

GENERAL NOTES

- THIS PROJECT IS IN CONFORMANCE WITH THE LATEST HOWARD COUNTY STANDARDS UNLESS WAIVERS HAVE BEEN APPROVED.
- SUBJECT PROPERTY ZONED PGCC PER THE OCTOBER 6, 2013 COMPREHENSIVE ZONING PLAN.
- THIS PROJECT IS SUBJECT TO THE THIRD AMENDED TURF VALLEY MULTI-USE SUBDISTRICT FINAL DEVELOPMENT PLAN RECORDED AS PLAT NUMBERS 21029-21031 ON MARCH 26, 2010.
- THE COORDINATES SHOWN HEREON ARE BASED UPON THE HOWARD COUNTY GEODETIC CONTROL WHICH IS BASED UPON THE MARYLAND STATE PLANE COORDINATE SYSTEM. HOWARD COUNTY MONUMENTS NO. 15E1 AND 0012 WERE USED FOR THIS PROJECT.
- PROJECT BOUNDARY IS BASED ON BOUNDARY SURVEY BY JOHN B. MILDENBERG IN MARCH, 2006.
- TOPOGRAPHY SHOWN IS BASED ON AERIAL TOPOGRAPHIC SURVEY PERFORMED BY WINGS AERIAL MAPPING CO., INC. FLOWN ON OR ABOUT JANUARY, 2006.
- EXISTING UTILITIES SHOWN ARE BASED ON FIELD LOCATIONS, HOWARD COUNTY GIS AND SIGNED CONTRACT DRAWINGS.
- THE WETLAND LOCATIONS SHOWN ON THE ADJACENT PROPERTIES ARE BASED ON APPROVED STUDIES AS SHOWN ON THE COMPREHENSIVE SKETCH PLAN OF TURF VALLEY. WETLANDS ARE BASED ON A STUDY CONDUCTED BY EXPLORATION RESEARCH FOR S-86-13 AND VERIFIED BY ECO-SCIENCE PROFESSIONALS, INC. IN JUNE 2002 AND APRIL 2004 (FOR DEVELOPMENT IN AND AROUND PODS 1, K, L, M, N, O, P, Q & S).
- THE GEOTECHNICAL REPORT WAS PREPARED BY HILLIS-CARNES ENGINEERING ASSOCIATES, INC. ON MARCH 31, 2014.
- NO GRADING, REMOVAL OF VEGETATIVE COVER OR TREES, PAVING AND NEW STRUCTURES SHALL BE PERMITTED WITHIN THE LIMITS OF WETLANDS EXCEPT THEIR REQUIRED BUFFERS EXCEPT THE DISTURBANCES THAT ARE ASSOCIATED WITH THE SEWER CONNECTION AND TEE TURNAROUND CONSTRUCTION AT THE END OF NASHVILLE COURT WHICH WAS DEEMED "NECESSARY" BY THE DEPARTMENT OF PLANNING AND ZONING UNDER ECP-14-053.
- THERE IS NO 100-YEAR FLOODPLAIN LOCATED ON THIS PROJECT SITE.
- TO THE BEST OF OUR KNOWLEDGE, THERE ARE NO CEMETERIES OR HISTORIC STRUCTURES LOCATED ON THIS SITE.
- THERE ARE NO STEEP SLOPES (25% OR GREATER) ON THIS SITE.
- WATER AND SEWER IS PUBLIC. THE CONTRACT NUMBER IS 24-4887-D. THIS SITE IS LOCATED WITHIN THE METROPOLITAN DISTRICT.
- A NOISE STUDY IS NOT REQUIRED FOR THIS PROJECT AS NONE OF THE PROPOSED LOTS ARE LOCATED WITHIN 500 FEET OF THE I-70 (PRINCIPAL ARTERIAL) RIGHT-OF-WAY.
- A TRAFFIC STUDY WAS PREPARED BY THE TRAFFIC GROUP IN JANUARY, 2005. IT WAS SUPPLEMENTED WITH A LETTER DATED SEPTEMBER 3, 2015 PREPARED BY THE TRAFFIC GROUP.
- THIS PROJECT IS EXEMPT FROM HOWARD COUNTY FOREST CONSERVATION REQUIREMENTS UNDER SECTION 16.1202(b)(1)(v) OF THE HOWARD COUNTY CODE SINCE IT IS A PLANNED UNIT DEVELOPMENT WHICH HAD PRELIMINARY DEVELOPMENT PLAN APPROVAL AND 50% OR MORE OF THE LAND WAS RECORDED AND SUBSTANTIALLY DEVELOPED BEFORE DECEMBER 31, 1992.
- LANDSCAPING FOR THIS DEVELOPMENT IS BEING PROVIDED BY A CERTIFIED LANDSCAPE PLAN WHICH IS A PART OF THIS ROAD CONSTRUCTION PLAN SET IN ACCORDANCE WITH SECTION 16.124 OF THE HOWARD COUNTY CODE AND LANDSCAPE MANUAL. FINANCIAL SURETY IN THE AMOUNT OF \$15,600.00 FOR THE REQUIRED PERIMETER LANDSCAPING SHALL BE POSTED AS PART OF THE DFW DEVELOPERS AGREEMENT.
- STORMWATER MANAGEMENT ENVIRONMENTAL SITE DESIGN (ESD) HAS BEEN PROVIDED TO THE MAXIMUM EXTENT PRACTICAL (MEP) VIA ONE (M-6) MICRO BIO-RETENTION PRACTICE, FIVE (F-6) BIO-RETENTION PRACTICES, TWO (M-2) SUBMERGED GRAVEL WETLANDS, TWO AREAS OF (N-2) DISCONNECTION OF NON-ROOFTOP RUNOFF. THE PRACTICES ARE PRIVATELY OWNED AND MAINTAINED.
- TRASH COLLECTION SHALL BE PUBLIC.
- RECREATIONAL OPEN SPACE IS NOT REQUIRED AS THIS PROJECT IS ZONED PGCC.
- THIS PROJECT IS SUBJECT TO THE AMENDED FIFTH EDITION OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS AND THE ZONING REGULATIONS EFFECTIVE OCTOBER 6, 2013. PER SECTION 126.D.H.1, PLANNING BOARD APPROVAL IS REQUIRED FOR THE SITE DEVELOPMENT PLAN FOR THIS PROJECT.
- THE VILLAGES AT TURF VALLEY SUBDIVISION (PHASES 1-5) CONSTITUTED 241 TOTAL UNITS, WHICH MET THE SKETCH PLAN MILESTONE DATE OF JANUARY 1, 2001 THROUGH JUNE 30, 2002 FOR BOTH PHASE IVA (131 UNITS) & IVB (110 UNITS) AS ESTABLISHED BY THE REVISED PHASING PLAN DATED JUNE 21, 2000, UNDER P-06-013. 42 CONDOMINIUM UNITS THAT WERE APPROVED WERE USED FOR OAKMONT AT TURF VALLEY (P-02-082). THESE 42 CONDOMINIUM UNITS WERE NOT PREVIOUSLY INCLUDED WITH THE OAKMONT AT TURF VALLEY (P-02-082) PLANS. IN ORDER TO RECEIVE BUILDING ALLOCATIONS, THESE 42 CONDOMINIUM UNITS WERE SHOWN AND APPROVED ON THE PRELIMINARY PLAN FOR THE VILLAGES AT TURF VALLEY (P-06-013). THE SECOND AMENDMENT TO THE TURF VALLEY MULTI-USE FINAL DEVELOPMENT PLAN WAS RECORDED ON NOVEMBER 30, 2007. PLATS 19578-19580, INCREASING THE PROJECTED UNITS IN THE OAKMONT AT TURF VALLEY AREA FROM 150 TO 200. AS A RESULT, THOSE 42 UNITS ARE NO LONGER A PART OF THE VILLAGES AT TURF VALLEY WHICH LEAVES UNIT TOTAL AT 199. HOWEVER, WITH THE APPROVAL OF WP-08-009 AN ADDITIONAL 21 UNITS WERE ADDED TO THE VILLAGES AT TURF VALLEY. THE FINAL UNIT TOTAL FOR THE "VILLAGES AT TURF VALLEY" SUBDIVISIONS COMES TO 220.
- APPLICABLE DPZ FILE REFERENCES ARE:
S-86-13, S-03-01, ECP-14-053, 3rd AMENDED FDP PLAT #21029-21031, SP-15-003
- PRIOR TO GRADING PERMIT APPLICATION, THE PROJECT SHALL COMPLY WITH THE REQUIREMENTS OF SECTION 16.129 THE HOWARD COUNTY CODE.
- THE 36 UNITS/LOTS PROPOSED ON THIS PLAN ARE BEING TRANSFERRED FROM THE 59 LOTS/UNITS PREVIOUSLY APPROVED FOR VILLAGES AT TURF VALLEY, PHASE 3, F-08-085.
- 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 TREE.
- ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY PLUS MSHA STANDARDS AND SPECIFICATIONS, IF APPLICABLE.
- TRAFFIC CONTROL DEVICES:
A) THE R1-1 "STOP" SIGN AND STREET NAME SIGN (SNS) ASSEMBLY 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 OF THE 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 (M&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) - 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.

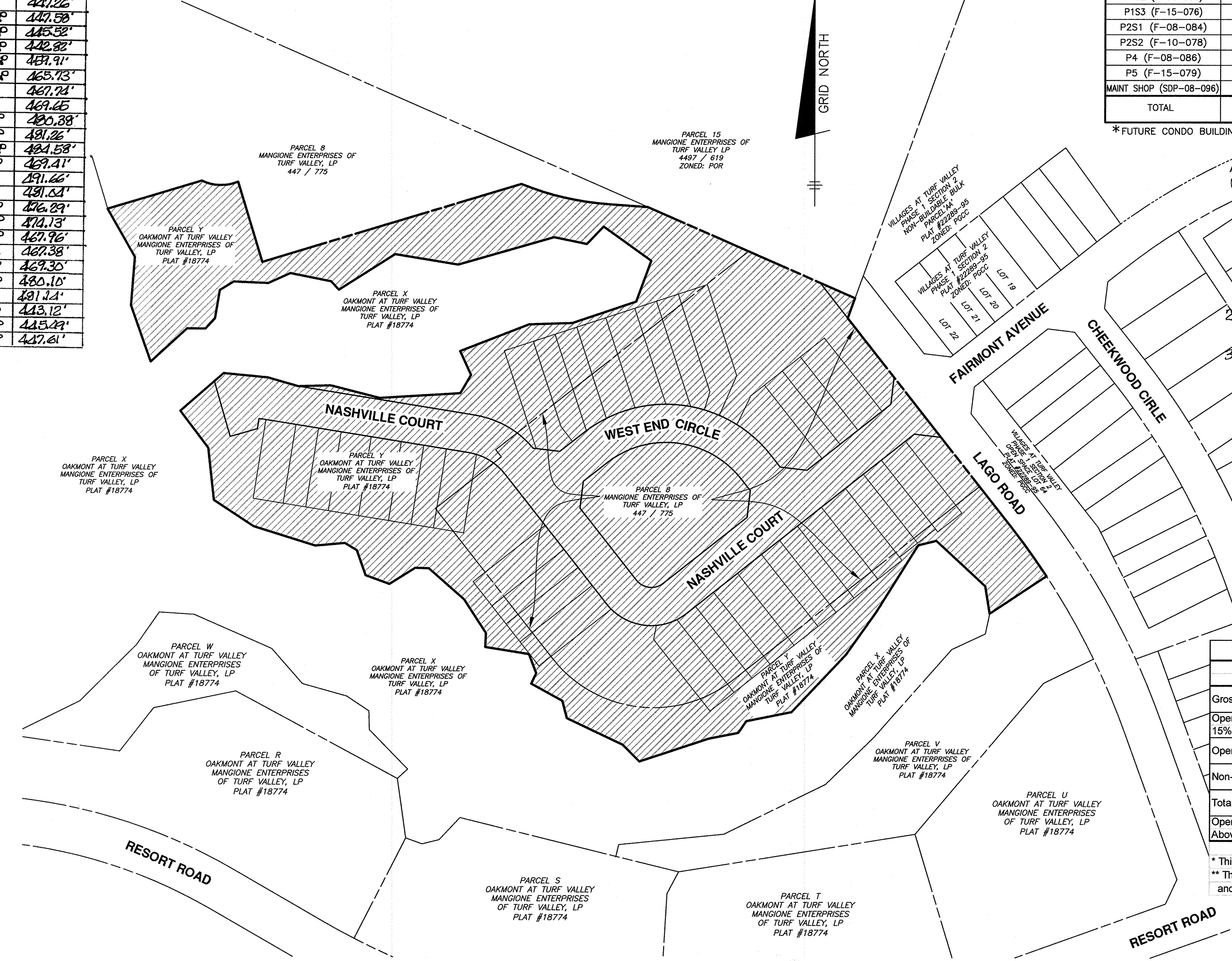
RIGHT OF WAY ELEVATION CHART NAD 83

R/W POINTS	DESCRIPTION	ELEVATION
201	REBAR & CAP	420.32'
202	REBAR & CAP	421.55'
203	X-CUT	426.87'
204	REBAR & CAP	424.29'
205	REBAR & CAP	423.84'
206	REBAR & CAP	421.39'
207	REBAR & CAP	421.70'
208	X-CUT	421.26'
209	REBAR & CAP	421.58'
210	REBAR & CAP	425.39'
211	REBAR & CAP	422.22'
212	REBAR & CAP	421.91'
213	REBAR & CAP	425.13'
214	X-CUT	427.74'
215	X-CUT	427.45'
216	REBAR & CAP	420.38'
217	REBAR & CAP	421.26'
218	REBAR & CAP	424.58'
219	REBAR & CAP	429.41'
220	X-CUT	291.66'
221	CONC. MON.	421.24'
222	REBAR & CAP	426.29'
223	REBAR & CAP	417.13'
224	REBAR & CAP	427.96'
225	CONC. MON.	422.38'
226	REBAR & CAP	427.30'
227	REBAR & CAP	420.10'
228	REBAR & CAP	421.14'
229	REBAR & CAP	423.12'
230	REBAR & CAP	423.29'
231	REBAR & CAP	427.61'

VILLAGES AT TURF VALLEY

PHASE 5

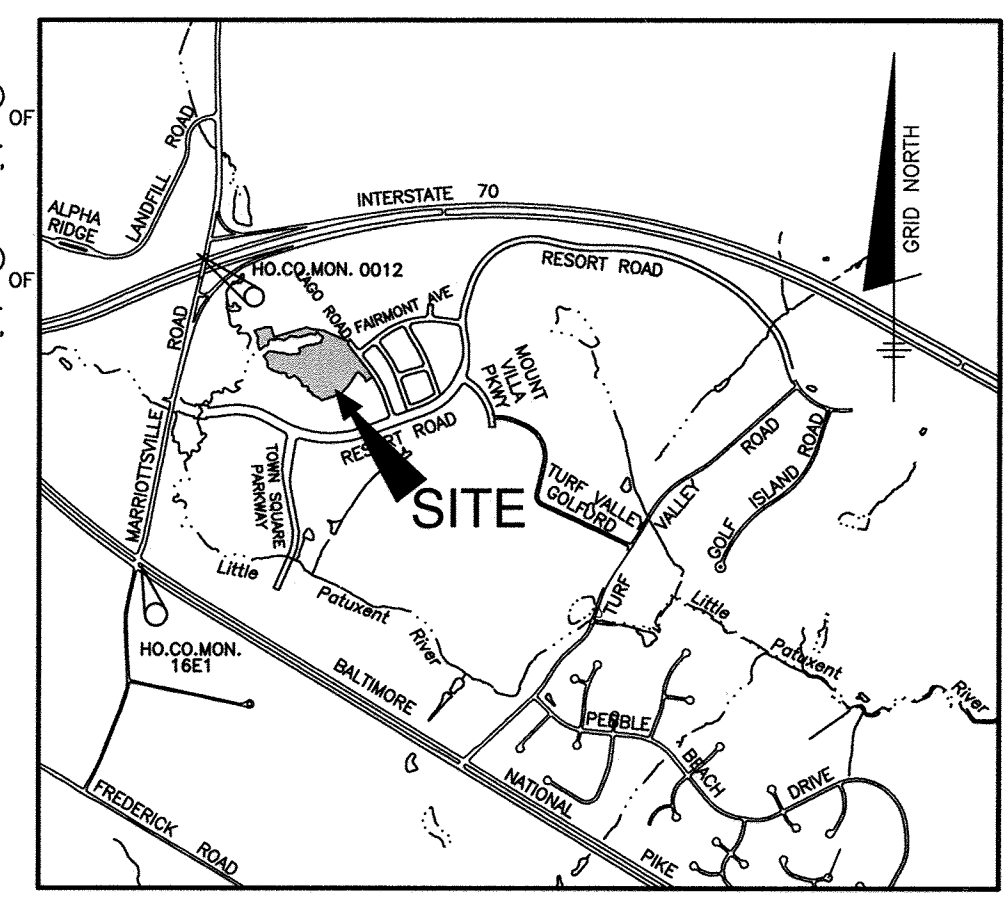
ROAD, STORMWATER MANAGEMENT AND STORM DRAIN CONSTRUCTION PLANS



VILLAGES AT TURF VALLEY PHASING CHART

PHASE/SECTION	S.F. ATTACHED	S.F. DETACHED	CONDOMINIUM	TOTAL
P1S1 (F10-026)	0	0	0	0
P1S2 (F-08-060)	41	21	0	62
P1S3 (F-15-076)	6	0	0	6
P2S1 (F-08-084)	0	0	44*	44
P2S2 (F-10-078)	0	48	0	48
P4 (F-08-086)	15	8	0	23
P5 (F-15-079)	36	0	0	36
MAINT SHOP (SDP-08-096)	0	0	1 (Access. Apt.)	1
TOTAL	98	77	45	220

*FUTURE CONDO BUILDING ON LOT 203



AS-BUILT NOTES:

- HORIZONTAL DATUM FOR THIS AS-BUILT IS BASED ON THE MARYLAND STATE REFERENCE SYSTEM NAD 83/ ADU C7 AS PROJECTED FROM HO CO GEODETIC CONTROL STATIONS 16E1 AND 0012. VERTICAL DATUM FOR THIS AS-BUILT IS NORTH AMERICAN VERTICAL DATUM NSVD 29 AS PROJECTED FROM THE ABOVE MENTIONED HOWARD COUNTY GEODETIC CONTROL STATIONS.
- THE INSTRUMENTS USED IN PERFORMING THE AS-BUILT WERE A TOTAL STATION AND PRISM AND RTK GPS.
- THIS AS-BUILT WAS PERFORMED BY BENCHMARK ENGINEERING, INC.

SITE ANALYSIS DATA CHART

GENERAL SITE DATA

- PRESENT ZONING: PGCC
- APPLICABLE DPZ FILE REFERENCES: ECP-14-053 SP-15-003
- PROPOSED USE OF SITE: RESIDENTIAL - SFA
- PROPOSED WATER AND SEWER SYSTEMS: PUBLIC

AREA TABULATION

- GROSS TRACT AREA: 10.49 AC.±
- AREA WITHIN 100-YEAR FLOODPLAIN: 0.00 AC.±
- TOTAL AREA OF 25% OR GREATER STEEP SLOPES AREA NOT IN FLOODPLAIN (FOR NTA CALC): 0.00 AC.±
- NET TRACT AREA: 10.49 AC.±
- TOTAL NUMBER OF LOTS ALLOWED PER ZONING: N/A
- TOTAL NUMBER OF RESIDENTIAL UNITS/LOTS PROPOSED ON THIS SUBMISSION: 36
- AREA OF BUILDABLE LOTS: 3.51± AC.
AREA OF OPEN SPACE LOTS: 3.80± AC.
AREA OF BUILDABLE BULK PARCELS: 1.42± AC.
AREA OF PUBLIC RIGHT-OF-WAY: 1.76± AC.

OPEN SPACE CALCULATIONS

	Phase 1 Section 1	Phase 1 Section 2*	Phase 1 Section 3	Phase 2 Section 1**	Phase 2 Section 2	Phase 4	Phase 5	Total
Gross Area	6.25	27.75	NA	157.59	NA	NA	10.49	202.08
Open Space Required 15% of gross	0.94	4.16	NA	23.64	NA	NA	1.57	39.23
Open Space Provided	2.58	5.32	0.19	124.96	0.32	1.02	3.80	138.19
Non-Credited (less than 35' in width)	0.00	0.65	0.14	0.35	0.32	0.57	0.00	2.03
Total Credited	2.58	4.67	0.05	124.61	0.00	0.45	3.80	136.16
Open Spaces Provided Above Requirement	1.64	0.51	0.05	100.97	0.00	0.45	2.23	105.85

* This includes area for Phase 4 (Non-Buildable Bulk Parcel BB)
** This includes area for Phase 2, Section 2 (Non-Buildable Bulk Parcels DD-1, EE-1 & FF-1) and area for Phase 1 Section 3 (Non-Buildable Bulk Parcel CC-1)

THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PUBLIC WORKS/BUREAU OF ENGINEERING/CONSTRUCTION INSPECTION DIVISION AT 410-313-1880 AT LEAST FIVE (5) WORKING DAYS PRIOR TO THE START OF WORK.

THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION WORK BEING DONE.

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.

License No. 21213, Expiration Date: 12/21/20



AS-BUILT CERTIFICATION

I hereby certify, by my seal, that to the best of my knowledge and belief the facilities shown on this "AS-BUILT" Plan meet the Approved Plans and Specifications

Donald Mason, P.E. Date: 1-18-19

SWM PRACTICE CHART SUMMARY TABLE

Practice	Pe= 1.6	inches	Qe= 0.66	inches	ESDv= 21104	cf	Rv= 0.41	ESDv		Rev		Ownership
								Required	Provided	Required	Provided	
(M-6) Micro-Bioretenion	#1	15.856	10.754	317	1011	PASS	1396	1616	1.6	1.6	Private	
(F-6) Bioretention	#1	29.464	17.567	589	1457	PASS	2304	2329	1.6	1.6	Private	
(F-6) Bioretention	#2	60.505	22.311	1210	2420	PASS	3081	3632	1.6	1.6	Private	
(F-6) Bioretention	#3	30.971	16.688	619	1620	PASS	2209	2483	1.6	1.6	Private	
(F-6) Bioretention	#4	33.996	21.845	680	2340	PASS	2848	3546	1.6	1.6	Private	
(F-6) Bioretention	#5	25.611	16.948	512	1708	PASS	2205	2754	1.6	1.6	Private	
(M-2) Submerged Gravel Wetland	#1	34.986	20.197	NA	1424	NA	2657	2115	1.6	1.6	Private	
(M-2) Submerged Gravel Wetland	#2	34.928	21.552	NA	1760	NA	2819	2741	1.6	1.6	Private	
(N-2) Disconnection of Non-Rooftop Runoff	#1	1.337	1.337				100	100	1.0	1.0	Private	
(N-2) Disconnection of Non-Rooftop Runoff	#2	1.633	1.633				122	122	1.0	1.0	Private	
Total Treated		269,287	150,832	3,928	13,740		21,104	21,438	1.6	2745	2745	
Site Total		386,046	151,186									

354 sf of impervious not treated is the small portion of sidewalk & pavement at southeast corner of Lago Road.

APPROVED: DEPARTMENT OF PUBLIC WORKS

CHIEF, BUREAU OF HIGHWAYS DATE: 9/8/2015

APPROVED: DEPARTMENT OF PLANNING AND ZONING

CHIEF, DIVISION OF LAND DEVELOPMENT DATE: 9-16-15

CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE: 9-10-15

SHEET INDEX

SHEET	TITLE
1	TITLE SHEET
2	ROAD PLAN, PROFILE, DETAILS, SIGNAGE AND STREET LIGHTING NASHVILLE COURT
3	ROAD PLAN, PROFILE, DETAILS, SIGNAGE AND STREET LIGHTING WEST END CIRCLE
4	STORM DRAIN DRAINAGE AREA MAP
5	STORM DRAIN PROFILES
6	STORM DRAIN DETAILS
7	ESD STORMWATER MANAGEMENT DETAILS (F-6) BIORETENTION
8	ESD STORMWATER MANAGEMENT DETAILS (F-6) BIORETENTION
9	ESD STORMWATER MANAGEMENT DETAILS (M-6) MICROBIO AND (F-6) BIORETENTION
10	ESD STORMWATER MANAGEMENT NOTES AND DETAILS (M-2) SUBMERGED GRAVEL WETLANDS
11	PERIMETER LANDSCAPE AND STREET TREE PLAN
12	PERIMETER LANDSCAPE AND STREET TREE NOTES, CHARTS & DETAILS
13	GRADING, SEDIMENT & EROSION CONTROL PLAN
14	GRADING, SEDIMENT & EROSION CONTROL PLAN
15	SEDIMENT & EROSION CONTROL NOTES AND SEQUENCE OF CONSTRUCTION
16	SEDIMENT & EROSION CONTROL DETAILS AND SOIL BORING LOGS
17	SOIL BORING LOGS
18	RETAINING WALL PLAN

BENCHMARK ENGINEERING, INC.

8480 BALTIMORE NATIONAL PIKE & SUITE 315 • ELICOTT CITY, MARYLAND 21043
(P) 410-465-6105 (F) 410-465-6844
WWW.BEI-CIVILENGINEERING.COM

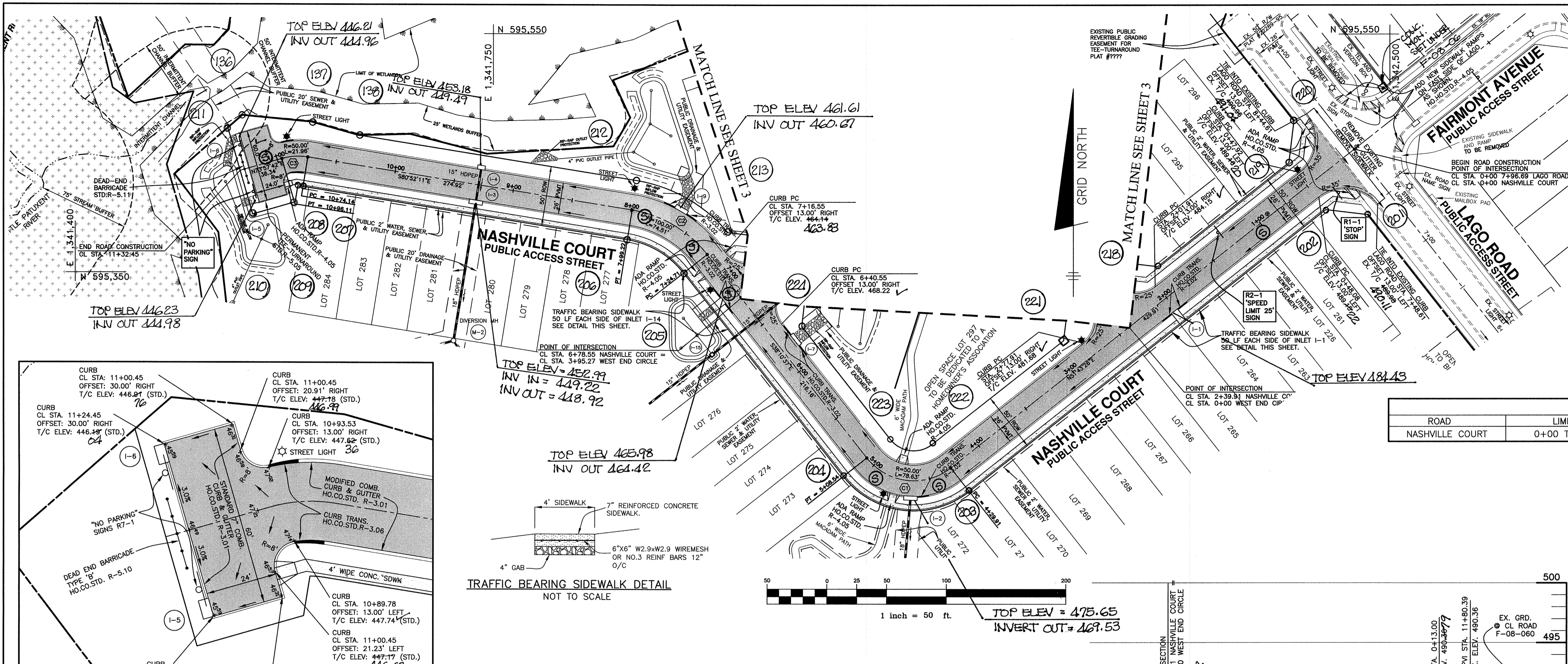
VILLAGES AT TURF VALLEY PHASE 5

LOTS 261 thru 296; OPEN SPACE LOTS 297 thru 299; AND BULK PARCEL GG

TAX MAP: 16 - GRID: 10 - PARCEL: P/O 8
ZONED: PGCC (MULTI-USE SUBDISTRICT)
ELECTION DISTRICT NO. 3 - HOWARD COUNTY, MARYLAND

TITLE SHEET

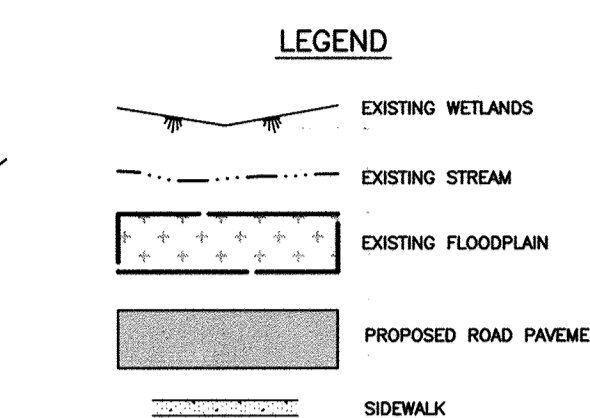
DATE: AUGUST, 2015 BEI PROJECT NO. 2601
DESIGN: DBT DRAFT: DBT SCALE: AS SHOWN SHEET 1 OF 18



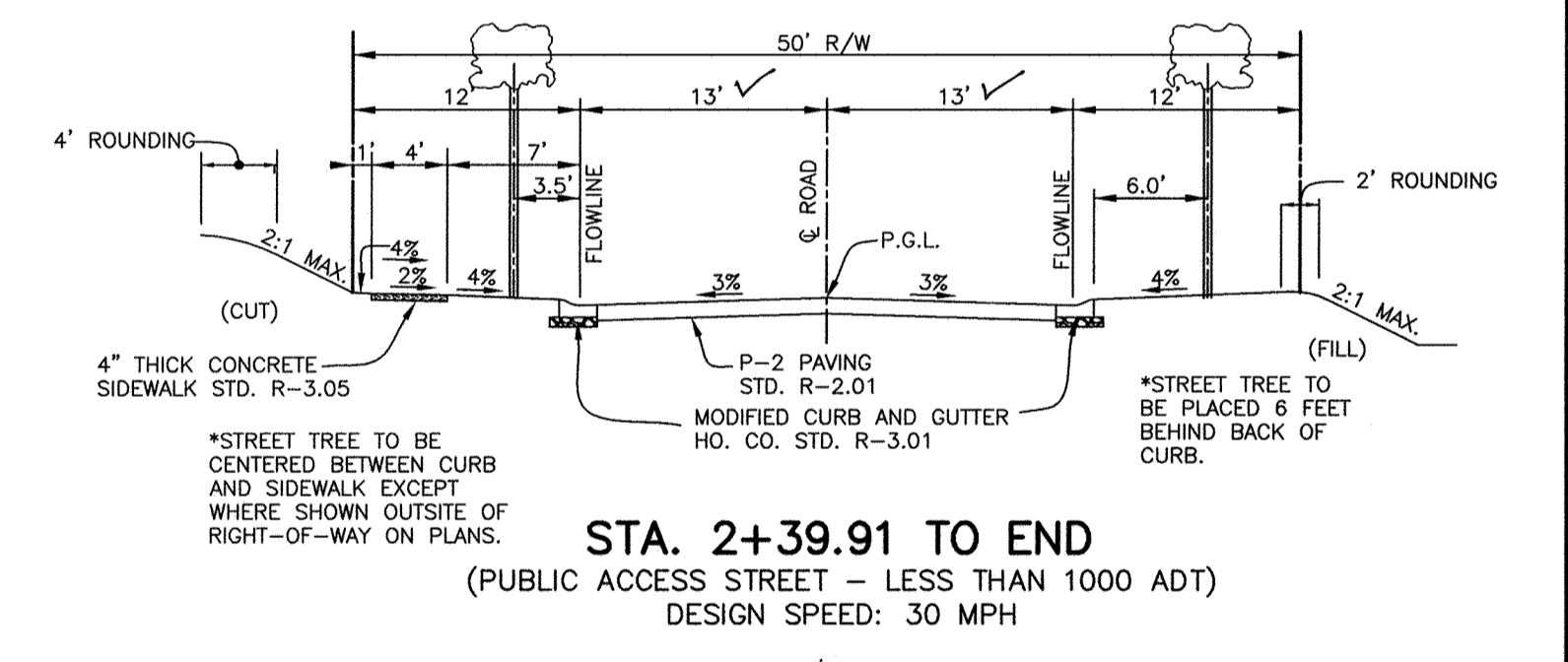
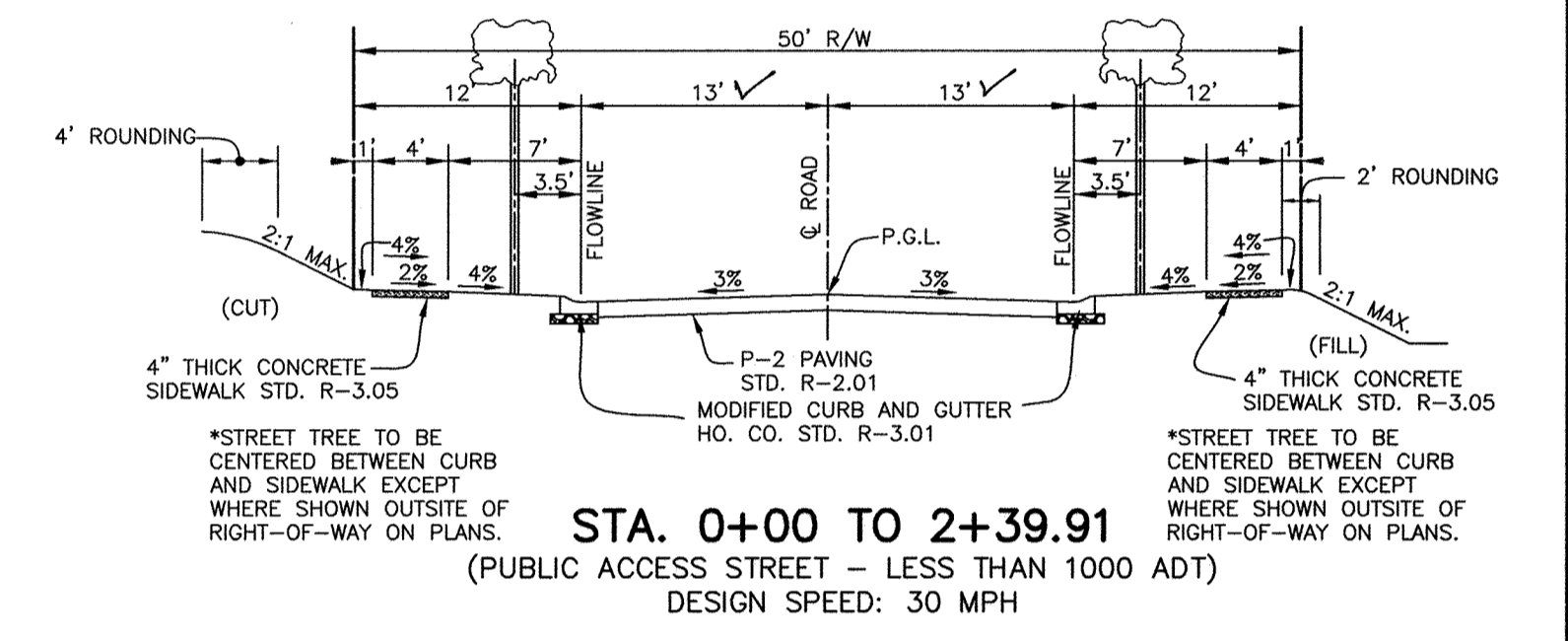
CENTER LINE CURVE DATA										
STREET NAME	CURVE	STATION	RADIUS	ARC	DELTA	TANGENT	CHORD			
NASHVILLE COURT	C1	4+29.91 TO 5+08.54	50.00'	78.63'	90°05'57"	50.09'	N83°13'35"W	70.77'		
	C2	7+24.71 TO 7+99.22	100.00'	74.51'	42°41'34"	39.08'	N59°31'24"W	72.80'		
	C3	10+74.14 TO 10+96.11	50.00'	21.96'	25°10'07"	11.16'	S86°32'45"W	21.79'		

CENTER CONTROL DATA		
STATION	NORTHING	EASTING
0+00.00	595454.05	1342470.28
4+29.91	595187.74	1342132.79
5+08.54	595196.09	1342062.51
7+24.71	595366.02	1341928.90
7+99.22	595402.94	1341866.16
10+74.14	595446.57	1341594.71
10+96.11	595445.26	1341572.94
11+32.45	595435.22	1341538.04

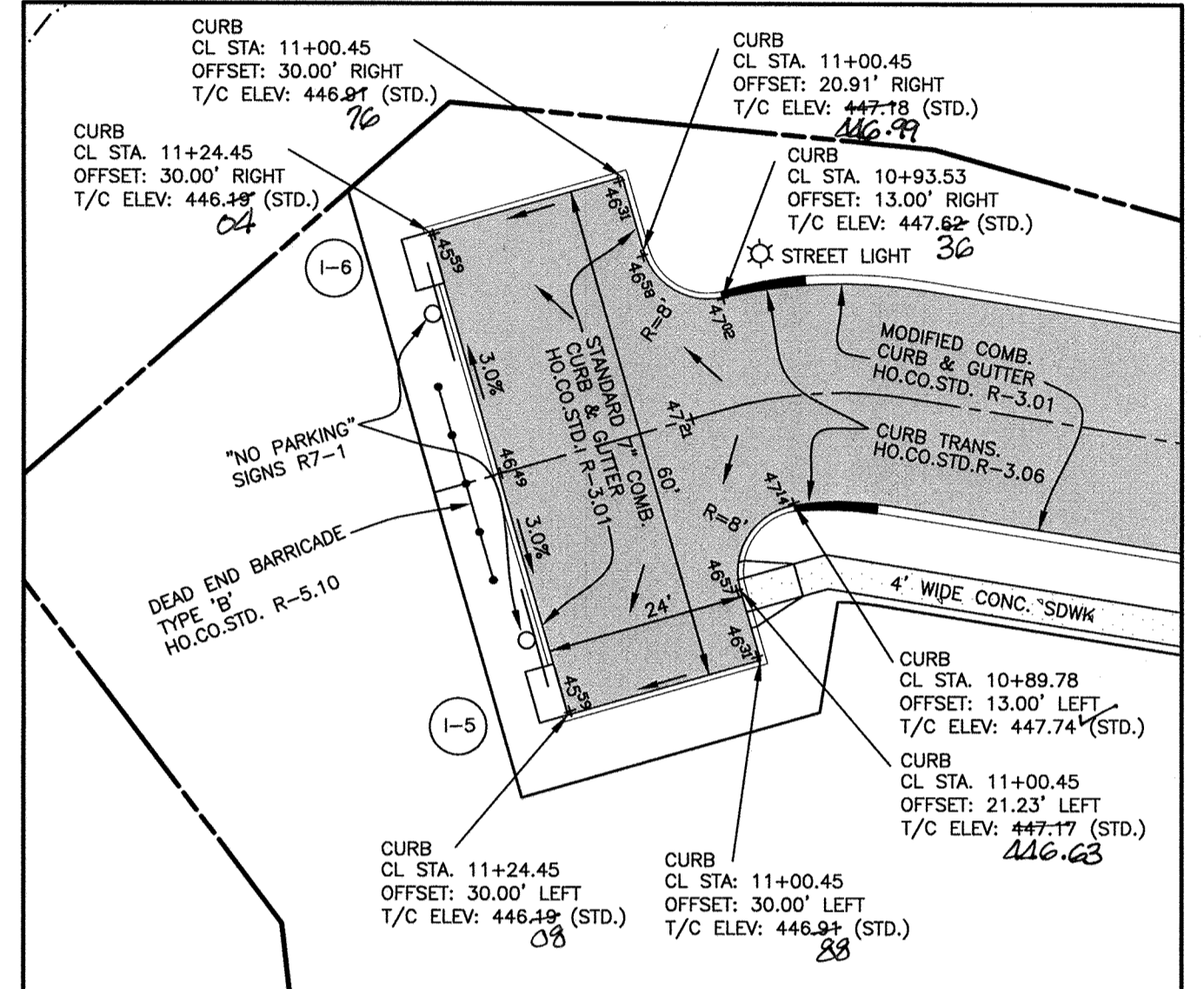
PUBLIC STREET LIGHT SCHEDULE		
SYMBOL	LOCATION	DESCRIPTION
○	NASHVILLE COURT: 0+47.92 RIGHT	56-WATT (LED-100) COLONIAL POST-TOP FIXTURE MOUNTED ON A 14-FOOT BLACK FIBERGLASS POLE
○	NASHVILLE COURT: 2+77.91 RIGHT	
○	NASHVILLE COURT: 4+84 LEFT	
○	NASHVILLE COURT: 7+00 LEFT	
○	NASHVILLE COURT: 8+00 RIGHT	
○	NASHVILLE COURT: 10+90 RIGHT	



ROAD CHART				
ROAD	LIMITS	CLASSIFICATION	DESIGN SPEED	PVMT TYPE
NASHVILLE COURT	0+00 TO END	PUBLIC ACCESS STREET	30 MPH	P-2



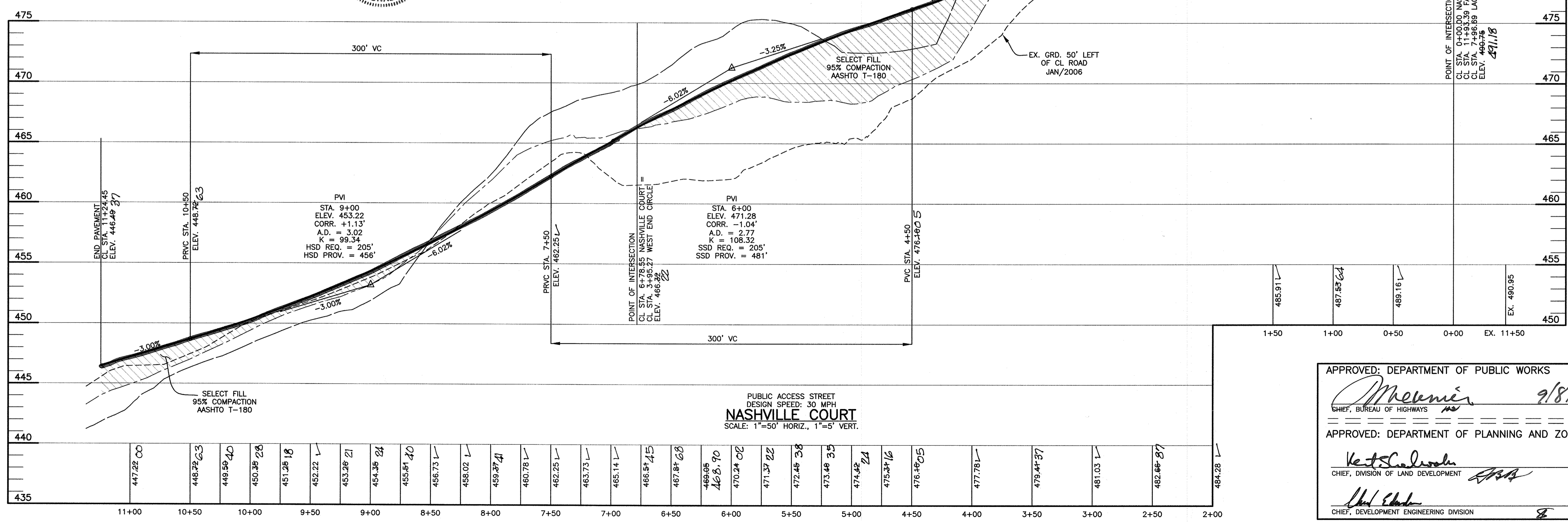
TYPICAL ROADWAY CROSS-SECTIONS
SCALE: 1" = 10'



PERMANENT TEE-TURNAROUND DETAIL
SCALE: 1" = 20'

AS-BUILT CERTIFICATION
I hereby certify, by my seal, that to the best of my knowledge and belief the facilities shown on this AS-BUILT Plan meet the Approved Plans and Specifications.
Date: 1/18/19
Donald Mason, P.E.

