

**GENERAL NOTES**

- APPLICABLE DPZ FILE REFERENCES: 44-4019, 86-S, ECP-18-023, WP-19-051.
- BOUNDARY INFORMATION SHOWN HEREON IS BASED ON AVAILABLE RECORD PLATS AND A FIELD RUN SURVEY PERFORMED BY KCI TECHNOLOGIES INC. DATED AUGUST 2017.
- THE FOREST CONSERVATION REQUIREMENTS FOR THIS SITE, BASED ON SECTION 16.1200 OF THE HOWARD COUNTY CODE, WILL BE HANDLED THROUGH A FEE-IN-LIEU. FEE-IN-LIEU WILL BE PAID AT \$0.75/SF (13,068SF x \$1.25 = \$16,335.00)
- ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY PLUS MSHA STANDARDS AND SPECIFICATIONS, IF APPLICABLE.
- THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" (800-257-7777) AT LEAST 48 HOURS PRIOR TO STARTING ANY EXCAVATION WORK.
- THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PUBLIC WORKS/ BUREAU OF ENGINEERING/CONSTRUCTION INSPECTION DIVISION AT (410) 313-1880 AT LEAST FIVE (5) WORKING DAYS PRIOR TO THE START OF WORK.
- OBSTRUCTIONS SUCH AS PAVING, TREES, UNDERGROUND UTILITIES, ETC. SHOWN ON THESE DRAWINGS ARE FOR THE CONVENIENCE OF THE CONTRACTOR ONLY. KCI TECHNOLOGIES, INC. DOES NOT WARRANT OR GUARANTEE THE CORRECTNESS OR THE COMPLETENESS OF THE INFORMATION GIVEN. THE CONTRACTOR MUST VERIFY ALL SUCH INFORMATION TO HIS OWN SATISFACTION. IN THE EVENT THAT INFORMATION IS IN CONFLICT WITH INFORMATION OUTLINED, THE CONTRACTOR SHALL IMMEDIATELY BRING IT TO THE ATTENTION OF THE ENGINEER PRIOR TO STARTING ANY WORK.
- CONTRACTOR TO VERIFY LOCATION AND ELEVATION OF EXISTING UTILITIES SHOWN HEREON BEFORE STARTING ANY WORK ON THESE PLANS. CONTRACTOR AGREES TO BE FULLY RESPONSIBLE FOR THE COST OF ANY AND ALL DAMAGES WHICH OCCUR AS A RESULT OF A FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL EXISTING UTILITIES TO REMAIN.
- WATER IS PUBLIC. CONTRACT # 44-4019. DRAINAGE AREA: PATAPSCO RIVER
- SEWER IS PUBLIC. CONTRACT # 86-S. DRAINAGE AREA: PATAPSCO RIVER
- CONTRACTOR SHALL REMOVE DRIVEWAY ENTRANCES, STRUCTURES, AND CONCRETE WALKS TO LIMITS INDICATED ON THE DRAWING.
- CONTRACTOR SHALL NOT PROCEED WITH ANY DEMOLITION WORK UNTIL ALL UTILITY DISCONNECTIONS ARE COMPLETED AND VERIFIED IN WRITING.
- EXISTING CONCRETE SIDEWALK SHALL BE REMOVED TO THE NEAREST JOINT. NO PATCHING SHALL BE PERMITTED.
- IT SHALL BE DISTINCTLY UNDERSTOOD THAT FAILURE TO MENTION SPECIFICALLY ANY WORK WHICH WOULD NORMALLY BE REQUIRED TO COMPLETE THIS PROJECT SHALL NOT RELIEVE THE CONTRACTOR OF HIS RESPONSIBILITY TO COMPLETE SUCH WORK.
- IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO NOTIFY THE ENGINEER OF ANY DEVIATION FROM THIS PLAN PRIOR TO ANY CHANGE BEING MADE. ANY DEVIATION FROM THIS PLAN WITHOUT WRITTEN AUTHORIZATION FROM THE ENGINEER WILL BE THE RESPONSIBILITY OF THE CONTRACTOR.
- TRAFFIC CONTROL DEVICES:
  - THE R1-1 ("STOP") SIGN AND THE STREET NAME SIGN (SNS) ASSEMBLY FOR THIS DEVELOPMENT MUST BE INSTALLED BEFORE THE BASE PAVING IS COMPLETED.
  - THE TRAFFIC CONTROL DEVICE LOCATIONS SHOWN ON THE PLANS ARE APPROXIMATE AND MUST BE FIELD APPROVED BY HOWARD COUNTY TRAFFIC DIVISION (410-313-2430) PRIOR TO THE INSTALLATION OF ANY OF THE TRAFFIC CONTROL DEVICES.
  - ALL TRAFFIC CONTROL DEVICES AND THEIR LOCATIONS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE "MARYLAND MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MDMUTCD).
  - ALL SIGN POSTS USED FOR TRAFFIC CONTROL SIGNS INSTALLED IN THE COUNTY RIGHT-OF-WAY SHALL BE MOUNTED ON A 2" GALVANIZED STEEL, PERFORATED ("QUICK PUNCH"), SQUARE TUBE POST (14 GAUGE) INSERTED INTO A 2-1/2" GALVANIZED STEEL, PERFORATED, SQUARE TUBE SLEEVE (12 GAUGE) - 3' LONG. THE ANCHOR SHALL NOT EXTEND MORE THAN TWO "QUICK PUNCH" HOLES ABOVE GROUND LEVEL. A GALVANIZED STEEL POLE CAP SHALL BE MOUNTED ON TOP OF EACH POST. ALL PLAN DIMENSIONS ARE TO THE FACE OF CURB UNLESS OTHERWISE NOTED.
- CONTRACTOR TO ADJUST TOP OF CURB GRADES AS NECESSARY TO PROVIDE SMOOTH TRANSITION TO EXISTING.
- SAW CUT EXISTING PAVEMENT AS NEEDED TO INSTALL NEW CONSTRUCTION.
- CONTRACTOR SHALL NOTE THAT IN CASE OF A DISCREPANCY BETWEEN THE SCALED AND THE FIGURED DIMENSIONS SHOWN ON THESE PLANS, THE FIGURED DIMENSIONS SHALL GOVERN.
- TRENCH BACKFILL IN GRASS AREAS SHALL BE COMPACTED TO A MINIMUM 90% OF MAXIMUM DRY DENSITY IN ACCORDANCE WITH A.A.S.H.T.O. VERIFY DESIGNATION T-180, METHOD C. TRENCH BACKFILL IN STRUCTURAL AND PAVEMENT AREAS SHALL BE PLACED IN EIGHT INCH LOOSE LIFTS AND COMPACTED TO AT LEAST 95% OF THE MODIFIED PROCTOR MAXIMUM DRY DENSITY (ASTM D-1557). IN PAVED AREAS, FILL BELOW THE TOP 12 INCHES SHOULD BE COMPACTED TO 97%.
- CONTRACTOR SHALL ADJUST ALL EXISTING UTILITIES, I.E. MANHOLE FRAMES AND COVERS, ETC. WITHIN THE LIMITS OF THE CONTRACTOR TO PROPOSED GRADES AS REQUIRED.
- THE CONTRACTOR SHALL MAINTAIN POSITIVE DRAINAGE AWAY FROM BUILDING STRUCTURES AT ALL TIMES.
- CONTRACTOR SHALL COORDINATE ALL DISCONNECTIONS AND REMOVAL OF EXISTING GAS, ELECTRIC AND TELEPHONE SERVICES AND EQUIPMENT WITH BALTIMORE GAS & ELECTRIC AND VERIZON.
- CONTRACTOR SHALL INSTALL SEDIMENT CONTROLS PRIOR TO BEGINNING ANY WORK AND MAINTAIN SEDIMENT CONTROLS THROUGHOUT THE ENTIRE DURATION OF DEMOLITION AND CONSTRUCTION ACTIVITIES.
- ALL EXCAVATION SHALL BE BACKFILLED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS. IN THE EVENT THAT A PORTION OF A UTILITY IS TO BE REMOVED THE CONTRACTOR SHALL TERMINATE AND CAP TO THE LIMITS INDICATED IN ACCORDANCE WITH ALL STATE AND LOCAL REQUIREMENTS.
- SHOULD THE CONTRACTOR DISCOVER DISCREPANCIES BETWEEN THE PLANS AND FIELD CONDITIONS, THE ENGINEER IS TO BE NOTIFIED IMMEDIATELY TO RESOLVE THE SITUATION. SHOULD THE CONTRACTOR MAKE FIELD CORRECTIONS OR ADJUSTMENTS WITHOUT NOTIFYING THE ENGINEER, THEN THE CONTRACTOR ASSUMES ALL RESPONSIBILITY FOR THOSE CHANGES.
- STORMWATER MANAGEMENT QUANTITY AND QUALITY HAS BEEN PROVIDED IN ACCORDANCE WITH THE 2010 MARYLAND STORMWATER MANAGEMENT ORDINANCE AND REVISED 2010 STORMWATER MANAGEMENT DESIGN MANUAL AND H.O.C.O. CODE. TWO M-6 MICRO BIORETENTION PRACTICES ARE PROPOSED FOR THIS SITE. ALL PRACTICES WILL BE PRIVATELY OWNED AND MAINTAINED IN THEIR ENTIRETY.
- THE COORDINATES SHOWN HEREON ARE BASED UPON THE HOWARD COUNTY GEODETIC CONTROL WHICH IS BASED UPON THE MARYLAND STATE PLANE COORDINATE SYSTEM. HOWARD COUNTY MONUMENT NOS. 38AA AND 38BA WERE USED FOR THIS PROJECT.
- THE EXISTING TOPOGRAPHY IS TAKEN FROM FIELD RUN SURVEY WITH ONE FOOT CONTOUR INTERVALS PREPARED BY KCI TECHNOLOGIES DATED AUGUST 2017.
- ALL OUTDOOR LIGHTING SHALL COMPLY WITH THE REQUIREMENTS OF ZONING SECTION 134.
- EXISTING UTILITIES ARE BASED ON AVAILABLE EXISTING PLANS AND FIELD RUN TOPOGRAPHY PERFORMED BY KCI TECHNOLOGIES ON OR ABOUT AUGUST 2017.
- PROPOSED BUILDING WHO'S WILL BE METERED INSIDE BUILDING.
- STREET LIGHT PLACEMENT AND THE TYPE OF FIXTURES AND POLES SHALL BE IN ACCORDANCE WITH THE HOWARD COUNTY DESIGN MANUAL, VOLUME III (2006) SECTION 5.5.A AND THE HOWARD COUNTY ROUTE 1 MANUAL. A MINIMUM OF 20' SHALL BE MAINTAINED BETWEEN ANY STREET LIGHT AND ANY TREE.
- THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH THE PROVISIONS OF SECTION 16.124 OF THE HOWARD COUNTY CODE AND LANDSCAPE MANUAL. PERIMETER LANDSCAPING REQUIRED: 22 SHADE TREES AND 14 EVERGREEN TREES. PARKING LANDSCAPING REQUIRED: 1 TREE FOR 15 SPACES. STREET TREES REQUIRED: 9 ALONG ROUTE 1 AND 5 ALONG MONTGOMERY ROAD. FINANCIAL SURETY IN THE AMOUNT OF \$12,900 FOR 18 SHADE TREES AND 50 EVERGREEN TREES WILL BE POSTED AS PART OF THE DPW, DEVELOPER'S AGREEMENT FOR THIS PLAN.
- KNOX BOX SHALL BE PLACED ON THE FRONT OF THE BUILDING NO MORE THAN 6' TO THE RIGHT OF THE MAIN ENTRANCE AT A HEIGHT OF 4'-5". PROPOSED BUILDING WILL HAVE AN AUTOMATIC FIRE PROTECTION SPRINKLER SYSTEM.
- THIS DESIGN WAS PRESENTED TO THE DAP COMMITTEE ON MAY 9TH, 2018 AND RECEIVED MULTIPLE RECOMMENDATIONS. THESE RECOMMENDATIONS INCLUDED THE SIDEWALK ALONG MONTGOMERY ROAD AND MORE LANDSCAPING AROUND THE BUILDING. ALL OF THE RECOMMENDATIONS HAVE BEEN FOLLOWED FOR THE SDP SUBMISSION.
- ALTERNATIVE COMPLIANCE WP-19-051 WAS APPROVED 1/15/2019 TO EXTEND THE PLAN SUBMISSION DATE DUE TO EXTRAORDINARY HARDSHIPS ALSO DUE TO THE FACT IT WOULD NOT BE DETRIMENTAL TO THE PUBLIC INTEREST.
- NO TRAFFIC STUDY WAS REQUIRED FOR THIS SITE DUE TO THE LARGE DECREASE IN TRIPS TO AND FROM THE PROPERTY.
- THE SUBJECT PROPERTY IS ZONED M-1 IN ACCORDANCE WITH THE OCTOBER 6, 2013 COMPREHENSIVE ZONING REGULATIONS.
- A GEOTECHNICAL REPORT, PREPARED BY KIM ENGINEERING, IS INCLUDED IN THE PLAN SUBMITAL.
- THE SITE IS IN COMPLIANCE WITH THE HOWARD COUNTY ROUTE 1 MANUAL.
- THERE ARE NO WETLANDS ON THIS SITE.
- THERE IS NO FLOODPLAIN ON THIS SITE.

