE REINFORCEMENT SHALL BE +/- 1/2". IN NO CASE SHALL THE COVER OVER THE REINFORCEMENT BE LESS THAN 1 1/2".
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 1/4".

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.

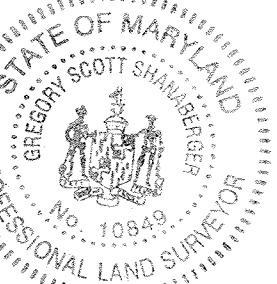
9. REPAIRS

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.

NOTE: THERE IS NO AS-BUILT INFORMATION PROVIDED ON THIS SHEET
6. SCOTT SHANABERGER
PROFESSIONAL LAND SURVEYOR
AS-BUILT DATE: 12-1-17 to 12-15-17



APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
Chief, Bureau of Highways
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
Chief, Division of Land Development
Chief, Development Engineering Division

CONTECH ENGINEERED SOLUTIONS LLC
15624 MORNINGSIDE GATE COURT
NEW MARKET, MARYLAND 21774
410-250-1511

Table with columns: DES., JMF, DRG, ADR, CHK, KDK, DATE, REVISION, BY, APPR.

PREPARED FOR:
THE HOWARD HUGHES CORPORATION
10480 LITTLE PATUMENT PARKWAY
SUITE 400
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. 36225
EXPIRATION DATE: 8/19/2018

SPECIFICATIONS FOR MANUFACTURE & INSTALLATION (1)
DOWNTOWN COLUMBIA
CRESCENT NEIGHBORHOOD - PH.1 - PARCELS A-1 THRU A-3
DIVIDED SKY LANE CROSSING
ELECTION DISTRICT No. 5
HOWARD COUNTY, MARYLAND

Table with columns: SCALE, ZONING, DATE, TAXITILE, SHEET. Values: AS NOTED, NT, NOV, 2015, 36 - 01, 30 OF 31

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 1/4" 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.

- 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 PADSHIMS - 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 1/2" 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 1/2", 3/4" AND 1" 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 1/4".
- 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 UNTIL 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 ELEMENTS, 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 +1/2" 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 1/2" x 1 1/2" 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 1/4".
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.

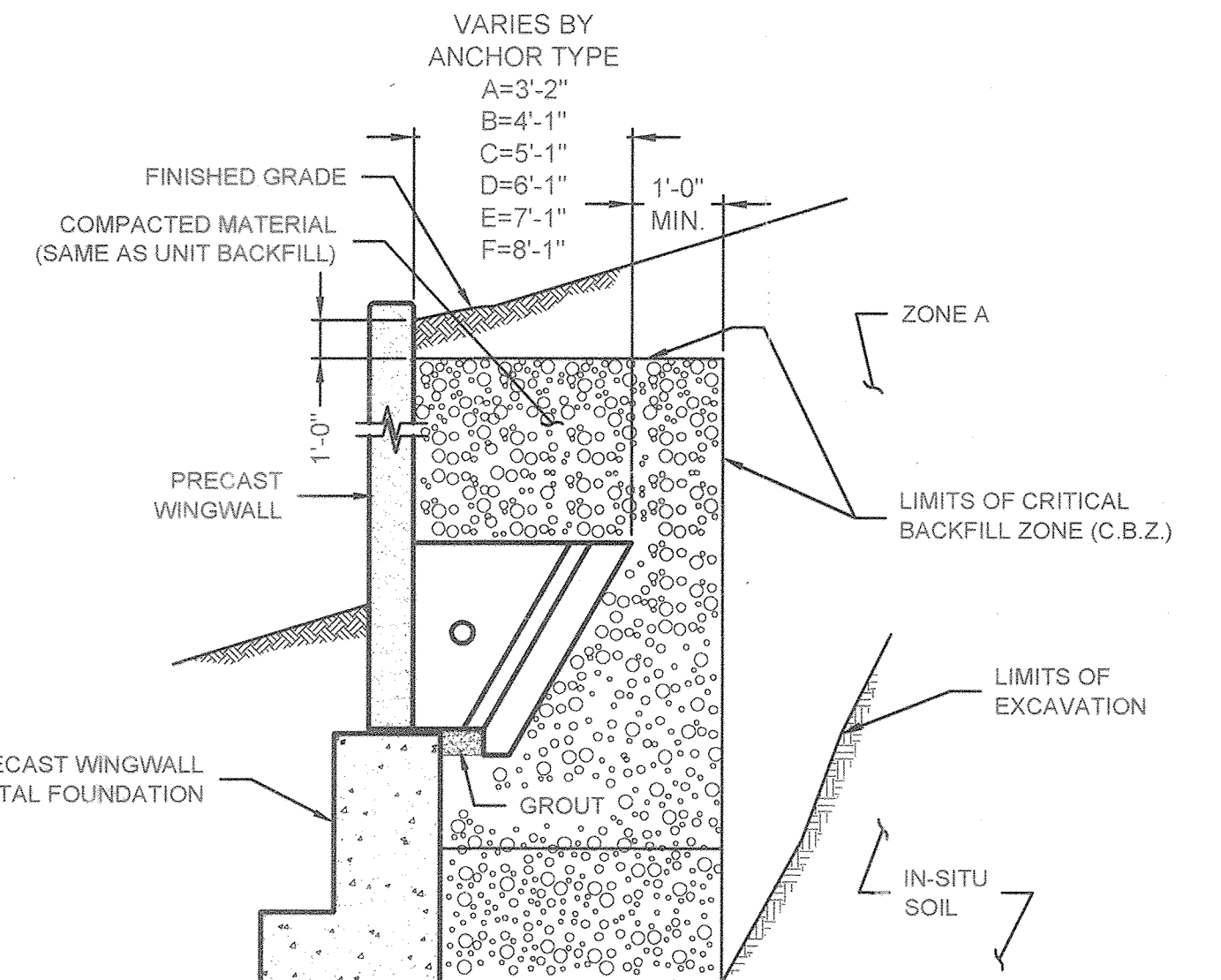
SOIL WITHIN 1'-0" OF CONCRETE SURFACES SHALL BE HAND-COMPACTED. ELSEWHERE, USE OF ROLLERS IS ACCEPTABLE. IF VIBRATING ROLLER-COMPACTORS ARE USED, THEY SHALL NOT BE STARTED OR STOPPED WITHIN ZONE B AND THE VIBRATION FREQUENCY SHOULD BE AT LEAST 30 REVOLUTIONS PER SECOND.