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.
License No. 21443, Expiration Date: 12-21-20

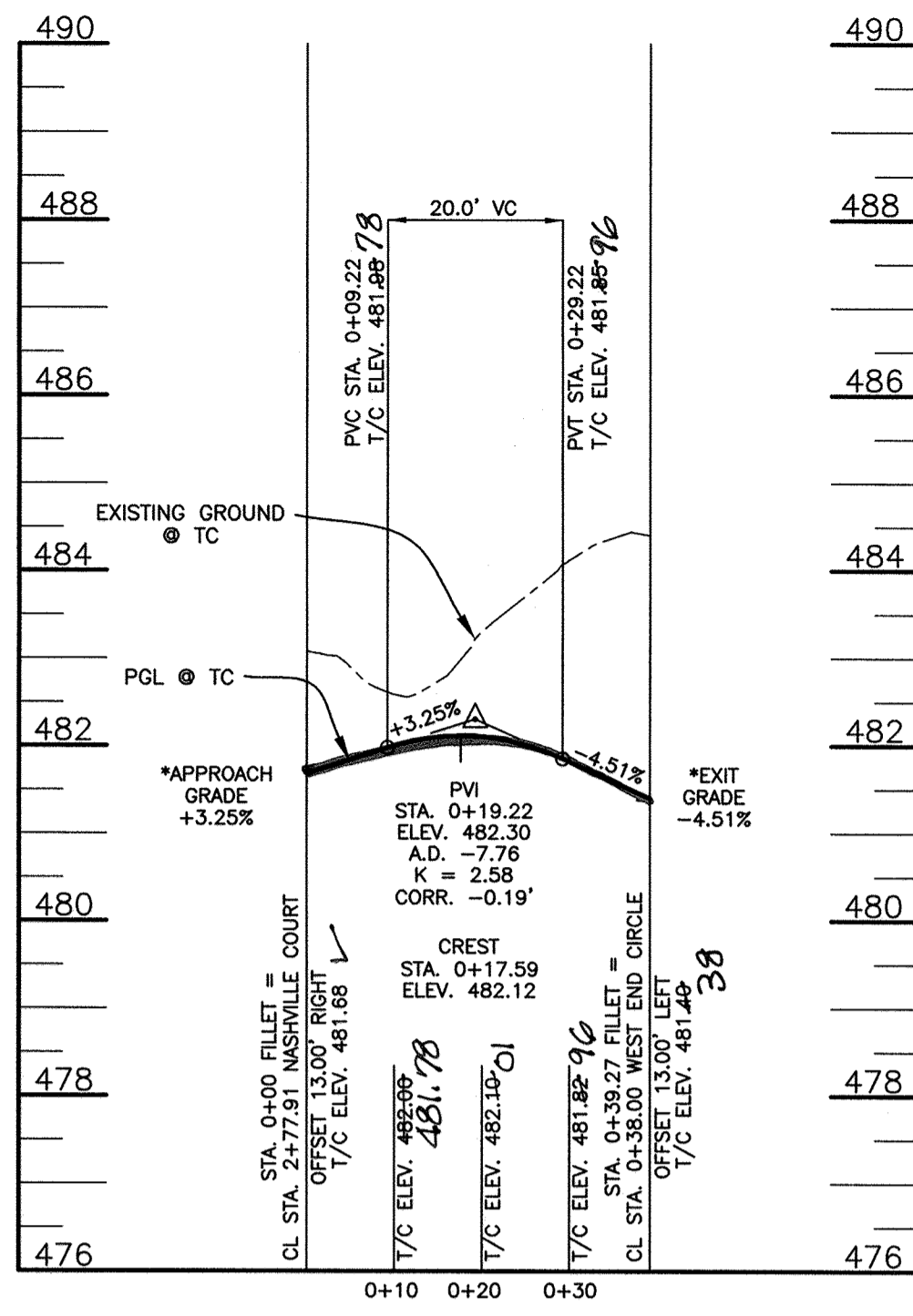


APPROVED: DEPARTMENT OF PUBLIC WORKS
Moumen 9/8/2015
CHIEF, BUREAU OF HIGHWAYS

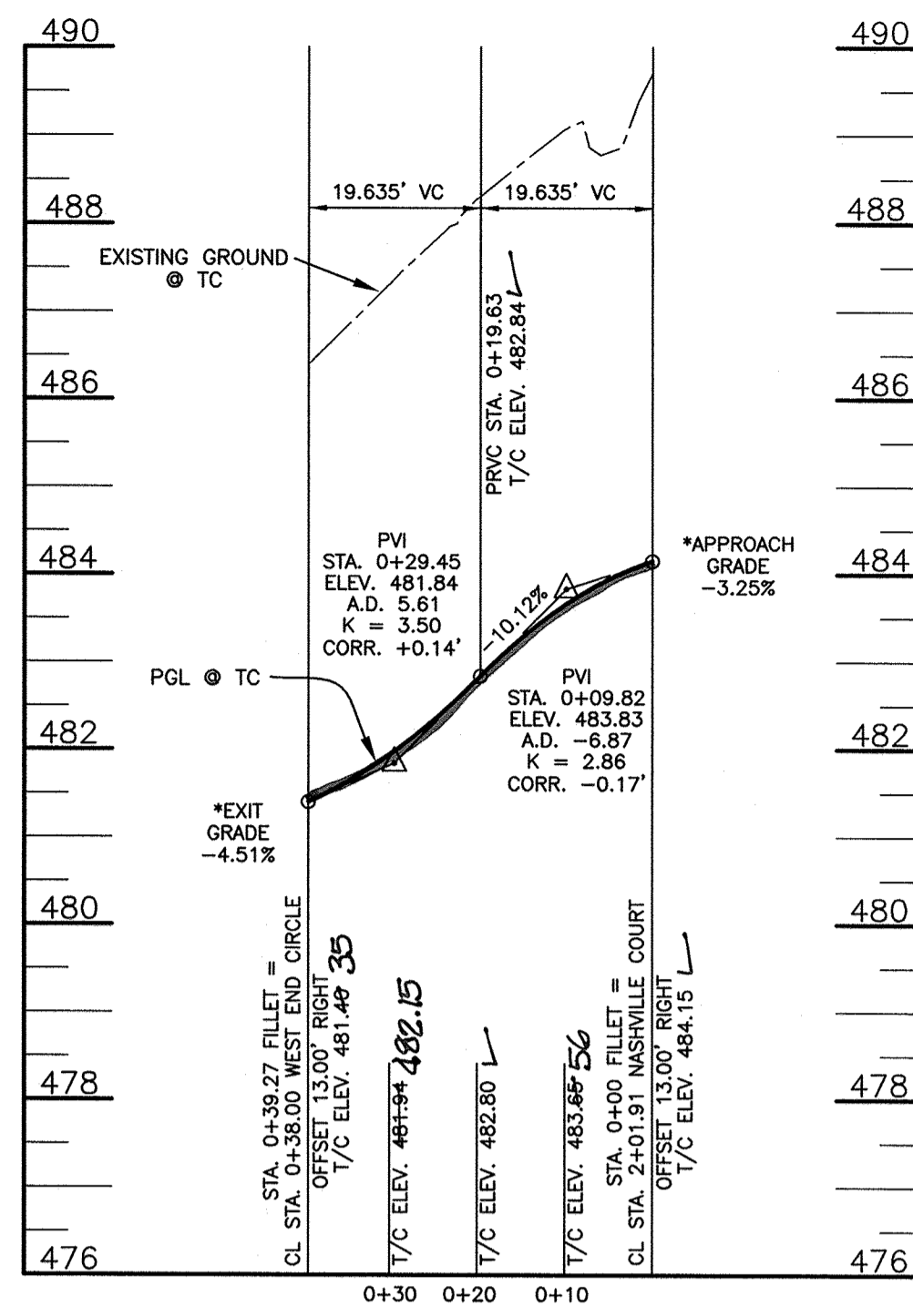
APPROVED: DEPARTMENT OF PLANNING AND ZONING
Kent Schindler 7-16-15
CHIEF, DIVISION OF LAND DEVELOPMENT

Neil Eshel 9-10-15
CHIEF, DEVELOPMENT ENGINEERING DIVISION

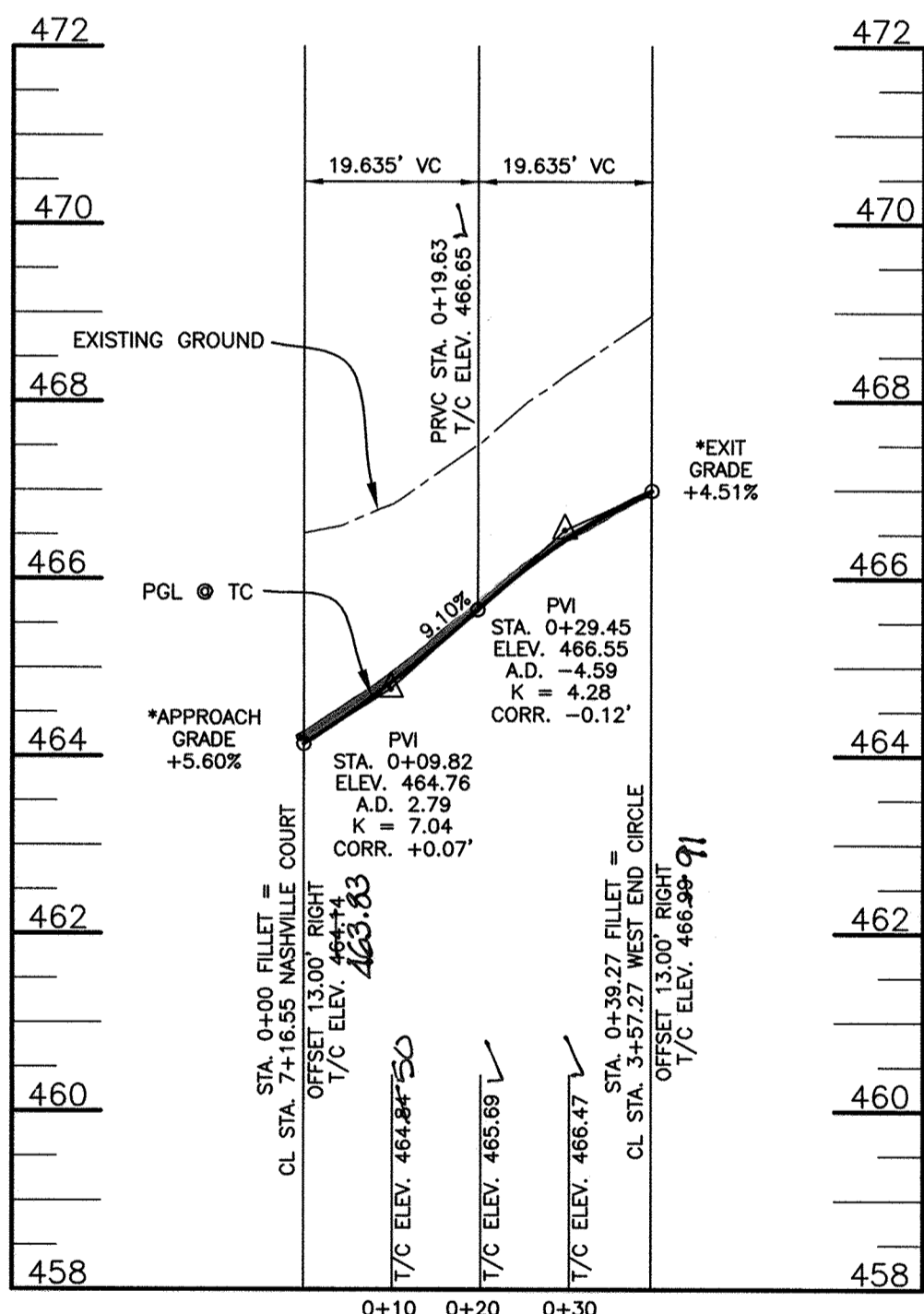
BENCHMARK ENGINEERING, INC. ENGINEERS & LAND SURVEYORS & PLANNERS 8480 BALTIMORE NATIONAL PIKE & SUITE 315 • ELLICOTT CITY, MARYLAND 21034 (P) 410-488-6105 (F) 410-485-8644 WWW.BEI-CIVILENGINEERING.COM		
OWNER: MANGIONE ENTERPRISES OF TURF VALLEY LIMITED PARTNERSHIP 1205 YORK ROAD, PENTHOUSE LUTHERVILLE, MARYLAND 21093 410-825-8400	DEVELOPER: MANGIONE ENTERPRISES OF TURF VALLEY LIMITED PARTNERSHIP 1205 YORK ROAD, PENTHOUSE LUTHERVILLE, MARYLAND 21093 410-825-8400	
VILLAGES AT TURF VALLEY PHASE 5 LOTS 261 thru 296; OPEN SPACE LOTS 297 thru 299; AND BULK PARCEL GG		DATE: AUGUST, 2015 BEI PROJECT NO. 2601 SHEET 2 OF 18
ROAD PLAN, PROFILES, DETAILS, SIGNAGE & STREET LIGHTING NASHVILLE COURT		



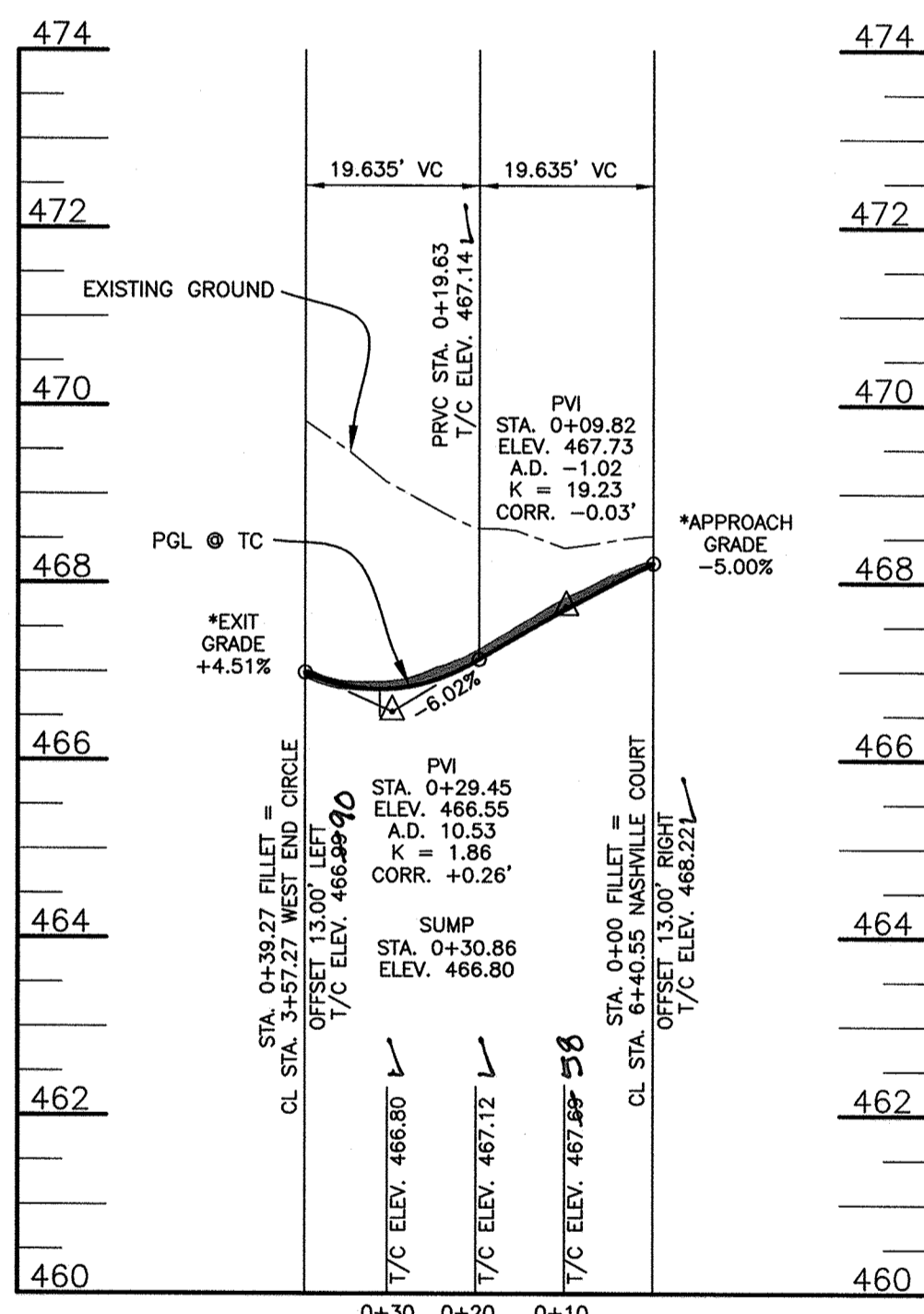
**FILLET PROFILE
SOUTHWEST CORNER
NASHVILLE/WEST END STA. 0+00**
SCALE: 1"=20' HORIZ., 1"=2' VERT.



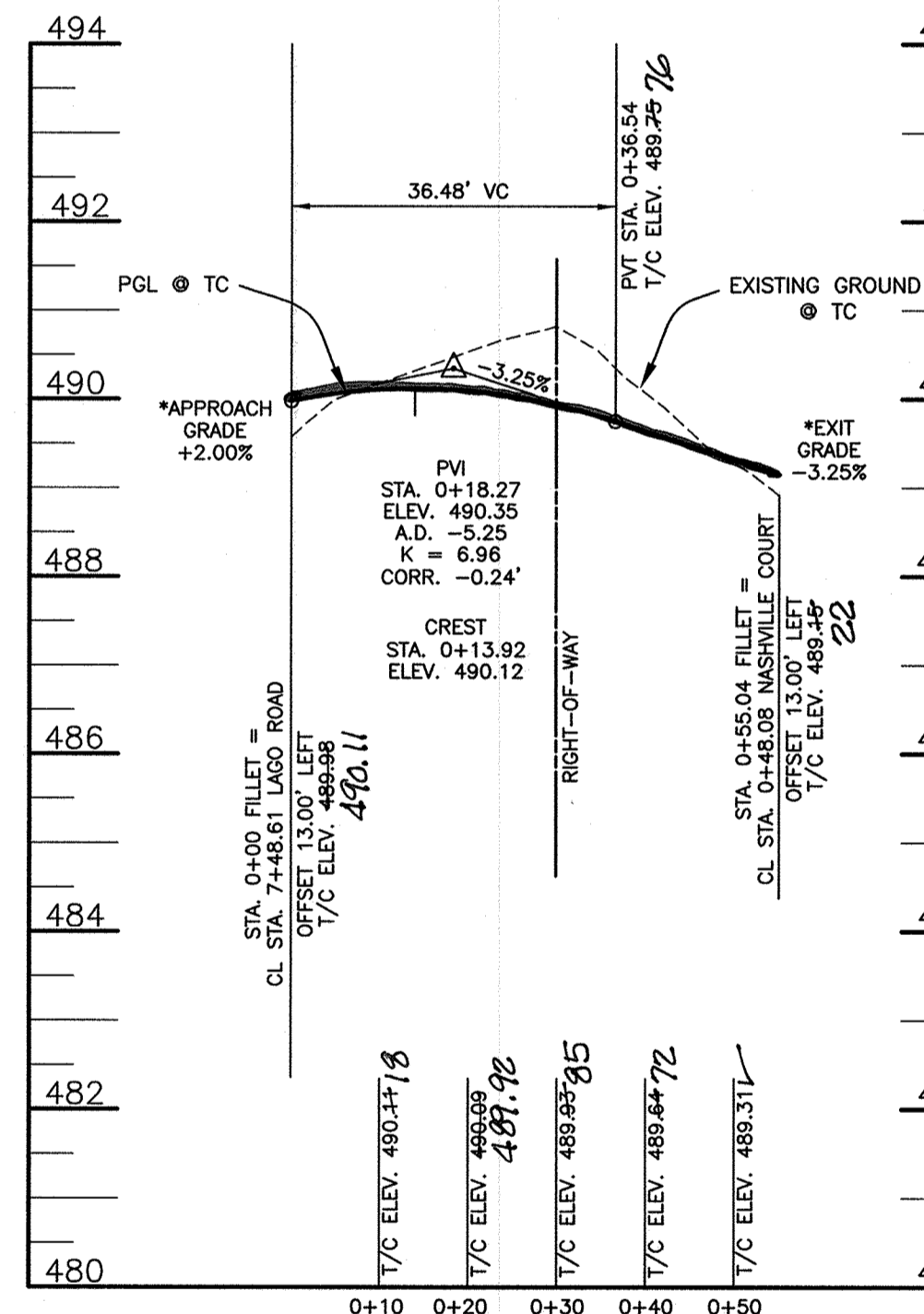
**FILLET PROFILE
NORTHEAST CORNER
NASHVILLE/WEST END STA. 0+00**
SCALE: 1"=20' HORIZ., 1"=2' VERT.



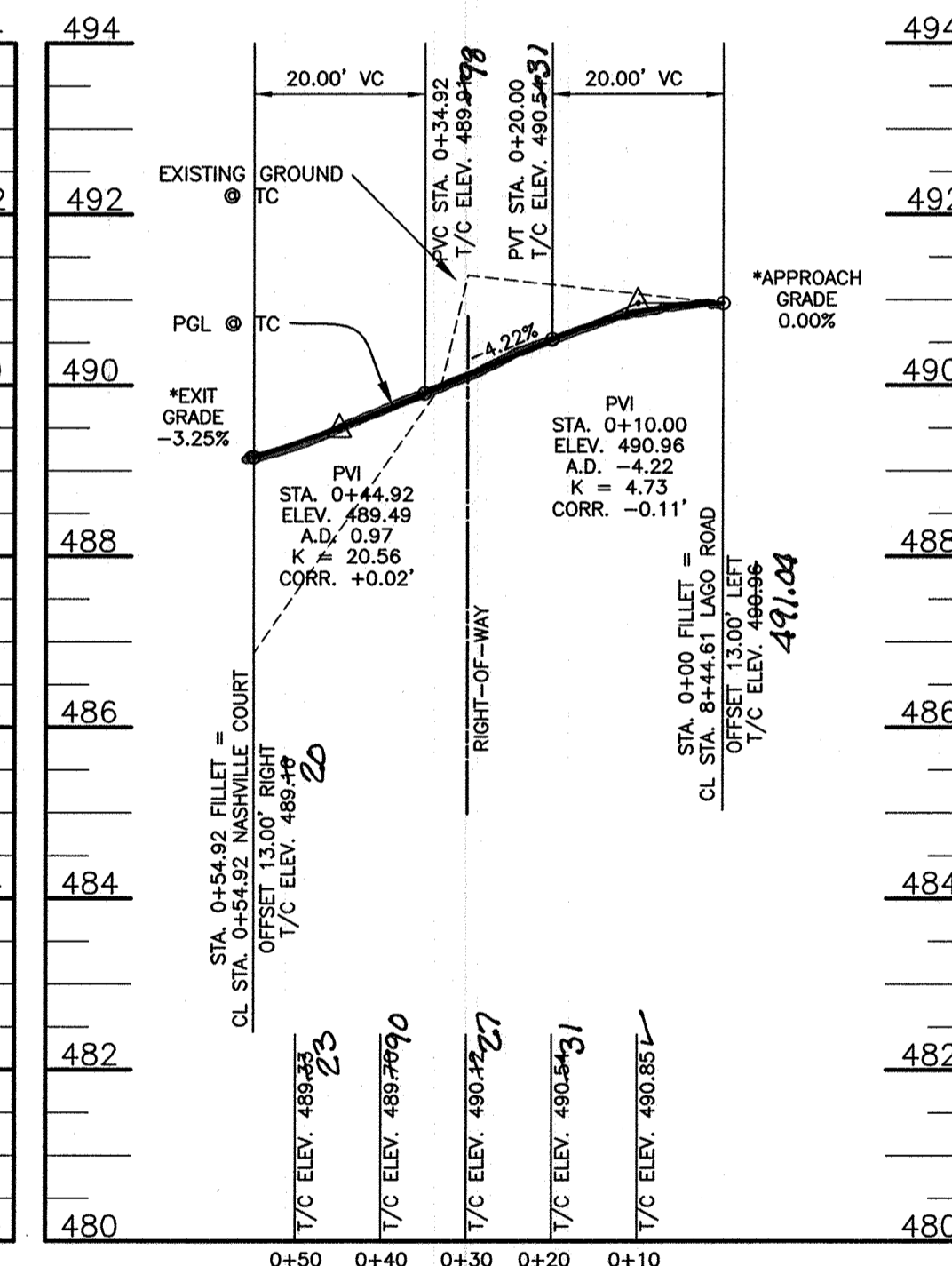
**FILLET PROFILE
NORTH CORNER
NASHVILLE/WEST END STA. 3+95.27**
SCALE: 1"=20' HORIZ., 1"=2' VERT.



**FILLET PROFILE
SOUTH CORNER
NASHVILLE/WEST END STA. 3+95.27**
SCALE: 1"=20' HORIZ., 1"=2' VERT.



**FILLET PROFILE
SOUTH CORNER
NASHVILLE COURT/LAGO ROAD**
SCALE: 1"=20' HORIZ., 1"=2' VERT.

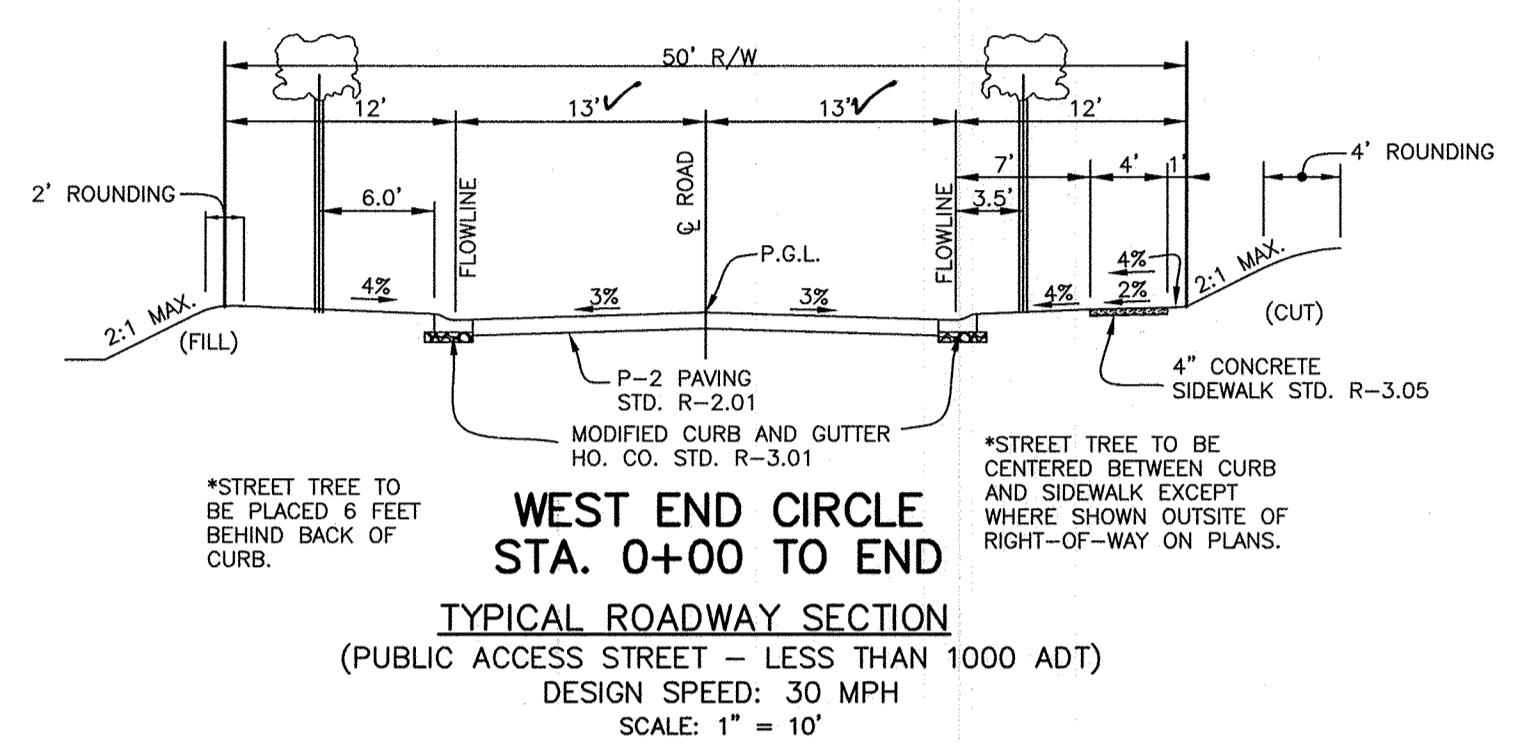


**FILLET PROFILE
NORTH CORNER
NASHVILLE COURT/LAGO ROAD**
SCALE: 1"=20' HORIZ., 1"=2' VERT.

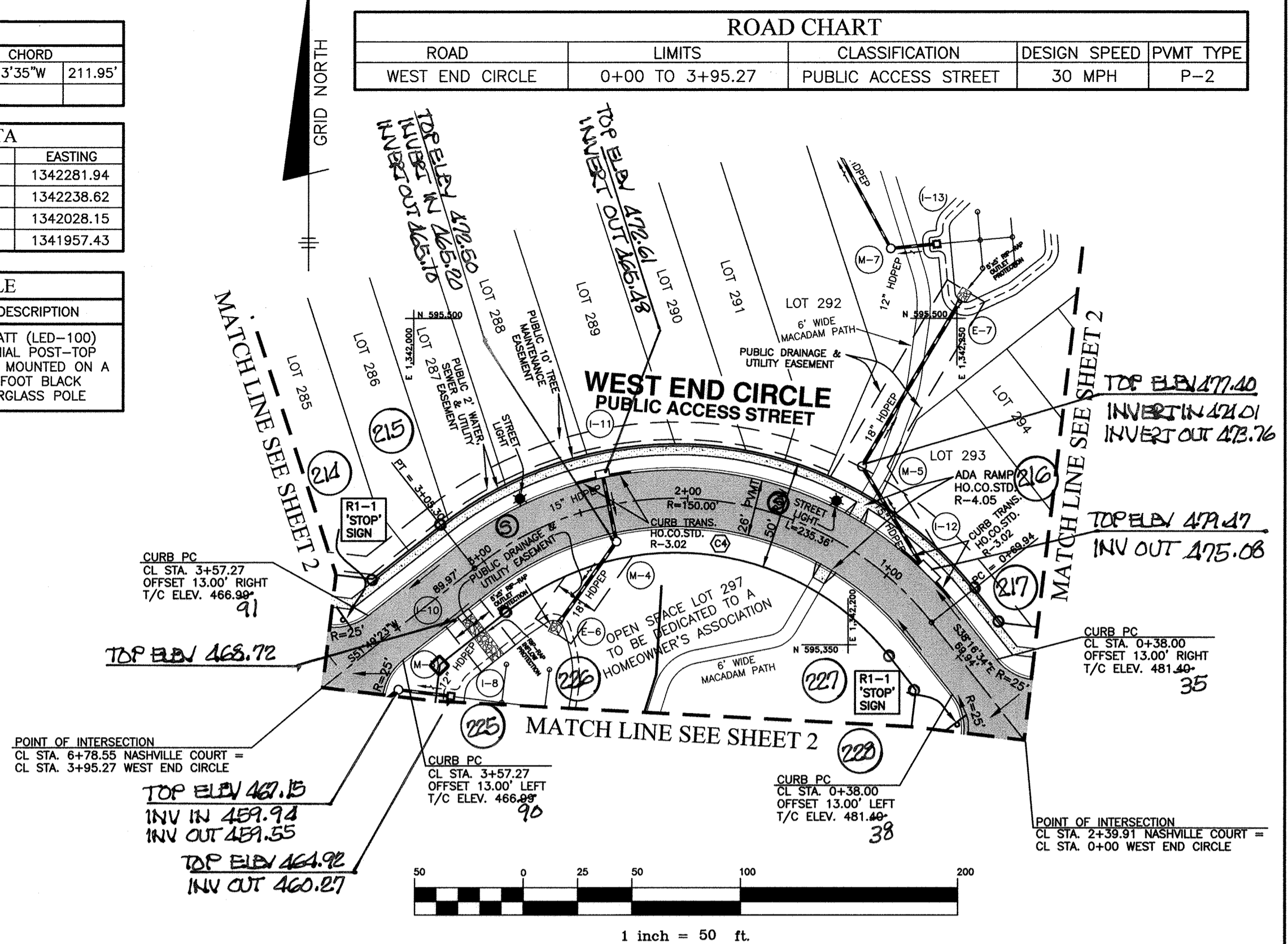
CENTER LINE CURVE DATA							
STREET NAME	CURVE	STATION	RADIUS	ARC	DELTA	TANGENT	CHORD
WEST END CIRCLE	C+	0+69.94 TO 3+05.30	150.00'	235.36'	89°54'03"	149.74'	N83°13'35"W 211.95'

CENTER CONTROL DATA		
STATION	NORTHINGS	EASTING
0+00.00	595304.55	1342281.94
0+69.94	595360.35	1342238.62
3+05.30	595385.35	1342028.15
3+95.27	595329.74	1341957.43

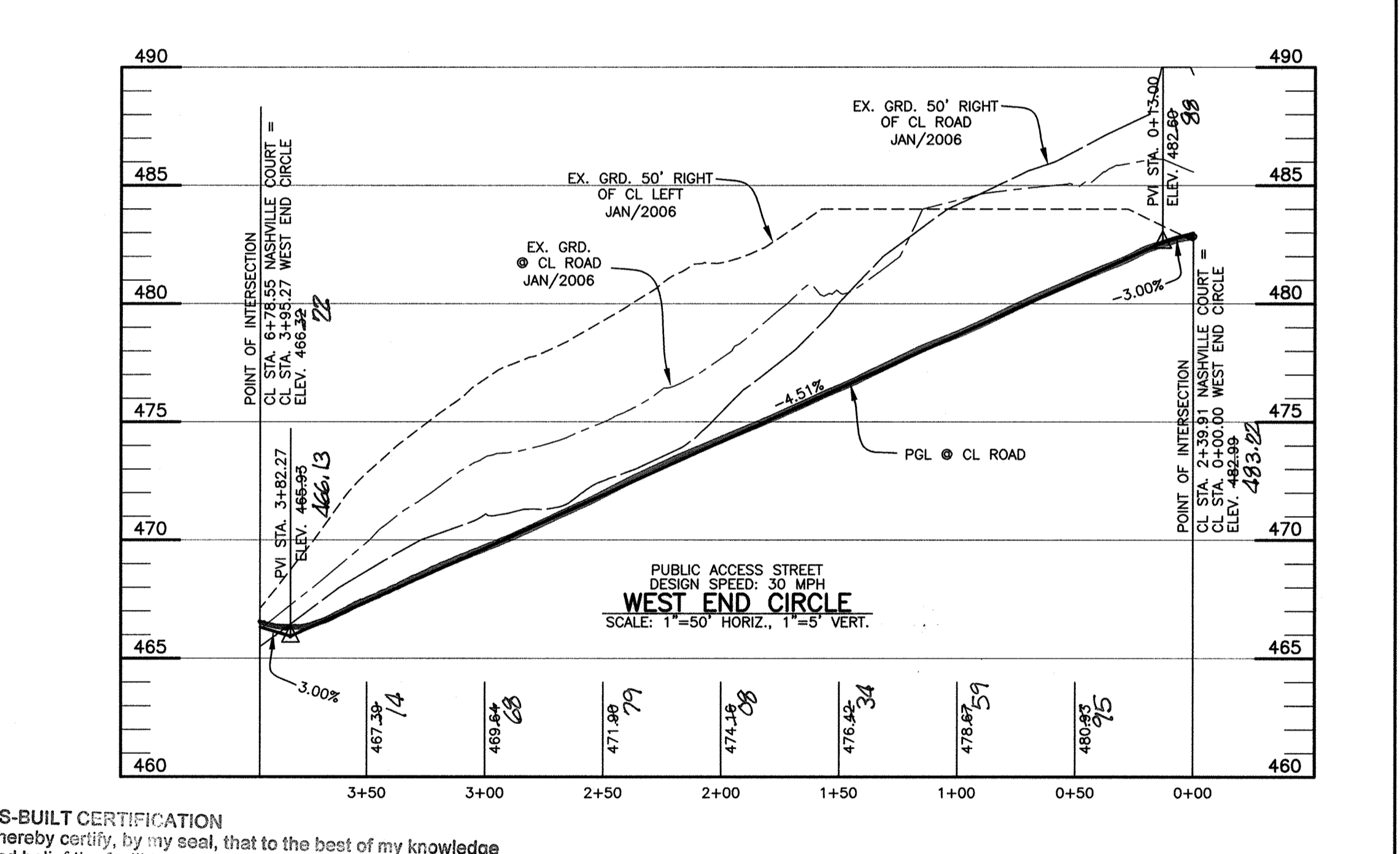
PUBLIC STREET LIGHT SCHEDULE		
SYMBOL	LOCATION	DESCRIPTION
☼	WEST END CIRCLE: 1+36 RIGHT	56-WATT (LED-100) COLONIAL POST-TOP FIXTURE MOUNTED ON A 14-FOOT BLACK FIBERGLASS POLE
☼	WEST END CIRCLE: 2+72.50 RIGHT	