# SITE DEVELOPMENT PLAN

# CUBESMART STORAGE

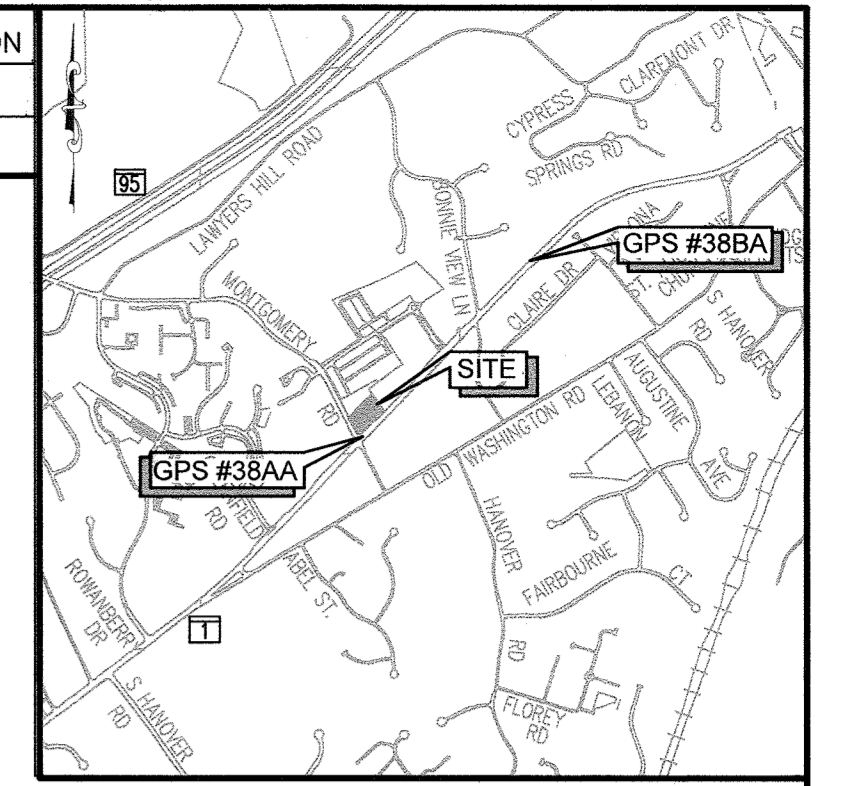
6300 WASHINGTON BOULEVARD

SECOND ELECTION DISTRICT  
HOWARD COUNTY, MARYLAND

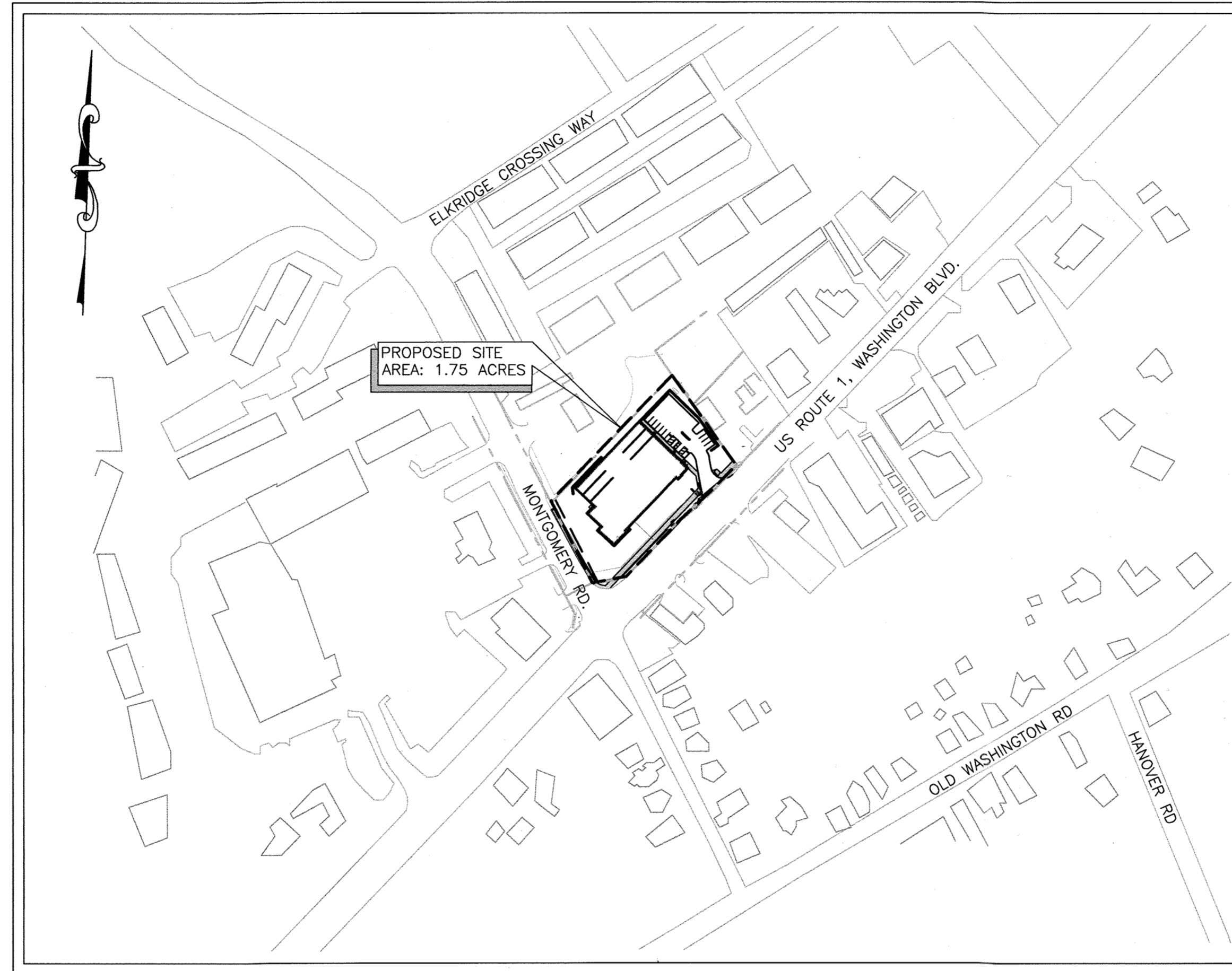
OWNER/DEVELOPER  
PATRICK DOUGAL  
DOUGAL & ASSOCIATES, LLC  
5695 MAIN STREET  
ELKRDIGE, MARYLAND 21075  
410-379-6444

PROPERTY INFORMATION  
TAX ID: 176331  
MAP: 38 GRID: 08  
PARCEL: 32  
L: 15972 F: 337  
AREA: 1.75 AC.  
ZONE: M-1

POINT	NORTHING	EASTING	ELEVATION
#38AA	561158.82	1389726.43	220.04
#38BA	562555.31	1390967.96	166.17



VICINITY MAP  
SCALE: 1" = 2000'  
ADC MAP 20, GRID A4



**LOCATION MAP**

SCALE: 1"=200'

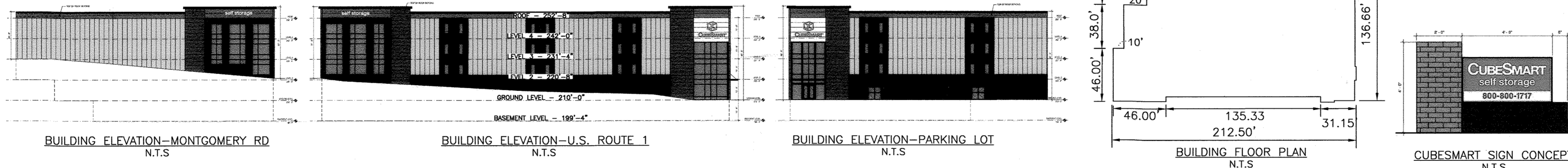
INDEX OF DRAWINGS		
SHEET #	SHEET NUMBER	SHEET NAME
1	C-0.01	TITLE SHEET
2	C-0.02	EXISTING CONDITIONS/DEMOLITION PLAN
3	C-1.00	OVERALL SITE PLAN
4	C-1.01	GEOMETRY PLAN
5	C-1.02	SITE DETAILS
6	C-1.03	SITE DETAILS
7	C-1.04	LANDSCAPING PLAN
8	C-1.05	LANDSCAPING DETAILS
9	C-2.00	STORMWATER DRAINAGE AREA MAP
10	C-2.01	STORMWATER MANAGEMENT FACILITY PLANS
11	C-2.02	STORM DRAIN PROFILES AND DETAILS
12	C-3.00	SEDIMENT & EROSION CONTROL PLAN
13	C-3.01	SEDIMENT & EROSION CONTROL NOTES AND DETAILS
14	C-3.02	SEDIMENT & EROSION CONTROL NOTES AND DETAILS
15	C-3.03	SEDIMENT & EROSION CONTROL NOTES AND DETAILS
16	C-3.04	SOIL BORING LOGS
17	C-4.00	RETAINING WALL PLANS
18-25	C-4.01 - C-4.08	RETAINING WALL DETAILS AND NOTES
26	C-5.00	MAINTENANCE OF TRAFFIC
27	FCP-1	FOREST CONSERVATION PLAN
28	FCP-2	FOREST CONSERVATION PLAN NOTES & DETAILS
29	C-6.00	BUILDING ELEVATIONS
30	C-6.01	CUBESMART STAND ALONE SIGN

*SWM As BUILT  
SURETY BY CLS1 5/4/2021  
THERE IS NO AS-BUILT INFORMATION  
PROVIDED ON THIS SHEET*

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.  
License No. 22732. Expiration Date: 05/16/2024



**MISS UTILITY**  
CALL "MISS UTILITY" AT 1-800-257-7777, 48 HOURS PRIOR TO THE START OF WORK. THE EXCAVATOR MUST NOTIFY ALL PUBLIC UTILITY COMPANIES WITH UNDERGROUND FACILITIES IN THE AREA OF PROPOSED EXCAVATION AND HAVE THOSE FACILITIES LOCATED BY THE UTILITY COMPANIES PRIOR TO COMMENCING EXCAVATION



**DEVELOPER'S CERTIFICATE**  
I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN OF DEVELOPMENT FOR SEDIMENT AND EROSION CONTROL, AND THAT ALL RESPONSIBLE PERSONS INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD COUNTY SOIL CONSERVATION DISTRICT.  
DEVELOPER: *PD* DATE: 11/4/19

**ENGINEER'S CERTIFICATE**  
I HEREBY CERTIFY THAT THIS PLAN FOR SEDIMENT AND EROSION CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD COUNTY SOIL CONSERVATION DISTRICT.  
ENGINEER: *Rob M.* DATE: 10/20/19

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
CHIEF, DIVISION OF LAND DEVELOPMENT: *Maria Sava* DATE: 2/4/20  
CHIEF, DEVELOPMENT ENGINEERING DIVISION: *Paul* DATE: 2/4/20  
DIRECTOR

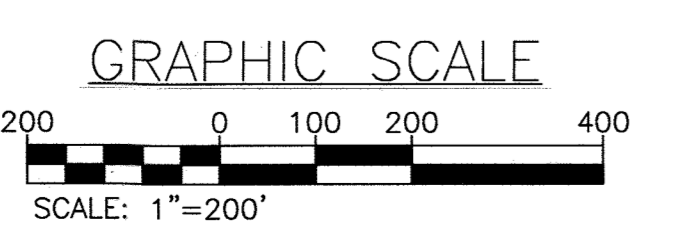
**STORMWATER MANAGEMENT TABLE**

AREA OF DISTURBANCE (AC.)	PROPOSED IMPERVIOUS (AC.)	%	PE	QE	ESDv REQUIRED (CF)	ESDv PROVIDED (CF)
1.65	1.04	63	1.80"	1.11"	2,152	2,643

**PARKING TABULATION**  
SELF-STORAGE BUILDING, 4.0 SPACES PER 1,000 SF OF OFFICE SPACE  
• 1,500 SF OF OFFICE SPACE PROPOSED  
• 6.0 PARKING SPACES MINIMUM REQUIRED FOR SITE  
• 13 PARKING SPACES PROVIDED

**SITE ANALYSIS DATA CHART**

PERMIT INFORMATION CHART
SUBDIVISION NAME: SECTION/AREA: LOT / PARCEL NO.:
PLAT NUMBER: GRID #: ZONING: TAX MAP: ELECTION DISTRICT: CENSUS:
WATER CODE: D-09 SEWER CODE: 2022431



REVISIONS			
NO.	DATE	BY	

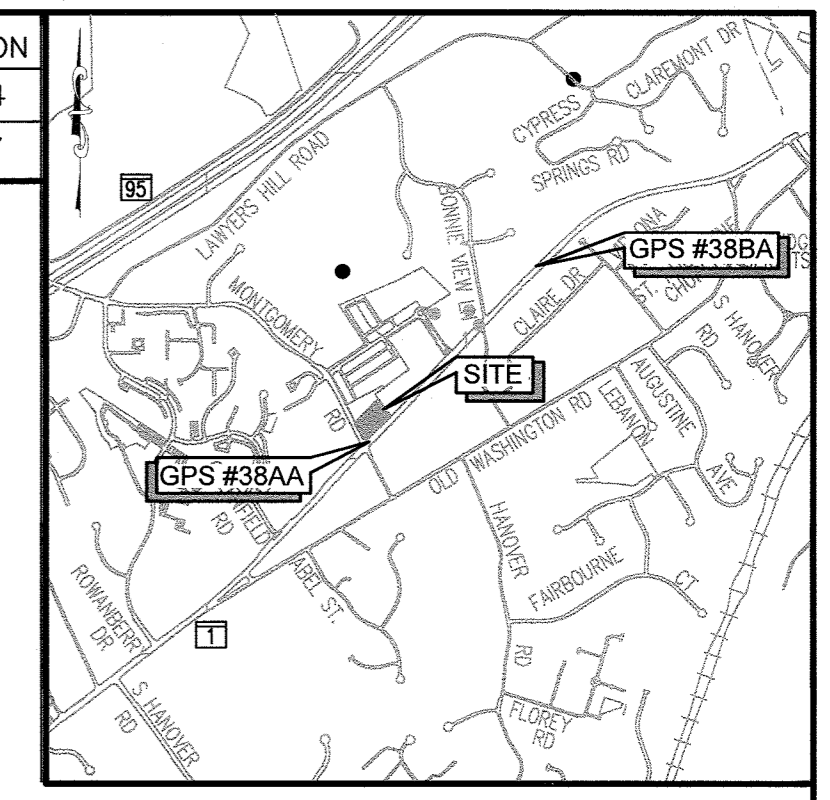
  

OWNER/DEVELOPER: PATRICK DOUGAL DOUGAL & ASSOCIATES 5695 MAIN STREET ELKRDIGE, MD 21075 (410)-379-6444	<p><b>CUBESMART STORAGE</b> 6300 WASHINGTON BLVD. ELKRDIGE, MD</p> <p><b>TITLE SHEET</b></p> <p>TAX MAP: 38 GRID: 08 PARCEL: 32 ZONED: M-1 ELECTION DISTRICT NO. 01 - HOWARD COUNTY MARYLAND</p>
DESIGN: NAB DATE: 9/03/19	KCI PROJECT NO. 271700283
DRAWN: BRA SCALE: AS SHOWN	SHEET NO. 1 OF 30
SHEET NO. <b>C-0.01</b>	

PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME AND THAT I AM DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 33772 EXP. DATE: 06/16/2021

