

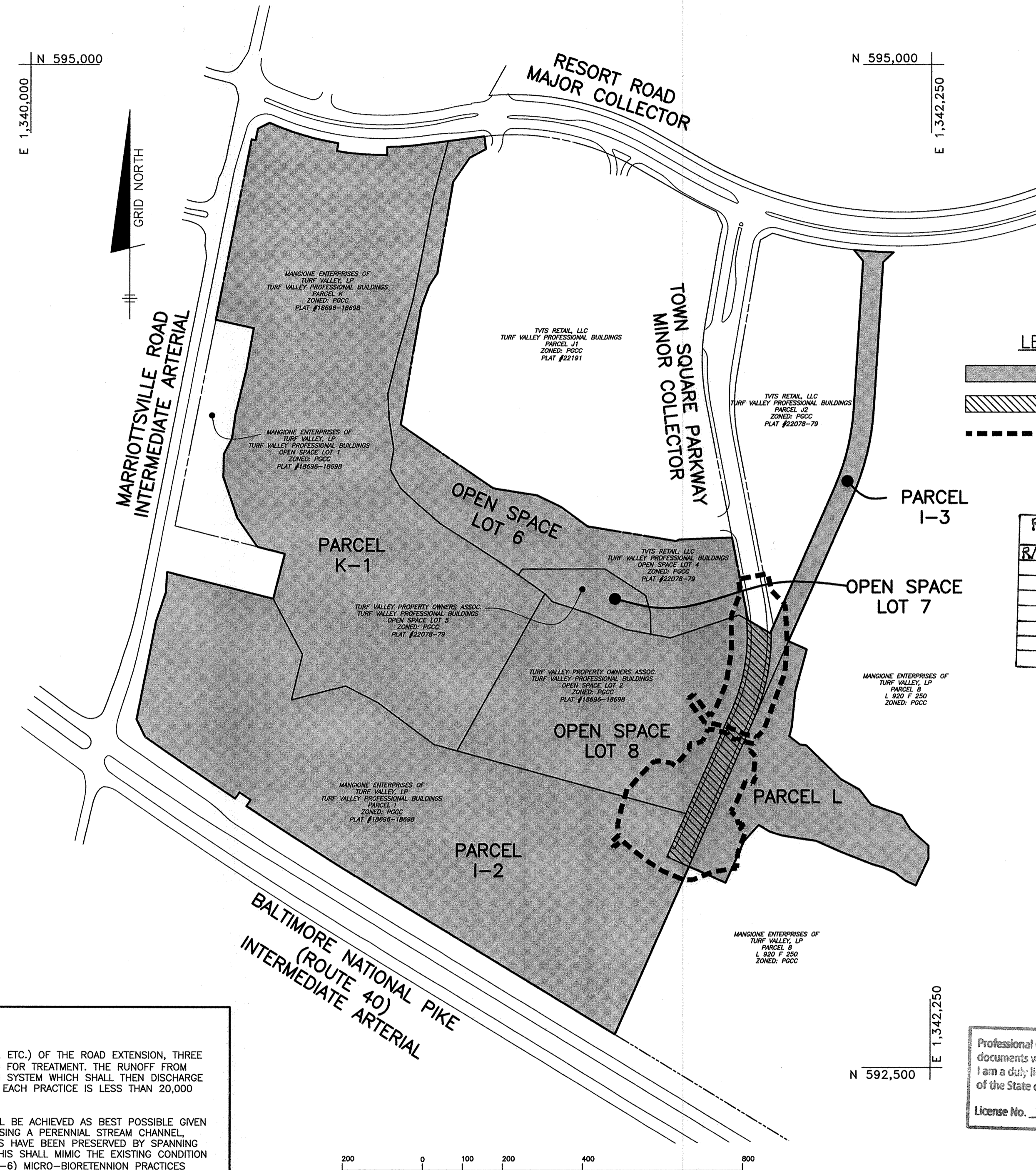
GENERAL NOTES

- ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY PLUS MSHA STANDARDS AND SPECIFICATIONS, IF APPLICABLE.
- BOUNDARY IS BASED ON A FIELD RUN MONUMENTED SUBURBAN BOUNDARY SURVEY PERFORMED BY JOHN A. MILDBERG IN MARCH, 2006.
- THE SUBJECT PROPERTY IS ZONED PGCC PER THE 10-6-2013 COMPREHENSIVE ZONING PLAN.
- THE EXISTING TOPOGRAPHY SHOWN ONSITE IS BASED ON AN AERIAL TOPOGRAPHIC SURVEY PERFORMED BY WINGS AERIAL MAPPING CO., INC. FLOWN ON OR ABOUT JANUARY, 2006.
- THE COORDINATES SHOWN HEREON ARE BASED UPON THE HOWARD COUNTY GEODETIC CONTROL WHICH IS BASED UPON THE MARYLAND STATE PLANE COORDINATE SYSTEM. HOWARD COUNTY MONUMENT NOS. 16E1 AND 0012 WERE USED FOR THIS PROJECT.
- WATER IS PUBLIC. THE CONTRACT NUMBER IS 24-4891-D. THE DRAINAGE AREA IS LITTLE PATUXENT.
- SEWER IS PUBLIC. THE CONTRACT NUMBER IS 24-4891-D. THE DRAINAGE AREA IS LITTLE PATUXENT.
- STORMWATER MANAGEMENT IS PROVIDED BY THREE (M-6) MICRO-BIORETENTION PRACTICES. THESE PRACTICES SHALL BE PRIVATELY OWNED AND JOINTLY MAINTAINED.
- EXISTING UTILITIES SHOWN ARE BASED ON CONTRACT DRAWINGS, AERIAL AND FIELD SURVEYED LOCATIONS.
- THE FLOODPLAIN STUDY FOR THIS PROJECT WAS PREPARED BY BENCHMARK ENGINEERING, INC. AND APPROVED BY DPZ ON MAY 14, 2015.
- A NOISE STUDY IS NOT REQUIRED FOR THIS PROJECT SINCE NO RESIDENTIAL LOTS/UNITS ARE PROPOSED.
- A GEOTECHNICAL REPORT WAS PREPARED BY HILLIS-CARNE ENGINEERING ASSOCIATES, INC. IN MARCH, 2014.
- A TRAFFIC STUDY IS NOT NEEDED FOR THIS PROJECT AS IT CREATES NO NEW (ADDITIONAL) LOTS.
- TO THE BEST OF OUR KNOWLEDGE, THERE ARE NO BURIAL GROUNDS, CEMETERIES OR HISTORIC STRUCTURES LOCATED ON THIS SITE.
- THERE ARE NO EXISTING STRUCTURES LOCATED ON-SITE.
- THE GRADING, REMOVAL OF VEGETATIVE COVER OR TREES, PAVING AND NEW STRUCTURES WITHIN THE WETLANDS, STREAMS, THEIR REQUIRED BUFFERS, 100-YR FLOODPLAIN OR 25% OR GREATER SLOPES WITH MORE THAN 20,000 SF OF CONTIGUOUS AREA WAS DEEMED "NECESSARY" BY THE DEPARTMENT OF PLANNING AND ZONING. THE MDE PERMIT IS #02-NI-009/200261464.
- THIS PROJECT IS LOCATED WITHIN THE METROPOLITAN DISTRICT.
- LANDSCAPING FOR THIS SUBDIVISION IS PROVIDED IN ACCORDANCE WITH A CERTIFIED LANDSCAPE PLAN INCLUDED WITH THIS ROAD CONSTRUCTION PLAN SET IN ACCORDANCE WITH SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL. FINANCIAL SURETY FOR THE REQUIRED STREET TREES SHALL BE POSTED AS A PART OF THE DPW DEVELOPER'S AGREEMENT.
- THIS PROJECT IS EXEMPT FROM HOWARD COUNTY FOREST CONSERVATION REQUIREMENTS UNDER SECTION 16.1202(b)(1)(v) OF THE 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.
- THE FOREST CONSERVATION EASEMENTS HAVE BEEN ESTABLISHED TO CREATE A FOREST MITIGATION BANK. NO CLEARING, GRADING OR CONSTRUCTION IS PERMITTED WITHIN THE FOREST CONSERVATION EASEMENTS; HOWEVER, FOREST MANAGEMENT PRACTICES AS DEFINED IN THE DEED OF FOREST CONSERVATION EASEMENT IS ALLOWED.
- 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.
- TRAFFIC CONTROL DEVICES:
 - THE "T" SIGN AND STREET NAME SIGN (SNS) ASSEMBLY FOR THIS DEVELOPMENT MUST BE INSTALLED BEFORE THE BASE PAVING IS COMPLETED.
 - 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.
 - 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).
 - 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 (12 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.
- THIS SUBDIVISION IS SUBJECT TO SECTION 16.122B OF THE HOWARD COUNTY CODE. PUBLIC WATER AND/OR SEWER SERVICE HAS BEEN GRANTED UNDER THE TERMS AND PROVISIONS, THEREOF, EFFECTIVE TBD, ON WHICH DATE DEVELOPER AGREEMENT #24-4551-D WAS FILED AND ACCEPTED.
- WP-14-063, A WAIVER PETITION TO SECTION 16.102(d)(1)(i) AND 16.144(g) WHICH REQUIRES A SUBMISSION OF A PRELIMINARY PLAN WAS APPROVED ON JANUARY 8, 2014 WITH THE FOLLOWING CONDITIONS:
 - PETITIONER SHALL SUBMIT A FINAL PLAN FOR THE PROJECT IN ACCORDANCE WITH SECTION 16.147 OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS.
 - PETITIONER SHALL ENSURE THAT THE PROJECT COMPLIES WITH THE REQUIREMENTS OF SECTION 16.129 OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS, AS APPLICABLE.
 - PETITIONER SHALL OBTAIN SIGNATURE APPROVAL OF ECP-14-036 PRIOR TO SUBMISSION OF FINAL PLANS.
 - PETITIONER SHALL SUBMIT AN ENVIRONMENTAL CONCEPT PLAN ADDRESSING ALL STORMWATER MANAGEMENT NEEDS FOR THE ROAD EXTENSION.
 - PETITIONER SHALL SUBMIT A PRELIMINARY ROAD PROFILE WITH THE ENVIRONMENTAL CONCEPT PLAN INDICATING THAT THE ROAD CAN BE CONSTRUCTED TO COUNTY STANDARDS.
 - PETITIONER SHALL INDICATE ON THE ENVIRONMENTAL CONCEPT PLAN THAT THE ROAD CAN BE EXTENDED AT LEAST 400 FEET IN THE FUTURE.
- THE PROJECT SHALL COMPLY WITH THE REQUIREMENTS OF SECTION 16.129 OF THE HOWARD COUNTY CODE.
- PROPERTIES DEPICTED ON THESE PLANS ARE ZONED "PGCC" UNLESS OTHERWISE NOTED.
- THE ARTICLES OF INCORPORATION FOR THE HOMEOWNERS ASSOCIATION WAS ACCEPTED BY THE STATE DEPARTMENT OF ASSESSMENT AND TAXATION ON 10/10/13. SEE RECORDED PLAT FOR INFORMATION.
- ALL FILL AREAS SHALL BE AT 95% COMPACTION IN ACCORDANCE WITH AASHTO T-180 STANDARDS.
- THE APPLICATION FOR THE CONDITIONAL LETTER OF MAP REVISION (CLOMR) WAS ACCEPTED BY FEMA ON JANUARY 27, 2015 (CASE #15-03-0875R). APPROVAL OF THE CLOMR SHALL BE RECEIVED PRIOR TO SIGNATURE APPROVAL OF THE RECORD PLAT.
- THE WETLANDS DELINEATION FOR THIS PROJECT WAS PREPARED BY EXPLORATION RESEARCH FOR S-86-013. THE WETLANDS WERE VERIFIED BY ECO-SCIENCE PROFESSIONALS, INC. IN JUNE 2002 AND APRIL 2004.

TURF VALLEY

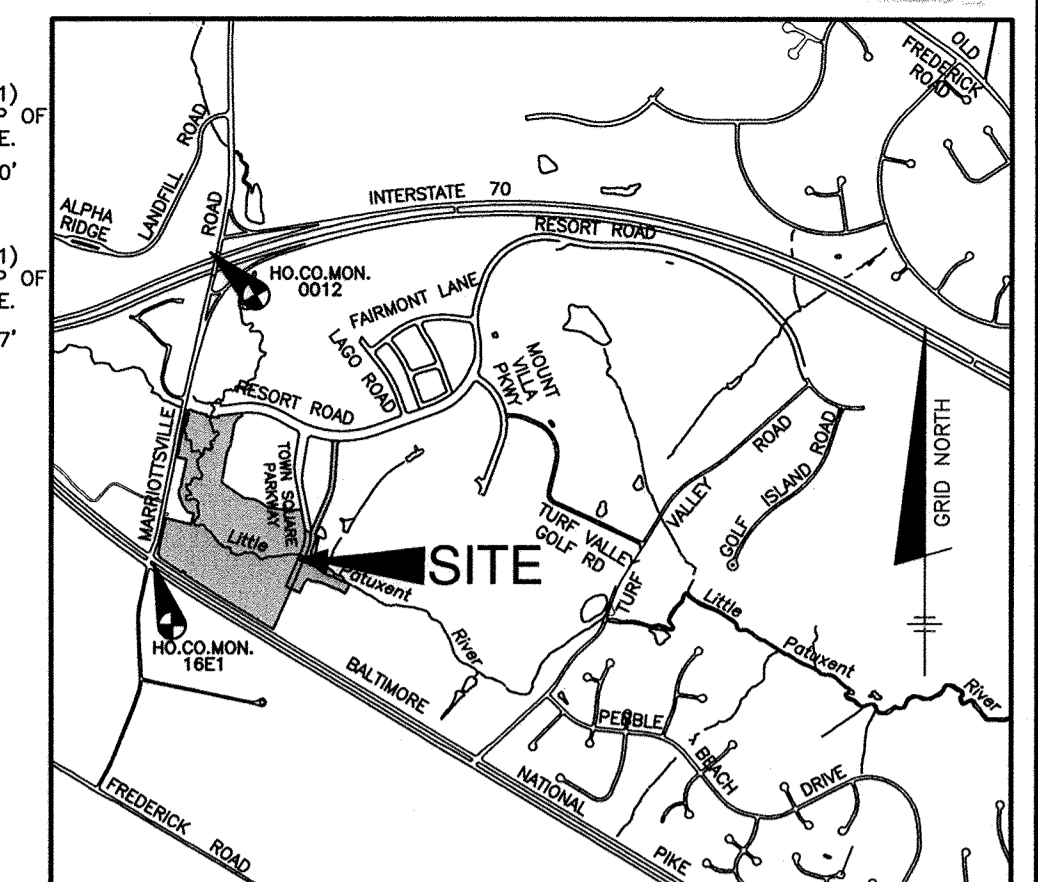
TOWN SQUARE PARKWAY EXTENSION

ROAD, STORMWATER MANAGEMENT AND STORM DRAIN CONSTRUCTION PLANS



AS-BUILT NOTES:

- HORIZONTAL DATUM FOR THIS AS-BUILT IS BASED ON THE MARYLAND STATE REFERENCE SYSTEM NAD 83/ ADI 07 AS PROJECTED FROM HO. CO. GEODETIC CONTROL STATIONS K61 AND 0012. VERTICAL DATUM FOR THIS AS-BUILT IS NORTH AMERICAN VERTICAL DATUM NGVD 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.



BENCHMARK
 NAD 83 HORIZONTAL
 HO. CO. #18E1 (AKA: 3438001)
 STAMPED BRASS DISK SET ON TOP OF
 A 3" DEEP COLUMN OF CONCRETE.
 N 593250.960' E 1340192.70'
 ELEVATION: 463.981'

HO. CO. #0012 (AKA: 3438001)
 STAMPED BRASS DISK SET ON TOP OF
 A 3" DEEP COLUMN OF CONCRETE.
 N 596502.760' E 1340864.37'
 ELEVATION: 486.298'

SHEET INDEX	
SHEET	TITLE
1	TITLE SHEET
2	ROAD PLAN, PROFILE AND DETAILS
3	STRIPING, SIGNAGE & STREET LIGHTING PLAN
4	STORM DRAIN DRAINAGE AREA MAP AND FLOODPLAIN
5	STORM DRAIN PROFILES AND DETAILS
6	ESD STORMWATER MANAGEMENT NOTES AND DETAILS
7	LANDSCAPE PLAN
8	FOREST MITIGATION BANK PLAN
9	FOREST MITIGATION BANK NOTES, CHARTS & DETAILS
10	GRADING, SEDIMENT & EROSION CONTROL PLAN
11	SEDIMENT & EROSION CONTROL NOTES AND SEQUENCE OF CONSTRUCTION
12	SEDIMENT & EROSION CONTROL DETAILS AND SOIL BORING LOGS
13	TEMPORARY STREAM CROSSING DETAILS FOR SEWER CONNECTION
14-24	CON-SPAN BRIDGE DRAWINGS

RIGHT OF WAY ELEVATION CHART NAD 83

R/W PT NO	DESCRIPTION	ELEVATION
0084	REBAR 8 CAP	441.87'
0085	REBAR 8 CAP	441.53'
0086	REBAR 8 CAP	430.67'
10008	REBAR 8 CAP	438.11'
10009	REBAR 8 CAP	438.10'
162	REBAR 8 CAP	449.38'
10011	REBAR 8 CAP	449.46'

SITE ANALYSIS DATA CHART

GENERAL SITE DATA

- PRESENT ZONING: PGCC
- APPLICABLE DPZ FILE REFERENCES: S-86-13, S-03-01, F-02-074, SDP-10-027, WP-14-063
- PROPOSED USE OF SITE: N/A
- PROPOSED WATER AND SEWER SYSTEMS: PUBLIC

AREA TABULATION

- GROSS TRACT AREA: 45.77 AC.±
- AREA WITHIN 100-YEAR FLOODPLAIN: 22.28 AC.±
- TOTAL AREA OF 25% OR GREATER STEEP SLOPES: 0.00 AC.±
 AREA NOT IN FLOODPLAIN (FOR NTA CALC): 0.00 AC.±
- NET TRACT AREA: 23.49 AC.±
- TOTAL NUMBER OF LOTS ALLOWED PER ZONING: N/A
- TOTAL NUMBER OF RESIDENTIAL UNITS/LOTS PROPOSED ON THIS SUBMISSION: 0
- AREA OF BUILDABLE LOTS: 0.00± AC.
 AREA OF OPEN SPACE LOTS: 10.53± AC.
 AREA OF BUILDABLE BULK PARCELS: 34.38± AC.
 AREA OF PUBLIC RIGHT-OF-WAY: 0.86± AC.

DESIGN NARRATIVE:

FOR THE IMPERVIOUS AREAS (ROADWAY PAVEMENT, SIDEWALKS, ETC.) OF THE ROAD EXTENSION, THREE (M-6) MICRO-BIORETENTION PRACTICES ARE BEING PROPOSED FOR TREATMENT. THE RUNOFF FROM THE IMPERVIOUS AREAS WILL DISCHARGE INTO A STORM DRAIN SYSTEM WHICH SHALL THEN DISCHARGE THE RUNOFF INTO THESE PRACTICES. THE DRAINAGE AREA TO EACH PRACTICE IS LESS THAN 20,000 SF.

NATURAL RESOURCE PROTECTION AND/OR ENHANCEMENT SHALL BE ACHIEVED AS BEST POSSIBLE GIVEN THAT THE PROPOSED IMPROVEMENTS NECESSITATES THE CROSSING A PERENNIAL STREAM CHANNEL, WETLANDS AND 100-YR FLOODPLAIN. NATURAL FLOW PATTERNS HAVE BEEN PRESERVED BY SPANNING THE STREAM CHANNEL WITH A BOTTOMLESS ARCH CULVERT. THIS SHALL MIMIC THE EXISTING CONDITION OF FLOW TOWARDS THE EASTERN SIDE OF THE ROAD. THE (M-6) MICRO-BIORETENTION PRACTICES SHALL BE LOCATED OUTSIDE ANY ENVIRONMENTAL AREA AND THE UNDERDRAIN PIPES SHALL DISCHARGE OUTSIDE THESE AREAS AS WELL.

SEDIMENT AND EROSION CONTROL SHALL MAINLY CONSIST OF A DOUBLE ROW OF SUPER SILT FENCE AROUND THE PERIMETER EDGE. CLEAN WATER DIVERSION DICES SHALL DIVERT THE RUNOFF AROUND THE PROJECT DURING CONSTRUCTION. THERE IS NO IMPACT TO THE SWM DESIGN BASED ON THE SEDIMENT CONTROL IMPLEMENTATION.

AS A RESULT OF UTILIZING ENVIRONMENTAL SITE DESIGN (ESD) TO MAXIMUM EXTENT PRACTICAL (MEP), STORM WATER MANAGEMENT HAS BEEN ADEQUATELY ADDRESSED WITHOUT THE NEED FOR STRUCTURAL PRACTICES.

ESD STORMWATER MANAGEMENT SUMMARY TABLE

Practice	Per	inches	Qe= 0.51			ESDv= 5446			Rv= 0.32			Ownership
			DA to practice	Imp Area to practice	Required	Provided	2% DA?	Required	Provided	Pe Provided	Required	
(M-6) MicroBioretention	#1	16.822	14.029	336	1750	PASS	1796	2591	1.6			PUBLIC
(M-6) MicroBioretention	#2	11.520	8.867	230	1036	PASS	1141	1648	1.6			PUBLIC
(M-6) MicroBioretention	#3	17.392	12.174	348	2125	PASS	1577	3189	1.6			PUBLIC
Total Treated			45.734	35.070	915	4.911	5,446	7,529	2.2	531	638	
Site Total			127.631	35.070								

APPROVED: DEPARTMENT OF PUBLIC WORKS

 CHIEF, BUREAU OF HIGHWAYS
 DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING

 CHIEF, DIVISION OF LAND DEVELOPMENT
 DATE

CHIEF, DEVELOPMENT ENGINEERING DIVISION
 DATE

AS-BUILT 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
 Donald Mason, P.E.
 Date: 6/12/19

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.

BENCHMARK ENGINEERING, INC.
 ENGINEERS & LAND SURVEYORS & PLANNERS
 6480 BALTIMORE NATIONAL PIKE & SUITE 315 • ELlicOTT CITY, MARYLAND 21043
 (P) 410-485-6105 (F) 410-485-6644
 WWW.BEI-CIVILENGINEERING.COM

TOWN SQUARE PARKWAY
 PARCELS 1-2, 1-3, K-1, & L AND OPEN SPACE LOTS 6 thru 8
 A RESUBDIVISION OF OPEN SPACE LOT 2 AND PARCELS K & L PREVIOUSLY RECORDED AS PLAT 18096-18098, OPEN SPACE LOTS 4 & 5 PREVIOUSLY RECORDED AS PLAT 22078-22079, AND PART OF UNRECORDED PARCEL 8

ROAD CONSTRUCTION PLAN TITLE SHEET

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

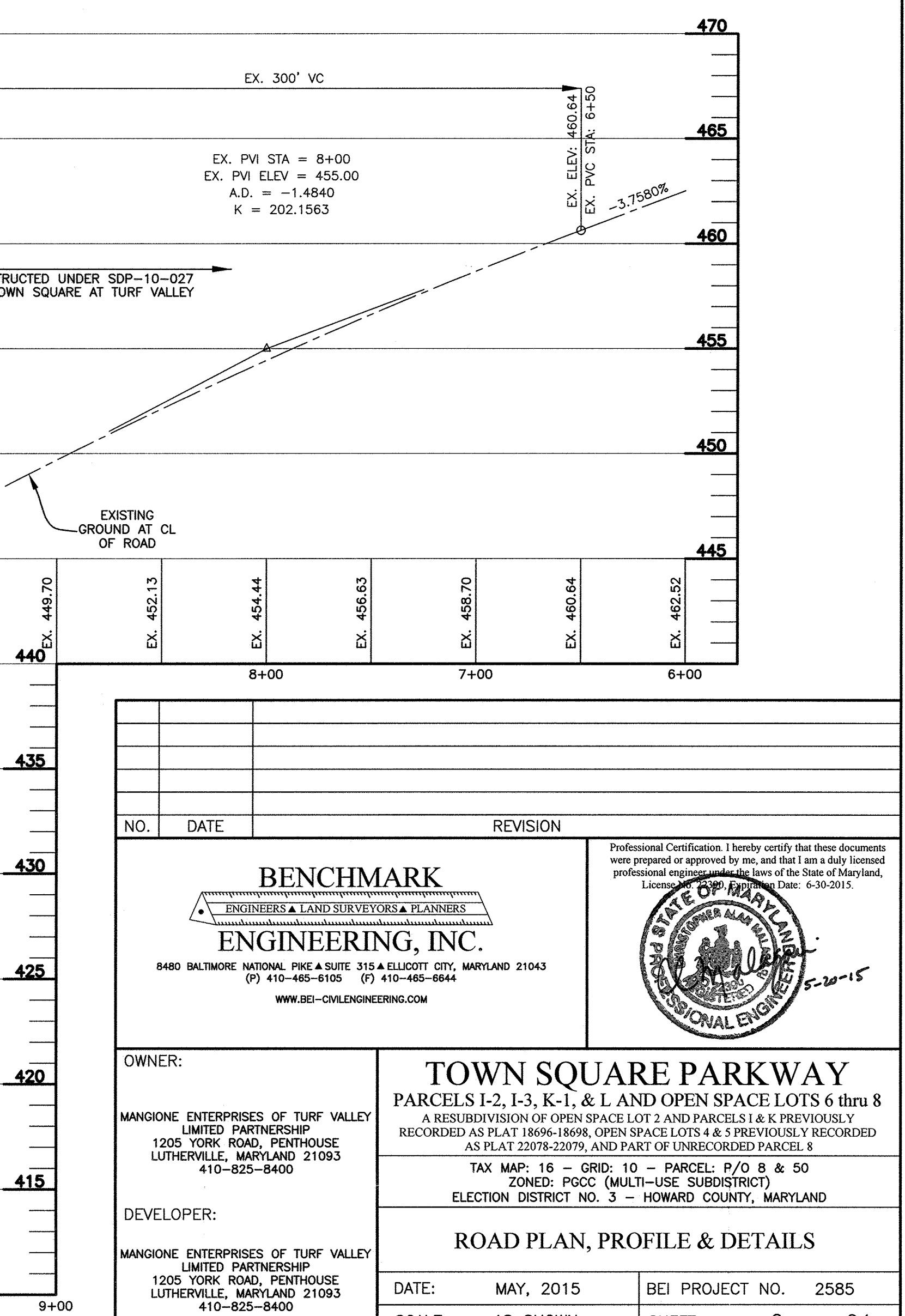
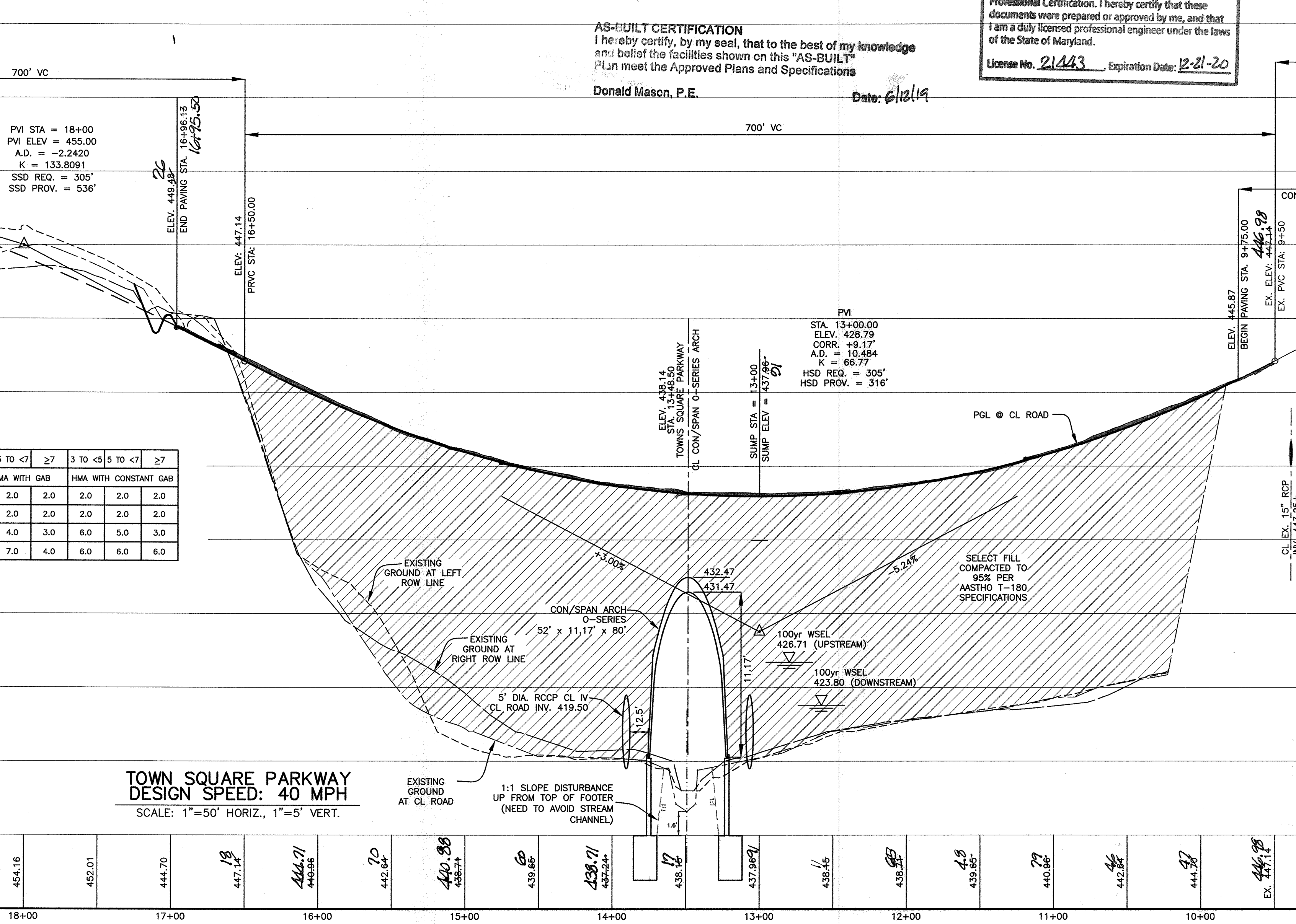
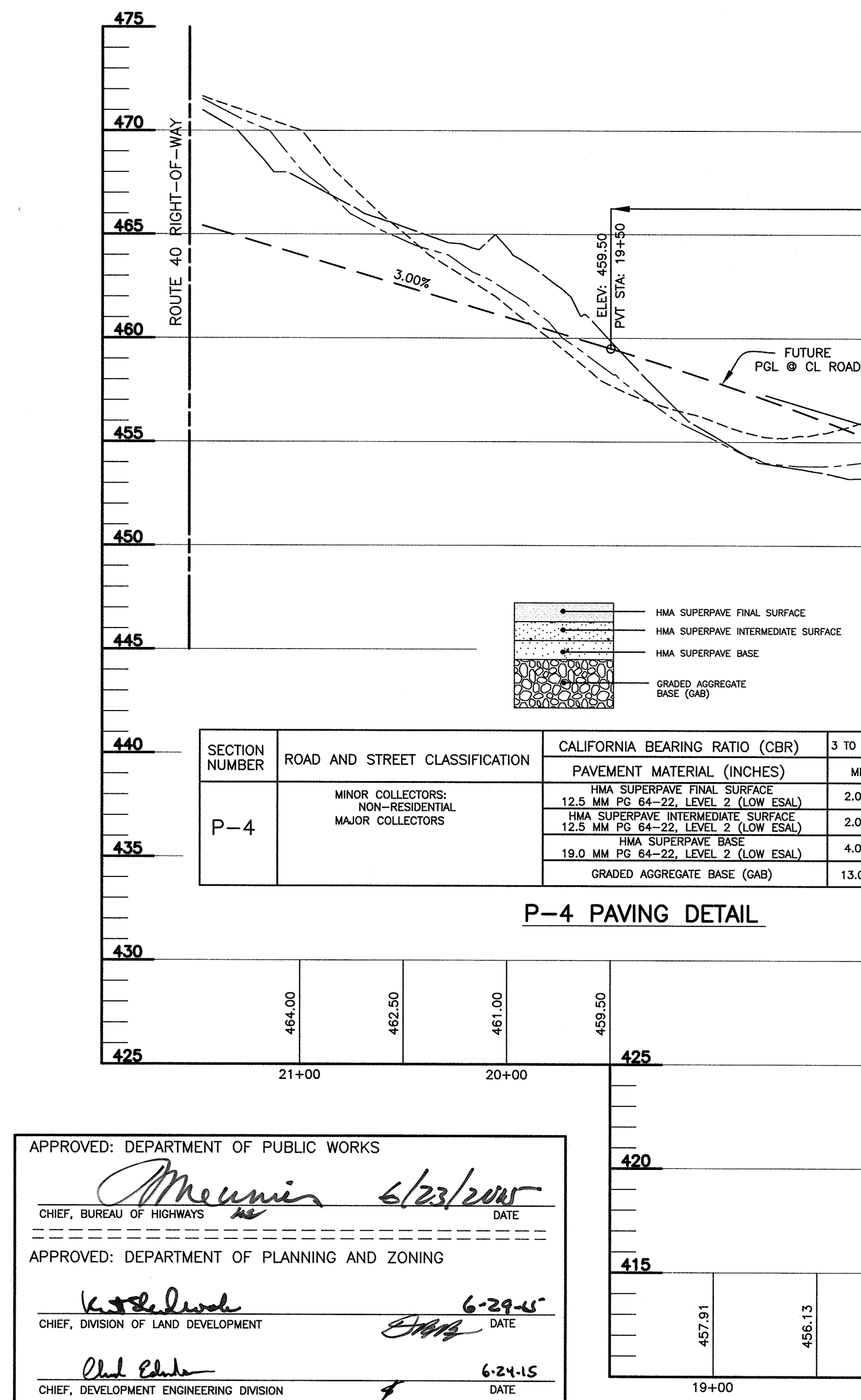
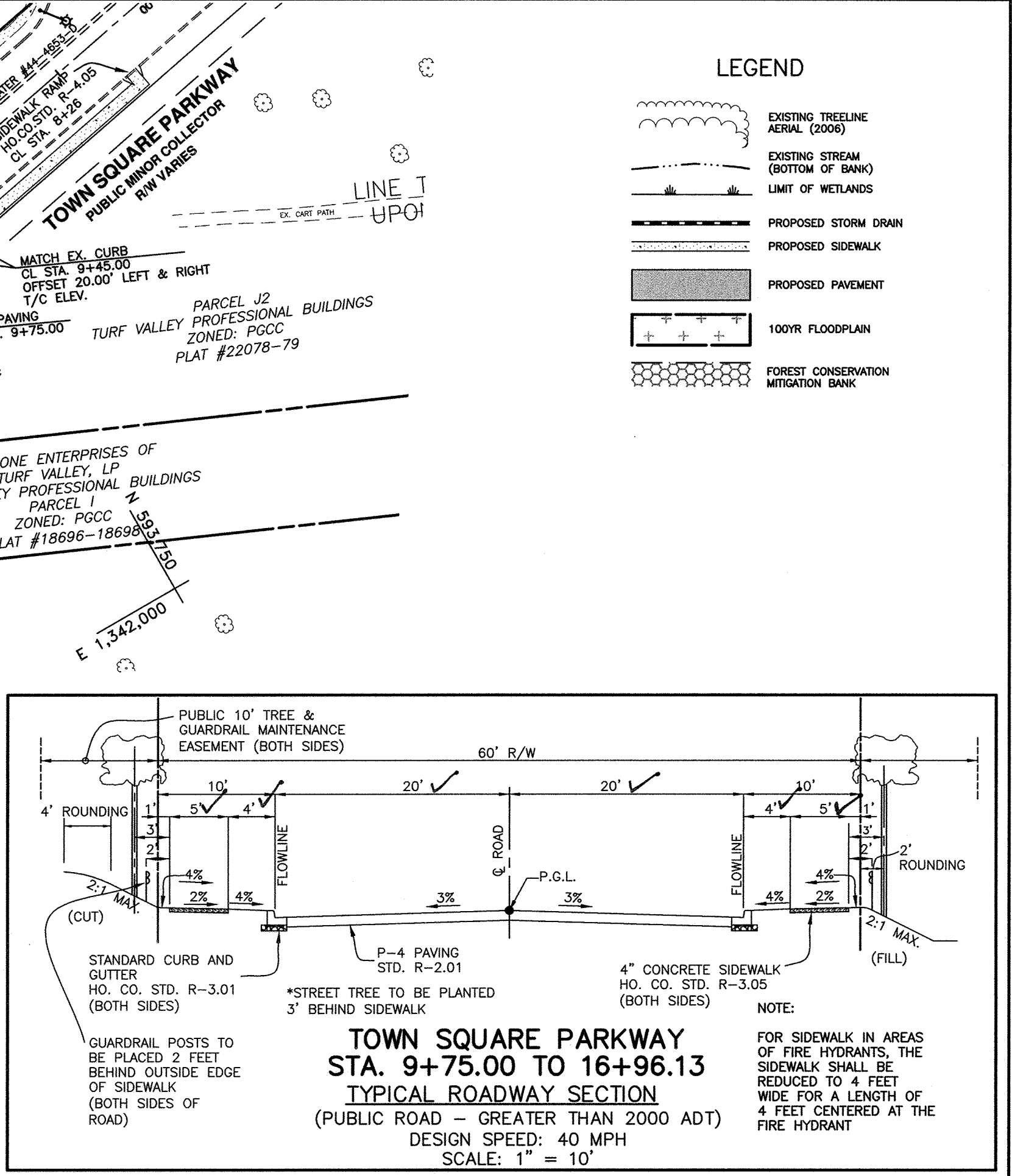
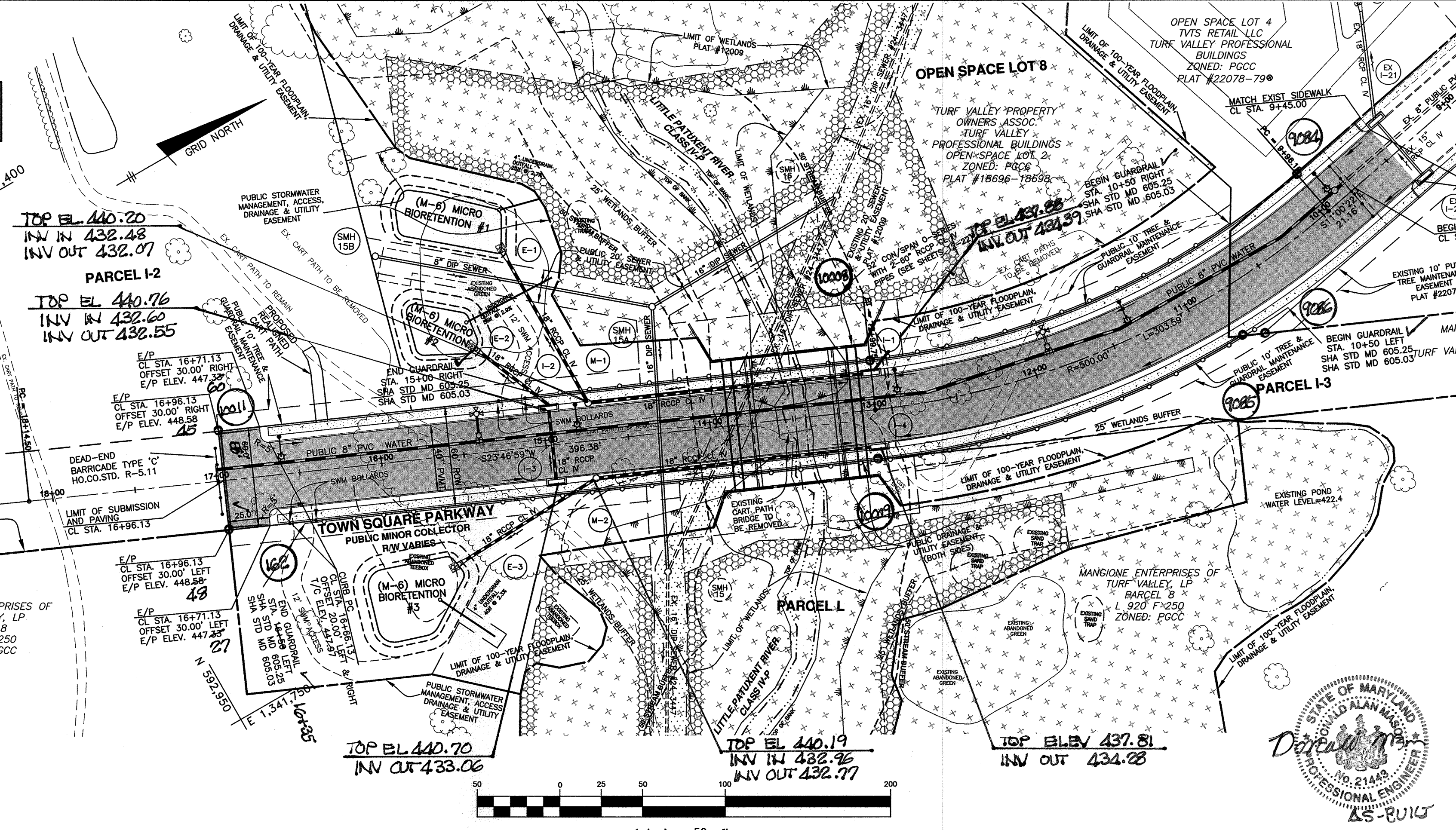
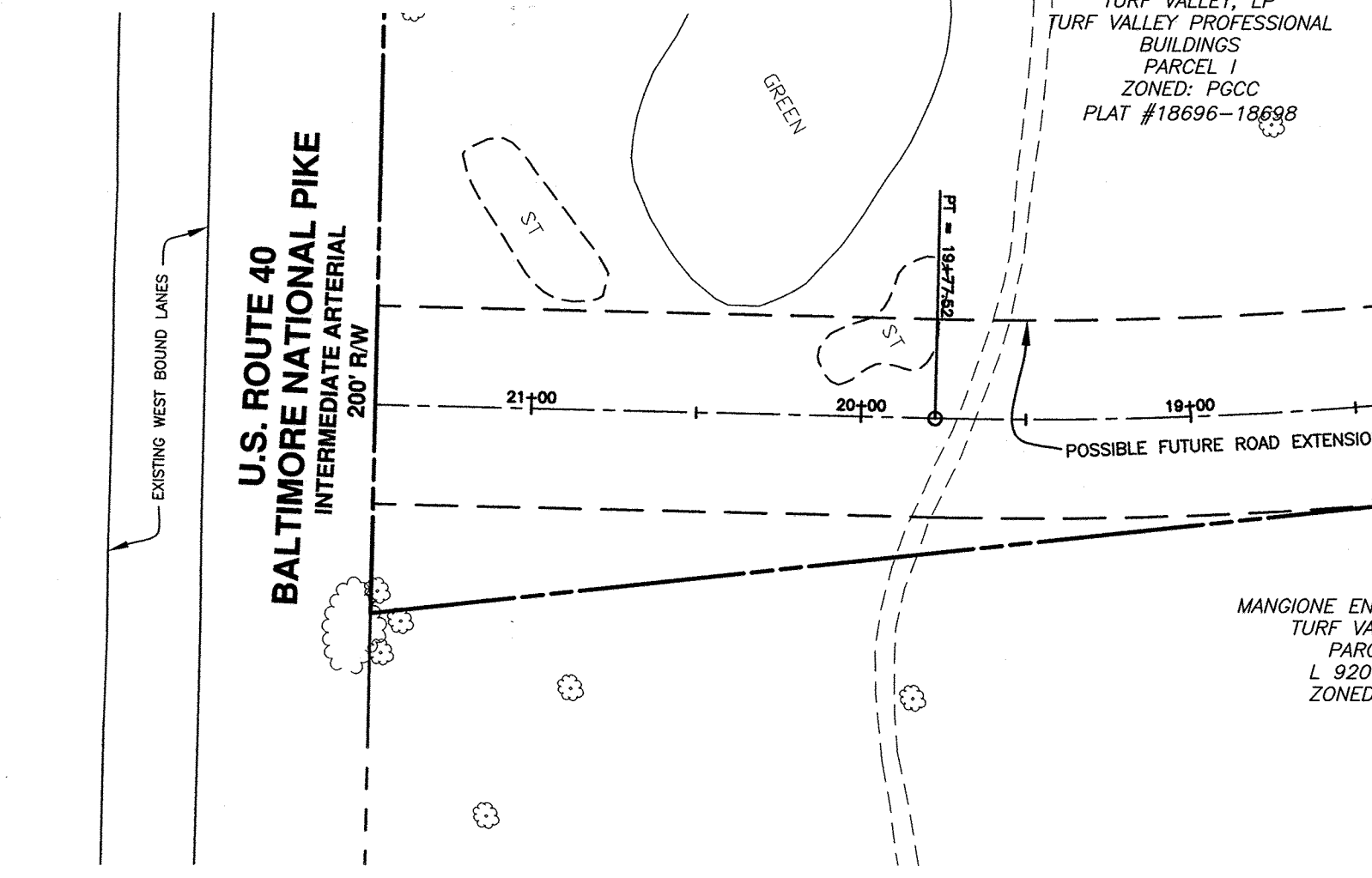
DEVELOPER: MANGIONE ENTERPRISES OF TURF VALLEY LIMITED PARTNERSHIP
 1205 YORK ROAD, PENTHOUSE LUTHERVILLE, MARYLAND 21093
 410-825-8400