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.

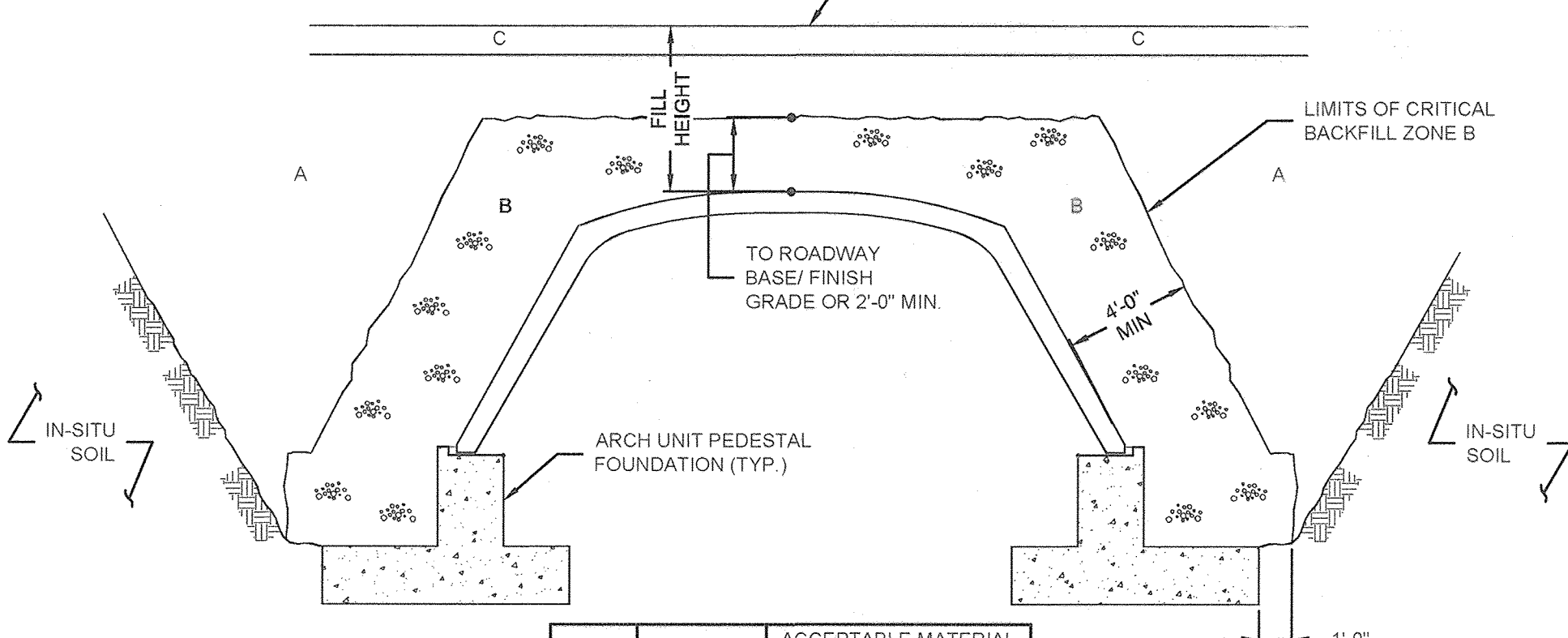
THE FIRST MEASUREMENT SHOULD TAKE PLACE AFTER THE ERECTION OF ALL PRECAST BRIDGE SYSTEM ELEMENTS, A SECOND AFTER COMPLETION OF BACKFILLING, AND A THIRD BEFORE OPENING OF THE BRIDGE TO TRAFFIC. FURTHER MEASUREMENTS MAY BE MADE ACCORDING TO LOCAL CONDITIONS.