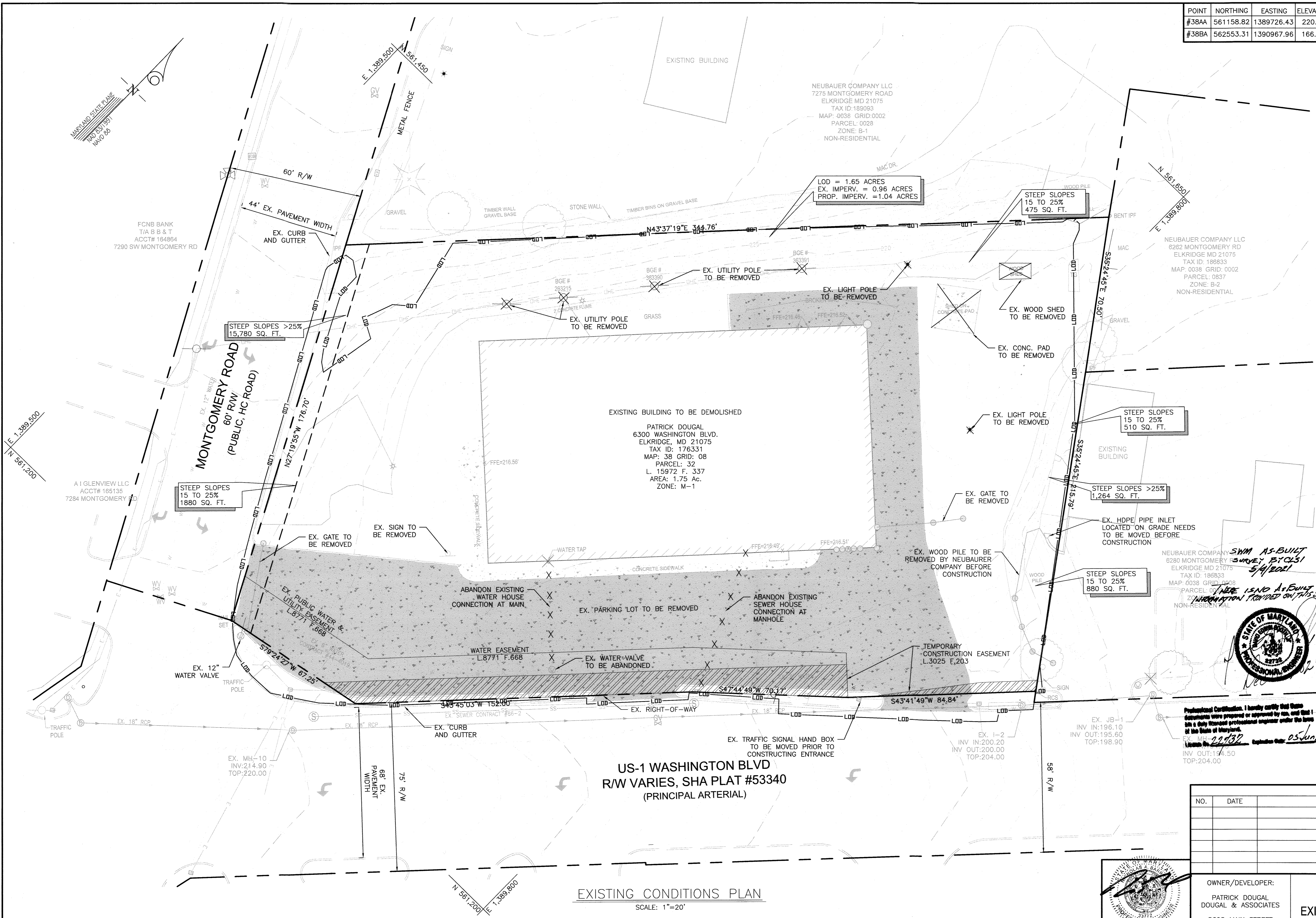


POINT	NORTHING	EASTING	ELEVATION
#38AA	561158.82	1389726.43	220.04
#38BA	562553.31	1390967.96	166.17



VICINITY MAP  
SCALE: 1" = 2000'  
ADC MAP 20, GRID A4  
LEGEND

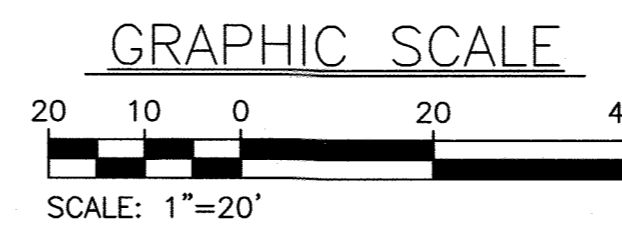
- 220 — PROPERTY LINE
- - - - - CONTOUR
- - - - - EDGE OF ROAD
- - - - - FENCE LINE
- - - - - SIDEWALK
- EXISTING TREES
- EXISTING PAVEMENT
- ▨ STEEP SLOPES (15 - 25%)
- ▨ STEEP SLOPES (GREATER THAN 25%)
- LOD — LIMIT OF DISTURBANCE
- ~ EXISTING TREE LINE
- GV GAS VALVE
- \* LIGHT POLE
- UTILITY POLE
- ⊙ SEWER MANHOLE
- SS — SEWER LINE
- ⊙ WATER STRUCTURE
- W WATER LINE
- WV WATER VALVE
- G GAS LINE
- ▨ CONSTRUCTION EASEMENT
- - - - - PROPERTY LINES
- SIGN
- ⊕ FIRE HYDRANT
- OHE — OVERHEAD ELECTRIC LINE



EXISTING CONDITIONS PLAN  
SCALE: 1"=20'

SOILS TABLE

SYMBOL	DESCRIPTION	HYDROLOGIC SOILS GROUP	K-VALUE	HYDRIC?
U/D	URBAN LAND-UDORTHTENTS COMPLEX, 0 TO 15 PERCENT SLOPES	D	0.28	NO



APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
 [Signature] 2/4/20  
 CHIEF, DIVISION OF LAND DEVELOPMENT  
 [Signature] 1/24/20  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION  
 [Signature] 2/4/20  
 DIRECTOR

PROFESSIONAL CERTIFICATION: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.  
 License No. 22,132 Expires Date: 05 Jun 2022

STATE OF MARYLAND  
 PROFESSIONAL ENGINEER  
 [Signature]

ENGINEERS  
PLANNERS  
SCIENTISTS  
CONSTRUCTION MANAGERS

**KCI**  
TECHNOLOGIES

11830 West Market Place  
Suite F  
Fusion, MD 20759  
Telephone: (410) 792-8086  
Fax: (410) 792-7419

REVISIONS			
NO.	DATE	DESCRIPTION	BY

OWNER/DEVELOPER:  
PATRICK DOUGAL  
DOUGAL & ASSOCIATES  
5695 MAIN STREET  
ELKCRIDGE, MD 21075  
(410)-379-6444

**CUBESMART STORAGE**  
6300 WASHINGTON BLVD. ELKCRIDGE, MD  
EXISTING CONDITIONS/DEMOLITION PLAN

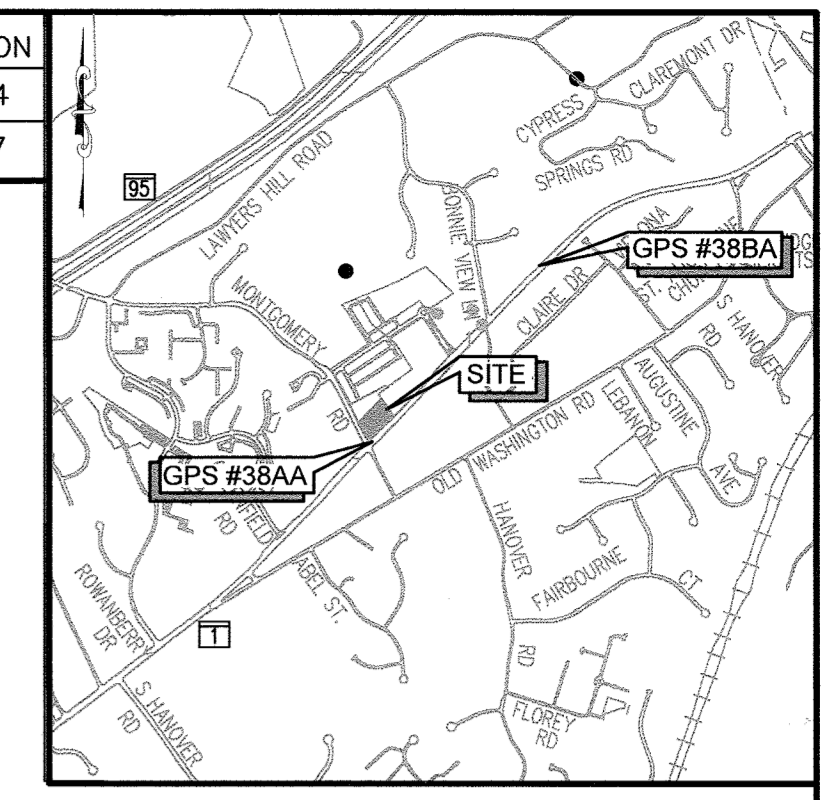
TAX MAP: 38 GRID: 08 PARCEL: 32  
ELECTION DISTRICT NO. 01 - HOWARD COUNTY MARYLAND

DESIGN: NAB DATE: 9/03/19 KCI PROJECT NO. 271700283 SHEET NO. C-0.02  
DRAWN: BRA SCALE: 1"=20' SHEET NO. 2 OF 30

PROFESSIONAL CERTIFICATION: I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME AND THAT I AM DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 33772 EXP. DATE: 06/16/2021



POINT	NORTHING	EASTING	ELEVATION
#38AA	561158.82	1389726.43	220.04
#38BA	562553.31	1390967.96	166.17



VICINITY MAP  
SCALE: 1" = 2000'  
ADC MAP 20, GRID A4

**LEGEND**

	PROPERTY LINE
	220 CONTOUR
	CURB AND GUTTER
	FENCE LINE
	PROPOSED BUILDING
	PROPOSED STORM DRAIN
	PROPOSED WATER
	PROPOSED SEWER
	PROPOSED RETAINING WALL
	LIMIT OF DISTURBANCE
	EXISTING TREES
	PROPOSED ASPHALT PAVING
	PROPOSED CONCRETE SIDEWALK
	TREELINE

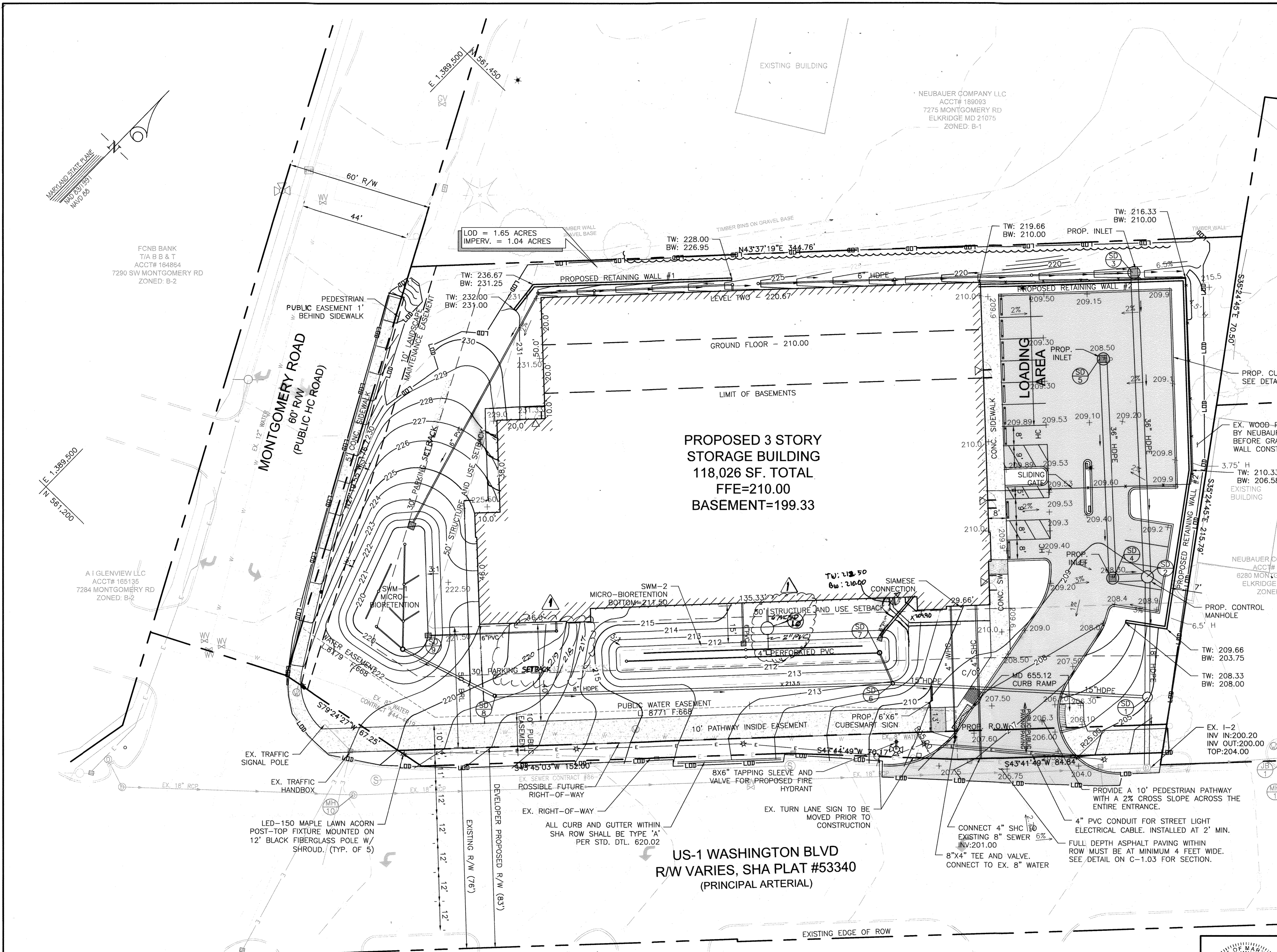
**SITE NOTES:**

- SEE SHEETS C-4.00 THROUGH C-4.07 FOR DETAILS INCLUDING GRADES FOR THE PROPOSED RETAINING WALLS ON SITE.
- ALL CURBING, PAVING, SIDEWALKS, HANDICAP RAMPS AND TRANSITIONS ARE TO BE PER HOWARD COUNTY STANDARD DETAILS. SEE SHEETS C-1.02 FOR DETAILS.
- UNLESS OTHERWISE NOTED, PROPOSED SPOT ELEVATIONS ALONG CURB AND GUTTER ARE TO FLOW LINE (BOTTOM OF CURB) AT THE PC'S & PT'S, CORNERS AND TERMINUSES.
- UNLESS OTHERWISE NOTED, ALL SIDEWALK RAMPS ARE TO BE BUILT BASED ON SHA STD. DTL. 655.12
- UNLESS OTHERWISE NOTED, ALL SIDEWALK RAMPS ARE TO HAVE DETECTABLE WARNING TRUNCATED DOMES ARE PER HOWARD COUNTY DPW STD. DTL. R-4.07.
- ALL ON-SITE STORM DRAIN SYSTEMS ARE PRIVATELY MAINTAINED. ALL ON-SITE SEWERS ARE PRIVATELY MAINTAINED.
- ALL CURB RADI ARE MEASURED FROM FACE OF CURB AT FLOW LINE. ALL DIMENSIONS ARE FROM FACE OF STRUCTURE (CURB, BLDG, ETC.) UNLESS OTHERWISE NOTED.
- LOCATIONS OF THE P.C.'S AND P.T.'S ARE SHOWN ON SHEETS C-1.01.
- THE FIVE (5) POST-TOP STREET LIGHTS WILL BE INSTALLED BY BGE UNDER THE DIRECTION OF HOWARD COUNTY TRAFFIC (410-313-2430). THE LOCATIONS OF THESE STREET LIGHTS WILL BE DETERMINED BY HOWARD COUNTY TRAFFIC.