DATE: MAY, 2015
 SCALE: AS SHOWN
 SHEET 1 OF 24
 BEI PROJECT NO. 2585

ROAD CHART				
ROAD	LIMITS	CLASSIFICATION	DESIGN SPEED	PVMT TYPE
TOWN SQUARE PARKWAY	9+75.00+ TO 16+96.13	PUBLIC MINOR COLLECTOR	40 MPH	P-4

CENTER LINE CURVE DATA						
CURVE	STATION	RADIUS	ARC	DELTA	TANGENT	CHORD
1	9+96.16 TO 12+99.75	500.00'	303.59'	34°47'20"	156.64'	S06°23'19"W 298.95'

CENTER CONTROL DATA			
STATION	NORTHING	EASTING	
9+75.00	593693.7386	1341808.7668	
9+96.16	593672.9721	1341812.8057	
12+99.75	593375.8790	1341779.5417	
16+96.13	593013.1608	1341619.6923	



APPROVED: DEPARTMENT OF PUBLIC WORKS
 CHIEF, BUREAU OF HIGHWAYS
 DATE: 6/23/2015

APPROVED: DEPARTMENT OF PLANNING AND ZONING
 CHIEF, DIVISION OF LAND DEVELOPMENT
 DATE: 6-29-15

CHIEF, DEVELOPMENT ENGINEERING DIVISION
 DATE: 6-24-15

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: 6/12/19

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: 12-31-20

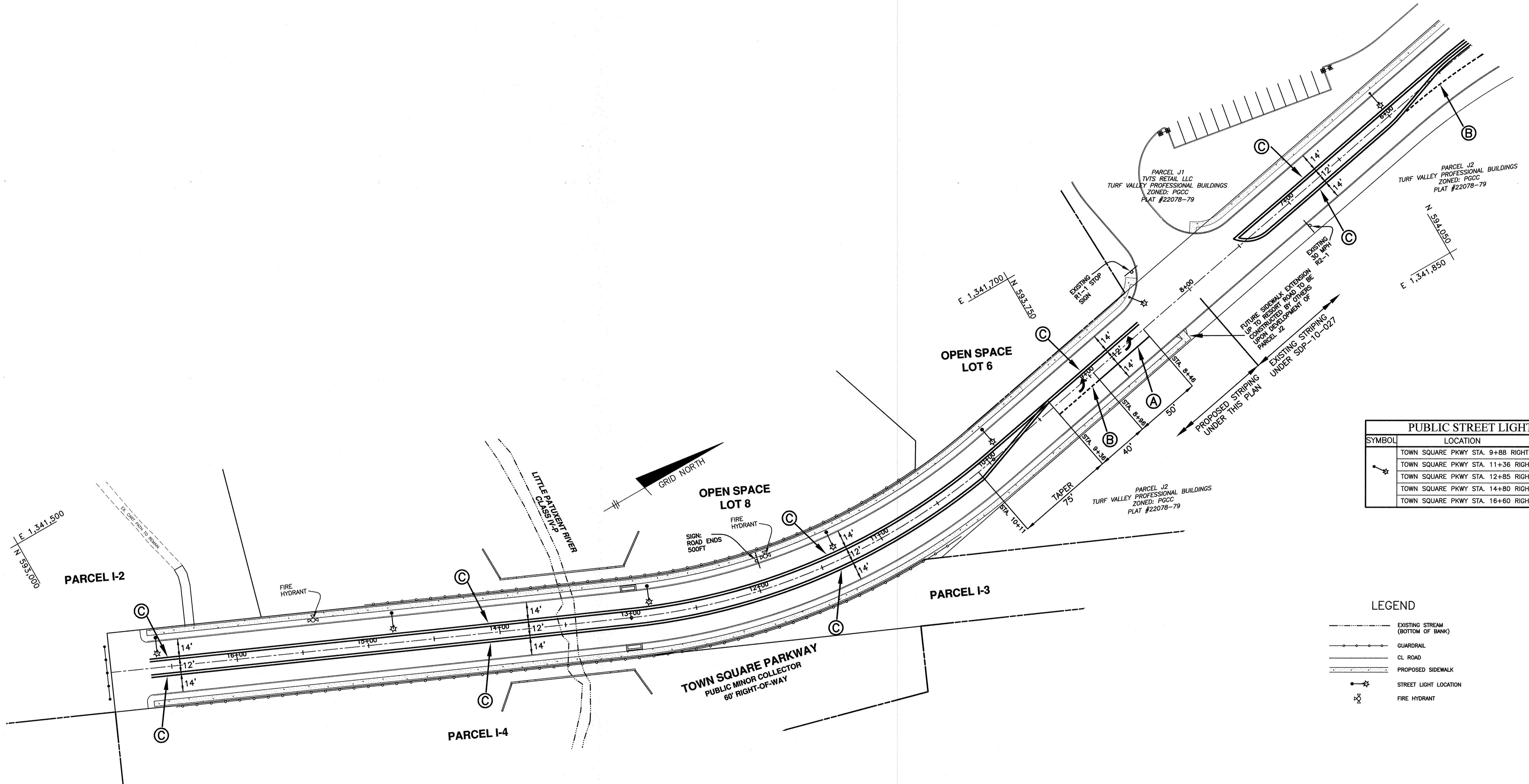
Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.
 License No. 21443 Expiration Date: 6-30-2015

BENCHMARK ENGINEERING, INC.
 8480 BALTIMORE NATIONAL PIKE SUITE 315 & ELLICOTT CITY, MARYLAND 21043
 (P) 410-465-6105 (F) 410-465-6644
 WWW.BEI-ENGINEERING.COM

TOWN SQUARE PARKWAY
 PARCELS 1-2, 1-3, K-1, & L AND OPEN SPACE LOTS 6 thru 8
 A RESUBDIVISION OF OPEN SPACE LOT 2 AND PARCELS 1 & K PREVIOUSLY RECORDED AS PLAT 18696-18698, OPEN SPACE LOTS 4 & 5 PREVIOUSLY RECORDED AS PLAT 22078-22079, AND PART OF UNRECORDED PARCEL 8

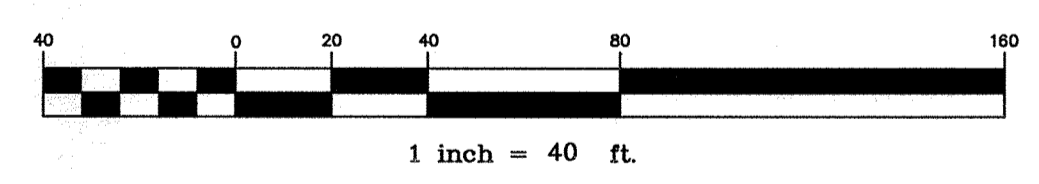
TAX MAP: 16 - GRID: 10 - PARCEL: P/O 8 & 50
 ZONED: PCCC (MULTI-USE SUBDISTRICT)
 ELECTION DISTRICT NO. 3 - HOWARD COUNTY, MARYLAND

ROAD PLAN, PROFILE & DETAILS
 DATE: MAY, 2015 BEI PROJECT NO. 2585
 SCALE: AS SHOWN SHEET 2 OF 24



PUBLIC STREET LIGHT SCHEDULE		
SYMBOL	LOCATION	DESCRIPTION
⊙	TOWN SQUARE PKWY STA. 9+88 RIGHT	208 WATT LED COBRA FIXTURE (LED - 250)
⊙	TOWN SQUARE PKWY STA. 11+36 RIGHT	MOUNTED AT 30' ON A BRONZE FIBERGLASS POLE USING A 12' ARM
⊙	TOWN SQUARE PKWY STA. 12+85 RIGHT	
⊙	TOWN SQUARE PKWY STA. 14+80 RIGHT	
⊙	TOWN SQUARE PKWY STA. 16+60 RIGHT	

LEGEND	
	EXISTING STREAM (BOTTOM OF BANK)
	GUARDRAIL
	CL. ROAD
	PROPOSED SIDEWALK
	STREET LIGHT LOCATION
	FIRE HYDRANT



STRIPING LEGEND

- (A) 5" WIDE WHITE SOLID LINE
- (B) 5" WIDE WHITE "PUPPY TRACKS" (2" SPACE, 6" PAINT, 2" SPACE)
- (C) 5" WIDE DOUBLE YELLOW LINE

"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. 21443 Expiration Date: 12-21-20



<p>NO. DATE REVISION</p>	
<p>BENCHMARK ENGINEERS & LAND SURVEYORS & PLANNERS ENGINEERING, INC. 8460 BALTIMORE NATIONAL PIKE & SUITE 315 • ELLICOTT CITY, MARYLAND 21043 (P) 410-465-8105 (F) 410-465-6644 WWW.BD-CIVILENGINEERING.COM</p>	
<p>OWNER: MANGIONE ENTERPRISES OF TURF VALLEY LIMITED PARTNERSHIP 1205 YORK ROAD, PENTHOUSE LUTHERVILLE, MARYLAND 21093 410-525-8400</p>	
<p>DEVELOPER: MANGIONE ENTERPRISES OF TURF VALLEY LIMITED PARTNERSHIP 1205 YORK ROAD, PENTHOUSE LUTHERVILLE, MARYLAND 21093 410-525-8400</p>	
<p>TOWN SQUARE PARKWAY PARCELS I-2, I-3, K-1, & L AND OPEN SPACE LOTS 6 thru 8 A RESUBDIVISION OF OPEN SPACE LOT 2 AND PARCELS I & K PREVIOUSLY RECORDED AS PLAT 18696-18698, OPEN SPACE LOTS 4 & 5 PREVIOUSLY RECORDED AS PLAT 22078-22079, AND PART OF UNRECORDED PARCEL 8</p>	
<p>TAX MAP: 16 - GRID: 10 - PARCEL: P/O 8 & 50 ZONED: PGCC (MULTI-USE SUBDISTRICT) ELECTION DISTRICT NO. 3 - HOWARD COUNTY, MARYLAND</p>	
<p>STRIPING, SIGNAGE AND STREET LIGHT PLAN</p>	
DATE: MAY, 2015	BEI PROJECT NO. 2585
SCALE: AS SHOWN	SHEET 3 OF 24

APPROVED: DEPARTMENT OF PUBLIC WORKS
Melvin 6/23/2015
 CHIEF, BUREAU OF HIGHWAYS DATE

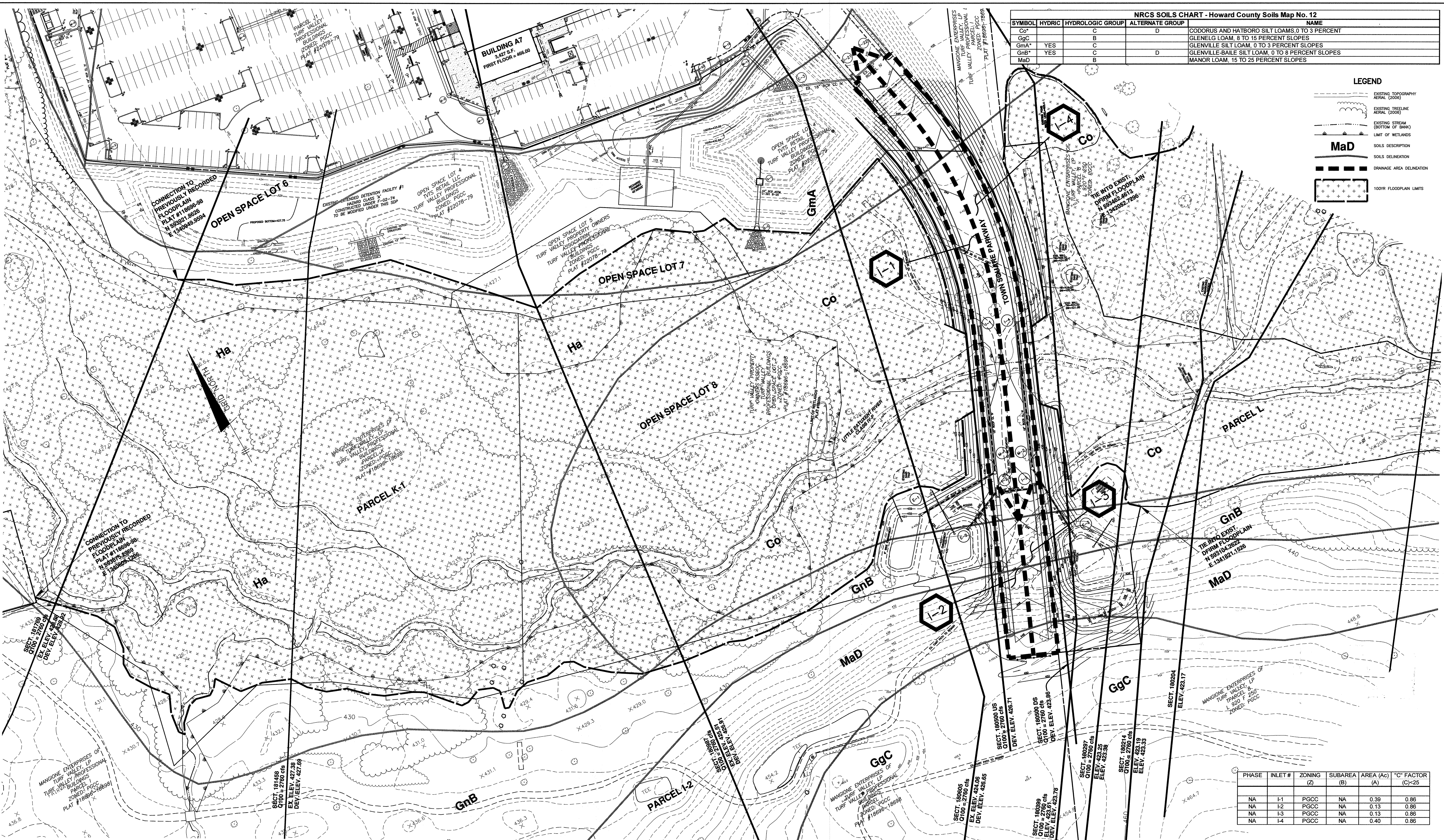
APPROVED: DEPARTMENT OF PLANNING AND ZONING
Kate 6-24-15
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

Ed 6-24-15
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

SYMBOL	HYDRIC	HYDROLOGIC GROUP	ALTERNATE GROUP	NAME
Co*		C	D	CODORUS AND HATBORO SILT LOAMS, 0 TO 3 PERCENT
GgC		B		GLENELG LOAM, 8 TO 15 PERCENT SLOPES
GmA*	YES	C		GLENVILLE SILT LOAM, 0 TO 3 PERCENT SLOPES
GnB*	YES	C	D	GLENVILLE-BAILE SILT LOAM, 0 TO 8 PERCENT SLOPES
MaD		B		MANOR LOAM, 15 TO 25 PERCENT SLOPES

LEGEND

- EXISTING TOPOGRAPHY AERIAL (2009)
- EXISTING TREELINE AERIAL (2009)
- EXISTING STREAM (DISTON OF BANK)
- LIMIT OF WETLANDS
- MaD** SOILS DESCRIPTION
- SOILS DELINEATION
- DRAINAGE AREA DELINEATION
- 100%Y FLOORPLAIN LIMITS



PHASE	INLET #	ZONING (Z)	SUBAREA (B)	AREA (Ac) (A)	"C" FACTOR (C)-25
NA	I-1	PGCC	NA	0.39	0.86
NA	I-2	PGCC	NA	0.13	0.86
NA	I-3	PGCC	NA	0.13	0.86
NA	I-4	PGCC	NA	0.40	0.86

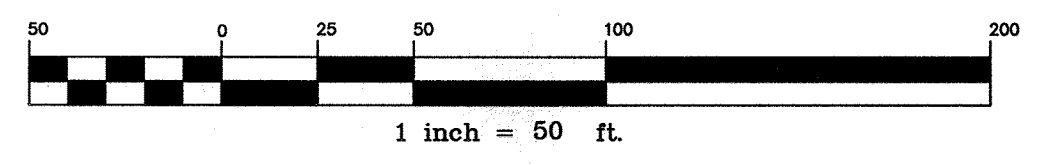
APPROVED: DEPARTMENT OF PUBLIC WORKS
M. McLean 6/23/2015
 CHIEF, BUREAU OF HIGHWAYS

APPROVED: DEPARTMENT OF PLANNING AND ZONING
K. Edwards 6-24-15
 CHIEF, DIVISION OF LAND DEVELOPMENT

C. Edwards 6-24-15
 CHIEF, DEVELOPMENT ENGINEERING DIVISION



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 AS-BUILT INFORMATION IS" PROVIDED ON THIS SHEET

NO. DATE REVISION

BENCHMARK ENGINEERS & LAND SURVEYORS & PLANNERS
ENGINEERING, INC.
 8480 BALTIMORE NATIONAL PIKE SUITE 315 & ELLICOTT CITY, MARYLAND 21043
 (P) 410-466-4100 (F) 410-466-6644
 WWW.BEI-CHALLENGERING.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. 45576 (Expiration Date: 10-06-2016)

J. McLean
 PROFESSIONAL ENGINEER

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

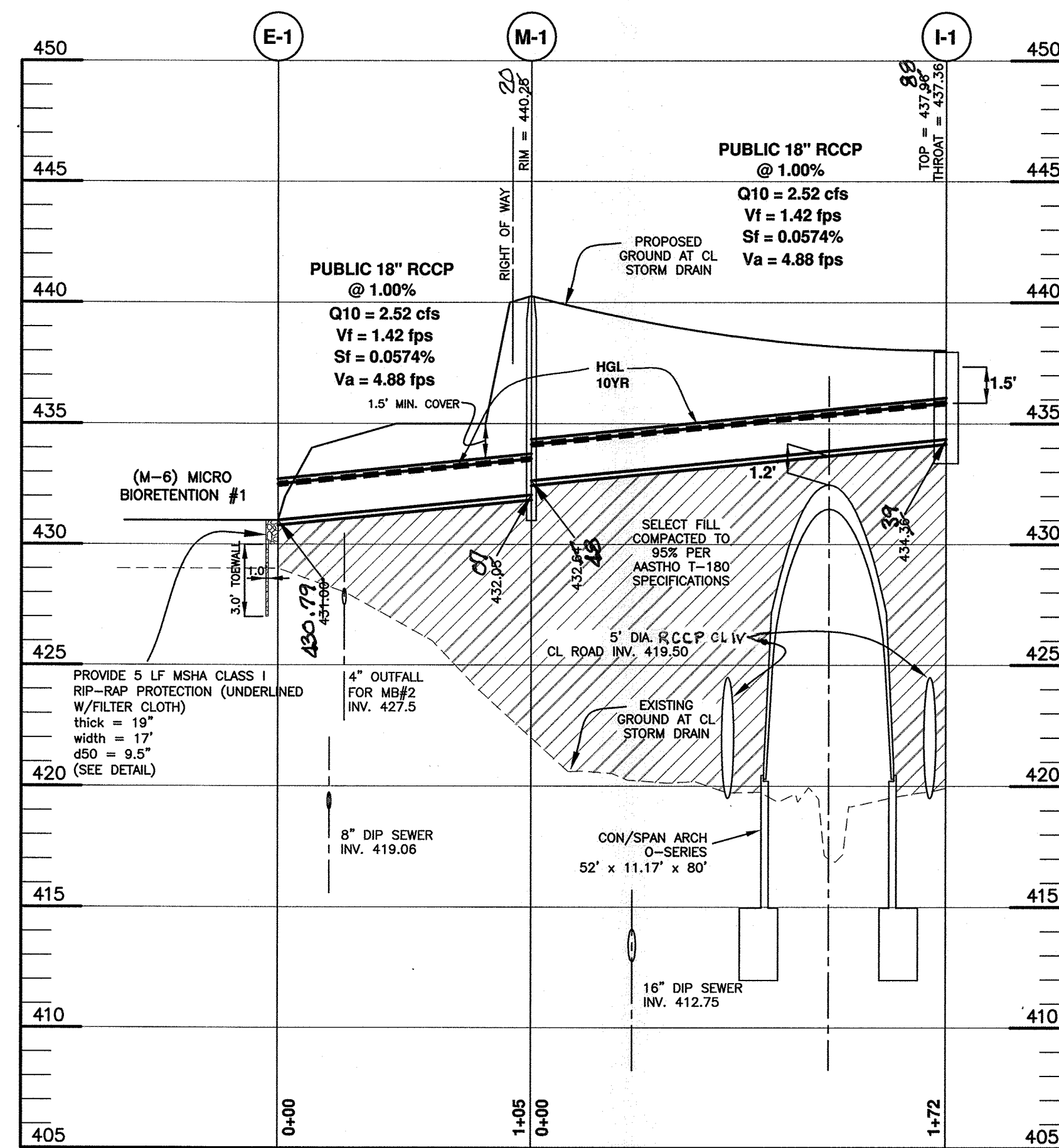
DEVELOPER:
 MANGIONE ENTERPRISES OF TURF VALLEY LIMITED PARTNERSHIP
 1205 YORK ROAD, PENTHOUSE LUTHERVILLE, MARYLAND 21093
 410-825-8400

TOWN SQUARE PARKWAY
 PARCELS I-2, I-3, K-1, & L AND OPEN SPACE LOTS 6 thru 8
 A RESUBDIVISION OF OPEN SPACE LOT 2 AND PARCELS I-1 & PREVIOUSLY RECORDED AS PLAT 18696-18698, OPEN SPACE LOTS 4 & 5 PREVIOUSLY RECORDED AS PLAT 22078-22079, AND PART OF UNRECORDED PARCEL 8

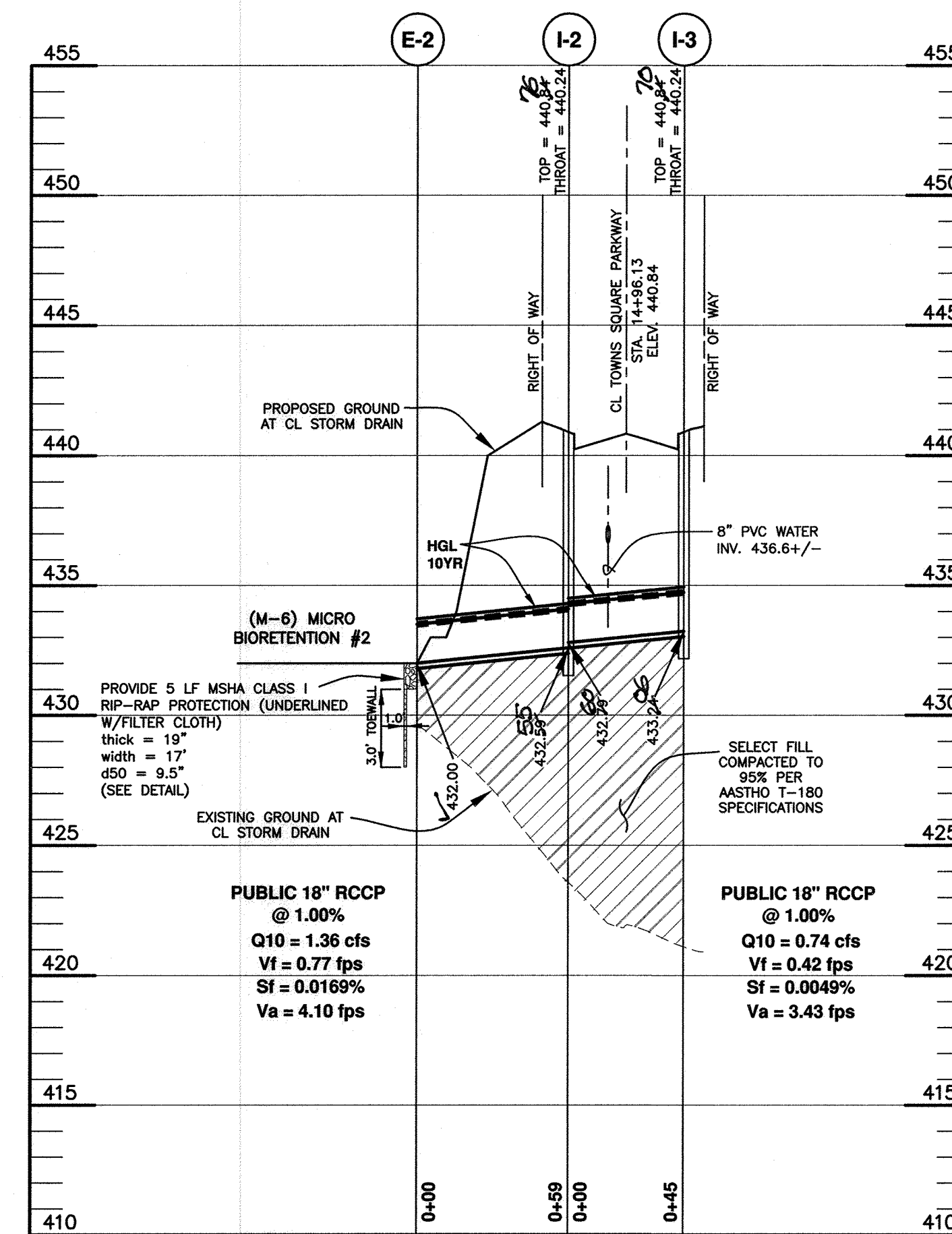
TAX MAP: 16 - GRID: 10 - PARCEL: P/O B & 50
 ZONED: PGCC (MULTI-USE SUBDISTRICT)
 ELECTION DISTRICT NO. 3 - HOWARD COUNTY, MARYLAND

STORM DRAIN DRAINAGE AREA MAP AND FLOODPLAIN

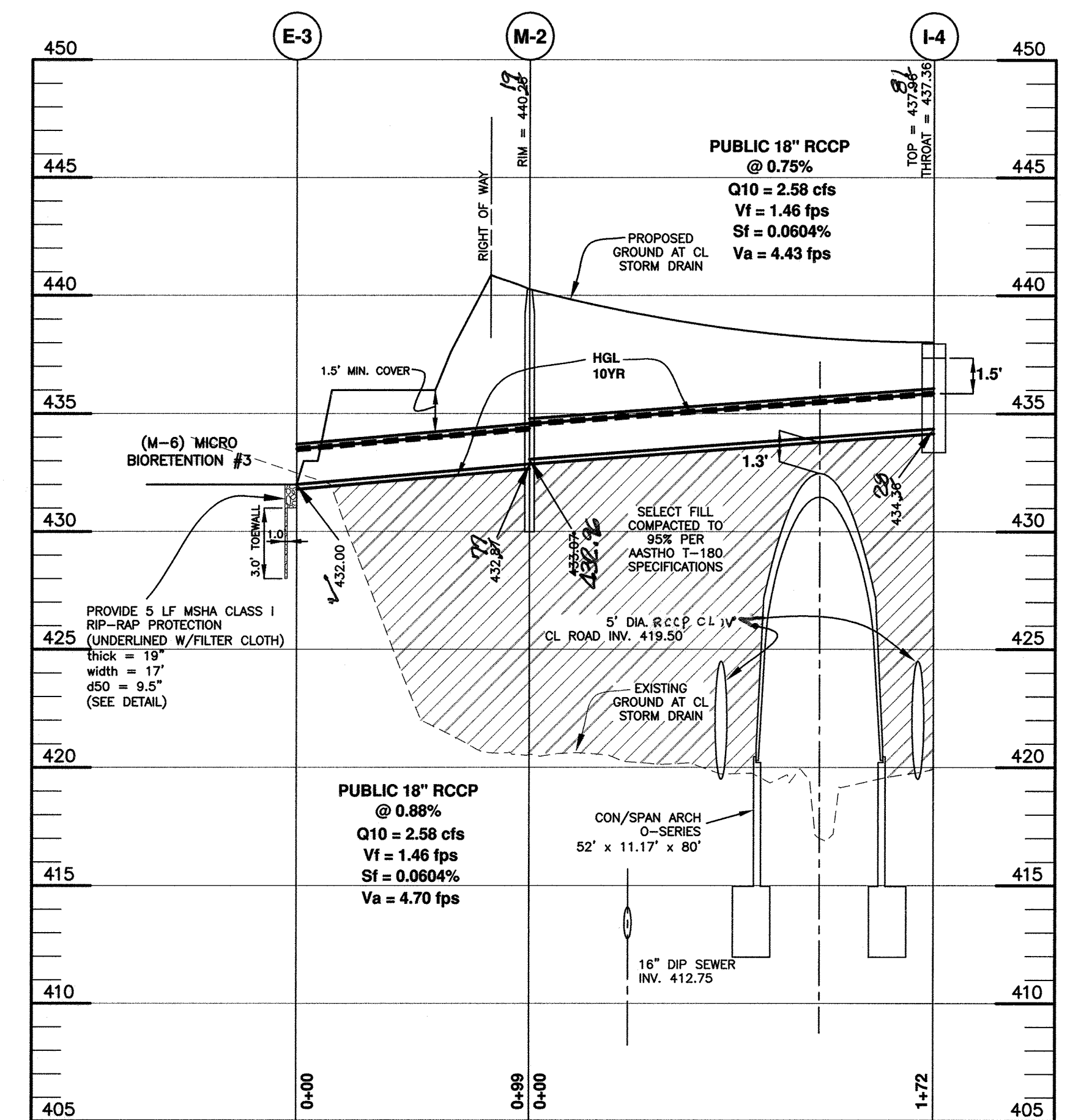
DATE: MAY, 2015 BEI PROJECT NO. 2585
 SCALE: AS SHOWN SHEET 4 OF 24



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



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



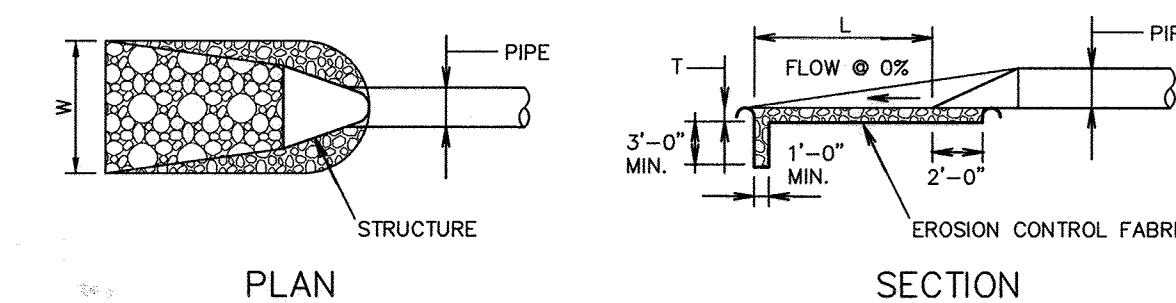
STORM DRAIN PROFILE
SCALE: 1" = 50' HORZ., 1" = 5' VERT.

