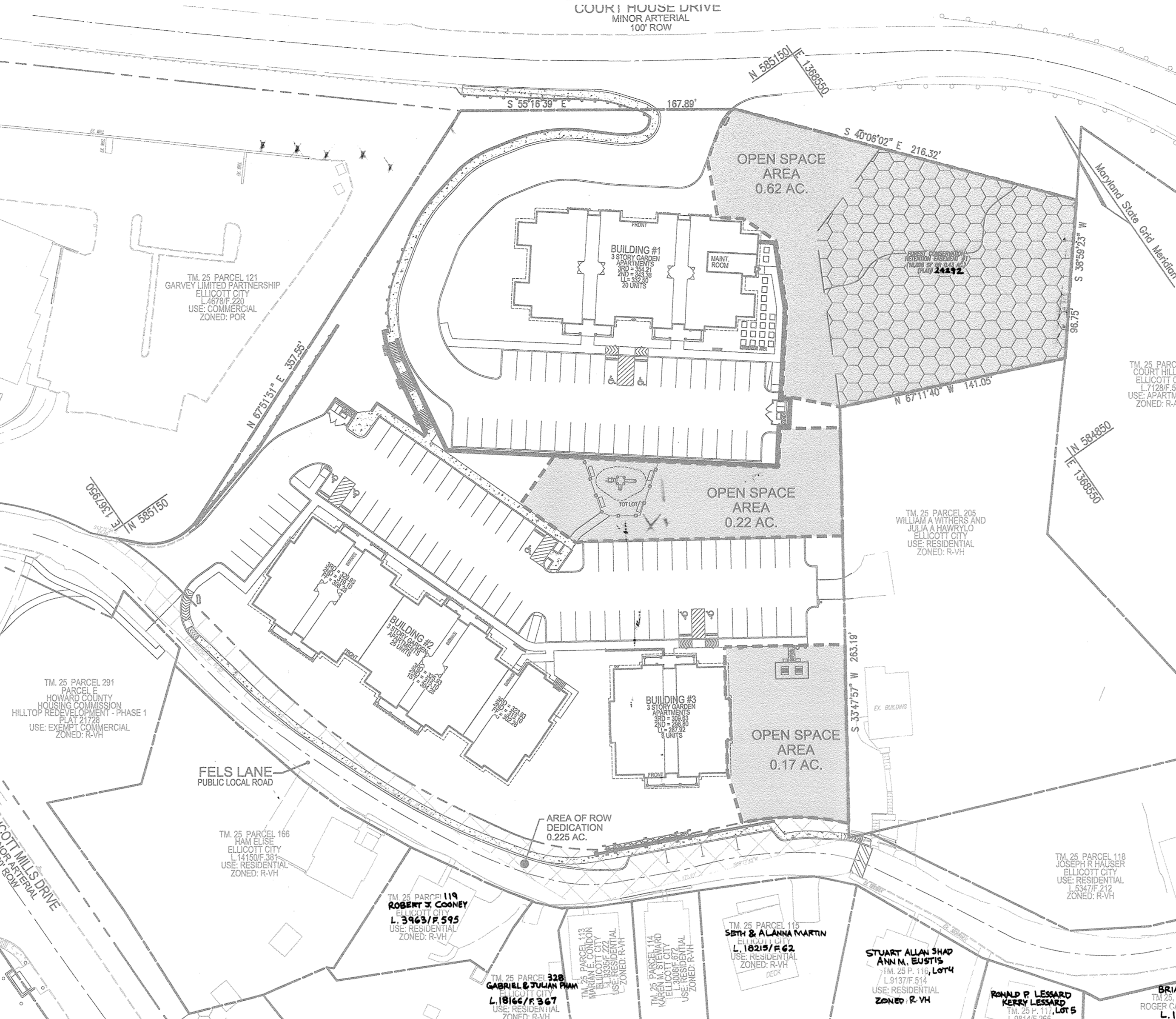


GENERAL NOTES

- 1. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY STANDARDS AND SPECIFICATIONS. ALL WORK AND MATERIALS SHALL COMPLY WITH O.S.A. STANDARDS.
2. THE CONTRACTOR SHALL NOTIFY 'MISS UTILITY' AT 1-800-257-7777 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION WORK.
3. THE CONTRACTOR IS TO NOTIFY THE FOLLOWING UTILITIES CONCERNED AT LEAST FIVE DAYS BEFORE STARTING WORK ON THESE DRAWINGS.
4. SITE ANALYSIS: TOTAL PARCEL AREA 3.95 AC. NET ACREAGE (MINUS 0.26 AC. PRE-EXISTING STEEP SLOPES) 3.59 AC. ROW DEDICATION: 0.23 AC. PARCEL AREA AFTER ROW DEDICATION: 3.72 AC. PRESENT ZONING: R-A-15. USE OF STRUCTURE: OPEN APARTMENT BUILDINGS. TOTAL BUILDING COVERAGE (FOOTPRINT AREA): 25,789 SF (0.59 AC. OR 15.90% OF GROSS AREA).

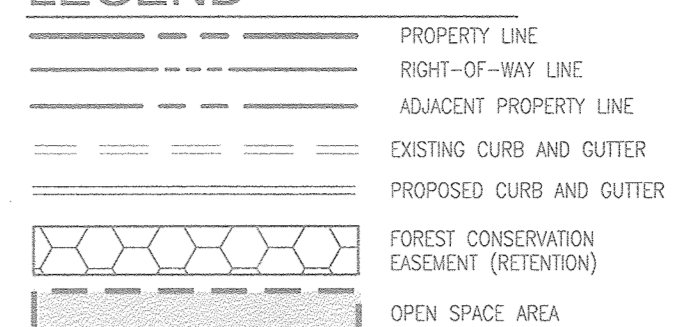
SITE DEVELOPMENT PLAN BURGESS MILL STATION - PHASE II APARTMENTS PARCEL 120



BENCHMARKS

HOWARD COUNTY BENCHMARK 25A1 N 586,557.546 E 1,366,847.098 ELEV.: 396.345' HOWARD COUNTY BENCHMARK 25A2 N 587,502.729 E 1,366,856.577 ELEV.: 348.145'

LEGEND



BURGESS MILL STATION - PHASES I AND 2 RECREATIONAL OPEN SPACE CALCULATOR

Table with columns for Burgess Mill Station - Phase 1 and Burgess Mill Station - Phase 2. Rows include Recreation Center, Recreation Center Court, Recreation Center Outdoor Post and Deck, and Recreation Center Sports Court. Columns show credit and debit values.

SHEET INDEX

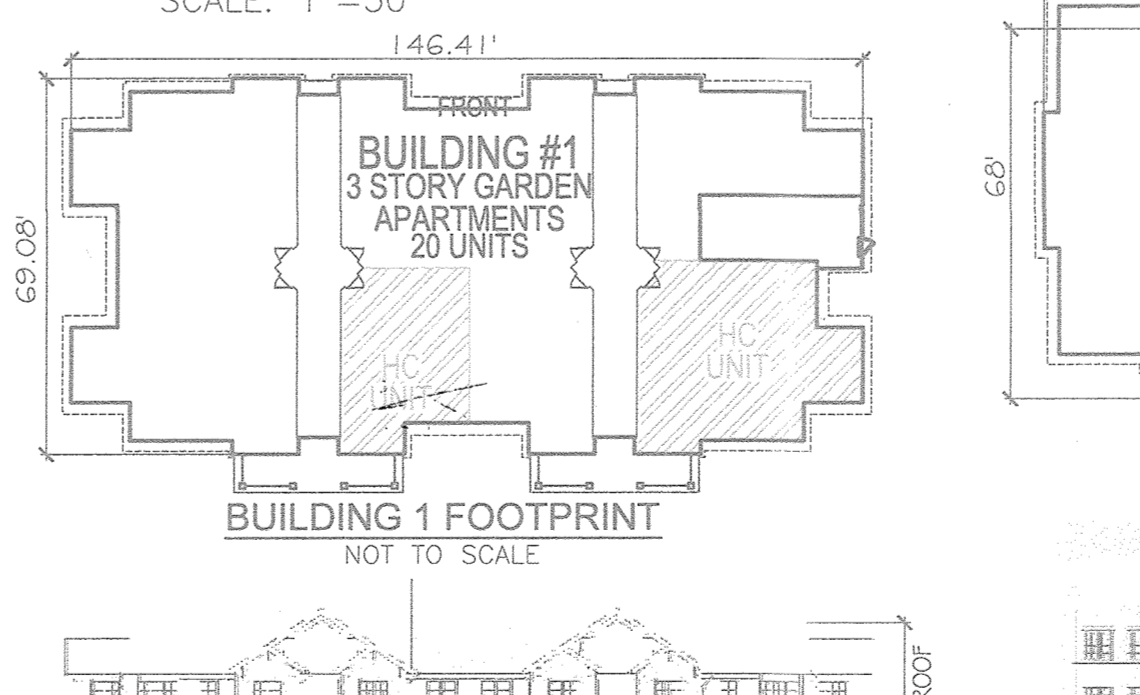
Table listing sheet numbers and descriptions: SHEET NO. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20. Descriptions include existing conditions and demolition plan, site layout plan, phase 2 grading and sediment control plan, etc.

- 31. THE EXISTING CURB, GUTTER, AND SIDEWALK SHALL BE MAINTAINED AND REPAIRED AS NECESSARY TO MAINTAIN UNINTERRUPTED SERVICE. ANY DAMAGE INCURRED DUE TO CONTRACTOR'S OPERATION SHALL BE REPAIRED IMMEDIATELY AT THE CONTRACTOR'S EXPENSE.
32. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY, PLUS MSHA STANDARDS AND SPECIFICATIONS, IF APPLICABLE.
33. EXISTING UTILITIES LOCATED FROM ROAD CONSTRUCTION PLANS, FIELD SURVEYS, PUBLIC WATER AND SEWER EXTENSION PLANS AND AVAILABLE RECORD DRAWINGS APPROXIMATE LOCATIONS OF EXISTING UTILITIES ARE SHOWN FOR THE CONTRACTOR'S INFORMATION. CONTRACTOR SHALL LOCATE EXISTING UTILITIES WELL IN ADVANCE OF CONSTRUCTION ACTIVITIES AND TAKE ALL NECESSARY PRECAUTIONS TO PROTECT THE EXISTING UTILITIES AND TO MAINTAIN UNINTERRUPTED SERVICE. ANY DAMAGE INCURRED DUE TO CONTRACTOR'S OPERATION SHALL BE REPAIRED IMMEDIATELY AT THE CONTRACTOR'S EXPENSE.
34. ALL REINFORCED CONCRETE FOR STORM DRAIN STRUCTURES SHALL HAVE A MINIMUM OF 28 DAYS STRENGTH OF 3,500 P.S.I.

GENERAL NOTES (CONTINUED...)

- 63. THIS PLAN IS SUBJECT TO A DESIGN MANUAL W/AVENUE TO SECTION 5.4.8.5 OF THE HOWARD COUNTY DESIGN MANUAL VOLUME 1 (WATER AND SEWER) REQUIRING A MINIMUM 10'-0" HORIZONTAL CLEARANCE BETWEEN ANY PERMANENT STRUCTURE AND THE EDGE OF A PUBLIC UTILITY EASEMENT AT THE FOLLOWING IMPACT AREAS:
1. THE PROPOSED ENCROACHMENT INTO THE EASEMENT SETBACK BY THE CONCRETE SECTIONS OF RETAINING WALL 2B; APPROVED 02/10/17.
2. THE PROPOSED ENCROACHMENT INTO THE EASEMENT SETBACK BY THE MODULAR BLOCK SECTIONS OF RETAINING WALL 2A; APPROVED 01/18/17.
3. THE PROPOSED ENCROACHMENT INTO THE EASEMENT SETBACK BY THE MODULAR BLOCK SECTIONS OF RETAINING WALL 2C; APPROVED 01/18/17.
4. THE PROPOSED ENCROACHMENT INTO THE EASEMENT SETBACK BY RETAINING WALL 1; APPROVED 01/18/17.
5. THE PROPOSED ENCROACHMENT INTO THE EASEMENT SETBACK BY RETAINING WALL 3; APPROVED 01/18/17.
6. THE PROPOSED ENCROACHMENT INTO THE EASEMENT SETBACK BY RETAINING WALL 4; APPROVED 02/10/17.

LOCATION MAP AND OPEN SPACE PLAN



PARKING TABULATION

Table showing parking tabulation for proposed buildings. Columns include Proposed Building, Dwelling Units, Required Per Code, and Required Per Parking Reduction. Includes a note about parking reduction based on parking needs analysis.

PARKING NOTES

- 1. PARKING TABULATION BASED ON PARKING NEEDS ANALYSIS PREPARED BY THE TRAFFIC GROUP, INC., DATED APRIL 21, 2011, LETTER DATED 07/12/16; AND UPDATED LETTER DATED 10/05/16 BY ROBERT H. VOGEL, ENGINEERING, INC. IN CONJUNCTION WITH THE CURRENT PHASE II DEVELOPMENT.
2. ON 08/14/17, THE PLANNING DIRECTOR APPROVED PROPOSED PARKING REDUCTION FOR APARTMENTS FROM 2.3 SPACES PER UNIT TO 2.0 SPACES PER UNIT FOR THIS PROJECT. THE CONTRACTOR IS RESPONSIBLE FOR ANY PARKING ISSUES THAT MAY ARISE. (ALSO, SEE GENERAL NOTE# 65.)

COVER SHEET

COVER SHEET information including project name (BURGESS MILL STATION PH II APARTMENTS), address (TAX MAP 25 BLOCK 7, 2ND ELECTION DISTRICT), and developer information (STAVROU ASSOCIATES, INC.).

ADDRESS CHART

Address chart table with columns for Lot/Parcel # and Street Address. Rows include Building #1 (3580 COURT HOUSE DRIVE), Building #2 (3585 FELLS LANE), and Building #3 (3595 FELLS LANE).

PERMIT INFORMATION CHART

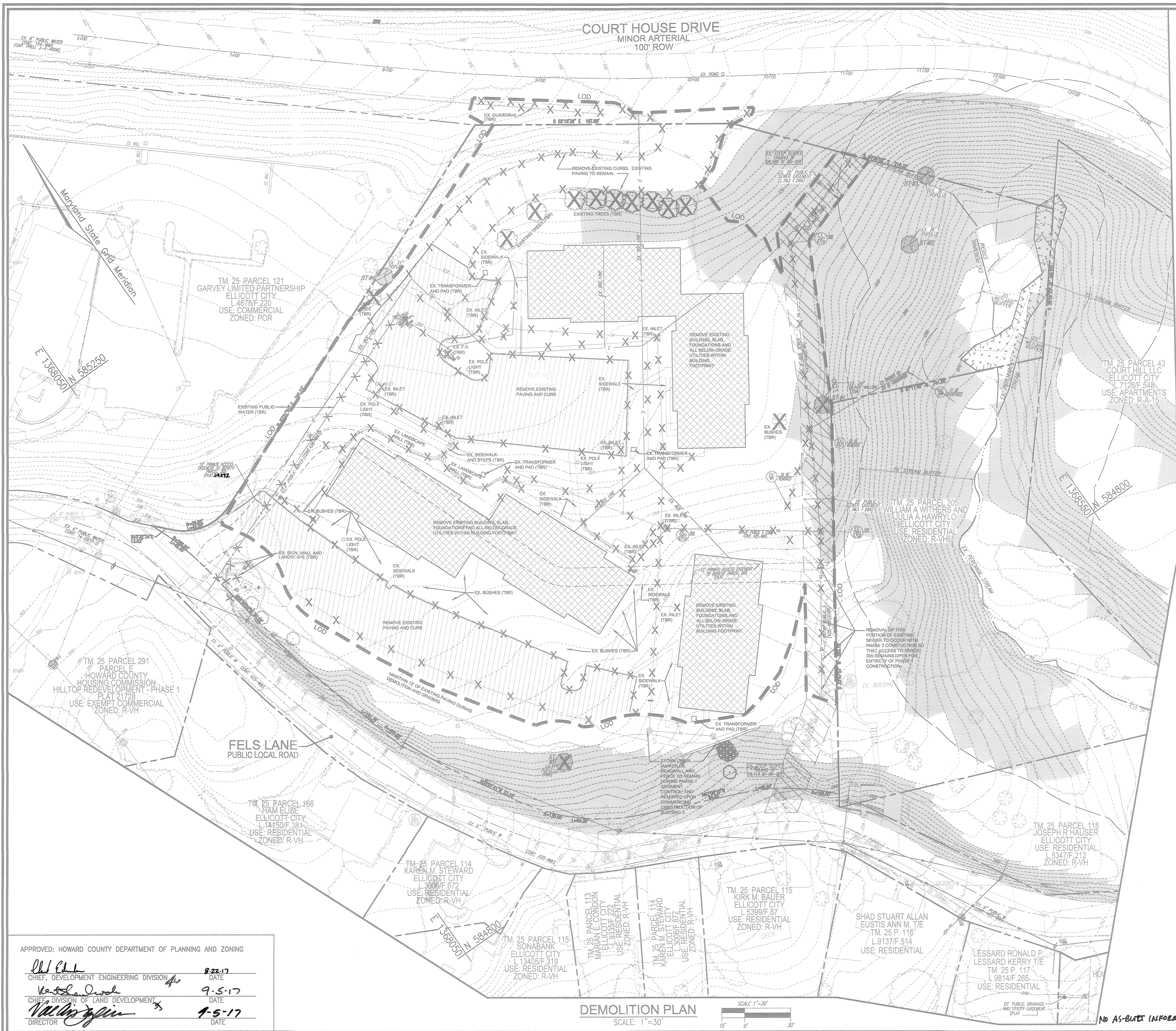
Permit information chart table with columns for Subdivision Name, Section/Area, Lot/Parcel, Plat Ref., Block No., Zone, Tax Map, Elect. Dist., and Census Tr. Rows include Venus Garden Apt and Parcel 120.

PROFESSIONAL CERTIFICATE

Professional certificate for Robert H. Vogel, Inc. Engineers - Surveyors - Planners, dated July 2017, for the project at 8407 Main Street, Ellicott City, MD 21043.

AS-BUILT CERTIFICATION FOR PSWM

AS-Built certification for PSWM signed by Robert H. Vogel, Inc. dated 9-20-19. Includes a note: 'NO AS-BUILT INFORMATION ON THIS SHEET'.



**LEGEND:**

	EXISTING CONTOUR		EXISTING TREELINE (FIELD LOCATED)
	EXISTING SPOT ELEVATION		EXISTING FENCE
	EXISTING CURB AND GUTTER		PROPERTY LINE
	PROPOSED CURB AND GUTTER		RIGHT-OF-WAY LINE
	EXISTING UTILITY POLE		MODERATE SLOPES (1% - 24.99%)
	EXISTING LIGHT POLE		STEEP SLOPE (>25%)
	EXISTING MAILBOX		LIMIT OF DISTURBANCE TO BE REMOVED
	EXISTING SIGN		EXISTING BUILDING TO BE REMOVED
	EXISTING SANITARY MANHOLE		EXISTING PAVING TO BE REMOVED
	EXISTING SANITARY LINE		EXISTING FIRE HYDRANT
	EXISTING FIRE HYDRANT		EXISTING WATER LINE
	EXISTING WATER LINE		EX. 20' PUBLIC WATER EASEMENT L.583 F.268 (TBR)
	EXISTING TREES (FIELD LOCATED)		EX. 12' PRIVATE ACCESS EASEMENT TO BENEFIT PARCEL 205
	EXISTING SPECIMEN TREES		

**AS-BUILT CERTIFICATION FOR PSWM**

I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND COMPLIES WITH THE PROPOSED PLANS AND SPECIFICATIONS. I HAVE VERIFIED THAT THE EXISTING DRAINAGE AREA IS SUFFICIENTLY STABILIZED TO PREVENT CLOGGING OF THE UNDERGROUND SWM FACILITY.

DATE: 9-20-19  
P.E. # 16193



EXISTING UTILITIES SHOWN ON THESE PLANS HAVE BEEN LOCATED FROM EXISTING SITE DEVELOPMENT PLANS, FIELD SURVEYS, PUBLIC WATER AND SEWER EXTENSION PLANS AND AVAILABLE RECORD DRAWINGS. APPROXIMATE LOCATION OF EXISTING UTILITIES ARE SHOWN FOR THE CONTRACTOR'S INFORMATION ONLY.

CONTRACTOR SHALL TEST FIT TO VERIFY EXISTING UTILITIES WELL IN ADVANCE OF CONSTRUCTION ACTIVITIES AND TAKE ALL NECESSARY PRECAUTIONS TO PROTECT THE EXISTING UTILITIES. TO MAINTAIN UNINTERRUPTED SERVICE AND TO PROVIDE REQUIRED CLEARANCES FOR ALL PROPOSED UTILITIES. ANY DAMAGE INCURRED DUE TO CONTRACTOR'S OPERATION SHALL BE REPAIRED IMMEDIATELY AT THE CONTRACTOR'S EXPENSE.

**OWNER**  
HOWARD COUNTY HOUSING COMMISSION  
9770 PATUXENT WOODS DR., SUITE 100  
COLUMBIA, MD 21046  
C/O PETER ENGEL  
(410) 313-6320

**DEVELOPER**  
STAVROU ASSOCIATES, INC.  
2661 RIVA ROAD  
SUITE 320  
ANNAPOLIS, MD 21401  
C/O SCOTT N. LINK  
(410) 571-6610

NO.	REVISION	DATE
3	REVISE TO MODIFY FRONTAGE IMPROVEMENT TO REMOVE SIDEWALK, ADD CURBING IN LOT #18 AND ADJUST STORM DRAIN WITHIN FELLS LANE	11/07/18

**REVISED SITE DEVELOPMENT PLAN**

**EXISTING CONDITION AND DEMOLITION PLAN**

**BURGESS MILL STATION PH II**

APARTMENTS  
A REDEVELOPMENT OF THE ELLICOTT CITY TERRACE APARTMENTS  
TAX MAP 25 BLOCK 7 PARCEL 120, PARCEL A  
2ND ELECTION DISTRICT L.11702/F.63 HOWARD COUNTY, MARYLAND

**ROBERT H. VOGEL ENGINEERING, INC.**  
ENGINEERS • SURVEYORS • PLANNERS  
8407 MAIN STREET ELLICOTT CITY, MD 21043 TEL: 410-461-7666

DESIGN BY: DZE		PROFESSIONAL CERTIFICATE 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. EXPIRES 08-27-2018
CHECKED BY: RHV		
DATE: JULY 2017		
SCALE: AS SHOWN		
W.O. NO.: 12-53	2 SHEET OF 30	

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

DATE: 8-22-17  
DATE: 9-5-17  
DATE: 9-5-17

**DEMOLITION PLAN**  
SCALE: 1"=30'

NO AS-BUILT INFORMATION ON THIS SHEET

COURT HOUSE DRIVE  
MINOR ARTERIAL  
100' ROW

LEGEND:

EXISTING CURB AND GUTTER	PROPOSED FOREST CONSERVATION EASEMENT (RETENTION)
PROPOSED CURB AND GUTTER	EXISTING WETLAND
EXISTING UTILITY POLE	EXISTING WETLAND BUFFER
EXISTING LIGHT POLE	12' PRIVATE ACCESS EASEMENT TO BENEFIT PARCEL 205
EXISTING MAILBOX	20' PUBLIC WATER AND UTILITY EASEMENT PLAN 24230-24292
EXISTING SIGN	PROP. MICRO BIOTRETION AREA
EXISTING SANITARY MANHOLE	EX. 20' PUBLIC SEWER EASEMENT PLAN 22261
EXISTING WATER LINE	20' PUBLIC ORANGE AND UTILITY EASEMENT PLAN 22261
PROPOSED SANITARY LINE	EXISTING ROW DEDICATION AREA
EXISTING CLEANOUT	PROPOSED BIKE RACK
EXISTING FIRE HYDRANT	PROPOSED MAIL BOX
EXISTING WATER LINE	FELS LANE MILL AND OVERLAY - SEE DETAIL SHEET 4*
PROPOSED STORM DRAIN	FELS LANE FULL-DEPTH PAVING - SEE DETAIL SHEET 4*
PROPOSED STORM DRAIN INLET	
EXISTING TREES (FIELD LOCATED)	
EXISTING SPECIMEN TREE (FIELD LOCATED)	
EXISTING TREELINE (FIELD LOCATED)	
EXISTING FENCE	
PROPERTY LINE	
RIGHT-OF-WAY LINE	
EXISTING STREAM	
EXISTING STREAM BUFFER	
PROPOSED SIDEWALK	
PROPOSED LIGHTS	

EXISTING UTILITIES SHOWN ON THESE PLANS HAVE BEEN LOCATED FROM EXISTING SITE DEVELOPMENT PLANS, FIELD SURVEYS, PUBLIC WATER AND SEWER EXTENSION PLANS AND AVAILABLE RECORD DRAWINGS. APPROXIMATE LOCATION OF EXISTING UTILITIES ARE SHOWN FOR THE CONTRACTORS INFORMATION ONLY.

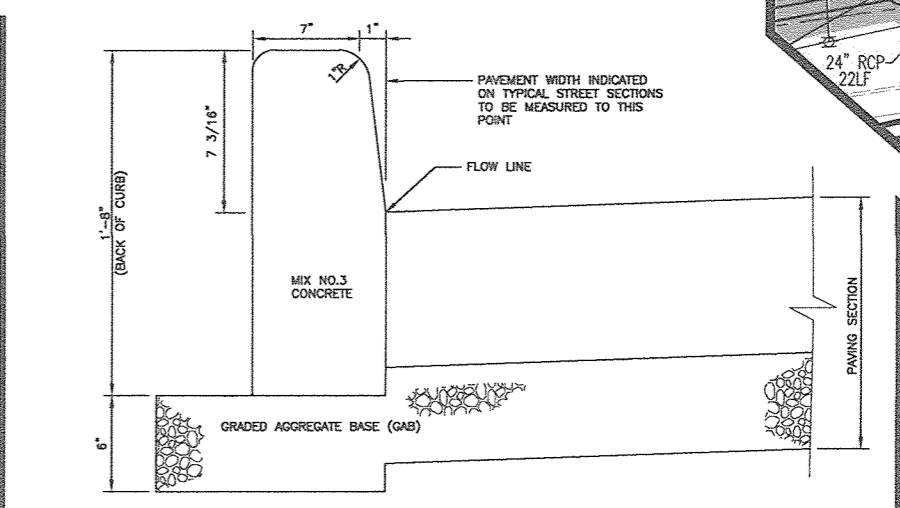
CONTRACTOR SHALL TEST PIT TO VERIFY EXISTING UTILITIES WELL IN ADVANCE OF CONSTRUCTION ACTIVITIES AND TAKE ALL NECESSARY PRECAUTIONS TO PROTECT THE EXISTING UTILITIES. TO MAINTAIN UNINTERRUPTED SERVICE AND TO PROVIDE REQUIRED CLEARANCES FOR ALL PROPOSED UTILITIES, ANY DAMAGE INCURRED DUE TO CONTRACTORS OPERATION SHALL BE REPAIRED IMMEDIATELY AT THE CONTRACTORS EXPENSE.



AS-BUILT CERTIFICATION FOR PSMW

I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND IS CONFORMANT WITH THE APPROVED PLANS AND SPECIFICATIONS. I HAVE VERIFIED THAT THE CONTRIBUTING DRAINAGE AREA IS SUFFICIENTLY STABILIZED TO PREVENT CLOGGING OF THE UNDERGROUND SWM FACILITY.

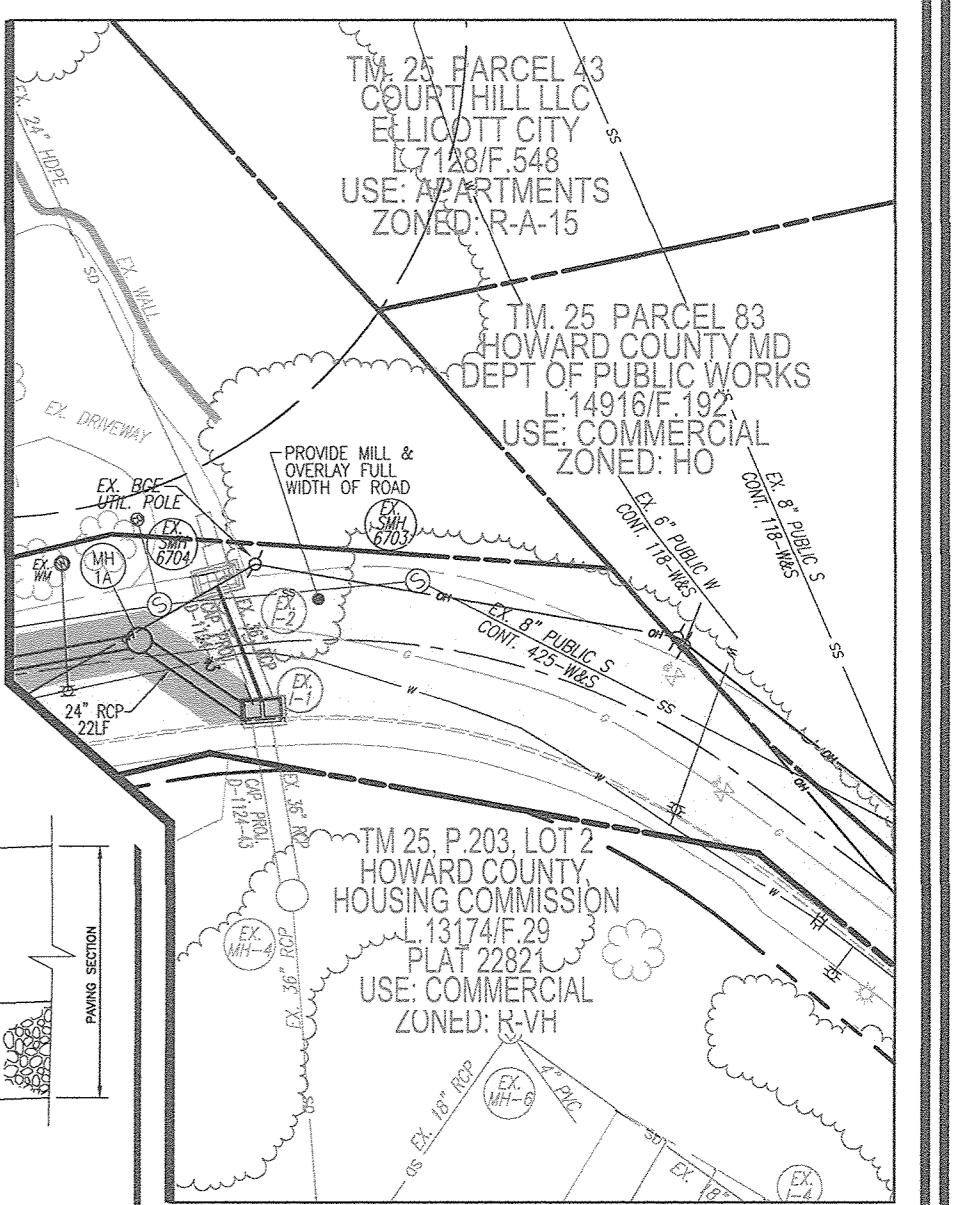
DATE: 9-20-19  
P.E. NAME: Robert H. Vogel, P.E. # 16193



NOTES:

- A MINIMUM OF TWO (2) FEET OF COMPACTED STABILIZED SAND, OR EQUIVALENT, SHALL SUPPORT THE ENTIRE BACK OF CURB.
- POSTING ORANGE SHALL BE PROVIDED BOTH BEHIND THE CURB AND ALONG THE GUTTER AND FLOW LANE.

CONCRETE BARRIER CURB	Detail
CURBS	Hot Mix Asphalt & Concrete Barrier
	R-3.03



OWNER	DEVELOPER
HOWARD COUNTY HOUSING COMMISSION 9770 PATUXENT WOODS DR., SUITE 100 COLUMBIA, MD 21046 C/O PETER ENCK (410) 313-6320	STAVROU ASSOCIATES, INC. 2661 RIVA ROAD SUITE 320 ANNAPOLIS, MD 21401 C/O SCOTT N. LINK (410) 571-6610

NO.	REVISION	DATE
3	REVISE TO MODIFY FRONTAGE IMPROVEMENTS TO REMOVE SIDEWALK, ADD CURBING, AND ADJUST STORM DRAIN WITHIN FELS LANE	11/07/18
2	REVISE OUTFALL ALONG FELS LANE TO CONNECT TO CAP. PROJ. D-2411-43;	01/16/18
1	REVISE WHC PROFILES TO LOTS 2 & 3.	
1	REVISE TO RELOCATE THE PROPOSED WHC TO BUILDING 1.	11/01/17

REVISED SITE DEVELOPMENT PLAN

LAYOUT PLAN

BURGESS MILL STATION PH II

A REDEVELOPMENT OF THE ELLICOTT CITY TERRACE APARTMENTS

TAX MAP 25 BLOCK 7 2ND ELECTION DISTRICT

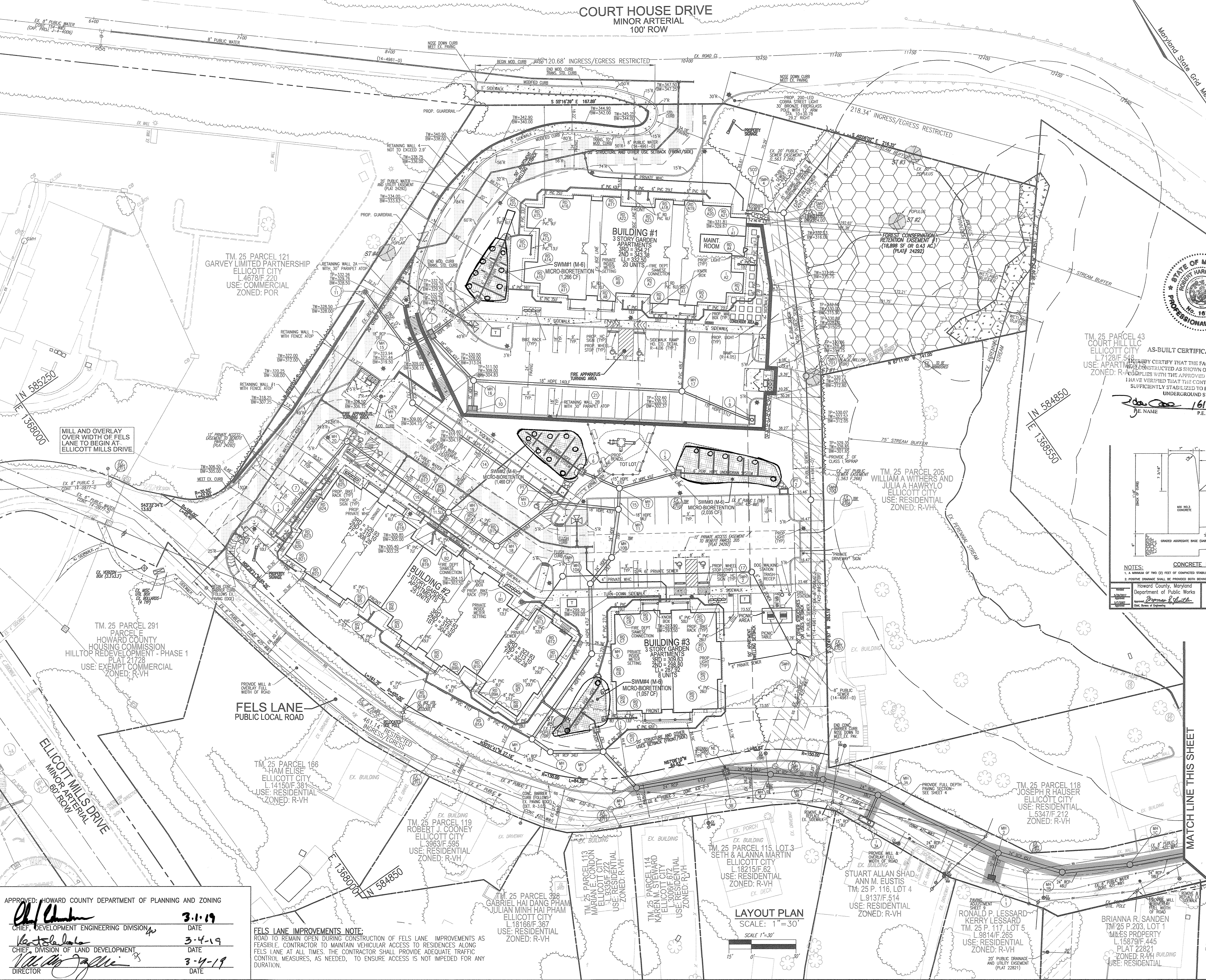
PARCEL 120, PARCEL A HOWARD COUNTY, MARYLAND

**ROBERT H. VOGEL ENGINEERING, INC.**

ENGINEERS • SURVEYORS • PLANNERS

3300 N. RIDGE ROAD, SUITE 110 ELLICOTT CITY, MD 21043 TEL: 410.461.7666 FAX: 410.461.8961

DESIGN BY:	DZE	PROFESSIONAL CERTIFICATE
DRAWN BY:	DZE/MR/KC	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. 16193, EXPIRATION DATE 06-27-2023
CHECKED BY:	RHV	
DATE:	FEB. 2019	
SCALE:	AS SHOWN	
W.O. NO.:	12-53	



APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

3-1-19 DATE

3-4-19 DATE

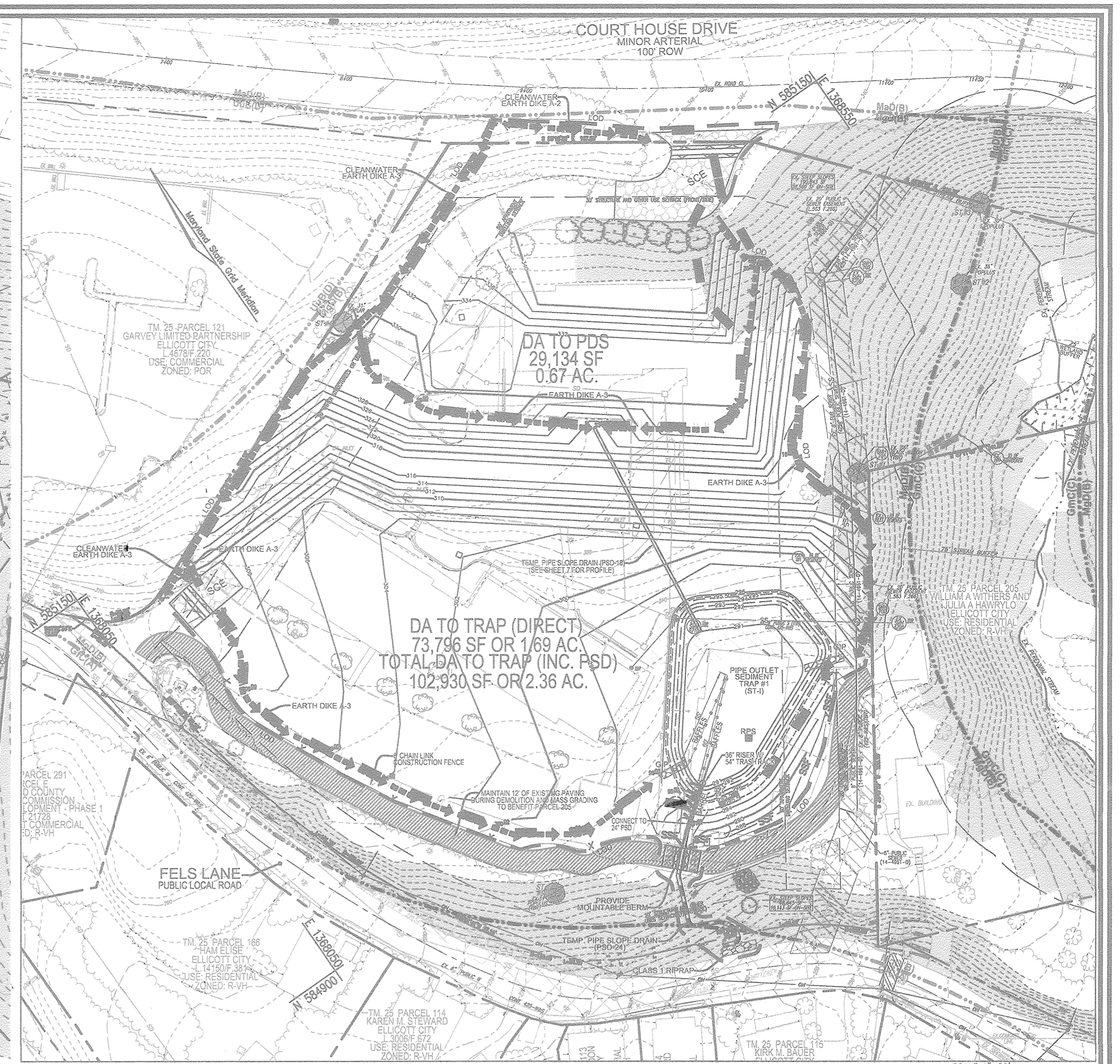
3-4-19 DATE

FELS LANE IMPROVEMENTS NOTE:

ROAD TO REMAIN OPEN DURING CONSTRUCTION OF FELS LANE IMPROVEMENTS AS FEASIBLE. CONTRACTOR TO MAINTAIN VEHICULAR ACCESS TO RESIDENCES ALONG FELS LANE AT ALL TIMES. THE CONTRACTOR SHALL PROVIDE ADEQUATE TRAFFIC CONTROL MEASURES, AS NEEDED, TO ENSURE ACCESS IS NOT IMPEDED FOR ANY DURATION.

LAYOUT PLAN  
SCALE: 1" = 30'





**PIPE OUTLET SEDIMENT TRAP #1 (ST-1)**

DRAINAGE AREA - INITIAL	=	2.36 AC.
DRAINAGE AREA - FINAL	=	2.36 AC.
TOTAL STORAGE REQUIRED	=	19,818 CF*
WET STORAGE REQUIRED	=	4249 CF*
DRY STORAGE REQUIRED	=	15,570 CF*
TOTAL STORAGE PROVIDED	=	20,281 CF*
WET STORAGE PROVIDED	=	4609 CF*
DRY STORAGE PROVIDED*	=	15,672 CF*
BOTTOM OF TRAP EL.	=	291.00
BOTTOM TRAP DIM.	=	APPROX. 85'x140'
ROSER CREST/DRY STORAGE EL.	=	294.30
CLEANOUT EL.	=	291.45
TOP OF EMBANKMENT	=	295.50
SIDE SLOPES	=	2:1
EMBANKMENT TOP WIDTH	=	24'
PRINCIPAL SPILLWAY MATERIAL	=	CMP
ROSER DIAMETER	=	36 IN.
BARREL DIAMETER	=	24 IN.
TRASH RACK DIAMETER	=	54 IN.
TRASH RACK HEIGHT	=	20 IN.
ANTI-SEEP COLLAR DIMENSIONS	=	(1) 3.5"x3.5"
OUTLET PROTECTION LENGTH	=	N/A - CONNECT TO
OUTLET PROTECTION WIDTH/DEPTH	=	24" PIPE SLOPE DRAIN
* INCLUDES 12"MM FOR THE 1-YEAR STORM & DRY STORAGE (DRY STORAGE PROVIDED FOR THE 1YR STORM @ 2.6 IN.)		

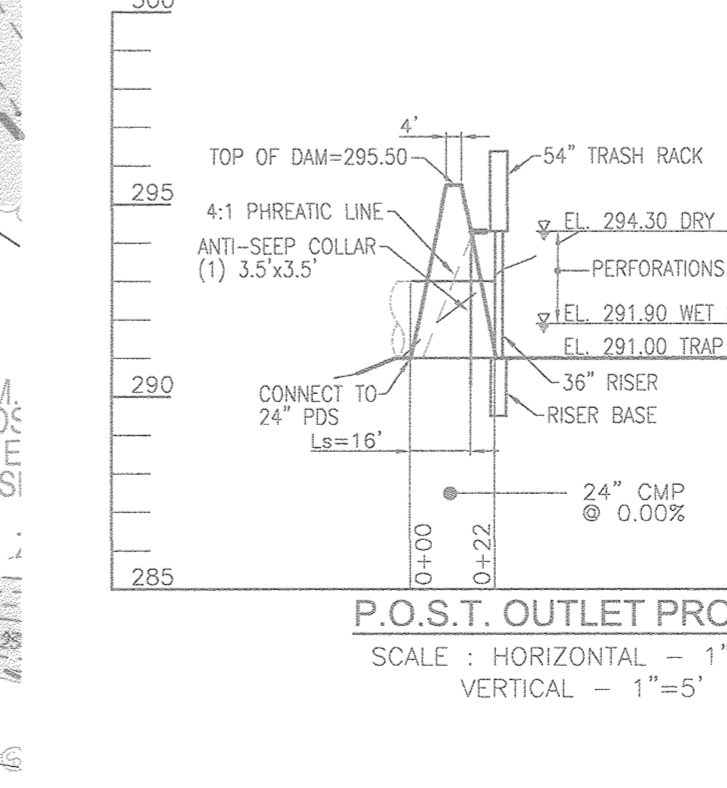
**PHASE 1 - SEDIMENT CONTROL DA MAP**  
SCALE: 1"=50'

CONTRACTOR'S EXPENSE	UTILITIES
WEL	7 TAKE
ALL I	STRING
UTIL	D TO
PROP	D
UTIL	E
COPEL	TORS

**STEEP SLOPE DISTURBANCE NOTE:**  
ENHANCED MANAGEMENT SUCH AS ACCELERATED STABILIZATION AND PERMANENT EROSION AND SEDIMENT CONTROLS ARE REQUIRED FOR STEEP SLOPE DISTURBANCES.

**OWNER:** HOWARD COUNTY HOUSING COMMISSION, 9770 PATUXENT WOODS DR., SUITE 100, COLUMBIA, MD 21046, (410) 313-6320

**DEVELOPER:** SIAWROU ASSOCIATES, INC., 2661 RIVA ROAD, SUITE 320, ANNAPOLIS, MD 21401, C/O FELIX ENGEL, (410) 371-6610



NO.	REVISION	DATE
3	REVISE TO MODIFY FRONTAGE IMPROVEMENT TO REMOVE SIDEWALK, ADD CURBING AND ADJUST STORM DRAIN WITHIN FELLS LANE	11/01/18

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

*[Signature]* 8-22-17  
DATE

*[Signature]* 9-5-17  
DATE

*[Signature]* 9-5-17  
DATE

**OWNER/DEVELOPER CERTIFICATION:**  
I/WE CERTIFY THAT ANY CLEARING, GRADING, CONSTRUCTION, OR DEVELOPMENT WILL BE DONE PURSUANT TO THIS APPROVED EROSION AND SEDIMENT CONTROL PLAN, INCLUDING INSPECTING AND MAINTAINING CONTROLS, AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A MARYLAND DEPARTMENT OF THE ENVIRONMENT (MDE) APPROVED TRAINING PROGRAM FOR THE CONTROL ON EROSION AND SEDIMENT PRIOR TO BEGINNING THE PROJECT. I CERTIFY RIGHT-OF-ENTRY FOR PERFORMING ON-SITE EVALUATION BY HOWARD COUNTY, THE HOWARD SOIL CONSERVATION DISTRICT AND/OR MDE.

*[Signature]* 7/19/18  
DATE

*[Signature]* Robert Engel, Executive Director  
PRINTED NAME & TITLE

**DESIGN CERTIFICATION:**  
I HEREBY CERTIFY THAT THIS PLAN HAS BEEN DESIGNED IN ACCORDANCE WITH CURRENT MARYLAND EROSION AND SEDIMENT CONTROL LAWS, REGULATIONS, AND STANDARDS, THAT IT REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

*[Signature]* 16193 9-20-19  
DATE

*[Signature]* 7/17/18  
DATE

ROBERT H. VOGEL  
PRINTED NAME

MD REGISTRATION NO. 16193  
R.L.S., OR R.L.A. (circle one)

**AS-BUILT CERTIFICATION FOR P.S.W.M. AND ADJACENT ALLIANCE**

I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND COMPLIES WITH THE APPROVED PLANS AND SPECIFICATIONS. I HAVE VERIFIED THAT THE CONTRIBUTING DRAINAGE AREA IS SUFFICIENTLY STABILIZED TO PREVENT CLOGGING OF THE UNDERGROUND SWM FACILITY.

*[Signature]* 9/11/17  
DATE

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

**LEGEND:**

EXISTING CONTOUR	PROPOSED STORM DRAIN	MODERATE SLOPES (15% - 24.99%)
PROPOSED CONTOUR	PROPOSED STORM DRAIN INLET	STEEP SLOPE (25% - 33%)
EXISTING SPOT ELEVATION	EXISTING TREES (FIELD LOCATED)	SILT FENCE
EXISTING CURB AND GUTTER	EXISTING SPECIMEN TREES	SUPER SILT FENCE
EXISTING UTILITY POLE	PROPOSED 6" CHAIN LINK CONSTRUCTION FENCE	EARTH DIKES
EXISTING MAILBOX	EXISTING TREE	STABILIZED CONSTRUCTION ENTRANCE
EXISTING SIGN	EXISTING TRUNK	LOD
EXISTING SANITARY MANHOLE	EXISTING FENCE	LOD
EXISTING SANITARY LINE	PROPERTY LINE	LIMIT OF DISTURBANCE
EXISTING CLEANOUT	RIGHT-OF-WAY LINE	
EXISTING FIRE HYDRANT	SOILS BOUNDARY	
EXISTING WATER LINE	SEDS	
EXISTING STORM DRAIN	DRAINAGE AREA LINE	

**REVISED SITE DEVELOPMENT PLAN**

**PHASE 1 GRADING AND SEDIMENT CONTROL PLAN**

**BURGESS MILL STATION PH II APARTMENTS**  
A REDEVELOPMENT OF THE ELLICOTT CITY TERRACE APARTMENTS

TAX MAP 25 BLOCK 7  
2ND ELECTION DISTRICT

PARCEL 120, PARCEL A  
HOWARD COUNTY, MARYLAND

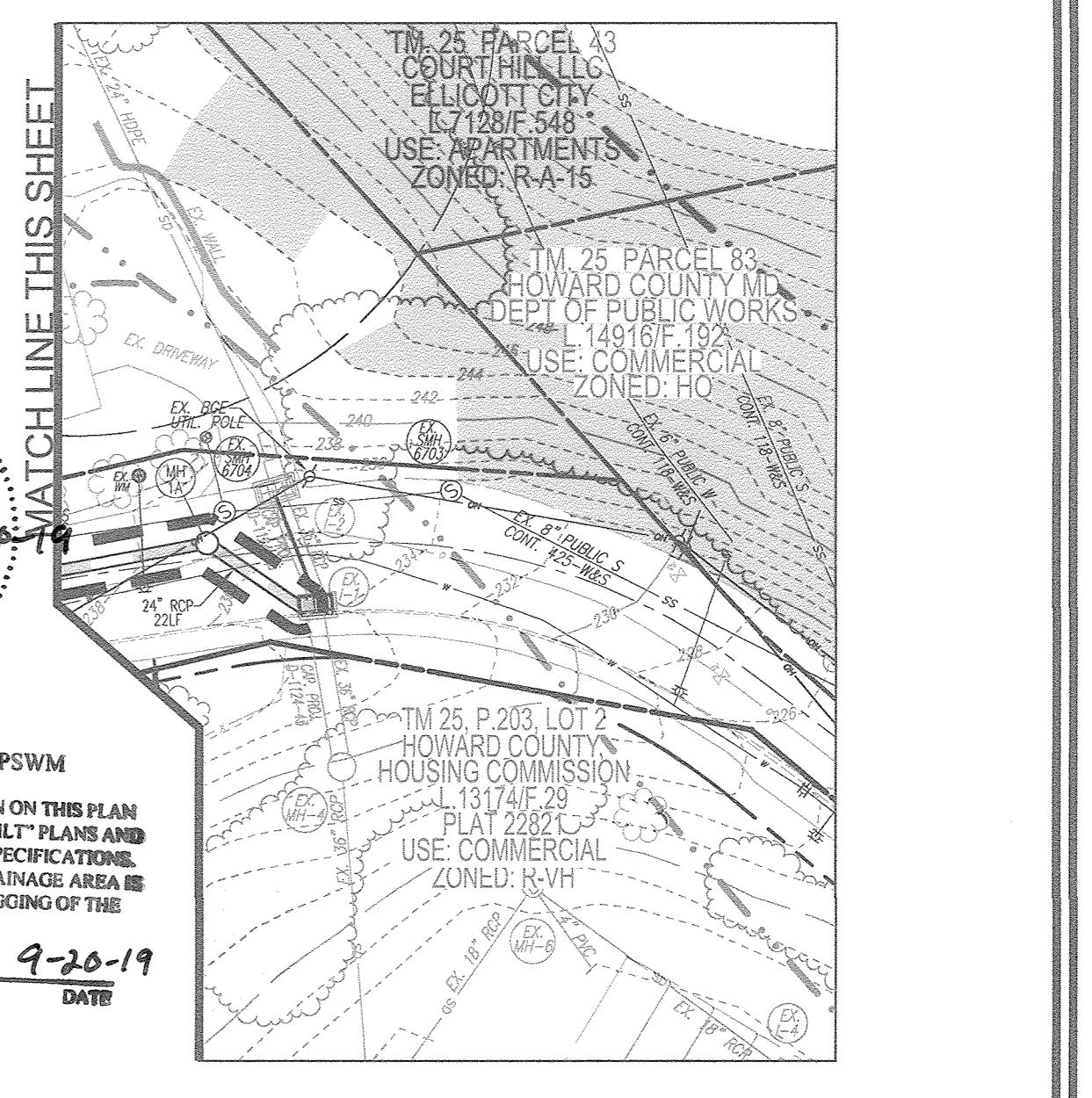
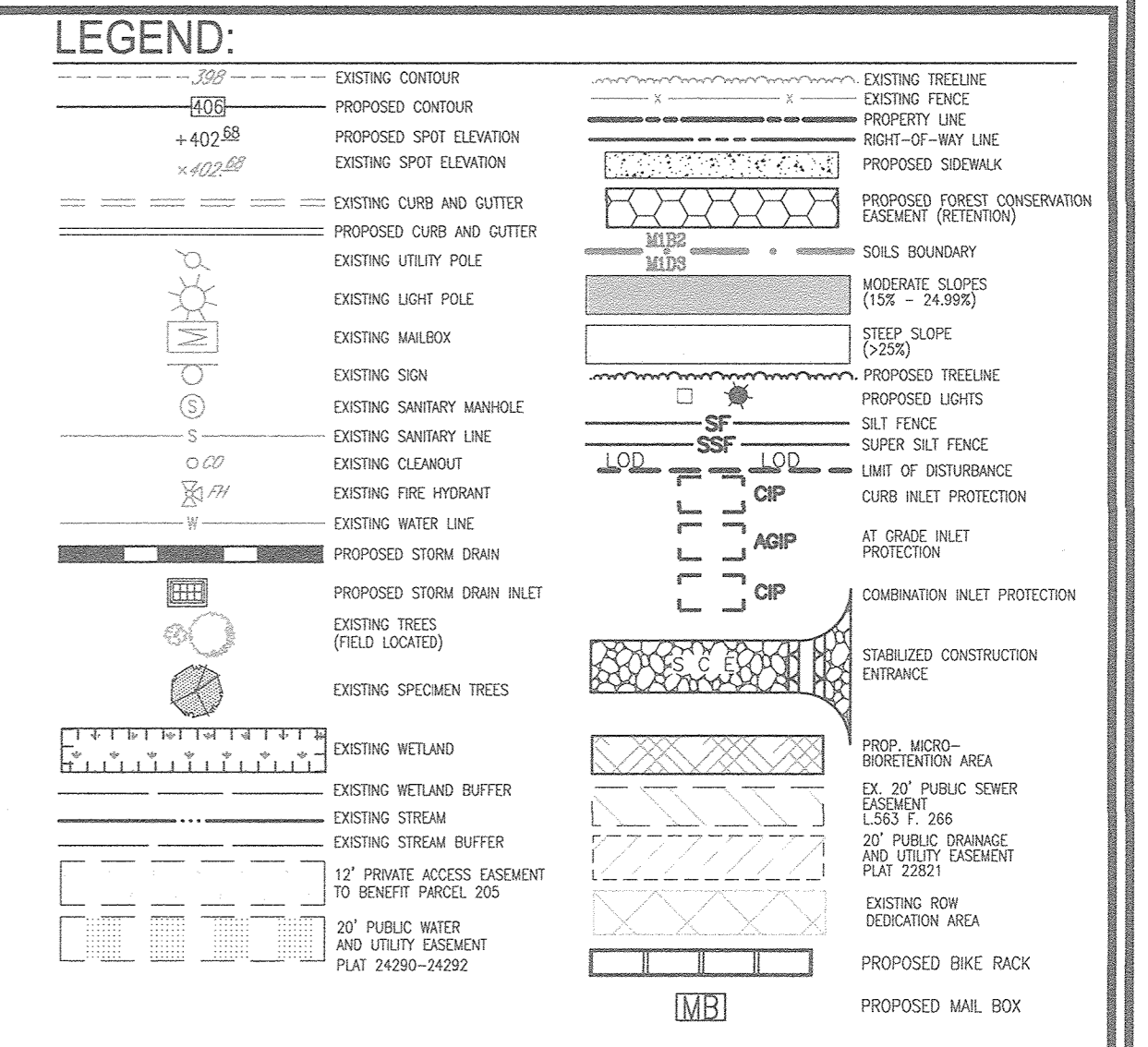
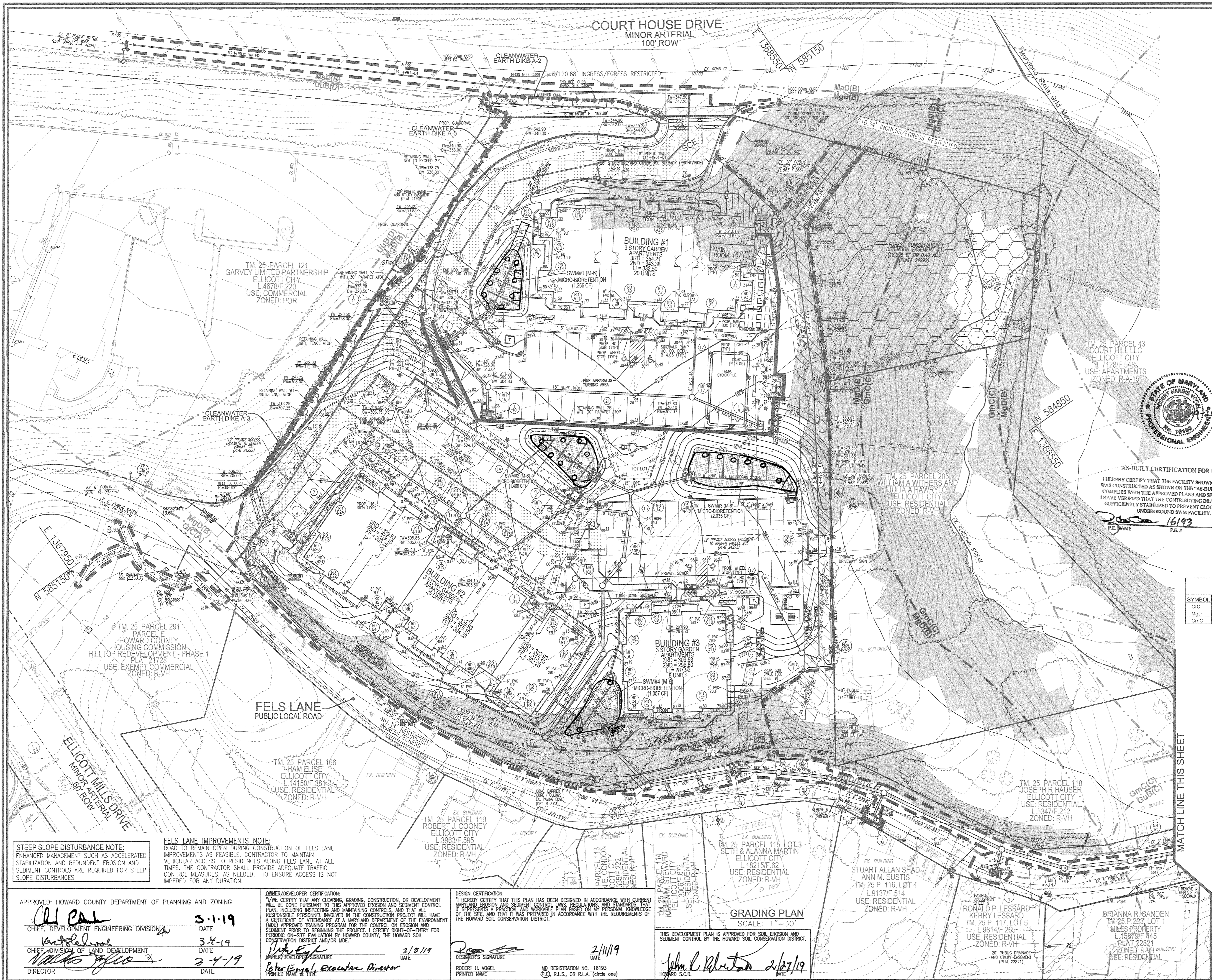
**ROBERT H. VOGEL ENGINEERING, INC.**  
ENGINEERS • SURVEYORS • PLANNERS  
8407 MAIN STREET ELLICOTT CITY, MD 21043 TEL: 410-461-7666 FAX: 410-461-1896

**PROFESSIONAL CERTIFICATE**  
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. EXPIRES 10-27-2019

DESIGN BY: DZE  
DRAWN BY: DZE/MB/KG  
CHECKED BY: RHY  
DATE: JULY 2017  
SCALE: AS SHOWN  
W.O. NO.: 12-53

5 SHEET OF 30

AS-BUILT - JUNE 2019



**AS-BUILT CERTIFICATION FOR PSWM**

I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND COMPLIES WITH THE APPROVED PLANS AND SPECIFICATIONS. I HAVE VERIFIED THAT THE CONTRIBUTING DRAINAGE AREA IS SUFFICIENTLY STABILIZED TO PREVENT CLOGGING OF THE UNDERGROUND SWM FACILITY.

*John L. Robertson* 16193 9-20-19  
P.E. NAME P.E.# DATE

**SOILS LEGEND**  
HOWARD COUNTY SOILS MAP #14

SYMBOL	NAME / DESCRIPTION	GROUP	FACTOR	ERODIBLE
G/C	GLADSTONE-URBAN LAND COMPLEX, 8 TO 10 PERCENT SLOPES	A	0.24	NO
MgD	MANOR-BANNERTOWN SANDY LOAMS, 15 TO 25 PERCENT SLOPES, ROCKY	B	0.24	YES
GmC	GLADSTONE LOAM, 8 TO 15 PERCENT SLOPES	C	0.43	YES

**OWNER**  
HOWARD COUNTY HOUSING COMMISSION  
9770 PALMIST WOODS DR., SUITE 100  
COLUMBIA, MD 21046  
C/O PETER ENGEL  
(410) 313-6320

**DEVELOPER**  
STAVROU ASSOCIATES, INC.  
2661 RIVA ROAD  
ANNAPOLIS, MD 21401  
C/O PETER ENGEL  
(410) 371-6610

NO.	REVISION	DATE
3	REVISE TO MODIFY FRONTAGE IMPROVEMENTS TO REMOVE SIDEWALK, ADD CURBING, AND ADJUST STORM DRAIN WITHIN FELLS LANE	11/07/18
2	REVISE OUTFALL ALONGS FELLS LANE TO CONNECT TO CAP. PROJ. D-2411-43;	01/16/18
1	REVISE WHC PROFILES TO LOTS 2 & 3.	
1	REVISE TO RELOCATE THE PROPOSED WHC TO BUILDING 1.	11/01/17

**REVISED SITE DEVELOPMENT PLAN**  
**PHASE 2 GRADING, SEDIMENT AND EROSION CONTROL PLAN**  
**BURGESS MILL STATION PH II**  
A REDEVELOPMENT OF THE ELLICOTT CITY TERRACE APARTMENTS  
TAX MAP 25 BLOCK 7 2ND ELECTION DISTRICT  
PARCEL 120, PARCEL A HOWARD COUNTY, MARYLAND

**ROBERT H. VOGEL ENGINEERING, INC.**  
ENGINEERS - SURVEYORS - PLANNERS  
3300 N. RIDGE ROAD, SUITE 110 TEL: 410.461.7666  
ELLICOTT CITY, MD 21043 FAX: 410.461.8961

**PROFESSIONAL CERTIFICATE**  
DESIGN BY: DZE  
DRAWN BY: DZE/MR/KG  
CHECKED BY: RHV  
DATE: FEB. 2019  
SCALE: AS SHOWN  
W.O. NO.: 12-53

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. EXPIRATION DATE: 10-27-2020

6 SHEET OF 30

**STEEP SLOPE DISTURBANCE NOTE:**  
ENHANCED MANAGEMENT SUCH AS ACCELERATED STABILIZATION AND REDUNDANT EROSION AND SEDIMENT CONTROLS ARE REQUIRED FOR STEEP SLOPE DISTURBANCES.

**FELS LANE IMPROVEMENTS NOTE:**  
ROAD TO REMAIN OPEN DURING CONSTRUCTION OF FELLS LANE IMPROVEMENTS AS FEASIBLE. CONTRACTOR TO MAINTAIN VEHICULAR ACCESS TO RESIDENCES ALONG FELLS LANE AT ALL TIMES. THE CONTRACTOR SHALL PROVIDE ADEQUATE TRAFFIC CONTROL MEASURES, AS NEEDED, TO ENSURE ACCESS IS NOT IMPEDED FOR ANY DURATION.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

*John P. ...* 3-1-19  
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

*...* 3-4-19  
CHIEF DIVISION OF LAND DEVELOPMENT DATE

*...* 3-4-19  
DIRECTOR DATE

**OWNER/DEVELOPER CERTIFICATION:**  
I/WE CERTIFY THAT ANY CLEARING, GRADING, CONSTRUCTION, OR DEVELOPMENT WILL BE DONE PURSUANT TO THIS APPROVED EROSION AND SEDIMENT CONTROL PLAN, INCLUDING INSPECTING AND MAINTAINING CONTROLS, AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A MARYLAND DEPARTMENT OF THE ENVIRONMENT (MDE) APPROVED TRAINING PROGRAM FOR THE CONTROL OF EROSION AND SEDIMENT PRIOR TO BEGINNING THE PROJECT. I CERTIFY RIGHT-OF-ENTRY FOR PERIODIC ON-SITE EVALUATION BY HOWARD COUNTY, THE HOWARD SOIL CONSERVATION DISTRICT AND/OR MDE.