**KCI TECHNOLOGIES**  
ENGINEERS  
PLANNERS  
SCIENTISTS  
CONSTRUCTION MANAGERS  
11830 WEST MARKET PLACE  
SUITE 100  
FULTON, MD 20759  
TELEPHONE: (410) 792-8086  
FAX: (410) 792-7419

REVISIONS		
NO.	DATE	BY
1	7/7/2020	GRADING REVISION, MANHOLE & UNDER DRAIN ADDITIONS

OWNER/DEVELOPER: PATRICK DOUGAL DOUGAL & ASSOCIATES 5695 MAIN STREET ELKRIDGE, MD 21075 (410)-379-6444	<b>CUBESMART STORAGE</b> 6300 WASHINGTON BLVD. ELKRIDGE, MD <b>SITE PLAN/ GRADING PLAN</b>
TAX MAP: 38 ELECTION DISTRICT NO. 01 - HOWARD COUNTY MARYLAND	GRID: 08 PARCEL: 32 ZONED: M-1 SHEET NO. C-1.00
DESIGN: NAB DATE: 9/03/19 DRAWN: BRA SCALE: 1" = 20'	KCI PROJECT NO. 271700283 SHEET NO. 3 OF 30

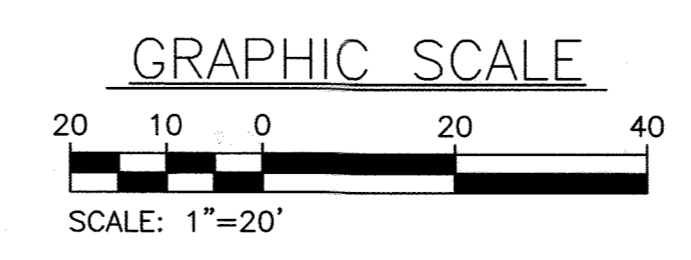


APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
DATE: 2/4/20  
DATE: 1-24-20  
DATE: 2/4/20



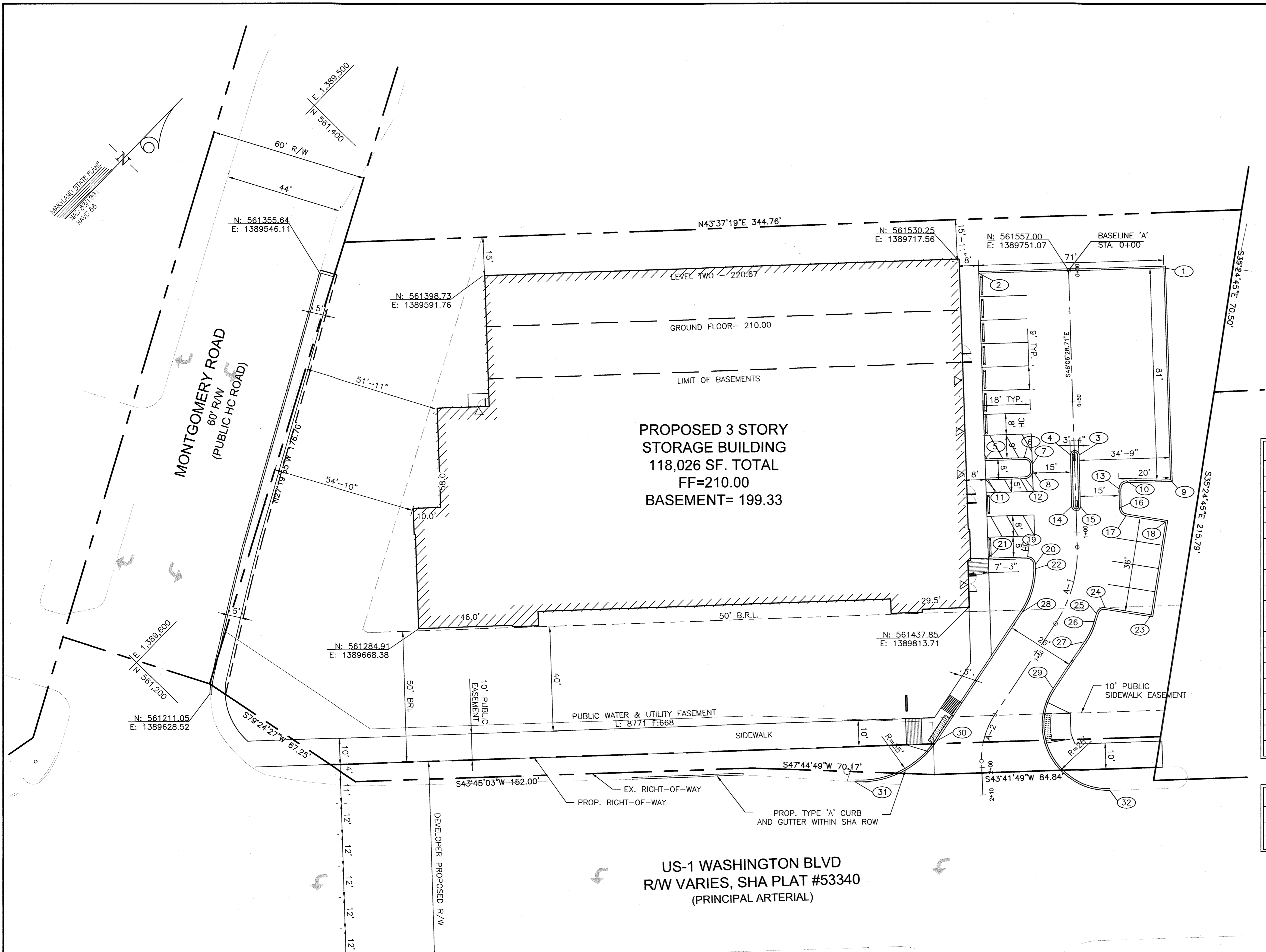
Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.  
License No. 227137, Expiration Date: 06/16/2021  
THERE IS NO AS-BUILT INFORMATION PROVIDED ON THIS SHEET

SWM AS-BUILT  
AS-BUILT SURVEY BY CLS1  
ON 5/14/2021



PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME AND THAT I AM DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND.  
LICENSE NO. 33772 EXP. DATE: 06/16/2021





**BASELINE 'A' DATA**

NO.	STATION	EASTING	NORTHING	LENGTH	NO.	STATION	EASTING	NORTHING	LENGTH
1	0+00.00	1389776.38	561583.32	36.50'L	19	1+11.00	1389816.34	561467.60	19.00'R
2	0+00.00	1389727.16	561532.15	34.50'R	20	1+14.90	1389820.51	561467.60	15.67'R
3	0+70.50	1389803.14	561509.43	1.80'L	21	1+16.00	1389805.93	561456.80	33.85'R
4	0+70.50	1389800.84	561507.05	1.50'R	22	1+17.00	1389821.63	561466.48	15.41'R
5	0+71.00	1389778.48	561483.08	34.25'R	23	1+22.00	1389865.62	561485.00	32.00'L
6	0+71.00	1389788.88	561493.89	19.25'R	24	1+24.00	1389850.50	561474.60	14.25'L
7	0+74.00	1389793.12	561493.97	16.25'L	25	1+27.00	1389850.25	561470.67	12.05'L
8	0+76.00	1389794.57	561492.51	16.25'R	26	1+30.00	1389851.65	561467.87	12.41'L
9	0+81.00	1389834.76	561527.16	36.50'L	27	1+36.00	1389854.46	561459.75	13.00'L
10	0+81.00	1389823.07	561515.10	19.75'L	28	1+40.00	1389829.63	561451.09	13.00'R
11	0+79.00	1389784.25	561477.54	34.25'R	29	1+58.00	1389858.49	561438.41	13.00'L
12	0+79.00	1389794.65	561488.35	19.25'R	30	1+92.00	1389840.63	561392.85	17.67'R
13	0+84.00	1389823.13	561510.85	16.75'L	31	2+03.00	1389829.06	561359.82	48.75'R
14	0+90.00	1389814.88	561493.32	1.65'R	32	2+10.00	1389901.21	561425.85	48.75'L
15	0+90.00	1389817.22	561495.65	1.65'L					
16	0+91.25	1389828.39	561505.71	16.65'L					
17	0+94.25	1389823.23	561505.41	19.00'L					
18	0+97.00	1389844.74	561514.32	34.17'L					

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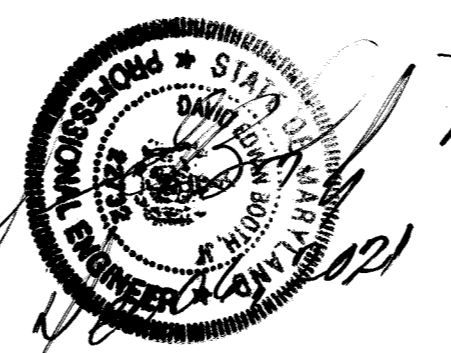
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A-2	1+79	1+97.50	30.00	18.50	S28°28'26.09"E	18.33

**KCI TECHNOLOGIES**  
 ENGINEERS  
 PLANNERS  
 SCIENTISTS  
 CONSTRUCTION MANAGERS  
 11830 WEST MARKET PLACE  
 SUITE F  
 FULTON, MD 20759  
 TELEPHONE: (410) 792-8086  
 FAX: (410) 792-7419

**REVISIONS**

NO.	DATE	BY

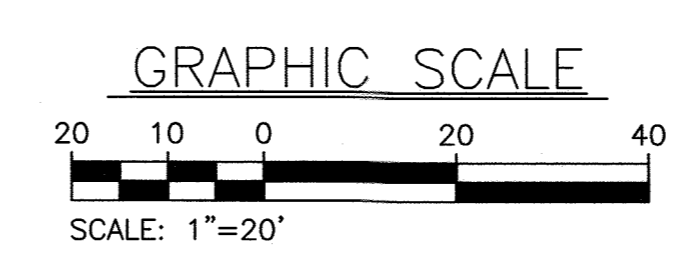
Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.  
 License No. 22732. Expiration Date: 05/30/2022



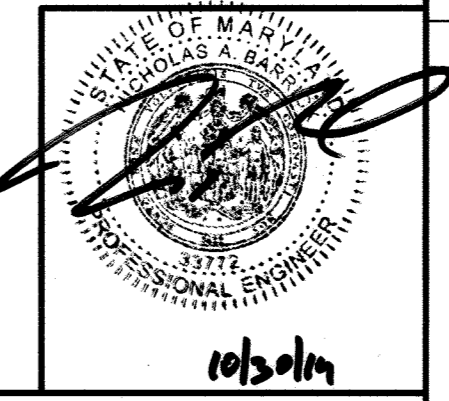
*SWM AS-BUILT  
 AS-BUILT SURVEY BY CLS1  
 ON 5/4/2021*

**GEOMETRY PLAN**  
 SCALE: 1"=20'

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



PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME AND THAT I AM DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND.  
 LICENSE NO. 33772 EXP. DATE: 06/16/2021



**CUBESMART STORAGE**  
 6300 WASHINGTON BLVD. ELKRIDGE, MD  
**GEOMETRY PLAN**

TAX MAP: 38 GRID: 08 PARCEL: 32  
 ZONED: M-1  
 ELECTION DISTRICT NO. 01 - HOWARD COUNTY MARYLAND

OWNER/DEVELOPER:  
 PATRICK DOUGAL  
 DOUGAL & ASSOCIATES  
 5695 MAIN STREET  
 ELKRIDGE, MD 21075  
 (410)-379-6444

DESIGN: NAB DATE: 9/03/19  
 DRAWN: BRA SCALE: 1"=20'