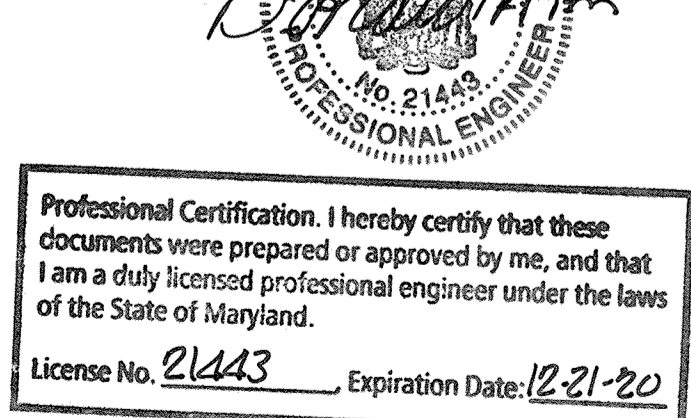
**WEST END CIRCLE
STA. 0+00 TO END**
TYPICAL ROADWAY SECTION
(PUBLIC ACCESS STREET - LESS THAN 1000 ADT)
DESIGN SPEED: 30 MPH
SCALE: 1"=10'



ROAD CHART
ROAD LIMITS CLASSIFICATION DESIGN SPEED PVMT TYPE
WEST END CIRCLE 0+00 TO 3+95.27 PUBLIC ACCESS STREET 30 MPH P-2



AS-BUILT CERTIFICATION
I hereby certify, by my seal, that to the best of my knowledge and belief the facilities shown on this "AS-BUILT" Plan meet the Approved Plans and Specifications
Donald Mason, P.E. Date: 1/18/19



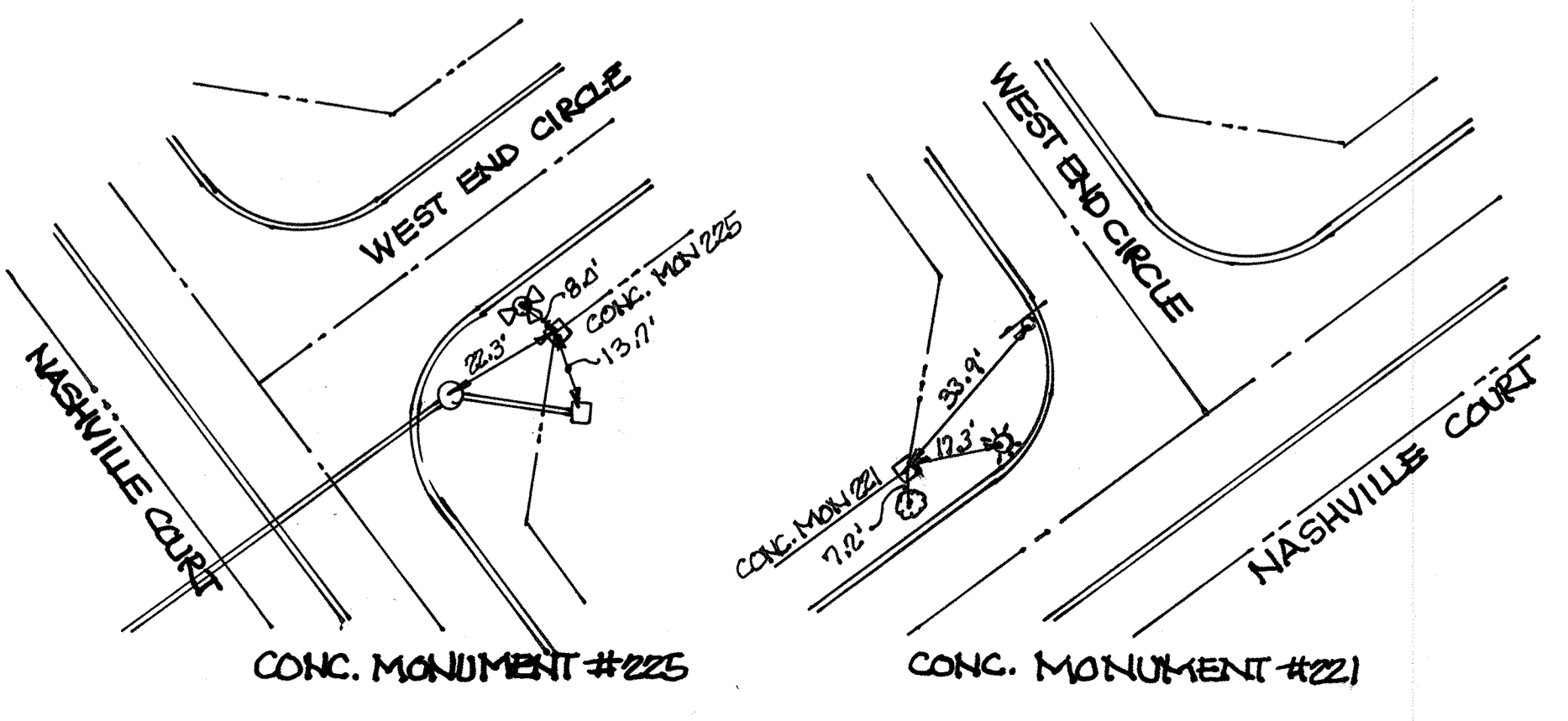
Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.
License No. 21443, Expiration Date: 12-21-20

NO.		DATE	REVISION
<p>BENCHMARK ENGINEERING, INC. ENGINEERS & LAND SURVEYORS & PLANNERS 8480 BALTIMORE NATIONAL PIKE & SUITE 315 & ELLICOTT CITY, MARYLAND 21043 (P) 410-465-6105 (F) 410-465-6644 WWW.BEI-CVLENGINEERING.COM</p>			
OWNER:		<p>VILLAGES AT TURF VALLEY PHASE 5 LOTS 261 thru 296; OPEN SPACE LOTS 297 thru 299; AND BULK PARCEL GG</p>	
DEVELOPER:		<p>MANGIONE ENTERPRISES OF TURF VALLEY LIMITED PARTNERSHIP 1205 YORK ROAD, PENTHOUSE LUTHERVILLE, MARYLAND 21093 410-825-8400</p>	
DESIGN:		<p>DATE: AUGUST, 2015 BEI PROJECT NO. 2601 SCALE: AS SHOWN SHEET 3 OF 18</p>	

APPROVED: DEPARTMENT OF PUBLIC WORKS
[Signature] 9/8/2015
CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING
[Signature] 9-16-15
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

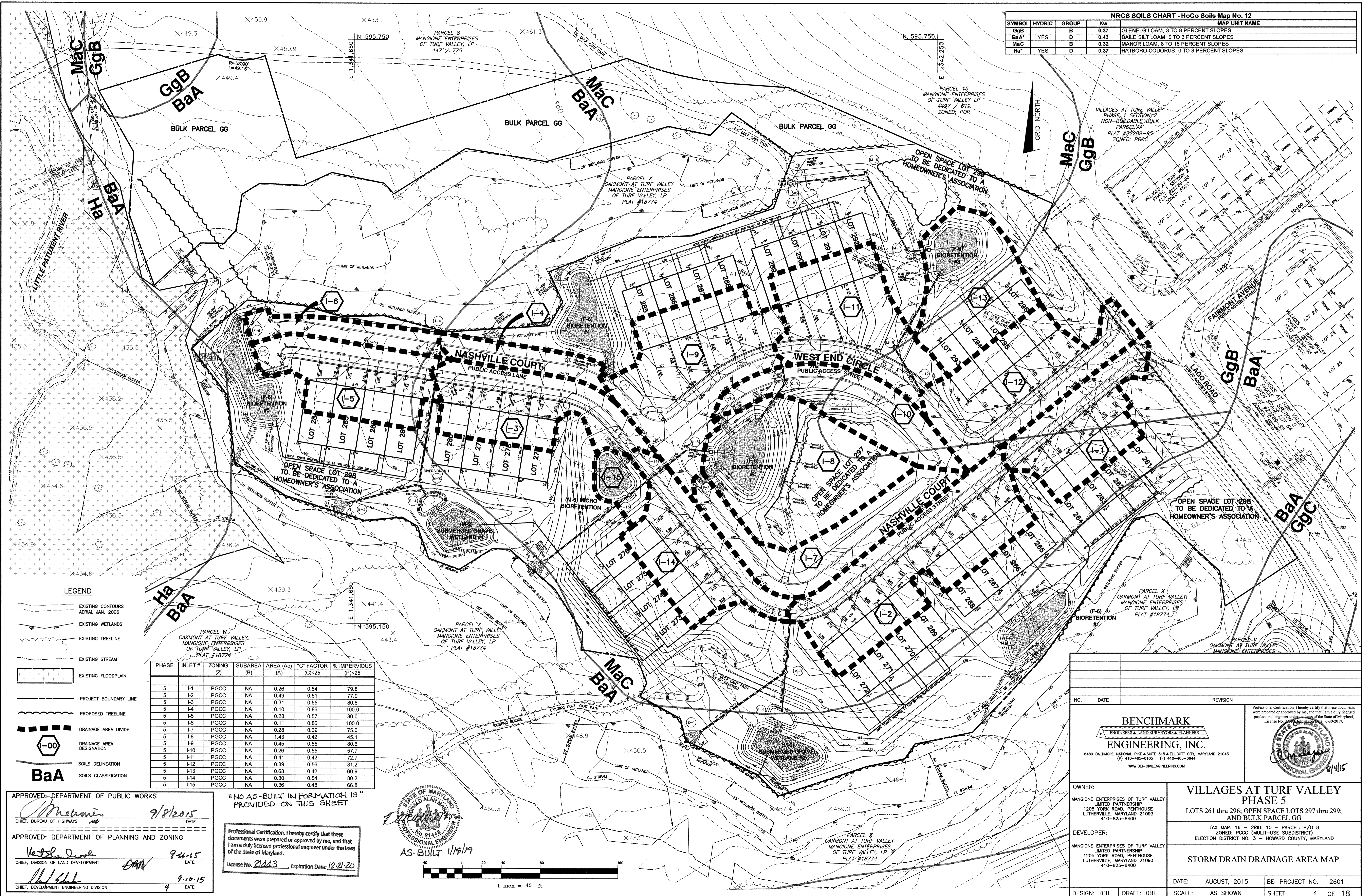
[Signature] 9-10-15
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE



SECTION NUMBER	ROAD AND STREET CLASSIFICATION	CALIFORNIA BEARING RATIO (CBR)	3 TO <5 TO <7		7 TO <15 TO <27	
			MIN HMA WITH GAB	HMA WITH CONSTANT GAB	MIN HMA WITH GAB	HMA WITH CONSTANT GAB
P-2	PARKING DRIVE AISLES: RESIDENTIAL AND NON-RESIDENTIAL WITH NO MORE THAN 10 HEAVY TRUCKS PER DAY LOCAL ROADS: ACCESS PLACE, ACCESS STREET CUL-DE-SACS: RESIDENTIAL	HMA SUPERPAVE FINAL SURFACE	1.5	1.5	1.5	1.5
		HMA SUPERPAVE INTERMEDIATE SURFACE	1.0	1.0	1.0	1.0
		HMA SUPERPAVE BASE	2.0	2.0	3.5	2.0
		GRADED AGGREGATE BASE (GAB)	8.0	4.0	3.0	4.0

P-2 PAVING DETAIL

NRCS SOILS CHART - HoCo Soils Map No. 12				MAP UNIT NAME
SYMBOL	HYDRIC	GROUP	Kw	
GgB		B	0.37	GLENELG LOAM, 3 TO 8 PERCENT SLOPES
BaA*	YES	D	0.43	BAILE SILT LOAM, 0 TO 3 PERCENT SLOPES
MaC		B	0.32	MANOR LOAM, 8 TO 15 PERCENT SLOPES
Ha*	YES	D	0.37	HATBORO-CODORUS, 0 TO 3 PERCENT SLOPES



LEGEND

- EXISTING CONTOURS
- AERIAL JAN. 2006
- EXISTING WETLANDS
- EXISTING TREELINE
- EXISTING STREAM
- EXISTING FLOODPLAIN
- PROJECT BOUNDARY LINE
- PROPOSED TREELINE
- DRAINAGE AREA DIVIDE
- DRAINAGE AREA DESIGNATION
- SOILS DELINEATION
- SOILS CLASSIFICATION

BaA

PHASE	INLET #	ZONING (Z)	SUBAREA (B)	AREA (Ac) (A)	"C" FACTOR (C)-25	% IMPERVIOUS (P)-25
5	I-1	PGCC	NA	0.26	0.54	79.8
5	I-2	PGCC	NA	0.49	0.51	77.9
5	I-3	PGCC	NA	0.31	0.55	80.8
5	I-4	PGCC	NA	0.10	0.86	100.0
5	I-5	PGCC	NA	0.28	0.57	80.0
5	I-6	PGCC	NA	0.11	0.86	100.0
5	I-7	PGCC	NA	0.28	0.69	75.0
5	I-8	PGCC	NA	1.43	0.42	45.1
5	I-9	PGCC	NA	0.45	0.55	80.6
5	I-10	PGCC	NA	0.26	0.56	67.7
5	I-11	PGCC	NA	0.41	0.42	72.7
5	I-12	PGCC	NA	0.39	0.56	81.2
5	I-13	PGCC	NA	0.68	0.42	60.9
5	I-14	PGCC	NA	0.30	0.54	80.2
5	I-15	PGCC	NA	0.36	0.48	66.8

APPROVED: DEPARTMENT OF PUBLIC WORKS
[Signature] 9/8/2015
 CHIEF, BUREAU OF HIGHWAYS

APPROVED: DEPARTMENT OF PLANNING AND ZONING
[Signature] 9-16-15
 CHIEF, DIVISION OF LAND DEVELOPMENT

[Signature] 9-10-15
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

"NO AS-BUILT INFORMATION IS PROVIDED ON THIS SHEET"

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.
 License No. 21143, Expiration Date: 12-21-20

AS-BUILT 1/19/19

STATE OF MARYLAND
 BOARD OF PROFESSIONAL ENGINEERS
 PROFESSIONAL ENGINEER
 NO. 21143
 AS-BUILT 1/19/19

1 inch = 40 ft.

NO. DATE REVISION

BENCHMARK ENGINEERING, INC.
 ENGINEERS & LAND SURVEYORS & PLANNERS
 8480 BALTIMORE NATIONAL PIKE & SUITE 315 & ELLICOTT CITY, MARYLAND 21043
 (P) 410-465-5105 (F) 410-465-6644
 WWW.BEI-CVLENGINEERING.COM

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OWNER: MANGIONE ENTERPRISES OF TURF VALLEY LIMITED PARTNERSHIP
 1205 YORK ROAD, PENTHOUSE LUTHERVILLE, MARYLAND 21093
 410-825-8400

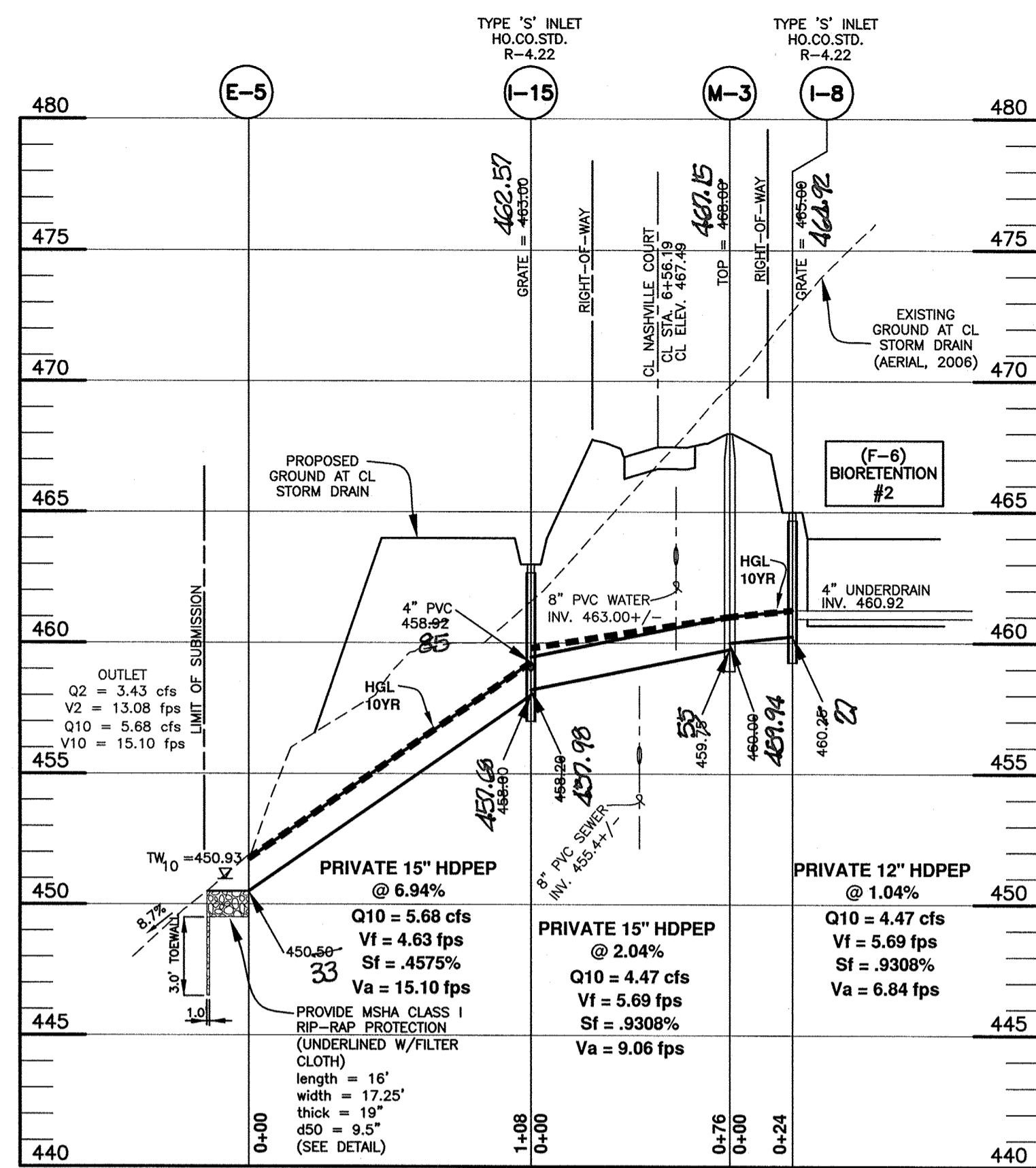
DEVELOPER: MANGIONE ENTERPRISES OF TURF VALLEY LIMITED PARTNERSHIP
 1205 YORK ROAD, PENTHOUSE LUTHERVILLE, MARYLAND 21093
 410-825-8400

VILLAGES AT TURF VALLEY PHASE 5
 LOTS 261 thru 296; OPEN SPACE LOTS 297 thru 299; AND BULK PARCEL GG

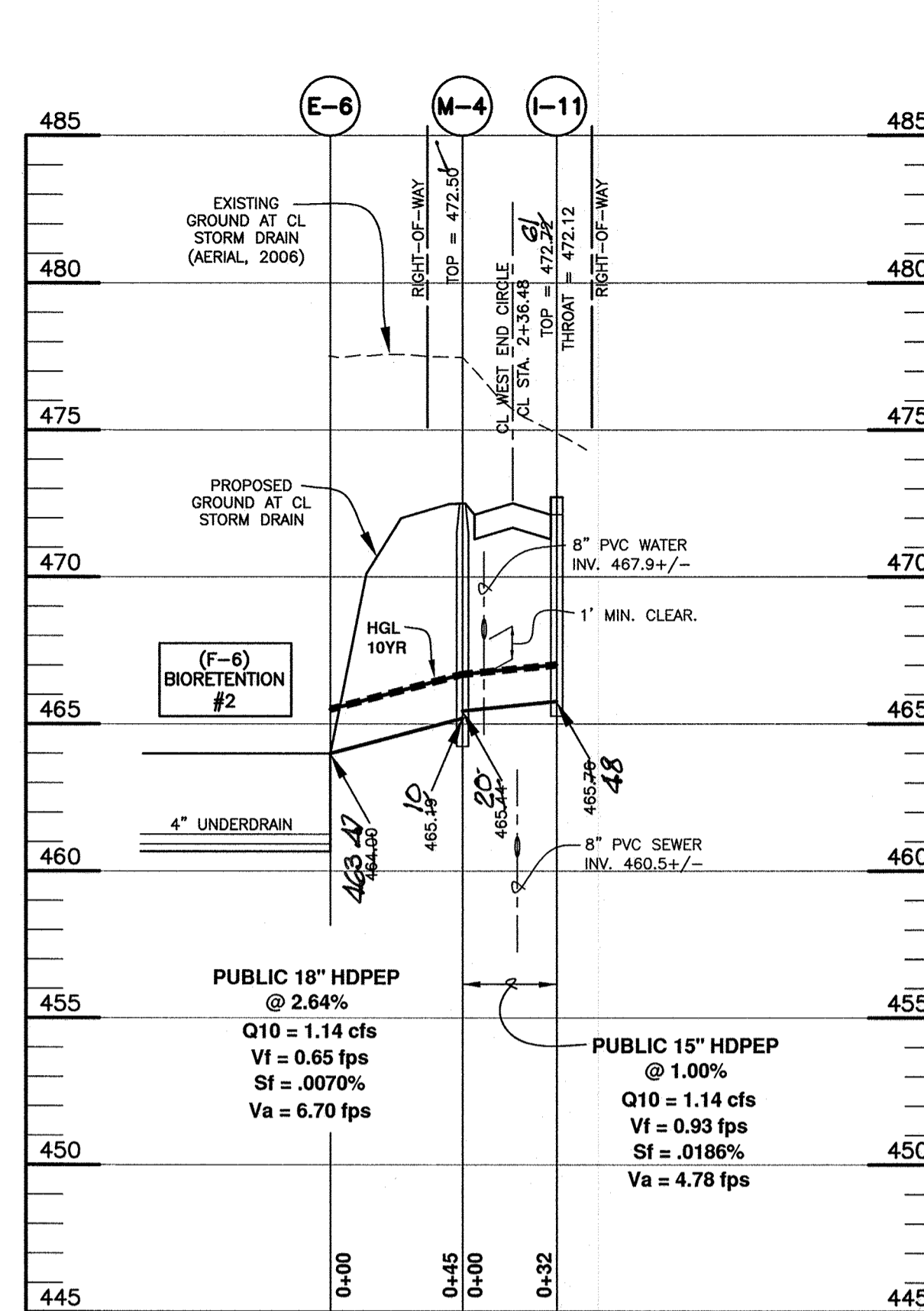
TAX MAP: 16 - GRID: 10 - PARCEL: P/O 8
 ZONED: PGCC (MULTI-USE SUBDISTRICT)
 ELECTION DISTRICT NO. 3 - HOWARD COUNTY, MARYLAND

STORM DRAIN DRAINAGE AREA MAP

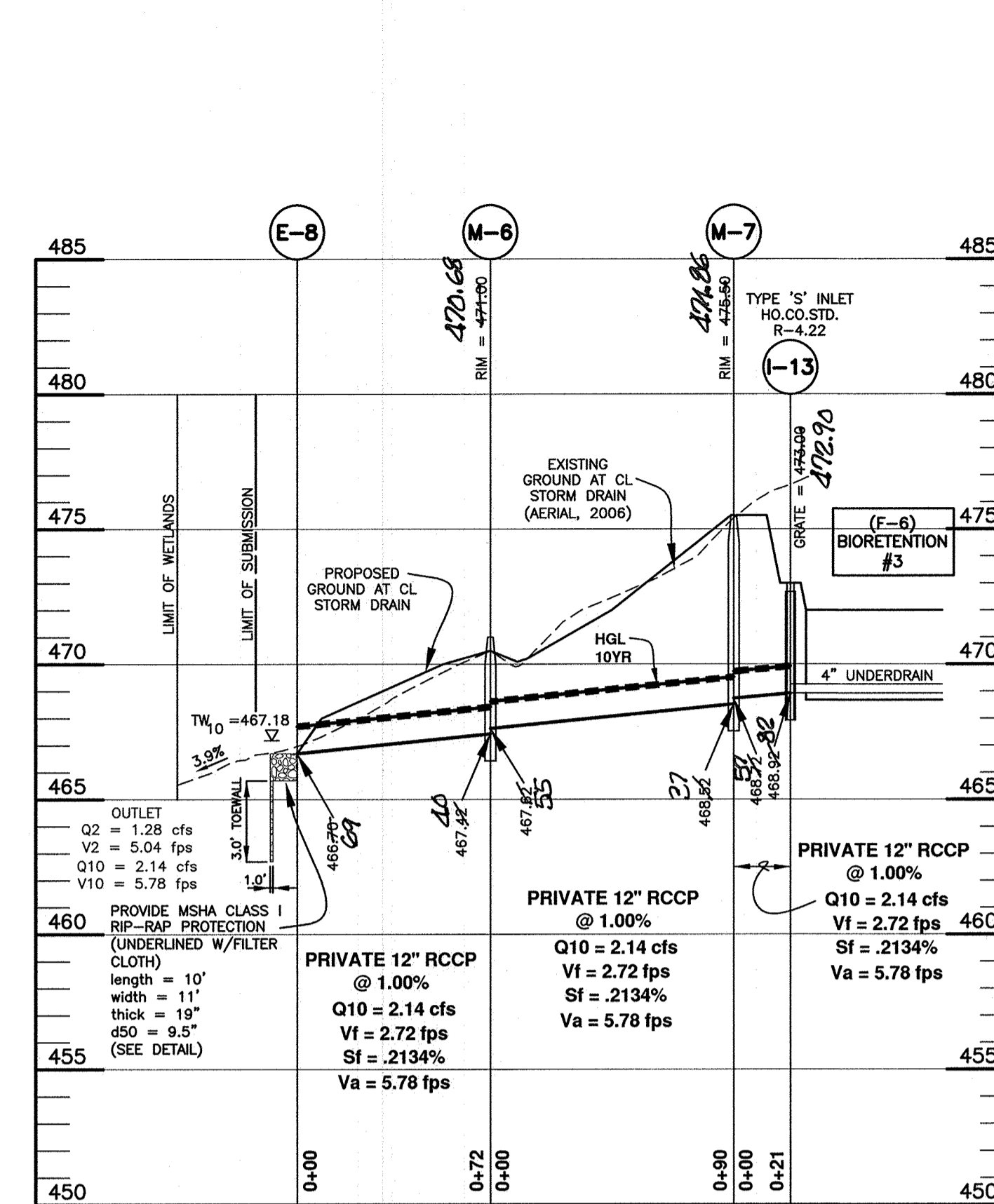
DATE: AUGUST, 2015 BEI PROJECT NO. 2601
 SCALE: AS SHOWN SHEET 4 OF 18



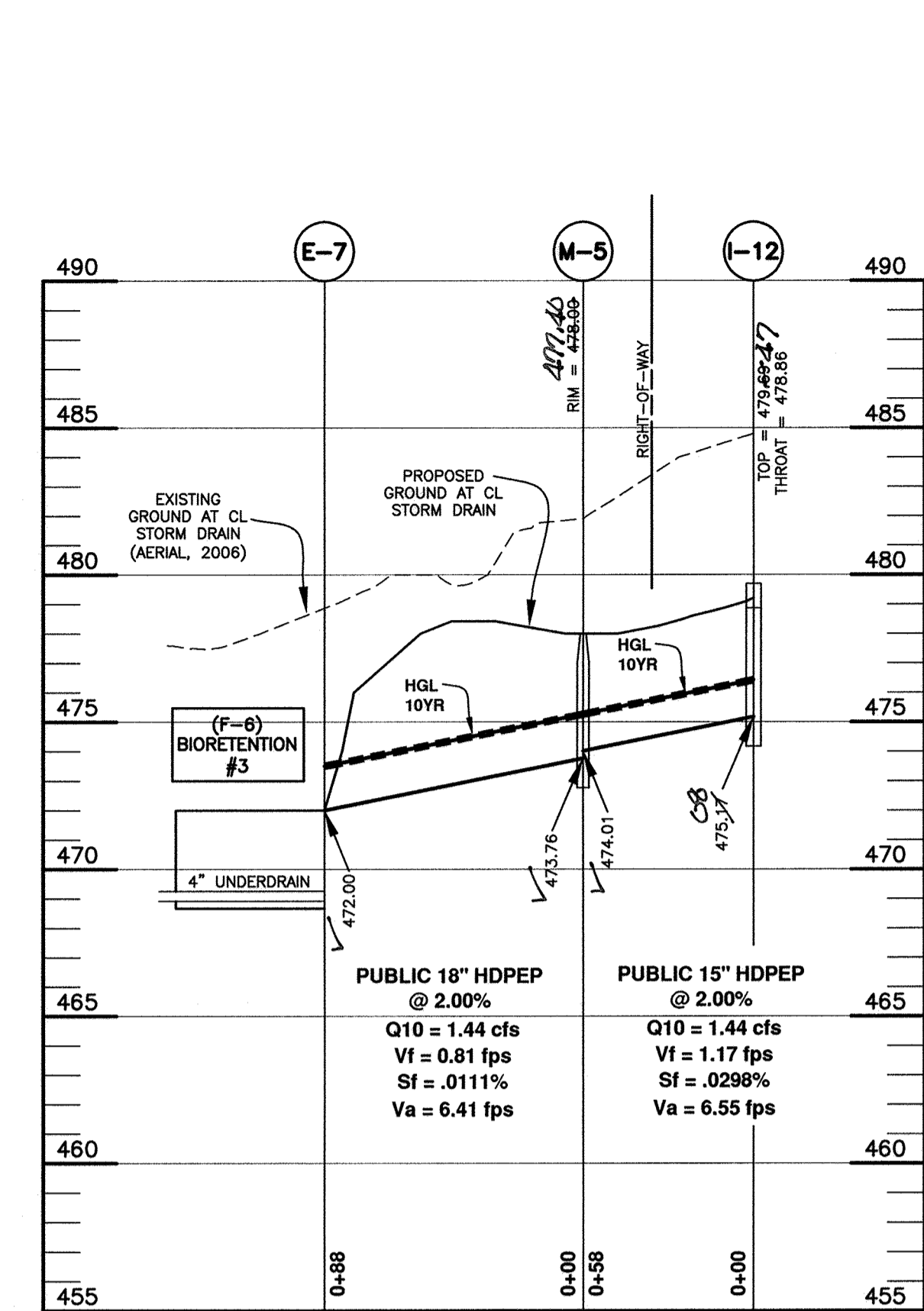
STORM DRAIN PROFILE
SCALE: 1" = 50' HORIZ., 1" = 5' VERT.



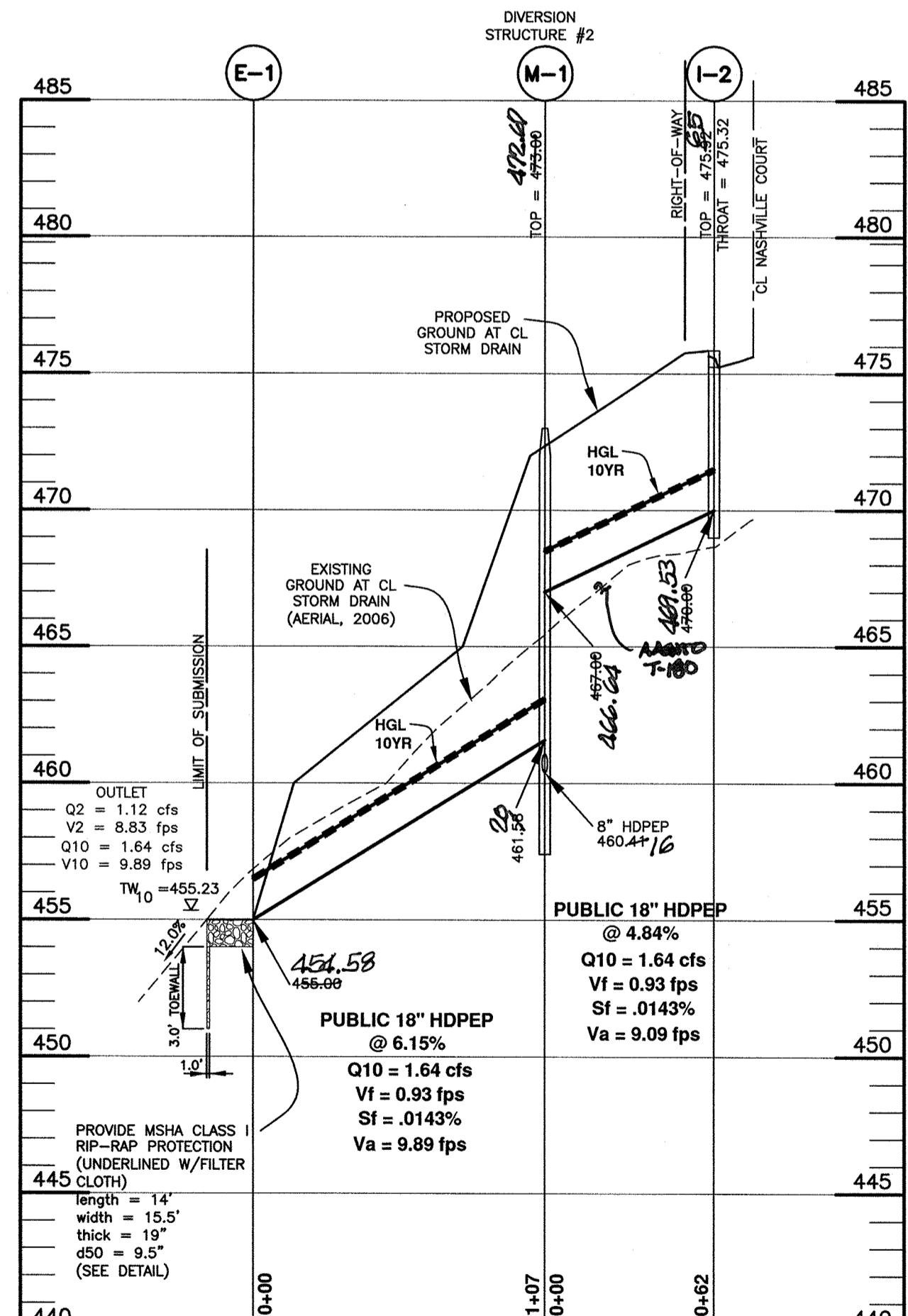
STORM DRAIN PROFILE
SCALE: 1" = 50' HORIZ., 1" = 5' VERT.



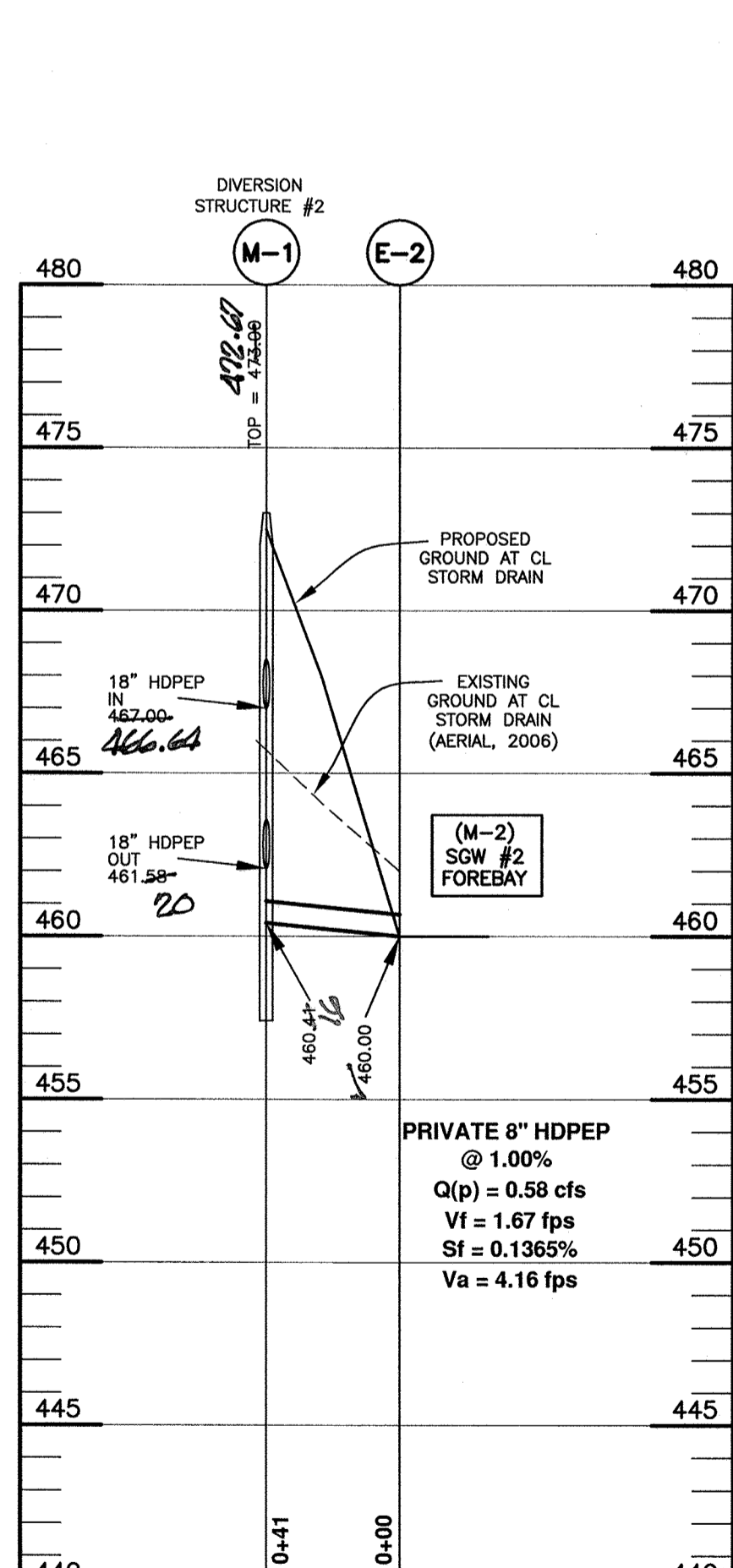
STORM DRAIN PROFILE
SCALE: 1" = 50' HORIZ., 1" = 5' VERT.



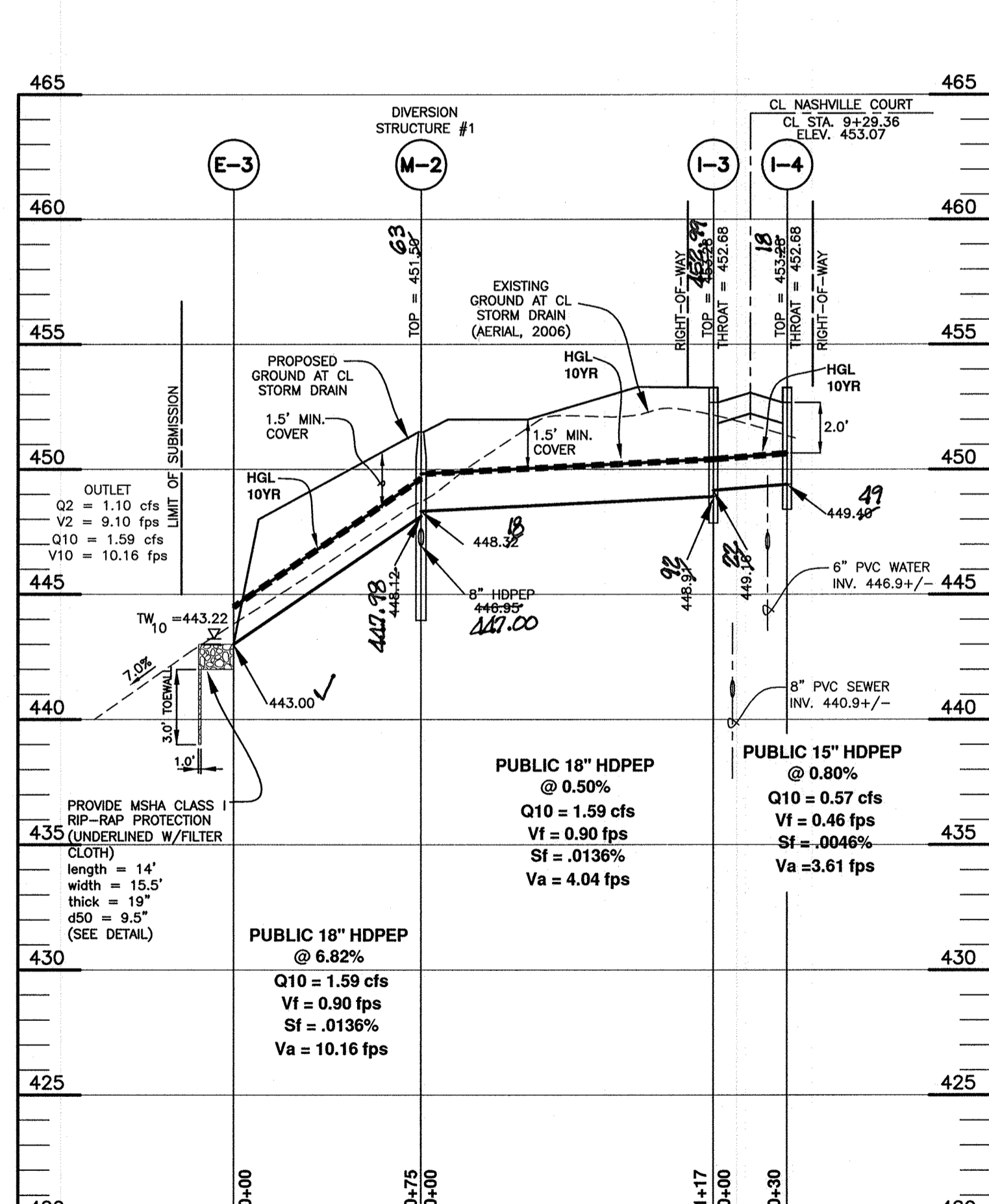
STORM DRAIN PROFILE
SCALE: 1" = 50' HORIZ., 1" = 5' VERT.