STRUCTURE TABLE										
STRUCTURE	TYPE	LOCATION	INVERT IN	INVERT OUT	TOP ELEV.	THROAT ELEV.	STD. DETAIL	INLET NOTES	MAINTENANCE	
INLETS										
I-1	A-10	CL STA. 13+00 TOWN SQUARE PARKWAY, OFFSET 20.00' RIGHT	-	-	434.36 ⁸⁹	437.36 ⁸⁸	437.36	HO.CO.STD. D-4.10	3.0' WIDTH	PUBLIC
I-2	A-5	CL STA. 14+96.13 TOWN SQUARE PARKWAY, OFFSET 20.00' RIGHT	-	432.24 ⁸²	432.24 ⁸⁵	440.24 ⁸⁰	440.24	HO.CO.STD. D-4.01	3.0' WIDTH	PUBLIC
I-3	A-5	CL STA. 14+96.13 TOWN SQUARE PARKWAY, OFFSET 20.00' LEFT	-	-	433.24 ⁸⁶	440.24 ⁸⁰	440.24	HO.CO.STD. D-4.01	3.0' WIDTH	PUBLIC
I-4	A-10	CL STA. 13+00 TOWN SQUARE PARKWAY, OFFSET 20.00' LEFT	-	-	434.36 ⁸⁸	437.36 ⁸¹	437.36	HO.CO.STD. D-4.01	3.0' WIDTH	PUBLIC
MANHOLES										
M-1	4' DIA	CL STA. 14+71.99 TOWN SQUARE PARKWAY, OFFSET 20.00' RIGHT	432.64 ⁸³	432.06 ⁸⁷	440.24 ⁸⁰			HO.CO.STD. G-5.12		PUBLIC
M-2	4' DIA	CL STA. 14+71.99 TOWN SQUARE PARKWAY, OFFSET 20.00' LEFT	432.64 ⁸⁶	432.06 ⁸⁹	440.24 ⁸¹			HO.CO.STD. G-5.12		PUBLIC
END SECTIONS										
E-1	18" RCP	N 593228.29 E 1341584.27	-	-	434.00			HO.CO.STD. G-5.51		PUBLIC
E-2	18" RCP	N 593184.63 E 1341625.97	-	-	432.00			HO.CO.STD. G-5.51		PUBLIC
E-3	18" RCP	N 593110.49 E 1341734.54	-	-	432.00			HO.CO.STD. G-5.51		PUBLIC

STRUCTURE LOCATION FOR MANHOLES IS AT THE CENTER OF THE MANHOLE RIM.
STRUCTURE LOCATION FOR INLETS IS AT THE CENTER OF THE INLET FACE.
STRUCTURE LOCATION FOR THE END-SECTIONS IS AT THE MIDPOINT OF THE END OF THE STRUCTURE.
PRECAST STRUCTURES MEETING HS-20 LOADING MAY BE USED.

PIPE SCHEDULE			
SIZE	TYPE	LENGTH (L.F.)	MAINTENANCE
18"	RCCP CL IV	652	PUBLIC

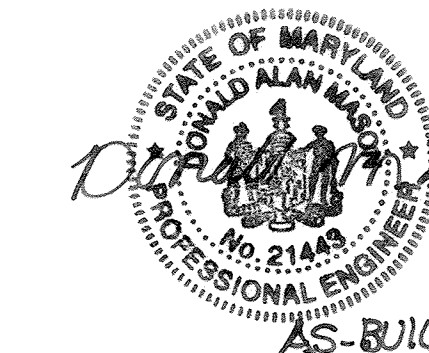
- CONSTRUCTION SPECIFICATIONS**
- THE SUBGRADE FOR THE FILTER, RIP-RAP, OR GABION SHALL BE PREPARED TO THE REQUIRED LINES AND GRADES. ANY FILL REQUIRED IN THE SUBGRADE SHALL BE COMPACTED TO A DENSITY OF APPROXIMATELY THAT OF THE SURROUNDING UNDISTURBED MATERIAL.
 - THE ROCK OR GRAVEL SHALL CONFORM TO THE SPECIFIED GRADING LIMITS WHEN INSTALLED RESPECTIVELY IN THE RIP-RAP OR FILTER.
 - GEOTEXTILE CLASS C28 OR BETTER SHALL BE PROTECTED FROM PUNCHING, CUTTING, OR TEARING. ANY DAMAGE OTHER THAN AN OCCASIONAL SMALL HOLE SHALL BE PREPARED BY PLACING ANOTHER PIECE OF GEOTEXTILE FABRIC OVER THE DAMAGED PART OR BY COMPLETELY REPLACING THE GEOTEXTILE FABRIC. ALL OVERLAPS WHETHER FOR REPAIRS OR FOR JOINING TWO PIECES OF GEOTEXTILE FABRIC SHALL BE A MINIMUM OF ONE FOOT.
 - STONE FOR THE RIP-RAP OR GABION OUTLETS MAY BE PLACED BY EQUIPMENT. THEY SHALL BE CONSTRUCTED TO THE FULL COURSE THICKNESS IN ONE OPERATION AND IN SUCH A MANNER AS TO AVOID DISPLACEMENT OF UNDERLYING MATERIALS. THE STONE FOR THE RIP-RAP OR GABION OUTLETS SHALL BE DELIVERED AND PLACED IN A MANNER THAT WILL ENSURE THAT IT IS REASONABLY HOMOGENEOUS WITH THE SMALLER STONES AND SPALLS FILLING THE VOIDS BETWEEN THE LARGER STONES. RIP-RAP SHALL BE PLACED IN A MANNER TO PREVENT DAMAGE TO THE FILTER BLANKET OR GEOTEXTILE FABRIC. HAND PLACEMENT WILL BE REQUIRED TO THE EXTENT NECESSARY TO PREVENT DAMAGE TO THE PERMANENT WORKS.
 - THE STONE SHALL BE PLACED SO THAT IT BLENDS IN WITH THE EXISTING GROUND. IF THE STONE IS PLACED TOO HIGH THEN THE FLOW WILL BE FORCED OUT OF THE CHANNEL AND SCOUR ADJACENT TO THE STONE WILL OCCUR.



STRUCTURE	V10 fps	d10 (ft)	d50	LENGTH(L)	WIDTH(W)	THICK.(T)	SHA CLASS
E-1	4.88	0.50	9.5"	5'	5'	19"	I
E-2	4.10	0.37	9.5"	5'	5'	19"	I
E-3	4.70	0.50	9.5"	5'	5'	19"	I

OUTLET PROTECTION DETAIL
NOT TO SCALE

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: 6/13/19



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. 21493, Expiration Date: 12-31-20

NO.	DATE	REVISION

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License No. 21493, Expiration Date: 6-30-2015

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<p>DEVELOPER: MANGIONE ENTERPRISES OF TURF VALLEY LIMITED PARTNERSHIP 1205 YORK ROAD, PENTHOUSE LUTHERVILLE, MARYLAND 21093 410-825-8400</p>	<p>STORM DRAIN PROFILES AND DETAILS DATE: MAY, 2015 SCALE: AS SHOWN</p>
<p>BEI PROJECT NO. 2585 SHEET 5 OF 24</p>	

APPROVED: DEPARTMENT OF PUBLIC WORKS
[Signature] 6/23/2015
CHIEF, BUREAU OF HIGHWAYS

APPROVED: DEPARTMENT OF PLANNING AND ZONING
[Signature] 6-29-15
CHIEF, DIVISION OF LAND DEVELOPMENT

[Signature] 6-24-15
CHIEF, DEVELOPMENT ENGINEERING DIVISION

CONSTRUCTION SPECIFICATIONS

B.4.C Specifications for Micro-Bioretenion, Rain Gardens, Landscape Infiltration & Infiltration Berms

1. Material Specifications:

The allowable materials to be used in these practices are detailed in Table B.4.1.

2. Filtering Media or Planting Soil:

The soil shall be a uniform mix, free of stones, stumps, roots or other similar objects larger than two inches. No other materials or substances shall be mixed or dumped within the micro-bioretenion practice that may be harmful to plant growth, or prove a hindrance to the planting or maintenance operations. The planting soil shall be free of Bermuda grass, Quackgrass, Johnson grass, or other noxious weeds as specified under COMAR 15.08.01.05. The planting soil shall be tested and shall meet the following criteria:

Soil Component - Loamy Sand or Sandy Loam (USDA Soil Textural Classification)
 Organic Content - Minimum 10% by dry weight (ASTM D 2974). In general, this can be met with a mixture of loamy and (60%-65%) and compost (35% to 40%) or sandy loam (30%), coarse sand (30%), and compost (40%).
 Clay Content - Media shall have a clay content of less than 5%.
 pH Range - Should be between 5.5 - 7.0. Amendments (e.g., lime, iron sulfate plus sulfur) may be mixed into the soil to increase or decrease pH.

There shall be at least one soil test per project. Each test shall consist of both the standard soil test for pH, and additional tests of organic matter, and soluble salts. A textural analysis is required from the site stockpiled topsoil. If topsoil is imported, then a texture analysis shall be performed for each location where the topsoil was excavated.

3. Compaction:

It is very important to minimize compaction of both the base of bioretention practices and the required backfill. When possible, use excavation hoers to remove original soil. If practices are excavated using a loader, the contractor should use wide track or marsh track equipment, or light equipment with turf type tires. Use of equipment with narrow tracks or narrow tires, rubber tires with large lugs, or high-pressure tires will cause excessive compaction resulting in reduced infiltration rates and is not acceptable. Compaction will significantly contribute to design failure.

Compaction can be alleviated at the base of the bioretention facility by using a primary tilling operation such as a chisel plow, ripper, or subsoiler. These tilling operations are to restructure the soil profile through the 12 inch compaction zone. Substitute methods must be approved by the engineer. Rototillers typically do not till deep enough to reduce the effects of compaction from heavy equipment.

Rototill 2 to 3 inches of sand into the base of the bioretention facility before backfilling the optional sand layer. Pump any ponded water before preparing (rototilling) base.

When backfilling the topsoil over the sand layer, first place 3 to 4 inches of topsoil over the sand, then rototill the sand/topsoil to create a gradation zone. Backfill the remainder of the topsoil to final grade.

When backfilling the bioretention facility, place soil in lifts 12" to 18". Do not use heavy equipment within the bioretention basin. Heavy equipment can be used around the perimeter of the basin to supply soils and sand. Grade bioretention materials with light equipment such as a compact loader or a dozer/loader with marsh tracks.

4. Plant Material:

Recommended plant material for micro-bioretenion practices can be found in Appendix A, Section A.2.3.

5. Plant Installation:

Compost is a better organic material source, is less likely to float, and should be placed in the invert and other low areas. Mulch should be placed in surrounding to a uniform thickness of 2" to 3". Shredded or chipped hardwood mulch is the only accepted mulch. Pine mulch and wood chips will float and move to the perimeter of the bioretention area during a storm event and are not acceptable. Shredded mulch must be well aged (6 to 12 months) for acceptance.

Rootstock of the plant material shall be kept moist during transport and on-site storage. The plant root ball should be planted so 1/8th of the ball is above final grade surface. The diameter of the planting pit shall be at least six inches larger than the diameter of the planting ball. Set and maintain the plant straight during the entire planting process. Thoroughly water ground bed cover after installation.

Trees shall be braced using 2" by 2" stakes only as necessary and for the first growing season only. Stakes are to be equally spaced on the outside of the tree ball.

Grasses and legume seed should be drilled into the soil to a depth of at least one inch. Grass and legume plugs shall be planted following the non-grass ground cover planting specifications.

The topsoil specifications provide enough organic material to adequately supply nutrients from natural cycling. The primary function of the bioretention structure is to improve water quality. Adding fertilizers, defeats, or at a minimum, impedes this goal. Only add fertilizer if wood chips or mulch are used to amend the soil. Rototill urea fertilizer at a rate of 2 pounds per 1000 square feet.

6. Underdrains:

Underdrains should meet the following criteria:

- Pipe - Should be 4" to 6" diameter, slotted or perforated rigid plastic pipe (ASTM F 758, Type PS 28, or AASHTO-M-278) in a gravel layer. The preferred material is slotted, 4" rigid pipe (e.g., PVC or HDPE).
- Perforations - If perforated pipe is used, perforations should be 3/4" diameter located 6" on center with a minimum of four holes per row. Pipe shall be wrapped with a 1/2" (No. 4 or 4x4) galvanized hardware cloth.
- Gravel - The gravel layer (No. 57 stone preferred) shall be at least 3" thick above and below the underdrain.
- The main collector pipe shall be at a minimum 0.5% slope.
- A rigid, non-perforated observation well must be provided (one per every 1,000 square feet) to provide a clean-out port and monitor performance of the filter.
- A 4" layer of pea gravel (1/4" to 3/8" stone) shall be located between the filter media and underdrain to prevent migration of fines into the underdrain. This layer may be considered part of the filter bed when bed thickness exceeds 24".

The main collector pipe for underdrain systems shall be constructed at a minimum slope of 0.5%. Observation wells and/or clean-out pipes must be provided (one minimum per every 1000 square feet of surface area).

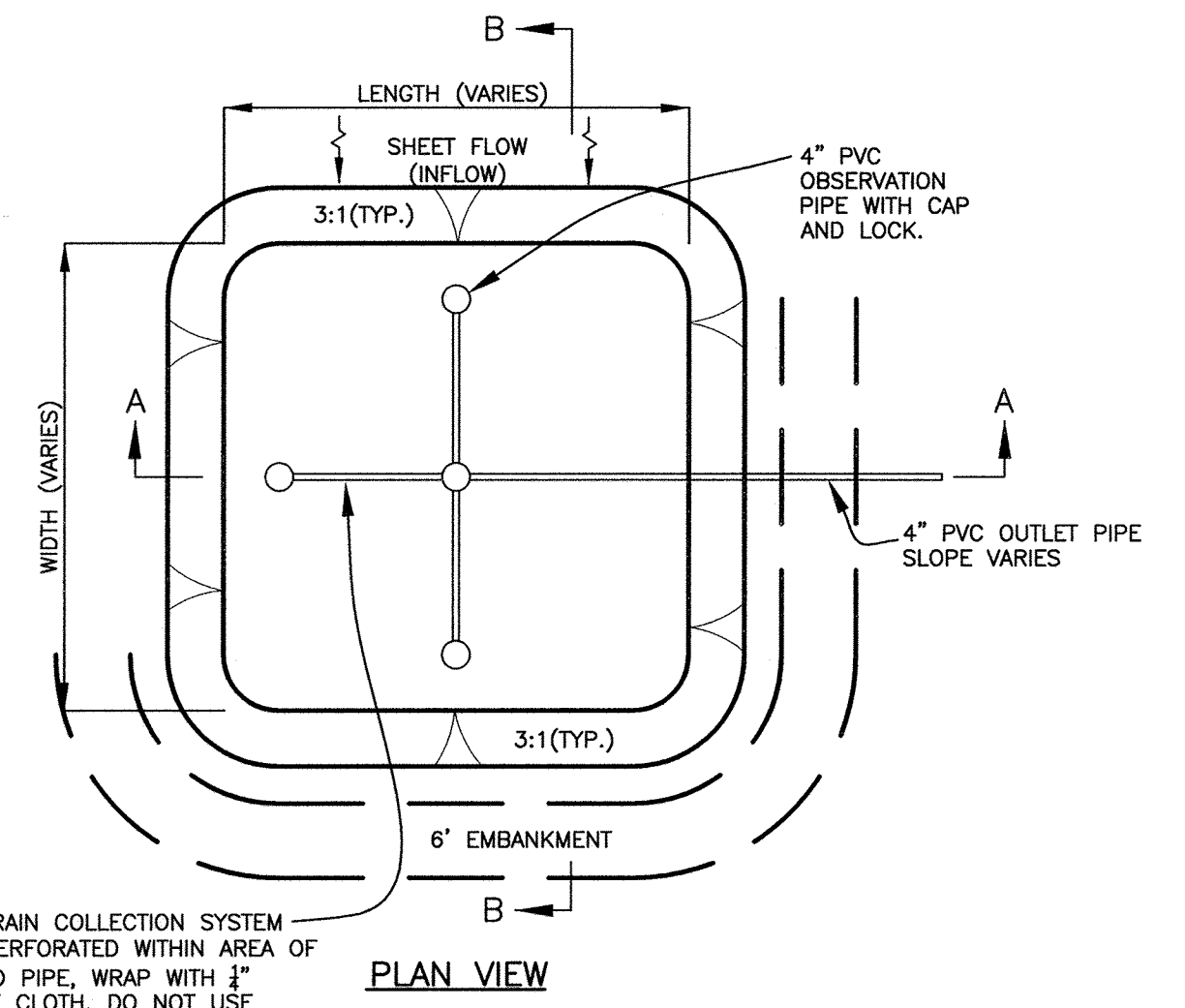
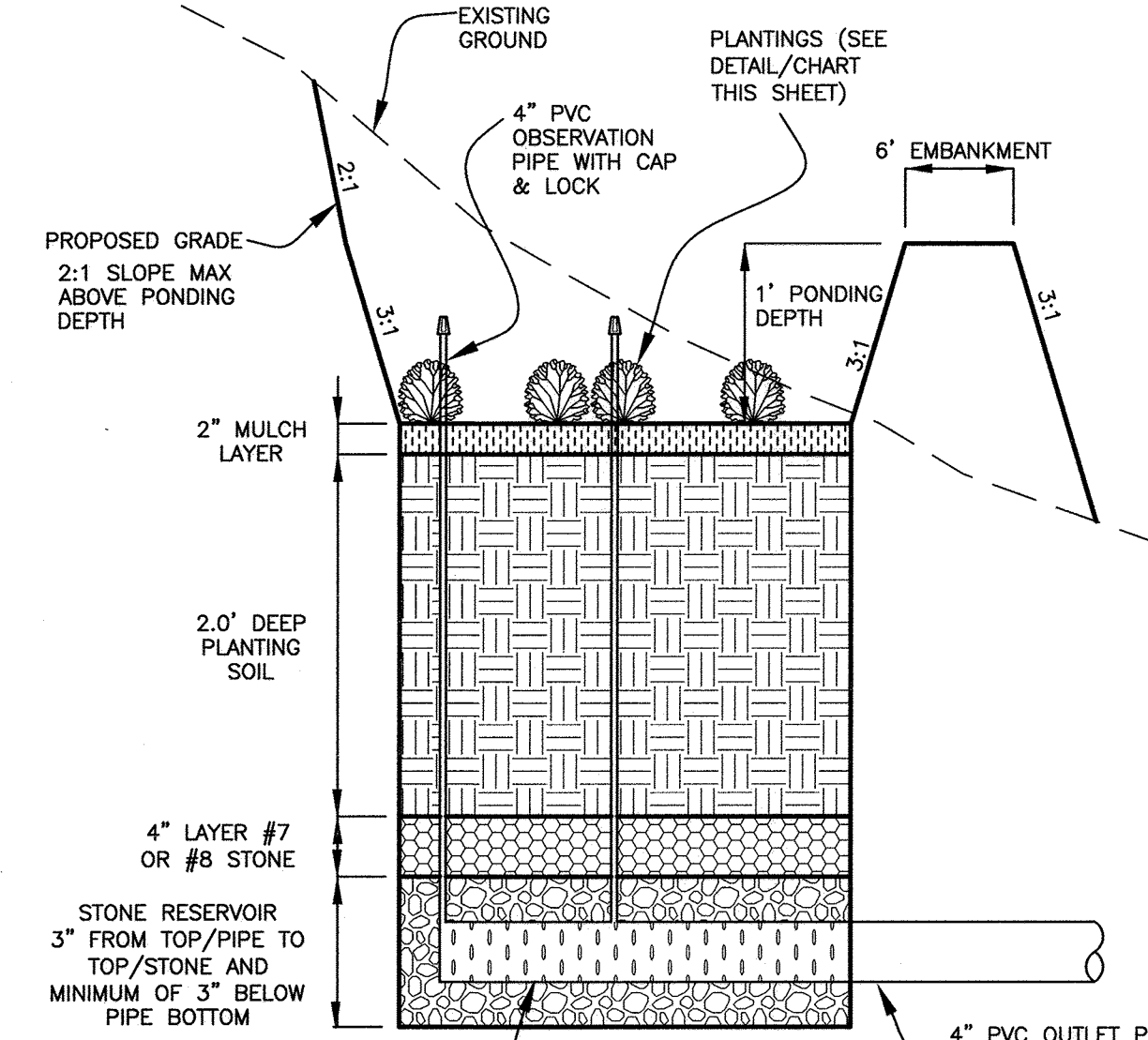
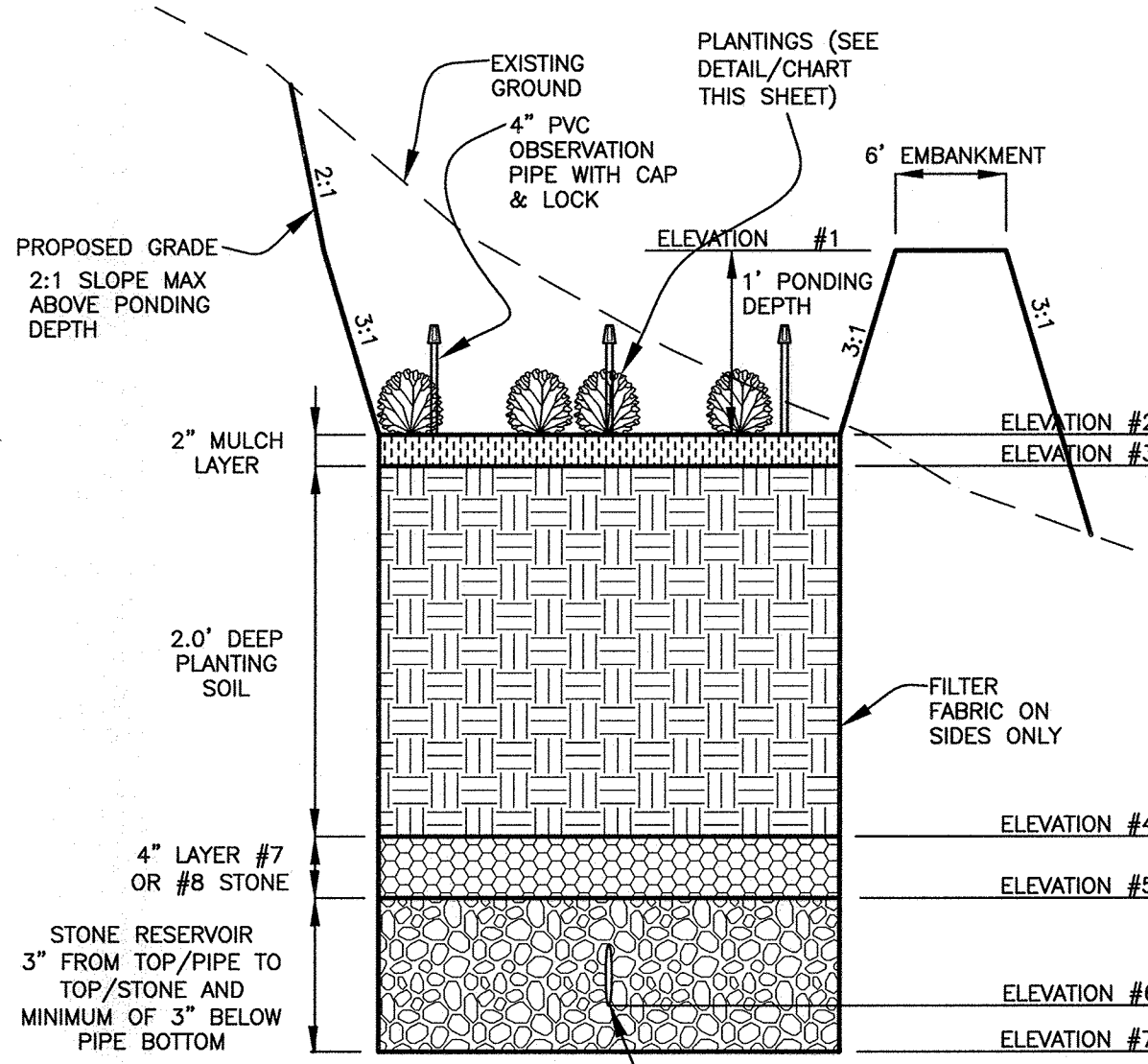
7. Miscellaneous:

These practices may not be constructed until all contributing drainage area has been stabilized.

M-6 Micro-Bioretenion #1		
Elev.	Description	Elevation
1	top of ponding/storage	432.00
2	top of mulch	431.00
3	top of soil	430.83
4	bottom of soil	428.83
5	bottom of stone	428.50
6	4" pvc pipe invert	427.92
7	bottom of facility	427.67
Surface Area (sf)		1,750

M-6 Micro-Bioretenion #2		
Elev.	Description	Elevation
1	top of ponding	433.00
2	top of mulch	432.00
3	top of soil	431.83
4	bottom of soil	429.83
5	bottom of stone	429.50
6	4" pvc pipe invert	428.92
7	bottom of facility	428.67
Surface Area (sf)		1,036

M-6 Micro-Bioretenion #3		
Elev.	Description	Elevation
1	top of ponding	433.00
2	top of mulch	432.00
3	top of soil	431.83
4	bottom of soil	429.83
5	bottom of stone	429.50
6	4" pvc pipe invert	428.92
7	bottom of facility	427.92
Surface Area (sf)		2,125



TYPICAL SECTION B-B

TYPICAL SECTION A-A

PLAN VIEW

TYPICAL (M-6) MICRO-BIORETENION DETAILS MICRO-BIORETENION #1, #2, AND #3

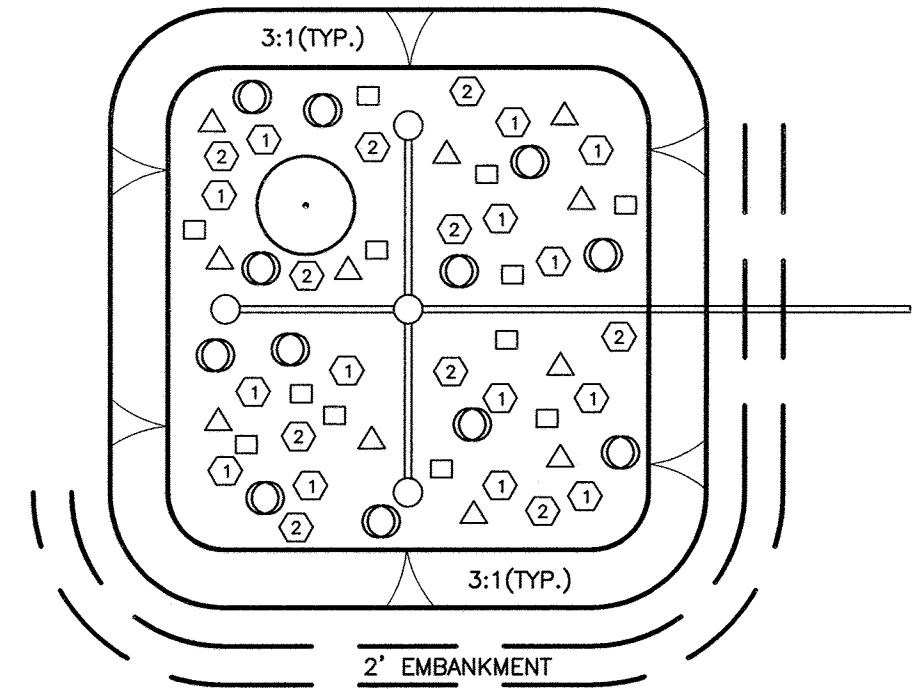
SCALE: 1"=10' HORIZ., 1"=1' VERT.

OPERATION AND MAINTENANCE SCHEDULE FOR LANDSCAPE INFILTRATION (M-3) MICRO-BIORETENION (M-6), RAIN GARDENS (M-7), BIORETENION SWALE (M-8), ENHANCED FILTERS (M-9)

1. Annual maintenance of plant material, mulch layer and soil layer is required. Maintenance of mulch and soil is limited to correcting areas of erosion or wash out. Any mulch replacement shall be done in the spring. Plant material shall be checked for disease and insect infestation and maintenance will address dead material and pruning. Acceptable replacement plant material is limited to the following: 2000 Maryland Stormwater Design Manual Volume II, Table A.4.1 and 2.
2. Schedule of plant inspection will be twice a year in spring and fall. This inspection will include removal of dead and diseased vegetation considered beyond treatment, treatment of all diseased trees and shrubs and replacement of all deficient stakes and wires.
3. Mulch shall be inspected each spring. Remove previous mulch layer before applying new layer once every 2 to 3 years.
4. Soil erosion to be addressed on an as needed basis, with a minimum of once per month and after heavy storm events.

M-6 MICRO-BIORETENION PRACTICE INTERNAL LANDSCAPING CHART								
Facility square footage	PLANT NAME	COMMON NAME	TYPE	SIZE	MB #1 1750	MB #2 1036	MB #3 2125	TOTAL 4911
	Ilex verticillata	Common Winterberry	shrub	2.5-3' ht	18	10	21	49
	Lobelia cardinalis	Cardinal flower	perennial herbaceous plant	quart bulb	117	69	142	327
	Lobelia siphilitica	Great Blue Lobelia	perennial herbaceous plant	quart bulb	117	69	142	327
	Carex stricta	Upright Sedge	grass	quart bulb	117	69	142	327
	Irish versicolor	Blue Water Iris	perennial herbaceous plant	quart bulb	117	69	142	327
	Liatris spicata	Prairie Gay Feather	perennial herbaceous plant	quart bulb	117	69	142	327

PLANTING LEGEND	
SYMBOL	NAME
①	LOBELIA CARDINALIS
②	LOBELIA SIPHILITICA
□	CAREX STRICTA
△	IRIS VERSICOLOR
○	LIATRIS SPICATA
●	ILEX VERTICILLATA



MICRO RETENTION MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND JOINTLY MAINTAINED STORMWATER FACILITIES (M-6)

- ROUTING MAINTENANCE: (BY HOA)**
1. FACILITY SHALL BE INSPECTED ANNUALLY AND AFTER MAJOR STORMS. INSPECTIONS SHALL BE PERFORMED DURING WET WEATHER TO DETERMINE IF THE FACILITY IS FUNCTIONING PROPERLY.
 2. TOP AND SIDE SLOPES OF THE EMBANKMENT SHALL BE MOWED A MINIMUM OF TWO (2) TIMES PER YEAR, ONCE IN JUNE AND ONCE IN SEPTEMBER. OTHER SIDE SLOPES AND MAINTENANCE ACCESS SHALL BE MOWED AS NEEDED.
 3. UNDER DRAINS, FEEDERS, PLANTINGS, OBSERVATION WELL, PIPE OUTFALL, OR OTHER ITEMS SHALL BE INSPECTED ANNUALLY AND AFTER MAJOR STORMS.
 4. DEBRIS/LITTER AND SEDIMENT SHALL BE REMOVED DURING REGULAR MOWING OPERATIONS AND AS NEEDED.
 5. KEEP ANNUAL MAINTENANCE LOGS/RECORDS FOR COUNTY INSPECTION.
- NON-ROUTINE MAINTENANCE: (BY COUNTY)**
1. THE OUTFALL STRUCTURES ADJACENT TO A PUBLIC ROAD SHALL BE REPAIRED UPON THE DETECTION OF ANY DAMAGE. THE COMPONENTS SHALL BE INSPECTED DURING ROUTING MAINTENANCE OPERATIONS.

SCHEMATIC PLANTING DETAIL FOR (M-6) MICRO-BIORETENION PRACTICES

Material	Specification	Size	Notes
Plantings	see Appendix A, Table A.4	n/a	plantings are site-specific
Planting soil [2' to 4' deep]	loamy sand (60 - 65%) & compost (35 - 40%) or sandy loam (30%), coarse sand (30%) & compost (40%)	n/a	USDA soil types loamy sand or sandy loam; clay content < 5%
Organic content	Min. 10% by dry weight (ASTM D 2974)		
Mulch	shredded hardwood		aged 6 months, minimum; no pine or wood chips
Pea gravel diaphragm	pea gravel: ASTM-D-448	NO. 8 OR NO. 9 (1/8" TO 3/8")	
Curtain drain	ornamental stone: washed cobbles	stone: 2" to 5"	
Geotextile	n/a	n/a	PE Type 1 nonwoven
Gravel (underdrains and infiltration berms)	AASHTO M-43	NO. 57 OR NO. 6 AGGREGATE (3/8" to 3/4")	
Underdrain piping	F 758, Type PS 28 or AASHTO M-278	4" to 6" rigid schedule 40 PVC or SDR35	Slotted or perforated pipe; 3/8" perf. @ 6" on center, 4 holes per row; minimum of 3" of gravel over pipes; not necessary underneath pipes. Perforated pipe shall be wrapped with 1/4 inch galvanized hardware cloth
Poured in place concrete (if required)	MSHA Mix No. 3; f'c = 3500 psi @ 28 days, normal weight, air-entrained; reinforcing to meet ASTM-615-60	n/a	on-site testing of poured-in-place concrete required: 28 day strength and slump test; all concrete design (cast-in-place or pre-cast) not using previously approved State or local standards requires design drawings sealed and approved by a professional structural engineer licensed in the State of Maryland - designs to include meeting ACI Code 350.8.8.9; vertical loading (H-10 or H-20); allowable horizontal loading (based on soil pressures); and analysis of potential cracking
Sand	AASHTO-M-6 or ASTM-C-33	0.02" to 0.04"	Sand substitutions such as Diabase and Grystone (AASHTO) #10 are not acceptable. No calcium carbonated or dolomitic sand substitutions are acceptable. No "rock dust" can be used for sand.