KCI PROJECT NO. 271700283  
 SHEET NO. 4 OF 30

SHEET NO. **C-1.01**

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

*[Signature]* 2/4/20  
 CHIEF, DIVISION OF LAND DEVELOPMENT  
 DATE

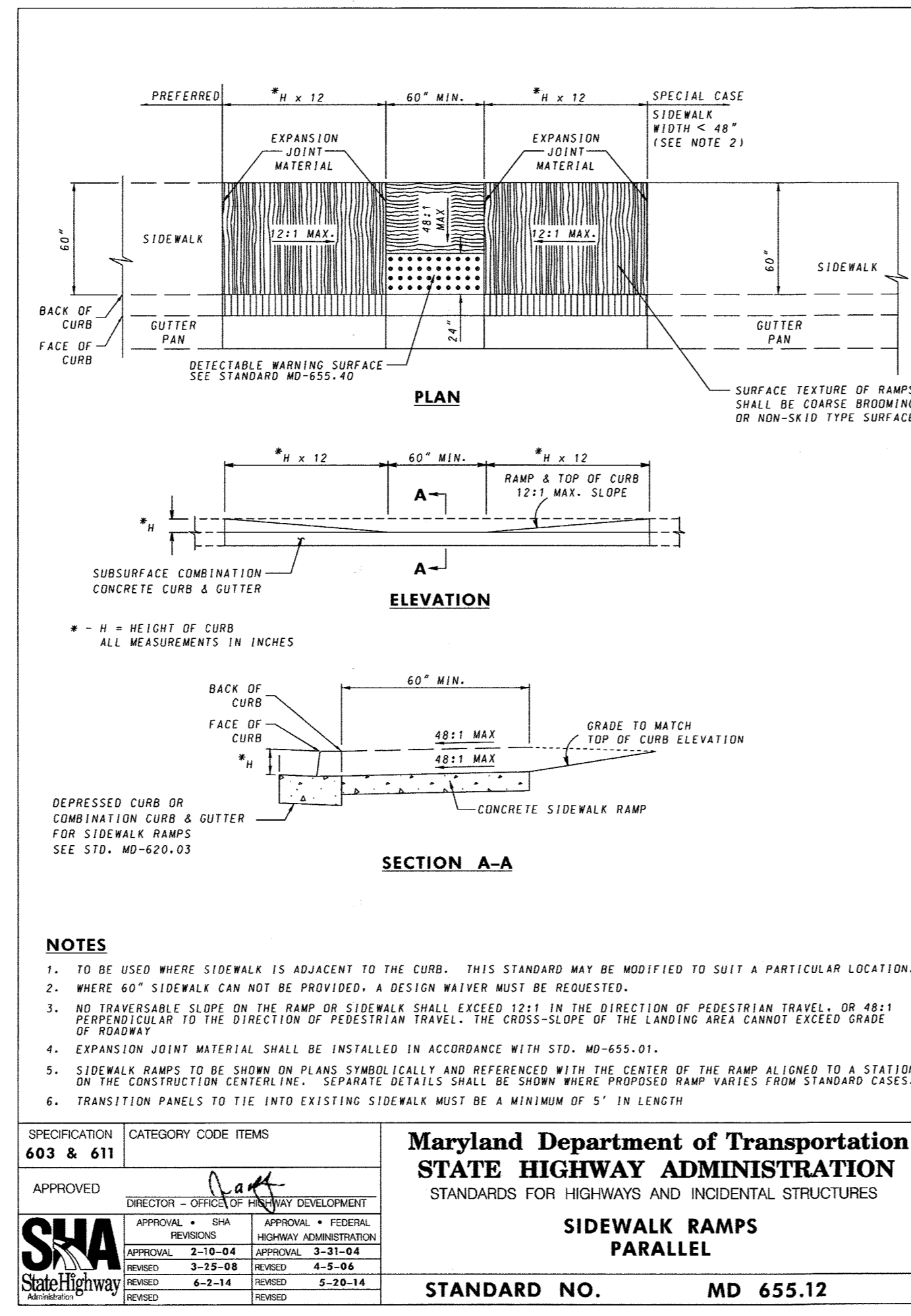
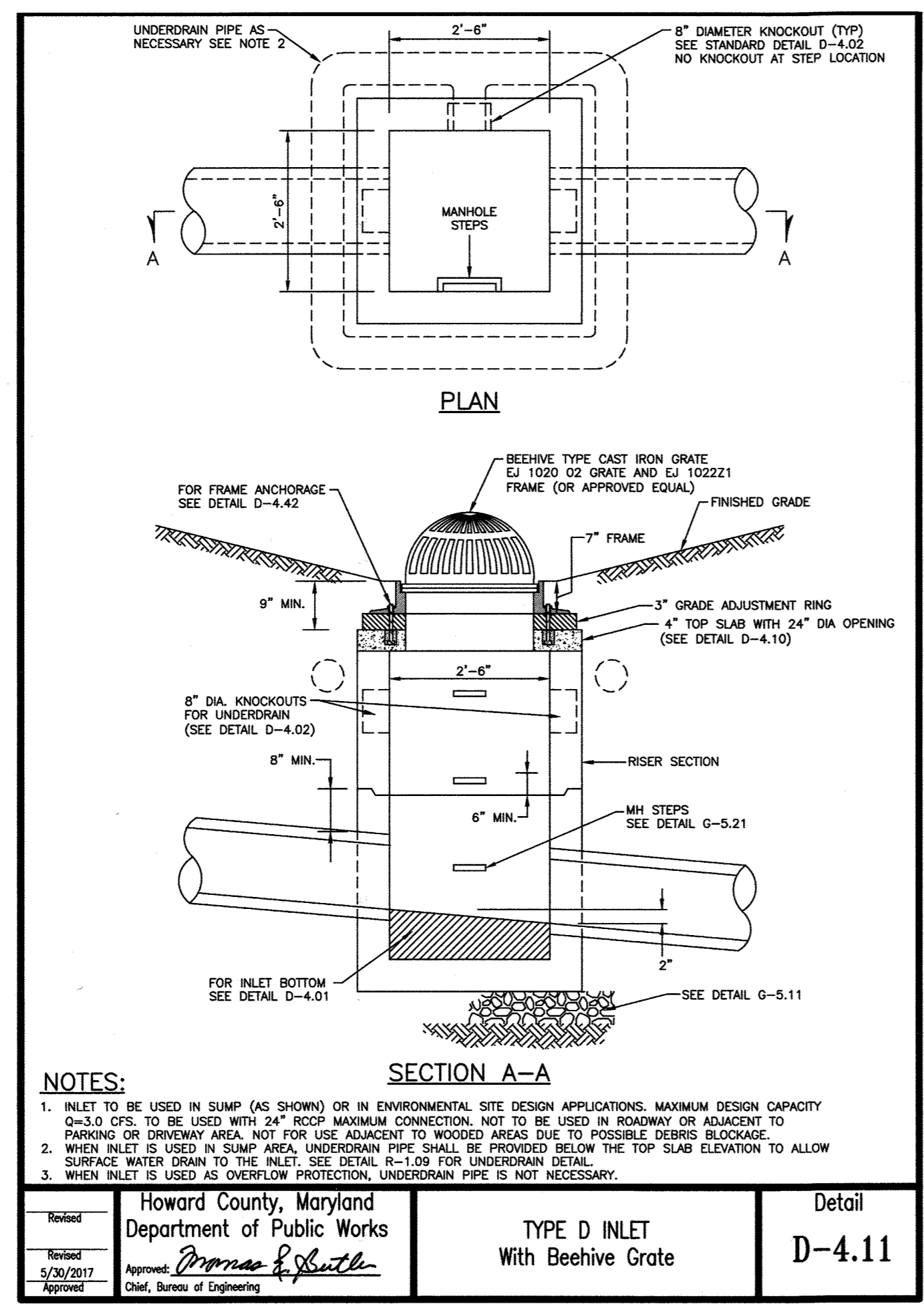
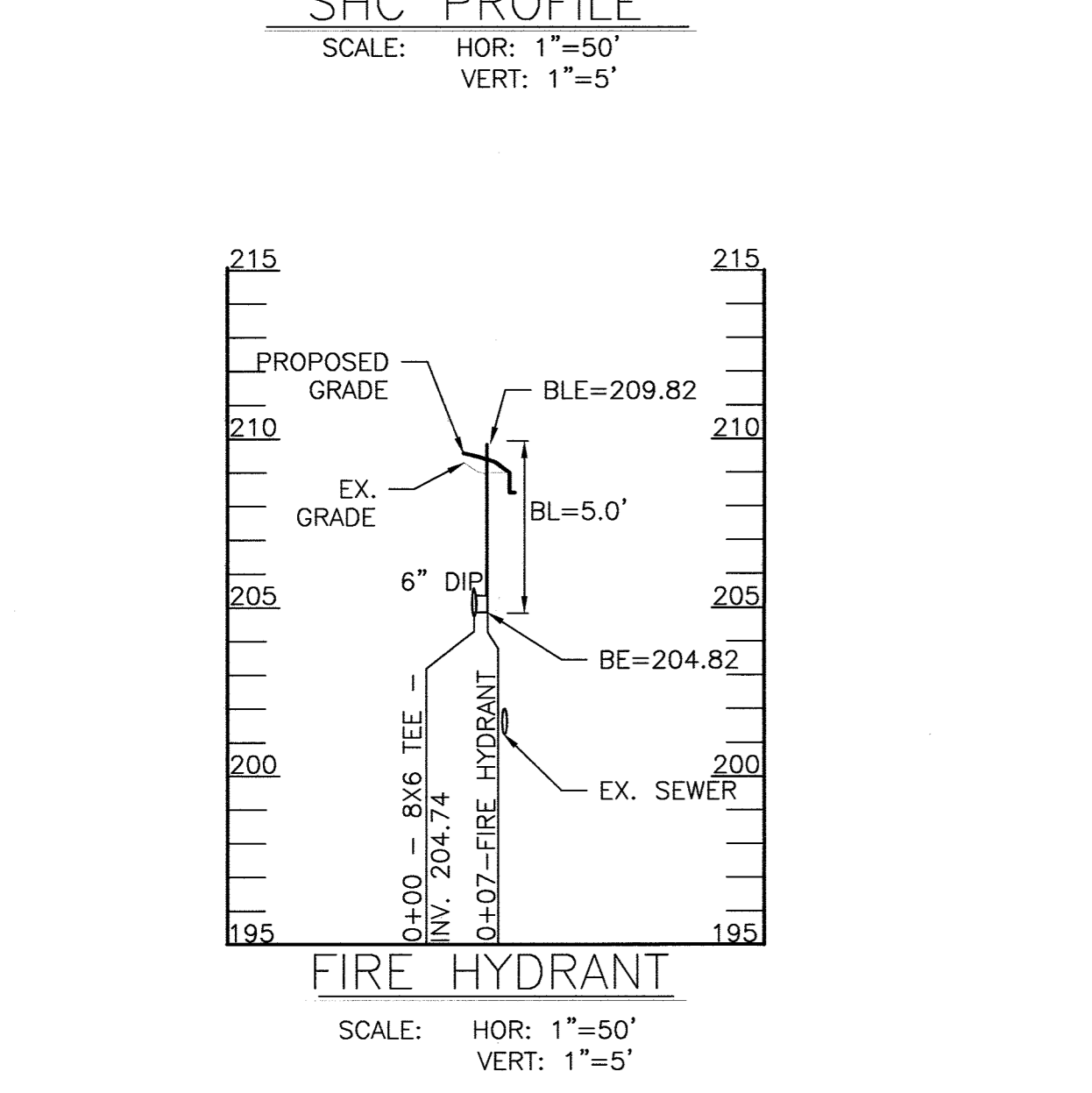
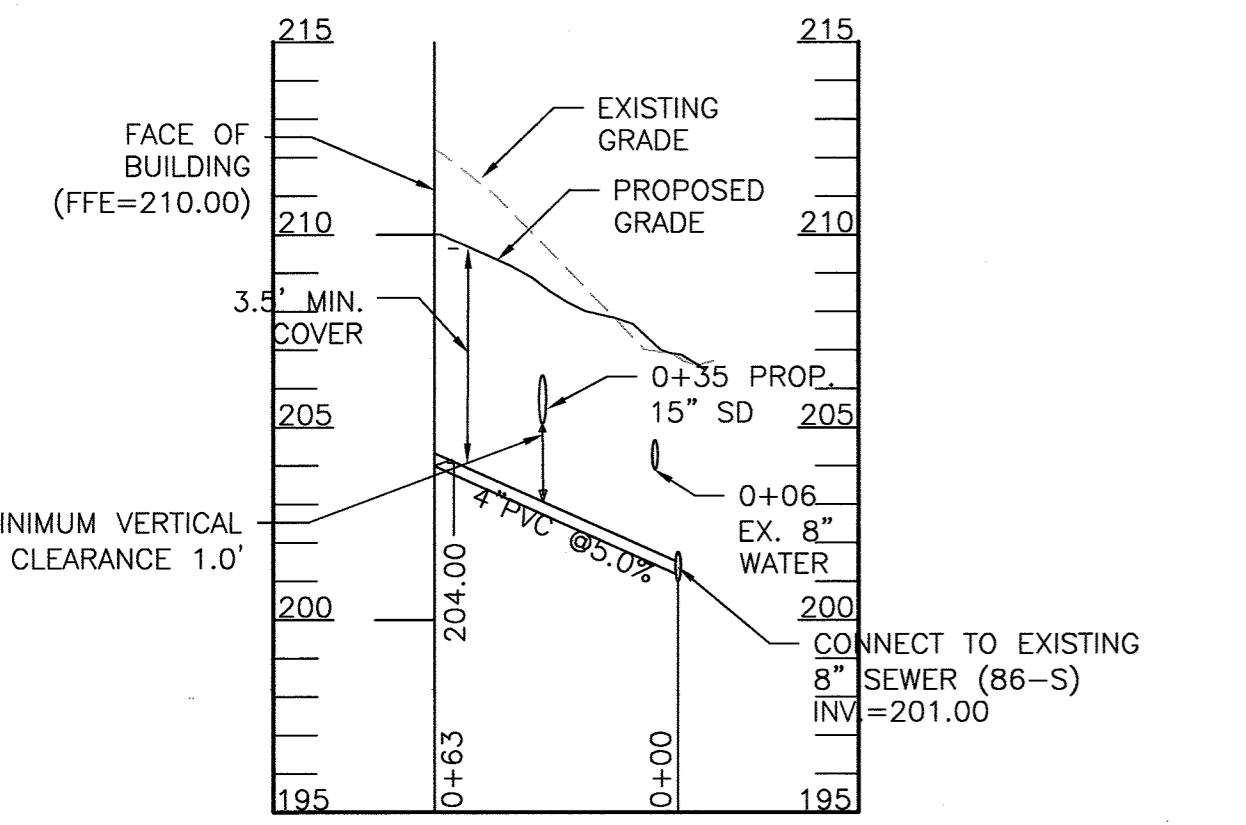
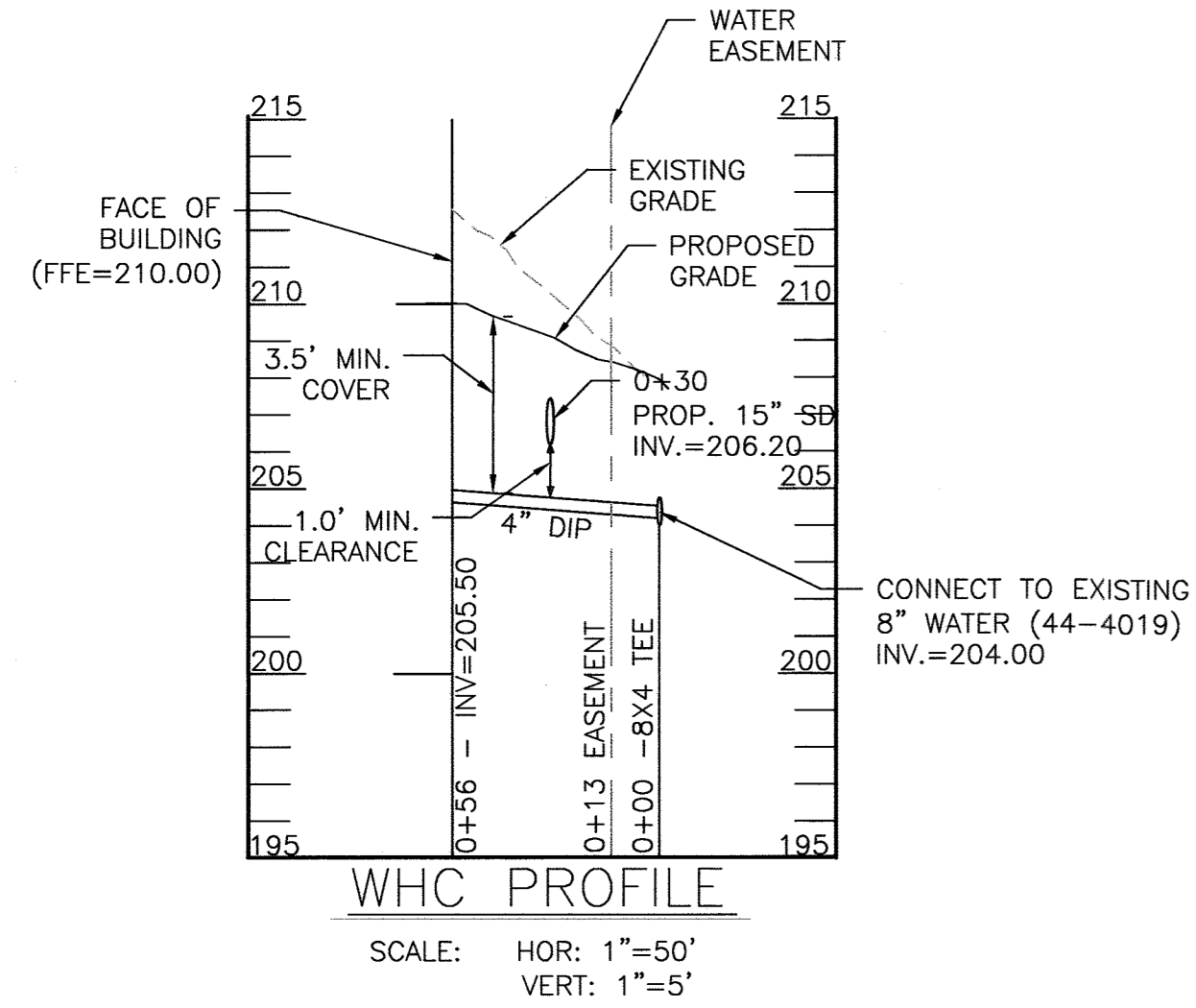
*[Signature]* 1/24/20  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION  
 DATE