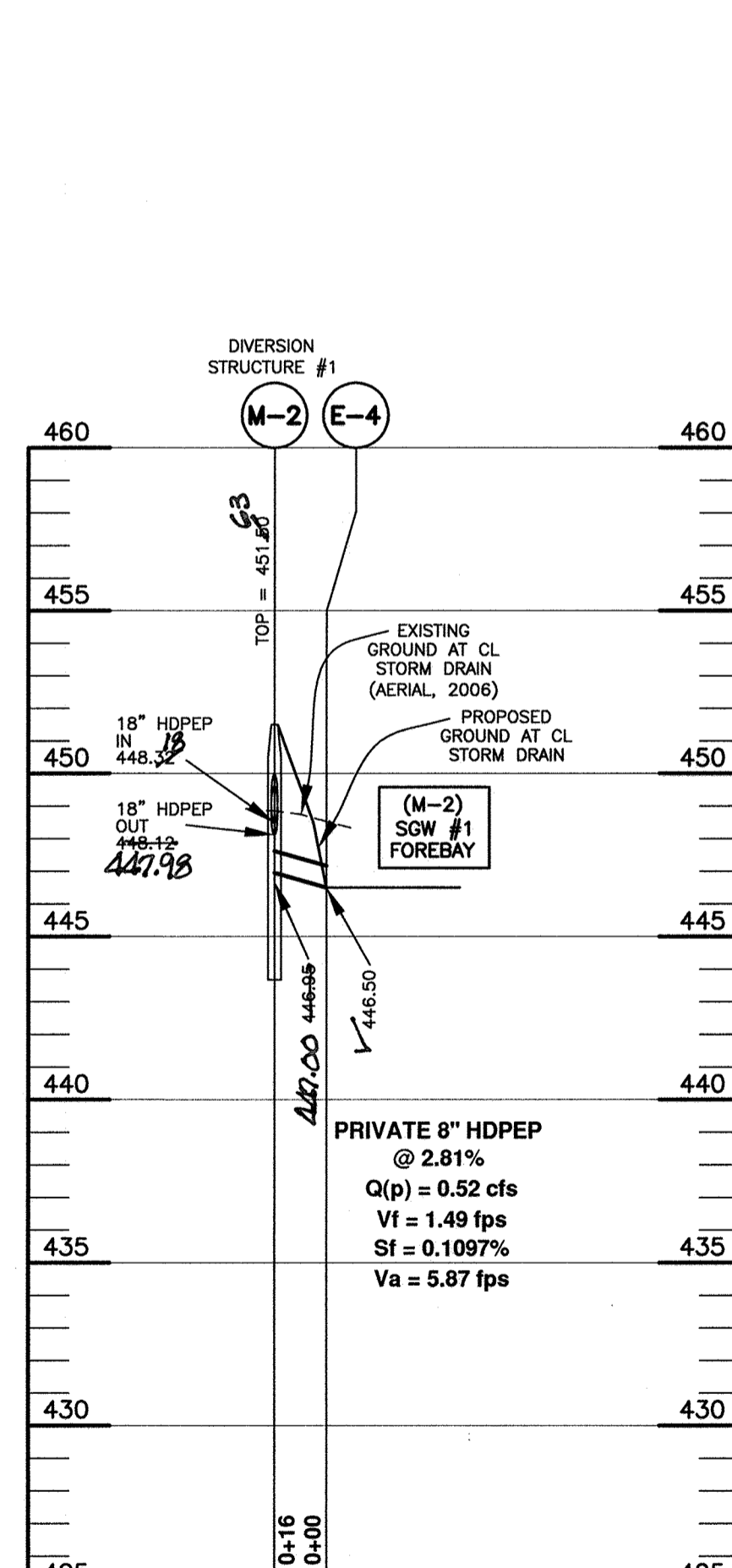
STORM DRAIN PROFILE
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STORM DRAIN PROFILE
SCALE: 1" = 50' HORIZ., 1" = 5' VERT.



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SCALE: 1" = 50' HORIZ., 1" = 5' VERT.

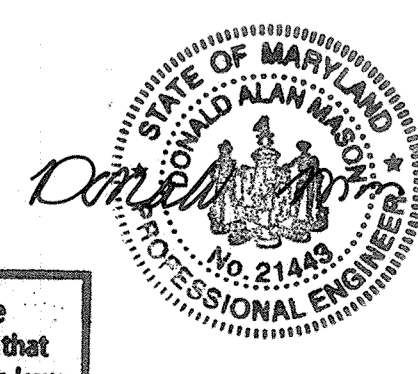


STORM DRAIN PROFILE
SCALE: 1" = 50' HORIZ., 1" = 5' VERT.

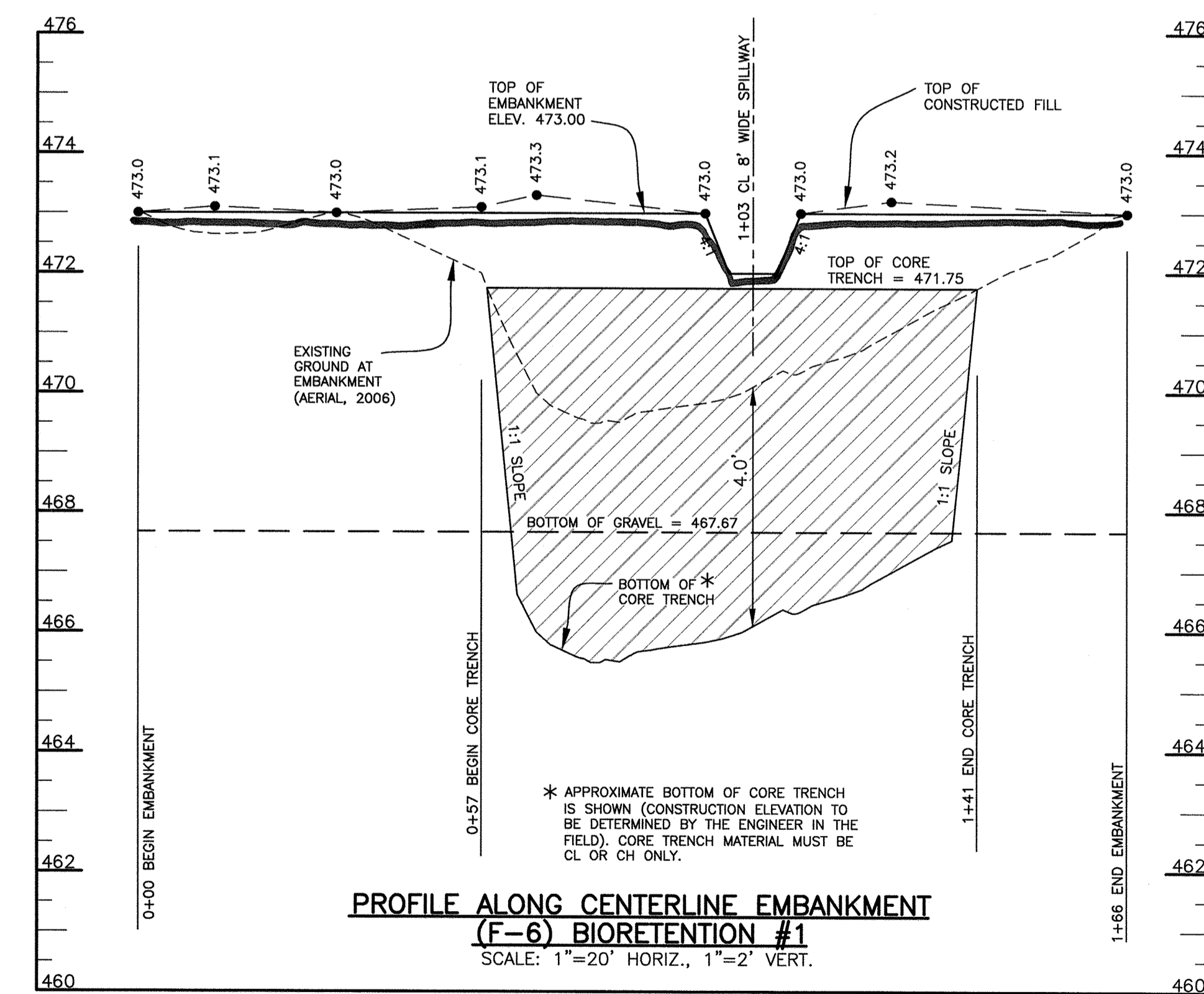
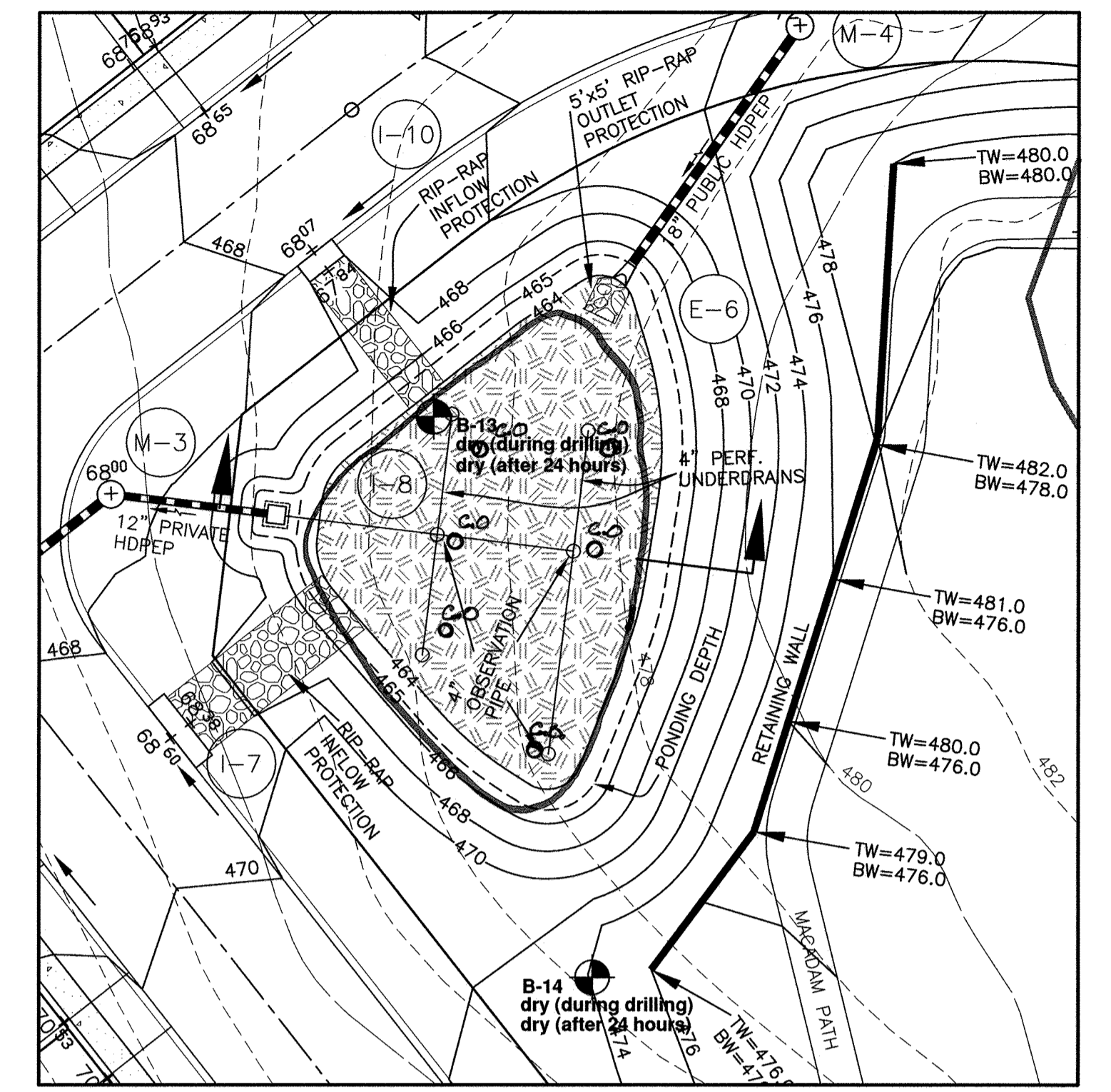
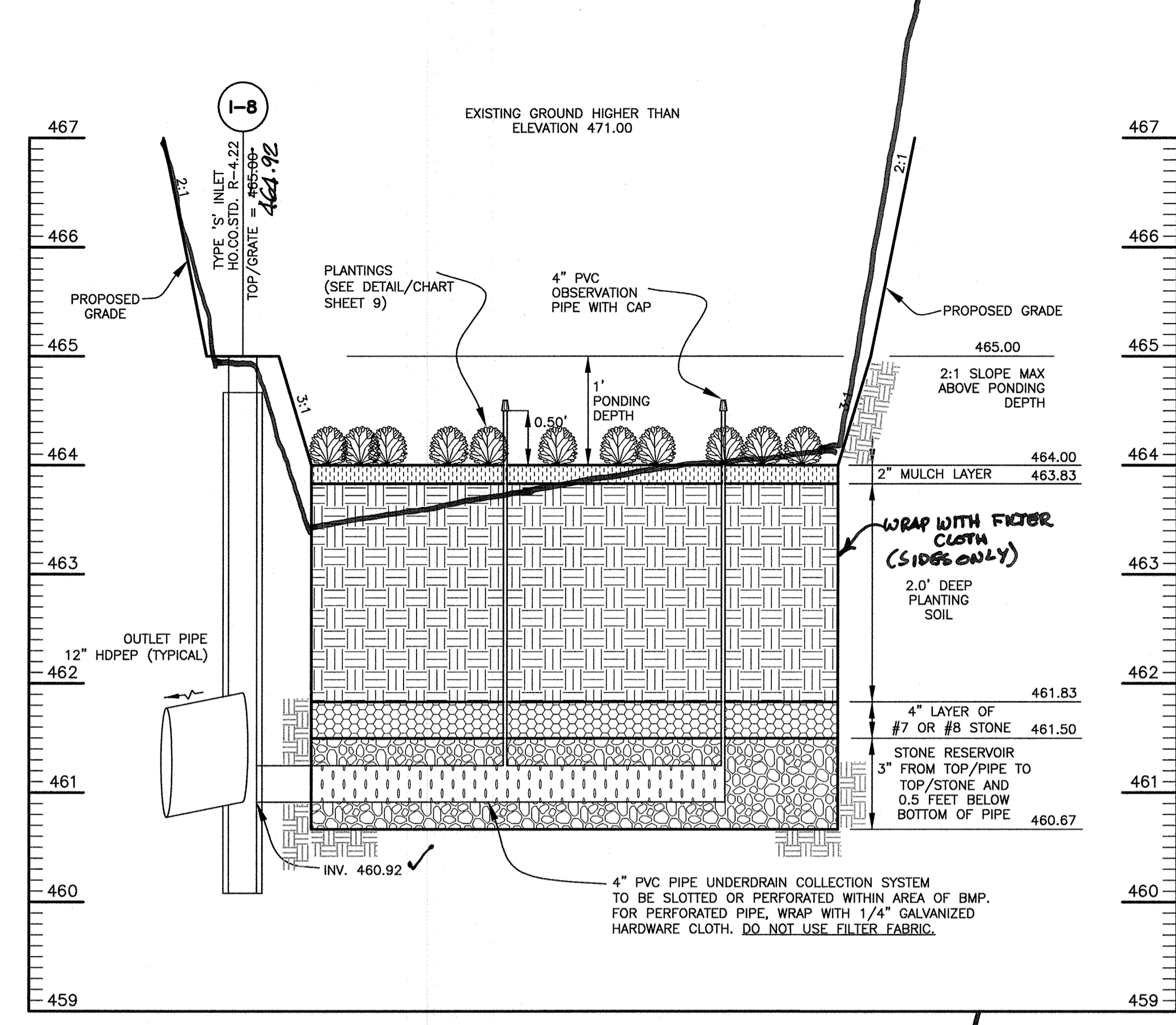
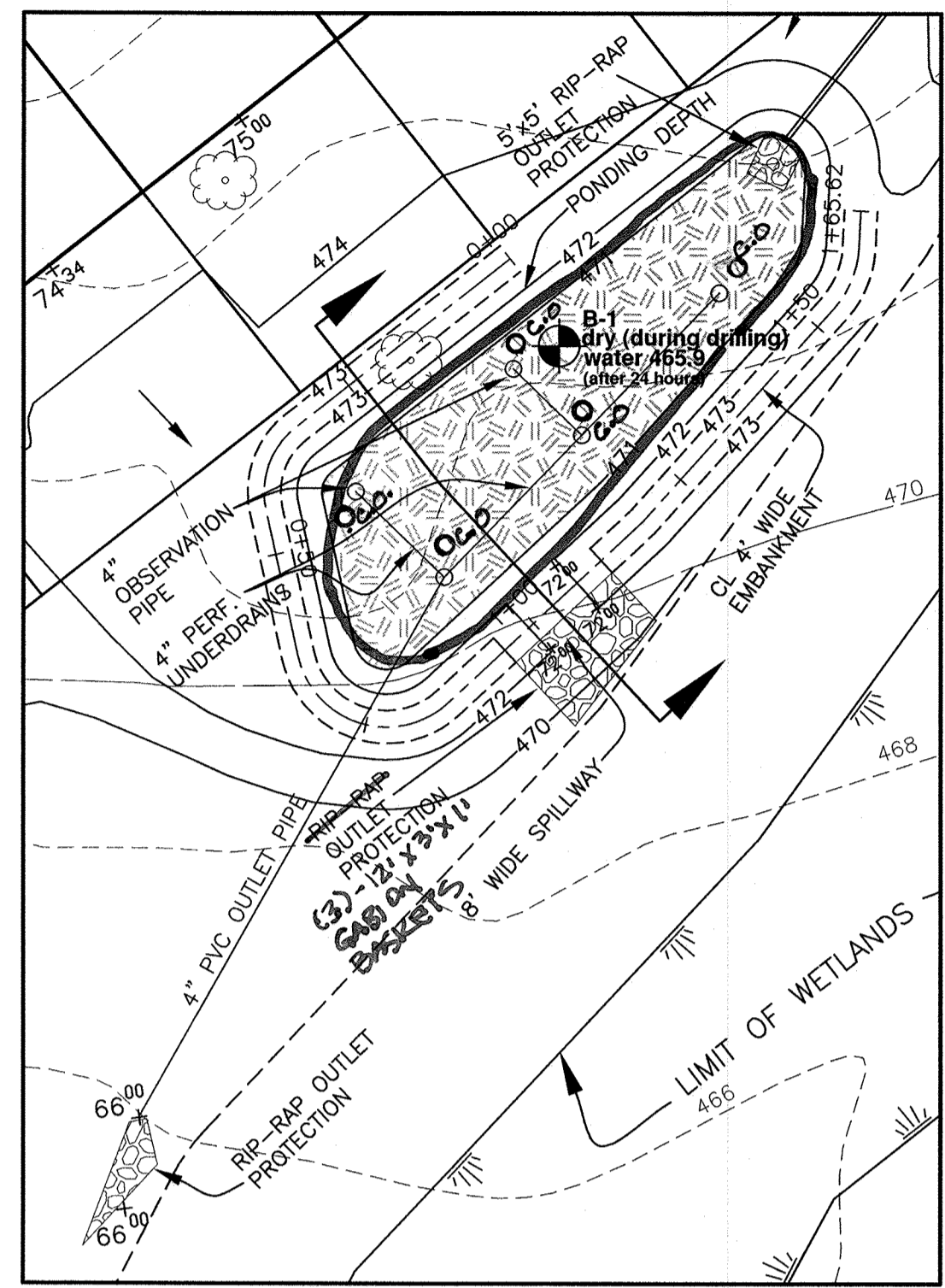
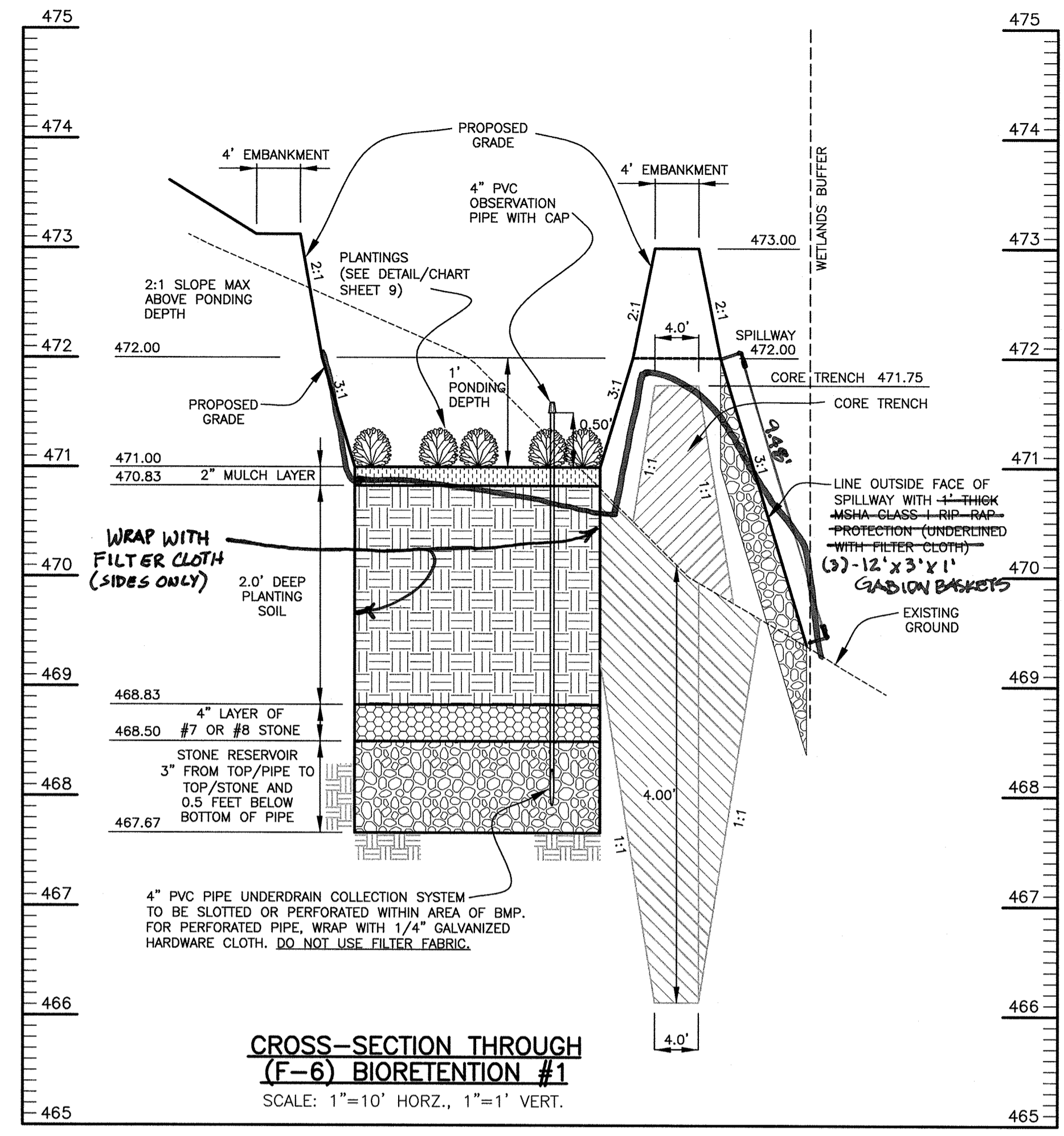
APPROVED: DEPARTMENT OF PUBLIC WORKS
M. M. M. M. 9/16/15
 CHIEF, BUREAU OF HIGHWAYS DATE
 APPROVED: DEPARTMENT OF PLANNING AND ZONING
K. L. L. L. 9-16-15
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE
D. L. L. L. 9-10-15
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

BENCHMARK ENGINEERING, INC. ENGINEERS & LAND SURVEYORS & PLANNERS 8480 BALTIMORE NATIONAL PIKE & SUITE 315 • ELLICOTT CITY, MARYLAND 21043 (P) 410-452-6105 (F) 410-452-6644 WWW.BEI-CVLENGINEERING.COM		
OWNER: MANGIONE ENTERPRISES OF TURF VALLEY LIMITED PARTNERSHIP 1205 YORK ROAD, PENTHOUSE LUTHERVILLE, MARYLAND 21093 410-825-8400	DEVELOPER: MANGIONE ENTERPRISES OF TURF VALLEY LIMITED PARTNERSHIP 1205 YORK ROAD, PENTHOUSE LUTHERVILLE, MARYLAND 21093 410-825-8400	
VILLAGES AT TURF VALLEY PHASE 5 LOTS 261 thru 296; OPEN SPACE LOTS 297 thru 299; AND BULK PARCEL GG TAX MAP: 16 - GRID: 10 - PARCEL: P/O 8 ZONED: PGCC (MULTI-USE SUBDISTRICT) ELECTION DISTRICT NO. 3 - HOWARD COUNTY, MARYLAND		STORM DRAIN PROFILES DATE: AUGUST, 2015 BEI PROJECT NO. 2601 DESIGN: DBT DRAFT: DBT SCALE: AS SHOWN SHEET 5 OF 18
DATE: 11/13/19		

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.
 License No. 21443, Expiration Date: 12-21-20



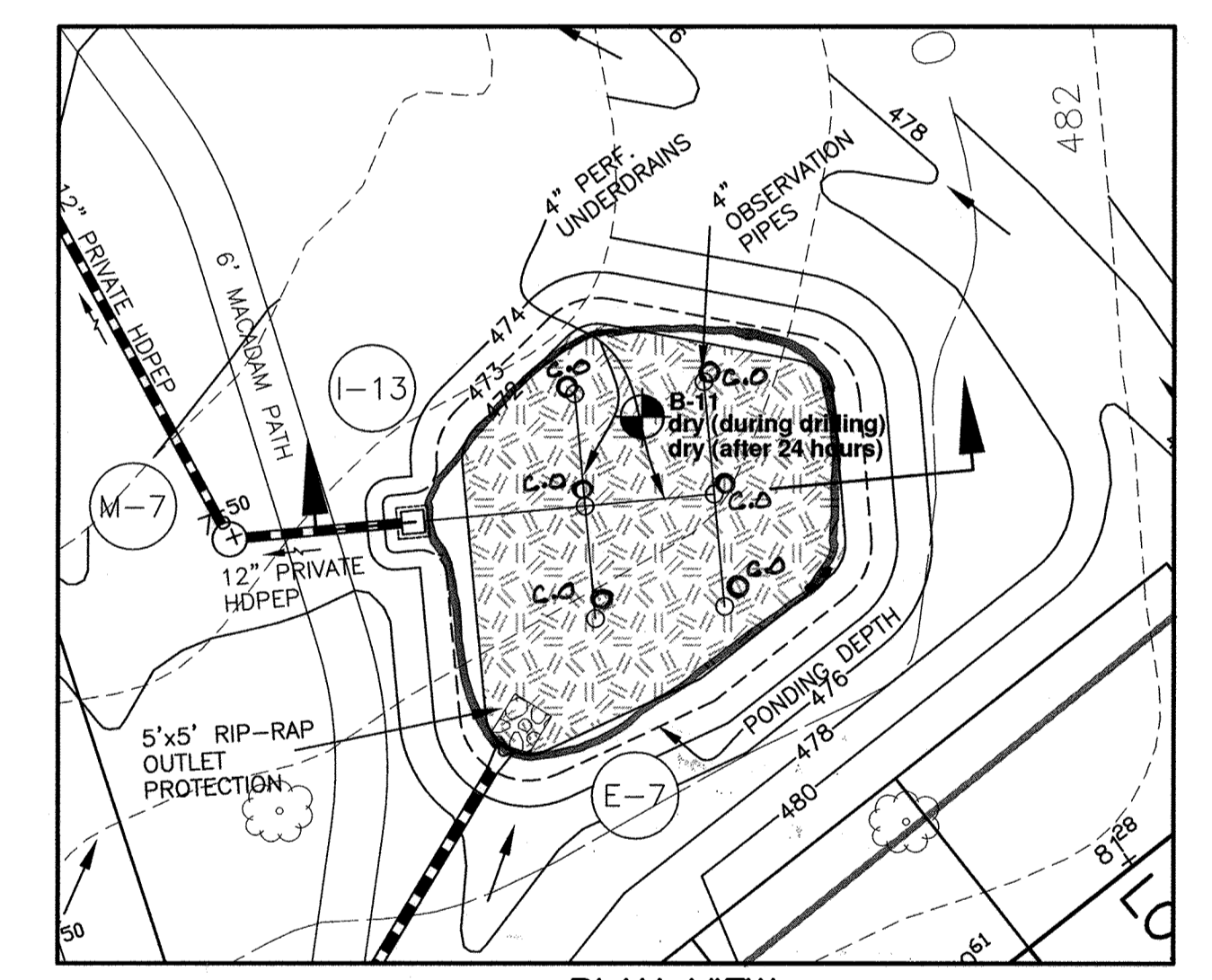
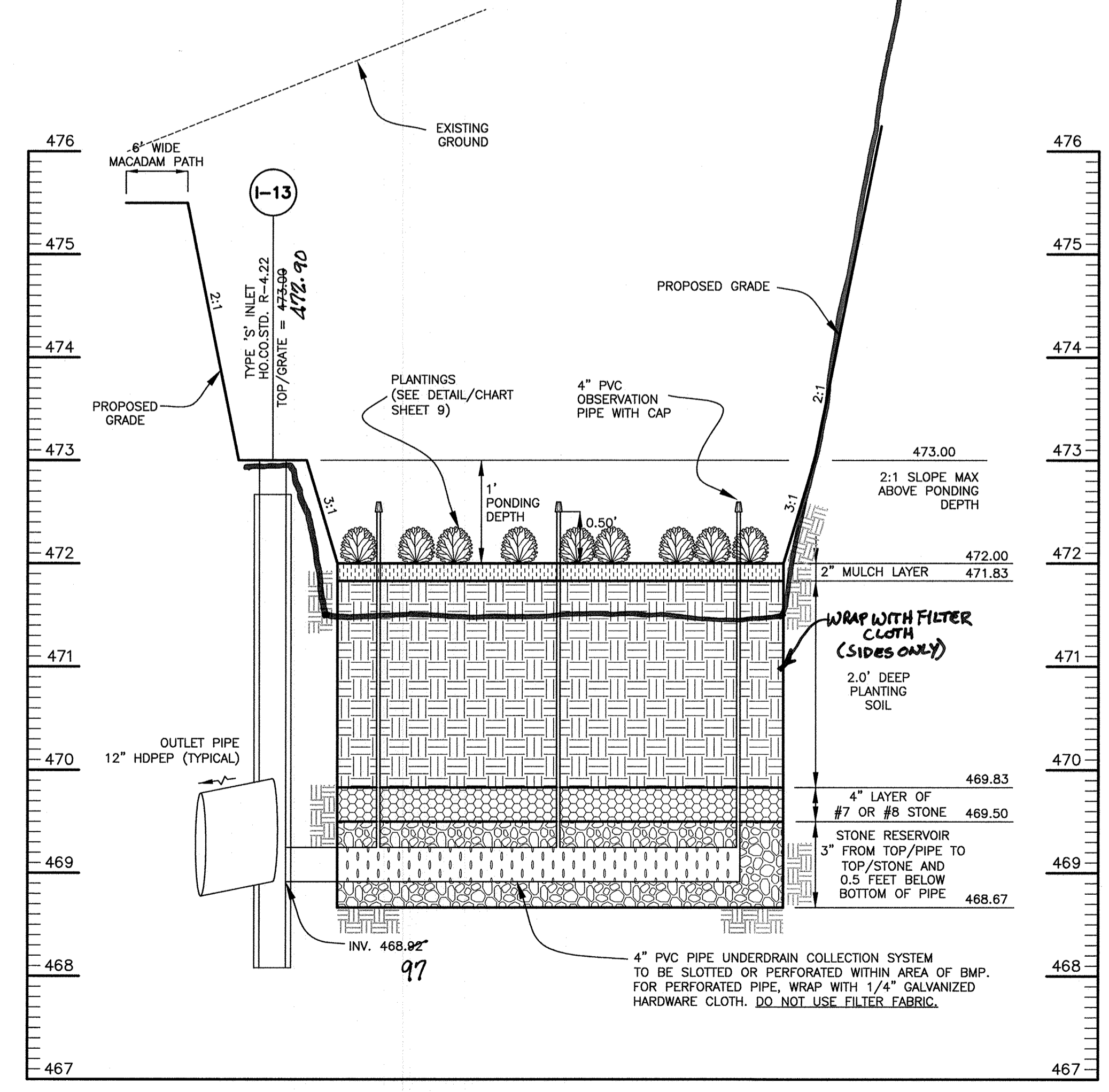
AS-BUILT CERTIFICATION
 I hereby certify, by my seal, that to the best of my knowledge and belief the facilities shown on this "AS-BUILT" Plan meet the Approved Plans and Specifications
 Donald Mason, P.E. Date: 11/13/19



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APPROVED: DEPARTMENT OF PUBLIC WORKS
9/8/2015
CHIEF, BUREAU OF HIGHWAYS
APPROVED: DEPARTMENT OF PLANNING AND ZONING
9-16-15
CHIEF, DIVISION OF LAND DEVELOPMENT
9-10-15
CHIEF, DEVELOPMENT ENGINEERING DIVISION

NO.	DATE	REVISION

BENCHMARK ENGINEERING, INC.
8480 BALTIMORE NATIONAL PIKE & SUITE 315 ELLIOTT CITY, MARYLAND 21043
(P) 410-465-8105 (F) 410-465-6644
WWW.BE-CIVILENGINEERING.COM

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.
License No. 21443 Expiration Date: 6-30-2017.

VILLAGES AT TURF VALLEY PHASE 5
LOTS 261 thru 296; OPEN SPACE LOTS 297 thru 299; AND BULK PARCEL GG

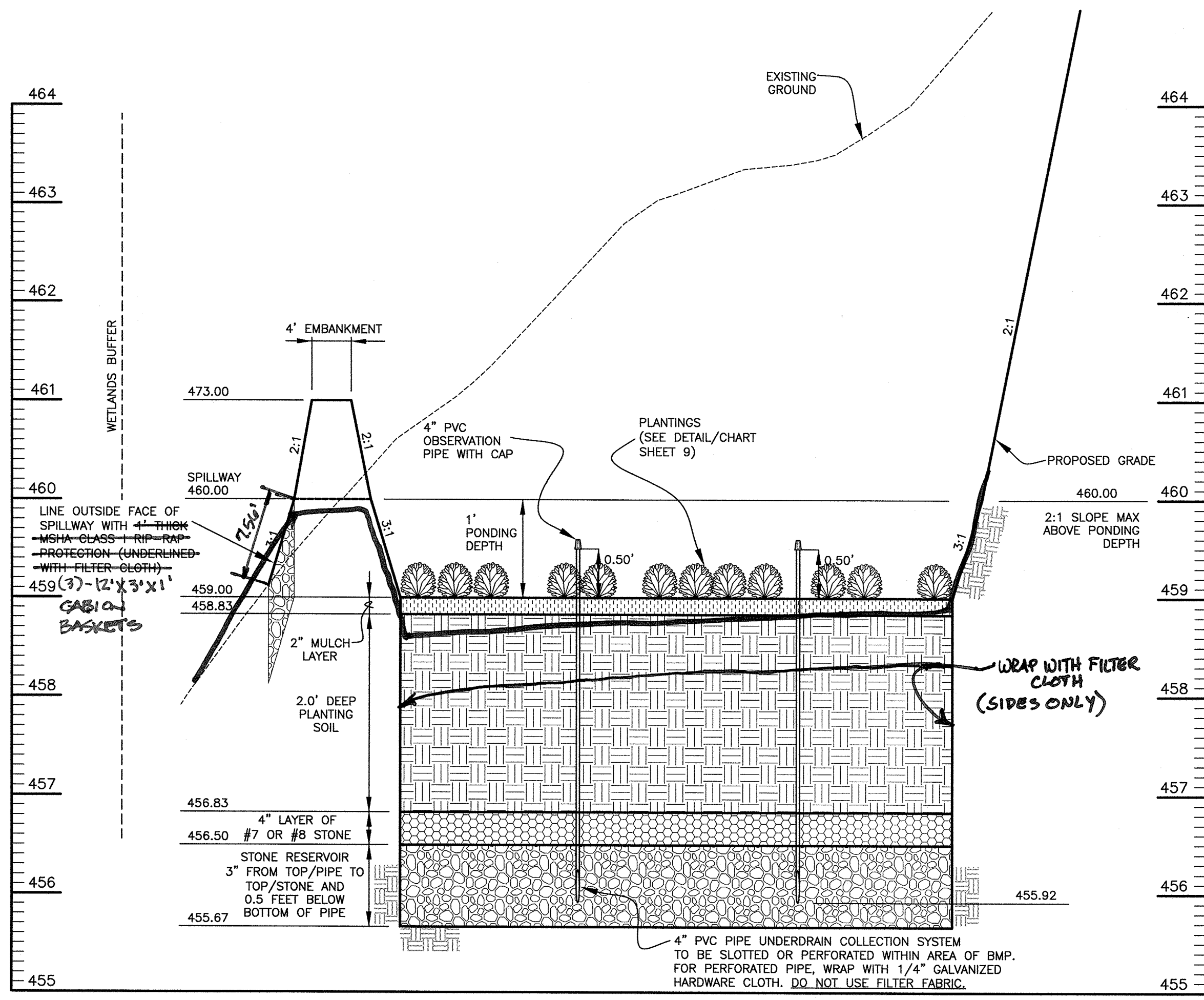
OWNER: MANGIONE ENTERPRISES OF TURF VALLEY LIMITED PARTNERSHIP
1205 YORK ROAD, PENTHOUSE LUTHERVILLE, MARYLAND 21093 410-825-8400

DEVELOPER: MANGIONE ENTERPRISES OF TURF VALLEY LIMITED PARTNERSHIP
1205 YORK ROAD, PENTHOUSE LUTHERVILLE, MARYLAND 21093 410-825-8400

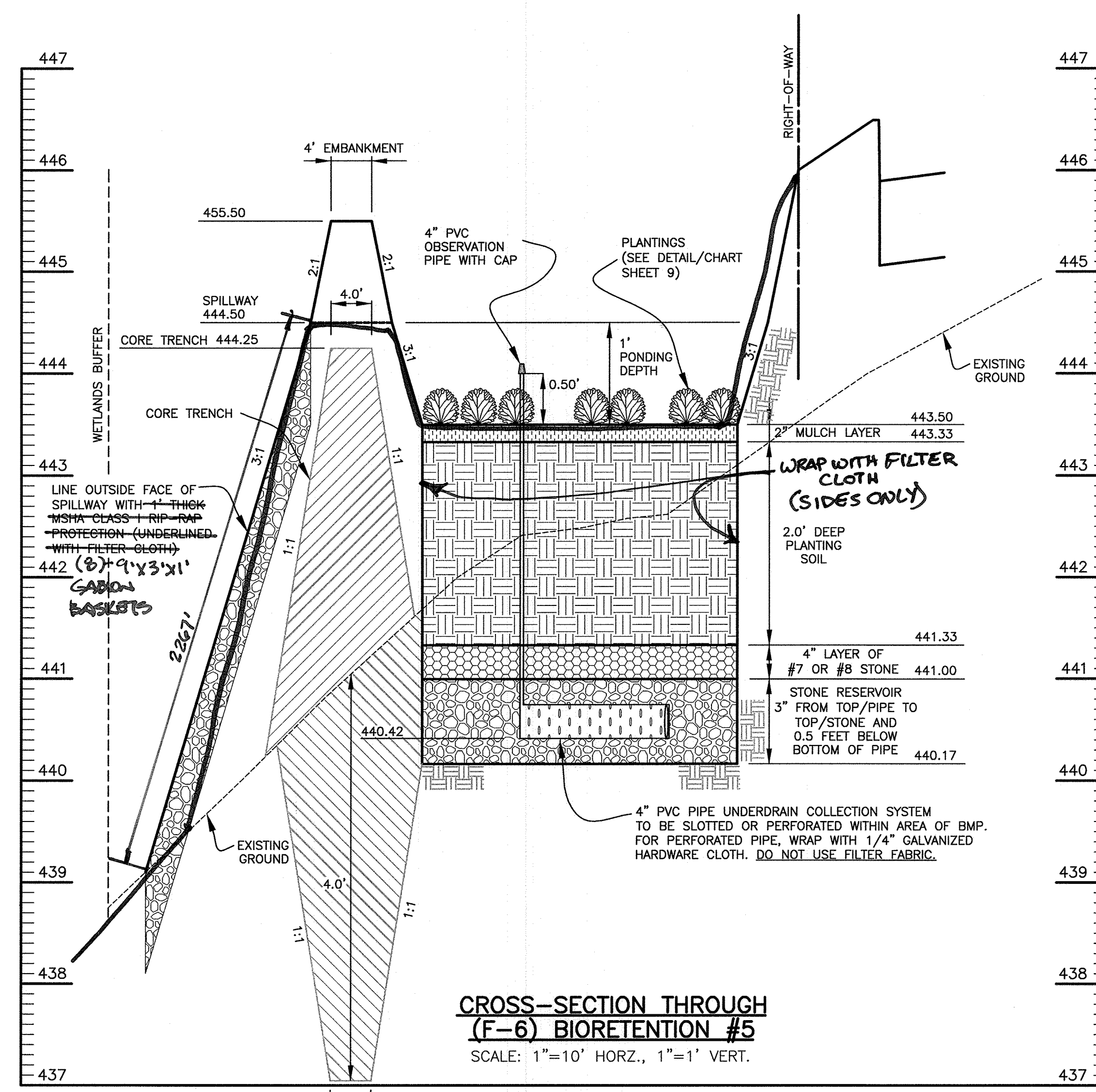
STORMWATER MANAGEMENT DETAILS (F-6) BIORETENTION FACILITIES

DATE: AUGUST, 2015 BEI PROJECT NO. 2601
SCALE: AS SHOWN SHEET 7 OF 18

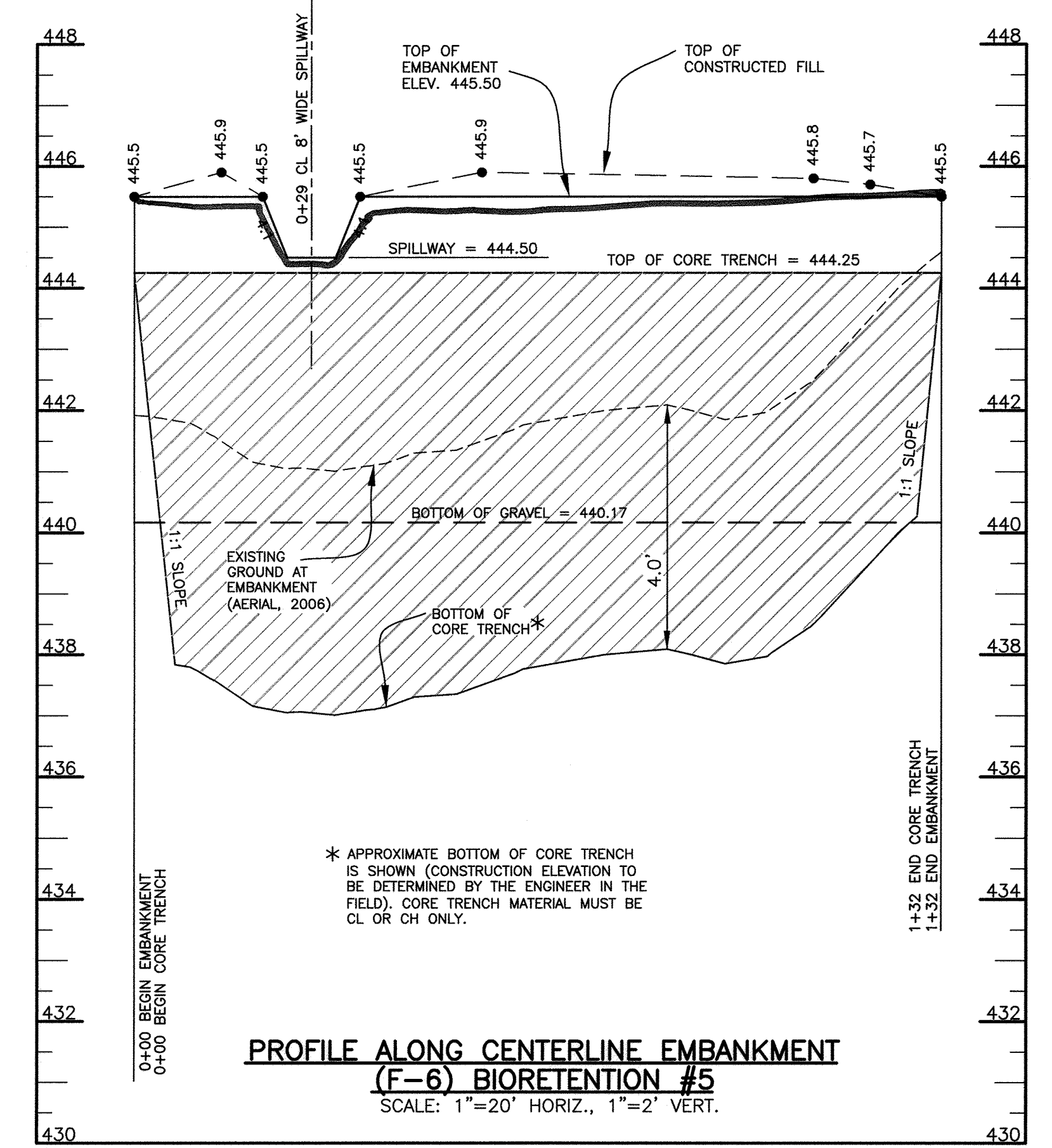
F-6 BIORETENTION FACILITIES WILL NOT BE REVIEWED AGAINST MD-378 CRITERIA



CROSS-SECTION THROUGH (F-6) BIORETENTION #4
SCALE: 1"=10' HORZ., 1"=1' VERT.