APPROVED: DEPARTMENT OF PUBLIC WORKS
 [Signature] 6/23/2015
 CHIEF, BUREAU OF HIGHWAYS
 APPROVED: DEPARTMENT OF PLANNING AND ZONING
 [Signature] 6-29-15
 CHIEF, DIVISION OF LAND DEVELOPMENT
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 CHIEF, DEVELOPMENT ENGINEERING DIVISION

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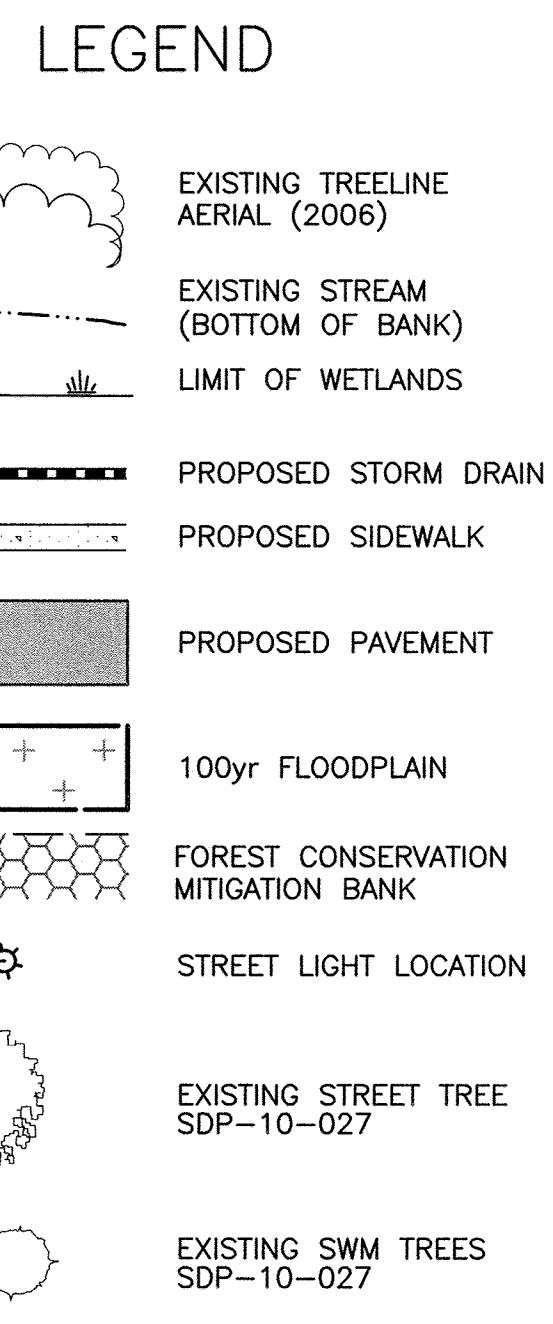
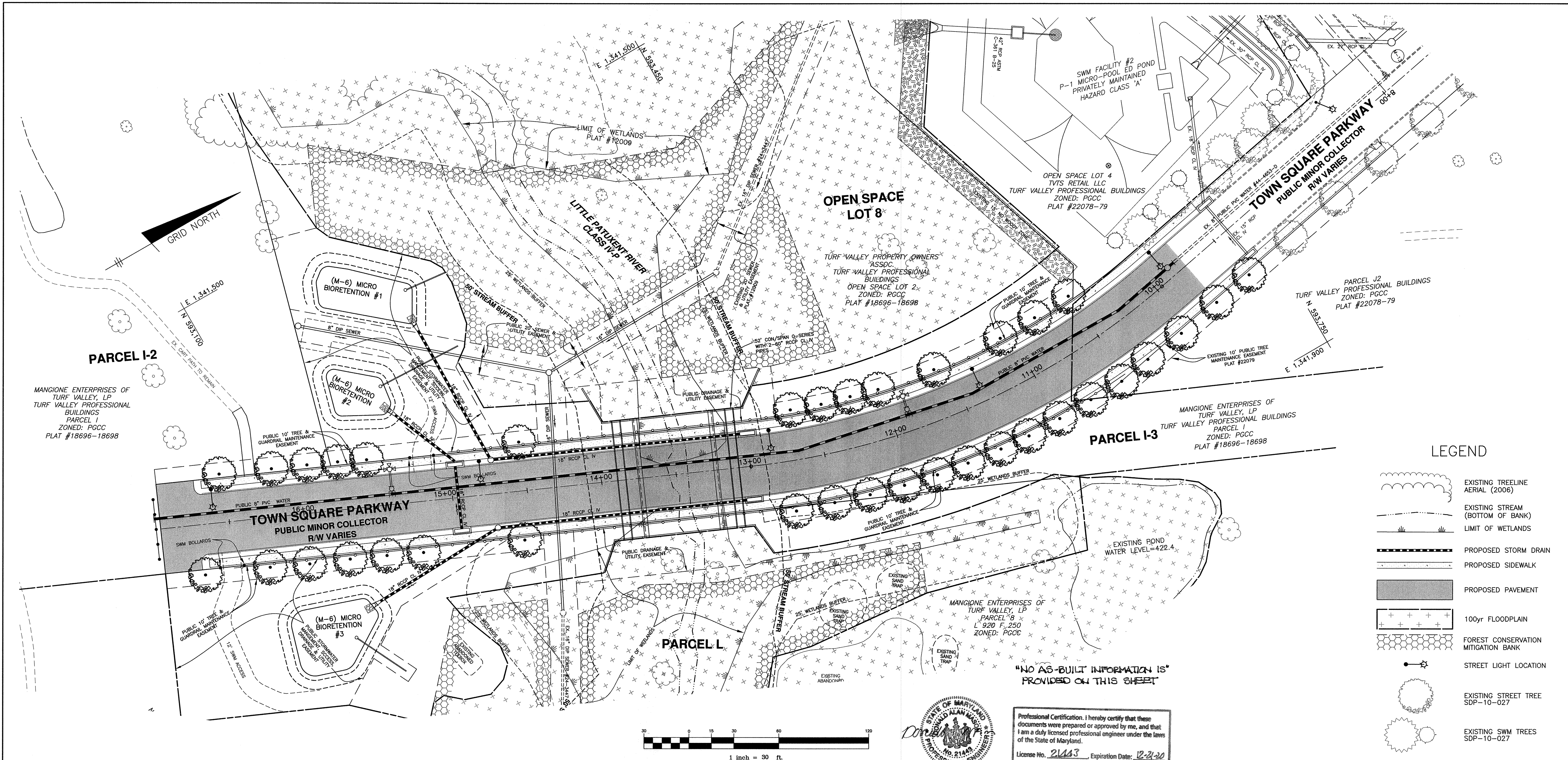
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STORMWATER MANAGEMENT DETAILS

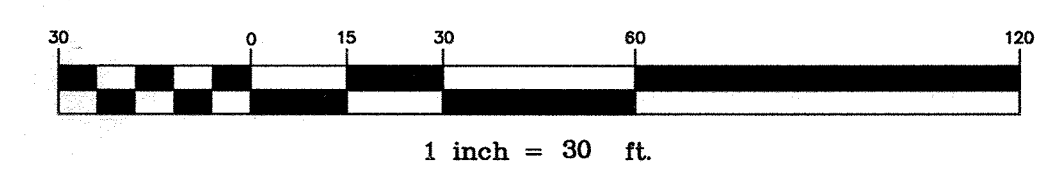
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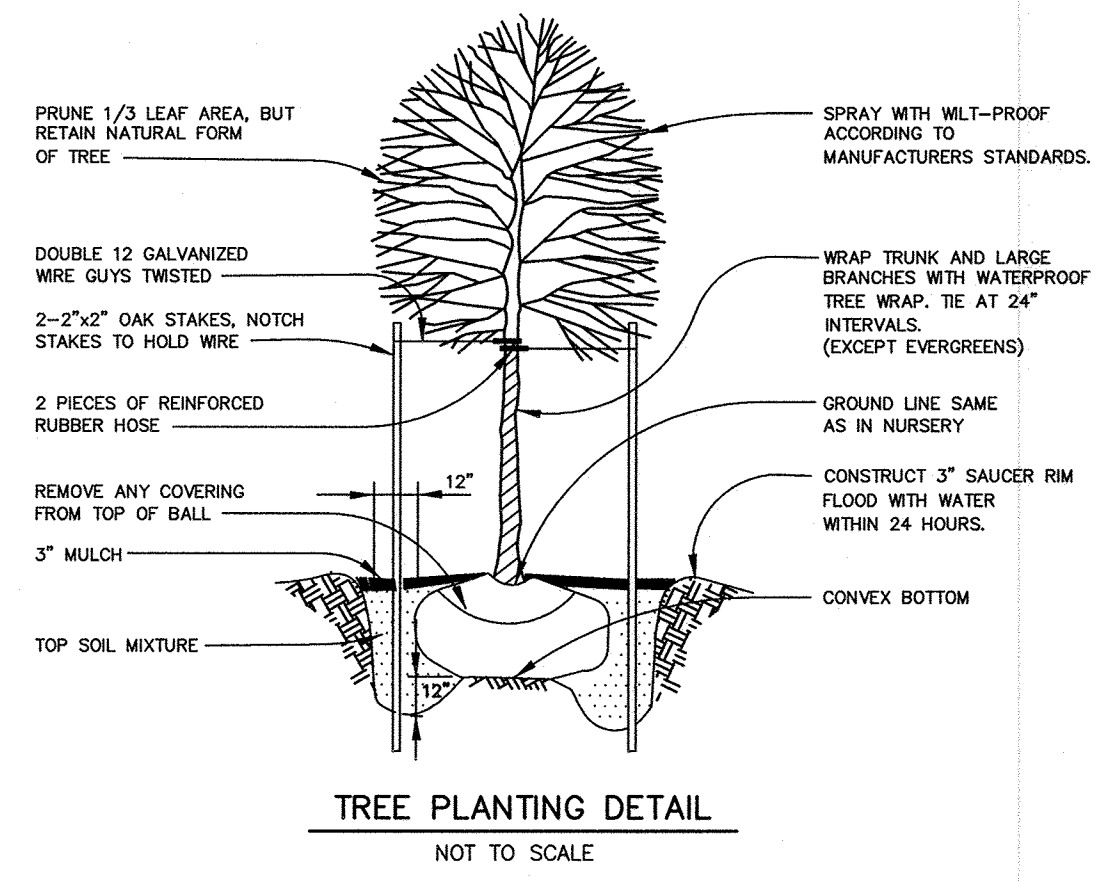
DATE: MAY, 2015 BEI PROJECT NO. 2585
 SCALE: AS SHOWN SHEET 6 OF 24



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. 21463 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 FOR THE REQUIRED LANDSCAPING SHALL BE POSTED AS PART OF THE DPW DEVELOPER'S AGREEMENT.



STREET TREE SCHEDULE

ROAD NAME	PERIMETER	TREES REQ.	SIZE
TOWN SQUARE PARKWAY	1442	36	LARGE

STREET TREE PLANTING LIST

SYMBOL	QUANTITY	NAME	REMARKS	DESCRIPTION
	36	TILIA CORDATA GREENSPIRE [®] (Greenspire Littleleaf Linden)	2 1/2" - 3" cal.	TO BE PLANTED ALONG TOWN SQUARE PARKWAY BY THE DEVELOPER.

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 CODE AND THE HOWARD COUNTY LANDSCAPE MANUAL. I/WE FURTHER CERTIFY THAT UPON COMPLETION OF 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.

Louis Mangione 5-19-15
 LOUIS MANGIONE DATE

APPROVED: DEPARTMENT OF PUBLIC WORKS
Michael Meunier 6/23/2015
 CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING
Kate Schuch 6-29-15
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

Chad Clark 6-29-15
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

NO.	DATE	REVISION

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
 WWW.BEG-CIVILENGINEERING.COM

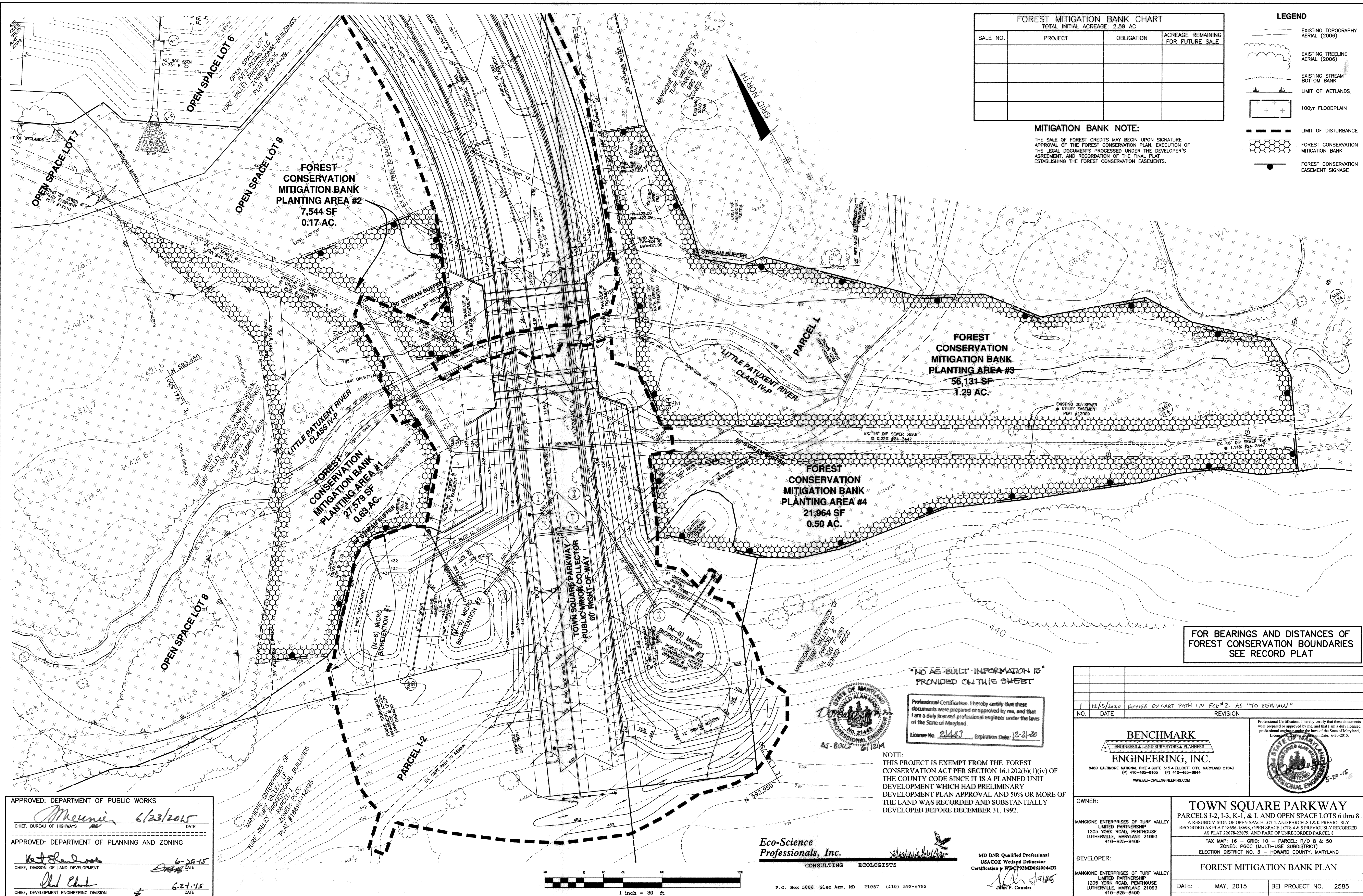
TOWN SQUARE PARKWAY
 PARCELS I-2, I-3, K-1, & L AND OPEN SPACE LOTS 6 thru 8
 A RESUBDIVISION OF OPEN SPACE LOT 2 AND PARCELS I & K PREVIOUSLY RECORDED AS PLAT 18696-18698, OPEN SPACE LOTS 4 & 5 PREVIOUSLY RECORDED AS PLAT 22078-22079, AND PART OF UNRECORDED PARCEL 8

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

LANDSCAPE PLAN

DATE: MAY, 2015 BEI PROJECT NO. 2585
 SCALE: AS SHOWN SHEET 7 OF 24



FOREST MITIGATION BANK CHART			
TOTAL INITIAL ACREAGE: 2.59 AC.			
SALE NO.	PROJECT	OBLIGATION	ACREAGE REMAINING FOR FUTURE SALE

- LEGEND**
- EXISTING TOPOGRAPHY AERIAL (2006)
 - EXISTING TREELINE AERIAL (2006)
 - EXISTING STREAM BOTTOM BANK
 - LIMIT OF WETLANDS
 - 100yr FLOODPLAIN
 - LIMIT OF DISTURBANCE
 - FOREST CONSERVATION MITIGATION BANK
 - FOREST CONSERVATION EASEMENT SIGNAGE

MITIGATION BANK NOTE:
 THE SALE OF FOREST CREDITS MAY BEGIN UPON SIGNATURE APPROVAL OF THE FOREST CONSERVATION PLAN, EXECUTION OF THE LEGAL DOCUMENTS PROCESSED UNDER THE DEVELOPER'S AGREEMENT, AND RECORDATION OF THE FINAL PLAT ESTABLISHING THE FOREST CONSERVATION EASEMENTS.

FOREST CONSERVATION MITIGATION BANK PLANTING AREA #2
 7,544 SF
 0.17 AC.

FOREST CONSERVATION MITIGATION BANK PLANTING AREA #3
 56,131 SF
 1.29 AC.

FOREST CONSERVATION MITIGATION BANK PLANTING AREA #4
 21,964 SF
 0.50 AC.

FOREST CONSERVATION MITIGATION BANK PLANTING AREA #1
 27,579 SF
 0.63 AC.

FOR BEARINGS AND DISTANCES OF FOREST CONSERVATION BOUNDARIES SEE RECORD PLAT

"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. 21443, Expiration Date: 12-31-20

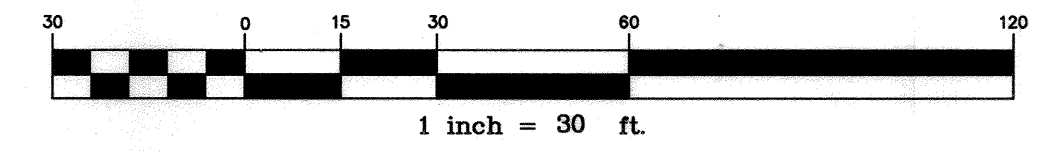


NOTE: THIS PROJECT IS EXEMPT FROM THE FOREST CONSERVATION ACT PER SECTION 16.1202(b)(1)(iv) OF THE COUNTY CODE SINCE IT IS A PLANNED UNIT DEVELOPMENT WHICH HAD PRELIMINARY DEVELOPMENT PLAN APPROVAL AND 50% OR MORE OF THE LAND WAS RECORDED AND SUBSTANTIALLY DEVELOPED BEFORE DECEMBER 31, 1992.

Eco-Science Professionals, Inc.
 CONSULTING ECOLOGISTS

MD DNR Qualified Professional
 USACO2 Wetland Delineator
 Certification # JPC933MD0610044132
 John P. Canoles

P.O. Box 5006 Glen Arm, MD 21057 (410) 592-6752



APPROVED: DEPARTMENT OF PUBLIC WORKS
 [Signature] 6/23/2015
 CHIEF, BUREAU OF HIGHWAYS

APPROVED: DEPARTMENT OF PLANNING AND ZONING
 [Signature] 6-23-15
 CHIEF, DIVISION OF LAND DEVELOPMENT

[Signature] 6-24-15
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

NO. DATE REVISION 1 12/15/2020 REVISE EX CART PATH LN FCE#2 AS "TO REMAIN"	
BENCHMARK ENGINEERING, INC. ENGINEERS & LAND SURVEYORS & PLANNERS 8480 BALTIMORE NATIONAL PIKE & SUITE 315 & ELLICOTT CITY, MARYLAND 21043 (P) 410-465-6105 (F) 410-465-6844 WWW.BEI-ENGINEERING.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
TOWN SQUARE PARKWAY PARCELS I-2, I-3, K-1, & L AND OPEN SPACE LOTS 6 thru 8 A RESUBDIVISION OF OPEN SPACE LOT 2 AND PARCELS I & K PREVIOUSLY RECORDED AS PLAT 18696-18698, OPEN SPACE LOTS 4 & 5 PREVIOUSLY RECORDED AS PLAT 22078-22079, AND PART OF UNRECORDED PARCEL 8 TAX MAP: 16 - GRID: 10 - PARCEL: P/O 8 & 50 ZONED: PGCC (MULTI-USE SUBDISTRICT) ELECTION DISTRICT NO. 3 - HOWARD COUNTY, MARYLAND	
FOREST MITIGATION BANK PLAN	
DATE: MAY, 2015	BEI PROJECT NO. 2585
SCALE: AS SHOWN	SHEET 8 OF 24

AS-BUILT F-15-056

REFORESTATION PLAN

A. Planting Plan and Methods

Plant species selection was based on our knowledge regarding plant communities in Maryland's Piedmont Plateau and information provided in the soil survey on typical vegetation for the soil type on the planting site. Species selection was also based on our knowledge of plant availability in the nursery industry.

Reforestation will be accomplished through a mixed planting of whips and branched transplants. Container grown stock is recommended but bareroot stock may be used to help control afforestation costs. If bareroot stock is used the root systems of all plants will be dipped in an anti-desiccant gel prior to planting to improve moisture retention in the root systems.

Prior to planting the proposed Forest Conservation Easements all multiflora rose in the planting area shall be removed. Removal of the rose may be performed with mowing and herbicide treatments. Physical removal of all top growth following by a periodic herbicide treatment of stump sprouts is recommended. Native tree and shrub species occurring within the rose thickets should be retained wherever possible. Herbicides treatments shall occur on 2 month intervals during the first growing season and once each in the spring and fall for subsequent years. Herbicide used shall be made specifically to address woody plant material and shall be applied as per manufacturers specifications. Care should be taken not to spray planted trees or naturally occurring native tree/shrub seedlings. It is recommended that initiation of rose removal begin at least six months prior to planting.

B. Planting and Soil Specifications

Plant material will be installed in accordance with the Planting Detail and Planting Specifications shown on the Forest Conservation Plan.

Amendments to existing soil will be in accordance with the Planting Specifications shown on the Forest Conservation Plan. Soil disturbance will be limited to individual planting locations.

C. Maintenance of Plantings

For information regarding maintenance of the reforestation plantings, see Post Construction Management Plans.

D. Guarantee Requirements

A 90 percent survival rate of the reforestation plantings will be required after one growing season. All plant material below the 90 percent survival threshold will be replaced at the beginning of the second growing season. At the end of the second growing season, a 75 percent survival rate will be required. All plant material below the 75 percent survival threshold will be replaced by the beginning of the next growing season.

E. Security for Reforestation

Section 16-1209 of the Howard County Forest Conservation Act requires that a developer shall post a security (bond, letter of credit, etc.) with the County to insure that all work is done in accordance with the FCP.

CONSTRUCTION PERIOD PROTECTION PROGRAM

A. Forest Protection Techniques

1. Soil Protection Area (Critical Root Zone)

The soil protection area, or critical root zone, of a tree is that portion of the soil column where most of its roots may be found. The majority of roots responsible for water and nutrient uptake are located just below the soil surface. Temporary fencing shall be placed around the critical root zone of the forest in areas where the forest limits occur within 25 feet of the limit of disturbance.

2. Fencing and Signage

Existing forest limits occurring within 25 feet of the limits of disturbance shall be protected using temporary protective fencing. Permanent signage shall be placed around the afforestation area prior to plant installation, as shown on the plan.

B. Pre-Construction Meeting

Upon staking of limits of disturbance a pre-construction meeting will be held between the developer, contractor and appropriate County inspector. The purpose of the meeting will be to verify that all sediment control is in order, and to notify the contractor of possible penalties for non-compliance with the FCP.

C. Storage Facilities/Equipment Cleaning

All equipment storage, parking, sanitary facilities, material stockpiling, etc. associated with construction of the project will be restricted to those areas outside of the proposed Forest Conservation Easement. Cleaning of equipment will be limited to areas within the LOD of the proposed development. Wastewater resulting from equipment cleaning will be controlled to prevent runoff into environmentally sensitive areas.

D. Sequence of Construction

The following timetable represents the proposed timetable for development. The items outlined in the Forest Conservation Plan will be enacted within two (2) years of subdivision approval.

Below find a proposed sequence of construction.

1. Install all signage and sediment control devices.
2. Hold pre-construction meeting between developer, contractor and County inspector.
3. Build access roads, install well and septic systems, and construct houses. Stabilize all disturbed areas accordingly.
4. Begin multiflora rose removal. Install permanent protective signage for Easements and initiate plantings in accordance with Forest Conservation Plan. Plantings will be completed within two (2) years of subdivision approval.
5. Remove sediment control.
6. Hold post-construction meeting with County inspectors to assure compliance with FCP. Submit Certification of Installation.
7. Monitor and maintain plantings for 2 years.

E. Construction Monitoring

Eco-Science Professionals, or another qualified professional designated by the developer, will monitor construction of the project to ensure that all activities are in compliance with the Forest Conservation Plan.

F. Post-Construction Meeting

Upon completion of construction, Eco-Science Professionals, or another qualified professional designated by the developer, will notify the County that construction has been completed and arrange for a post-construction meeting to review the project site. The meeting will allow the County inspector to verify that afforestation plantings have been installed.

POST-CONSTRUCTION MANAGEMENT PLAN

Howard County requires a two year post-construction management plan be prepared as part of the forest conservation plan. The plan goes into effect upon acceptance of the construction certification of completion by the County. Eco-Science Professionals, or another qualified professional designated by the developer, will be responsible for implementation of the post-construction management plan.

The following items will be incorporated into the plan:

A. Fencing and Signage

Permanent signage indicating the limits of the retention/afforestation area shall be maintained.

B. General Site Inspections/Maintenance of Plantings

Site inspections will be performed a minimum of three times during the growing season. The purpose of the inspections will be to assess the health of the afforestation plantings. Appropriate measures will be taken to rectify any problems which may arise.

In addition, maintenance of the afforestation plantings will involve the following steps:

1. Watering - All plant material shall be watered twice a month during the 1st growing season, more or less frequently depending on weather conditions. During the second growing season, once a month during May-September, if needed.
2. Removal of invasive exotics and noxious weeds. Old field successional species will be retained.
3. Identification of serious plant pests and diseases, treatment with appropriate agent.
4. Pruning of dead branches.
5. After 12 and 24 months, replacement of plants, if required, in accordance with the Guarantee Requirements shown on the FCP.

C. Education

The developer will provide appropriate materials to property owners informing them of the location and purpose of the afforestation area. Materials may include site plans and information explaining the intent of the forest conservation law.

D. Final Inspection

At the end of the two year post-construction management period, Eco-Science Professionals, or another qualified professional, will submit to the administrator of the Howard County Forest Conservation Program certification that all retention/afforestation requirements have been met. Upon acceptance of this certification, the County will release the developer from all future obligations and release the developer's bond.

Planting Notes:

- Planting density based on 700 planting units per acre. 2" caliper trees = 7 planting units, 1" caliper trees = 3.5 planting units, whips with shelter = 2 planting units.
- ** - These species should not be planted within the wetland limits.
- 1" caliper trees should be staggered along the outer perimeter of the planting area to serve as demarcation of the boundary. The trees should be no closer than 15 foot spacing.
- Planting shall be made in a curvilinear fashion along contour. The planting should avoid a grid appearance but should be spaced to facilitate maintenance
- Multiflora rose/heavy brush removal/control may be required prior to installation of planting.
- All whips are required to be installed with tree shelters per Howard County FCA manual.

Planting Area 1 - 0.63 acres +/-

FCA Planting units Required: 441
FCA Planting units Provided: 446

Qty	Species	Size	Spacing	Total FCA Units
5	Acer rubrum - Red maple	1" cal	15' o.c.	
3	Liriodendron tulipifera - Tulip poplar **	1" cal	15' o.c.	
5	Platanus occidentalis - Sycamore	1" cal	15' o.c.	
3	Quercus palustris - Pin oak	1" cal	15' o.c.	
16	Total 1" caliper trees x 3.5 units/tree = FCA unit credit			
11	Acer rubrum - Red maple	2-3' whip	11' o.c.	
10	Carya glabra - Pignut hickory	2-3' whip	11' o.c.	
10	Diospyros virginiana - Persimmon **	2-3' whip	11' o.c.	
10	Liriodendron tulipifera - Tulip poplar **	2-3' whip	11' o.c.	
15	Nyssa sylvatica - Black gum	2-3' whip	11' o.c.	
25	Platanus occidentalis - Sycamore	2-3' whip	11' o.c.	
15	Prunus serotina - Black cherry **	2-3' whip	11' o.c.	
15	Quercus alba - White oak	2-3' whip	11' o.c.	
20	Quercus palustris - Pin oak	2-3' whip	11' o.c.	
15	Quercus velutina - Black oak	2-3' whip	11' o.c.	
10	Ulmus rubra - Slippery Elm	2-3' whip	11' o.c.	
10	Cornus amomum - Silky dogwood	2-3' whip	11' o.c.	
15	Viburnum dentatum - Arrowwood **	2-3' whip	11' o.c.	
10	Viburnum prunifolium - Blackhaw **	2-3' whip	11' o.c.	
198	Total whip plantings x 2 units/tree = FCA unit credit			
				390
				Total Unit Credit 446

Planting Area 2 - 0.17 acres +/-

FCA Planting units Provided: 122.5

FCA Planting units Required: 119

Qty	Species	Size	Spacing	Total FCA Units
10	Acer rubrum - Red maple	1" cal	15' o.c.	
5	Liriodendron tulipifera - Tulip poplar **	1" cal	15' o.c.	
15	Platanus occidentalis - Sycamore	1" cal	15' o.c.	
5	Quercus palustris - Pin oak **	1" cal	15' o.c.	
35	Total 1" caliper trees x 3.5 units/tree = FCA unit credit			
				122.5
				Total Unit Credit 122.5

Planting Area 3 - 1.29 acres +/-

FCA Planting units Required: 903

FCA Planting units Provided: 903.5

Qty	Species	Size	Spacing	Total FCA Units
10	Acer rubrum - Red maple	1" cal	15' o.c.	
6	Liriodendron tulipifera - Tulip poplar **	1" cal	15' o.c.	
15	Platanus occidentalis - Sycamore	1" cal	15' o.c.	
10	Quercus palustris - Pin oak	1" cal	15' o.c.	
41	Total 1" caliper trees x 3.5 units/tree = FCA unit credit			
50	Acer rubrum - Red maple	2-3' whip	11' o.c.	
25	Carya glabra - Pignut hickory	2-3' whip	11' o.c.	
15	Diospyros virginiana - Persimmon **	2-3' whip	11' o.c.	
25	Liriodendron tulipifera - Tulip poplar **	2-3' whip	11' o.c.	
35	Nyssa sylvatica - Black gum	2-3' whip	11' o.c.	
70	Platanus occidentalis - Sycamore	2-3' whip	11' o.c.	
20	Prunus serotina - Black cherry **	2-3' whip	11' o.c.	
20	Quercus alba - White oak	2-3' whip	11' o.c.	
70	Quercus palustris - Pin oak	2-3' whip	11' o.c.	
20	Quercus velutina - Black oak	2-3' whip	11' o.c.	
15	Ulmus rubra - Slippery Elm	2-3' whip	11' o.c.	
15	Viburnum prunifolium - Blackhaw **	2-3' whip	11' o.c.	
380	Total whip plantings x 2 units/tree = FCA unit credit			
				760
				Total Unit Credit 903.5

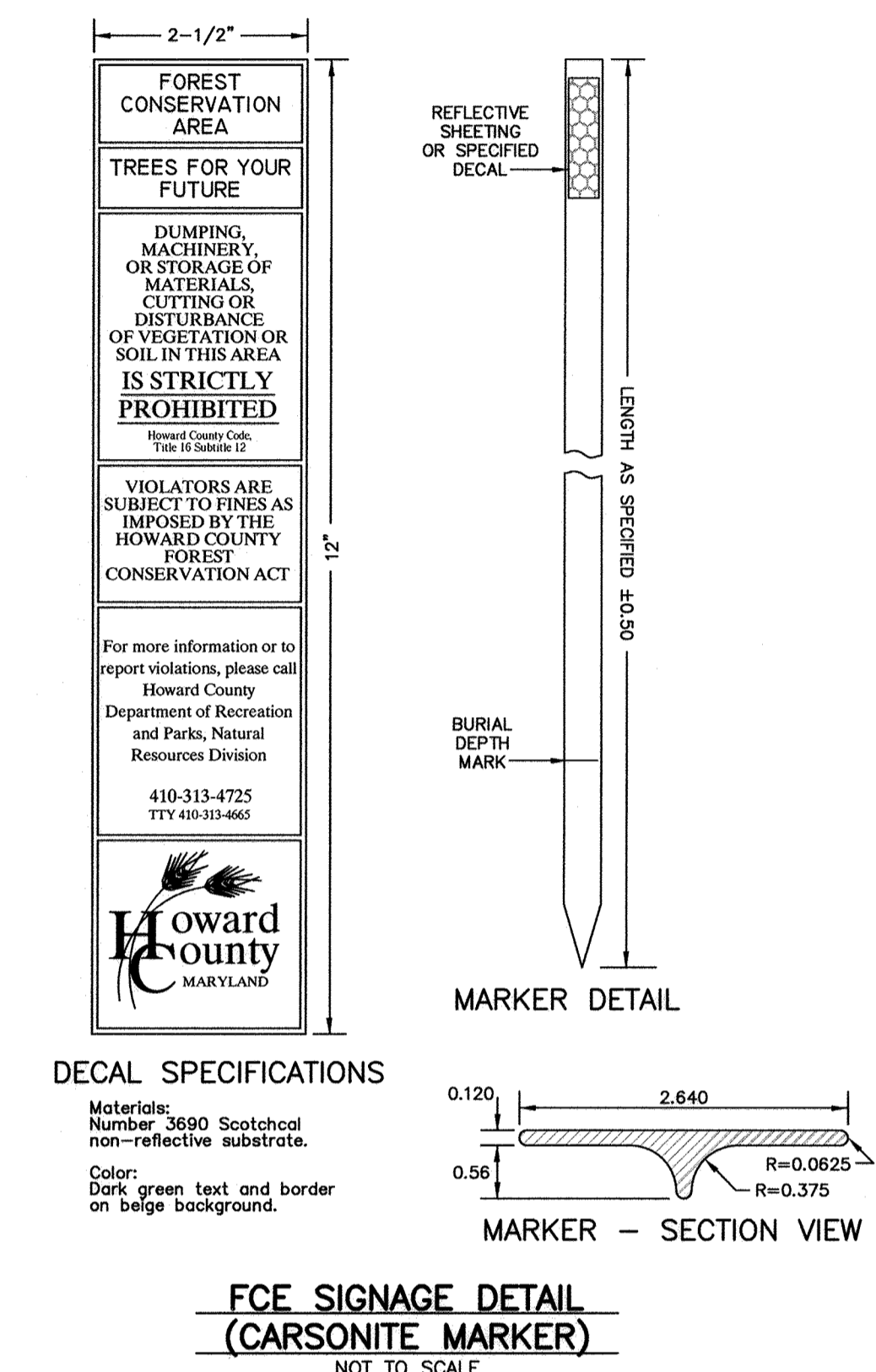
Planting Area 4 - 0.5 acres +/-

FCA Planting units Required: 359

FCA Planting units Provided: 352.5

Qty	Species	Size	Spacing	Total FCA Units
4	Acer rubrum - Red maple	1" cal	15' o.c.	
2	Liriodendron tulipifera - Tulip poplar **	1" cal	15' o.c.	
5	Platanus occidentalis - Sycamore	1" cal	15' o.c.	
4	Quercus palustris - Pin oak	1" cal	15' o.c.	
15	Total 1" caliper trees x 3.5 units/tree = FCA unit credit			
15	Acer rubrum - Red maple	2-3' whip	11' o.c.	
10	Carya glabra - Pignut hickory	2-3' whip	11' o.c.	
5	Diospyros virginiana - Persimmon **	2-3' whip	11' o.c.	
10	Liriodendron tulipifera - Tulip poplar **	2-3' whip	11' o.c.	
10	Nyssa sylvatica - Black gum	2-3' whip	11' o.c.	
20	Platanus occidentalis - Sycamore	2-3' whip	11' o.c.	
10	Prunus serotina - Black cherry **	2-3' whip	11' o.c.	
10	Quercus alba - White oak	2-3' whip	11' o.c.	
25	Quercus palustris - Pin oak	2-3' whip	11' o.c.	
10	Quercus velutina - Black oak	2-3' whip	11' o.c.	
10	Ulmus rubra - Slippery Elm	2-3' whip	11' o.c.	
15	Viburnum prunifolium - Blackhaw **	2-3' whip	11' o.c.	
150	Total whip plantings x 2 units/tree = FCA unit credit			
				300
				Total Unit Credit 352.5

FOR BEARINGS AND DISTANCES OF FOREST CONSERVATION BOUNDARIES SEE RECORD PLAT



FCE SIGNAGE DETAIL (CARSONITE MARKER)
NOT TO SCALE

FOREST CONSERVATION NOTES:

1. THIS PROJECT IS EXEMPT FROM THE FOREST CONSERVATION ACT PER SECTION 16.1202(b)(1)(iv) OF THE 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. THE FOREST CONSERVATION EASEMENTS ESTABLISHED ON THIS PROJECT SHALL CONSTITUTE A FOREST MITIGATION BANK.
2. ANY FOREST CONSERVATION EASEMENT (FCE) AREA SHOWN HEREON IS SUBJECT TO PROTECTIVE COVENANTS WHICH MAY BE FOUND IN THE LAND RECORDS OF HOWARD COUNTY WHICH RESTRICT THE DISTURBANCE AND USE OF THESE AREAS.
3. NO CLEARING, GRADING, OR CONSTRUCTION IS PERMITTED WITHIN THE FOREST CONSERVATION EASEMENT, HOWEVER, FOREST MANAGEMENT PRACTICES AS DEFINED IN THE DEED OF FOREST CONSERVATION EASEMENT ARE ALLOWED.
4. LIMITS OF DISTURBANCE SHALL BE RESTRICTED TO AREAS OUTSIDE THE LIMIT OF TEMPORARY FENCING OR THE FCE BOUNDARY, WHICHEVER IS GREATER.
5. PERMANENT SIGNAGE SHALL BE PLACED 50'-100' APART ALONG THE BOUNDARIES OF ALL FOREST CONSERVATION EASEMENTS. THIS SIGNAGE SHALL STAY IN PERPETUITY.
6. THE FOREST CONSERVATION WATERSHED FOR THIS PROJECT IS THE LITTLE PATUXENT RIVER.
7. THERE ARE NO RARE, THREATENED OR ENDANGERED SPECIES LOCATED ON THIS SITE. TO THE BEST OF OUR KNOWLEDGE, THERE ARE NO HISTORIC STRUCTURES LOCATED ON THIS SITE. THERE ARE NO SPECIMEN TREES LOCATED ON THIS SITE.