*[Signature]* 2/4/20  
 DIRECTOR  
 DATE

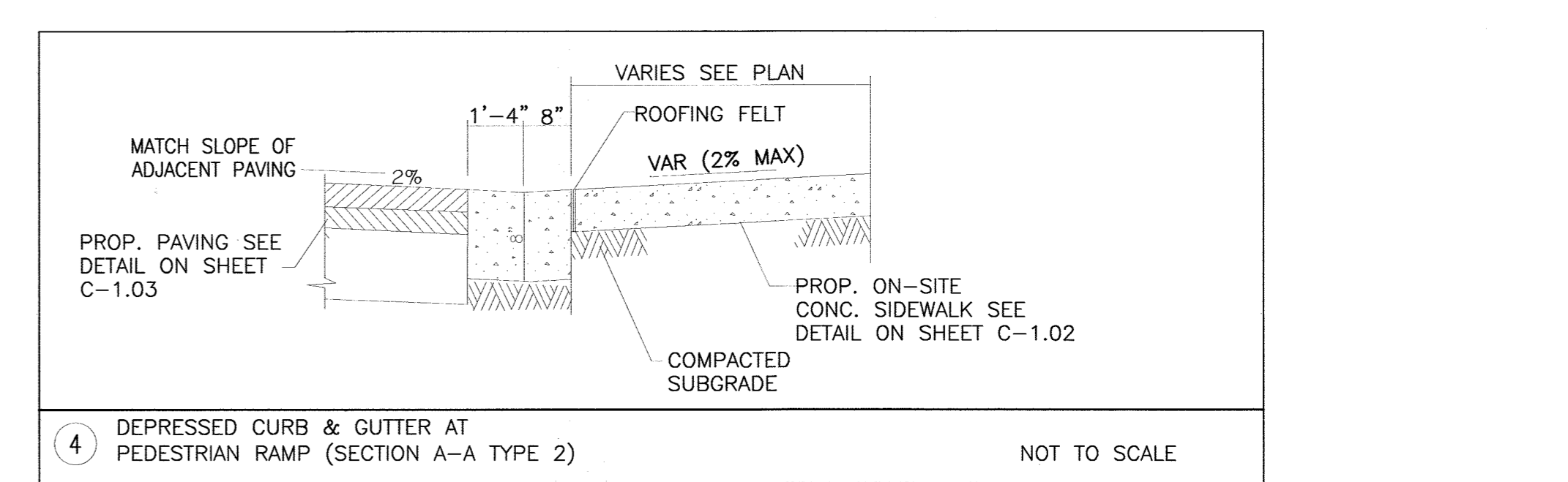
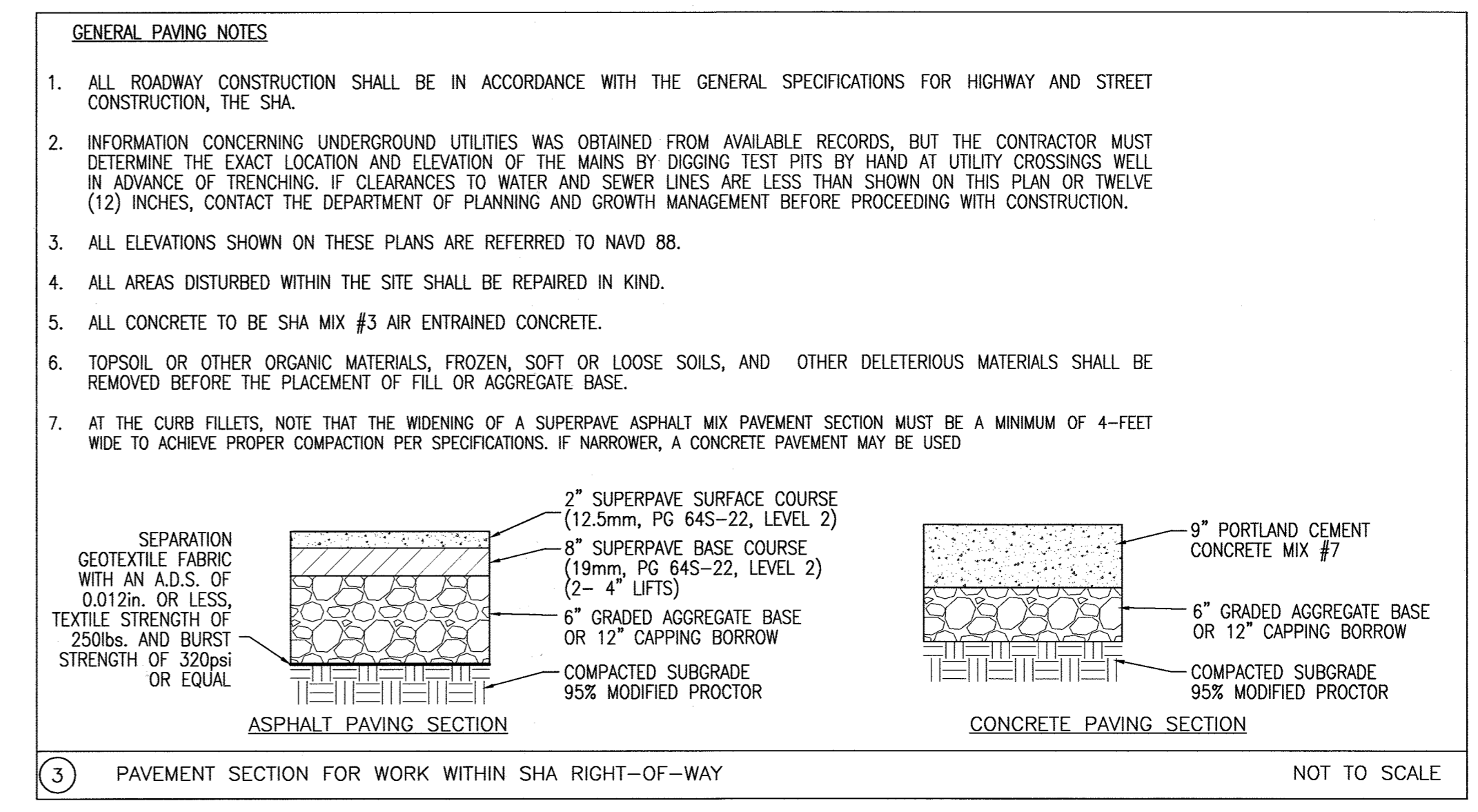
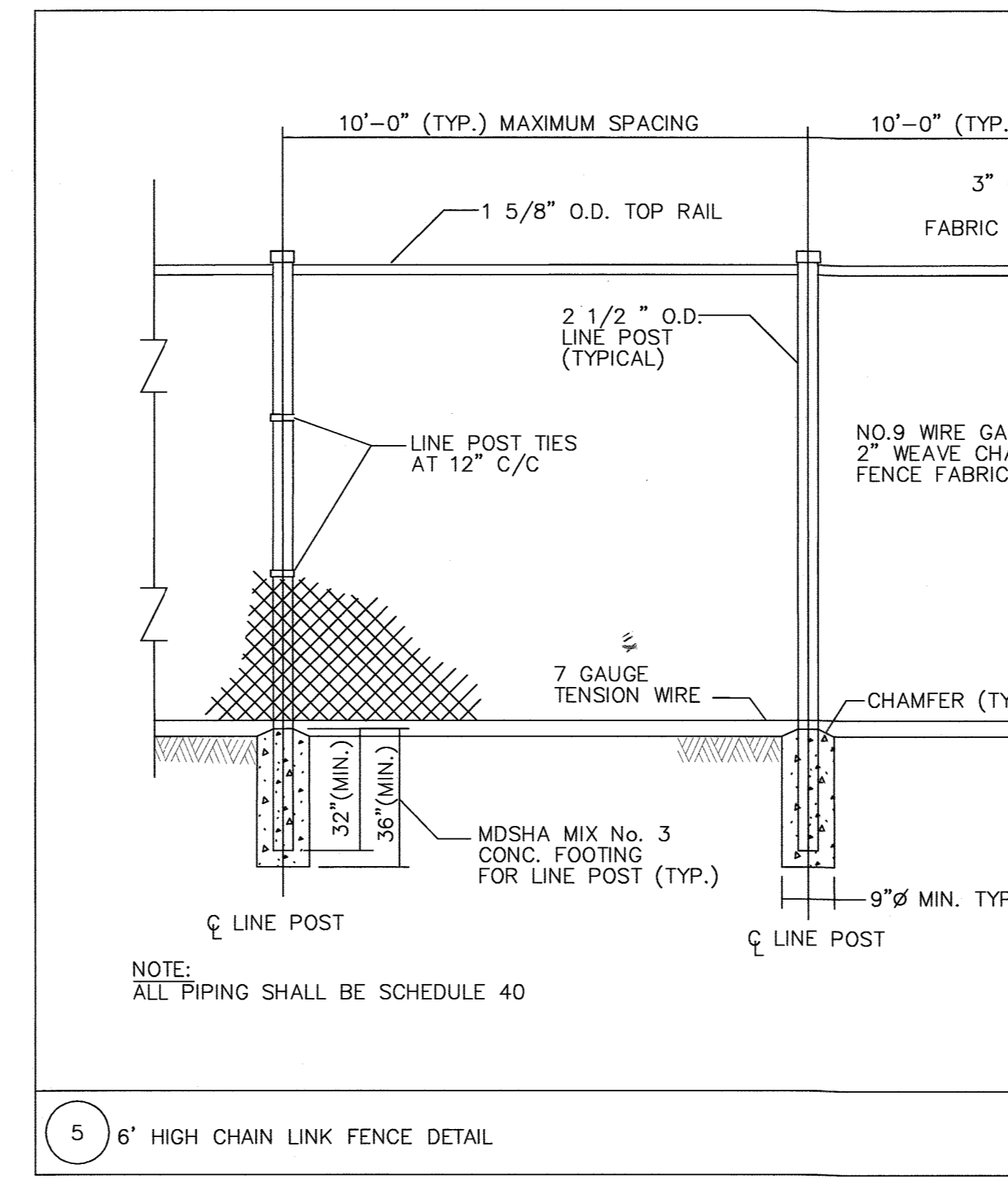
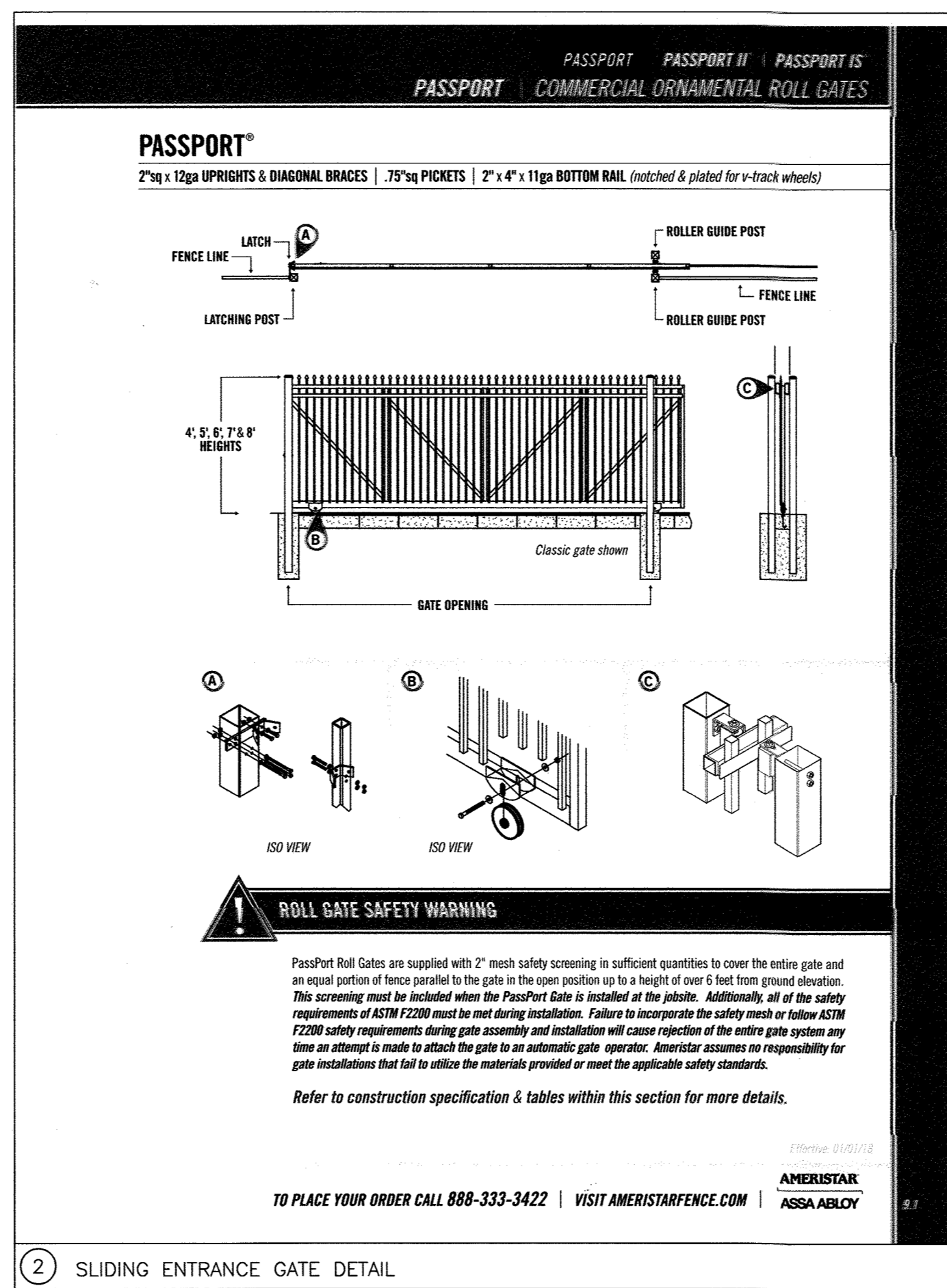








APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING	DATE: 2/4/20
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE: 1/24/20
CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE: 2/4/20
DIRECTOR	DATE:



**DWM AS BUILT AS BUILT SURVEY BY CLS1 ON 05/04/2021**

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.  
License No. 22132, Expiration Date: 05/16/2022

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

**KCI TECHNOLOGIES**  
ENGINEERS, PLANNERS, SCIENTISTS, CONSTRUCTION MANAGERS  
11830 WEST MARKET PLACE, SUITE 1, FULTON, MD 20759, TELEPHONE: (410) 792-8086, FAX: (410) 792-7419

REVISIONS			
NO.	DATE	BY	

OWNER/DEVELOPER: PATRICK DOUGAL DOUGAL & ASSOCIATES  
5695 MAIN STREET, ELK RIDGE, MD 21075, (410)-379-6444

**CUBESMART STORAGE**  
6300 WASHINGTON BLVD. ELK RIDGE, MD  
UTILITY PROFILES AND SITE DETAILS

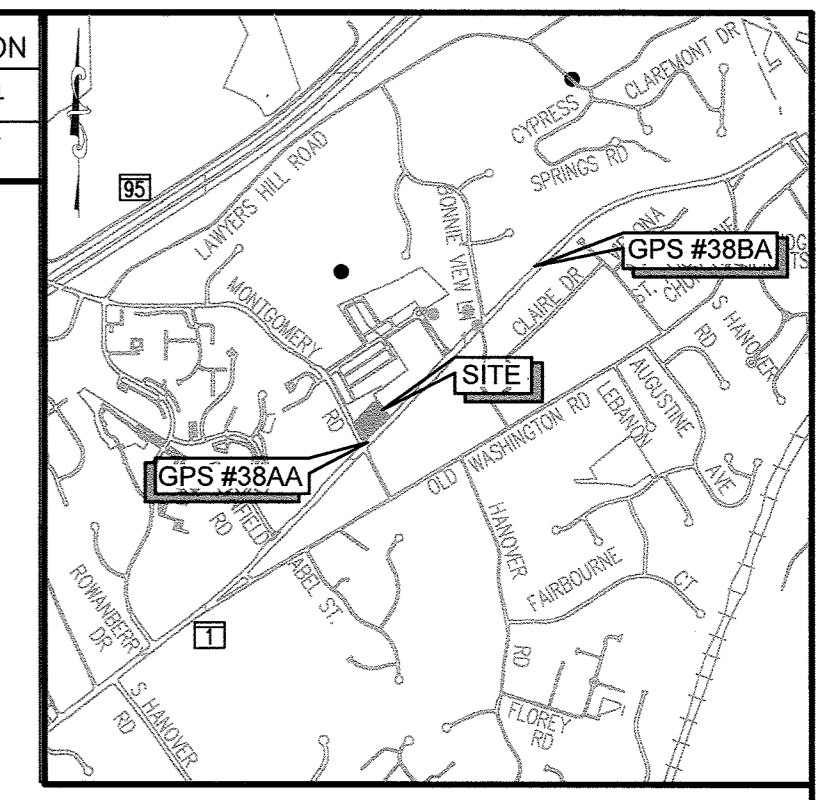
TAX MAP: 38 GRID: 08 PARCEL: 32  
ELECTION DISTRICT NO. 01 - HOWARD COUNTY MARYLAND

DESIGN: NAB DATE: 9/03/19 KCI PROJECT NO. 271700283 SHEET NO. C-1.03  
DRAWN: BRA SCALE: SHEET NO. 6 OF 30

PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME AND THAT I AM DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 33772 EXP. DATE: 06/16/2021



POINT	NORTHING	EASTING	ELEVATION
#38AA	561158.82	1389726.43	220.04
#38BA	562553.31	1390967.96	166.17



VICINITY MAP  
SCALE: 1" = 2000'  
ADC MAP 20, GRID A4

**LEGEND**

	PROPERTY LINE
	CONTOUR
	CURB AND GUTTER
	FENCE LINE
	PROPOSED BUILDING
	PROPOSED STORM DRAIN
	PROPOSED WATER
	PROPOSED SEWER
	PROPOSED RETAINING WALL
	LIMIT OF DISTURBANCE
	PROPOSED TREES
	PROPOSED ASPHALT PAVING
	PROPOSED CONCRETE SIDEWALK

**DEVELOPER'S/OWNER'S LANDSCAPE 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 LANDSCAPE INSTALLATION, ACCOMPANIED BY AN EXECUTED ONE YEAR GUARANTEE OF PLANT MATERIALS, WILL BE SUBMITTED TO THE DEPARTMENT OF PLANNING AND ZONING.

*[Signature]*  
DEVELOPER'S / OWNER'S NAME

**KCI TECHNOLOGIES**  
ENGINEERS  
PLANNERS  
SCIENTISTS  
CONSTRUCTION MANAGERS  
11830 WEST MARKET PLACE  
SUITE F  
ELKRDGE, MD 21075  
TELEPHONE: (410) 792-8086  
FAX: (410) 792-7419

REVISIONS		
NO.	DATE	BY

**CUBESMART STORAGE**  
6300 WASHINGTON BLVD. ELKRDGE, MD  
**LANDSCAPE PLAN**

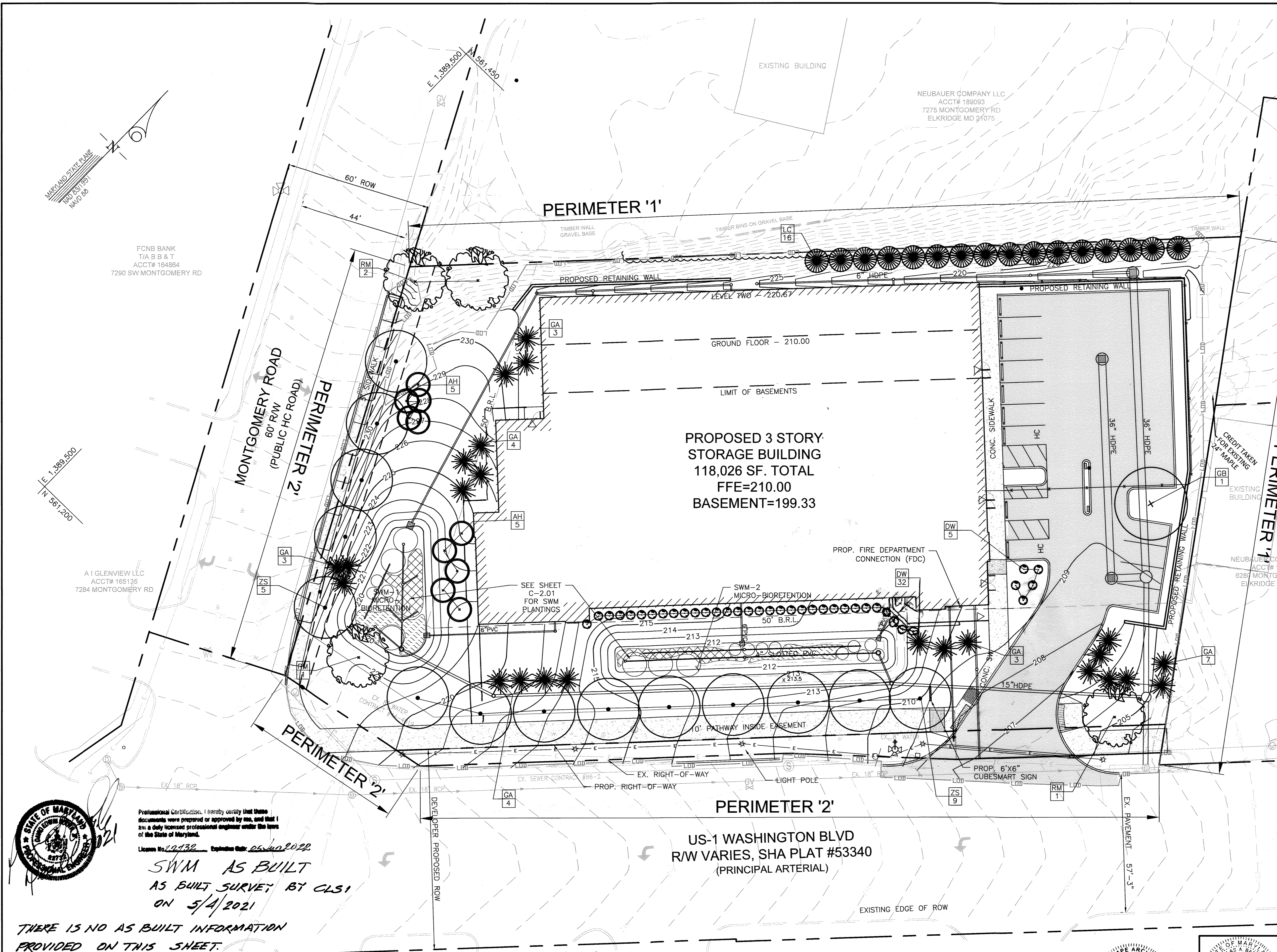
TAX MAP: 38    GRID: 08    PARCEL: 32  
ZONED: M-1  
ELECTION DISTRICT NO. 01 - HOWARD COUNTY MARYLAND

OWNER/DEVELOPER:  
PATRICK DOUGAL  
DOUGAL & ASSOCIATES  
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(410)-379-6444

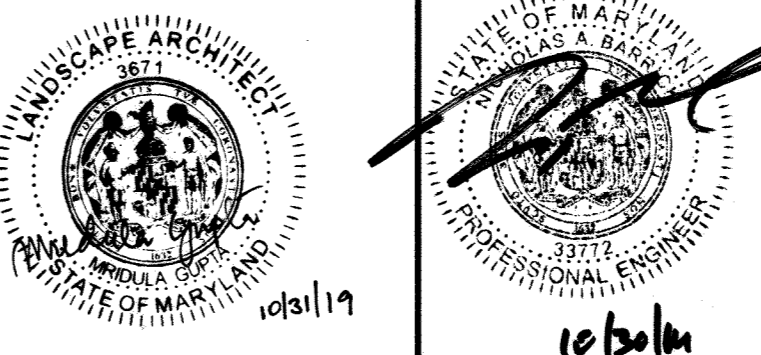
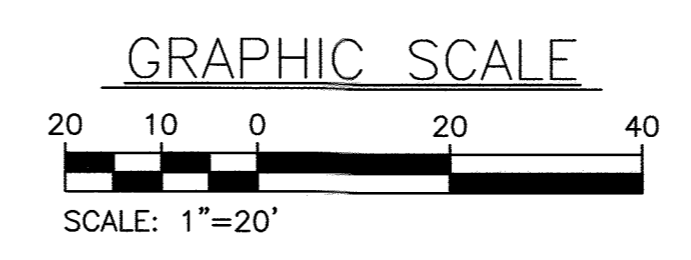
DESIGN: NAB    DATE: 9/03/19  
DRAWN: BRA    SCALE: 1"=20'

KCI PROJECT NO. 271700283  
SHEET NO. 7 OF 30

**1.04**



**LANDSCAPING PLAN**  
SCALE: 1"=20'



PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME AND THAT I AM DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 33772 EXP. DATE: 06/16/2021

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.  
License No. 20132    Expiration Date: 06/16/2022  
**SWM AS BUILT**  
AS BUILT SURVEY BY CLS1  
ON 5/4/2021  
THERE IS NO AS BUILT INFORMATION PROVIDED ON THIS SHEET.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
*[Signature]*  
CHIEF, DIVISION OF LAND DEVELOPMENT    DATE: 2/4/20  
*[Signature]*  
CHIEF, DEVELOPMENT ENGINEERING DIVISION    DATE: 1/24/20  
*[Signature]*  
DIRECTOR    DATE: 2/4/20