CROSS-SECTION THROUGH (F-6) BIORETENTION #5
SCALE: 1"=10' HORZ., 1"=1' VERT.



PROFILE ALONG CENTERLINE EMBANKMENT (F-6) BIORETENTION #5
SCALE: 1"=20' HORIZ., 1"=2' VERT.

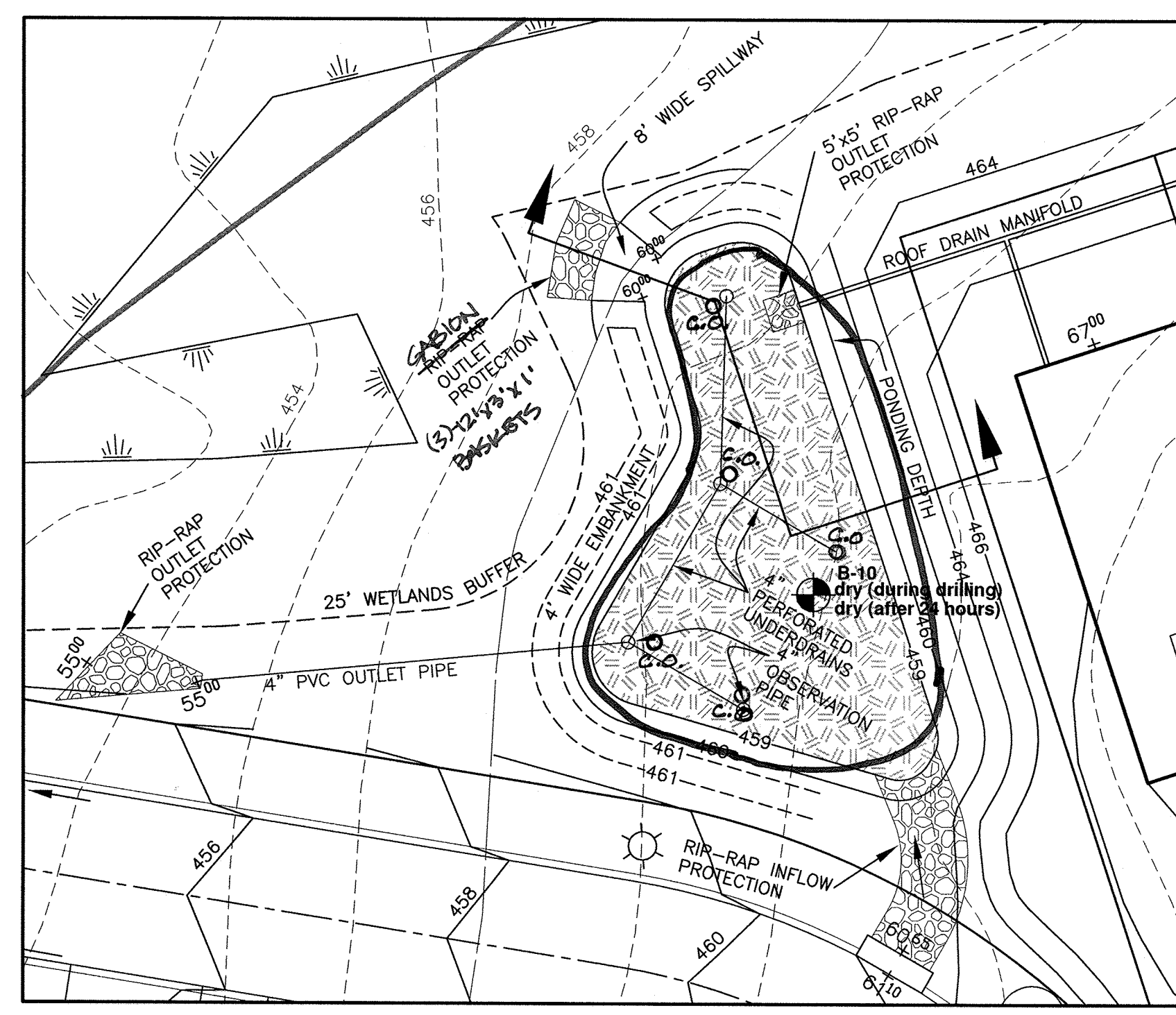
AS-BUILT CERTIFICATION
I hereby certify, by my seal, that to the best of my knowledge and belief the facilities shown on this "AS-BUILT" Plan meet the Approved Plans and Specifications

Donald Mason, P.E. Date: 1/18/19

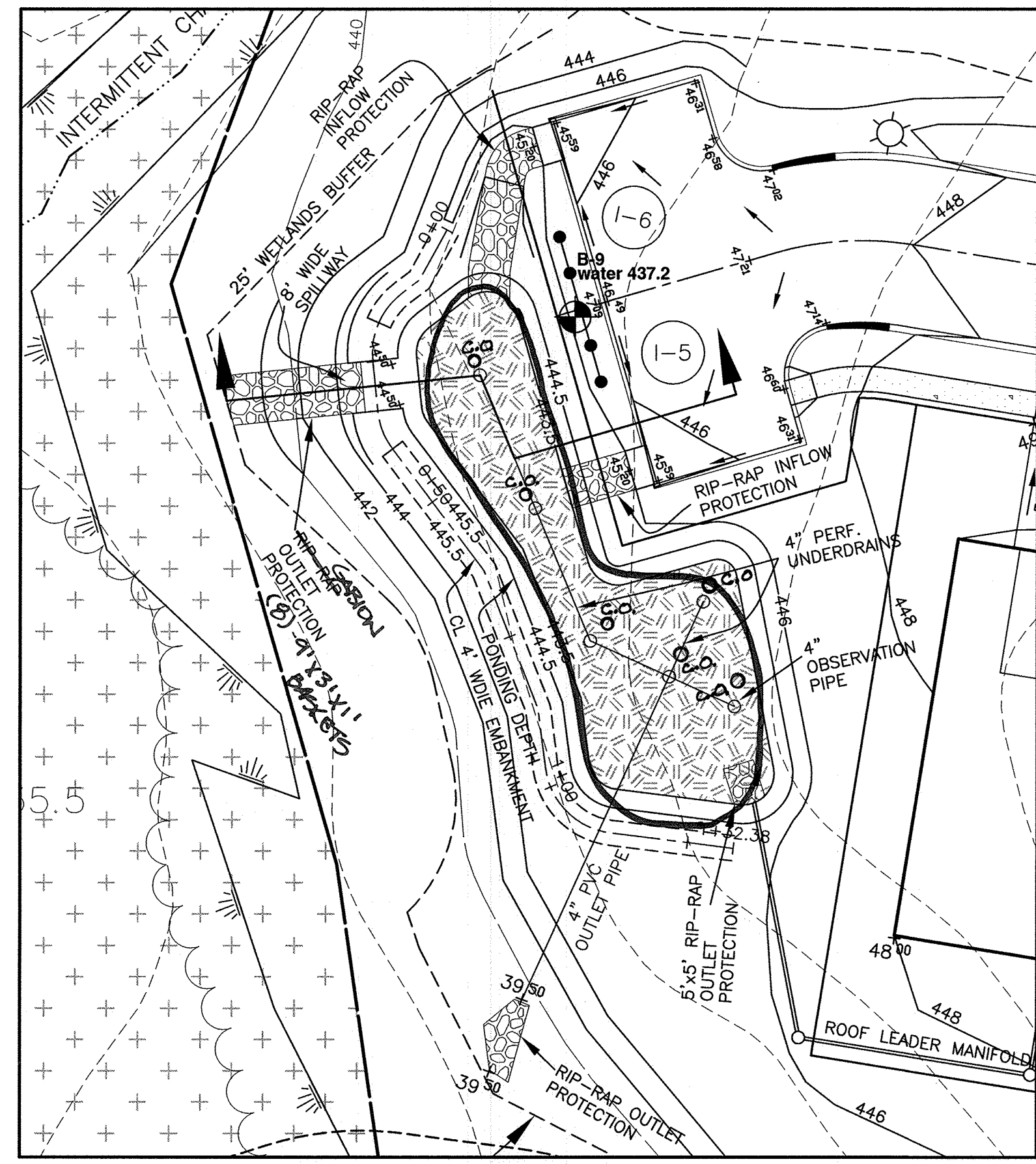


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License No. 21443 Expiration Date: 12-31-20

****F-6 BIORETENTION FACILITIES WILL NOT BE REVIEWED AGAINST MD-378 CRITERIA****



PLAN VIEW (F-6) BIORETENTION FACILITY #4
SCALE: 1"=20'



PLAN VIEW (F-6) BIORETENTION FACILITY #5
SCALE: 1"=20'

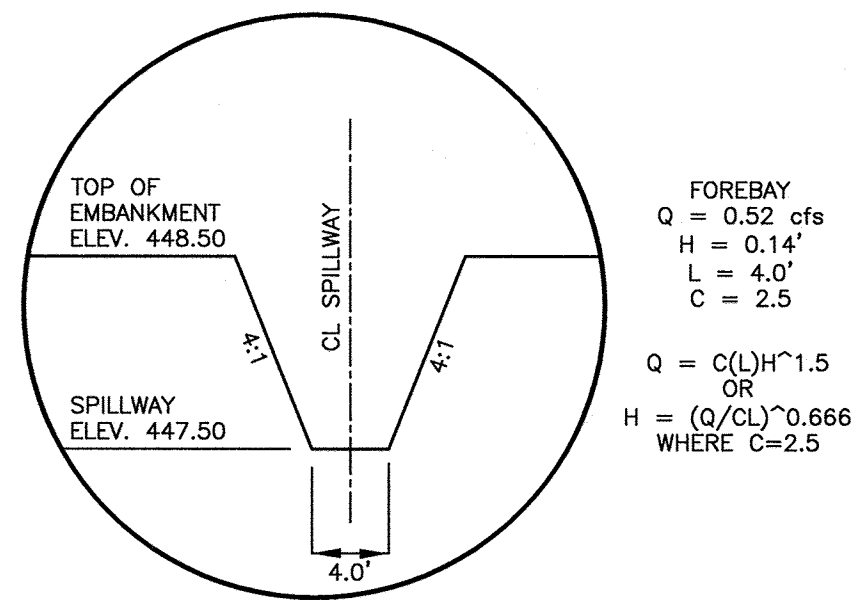
APPROVED: DEPARTMENT OF PUBLIC WORKS
9/8/2015
CHIEF, BUREAU OF HIGHWAYS
APPROVED: DEPARTMENT OF PLANNING AND ZONING
9-16-15
CHIEF, DIVISION OF LAND DEVELOPMENT
9-10-15
CHIEF, DEVELOPMENT ENGINEERING DIVISION

NO.	DATE	REVISION

BENCHMARK ENGINEERING, INC.
ENGINEERS & LAND SURVEYORS & PLANNERS
8480 BALTIMORE NATIONAL PIKE & SUITE 315 • ELLICOTT CITY, MARYLAND 21043
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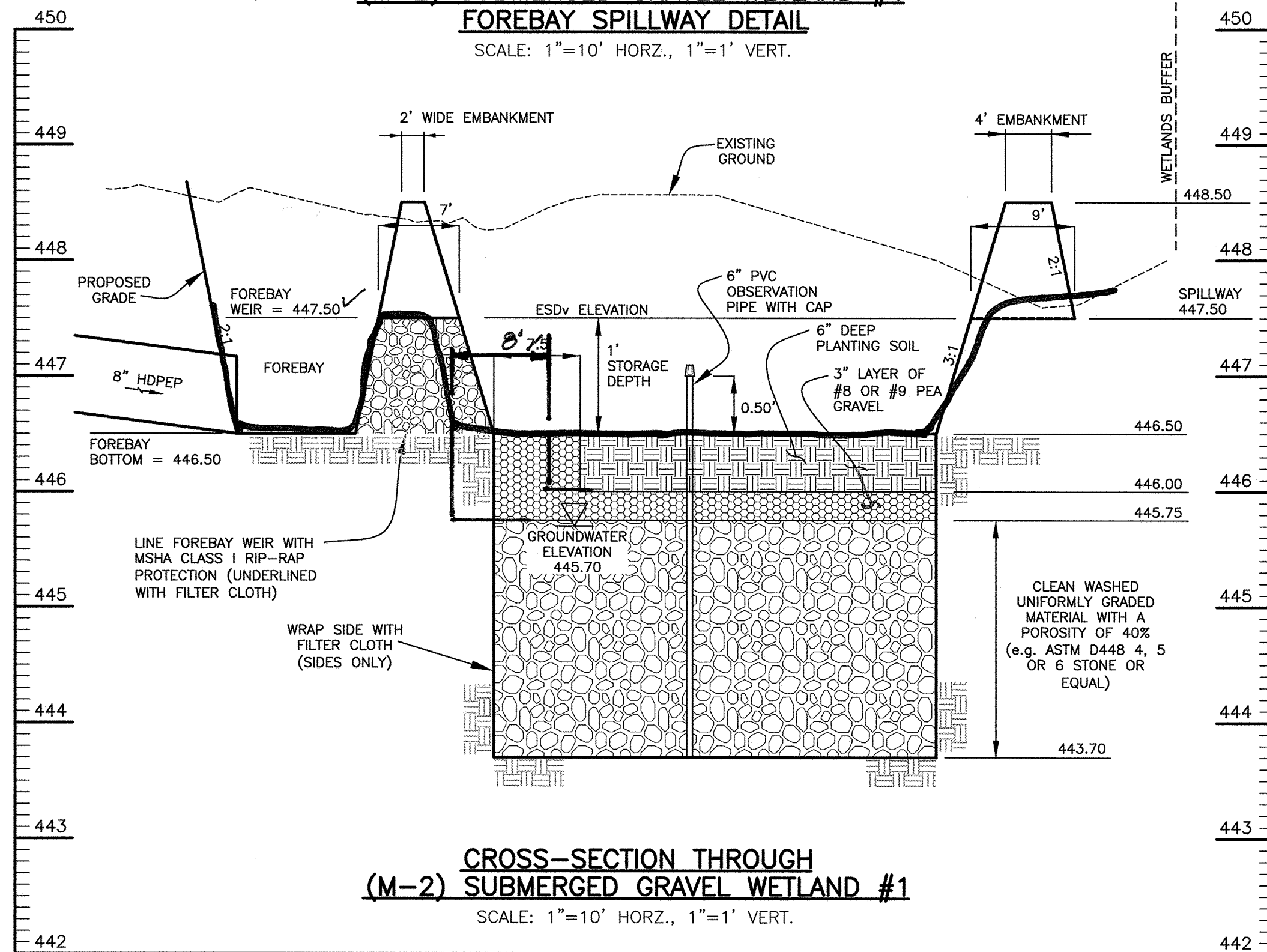
Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.
License No. 21443 Expiration Date: 12-31-20

OWNER: MANGIONE ENTERPRISES OF TURF VALLEY LIMITED PARTNERSHIP 1205 YORK ROAD, PENTHOUSE LUTHERVILLE, MARYLAND 21093 410-825-8400	VILLAGES AT TURF VALLEY PHASE 5 LOTS 261 thru 296; OPEN SPACE LOTS 297 thru 299; AND BULK PARCEL GG
DEVELOPER: MANGIONE ENTERPRISES OF TURF VALLEY LIMITED PARTNERSHIP 1205 YORK ROAD, PENTHOUSE LUTHERVILLE, MARYLAND 21093 410-825-8400	TAX MAP: 16 - GRID: 10 - PARCEL: P/O 8 ZONED: P/C/C (MULTI-USE SUBDISTRICT) ELECTION DISTRICT NO. 3 - HOWARD COUNTY, MARYLAND
STORMWATER MANAGEMENT DETAILS (F-6) BIORETENTION FACILITIES	
DATE: AUGUST, 2015	BEI PROJECT NO. 2601
DESIGN: DBT	DRAFT: DBT
SCALE: AS SHOWN	SHEET 8 OF 18

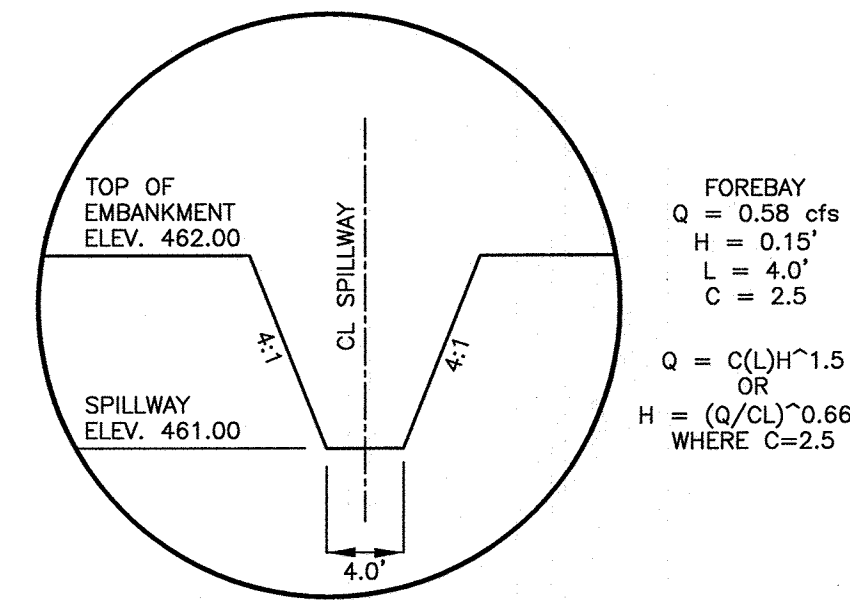


FOREBAY
 $Q = 0.52 \text{ cfs}$
 $H = 0.14'$
 $L = 4.0'$
 $C = 2.5$
 $Q = C(L)^{1.5}$
 OR
 $H = (Q/C)^{0.666}$
 WHERE $C=2.5$

(M-2) SUBMERGED GRAVEL WETLAND #1 FOREBAY SPILLWAY DETAIL
 SCALE: 1"=10' HORZ., 1"=1' VERT.

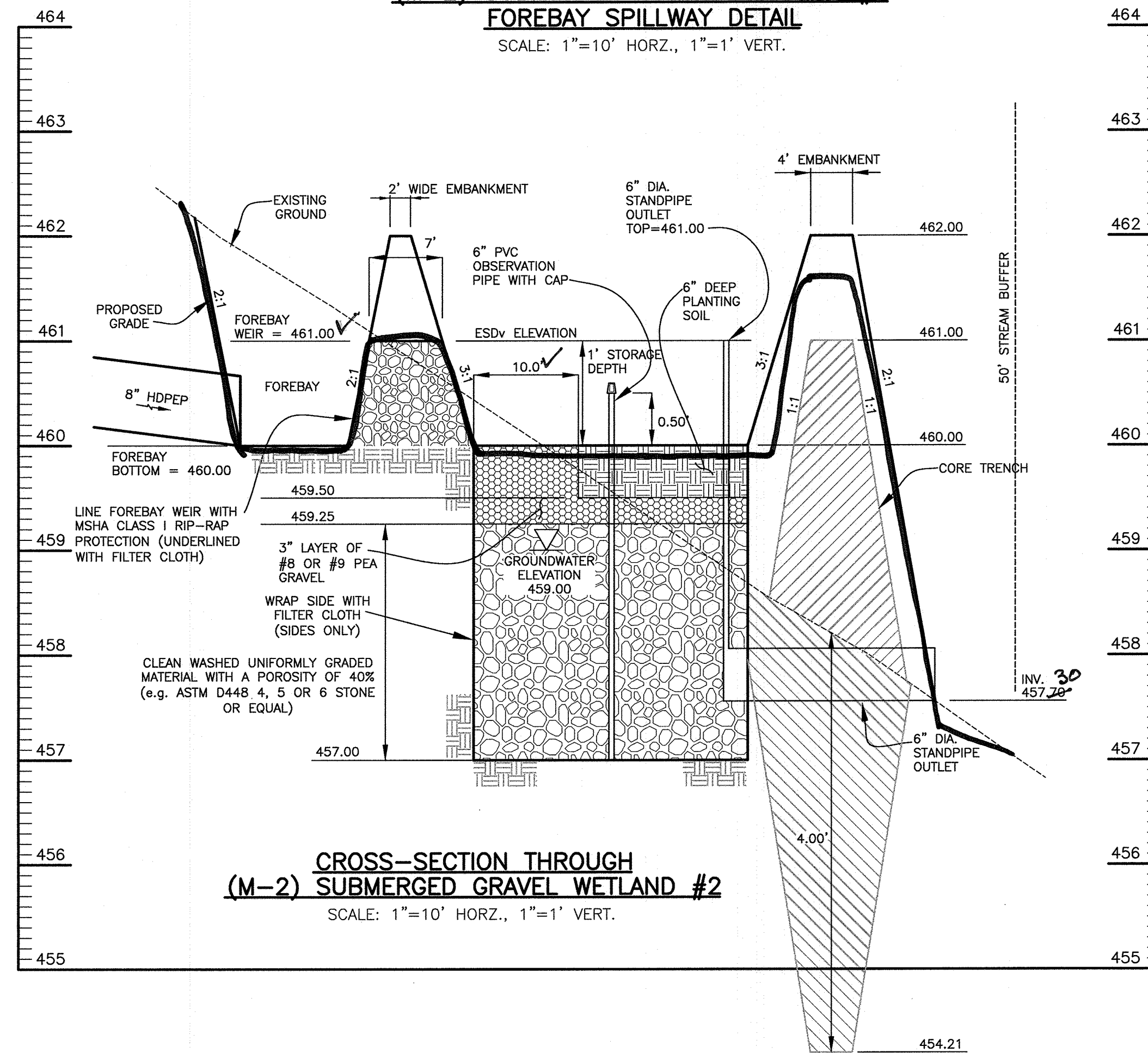


CROSS-SECTION THROUGH (M-2) SUBMERGED GRAVEL WETLAND #1
 SCALE: 1"=10' HORZ., 1"=1' VERT.

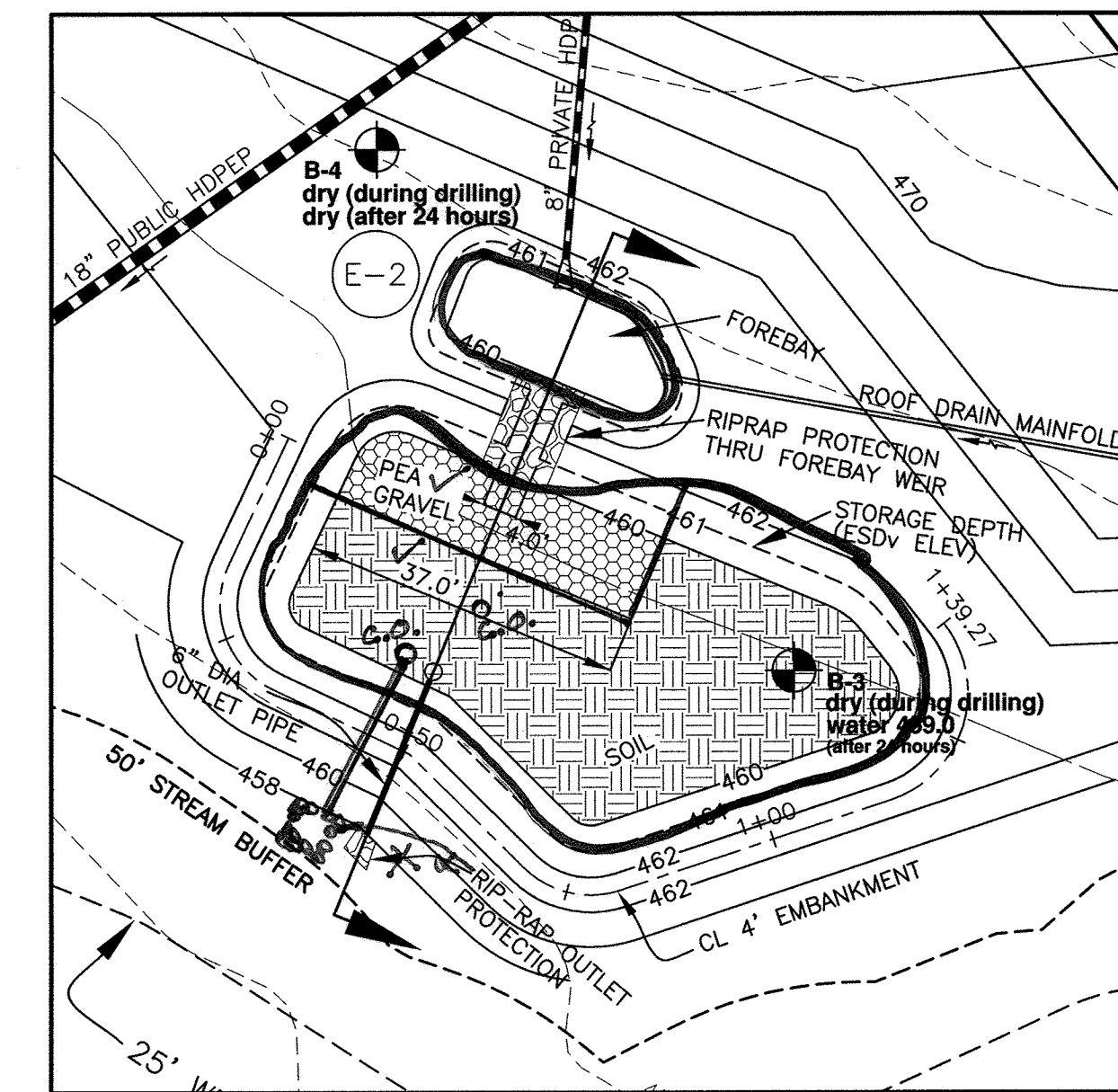


FOREBAY
 $Q = 0.58 \text{ cfs}$
 $H = 0.15'$
 $L = 4.0'$
 $C = 2.5$
 $Q = C(L)^{1.5}$
 OR
 $H = (Q/C)^{0.666}$
 WHERE $C=2.5$

(M-2) SUBMERGED GRAVEL WETLAND #2 FOREBAY SPILLWAY DETAIL
 SCALE: 1"=10' HORZ., 1"=1' VERT.



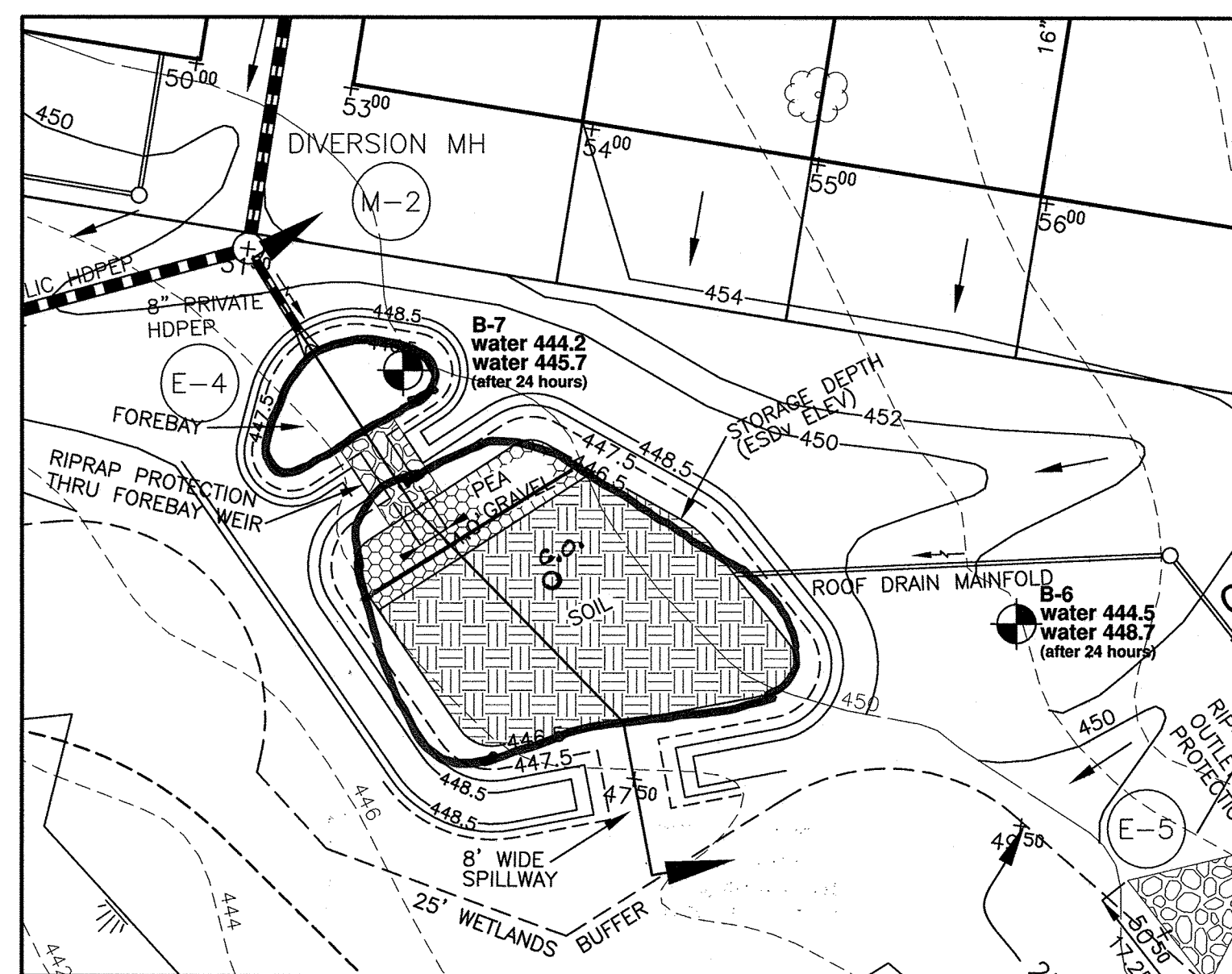
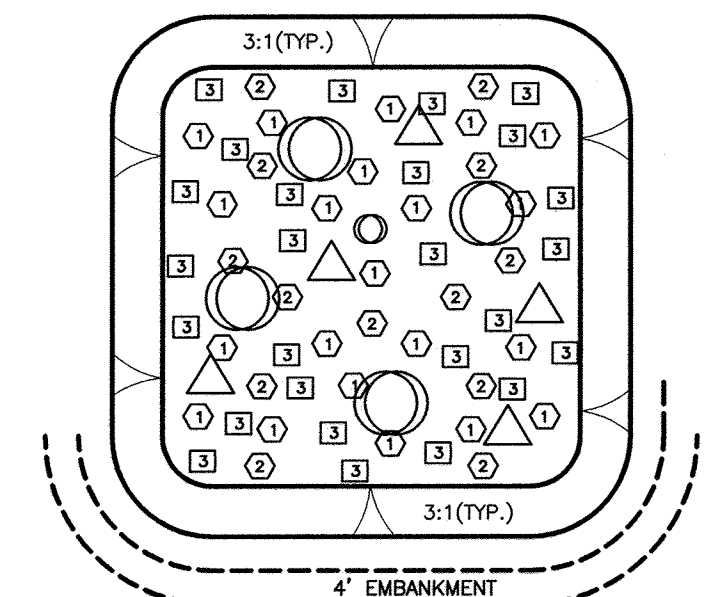
CROSS-SECTION THROUGH (M-2) SUBMERGED GRAVEL WETLAND #2
 SCALE: 1"=10' HORZ., 1"=1' VERT.



PLAN VIEW (M-2) SUBMERGED GRAVEL WETLAND #2
 SCALE: 1"=20'

(M-2) SUBMERGED GRAVEL WETLAND PLANTING CHART						
planting soil surface square footage				SGW #1	SGW #2	TOTAL
PLANT NAME	COMMON NAME	TYPE	SIZE	QUANTITY	QUANTITY	QUANTITY
Caltha Palustris	Marsh Marigold	perennial herbaceous plant	plug	53	66	119
Monarda Fistulosa	Wild Bergamot	perennial herbaceous plant	plug	38	47	85
Lobelia Cardinalis	Cardinal Flower	perennial herbaceous plant	plug	61	75	136
Salix Sericea	Willow, Silky	shrub	2.5'-3' ht	11	14	25
Viburnum Nudum	Viburnum, Possum-haw	shrub	2.5'-3' ht	16	20	36

PLANTING LEGEND	
SYMBOL	NAME
⊙	MARSH MARIGOLD
⊗	WILD BERGAMOT
⊠	CARDINAL FLOWER
△	WILLOW, SILKY
○	VIBURNUM, POSSUM-HAW



PLAN VIEW (M-2) SUBMERGED GRAVEL WETLAND #1
 SCALE: 1"=20'

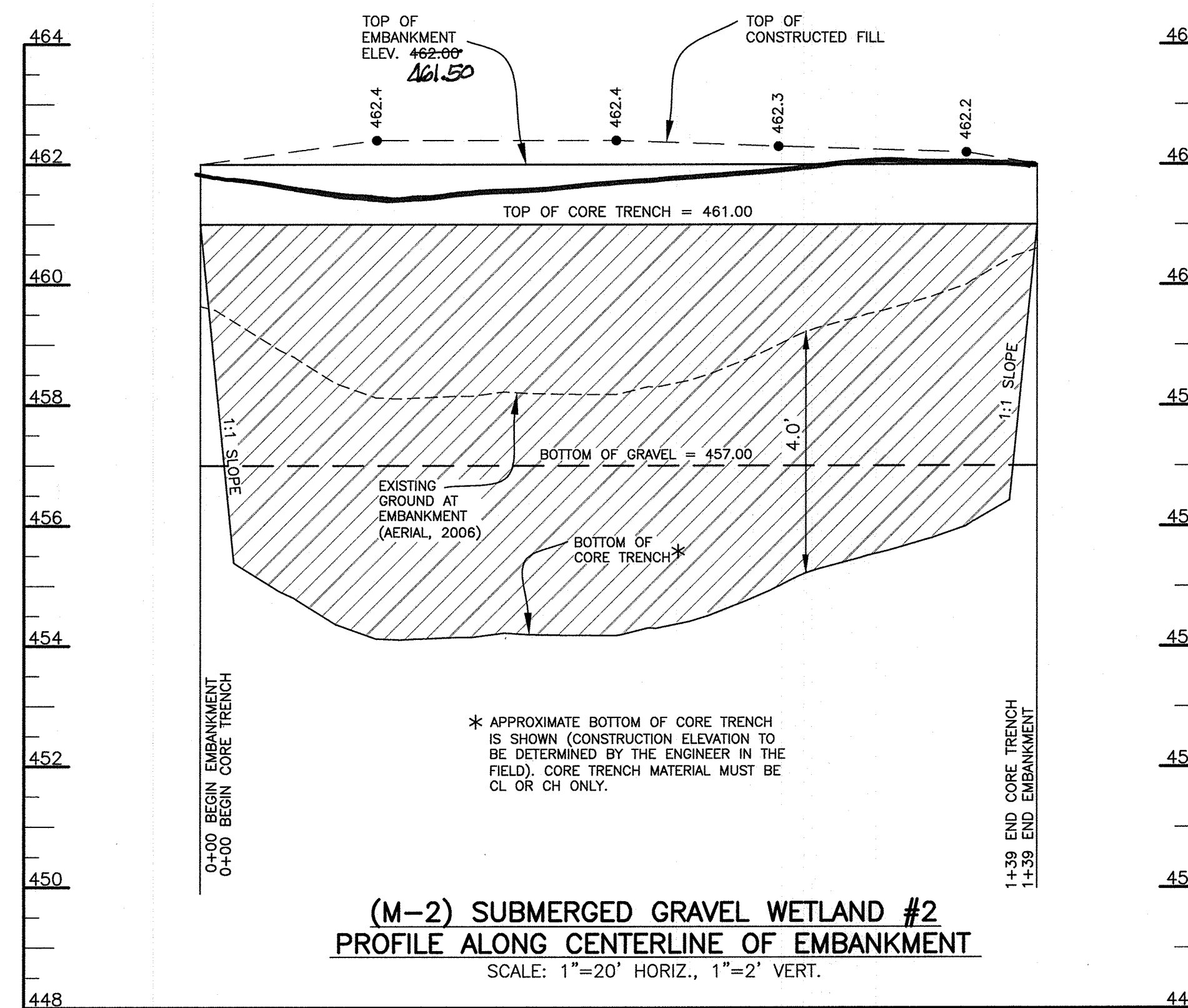
OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED SUBMERGED GRAVEL WETLANDS (M-2)

- During the first year of operation, the Owner shall inspect the facility after every heavy storm and replace vegetation as needed.
- The Owner shall remove sediment accumulated in the pretreatment areas as necessary.
- Signs of uneven flow within the wetland may mean that the gravel or underdrain is clogged. The gravel or underdrain shall be removed, cleaned, and replaced, as needed.
- The Owner shall ensure a dense stand of wetland vegetation is maintained through the life of the facility and replace vegetation as needed.
- The Owner shall ensure the inlets and outlets to each gravel wetland cell are free from debris.
- The Owner shall repair erosion at inflow points and ensure flow splitters are functional to prevent bypassing the facility.