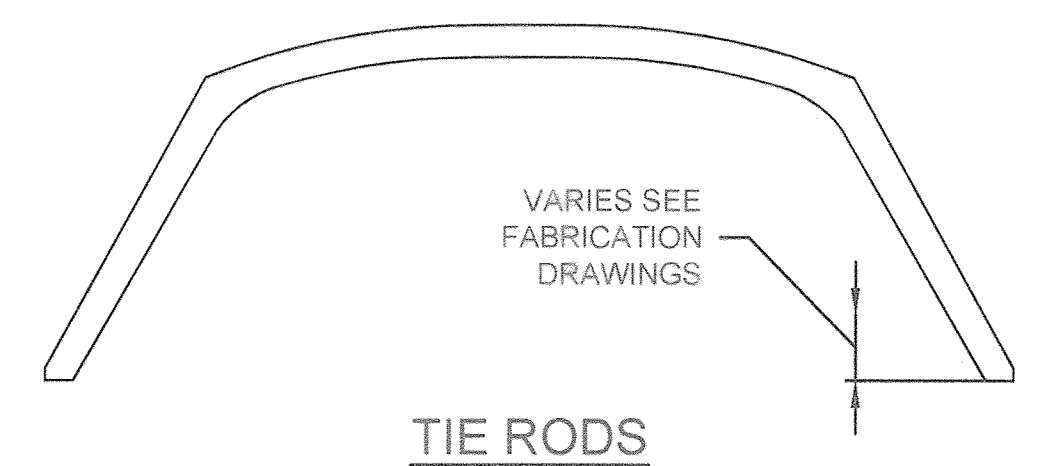
WALL BACKFILL REQUIREMENTS

ACCEPTABLE SOILS FOR USE IN ZONE B BACKFILL

TYPICAL USCS MATERIALS	AASHTO GROUP	AASHTO SUBGROUP	PERCENT PASSING US SIEVE NO.			CHARACTER OF FRACTION PASSING NO. 40 SIEVE		SOIL DESCRIPTION
			#10	#40	#200	LIQUID LIMIT	PLASTICITY INDEX	
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-COMPRESSIBILITY SILTS



BACKFILL REQUIREMENTS



TIE RODS

APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS
[Signature]
 Chief, Bureau of Highways
 Date: 11/18/15

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
[Signature]
 Chief, Division of Land Development
 Date: 12-9-15

[Signature]
 Chief, Development Engineering Division
 Date: 11-19-15

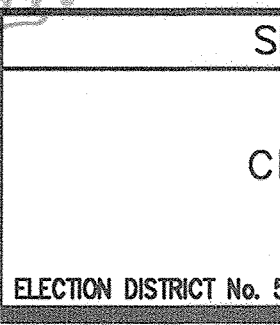
NOTE: THERE IS NO AS-BUILT INFORMATION PROVIDED ON THIS SHEET.
[Signature]
 G. SCOTT SHANBERGER
 SHANBERGER & LANE
 PROFESSIONAL L.S. #19848 Exp. Date 4/2/2016
 AS-BUILT DATE: 12-1-17 to 12-15-17



DES.	JMF	DRN	ACR	CHK	KDK	DATE	REVISION	BY	APPR.

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

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