*John L. Robertson* 2/18/19  
OWNER/DEVELOPER SIGNATURE DATE

*Robert H. Vogel* 2/18/19  
PRINTED NAME & TITLE DATE

**DESIGN CERTIFICATION:**  
I HEREBY CERTIFY THAT THIS PLAN HAS BEEN DESIGNED IN ACCORDANCE WITH CURRENT MARYLAND EROSION AND SEDIMENT CONTROL LAWS, REGULATIONS, AND STANDARDS, THAT THIS IS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE, AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

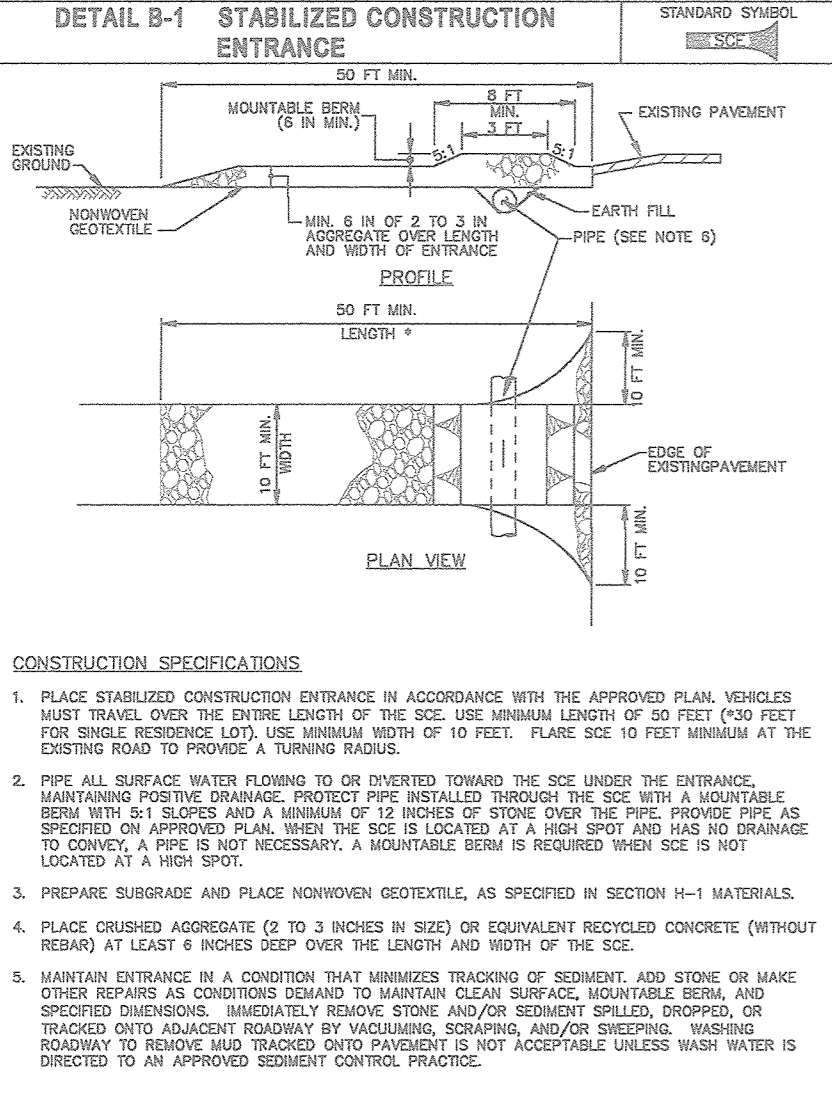
*John L. Robertson* 2/18/19  
DESIGNER'S SIGNATURE DATE

ROBERT H. VOGEL MD REGISTRATION NO. 16193  
PRINTED NAME © P.A. R.L.S., OR R.L.A. (Circle one)

**GRADING PLAN**  
SCALE: 1" = 30'

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

*John L. Robertson* 2/18/19  
DATE

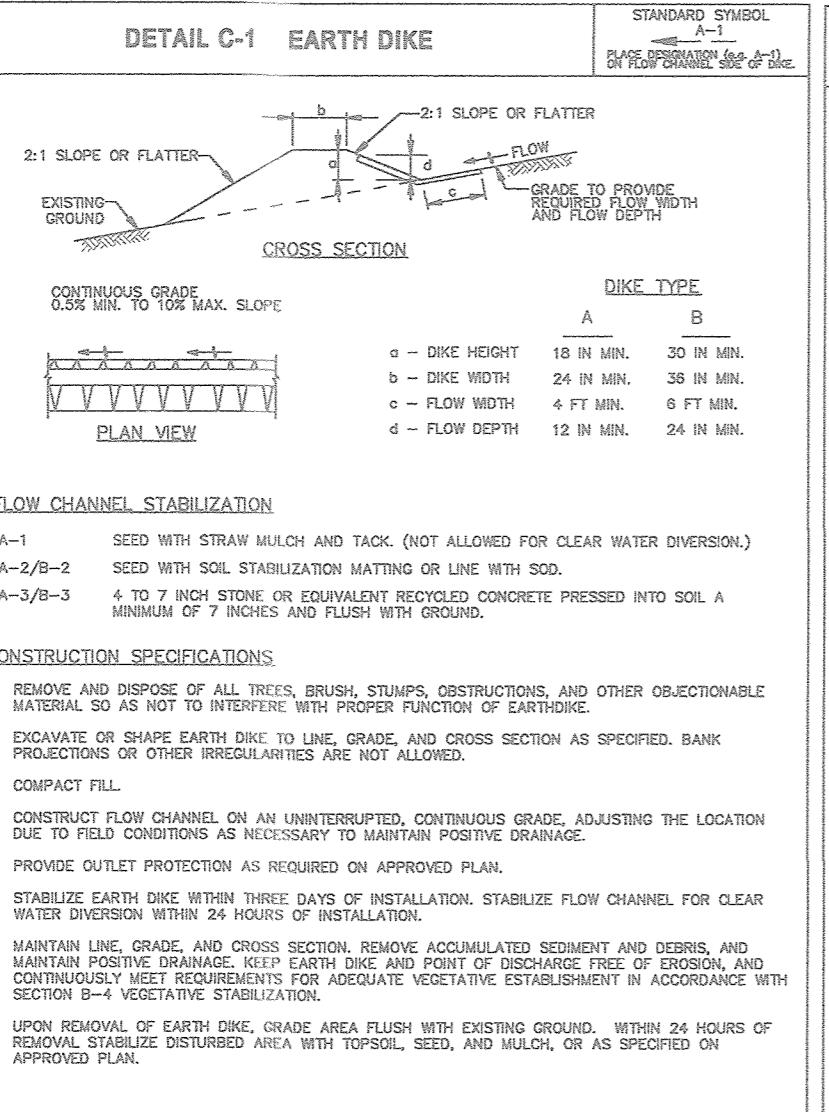


MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

U.S. DEPARTMENT OF AGRICULTURE  
NATURAL RESOURCES CONSERVATION SERVICE

2011

MARYLAND DEPARTMENT OF ENVIRONMENT  
WATER MANAGEMENT ADMINISTRATION

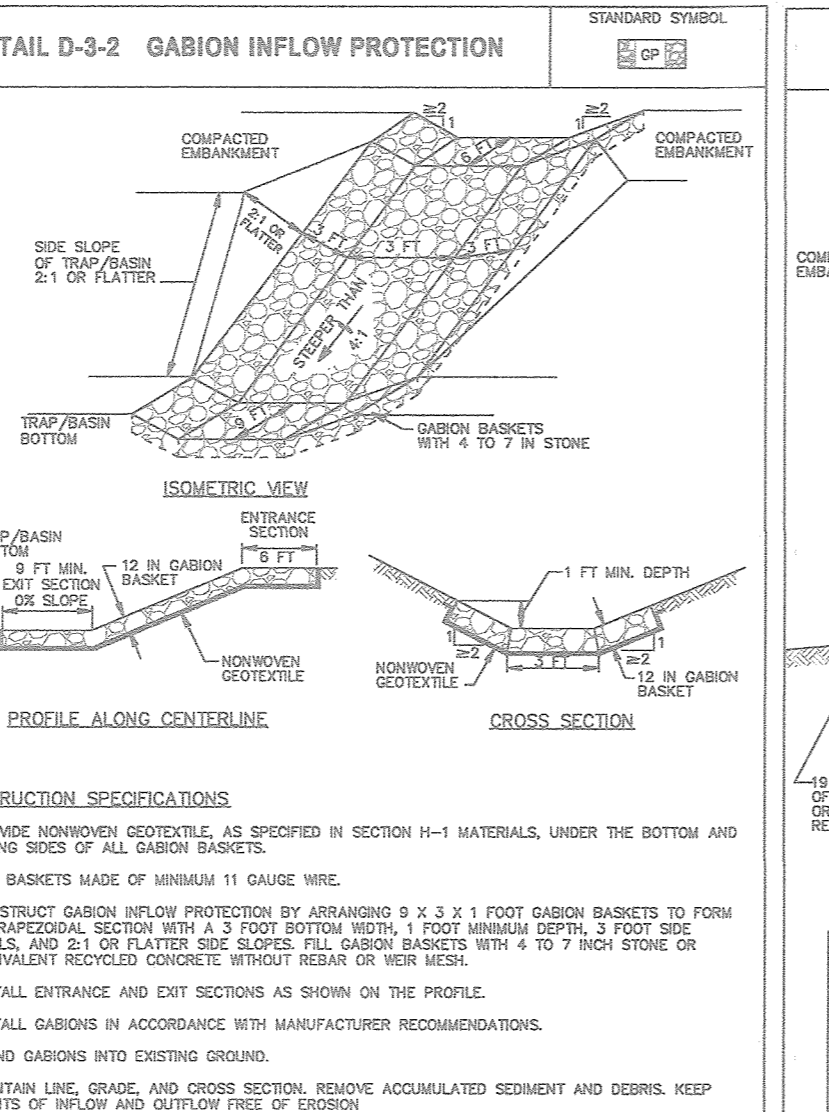


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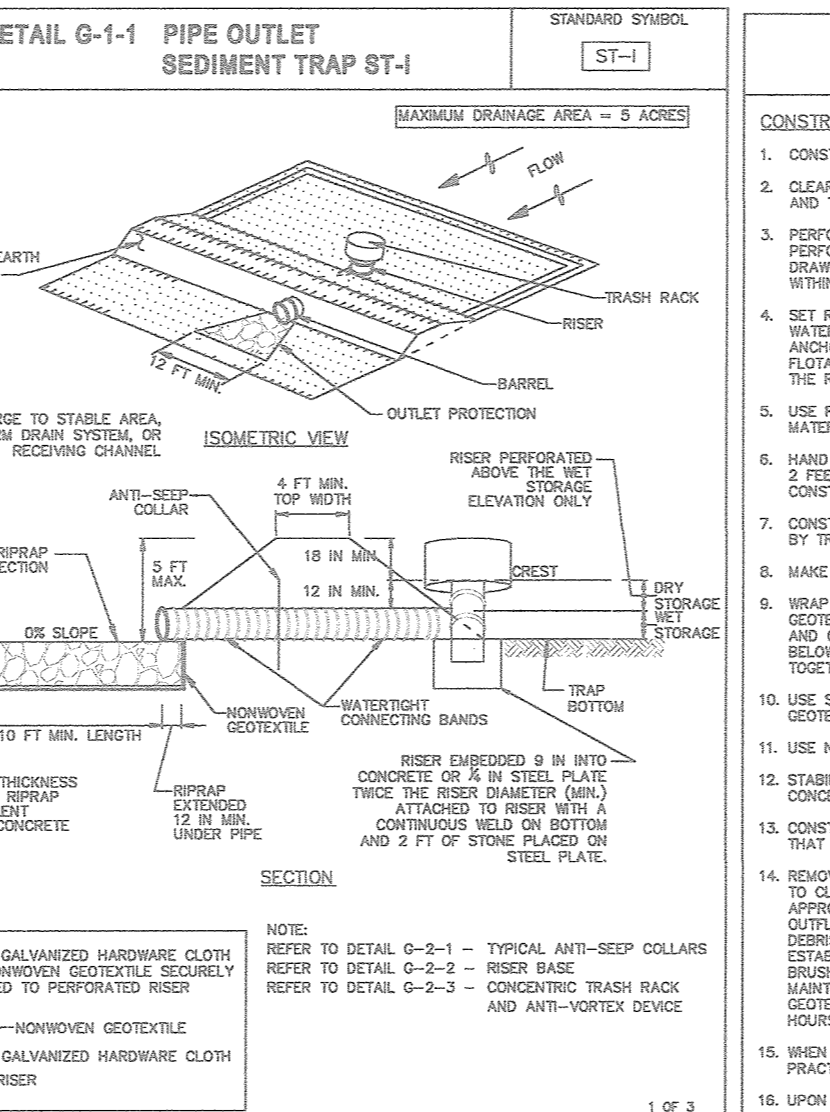


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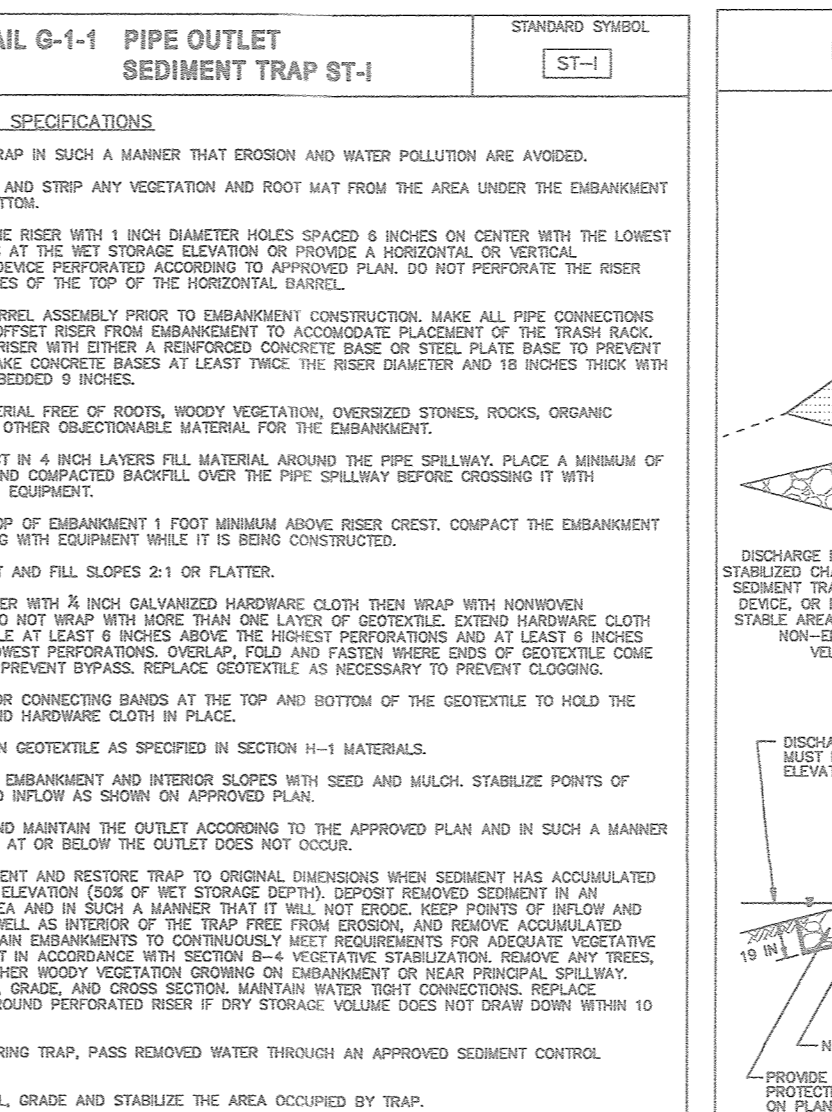


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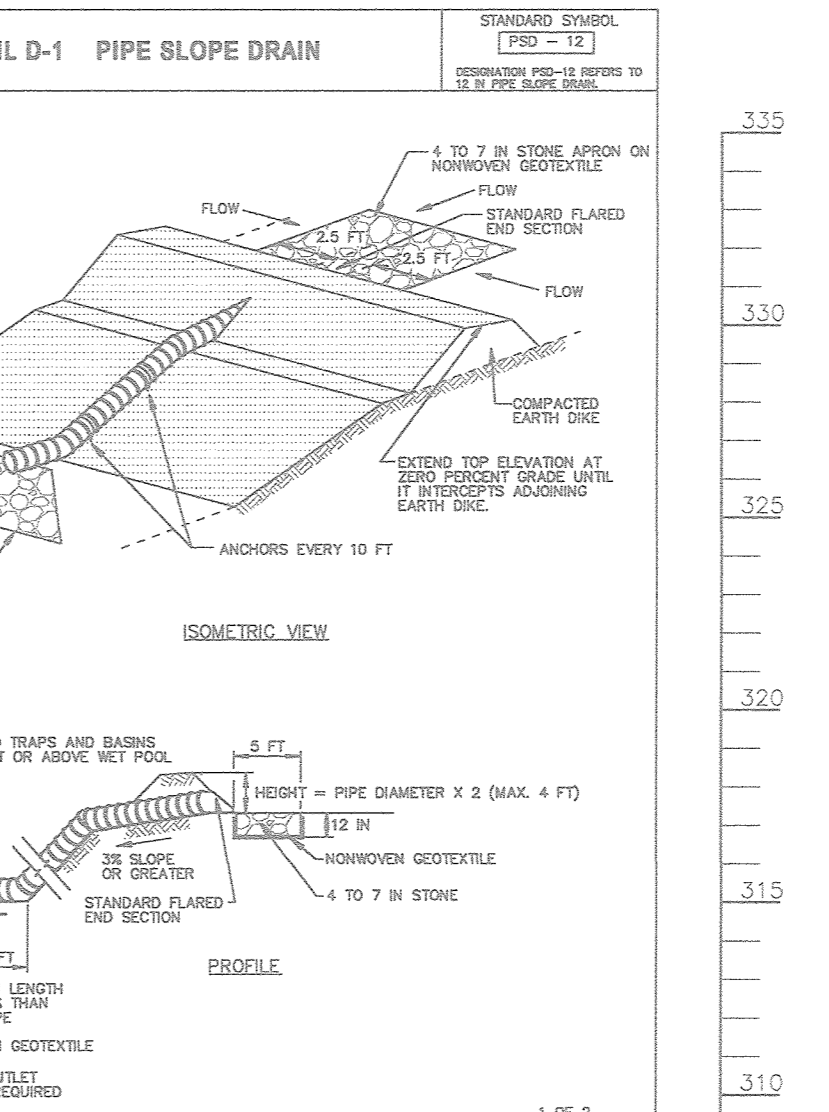


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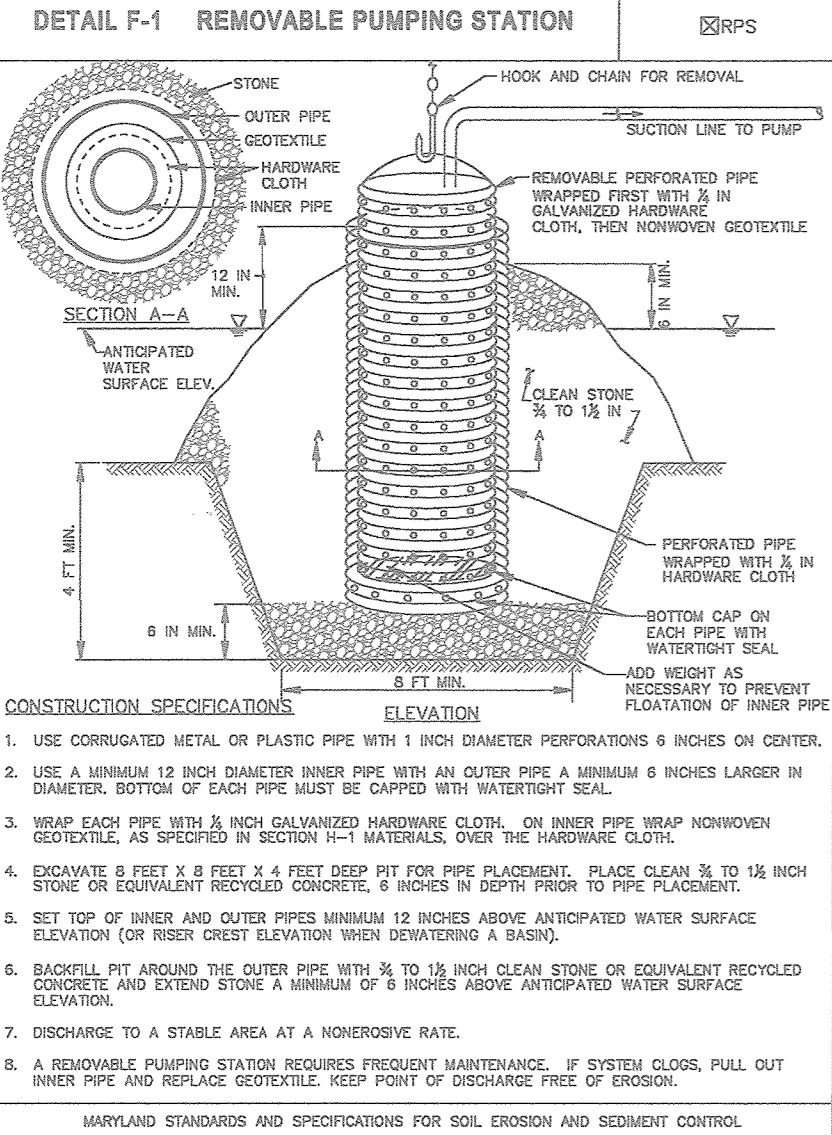
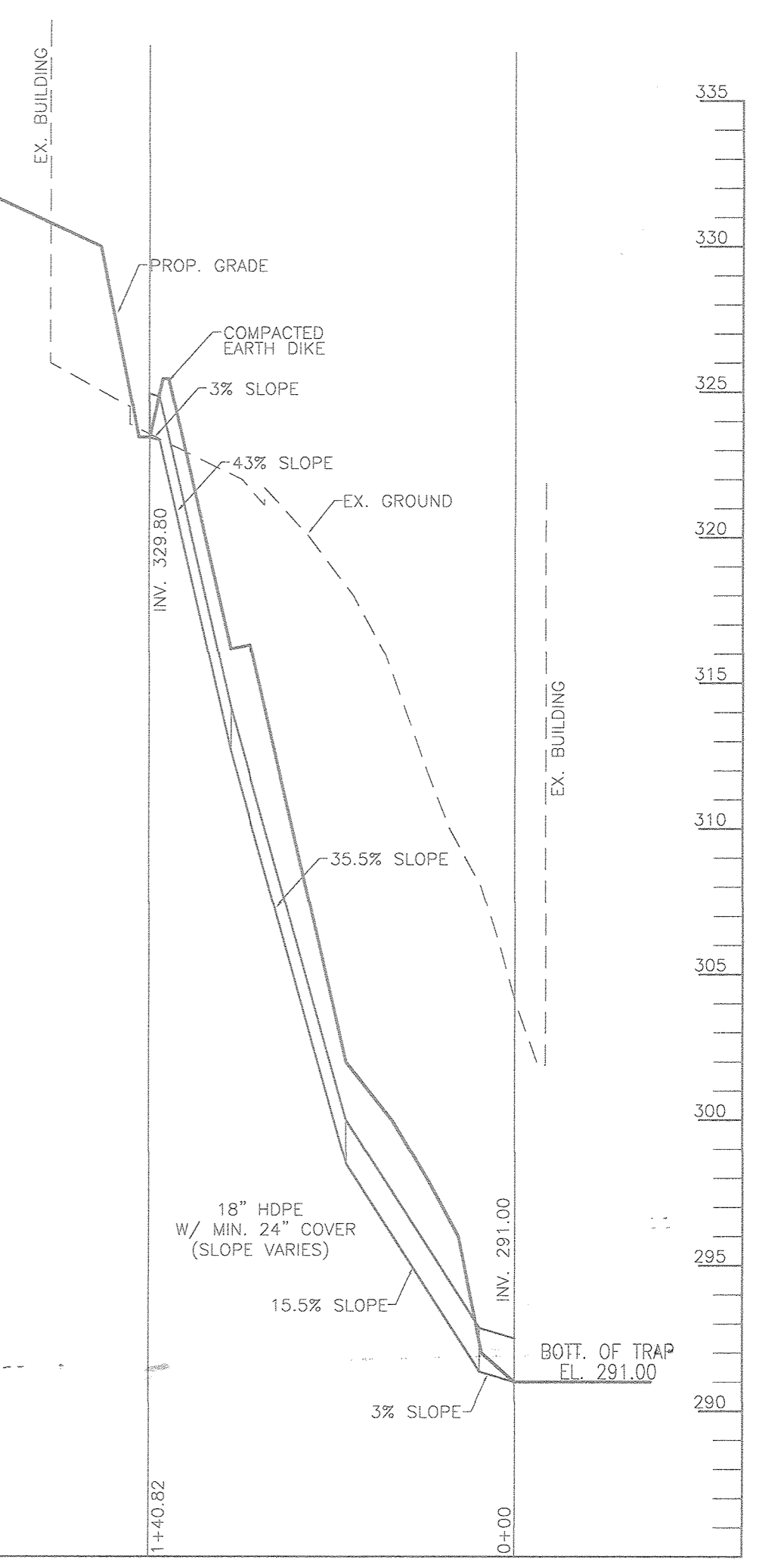


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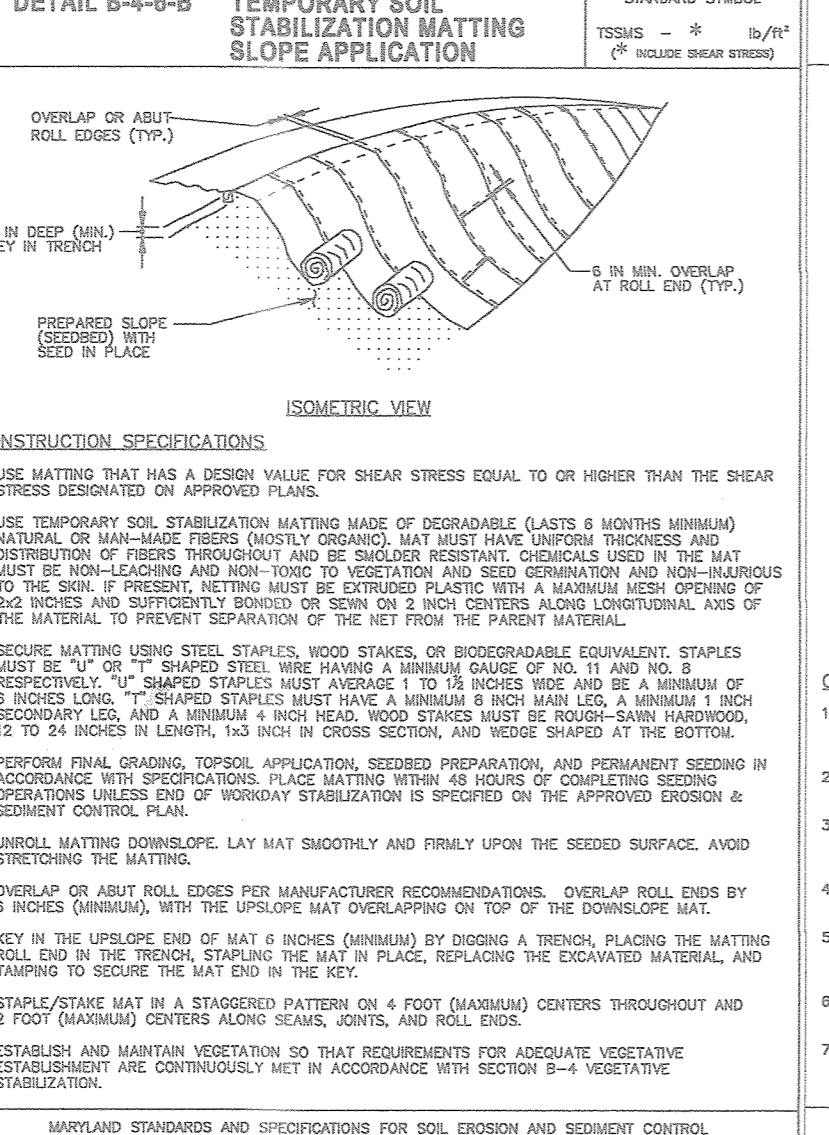


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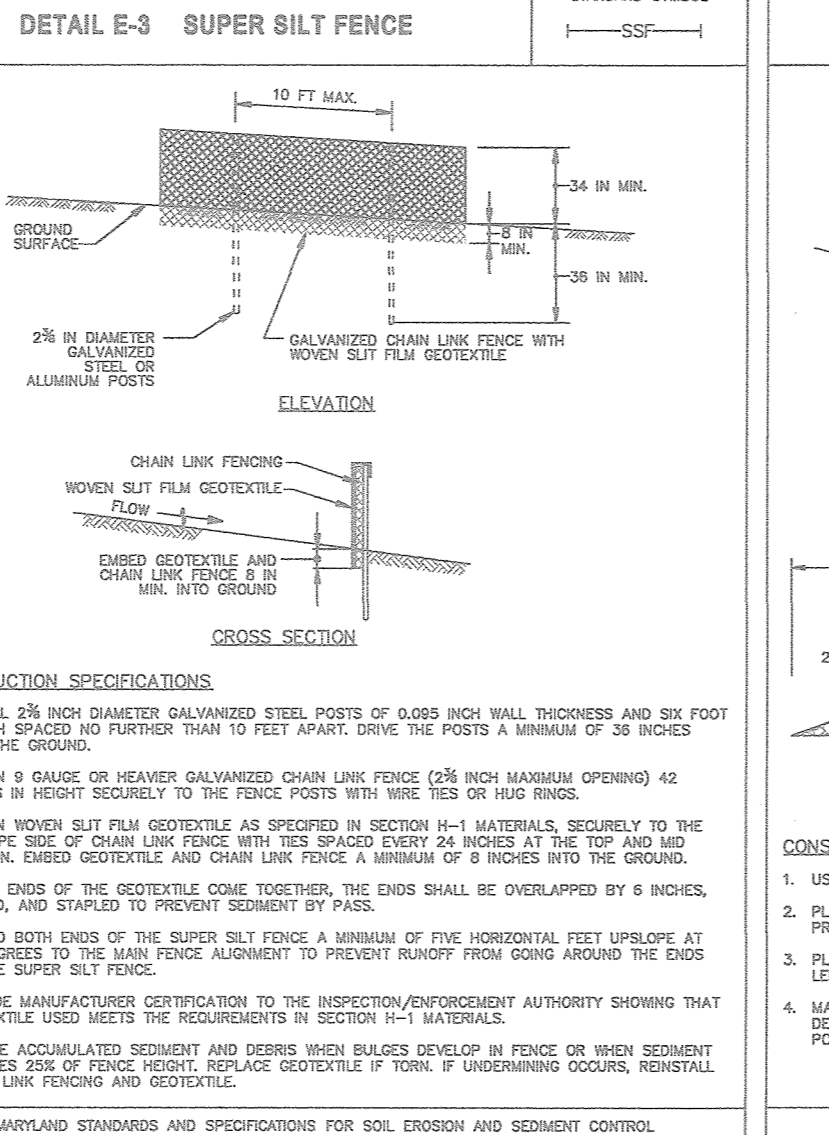


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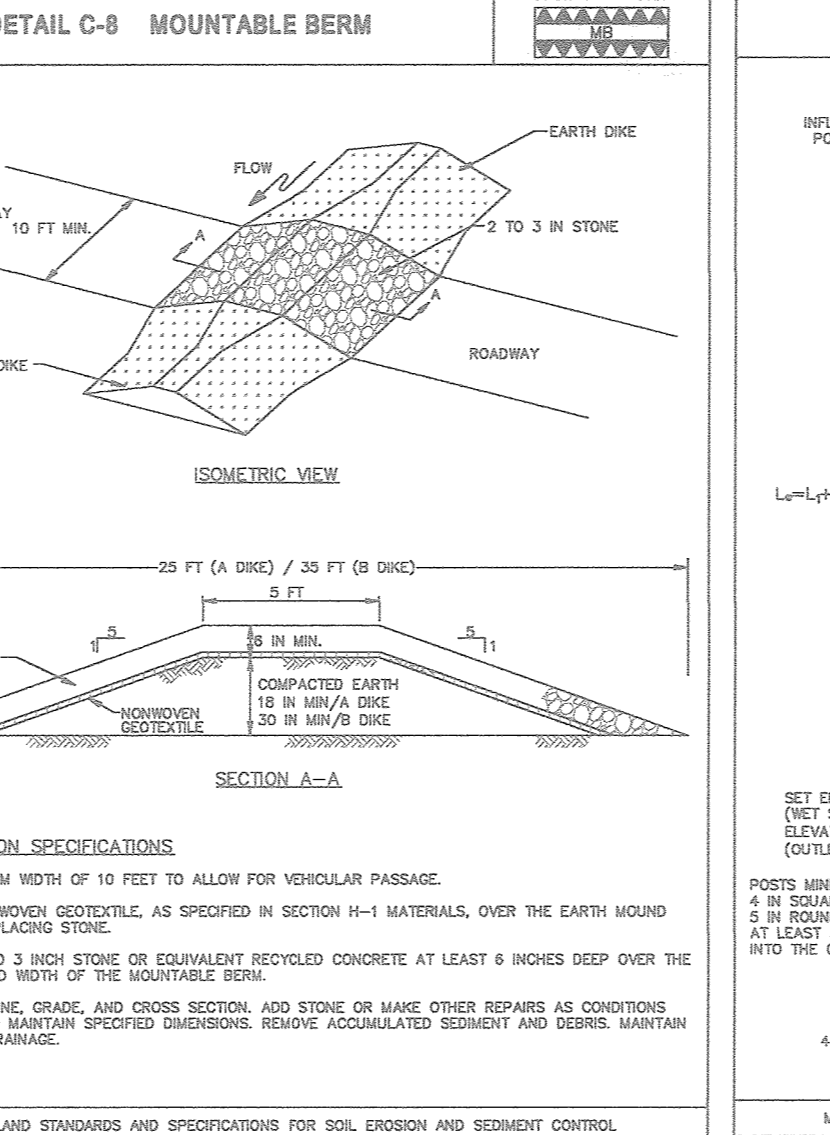


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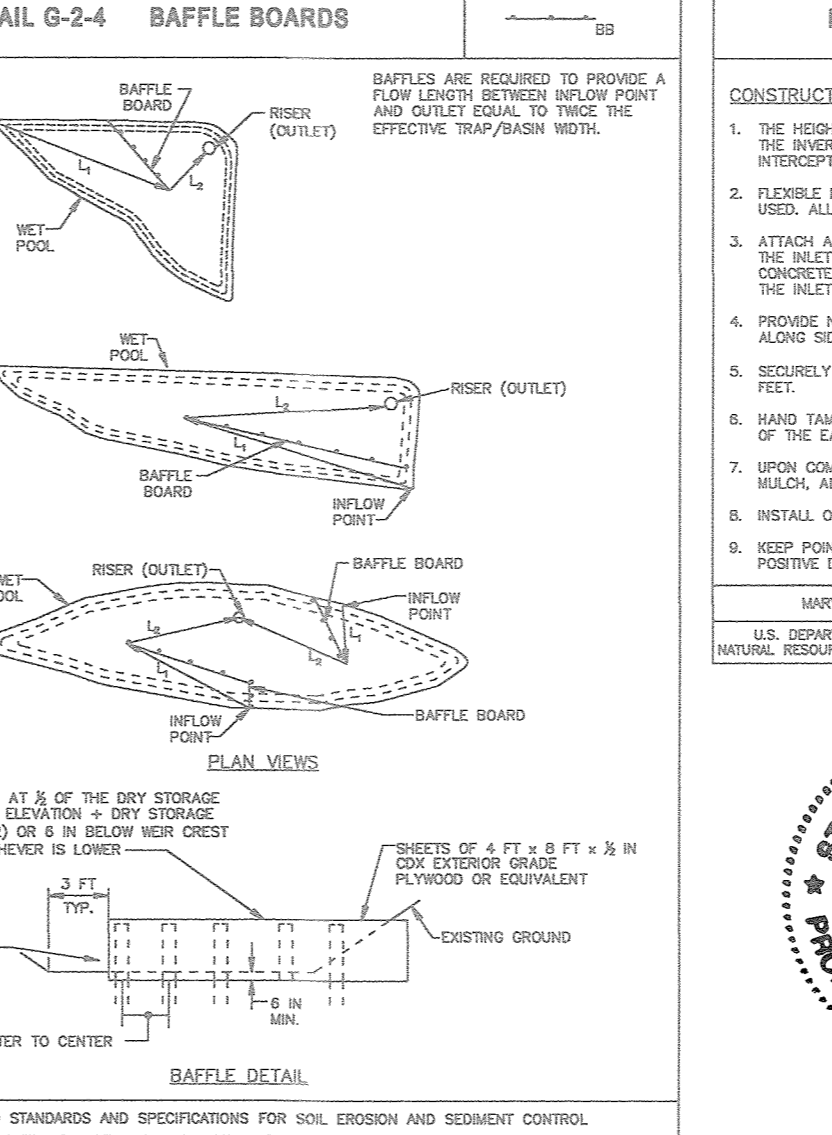


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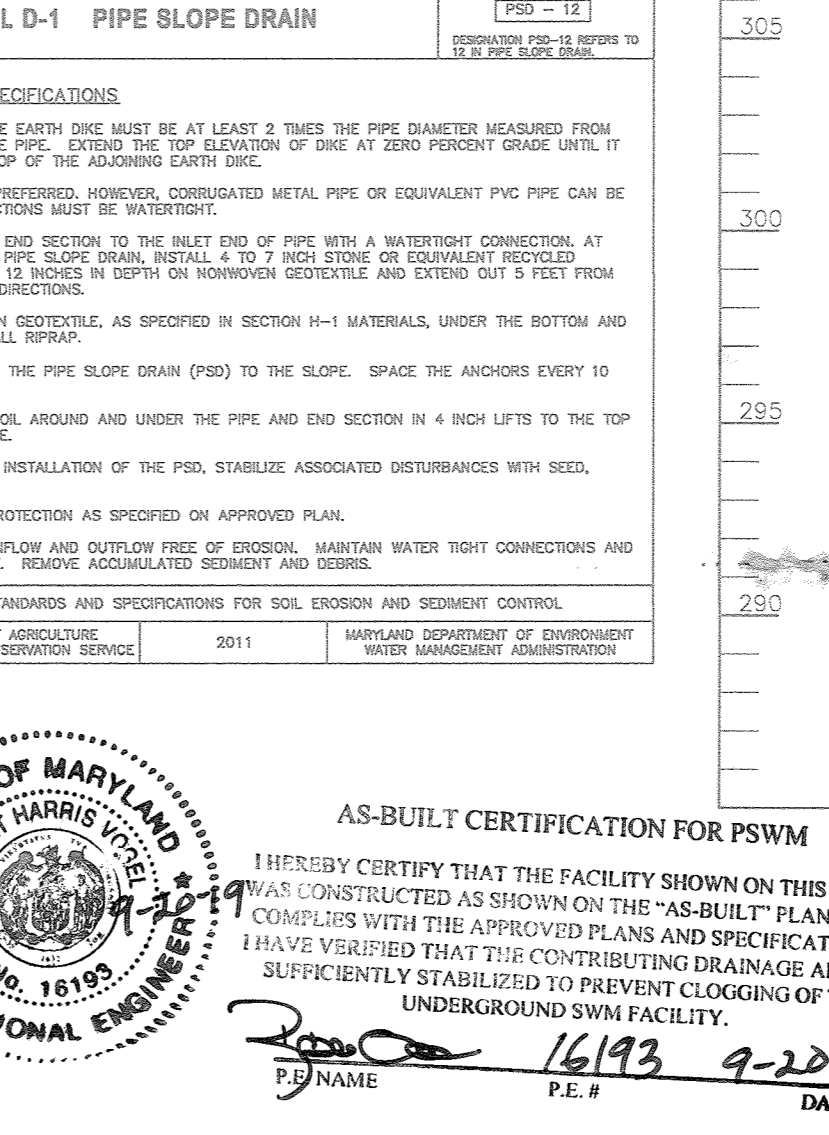


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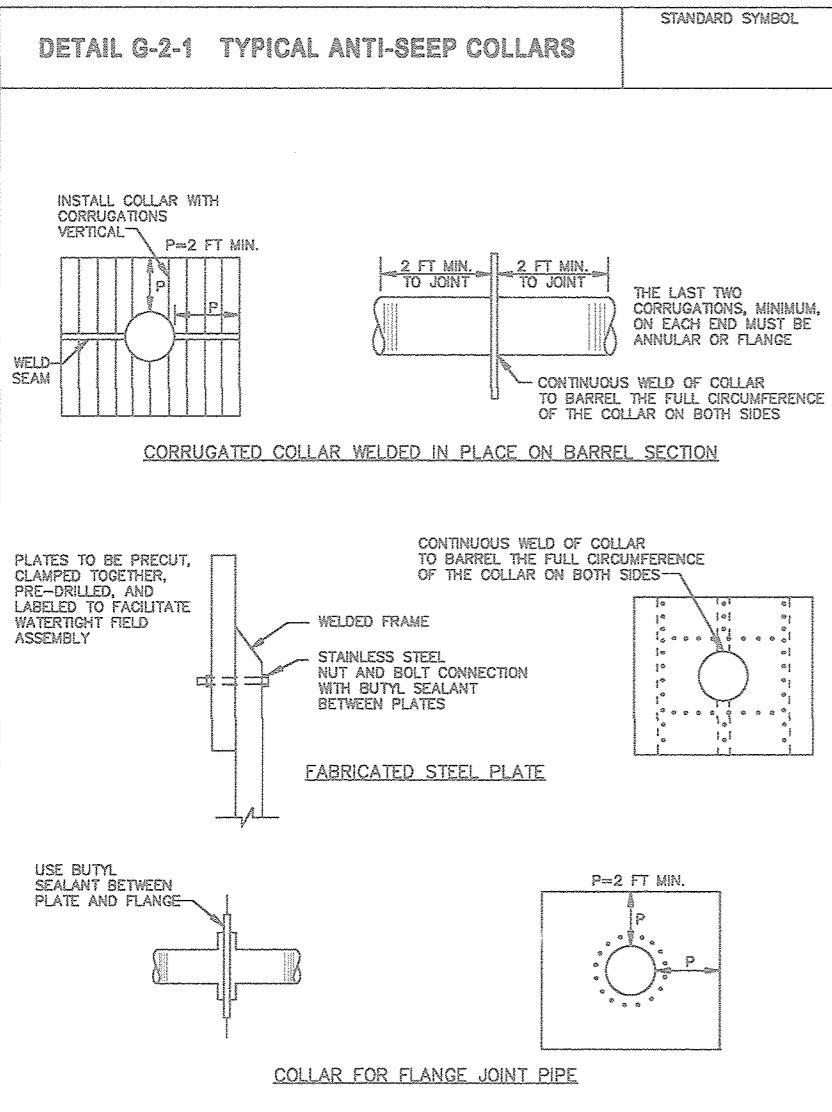


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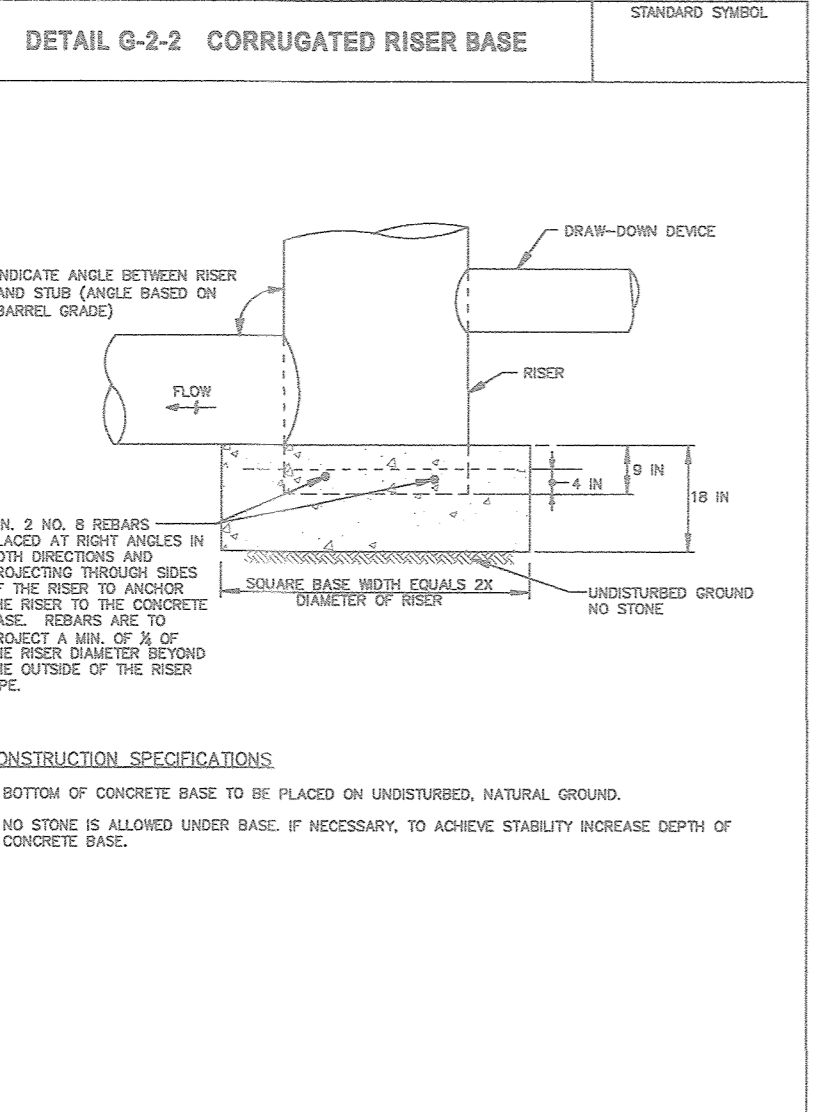


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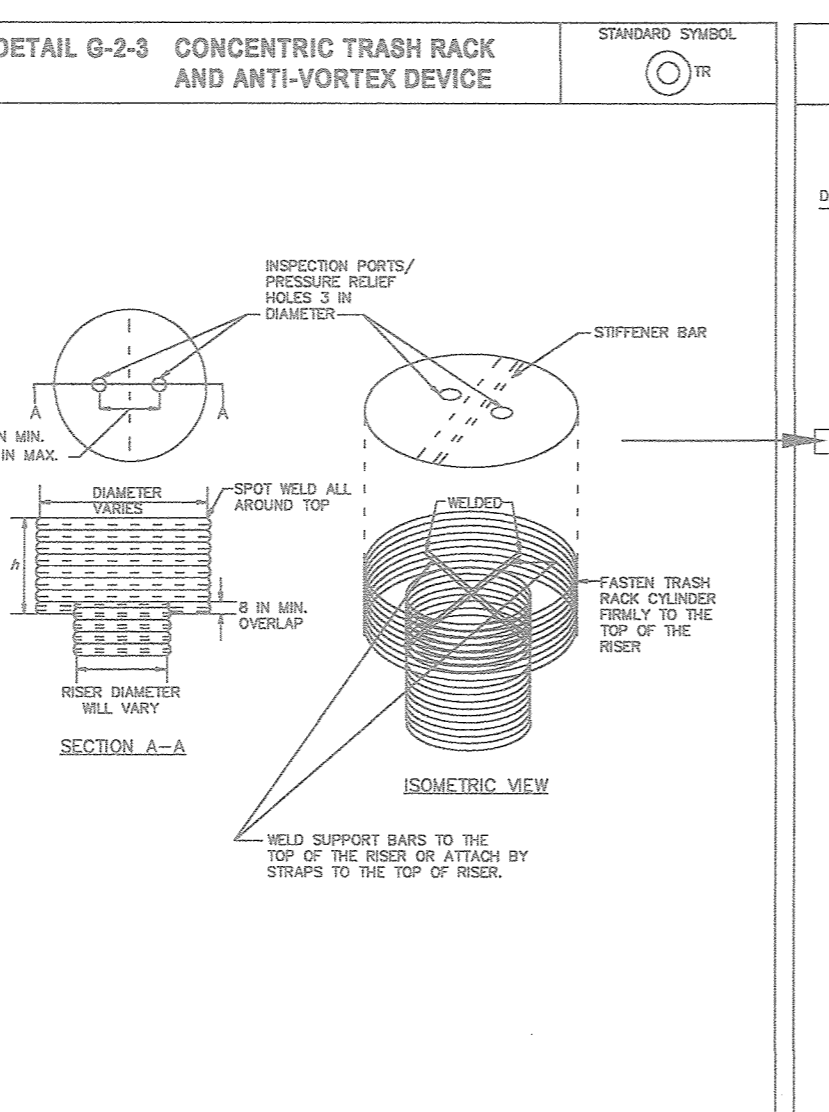


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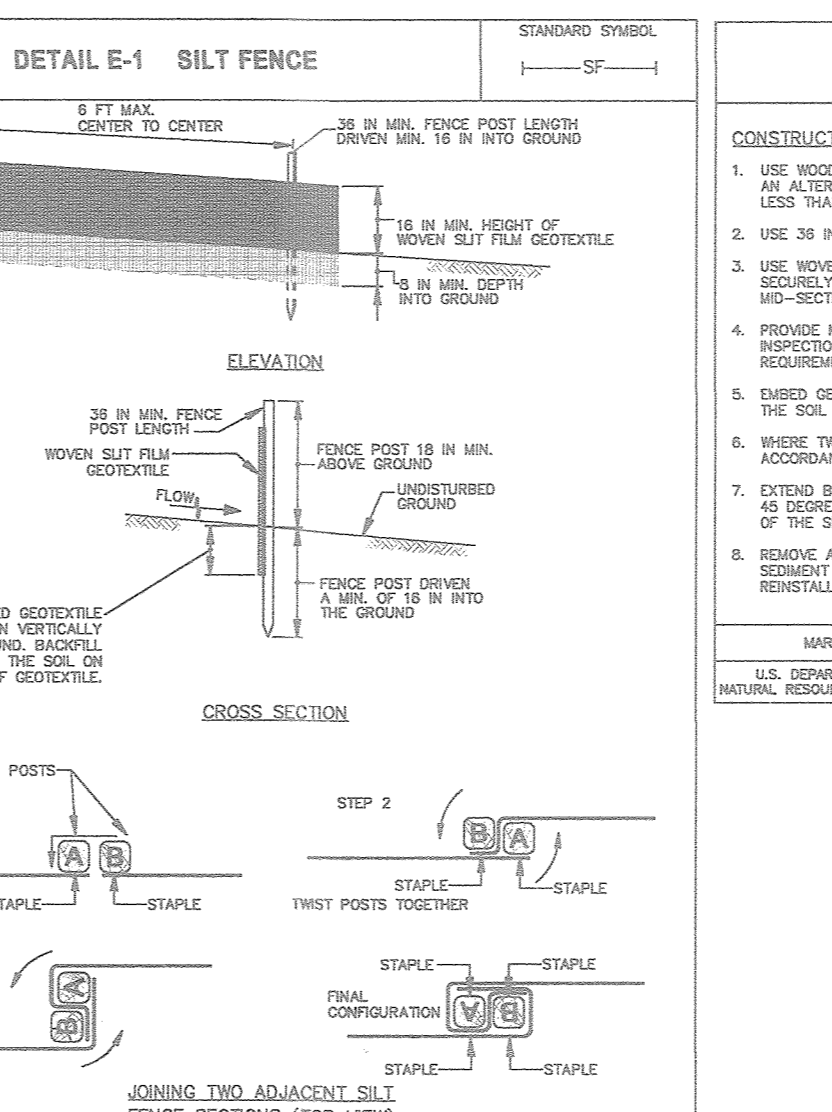
DIAMETER (IN)	MINIMUM THICKNESS (IN)	MINIMUM SIZE (IN)	MINIMUM THICKNESS (IN)	MINIMUM SIZE (IN)
12	18	14	18	14
15	21	16	21	16
18	24	18	24	18
21	30	21	30	21
24	36	24	36	24
27	42	27	42	27
30	48	30	48	30
36	54	36	54	36
42	60	42	60	42
48	72	48	72	48
54	84	54	84	54
60	96	60	96	60
66	108	66	108	66
72	120	72	120	72
78	132	78	132	78
84	144	84	144	84

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL

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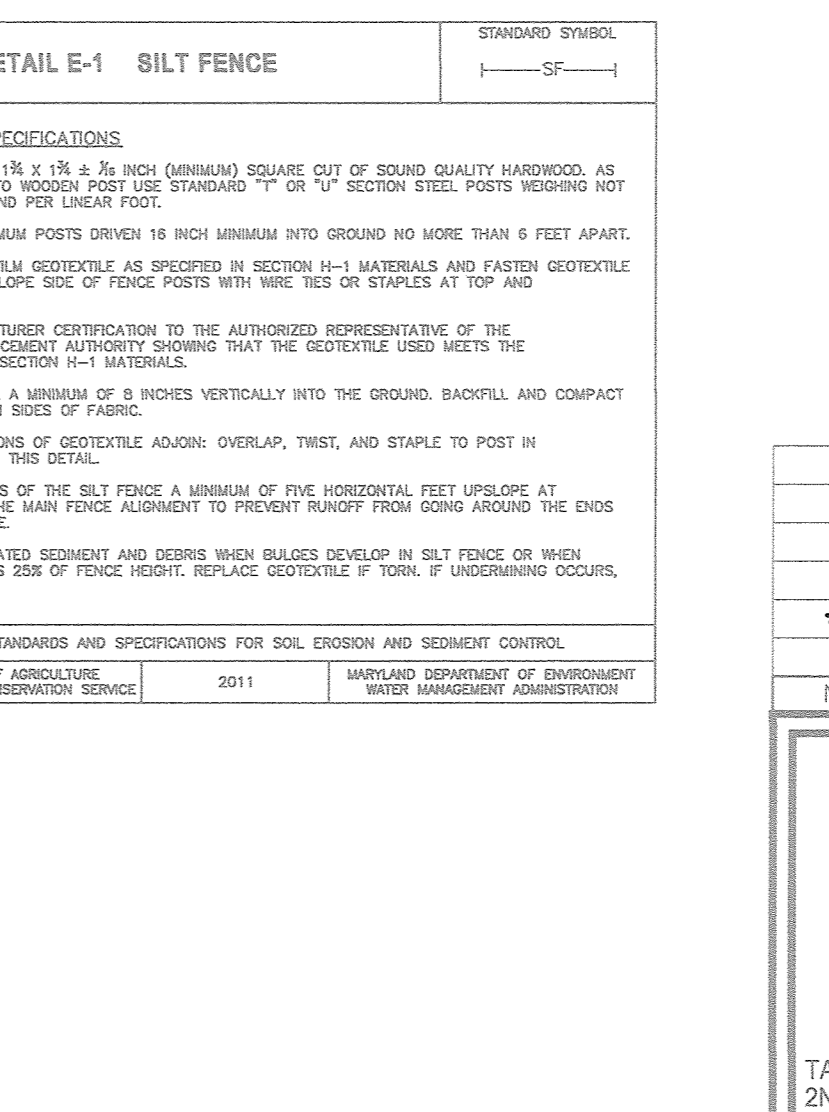


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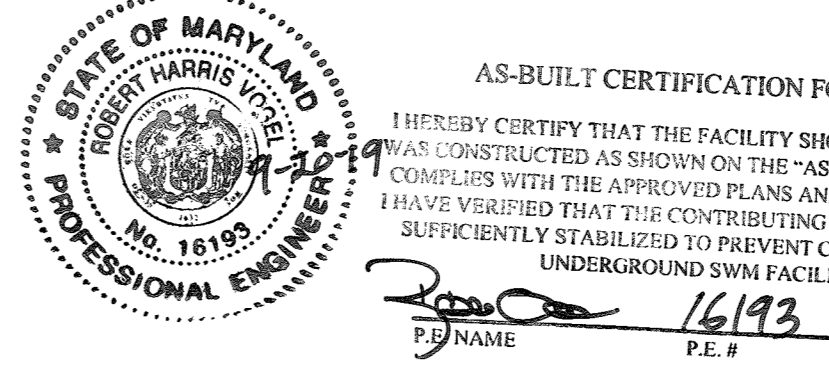


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U.S. DEPARTMENT OF AGRICULTURE  
NATURAL RESOURCES CONSERVATION SERVICE

2011

MARYLAND DEPARTMENT OF ENVIRONMENT  
WATER MANAGEMENT ADMINISTRATION



AS-BUILT CERTIFICATION FOR PSWM

I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND HAS BEEN VERIFIED THAT THE CONTRIBUTING DRAINAGE AREA IS SUFFICIENTLY STABILIZED TO PREVENT CLOGGING OF THE UNDERGROUND SWM FACILITY.

P.E. NAME: Robert H. Vogel P.E.#: 18193 DATE: 9-20-19

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

*[Signature]* 8-22-17 DATE  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

*[Signature]* 9-5-17 DATE  
 CHIEF, DIVISION OF LAND DEVELOPMENT

*[Signature]* 9-5-17 DATE  
 DIRECTOR

OWNER/DEVELOPER CERTIFICATION:

I/WE CERTIFY THAT ALL CLEARING, GRADING, CONSTRUCTION, OR DEVELOPMENT OF THIS PROJECT HAS BEEN COMPLETED IN ACCORDANCE WITH THE APPROVED EROSION AND SEDIMENT CONTROL PLAN, INCLUDING INSPECTING AND MAINTAINING CONTROLS AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE FROM THE MARYLAND DEPARTMENT OF ENVIRONMENT (MDE) APPROVED TRAINING PROGRAM FOR THE CONTROL OF EROSION AND SEDIMENT PRIOR TO BEGINNING THE PROJECT. I CERTIFY RIGHT-OF-ENTRY FOR EROSION AND SEDIMENT CONTROL EVALUATION BY HOWARD COUNTY, THE HOWARD SOIL CONSERVATION DISTRICT AND/OR MDE.

*[Signature]* 2/11/17 DATE  
 OWNER/DEVELOPER SIGNATURE

*[Signature]* 2/11/17 DATE  
 PROJECT MANAGER'S SIGNATURE

DESIGN CERTIFICATION:

I HEREBY CERTIFY THAT THIS PLAN HAS BEEN DESIGNED IN ACCORDANCE WITH CURRENT MARYLAND EROSION AND SEDIMENT CONTROL STANDARDS AND THAT IT REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

*[Signature]* 8/1/17 DATE  
 DESIGNER'S SIGNATURE

ROBERT H. VOGEL  
 M.D. REGISTRATION NO. 18193  
 P.E. R.L.S., OR R.L.A. (circle one)

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

*[Signature]* 8/1/17 DATE  
 BOARD SECRETARY

NO AS-BUILT INFORMATION ON THIS SHEET

REVISOR'S CERTIFICATE

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. 18193, EXPIRES 08-27-2019.

DESIGN BY: DZE

DRAWN BY: DZE/MR/KG

CHECKED BY: RHV

DATE: JULY 2017

SCALE: AS SHOWN

W.O. NO.: 12-53

7 OF 30

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

**DEFINITION:** TO PREPARE THE SOILS TO SUSTAIN ADEQUATE VEGETATIVE STABILIZATION.

**PURPOSE:** TO PREPARE THE SOILS TO SUSTAIN ADEQUATE VEGETATIVE STABILIZATION.

**CONDITIONS WHERE PRACTICE APPLIES:** TO PROTECT DISTURBED SOILS FROM EROSION DURING AND AT THE END OF CONSTRUCTION.

**CRITERIA:**

1. SOIL PREPARATION  
A. SOIL PREPARATION CONSISTS OF LOOSENING SOIL TO A DEPTH OF 3 TO 6 INCHES BY MEANS OF SUBSOILING OR CONSTRUCTION EQUIPMENT, SUCH AS SUBSOILERS OR PLOWING PLANS OR BROWNS OR GRADING EQUIPMENT. AFTER THE SOIL IS LOOSENED, IT MUST NOT BE RETURNED TO OR COVERED BY A DEPTH OF 2 INCHES OR MORE OF SOIL OR OTHER MATERIAL.  
B. SOIL PREPARATION MUST BE COMPLETED BEFORE THE DATE OF SOILING OR PLANTING.  
C. SOIL PREPARATION MUST BE COMPLETED BEFORE THE DATE OF SOILING OR PLANTING.  
D. SOIL PREPARATION MUST BE COMPLETED BEFORE THE DATE OF SOILING OR PLANTING.
2. TOPSOILING  
A. TOPSOILING IS REQUIRED FOR ANY EARTH DISTURBANCE OF 3 ACRES OR MORE OR OTHER SOIL CONDITIONS REQUIRING PRESENT VEGETATIVE ESTABLISHMENT AREA.  
B. TOPSOILING IS REQUIRED FOR ANY EARTH DISTURBANCE OF 3 ACRES OR MORE OR OTHER SOIL CONDITIONS REQUIRING PRESENT VEGETATIVE ESTABLISHMENT AREA.  
C. TOPSOILING IS REQUIRED FOR ANY EARTH DISTURBANCE OF 3 ACRES OR MORE OR OTHER SOIL CONDITIONS REQUIRING PRESENT VEGETATIVE ESTABLISHMENT AREA.

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

**DEFINITION:** TO PREPARE THE SOILS TO SUSTAIN ADEQUATE VEGETATIVE STABILIZATION.

**PURPOSE:** TO PREPARE THE SOILS TO SUSTAIN ADEQUATE VEGETATIVE STABILIZATION.

**CONDITIONS WHERE PRACTICE APPLIES:** TO PROTECT DISTURBED SOILS FROM EROSION DURING AND AT THE END OF CONSTRUCTION.

**CRITERIA:**

1. SEEDING  
A. SEEDING MUST MEET THE REQUIREMENTS OF THE MARYLAND STATE SEED ACT. ALL SEED MUST BE SUBJECT TO TESTING BY A RECOGNIZED SEED LABORATORY. ALL SEED MUST HAVE BEEN TESTED TO DETERMINE PURITY, GERMINATION PERCENTAGE, AND SEEDING DATES IN THE PERMANENT SEEDING SUMMARY.  
B. SEEDING MUST BE COMPLETED BEFORE THE DATE OF SOILING OR PLANTING.  
C. SEEDING MUST BE COMPLETED BEFORE THE DATE OF SOILING OR PLANTING.
2. MULCHING  
A. MULCHING MUST BE COMPLETED BEFORE THE DATE OF SOILING OR PLANTING.  
B. MULCHING MUST BE COMPLETED BEFORE THE DATE OF SOILING OR PLANTING.

### B-4-5 STANDARDS AND SPECIFICATIONS FOR PERMANENT STABILIZATION

**DEFINITION:** TO PREPARE THE SOILS TO SUSTAIN ADEQUATE VEGETATIVE STABILIZATION.

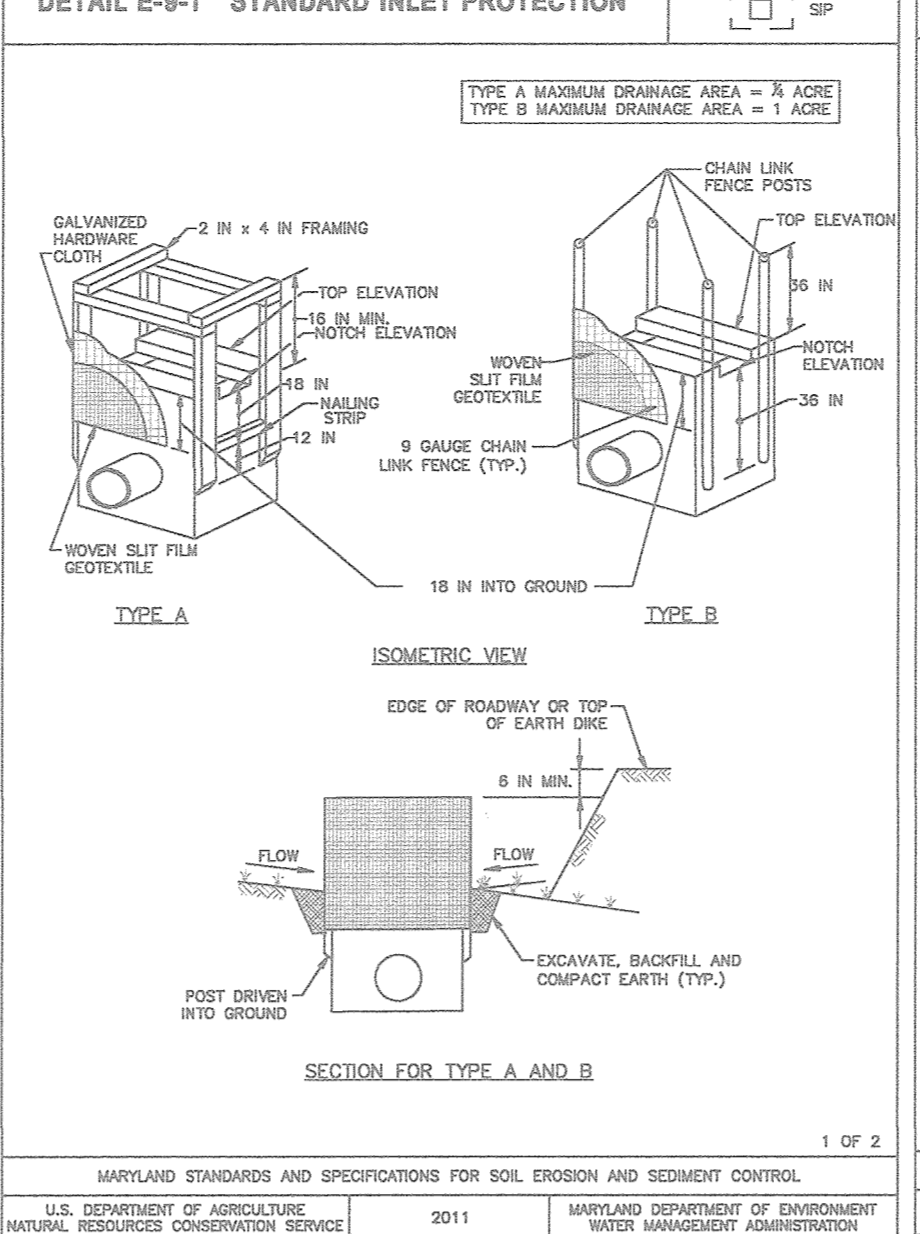
**PURPOSE:** TO PREPARE THE SOILS TO SUSTAIN ADEQUATE VEGETATIVE STABILIZATION.

**CONDITIONS WHERE PRACTICE APPLIES:** TO PROTECT DISTURBED SOILS FROM EROSION DURING AND AT THE END OF CONSTRUCTION.

**CRITERIA:**

1. PERMANENT STABILIZATION  
A. PERMANENT STABILIZATION MUST BE COMPLETED BEFORE THE DATE OF SOILING OR PLANTING.  
B. PERMANENT STABILIZATION MUST BE COMPLETED BEFORE THE DATE OF SOILING OR PLANTING.
2. PERMANENT STABILIZATION  
A. PERMANENT STABILIZATION MUST BE COMPLETED BEFORE THE DATE OF SOILING OR PLANTING.  
B. PERMANENT STABILIZATION MUST BE COMPLETED BEFORE THE DATE OF SOILING OR PLANTING.

### DETAIL E-9-1 STANDARD INLET PROTECTION

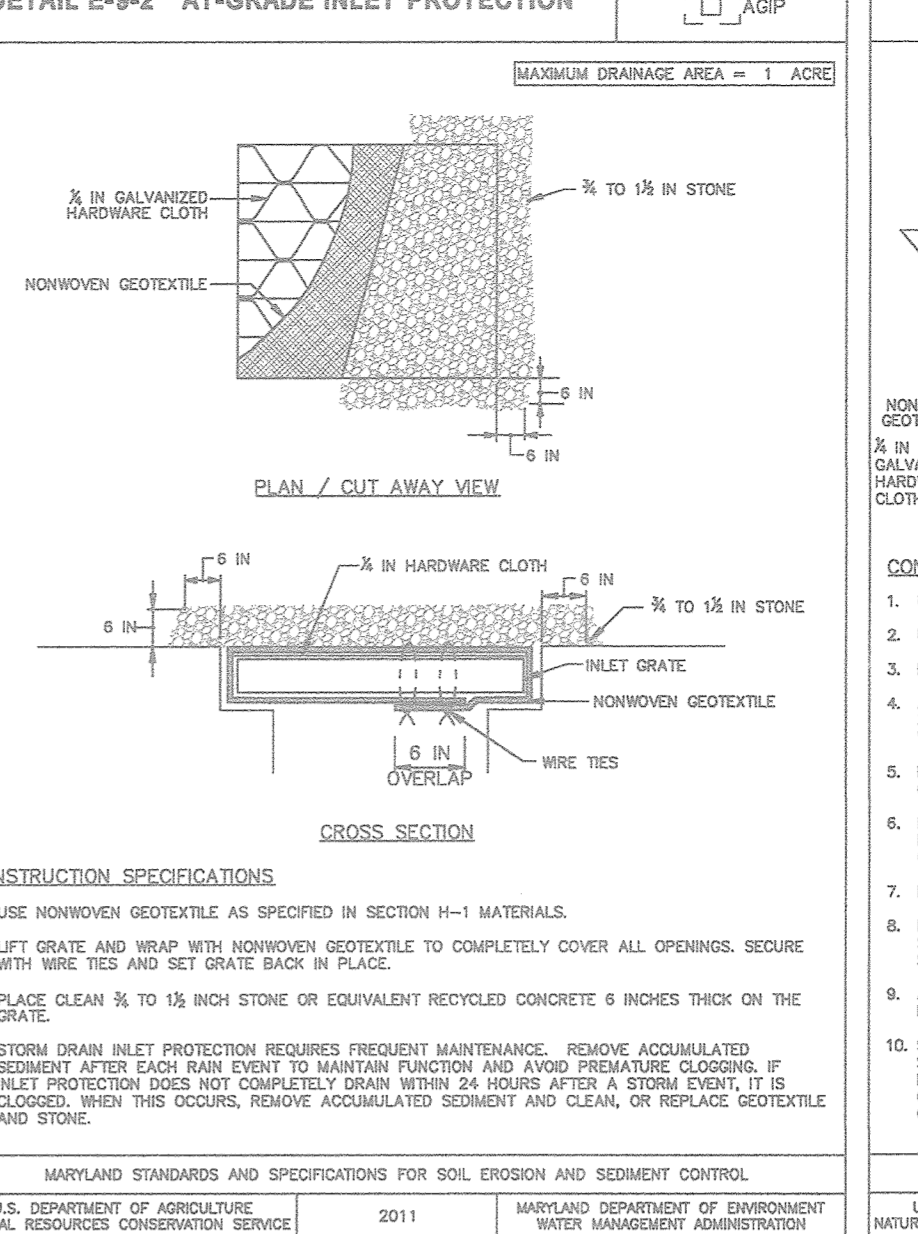


### DETAIL E-9-1 STANDARD INLET PROTECTION

**CONSTRUCTION SPECIFICATIONS:**

1. USE NONWOVEN GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS.
2. EXCAVATE COMPLETELY AROUND THE INLET TO A DEPTH OF 18 INCHES BELOW THE NOTCH ELEVATION.
3. FOR TYPE A, USE NONWOVEN GEOTEXTILE WITH 4 INCH GALVANIZED HARDWARE CLOTH. PLACE MAT STRIPS BETWEEN THE POSTS ON A 18 INCH CENTER TO FORM A 24 INCH WIDE CURB. PLACE MAT STRIPS BETWEEN THE POSTS ON A 18 INCH CENTER TO FORM A 24 INCH WIDE CURB. PLACE MAT STRIPS BETWEEN THE POSTS ON A 18 INCH CENTER TO FORM A 24 INCH WIDE CURB.

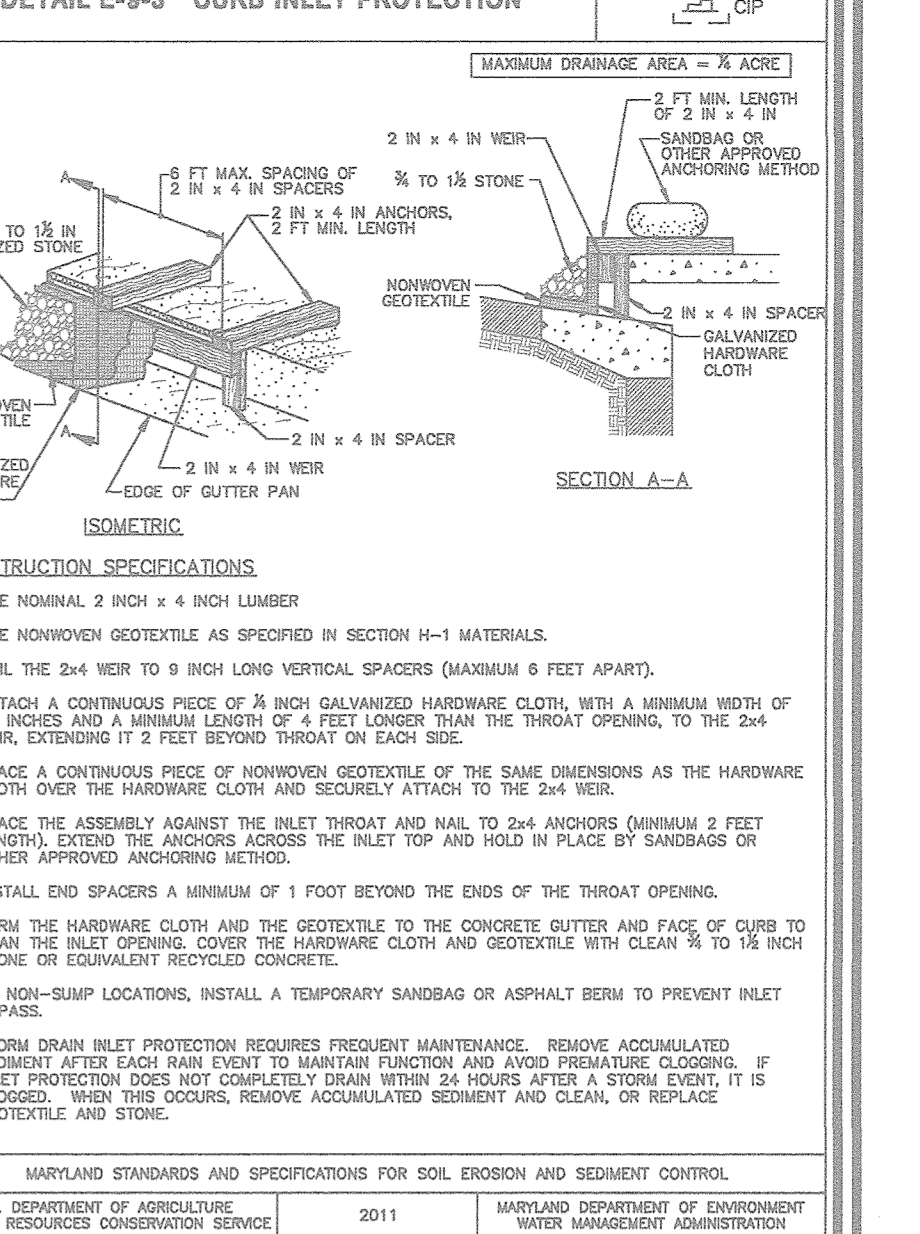
### DETAIL E-9-2 AT-GRADE INLET PROTECTION



**CONSTRUCTION SPECIFICATIONS:**

1. USE NONWOVEN GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS.
2. EXCAVATE COMPLETELY AROUND THE INLET TO A DEPTH OF 18 INCHES BELOW THE NOTCH ELEVATION.
3. FOR TYPE A, USE NONWOVEN GEOTEXTILE WITH 4 INCH GALVANIZED HARDWARE CLOTH. PLACE MAT STRIPS BETWEEN THE POSTS ON A 18 INCH CENTER TO FORM A 24 INCH WIDE CURB. PLACE MAT STRIPS BETWEEN THE POSTS ON A 18 INCH CENTER TO FORM A 24 INCH WIDE CURB.