APPROVED: DEPARTMENT OF PUBLIC WORKS
 [Signature] 10/18/2018
 CHIEF, BUREAU OF HIGHWAYS

APPROVED: DEPARTMENT OF PLANNING AND ZONING
 [Signature] 10/25/18
 CHIEF, DIVISION OF LAND DEVELOPMENT #10

[Signature] 10-27-18
 CHIEF, DEVELOPMENT ENGINEERING DIVISION



(M-2) SUBMERGED GRAVEL WETLAND #2 PROFILE ALONG CENTERLINE OF EMBANKMENT
 SCALE: 1"=20' HORIZ., 1"=2' VERT.

AS-BUILT CERTIFICATION
 I hereby certify, by my seal, that to the best of my knowledge and belief the facilities shown on this "AS-BUILT" Plan meet the Approved Plans and Specifications.

Donald Mason, P.E.

Date: 1/18/19

SCHMATIC PLATING DETAIL FOR (M-2) SUBMERGED GRAVEL WETLANDS
 NOT TO SCALE



Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.

License No. 21443, Expiration Date: 12-21-20

NO.	DATE	REVISION
1	10-8-2018	REVISE SGW TO REFLECT LAYER OF PLANTING SOIL AND PEA GRAVEL. REVISE PLANTING CHART.

BENCHMARK ENGINEERS & LAND SURVEYORS & PLANNERS
 LIMITED PARTNERSHIP
 ENGINEERING, INC.
 8480 BALTIMORE NATIONAL PIKE, SUITE 315 & ELLOTT CITY, MARYLAND 21043
 (P) 410-465-8100 (F) 410-465-8644
 WWW.BE-CVLEENGINEERING.COM

VILLAGES AT TURF VALLEY PHASE 5
 LOTS 261 thru 296; OPEN SPACE LOTS 297 thru 299; AND BULK PARCEL GG

TAX MAP: 16 - GRID: 10 - PARCEL: P/O 8
 ZONED: PSCC (MULTI-USE SUBDISTRICT)
 ELECTION DISTRICT NO. 3 - HOWARD COUNTY, MARYLAND

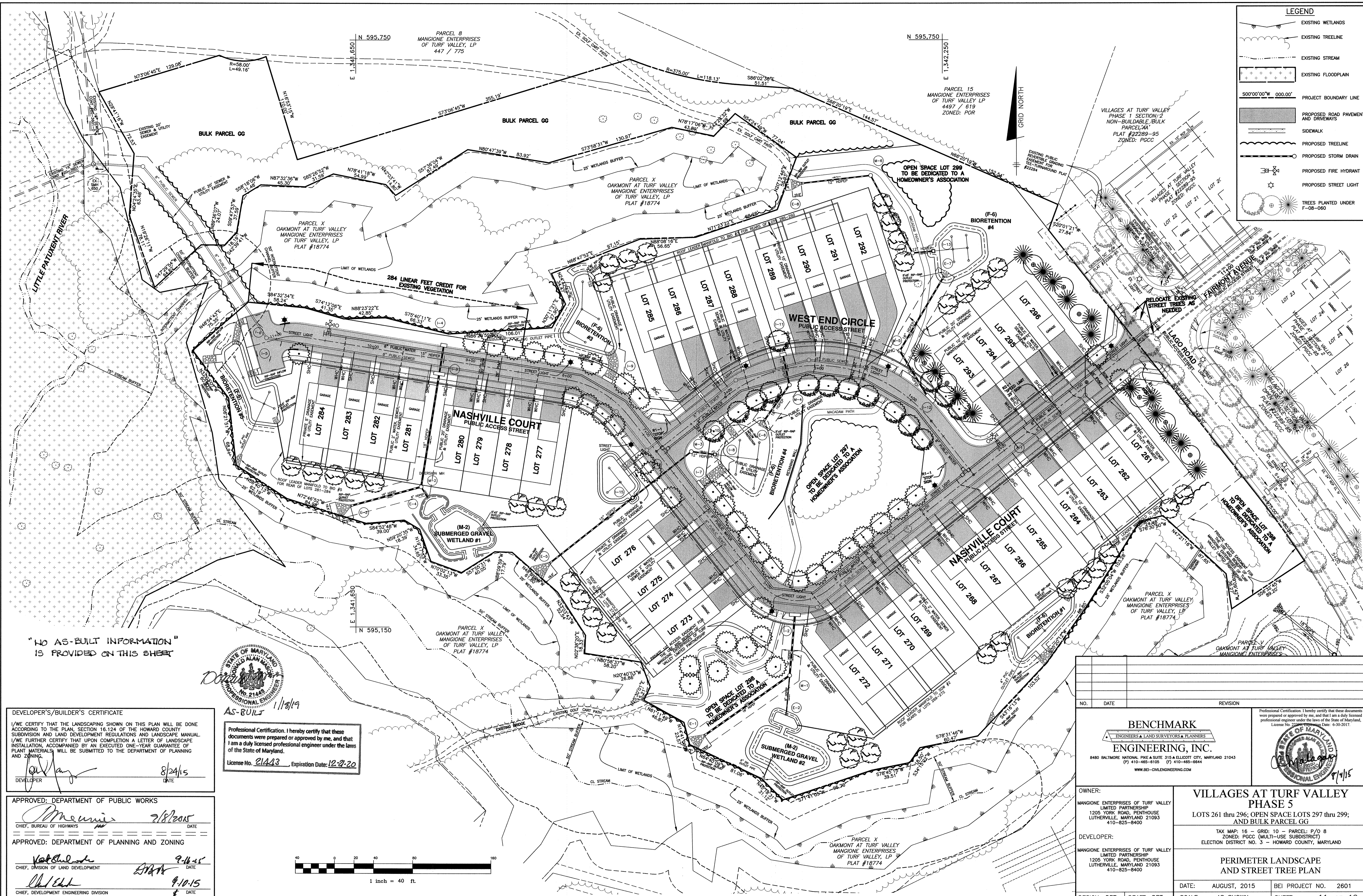
REVISED STORMWATER MANAGEMENT DETAILS (M-2) SUBMERGED GRAVEL WETLANDS

OWNER: MANGIONE ENTERPRISES OF TURF VALLEY LIMITED PARTNERSHIP 1205 YORK ROAD, PENTHOUSE LUTHERVILLE, MARYLAND 21093 410-825-8400

DEVELOPER: MANGIONE ENTERPRISES OF TURF VALLEY LIMITED PARTNERSHIP 1205 YORK ROAD, PENTHOUSE LUTHERVILLE, MARYLAND 21093 410-825-8400

DATE: OCTOBER 8, 2018 BEI PROJECT NO. 2601

DESIGN: DBT DRAFT: DBT SCALE: AS SHOWN SHEET 10 OF 18



LEGEND

- EXISTING WETLANDS
- EXISTING TREELINE
- EXISTING STREAM
- EXISTING FLOODPLAIN
- PROJECT BOUNDARY LINE
- PROPOSED ROAD PAVEMENT AND DRIVEWAYS
- SIDEWALK
- PROPOSED TREELINE
- PROPOSED STORM DRAIN
- PROPOSED FIRE HYDRANT
- PROPOSED STREET LIGHT
- TREES PLANTED UNDER F-08-060

"NO AS-BUILT INFORMATION" IS PROVIDED ON THIS SHEET

DEVELOPER'S/BUILDER'S CERTIFICATE

I/WE CERTIFY THAT THE LANDSCAPING SHOWN ON THIS PLAN WILL BE DONE ACCORDING TO THE PLAN, SECTION 16.124 OF THE HOWARD COUNTY SUBDIVISION AND LAND DEVELOPMENT REGULATIONS AND LANDSCAPE MANUAL. I/WE FURTHER CERTIFY THAT UPON COMPLETION A LETTER OF LANDSCAPE INSTALLATION, ACCOMPANIED BY AN EXECUTED ONE-YEAR GUARANTEE OF PLANT MATERIALS, WILL BE SUBMITTED TO THE DEPARTMENT OF PLANNING AND ZONING.

[Signature] 8/24/15
DEVELOPER DATE

Professional Certification

I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.

License No. 21443 Expiration Date: 12-31-20

AS-BUILT 11/18/19

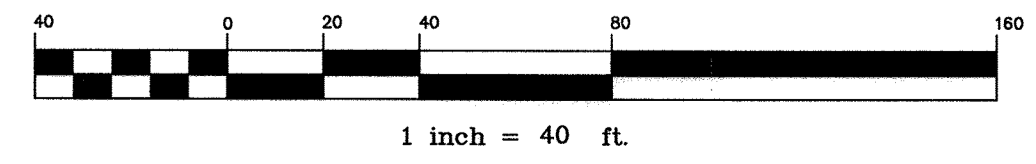
APPROVED: DEPARTMENT OF PUBLIC WORKS

[Signature] 7/8/2015
CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING

[Signature] 9-16-15
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

[Signature] 9-10-15
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE



NO.	DATE	REVISION
BENCHMARK ENGINEERING, INC. ENGINEERS & LAND SURVEYORS & PLANNERS 8480 BALTIMORE NATIONAL PIKE SUITE 315 & ELLICOTT CITY, MARYLAND 21043 (P) 410-465-4100 (F) 410-465-6644 WWW.BEI-CVLENGINEERING.COM		
OWNER: MANGIONE ENTERPRISES OF TURF VALLEY LIMITED PARTNERSHIP 1205 YORK ROAD, PENTHOUSE LUTHERVILLE, MARYLAND 21093 410-825-8400		VILLAGES AT TURF VALLEY PHASE 5 LOTS 261 thru 296; OPEN SPACE LOTS 297 thru 299; AND BULK PARCEL GG
DEVELOPER: MANGIONE ENTERPRISES OF TURF VALLEY LIMITED PARTNERSHIP 1205 YORK ROAD, PENTHOUSE LUTHERVILLE, MARYLAND 21093 410-825-8400		TAX MAP: 16 - GRID: 10 - PARCEL: P/O 8 ZONED: PGCC (MULTI-USE SUBDISTRICT) ELECTION DISTRICT NO. 3 - HOWARD COUNTY, MARYLAND
PERIMETER LANDSCAPE AND STREET TREE PLAN		
DATE: AUGUST, 2015	BEI PROJECT NO. 2601	
DESIGN: DBT	DRAFT: DBT	SCALE: AS SHOWN SHEET 11 OF 18

DEVELOPER'S/BUILDER'S CERTIFICATE

I/WE CERTIFY THAT THE LANDSCAPING SHOWN ON THIS PLAN WILL BE DONE ACCORDING TO THE PLAN, SECTION 16.124 OF THE HOWARD COUNTY SUBDIVISION AND LAND DEVELOPMENT REGULATIONS AND LANDSCAPE MANUAL. I/WE FURTHER CERTIFY THAT UPON COMPLETION A LETTER OF LANDSCAPE INSTALLATION, ACCOMPANIED BY AN EXECUTED ONE-YEAR GUARANTEE OF PLANT MATERIALS, WILL BE SUBMITTED TO THE DEPARTMENT OF PLANNING AND ZONING.

[Signature] 8/24/15
DEVELOPER DATE

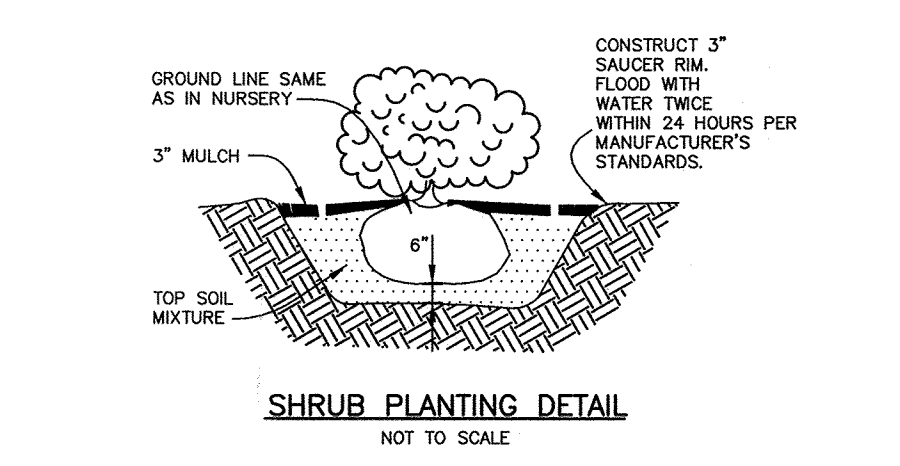
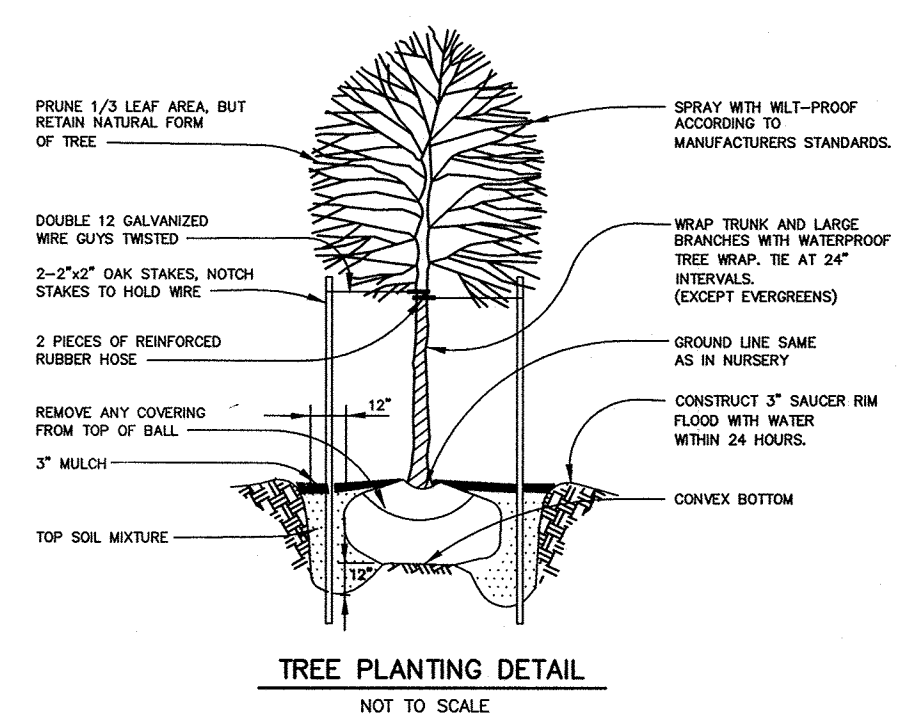
APPROVED: DEPARTMENT OF PUBLIC WORKS

[Signature] 7/8/2015
CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING

[Signature] 9-16-15
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

[Signature] 9-10-15
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE



SCHEDULE A PERIMETER LANDSCAPE EDGE				
CATEGORY	ADJACENT TO ROAD (LOT 261) ④	ADJACENT TO ROAD (LOT 293) ⑤	ADJACENT TO ROAD (LOT 296) ⑥	TOTALS
LANDSCAPE TYPE	C 1:40 shade 1:20 evergreen	C 1:40 shade 1:20 evergreen	C 1:40 shade 1:20 evergreen	
LINEAR FEET OF ROADWAY FRONTAGE/PERIMETER	120 LF	80 LF	122 LF	
CREDIT FOR EXISTING VEGETATION (YES, NO, LINEAR FEET) (DESCRIBE BELOW IF NEEDED)	NO	NO	NO	
CREDIT FOR WALL, FENCE OR BERM (YES, NO, LINEAR FEET) (DESCRIBE BELOW IF NEEDED)	NO	NO	NO	
NUMBER OF PLANTS REQUIRED	120 LF	80 LF	122 LF	
SHADE TREES	3	2	3	8
EVERGREEN TREES	6	4	6	16
OTHER TREES (2:1 SUBSTITUTE)	0	0	0	0
SHRUBS	0	0	0	0
NUMBER OF PLANTS PROVIDED				
SHADE TREES	3	2	3	8
EVERGREEN TREES	6	4	6	16
OTHER TREES (2:1 SUBSTITUTE)	0	0	0	0
SHRUBS (10:1 SUBSTITUTE)	0	0	0	0

SCHEDULE C RESIDENTIAL DEVELOPMENT INTERNAL LANDSCAPING	
NUMBER OF DWELLING UNITS	36
NUMBER OF TREES REQUIRED (1:DU SFA; 1:3 DU APTS)	36
NUMBER OF TREES PROVIDED	
SHADE TREES	36
OTHER (2:1 RATIO)	0

PERIMETER LANDSCAPE PLANTING LIST				
SYMBOL	QUANTITY	NAME	REMARKS	DESCRIPTION
	36	CLADRASITIS KENTUKEA LUTEA (Yellowwood)	2.5" - 3" cal.	SHADE TREES FOR INTERNAL LANDSCAPING REQUIREMENT TO BE PROVIDED BY THE BUILDER
	8	PLATANUS X ACERFOLIA (Bloodgood London Plane)	2 1/2" - 3" cal.	SHADE TREES ALONG PERIMETER EDGES TO BE PROVIDED BY THE DEVELOPER
	16	CUPPRESSOCYPARIS LEYLANDI (Leyland Cypress)	5' - 6' ht.	EVERGREEN TREES ALONG PERIMETER EDGES TO BE PROVIDED BY THE DEVELOPER

STREET TREE SCHEDULE				
	NASHVILLE COURT	WEST END CIRCLE		
LINEAR FEET OF RIGHT-OF-WAY	1883'	591'		
LINEAR FEET OF CREDIT	284'	0		
LINEAR FEET OF REQUIRED PLANTING	1599'	591'		TOTAL
TREE SIZE	LARGE 1:40 LF	LARGE 1:40 LF		
TREES REQUIRED	40	15		62

STREET TREE PLANTING LIST				
SYMBOL	QUANTITY	NAME	REMARKS	DESCRIPTION
	15	TILIA CORDATA 'GREENSPIRE' (Greenspire Littleleaf Linden)	2.5" - 3" cal.	TO BE PLANTED ALONG WEST END CIRCLE (PROVIDED BY THE DEVELOPER)
	40	ACER RUBRUM 'RED SUNSET' (Red Sunset Red Maple)	2.5" - 3" cal.	TO BE PLANTED ALONG NASHVILLE COURT (PROVIDED BY THE DEVELOPER)

"NO AS BUILT INFORMATION IS PROVIDE ON THIS SHEET"



Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.
License No. 21443, Expiration Date: 12-21-20

LANDSCAPE NOTES:

- THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH THE PROVISIONS OF SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE HOWARD COUNTY LANDSCAPE MANUAL.
- STREET TREE LOCATIONS:
 - WHEN THE DISTANCE BETWEEN THE CURB AND SIDEWALK IS 6 FEET OR GREATER, THE TREES SHALL BE LOCATED WITHIN THE RIGHT-OF-WAY AND SHALL BE CENTERED BETWEEN THE CURB AND SIDEWALK.
 - WHEN THE DISTANCE BETWEEN THE CURB AND SIDEWALK IS LESS THAN 6 FEET, TREES MAY BE PLANTED 3 FEET FROM THE SIDEWALK IN THE DIRECTION AWAY FROM THE ROAD. A 10-FOOT WIDE TREE MAINTENANCE EASEMENT SHALL BE REQUIRED IF THE RIGHT-OF-WAY IS LIMITED.
 - TREES SHALL BE PLANTED 6 FEET BEHIND CURB WHEN THERE ARE NO SIDEWALKS.
 - TREES TO BE PLANTED MINIMUM 30 FEET FROM SIGNS AND INTERSECTIONS WHEN PLANTED BETWEEN SIDEWALK AND CURB. TREES MAY NOT BE PLANTED WITHIN 5 FEET OF A STORM DRAIN INLET, OPEN SPACE ACCESS STRIP, OR 10 FEET OF A DRIVEWAY.
- AT THE TIME OF INSTALLMENT, ALL SHRUBS AND OTHER PLANTINGS HEREWITH LISTED AND APPROVED FOR THIS SITE, SHALL BE OF THE PROPER HEIGHT REQUIREMENTS IN ACCORDANCE WITH THE HOWARD COUNTY LANDSCAPE MANUAL. IN ADDITION, NO SUBSTITUTIONS OR RELOCATION OF REQUIRED PLANTINGS MAY BE MADE WITHOUT PRIOR REVIEW AND APPROVAL FROM THE DEPARTMENT OF PLANNING AND ZONING. ANY DEVIATION FROM THIS APPROVED LANDSCAPE PLAN MAY RESULT IN DENIAL OR DELAY IN RELEASE OF LANDSCAPE SURETY UNTIL SUCH TIME AS ALL REQUIRED MATERIALS ARE PLANTED AND/OR REVISIONS ARE MADE TO APPLICABLE PLANS AND CERTIFICATIONS.
- THE OWNER, TENANTS AND/OR THEIR AGENTS SHALL BE RESPONSIBLE FOR MAINTENANCE OF THE REQUIRED LANDSCAPING INCLUDING BOTH PLANT MATERIALS AND BERMS, FENCES AND WALLS. ALL PLANT MATERIALS SHALL BE MAINTAINED IN GOOD GROWING CONDITION, AND WHEN NECESSARY, REPLACED WITH NEW MATERIALS TO ENSURE CONTINUED COMPLIANCE WITH APPLICABLE REGULATIONS. ALL OTHER REQUIRED LANDSCAPING SHALL BE PERMANENTLY MAINTAINED IN GOOD CONDITION, AND WHEN NECESSARY, REPAIRED OR REPLACED.
- FINANCIAL SURETY IN THE AMOUNT OF \$15,600.00 FOR THE REQUIRED PERIMETER LANDSCAPING SHALL BE POSTED AS PART OF THE DPW DEVELOPER'S AGREEMENT.

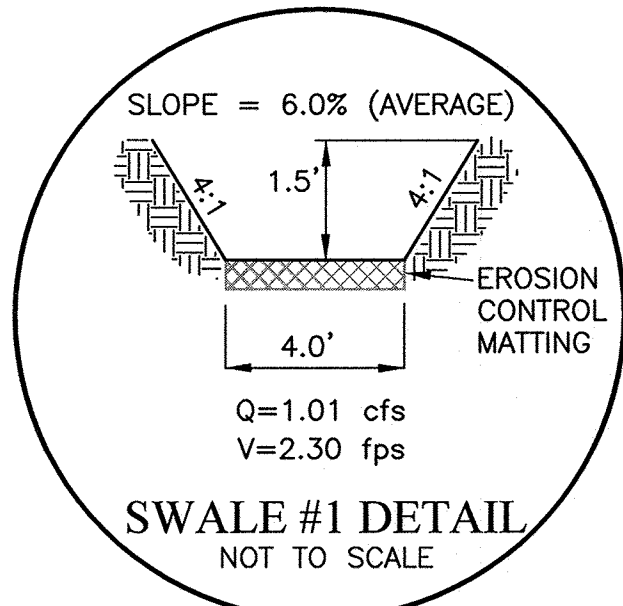
NO.	DATE	REVISION
<p>BENCHMARK ENGINEERS & LAND SURVEYORS & PLANNERS, INC. 8480 BALTIMORE NATIONAL PIKE & SUITE 315 A ELICOTT CITY, MARYLAND 21043 (7) 410-465-6100 (F) 410-465-6644 WWW.BEI-CVLENGINEERING.COM</p>		<p>Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland. License No. 21443, Expiration Date: 12-21-20</p>
<p>OWNER: MANGIONE ENTERPRISES OF TURF VALLEY LIMITED PARTNERSHIP 1205 YORK ROAD, PENTHOUSE LUTHERVILLE, MARYLAND 21093 410-825-8400</p>		<p>VILLAGES AT TURF VALLEY PHASE 5 LOTS 261 thru 296; OPEN SPACE LOTS 297 thru 299; AND BULK PARCEL GG</p>
<p>DEVELOPER: MANGIONE ENTERPRISES OF TURF VALLEY LIMITED PARTNERSHIP 1205 YORK ROAD, PENTHOUSE LUTHERVILLE, MARYLAND 21093 410-825-8400</p>		<p>TAX MAP: 16 - GRID: 10 - PARCEL: P/O 8 ZONED: PGCC (MULTI-USE SUBDISTRICT) ELECTION DISTRICT NO. 3 - HOWARD COUNTY, MARYLAND</p>
<p>LANDSCAPE NOTES, CHARTS AND DETAILS</p>		
DATE: AUGUST, 2015	BEI PROJECT NO. 2601	
DESIGN: DBT	DRAFT: DBT	SCALE: AS SHOWN SHEET 12 OF 18

LEGEND

- EXISTING CONTOURS
- AERIAL JAN. 2006
- EXISTING WETLANDS
- EXISTING TREELINE
- EXISTING STREAM
- EXISTING FLOODPLAIN
- PROJECT BOUNDARY LINE
- LIMIT OF DISTURBANCE
- PROPOSED TREELINE
- SUPER SILT FENCE
- EARTH DIKE
- STABILIZED CONSTRUCTION ENTRANCE
- CURB INLET PROTECTION
- EROSION CONTROL MATTING
- SOILS DELINEATION
- SOILS CLASSIFICATION
- SOIL BORING LOCATION

NRCS SOILS CHART - HoCo Soils Map No. 12				
SYMBOL	HYDRIC	GROUP	Kw	MAP UNIT NAME
GgB		B	0.37	GLENELG LOAM, 3 TO 8 PERCENT SLOPES
BaA*	YES	D	0.43	BAILE SILT LOAM, 0 TO 3 PERCENT SLOPES
MaC		B	0.32	MANOR LOAM, 8 TO 15 PERCENT SLOPES
Ha*	YES	D	0.37	HATBORO-CODORUS, 0 TO 3 PERCENT SLOPES

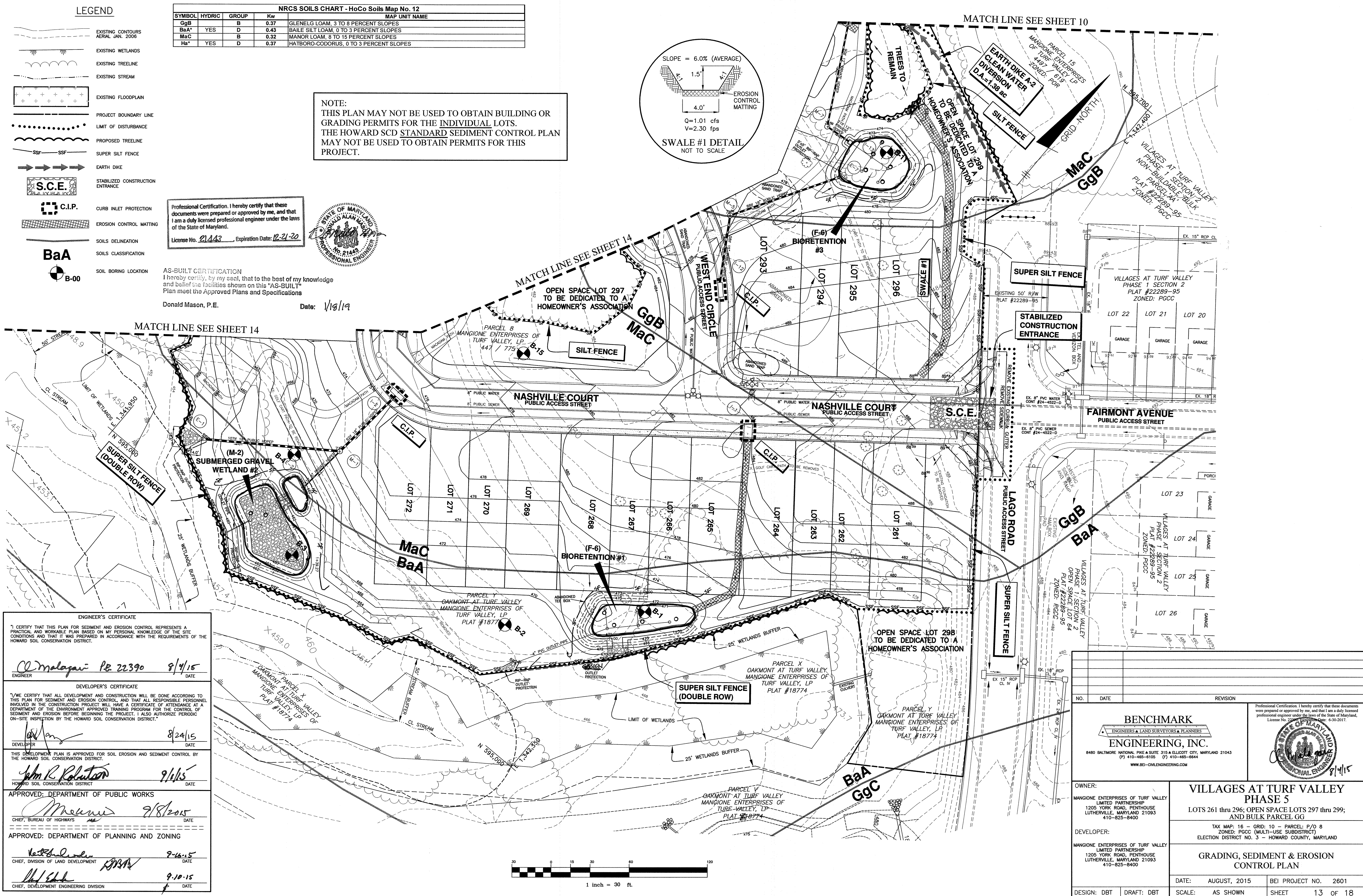
NOTE:
THIS PLAN MAY NOT BE USED TO OBTAIN BUILDING OR GRADING PERMITS FOR THE INDIVIDUAL LOTS. THE HOWARD SCD STANDARD SEDIMENT CONTROL PLAN MAY NOT BE USED TO OBTAIN PERMITS FOR THIS PROJECT.



Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.
License No. 21443, Expiration Date: 12-21-20



AS-BUILT CERTIFICATION
I hereby certify, by my seal, that to the best of my knowledge and belief the facilities shown on this "AS-BUILT" Plan meet the Approved Plans and Specifications.
Donald Mason, P.E. Date: 1/9/19



ENGINEER'S CERTIFICATE
I CERTIFY THAT THIS PLAN FOR SEDIMENT AND EROSION CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.
C. Malagan, P.E. 22390 8/4/15

DEVELOPER'S CERTIFICATE
I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN FOR SEDIMENT AND EROSION CONTROL, AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT.
John R. Rolston 8/24/15

APPROVED: DEPARTMENT OF PUBLIC WORKS
Mearns 9/1/15

APPROVED: DEPARTMENT OF PLANNING AND ZONING
K. J. ... 9-16-15

APPROVED: DEPARTMENT OF PLANNING AND ZONING
... 9-10-15

NO.	DATE	REVISION

BENCHMARK ENGINEERS & PLANNERS
ENGINEERS & LAND SURVEYORS & PLANNERS
ENGINEERING, INC.
8480 BALTIMORE NATIONAL PIKE & SUITE 315 A ELLICOTT CITY, MARYLAND 21043
(410) 468-8108 (410) 468-8644
WWW.BEI-CVLENGINEERS.COM

OWNER: MANGIONE ENTERPRISES OF TURF VALLEY LIMITED PARTNERSHIP
1205 YORK ROAD, PENTHOUSE LUTHERVILLE, MARYLAND 21093 410-825-8400

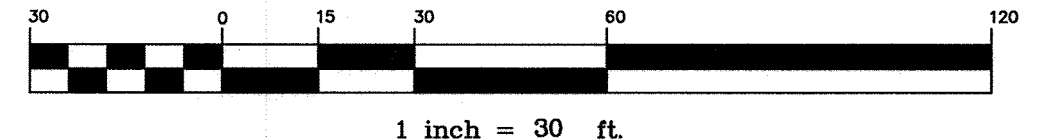
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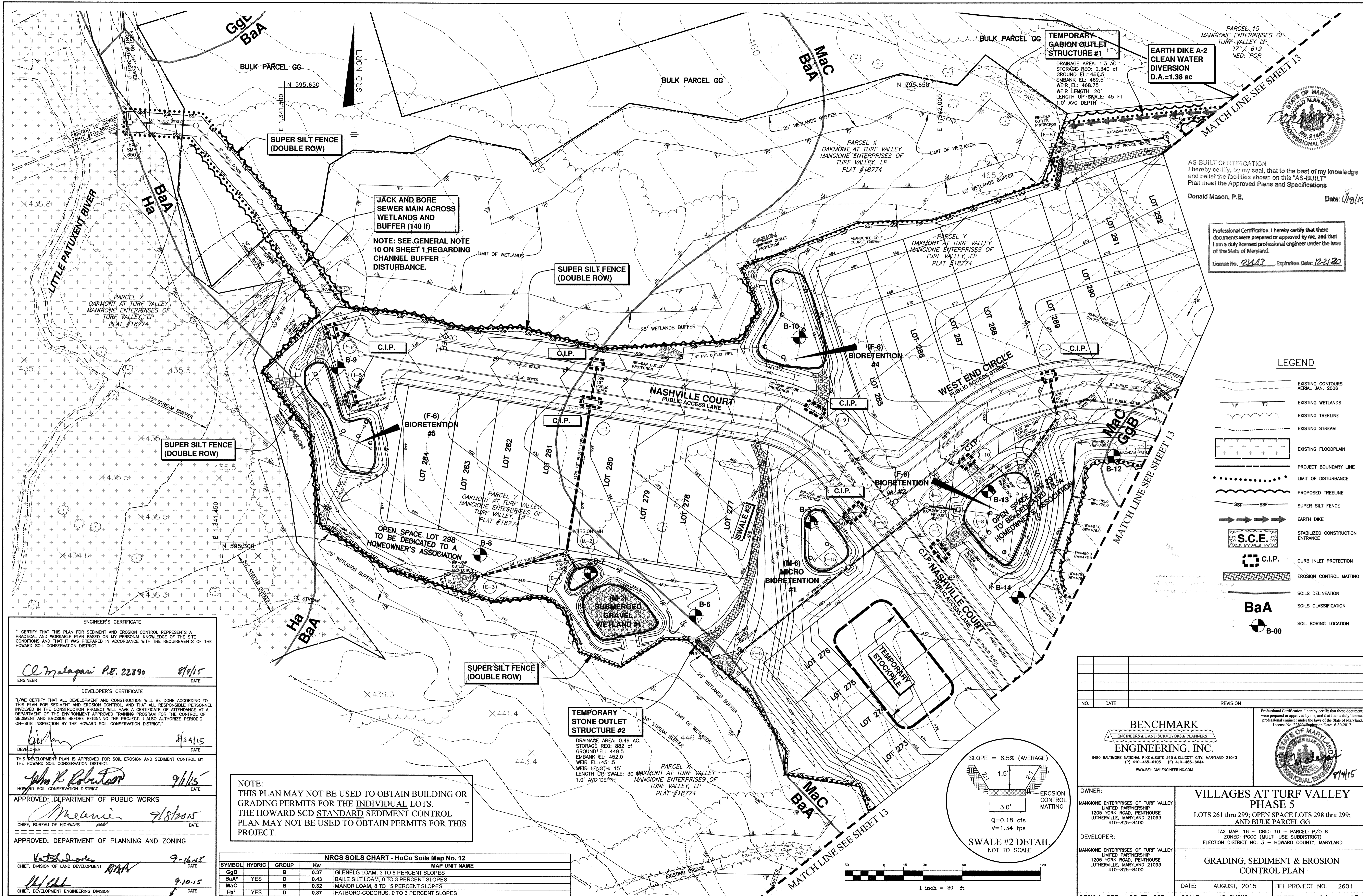
VILLAGES AT TURF VALLEY PHASE 5
LOTS 261 thru 296; OPEN SPACE LOTS 297 thru 299; AND BULK PARCEL GG

TAX MAP: 16 - GRID: 10 - PARCEL: P/O 8
ZONED: PGCC (MULTI-USE SUBDISTRICT)
ELECTION DISTRICT NO. 3 - HOWARD COUNTY, MARYLAND

GRADING, SEDIMENT & EROSION CONTROL PLAN

DATE: AUGUST, 2015 BEI PROJECT NO. 2601
SCALE: AS SHOWN SHEET 13 OF 18





ENGINEER'S CERTIFICATE
 I CERTIFY THAT THIS PLAN FOR SEDIMENT AND EROSION CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.
Cl. Malagani P.E. 22390 8/4/15
 ENGINEER DATE

DEVELOPER'S CERTIFICATE
 I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN FOR SEDIMENT AND EROSION CONTROL, AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT.
 [Signature] 8/24/15
 DEVELOPER DATE

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.
John K. Robertson 9/1/15
 HOWARD SOIL CONSERVATION DISTRICT DATE

APPROVED: DEPARTMENT OF PUBLIC WORKS
Melanie 9/8/2015
 CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING
Vatcha 9-16-15
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

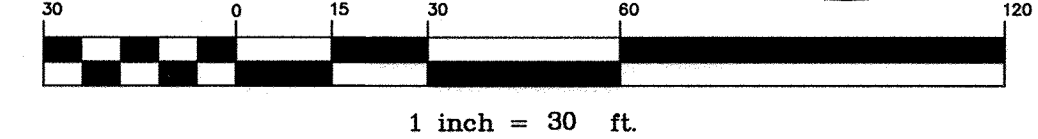
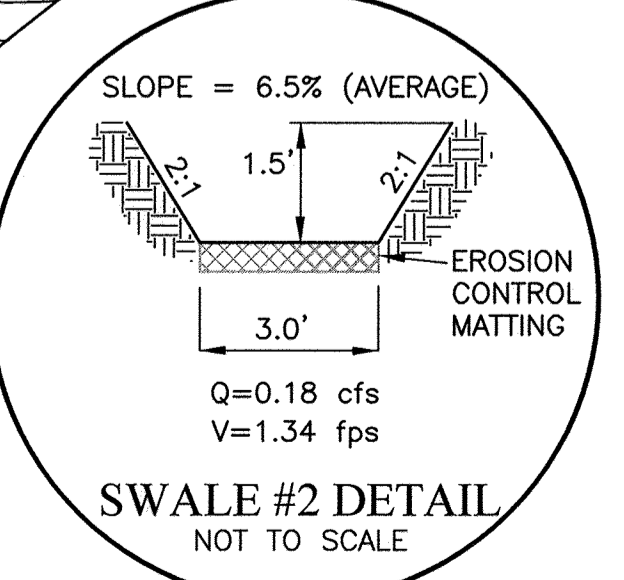
W. Hill 9-10-15
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

NOTE:
 THIS PLAN MAY NOT BE USED TO OBTAIN BUILDING OR GRADING PERMITS FOR THE INDIVIDUAL LOTS.
 THE HOWARD SCD STANDARD SEDIMENT CONTROL PLAN MAY NOT BE USED TO OBTAIN PERMITS FOR THIS PROJECT.