NOTE: THIS PROJECT IS EXEMPT FROM THE FOREST CONSERVATION ACT PER SECTION 16.1202(b)(1)(iv) OF THE 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.

APPROVED: DEPARTMENT OF PUBLIC WORKS
Melanie 6/23/2015
CHIEF, BUREAU OF HIGHWAYS

APPROVED: DEPARTMENT OF PLANNING AND ZONING
Kevin J. Calabrese 6-29-15
CHIEF, DIVISION OF LAND DEVELOPMENT

Phil Pelt 6-24-15
CHIEF, DEVELOPMENT ENGINEERING DIVISION



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. 21448, Expiration Date: 12-31-20

Eco-Science Professionals, Inc.
CONSULTING ECOLOGISTS
P.O. Box 5006 Glen Arm, MD 21057 (410) 592-6752

MID DNR Qualified Professional
USACOE Wetland Delinator
Certification # WD0333MD06100432
John P. Canoles 5/14/15

BENCHMARK ENGINEERING, INC.
8480 BALTIMORE NATIONAL PIKE & SUITE 315 A ELLICOTT CITY, MARYLAND 21043
(P) 410-465-6105 (F) 410-465-6844
WWW.BE-ENGINEERING.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. 21448, Expiration Date: 6-30-2015.

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

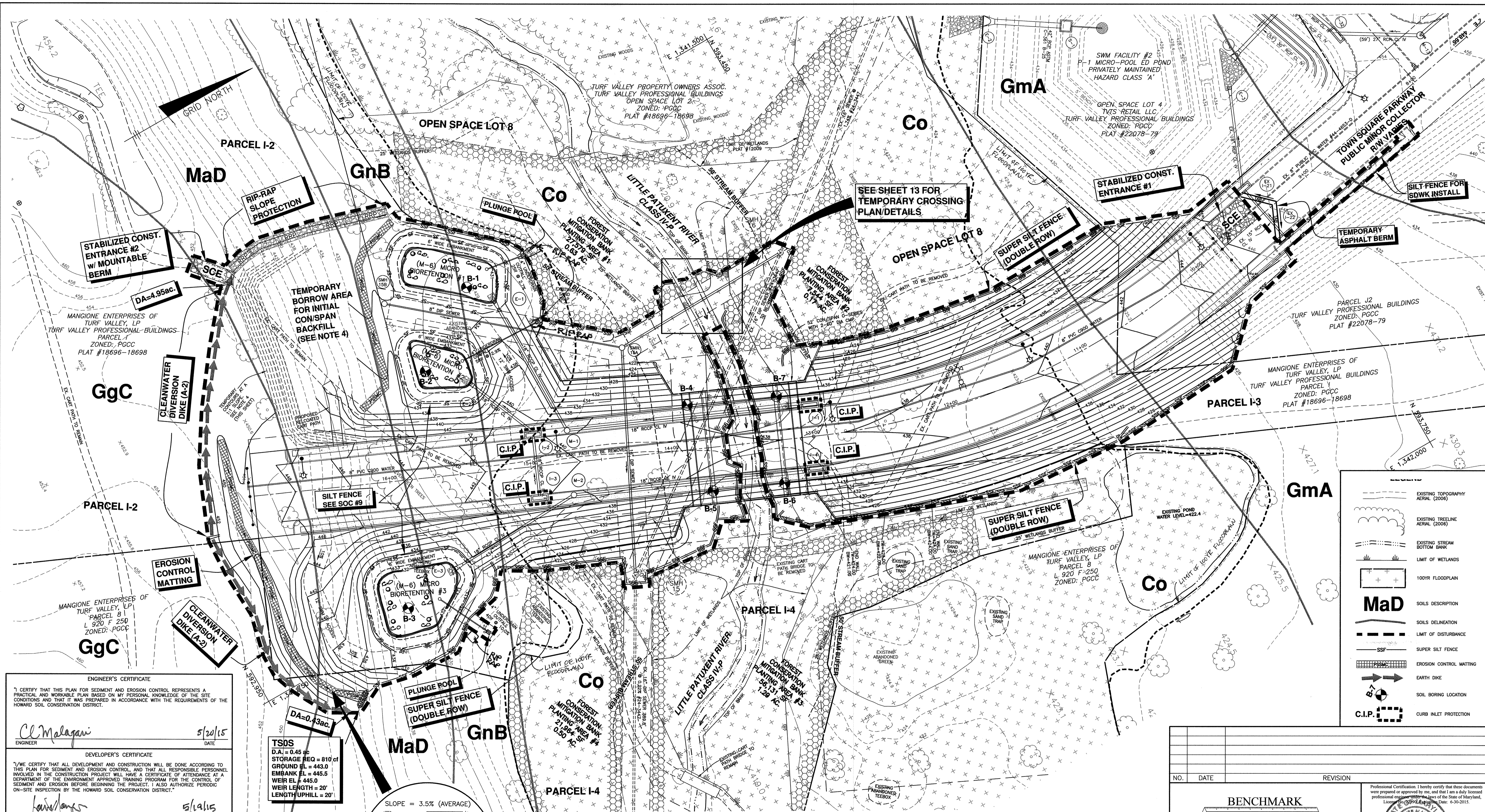
DEVELOPER: MANGIONE ENTERPRISES OF TURF VALLEY LIMITED PARTNERSHIP
1205 YORK ROAD, PENTHOUSE LUTHERVILLE, MARYLAND 21093
410-825-8400

TOWN SQUARE PARKWAY
PARCELS 1-2, 1-3, K-1, & L AND OPEN SPACE LOTS 6 thru 8
A RESUBDIVISION OF OPEN SPACE LOT 2 AND PARCELS 1 & 8 PREVIOUSLY RECORDED AS PLAT 18096-18098, OPEN SPACE LOTS 4 & 5 PREVIOUSLY RECORDED AS PLAT 22078-22079, AND PART OF UNRECORDED PARCEL 8

TAX MAP: 16 - GRID: 10 - PARCEL: P/O B & 50
ZONED: PCCC (MULTI-USE SUBDISTRICT)
ELECTION DISTRICT NO. 3 - HOWARD COUNTY, MARYLAND

FOREST MITIGATION BANK NOTES, CHARTS & DETAILS

DATE: MAY, 2015
BEI PROJECT NO. 2585
SCALE: AS SHOWN
SHEET 9 OF 24



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. Malagani 5/20/15
 ENGINEER DATE

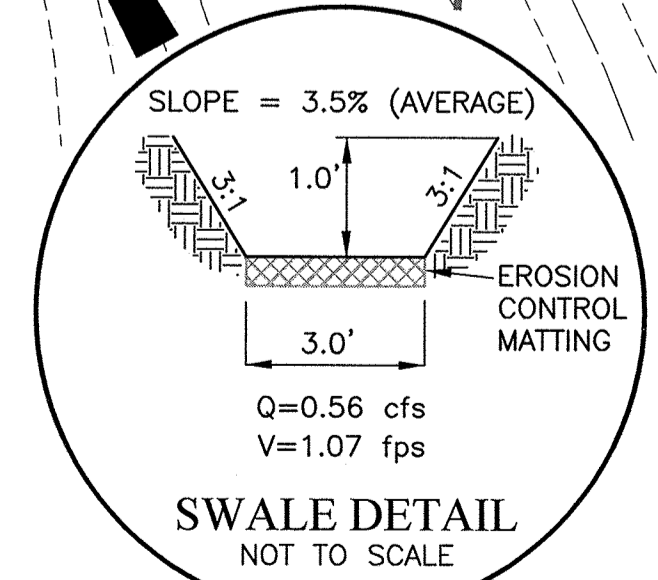
DEVELOPER'S CERTIFICATE
 I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN FOR SEDIMENT AND EROSION CONTROL, AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING 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.
 5/14/15
 DEVELOPER DATE

APPROVED: DEPARTMENT OF PUBLIC WORKS
 6/14/15
 HOWARD SOIL CONSERVATION DISTRICT DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING
 6-29-15
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

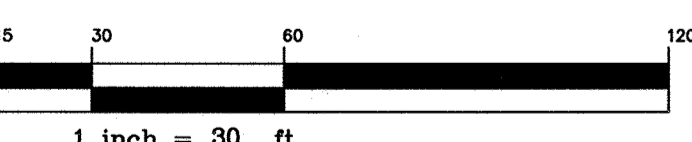
APPROVED: DEPARTMENT OF PLANNING AND ZONING
 6-24-15
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

TSOS
 D.A. = 0.45 ac
 STORAGE REQ = 810 cf
 GROUND EL = 443.0
 EMBANK EL = 445.5
 WEIR EL = 445.0
 WEIR LENGTH = 20'
 LENGTH UPHILL = 20'



NRCS SOILS CHART - Howard County Soils Map No. 12

SYMBOL	HYDRIC	HYDROLOGIC GROUP	ALTERNATE GROUP	NAME
Co*		C	D	CODORUS AND HATBORO SILT LOAMS, 0 TO 3 PERCENT
GgC		B		GLENEGL LOAM, 8 TO 15 PERCENT SLOPES
GmA*	YES	C		GLENVILLE SILT LOAM, 0 TO 3 PERCENT SLOPES
GnB*	YES	C	D	GLENVILLE-BAILE SILT LOAM, 0 TO 8 PERCENT SLOPES
MaD		B		MANOR LOAM, 15 TO 25 PERCENT SLOPES



AS-BUILT CERTIFICATION
 I hereby certify, by my seal, that to the best of my knowledge the facilities shown on this "AS-BUILT" plan meet the Approved Plans and Specifications
 Donald Mascos, P.E. Date: 6/18/15



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. 21467, Expiration Date: 12-31-20

- NOTES:**
- NO DISTURBANCE IS TO OCCUR WITHIN THE LIMITS OF THE STREAM BANK (TOP OF BANK TO TOP OF BANK) EXCEPT THE TEMPORARY DISTURBANCE ASSOCIATED WITH THE SEWER MAIN CROSSING.
 - UTILIZE PERMANENT SOIL STABILIZATION MATTING SLOPE APPLICATION ALONG THE SIDE SLOPES OF THE ROADWAY WITHIN THE STREAM BUFFER AREAS.
 - SUPER SILT FENCING TO BE CURLED UPHILL EVERY 6 FEET IN ELEVATION FORMING A 'J' SHAPE WHERE FENCING RUNS DOWNHILL.
 - TEMPORARY BORROW AREA FOR INITIAL BACKFILL OF ARCH CULVERT ONLY. ONCE BACKFILL IS COMPLETE AND ACCESS ACROSS BRIDGE CAN BE UTILIZED, THIS AREA IS TO BE RETURNED TO ITS ORIGINAL GRADE ALONG WITH THE PAVED CART PATH.
 - NO STOCKPILING IS ALLOWED FOR THIS PROJECT.

LEGEND

- EXISTING TOPOGRAPHY AERIAL (2006)
- EXISTING TREE LINE AERIAL (2006)
- EXISTING STREAM BOTTOM BANK
- LIMIT OF WETLANDS
- 100YR FLOODPLAIN
- MaD** SOILS DESCRIPTION
- SOILS DELINEATION
- LIMIT OF DISTURBANCE
- SSF SUPER SILT FENCE
- EROSION CONTROL MATTING
- EARTH DIKE
- SOIL BORING LOCATION
- C.I.P. CURB INLET PROTECTION

BENCHMARK ENGINEERING, INC.
 8480 BALTIMORE NATIONAL PIKE & SUITE 315 & ELLICOTT CITY, MARYLAND 21043
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 WWW.BEI-CIVILENGINEERING.COM

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 TAX MAP: 16 - GRID: 10 - PARCEL: P/O 8 & 50
 ZONED: PGCC (MULTI-USE SUBDISTRICT)
 ELECTION DISTRICT NO. 3 - HOWARD COUNTY, MARYLAND

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: MAY, 2015 BEI PROJECT NO. 2585
 SCALE: AS SHOWN SHEET 10 OF 24

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

Using vegetation as cover to protect exposed soil from erosion. Definition: The process of preparing the soils to sustain adequate vegetative stabilization. Purpose: To provide a suitable soil medium for vegetative growth. Conditions Where Practice Applies: On all disturbed areas not stabilized by other methods. This specification is divided into sections on incremental stabilization, soil preparation, soil amendments and topsoiling; seeding and mulching; temporary stabilization practices; and permanent stabilization.

Effects on Water Quality and Quantity: Stabilization practices are used to promote the establishment of vegetation on exposed soil. When soil is stabilized with vegetation, the soil is less likely to erode and more likely to allow infiltration of rainfall, thereby reducing sediment loads and runoff to downstream areas. Planting vegetation in disturbed areas will have an effect on the water budget, especially on volumes and rates of runoff, infiltration, evaporation, transpiration, percolation, and groundwater recharge. Over time, vegetation will increase organic matter content and improve the water holding capacity of the soil and subsequent plant growth. Vegetation will help reduce the movement of sediment, nutrients, and other chemicals carried by runoff to receiving waters. Plants will also help protect groundwater supplies by assimilating those substances present within the root zone. Sediment control practices must remain in place during grading, seedbed preparation, seeding, mulching, and vegetative establishment.

Adequate Vegetative Establishment and Maintenance: Inspect seeded areas for vegetative establishment and make necessary repairs, replacements, and reseedings within the planting season.

- Adequate vegetative stabilization requires 95 percent groundcover.
- If an area has less than 40 percent groundcover, reestablish following the original recommendations for lime, fertilizer, seedbed preparation, and seeding.
- If an area has between 40 and 94 percent groundcover, over-seed and fertilize using half of the rates originally specified.
- Maintenance fertilizer rates for permanent seeding are shown in Table B.6.

B-4-1 STANDARDS AND SPECIFICATIONS FOR INCREMENTAL STABILIZATION

Establishment of vegetative cover on cut and fill slopes. Purpose: To provide timely vegetative cover on cut and fill slopes as work progresses. Conditions Where Practice Applies: Any cut or fill slope greater than 15 feet in height. This practice also applies to stockpiles.

Criteria:

- Excavate and stabilize cut slopes in increments not to exceed 15 feet in height. Prepare seedbed and apply seed and mulch on all cut slopes as the work progresses.
- Construction sequence example (Refer to Figure B.1):
 - Construct and stabilize all temporary swales or dikes that will be used to convey runoff around the excavation.
 - Perform Phase 1 excavation, prepare seedbed, and stabilize.
 - Perform Phase 2 excavation, prepare seedbed, and stabilize. Overseed Phase 1 areas as necessary.
 - Perform final phase excavation, prepare seedbed, and stabilize. Overseed previously seeded areas as necessary.

Note: Once excavation has begun the operation should be continuous from grubbing through the completion of grading and placement of topsoil (if required) and permanent seed and mulch. Any interruptions in the operation or completing the operation out of the seeding season will necessitate the application of temporary stabilization.

B. Incremental Stabilization - Fill Slopes

- Construct and stabilize fill slopes in increments not to exceed 15 feet in height. Prepare seedbed and apply seed and mulch on all slopes as the work progresses.
- Stabilize slopes immediately when the vertical height of a lift reaches 15 feet, or when the grading operation ceases as prescribed in the plans.
- At the end of each day, install temporary water conveyance practice(s), as necessary, to intercept surface runoff and convey it down the slope in a non-erosive manner.
- Construction sequence example (Refer to Figure B.2):
 - Construct and stabilize all temporary swales or dikes that will be used to divert runoff around the fill. Construct silt fence on low side of fill unless other methods shown on the plans address this area.
 - At the end of each day, install temporary water conveyance practice(s), as necessary, to intercept surface runoff and convey it down the slope in a non-erosive manner.
 - Place Phase 1 fill, prepare seedbed, and stabilize.
 - Place Phase 2 fill, prepare seedbed, and stabilize.
 - Place final phase fill, prepare seedbed, and stabilize. Overseed previously seeded areas as necessary.

Note: Once the placement of fill has begun the operation should be continuous from grubbing through the completion of grading and placement of topsoil (if required) and permanent seed and mulch. Any interruptions in the operation or completing the operation out of the seeding season will necessitate the application of temporary stabilization.

B. Mulching

- Mulch Materials (in order of preference)
 - Straw consisting of thoroughly threshed wheat, rye, oat, or barley and reasonably bright in color. Straw is to be free of noxious weed seeds as specified in the Maryland Seed Law and not musty, moldy, caked, or excessively dusty. Note: Use only sterile straw mulch in areas where one species of grass is desired.
 - Wood Cellulose Fiber Mulch (WCFM) consisting of specially prepared wood cellulose processed into a uniform fibrous physical sluff.
 - WCFM is to be dyed green or contain a green dye in the package that will provide an appropriate color to facilitate visual inspection of the uniformly spread sluff.
 - WCFM, including dye, must contain no germination or growth inhibiting factors.
 - WCFM materials are to be manufactured and processed in such a manner that the wood cellulose fiber mulch will remain in uniform suspension in water under agitation and will blend with seed, fertilizer and other additives to form a homogeneous slurry. The mulch material must form a blotter-like ground cover, on application, having moisture absorption and percolation properties and must cover and hold grass seed in contact with the soil without inhibiting the growth of the grass seedlings.
 - WCFM material must not contain elements or compounds at concentration levels that will be phyto-toxic.
 - WCFM must conform to the following physical requirements: fiber length of approximately 10 millimeters, diameter approximately 1 millimeter, pH range of 4.0 to 8.5, ash content of 1.6 percent maximum and water holding capacity of 90 percent minimum.

H-5 STANDARDS AND SPECIFICATIONS FOR DUST CONTROL

Controlling the suspension of dust particles from construction activities. Purpose: To prevent blowing and movement of dust from exposed soil surfaces to reduce on and off-site damage including health and traffic hazards.

Conditions Where Practice Applies: Areas subject to dust blowing and movement where on and off-site damage is likely without treatment.

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

- Obtain grading permit. (day 1)
- Hold on-site pre-construction meeting. (day 2)
- Clear and Grub as necessary to install stabilized construction entrance and perimeter controls (super silt fences, diversion dikes) (day 3-6)
- Upon approval from the Howard County sediment control inspector, proceed to clear, grub and grade within the perimeter. (day 7-10)
- Install new sewer line from ex SMH 16 to ex SMH 15. Utilize either the pump around practice or the diversion pipe practice per details shown on sheet 13. Limit the amount of disturbance within the stream channel as much as possible. The installation of the sewer in the area of the stream channel shall occur within 24 hours. (day 11-12)
- Install the 52" Con/Span arch and 60" diameter pipes and headwalls. Backfill over the arch from both sides (north side and south side) simultaneously up to an elevation where access across the bridge can be achieved. Backfill shall occur in layers not exceeding 8 inches. Do NOT exceed 2'-0" of elevation between each side of the bridge where backfilling will occur. Dirt for the north side shall come from stockpile area within Turf Valley and access to the arch will be from the end of Town Square Parkway. Dirt for the south side shall be taken from the area labeled "Temporary Borrow Area" and accessed via the existing golf cart path system. (day 13-33)
- Once initial backfill is complete and access across the bridge can be utilized, return temporary backfill area back to its original grade utilizing dirt within Turf Valley site. Remove SCE #2. Grade the swale along MB #1 and MB #2 and install erosion control matting. (Note this swale will not receive any runoff until the earth dike is removed. Do NOT remove earth dike at this time) (day 34-48)
- Bring roadbed to subgrade and utilize Permanent Soil Stabilization Matting Slope Protection with the limits of the stream buffers. Grade the swale at the end of the road by MB #3 and install erosion control matting. (Note this swale will not receive any runoff until the earth dike is removed. Do NOT remove earth dike at this time). (day 49-59)
- Construct MB #1, #2 and #3 including all underdrains, stone and planting soil. Wrap perimeter with silt fence. Do NOT install the planting at this time. (day 60-70)
- Install water main. (day 71-75).
- Install curb and gutter and base pave the roadway. (day 87-94)
- Install guardrails. (day 95-101)
- Install the sidewalks and street lights. (day 102-109)
- Install the final plantings for MB #1, #2 and #3 and street trees. (day 110-112)
- Upon approval from the Howard County sediment control inspector, remove sediment control devices and stabilize any remaining disturbed areas in accordance with the permanent seeded notes. (day 113-120)

Table B.1: Temporary Seeding for Site Stabilization

Plant Species	Seeding Rate 1/		Recommended Seeding Dates by Plant Hardiness Zone 3/			
	lb/ac	lb/1000 ft ²	5b and 6a		6b	7a and 7b
Cool-Season Grasses						
Annual Ryegrass (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 (Serataria 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:

- Seeding rates for the warm season grasses are in pounds of Pure Live Seed (PLS). Actual planting rates shall be adjusted to reflect percent seed germination and purity, as tested. Adjustments are usually not needed for the cool-season grasses.
- Seeding rates listed above are for temporary seedings, when planted alone. When planted as a nurse crop with permanent seed mixes, use 1/3 of the seeding rate listed above for barley, oats, and wheat. For smaller-seeded grasses (annual ryegrass, pearl millet, foxtail millet), do not exceed more than 5% (by weight) of the overall permanent seeding mix. Cereal rye generally should not be used as a nurse crop, unless planting will occur very late fall beyond the seeding dates for other temporary seedings. Cereal rye has allelopathic properties that inhibit the germination and growth of other plants. If it must be used as a nurse crop, seed at 1/3 of the rate listed above.
- Oats are the recommended nurse crop for warm-season grasses.
- For sandy soils, plant seeds at twice the depth listed above.
- 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

No.	Species	Application Rate (lb/ac)	Seeding Dates	Seeding Depths	Fertilizer Rate (10-20-20)			Lime Rate
					N	P2O5	K2O	
9	Fescue, Tall	60	Mar 1 to May 15	1/4 - 1/2 in	45 pounds per acre	90 lb/ac	90 lb/ac	2 tons/ac
			Aug 1 to Oct 15	1/4 - 1/2 in	(1.0 lb/100 sf)	(2 lb/1000 sf)	(2 lb/1000 sf)	(90lb/1000 sf)
9	Bluegrass, Kentucky	40	Mar 1 to May 15	1/4 - 1/2 in	45 pounds per acre	90 lb/ac	90 lb/ac	2 tons/ac
			Aug 1 to Oct 15	1/4 - 1/2 in	(1.0 lb/100 sf)	(2 lb/1000 sf)	(2 lb/1000 sf)	(90lb/1000 sf)

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.

CEM Malagan 5-20-15
ENGINEER DATE

DEVELOPER'S CERTIFICATE

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CEM Malagan 5-19-15
DEVELOPER DATE

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

John C. Robertson 6/14/15
HOWARD SOIL CONSERVATION DISTRICT DATE

APPROVED: DEPARTMENT OF PUBLIC WORKS

Meemini 6/23/2015
CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Kat Balash 6-29-15
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

Chad Eche 6-24-15
CHIEF, DEVELOPMENT ENGINEERING DIVISION 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. *21403*, Expiration Date: *12-31-20*

DOUGLAS B. WILSON
Professional Engineer
No. 21403
5-20-15

NO AS-BUILT INFORMATION IS PROVIDED ON THIS SHEET

BENCHMARK ENGINEERING, INC.
ENGINEERS & LAND SURVEYORS & PLANNERS
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TAX MAP: 16 - GRID: 10 - PARCEL: P/0 8 & 50
ZONED: POGC (MULTI-USE SUBDISTRICT)
ELECTION DISTRICT NO. 3 - HOWARD COUNTY, MARYLAND