### DETAIL E-9-3 CURB INLET PROTECTION



**CONSTRUCTION SPECIFICATIONS:**

1. USE NONWOVEN GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS.
2. EXCAVATE COMPLETELY AROUND THE INLET TO A DEPTH OF 18 INCHES BELOW THE NOTCH ELEVATION.
3. FOR TYPE A, USE NONWOVEN GEOTEXTILE WITH 4 INCH GALVANIZED HARDWARE CLOTH. PLACE MAT STRIPS BETWEEN THE POSTS ON A 18 INCH CENTER TO FORM A 24 INCH WIDE CURB. PLACE MAT STRIPS BETWEEN THE POSTS ON A 18 INCH CENTER TO FORM A 24 INCH WIDE CURB.

### HOWARD SOIL CONSERVATION DISTRICT (HSD) STANDARD SEDIMENT CONTROL NOTES

1. PREPARE THE SOILS TO SUSTAIN ADEQUATE VEGETATIVE STABILIZATION.
2. PREPARE THE SOILS TO SUSTAIN ADEQUATE VEGETATIVE STABILIZATION.
3. PREPARE THE SOILS TO SUSTAIN ADEQUATE VEGETATIVE STABILIZATION.
4. PREPARE THE SOILS TO SUSTAIN ADEQUATE VEGETATIVE STABILIZATION.
5. PREPARE THE SOILS TO SUSTAIN ADEQUATE VEGETATIVE STABILIZATION.
6. PREPARE THE SOILS TO SUSTAIN ADEQUATE VEGETATIVE STABILIZATION.
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9. PREPARE THE SOILS TO SUSTAIN ADEQUATE VEGETATIVE STABILIZATION.
10. PREPARE THE SOILS TO SUSTAIN ADEQUATE VEGETATIVE STABILIZATION.
11. PREPARE THE SOILS TO SUSTAIN ADEQUATE VEGETATIVE STABILIZATION.
12. PREPARE THE SOILS TO SUSTAIN ADEQUATE VEGETATIVE STABILIZATION.
13. PREPARE THE SOILS TO SUSTAIN ADEQUATE VEGETATIVE STABILIZATION.
14. PREPARE THE SOILS TO SUSTAIN ADEQUATE VEGETATIVE STABILIZATION.
15. PREPARE THE SOILS TO SUSTAIN ADEQUATE VEGETATIVE STABILIZATION.
16. PREPARE THE SOILS TO SUSTAIN ADEQUATE VEGETATIVE STABILIZATION.
17. PREPARE THE SOILS TO SUSTAIN ADEQUATE VEGETATIVE STABILIZATION.
18. PREPARE THE SOILS TO SUSTAIN ADEQUATE VEGETATIVE STABILIZATION.
19. PREPARE THE SOILS TO SUSTAIN ADEQUATE VEGETATIVE STABILIZATION.
20. PREPARE THE SOILS TO SUSTAIN ADEQUATE VEGETATIVE STABILIZATION.
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24. PREPARE THE SOILS TO SUSTAIN ADEQUATE VEGETATIVE STABILIZATION.
25. PREPARE THE SOILS TO SUSTAIN ADEQUATE VEGETATIVE STABILIZATION.
26. PREPARE THE SOILS TO SUSTAIN ADEQUATE VEGETATIVE STABILIZATION.
27. PREPARE THE SOILS TO SUSTAIN ADEQUATE VEGETATIVE STABILIZATION.
28. PREPARE THE SOILS TO SUSTAIN ADEQUATE VEGETATIVE STABILIZATION.
29. PREPARE THE SOILS TO SUSTAIN ADEQUATE VEGETATIVE STABILIZATION.
30. PREPARE THE SOILS TO SUSTAIN ADEQUATE VEGETATIVE STABILIZATION.

### SEEDING AND MULCHING

**DEFINITION:** TO PREPARE THE SOILS TO SUSTAIN ADEQUATE VEGETATIVE STABILIZATION.

**PURPOSE:** TO PREPARE THE SOILS TO SUSTAIN ADEQUATE VEGETATIVE STABILIZATION.

**CONDITIONS WHERE PRACTICE APPLIES:** TO PROTECT DISTURBED SOILS FROM EROSION DURING AND AT THE END OF CONSTRUCTION.

**CRITERIA:**

1. SEEDING  
A. SEEDING MUST MEET THE REQUIREMENTS OF THE MARYLAND STATE SEED ACT. ALL SEED MUST BE SUBJECT TO TESTING BY A RECOGNIZED SEED LABORATORY. ALL SEED MUST HAVE BEEN TESTED TO DETERMINE PURITY, GERMINATION PERCENTAGE, AND SEEDING DATES IN THE PERMANENT SEEDING SUMMARY.
2. MULCHING  
A. MULCHING MUST BE COMPLETED BEFORE THE DATE OF SOILING OR PLANTING.  
B. MULCHING MUST BE COMPLETED BEFORE THE DATE OF SOILING OR PLANTING.

### TEMPORARY SEEDING SUMMARY

NO.	SPECIES	APPLICABLE RATE (LB/A)		SEEDING DATE	SEEDING DEPTHS	FELTZER RATE (10-20-20)	LIME RATE
		10-20-20	20-20-20				
1	COOL SEED	40	1.0	0.5	15	15	15
2	WARM SEED	40	1.0	0.5	15	15	15

### TEMPORARY SEEDING SUMMARY

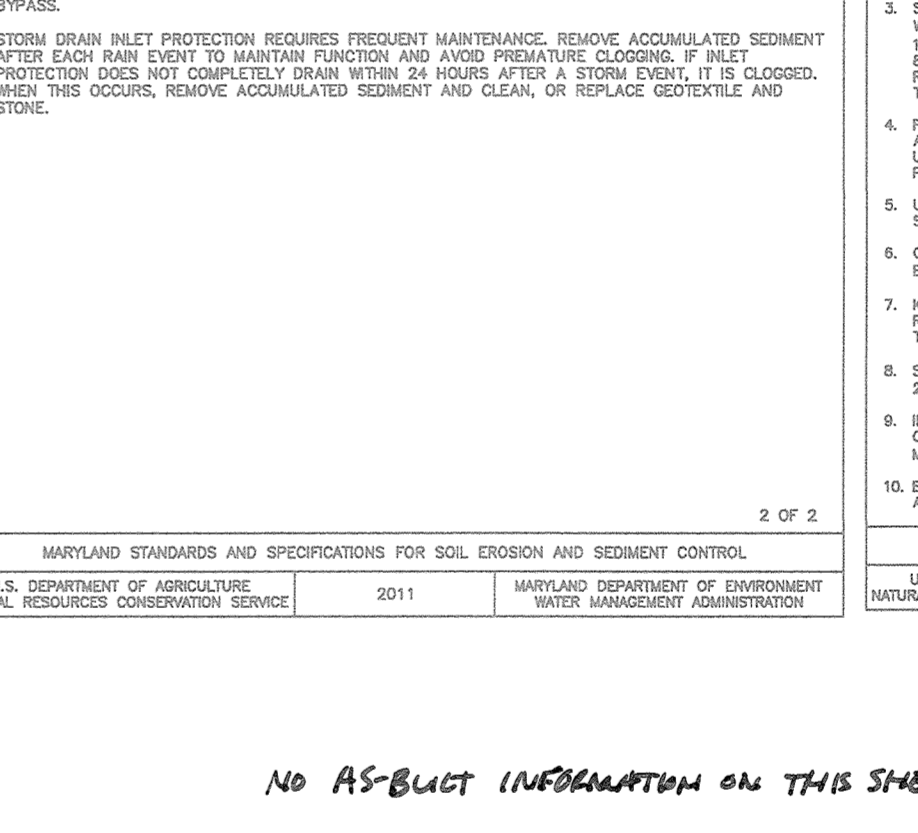
NO.	SPECIES	APPLICABLE RATE (LB/A)		SEEDING DATE	SEEDING DEPTHS	FELTZER RATE (10-20-20)	LIME RATE
		10-20-20	20-20-20				
1	COOL SEED	40	1.0	0.5	15	15	15
2	WARM SEED	40	1.0	0.5	15	15	15

### AS-BUILT CERTIFICATION FOR PSWM

I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE AS-BUILT PLANS AND COMPLIES WITH THE APPROVED PLANS AND SPECIFICATIONS. I HAVE VERIFIED THAT THE CONTRIBUTING DRAINAGE AREA IS SUFFICIENTLY STABILIZED TO PREVENT CLOGGING OF THE UNDERGROUND SWM FACILITY.

**DATE:** 6/19/19  
**TIME:** 16:33

### DETAIL D-4-1-B ROCK OUTLET PROTECTION II



### SEDIMENT AND EROSION CONTROL NOTES & DETAILS

**BURGESS HILL STATION PH II**

A DEVELOPMENT OF THE HIGHT CITY TERRACE APARTMENTS

TAX MAP 25 BLOCK 7  
2ND ELECTION DISTRICT

PARCEL 120, PARCEL A  
HOWARD COUNTY, MARYLAND

**REVISIONS:**

NO.	REVISION	DATE
3	REVISE TO MODIFY FRONTAGE IMPROVEMENT TO REMOVE SIDEWALK, APPROXIMATE 11/07/18 AND ADJUST STORM DRAIN WITH FELS LANE	

**APPROVED:** HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

**DATE:** 8-22-17

**DATE:** 9-5-17

**DATE:** 9-5-17

**OWNER/DEVELOPER CERTIFICATION:**

I, THE UNDERSIGNED, AS OWNER/DEVELOPER, HEREBY CERTIFY THAT THIS PLAN HAS BEEN DESIGNED IN ACCORDANCE WITH CURRENT MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL. I HAVE REVIEWED THE PLAN AND FOUND IT TO BE IN ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS. I HAVE REVIEWED THE PLAN AND FOUND IT TO BE IN ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS. I HAVE REVIEWED THE PLAN AND FOUND IT TO BE IN ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS.

**DESIGNER'S SIGNATURE:**

**DATE:** 7/11/17

**DESIGNER'S SIGNATURE:**

**DATE:** 7/11/17

**STATE OF MARYLAND PROFESSIONAL ENGINEER**

**NO. 16193**

**DATE:** 6/19/19

**STANDARDS AND SPECIFICATIONS FOR DUST CONTROL**

**DEFINITION:** TO PREVENT THE SUSPENSION OF DUST PARTICLES FROM CONSTRUCTION ACTIVITIES.

**PURPOSE:** TO PREVENT THE SUSPENSION OF DUST PARTICLES FROM CONSTRUCTION ACTIVITIES.

**CONDITIONS WHERE PRACTICE APPLIES:** TO PREVENT THE SUSPENSION OF DUST PARTICLES FROM CONSTRUCTION ACTIVITIES.

**CONSTRUCTION SPECIFICATIONS:**

1. RIPPAP AND STONE MUST CONFORM TO THE SPECIFIED CLASS.
2. USE NONWOVEN GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS. AND PROTECT FROM DAMAGE BY PLACING A DOUBLE LAYER OF GEOTEXTILE OVER THE DAMAGED PART OR BY COMPLETELY REPLACING THE GEOTEXTILE WITH A NEW LAYER OF GEOTEXTILE.
3. USE RIPPAP AND STONE TO PROTECT THE UNDERGROUND SWM FACILITY FROM DAMAGE BY PLACING A DOUBLE LAYER OF GEOTEXTILE OVER THE DAMAGED PART OR BY COMPLETELY REPLACING THE GEOTEXTILE WITH A NEW LAYER OF GEOTEXTILE.

**DESIGN BY:** DZE

**DRAWN BY:** DZE/MK/KG

**CHECKED BY:** RHV

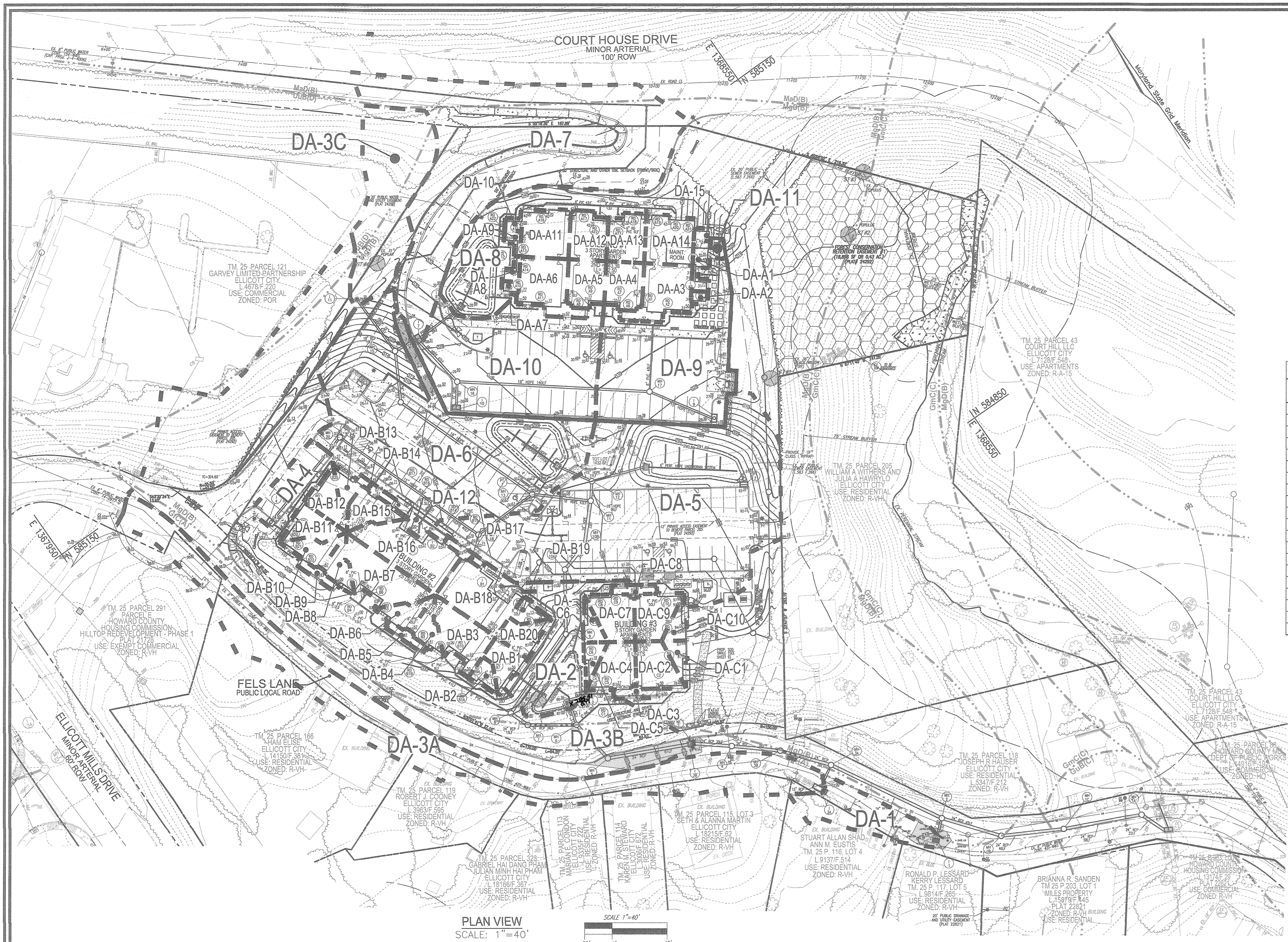
**DATE:** JULY 2017

**SCALE:** AS SHOWN

**W.O. NO.:** 12-53

**8 SHEET OF 30**



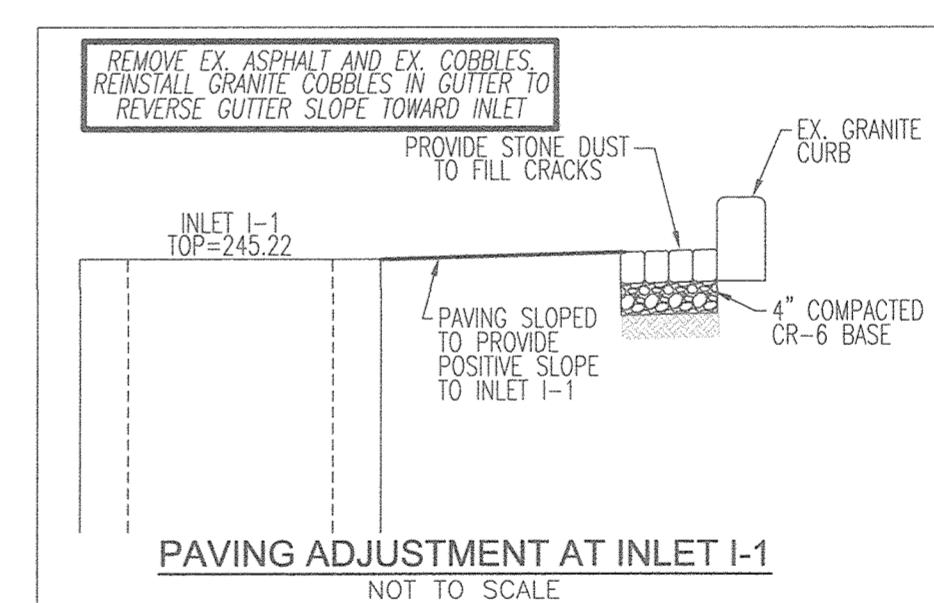


**LEGEND:**

	EXISTING CONTOUR		EXISTING TREELINE (FIELD LOCATED)
	PROPOSED CONTOUR		EXISTING FENCE
	EXISTING SPOT ELEVATION		PROPERTY LINE
	EXISTING SPOT ELEVATION		RIGHT-OF-WAY LINE
	EXISTING CURB AND GUTTER		PROPOSED SIDEWALK
	EXISTING UTILITY POLE		PROPOSED FOREST CONSERVATION EASEMENT (RETENTION)
	EXISTING LIGHT POLE		SOILS BOUNDARY
	EXISTING MAILBOX		DRAINAGE AREA
	EXISTING SIGN		EXISTING WETLAND
	PROPOSED STORM DRAIN		EXISTING WETLAND BUFFER
	PROPOSED STORM DRAIN INLET		EXISTING STREAM
	EXISTING TREES (FIELD LOCATED)		EXISTING STREAM BUFFER
	PROPOSED TREELINE		PROPOSED LIGHTS
	PROPOSED BIKE RACK		PROPOSED MAIL BOX

**SD Drainage Area Chart**

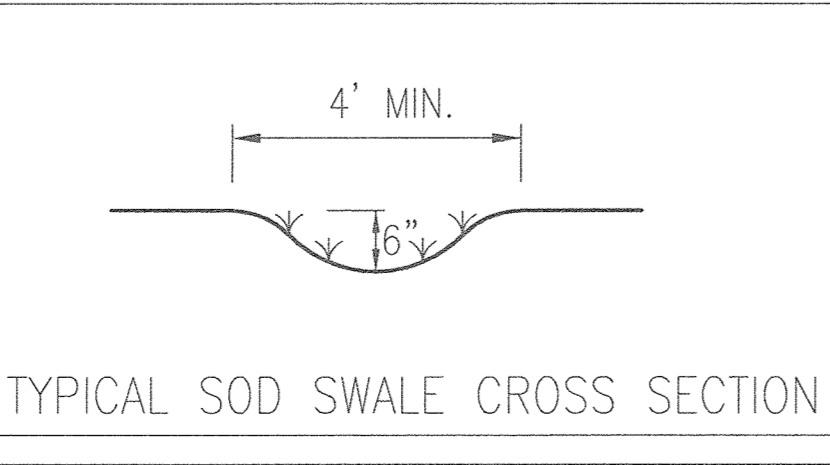
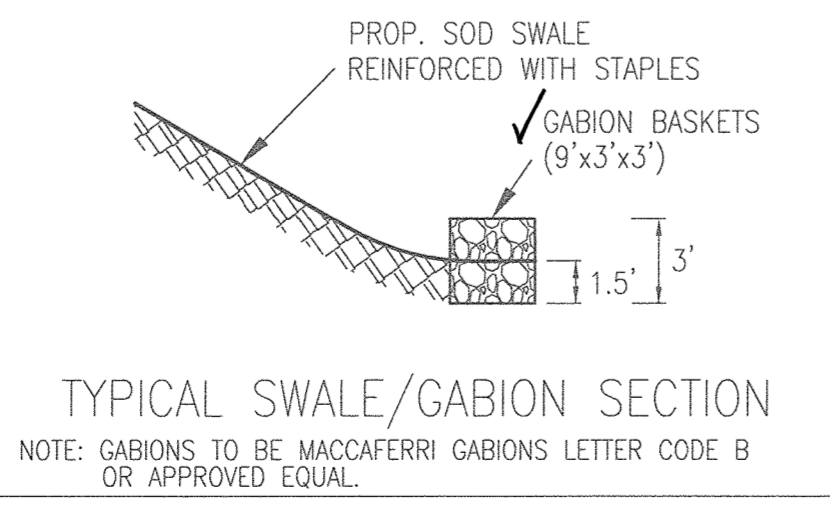
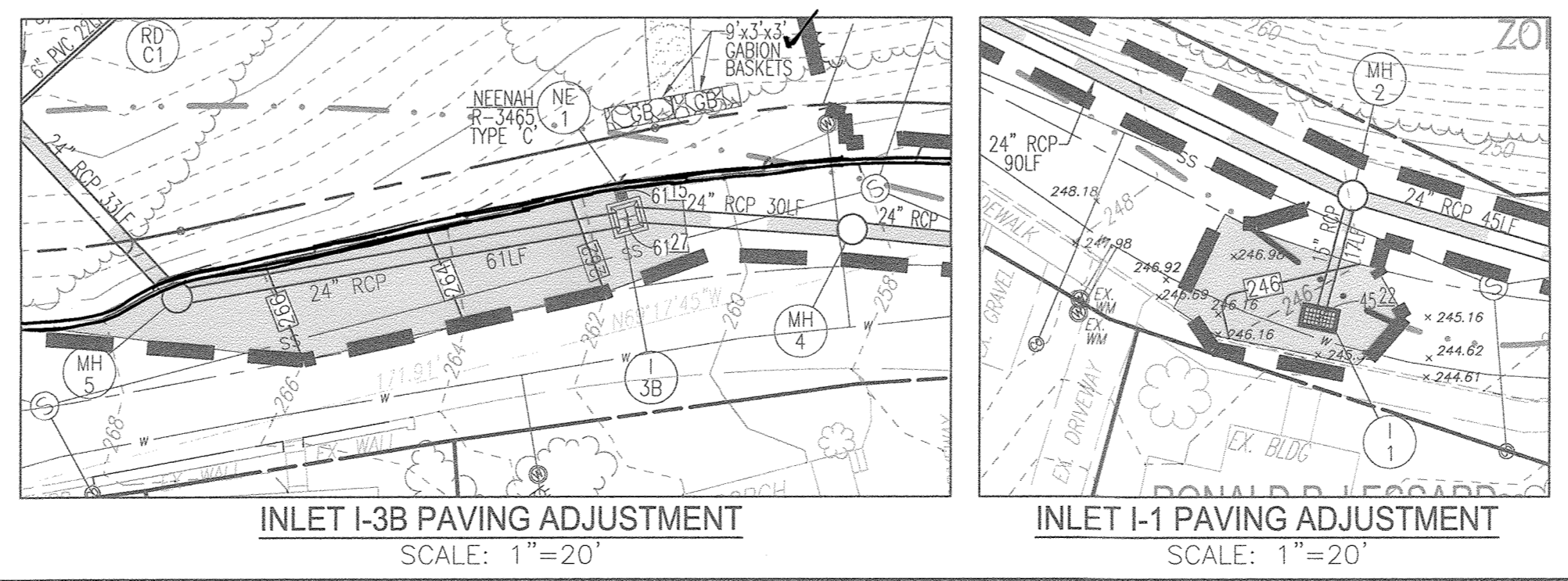
DRAINAGE AREA	AREA AC	C	IMP %	DRAINAGE AREA	AREA AC	C	IMP %	DRAINAGE AREA	AREA AC	C	IMP %	DRAINAGE AREA	AREA AC	C	IMP %
DA-1	0.05	0.45	45%	DA-A1	0.01	0.86	100%	DA-B1	0.01	0.86	100%	DA-C1	0.01	0.86	100%
DA-2	0.09	0.24	11%	DA-A2	0.003	0.86	100%	DA-B2	0.01	0.86	100%	DA-C2	0.02	0.86	100%
DA-3A	0.30	0.54	56%	DA-A3	0.03	0.86	100%	DA-B3	0.03	0.86	100%	DA-C3	0.01	0.86	100%
DA-3B	0.77	0.24	11%	DA-A4	0.02	0.86	100%	DA-B4	0.01	0.86	100%	DA-C4	0.02	0.86	100%
DA-3C	0.13	0.26	9%	DA-A5	0.02	0.86	100%	DA-B5	0.01	0.86	100%	DA-C5	0.01	0.86	100%
DA-4	0.04	0.66	11%	DA-A6	0.03	0.86	100%	DA-B6	0.01	0.86	100%	DA-C6	0.01	0.86	100%
DA-5	0.49	0.59	61%	DA-A7	0.003	0.86	100%	DA-B7	0.04	0.86	100%	DA-C7	0.02	0.86	100%
DA-6	0.22	0.41	36%	DA-A8	0.004	0.86	100%	DA-B8	0.01	0.86	100%	DA-C8	0.01	0.86	100%
DA-7	0.40	0.59	61%	DA-A9	0.004	0.86	100%	DA-B9	0.01	0.86	100%	DA-C9	0.02	0.86	100%
DA-8	0.11	0.16	0%	DA-A10	0.003	0.86	100%	DA-B10	0.01	0.86	100%	DA-C10	0.01	0.86	100%
DA-9	0.20	0.71	79%	DA-A11	0.03	0.86	100%	DA-B11	0.02	0.86	100%				
DA-10	0.21	0.72	79%	DA-A12	0.02	0.86	100%	DA-B12	0.02	0.86	100%				
DA-11	0.005	0.16	0%	DA-A13	0.02	0.86	100%	DA-B13	0.01	0.86	100%				
DA-12	0.01	0.16	0%	DA-A14	0.03	0.86	100%	DA-B14	0.005	0.86	100%				
				DA-A15	0.003	0.86	100%	DA-B15	0.02	0.86	100%				
								DA-B16	0.05	0.86	100%				
								DA-B17	0.005	0.86	100%				
								DA-B18	0.05	0.78	89%				
								DA-B19	0.01	0.86	100%				
								DA-B20	0.01	0.86	100%				



**AS-BUILT CERTIFICATION FOR PSWM**  
 I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND COMPLIES WITH THE APPROVED PLANS AND SPECIFICATIONS. I HAVE VERIFIED THAT THE CONTRIBUTING DRAINAGE AREA IS SUFFICIENTLY STABILIZED TO PREVENT CLOGGING OF THE UNDERGROUND SWM FACILITY.  
 P.E. NAME: 16193 P.E.#: 9-20-19 DATE: 9-20-19



**PAVING ADJUSTMENT NOTES:**  
 ADJUSTMENT AT INLET I-1:  
 1. GUTTER PLAN AT I-1 TO BE ADJUSTED (SPILL).  
 2. GRANITE CURB AT I-1 TO BE REMOVED TO REVERSE FLOW TO INLET. COBBLES TO BE REINSTALLED. PROVIDE STONE DUST TO FILL CRACKS.  
 3. SEE DETAIL, THIS SHEET FOR INLET I-1 DETAIL.  
 ADJUSTMENT AT INLET I-3B:  
 1. SEE DETAIL, SHEET 9, FOR NEENAH INLET NE-1 CONNECTION TO INLET I-3B.



APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
 Chief, Development Engineering Division: 3-1-19 DATE  
 Chief, Division of Land Development: 3-4-19 DATE  
 Director: 3-4-19 DATE

**OWNER:** HOWARD COUNTY HOUSING COMMISSION, 9770 PATUXENT WOODS DR., SUITE 100, COLUMBIA, MD 21046, C/O PETER ENZEL, (410) 313-6320

**DEVELOPER:** STAVROU ASSOCIATES, INC., 2661 RIVA ROAD, SUITE 200, ANNAPOLIS, MD 21401, C/O SCOTT N. LINK, (410) 571-6610

NO.	REVISION	DATE
3	REVISE TO MODIFY FRONTAGE IMPROVEMENTS TO REMOVE SIDEWALK, ADD CURBING, AND ADJUST STORM DRAIN WITHIN FELLS LANE	11/07/18
2	REVISE OUTFALL ALONG FELLS LANE TO CONNECT TO CAP. PROJ. D-2411-43; REVISE WHC PROFILES TO LOTS 2 & 3.	01/16/18
1	REVISE TO RELOCATE THE PROPOSED WHC TO BUILDING 1.	11/01/17

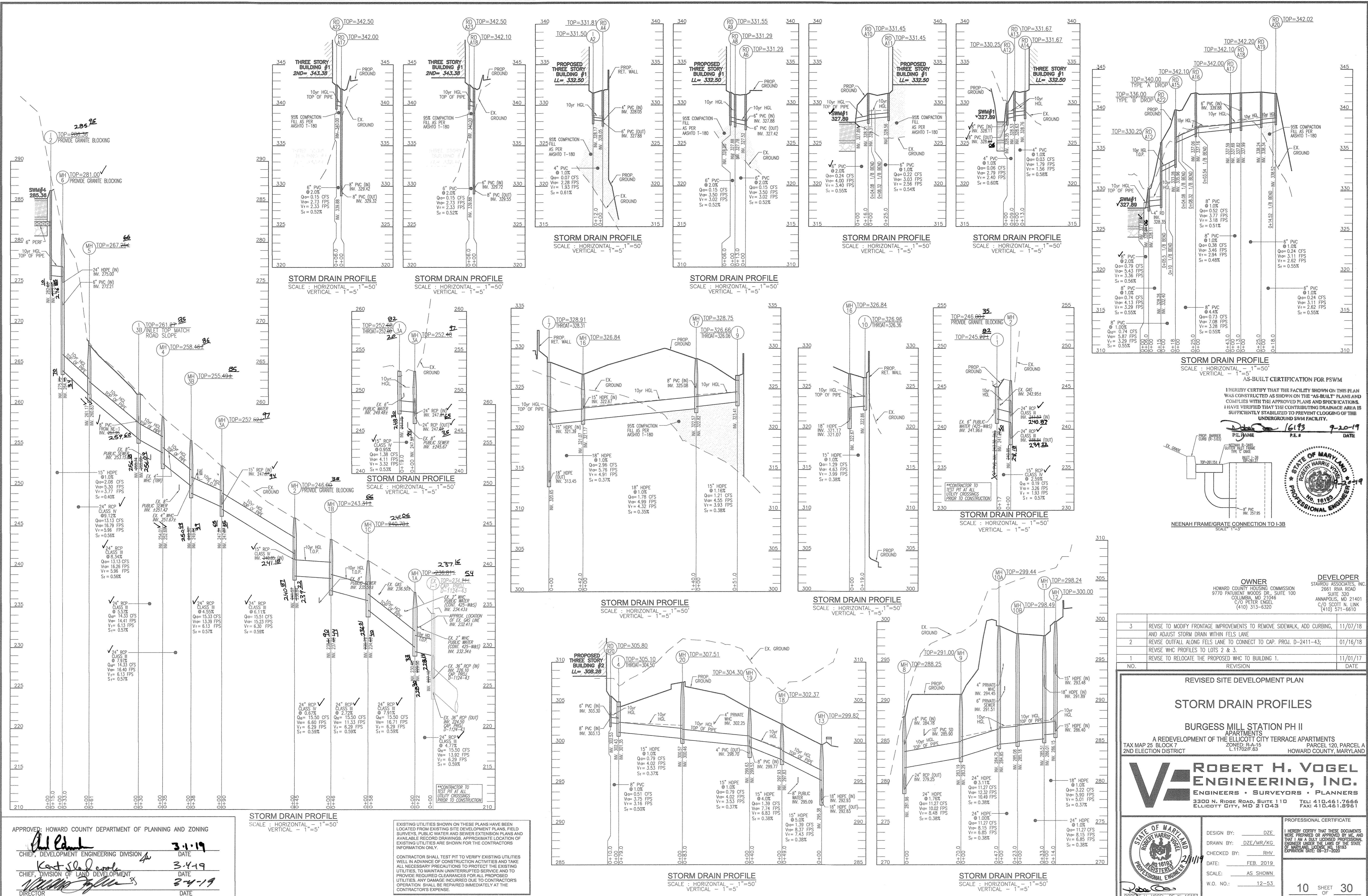
REVISED SITE DEVELOPMENT PLAN  
**STORM DRAIN DRAINAGE AREA MAP**  
 BURGESS MILL STATION PH II APARTMENTS  
 A REDEVELOPMENT OF THE ELICOTT CITY TERRACE APARTMENTS  
 TAX MAP 25 BLOCK 7 ZONED: R-A-15 PARCEL 120, PARCEL A  
 2ND ELECTION DISTRICT L11702/F/83 HOWARD COUNTY, MARYLAND

**ROBERT H. VOGEL ENGINEERS - SURVEYORS - PLANNERS**  
 3930 N. RIDGE ROAD, SUITE 110 TEL: 410.461.7666  
 ELICOTT CITY, MD 21043 FAX: 410.461.8991

PROFESSIONAL CERTIFICATE  
 DESIGN BY: DZE  
 DRAWN BY: DZE/MR/KG  
 CHECKED BY: RHV  
 DATE: FEB. 2019  
 SCALE: AS SHOWN  
 W.O. NO.: 12-53

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.  
 EXPIRATION DATE: 08-27-2020

9 SHEET OF 30



APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

*[Signature]* 3-1-19  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION

*[Signature]* 3-4-19  
 CHIEF, DIVISION OF LAND DEVELOPMENT

*[Signature]* 3-4-19  
 DIRECTOR

EXISTING UTILITIES SHOWN ON THESE PLANS HAVE BEEN LOCATED FROM EXISTING SITE DEVELOPMENT PLANS, FIELD SURVEYS, PUBLIC WATER AND SEWER EXTENSION PLANS AND AVAILABLE RECORD DRAWINGS. APPROXIMATE LOCATION OF EXISTING UTILITIES ARE SHOWN FOR THE CONTRACTORS INFORMATION ONLY.

CONTRACTOR SHALL TEST PIT TO VERIFY EXISTING UTILITIES WELL IN ADVANCE OF CONSTRUCTION ACTIVITIES AND TAKE ALL NECESSARY PRECAUTIONS TO PROTECT THE EXISTING UTILITIES. TO MAINTAIN UNINTERRUPTED SERVICE AND TO PROVIDE REQUIRED CLEARANCES FOR ALL PROPOSED UTILITIES. ANY DAMAGE INCURRED DUE TO CONTRACTORS OPERATION SHALL BE REPAIRED IMMEDIATELY AT THE CONTRACTORS EXPENSE.

I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND COMPLIES WITH THE APPROVED PLANS AND SPECIFICATIONS. I HAVE VERIFIED THAT THE CONTRIBUTING DRAINAGE AREA IS SUFFICIENTLY STABILIZED TO PREVENT CLOGGING OF THE UNDERGROUND SWIM FACILITY.

*[Signature]* 16193 9-20-19  
 P.E. # DATE



OWNER: HOWARD COUNTY HOUSING COMMISSION, 9770 PATENT WOODS DR., SUITE 100, COLUMBIA, MD 21046, C/O PETER ENGEL, (410) 313-6320

DEVELOPER: STAVROU ASSOCIATES, INC., 2661 RIVA ROAD, SUITE 320, ANNAPOLIS, MD 21401, C/O SCOTT N. LINK, (410) 571-6610

NO.	REVISION	DATE
3	REVISE TO MODIFY FRONTAGE IMPROVEMENTS TO REMOVE SIDEWALK, ADD CURBING, AND ADJUST STORM DRAIN WITHIN FELS LANE	11/07/18
2	REVISE OUTFALL ALONGS FELS LANE TO CONNECT TO CAP. PROJ. D-2411-43;	01/16/18
1	REVISE WHO PROFILES TO LOTS 2 & 3.	
1	REVISE TO RELOCATE THE PROPOSED WHC TO BUILDING 1.	11/01/17

REVISED SITE DEVELOPMENT PLAN

**STORM DRAIN PROFILES**

BURGESS MILL STATION PH II  
 APARTMENT  
 A REDEVELOPMENT OF THE ELIOTT CITY TERRACE APARTMENTS  
 TAX MAP 25 BLOCK 7 ZONED: R-A-15 PARCEL 120, PARCEL A  
 2ND ELECTION DISTRICT L17102F#63 HOWARD COUNTY, MARYLAND

**ROBERT H. VOGEL**  
 ENGINEERS • SURVEYORS • PLANNERS

3300 N. RIDGE ROAD, SUITE 110 TEL: 410.461.2666  
 ELIOTT CITY, MD 21043 FAX: 410.461.2951

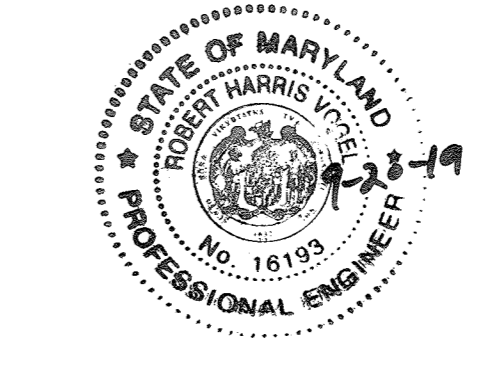
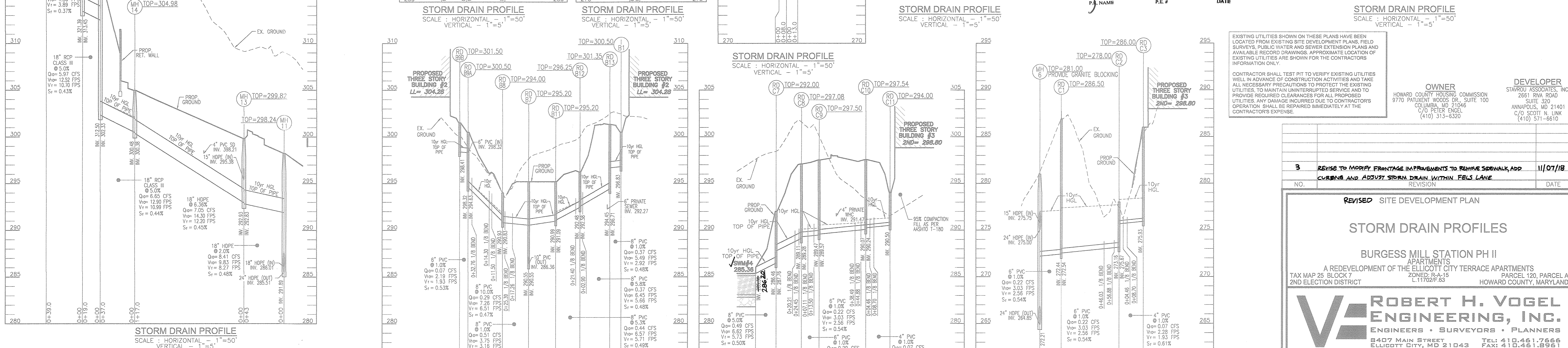
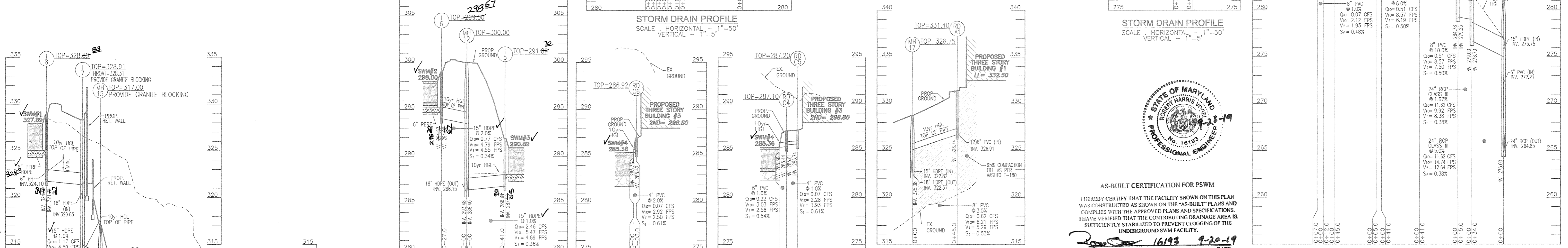
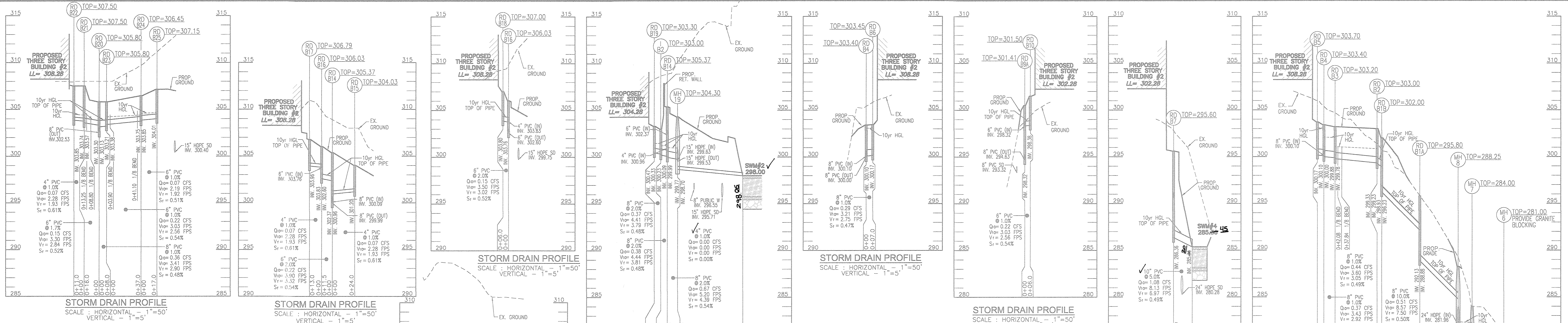
PROFESSIONAL CERTIFICATE

DESIGN BY: DZE  
 DRAWN BY: DZE/MR/KC  
 CHECKED BY: RHW  
 DATE: FEB. 2019  
 SCALE: AS SHOWN  
 W.D. NO.: 12-53

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A FULLY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193, EXPIRATION DATE 09-28-2020.

10 SHEET OF 30

AS-BUILT - JUNE 2019



**AS-BUILT CERTIFICATION FOR PSWM**  
I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND COMPLIES WITH THE APPROVED PLANS AND SPECIFICATIONS. I HAVE VERIFIED THAT THE CONTRIBUTING DRAINAGE AREA IS SUFFICIENTLY STABILIZED TO PREVENT CLOGGING OF THE UNDERGROUND SWM FACILITY.

DATE: 9-20-19  
P.E. NAME: R. H. VOGEL  
P.E. NO.: 16193

EXISTING UTILITIES SHOWN ON THESE PLANS HAVE BEEN LOCATED FROM EXISTING SITE DEVELOPMENT PLANS, FIELD SURVEYS, PUBLIC WATER AND SEWER EXTENSION PLANS AND AVAILABLE RECORD DRAWINGS. APPROXIMATE LOCATION OF EXISTING UTILITIES ARE SHOWN FOR THE CONTRACTORS INFORMATION ONLY.

CONTRACTOR SHALL TEST PIT TO VERIFY EXISTING UTILITIES WELL IN ADVANCE OF CONSTRUCTION ACTIVITIES AND TAKE ALL NECESSARY PRECAUTIONS TO PROTECT THE EXISTING UTILITIES, TO MAINTAIN UNINTERRUPTED SERVICE AND TO PROVIDE REQUIRED CLEARANCES FOR ALL PROPOSED UTILITIES. ANY DAMAGE INCURRED DUE TO CONTRACTORS OPERATION SHALL BE REPAIRED IMMEDIATELY AT THE CONTRACTORS EXPENSE.

**OWNER**  
HOWARD COUNTY HOUSING COMMISSION  
9770 PATIENT WOODS DR., SUITE 100  
COLUMBIA, MD 21046  
C/O PETER ENGL  
(410) 313-6320

**DEVELOPER**  
STAVROU ASSOCIATES, INC.  
2661 RIVA ROAD  
SUITE 300  
ANNAPOLIS, MD 21401  
C/O SCOTT N. LINK  
(410) 571-6610

3			REVISE TO MODIFY FRONTAGE IMPROVEMENTS TO REMOVE SIDEWALK, ADD CURBING AND ADJUST STORM DRAIN WITHIN FEELS LANE.	11/07/18
NO.	REVISION	DATE		

**REVISED SITE DEVELOPMENT PLAN**  
**STORM DRAIN PROFILES**  
**BURGESS MILL STATION PH II**  
APARTMENTS  
A REDEVELOPMENT OF THE HELLCOTT CITY TERRACE APARTMENTS  
TAX MAP 25 BLOCK 7  
2ND ELECTION DISTRICT  
ZONED: RA-15  
L117027#3  
PARCEL 120, PARCEL A  
HOWARD COUNTY, MARYLAND

**ROBERT H. VOGEL ENGINEERS • SURVEYORS • PLANNERS**  
8407 MAIN STREET, ELLICOTT CITY, MD 21043  
TEL: 410.461.7666  
FAX: 410.461.1961

**PROFESSIONAL CERTIFICATE**  
DESIGN BY: DZE  
DRAWN BY: DZE/MR/KG  
CHECKED BY: RHY  
DATE: JULY 2017  
SCALE: AS SHOWN  
W.O. NO.: 12-53

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.  
SIGNATURE DATE: 10-27-2018

11 SHEET OF 30

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

DATE: 8-22-17  
DATE: 9-5-17  
DATE: 9-5-17

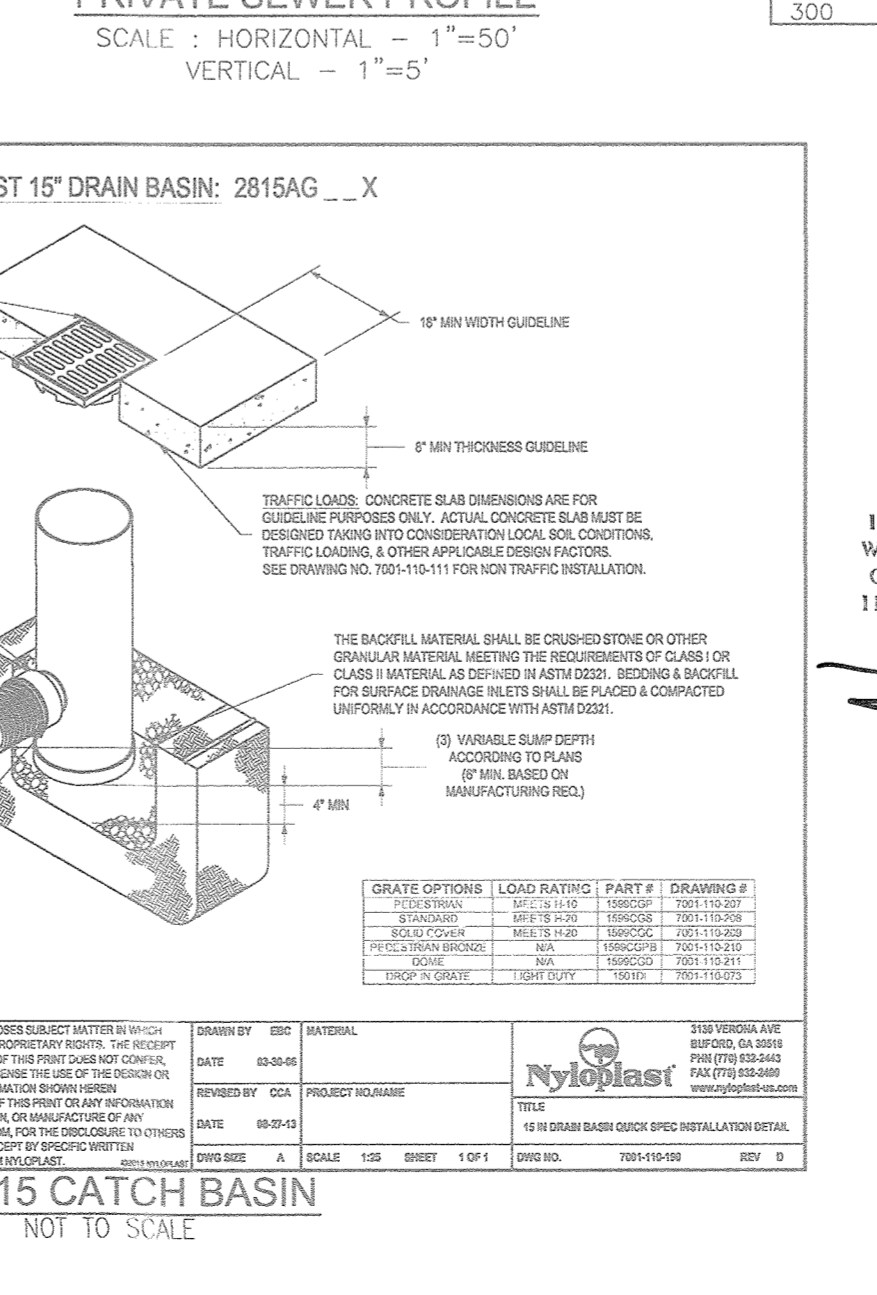
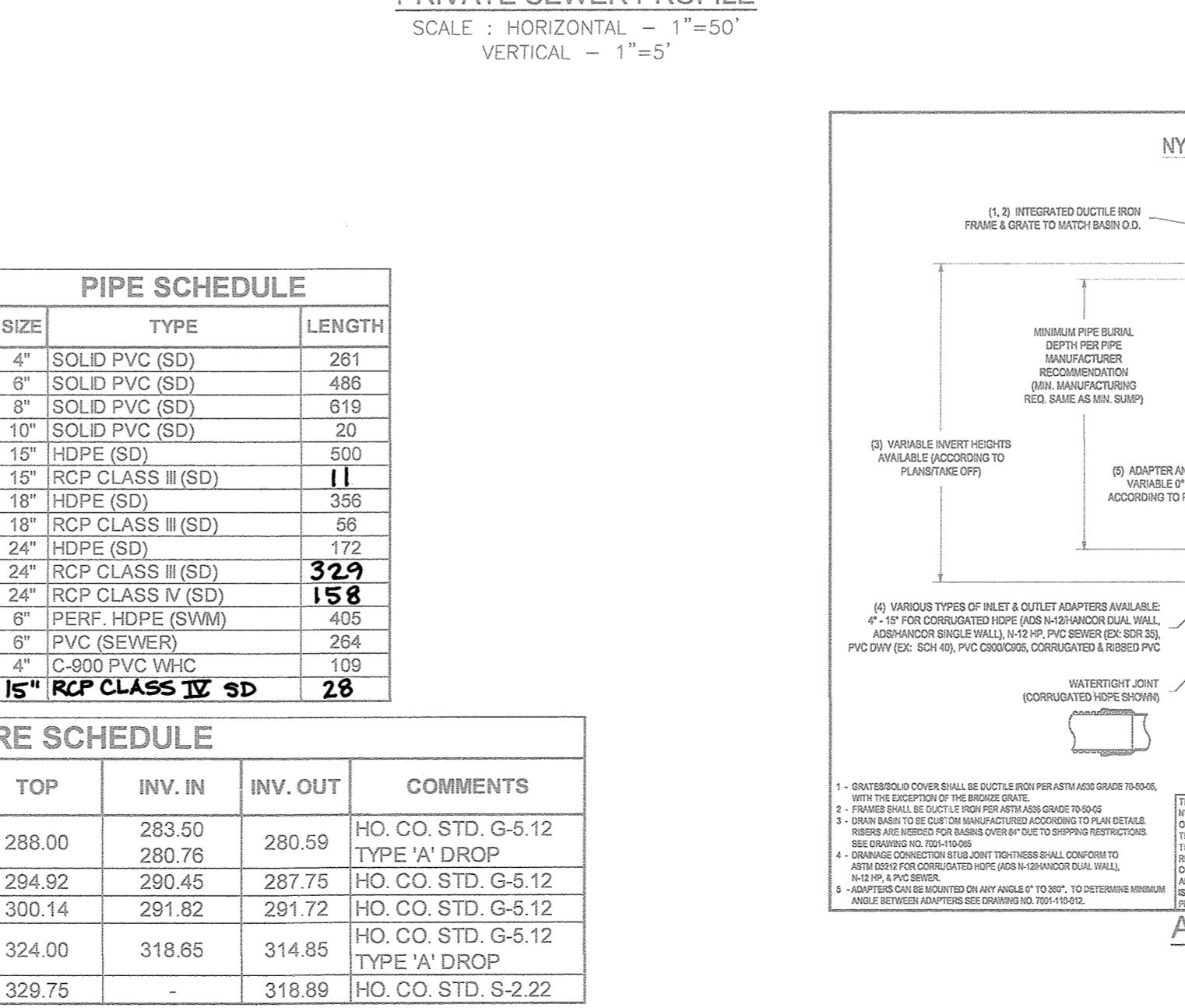
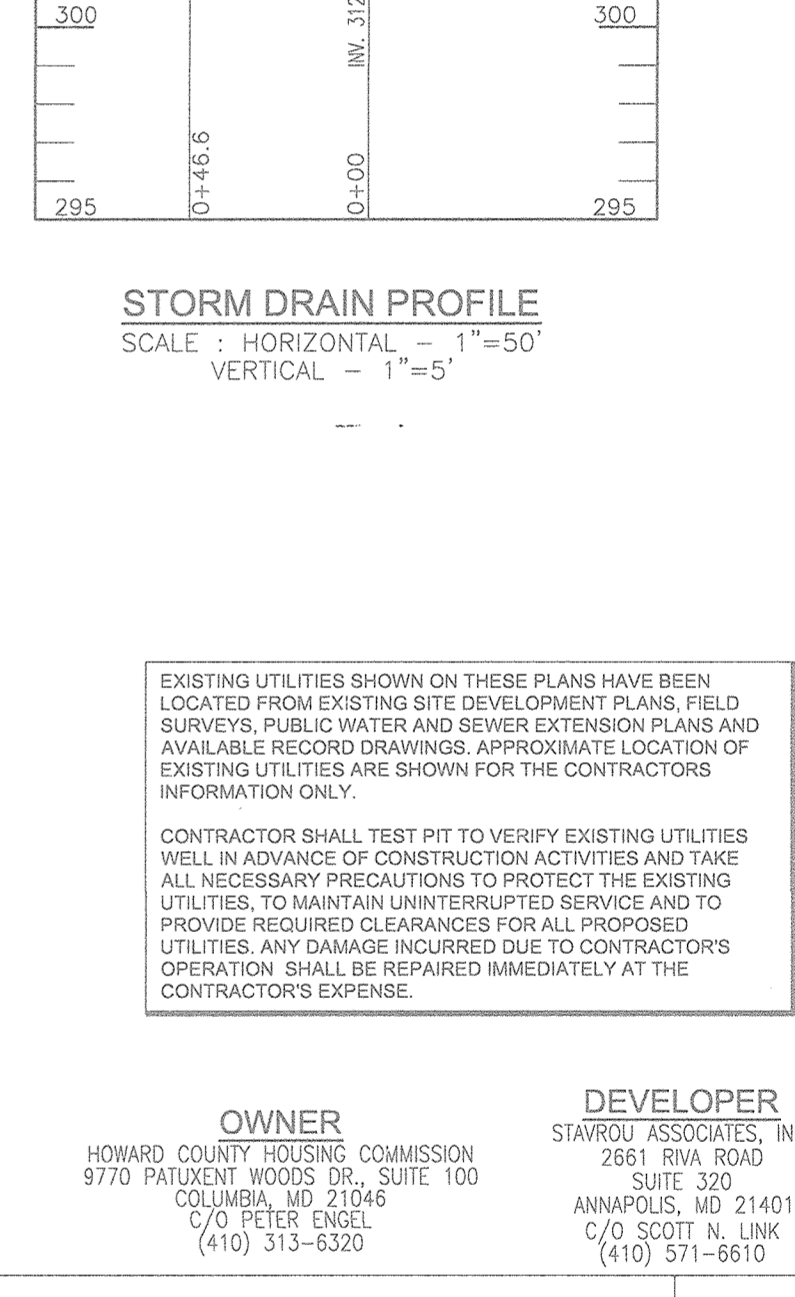
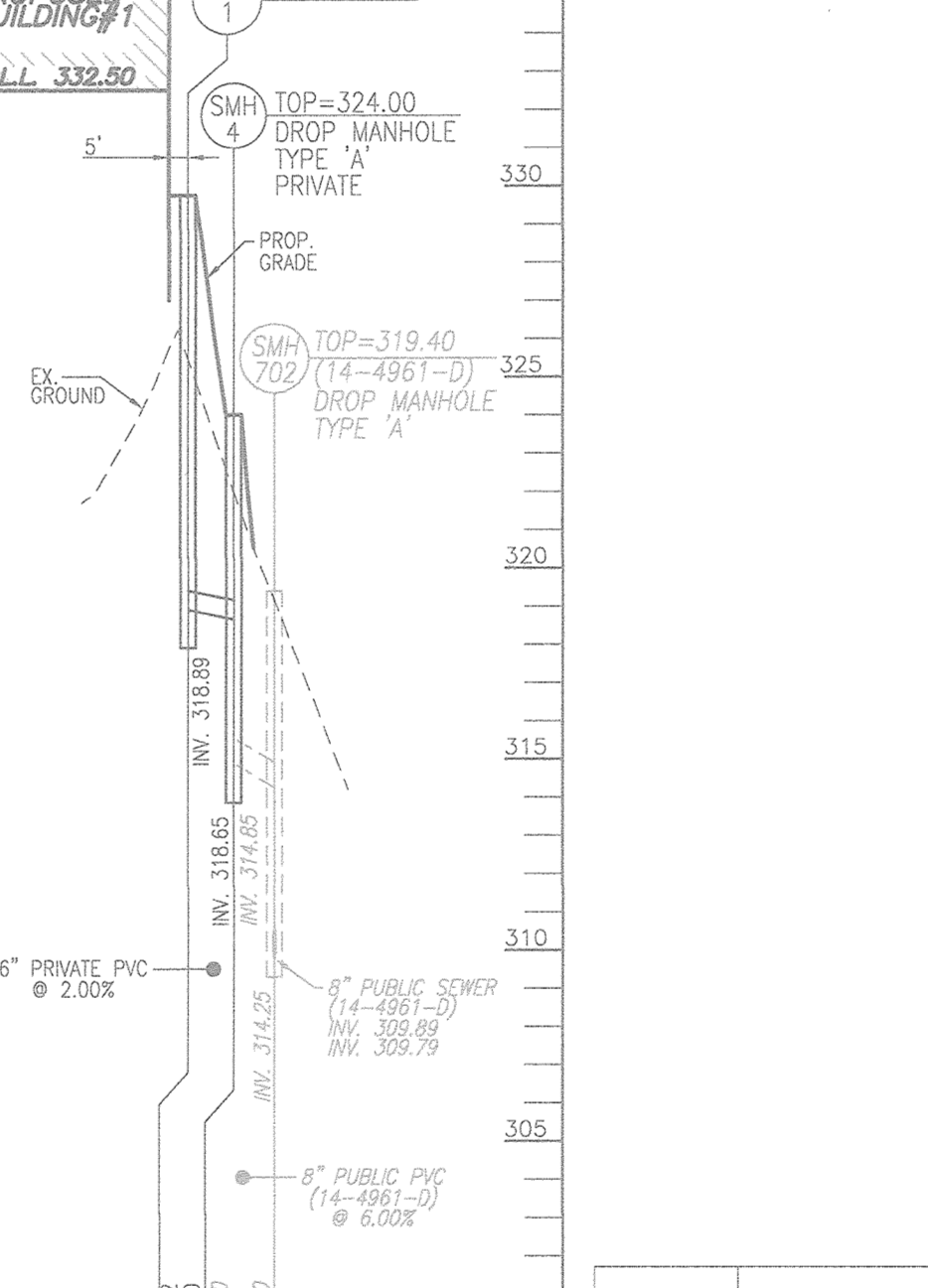
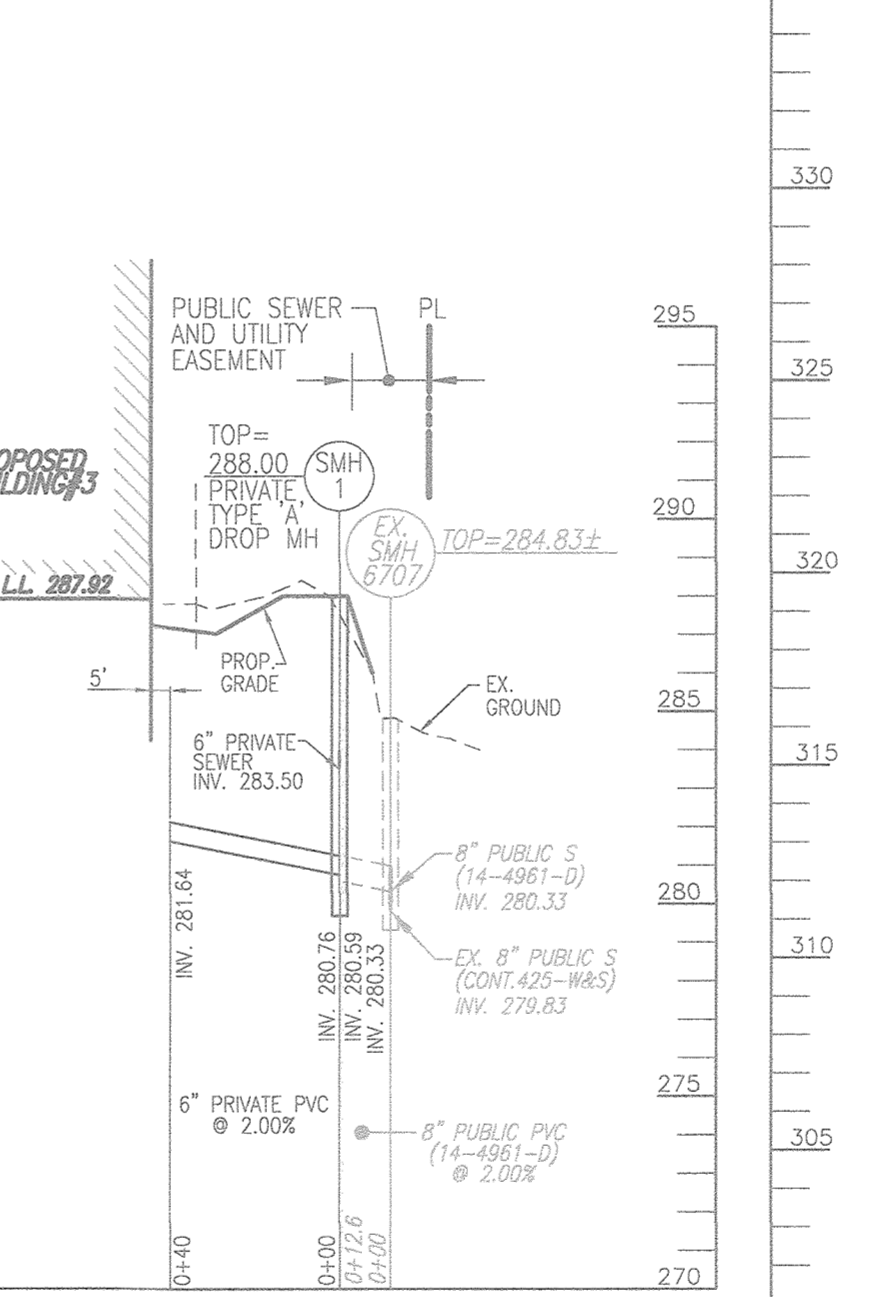
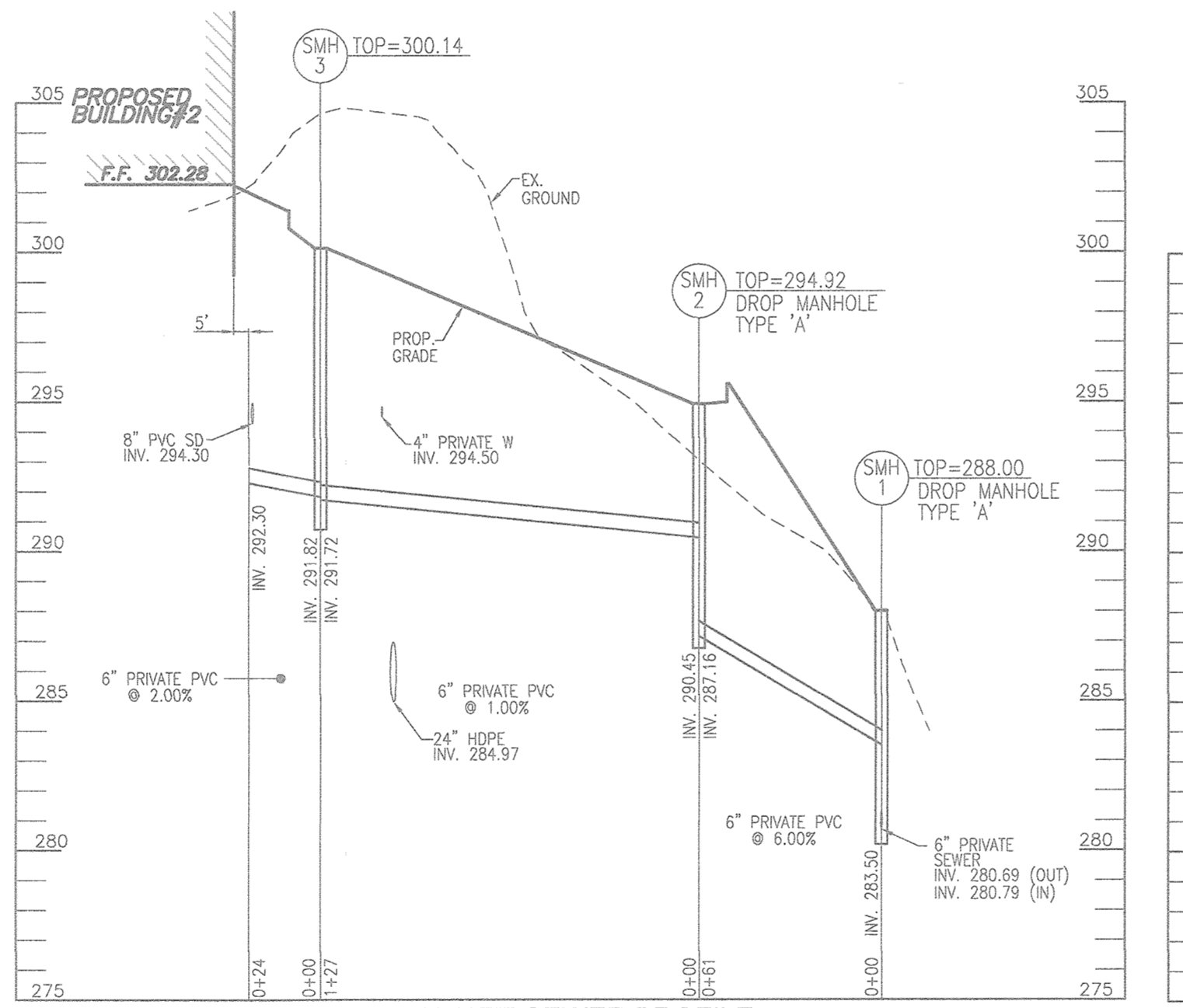
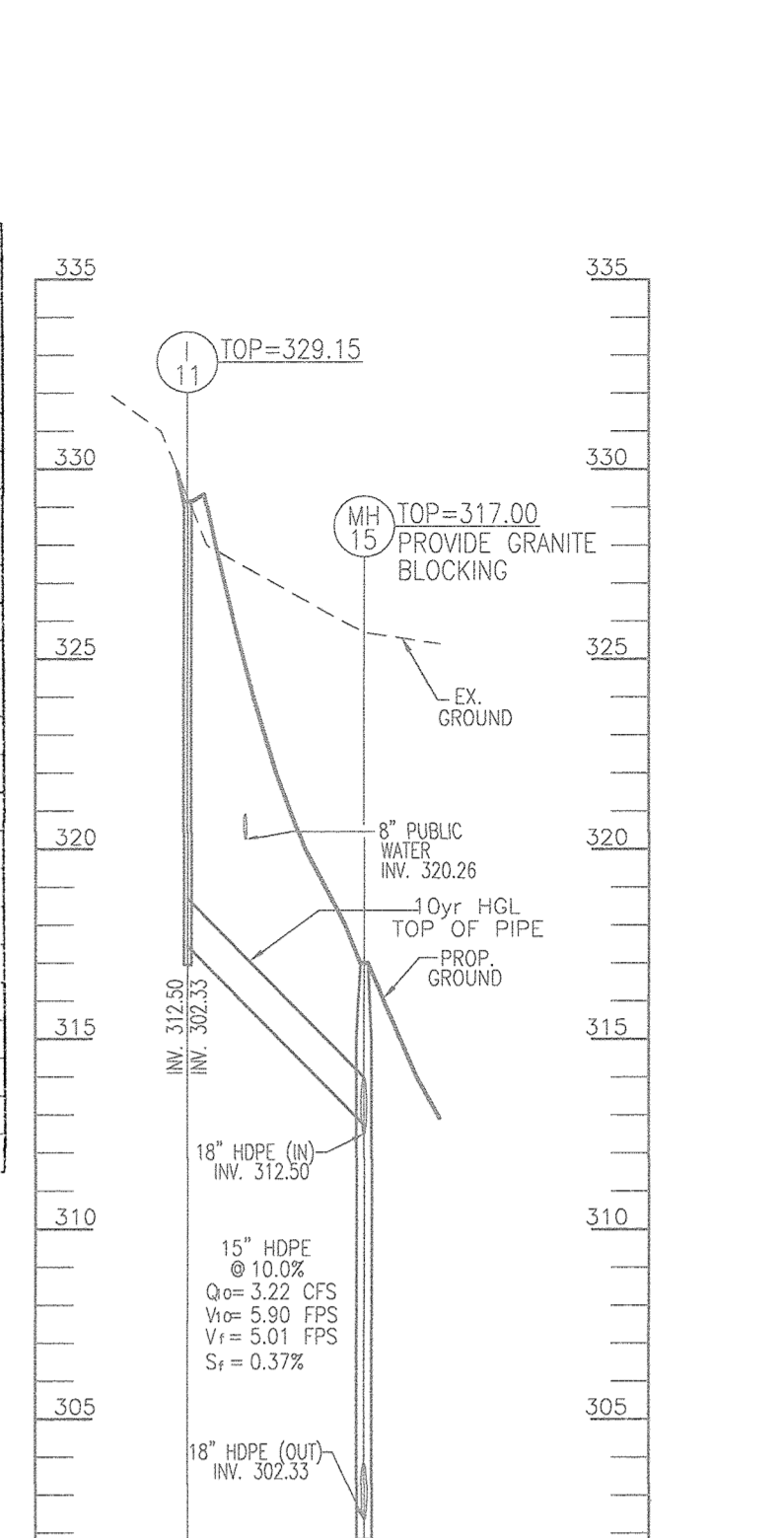
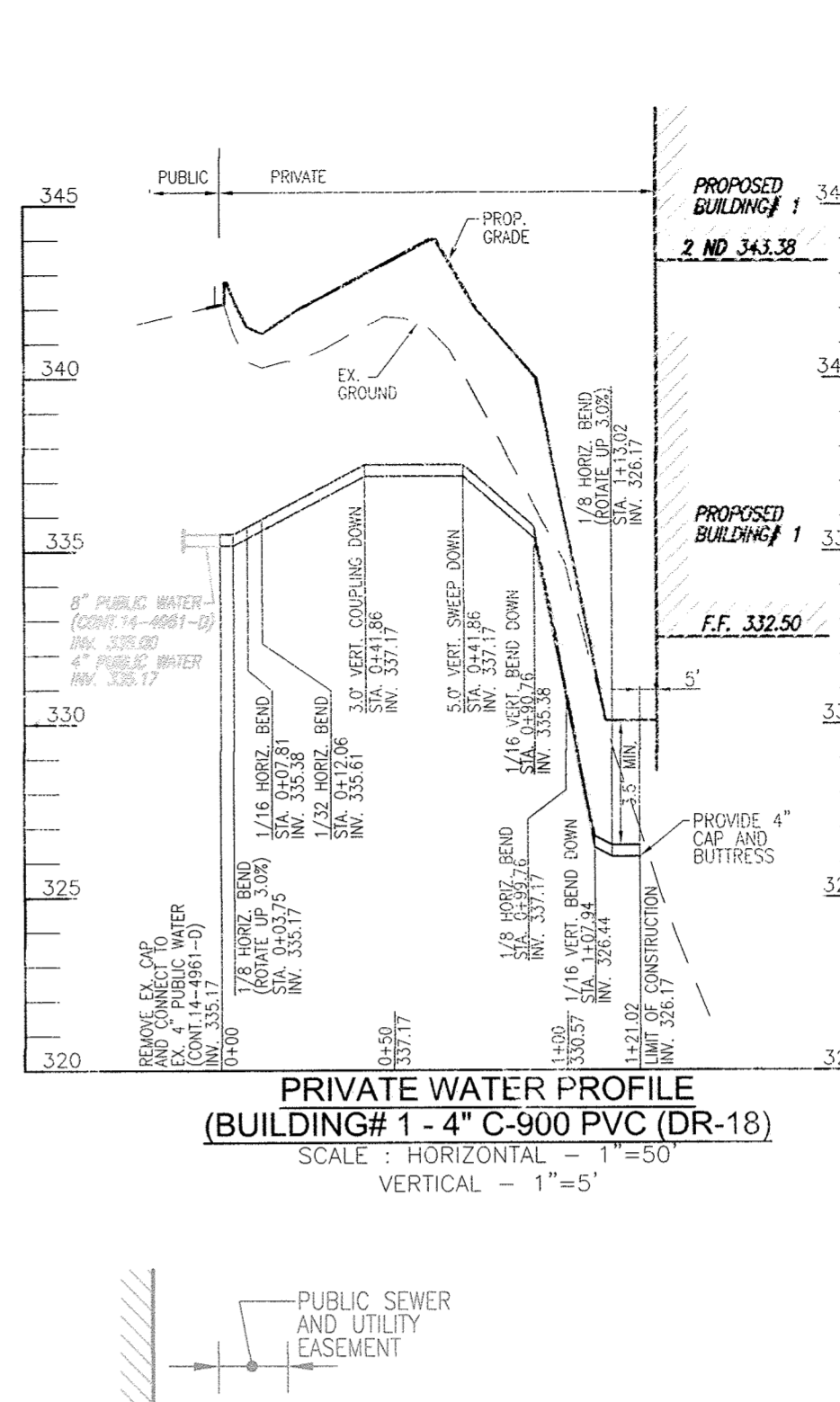
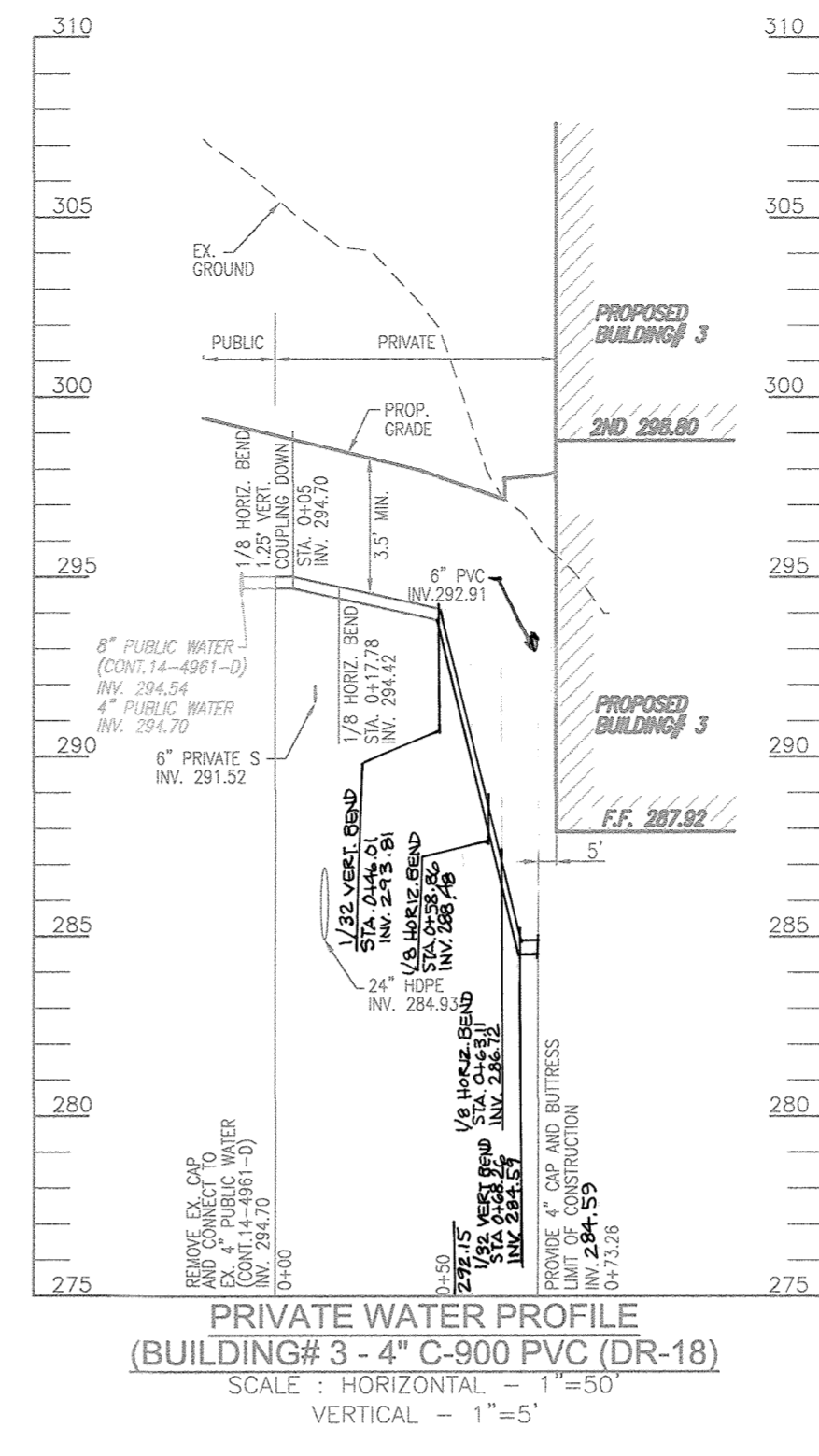
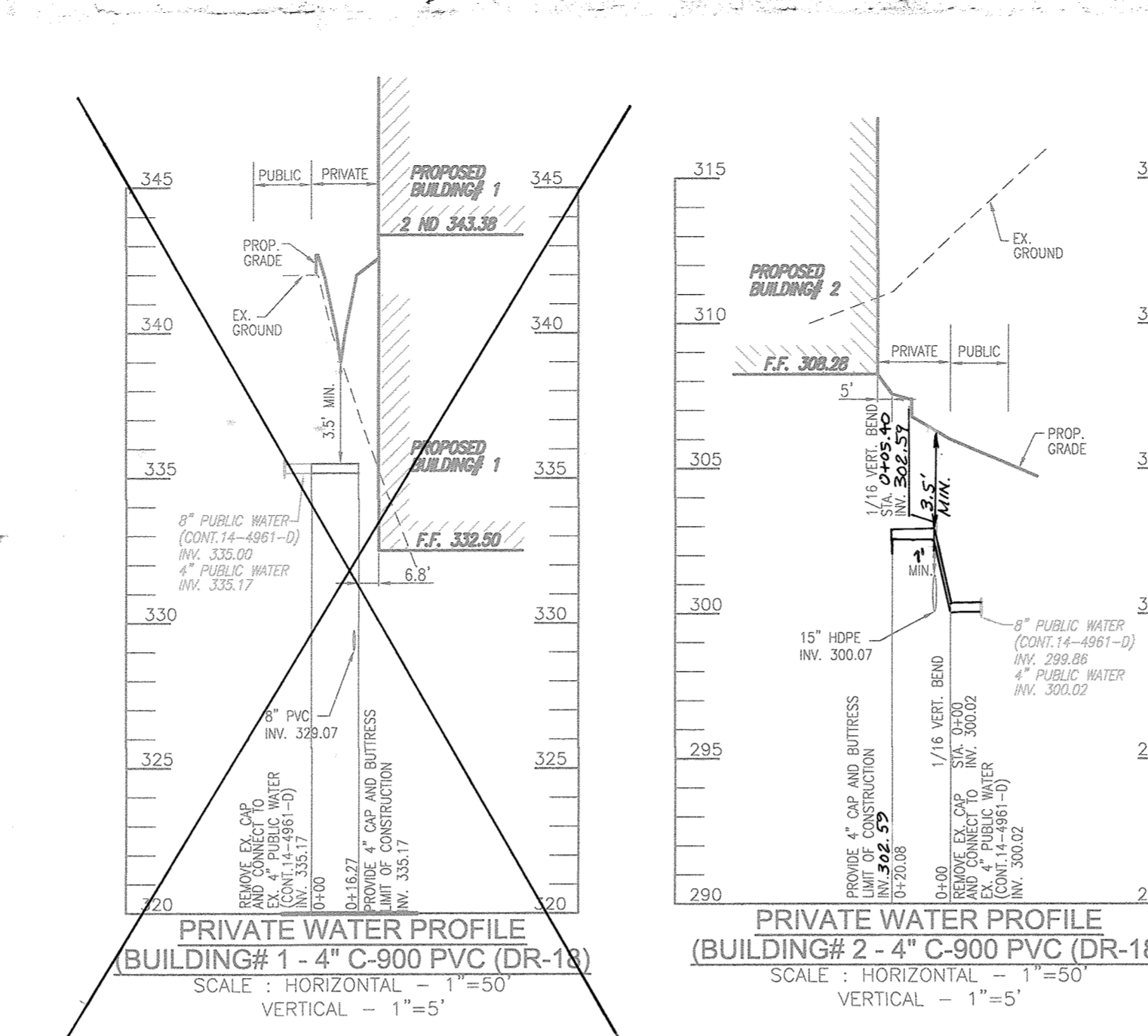
CHIEF, DEVELOPMENT ENGINEERING DIVISION  
CHIEF, DIVISION OF LAND DEVELOPMENT  
DIRECTOR