NRCS SOILS CHART - HoCo Soils Map No. 12

SYMBOL	HYDRIC	GROUP	Kw	MAP UNIT NAME
GgB		B	0.37	GLENELG LOAM, 3 TO 8 PERCENT SLOPES
BaA*	YES	D	0.43	BAILE SILT LOAM, 0 TO 3 PERCENT SLOPES
MaC		B	0.32	MANOR LOAM, 8 TO 15 PERCENT SLOPES
HaA*	YES	D	0.37	HATBORO-CODORUS, 0 TO 3 PERCENT SLOPES

TEMPORARY STONE OUTLET STRUCTURE #2
 DRAINAGE AREA: 0.49 AC.
 STORAGE REQ: 882 cf
 GROUND EL: 449.5
 EMBANK EL: 452.0
 WEIR EL: 451.5
 WEIR LENGTH: 15'
 LENGTH UP SWALE: 30'
 1.0' AVG DEPTH



AS-BUILT CERTIFICATION
 I hereby certify, by my seal, that to the best of my knowledge and belief the facilities shown on this "AS-BUILT" Plan meet the Approved Plans and Specifications.
 Donald Mason, P.E. Date: 11/9/19

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.
 License No. 21443 Expiration Date: 12-21-20



LEGEND

- EXISTING CONTOURS AERIAL JAN. 2006
- EXISTING WETLANDS
- EXISTING TREELINE
- EXISTING STREAM
- EXISTING FLOODPLAIN
- PROJECT BOUNDARY LINE
- LIMIT OF DISTURBANCE
- PROPOSED TREELINE
- SSF - SUPER SILT FENCE
- EARTH DIKE
- S.C.E. STABILIZED CONSTRUCTION ENTRANCE
- C.I.P. CURB INLET PROTECTION
- EROSION CONTROL MATTING
- SOILS DELINEATION
- SOILS CLASSIFICATION
- BaA
- B-00 SOIL BORING LOCATION

BENCHMARK ENGINEERING, INC.
 ENGINEERS • LAND SURVEYORS • PLANNERS
 8480 BALTIMORE NATIONAL PIKE & SUITE 315A ELLICOTT CITY, MARYLAND 21043
 (P) 410-465-6100 (F) 410-465-6644
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OWNER: MANGIONE ENTERPRISES OF TURF VALLEY LIMITED PARTNERSHIP
 1205 YORK ROAD, PENTHOUSE LUTHERVILLE, MARYLAND 21093
 410-825-8400

DEVELOPER: MANGIONE ENTERPRISES OF TURF VALLEY LIMITED PARTNERSHIP
 1205 YORK ROAD, PENTHOUSE LUTHERVILLE, MARYLAND 21093
 410-825-8400

VILLAGES AT TURF VALLEY PHASE 5
 LOTS 261 thru 299; OPEN SPACE LOTS 298 thru 299; AND BULK PARCEL GG

TAX MAP: 16 - GRID: 10 - PARCEL: P/O 8
 ZONED: PGCC (MULTI-USE SUBDISTRICT)
 ELECTION DISTRICT NO. 3 - HOWARD COUNTY, MARYLAND

GRADING, SEDIMENT & EROSION CONTROL PLAN

DATE: AUGUST, 2015 BEI PROJECT NO. 2601
 DESIGN: DBT DRAFT: DBT SCALE: AS SHOWN SHEET 14 OF 18

B-4 STANDARDS AND SPECIFICATIONS FOR VEGETATIVE STABILIZATION

B-4-2 STANDARDS AND SPECIFICATIONS FOR SOIL PREPARATION, TOPSOILING, AND SOIL AMENDMENTS

B-4-3 STANDARDS AND SPECIFICATIONS FOR SEEDING AND MULCHING

B-4-5 STANDARDS AND SPECIFICATIONS FOR PERMANENT STABILIZATION

B-4-4 STANDARDS AND SPECIFICATIONS FOR TEMPORARY STABILIZATION

HOWARD SOIL CONSERVATION DISTRICT STANDARD SEDIMENT CONTROL NOTES

1. A MINIMUM OF 48 HOURS NOTICE MUST BE GIVEN TO THE HOWARD COUNTY DEPARTMENT OF INSPECTIONS, LICENSES AND PERMITS, SEDIMENT CONTROL DIVISION PRIOR TO THE START OF ANY CONSTRUCTION (313-1855).

2. ALL VEGETATIVE AND STRUCTURAL PRACTICES ARE TO BE INSTALLED ACCORDING TO THE PROVISIONS OF THIS PLAN AND ARE TO BE IN CONFORMANCE WITH THE MOST CURRENT MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL AND REVISIONS THERETO.

3. FOLLOWING INITIAL SOIL DISTURBANCE OR RE-DISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN: (A) 3 CALENDAR DAYS FOR ALL PERIMETER SEDIMENT CONTROL STRUCTURES, DIKES, PERMETER SLOPES AND ALL SLOPES GREATER THAN 3:1, (B) 7 DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE.

4. ALL DISTURBED AREAS MUST BE STABILIZED WITHIN THE TIME PERIOD SPECIFIED ABOVE IN ACCORDANCE WITH THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL FOR PERMANENT SEEDING (SEC. B-4-5), TEMPORARY SEEDING (SEC. B-4-4) AND MULCHING (SEC. B-4-3). TEMPORARY STABILIZATION WITH MULCH ALONE CAN ONLY BE DONE WHEN RECOMMENDED SEEDING DATES DO NOT ALLOW FOR PROPER GERMINATION AND ESTABLISHMENT OF GRASSES.

5. ALL SEDIMENT CONTROL STRUCTURES ARE TO REMAIN IN PLACE AND ARE TO BE MAINTAINED IN OPERATIVE CONDITION UNTIL PERMISSION FOR THEIR REMOVAL HAS BEEN OBTAINED FROM THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.

6. SITE ANALYSIS:

TOTAL AREA OF SITE: 10.49 ACRES

AREA DISTURBED: 8.9 ACRES

AREA TO BE ROOFED OR PAVED: 1.2 ACRES

AREA TO BE VEGETATIVELY STABILIZED: 7.7 ACRES

TOTAL CUT: 12,999 CY*

TOTAL FILL: 25,007 CY*

OFFSITE WASTE/BORROW LOCATION: SITE WITH AN ACTIVE GRADING PERMIT

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

8. ADDITIONAL SEDIMENT CONTROL MUST BE PROVIDED, IF DEEMED NECESSARY BY THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.

9. ON ALL SITES WITH DISTURBED AREAS IN EXCESS OF 2 ACRES, APPROVAL OF THE INSPECTION AGENCY SHALL BE REQUESTED UPON COMPLETION OF INSTALLATION OF PERIMETER EROSION AND SEDIMENT CONTROLS, BUT BEFORE PROCEEDING WITH ANY OTHER EARTH DISTURBANCE OR GRADING. OTHER BUILDING OR GRADING INSPECTION APPROVALS MAY NOT BE AUTHORIZED UNTIL THIS INITIAL APPROVAL BY THE INSPECTION AGENCY IS MADE.

10. TRENCHES FOR THE CONSTRUCTION OF UTILITIES IS LIMITED TO THREE PIPE LENGTHS OR THAT WHICH SHALL BE BACK-FILLED AND STABILIZED BY THE END OF EACH WORKDAY, WHICHEVER IS SHORTER.

11. ANY CHANGES OR REVISIONS TO THE SEQUENCE OF CONSTRUCTION MUST BE REVIEWED AND APPROVED BY THE PLAN APPROVAL AUTHORITY PRIOR TO PROCEEDING WITH CONSTRUCTION.

12. A PROJECT IS TO BE SEQUENCED SO THAT GRADING ACTIVITIES BEGIN ON ONE GRADING UNIT (MAXIMUM ACREAGE OF 20 ACRES PER GRADING UNIT) AT A TIME. WORK MAY PROCEED TO A SUBSEQUENT GRADING UNIT WHEN AT LEAST 50 PERCENT OF THE DISTURBED AREA IN THE PRECEDING GRADING UNIT HAS BEEN STABILIZED AND APPROVED BY THE ENFORCEMENT AUTHORITY. UNLESS OTHERWISE SPECIFIED AND APPROVED BY THE APPROVAL AUTHORITY, NO MORE THAN 30 ACRES CUMULATIVELY MAY BE DISTURBED AT A GIVEN TIME.

*CUT/FILL NUMBERS ARE FOR SEDIMENT CONTROL PURPOSES ONLY. CONTRACTOR TO VERIFY.

B-4-8 STANDARDS AND SPECIFICATIONS FOR STOCKPILE AREA

A mound or pile of soil protected by appropriately designed erosion and sediment control measures.

To provide a designated location for the temporary storage of soil that controls the potential for erosion, sedimentation, and changes to drainage patterns.

1. The stockpile location and all related sediment control practices must be clearly indicated on the erosion and sediment control plan.

2. The footprint of the stockpile must be sized to accommodate the anticipated volume of material and based on a side slope ratio no steeper than 2:1. Benching must be provided in accordance with Section B-3 Land Grading.

3. Runoff from the stockpile area must drain to a suitable sediment control practice.

4. Access the stockpile area from the upgrade side.

5. Clear water runoff into the stockpile area must be minimized by use of a diversion device such as an earth dike, temporary swale or diversion fence. Provisions must be made for discharging concentrated flow in a non-erosive manner.

6. Where runoff concentrates along the toe of the stockpile fill, an appropriate erosion/sediment control practice must be used to intercept the discharge.

7. Stockpiles must be stabilized in accordance with the 3/7 day stabilization requirement as well as Standard B-4-1 Incremental Stabilization and Standard B-4-4 Temporary Stabilization.

8. If the stockpile is located on an impervious surface, a liner should be provided below the stockpile to facilitate cleanup. Stockpiles containing contaminated material must be covered with impervious sheeting.

H-2 STANDARDS AND SPECIFICATIONS FOR DUST CONTROL

Controlling the suspension of dust particles from construction activities.

To prevent blowing and movement of dust from exposed soil surfaces to reduce on and off-site damage including health and traffic hazards.

1. Mulches: See Section B-4-2 Soil Preparation, Topsoiling, and Soil Amendments, Section B-4-3 Seeding, and Section B-4-4 Temporary Stabilization. Mulch must be anchored to prevent blowing.

2. Vegetative Cover: See Section B-4-4 Temporary Stabilization.

3. Tillage: Till to roughen surface and bring clods to the surface. Begin plowing on windward side of site. Chisel-type plows spaced about 12 inches apart, spring-toothed harrows, and similar plows are examples of equipment that may produce the desired effect.

4. Irrigation: Sprinkle site with water until the surface is moist. Repeat as needed. The site must not be irrigated to the point that runoff occurs.

5. Barriers: Solid board fences, silt fences, snow fences, burlap fences, straw bales, and similar material can be used to control air currents and soil blowing.

6. Chemical Treatment: Use of chemical treatment requires approval by the appropriate plan review authority.

SEQUENCE OF CONSTRUCTION

NOTIFY SEDIMENT CONTROL DIVISION 48 HOURS PRIOR TO START OF WORK

1. Obtain grading permit. (day 1)

2. Hold on-site pre-construction meeting. (day 2)

3. Clear and Grub as necessary to install stabilized construction entrance and perimeter controls (clean water diversion dike, super silt fences, TGOS, TSOS etc.). Install the clean water dike prior to installation of the TGOS. (day 3-6)

4. Upon approval from the Howard County sediment control inspector, proceed to clear, grub and grade within the perimeter. (day 7-10)

5. Install new sewer line from ex SMH 650 up to proposed SMH 3. Utilize a jack and bore between proposed SMH's 2 and 3 in order to avoid disturbance to the wetlands and wetlands buffer. (day 11-18)

6. Bring roadbed to subgrade and at the same time begin mass grading of the lots. (day 19-28)

7. Complete installation of rest of the water and sewer mains. Install the house connections. (day 29-55)

8. Install the storm drain system from E-1 to I-2, E-3 to I-4, E-5 to I-8 and E-8 to I-13. Install the rip-rap outlet protection. Block the 8" HDPE pipes at M-1 and M-2 so that runoff will not enter those pipes. Utilize inlet protection/blocking for the inlets. (day 56-70)

9. Construct the Bio-retention Facilities, Micro Bio-retention practice and the Submerged Gravel Wetlands. Complete with underdrain outfalls. Do NOT install the plantings at this time. Also, ensure that the swale east of Lot 277 and the swale east of Lot 296 have been graded at this time in order to avoid excess runoff from entering the Submerged Gravel Wetland #1 and Bio-Retention #3. Ensure swales discharge to the TGOS and TSOS. Once Submerged Gravel Wetlands are constructed, the 8" pipes can be unblocked. (day 71-90)

10. Install the all remaining storm drain pipes and structures. Utilize inlet protection. Install related inflow and outflow rip-rap protection at the structures as indicated on the plans. (day 91-100)

11. Install curb and gutter. (day 101-105)

12. Install base paving for the roads. (day 106-110)

13. Complete mass grading of the lots and stabilize in accordance with the permanent seeded notes. (day 111-115)

14. Install the sidewalks. (day 116-120)

15. Once all lot areas have been permanently stabilized, install the final plantings for the Bio-retention, Micro Bio-retention and the Submerged Gravel Wetlands. (day 121-125)

16. Install street trees and perimeter landscape trees. (day 126-130)

17. Upon approval from the Howard County Sediment Control Inspector, remove all sediment control devices and stabilize any remaining disturbed areas in accordance with the permanent seeded notes. (day 121-133)

ENGINEER'S CERTIFICATE

I CERTIFY THAT THIS PLAN FOR SEDIMENT AND EROSION CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

Cl. Malagan **AG-22370** **8/9/15**

ENGINEER DATE

DEVELOPER'S CERTIFICATE

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

John R. Robert **9/11/15**

DEVELOPER DATE

APPROVED: DEPARTMENT OF PUBLIC WORKS

John R. Robert **9/18/2015**

CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING

John R. Robert **9-16-15**

CHIEF, DIVISION OF LAND DEVELOPMENT DATE

John R. Robert **9-10-15**

CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

Table B.1: Temporary Seeding for Site Stabilization

Plant Species	Seeding Rate 1/		Seeding Depth 2/ (inches)	Recommended Seeding Dates by Plant Hardiness Zone 3/		
	lb/ac	lb/1000ft ²		5b and 6a	6b	7a and 7b
Cool-Season Grasses						
Annual Ryegrass (Lolium perenne ssp. Multiflorum)	40	1.0	0.5	Mar 1 to May 15; Aug 1 to Oct 31		
Barley (Hordeum vulgare)	96	2.2	1.0	Mar 1 to May 15; Aug 1 to Oct 31		
Oats (Avena sativa)	72	1.7	1.0	Mar 1 to May 15; Aug 1 to Oct 31		
Wheat (Triticum aestivum)	120	2.8	1.0	Mar 1 to May 15; Aug 1 to Oct 31		
Cereal Rye (Secale cereale)	112	2.8	1.0	Mar 1 to May 15; Aug 1 to Nov 15		
Warm-Season Grasses						
Foxtail Millet (Setaria italica)	30	0.7	0.5	May 16 to Jul 31		
Pearl Millet (Pennisetum glaucum)	20	0.5	0.5	May 16 to Jul 31		
Notes:	1/ Seeding rates for the warm season grasses are in pounds of Pure Live Seed (PLS). Actual planting rates shall be adjusted to reflect percent seed germination and purity, as tested. Adjustments are usually not needed for the cool-season grasses.					
	2/ Seeding rates listed above are for temporary seedings, when planted alone. When planted as a nurse crop with permanent seed mixes, use 1/3 of the seeding rate listed above for the nurse crop. For smaller-seeded grasses (annual ryegrass, pearl millet, foxtail millet), do not exceed more than 160 lbs/mi ² of seed. For larger-seeded grasses (cereal rye, wheat), do not exceed more than 100 lbs/mi ² of seed. Cereal rye has allelopathic properties that inhibit the germination and growth of other plants. If it must be used as a nurse crop, seed at 1/3 of the rate listed above.					
	3/ Oats are the recommended nurse crop for warm-season grasses.					
	4/ For sandy soils, plant seeds at twice the depth listed above.					
	5/ The planting dates listed are averages for each Zone and may require adjustment to reflect local conditions, especially near the boundaries of the zone.					

Permanent Seeding Summary

Hardness Zone (from Figure B.3):	Seed Mixture (from Table B.3):	Seeding Rate		Fertilizer Rate (10-20-20)	Lime Rate
		lb/ac	lb/1000ft ²		
6b	Tall Fescue/Kentucky Bluegrass				
No.	Species	Application Rate (lb/ac)	Seeding Dates	Seeding Depths	N P205 K20
9	Fescue, Tall	60	Mar 1 to May 15 Aug 1 to Oct 15	1/4 - 1/2 in	45 pounds per acre (1.0 lb/1000 ft ²) (2 lb/1000 ft ²) (100 lb/1000 ft ²)
	Bluegrass, Kentucky	40	Mar 1 to May 15 Aug 1 to Oct 15	1/4 - 1/2 in	90 lb/ac (2 1/2 lb/1000 ft ²) (1000 lb/1000 ft ²)
				1/4 - 1/2 in	2 tons/ac (900 lb/1000 ft ²) (1000 lb/1000 ft ²)

NO AS BUILT INFORMATION IS PROVIDED ON THIS SHEET

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Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.

License No. **21443**, Expiration Date: **12-21-20**

BENCHMARK ENGINEERS & LAND SURVEYORS & PLANNERS

8480 BALTIMORE NATIONAL PIKE & SUITE 315 & ELLICOTT CITY, MARYLAND 21043
(P) 301-974-6100 (F) 301-974-6644
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VILLAGES AT TURF VALLEY PHASE 5

LOTS 261 thru 296; OPEN SPACE LOTS 297 thru 299; AND BULK PARCEL GG

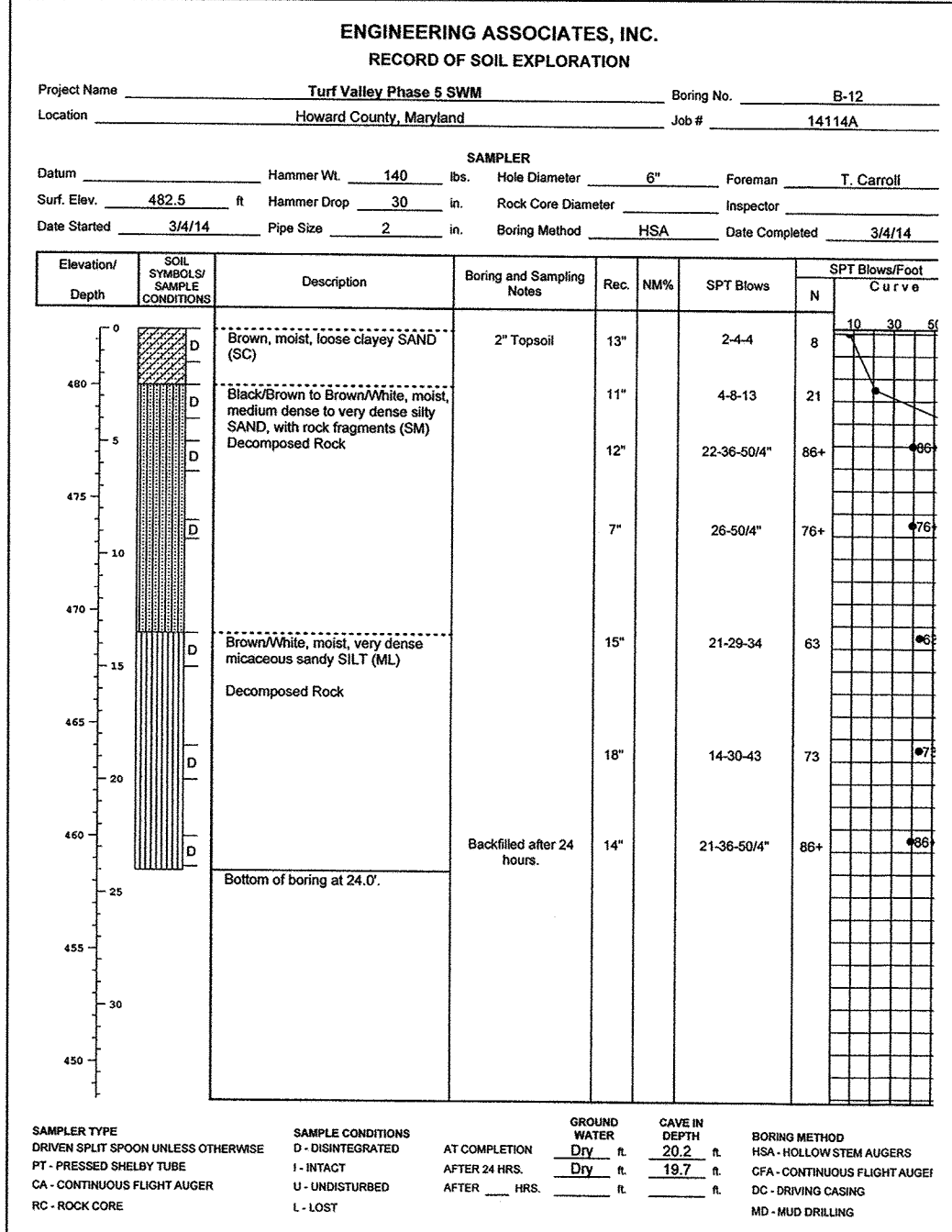
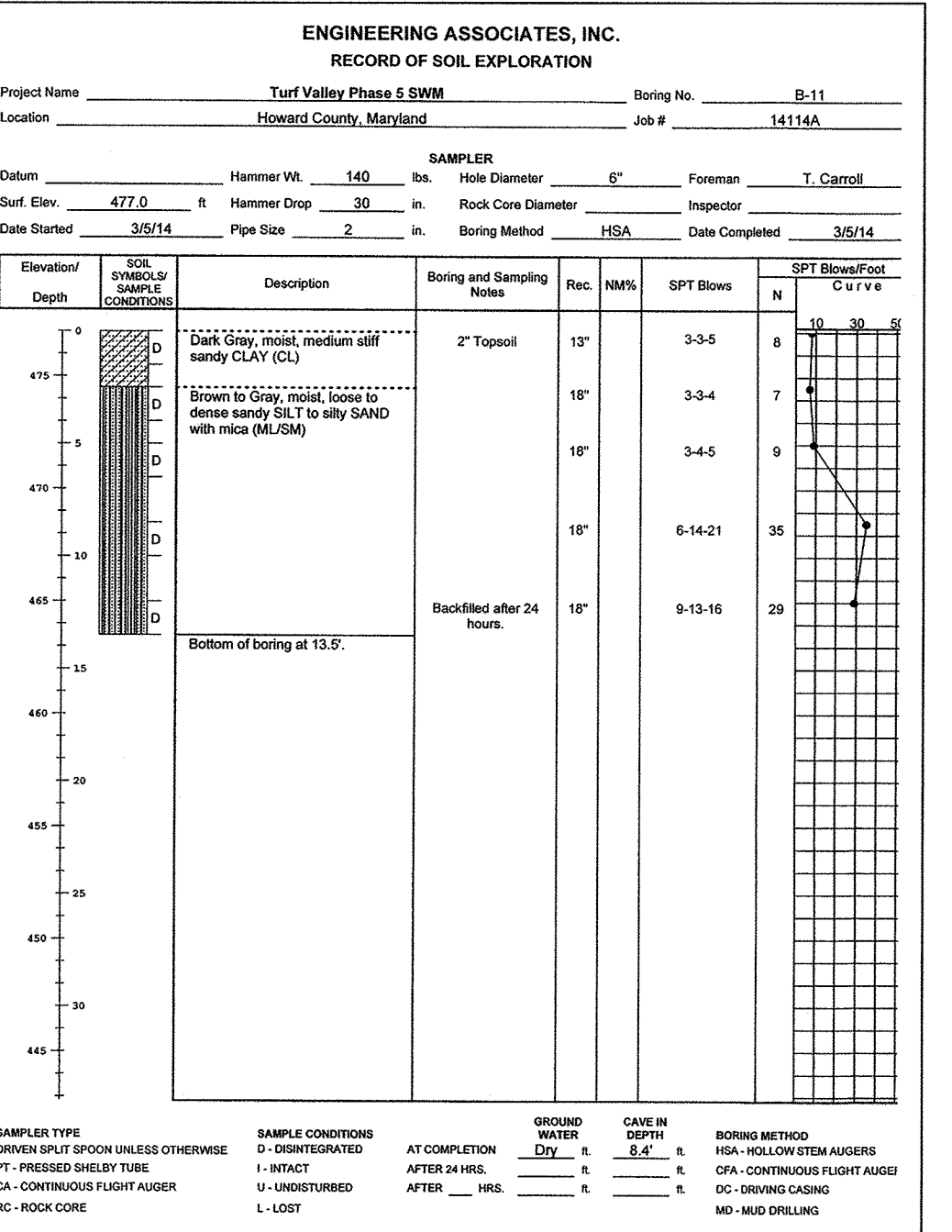
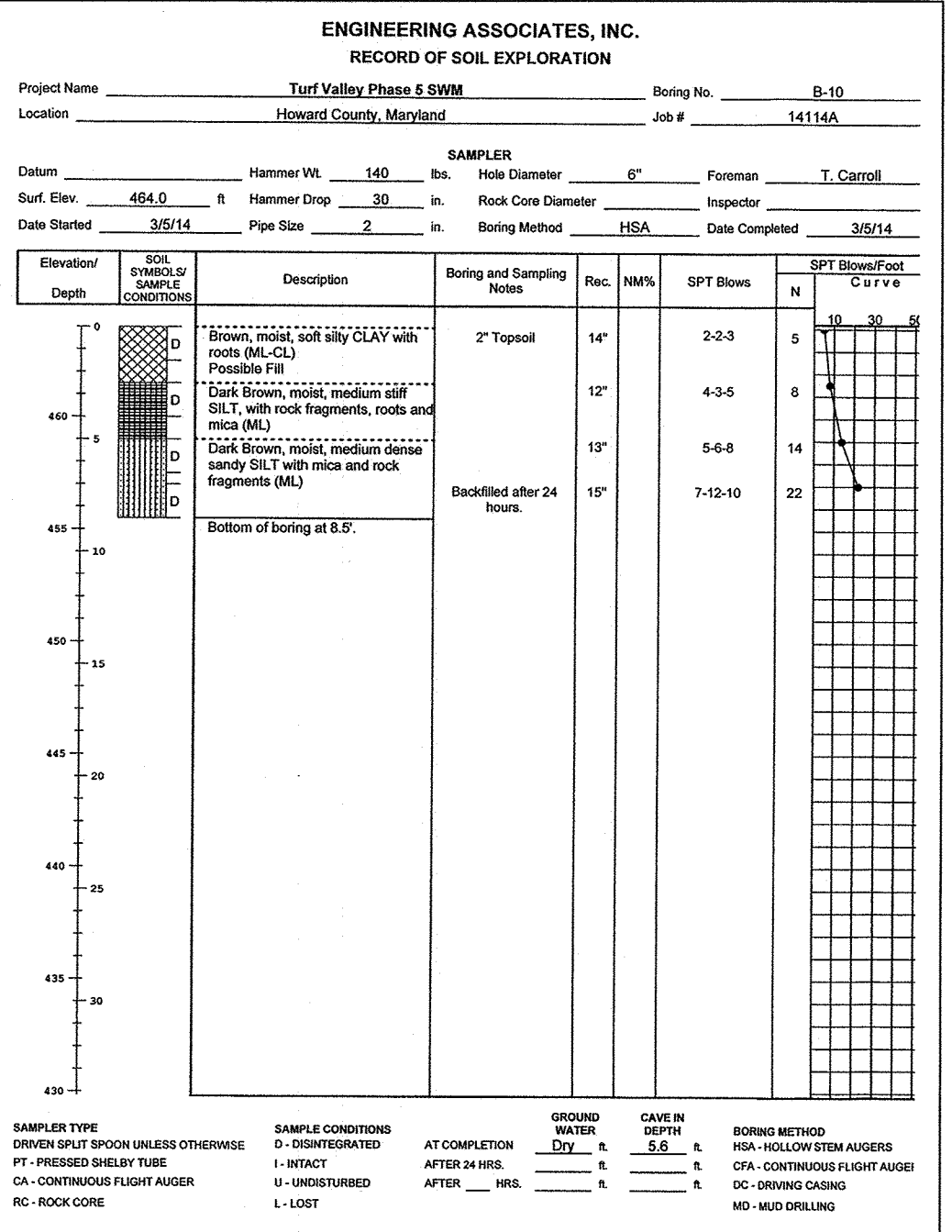
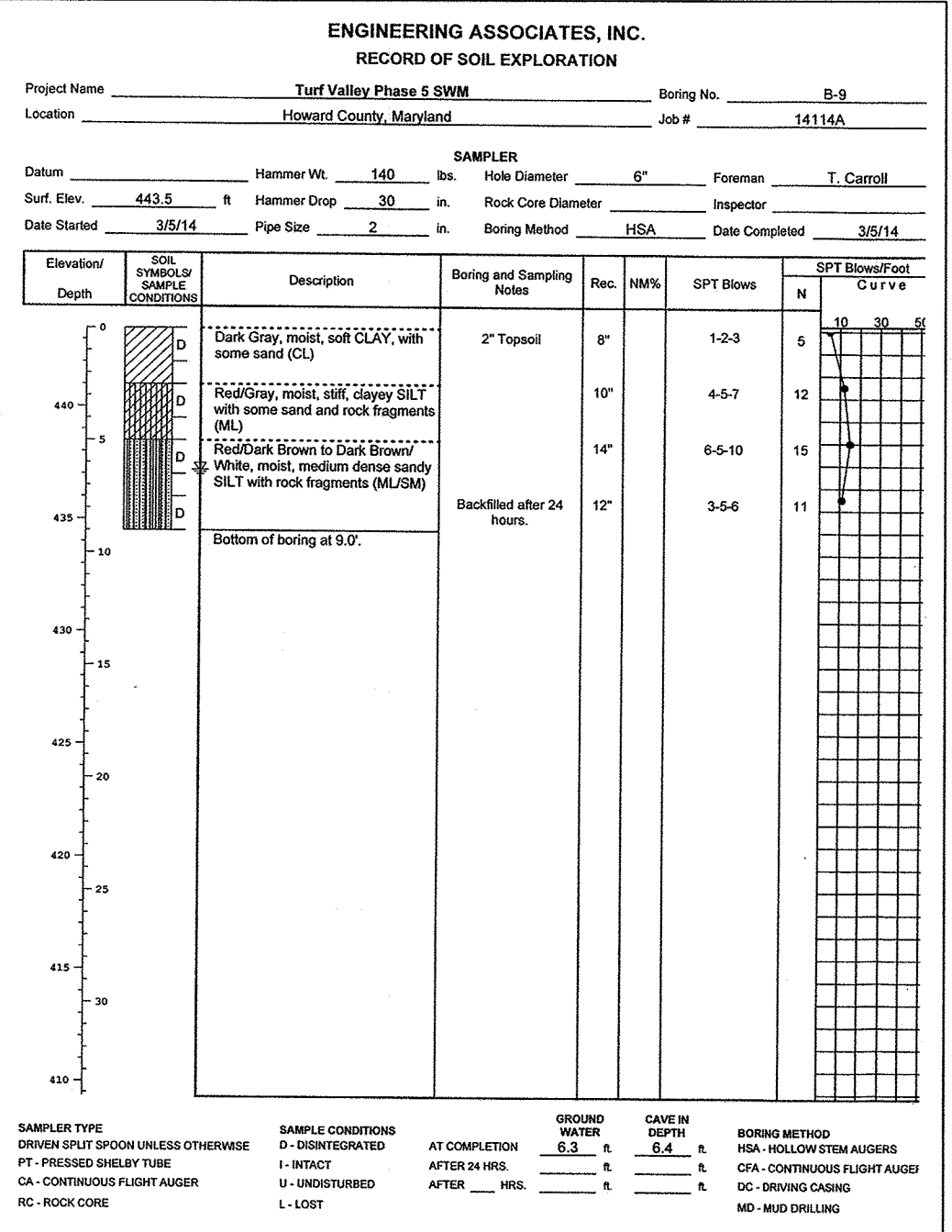
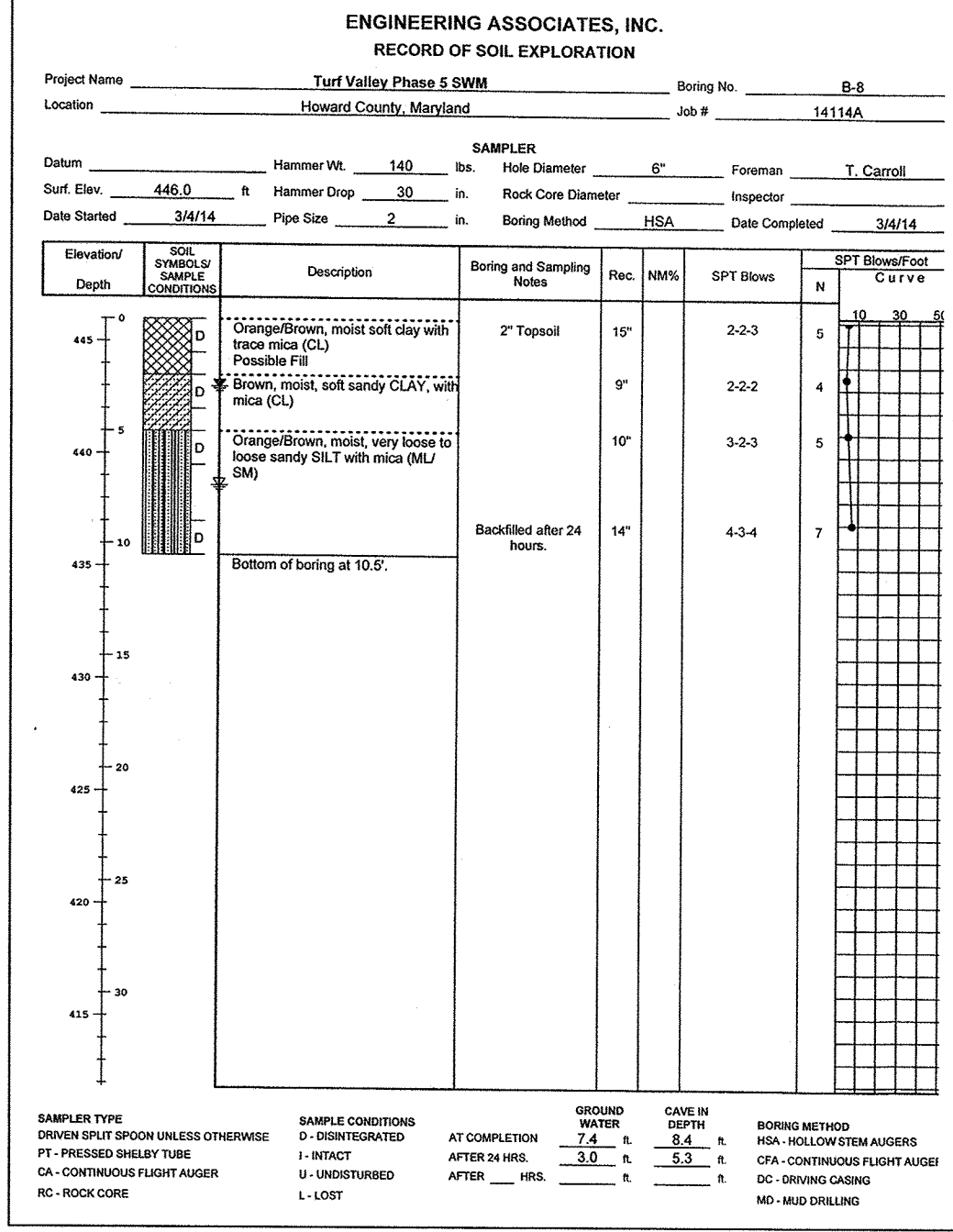
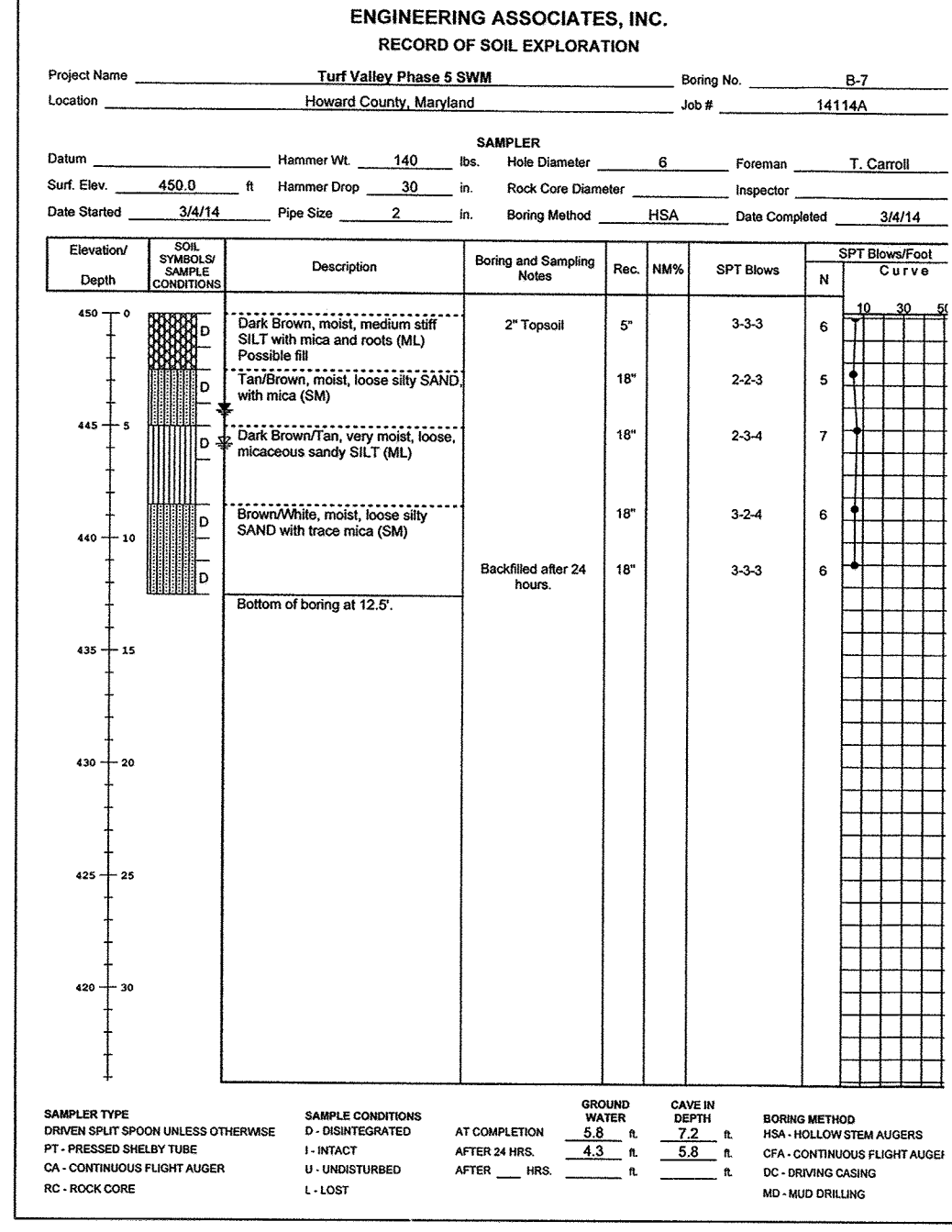
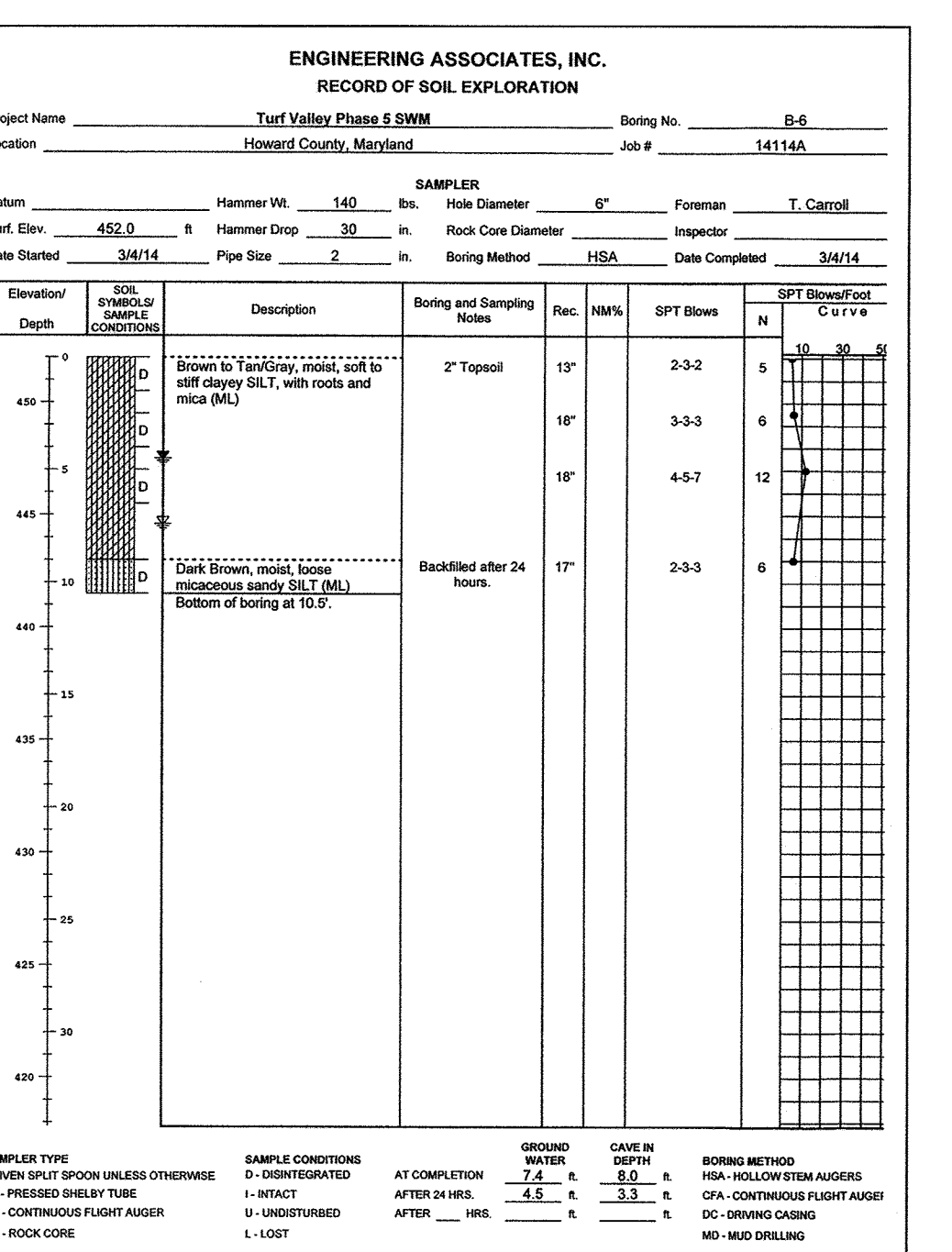
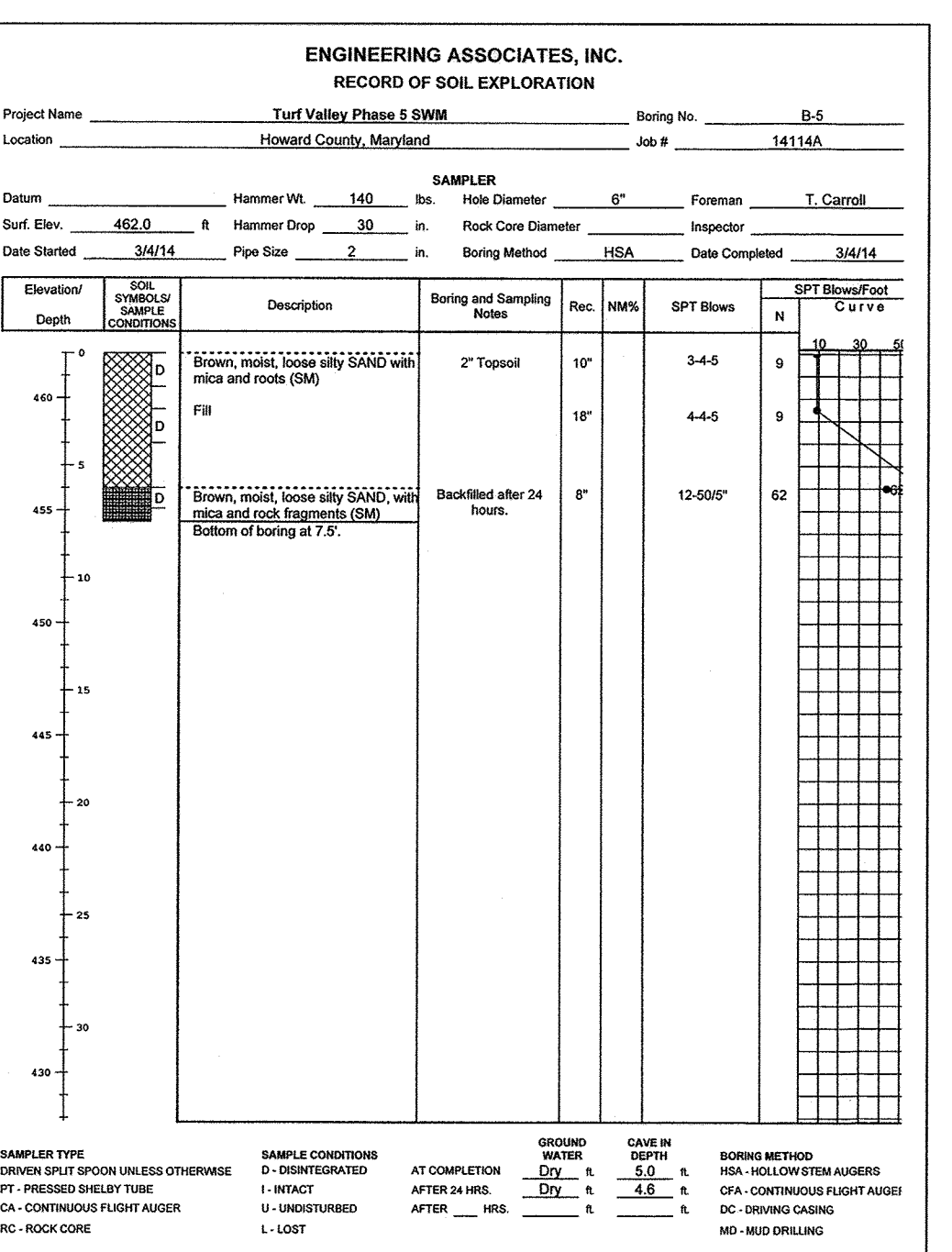
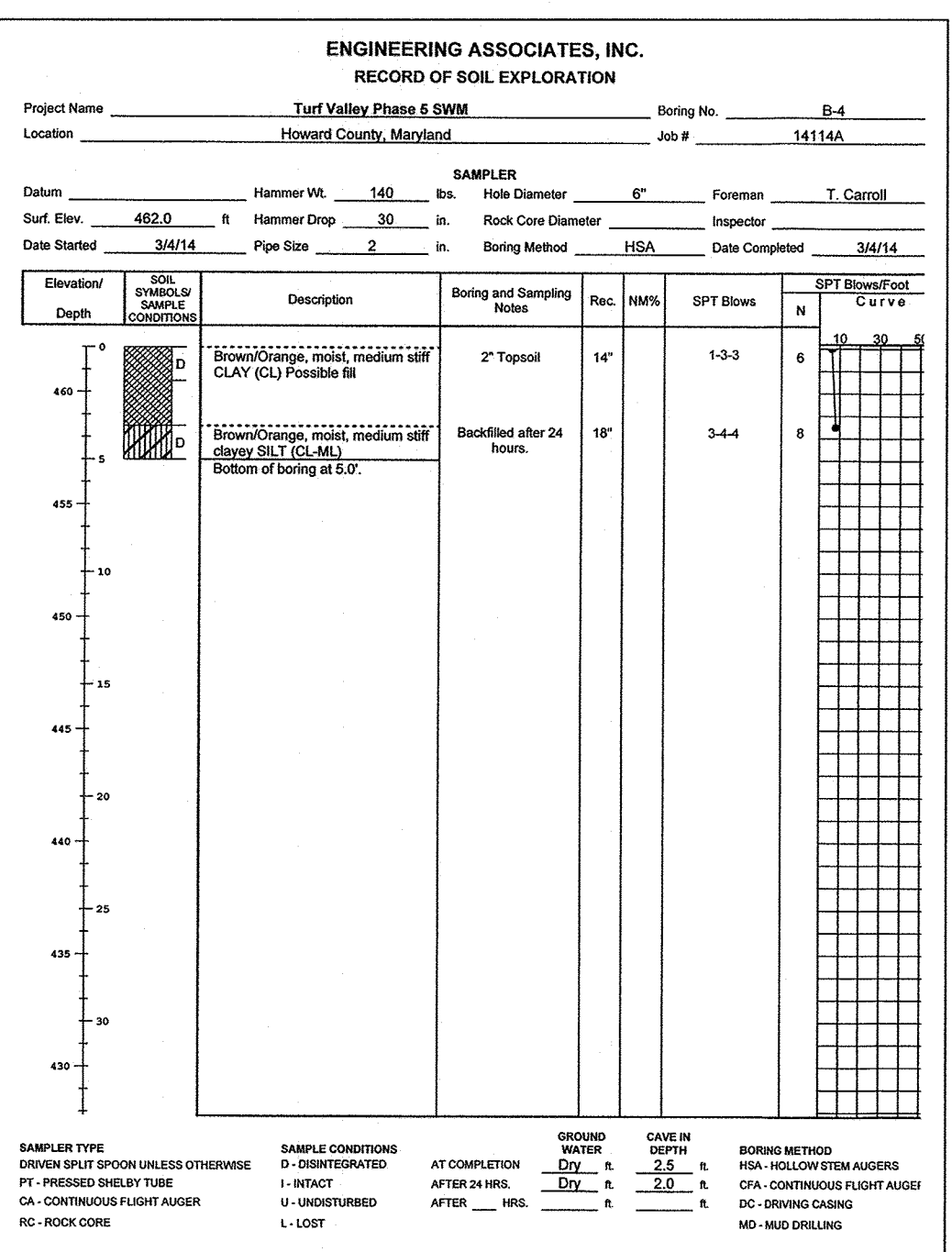
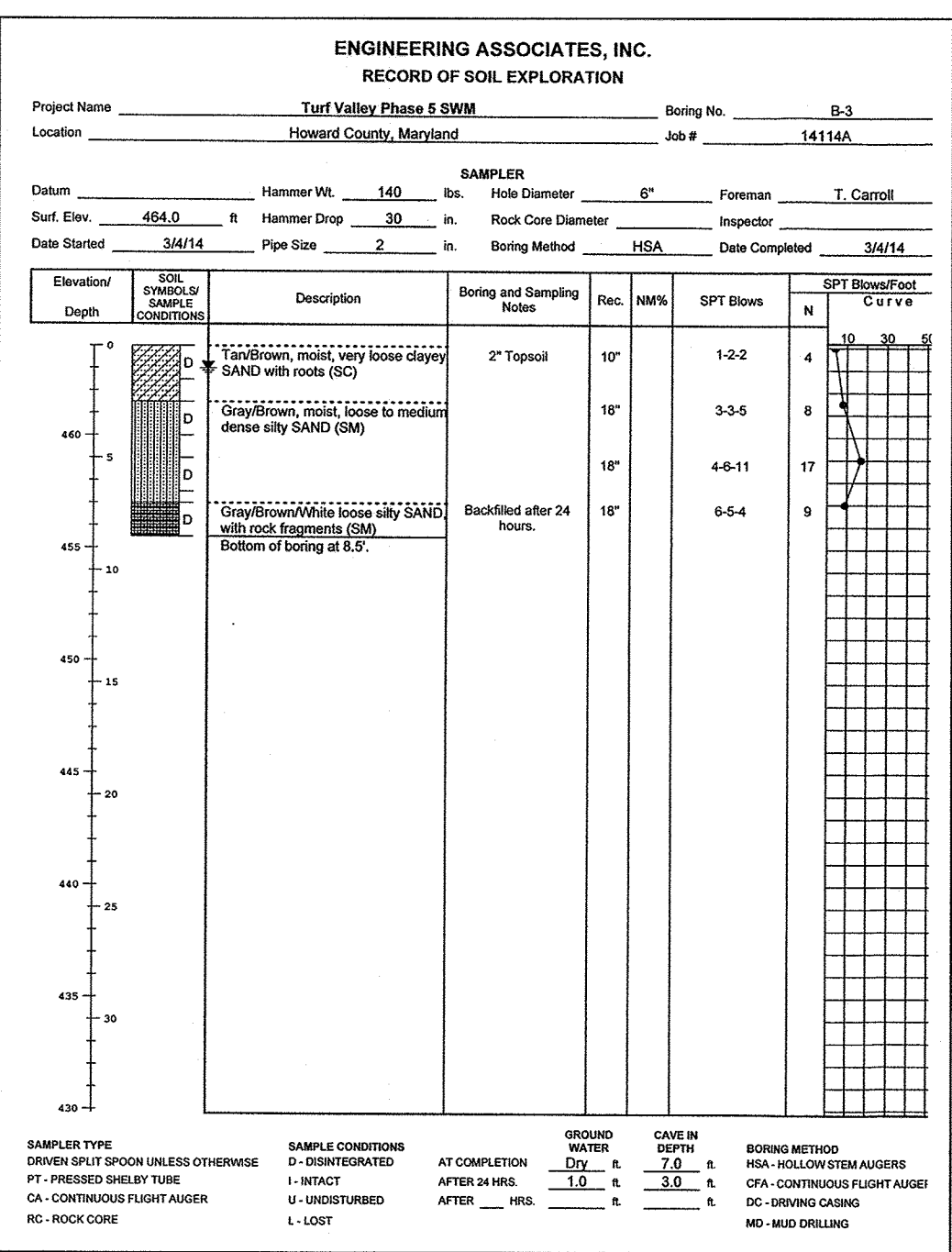
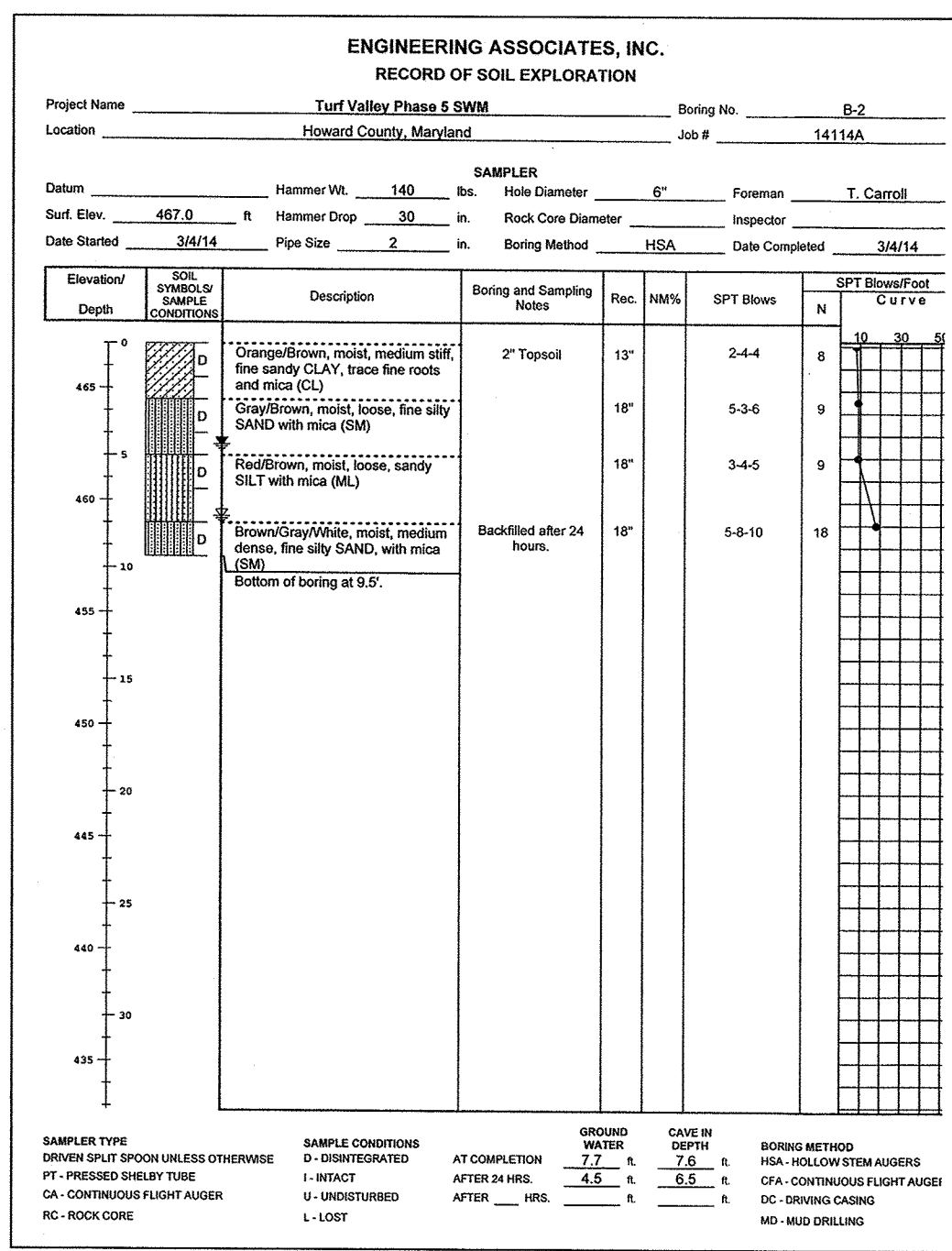
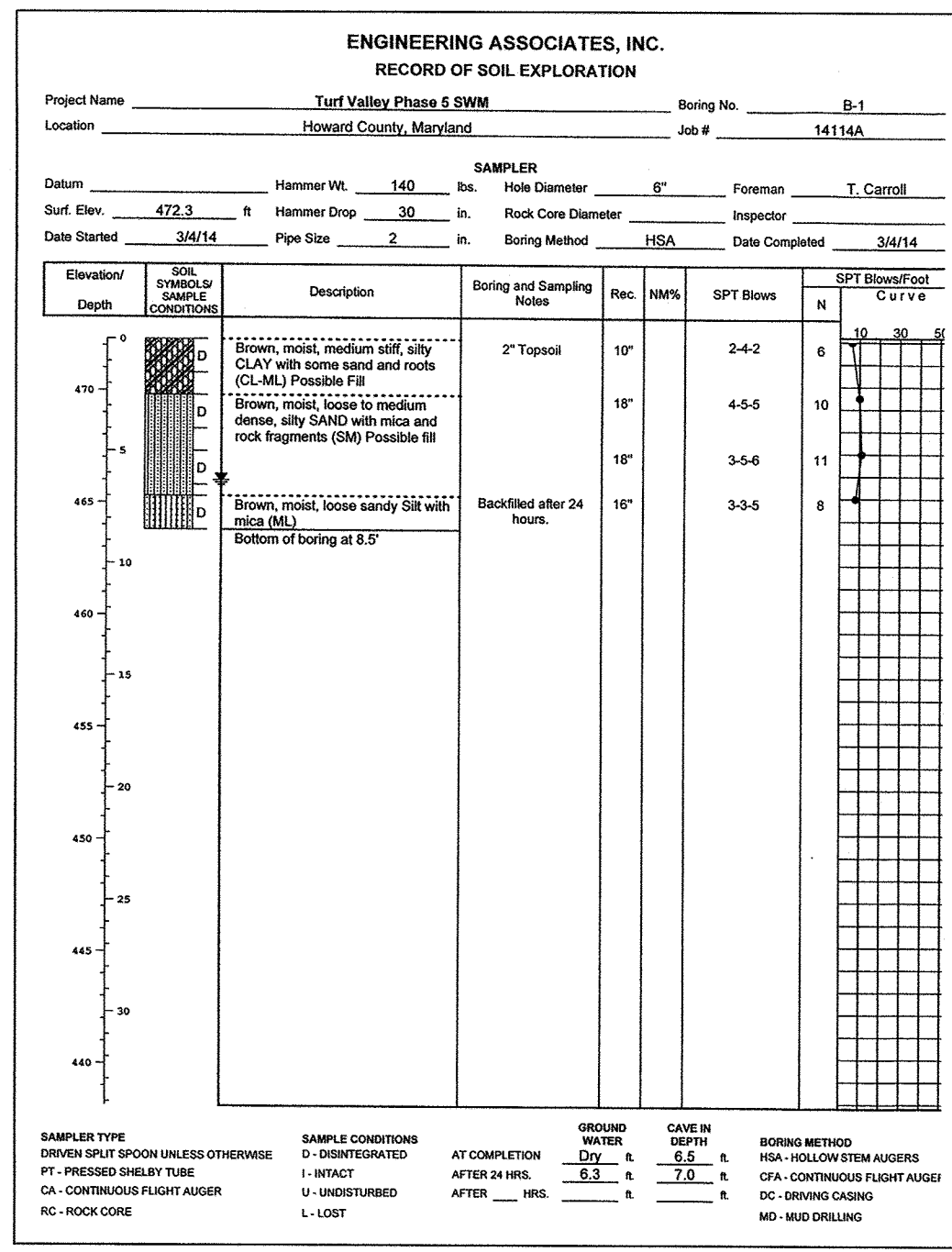
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ZONED: POC (MULTI-USE SUBSTRUCTURE)
ELECTION DISTRICT NO. 3 - HOWARD COUNTY, MARYLAND