SEDIMENT AND EROSION CONTROL NOTES

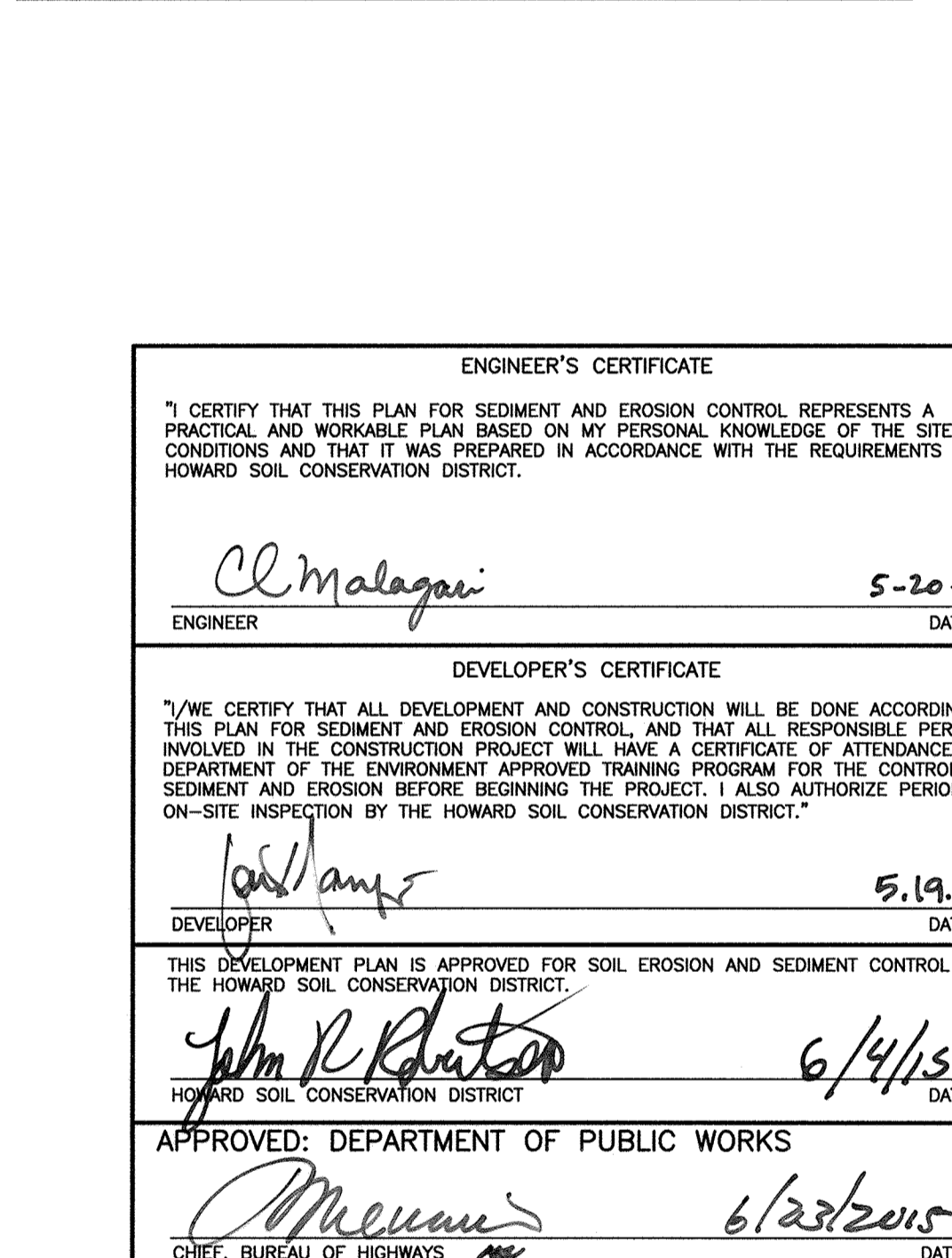
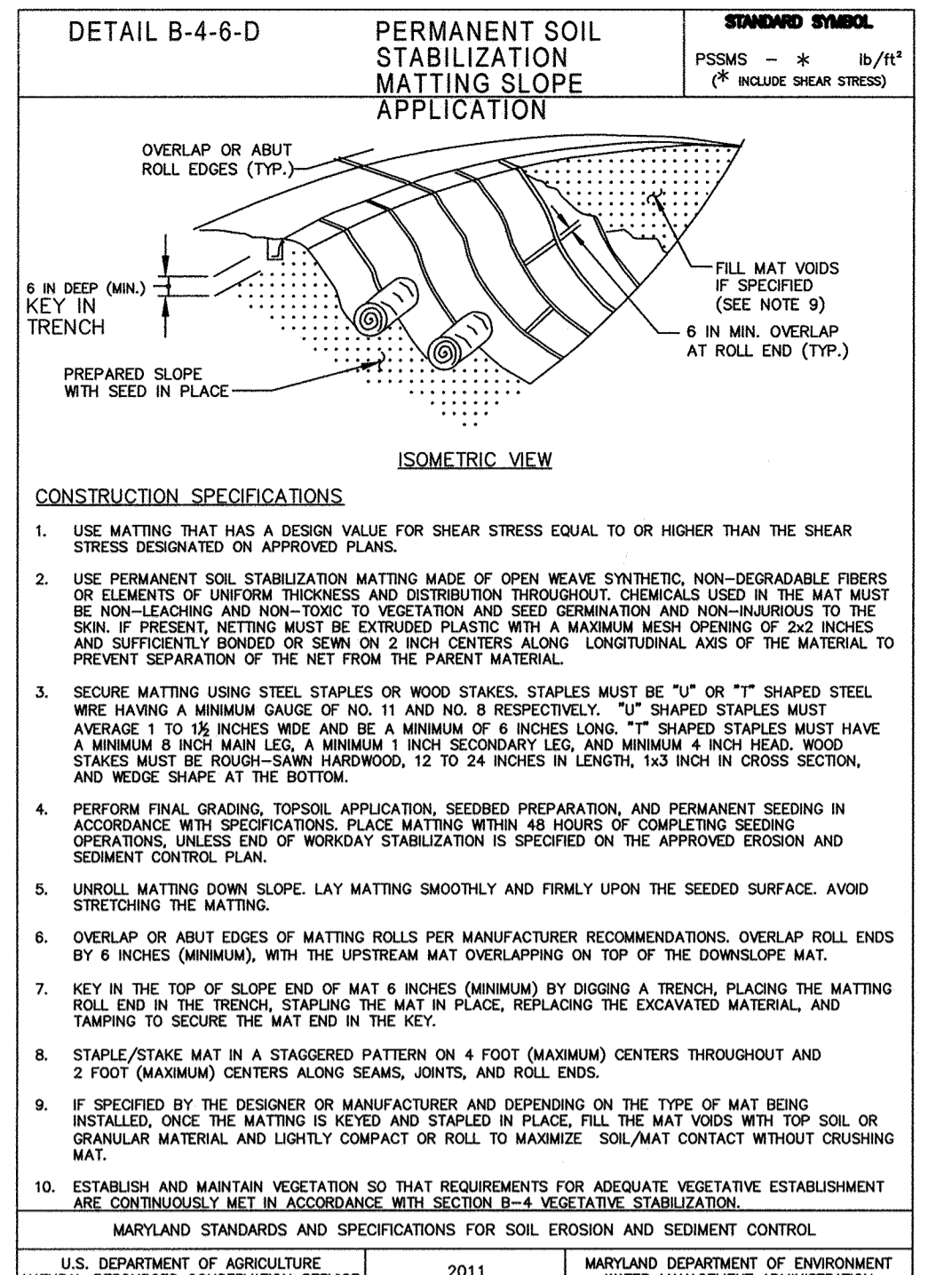
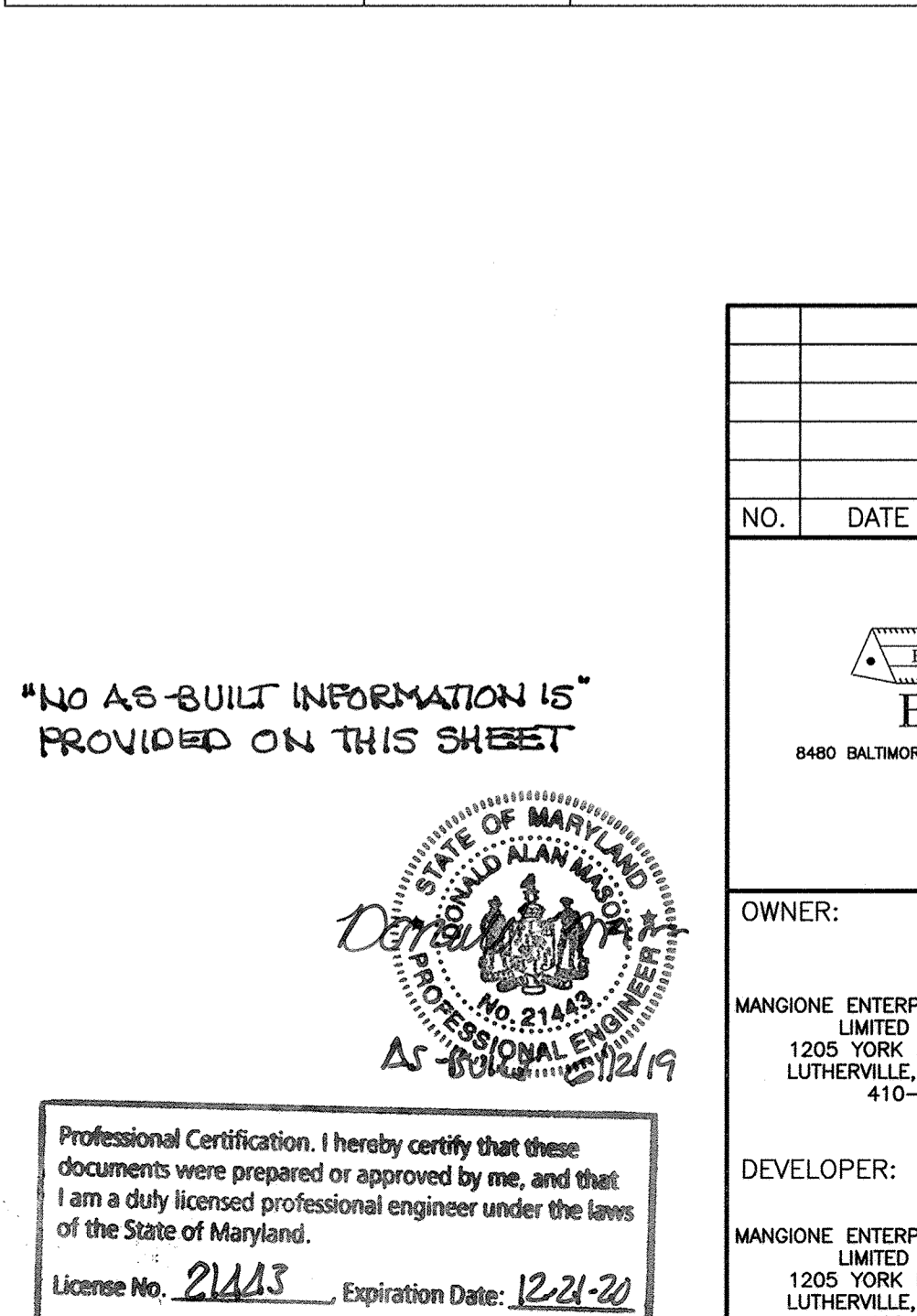
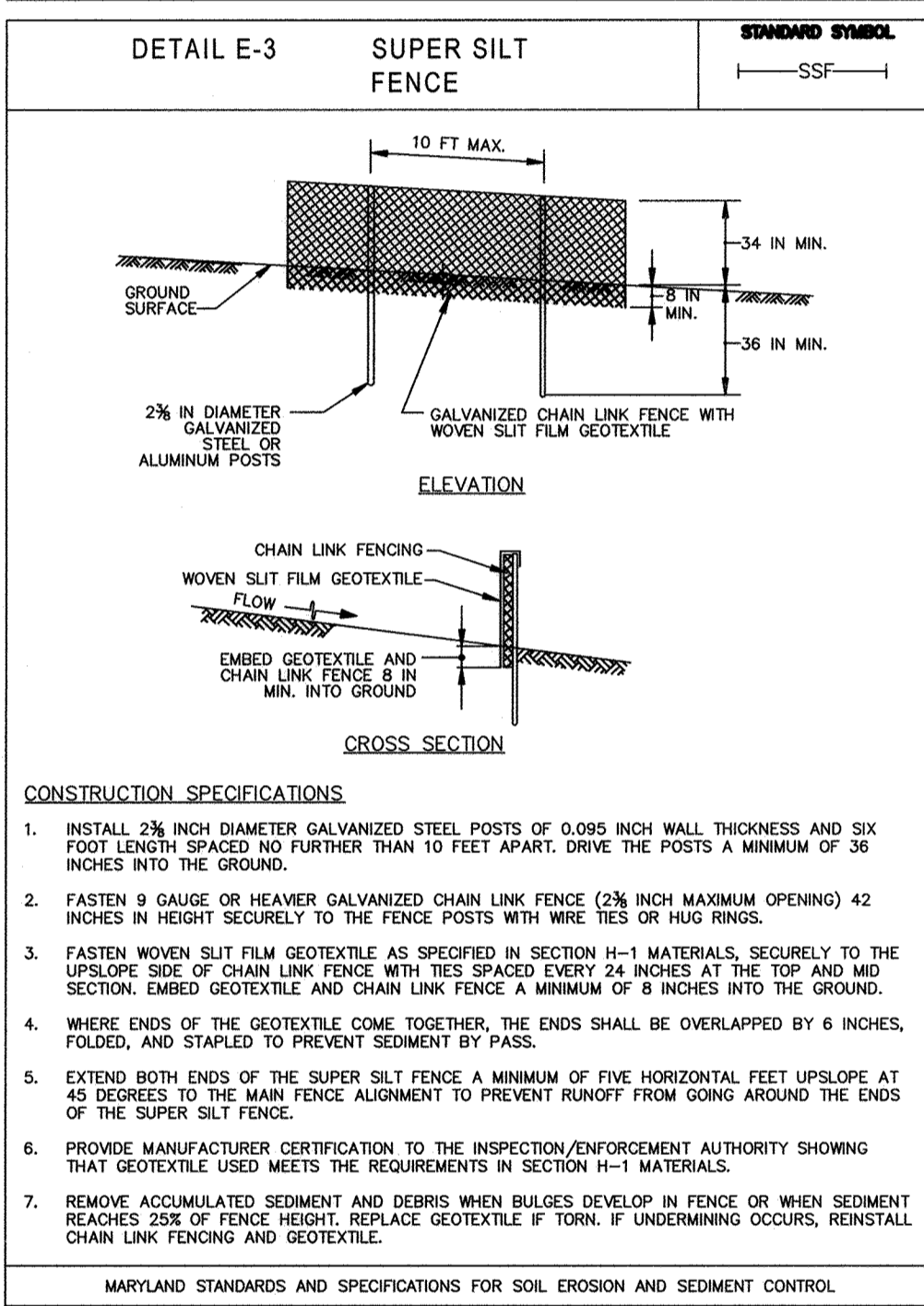
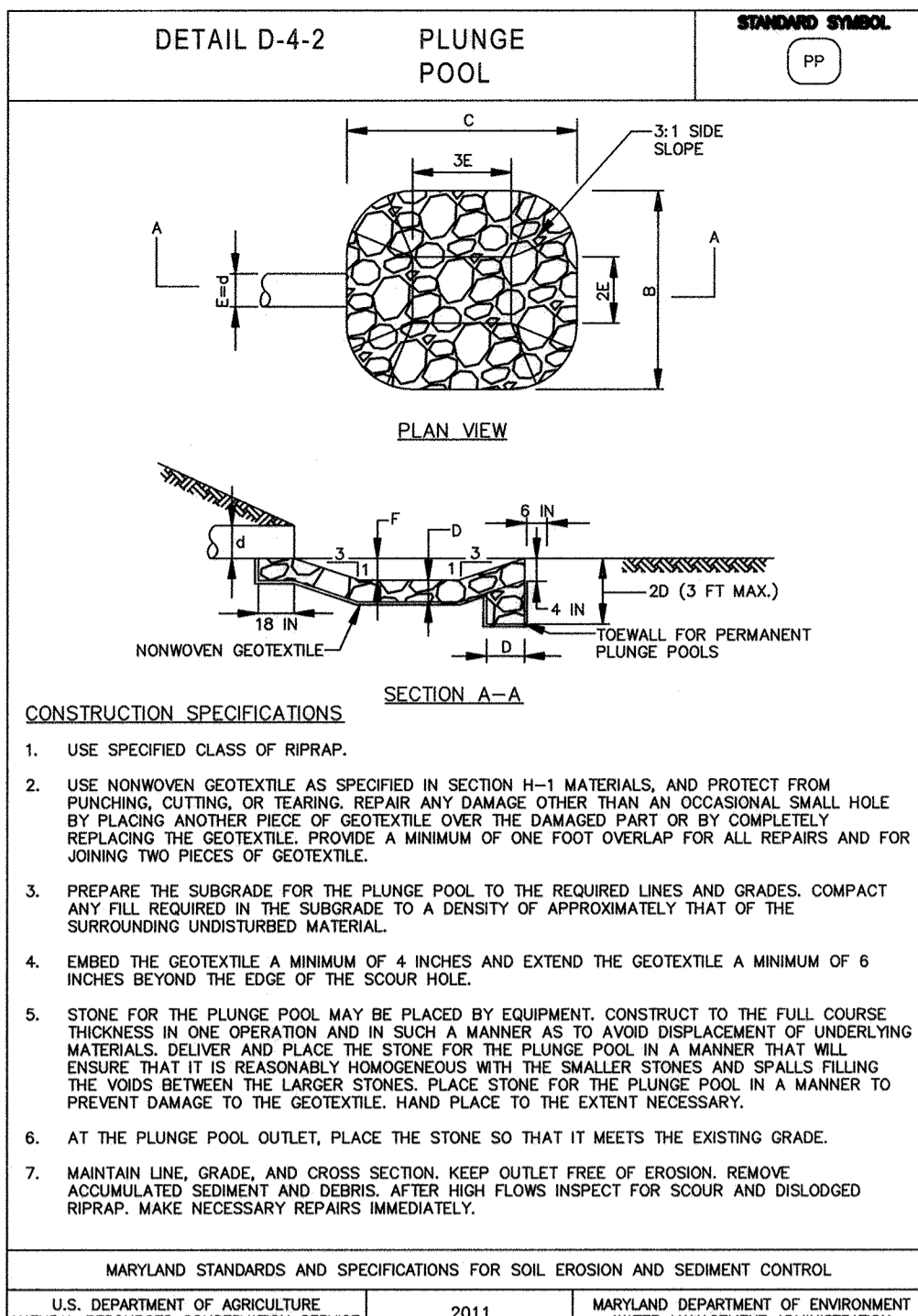
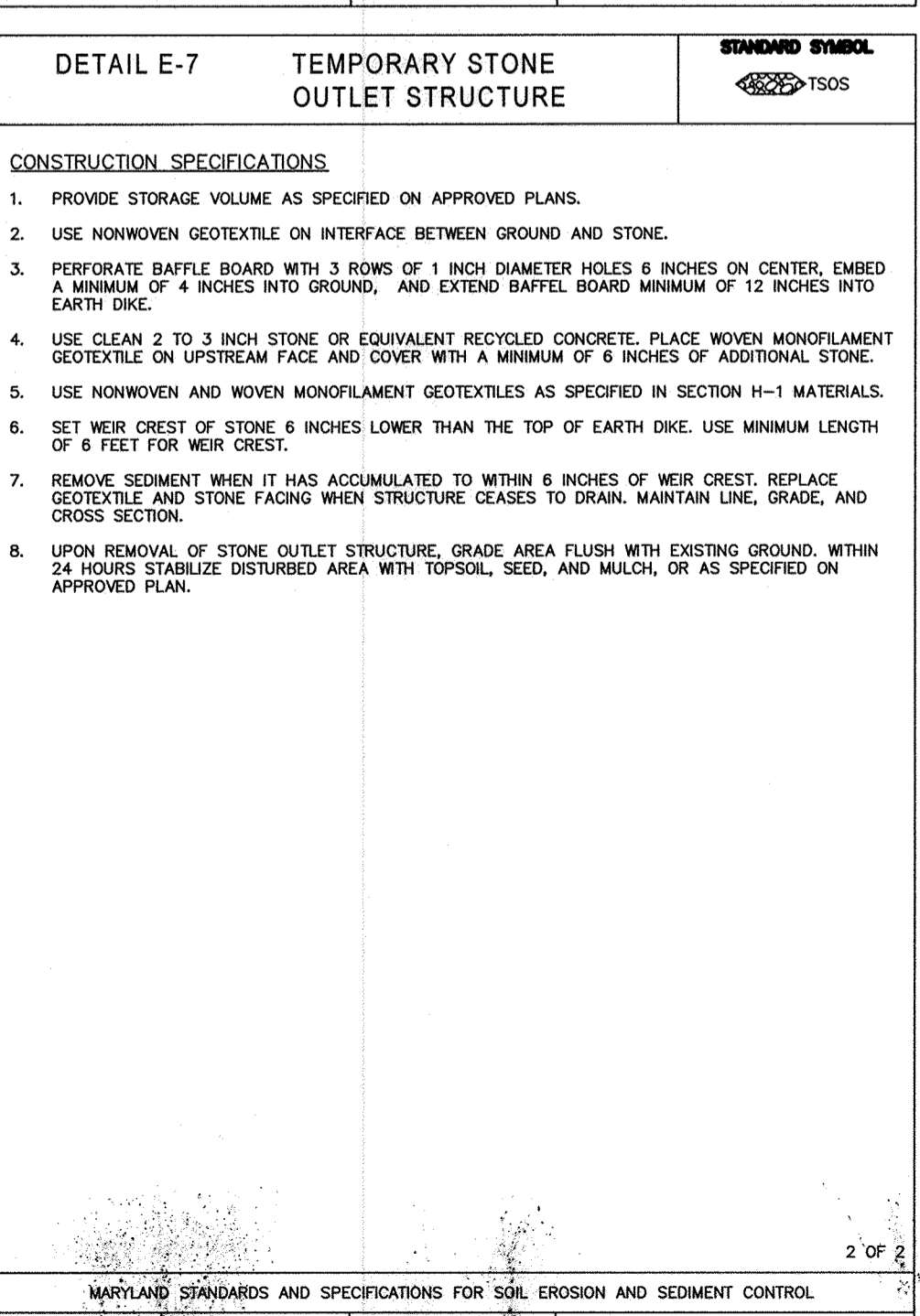
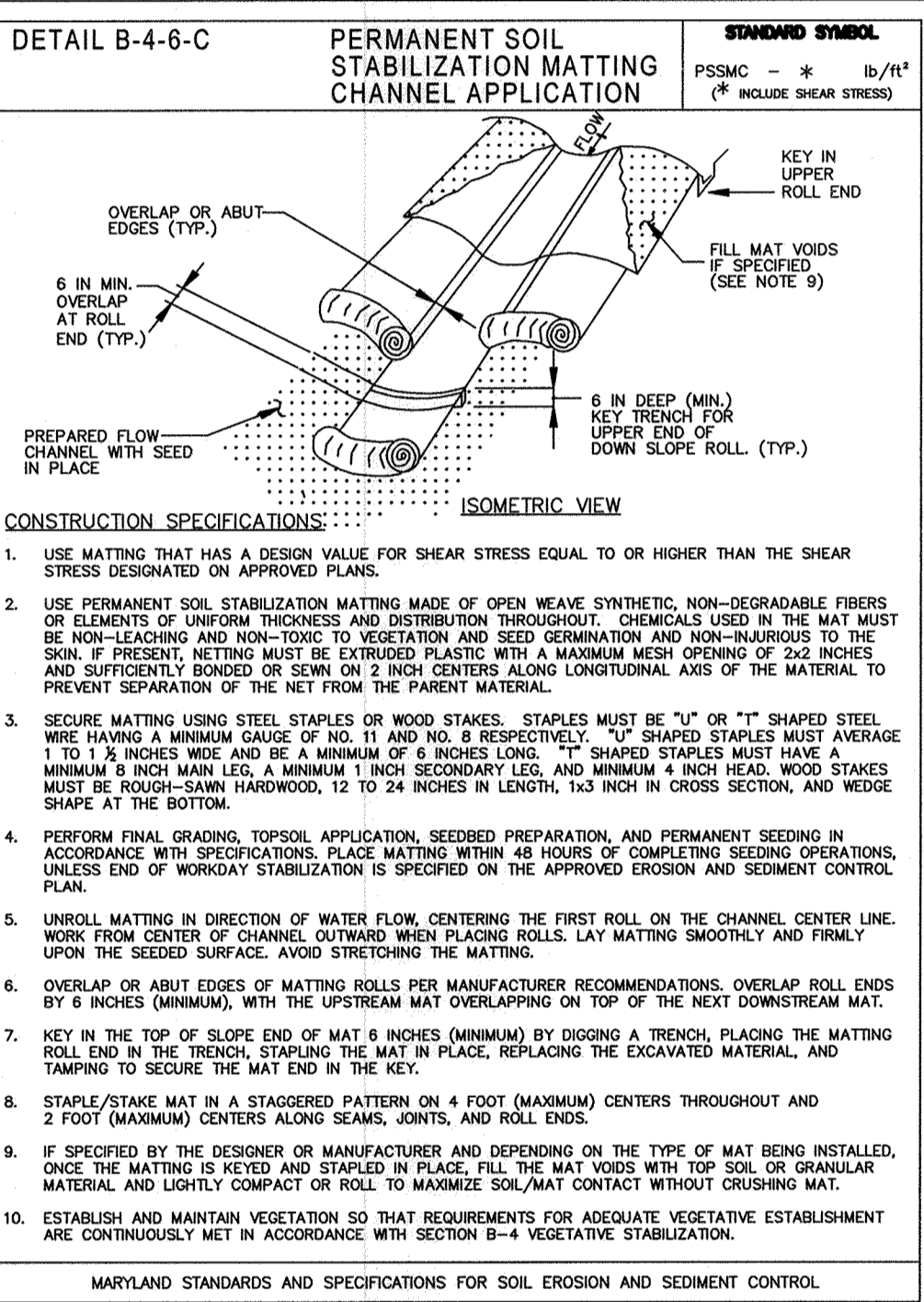
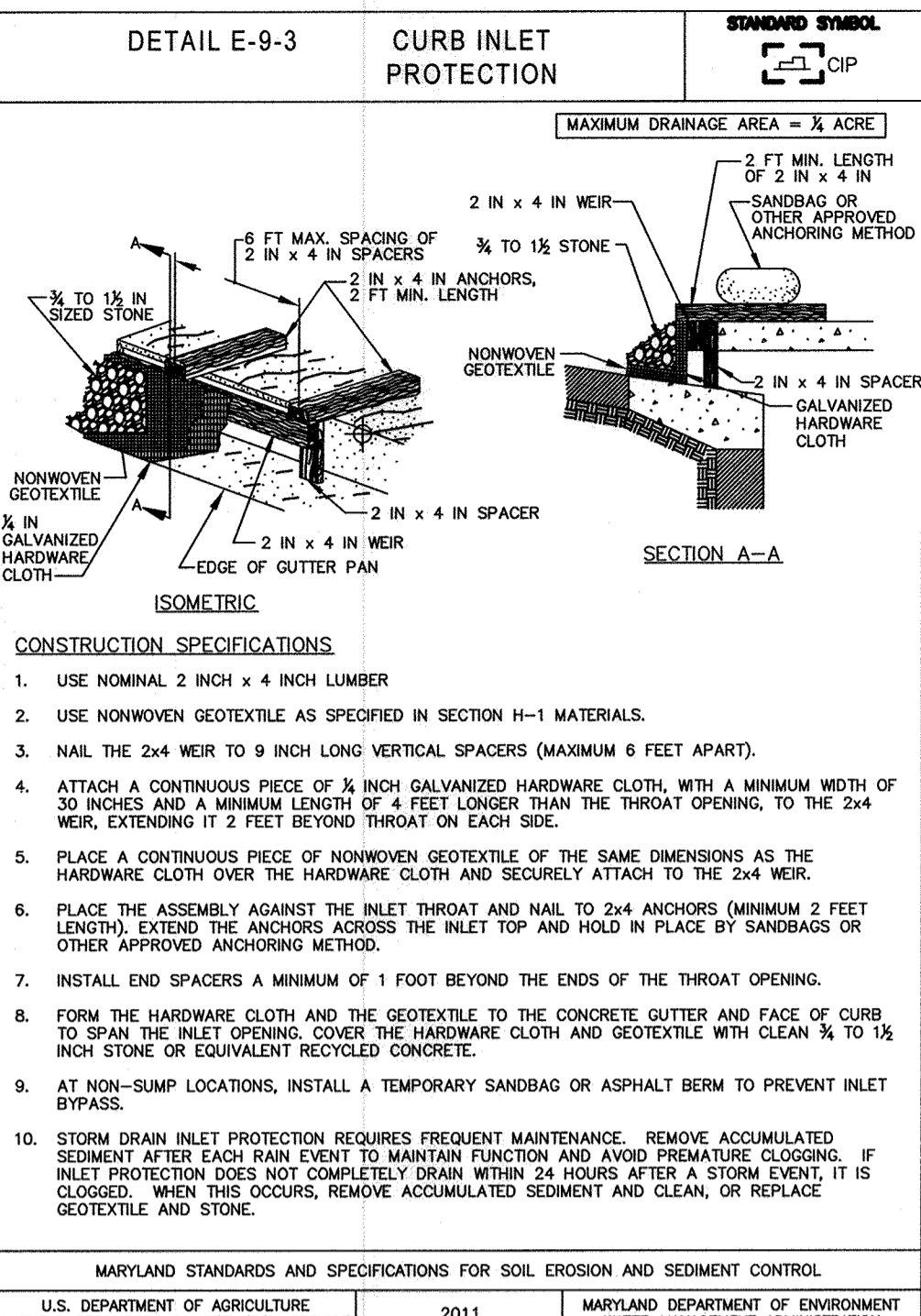
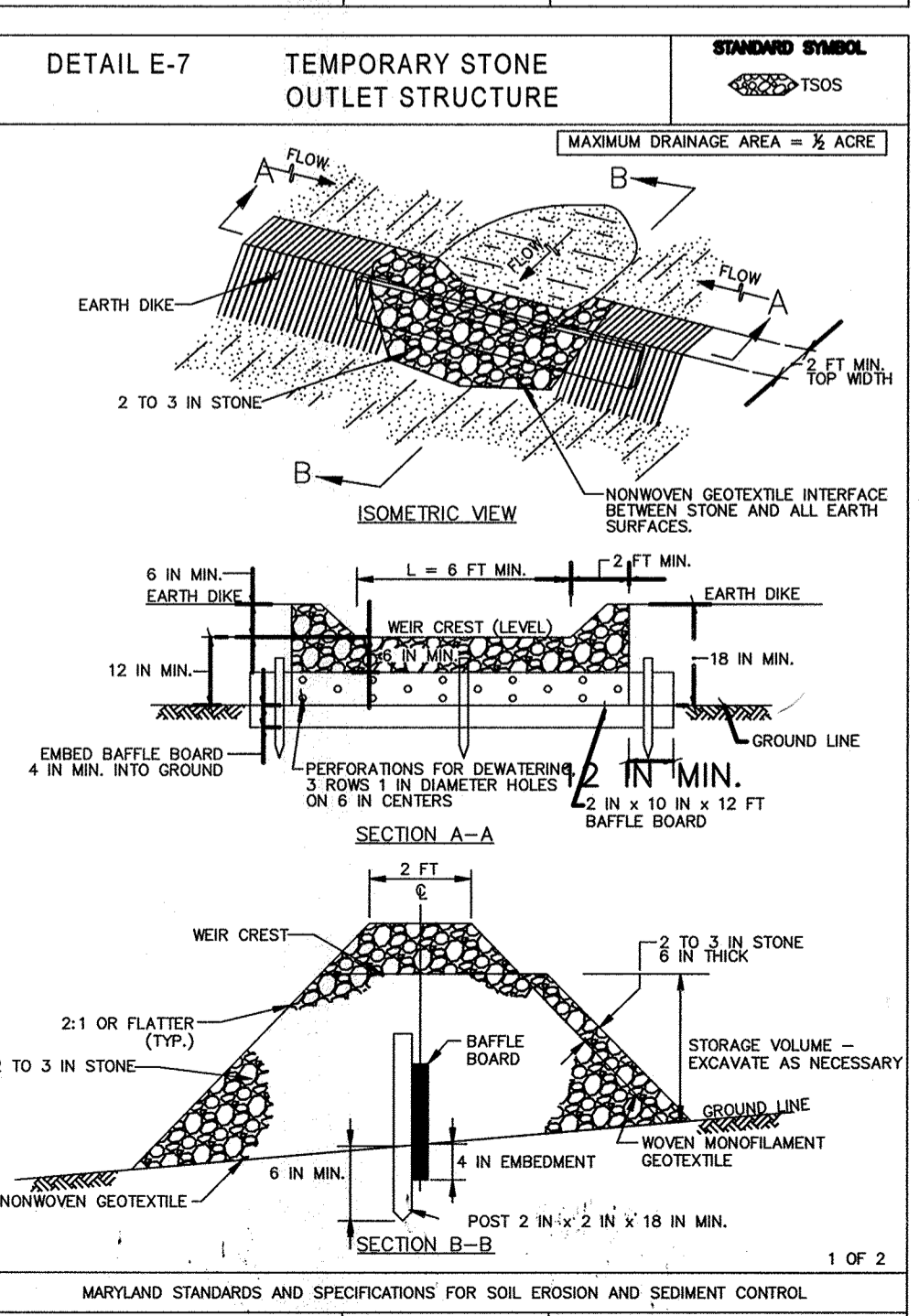
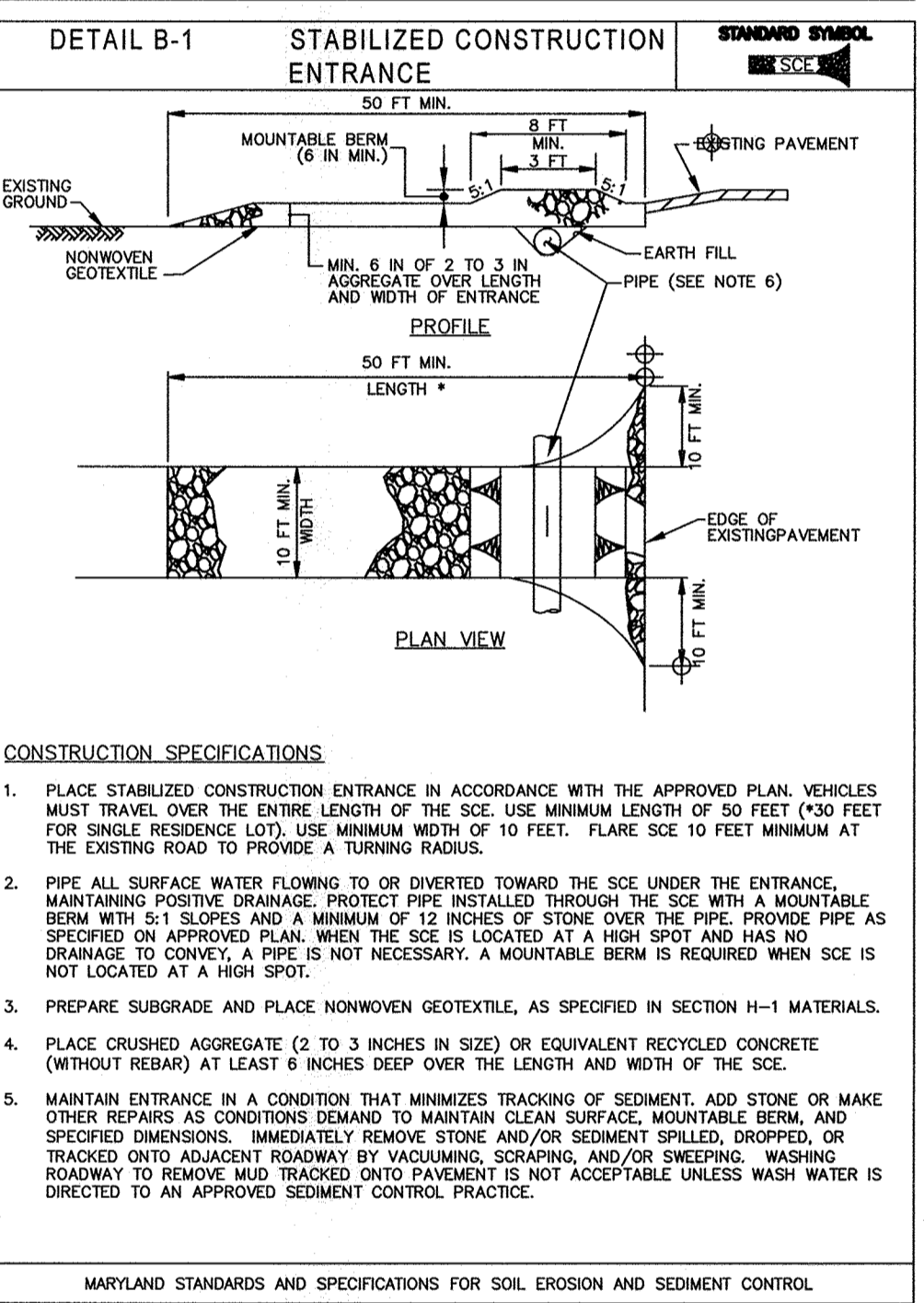
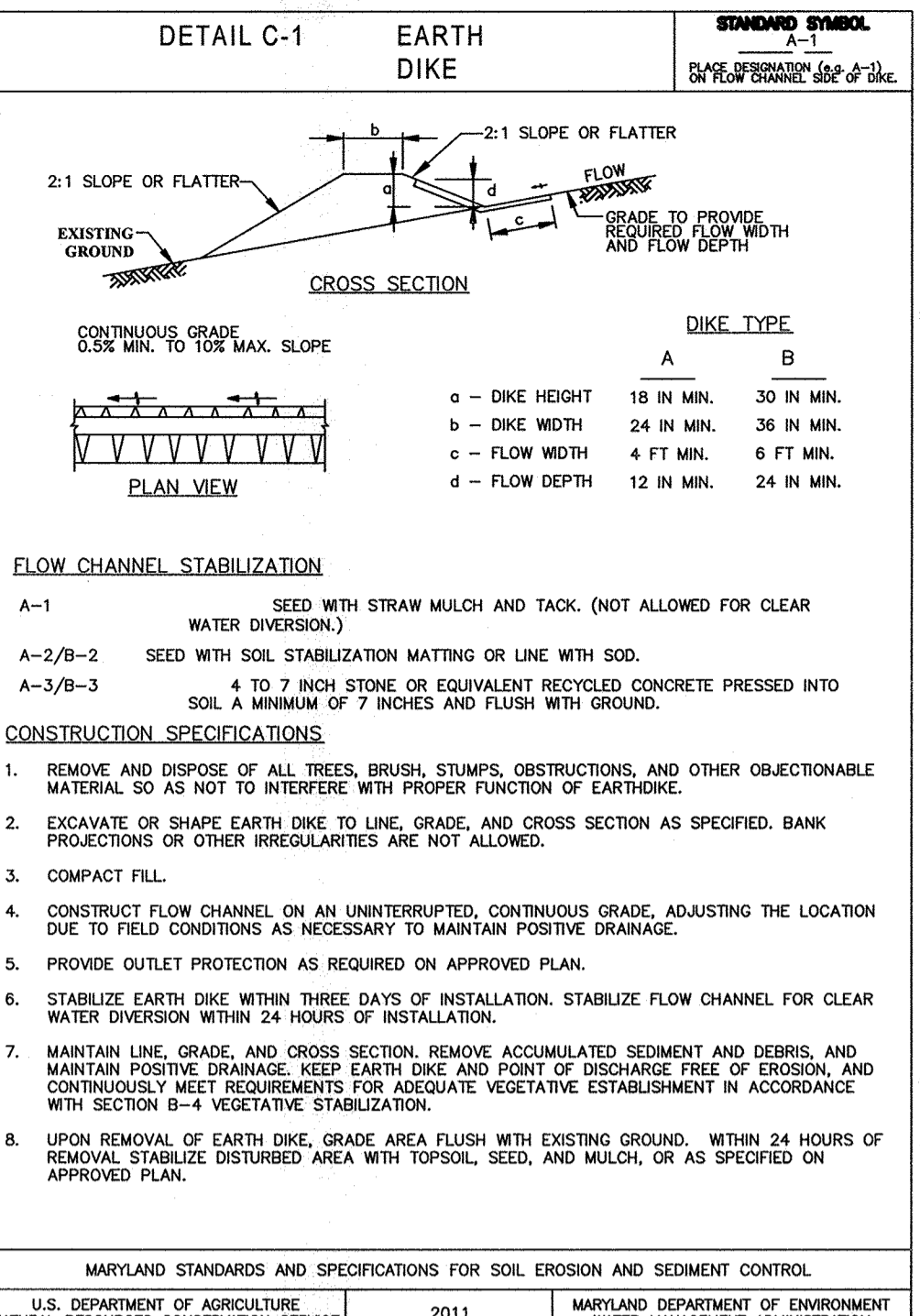
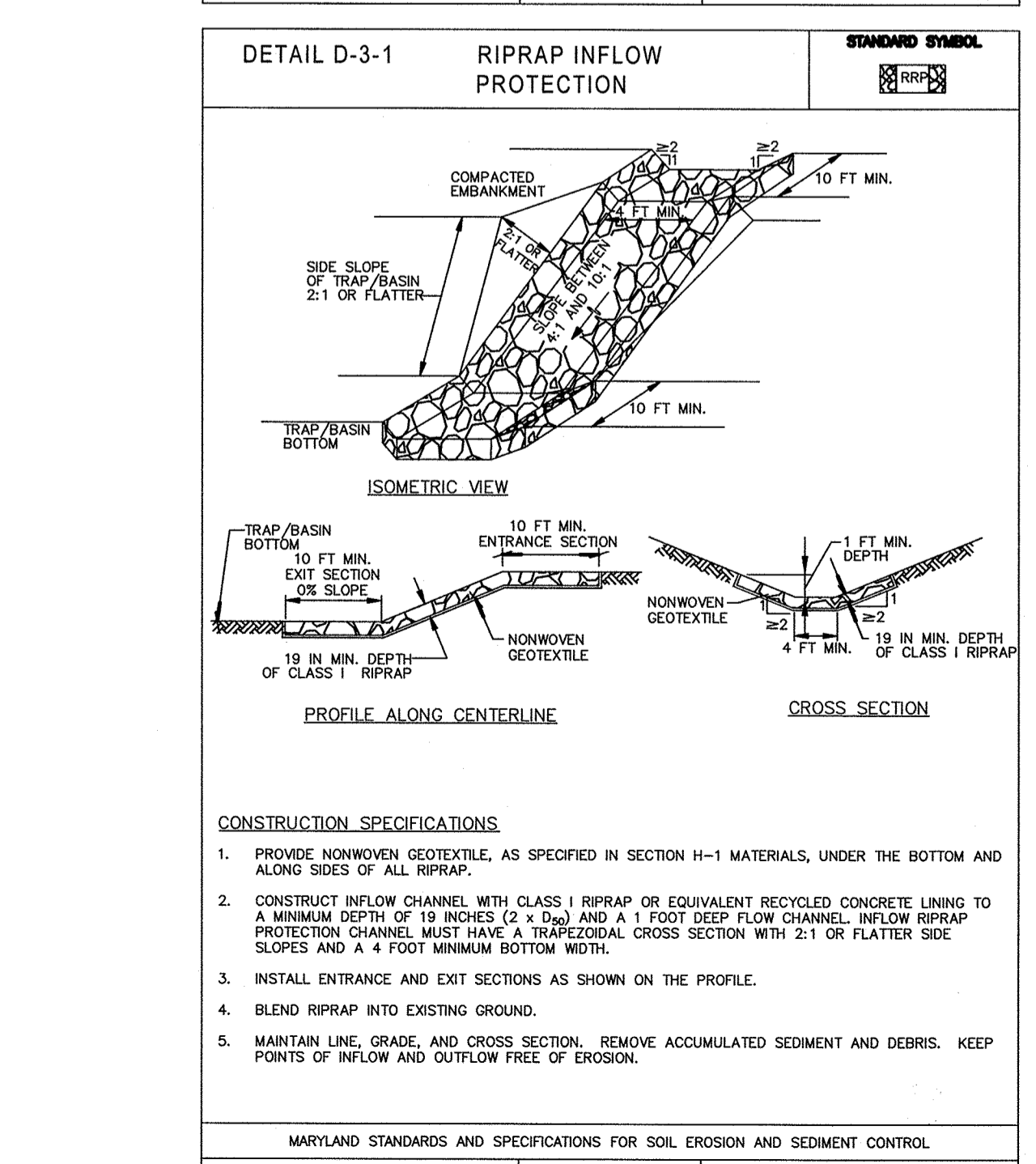
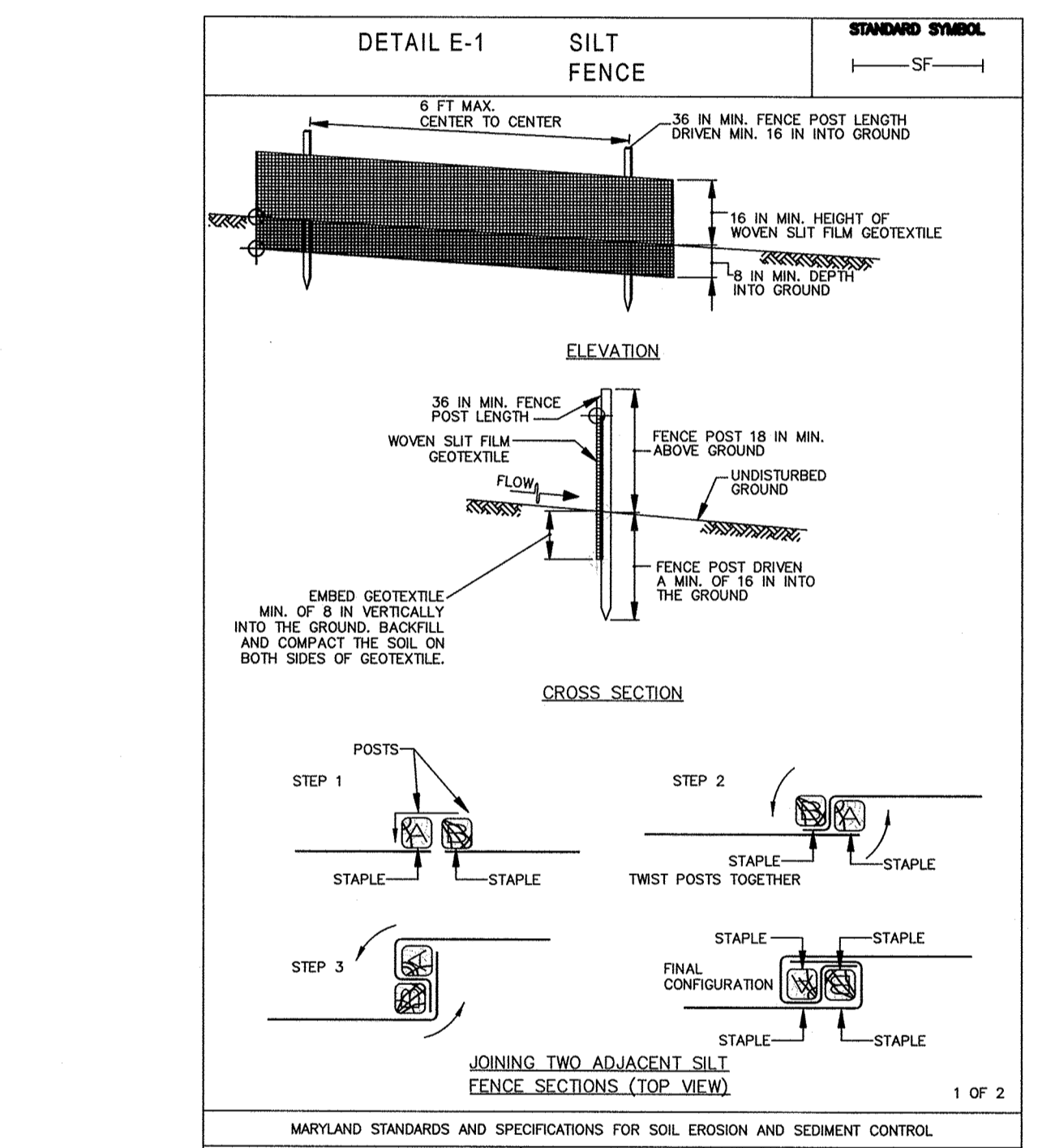
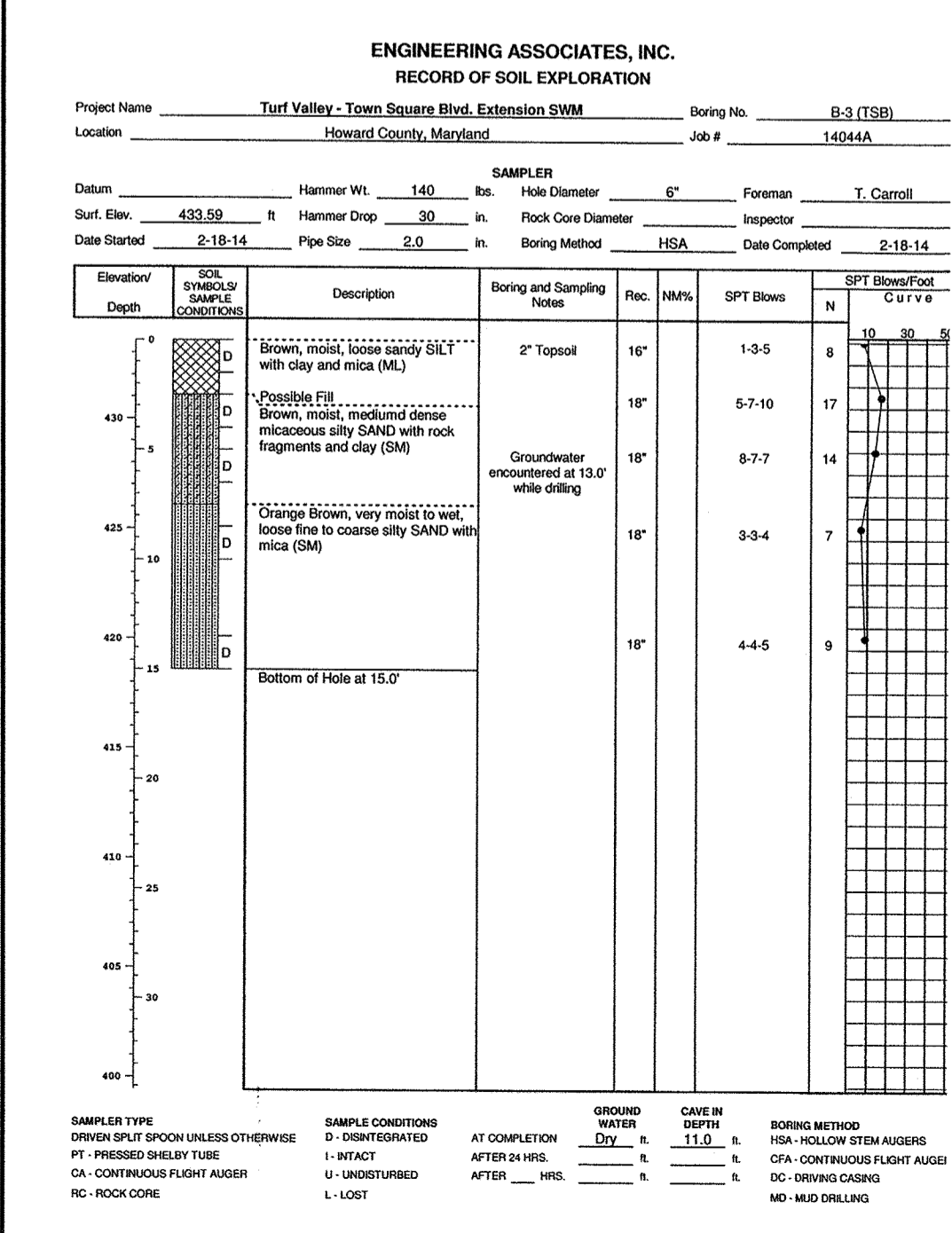
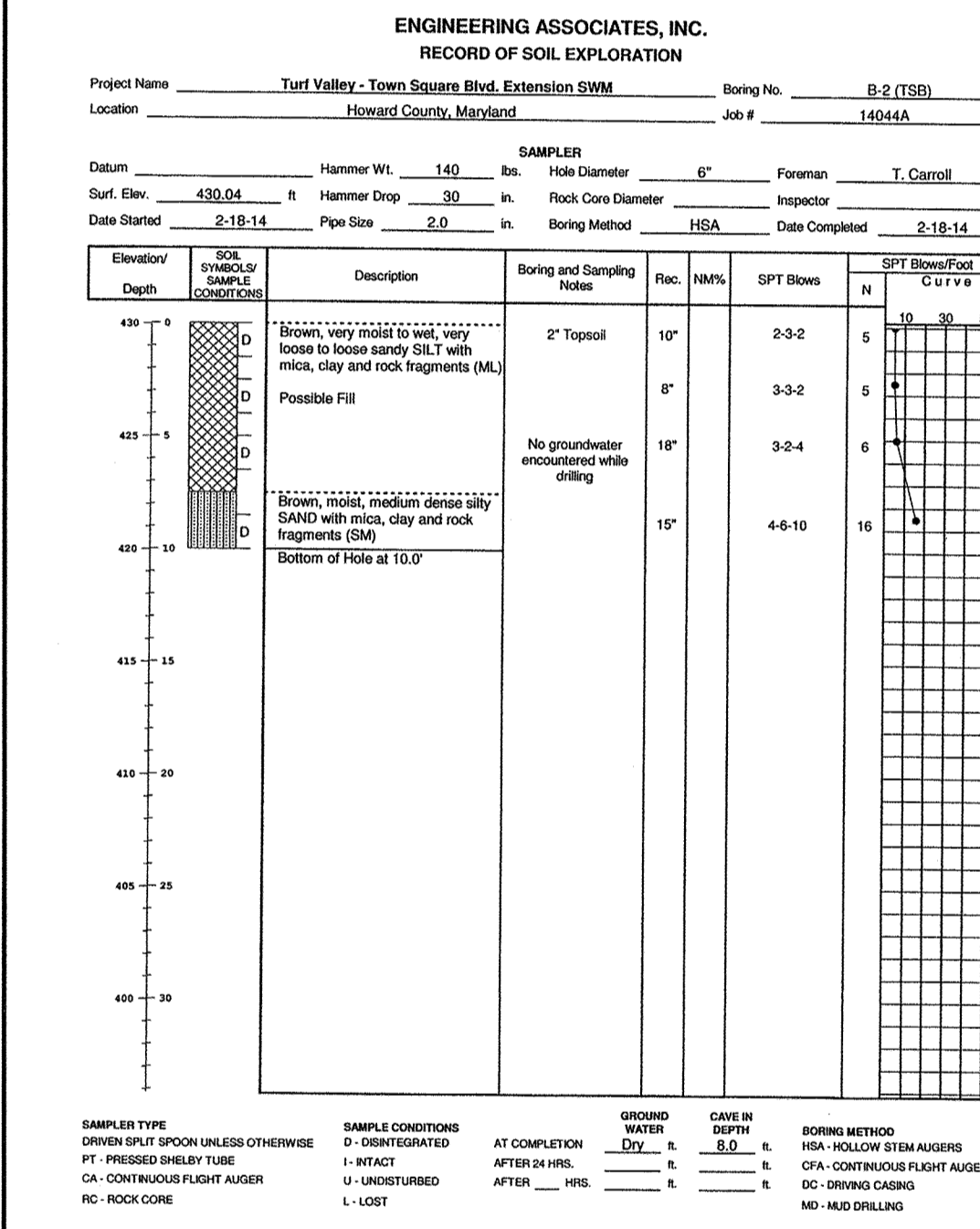
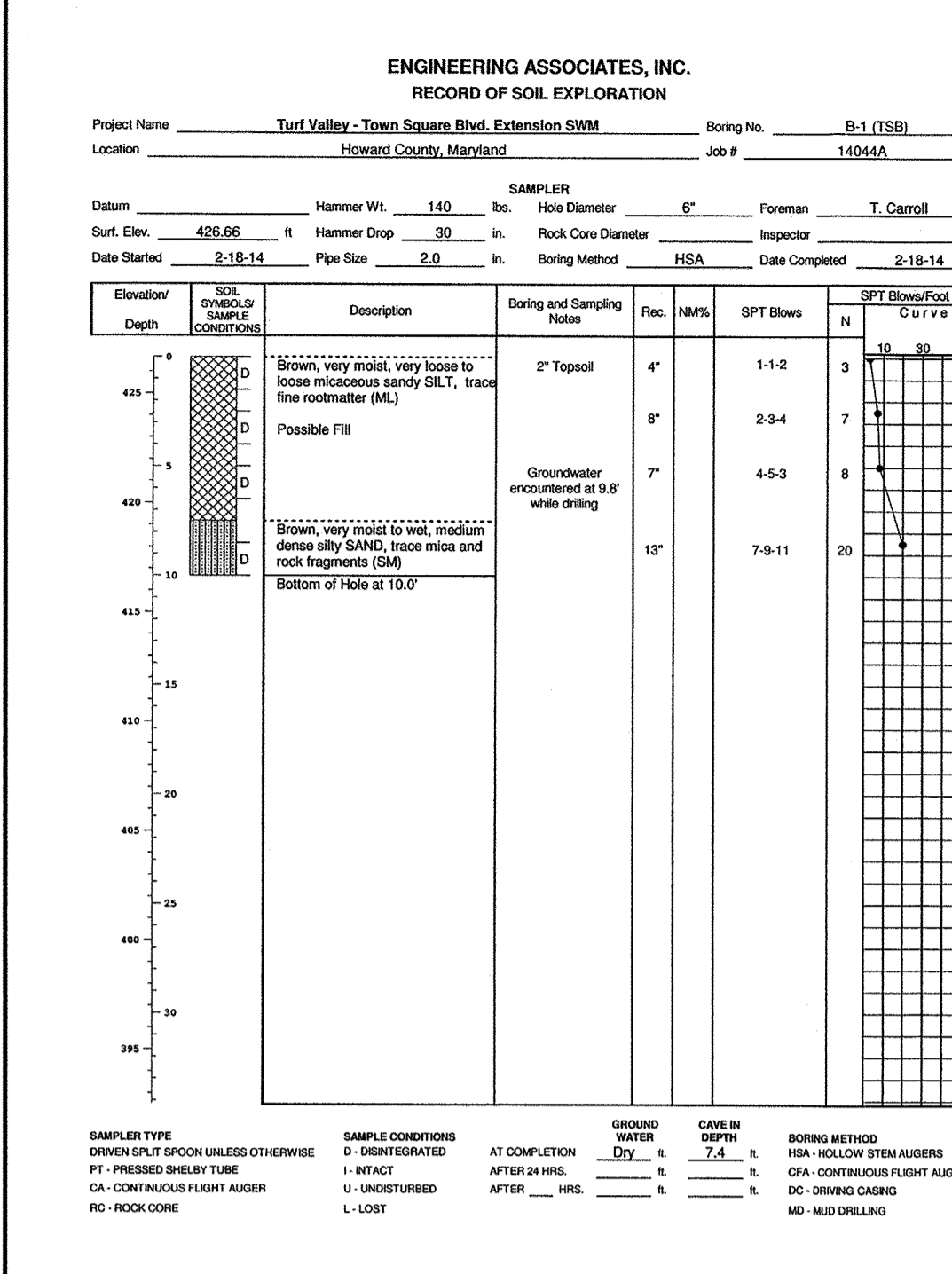
OWNER: MANGIONE ENTERPRISES OF TURF VALLEY LIMITED PARTNERSHIP
1205 YORK ROAD, PENTHOUSE LUTHERVILLE, MARYLAND 21093 410-825-8400