STORM DRAIN STRUCTURE SCHEDULE

Table with columns: NO., TYPE, LOCATION (NORTHING, EASTING), THROAT, TOP, INV. IN, INV. OUT, COMMENTS. Lists various storm drain structures including inlets, manholes, and cleanouts with their respective elevations and details.

STORM DRAIN STRUCTURE SCHEDULE

Summary table for storm drain structures with columns: NO., TYPE, LOCATION, THROAT, TOP, INV. IN, INV. OUT, COMMENTS. Includes a note: 'INLET #1 IS NOT TO BE CONSTRUCTED'.



PIPE SCHEDULE table with columns: SIZE, TYPE, LENGTH. Lists pipe specifications for various sizes and materials.

PRIVATE SEWER STRUCTURE SCHEDULE table with columns: NO., TYPE, LOCATION (NORTHING, EASTING), TOP, INV. IN, INV. OUT, COMMENTS. Lists sewer structures like manholes and cleanouts.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING. Includes signatures and dates for Chief Development Engineering Division and Chief Division of Land Development.

Revision table with columns: NO., REVISION, DATE. Lists three revisions to the drawings.

REVISED SITE DEVELOPMENT PLAN. STORM DRAIN AND UTILITY PROFILES. BURGESS MILL STATION PH II APARTMENTS. A REDEVELOPMENT OF THE LLOYD CITY TERRACE APARTMENTS.

Professional seal and logo for ROBERT H. VOGEL ENGINEERS, SURVEYORS, PLANNERS. Includes address, phone, and website information.

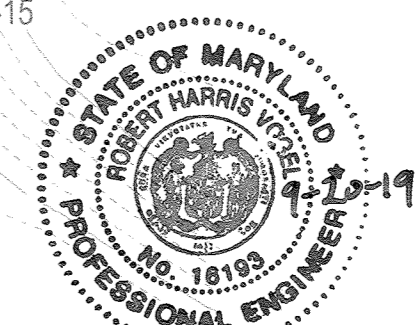
DESIGN BY: DZE, DRAWN BY: DZE/MR/XG, CHECKED BY: RLV, DATE: JULY 2017, SCALE: AS SHOWN, W.O. NO.: 12-53, 12 SHEET OF 30.

AS-BUILT - JUNE 2019

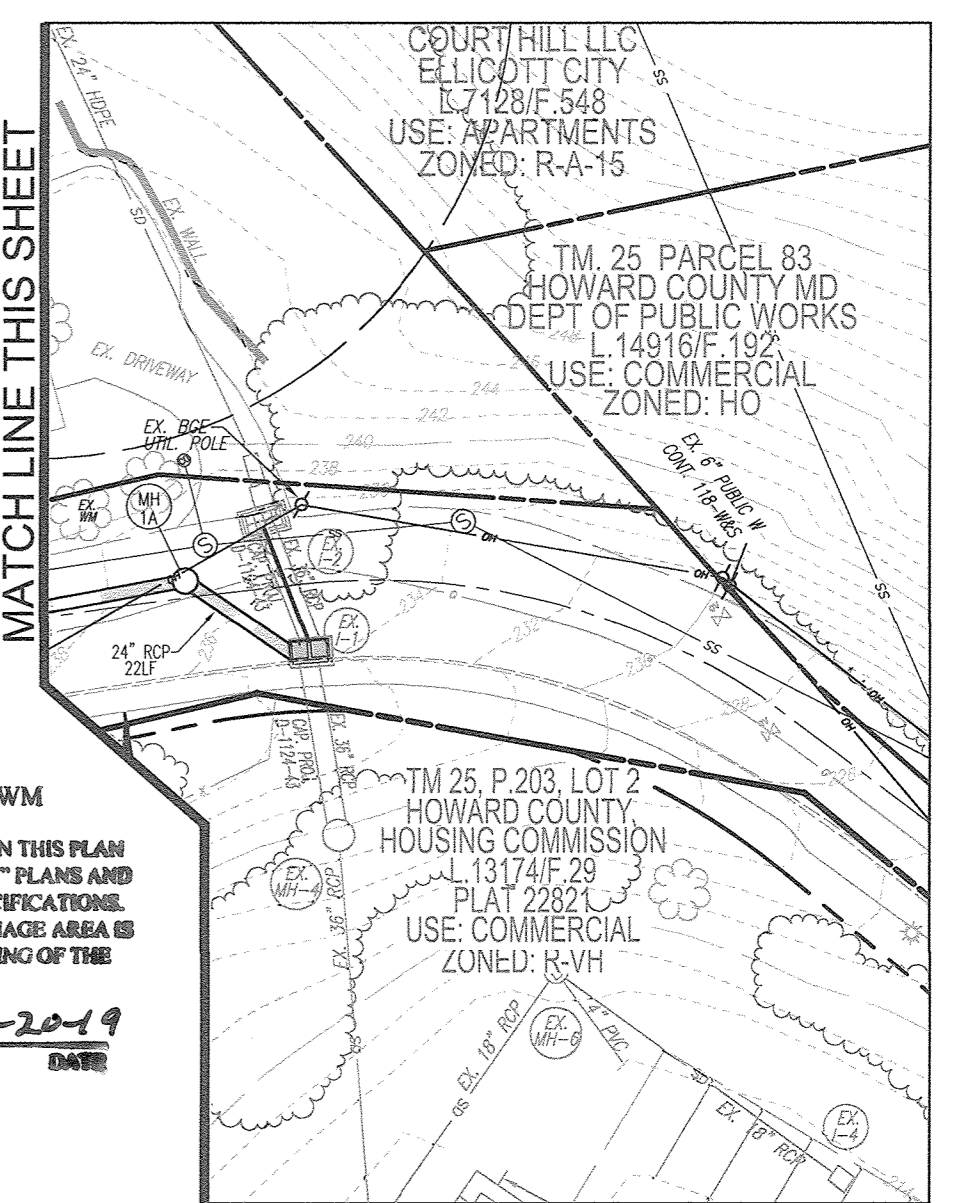


**LEGEND:**

[Symbol]	EXISTING CONTOUR	[Symbol]	EXISTING TREELINE (FIELD LOCATED)
[Symbol]	PROPOSED CONTOUR	[Symbol]	EXISTING FENCE
[Symbol]	PROPOSED SPOT ELEVATION	[Symbol]	PROPERTY LINE
[Symbol]	EXISTING SPOT ELEVATION	[Symbol]	RIGHT-OF-WAY LINE
[Symbol]	EXISTING CURB AND GUTTER	[Symbol]	PROPOSED FOREST CONSERVATION EASEMENT (RETENTION)
[Symbol]	PROPOSED CURB AND GUTTER	[Symbol]	SOILS BOUNDARY
[Symbol]	EXISTING UTILITY POLE	[Symbol]	DRAINAGE DIVIDE
[Symbol]	PROPOSED UTILITY POLE	[Symbol]	EXISTING WETLAND
[Symbol]	EXISTING MAILBOX	[Symbol]	EXISTING WETLAND BUFFER
[Symbol]	EXISTING SIGN	[Symbol]	12' PRIVATE ACCESS EASEMENT TO BENEFIT PARCEL 205
[Symbol]	PROPOSED STORM DRAIN	[Symbol]	20' PUBLIC WATER AND UTILITY EASEMENT PLAT 24250-24252
[Symbol]	PROPOSED STORM DRAIN INLET	[Symbol]	PROP. MICRO-BIORETENTION AREA
[Symbol]	EXISTING TREES (FIELD LOCATED)	[Symbol]	EX. 20' PUBLIC SEWER EASEMENT L-583 F. 256
[Symbol]	EXISTING SPECIEN TREES	[Symbol]	20' PUBLIC DRAINAGE AND UTILITY EASEMENT PLAT 22821
[Symbol]	EXISTING STREAM BUFFER	[Symbol]	EXISTING ROW DEDICATION AREA
[Symbol]	PROPOSED SIDEWALK	[Symbol]	
[Symbol]	PROPOSED LIGHTS	[Symbol]	
[Symbol]	PROPOSED BIKE RACK	[Symbol]	
[Symbol]	PROPOSED MAIL BOX	[Symbol]	



AS-BUILT CERTIFICATION FOR PSWM  
 I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND COMPLIES WITH THE APPROVED PLANS AND SPECIFICATIONS. I HAVE VERIFIED THAT THE CONTRIBUTING DRAINAGE AREA IS SUFFICIENTLY STABILIZED TO PREVENT CLOGGING OF THE UNDERGROUND SWM FACILITY.  
 P.E. NAME: [Signature] 16193 9-20-19



NO AS-BUILT INFORMATION ON THIS SHEET

SCALE 1"=30'  
 OWNER: HOWARD COUNTY HOUSING COMMISSION, 9770 PATUXENT WOODS DR., SUITE 100, COLUMBIA, MD 21046, C/O PETER ENGEL, (410) 313-6320  
 DEVELOPER: STAVROU ASSOCIATES, INC., 2661 RIVA ROAD, SUITE 320, ANNAPOLIS, MD 21401, C/O SCOTT N. LINK, (410) 571-6610

NO.	REVISION	DATE
3	REVISE TO MODIFY FRONTAGE IMPROVEMENTS TO REMOVE SIDEWALK, ADD CURBING, AND ADJUST STORM DRAIN WITHIN FELLS LANE	11/07/18
2	REVISE OUTFALL ALONGS FELLS LANE TO CONNECT TO CAP. PROJ. D-2411-43;	01/16/18
1	REVISE WHC PROFILES TO LOTS 2 & 3.	
1	REVISE TO RELOCATE THE PROPOSED WHC TO BUILDING 1.	11/01/17

REVISED SITE DEVELOPMENT PLAN  
**STORMWATER MANAGEMENT DRAINAGE AREA MAP**  
 BURGESS MILL STATION PH II  
 A REDEVELOPMENT OF THE ELICOTT CITY TERRACE APARTMENTS  
 TAX MAP 25 BLOCK 7 2ND ELECTION DISTRICT  
 PARCEL 120, PARCEL A HOWARD COUNTY, MARYLAND

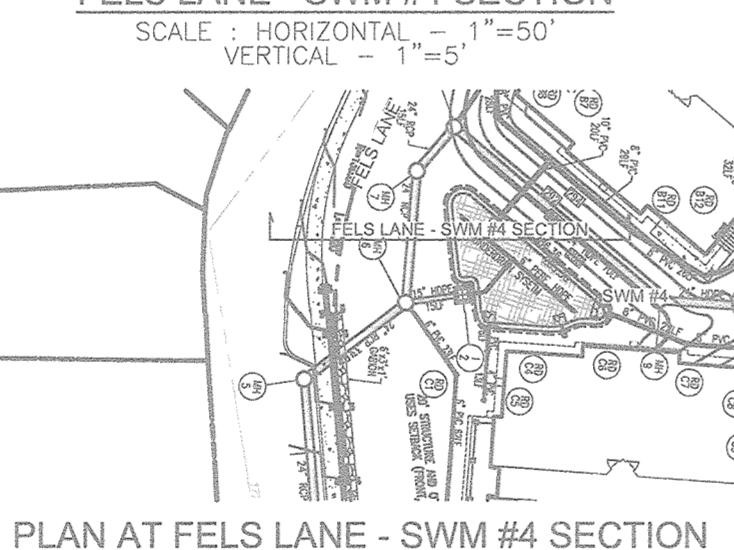
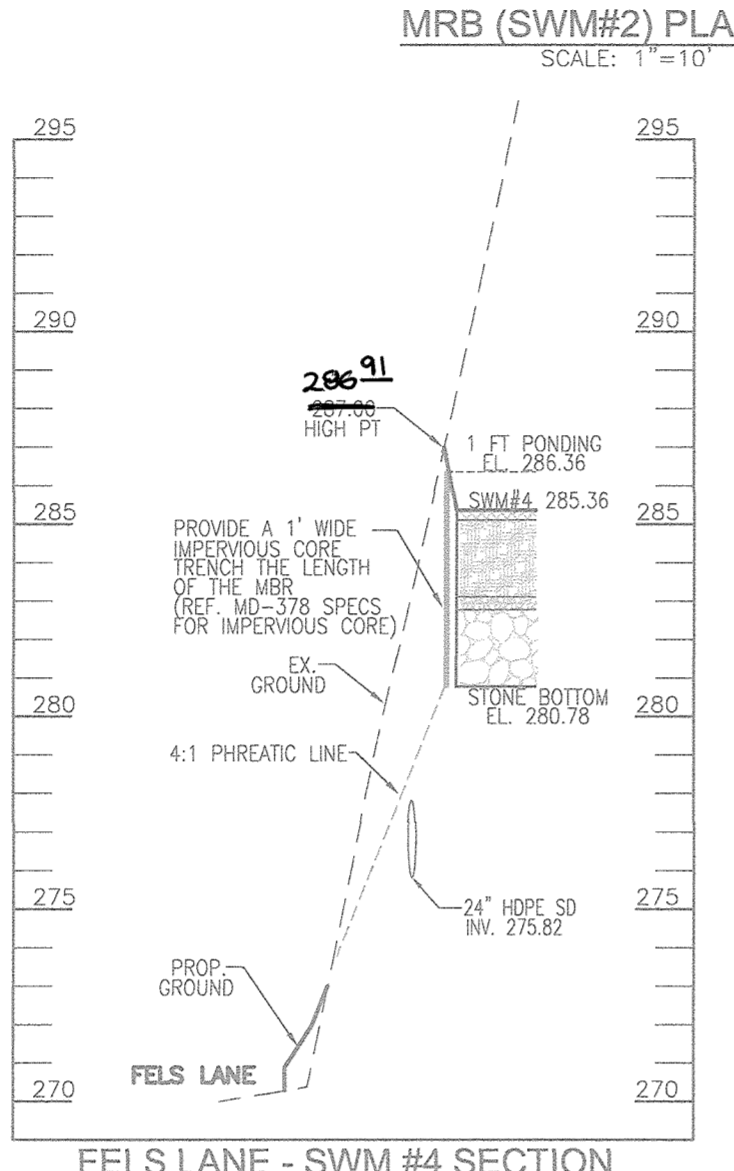
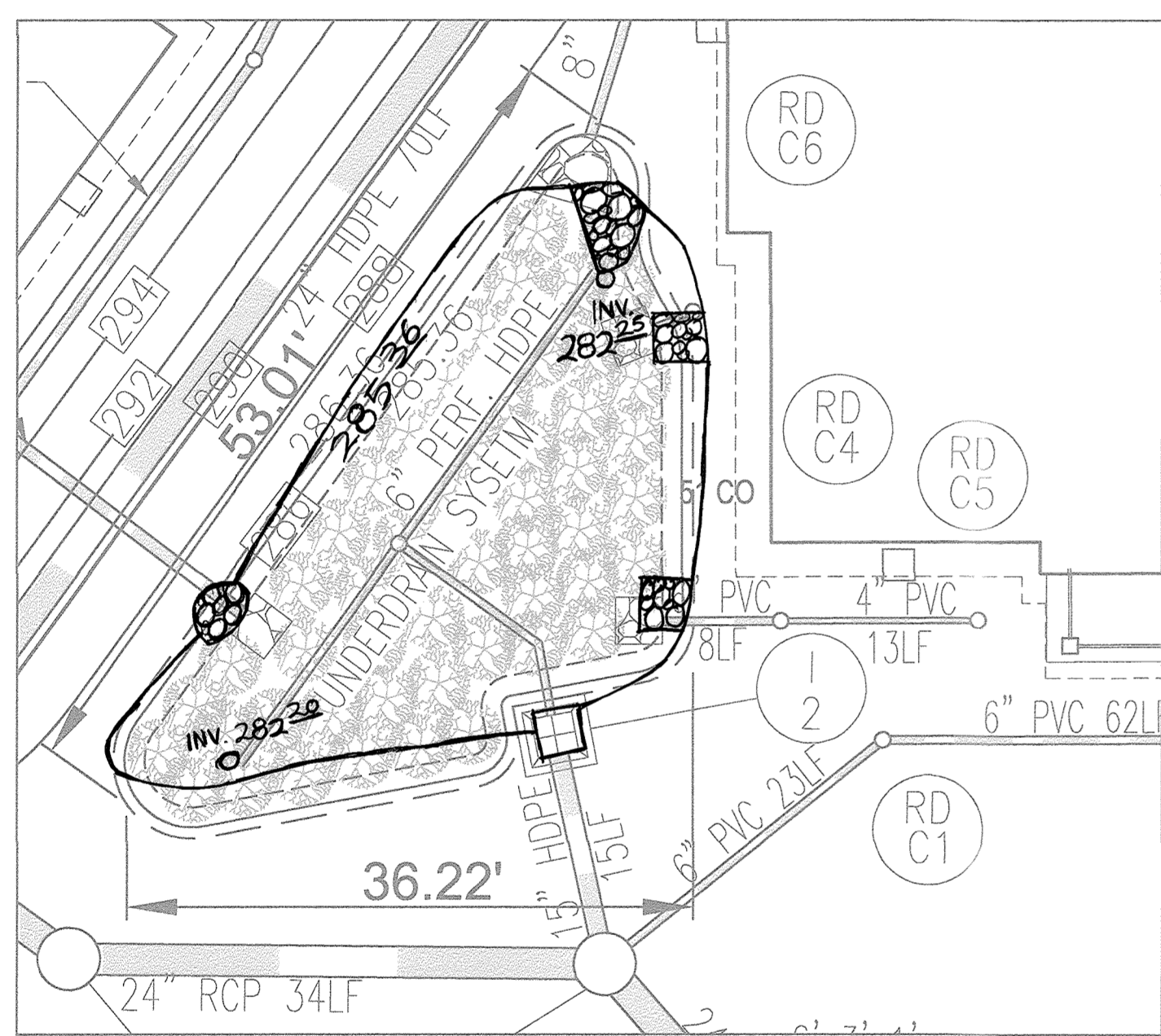
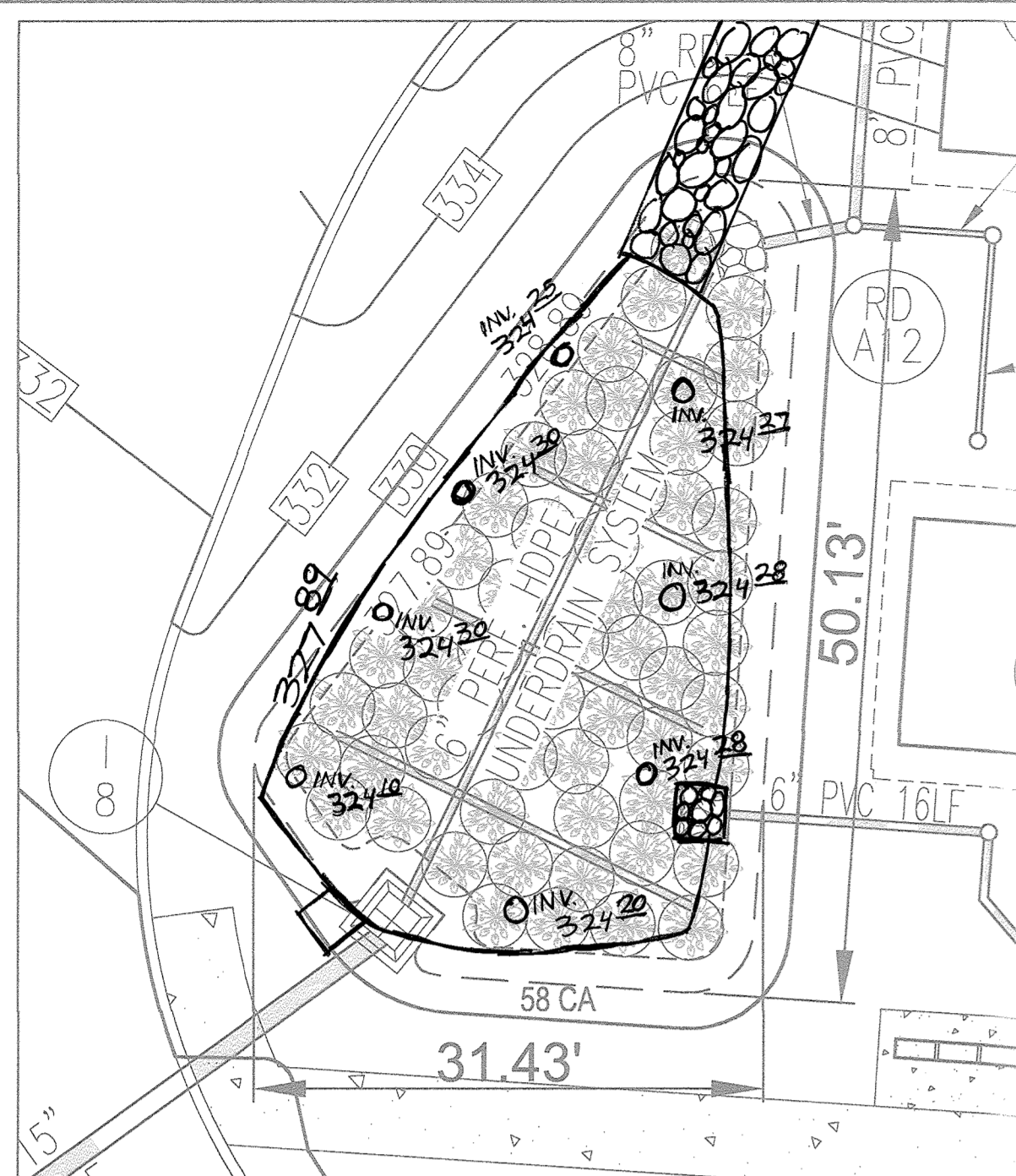
**ROBERT H. VOGEL ENGINEERING, INC.**  
 ENGINEERS • SURVEYORS • PLANNERS  
 3300 N. RIDGE ROAD, SUITE 110 ELICOTT CITY, MD 21043  
 TEL: 410.461.7666 FAX: 410.461.8961

DESIGN BY: DZE	PROFESSIONAL CERTIFICATE
DRAWN BY: DZE/MR/KG	I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193, EXPIRATION DATE: 06-27-2020
CHECKED BY: RHV	
DATE: FEB. 2019	
SCALE: AS SHOWN	
W.O. NO.: 12-53	
	13 SHEET OF 30

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
 [Signature] 3-1-19 DATE  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION  
 [Signature] 3-4-19 DATE  
 CHIEF, DIVISION OF LAND DEVELOPMENT  
 [Signature] 3-4-19 DATE  
 DIRECTOR

SWM DRAINAGE AREA MAP  
 SCALE: 1"=30'

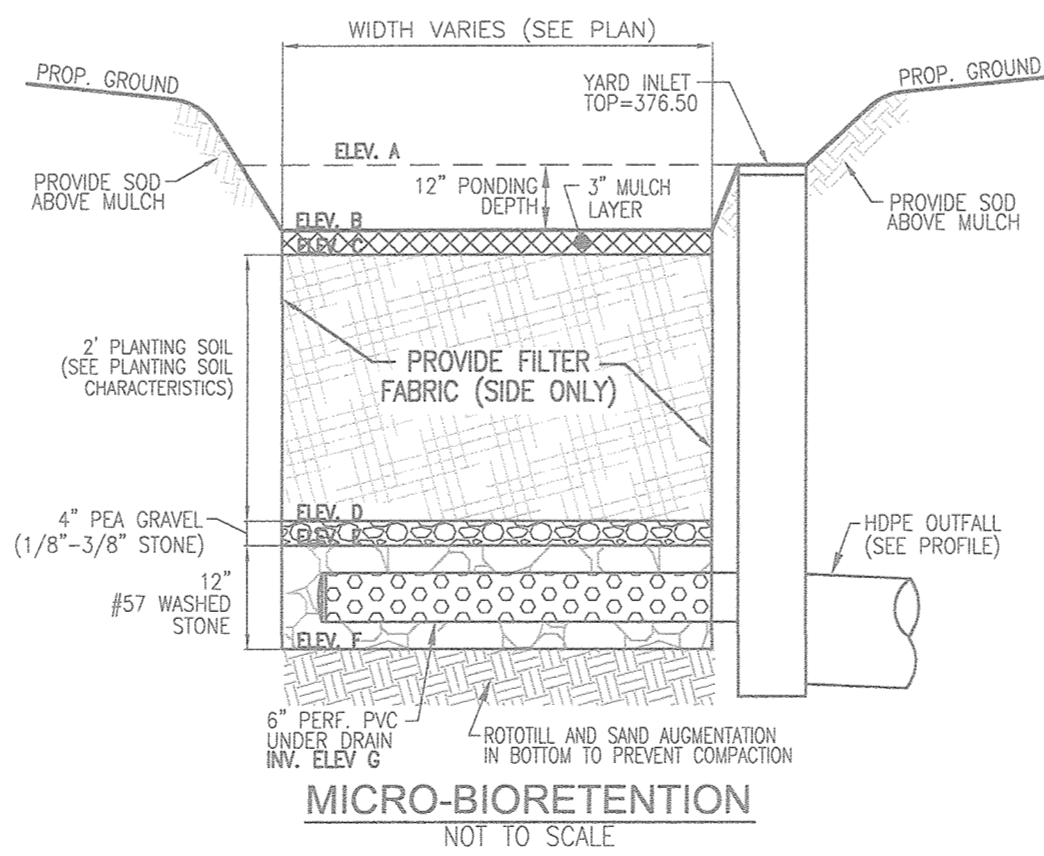
AS-BUILT - JUNE 2019  
 SDP-16-016



Appendix B.4. Construction Specifications for Environmental Site Design Practices

Table B.4.1 Materials Specifications for Micro-Bioretentation, Rain Gardens & Landscape Infiltration

Table with 4 columns: Material, Specification, Size, Notes. Rows include Plantings, Organic content, Mulch, Pea gravel diaphragm, Curtain drain, Geotextile, Gravel (underdrains and infiltration berms), Underdrain piping, Poured in place concrete, and Sand.



MICROBIORETENTION NOTES: 1. ONLY THE SIDES OF MICROBIORETENTION ARE TO BE WRAPPED IN FILTER FABRIC... 2. WRAP THE PERFORATED MBR UNDERDRAIN PIPE WITH 1/4" MESH (4x4) OR SMALLER GALVANIZED HARDWARE CLOTH.

Pe= 2.60
ESDv=(PexRvxA)/12
Rv=0.05+0.009xI
V min=1.0" rainfall
V max=1yr rainfall=2.6"

Table with columns: DA, % IMPERV, Rv, ESDv, MINIMUM VOLUME, MAXIMUM VOLUME, TOTAL VOL PROVIDED, SWM PRACTICE, SURFACE AREA, STORAGE DEPTH, MBR VOLUME, STONE DEPTH, STONE VOLUME, AREA SF, PERV AREA, IMP AREA. Includes a TOTAL ESDv BY SUBAREA row.

MICRO-BIORETENTION DATA CHART table with columns: MBR Facility, Ponding Depth, Pounding Elevation, Top of Mulch, Bottom of Mulch, Bottom of Plant Mix, Bottom of Pea Gravel, Depth of Stone, Size of Underdrain, Invert of Underdrain, Bottom of Stone.

ENVIRONMENTAL SITE DESIGN PRACTICE table with columns: DRAINAGE AREA, AREA TREATED, FACILITY NUMBER, PERMEABLE PAVEMENT, STONE UNDER PERM. PAVE, LANDSCAPE INFILTRATION, PERVIOUS SIDEWALK, BIO SWALE, GRAVEL TRENCH, MICRO BIO RETENTION, STONE UNDER MBR, ESDv VOLUME.

TOTAL AREA 71152 SF 1.63 AC, TOTAL ESDv PROVIDED (cft) 5822

APPENDIX B.4.C SPECIFICATIONS FOR MICRO-BIORETENTION, RAIN GARDEN, 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...

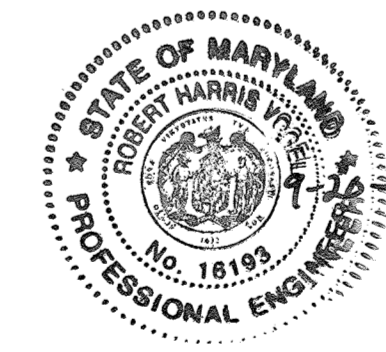
IT IS VERY IMPORTANT TO MINIMIZE EXPOSURE OF BOTH THE BASE OF BIORETENTION PRACTICES AND THE REQUIRED BACKFILL. WHEN POSSIBLE, USE EXCAVATION HOES TO REMOVE ORIGINAL SOIL. IF PRACTICES ARE EXCAVATED USING WIDE TRACK OR MARSH TRACK EQUIPMENT...

- 3. COMPACTION: 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...
4. PLANT MATERIAL: RECOMMENDED PLANT MATERIAL FOR MICRO-BIORETENTION PRACTICES CAN BE FOUND IN APPENDIX A, SECTION A.2.3.

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...
6. UNDERDRAINS: UNDERDRAINS SHOULD MEET THE FOLLOWING CRITERIA:
\* PPE SHOULD BE 4" TO 6" DIAMETER, SLOTTED OR PERFORATED RIGID PLASTIC PIPE (ASTM F758, TYPE PS 28, OR AISI-316-278) IN A GRAVEL LAYER...

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

- 1. THE OWNER SHALL MAINTAIN THE PLANT MATERIAL, MULCH LAYER AND SOIL LAYER ANNUALLY...
2. THE OWNER SHALL PERFORM A PLANT IN THE SPRING AND IN THE FALL OF EACH YEAR...
3. THE OWNER SHALL INSPECT THE MULCH EACH SPRING...
4. THE OWNER SHALL CORRECT SOIL EROSION ON AN AS NEEDED BASIS...



AS-BUILT CERTIFICATION FOR PSWM

I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE AS-BUILT PLANS AND COMPLIES WITH THE APPROVED PLANS AND SPECIFICATIONS...

OWNER: HOWARD COUNTY FLOODING COMMISSION, 9770 PATUXENT WOODS DR., SUITE 100, COLUMBIA, MD 21046
DEVELOPER: STAVROU ASSOCIATES, INC., 2661 RIVA ROAD, SUITE 300, ANNAPOLIS, MD 21401

Revision table with columns: NO., REVISION, DATE. Row 3: REVISE TO MODIFY FRONTAGE IMPROVEMENT TO REMOVE SIDEWALK, ADD CURBING AND ADJUST STORM DRAIN WITHIN FELS LANE, 11/07/18

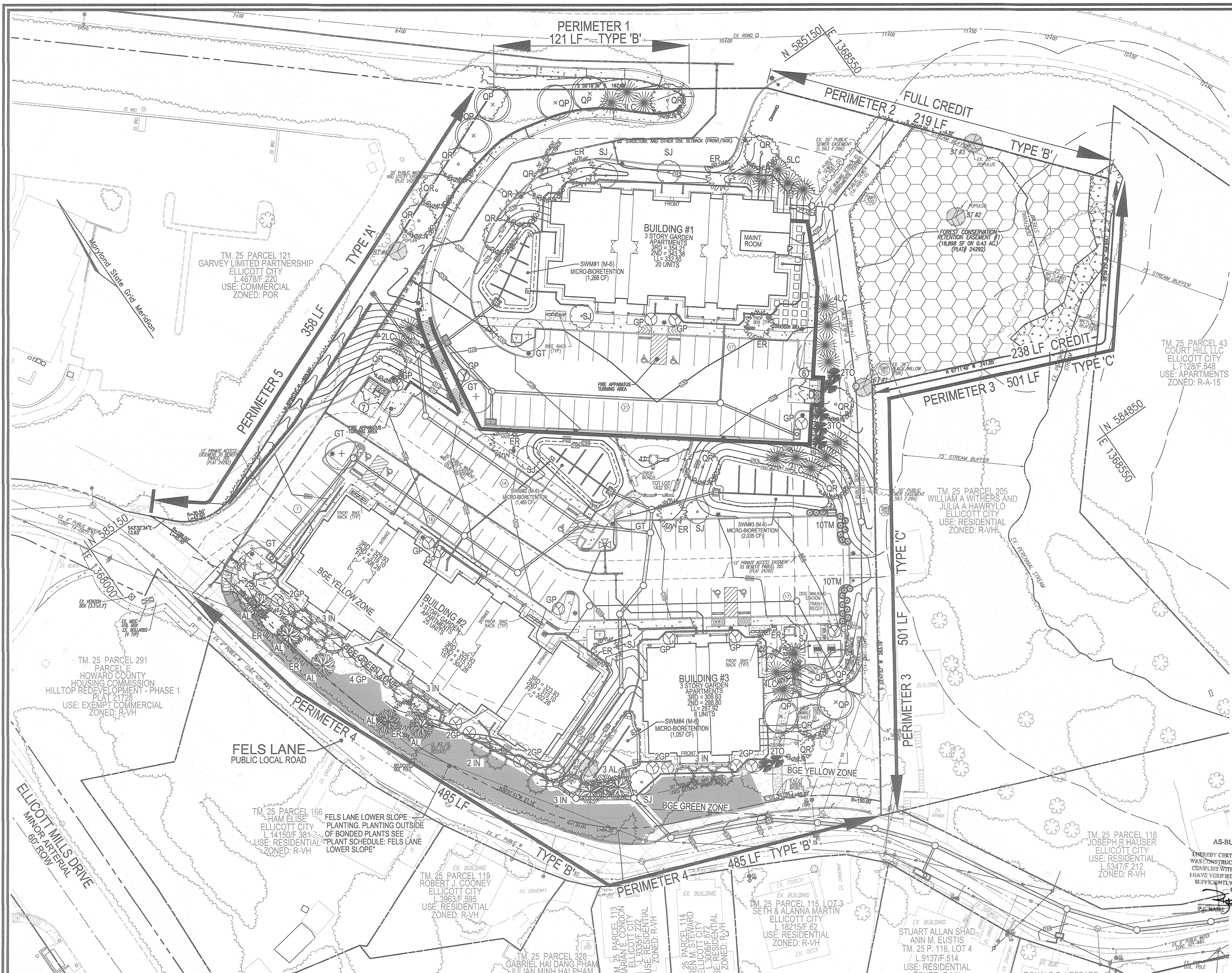
REVISED SITE DEVELOPMENT PLAN STORMWATER MANAGEMENT DETAILS

BURGESS MILL STATION PH II A REDEVELOPMENT OF THE FELLCOTT CITY TERRACE APARTMENTS TAX MAP 25 BLOCK 7 2ND ELECTION DISTRICT

ROBERT H. VOGEL ENGINEERS SURVEYORS PLANNERS logo and contact information. 8407 MAIN STREET, ELLICOTT CITY, MD 21043, TEL: 410-481-7666

PROFESSIONAL CERTIFICATE: DESIGN BY: DZE, DRAWN BY: DZE/MR/KG, CHECKED BY: RHV, DATE: JULY 2017, SCALE: AS SHOWN, W.O. NO.: 12-53, SHEET 14 OF 30

AS-BUILT - JUNE 2019 SDP-16-016



**GENERAL NOTES:**

- THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH THE PROVISIONS OF SECTION 18.124 OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL.
- FINANCIAL SURETY FOR THE REQUIRED LANDSCAPING HAS BEEN POSTED AS PART OF THE DEVELOPER'S AGREEMENT FOR THIS SITE DEVELOPMENT PLAN IN THE AMOUNT OF \$23,550.00 FOR THE REQUIRED 61 SHADE TREES AND 35 EVERGREENS (INCLUDES SPECIMEN TREE MITIGATION).
- REMOVAL OF THE TWO (2) SPECIMEN TREES WILL REQUIRE MITIGATION WITH THE PLANTING OF 2:1 REPLACEMENT TREES (4 TOTAL) WITH A MINIMUM 3" CALIPER NATIVE PLANT SPECIES. THE REPLACEMENT TREES SHALL BE BONDED AND SHOWN ON THIS LANDSCAPE PLAN. (REF. WP-16-018 & WP-17-055).
- ANY ADDITIONAL REMOVAL OF SPECIMEN TREES DURING CONSTRUCTION ACTIVITY SHALL REQUIRE THE SUBMITTER TO OBTAIN A NEW PLANTING COMPLIANCE PETITION APPLICATION. ANY REMAINING SPECIMEN TREES SHALL BE SAVED AND PROTECTED DURING THE CONSTRUCTION ACTIVITY.

**LANDSCAPE SCHEDULE NOTE:**

- ALL PLANT MATERIALS SHALL BE FULL AND HEAVY, BE WELL FORMED AND SYMMETRICAL, CONFORM TO THE MOST CURRENT AND SPECIFICATIONS AND BE INSTALLED IN ACCORDANCE WITH HRP PLANTING SPECIFICATIONS.
- CONTRACTOR SHALL VERIFY LOCATION OF ALL UNDERGROUND UTILITIES PRIOR TO DIGGING.
- FINAL LOCATION OF PLANT MATERIAL MAY NEED TO VARY TO MEET FINAL FIELD CONDITIONS. TREES SHALL NOT BE PLANTED IN THE BOTTOM OF DRAINAGE SWALES.
- CONTRACTOR SHALL VERIFY PLANT QUANTITIES PRIOR TO BIDDING. IF PLAN DIFFERS FROM LANDSCAPE SCHEDULE, THE PLAN SHALL GOVERN.

**SEE SHEET 17 FOR TREE PLANTING, STAKING AND SHRUB DETAILS**

**SPECIMEN TREE MITIGATION**

NUMBER OF SPECIMEN TREES TO BE REMOVED	2
NUMBER OF TREES PROVIDED	4
NUMBER OF TREES REQUIRED (2 x SPECIMEN TREES TBR)	4
SHADE TREES (2:1 SUBSTITUTION)	2***
EVERGREEN TREES (2:1 SUBSTITUTION)	4***

\*\*\* SUBSTITUTE 4 EVERGREEN TREES FOR 2 SHADE TREES (PLANTED IN PERIMETER 3).

**LANDSCAPE SCHEDULE 'C'**

NUMBER OF DWELLING UNITS	53 APT
NUMBER OF TREES REQUIRED (1:3 DU APT)	18
NUMBER OF TREES PROVIDED	11
SHADE TREES (2:1 SUBSTITUTION)	14
SHRUBS (10:1 SUBSTITUTION)	-

**SCHEDULE 'A' PERIMETER LANDSCAPE EDGE**

CATEGORY	ADJACENT TO PERIMETER AND ROOFS							DUMPSTER	TOTAL
	1	2	3	4	5	6	7		
PERIMETER/FRONTAGE DESIGNATION	B	C	A	D	C				
LINEAR FEET OF ROADWAY FRONTAGE/PERIMETER	121'	219'	501'	485'	351'	27'	37'		
CREDIT FOR EXISTING VEGETATION (YES, NO, LINEAR FEET)	No	Yes	Yes	Yes	Yes	No	1 TREE	No	No
DESCRIBE BELOW IF NEEDED									
CREDIT FOR WALLS OR BERM (YES, NO, LINEAR FEET)	No	No	No	No	No	No	No	No	No
DESCRIBE BELOW IF NEEDED									
NUMBER OF PLANTS REQUIRED	150	3	263	17	150	160	6	140	1
SHADE TREES	140	3	140	10	140	13	1	1:10	3
EVERGREEN TREES	-	-	120	14	-	-	-	1:10	3
SHRUBS	-	-	-	-	-	-	-	1:20	2
NUMBER OF PLANTS PROVIDED	3	-	7	14	5	0*	1	30	
SHADE TREES	3	-	14	14	-	5*	2	38	
EX SHADE TREES	-	-	-	-	-	-	-	-	16
OTHER TREES (2:1 SUBSTITUTION)	-	-	-	-	-	-	-	-	-
SHRUBS (10:1 SUBSTITUTION)	-	-	-	-	-	-	-	-	-
DESCRIBE PLANT SUBSTITUTION CREDITS BELOW IF NEEDED									

\* SUBSTITUTE 2 EVERGREEN TREES FOR 1 SHADE TREE IN PERIMETER 6.  
\*\* CREDIT FOR SPECIMEN TREE SHOWN IN PERIMETER 5.

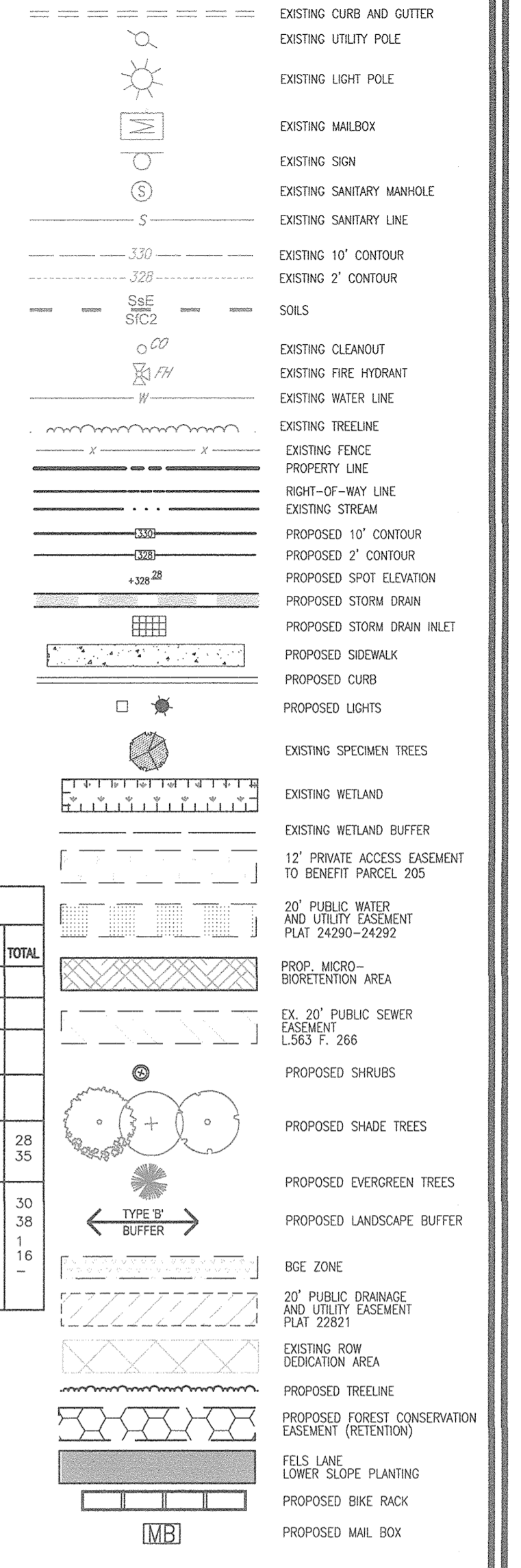
**LANDSCAPE SCHEDULE - REQUIRED PLANTING**

KEY	QUAN.	BOTANICAL NAME	SIZE	CAT
GP	25	QUERCUS PALMISTAE 'GREEN PILLAR'	12" HGT. MIN.	B & B
GT	5	GLENDISTIA TRIACANTHOS 'IMPERIAL'	2.5"-3" CAL	B & B
GT	5	IMPERIAL THORNLESS HONEYSUCKER	2.5"-3" CAL	B & B
QP	8	QUERCUS PHellos	2.5"-3" CAL	B & B
QR	14	QUERCUS RUBRA	2.5"-3" CAL	B & B
SJ	10	NORTHERN RED OAK	10" HGT. MIN.	B & B
SJ	10	SYRAC JAPONICUS	10" HGT. MIN.	B & B
ER	10	CERCIS CANADENSIS	8" HGT. MIN.	B & B
ER	10	EASTERN REDBUD	8" HGT. MIN.	B & B
IN	14	ILEX X 'NELLIE R. STEVENS'	8" HGT. MIN.	B & B
LC	23	CUPRESSOCYPARIS LEYLANDI	10" HGT. MIN.	B & B
TO	7	WHITE CEDAR	6"-8" HT.	B & B
AL	8	AMELANCHIER LAEVIS	8" HGT. MIN.	B & B
AL	8	SERVICEBERRY / AMELANCHIER	8" HGT. MIN.	B & B
TM	20	TAXUS MEDIA 'BENSIFORMIS' / DENSIFORMIS 'NEW'	2 1/2"-3" HGT.	B & B

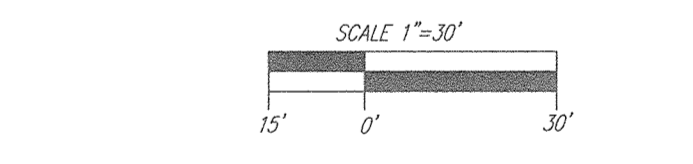
**PARKING LOT INTERVAL LANDSCAPING**

NUMBER OF PARKING SPACES	107
NUMBER OF TREES REQUIRED	11
NUMBER OF TREES PROVIDED	9
SHADE TREES (2:1 SUBSTITUTION)	6
EVERGREEN TREES (2:1 SUBSTITUTION)	3
SHRUBS (10:1 SUBSTITUTION)	20

**LEGEND:**



NO AS-BUILT INFORMATION ON THIS SHEET



**OWNER:** HOWARD COUNTY HOUSING COMMISSION, 9770 PATUXENT WOODS DR., SUITE 100, COLUMBIA, MD 21096, (410) 313-6320

**DEVELOPER:** STAVROU ASSOCIATES, INC., 2661 RIVA ROAD, SUITE 300, ANNAPOLIS, MD 21401, (410) 571-6610

3	REVISE TO MODIFY FRONTAGE IMPROVEMENTS TO REMOVE SIDEWALK, ADD CURBING, AND ADJUST STORM DRAIN WITHIN FELLS LANE	11/07/18
2	REVISE OUTFALL ALONG FELLS LANE TO CONNECT TO CAP. PROJ. D-2411-43; REVISE WHC PROFILES TO LOTS 2 & 3.	01/16/18
1	REVISE TO RELOCATE THE PROPOSED WHIC TO BUILDING 1.	11/01/17
NO.	REVISION	DATE

REVISED SITE DEVELOPMENT PLAN

**LANDSCAPE PLAN**

**BURGESS MILL STATION PH II**

A DEVELOPMENT OF THE ELLICOTT CITY TERRACE APARTMENTS

TAX MAP 25 BLOCK 7 ZONED: R-A-15 PARCEL 120, PARCEL A 2ND ELECTION DISTRICT L11702/F:63 HOWARD COUNTY, MARYLAND

**ROBERT H. VOGEL ENGINEERING, INC.**

ENGINEERS • SURVEYORS • PLANNERS

3300 N. RIDGE ROAD, SUITE 110 ELLICOTT CITY, MD 21143

TEL: 410.461.7666 FAX: 410.416.8961

**PROFESSIONAL CERTIFICATE**

DESIGN BY: DZE

DRAWN BY: DZE/MR/KC

CHECKED BY: RHV

DATE: NOV 2018

SCALE: AS SHOWN

W.O. NO.: 12-53

15 SHEET OF 30

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

*Chad Edmund* 12-2-18  
CHIEF, DEVELOPMENT ENGINEERING DIVISION 4 DATE

*Kent Schaefer* 3-4-19  
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

*William Jagan* 3-4-19  
DIRECTOR DATE

**DEVELOPER'S/BUILDER'S CERTIFICATE**

I/WE CERTIFY THAT THE LANDSCAPING SHOWN ON THIS PLAN WILL BE DONE ACCORDING TO THE PLAN, SECTION 18.124 OF THE HOWARD COUNTY CODE AND THE HOWARD COUNTY LANDSCAPE MANUAL. I/WE FURTHER CERTIFY THAT UPON COMPLETION, A CERTIFICATION OF LANDSCAPE INSTALLATION, ACCOMPANIED BY AN EXECUTED ONE (1) YEAR GUARANTEE OF PLANT MATERIALS, WILL BE SUBMITTED TO THE DEPARTMENT OF PLANNING AND ZONING.

*Cynthia A. Linnich* Chief, Dev. Finance and Project Mgmt. 11/19/18  
SIGNATURE OF DEVELOPER DATE

**PLAN VIEW**

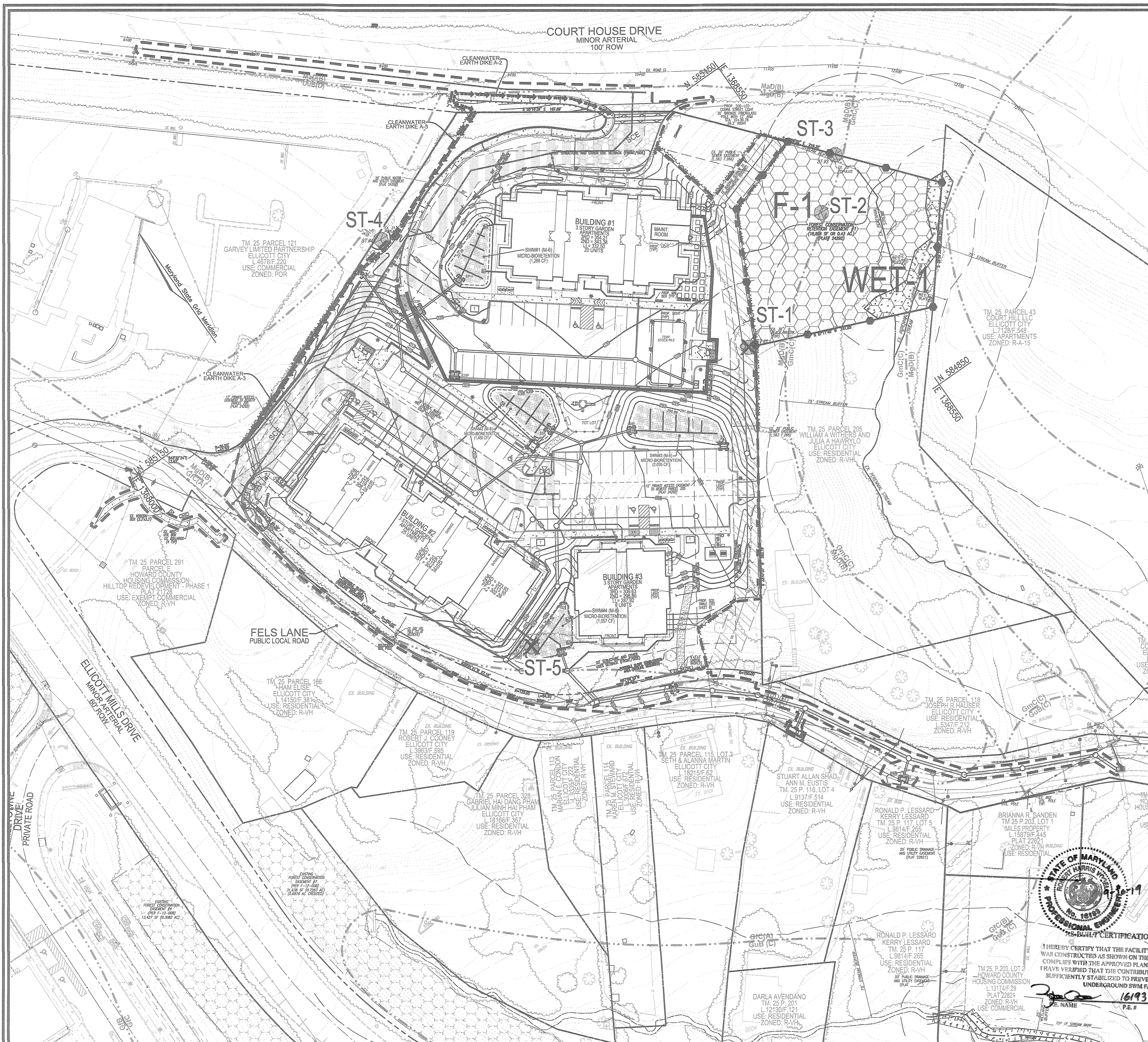
SCALE: 1"=30'

**PLANT SCHEDULE: Fells Lane Lower Slope**

Quantity	BOTANICAL NAME	Common Name	SIZE	Condition	Form	Spacing	Species Notes
100	Rhus copallinum	DWARF Flaming/Shining Sumac	gallon MIN	Container	Full, vigorous, evenly branching	Full, vigorous, evenly branching	Plant height according to container size, slope, access, and depth of soil. Plant in shade, access, and depth of soil.
60	Viburnum acerifolium	Mopeloid Viburnum	5 gallon	Container	Full, vigorous, evenly branching	Full, vigorous, evenly branching	Plant height according to container size, slope, access, and depth of soil. Plant in shade, access, and depth of soil.
15	Lindera benzoin	Spicebush	5 gallon	Container	Full, vigorous, evenly branching	Full, vigorous, evenly branching	Plant height according to container size, slope, access, and depth of soil. Plant in shade, access, and depth of soil.
8	Amelanchier laevis	Serviceberry / Amelanchier	10 gallon	Container	Multiple trunk (2-3 leaders), Full, vigorous	Multiple trunk (2-3 leaders), Full, vigorous	Plant height according to container size, slope, access, and depth of soil. Plant in shade, access, and depth of soil.
8	Cercis canadensis	Eastern Redbud	10 gallon	B&B/Container	Multiple trunk (2-3 leaders), Full, vigorous	Multiple trunk (2-3 leaders), Full, vigorous	Plant height according to container size, slope, access, and depth of soil. Plant in shade, access, and depth of soil.

THE PLANTS THAT ARE PART OF THIS SCHEDULE ARE RESPONSES TO SPECIFIC REQUESTS BY THE COMMUNITY, ARE IN ADDITION TO THE BONDED PLANTS NOTED IN OTHER PLANT SCHEDULES, AND ARE NOT PART OF THE SECURITY BOND. THE AREA IS THAT BETWEEN THE EROSION AND SEDIMENT CONTROL FENCE AND THE NEW SIDEWALK ALONG FELLS LANE. DUE TO THE EXTREME SLOPES, VISIBLE PRESENCE OF ROCK, DRY CONDITIONS, AND THE PRESENCE OF PLANTS TO BE PLANTED IN THIS AREA, THE PLANTS SPECIFICATIONS REQUIRE SMALL PLANTS WITH MINIMAL ROOT MASS. 2) CONTRACTOR IS TO DISTURB AS LITTLE OF THE EXISTING VEGETATION AS POSSIBLE WHEN PLANTING. 3) PLANTS WILL BE FIELD LOCATED ACCORDING TO BEST PLANTING CONDITIONS AND AESTHETIC ARRANGEMENT; AND 4) EXISTING TREES WHOSE LEADERS HAVE BEEN CUT BY BGE, LEAVING THEM UNSIGHTLY, SHALL BE REMOVED; HOWEVER, THEY SHALL NOT BE GRUBBED AND INSTEAD, THEIR ROOT BALLS LEFT IN PLACE TO MAINTAIN SOIL STRUCTURE AND PREVENT EROSION. CONTRACTOR IS TO CUT THEM AS CLOSE TO THE GROUND AS POSSIBLE. 5) APPLY 6X COTTONSUCKER OR OTHER SUITABLE HERBICIDE TO CUT STEMS (FULLY COVERING CUT SURFACES). C) REAPPLY HERBICIDE IF ANY NEW GROWTH APPEARS, APPLYING TO BOTH STEMS AND ANY LEAVES, AND D) ASSESS THE FOLLOWING SEASON AND RETREAT UNTIL NO NEW GROWTH APPEARS. IT IS RECOMMENDED THAT THE PLANTS NOTED BELOW IN THIS FELLS LANE LOWER SLOPE PLANT SCHEDULE ARE PLANTED AS FOLLOWS: A) IN SEASON #1, PLANT HALF OF THE TOTAL QUANTITIES NOTED FOR EACH SPECIES, AND B) IN SEASON #2, ASSESS THE SURVIVAL AND CONDITION OF PLANTS INSTALLED SEASON #1, AND PLANT THE REMAINING HALF OF THE PLANTS, ADJUSTING THE PLANT SPECIES, IF NECESSARY.

AS-BUILT - JUNE 2019



**LEGEND:**

- EXISTING CURB AND GUTTER
- EXISTING UTILITY POLE
- EXISTING LIGHT POLE
- EXISTING MAILBOX
- EXISTING SIGN
- EXISTING SANITARY MANHOLE
- EXISTING SANITARY LINE
- EXISTING 10" CONTOUR
- EXISTING 2" CONTOUR
- SOILS
- EXISTING CLEANOUT
- EXISTING FIRE HYDRANT
- EXISTING WATER LINE
- EXISTING TREETRUNK
- EXISTING FENCE
- PROPERTY LINE
- RIGHT-OF-WAY LINE
- EXISTING STREAM
- PROPOSED 10" CONTOUR
- PROPOSED 2" CONTOUR
- PROPOSED STORM DRAIN
- PROPOSED STORM DRAIN INLET
- PROPOSED SIDEWALK
- PROPOSED CURB
- PROPOSED LIGHTS
- FOREST CONSERVATION SIGNS
- PROPOSED FOREST CONSERVATION EASEMENT (RETENTION)
- EXISTING WETLAND
- EXISTING WETLAND BUFFER
- 12' PRIVATE ACCESS EASEMENT TO BENEFIT PARCEL 205
- 20' PUBLIC WATER AND UTILITY EASEMENT
- 20' PUBLIC SEWER EASEMENT
- 1.663 F. 266
- PROPOSED TREETRUNK
- PROPOSED BIKE RACK
- PROPOSED MAIL BOX

**VICINITY MAP**  
SCALE: 1"=1000'  
ADC MAP COORDINATES: 4816/B7

**BENCHMARKS**  
HOWARD COUNTY BENCHMARK 25A1  
N 586,557.546 E 1,365,847.098 ELEV.: 396.343'  
HOWARD COUNTY BENCHMARK 25A2  
N 587,502.729 E 1,365,556.377 ELEV.: 348.145'

**NO AS-BUILT INFORMATION ON THIS SHEET**

**OWNER**  
HOWARD COUNTY HOUSING COMMISSION  
9770 PATUXENT WOODS DR., SUITE 100  
COLUMBIA, MD 21046  
C/O PETER ENGEL  
(410) 313-6320

**DEVELOPER**  
STAVROU ASSOCIATES, INC.  
2661 RIVA ROAD  
SUITE 320  
ANNAPOLIS, MD 21401  
C/O SCOTT N. LINK  
(410) 571-6610

NO.	REVISION	DATE
3	REVISE TO MODIFY FRONTAGE IMPROVEMENTS TO REMOVE SIDEWALK, ADD CURBING, AND ADJUST STORM DRAIN WITHIN FELLS LANE	11/07/18
2	REVISE OUTFALL ALONG FELLS LANE TO CONNECT TO CAP. PROJ. D-2411-43; REVISE WHC PROFILES TO LOTS 2 & 3.	01/16/18
1	REVISE TO RELOCATE THE PROPOSED WHC TO BUILDING 1.	11/01/17

**REVISED SITE DEVELOPMENT PLAN**

**FOREST CONSERVATION PLAN**

**BURGESS MILL STATION PH II**  
APARTMENTS  
A REDEVELOPMENT OF THE ELLICOTT CITY TERRACE APARTMENTS  
TAX MAP 25 BLOCK 7 PARCEL 120, PARCEL A  
2ND ELECTION DISTRICT ZONED: R-A-15 L11702F.63 HOWARD COUNTY, MARYLAND

**ROBERT H. VOGEL ENGINEERING, INC.**  
ENGINEERS • SURVEYORS • PLANNERS  
3300 N. RIDGE ROAD, SUITE 110 TEL: 410.461.7666  
ELLICOTT CITY, MD 21043 FAX: 410.461.9961

**PROFESSIONAL CERTIFICATE**

DESIGN BY: DZE  
DRAWN BY: DZE/MR/KG  
CHECKED BY: RHV  
DATE: NOV 2018  
SCALE: AS SHOWN  
W.O. NO.: 12-53

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A FULLY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193 EXPIRATION DATE: 06-27-2020

16 SHEET OF 30

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

*[Signature]* 12-2-18  
CHIEF, DEVELOPMENT ENGINEERING DIVISION  
DATE

*[Signature]* 3-4-19  
CHIEF, DIVISION OF LAND DEVELOPMENT  
DATE

*[Signature]* 3-4-19  
DIRECTOR

**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, A CERTIFICATION OF LANDSCAPE INSTALLATION, ACCOMPANIED BY AN EXECUTED ONE (1) YEAR GUARANTEE OF PLANT MATERIALS, WILL BE SUBMITTED TO THE DEPARTMENT OF PLANNING AND ZONING.