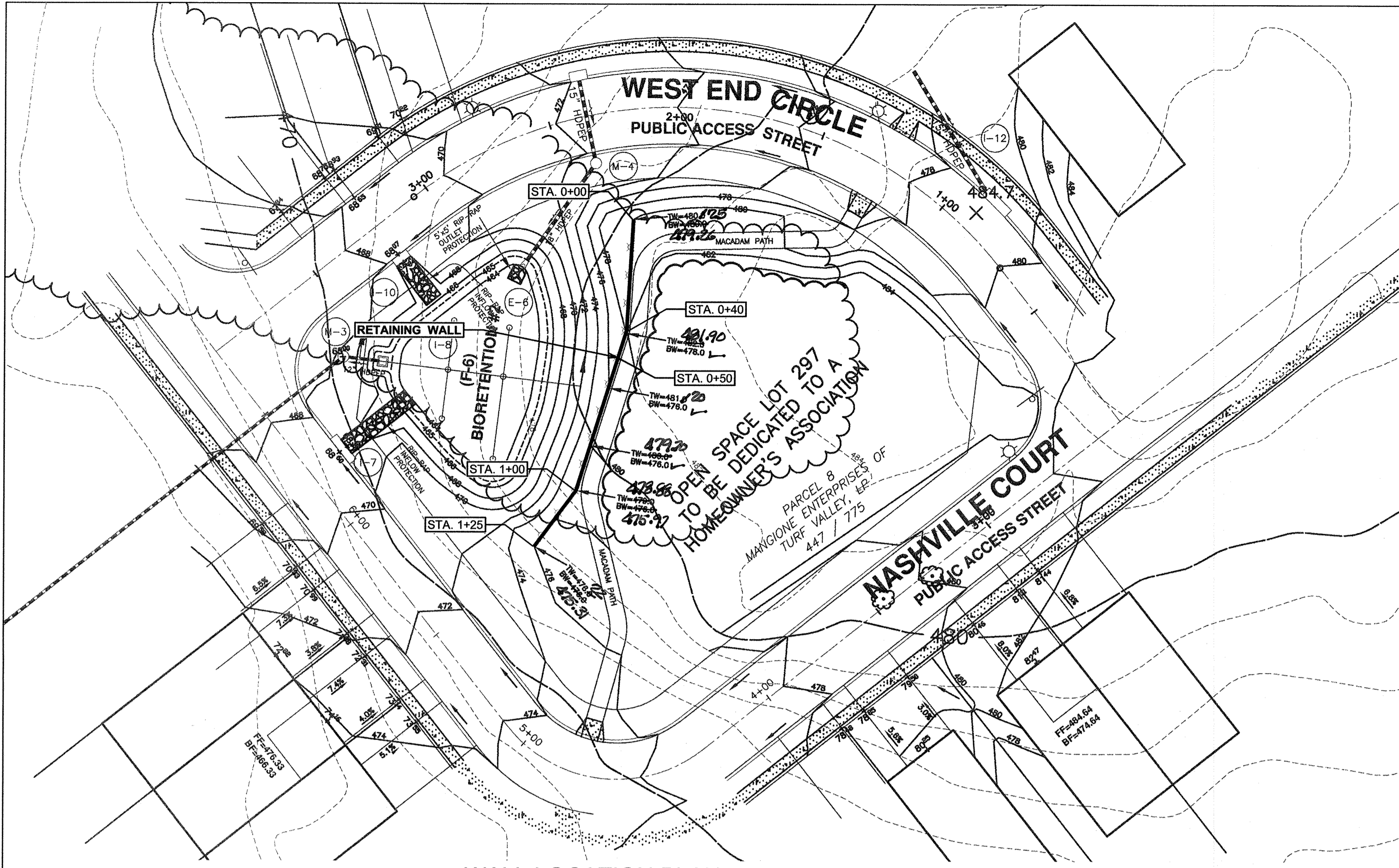
SEDIMENT & EROSION CONTROL NOTES

DATE: AUGUST, 2015 BEI PROJECT NO. 2601

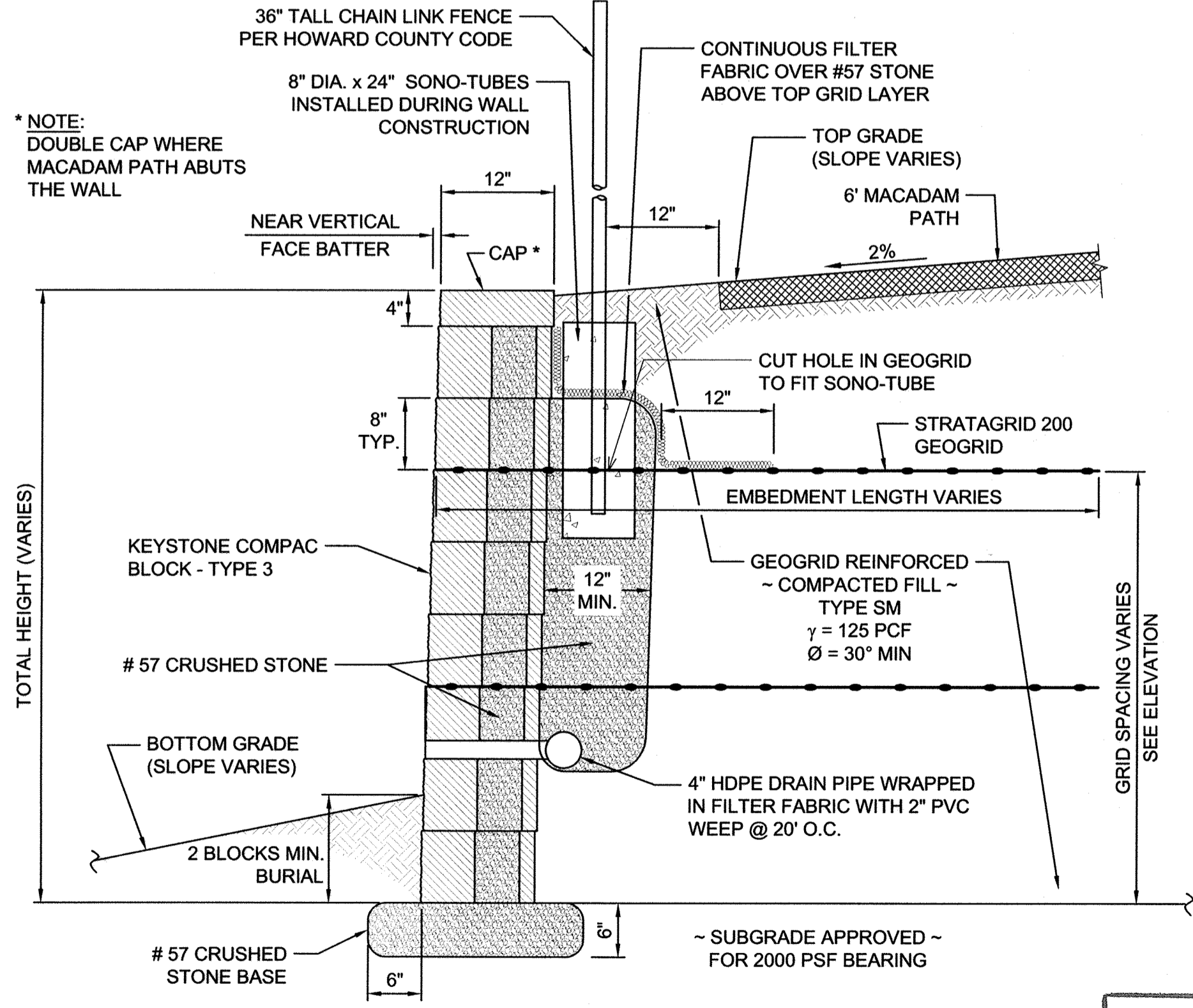
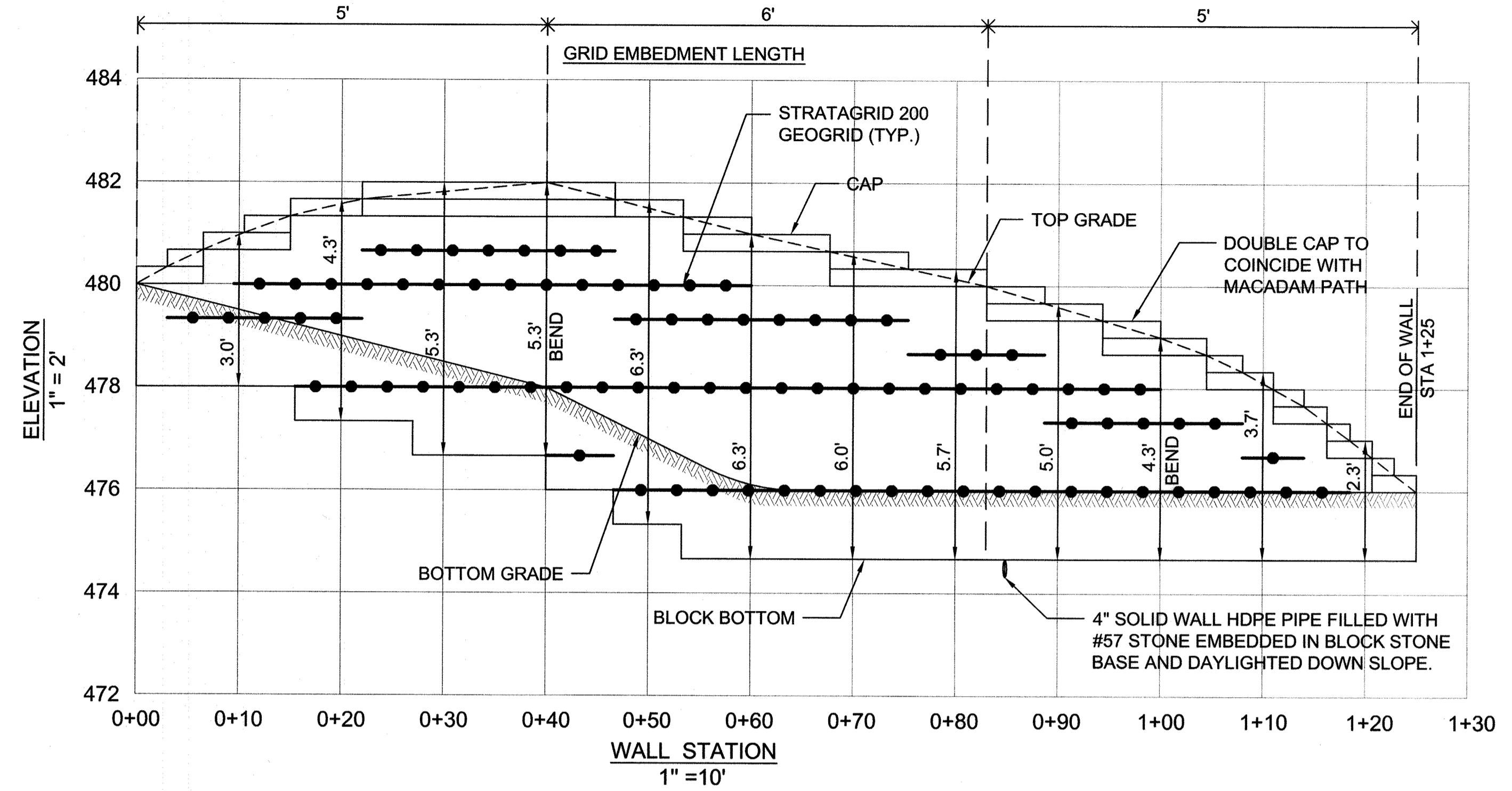
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AS-BUILT F-15-079





WALL LOCATION PLAN
1" = 30'



TYPICAL WALL SECTION
N.T.S.

GENERAL NOTES:

- No trees shall be planted within 10 feet of the top of the retaining wall.
- Retaining walls shall only be constructed under the observation of a registered professional engineer and a (NICET, WACEL, or equiv.) certified soils technician.
- The required bearing pressure beneath the wall system shall be verified in the field by a certified soils technician. Testing documentation must be provided to the Howard County Inspector prior to start of construction. The required bearing test shall be the Dynamic Cone Penetrometer test ASTM STP-399.
- The suitability of fill material shall be confirmed by the on-site soils technician. Each 8" lift must be compacted to a minimum 95% standard proctor density and the testing report shall be made available to the Howard County Inspector upon completion of construction.
- Walls shall not be constructed on uncertified fill materials.
- Walls shall not be constructed within a Howard County right-of-way or easement.

SPECIFICATIONS
MODULAR CONCRETE BLOCK RETAINING WALL

PART 1: GENERAL

- 1.01 Description**
- Work shall consist of furnishing and construction of a Modular Retaining Wall System in accordance with these specifications and in reasonably close conformity with the lines, grades, design, and dimensions shown on the plans.
 - Work includes preparing foundation soil, furnishing and installing leveling pad, unit drainage fill and backfill to the lines and grades shown on the construction drawings.
 - Work includes furnishing and installing geogrid soil reinforcement of the type, size, location, and lengths designated on the construction drawings.
- 1.02 Delivery, Storage and Handling**
- Contractor shall check all materials upon delivery to assure that the proper type, grade, color, and certification has been received.
 - Contractor shall protect all materials from damage due to job site conditions and in accordance with manufacturer's recommendations. Damaged materials shall not be incorporated into the work.

PART 2: PRODUCTS

- 2.01 Modular Concrete Retaining Wall Units**
- Modular concrete units shall conform to the following architectural requirements:
face color - color may be specified by the Owner.
face finish - sculptured rock face in angular tri-planer or flat configuration. Other face finishes will not be allowed without written approval of Owner.
bond configuration - running with bonds nominally located at midpoint vertically adjacent units, in both straight and curved alignments.
exposed surfaces of units shall be free of chips, cracks or other imperfections when viewed from a distance of 10 feet under diffused lighting.
 - Modular concrete materials shall conform to the requirements of ASTM C1372 - Standard Specifications for Segmental Retaining Wall Units.
compressive strength = 3000 psi minimum; absorption = 8% maximum (6% in northern states) for standard weight aggregates;
dimensional tolerances = ±1/8" from nominal unit dimensions not including rough split face, ±1/16"
unit height - top and bottom planes; unit size - 8" (H) x 18" (W) x 12 (D) minimum;
unit weight - 75 lbs/unit minimum for standard weight aggregates;
 - Modular concrete units shall conform to the following structural and geometric requirements measured in accordance with appropriate references:
compressive strength = 3000 psi minimum; absorption = 8% maximum (6% in northern states) for standard weight aggregates;
dimensional tolerances = ±1/8" from nominal unit dimensions not including rough split face, ±1/16"
unit height - top and bottom planes; unit size - 8" (H) x 18" (W) x 12 (D) minimum;
unit weight - 75 lbs/unit minimum for standard weight aggregates;
inter-unit shear strength - 1000 pif minimum at 2 psi normal pressure; at 2 psi normal force.

2.02 Shear Connectors

- Shear connectors shall be 1/2 inch diameter thermoset isophthalic polyester resin-protuded fiberglass reinforcement rods or equivalent to provide connection between vertically and horizontally adjacent units. Strength of shear connectors between vertical adjacent units shall be applicable over a design temperature of 10 degrees F to +100 degrees F. B. Shear connectors shall be capable of holding the geogrid in the proper design position during grid pre-tensioning and backfilling.

2.03 Base Leveling Pad Material

- A. Material shall consist of a compacted #57 crushed stone base as shown on the construction drawings.

2.04 Unit Drainage Fill

- Unit drainage fill shall consist of #57 crushed stone

2.05 Reinforced Backfill

- Reinforced backfill shall type SM, be free of debris and meet the following gradation tested in accordance with ASTM D-422 and meet other properties shown on the plan:

Sieve Size	Percent Passing
2 inch	100-75
3/4 inch	100-75
No. 40	0-60
No. 200	0-35

Plasticity Index (PI) <10 and Liquid Limit <35 per ASTM D-4318.
- Material can be site excavated soils where the above requirements can be met. Unsuitable soils for backfill (high plastic clays or organic soils) shall not be used in the reinforced soil mass.

2.06 Geogrid Soil Reinforcement

- Geosynthetic reinforcement shall consist of geogrids manufactured specifically for soil reinforcement applications and shall be manufactured from high tenacity polyester yarn.
- 2.07 Drainage Pipe**
- The drainage pipe shall be perforated corrugated HDPE pipe manufactured in accordance with ASTM D-1248.

PART 3 EXECUTION

- 3.01 Excavation**
- Contractor shall excavate to the lines and grades shown on the construction drawings. Owner's representative shall be responsible for inspecting and approving the excavation prior to placement of leveling material or fill soils.

3.02 Base Leveling Pad

- Leveling pad material shall be placed to the lines and grades shown on the construction drawings, to a minimum thickness of 6 inches and extend laterally a minimum of 6" in front and behind the modular wall unit.
- Leveling pad shall be prepared to insure full contact to the base surface of the concrete units.

3.03 Modular Unit Installation

- First course of units shall be placed on the leveling pad at the appropriate line and grade. Alignment and level shall be checked in all directions and insure that all units are in full contact with the base and properly seated.
- Place the front of units side-by-side. Do not leave gaps between adjacent units. Layout of corners and curves shall be in accordance with manufacturer's recommendations.
- Install shear/connecting devices per manufacturer's recommendations.
- Place and compact drainage fill within and behind wall units. Place and compact backfill soil behind drainage fill. Follow wall erection and drainage fill closely with structure backfill.
- Maximum stacked vertical height of wall units, prior to unit drainage fill and backfill placement and compaction, shall not exceed three courses.

3.04 Structural Geogrid Installation

- Geogrid shall be oriented with the highest strength axis perpendicular to the wall alignment.
- Geogrid reinforcement shall be placed at the strengths, lengths, and elevations shown on the construction design drawings or as directed by the Engineer.
- The geogrid shall be laid horizontally on compacted backfill and attached to the modular wall units. Place the next course of modular concrete units over the geogrid. The geogrid shall be pulled taut, and anchored prior to backfill placement on the geogrid.
- Geogrid reinforcements shall be continuous throughout their embedment lengths and placed side-by-side to provide 100% coverage at each level. Spliced connections between shorter pieces of geogrid or gaps between adjacent pieces of geogrid are not permitted.

3.05 Reinforced Backfill Placement

- Reinforced backfill shall be placed, spread, and compacted in such a manner that minimizes the development of slack in the geogrid and installation damage.
- Reinforced backfill shall be placed and compacted in lifts not to exceed 6 inches where hand compaction is used, or 8 - 10 inches where heavy compaction equipment is used. Lift thickness shall be decreased to achieve the required density as required.
- Reinforced backfill shall be compacted to 95% of the maximum density as determined by ASTM D698. The moisture content of the backfill material prior to and during compaction shall be uniformly distributed throughout each layer and shall be + 3% to - 3% of optimum.
- Only lightweight hand-operated equipment shall be allowed

- Tracked construction equipment shall not be operated directly upon the geogrid reinforcement. A minimum fill thickness of 6 inches is required prior to operation of tracked vehicles over the geogrid. Tracked vehicle turning should be kept to a minimum to prevent tracks from displacing the fill and damaging the geogrid.
 - Rubber tired equipment may pass over geogrid reinforcement at slow speeds, less than 10 MPH. Sudden braking and sharp turning shall be avoided.
 - At the end of each day's operation, the Contractor shall slope the last lift of reinforced backfill away from the wall units to direct runoff away from wall face. The Contractor shall not allow surface runoff from adjacent areas to enter the wall construction site.
- 3.06 Cap Installation**
- Cap units shall be glued to underlying units with an all-weather adhesive recommended by the manufacturer.
- 3.07 Field Quality Control**
- The Owner shall engage inspection and testing services, including independent laboratories, to provide quality assurance and testing services during construction.
 - As a minimum, quality assurance testing should include foundation soil inspection, soil and backfill testing, verification of design parameters, and observation of construction for general compliance with design drawings and specifications.

NO.	DATE	REVISION

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. 14452, Expiration Date: 9/30/17.

HILLIS-CARNES ENGINEERING ASSOCIATES
10975 Guilford Road, Suite A Annapolis Junction, Maryland (410) 880-4788 WWW.HCEA.COM Fax: (410) 880-4088

OWNER: MANGIONE ENTERPRISES OF TURF VALLEY, LIMITED PARTNERSHIP 1205 YORK ROAD, PENTHOUSE LUTHERVILLE, MARYLAND 21093 410-825-8400

DEVELOPER: MANGIONE ENTERPRISES OF TURF VALLEY, LIMITED PARTNERSHIP 1205 YORK ROAD, PENTHOUSE LUTHERVILLE, MARYLAND 21093 410-825-8400

VILLAGES AT TURF VALLEY PHASE 5
LOTS 261 thru 299; OPEN SPACE LOTS 298 thru 299; AND BULK PARCEL GG

TAX MAP: 16 - GRID: 10 - PARCEL: P08 ZONED: PGCC (MULTI-USE SUBDISTRICT) ELECTION DISTRICT NO. 3 - HOWARD COUNTY, MARYLAND

RETAINING WALL PLAN, PROFILE AND DETAILS

DATE: AUGUST, 2015 HCEA PROJECT NO. 14452-A
SCALE: AS SHOWN SHEET 18 OF 18

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division 9-10-15 DATE

Chief, Division of Land Development 9-16-15 DATE

Director DNE



AS-BUILT CERTIFICATION
I hereby certify, by my seal, that to the best of my knowledge and belief the facilities shown on this "AS-BUILT" Plan meet the Approved Plans and Specifications

Donald Mason, P.E. Date: 11/19/19