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

DATE: MAY, 2015
SCALE: AS SHOWN

BEI PROJECT NO. 2585
SHEET 11 OF 24

AS-BUILT **F-15-056**



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. Malaga 5-20-15
ENGINEER DATE

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John R. Rector 6/4/15
HOWARD SOIL CONSERVATION DISTRICT DATE

APPROVED: DEPARTMENT OF PUBLIC WORKS

Michael 6/23/2015
CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING

Kevin S. Dool 6-29-15
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

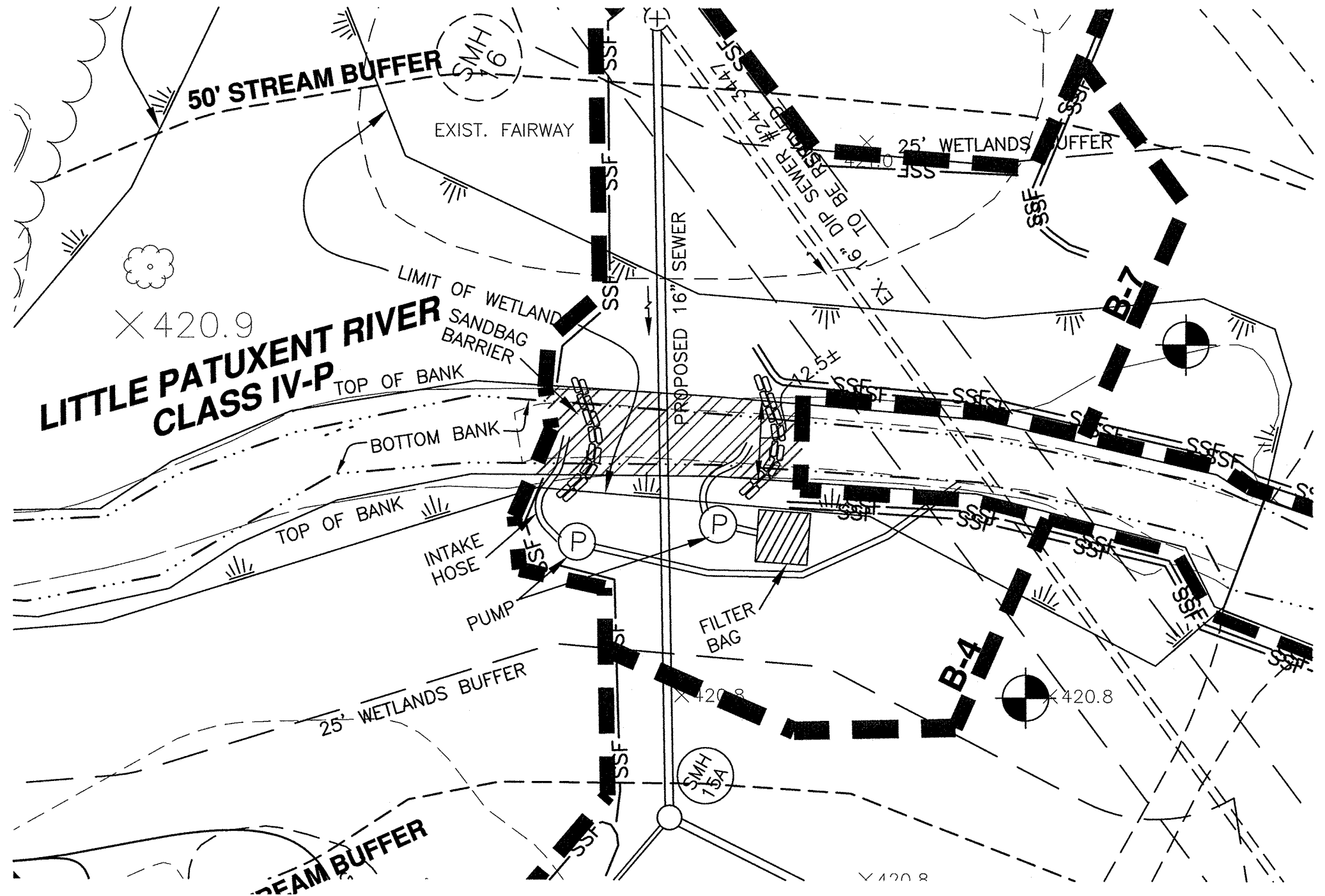
John S. Hall 6-24-15
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

BENCHMARK ENGINEERING, INC.
8400 BALTIMORE NATIONAL PIKE SUITE 315 & ELLIOTT CTR, MARYLAND 21043
(410) 485-8105 (F) 410-485-8644
WWW.BE-CIVILENGINEERING.COM

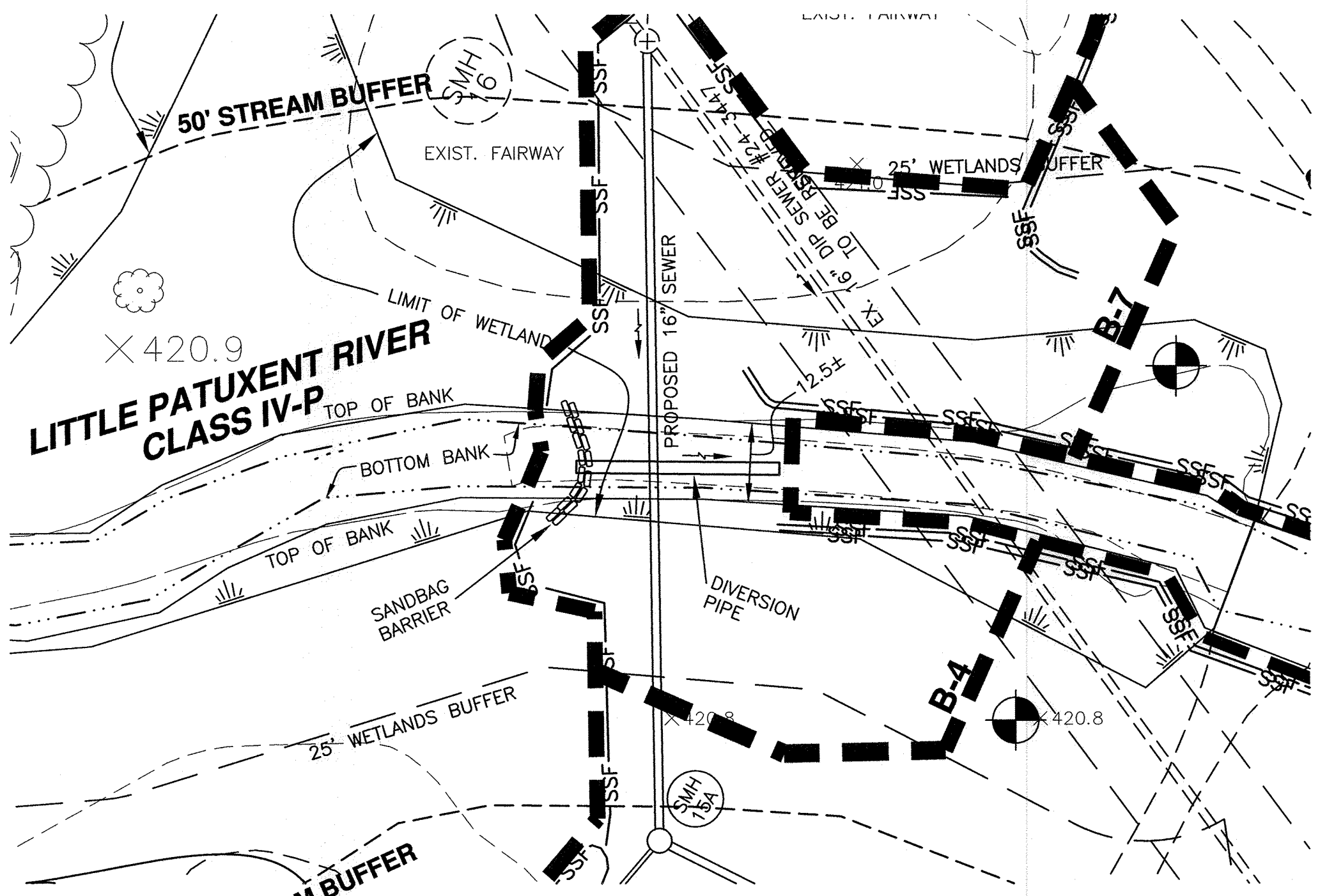
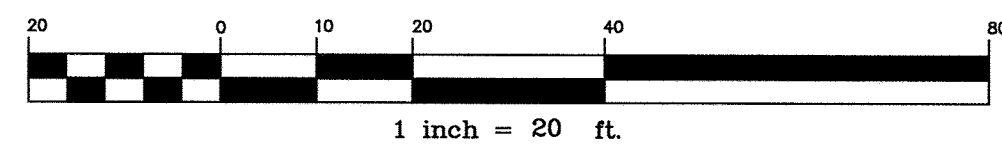
TOWN SQUARE PARKWAY
PARCELS 1-2, 1-3, K-1, & L AND OPEN SPACE LOTS 6 thru 8
A RESUBDIVISION OF OPEN SPACE LOT 2 AND PARCELS 1 & K PREVIOUSLY RECORDED AS PLAT 18696-18698, OPEN SPACE LOTS 4 & 5 PREVIOUSLY RECORDED AS PLAT 22078-22079, AND PART OF UNRECORDED PARCEL 8
TAX MAP: 16 - GRID: 10 - PARCEL: P/O 8 & 5
ZONED: PCCC (MULTI-USE SUBDISTRICT)
ELECTION DISTRICT NO. 3 - HOWARD COUNTY, MARYLAND

SEDIMENT AND EROSION CONTROL DETAILS AND SOIL BORING LOGS

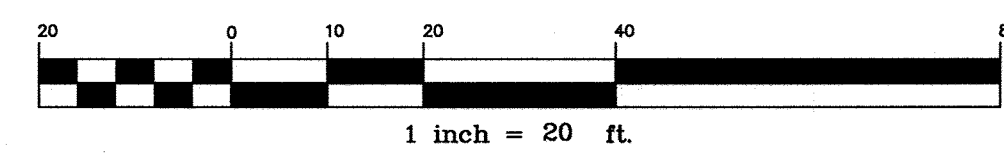
DATE: MAY, 2015 BEI PROJECT NO. 2585
SCALE: AS SHOWN SHEET 12 OF 24



CROSSING DETAIL - OPTION #1
PUMP AROUND PRACTICE



CROSSING DETAIL - OPTION #2
DIVERSION PIPE



MGWC 1.4: DIVERSION PIPE

Temporary measure for dewatering in-channel construction sites

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

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

MATERIAL SPECIFICATIONS
Materials for stream diversions should meet the following requirements:

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

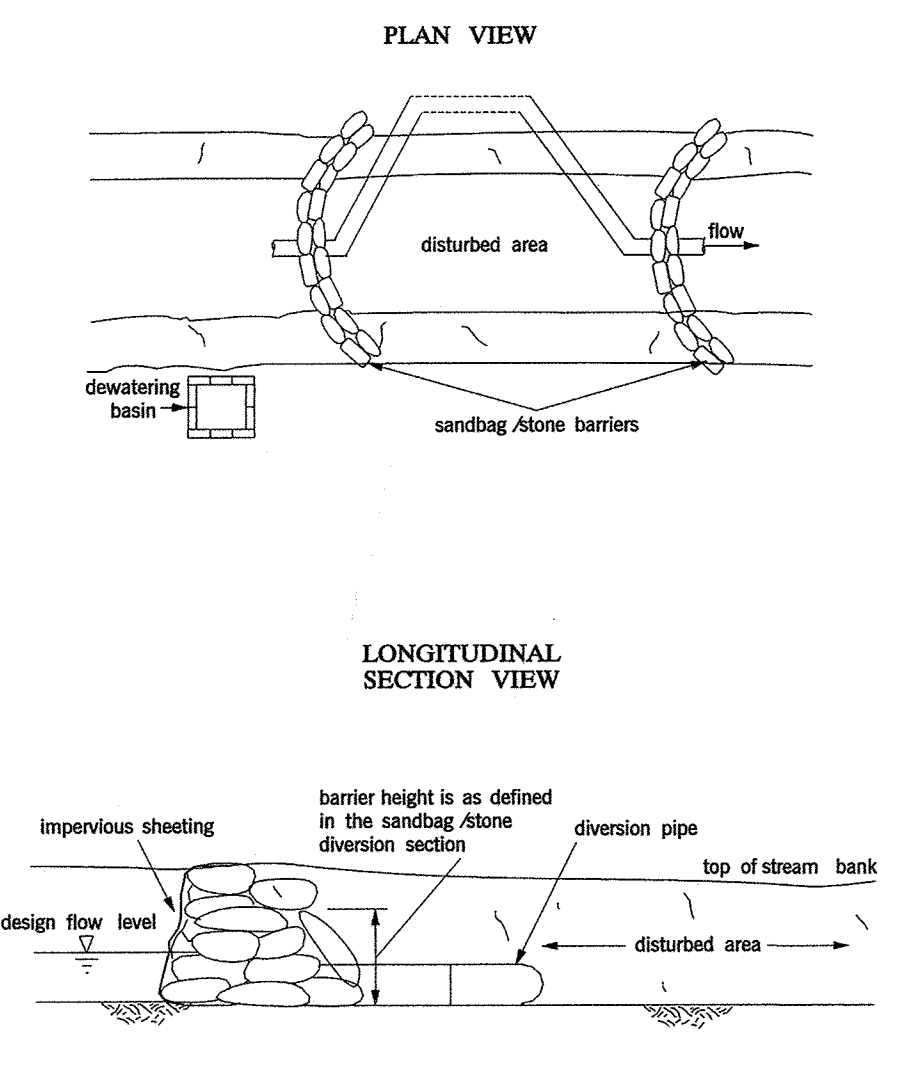
INSTALLATION GUIDELINES
All erosion and sediment control devices including mandatory dewatering basins should be installed as the first order of business according to a plan approved by the WMA or local authority. Installation should proceed from upstream to downstream during low flow conditions. If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

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

- Sandbag/stone barriers should be sized and installed as detailed in MGWC 1.5: Sandbag/Stone Diversion. The materials should be sized to withstand baseflow velocities.
- All excavated material should be deposited and stabilized in an approved area outside the 100-year floodplain unless otherwise authorized by the WMA.
- Sediment-laden water from the construction area should be pumped to a dewatering basin.
- 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.
- If necessary, silt fence or straw bales should be installed around the perimeter of the work area.
- Sediment control devices are to remain in place until all disturbed areas are stabilized and the inspecting authority approves their removal.

TEMPORARY INSTREAM CONSTRUCTION MEASURES MARYLAND DEPARTMENT OF THE ENVIRONMENT WATERWAY CONSTRUCTION GUIDELINES REVISION NOVEMBER 2008
PAGE 1.4 - 1

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



TEMPORARY INSTREAM CONSTRUCTION MEASURES REVISION NOVEMBER 2008 PAGE 1.4 - 2 MARYLAND DEPARTMENT OF THE ENVIRONMENT WATER MANAGEMENT ADMINISTRATION

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 5-20-15
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.

John C. Malagan 5.19.15
DEVELOPER DATE

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

John C. Malagan 6/4/15
HOWARD SOIL CONSERVATION DISTRICT DATE

APPROVED: DEPARTMENT OF PUBLIC WORKS
Michael 6/23/2015
CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING
Ke. R. Dool 6-29-15
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

John C. Malagan 6-24-15
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

MGWC 1.2: PUMP-AROUND PRACTICE
Temporary measure for dewatering in-channel construction sites

DESCRIPTION
The work should consist of installing a temporary pump around and supporting measures to divert flow around in-stream construction sites.

IMPLEMENTATION SEQUENCE
Sediment control measures, pump-around practices, and associated channel and bank construction should be completed in the following sequence (refer to Detail 1.2):

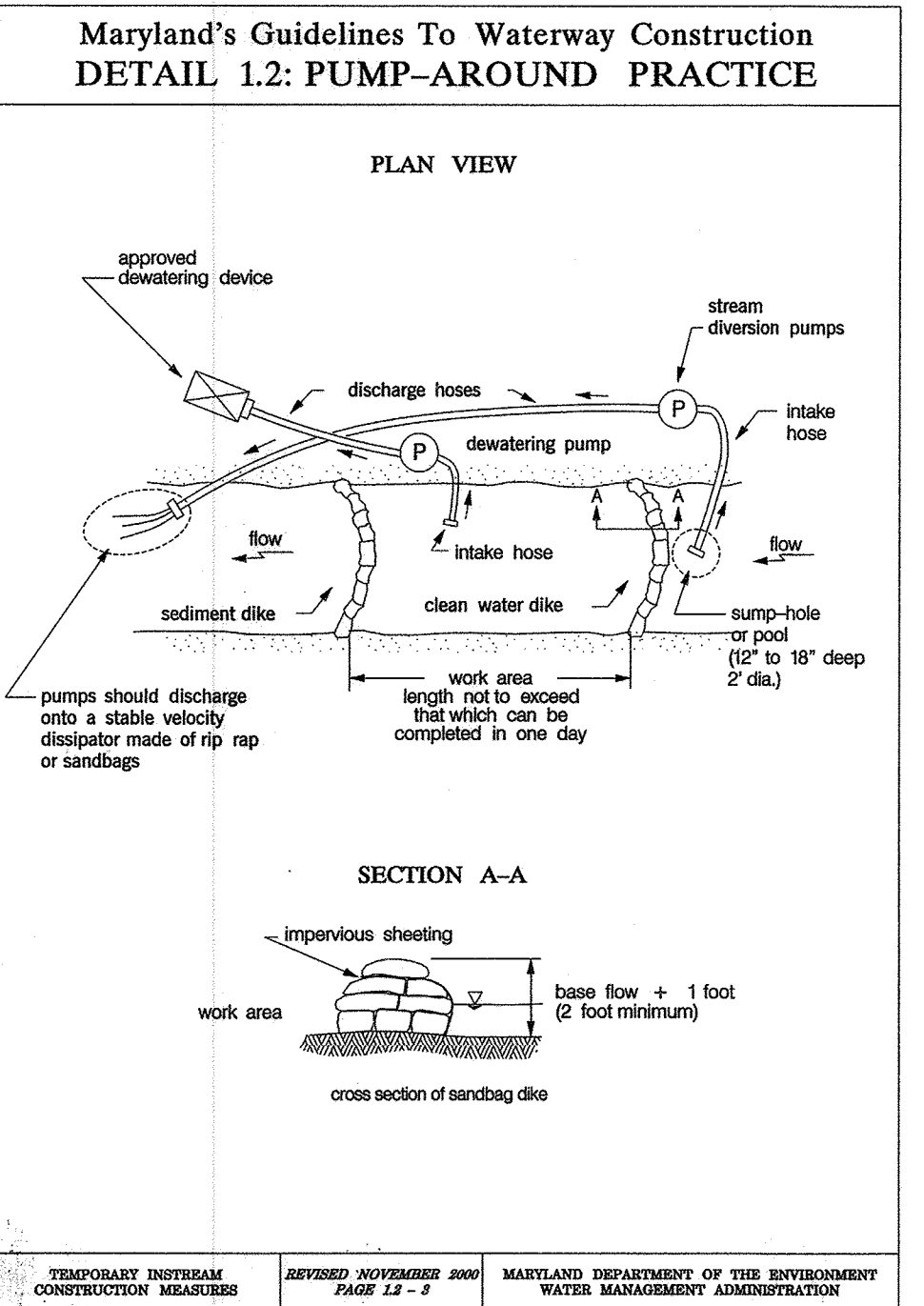
- Construction activities including the installation of erosion and sediment control measures should not begin until all necessary easements and/or right-of-ways have been acquired. All existing utilities should be marked in the field prior to construction. The contractor is responsible for any damage to existing utilities that may result from construction and should repair the damage at his/her own expense to the county's or utility company's satisfaction.
- The contractor should notify the Maryland Department of the Environment or WMA sediment control inspector at least 5 days before beginning construction. Additionally, the contractor should inform the local environmental protection and resource management inspection and enforcement division and the provider of local utilities a minimum of 48 hours before starting construction.
- The contractor should conduct a pre-construction meeting on site with the WMA sediment control inspector, the county project manager, and the engineer to review limits of disturbance, erosion and sediment control requirements, and the sequence of construction. The contractor should take out all limits of disturbance prior to the pre-construction meeting so they may be reviewed. The participants will also designate the contractor's staging areas and flag all trees within the limit of disturbance which will be removed for construction access. Trees should not be removed within the limit of disturbance without approval from the WMA or local authority.
- Construction should not begin until all sediment and erosion control measures have been installed and approved by the engineer and the sediment control inspector. The contractor should stay within the limits of the disturbance as shown on the plans and minimize disturbance within the work area whenever possible.
- Upon installation of all sediment control measures and approval by the sediment control inspector and the local environmental protection and resource management inspection and enforcement division, the contractor should begin work at the upstream section and proceed downstream beginning with the establishment of stabilized construction entrances. In some cases, work may begin downstream if appropriate. The sequence of construction must be followed unless the contractor gets written approval for deviations from the WMA or local authority. The contractor should only begin work in an area which can be completed by the end of the day including grading adjacent to the channel. At the end of each work day, the work area must be stabilized and the pump around removed from the channel. Work should not be conducted in the channel during rain events.
- Sandbag dikes should be situated at the upstream and downstream ends of the work area as shown on the plans, and stream flow should be pumped around the work area. The pump should discharge onto a stable velocity dissipater made of rip rap or sandbags.