*[Signature]* Chief, Dev. Planning  
11/19/18  
SIGNATURE OF DEVELOPER DATE

**PLAN VIEW**  
SCALE: 1"=40'

**SOILS LEGEND**  
HOWARD COUNTY SOILS MAP #14

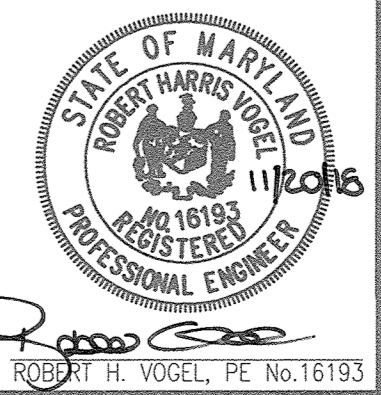
SYMBOL	NAME / DESCRIPTION	GROUP	K FACTOR	ERODIBLE
S1C	GLAUCOSE-URBAN LAND COMPLEX, 8 TO 10 PERCENT SLOPES	A	0.24	NO
MdD	MANOR-BANNERTOWN SANDY LOAMS, 15 TO 25 PERCENT SLOPES, ROCKY	B	0.24	YES
GmC	GLAUCOSE LOAM, 8 TO 15 PERCENT SLOPES	C	0.43	YES

**AS-BUILT CERTIFICATION FOR PSWM**

I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND COMPLIES WITH THE APPROVED PLANS AND SPECIFICATIONS. I HAVE VERIFIED THAT THE CONTRIBUTING DRAINAGE AREA IS SUFFICIENTLY STABILIZED TO PREVENT CLOGGING OF THE UNDERGROUND SWIM FACILITY.

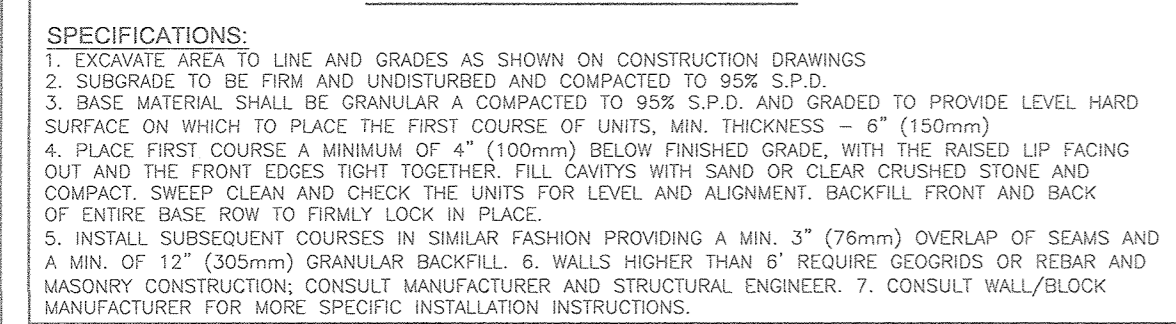
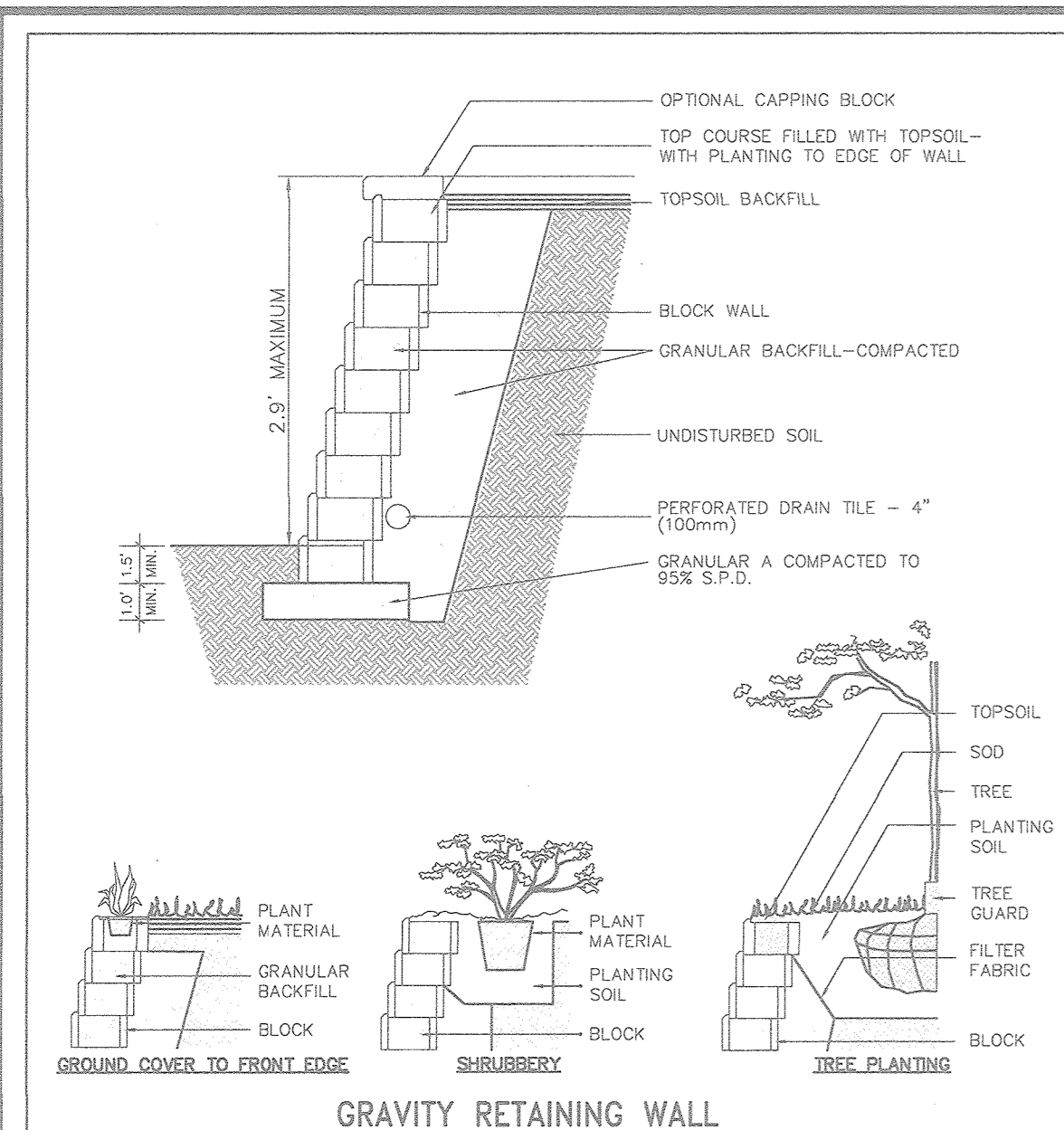
*[Signature]* 16193 9-20-19  
P.E. # DATE

**Eco-Science Professionals, Inc.**  
Consulting Ecologists  
P.O. Box 5006 Glen Arm, Maryland 21087 Telephone (410) 832-3480 Fax (410) 832-3488



**AS-BUILT - JUNE 2019**

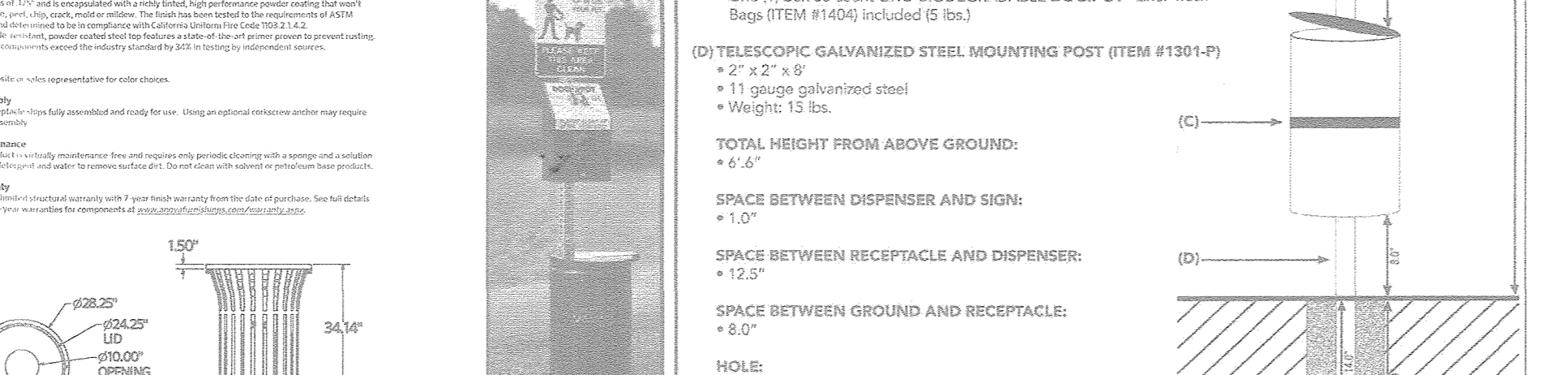
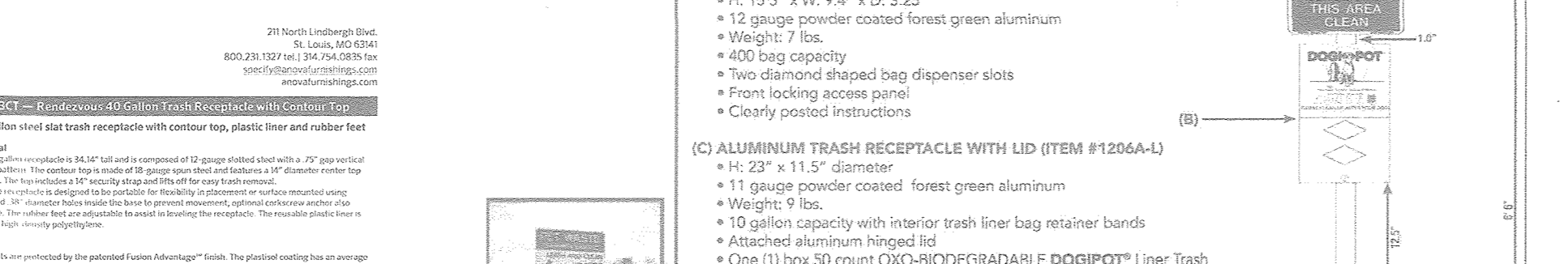
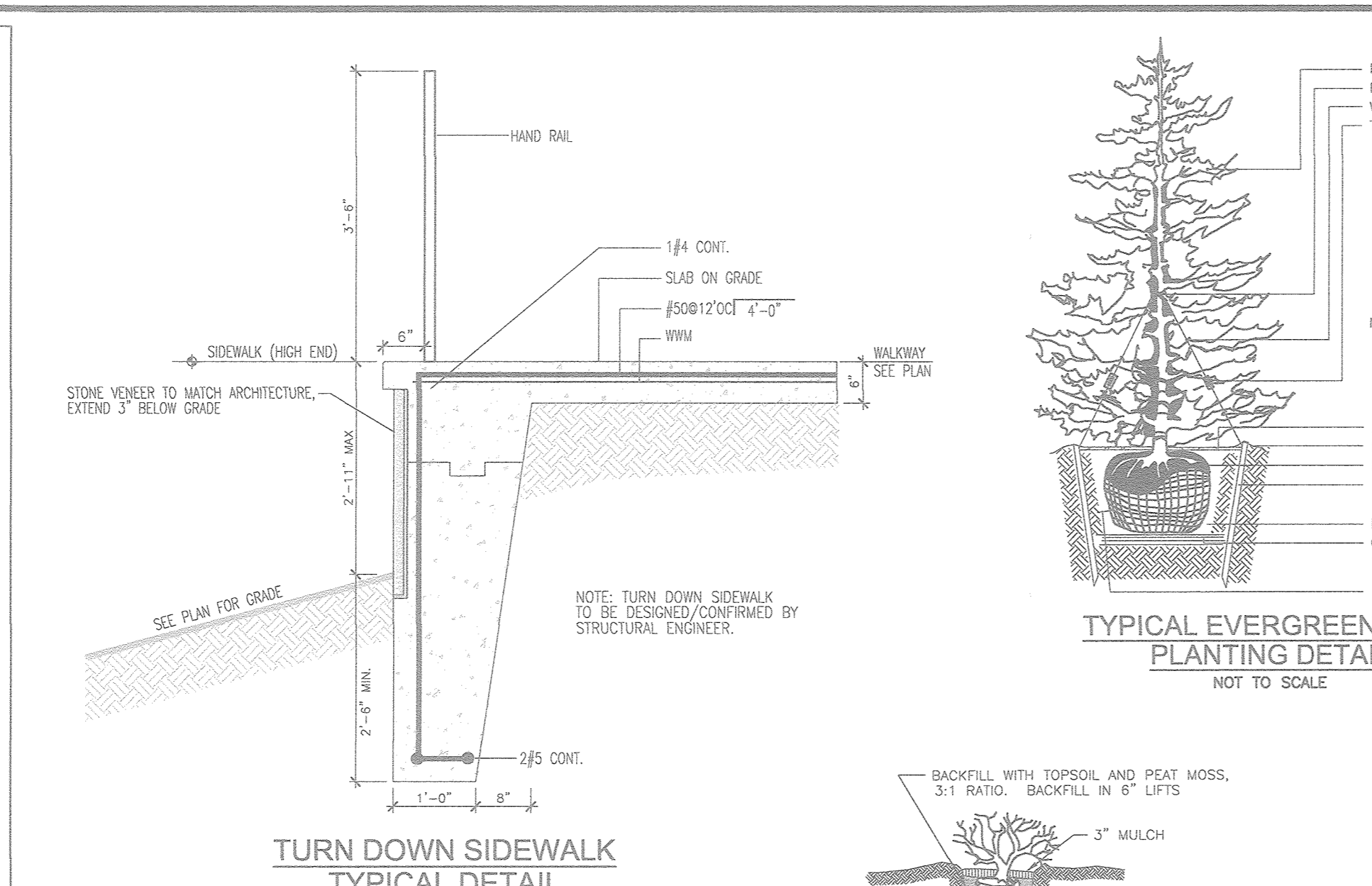




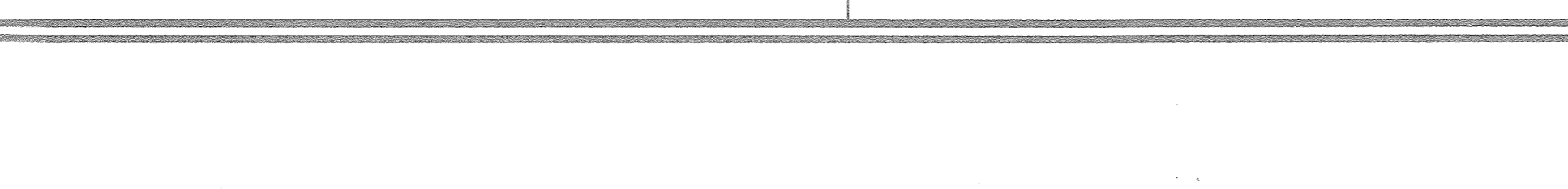
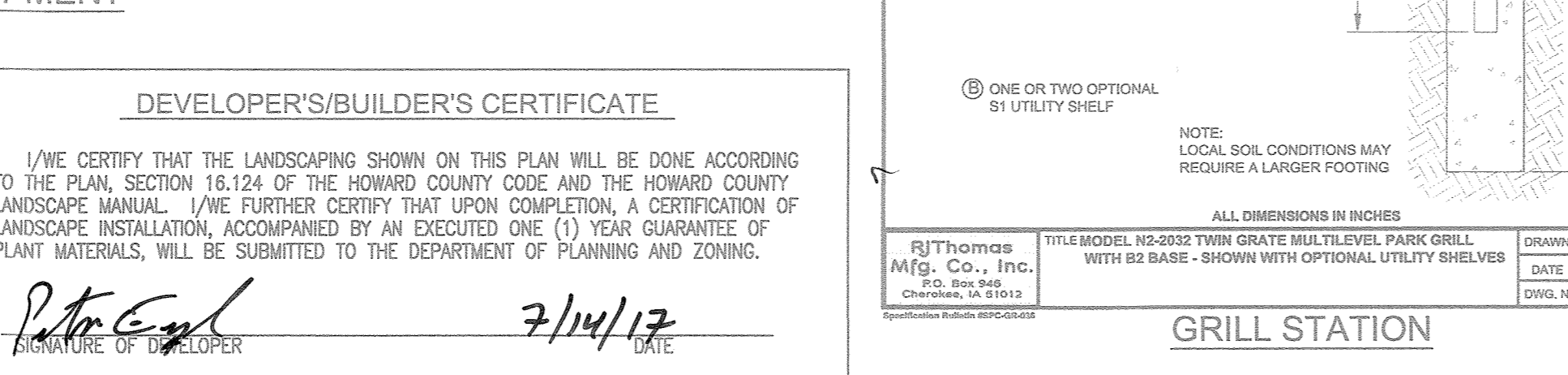
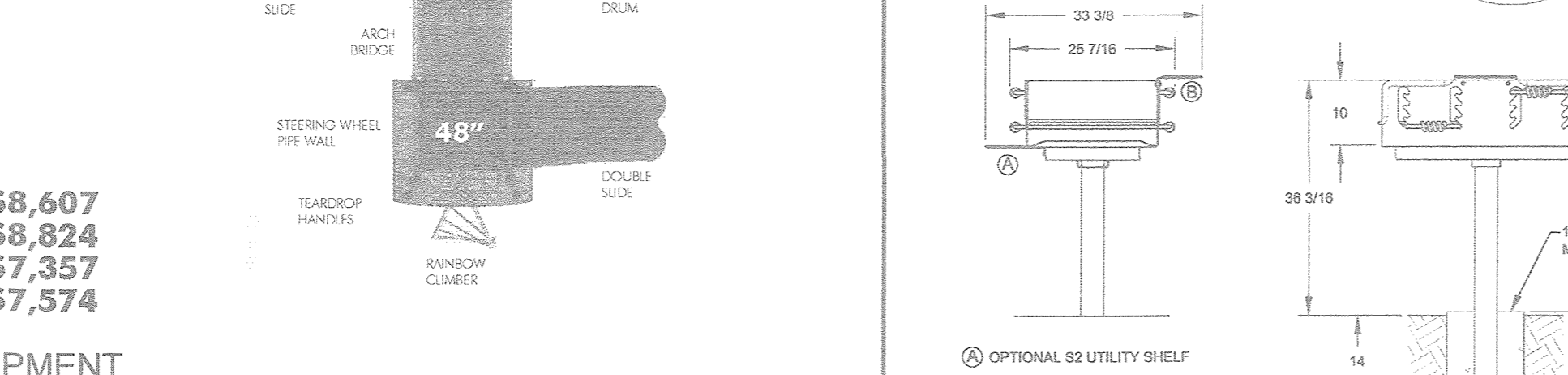
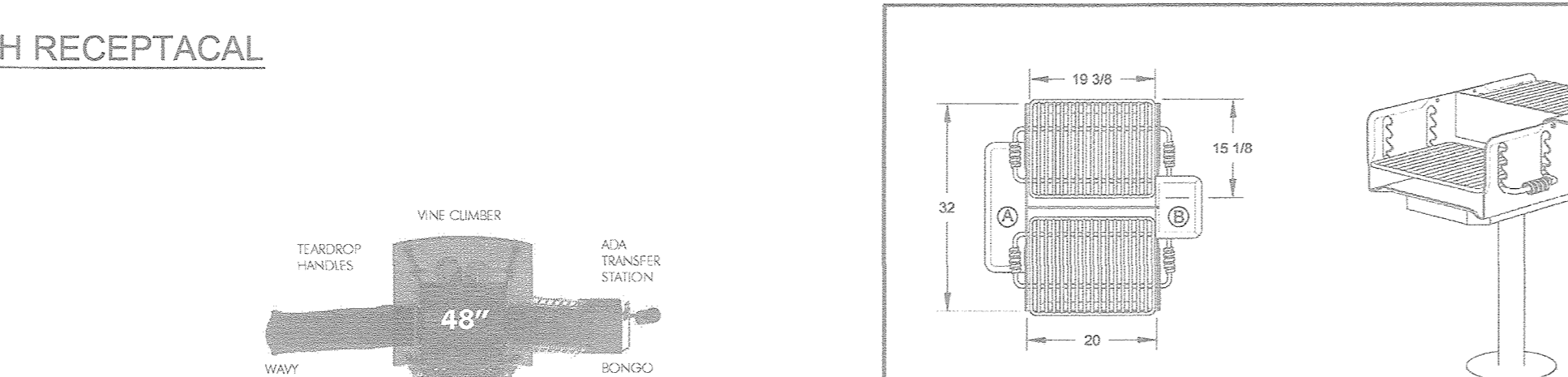
**TYP. NON-STRUCTURAL WALL OR EQUAL**

**SPECIFICATIONS:**

- EXCAVATE AREA TO LINE AND GRADES AS SHOWN ON CONSTRUCTION DRAWINGS
- SUBGRADE TO BE FIRM AND UNDISTURBED AND COMPACTED TO 95% S.P.D.
- BASE MATERIAL SHALL BE GRANULAR A COMPACTED TO 95% S.P.D. AND GRADED TO PROVIDE LEVEL HARD SURFACE ON WHICH TO PLACE THE FIRST COURSE OF UNITS. MIN. THICKNESS = 4" (100mm)
- PLACE FIRST COURSE A MINIMUM OF 4" (100mm) BELOW FINISHED GRADE, WITH THE RAISED UP FACING OUT AND THE FRONT EDGES TIGHT TOGETHER. FILL CAVITIES WITH SAND OR CLEAR CRUSHED STONE AND COMPACT. SWEEP CLEAN AND CHECK THE UNITS FOR LEVEL AND ALIGNMENT. BACKFILL FRONT AND BACK OF ENTIRE BASE ROW TO FIRMLY LOCK IN PLACE.
- INSTALL SUBSEQUENT COURSES IN SIMILAR FASHION PROVIDING A MIN. 3" (76mm) OVERLAP OF SEAMS AND A MIN. OF 12" (305mm) GRANULAR BACKFILL. 6. WALLS HIGHER THAN 6' REQUIRE GEOTECHNICAL REPORTS AND MASONRY CONSTRUCTION; CONSULT MANUFACTURER AND STRUCTURAL ENGINEER. 7. CONSULT WALL/BLOCK MANUFACTURER FOR MORE SPECIFIC INSTALLATION INSTRUCTIONS.



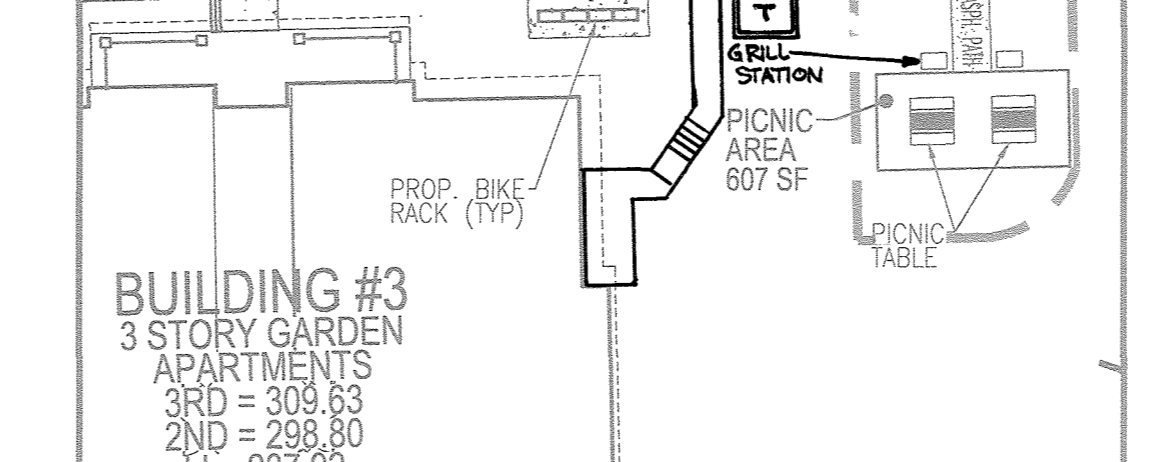
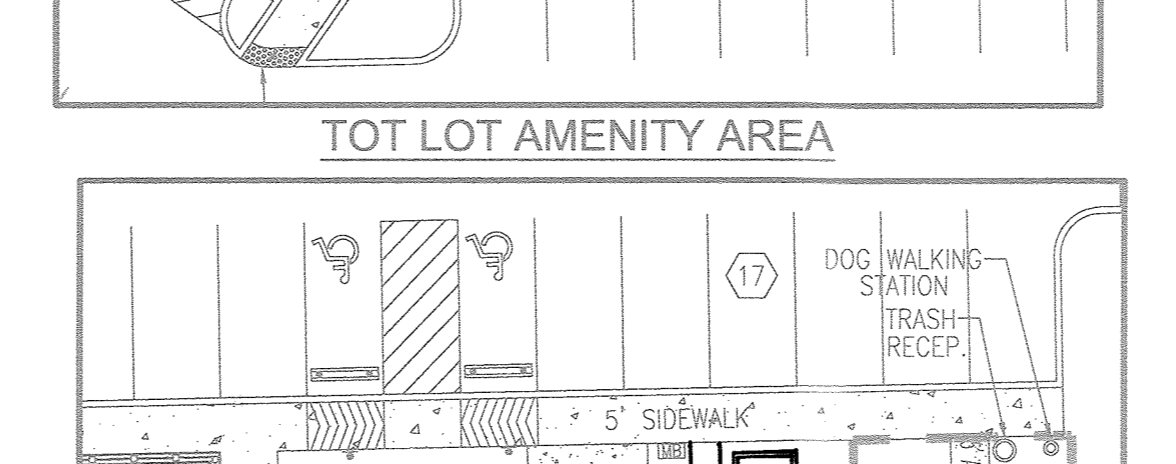
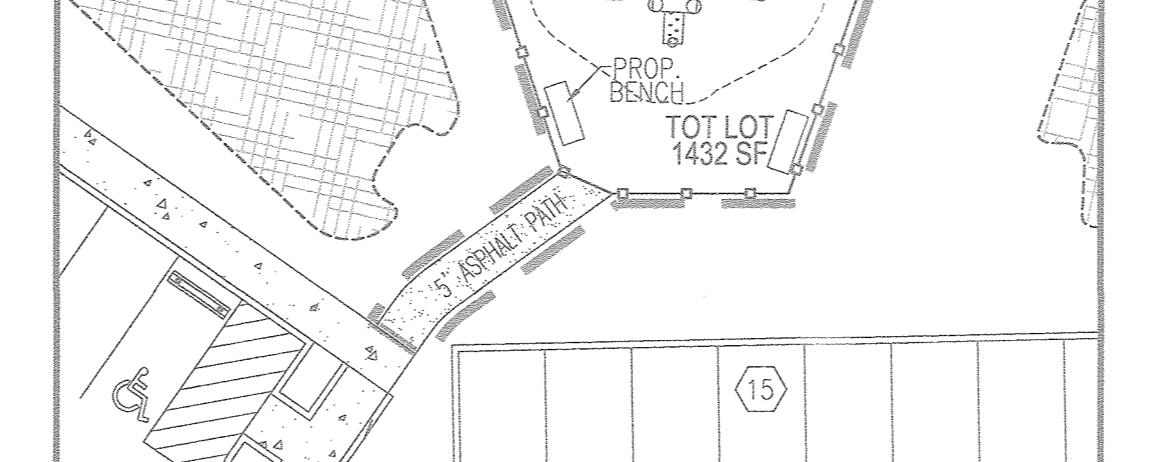
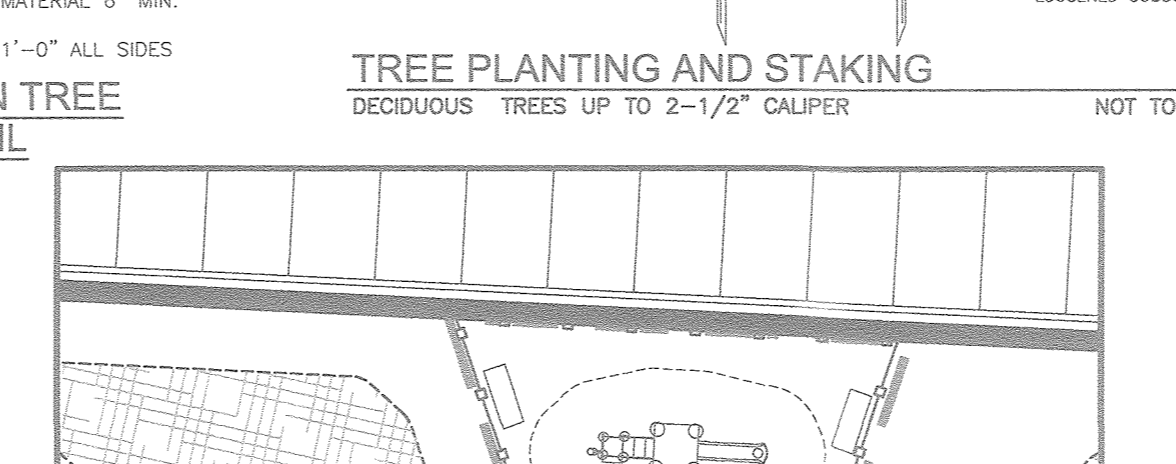
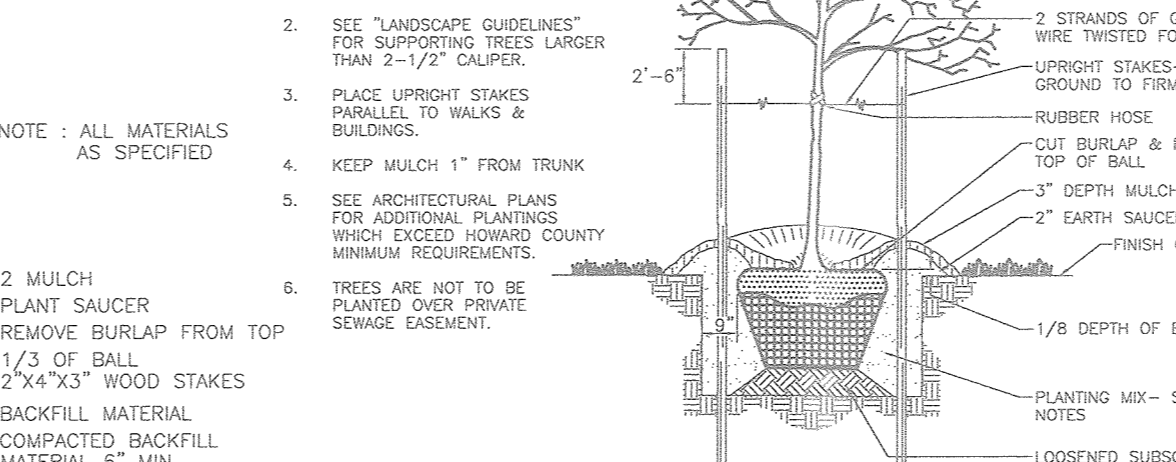
Key	Community	Acreage	Dominant Vegetation	General Condition	Priority
P1	Poplar	0.8	Liriodendron tulipifera, Acer saccharinum, Acer negundo, Platanus occidentalis, Robinia pseudo-acacia	Good	0.6 slopes



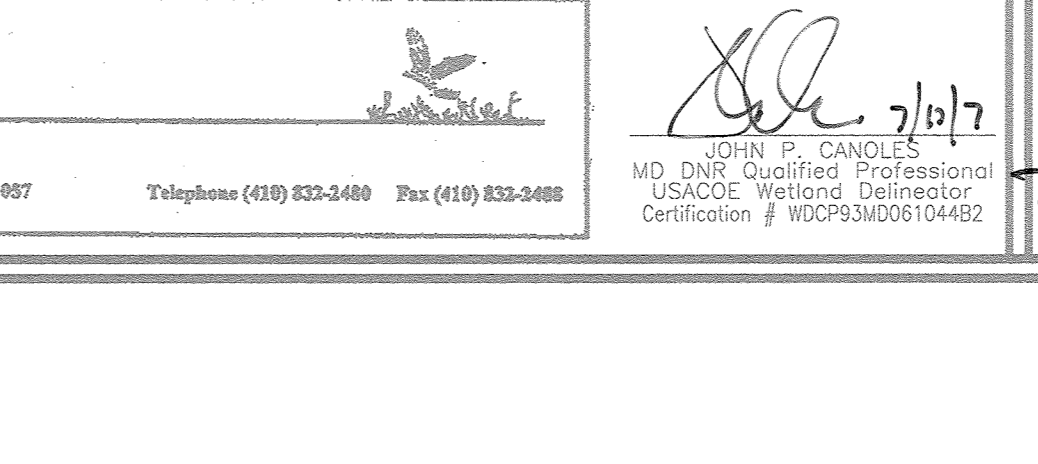
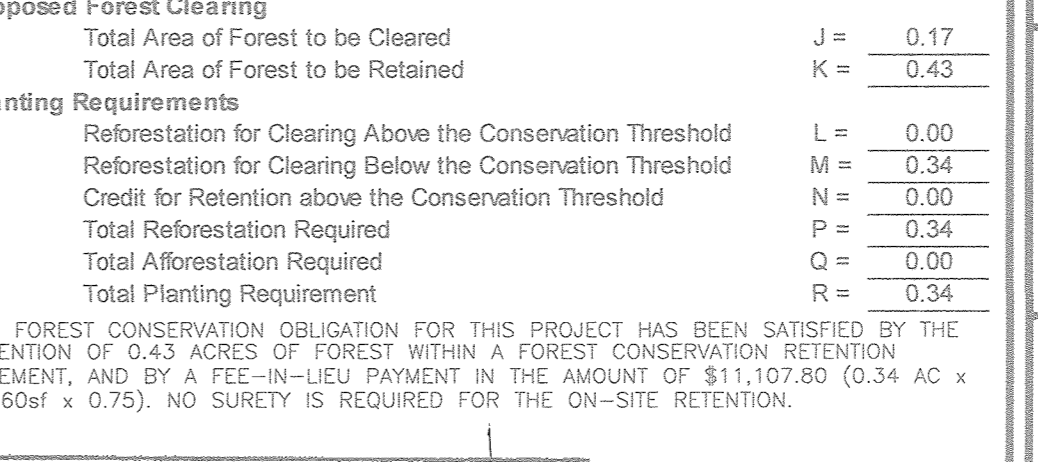
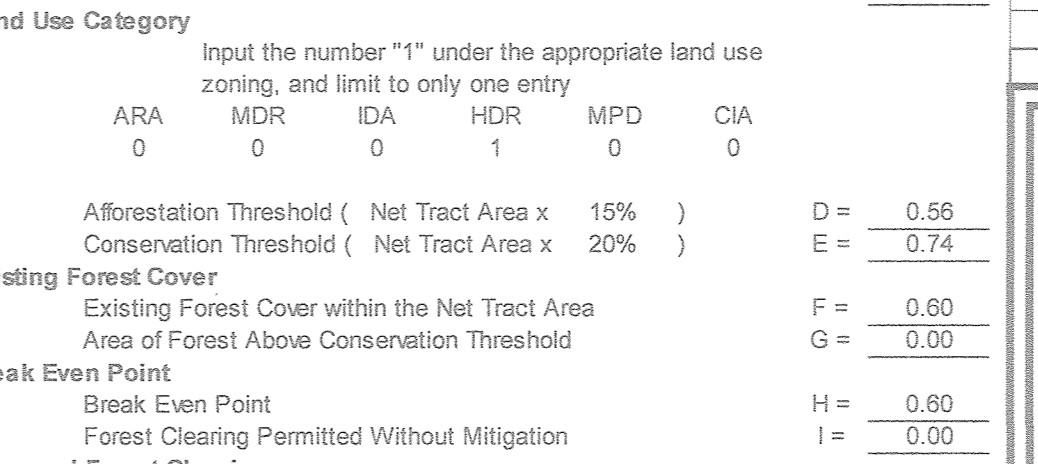
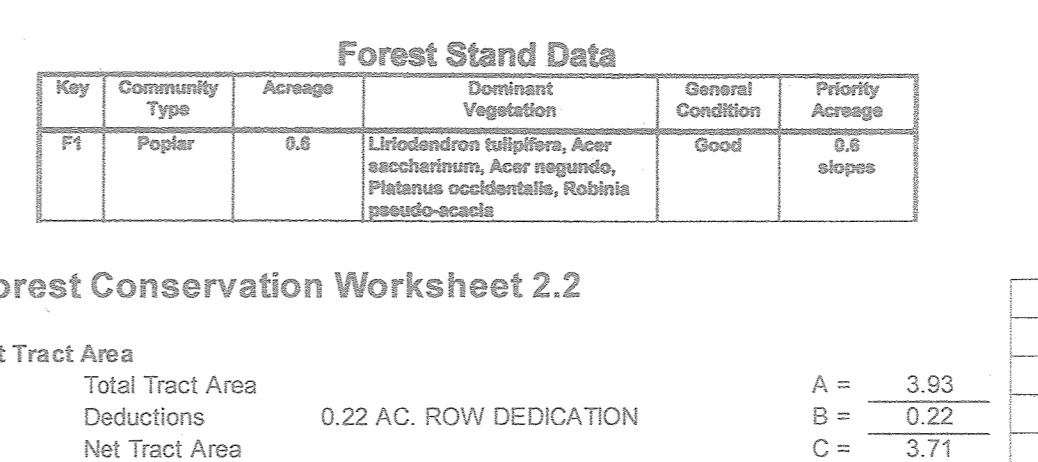
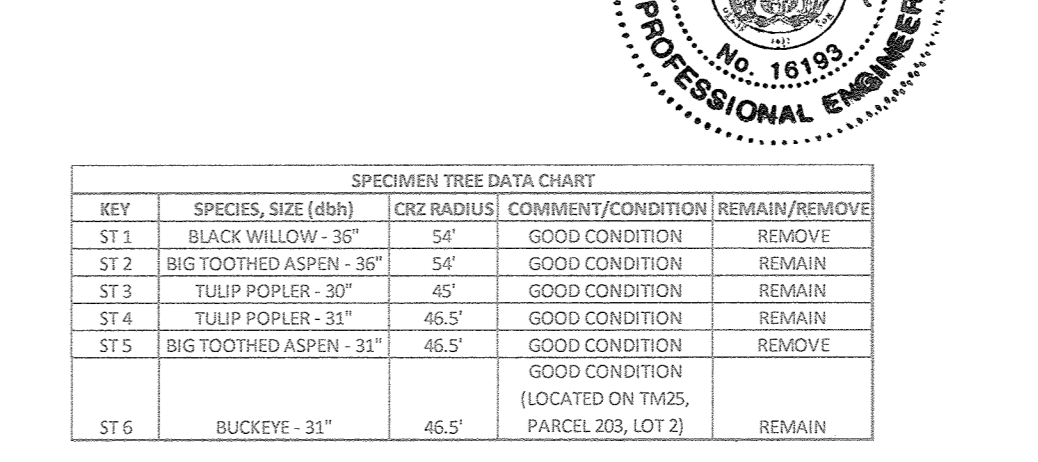
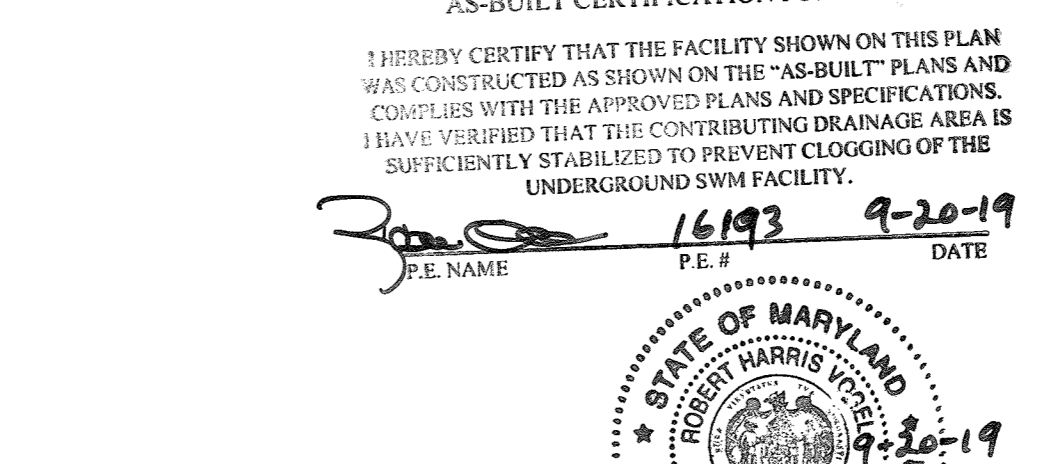
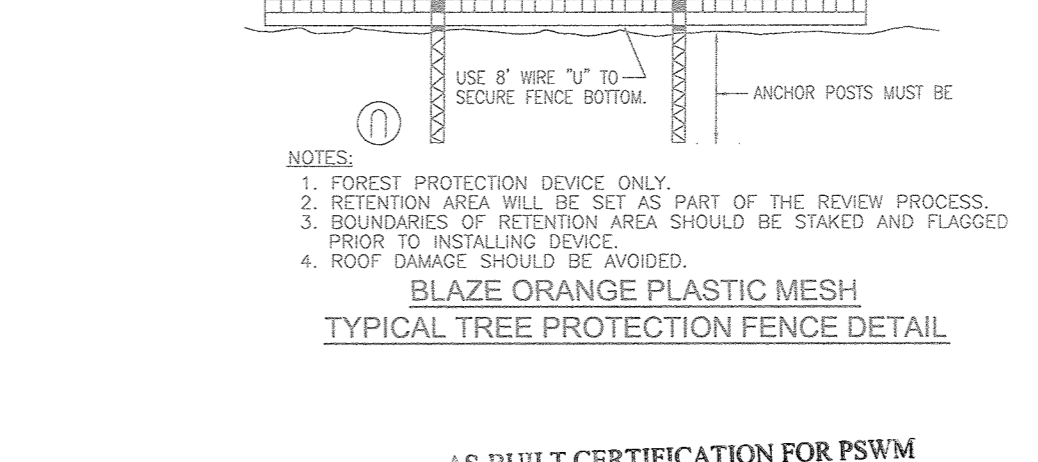
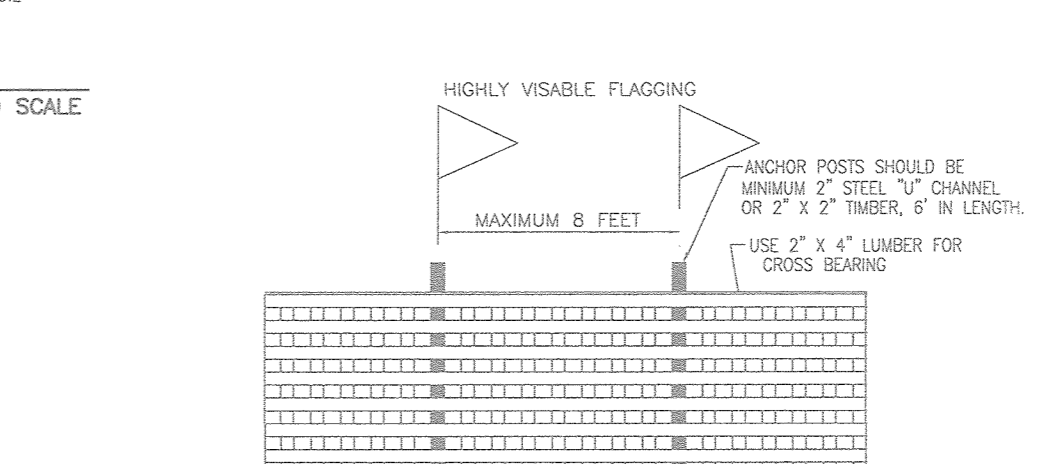
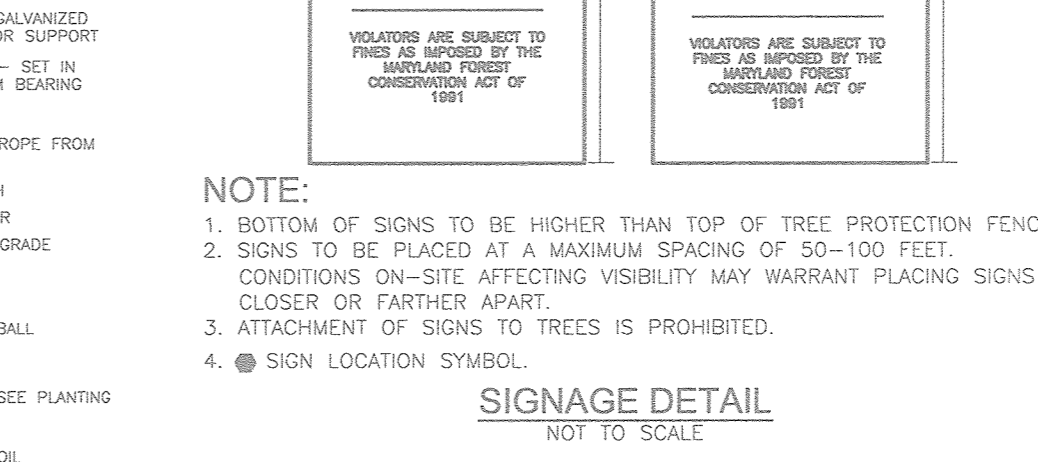
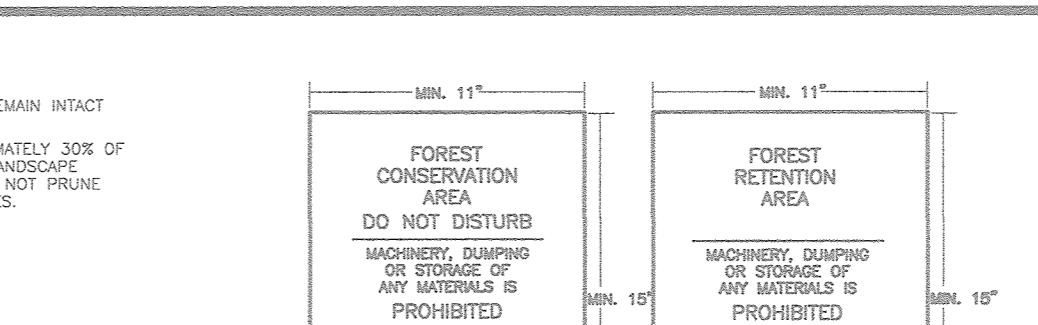
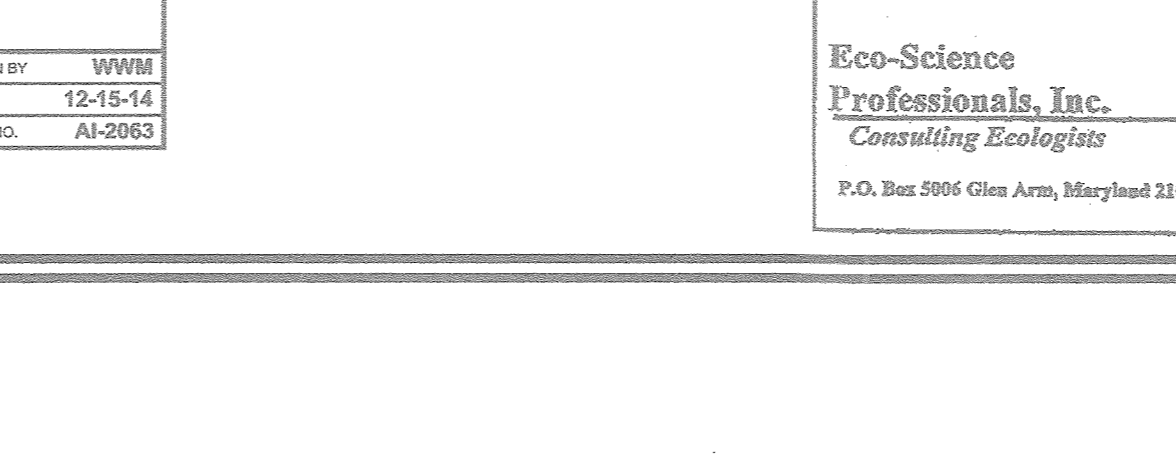
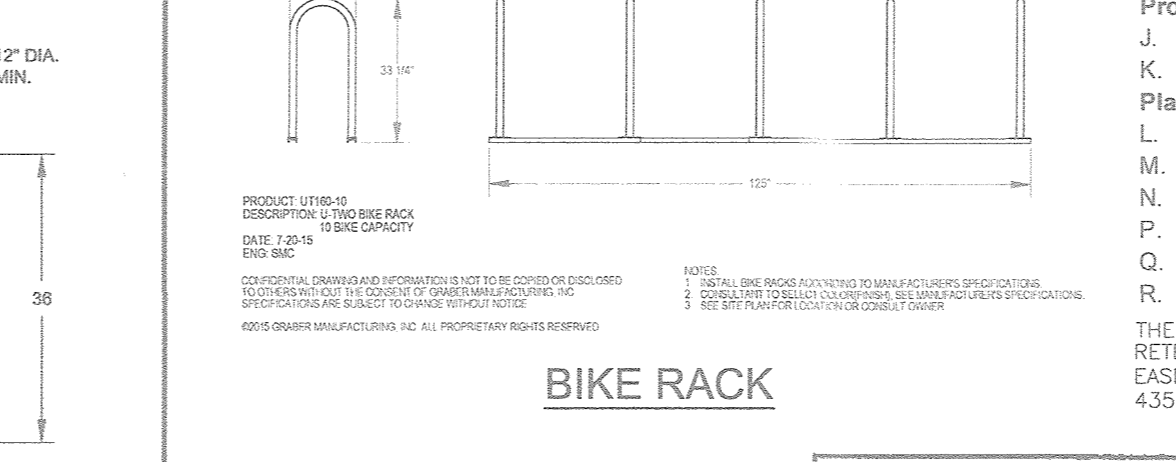
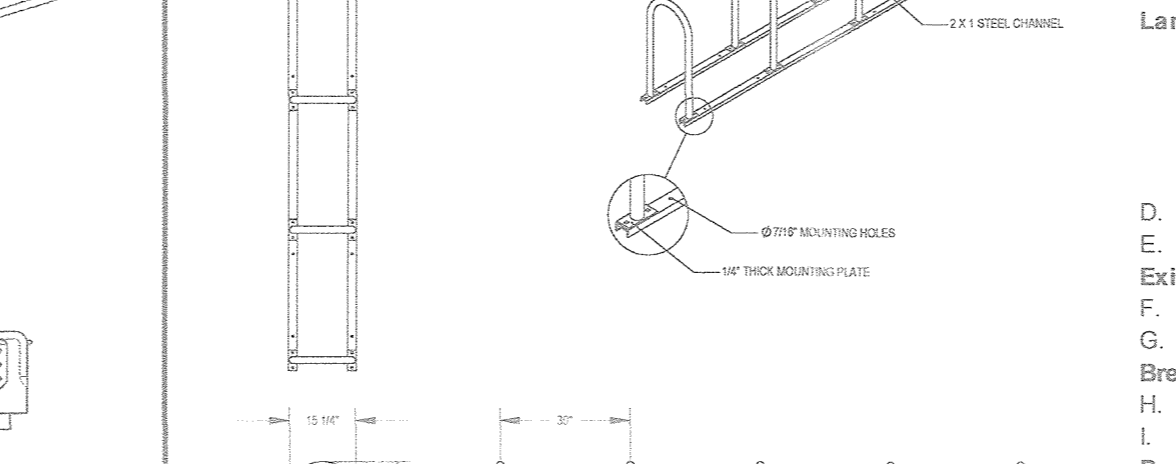
**TYP. NON-STRUCTURAL WALL OR EQUAL**

**SPECIFICATIONS:**

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Key	Species, Size (dbh)	(CIR RADIUS)	COMMENT/CONDITION	REMAIN/REMOVE
ST 1	BLACK WILLOW - 36"	5'	GOOD CONDITION	REMOVE
ST 2	BIG TOOTHED ASPEN - 36"	5'	GOOD CONDITION	REMAIN
ST 3	TULIP POPLAR - 30"	45'	GOOD CONDITION	REMAIN
ST 4	TULIP POPLAR - 31"	46.5'	GOOD CONDITION	REMAIN
ST 5	BIG TOOTHED ASPEN - 31"	46.5'	GOOD CONDITION	REMOVE
ST 6	BUCKEYE - 31"	46.5'	GOOD CONDITION	REMAIN



**FOREST CONSERVATION NOTES:**

**PRE-CONSTRUCTION ACTIVITIES**

- PRIOR TO THE START OF ANY CONSTRUCTION DEFINE THE LIMITS OF DISTURBANCE AND THE SOIL PROTECTION ZONE (CRITICAL ROOT AREA) FOR THE FOREST RETENTION AREAS. (SEE APPENDIX 'G' OF THE HOWARD COUNTY FOREST CONSERVATION MANUAL).
- PRIOR TO THE START OF ANY CONSTRUCTION (INCLUDING CLEARING) ADJACENT TO THE SOIL PROTECTION ZONE, INSTALL BLAZE ORANGE FENCING.
- INSTALL ALL FOREST CONSERVATION AREA SIGNS AS SHOWN ON THIS SDP AND/OR POP.
- ALL SEDIMENT CONTROL DEVICES SHALL BE IN PLACE PRIOR TO CONSTRUCTION TO PREVENT SEDIMENT FROM ENTERING THE FOREST CONSERVATION AREAS. SUPER SILT FENCE SHALL BE INSTALLED ON THE UPHILL SIDE OF ALL FOREST RETENTION AREAS, AND ALSO OF THE LOD OR LESS OF RETENTION AREA. ALL FENCING, BLAZE-ORANGE OR SUPER SILT SHALL BE CLEANED AND MAINTAINED IN GOOD CONDITION AND PROMPTLY REPAIRED OR RESTORED AS SITUATION WARRANTS ON A REGULAR BASIS THROUGH THE CONSTRUCTION PERIOD.
- A QUALIFIED TREE CARE EXPERT SHALL DETERMINE IF ROOT PRUNING IS REQUIRED ALONG THE LIMIT OF DISTURBANCE. ROOT PRUNING TREES AS REQUIRED. WATER ANY ROOT-PRUNED TREES IMMEDIATELY AFTER ROOT-PRUNING AND MONITOR FOR SIGNS OF STRESS DURING CONSTRUCTION.

**CONSTRUCTION PHASE**

- DURING CONSTRUCTION, MONITOR ANY UNAUTHORIZED USE OF FOREST RETENTION AREAS. ANY USE OF FOREST RETENTION AREAS FOR THE FOLLOWING ACTIVITIES OR OTHER INTRUSIONS SHALL BE A VIOLATION OF THE APPROVED FOREST CONSERVATION PLAN:
  - STORAGE OF EQUIPMENT AND MATERIALS
  - DISPOSAL OF CONSTRUCTION MATERIALS
  - WASHING OF EQUIPMENT, DISPOSAL OF WASTEWATER FROM CONCRETE OPERATIONS, ETC. - EMPLOYEE
- TEMPORARY STRUCTURES SUCH AS TRAILERS, SANITARY FACILITIES, ETC.
  - SOIL COMPACTION
  - ROOT INJURY
  - FLOODED CONDITIONS
  - DRYING CONDITIONS
- DURING CONSTRUCTION, INSPECT AND ENFORCE THE LIMITS OF DISTURBANCE AND REQUIRED PROTECTION MEASURES.
  - IN THE EVENT OF DROUGHT, THE PROTECTED TREES SHALL BE MONITORED FOR SIGNS OF STRESS AND WATERED AS NEEDED.
  - ANY DAMAGES TO RETAINED TREES DUE TO CONSTRUCTION SHALL BE REPAIRED BY THE CONTRACTOR AT THE DIRECTION OF THE QUALIFIED PROFESSIONAL.
- FOREST CONSERVATION AREAS TO BE INSPECTED AND CERTIFIED FOR COMPLETION OF THE FOREST CONSERVATION PLAN REQUIREMENTS BY A QUALIFIED PROFESSIONAL.

**POST CONSTRUCTION**

- POST CONSTRUCTION ACTIVITIES TO BE PROVIDED FOR A MINIMUM OF 2 YEARS.
  - INSPECTIONS SHALL BE CARRIED OUT AT THE BEGINNING AND END OF THE CONSTRUCTION TO PINDPOINT ANY PROBLEMS, MONITOR SURVIVAL RATES, AND SPECIFY REMEDIAL ACTIONS NEEDED TO CORRECT EXISTING PROBLEMS.
- POST CONSTRUCTION MANAGEMENT PROGRAMS OF FOREST CONSERVATION AREAS MUST BE ESTABLISHED AND INCLUDE MAINTENANCE OF ALL FENCES, SIGNS AND OTHER DEVICES DELINEATING FOREST CONSERVATION AREAS, AS WELL AS THE FOLLOWING OTHER MEASURES:
  - STRESS REDUCTION:
    - ROOT PRUNING - CROWN REDUCTION OR PRUNING
    - WATERING
    - FERTILIZATION
    - MULCHING
    - PEST CONTROL
    - CONTROL OF UNDESIRABLE COMPETING SPECIES
    - THINNING AND PRUNING TO ENCOURAGE PROPER GROWTH
    - REPAIR OF TREE DAMAGES:
      - ROOT REPAIR
      - REMOVAL OF DEAD OR DAMAGED MATERIAL/LIMBS
      - SOIL AERATION
    - REMOVAL OF DEAD OR DYING TREES POSING AN IMMEDIATE SAFETY HAZARD
- AS PER THE SECTION OF THE POST-CONSTRUCTION PERIOD, THE QUALIFIED PROFESSIONAL INSPECTOR, REMOVE TEMPORARY SEDIMENT CONTROL MEASURES AND FENCING. FOREST CONSERVATION SIGNS SHALL NOT BE REMOVED.
- AN INSPECTOR SHALL TAKE PLACE AT THE END OF YEAR ONE OR BEFORE THE SECOND GROWING SEASON TO EVALUATE SURVIVAL RATES AND APPROPRIATE ACTIONS TAKEN TO ACHIEVE REQUIRED SURVIVAL RATES.
- AT THE CONCLUSION OF THE POST-CONSTRUCTION PERIOD, THE QUALIFIED PROFESSIONAL SHALL CERTIFY ALL FOREST CONSERVATION AREAS, SUPPLY SURVIVAL RATE DATA, AND VERIFY ALL PERTINENT PROTECTION MEASURES ARE IN PLACE. UPON INSPECTION BY LOCAL STATE PROJECT INSPECTOR APPROVAL, THE DEVELOPER SHALL BE RELEASED OF ALL SURETIES AND FUTURE OBLIGATIONS.
- EDUCATION MATERIAL MUST BE PROVIDED TO OWNERS AND/OCCUPANTS ABOUT PROPER USE OF FOREST CONSERVATION AREAS. SUCH EDUCATION MATERIAL SHOULD INCLUDE A PLAN LOCATING ALL PROTECTED AREAS ON-SITE AND A DESCRIPTION OF PROHIBITED AND PERMITTED ACTIVITIES WITHIN OR AFFECTING SUCH AREAS.

**FOREST CONSERVATION NARRATIVE:**

THIS PLAN PROPOSES RETENTION OF FOREST WITHIN ONE FOREST CONSERVATION EASEMENT.

**FOREST CONSERVATION NOTES:**

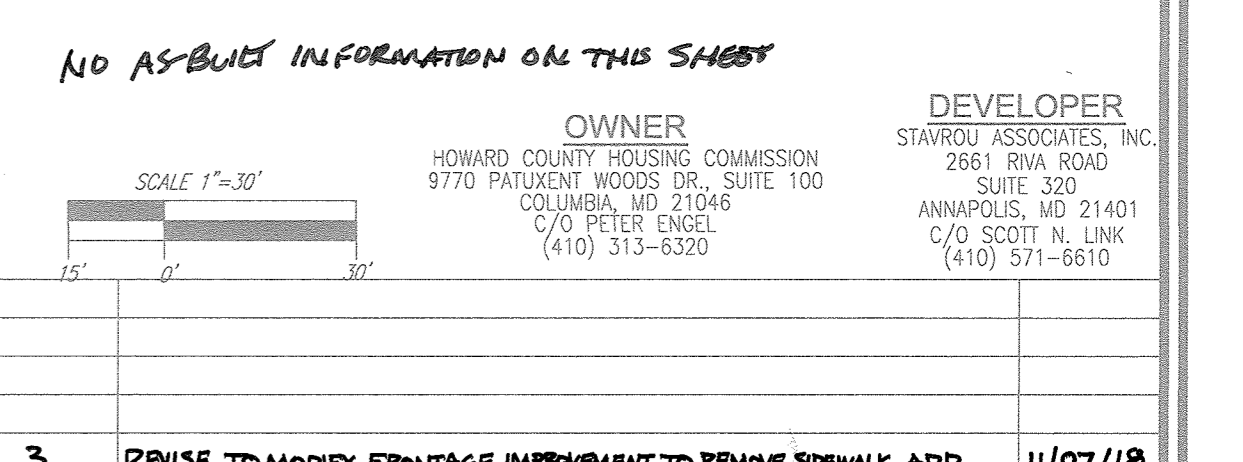
- THE PROTECTIVE SIGNAGE SHALL BE IN PLACE FOR PERPETUITY.
- THERE ARE TWO SPECIMEN TREES WITHIN THE LOD, WHICH ARE TO BE REMOVED. THREE ADDITIONAL SPECIMEN TREES ON THE SITE ARE OUTSIDE OF THE LOD AND WILL REMAIN (KEY: WP-16-018 AND WP-17-055). THE FSD INDICATED THAT THERE ARE SIX SPECIMEN TREES AS PART OF THE REPORT, HOWEVER, ONE OF THE SIX SPECIMEN TREES (A BUCKEYE TREE) IS LOCATED ON TMS, PARCEL 203, LOT 2; THIS TREE SHALL REMAIN. THE ON-SITE SPECIMEN TREES TO REMAIN SHALL BE PROTECTED BY TREE PROTECTION FENCING.

**SEQUENCE OF CONSTRUCTION-FOREST CONSERVATION:**

- PRE-CONSTRUCTION MEETING/ SITE WALK WITH CONTRACTORS AND OTHER RESPONSIBLE PARTIES TO DEFINE PROTECTION MEASURES TO BE UTILIZED AND TO POINT OUT PARTICULAR TREES TO BE SAVED.
- STAKE OUT LIMITS OF DISTURBANCE AND TREE PROTECTION FENCING LOCATIONS.
- INSTALL TREE PROTECTION FENCING TO BE INSPECTED BY THE PROJECT ENGINEER OR THE PROJECT ECOLOGIST AND HOWARD COUNTY CID AND/OR DRP.
- PROCEED WITH TREE REMOVAL AND SITE IMPROVEMENTS AS PER APPROVED SEDIMENT CONTROL PLAN - TO BE INSPECTED BY HOWARD COUNTY CID AND/OR DRP.
- TEMPORARY TREE PROTECTION DEVICES SHALL BE REMOVED AFTER FINAL GRADING AND UTILITY CONSTRUCTION HAS OCCURRED AND WITH APPROVAL FROM THE HOWARD COUNTY OFFICE OF PLANNING AND ZONING.

**FSD NOTES:**

- NO RARE, THREATENED OR ENDANGERED SPECIES OR THEIR APPROPRIATE HABITAT WERE OBSERVED ON THIS PROPERTY.
- SURROUNDING LAND USE IS GENERALLY HIGH DENSITY RESIDENTIAL DEVELOPMENT AND COMMERCIAL.
- THERE ARE 0.83 AC OF STEEP SLOPES PRESENT ON SITE.
- THERE ARE NO BURIAL GROUNDS OR CEMETERIES ON THE PROPERTY.
- THERE ARE 5 SPECIMEN TREES IDENTIFIED WITHIN THE SITE BOUNDARY. THE FSD INDICATED THAT THERE ARE SIX SPECIMEN TREES FOUND AS PART OF THE REPORT, HOWEVER, ONE OF THE SIX SPECIMEN TREES (A BUCKEYE TREE) IS LOCATED ON TMS, PARCEL 203, LOT 2. NO STATE CHAMPION TREES AND/OR TREES 75% OF THE SIZE OF STATE CHAMPION TREES WERE OBSERVED ON THE SITE.
- THE SITE AREA IS 3.95 AC.



**NO AS-BUILT INFORMATION ON THIS SHEET**

**DEVELOPER:** STAVROW ASSOCIATES, INC. 2661 RIVA ROAD SUITE 320 ANNAPOLIS, MD 21401 C/O SCOTT N. LINK (410) 571-6610

**HOWARD COUNTY HOUSING COMMISSION**  
2770 PATUXENT WOODS DRIVE SUITE 100 COLUMBIA, MD 21046 C/O PETER OWEN (410) 313-6320

**REVISED SITE DEVELOPMENT PLAN**

**LANDSCAPE AND FOREST CONSERVATION NOTES AND DETAILS; AMENITY DETAILS**

**BURGESS MILL STATION PH II**

A REDEVELOPMENT OF THE ELLIOTT CITY TERRACE APARTMENTS  
TAX MAP 25 BLOCK 7 ZONED: R-1  
2ND ELECTION DISTRICT L11702/F-63 PARCEL 120, PARCEL A HOWARD COUNTY, MARYLAND

**ROBERT H. VOGEL ENGINEERS - SURVEYORS - PLANNERS**  
8407 MAIN STREET ELLIOTT CITY, MD 21043 TEL: 410-461-7666 FAX: 410-461-8361

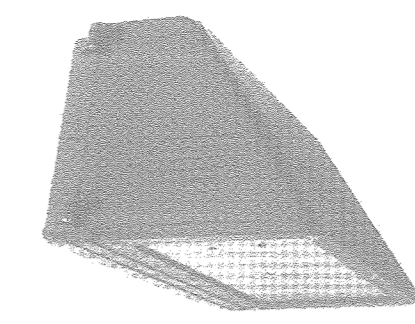
**PROFESSIONAL CERTIFICATE**

DESIGN BY: DZE  
DRAWN BY: DZE/MB/KG  
CHECKED BY: RHV  
DATE: JULY 2017  
SCALE: AS SHOWN  
W.O. NO.: 12-53

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. EXPIRATION DATE 06-27-2019

17 SHEET OF 30

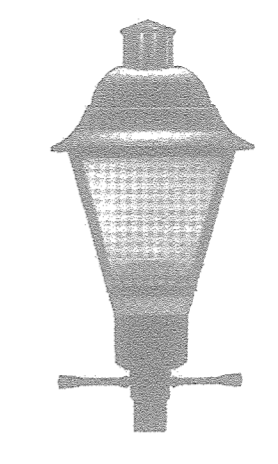
**AS-BUILT - JUNE 2019**



DESIGNATION: WE  
 DESCRIPTION: EXTERIOR WALL PACK  
 LOCATION: EXTERIOR BUILDING  
 MOUNTING: WALL SURFACE  
 TYPE OF LAMP: LED (2) DIODES 4550 LUMENS 5000K  
 VOLTAGE: 120  
 NUMBER OF LAMPS: LED  
 WATTAGE: 56W  
 MANUFACTURER:  
 JARVIS WP3DS SERIES

OR EQUAL BY:  
 PHILIPS  
 LITHONIA

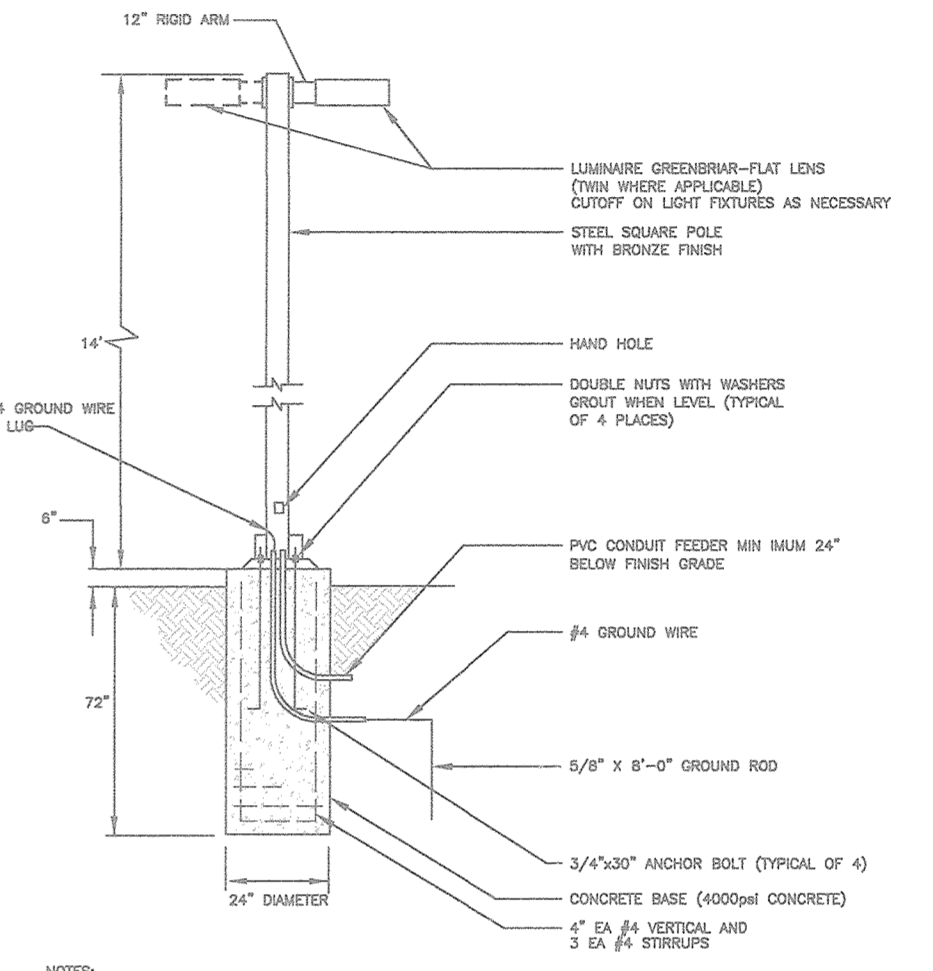
FEATURES:  
 DARK SKY LED WALL PACK WITH UV TREATED POLYCARBONATE HIGH IMPACT RESISTANT LENS, BRONZE POWDERCOAT FINISH, UL LISTED WET LOCATION, NOMINAL 13"W X 9" X 11"D



DESIGNATION: S1  
 DESCRIPTION: PEDESTRIAN SITE POLE LIGHT  
 LOCATION: SITE  
 MOUNTING: POLE MOUNTED AT 14'  
 TYPE OF LAMP: 150W PULSE START METAL HALIDE  
 NUMBER OF LAMPS: 1  
 WATTAGE: 165W  
 MANUFACTURER:  
 HADCO INDEPENDENCE (V161) SERIES

OR EQUAL BY:  
 HOLOPHANE  
 STERNBERG

FEATURES:  
 DIE CAST ALUMINUM ALLOY HOUSING, POLYESTER POWDERCOAT BLACK FINISH, VERTICAL RIB TYPE III OPTICS, UV STABILIZED ACRYLIC PANELS, SEGMENTED SPECULAR ALUMINUM REFLECTOR, HPF BALLAST.



POLE BASE DETAIL  
 (NOT TO SCALE)



AS-BUILT CERTIFICATION FOR PSWM  
 I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND COMPLIES WITH THE APPROVED PLANS AND SPECIFICATIONS. I HAVE VERIFIED THAT THE CONTRIBUTING DRAINAGE AREA IS SUFFICIENTLY STABILIZED TO PREVENT CLOGGING OF THE UNDERGROUND SWM FACILITY.

OWNER: HOWARD COUNTY HOUSING COMMISSION  
 DEVELOPER: STAVROU ASSOCIATES, INC.

NO.	REVISION	DATE
3	REVISE TO MODIFY FRONTAGE IMPROVEMENT TO REMOVE SIDEWALK, ADD CURBING AND ADJUST STORM DRAIN WITHIN FELLS LANE	11/07/19

REVISED SITE DEVELOPMENT PLAN  
 PHOTOMETRIC PLAN  
 BURGESS MILL STATION PH II APARTMENTS  
 A REDEVELOPMENT OF THE ELLICOTT CITY TERRACE APARTMENTS  
 TAX MAP 25 BLOCK 7 PARCEL 120, PARCEL A  
 2ND ELECTION DISTRICT L.11702/F.63 HOWARD COUNTY, MARYLAND

**ROBERT H. VOGEL ENGINEERING, INC.**  
 ENGINEERS • SURVEYORS • PLANNERS  
 8407 MAIN STREET ELLICOTT CITY, MD 21043 TEL: 410-461-7666 FAX: 410-461-8361

DESIGN BY: DZE  
 DRAWN BY: DZE/MR/KC  
 CHECKED BY: RHY  
 DATE: JULY 2017  
 SCALE: AS SHOWN  
 W.O. NO.: 12-53

PROFESSIONAL CERTIFICATE  
 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. EXPIRATION DATE: 09-27-2019

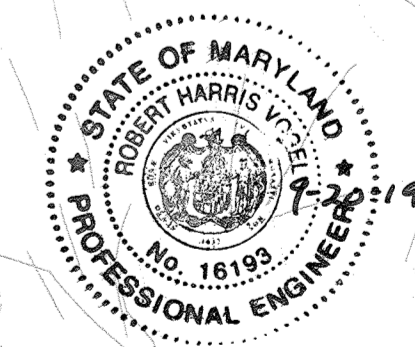
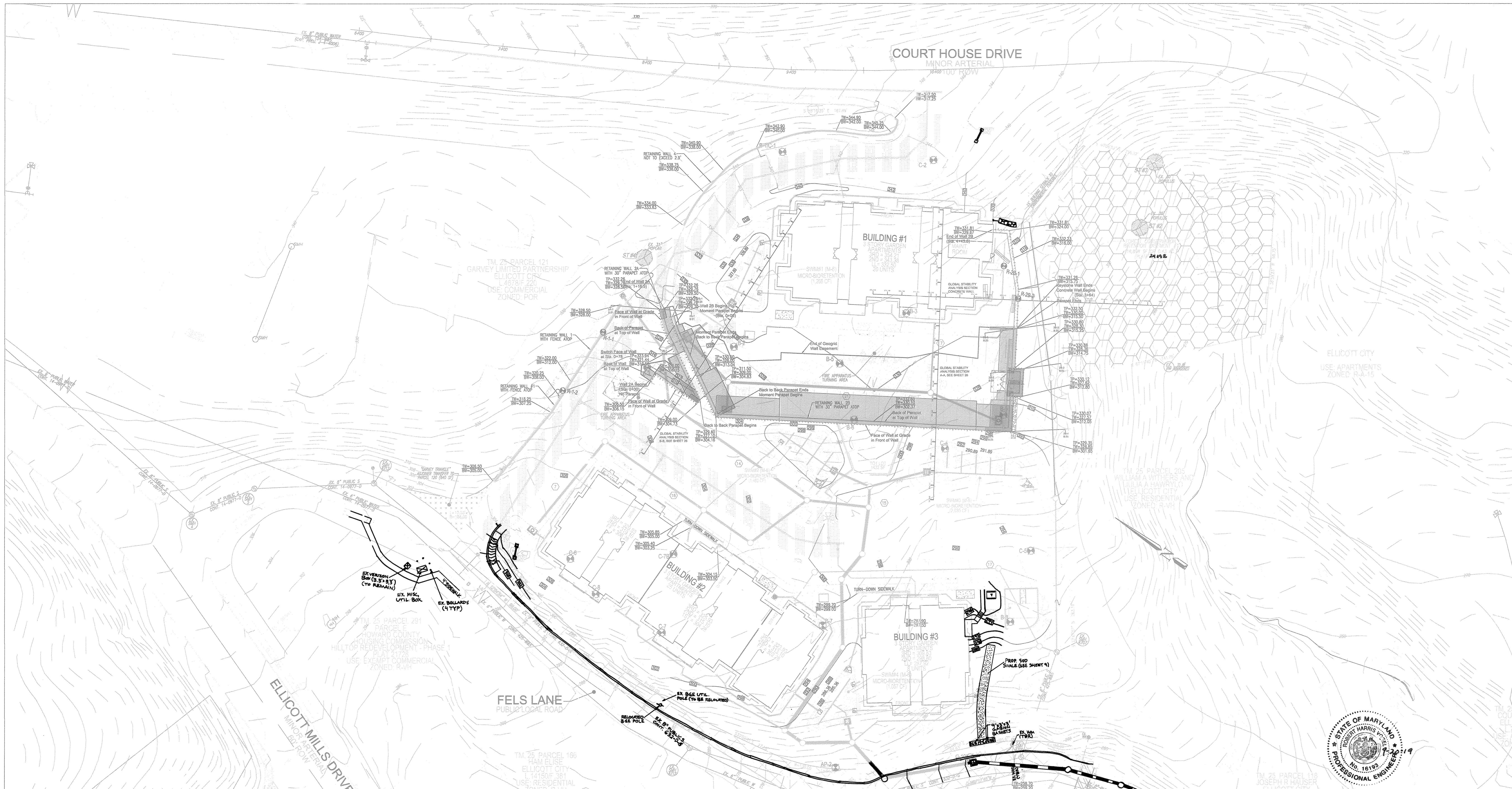
18 SHEET OF 30

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
 CHIEF DEVELOPMENT ENGINEERING DIVISION  
 CHIEF DIVISION OF LAND DEVELOPMENT  
 DIRECTOR

DATE: 9-22-17  
 DATE: 9-5-17  
 DATE: 9-5-17

Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
CalcPis	illuminance	Fc	0.69	11.0	0.0	N.A.	N.A.
CalcPis_1_upper level entry	illuminance	Fc	0.35	3.5	0.0	N.A.	N.A.
CalcPis_upper level	illuminance	Fc	1.16	10.7	0.0	N.A.	N.A.
steps_landing_10_Top_1	illuminance	Fc	1.86	2.7	0.5	3.72	5.40
steps_landing_20_Top_1	illuminance	Fc	5.66	9.8	1.9	2.98	5.16
lower parking	illuminance	Fc	1.12	5.4	0.1	11.20	54.00
upper parking	illuminance	Fc	1.26	5.1	0.3	4.20	17.00

Symbol	Qty	Label	Arrangement	Total Lamp Lumens	LLF	Description
1	21	Hadco post top independe-T3	SINGLE	12500	0.800	V151AV3ND150HE-TYP3-3 L.9137/F.514
2	11	WP3DS-60-2LED26-700C-50K	SINGLE	N.A.	0.800	WP3DS-60-2LED26-700C-50K-T5



PROFESSIONAL CERTIFICATE  
 I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A FULLY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193, EXPIRATION DATE: 11-29-2018

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
 [Signature] 8/22/17  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION, DATE  
 [Signature] 9-5-17  
 CHIEF, DIVISION OF LAND DEVELOPMENT, DATE  
 [Signature] 9-5-17  
 DIRECTOR, DATE

No.	Date	Revision	By
3	11/07/10	REVISE TO MODIFY FRONTAGE IMPROVEMENT TO REMOV SIDEWALK, ADD CURBING AND ADJUST STORM DRAIN WITHIN FELLS LANE	RHV

TM 25 PARCEL 119  
 ROBERT J. COONEY  
 L. 3963/F. 595  
 USE: RESIDENTIAL ZONED R-VH

OWNER  
 HOWARD COUNTY HOUSING COMMISSION  
 9770 PATUXENT WOODS DR., SUITE 100  
 COLUMBIA, MD 21046  
 C/O PETER ENGEL  
 (410) 313-6320

DEVELOPER  
 STAVROU ASSOCIATES, INC.  
 2651 RIVA ROAD, SUITE 320  
 ANNAPOLIS, MD 21401  
 C/O SCOTT H. LINK  
 (410) 571-6610

**Legend**

- Reinforcement
- Grid
- Moment
- Parapet
- Wall
- Essement
- Concrete
- Well

Front of Wall At Grade  
 Existing 10' contours  
 Existing 2' contours  
 Proposed 10' contours  
 Proposed 2' contours

No AS-BUILT INFORMATION ON THIS SHEET

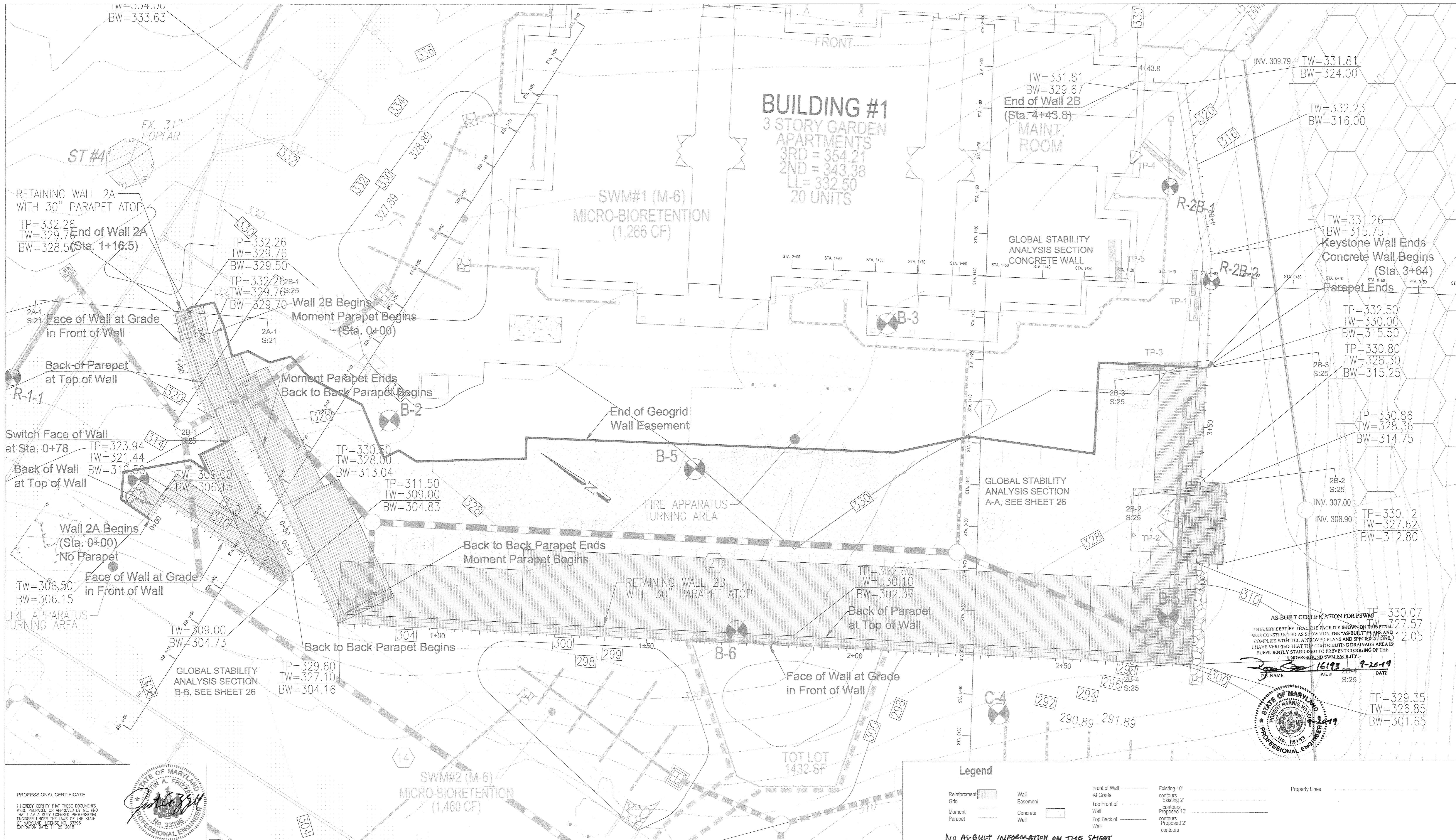
**HARDIN-KIGHT ASSOCIATES, INC.**  
 GEOTECHNICAL CONSULTANTS  
 7524 WB&A ROAD, SUITE 100  
 GLEN BURNIE, MARYLAND  
 (410) 553-0802  
 (410) 553-0808

Designed By: JAF	Title: Overall Retaining Wall Location Plan	Date: 02/09/2017
Checked By: SEK	Project: BURGESS MILL STATION PH II APARTMENTS A REDEVELOPMENT OF THE ELLICOTT CITY TERRACE APARTMENTS TAX MAP 25 BLOCK 7 2ND ELECTION DISTRICT	Project No: 15140
Scale: 1"=30'	APARTMENTS ZONED: R-A-15 L 11702ZF.63 PARCELS 120 HOWARD COUNTY, MARYLAND	Drawing No: 19 of 30

AS-BUILT CERTIFICATION FOR PSWM  
 I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN PROPERTY CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND COMPLIES WITH THE APPROVED PLANS AND SPECIFICATIONS. I HAVE VERIFIED THAT THE CONTRIBUTING DRAINAGE AREA IS SUFFICIENTLY STABILIZED TO PREVENT CLOGGING OF THE UNDERGROUND SWM FACILITY.

[Signature] 16193 9-20-19  
 P.E. NAME P.L.R. DATE

AS-BUILT - JUNE 2019



16193 9-26-19  
P.E. NAME P.E.# DATE  
S:25

STATE OF MARYLAND  
JAMES A. FRIZZELL  
No. 16193  
PROFESSIONAL ENGINEER

Legend	
Reinforcement Grid	Wall Easement
Moment Parapet	Concrete Wall
Front of Wall At Grade	Existing 10' contours
Top Front of Wall	Existing 2' contours
Top Back of Wall	Proposed 10' contours
	Proposed 2' contours
	Property Lines

**No AS-BUILT INFORMATION ON THIS SHEET**

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

Howard County Department of Planning and Zoning  
9-5-17  
9-5-17

No.	Date	Revision	By
3	11/07/18	REVISE TO MODIFY FRONTAGE IMPROVEMENT TO REMOVE SIDEWALK, ADD CURBING AND ADJUST STORM DRAIN WITHIN FELLS LANE	RHV

**OWNER**  
HOWARD COUNTY HOUSING COMMISSION  
9770 PATUXENT WOODS DR., SUITE 100  
COLUMBIA, MD 21046  
C/O PETER ENGEL  
(410) 313-6320

**DEVELOPER**  
STAVROU ASSOCIATES, INC.  
2651 BIVA ROAD  
SUITE 320  
ANNAPOLIS, MD 21401  
C/O SCOTT N. LINK  
(410) 571-6610

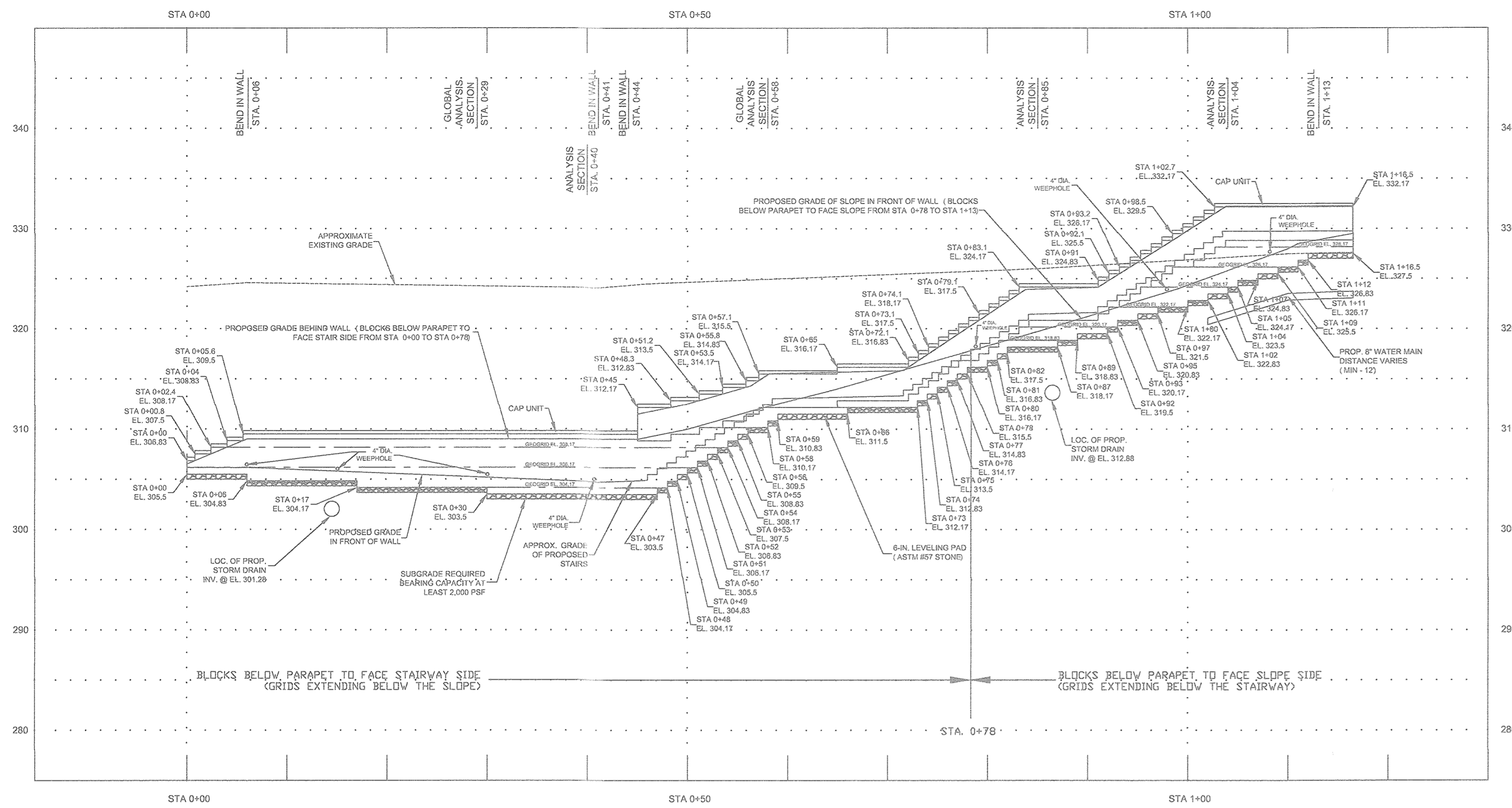
**HARDIN-KIGHT ASSOCIATES, INC.**  
GEOTECHNICAL CONSULTANTS  
7524 W/B&A ROAD, SUITE 100  
GLEN BURNIE, MARYLAND  
(410) 553-0802  
(410) 553-0808

Designed By: JAF  
Checked By: ---  
Scale: 1"=10'

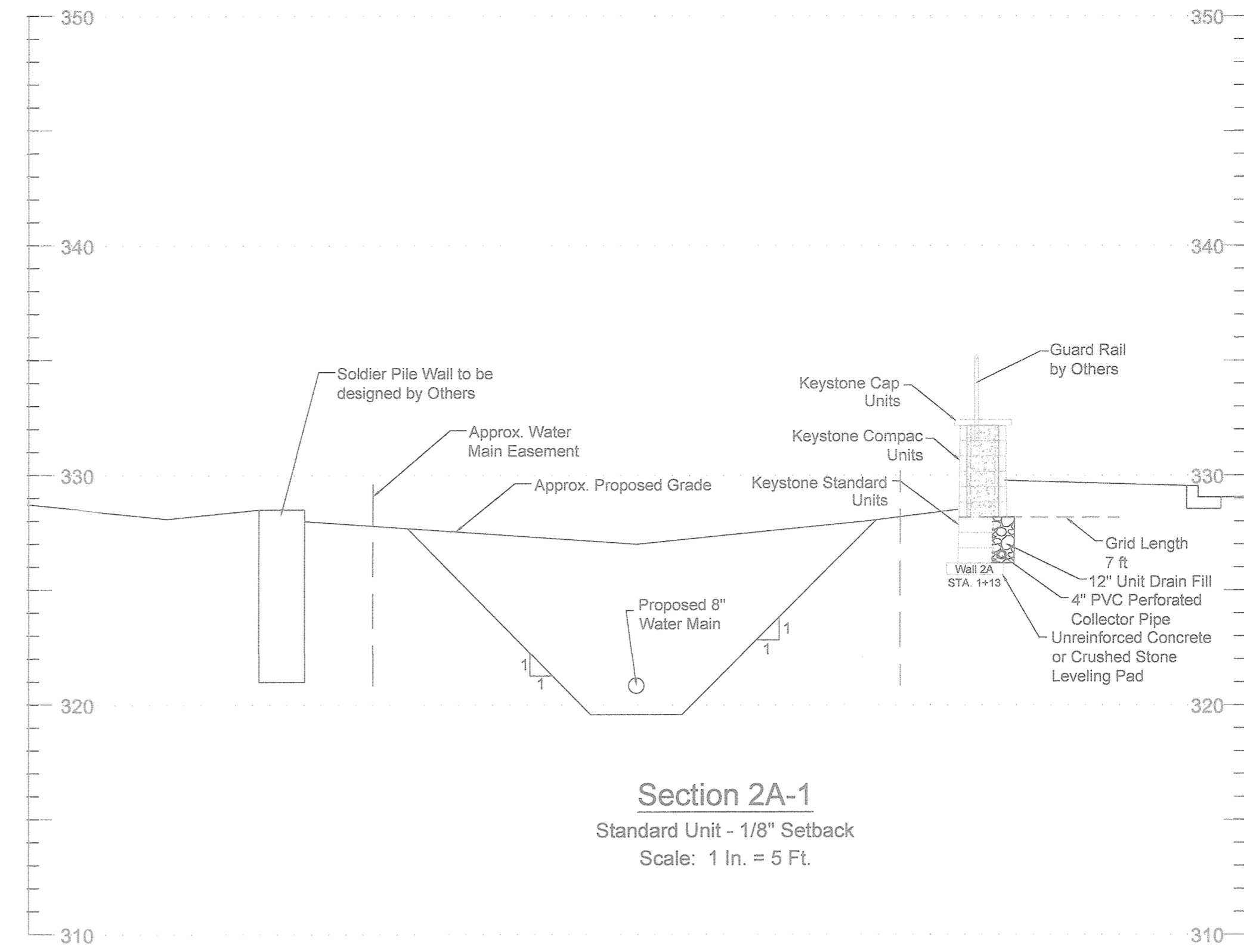
Title: Retaining Walls #2A & #2B Plan  
Project: BURGESS MILL STATION PH II APARTMENTS  
A REDEVELOPMENT OF THE ELLICOTT CITY TERRACE APARTMENTS  
TAX MAP 25 BLOCK 7 2ND ELECTION DISTRICT  
PARCELS 120 HOWARD COUNTY, MARYLAND

Date: 02/09/2017  
Project No: 15140  
Drawing No: 20 OF 30

**AS-BUILT - JUNE 2019**



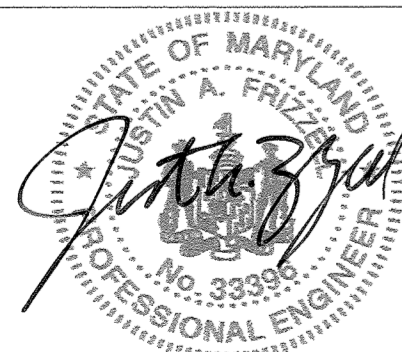
RETAINING WALL #2A PROFILE  
 GRID TYPE - MIRAFI 5XT OR EQUIV. GRID LENGTH - 7 FEET  
 SCALE: 1" = 10'



Section 2A-1  
 Standard Unit - 1/8" Setback  
 Scale: 1 in. = 5 Ft.

PROFESSIONAL CERTIFICATE

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. 33393, EXPIRATION DATE: 11-28-2018



AS-BUILT CERTIFICATION FOR PSWM

I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND COMPLIES WITH THE APPROVED PLANS AND SPECIFICATIONS. I HAVE VERIFIED THAT THE CONTRIBUTING DRAINAGE AREA IS SUFFICIENTLY STABILIZED TO PREVENT CLOGGING OF THE UNDERGROUND SWM FACILITY.

*Robert Harris* 18193 9-20-19  
 P.E. # DATE

NO AS-BUILT INFORMATION ON THIS SHEET

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

*Chad E. Clark* 8-22-17  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE  
*Kevin J. Leland* 9-5-17  
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE  
*William J. ...* 9-5-17  
 DIRECTOR DATE

No.	Date	Revision	By
3	11/07/18	REVISE TO MODIFY FRONTAGE IMPROVEMENT TO REMOVE SIDEWALK, ADD CURBING AND ADJUST STORM DRAIN WITHIN FELLS LAKE	RHW

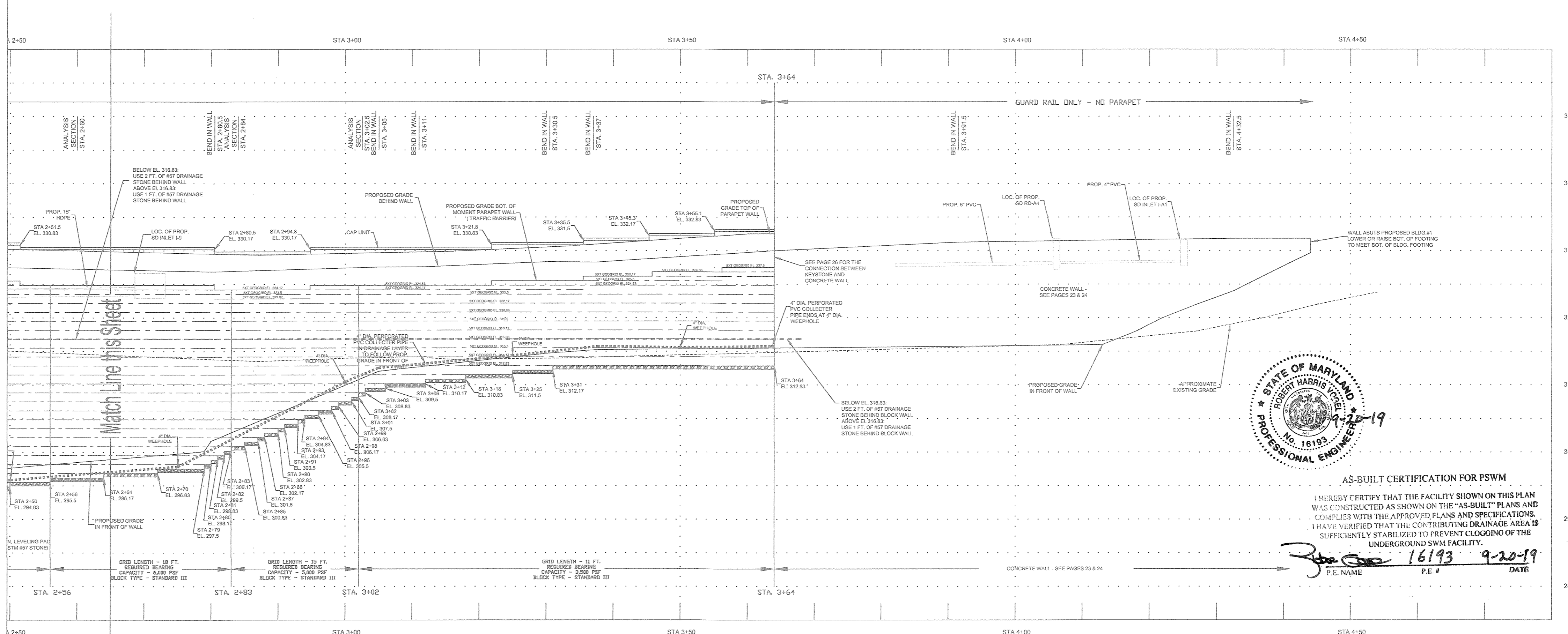
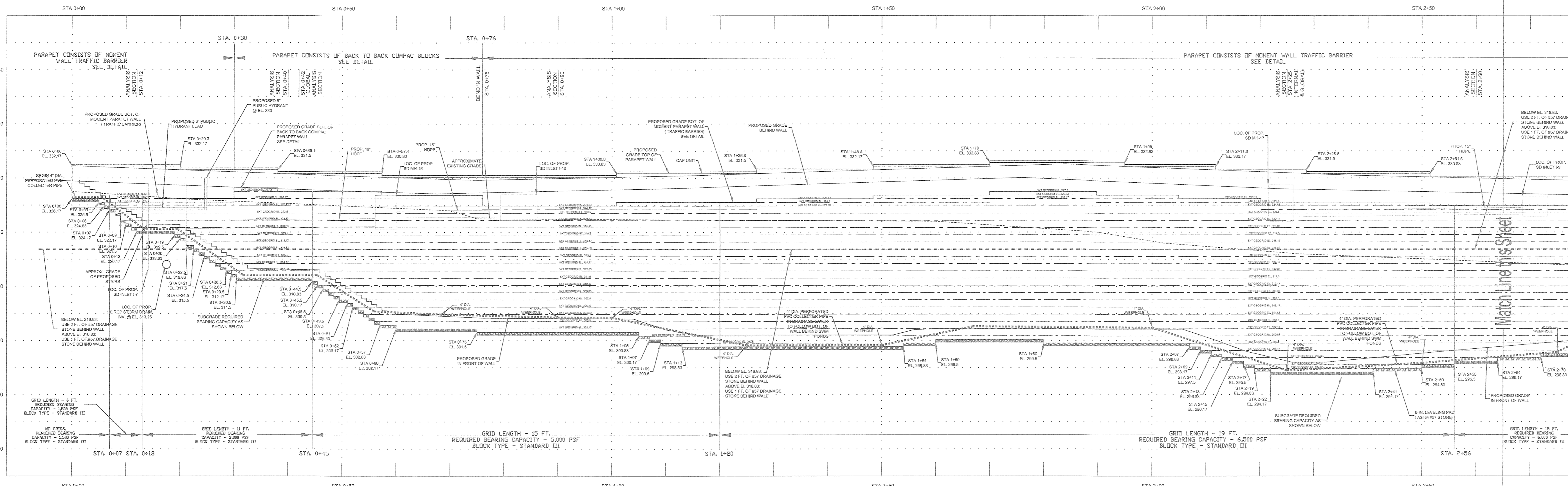
**OWNER**  
 HOWARD COUNTY HOUSING COMMISSION  
 9770 PATUXENT WOODS DR., SUITE 100  
 COLUMBIA, MD 21046  
 C/O PETER ENGEL  
 (410) 313-6320

**DEVELOPER**  
 STAVROU ASSOCIATES, INC.  
 2051 RIVA ROAD  
 SUITE 320  
 ANNAPOLIS, MD 21401  
 C/O SCOTT W. LINK  
 (410) 571-6610

**HARDIN-KIGHT ASSOCIATES, INC.**  
 GEOTECHNICAL CONSULTANTS  
 7524 WB&A ROAD, SUITE 100  
 GLEN BURNIE, MARYLAND  
 (410) 553-0802  
 (410) 553-0808

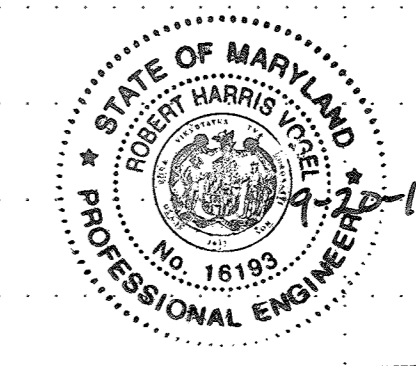
Designed By: JAF	Title: Retaining Wall #2A Elevation and Section	Date: 02/09/2017
Checked By: SEK	Project: BURGESS MILL STATION PH II APARTMENTS A REDEVELOPMENT OF THE ELLICOTT CITY TERRACE APARTMENTS	Project No: 15140
Scale: AS SHOWN	TAX MAP 25 BLOCK 7 2ND ELECTION DISTRICT	Drawing No: 21 OF 30

AS-BUILT - JUNE 2019



PROFESSIONAL CERTIFICATE  
 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. 33536, EXPIRATION DATE: 11-29-2018.

*Justin A. Frizell*  
 No. 33536  
 PROFESSIONAL ENGINEER



AS-BUILT CERTIFICATION FOR PSWM  
 I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND COMPLIES WITH THE APPROVED PLANS AND SPECIFICATIONS. I HAVE VERIFIED THAT THE CONTRIBUTING DRAINAGE AREA IS SUFFICIENTLY STABILIZED TO PREVENT CLOGGING OF THE UNDERGROUND SWM FACILITY.

*Justin A. Frizell* 16193 9-20-19  
 P.E. NAME P.E.# DATE

NO AS-BUILT INFORMATION ON THIS SHEET

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

*Howard* 8-22-17  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

*Katherine* 9-5-17  
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

*Nathan* 9-9-17  
 DIRECTOR DATE

No.	Date	Revision	By
3	11/07/18	REVISE TO MODIFY FRONTAGE IMPROVEMENT TO REMOVE SIDEWALK, ADD CURBING AND ADJUST STORM DRAIN WITHIN FELLS CANE	RHV

OWNER  
 HOWARD COUNTY HOUSING COMMISSION  
 9770 PATUXENT WOODS DR., SUITE 100  
 COLUMBIA, MD 21046  
 C/O PETER ENGEL  
 (410) 313-8320

DEVELOPER  
 STAIRCO ASSOCIATES, INC.  
 2561 ROVA ROAD  
 SUITE 320  
 ANNAPOLIS, MD 21401  
 C/O SCOTT N. LUK  
 (410) 571-6810

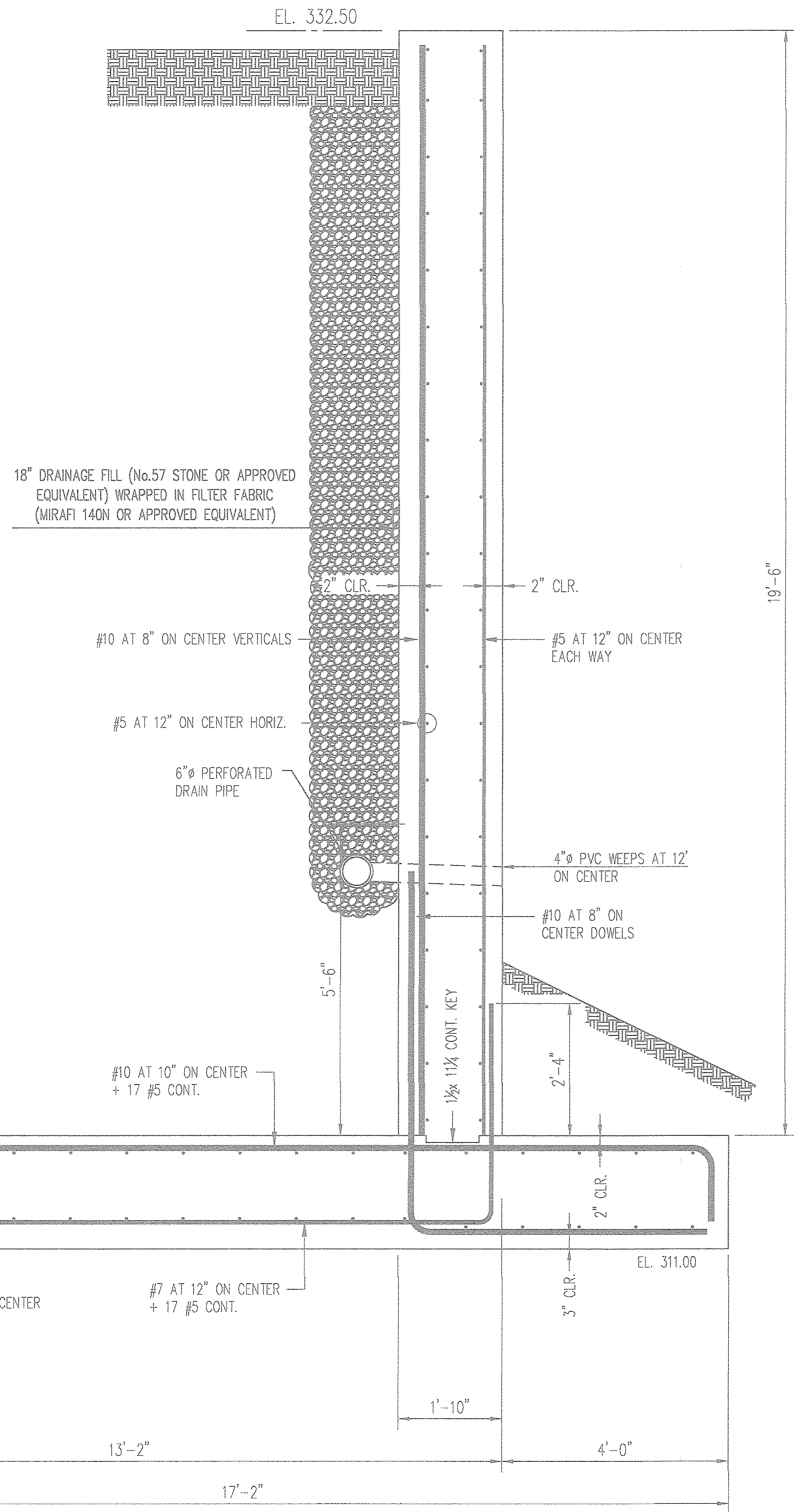
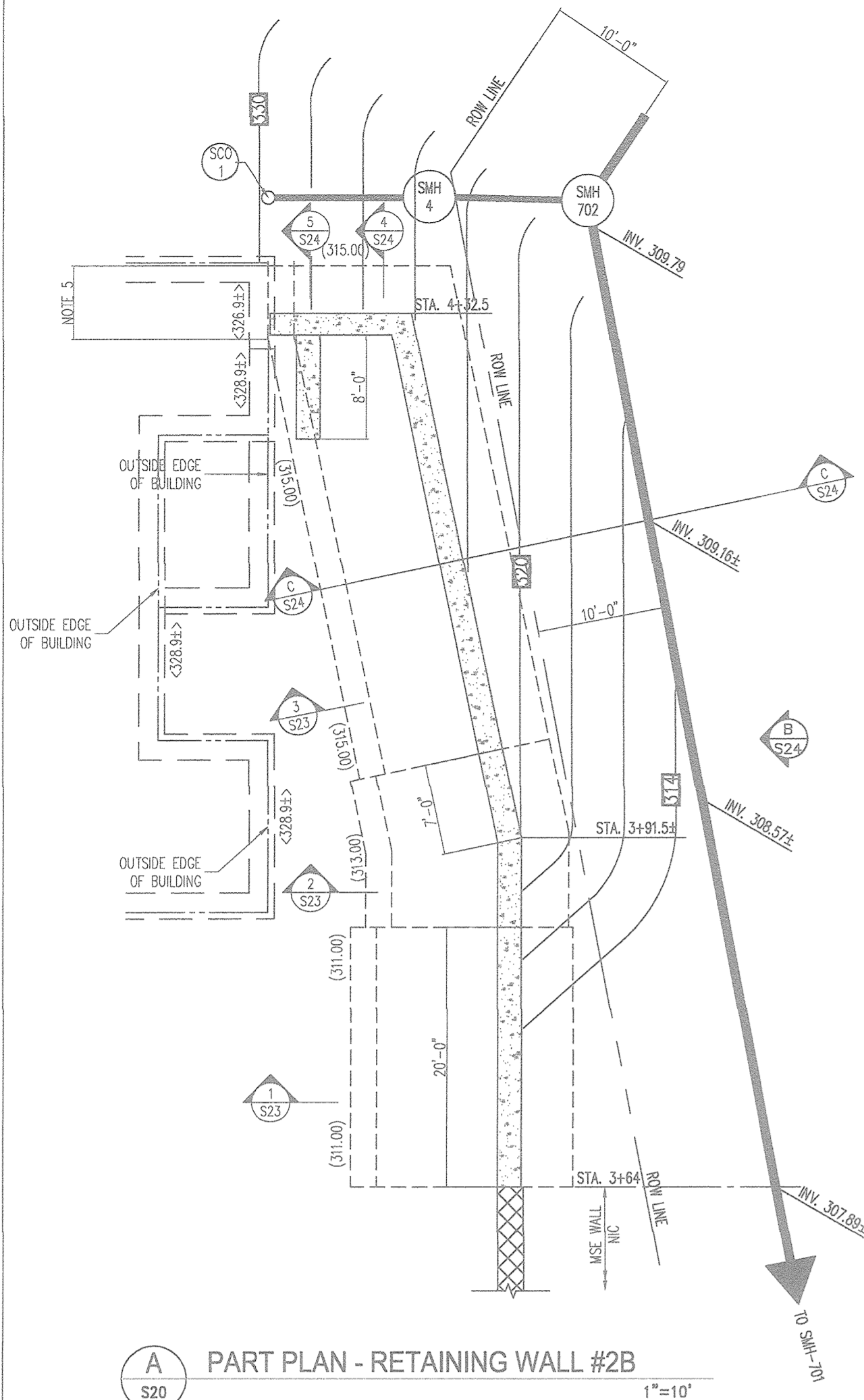
HARDIN-KIGHT ASSOCIATES, INC.  
 GEOTECHNICAL CONSULTANTS  
 7524 WB&A ROAD, SUITE 100  
 GLEN BURNIE, MARYLAND  
 (410) 553-0802  
 (410) 553-0808

Designed By: JAF	Title: Retaining Wall #2B Elevation	Date: 02/09/2017
Checked By: SEK	Project: BURGESS MILL STATION PH II A REDEVELOPMENT OF THE ELLICOTT CITY TERRACE APARTMENTS	Project No: 15140
Scale: 1"=10'	TAX MAP 25 BLOCK 7 2ND ELECTION DISTRICT	Drawing No: 22 OF 30

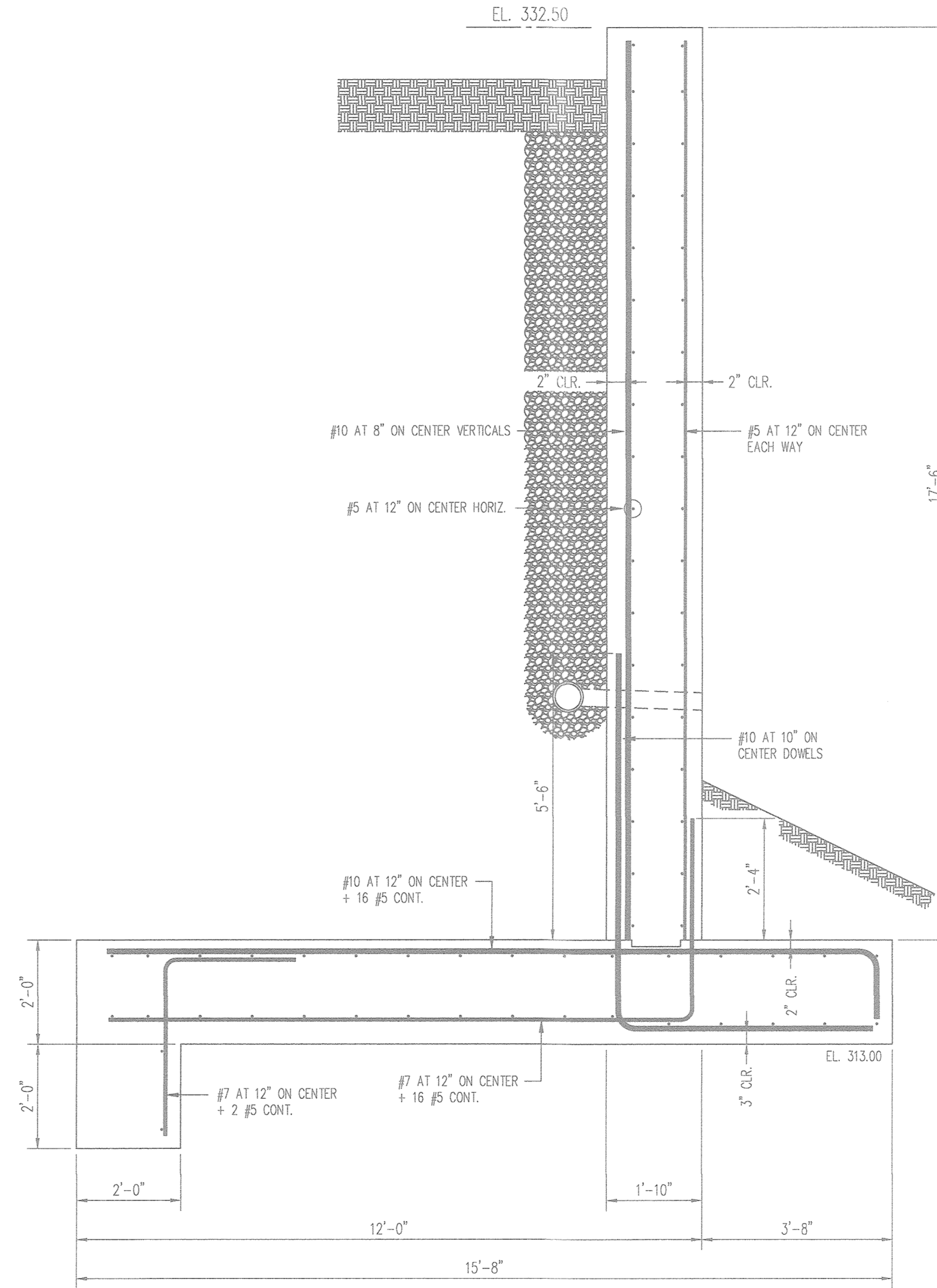
AS-BUILT - JUNE 2019

NOTES:  
 BUILDING LAYOUT AND PROPOSED FOOTING ELEVATIONS BASED ON STRUCTURAL DRAWINGS PREPARED BY GRIM AND PARKER DATED 9-7-16 "PRICING SET". RETAINING WALL LAYOUT AND PUBLIC SEWER LOCATION BASED ON CIVIL DRAWINGS FURNISHED BY HARDIN KIGHT ASSOCIATES, INC., DATED 10-24-16. INVERT ELEVATIONS OF PUBLIC SEWER BASED ON INFORMATION CONTAINED IN DRAWINGS PREPARED BY ROBERT S. VOGEL ENGINEERING DATED JULY 2016. VERIFY AND COORDINATE ACTUAL BUILDING LAYOUT, RETAINING WALL CONFIGURATION AND SEWER INFORMATION WITH FINAL CONTRACT DRAWINGS.

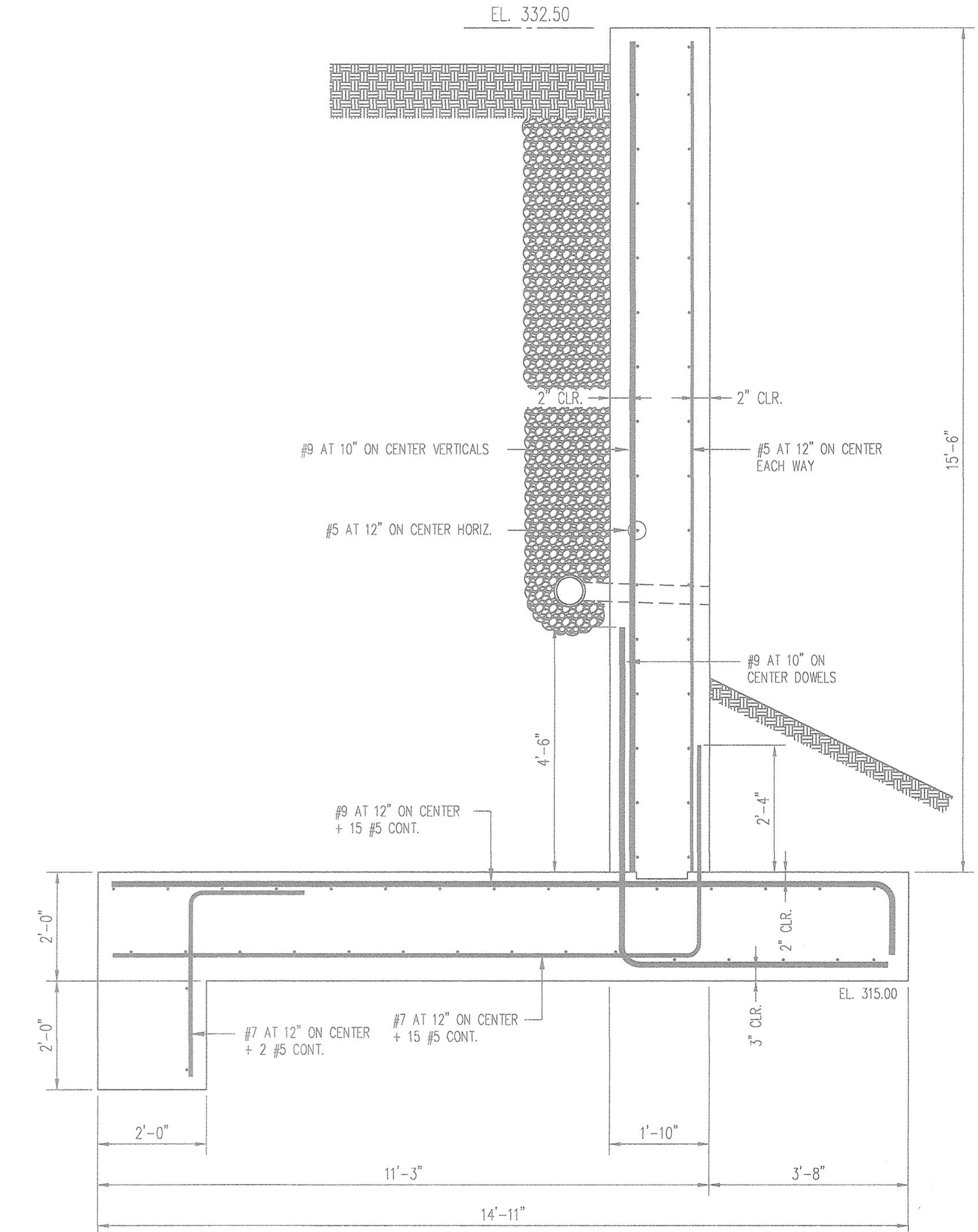
- ELEVATION BOTTOM OF RETAINING WALL FOOTINGS SHOWN ON PLAN THUS: (310.00)
- PROPOSED BOTTOM OF FOOTING ELEVATIONS AT BUILDING ARE INDICATED ON PLAN THUS: <327.82>
- CONCRETE FOR NEW RETAINING WALL AND RETAINING WALL FOOTING SHALL BE NORMAL WEIGHT CONCRETE WITH A MINIMUM 28 DAY COMPRESSIVE STRENGTH,  $f_c = 5,000$  PSI.
- RETAINING WALL DESIGN BASED ON THE FOLLOWING GEOTECHNICAL PARAMETERS AS FURNISHED BY HARDIN KIGHT ASSOCIATES:  
 SOIL DENSITY,  $\gamma = 130$  PCF  
 INTERNAL FRICTION ANGLE  $\phi = 32^\circ$   
 MAXIMUM BEARING PRESSURE,  $q = 3,500$  PSF
- RETAINING WALL FOOTING AGAINST BUILDING TO BE TAPERED TO MATCH PLAN PROFILE OF BUILDING FOOTING.



1 SECTION THROUGH RETAINING WALL TYPE 1  
 1/2" = 1'-0"



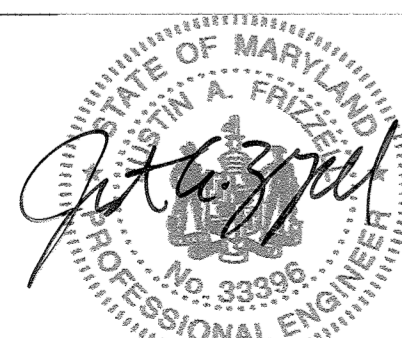
2 SECTION THROUGH RETAINING WALL TYPE 2  
 1/2" = 1'-0"



3 SECTION THROUGH RETAINING WALL TYPE 3  
 1/2" = 1'-0"

PROFESSIONAL CERTIFICATE

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. 33398, EXPIRATION DATE: 11-28-2018



AS-BUILT CERTIFICATION FOR PSWM  
 I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND COMPLIES WITH THE APPROVED PLANS AND SPECIFICATIONS. I HAVE VERIFIED THAT THE CONTRIBUTING DRAINAGE AREA IS ADEQUATELY STABILIZED TO PREVENT CLOGGING OF THE UNDERGROUND SWM FACILITY.  
 P.E. # 16193 DATE 9-20-19

NO AS-BUILT INFORMATION ON THIS SHEET

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

Chief, Development Engineering Division  
 Chief, Division of Land Development  
 Director

No.	Date	Revision	By
3	11/07/18	REVISE TO MODIFY FRONTAGE IMPROVEMENT TO RENOVATE SIDEWALK ADD CURBING AND ADJUST STORM DRAIN WITHIN PELS LANE	RHV

**McLaren**  
 ENGINEERING GROUP  
 McLaren Technical Services, Inc.  
 601 East Pratt Street, Ste. 302, Baltimore, MD 21202  
 Tel: (410) 243-8787 Fax: (410) 243-4958 www.mgmclaren.com  
 COPYRIGHT © 2015, McLAREN ENGINEERING GROUP

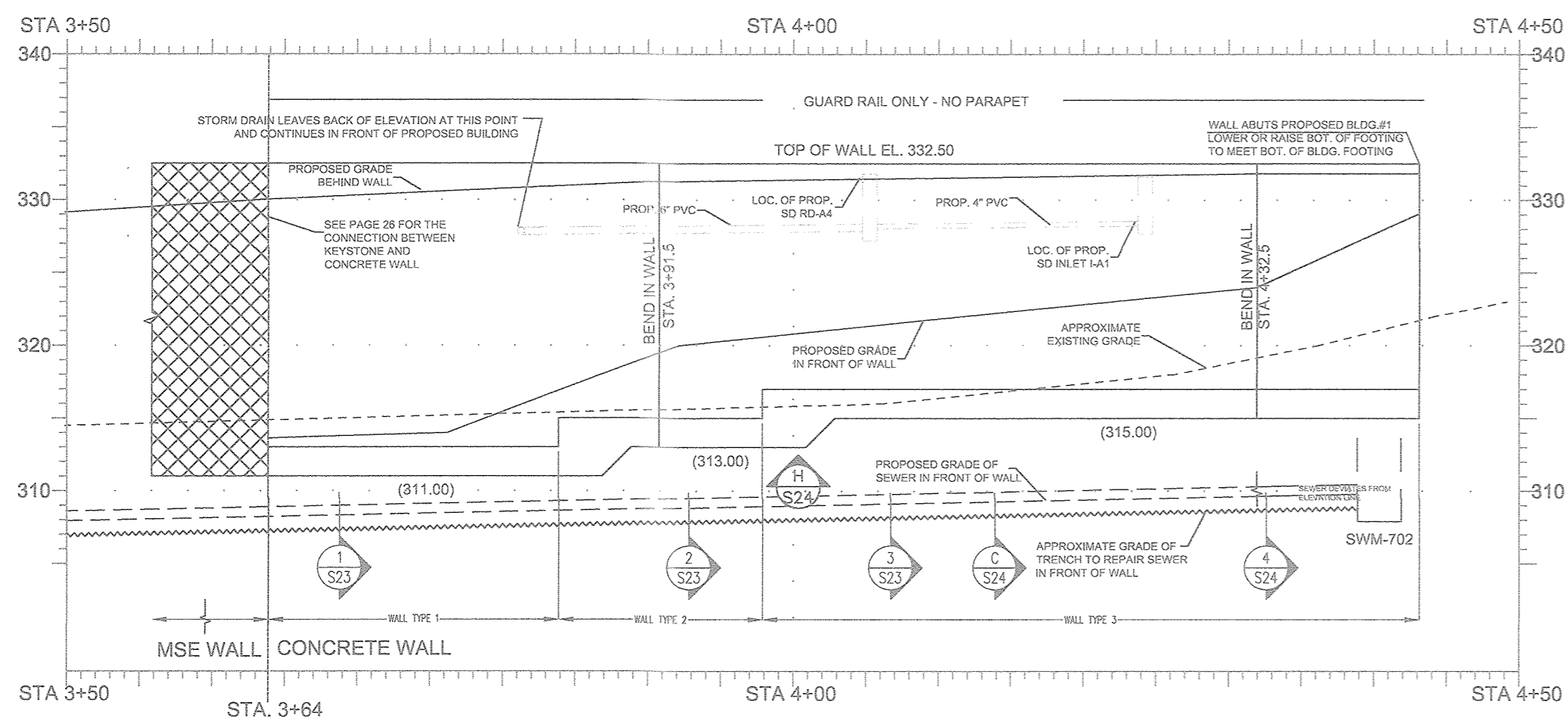
**OWNER**  
 HOWARD COUNTY HOUSING COMMISSION  
 9770 PATUXENT WOODS DR., SUITE 100  
 COLUMBIA, MD 21046  
 C/O PETER ENGEL  
 (410) 313-6320

**DEVELOPER**  
 STARROU ASSOCIATES, INC.  
 2961 RIVA ROAD  
 SUITE 320  
 ANNAPOLIS, MD 21401  
 C/O SCOTT W. LINK  
 (410) 571-8810

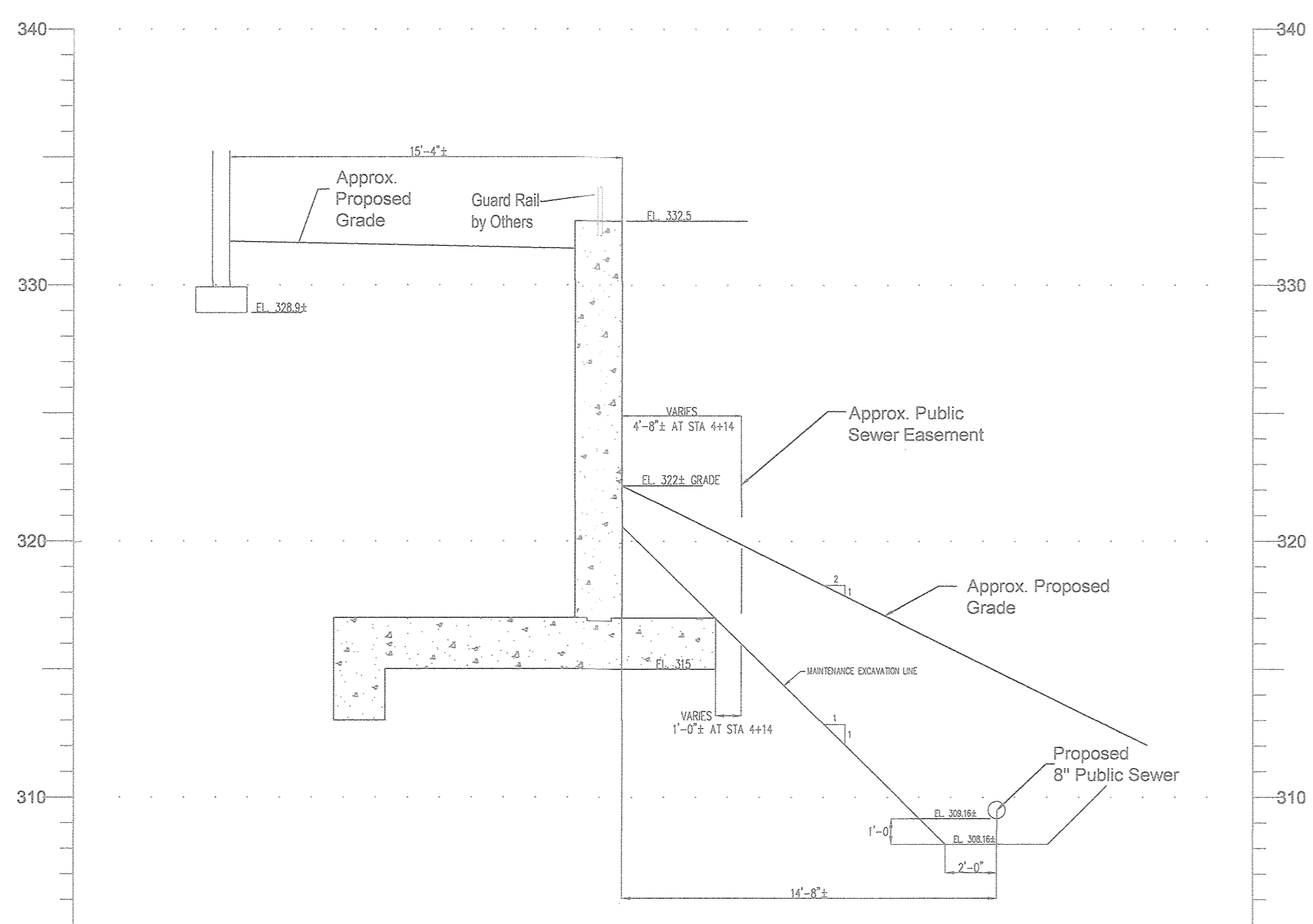
**HARDIN-KIGHT ASSOCIATES, INC.**  
 GEOTECHNICAL CONSULTANTS  
 7524 WB&A ROAD, SUITE 100  
 GLEN BURNIE, MARYLAND  
 (410) 553-0802  
 (410) 553-0808

Designed By: MC	Title: Retaining Wall 2B Concrete Wall, Plan, Elevations and Sections	Date: 02/09/2017
Checked By: SEK	Project: BURGESS MILL STATION PH II APARTMENTS A REDEVELOPMENT OF THE ELLICOTT CITY TERRACE APARTMENTS ZONED: RA-15 L17702P-83	Project No: 15140
Scale: As Shown	TAX MAP 25 BLOCK 7 2ND ELECTION DISTRICT	Drawing No: 23 OF 30

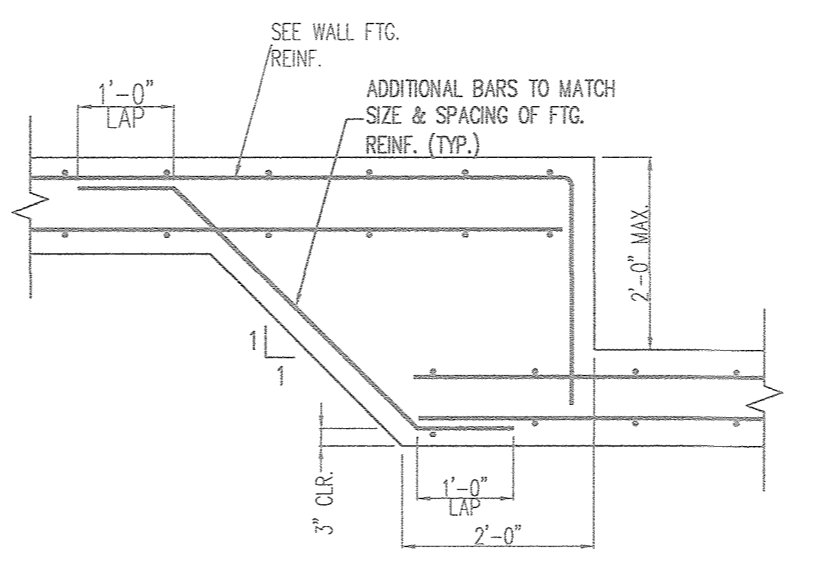
AS-BUILT - JUNE 2019



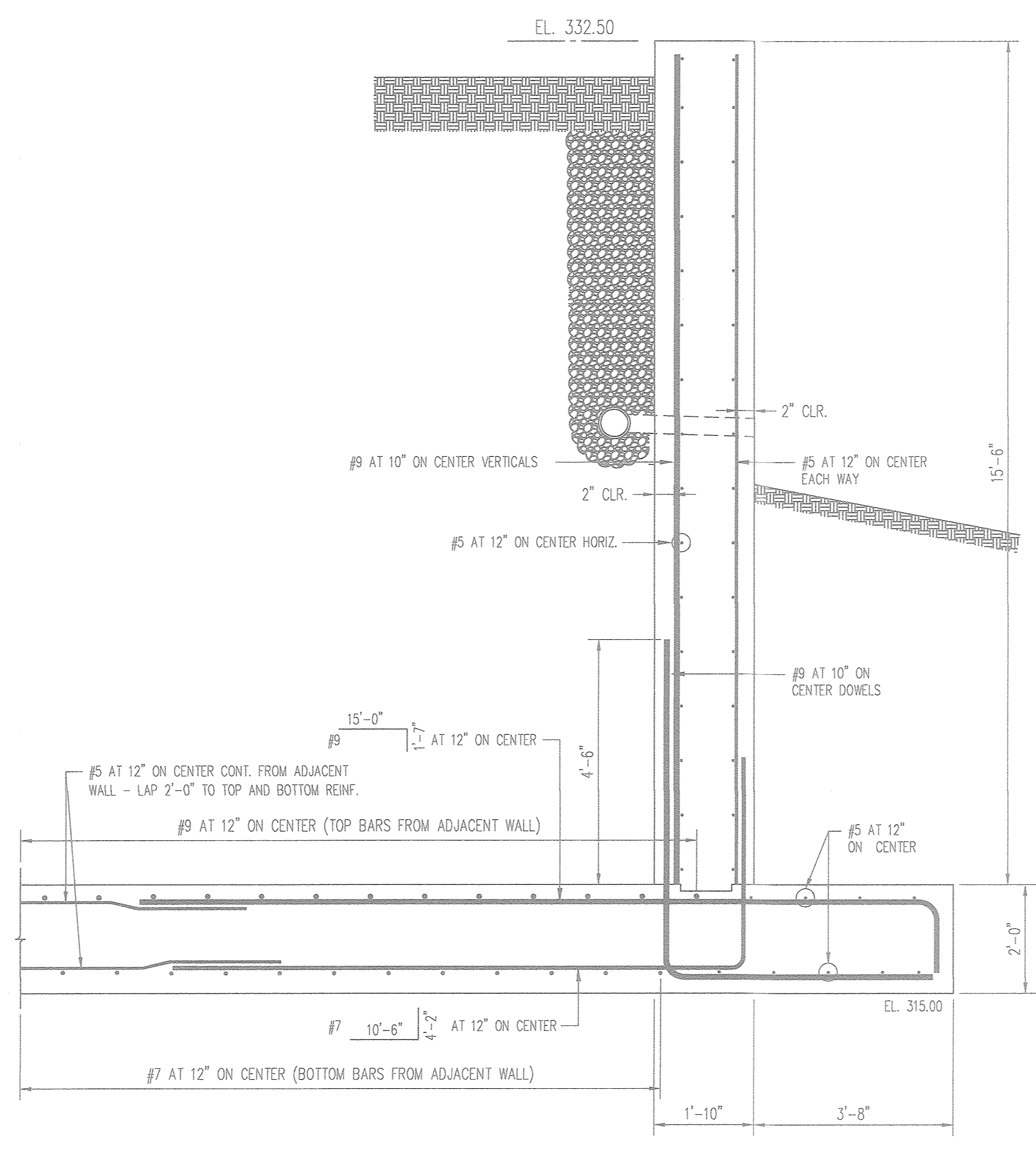
B PART ELEVATION (UNFOLDED) - RETAINING WALL #2B  
S23 1"=10'