TEMPORARY INSTREAM CONSTRUCTION MEASURES MARYLAND DEPARTMENT OF THE ENVIRONMENT WATERWAY CONSTRUCTION GUIDELINES REVISION NOVEMBER 2008
PAGE 1.2 - 1

MGWC 1.2: PUMP-AROUND PRACTICE
Temporary measure for dewatering in-channel construction sites

- Water from the work area should be pumped to a sediment filtering measure such as a dewatering basin, sediment bag, or other approved source. The measure should be located such that the water drains back into the channel below the downstream sandbag dike.
- Traversing a channel reaches with equipment within the work area where no work is proposed should be avoided. If equipment has to traverse such a reach for access to another area, then timber mats or similar measures should be used to minimize disturbance to the channel. Temporary stream crossings should be used only when necessary and only where noted on the plans or specified. (See Section 4, Stream Crossings, Maryland Guidelines to Waterway Construction).
- All stream restoration measures should be installed as indicated by the plans and all banks graded in accordance with the grading plans and typical cross-sections. All grading must be stabilized at the end of each day with seed and mulch or seed and matting as specified on the plans.
- After an area is completed and stabilized, the clean water dike should be removed. After the first sediment flush, a new clean water dike should be established upstream from the old sediment dike. Finally, upon establishment of a new sediment dike below the old one, the old sediment dike should be removed.
- A pump around must be installed on any tributary or storm drain outfall which contributes baseflow to the work area. This should be accomplished by locating a sandbag dike at the downstream end of the tributary or storm drain outfall and pumping the stream flow around the work area. This water should discharge onto the same velocity dissipater used for the main stem pump around.
- If a tributary is to be restored, construction should take place on the tributary before work on the main stem reaches the tributary confluence. Construction in the tributary, including pump around practices, should follow the same sequence as for the main stem of the river or stream. When construction on the tributary is completed, work on the main stem should resume. Water from the tributary should continue to be pumped around the work area in the main stem.
- The contractor is responsible for providing access to and maintaining all erosion and sediment control devices until the sediment control inspector approves their removal.
- After construction, all disturbed areas should be regraded and revegetated as per the planting plan.

TEMPORARY INSTREAM CONSTRUCTION MEASURES MARYLAND DEPARTMENT OF THE ENVIRONMENT WATERWAY CONSTRUCTION GUIDELINES REVISION NOVEMBER 2008
PAGE 1.2 - 2



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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

AS-BUILT 6/12/15

NO.	DATE	REVISION

BENCHMARK ENGINEERING, INC.
8480 BALTIMORE NATIONAL PIKE & SUITE 315 & ELLICOTT CITY, MARYLAND 21043
(P) 410-465-6105 (F) 410-465-6844
WWW.BE-CVLENGINEERING.COM

TOWN SQUARE PARKWAY
PARCELS 1-2, 1-3, K-1, & L AND OPEN SPACE LOTS 6 thru 8
A RESUBDIVISION OF OPEN SPACE LOT 2 AND PARCELS 1 & K, PREVIOUSLY RECORDED AS PLAT 18696-18698, OPEN SPACE LOTS 4 & 5 PREVIOUSLY RECORDED AS PLAT 22078-22079, AND PART OF UNRECORDED PARCEL 8
TAX MAP: 16 - GRID: 10 - PARCEL P/O 8 & 50
ZONED: PGCC (MULTI-USE SUBDISTRICT)
ELECTION DISTRICT NO. 3 - HOWARD COUNTY, MARYLAND

TEMPORARY STREAM CROSSING DETAILS FOR SEWER CONNECTION

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: MAY, 2015 BEI PROJECT NO. 2585
SCALE: AS SHOWN SHEET 13 OF 24

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.

10. A 36" HIGH FENCE CONFORMING TO HOWARD COUNTY CODE SHALL BE PLACED ALONG THE ENTIRE LENGTH OF THE HEADWALL ON BOTH SIDES OF THE CON/SPAN ARCH. (SHA STD. NO. BR-55(3.12)-96-318)

DESIGN DATA

DESIGN LOADING:

BRIDGE UNITS: HS25
 HEADWALLS: EARTH PRESSURE ONLY
 WINGWALLS: EARTH PRESSURE ONLY
 DESIGN FILL HEIGHT: 2'-0" MIN. TO 5'-6" MAX.
 FROM TOP OF CROWN TO TOP OF PAVEMENT.
 DESIGN METHOD: LOAD FACTOR PER AASHTO SPECIFICATION
 NET ALLOWABLE SOIL BEARING PRESSURE: 6000 PSF*
 GROSS ALLOWABLE SOIL BEARING PRESSURE: 6720 PSF*

*FOUNDATION EXCAVATION AND SUBGRADE PREPARATION SHALL BE IN ACCORDANCE WITH THE GEOTECHNICAL REPORT FOR THIS PROJECT PREPARED BY HILLIS-CARNES ENGINEERING ASSOC., INC. DATED 5/15/2014

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.

APPROVED: DEPARTMENT OF PUBLIC WORKS

[Signature] 6/23/2015
 CHIEF, BUREAU OF HIGHWAYS DATE

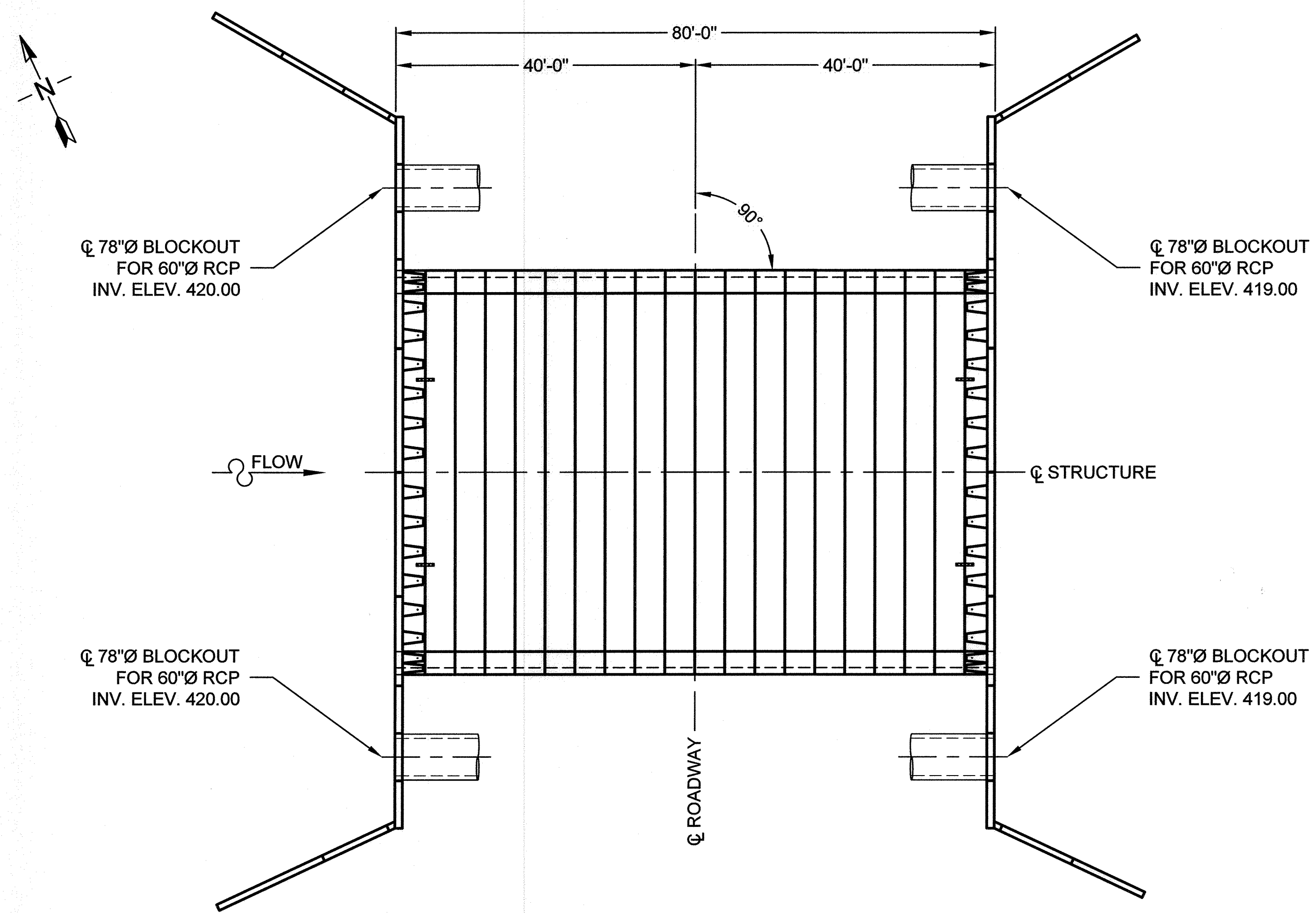
APPROVED: DEPARTMENT OF PLANNING AND ZONING

[Signature] 6-29-15
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

[Signature] 6-24-15
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

TURF VALLEY - TOWN SQUARE PARKWAY

HOWARD COUNTY, MARYLAND



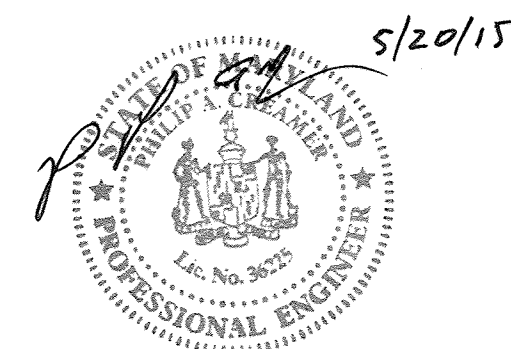
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LOCATION PLAN

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. *[Signature]*, Expiration Date: 12-31-20



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. 36225, EXPIRATION DATE: 8/19/2016

I:\MERLIN\PROJECTS\ACTIVE\VEW\496800\496874\10-CON-SPAN_C_SERIES\DRAWINGS\CONTRACT\PRE-496874-010-CC-CON-C.DWG 5/18/2015 2:35 PM

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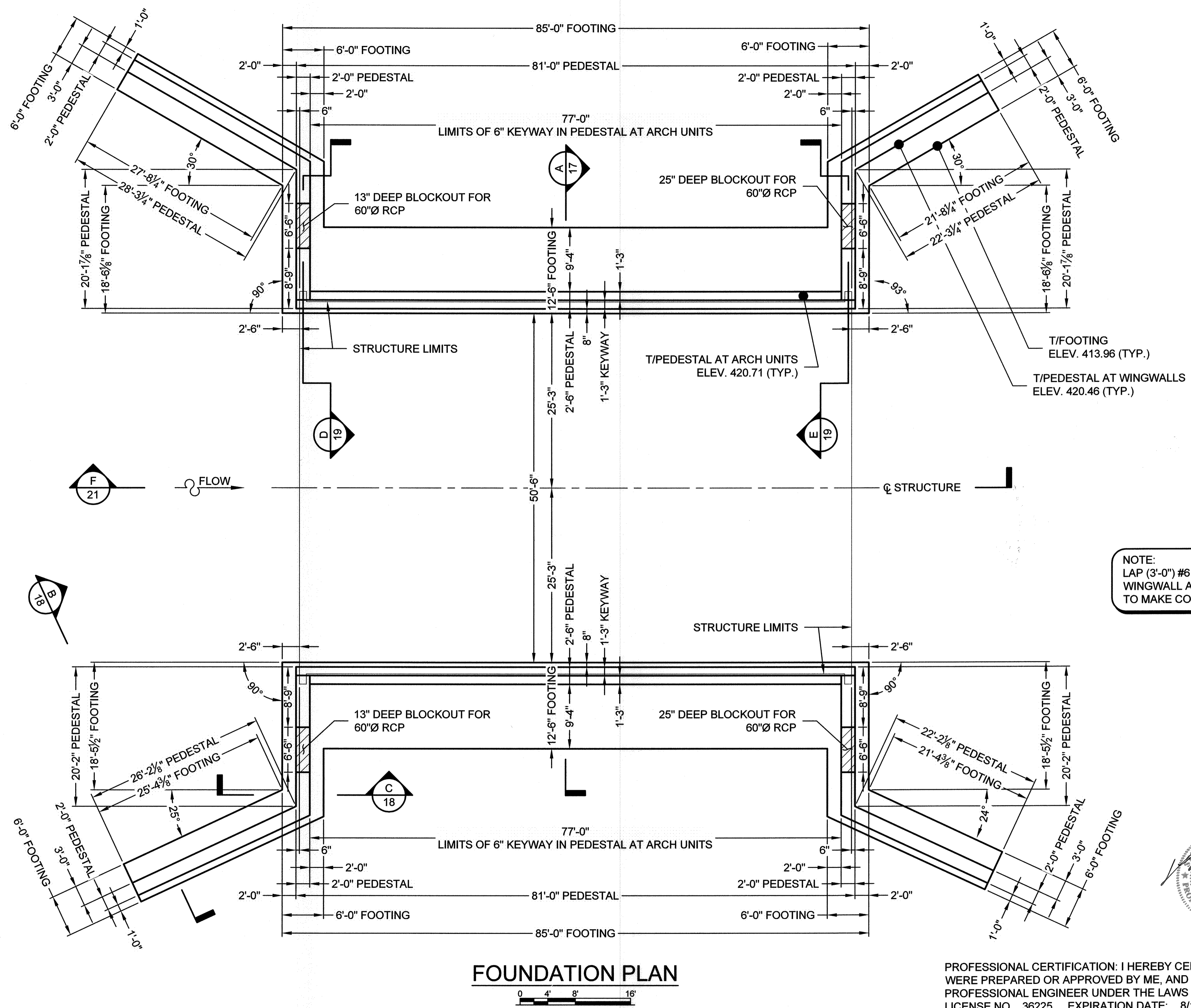
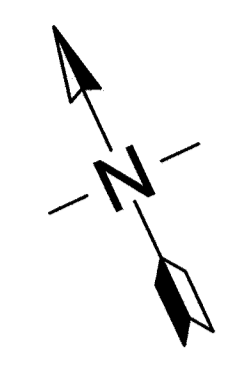
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CONTRACT DRAWING

TURF VALLEY - TOWN SQUARE PARKWAY
 HOWARD COUNTY, MARYLAND

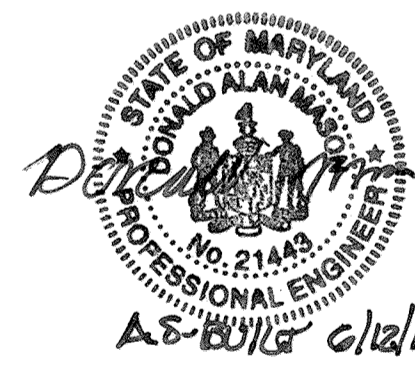
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DESIGNED: JMF	DRAWN: TRL	
CHECKED: EWM	APPROVED: PAC	
SHEET NO.: 14		OF 24

AS-BUILT F15-056



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

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

APPROVED: DEPARTMENT OF PUBLIC WORKS
M. McQuinn 6/23/2015
CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING
K. St. Louis 6-23-15
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

Chad E. ... 6-24-15
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

FOUNDATION PLAN
0 4 8 16'

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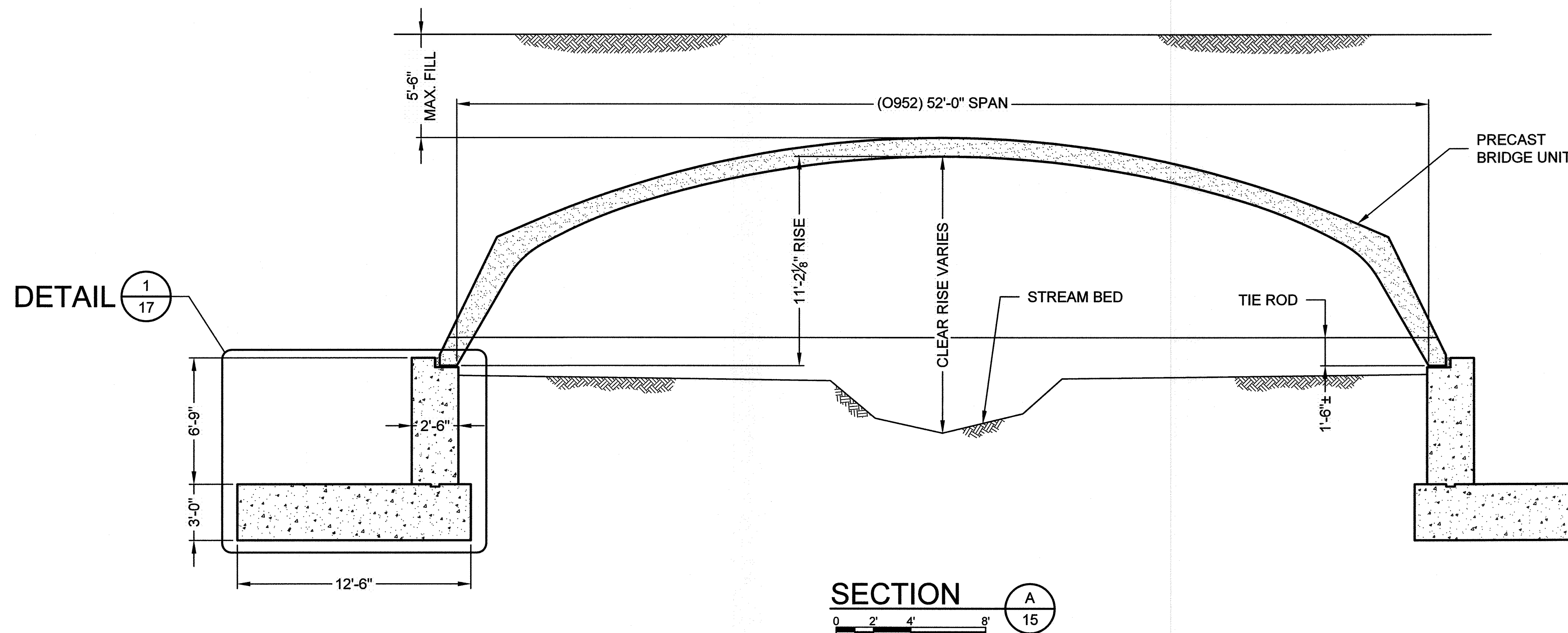
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CONTRACT DRAWING

TURF VALLEY - TOWN SQUARE PARKWAY
HOWARD COUNTY, MARYLAND

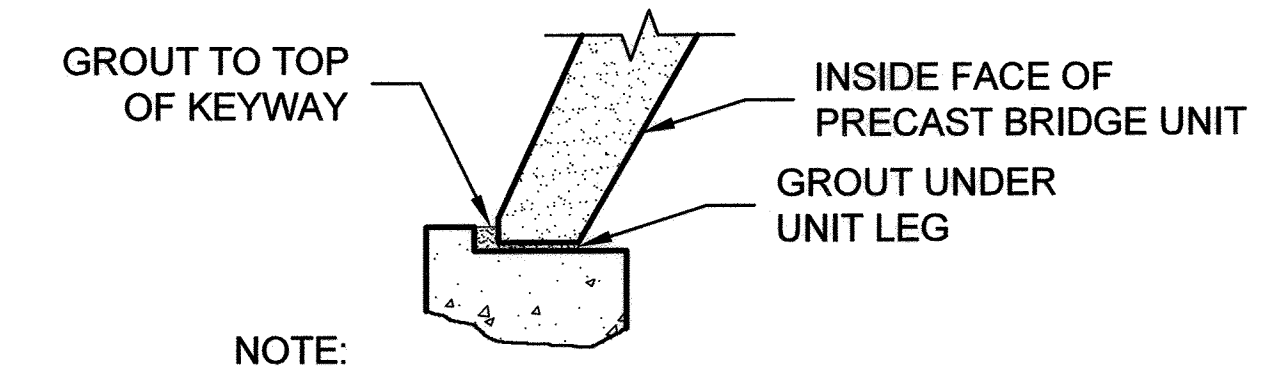
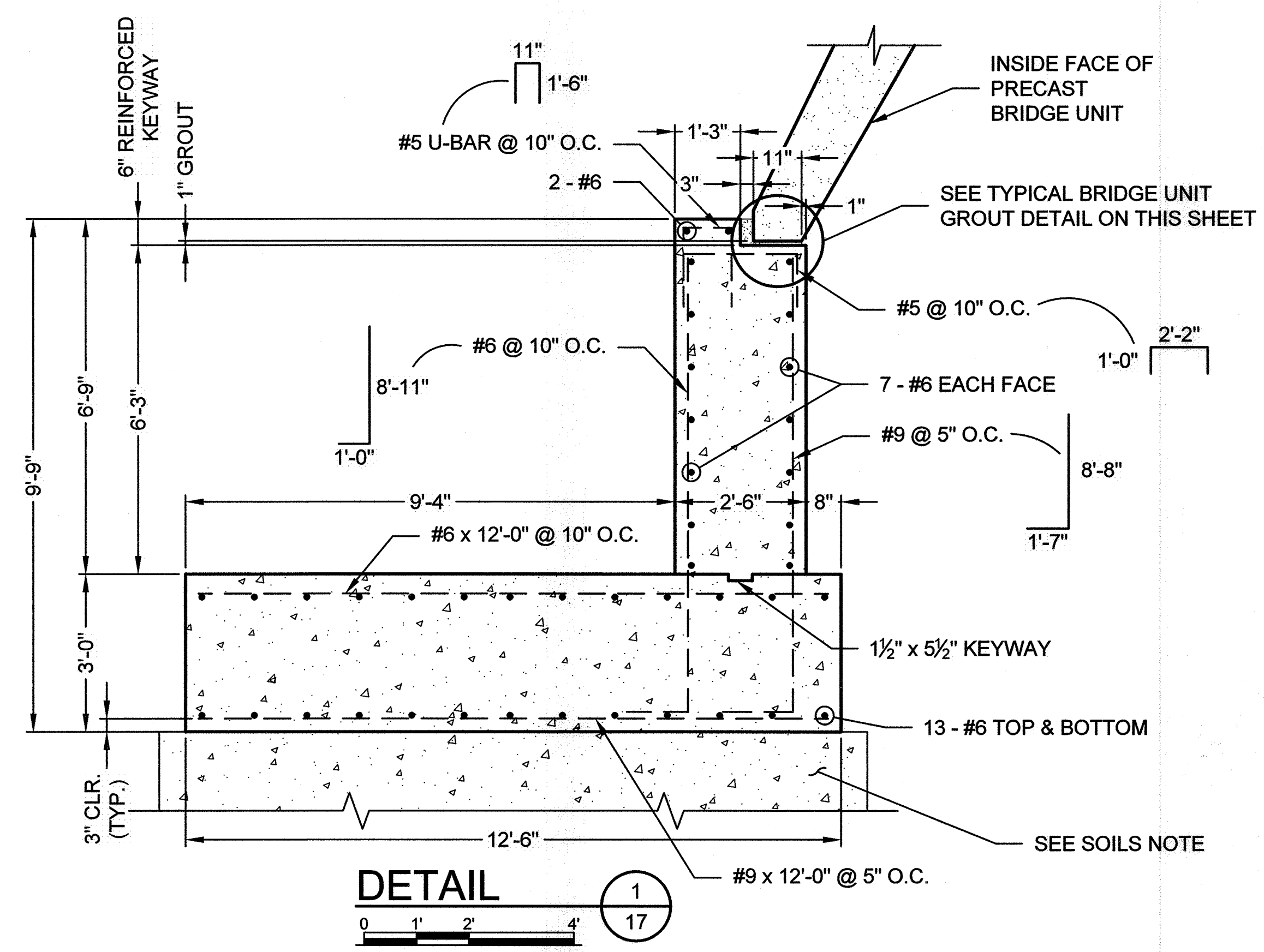
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DESIGNED: JMF	DRAWN: TRL	
CHECKED: EWM	APPROVED: PAC	
SHEET No.: 16	OF 24	

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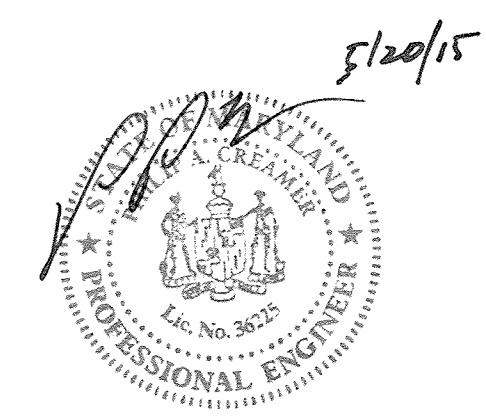
Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.
 License No. 21447 Expiration Date: 12-21-20

NOTE:
 PER THE GEOTECHNICAL REPORT DATED MAY 15, 2014, IT IS ANTICIPATED THAT OVER-EXCAVATION OF LOOSE AND/OR SOFT MATERIALS WILL BE REQUIRED, EXTENDING APPROXIMATELY TO ELEVATION 408+/- . UNSUITABLE MATERIALS SHOULD BE REMOVED. LEAN CONCRETE MAY BE USED TO REACH THE PROPER SCOUR DEPTH FOR THE FOUNDATION AS DETERMINED BY THE SCOUR ANALYSIS. BOTTOM OF REINFORCED FOUNDATION SHALL BE AT ELEVATION 410.96 UNLESS CONTECH HAS BEEN NOTIFIED AND APPROVED THE CHANGE. LEAN CONCRETE OR WASHED 57 STONE MAY BE USED AS A SUB-FOOTER FOR SOFT SPOTS BELOW THE SCOUR ELEVATION. FOUNDATIONS WILL BE DESIGNED FOR A NET ALLOWABLE SOIL BEARING PRESSURE OF 6,000 PSF.



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

TYPICAL BRIDGE UNIT GROUT DETAIL
 NOT TO SCALE



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APPROVED: DEPARTMENT OF PUBLIC WORKS
[Signature] 6/23/2015
 CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING
[Signature] 6-29-15
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

[Signature] 6-24-15
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

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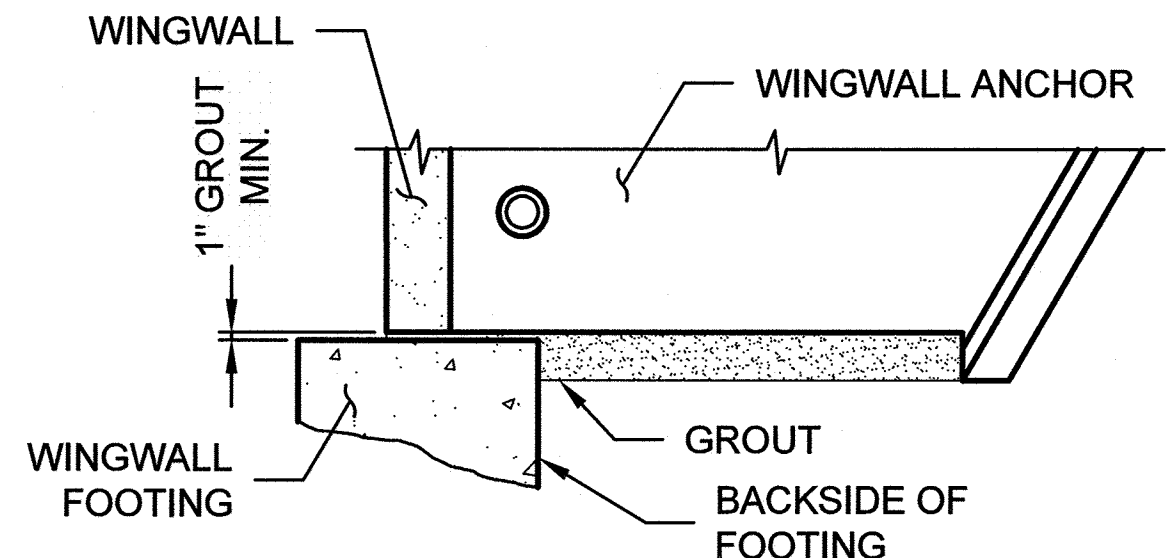
CONSPAN
 SERIES
 CONTRACT DRAWING

TURF VALLEY - TOWN SQUARE PARKWAY
 HOWARD COUNTY, MARYLAND

PROJECT No.: 496874	SEQ. No.: 010	DATE: 5/14/2015
DESIGNED: JMF	DRAWN: TRL	
CHECKED: EWM	APPROVED: PAC	
SHEET NO.: 17		OF 24

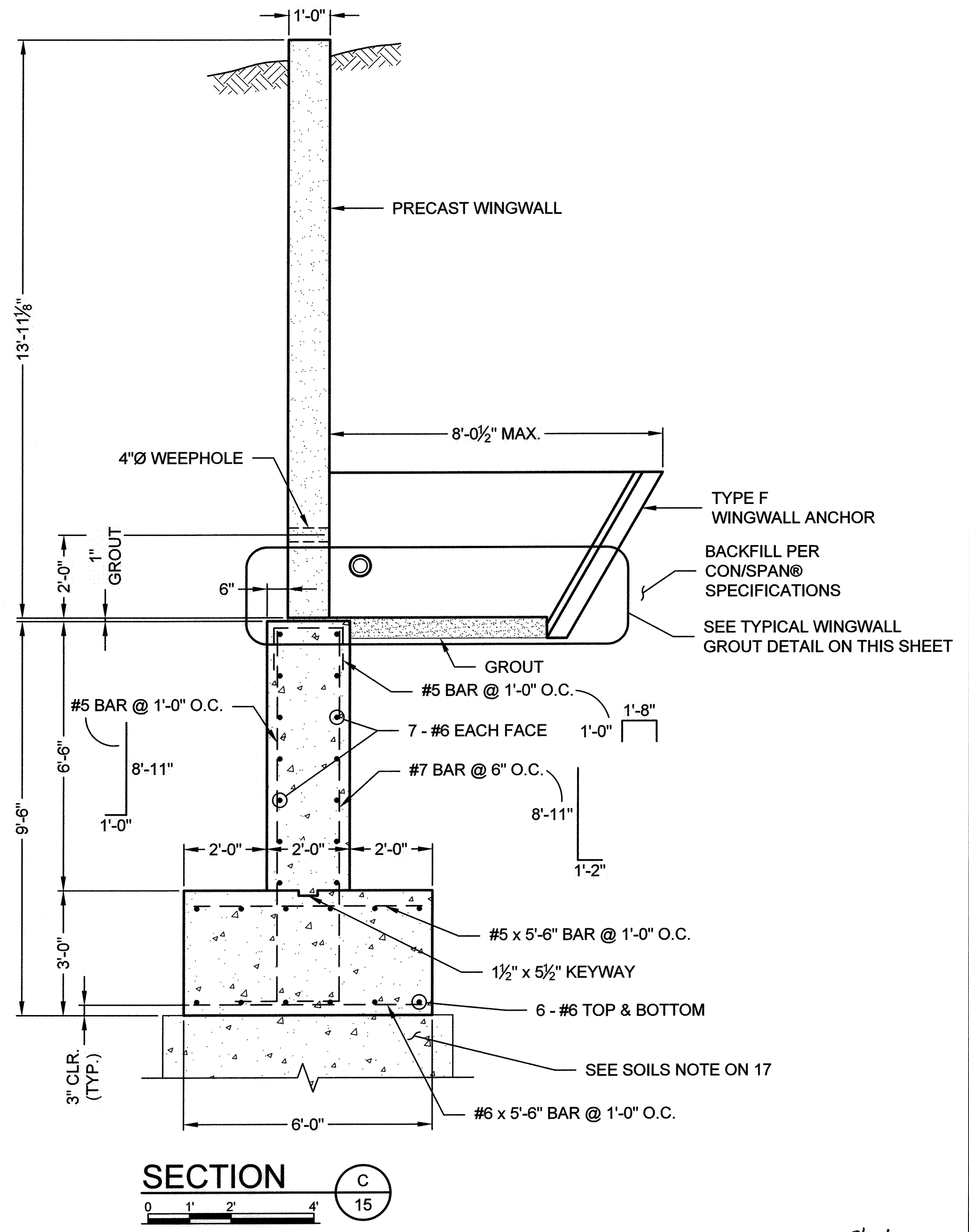
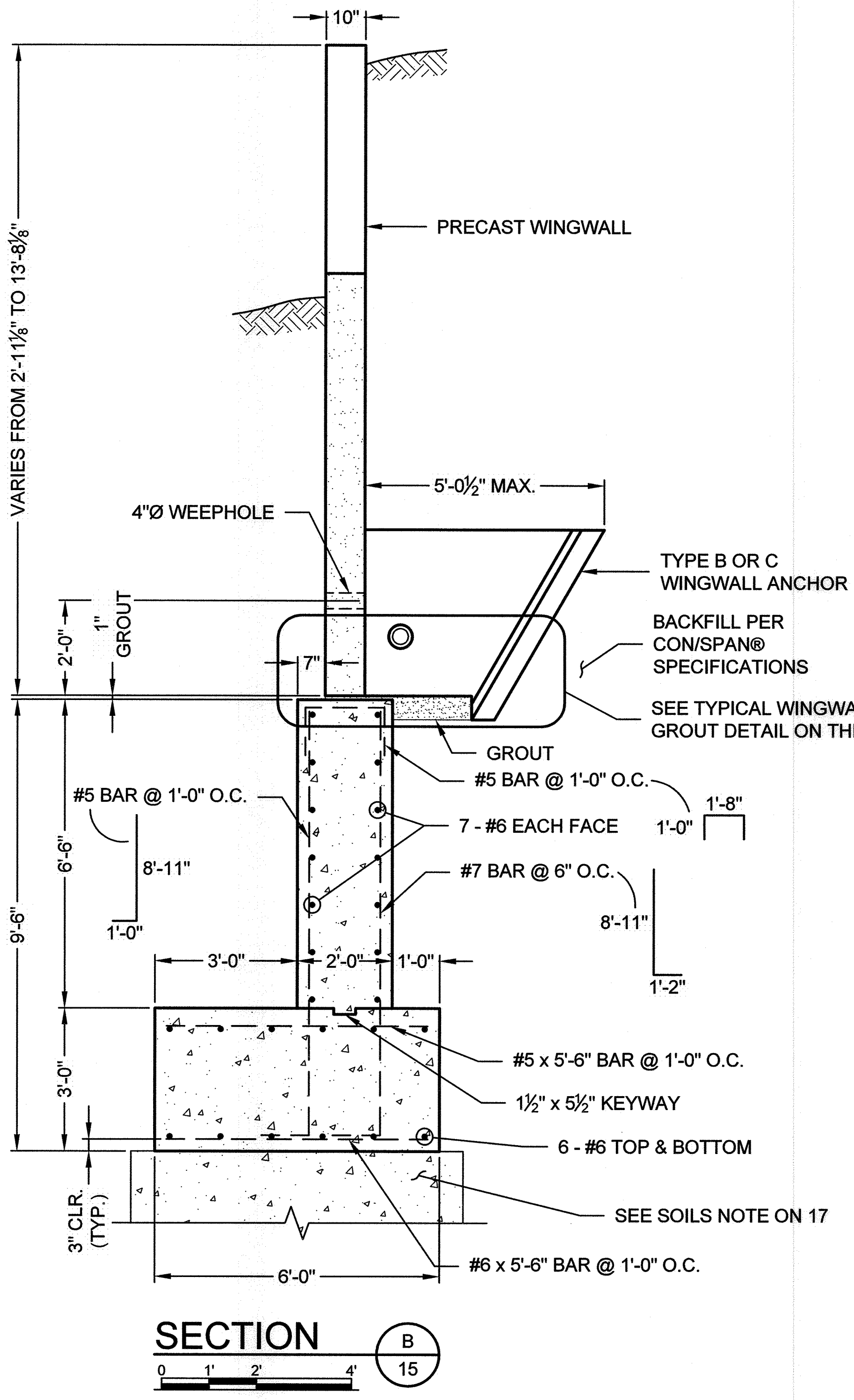
As-BUILT F-15-056

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- 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: DEPARTMENT OF PUBLIC WORKS
[Signature] 6/23/2015
 CHIEF, BUREAU OF HIGHWAYS DATE

APPROVED: DEPARTMENT OF PLANNING AND ZONING
[Signature] 6-29-15
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

[Signature] 6-24-15
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

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MARK	DATE	REVISION DESCRIPTION	BY

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ENGINEERED SOLUTIONS LLC
www.ContechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

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-SERIES-
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"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. 21443 Expiration Date: 12-21-20

STATE OF MARYLAND
 DEPARTMENT OF PROFESSIONAL REGULATION
 PROFESSIONAL ENGINEER
 No. 21443
 AS-SULL 6/12/19

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. 36225, EXPIRATION DATE: 8/19/2016.



TURF VALLEY - TOWN SQUARE PARKWAY
 HOWARD COUNTY, MARYLAND

PROJECT No.:	SEQ. No.:	DATE:
496874	010	5/14/2015
DESIGNED:	DRAWN:	
JMF	TRL	
CHECKED:	APPROVED:	
EWM	PAC	
SHEET NO.:	18 OF 24	

AS-BUILT F-15-056

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