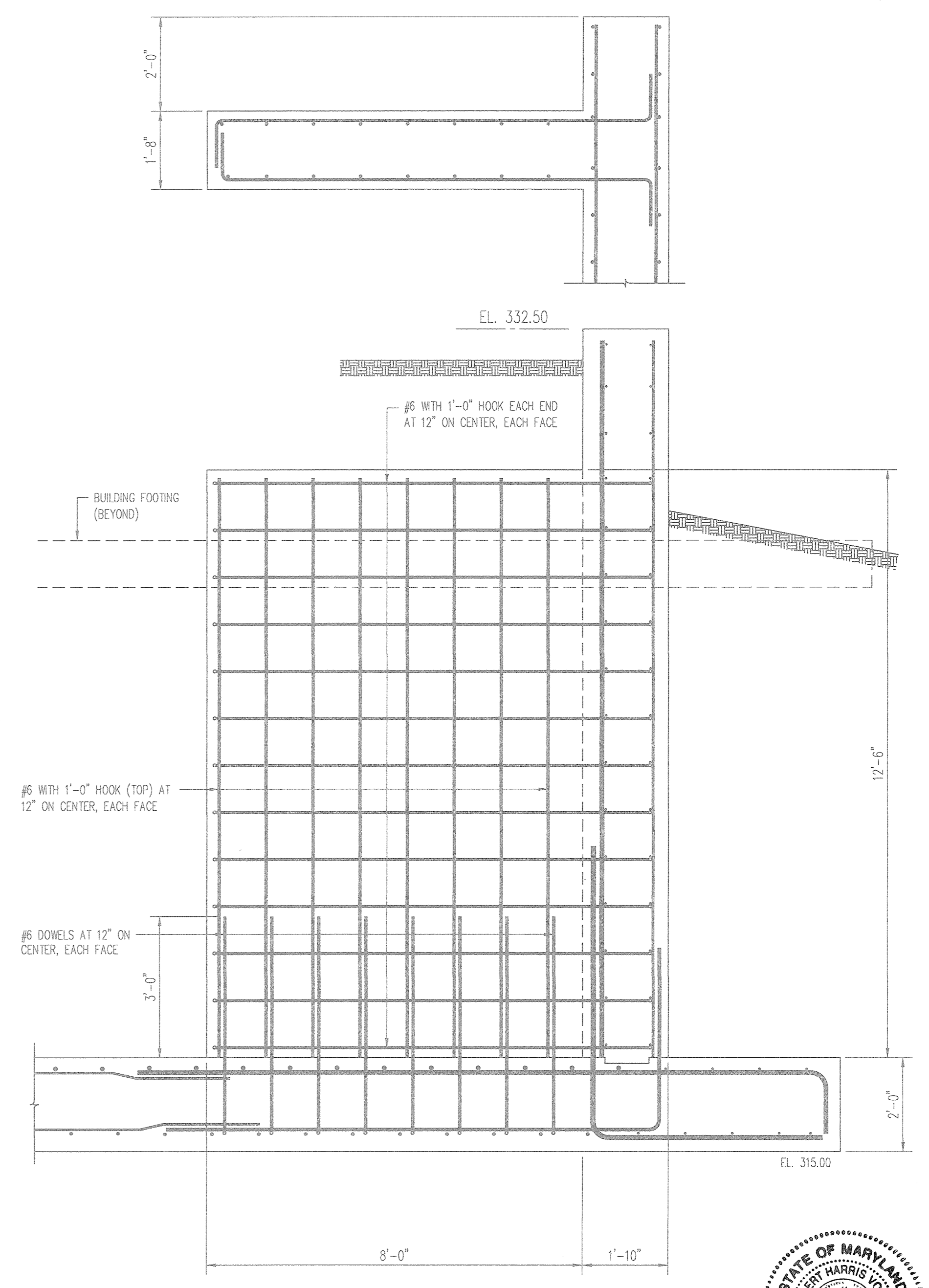
C SECTION THROUGH RETAINING WALL AT STA. 4+14 (25' +/- SOUTH OF SMH-702)  
S23 1"=5' Approx



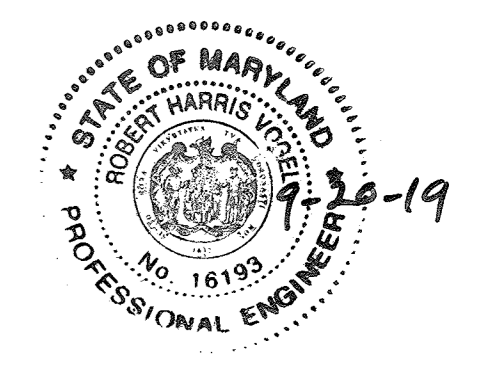
H TYP. FOOTING STEP DETAIL  
S24 No Scale



4 SECTION THROUGH RETAINING WALL TYPE 3 - END RETURN WALL  
S23 1/2" = 1'-0"



5 SECTION THROUGH END WALL BUTTRESS  
S23 1/2" = 1'-0"



AS-BUILT CERTIFICATION FOR PSWM  
HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND COMPLIES WITH THE APPROVED PLANS AND SPECIFICATIONS. I HAVE VERIFIED THAT THE CONTRIBUTING DRAINAGE AREA IS SUFFICIENTLY STABILIZED TO PREVENT CLOGGING OF THE UNDERGROUND SWM FACILITY.  
R.E. NAME: [Signature] 16193 9-20-19 DATE

NO AS-BUILT INFORMATION ON THIS SHEET

PROFESSIONAL CERTIFICATE  
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A FULLY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 33396, EXPIRATION DATE: 11-29-2018.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
[Signatures and Dates: 8-22-17, 9-5-17, 9-5-17]

No.	Date	Revision	By
3	11/07/18	REVISE TO MODIFY FRONTAGE IMPROVEMENT TO REMOVE SIDEWALK, ADD CURBING AND ADJUST STORM DRAIN WITHIN FELS LANE	RHV

**McLaren ENGINEERING GROUP**  
McLaren Technical Services, Inc.  
601 East Pratt Street, Ste. 302, Baltimore, MD 21202  
Tel. (410) 243-8787 Fax. (410) 243-4856 www.mclaren.com  
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HOWARD COUNTY HOUSING COMMISSION  
9770 PATUXENT WOODS DR., SUITE 100  
COLUMBIA, MD 21046  
C/O PETER ENGEL  
(410) 313-6320

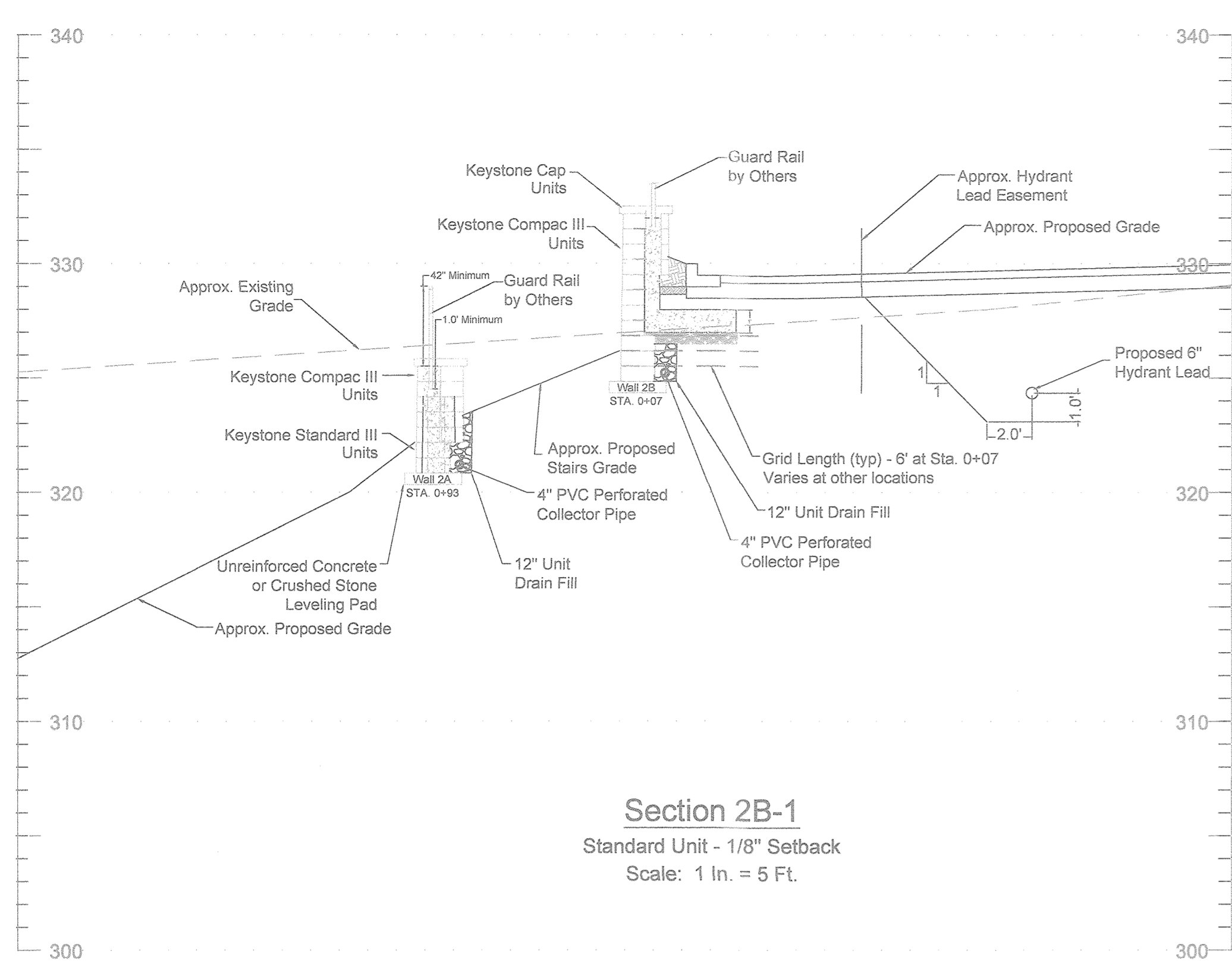
**DEVELOPER**  
STARROD ASSOCIATES, INC.  
2061 RIVA ROAD  
SUITE 320  
ANNAPOLIS, MD 21401  
C/O SCOTT N. LINK  
(410) 571-8610

**HARDIN-KIGHT ASSOCIATES, INC.**  
GEO TECHNICAL CONSULTANTS  
7524 WB&A ROAD, SUITE 100  
GLEN BURNIE, MARYLAND  
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(410) 553-0808

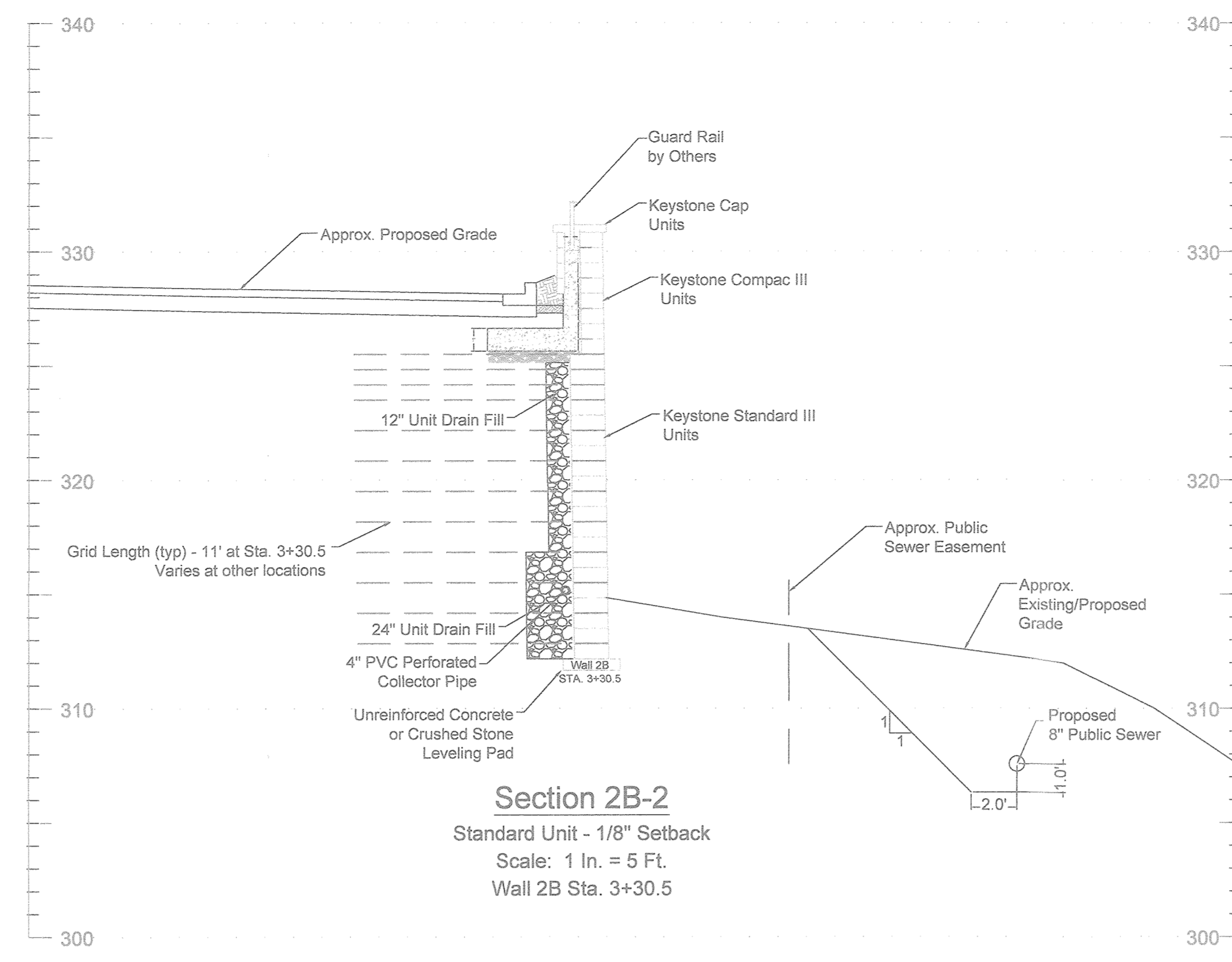
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Checked By: SEK	Project: BURGESS MILL STATION PH II A REDEVELOPMENT OF THE ELLICOTT CITY TERRACE APARTMENTS	Project No: 15140
Scale: As Shown	TAX MAP 25 BLOCK 7 2ND ELECTION DISTRICT	Drawing No: 24 OF 30

AS-BUILT - JUNE 2019

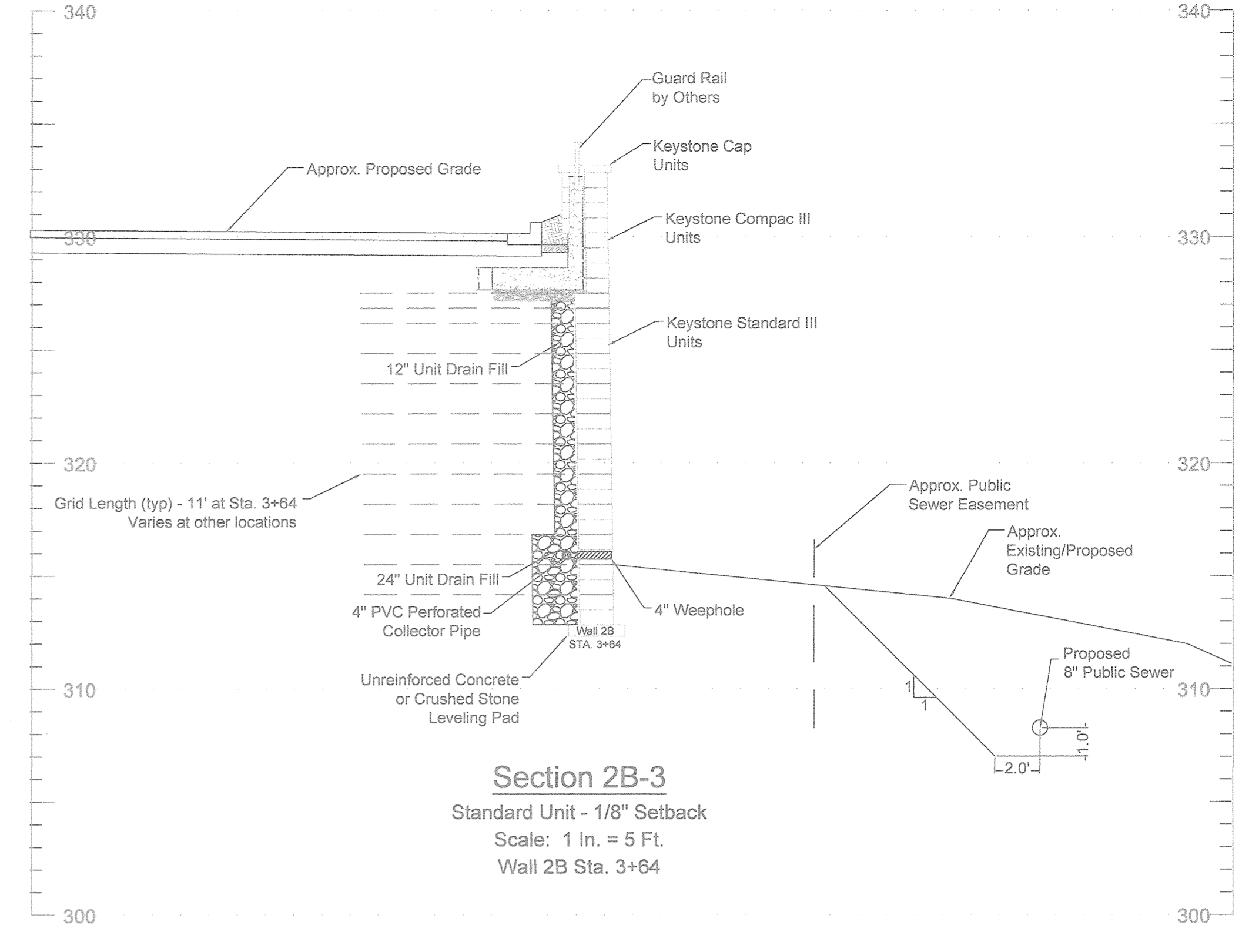




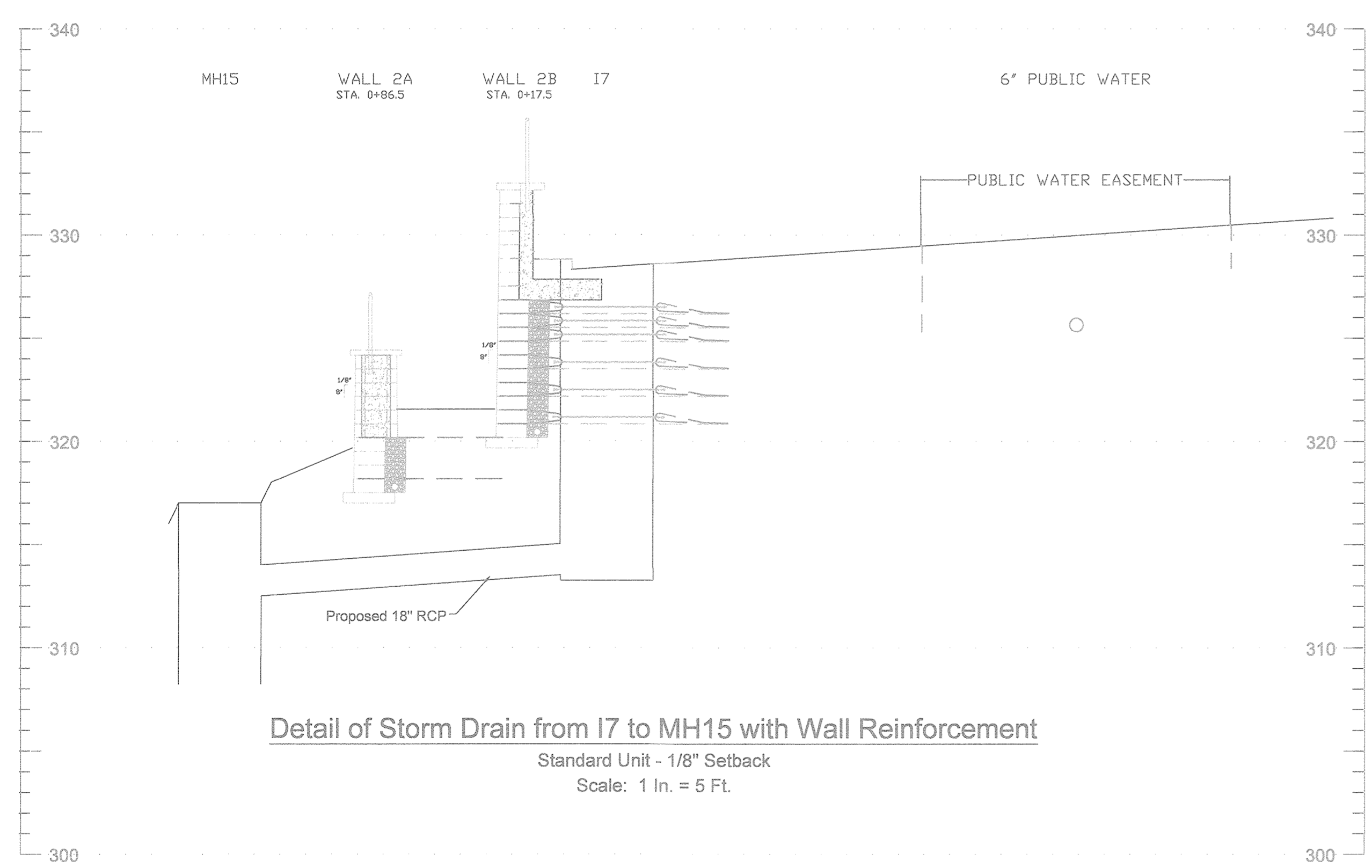
**Section 2B-1**  
Standard Unit - 1/8" Setback  
Scale: 1 In. = 5 Ft.



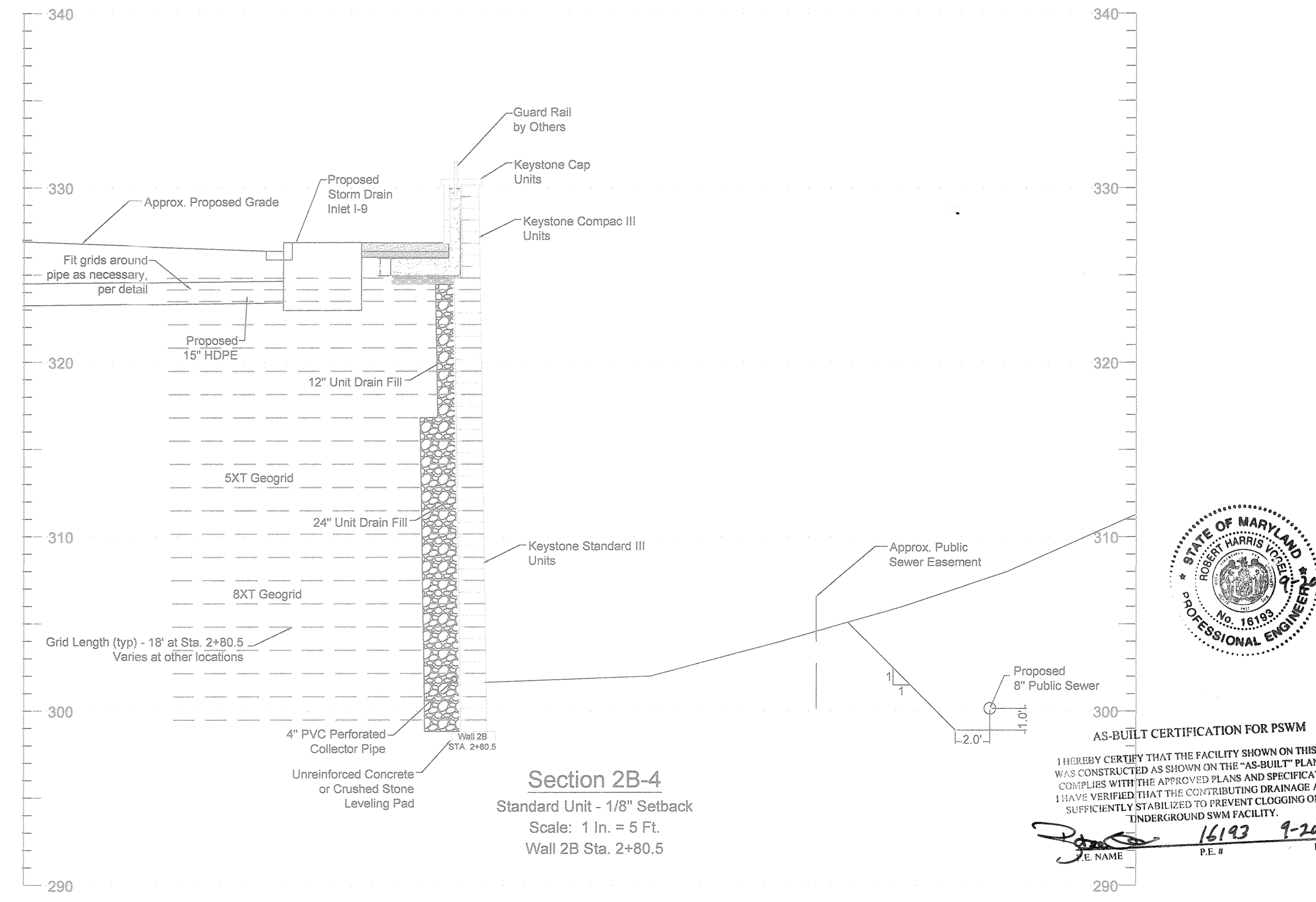
**Section 2B-2**  
Standard Unit - 1/8" Setback  
Scale: 1 In. = 5 Ft.  
Wall 2B Sta. 3+30.5



**Section 2B-3**  
Standard Unit - 1/8" Setback  
Scale: 1 In. = 5 Ft.  
Wall 2B Sta. 3+64



**Detail of Storm Drain from I7 to MH15 with Wall Reinforcement**  
Standard Unit - 1/8" Setback  
Scale: 1 In. = 5 Ft.



**Section 2B-4**  
Standard Unit - 1/8" Setback  
Scale: 1 In. = 5 Ft.  
Wall 2B Sta. 2+80.5



**AS-BUILT CERTIFICATION FOR PSWM**  
I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND COMPLIES WITH THE APPROVED PLANS AND SPECIFICATIONS. I HAVE VERIFIED THAT THE CONTRIBUTING DRAINAGE AREA IS SUFFICIENTLY STABILIZED TO PREVENT CLOGGING OF THE UNDERGROUND SWM FACILITY.  
P.E. NAME: Robert Harris Vose P.E. # 16193 DATE: 9-20-19

**NO AS-BUILT INFORMATION ON THIS SHEET**

**PROFESSIONAL CERTIFICATE**  
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. 33398, EXPIRATION DATE: 11-29-2019.  
*Robert Harris Vose*  
No. 33398  
PROFESSIONAL ENGINEER

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
 Chief, Development Engineering Division: Robert Harris Vose DATE: 8-22-17  
 Chief, Division of Land Development: Robert Harris Vose DATE: 9-5-17  
 Director: Robert Harris Vose DATE: 9-5-17

No.	Date	Revision	By
3	11/07/18	REVISE TO MODIFY FRONTAGE IMPROVEMENT TO REMOVE SIDEWALK, ADD CURBING AND ADJUST STORM DRAIN WITHIN BELLS LANE	RHV

**OWNER**  
HOWARD COUNTY HOUSING COMMISSION  
9770 PATUXENT WOODS DR., SUITE 100  
COLUMBIA, MD 21046  
C/O PETER ENGEL  
(410) 313-6320

**DEVELOPER**  
STARBUCK ASSOCIATES, INC.  
2661 RIVA ROAD  
SUITE 320  
ANNAPOLIS, MD 21401  
C/O SCOTT N. LINK  
(410) 571-8610

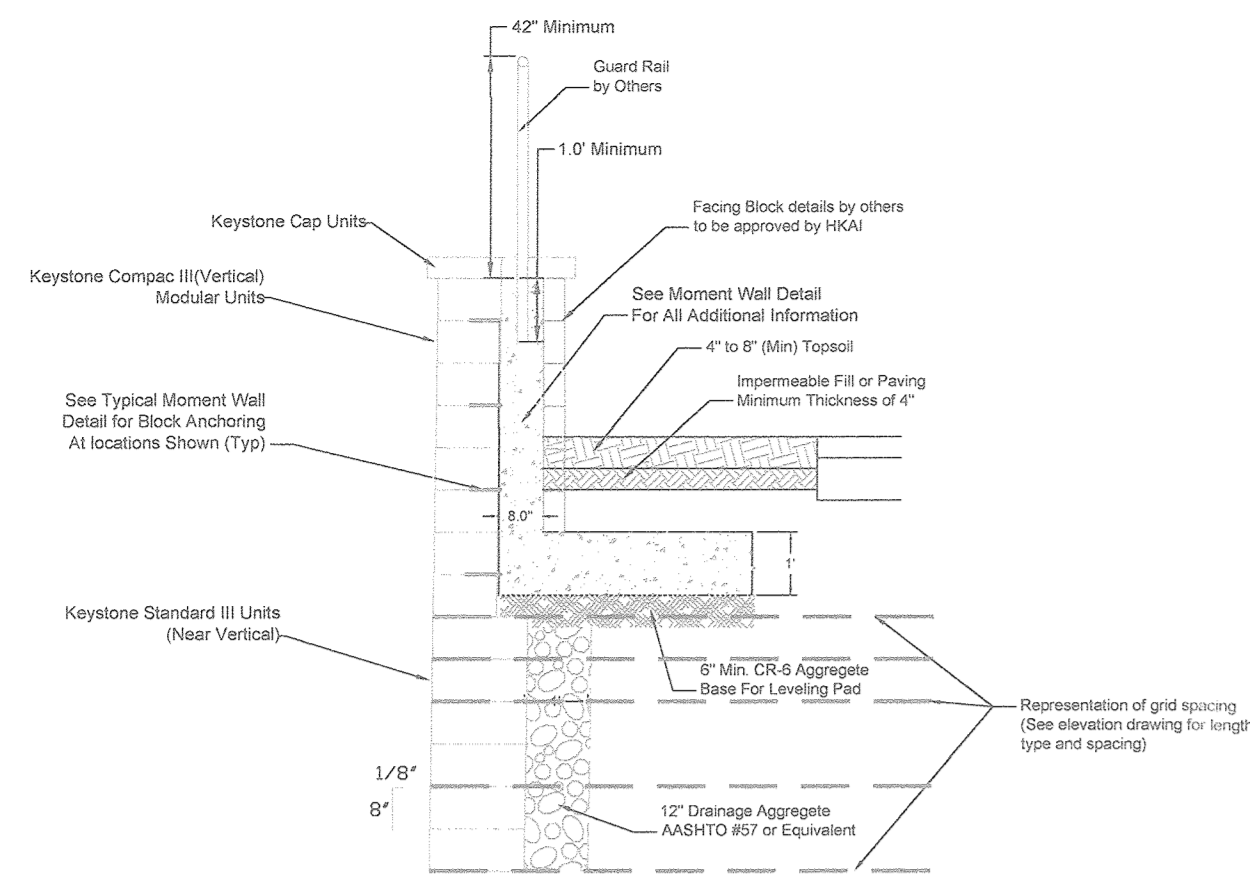
**HARDIN-KIGHT ASSOCIATES, INC.**  
GEOTECHNICAL CONSULTANTS  
7524 WB&A ROAD, SUITE 100  
GLEN BURNIE, MARYLAND  
(410) 553-0802  
(410) 553-0808

Drawn By: JAF  
Checked By: SEK  
Scale: 1"=5'

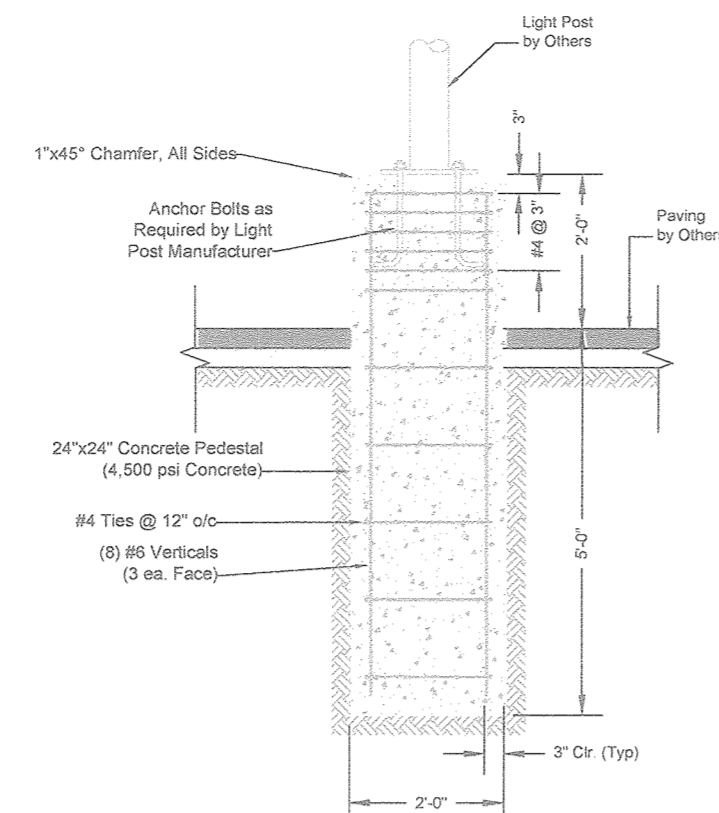
Title: Retaining Walls 2A & 2B Detail and Cross Sections  
 Project: BURGESS MILL STATION PH II APARTMENTS  
 A REDEVELOPMENT OF THE ELLICOTT CITY TERRACE APARTMENT  
 ZONED: R-A-15 L-11702P-63 PARCELS 120  
 TAX MAP 25 BLOCK 7 2ND ELECTION DISTRICT HOWARD COUNTY, MARYLAND

Date: 02/09/2017  
Project No: 15140  
Drawing No: 25 OF 30

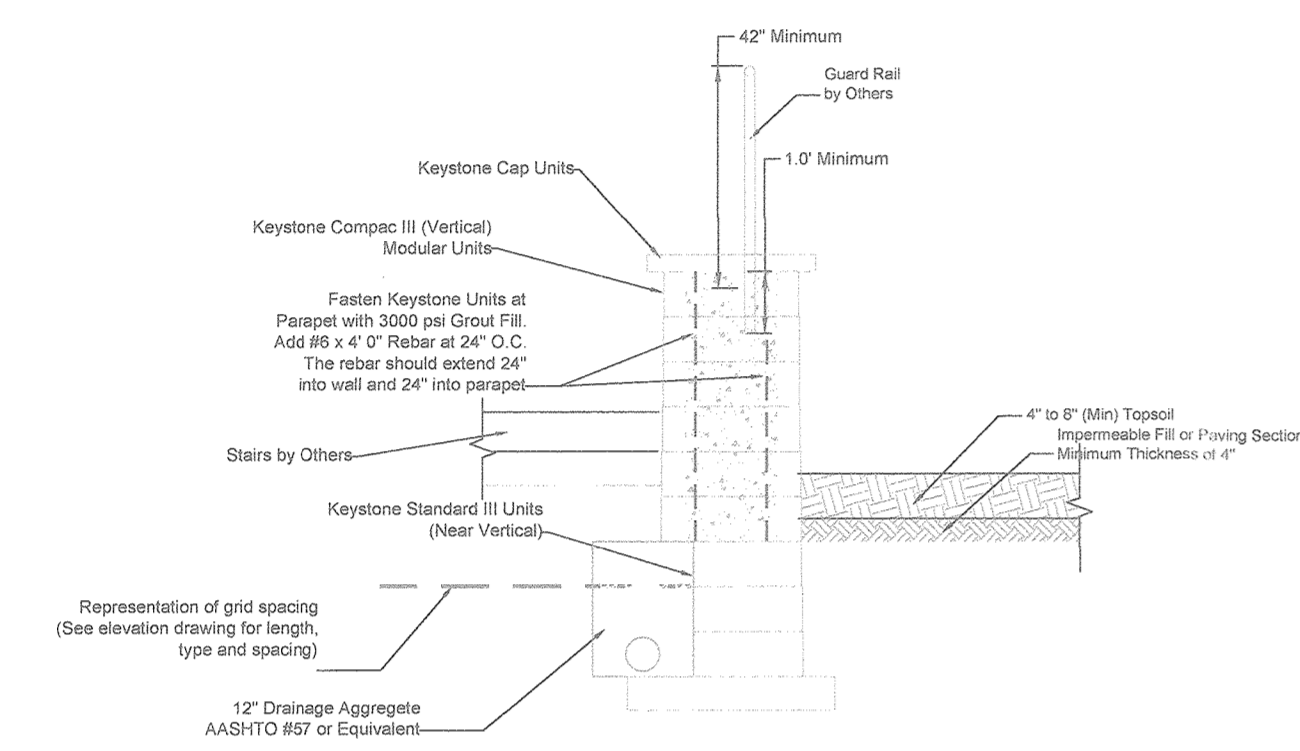
**AS-BUILT - JUNE 2019**



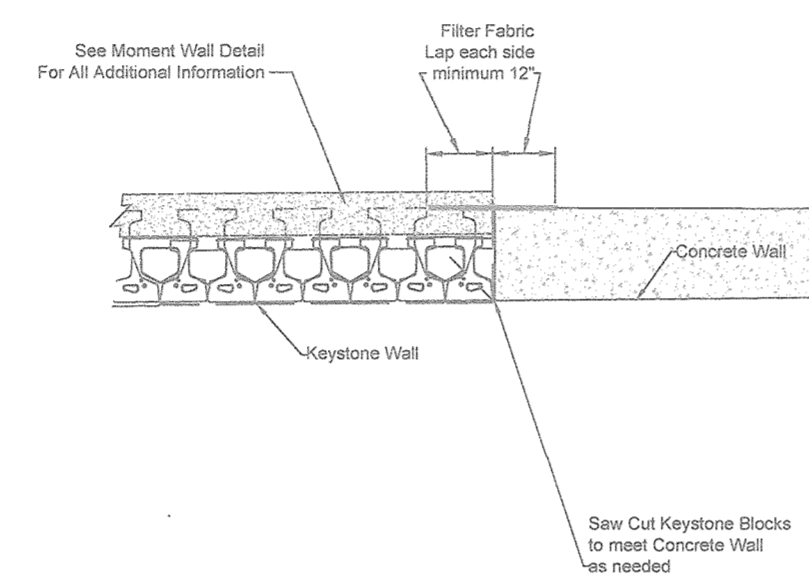
Wall 2B Parapet Moment Wall (Typ)



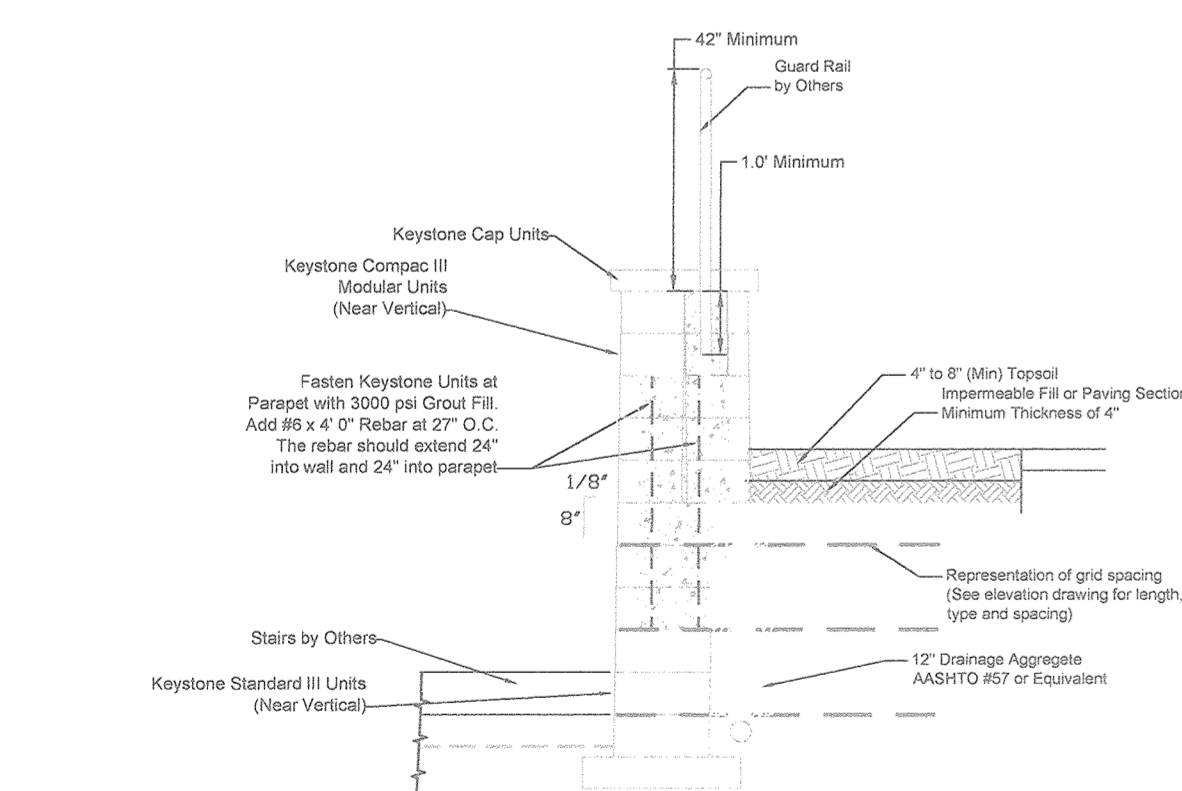
Lamp Post Base Detail (Typ)



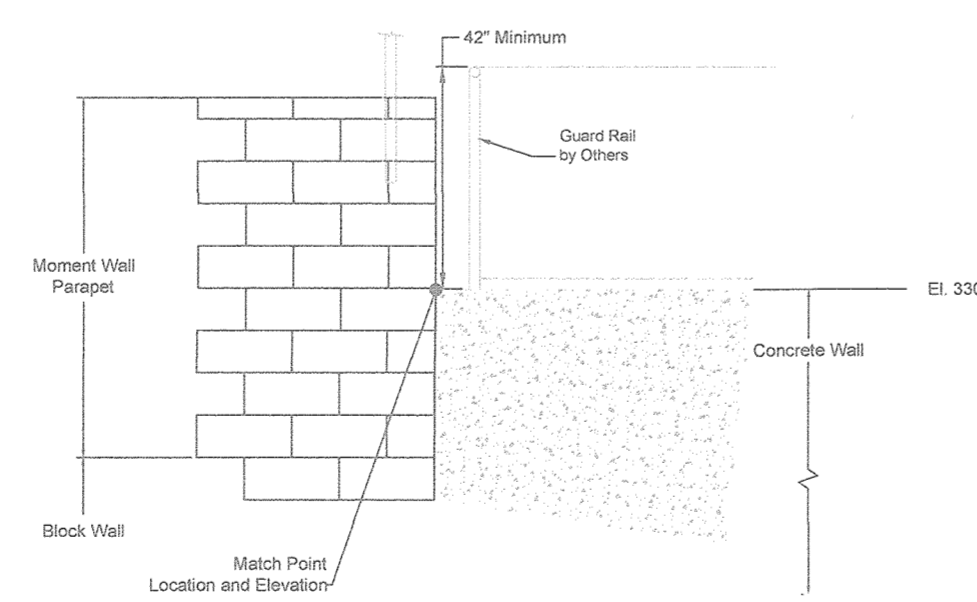
Parapet Wall - Stairs Above Grade (Typ)



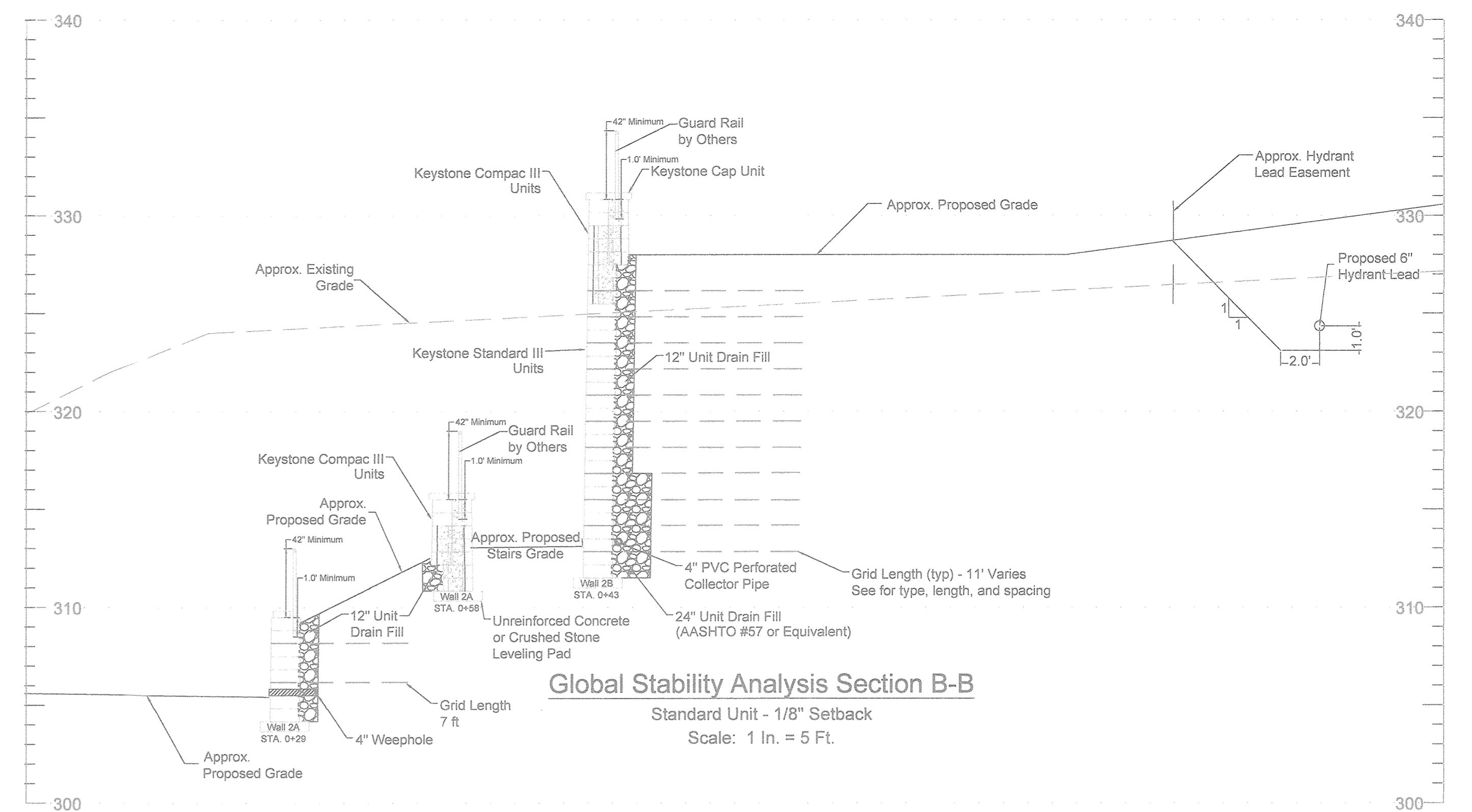
Wall 2B Plan View  
Joint Block Wall and Concrete Wall  
Wall 2B: Sta. 3+64



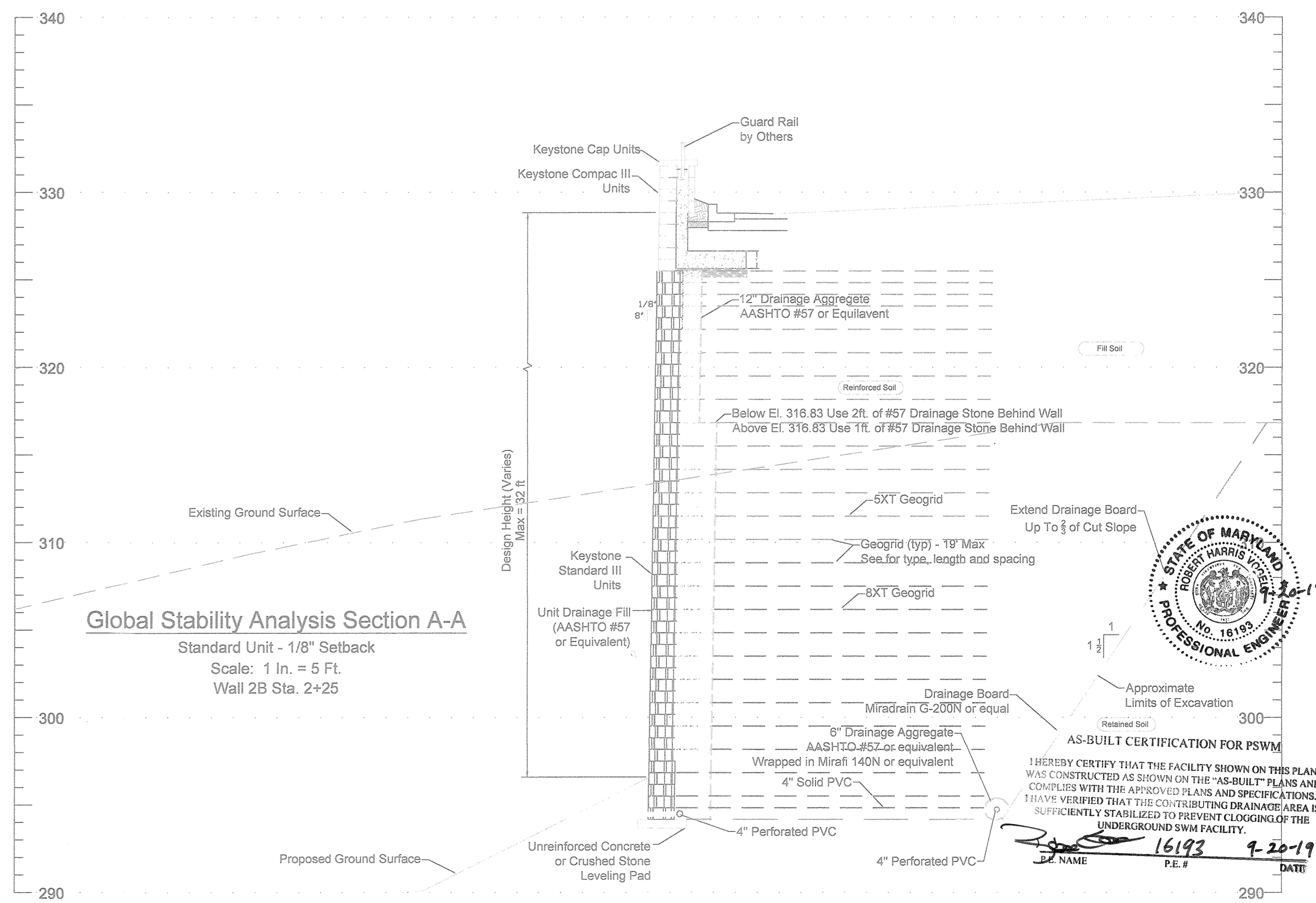
Parapet Wall - Stairs Below Grade (Typ)



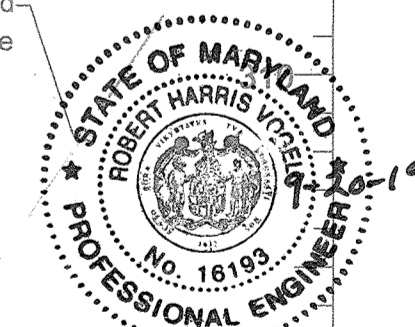
Wall 2B Elevation At Concrete Wall  
Wall 2B: Sta. 3+64



Global Stability Analysis Section B-B  
Standard Unit - 1/8" Setback  
Scale: 1 in. = 5 Ft.



Global Stability Analysis Section A-A  
Standard Unit - 1/8" Setback  
Scale: 1 in. = 5 Ft.  
Wall 2B Sta. 2+25



I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND COMPLIES WITH THE APPROVED PLANS AND SPECIFICATIONS. I HAVE VERIFIED THAT THE CONTRIBUTING DRAINAGE AREA IS SUFFICIENTLY STABILIZED TO PREVENT CLOGGING OF THE UNDERGROUND SWM FACILITY.

P.E. NAME: Robert Harris P.E.#: 16193 DATE: 9-20-19

No AS-BUILT INFORMATION ON THIS SHEET

PROFESSIONAL CERTIFICATE  
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. 33398, EXPIRATION DATE: 11-29-2018.

*Robert Harris*  
No. 33398  
PROFESSIONAL ENGINEER

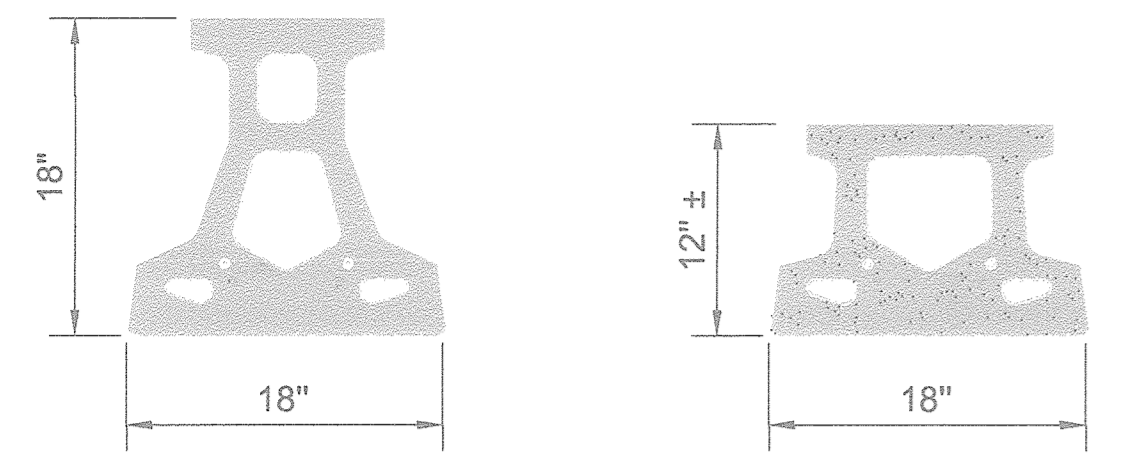
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING	No.	Date	Revision	By
<i>[Signature]</i> CHIEF, DEVELOPMENT ENGINEERING DIVISION		8-22-17		
<i>[Signature]</i> CHIEF, DIVISION OF LAND DEVELOPMENT		9-5-17		
<i>[Signature]</i> DIRECTOR	3	11/07/18	REVISE TO MODIFY FRONTAGE IMPROVEMENT TO REMOVE SIDEWALK, ADD CURBING AND ADJUST STORM DRAIN WITHIN FELLS LANE	RHV

OWNER HOWARD COUNTY HOUSING COMMISSION 9770 PATUXENT WOODS DR., SUITE 100 COLUMBIA, MD 21046 C/O PETER ENGEL (410) 313-5320	DEVELOPER STAYROU ASSOCIATES, INC. 2661 RVA ROAD SUITE 320 ANNAPOLIS, MD 21401 C/O SCOTT N. LINK (410) 571-6610
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HARDIN-KIGHT ASSOCIATES, INC.  
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7524 WB&A ROAD, SUITE 100  
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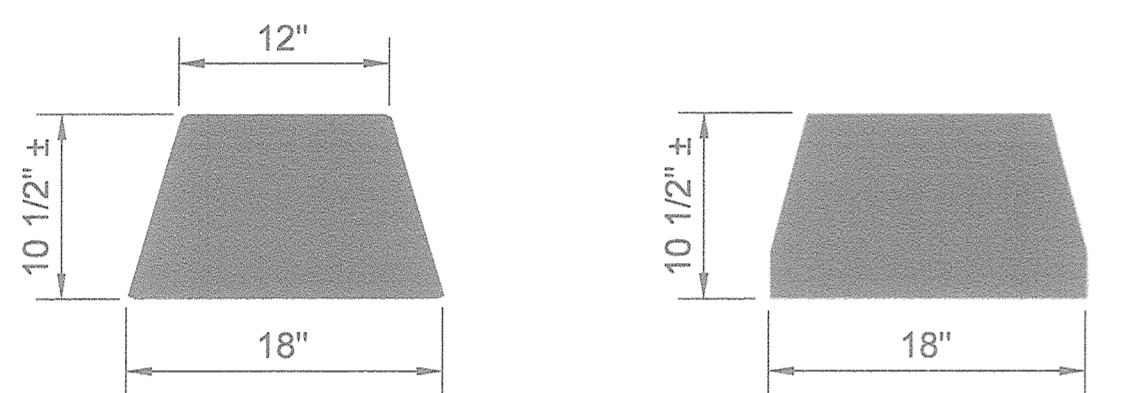
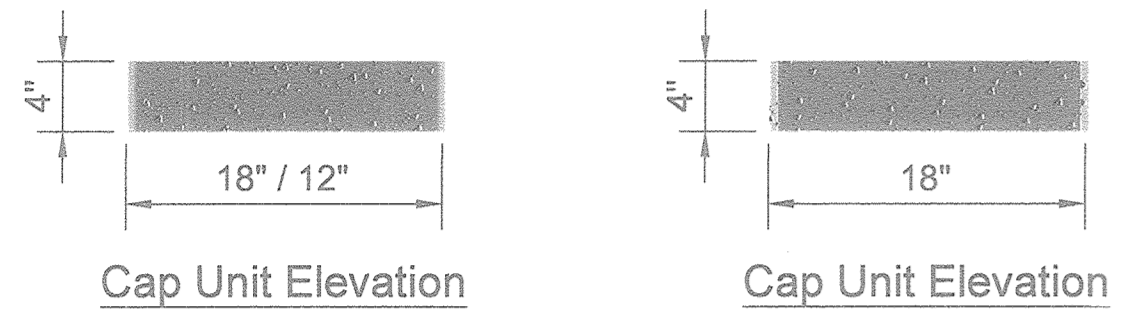
Drawn By: JAF	Title: Retaining Walls 2A & 2B Details and Cross Sections	Date: 02/09/2017
Checked By: SEK	Project: BURGESS MILL STATION PH II APARTMENTS A REDEVELOPMENT OF THE ELLICOTT CITY TERRACE APARTMENTS ZONED: RA-15 L-17702P-63	Project No: 15140
Scale: NTS OR AS SHOWN	TAX MAP 25 BLOCK 7 2ND ELECTION DISTRICT	Drawing No: 26 OF 30

AS-BUILT - JUNE 2019



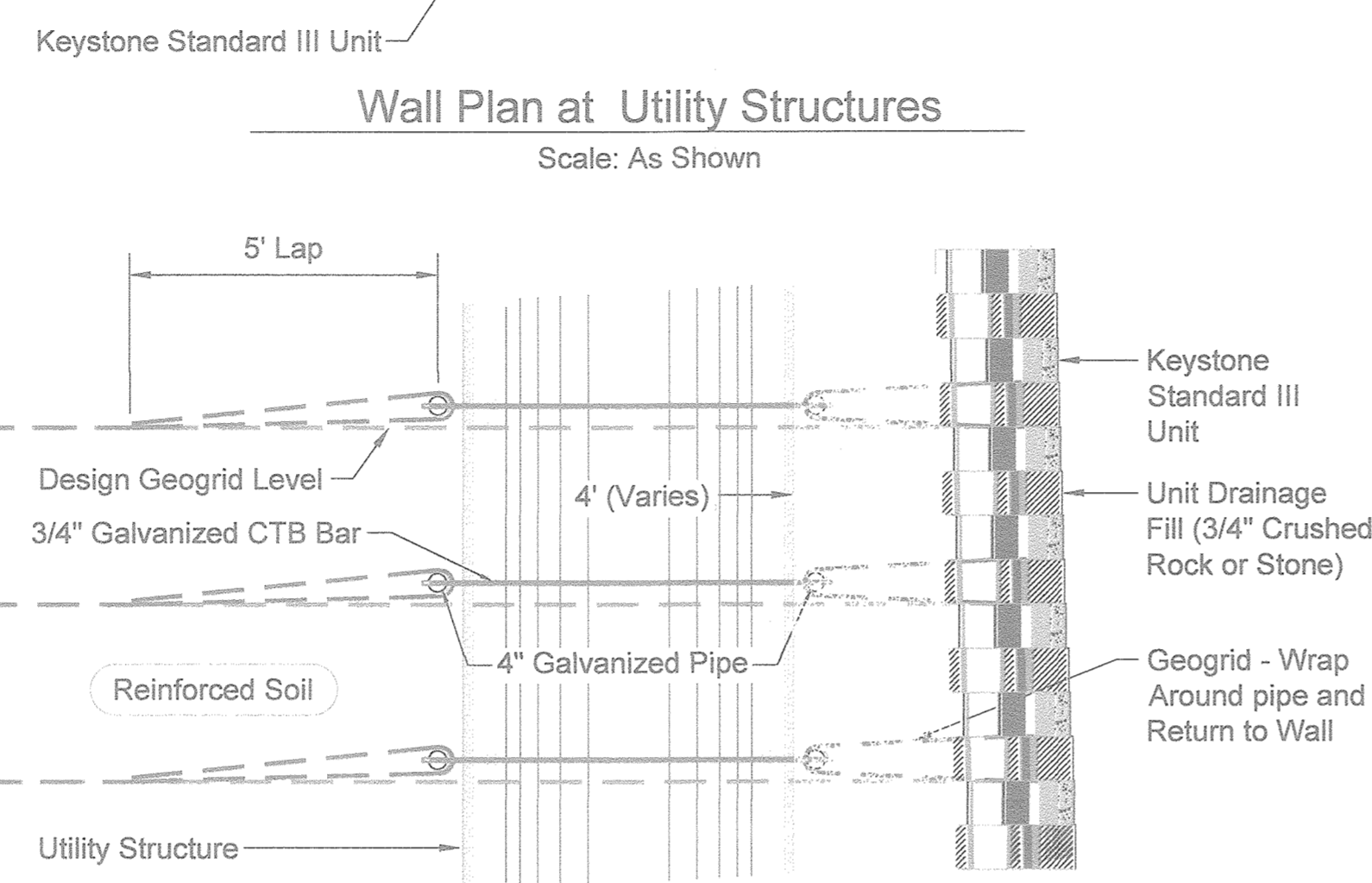
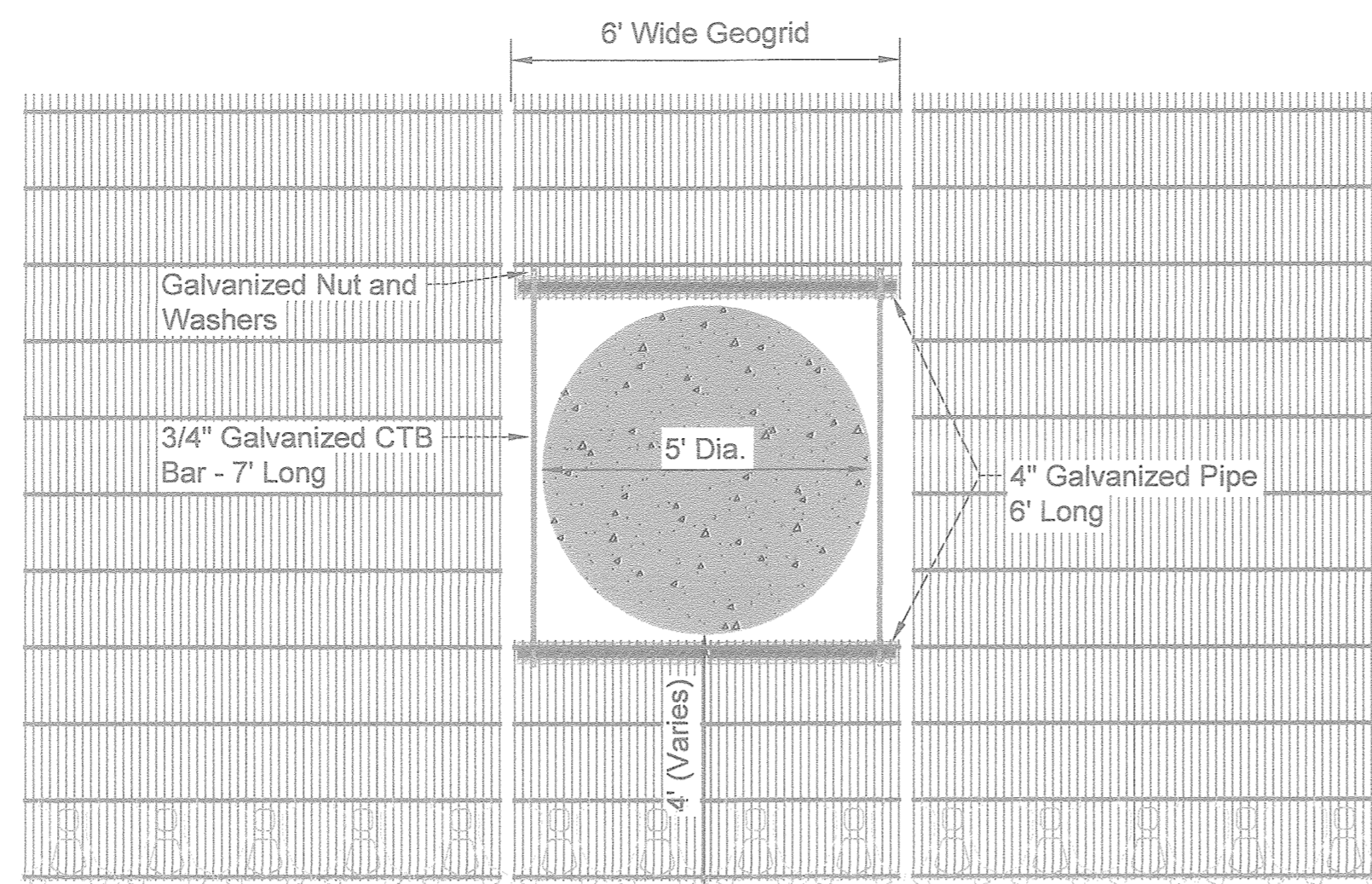
**Standard III Unit**  
\* Dimensions May Vary by Region

**Compac III Unit**  
\* Dimensions May Vary by Region

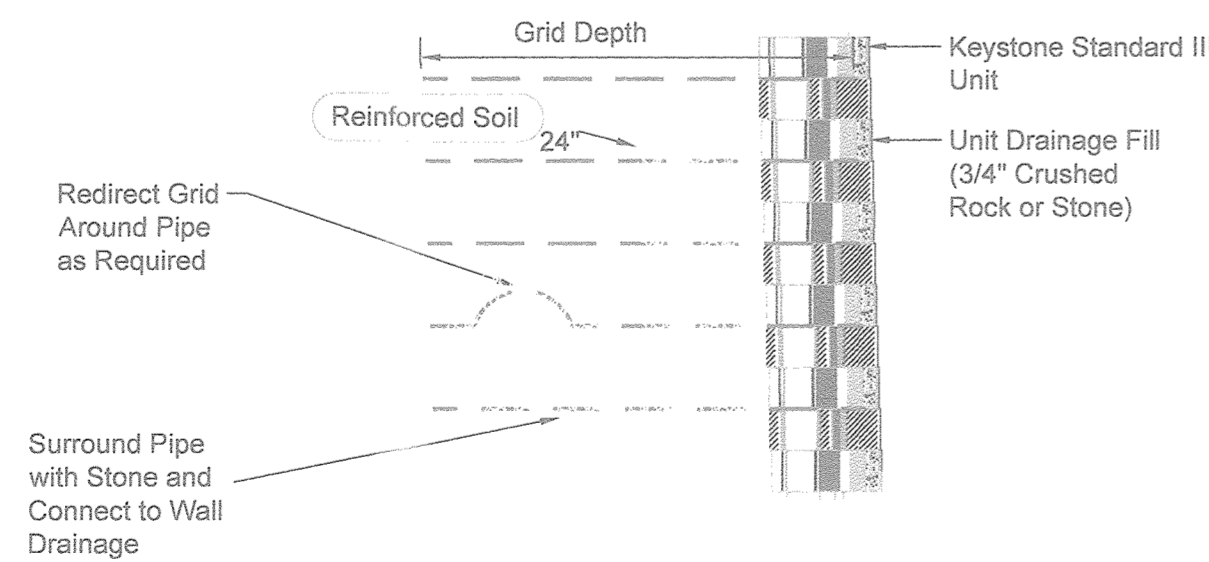


**Universal Cap Unit Option**  
\* Dimensions & Availability Will Vary by Region

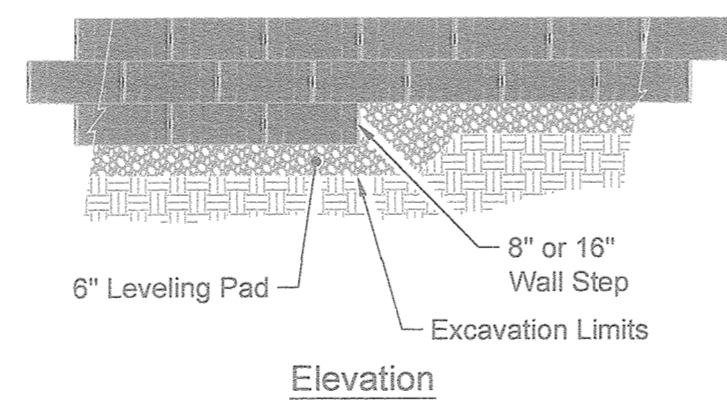
**Straight Split Cap Unit Option**  
\* Dimensions & Availability Will Vary by Region



**Wall Section at Utility Structures**  
Standard Unit - Near Vertical Setback

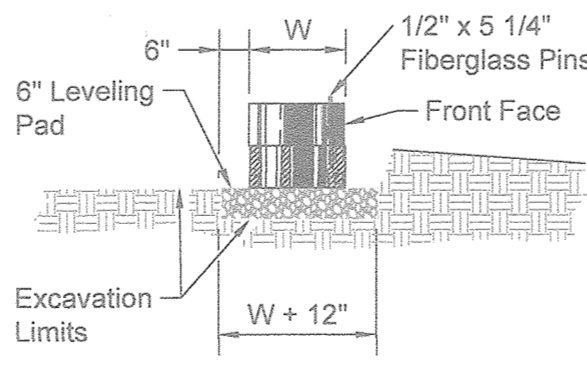


**Wall Section with Pipe in Reinforced Zone**  
Standard Unit - Near Vertical Setback

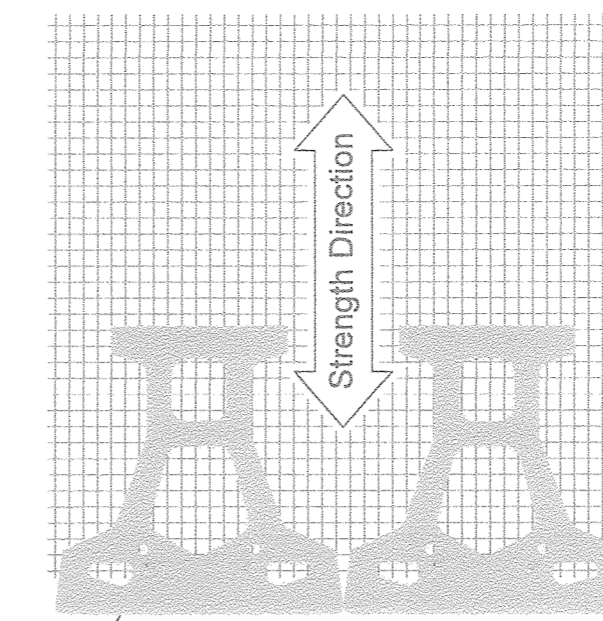


**Elevation**

**Note:**  
1. The leveling pad is to be constructed of crushed stone or 2000 psi ± unreinforced concrete.

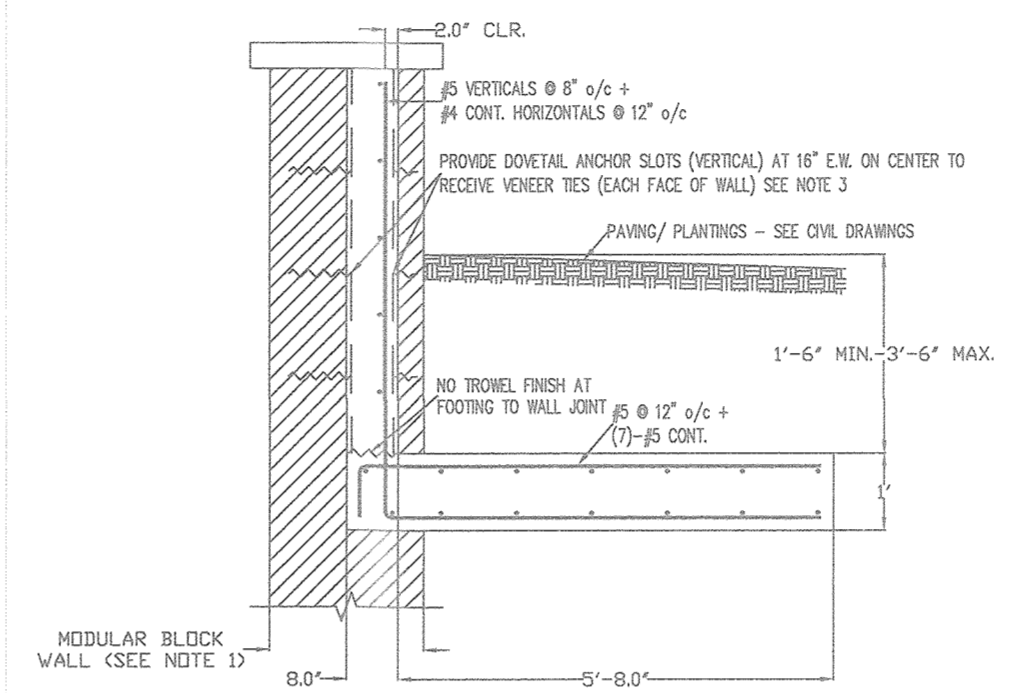


**Leveling Pad Detail**



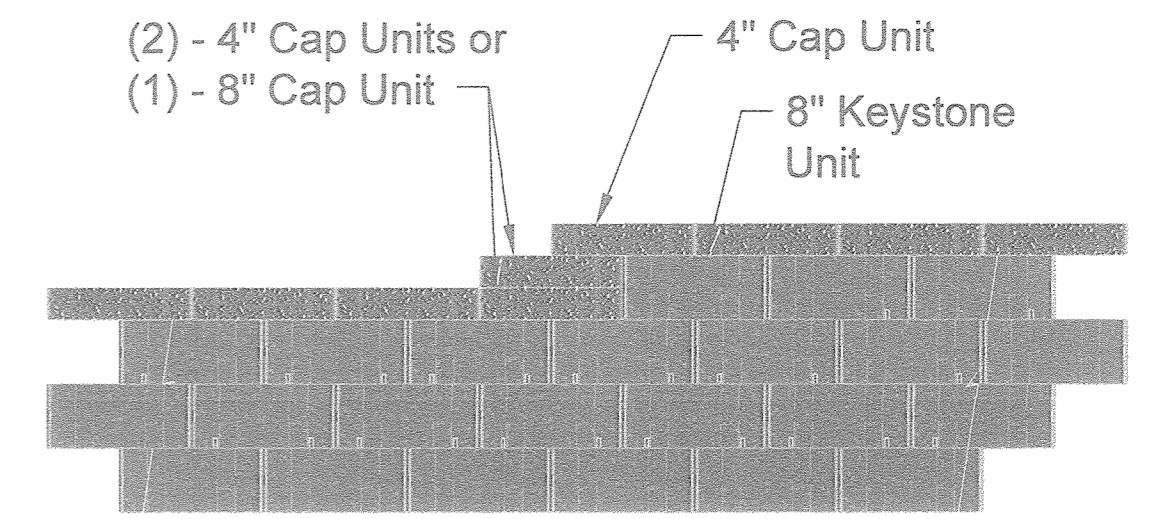
Geogrid is to be Placed on Level Backfill and Extended Over the Fiberglass Pins. Place Next Unit. Pull Grid Taught and Backfill. Stake as required.

**Grid & Pin Connection**



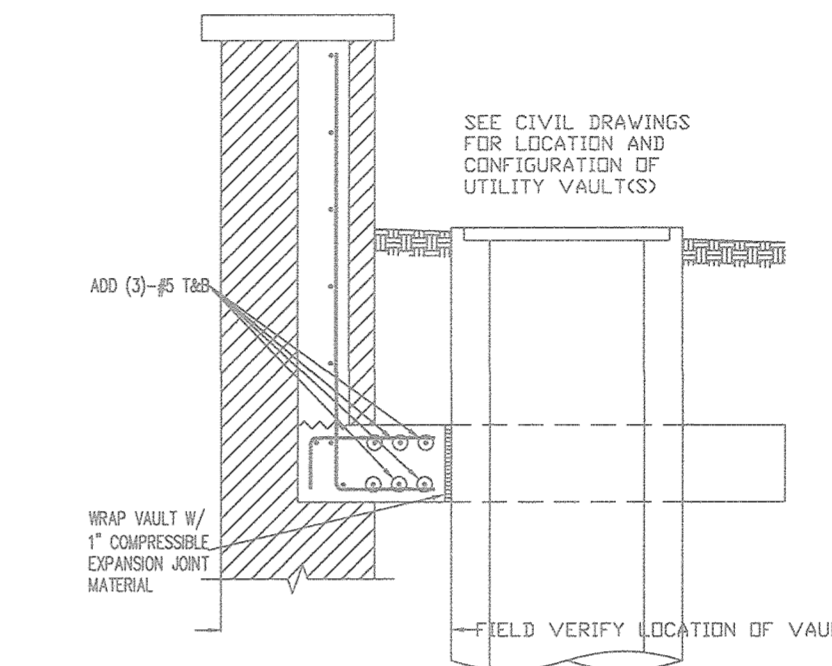
**Typical Moment Wall**

**NOTES:**  
1. GEGRID NOT SHOWN - SEE MODULAR WALL ENGINEER'S DRAWINGS FOR RETAINING WALL INFORMATION.  
2. SEE CIVIL DRAWINGS FOR REQUIRED EXTENT OF IMPACT BARRIER WALL.  
3. DOVETAIL SLOTS SHALL BE HOBASIT AND BARBARD TYPE 305 OR APPROVED EQUIVALENT, 18 GAGE GALVANIZED SPACED AT 16" E.W. ON CENTER. DOVETAIL ANCHORS SHALL BE HOBASIT AND BARBARD TYPE 315-RL, STRAIGHT-FLEXIBLE DOVETAIL ANCHORS OR APPROVED EQUIVALENT WITH 14 GAGE DOVETAIL HEAD AND 5" LENGTH TIE, GALVANIZED.

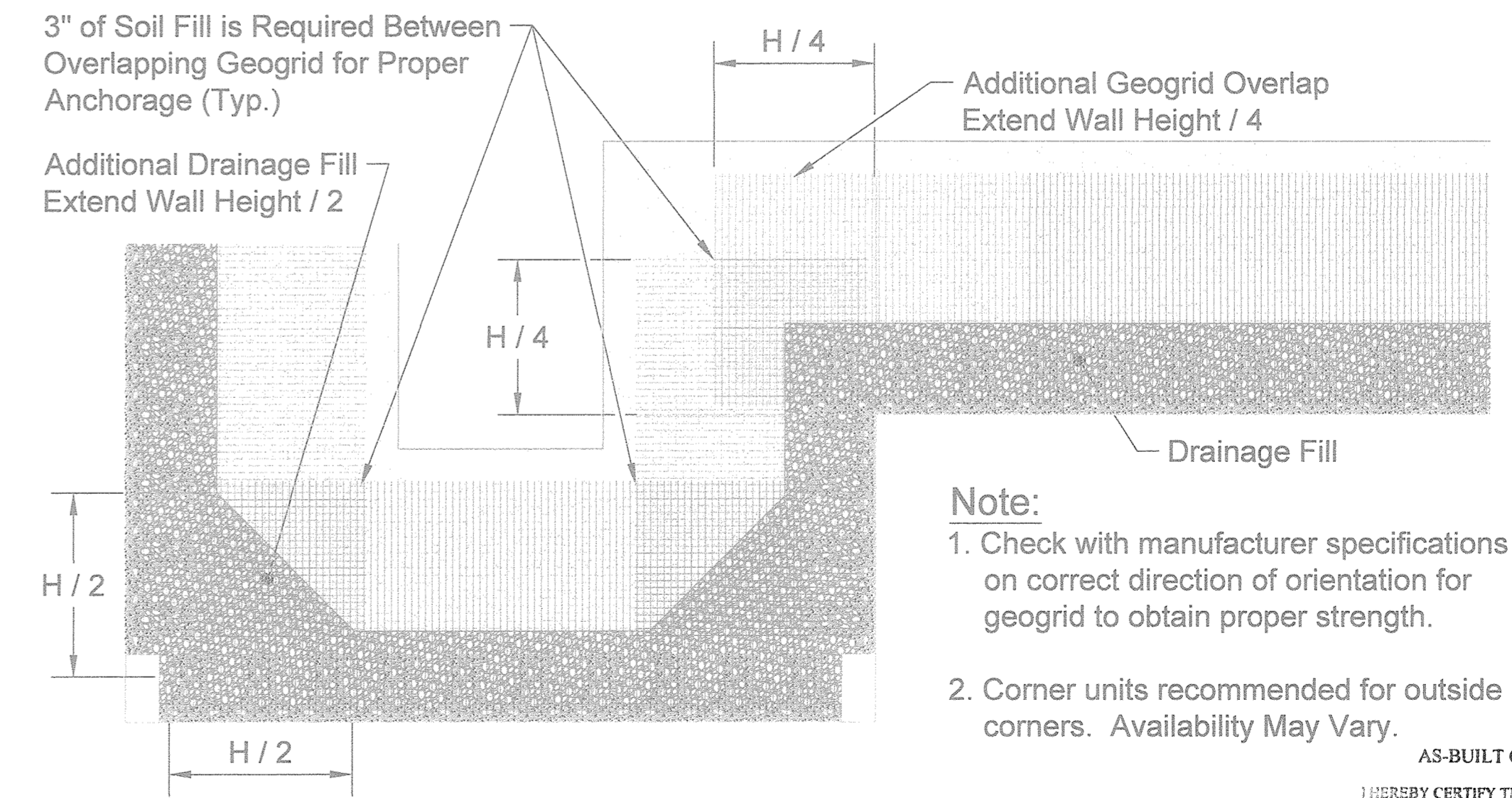
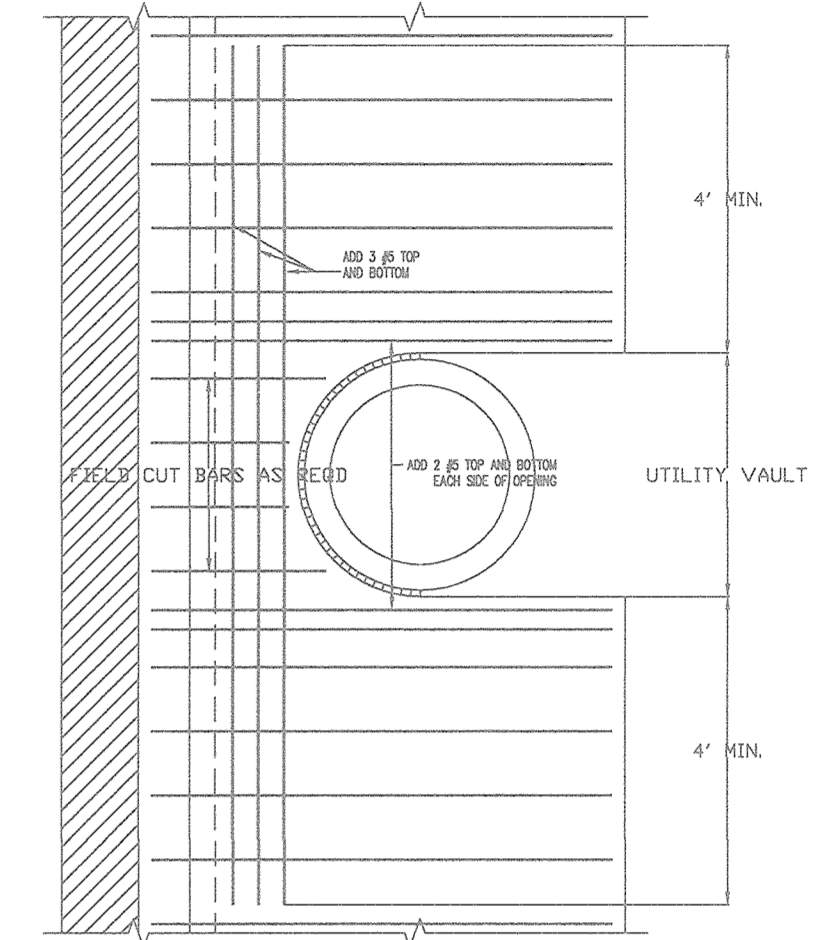


**Note:**  
1. Secure all cap units with Keystone Kapseal or equal.

**Top of Wall Steps**

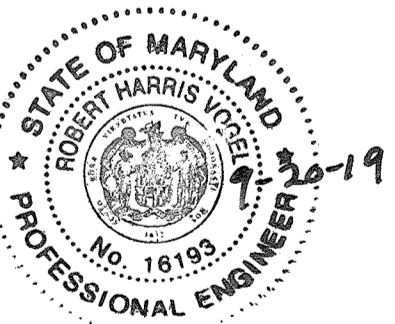


**Typical Moment Wall at Utility Structures**



**Geogrid Installation at Corners**

**Note:**  
1. Check with manufacturer specifications on correct direction of orientation for geogrid to obtain proper strength.  
2. Corner units recommended for outside corners. Availability May Vary.



AS-BUILT CERTIFICATION FOR PSWM

I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE AS-BUILT PLANS AND COMPLIES WITH THE APPROVED PLANS AND SPECIFICATIONS. I HAVE VERIFIED THAT THE CONTRIBUTING DRAINAGE AREA IS SUFFICIENTLY STABILIZED TO PREVENT CLOGGING OF THE UNDERGROUND SWIM FACILITY.

**16193** 9-20-19  
P.E. # DATE

NO AS-BUILT INFORMATION ON THIS SHEET

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APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
**Chief, Development Engineering Division** 8-22-17  
**Chief, Division of Land Development** 9-5-17  
**Director** 9-5-17

No.	Date	Revision	By
3	11/07/18	REVISE TO MOVE FRONTAGE IMPROVEMENT TO REMOVE SIDEWALK ADD CURBING AND ADJUST STORM DRAIN WITHIN FELS LANE	RHV

**OWNER**  
HOWARD COUNTY HOUSING COMMISSION  
9770 PATUXENT WOODS DR., SUITE 100  
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C/O PETERS EXCEL  
(410) 313-6320

**DEVELOPER**  
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C/O SCOTT N. LINK  
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**HARDIN-KIGHT ASSOCIATES, INC.**  
GEOTECHNICAL CONSULTANTS  
7524 WB&A ROAD, SUITE 100  
GLEN BURNIE, MARYLAND  
(410) 553-0802  
(410) 553-0808

Drawn By: JAF	Title: Retaining Walls 2A & 2B Details	Date: 02/09/2017
Checked By: SEK	Project: BURGESS MILL STATION PH II APARTMENTS A REDEVELOPMENT OF THE ELLICOTT CITY TERRACE APARTMENTS	Project No: 15140
Scale: NTS	TAX MAP 25 BLOCK 7 2ND ELECTION DISTRICT	Drawing No: 27 OF 30

**AS-BUILT - JUNE 2019**

**BURGESS MILL - RETAINING WALLS #2A & #2B  
SEGMENTAL RETAINING WALL SPECIFICATIONS**

**PART 1: GENERAL**

**1.01 Description**

A. Work shall consist of furnishing and construction of a KEYSTONE Standard Unit Retaining Wall System or equal in accordance with these specifications and in reasonably close conformity with the lines, grades, design, and dimensions shown on the plans.

B. Work includes preparing foundation soil, furnishing and installing leveling pad, unit drainage fill and backfill to the lines and grades shown on the construction drawings.

C. Work includes furnishing and installing geogrid soil reinforcement of the type, size, location, and lengths designated on the construction drawings.

**1.02 Reference Documents**

A. American Society for Testing and Materials (ASTM)

- ASTM C140 Sampling and Testing Concrete Masonry Units
- ASTM C1372 Specification for Dry-Cast Segmental Retaining Wall Units
- ASTM D422 Particle-Size Analysis of Soils
- ASTM D698 Laboratory Compaction Characteristics of Soil - Standard Effort
- ASTM D1557 Laboratory Compaction Characteristics of Soil - Modified Effort
- ASTM D3034 Polyvinyl Chloride Pipe (PVC)
- ASTM D4318 Liquid Limit, Plastic Limit and Plasticity Index of Soils
- ASTM D4475 Horizontal Shear Strength of Pultruded Reinforced Plastic Rods
- ASTM D4476 Flexural Properties of Fiber Reinforced Pultruded Plastic Rods
- ASTM D4595 Tensile Properties of Geotextiles - Wide Width Strip
- ASTM D5262 Unconfined Tension Creep Behavior of Geosynthetics
- ASTM D6818 Evaluate Installation Damage of Geosynthetics
- ASTM D6637 Tensile Properties of Geogrids - Single or Multi-Rib
- ASTM D6638 Connection Strength - Reinforcement/Segmental Units
- ASTM D6706 Geosynthetic Pullout Resistance in Soil
- ASTM D6916 Shear Strength Between Segmental Concrete Units

B. American Association of State Highway and Transportation Officials (AASHTO)

- AASHTO M 252 Corrugated Polyethylene Drainage Pipe

C. Geosynthetic Research Institute (GRI)

- GRI-GG4 Determination of Long Term Design Strength of Geogrids
- GRI-GG5 Determination of Geogrid (soil) Pullout

D. National Concrete Masonry Association (NCMA)

- NCMA SRWU-1 Test Method for Determining Connection Strength of SRW
- NCMA SRWU-2 Test Method for Determining Shear Strength of SRW

**1.03 Delivery, Storage and Handling**

A. Contractor shall check all materials upon delivery to assure that the proper type, grade, color, and certification has been received.

B. Contractor shall protect all materials from damage due to jobsite conditions and in accordance with manufacturer's recommendations. Damaged materials shall not be incorporated into the work.

**PART 2: PRODUCTS**

**2.01 Definitions**

A. Modular Unit - a concrete retaining wall element machine made from Portland cement, water, and aggregates.

B. Structural Geogrid - a structural element formed by a regular network of integrally connected tensile elements with apertures of sufficient size to allow interlocking with surrounding soil, rock, or earth and function primarily as reinforcement.

C. Unit Drainage Fill - drainage aggregate, which is placed within and immediately behind the modular concrete units.

D. Reinforced Backfill - compacted soil, which is placed within the reinforced soil volume as outlined on the plans.

**2.02 Modular Concrete Retaining Wall Units**

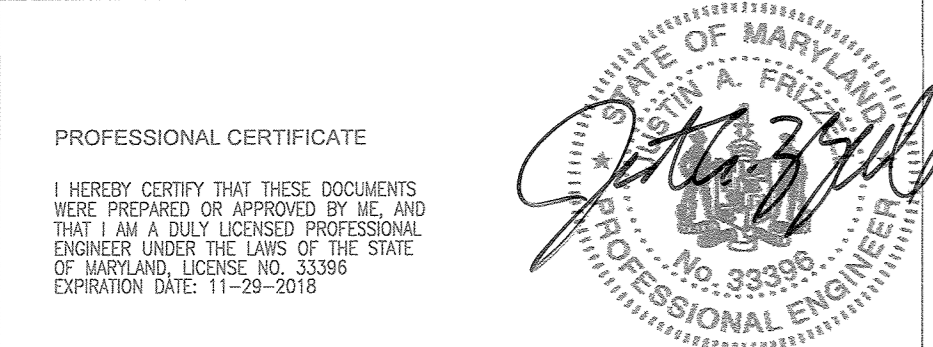
A. Modular concrete units shall conform to the following architectural requirements:

- Color - The Owner will specify standard manufacturers' color.
- Face finish - The Owner will specify sculptured rock face in angular tri-planer or straight face configuration. Other face finishes will not be allowed without written approval of Owner.
- Bond configuration - running with bonds nominally located at midpoint vertically adjacent units, in both straight and curved alignments.
- Exposed surfaces of units shall be free of chips, cracks or other imperfections when viewed from a distance of 10 feet under diffused lighting.

B. Modular concrete materials shall conform to the requirements of ASTM C1372 - Standard Specifications for Segmental Retaining Wall Units.

C. Modular concrete units shall conform to the following structural and geometric requirements measured in accordance with ASTM C140 Sampling and Testing Concrete Masonry Units:

- Compressive strength: 3000 psi (21 MPa);
- Absorption: 8 % for standard weight aggregates;
- Dimensional tolerances: ± 1/8" (3 mm) from nominal unit dimensions not including rough split face, ±1/16" (1.5 mm) unit height - top and bottom planes;
- Unit size: 8" (203 mm) (H) x 18" (457 mm)(W) x 18" (457 mm)(D) minimum;
- Unit weight: 100 lbs/unit (45 kg) minimum for standard weight aggregates.



D. Modular concrete units shall conform to the following performance testing:

- Inter-unit shear strength in accordance with ASTM D6916 (NCMA SRWU-2); 1500 pif (21 kN/m) minimum at 2 psi (13 MPa) normal pressure;
- Geogrid/unit peak connection strength in accordance with ASTM D6638 (NCMA SRWU-1); 900 pif (13 kN/m) minimum at 2-psi (13 MPa) normal force.

E. Modular concrete units shall conform to the following constructability requirements:

- Vertical setback: 1/8" (3 mm) ± per course (near vertical) per the design;
- Alignment and grid positioning mechanism - fiberglass pins, two per unit minimum;
- Maximum horizontal gap between erected units shall be 1/2 inch (13 mm).

**2.03 Shear Connectors**

A. Shear connectors shall be 1/2-inch (12 mm) diameter thermoalloghathic polyester resin-pultruded fiberglass reinforcement rods or equivalent to provide connection between vertically and horizontally adjacent units with the following requirements:

- Flexural Strength in accordance with ASTM D4476: 128,000 psi (882 MPa) minimum;
- Short Beam Shear in accordance with ASTM D4475: 6,400 psi (44 MPa) minimum.

B. Shear connectors shall be capable of holding the geogrid in the proper design position during grid pre-tensioning and backfilling.

**2.04 Base Leveling Pad Material**

A. Material shall consist of a compacted crushed stone base or non-reinforced concrete as shown on the construction drawings. A minimum of 6 inches deep and 30 inches wide compacted base is required. The base materials must be approved by a Maryland Registered Professional Engineer.

**2.05 Unit Drainage Fill**

A. Unit drainage fill shall consist of clean 1" (25 mm) minus crushed stone or crushed gravel meeting the following gradation tested in accordance with ASTM D-422.

Sieve Size	Percent Passing
1 1/2" (37.5 mm)	100
1 inch (25 mm)	95-100
1/2-inch (12.5 mm)	25 - 60
No. 4	0 - 10
No. 8	0 - 5

B. Drainage fill shall be placed within cores of, between, and behind units to meet this requirement. The drainage fill for Wall #2B must extend to at least 2 feet behind the back of the units below El. 316.83, and to 1 foot behind the back of the units above El. 316.83, as indicated on the site plans.

**2.06 Reinforced Backfill**

A. Reinforced backfill shall be free of debris and meet the following gradation tested in accordance with ASTM D-422:

Sieve Size	Percent Passing
3-inch (76 mm)	100
3/4-inch (19 mm)	75 - 100
No. 40	0 - 60
No. 200	0 - 35

Plasticity Index (PI) <15 and Liquid Limit <40 per ASTM D-4318.

B. Material can be site-excavated soils where the above requirements can be met. Unsuitable soils for backfill (high plastic clays or organic soils) shall not be used in the backfill or in the reinforced soil mass.

C. Contractor shall submit reinforced fill sample to the Geotechnical Engineer for approval prior to the use of any proposed reinforced fill material.

**2.07 Geogrid Soil Reinforcement**

A. Geosynthetic reinforcement shall consist of geogrids manufactured specifically for soil reinforcement applications and shall be manufactured from high tenacity polyester yarn or high-density polyethylene. Polyester geogrid shall be knitted from high tenacity polyester filament yarn with a molecular weight exceeding 25,000 Meg/m and a carboxyl end group values less than 30. Polyester geogrid shall be coated with an impregnated PVC coating that resists peeling, cracking, and stripping.

B. The Long Term Allowable Tensile Design Load, of the geogrid material shall be determined as follows:

$T_d = T_{ult} / (RF_c \cdot RF_d \cdot RF_{id} \cdot FS)$

$T_d$  shall be evaluated based on a 75-year design life.

- T<sub>ult</sub>, Short Term Ultimate Tensile Strength shall be determined in accordance with ASTM D4595 or ASTM D6637. T<sub>ult</sub> is based on the minimum average roll values (MARV).
- RF<sub>c</sub>, Reduction Factor for Long Term Tension Creep. RF<sub>c</sub> shall be determined from 10,000-hour creep testing performed in accordance with ASTM D5262. Reduction value = 1.45 minimum.
- RF<sub>d</sub>, Reduction Factor for Durability. RF<sub>d</sub> shall be determined from polymer specific durability testing covering the range of expected soil environments. RF<sub>d</sub> = 1.10 minimum.
- RF<sub>id</sub>, Reduction Factor for Installation Damage. RF<sub>id</sub> shall be determined from product specific construction damage testing performed in accordance with ASTM D5818 (GRI-GG4). Test results shall be provided for each product to be used with project specific or more severe soil type. RF<sub>id</sub> = 1.05 minimum.
- FS, Overall Design Factor of Safety. FS shall be 1.5 unless otherwise noted for the maximum allowable working stress calculation.

C. The maximum design tensile load of the geogrid shall not exceed the laboratory tested ultimate strength of the geogrid/facing unit connection as limited by the "Hinge Height" divided by a factor of safety of 1.5. The connection strength testing and computation procedures shall be in accordance with ASTM D6638 Connection Strength between Geosynthetic Reinforcement and Segmental Concrete Units (NCMA SRWU-1).

D. Soil Interaction Coefficient, C<sub>i</sub>. C<sub>i</sub> values shall be determined per ASTM D6706 (GRI-GG5) at a maximum 0.75-inch (19 mm) displacement.

E. Manufacturing Quality Control. The geogrid manufacturer shall have a manufacturing quality control program that includes QC testing by an independent laboratory. The QC testing shall include:

- Tensile Strength Testing
- Melt Flow Index (HDPE)
- Molecular Weight (Polyester)

**2.08 Drainage Pipe**

A. The drainage pipe shall be perforated or slotted PVC pipe manufactured in accordance with ASTM D-3034 or corrugated HDPE pipe manufactured in accordance with AASHTO M252.

**2.09 Geotextile Filter Fabric**

A. When required, Geotextile filter fabric shall be 4.0 oz/sy, polypropylene, needlepunched nonwoven fabric. (Mirafix 140N or equivalent)

**PART 3: EXECUTION**

**3.01 Excavation**

A. Contractor shall excavate to the lines and grades shown on the construction drawings. The Geotechnical Engineer shall inspect the excavation and approve prior to placement of leveling material or fill soils. Proof roll foundation area as directed to determine if remedial work is required.

B. Over-excavation and replacement of unsuitable foundation soils and replacement with approved compacted fill will be performed under the direction of the Geotechnical Engineer.

**3.02 Base Leveling Pad**

A. Leveling pad material shall be placed to the lines and grades shown on the construction drawings, to a minimum thickness of 6" (150 mm) and extend laterally a minimum of 6" (150 mm) in front and behind the modular wall unit.

B. Soil leveling pad materials shall be compacted to a minimum of 95% Standard Proctor density per ASTM D-698 or 92% Modified Proctor Density per ASTM D1557.

C. Leveling pad shall be prepared to insure full contact to the base surface of the concrete units.

**3.03 Modular Unit Installation**

A. First course of units shall be placed on the leveling pad at the appropriate line and grade. Alignment and level shall be checked in all directions and insure that all units are in full contact with the base and properly seated.

B. Place the front of units side-by-side. Do not leave gaps between adjacent units. Layout of corners and curves shall be in accordance with manufacturer's recommendations.

C. Install shear/connecting devices per manufacturer's recommendations.

D. Place and compact drainage fill within and behind wall units. Place and compact backfill soil behind drainage fill, where indicated on plans. Follow wall erection and drainage fill closely with structure backfill.

E. Maximum stacked vertical height of wall units, prior to unit drainage fill and backfill placement and compaction, shall not exceed two courses.

**3.04 Structural Geogrid Installation**

A. Geogrid shall be oriented with the highest strength axis perpendicular to the wall alignment.

B. Geogrid reinforcement shall be placed at the strengths, lengths, and elevations shown on the construction design drawings or as directed by the Engineer.

C. The geogrid shall be laid horizontally on compacted backfill and attached to the modular wall units. Place the next course of modular concrete units over the geogrid. The geogrid shall be pulled taut, and anchored prior to backfill placement on the geogrid.

D. Geogrid reinforcements shall be continuous throughout their embedment lengths and placed side-by-side to provide 100% coverage at each level. Spliced connections between shorter pieces of geogrid or gaps between adjacent pieces of geogrid are not permitted.

**3.05 Reinforced Backfill Placement**

A. Reinforced backfill shall be placed, spread, and compacted in such a manner that minimizes the development of slack in the geogrid and installation damage.

B. Reinforced backfill shall be placed and compacted in lifts not to exceed 6 inches (150 mm) where hand compaction is used, or 8 - 10 inches (200 to 250 mm) where heavy compaction equipment is used. Lift thickness shall be decreased to achieve the required density as required.

C. Reinforced backfill shall be compacted to a minimum of 95% Standard Proctor density per ASTM D-698 or 92% Modified Proctor Density per ASTM D1557. All fill within 1 foot vertically below the parapet wall leveling pad, must be compacted to a minimum of 98% Standard Proctor density per ASTM D-698 or 95% Modified Proctor Density per ASTM D1557. The moisture content of the backfill material prior to and during compaction shall be uniformly distributed throughout each layer and shall be approved by the Geotechnical Engineer.

D. Only lightweight hand-operated equipment shall be allowed within 3 feet (1m) from the tail of the modular concrete unit.

E. Tracked construction equipment shall not be operated directly upon the geogrid reinforcement. A minimum fill thickness of 6 inches (150 mm) is required prior to operation of tracked vehicles over the geogrid. Tracked vehicle turning should be kept to a minimum to prevent tracks from displacing the fill and damaging the geogrid.

F. Rubber tired equipment may pass over geogrid reinforcement at slow speeds, less than 10 MPH (15 KPH). Sudden braking and sharp turning shall be avoided.

G. At the end of each day's operation, the Contractor shall slope the last lift of reinforced backfill away from the wall units to direct runoff away from wall face. The Contractor shall not allow surface runoff from adjacent areas to enter the wall construction site.

**3.06 Cap Installation**

A. Cap units shall be glued to underlying units with an all-weather adhesive recommended by the manufacturer.

**3.07 As-built Construction Tolerances**

A. Vertical alignment: ± 1.5" (40 mm) over any 10' (3 m) distance.

B. Wall Batter: within 0.5 degrees of design batter (0.9 degrees).

C. Horizontal alignment: ± 1.5" (40 mm) over any 10' (3 m) distance. Corners, bends & curves: ± 1 ft (300 mm) to theoretical location.

D. Maximum horizontal gap between erected units shall be 1/2 inch (13 mm).

**3.08 Connection with Concrete Wall**

A. Units shall be saw cut to abut concrete wall, with filter fabric (Mirafix 140N or equal) installed as shown on details.

**3.09 Field Quality Control**

A. Quality Assurance - The Geotechnical Engineer (Hardin-Kight Associates, Inc.) will provide quality assurance and testing services during construction.

B. Quality assurance should include foundation soil inspection. Verification of geotechnical design parameters. Quality assurance shall also include observation of construction for general compliance with design drawings and project specifications. Quality assurance is best performed by Hardin-Kight Associates, Inc.

C. Quality Control - Only qualified and experienced technicians and engineers shall perform testing and inspection services.

D. Quality control testing shall include soil and backfill testing to verify soil types and compaction and verification that the retaining wall is being constructed in accordance with the design plans and project specifications.

**PART 4: DESIGN CRITERIA**

A. The required bearing capacity for the retaining wall ranges from 2,000 psf to 7,000 psf, depending on the station along the wall. The bearing capacity requirements are indicated on the site plans.

B. Design φ (soil) = 32 degrees.

C. Design unit weight = 120 pcf.

D. Retaining walls were not designed to resist hydrostatic pressure.

E. Construction must be monitored by a professional engineer.



**AS-BUILT CERTIFICATION FOR PSWM**

I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND COMPLIES WITH THE APPROVED PLANS AND SPECIFICATIONS. I HAVE VERIFIED THAT THE CONTRIBUTING DRAINAGE AREA IS SUFFICIENTLY STABILIZED TO PREVENT CLOGGING OF THE UNDERGROUND SWM FACILITY.

*[Signature]* **16193** **9-20-19**  
P.E. # DATE

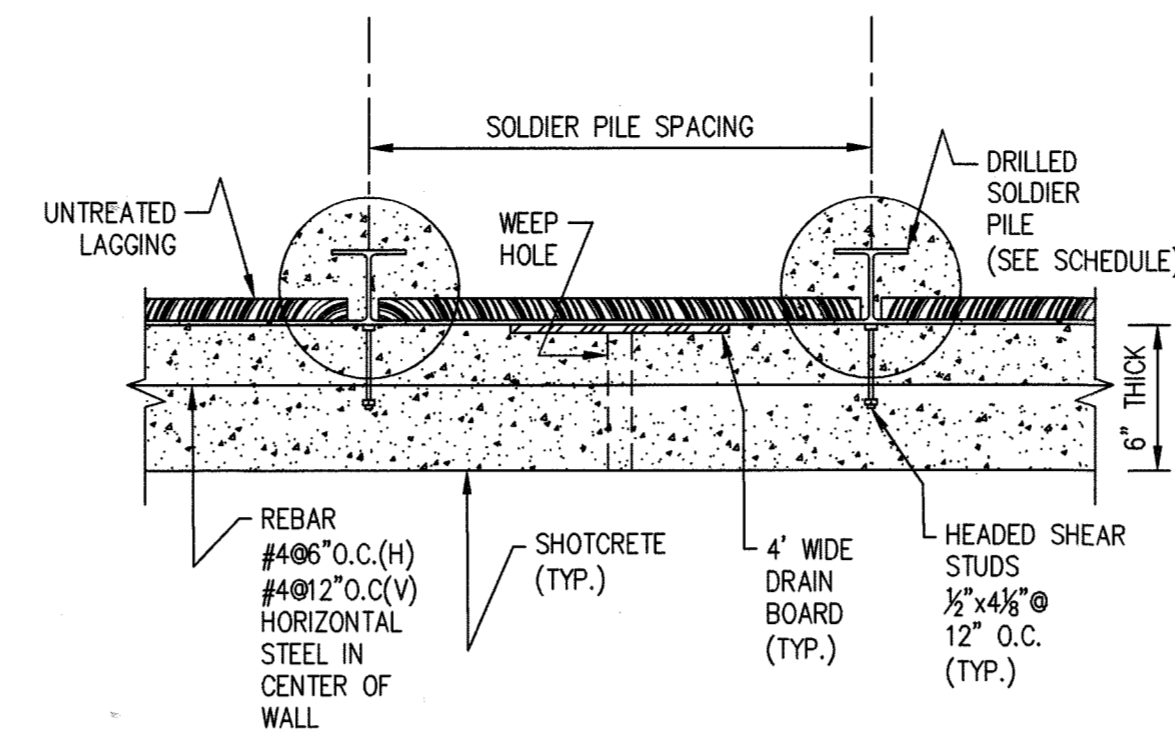
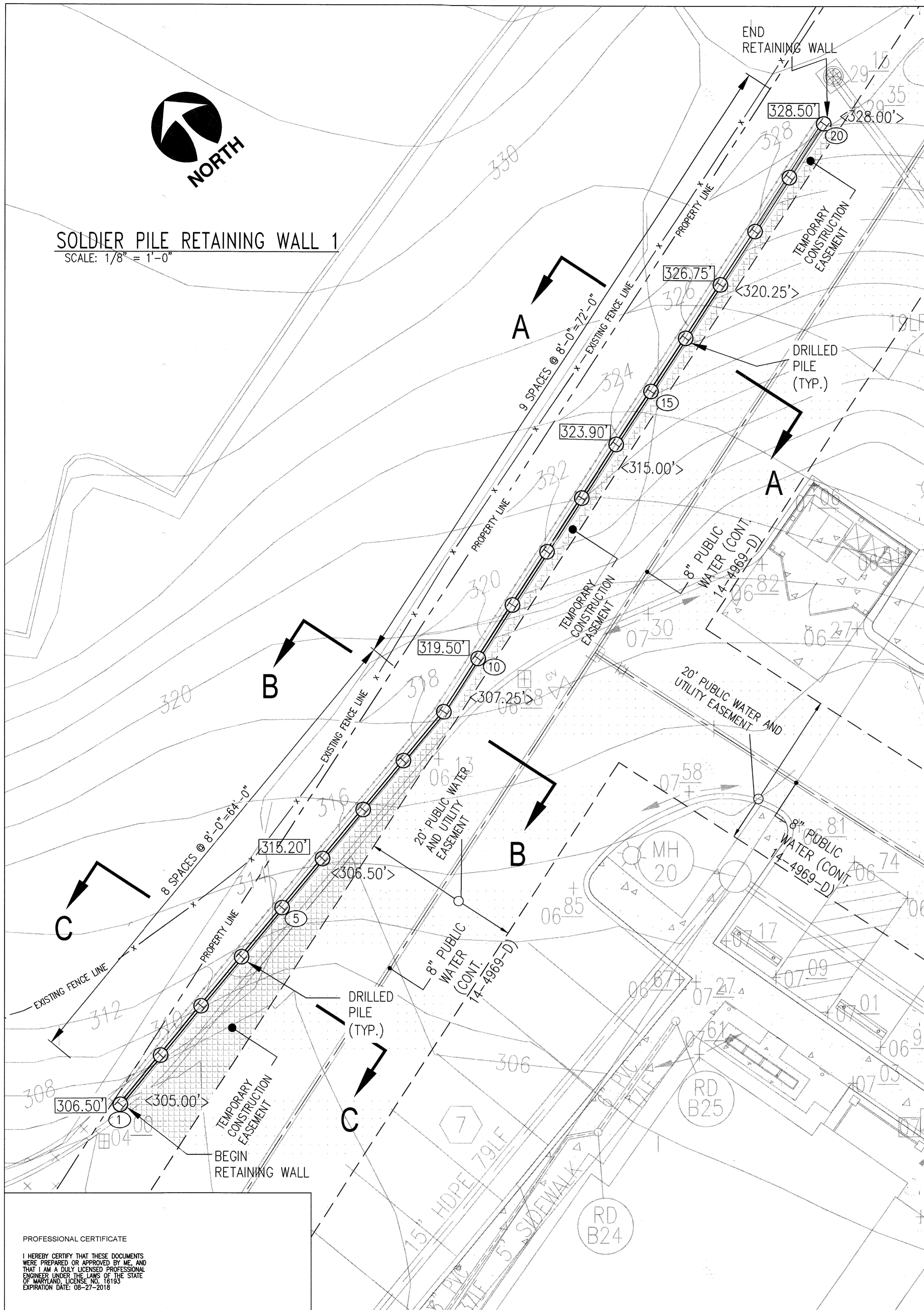
**NO AS-BUILT INFORMATION ON THIS SHEET**

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING	No.	Date	Revision	By	<p><b>OWNER</b> HOWARD COUNTY HOUSING COMMISSION 9770 PATUXENT WOODS DR., SUITE 100 COLUMBIA, MD 21046 C/O PETER ENGEL (410) 313-6320</p> <p><b>DEVELOPER</b> STAVROU ASSOCIATES, INC. 2661 RIVA ROAD SUITE 200 ANNAPOLIS, MD 21401 C/O SCOTT N. LUNK (410) 571-6610</p> <p><b>HARDIN-KIGHT ASSOCIATES, INC.</b> GEOTECHNICAL CONSULTANTS 7524 WB&amp;A ROAD, SUITE 100 GLEN BURNIE, MARYLAND (410) 553-0802 (410) 553-0808</p>	Designed By: JAF	Title: Retaining Wall 2A & 2B Specifications	Date: 02/09/2017	
<p><i>[Signature]</i> <b>8-22-17</b> CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE</p> <p><i>[Signature]</i> <b>9-5-17</b> CHIEF, DIVISION OF LAND DEVELOPMENT DATE</p> <p><i>[Signature]</i> <b>9-5-17</b> DIRECTOR DATE</p>						Checked By: SEK	Project: BURGESS MILL STATION PH II APARTMENTS A REDEVELOPMENT OF THE ELLICOTT CITY TERRACE APARTMENTS TAX MAP 25 BLOCK 7 2ND ELECTION DISTRICT	Project No: 15140	Drawing No: 28 OF 30
	3	11/07/18	REVISE TO MODIFY FRONTAGE IMPROVEMENT TO REMOVE SIDEWALK, ADD CURBING AND ADJUST STORM DRAIN WITHIN PELS LANE	RHV		Scale: NTS	<p>HOWARD COUNTY, MARYLAND</p> <p>PARCELS 120 ZONED R-4-15 L11702P-63</p>		

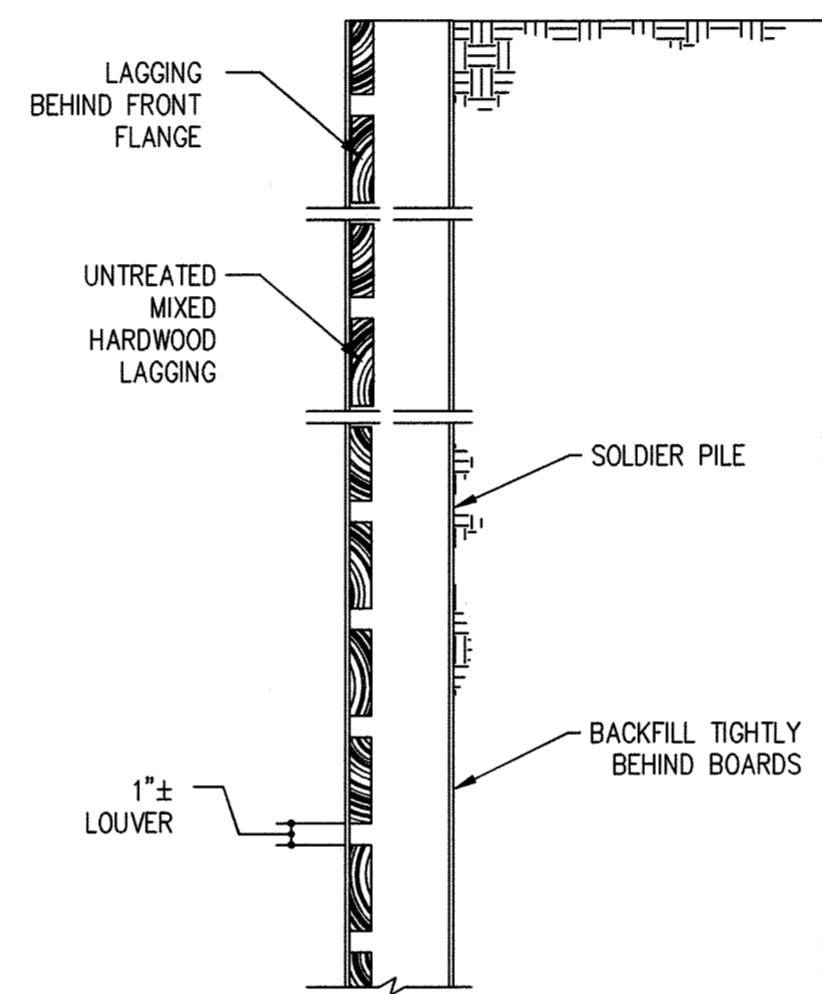
**AS-BUILT - JUNE 2019**



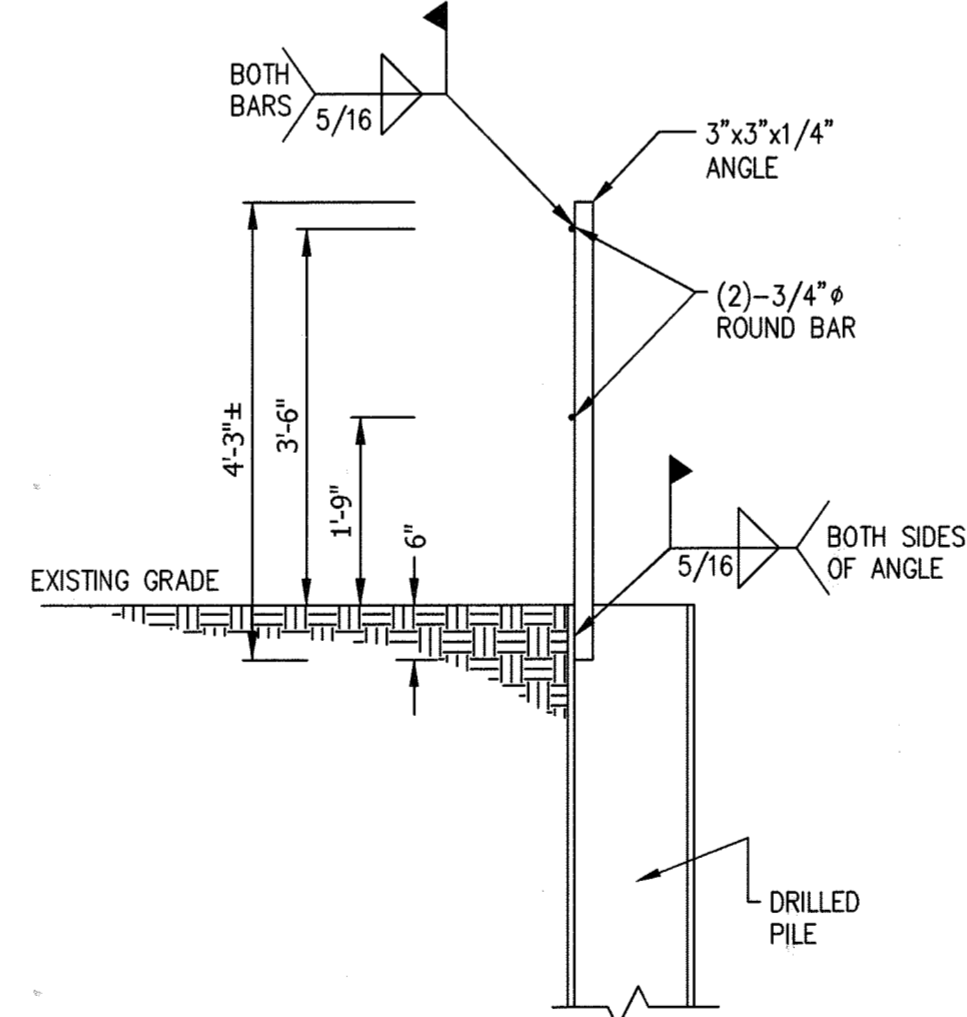
**SOLDIER PILE RETAINING WALL 1**  
SCALE: 1/8" = 1'-0"



**SHOTCRETE WALL PLAN**  
SCALE: N.T.S.



**TYPICAL LAGGING DETAIL**  
SCALE: N.T.S.



**TYPICAL HANDRAIL DETAIL**  
SCALE: N.T.S.

**GENERAL NOTES**

This Drawing describes the construction of the temporary anchored earth retention system and driven piles for the construction of The Burgess Mill Station PH II located at Howard County, Maryland. Only that information required to accomplish this work is shown.

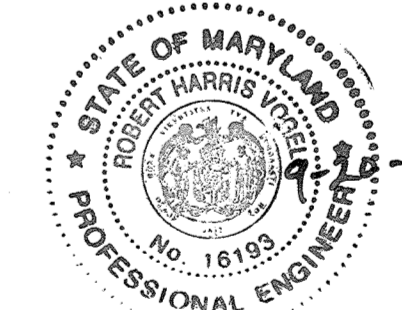
**MATERIALS:**

- Steel: ASTM A992, Grade 50 (W Shapes)
- Pile Shaft: 26"ø
- Welds: E70xx Electrode, Low Hydrogen
- Lagging: 3" thick (nominal) mixed hardwoods (untreated) for spans ≤ 8 ft
- Concrete: 3000 P.S.I. concrete
- Shotcrete: 4000 P.S.I.

**SHEETING & SHORING PROCEDURES:**

1. Have existing utilities and structures located, abandoned or relocated. ( by others)
2. Call Miss Utility 1-800-257-7777 (Berkel & Co. I.D. 102974).
3. By others, remove all service utilities approaching structures.
4. Layout future building (by others), including wall corners, footings, and grades.
5. Layout piles, adjusting locations as necessary to avoid existing utilities or other obstructions.
6. Establish a firm, 50ft wide, level bench and drill piles as show on plan, sections and elevations.
7. Drill piles as shown on plan, sections, and schedule.
8. Install lagging in 5' lifts to bottom of shotcrete elevation.
9. Install headed shear studs and drainboard.
10. Install reinforced shotcrete.
11. This support of excavation system has been designed as free draining with no allowance for hydrostatic pressure. An adequate dewatering system is to be installed (by others) prior to excavation to eliminate all hydrostatic pressure against the sheeting system and to lower and maintain the water table below design subgrade.
12. All steel members may be substituted with members of equivalent strength and section upon approval of Berkel's Engineer of Record.

Burgess Mill Ellicott City, MD						
Pile Number	Top (Ft)	Final (Ft)	Btm Shotcrete (Ft)	Shotcrete Height (Ft)	Pile Section	Pile Length (Ft)
1	306.50	305.00	304.00	2.50	WF10x33	15
2	307.97	305.29	304.29	3.68	WF10x33	15
3	309.44	305.58	304.58	4.86	WF10x33	15
4	311.75	306.10	305.10	6.65	WF10x33	20
5	314.10	306.25	305.25	8.85	WF14x43	25
6	315.20	306.50	305.50	9.70	WF14x43	25
7	316.00	306.75	305.75	10.25	WF14x43	27.5
8	317.00	307.00	306.00	11.00	WF18x50	30
9	318.50	307.25	306.25	12.25	WF18x60	35
10	319.50	307.75	306.75	12.75	WF18x60	35
11	320.75	309.00	308.00	12.75	WF18x65	35
12	322.00	311.90	310.90	11.10	WF18x76	40
13	322.75	313.80	312.50	10.25	WF18x76	40
14	323.90	315.00	313.00	10.90	WF18x86	40
15	324.75	316.00	315.00	9.75	WF18x65	35
16	326.00	318.10	317.10	8.90	WF18x50	35
17	326.75	320.25	319.25	7.50	WF14x43	27.5
18	328.00	322.50	321.50	6.50	WF10x33	22.5
19	328.25	325.00	324.00	4.25	WF10x33	17.5
20	328.50	328.00	327.00	1.50	WF10x33	15



AS-BUILT CERTIFICATION FOR PSWM  
I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND COMPLIES WITH THE APPROVED PLANS AND SPECIFICATIONS. I HAVE VERIFIED THAT THE CONTRIBUTING DRAINAGE AREA IS SUFFICIENTLY STABILIZED TO PREVENT CLOGGING OF THE UNDERGROUND SWM FACILITY.  
J.E. NAME: Robert Harris RE.#: 16193 DATE: 9-20-19  
For location only

**LEGEND**

- XXX.X PROPOSED GRADE
- <XXX.X> PROPOSED SUBGRADE
- XX SOLDIER PILE REFERENCE NUMBER

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BERKEL JOB # 16-179s

No AS-BUILT INFORMATION ON THIS SHEET

PROFESSIONAL CERTIFICATE  
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. 16193, EXPIRATION DATE: 08-27-2018

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
DATE: 8-22-17  
DATE: 9-5-17  
DATE: 9-5-17

No.	Date	Revision	By
3	11/07/18	REVISION TO MODIFY FRONTAGE IMPROVEMENTS TO REMOVE SIDEWALK, ADD CURBING AND ADJUST STORM DRAIN WITHIN FEELS LANE	R.H.V.

**OWNER**  
HOWARD COUNTY HOUSING COMMISSION  
9770 PATUXENT WOODS DR  
COLUMBIA, MD 21046  
(410) 313-6320

**DEVELOPER**  
STARRBU ASSOCIATES, INC.  
2661 RIVA ROAD  
SUITE 320  
ANNAPOLIS, MD 21401  
C/O SCOTT N. LINK  
(410) 571-6610

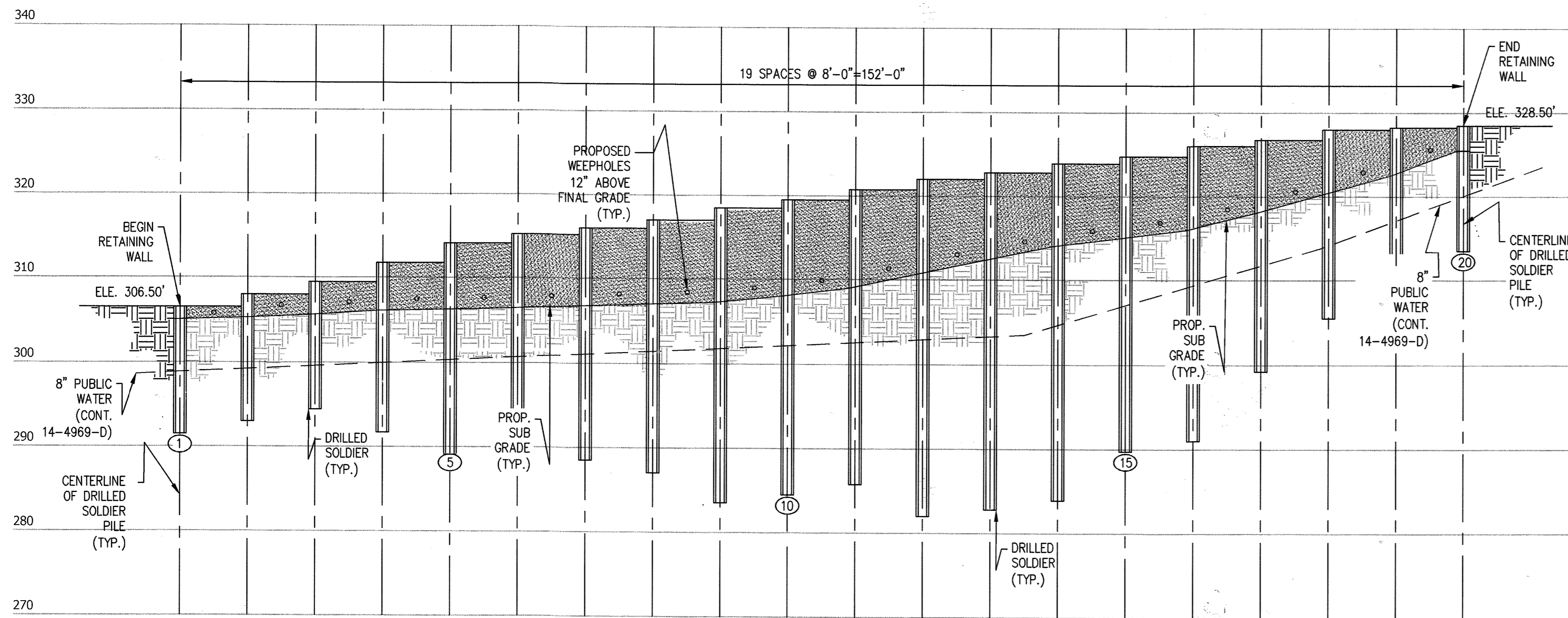
**BURGESS MILL STATION PH II**  
A REDEVELOPMENT OF THE ELLICOTT CITY TERRACE APARTMENTS  
**OVERALL RETAINING WALL LOCATION PLANS**  
**BERKEL & COMPANY CONTRACTORS, INC.**  
REGIONAL OFFICE (301) 587-5111  
2431 LINDEN LANE, SILVER SPRING, MD 20910

Designed By: D.Z.E.  
Checked By: R.H.V.  
Scale: 1/8"=1'-0"

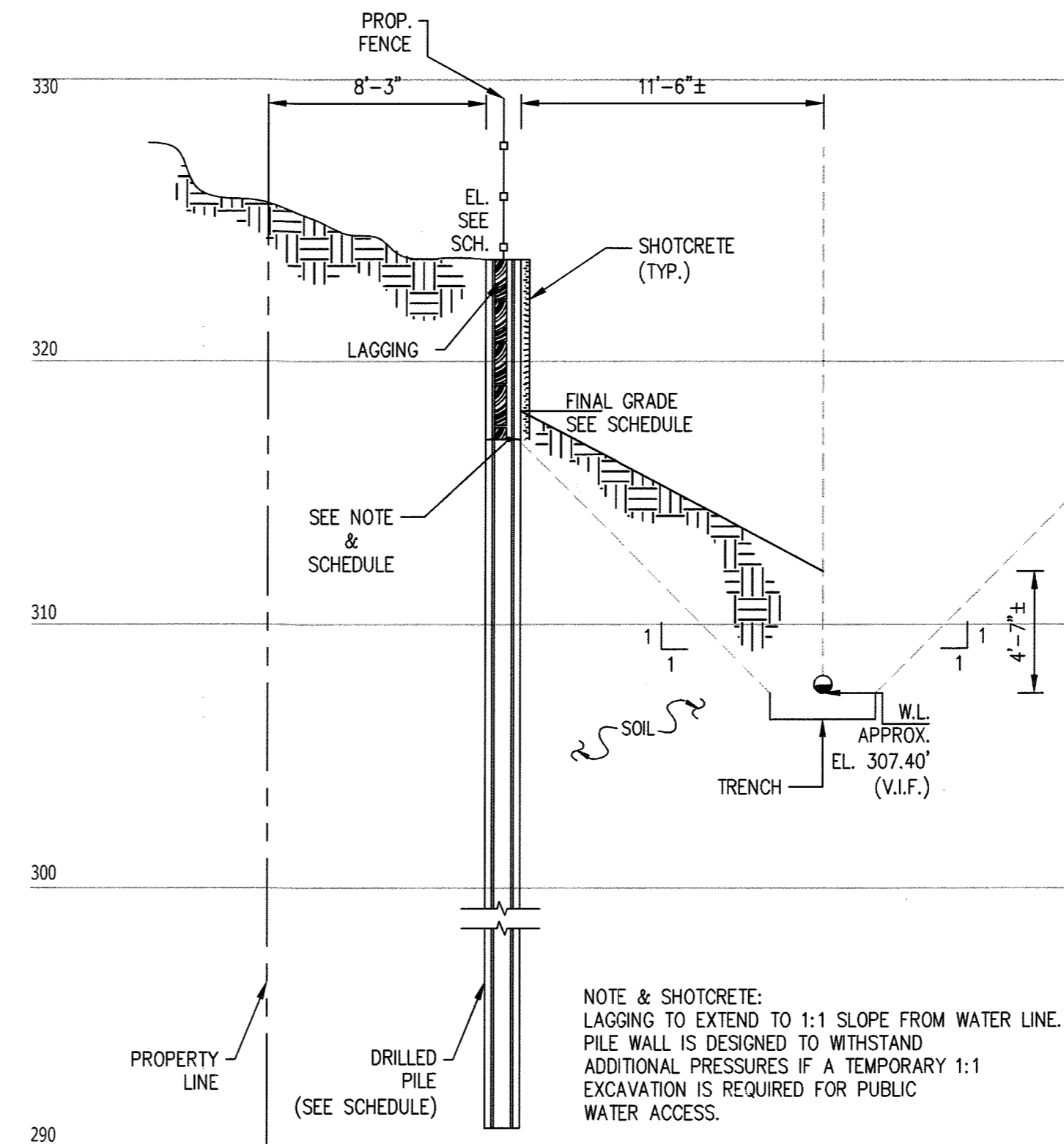
Title: Overall Retaining Wall Location Plan, Details, Notes, and Schedule  
Project: BURGESS MILL STATION PH II APARTMENTS  
A REDEVELOPMENT OF THE ELLICOTT CITY TERRACE APARTMENTS  
ZONED: R-A-15  
L.11702F-53

Date: 02/14/17  
Project No: 15140  
Drawing No: 29 OF 30

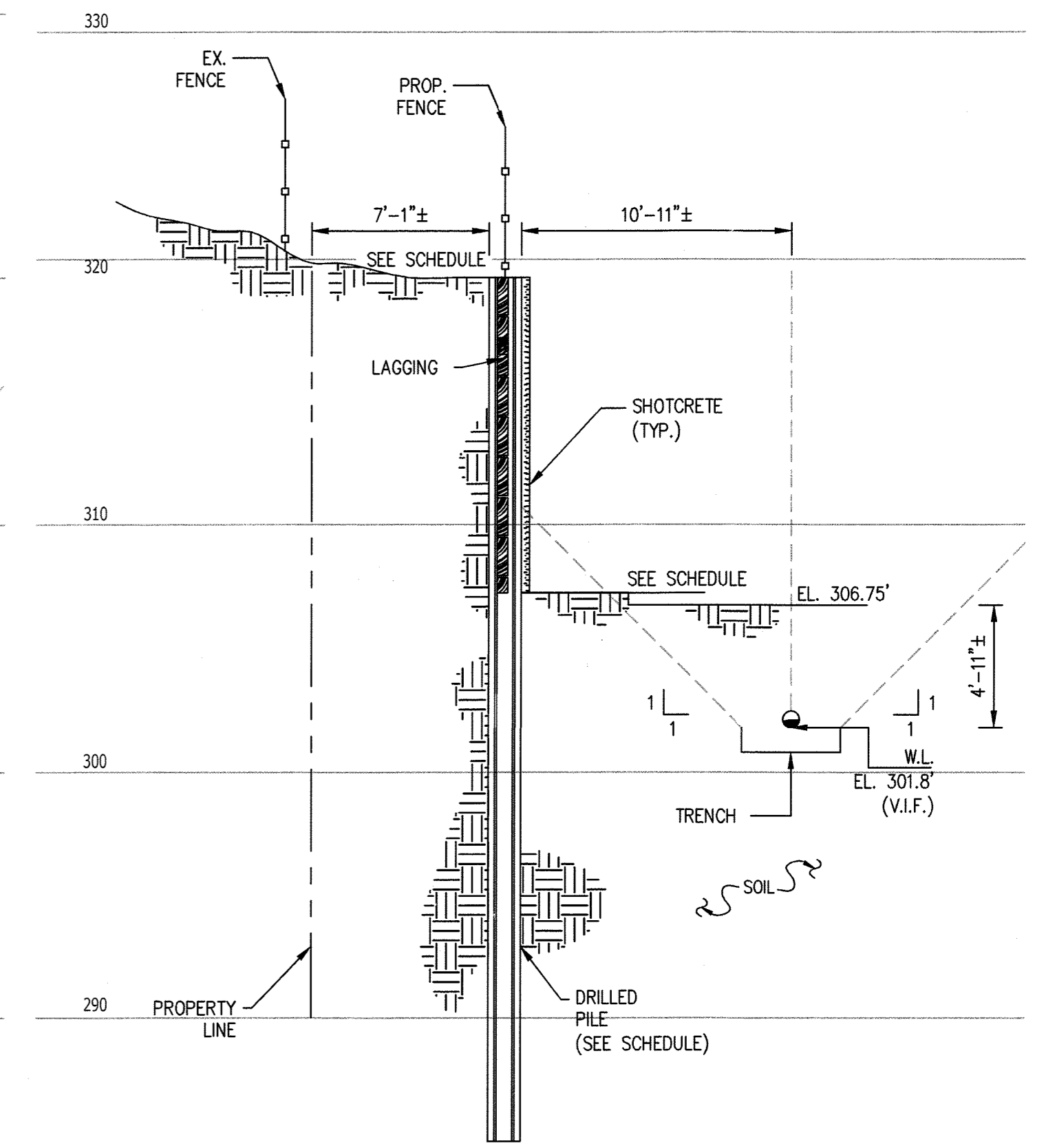
AS-BUILT - JUNE 2019



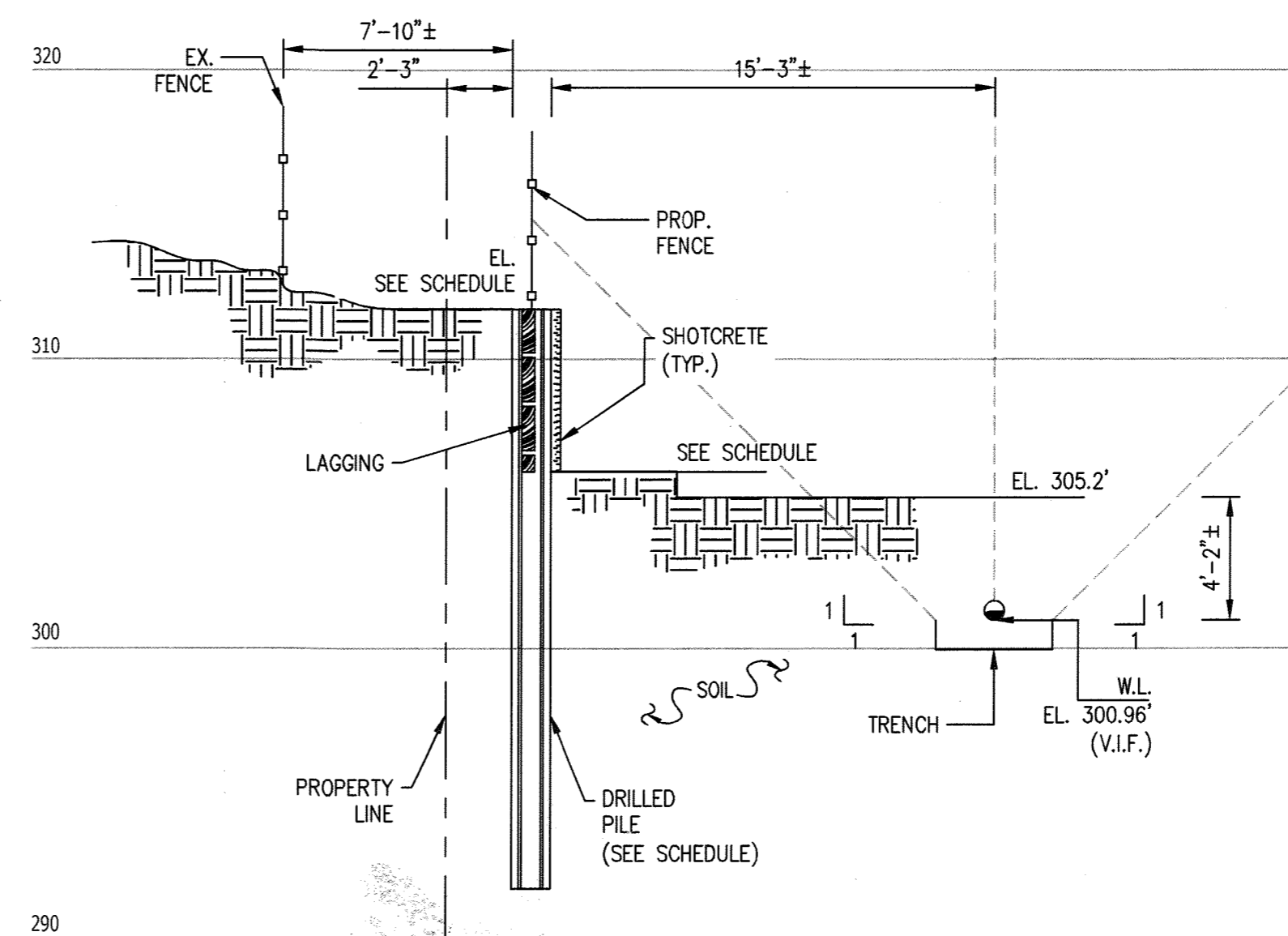
**RETAINING WALL 1-ELEVATION**  
SCALE: 3/32"=1'-0"



**SECTION A-A**  
SCALE: 3/16"=1'-0"



**SECTION B-B**  
SCALE: 3/16"=1'-0"



**SECTION C-C**  
SCALE: 3/16"=1'-0"



AS-BUILT CERTIFICATION FOR PSWM

I HEREBY CERTIFY THAT THE FACILITY SHOWN ON THIS PLAN WAS CONSTRUCTED AS SHOWN ON THE "AS-BUILT" PLANS AND COMPLIES WITH THE APPROVED PLANS AND SPECIFICATIONS. I HAVE VERIFIED THAT THE CONTRIBUTING DRAINAGE AREA IS SUFFICIENTLY STABILIZED TO PREVENT CLOGGING OF THE UNDERGROUND SWM FACILITY.

*John Case* 16193 9-20-19  
P.E. NAME DATE  
FOR CORROSION CITY

BERKEL JOB # 16-179s

NO AS-BUILT INFORMATION ON THIS SHEET

PROFESSIONAL CERTIFICATE

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. 16193, EXPIRATION DATE: 08-27-2018

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APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
*John Case* 822-17  
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE  
*Ken D. Smith* 9-5-17  
CHIEF, DIVISION OF LAND DEVELOPMENT DATE  
*William J. Miller* 9-5-17  
DIRECTOR DATE

No.	Date	Revision	By
3	11/07/18	REVISE TO MODIFY FRONTAGE IMPROVEMENT TO REMOVE SIDEWALK ADD CURBING AND ADJUST STORM DRAIN WITHIN FELLS LANE	R.H.V.

OWNER  
HOWARD COUNTY HOUSING COMMISSION  
9770 PATUXENT WOODS DR  
COLUMBIA, MD 21046  
C/O PETER ENGEL  
(410) 313-6320

DEVELOPER  
STARBUCK ASSOCIATES, INC.  
2661 RIVA ROAD  
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ANNAPOLIS, MD 21401  
C/O SCOTT N. LINK  
(410) 571-6610

**BURGESS MILL STATION PH II**  
A REDEVELOPMENT OF THE ELLICOTT CITY TERRACE APARTMENTS  
**OVERALL RETAINING WALL LOCATION PLANS**  
**BERKEL & COMPANY CONTRACTORS, INC.**  
REGIONAL OFFICE (301) 587-5111  
2431 LINDEN LANE, SILVER SPRING, MD 20910

Designed By: D.Z.E.  
Checked By: R.H.V.  
Scale: 1/8"=1'-0"

Title: **Elevation & sections**  
Project: **BURGESS MILL STATION PH II APARTMENTS**  
A REDEVELOPMENT OF THE ELLICOTT CITY TERRACE APARTMENTS  
ZONED R-A-15 L.17702F-63 PARCELS 120 HOWARD COUNTY, MARYLAND  
Date: 02/14/17  
Project No: 15140  
Drawing No: 30 OF 30

**AS-BUILT - JUNE 2019**