GENERAL PLANTING NOTES

- THIS PLAN IS FOR LANDSCAPE PURPOSES ONLY.
- IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO NOTIFY THE ENGINEER OR LANDSCAPE ARCHITECT OF ANY DEVIATION FROM THE PLANS PRIOR TO ANY CHANGE BEING MADE. ANY DEVIATION OF THIS PLAN WITHOUT WRITTEN AUTHORIZATION FROM THE ENGINEER OR LANDSCAPE ARCHITECT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR.
- SHOULD THE CONTRACTOR DISCOVER DISCREPANCIES BETWEEN THE PLANS AND FIELD CONDITIONS, THE ENGINEER OR LANDSCAPE ARCHITECT IS TO BE NOTIFIED IMMEDIATELY TO RESOLVE THE SITUATION. SHOULD THE CONTRACTOR MAKE FIELD CORRECTIONS OR ADJUSTMENTS WITHOUT WRITTEN PERMISSION OF THE ENGINEER OR LANDSCAPE ARCHITECT, THE CONTRACTOR ASSUMES ALL RESPONSIBILITY FOR THOSE CHANGES.
- IF A CONFLICT EXISTS BETWEEN DRAWINGS (AND/OR SPECIFICATIONS), THE MORE STRINGENT AND MORE COSTLY REQUIREMENT SHALL APPLY. ITEMS SHOWN ON THE DRAWINGS, BUT NOT SPECIFIED, SHALL APPLY AND BE FURNISHED AND INSTALLED BY THE CONTRACTOR. IF ANY ITEM IS SHOWN ON THE DRAWINGS, BUT NOT INCLUDED IN THE SPECIFICATIONS, PROVIDE ITEM OF QUALITY LEVEL CONSISTENT WITH THE GENERAL QUALITY LEVEL OF THE CONTRACT REQUIREMENTS. BRING CONFLICTS BETWEEN THE DRAWINGS AND SPECIFICATIONS TO THE ATTENTION OF THE ENGINEER OR LANDSCAPE ARCHITECT IMMEDIATELY.
- THE CONTRACTOR SHALL INSURE THAT HIS WORK DOES NOT INTERRUPT EXISTING OR PROPOSED DRAINAGE PATTERNS.
- DURING PLANTING OPERATIONS, EXCESS WASTE MATERIALS SHALL BE REMOVED DAILY FROM THE SITE. THE CONTRACTOR SHALL DISPOSE OF STUMPS AND MAJOR ROOTS OF ALL PLANTS TO BE REMOVED. DEPRESSIONS CAUSED BY REMOVAL OPERATIONS SHALL BE REFILLED WITH FERTILE, FRIABLE SOIL REPLACED AND COMPACTED SO AS TO REESTABLISH PROPER GRADE FOR NEW PLANTING.
- THE CONTRACTOR SHALL CONTACT "MISS UTILITY" FOR UNDERGROUND UTILITY LOCATIONS AT LEAST 72 HOURS PRIOR TO THE LANDSCAPE INSTALLATION.
- THE CONTRACTOR SHALL NOTIFY THE FACILITY MANAGER, OR OWNER, A MINIMUM OF THREE WORKING DAYS PRIOR TO PLANTING AND CONSTRUCTION FOR AS-BUILT DRAWINGS FOR UNDERGROUND UTILITIES AND IRRIGATION SYSTEM LINES, VALVES, LATERALS AND DRIP TUBING.
- THE CONTRACTOR IS ADVISED OF THE EXISTENCE OF UNDERGROUND UTILITIES ON THE SITE. THEIR EXACT LOCATION SHALL BE VERIFIED IN THE FIELD WITH THE OWNER OR GENERAL CONTRACTOR PRIOR TO THE COMMENCEMENT OF ANY DIGGING OPERATIONS. IN THE EVENT THEY ARE UNCOVERED, THE LANDSCAPE CONTRACTOR SHALL BE HELD RESPONSIBLE FOR ALL DAMAGE TO UTILITIES AND SUCH DAMAGE SHALL NOT RESULT IN ANY ADDITIONAL EXPENSES TO THE OWNER. HAND EXCAVATE TO FULL DEPTH OF INSTALLATION OR UNTIL UTILITY IS FOUND.
- IF UTILITY LINES ARE ENCOUNTERED IN THE EXCAVATION OF TREE PITS, OTHER LOCATIONS FOR TREES SHALL BE MADE BY THE CONTRACTOR WITHOUT ADDITIONAL COMPENSATION. NO CHANGES OF LOCATION SHALL BE MADE WITHOUT APPROVAL OF THE LANDSCAPE ARCHITECT.
- EVERY POSSIBLE SAFEGUARD SHALL BE TAKEN TO PROTECT BUILDING SURFACES, LIGHTING, TRELLISES, EQUIPMENT, AND FURNISHING. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE OR INJURY TO PERSONNEL OR PROPERTY WHICH MAY OCCUR AS A CONSEQUENCE OF THE EXECUTION OF THE WORK.
- THE CONTRACTOR SHALL STAKE ALL INDIVIDUAL SPECIMEN MATERIAL LOCATED ON THE SITE FOR REVIEW AND/OR ADJUSTMENT BY THE LANDSCAPE ARCHITECT PRIOR TO PLANTING. SHRUBS AND TREES SHALL BE STAKED WITH COLOR CODED WIRE SURVEY FLAGS. SURVEYOR GROUND PAINT SHALL BE USED TO MARK OUT GROUNDCOVER BEDS. ALL LOCATIONS ARE TO BE APPROVED BY THE LANDSCAPE ARCHITECT BEFORE PLANTING.
- PLANTS SHALL CONFORM TO CURRENT "AMERICAN STANDARDS FOR NURSERY STOCK", PARTICULARLY WITH REGARD TO SIZE, GROWTH, SIZE OF BALL, AND DENSITY OF BRANCH STRUCTURE. PLANT MATERIAL SHALL BE TAGGED AT THE SOURCES BY THE LANDSCAPE ARCHITECT UNLESS THIS REQUIREMENT IS SPECIFICALLY WAIVED. REFERENCE "ANSI Z60.1-2004" (OR MOST CURRENT DOCUMENT AVAILABLE AT WWW.ANLA.ORG).

- ALL SHRUB AND GROUNDCOVER BEDS SHALL BE PLANTED IN CONTINUOUS PREPARED PLANTING BEDS.
- ALL SHRUB BEDS AND PERENNIALS SHALL BE MULCHED WITH SHREDDED AND FULLY COMPOSTED HARDWOOD MULCH FREE OF COLOR DYE AS DETAILED AND SPECIFIED EXCEPT WHERE NOTED ON PLANS.
- INSTALLATION CONTRACTOR MAINTENANCE SHALL BEGIN AFTER EACH PLANT HAS BEEN INSTALLED AND SHALL CONTINUE UNTIL 90 DAYS AFTER FINAL ACCEPTANCE BY THE ARCHITECT OR OWNER REPRESENTATIVE. MAINTENANCE SHALL INCLUDE WATERING, PRUNING, WEEDING, FERTILIZING, MULCHING, REPLACEMENT OF SICK OR DEAD PLANTS, AND ANY OTHER CARE NECESSARY FOR THE PROPER GROWTH OF THE PLANT MATERIAL. THE CONTRACTOR MUST BE ABLE TO PROVIDE CONTINUOUS MAINTENANCE, FOR AN ADDITIONAL COST, FOR A PERIOD OF ONE YEAR AFTER THE DATE OF THE "CERTIFICATE OF SUBSTANTIAL COMPLETION." THE CONTRACTOR WILL BE RESPONSIBLE FOR ITEMS LOST BY THEFT, "ACTS OF GOD," VANDALISM OR ANY CONDITION AFFECTING THE LANDSCAPE PRODUCT NOT SPECIFICALLY RELATED TO THE OWNER OR OTHER SITE CONTRACTOR DAMAGE UP TO DATE OF THE ISSUANCE OF A "CERTIFICATE OF SUBSTANTIAL COMPLETION."
- UPON COMPLETION OF ALL LANDSCAPING FOR EACH PHASE OF WORK, AN INSPECTION OF THE WORK SHALL BE HELD. THE CONTRACTOR SHALL NOTIFY THE LANDSCAPE ARCHITECT OR OWNER FOR SCHEDULING THE INSPECTION AT LEAST SEVEN (7) DAYS PRIOR TO THE ANTICIPATED INSPECTION DATE.
- THE CONTRACTOR IS RESPONSIBLE FOR TESTING PROJECT SOILS. THE CONTRACTOR IS TO PROVIDE A CERTIFIED SOILS REPORT TO THE OWNER. THE CONTRACTOR SHALL NOT KNOWINGLY INSTALL PLANTS IN SOIL OR DRAINAGE CONDITIONS THAT ARE NOT CONDUCTIVE TO PLANT SURVIVAL. THE CONTRACTOR SHALL VERIFY THAT THE SOILS ON SITE ARE ACCEPTABLE FOR THE PROPER GROWTH OF THE PROPOSED PLANT MATERIAL. THE CONTRACTOR SHALL SUBMIT RECOMMENDATIONS FOR SOIL TEXTURE MODIFICATIONS, SOIL PH MODIFIERS OR ADDITION OF MACRO AND MICRO NUTRIENTS WHICH MAY REQUIRE MODIFICATION OF THE SPECIFIED PLANTING MIX, SPECIFIED HEREIN.
- QUICK SOIL TESTING AND PLANTING MIX DESIGN CAN BE PROVIDED BY A & L LABORATORIES (800-264-4522), 2790 WHITTEN ROAD, MEMPHIS, TN 38133. PROVIDE SOIL PLANTING MIX FROM SPECS AND ASK FOR COMMENTS FOR ALTERING MIX, IF APPROPRIATE. MULTIPLE SAMPLES MIGHT BE REQUIRED FOR LARGE JOBS WITH VARYING SOIL CONDITIONS. PROVIDE ONE REPORT FOR EACH 10,000 SF OF LANDSCAPE. MINIMUM SOIL SAMPLES SHALL BE TAKEN AT 1 INCH AND 6 INCH DEPTHS FROM AT LEAST 4 LOCATIONS. THESE SAMPLES SHOULD THEN BE MIXED AND SUBMITTED TO THE LAB AS A SINGLE SAMPLE.
- PLANTING MIX - ADJUST AS RECOMMENDED BY THE SOIL LABORATORY.
  - PLANTING MIX SHALL BE PREPARED AT APPROVED ON-SITE STAGING AREA USING APPROVED ON-SITE EXISTING SOIL. MIX MINIMUM QUANTITIES OF 20 CUBIC YARDS OR SUFFICIENT MIX FOR ENTIRE JOB IF LESS THEN 20 CUBIC YARDS IS REQUIRED.
  - THOROUGHLY MIXED IN THE FOLLOWING PROPORTIONS FOR TREE AND SHRUB PLANTING MIX:
    - 0.5 CY EXISTING SOIL
    - 0.2 CY SHARP SAND
    - 0.3 CY WOOD RESIDUALS (MUST BE BROKEN DOWN BY AT LEAST TWO YEARS DECOMPOSITION)
    - 4.5 LBS TREBLE SUPERPHOSPHATE (0-46-0)
    - 5.0 LBS DOLOMITIC LIMESTONE (ELIMINATE FOR ACID LOVING PLANTS)
  - FOR PLANTING BEDS, SHRUB AND GROUNDCOVER INCORPORATE THE FOLLOWING INGREDIENTS PER 20 SF AND INCORPORATE INTO TOP 8 INCHES OF EXISTING SOILS BY ROTOTILLING OR SIMILAR METHOD OF INCORPORATION.
    - 0.1 CY SHARP SAND
    - 0.2 CY ORGANIC MATERIAL
    - 4.5 LBS TREBLE SUPERPHOSPHATE (0-46-0)
    - 5.0 LBS DOLMONTITE LIMESTONE (ELIMINATE FOR ACID LOVING PLANTS)
  - IF SOIL TESTS RESULTS AND TESTING LAB RECOMMENDATIONS CONFLICT WITH THE SPECIFIED SOIL MIX THE CONTRACTOR SHALL BRING IT TO THE ATTENTION OF THE LANDSCAPE ARCHITECT FOR REVIEW, ALTERATION APPROVAL.
  - THE LANDSCAPE CONTRACTOR SHALL PROVIDE THE LANDSCAPE ARCHITECT / OWNER A 1 CF SAMPLE OF SPECIFIED MIXES AND LAB REPORTS PRIOR TO USE.
- WARRANTY: ALL PLANT MATERIAL SHALL BE GUARANTEED FOR TWELVE MONTHS FROM THE DATE OF ACCEPTANCE IN WRITING BY THE OWNER OR BY ISSUANCE OF AN AIA STANDARD FORM "CERTIFICATE OF SUBSTANTIAL COMPLETION." THIS CERTIFICATE WILL BE ISSUED AFTER FINAL INSPECTION BY THE LANDSCAPE ARCHITECT. IF THE LANDSCAPE ARCHITECT IS SATISFIED THAT THE PROJECT IS SUBSTANTIALLY COMPLETE, THE CERTIFICATE WILL BE PREPARED WITH AN INSPECTION DATE AND CONDITIONS WHICH MUST BE SATISFIED IN A SPECIFIC PERIOD OF TIME (GENERALLY 30 DAYS). IF THESE CONDITIONS ARE NOT MET, THE CERTIFICATE MAY BE REVOKED AND A NEW INSPECTION WILL BE REQUIRED AND THE WARRANTY PERIOD SHALL BE EXTENDED ACCORDINGLY. OTHER INSPECTIONS MAY BE APPROPRIATE TO VERIFY COMPLIANCE WITH THE PUNCH LIST. THE LANDSCAPE CONTRACTOR SHALL BE RESPONSIBLE FOR A ONE-TIME REPLACEMENT ONLY. REPLACEMENTS SHALL BE OF THE SAME TYPE, SIZE AND QUALITY AS THE ORIGINAL SPECIES UNLESS OTHERWISE NEGOTIATED.

MINIMUM LANDSCAPE MAINTENANCE REQUIREMENTS

- LAWN AREAS SHALL BE MOWED TO A HEIGHT OF 2 TO 3 INCHES AND NOT ALLOWED TO REACH A HEIGHT OF 4 INCHES BEFORE MOWING.
- ALL CURBS AND WALKS SHALL BE EDGED AS NEEDED.
- ALL LAWN AREAS ADJACENT TO BUILDING FACES OR STRUCTURES SHALL BE TRIMMED.
- A SLOW RELEASE NITROGEN BALANCED FERTILIZER WITH A 2-1-1 RATIO SHALL BE APPLIED AT A RATE OF 2 POUNDS OF NITROGEN PER 1000 SQUARE FEET IN SEPTEMBER, OCTOBER, AND FEBRUARY.
- LIME SHALL BE APPLIED AT THE RATE DETERMINED BY A SOILS REPORT.
- IT IS RECOMMENDED THAT THE LAWN AREAS BE TREATED IN MID-MARCH TO EARLY APRIL WITH PRE-EMERGENT HERBICIDE (BETASAN) OR EQUAL APPLIED AT THE MANUFACTURER'S RECOMMENDED RATE.
- A POST-EMERGENT HERBICIDE (TRIMEC) OR EQUAL IS RECOMMENDED TO BE SPRAYED ON LAWN AREAS IN THE LATE SPRING OR THE EARLY FALL. FOLLOW MANUFACTURER'S RATES AND RECOMMENDATIONS.
- INSECTICIDES AND FUNGICIDES ARE RECOMMENDED FOR INSECT AND DISEASE CONTROL.
- RE-SEED BARE AREAS OF LAWN AS NECESSARY. YEARLY AERATION IS RECOMMENDED.
- ALL TRASH, LITTER, AND DEBRIS SHALL BE REMOVED FROM LAWN AREAS, PARKING LOTS, AND SHRUB BEDS AS NEEDED.
- MULCH ALL SHRUB BEDS AND TREES YEARLY WITH 3 INCHES OF SHREDDED HARDWOOD BARK MULCH FREE OF COLOR DYE. BARK SHOULD BE PULLED AWAY FROM THE TRUNK / ROOT COLLAR.
- MULCH ALL PERENNIAL, ORNAMENTAL GRASS AND ANNUAL BEDS YEARLY WITH 2 INCHES OF SHREDDED HARDWOOD BARK MULCH FREE OF COLOR DYE.
- PERMIT SHRUBS AND TREES TO GROW AND ENLARGE TO THEIR DESIGN SIZE. CONSULT PROJECT LANDSCAPE ARCHITECT FOR DETAILS.
- PRUNE TREES IN ACCORDANCE WITH LANDSCAPE SPECIFICATION GUIDELINES FOR BALTIMORE-WASHINGTON METROPOLITAN AREAS.
- THE OWNER OF ANY PROPERTY ON WHICH LANDSCAPING HAS BEEN INSTALLED PURSUANT TO THIS CHAPTER SHALL MAINTAIN THE LANDSCAPING IN GOOD CONDITION IN PERPETUITY. A LANDSCAPE MAINTENANCE AGREEMENT SHALL BE REQUIRED. FAILURE TO REPLACE DEAD OR DYING PUS OR THE REMOVAL OF ANY INSTALLED PUS IS A VIOLATION OF THIS CHAPTER.
- ACCEPTABLE PLANT SURVIVAL SHALL BE DEFINED AS NOT MORE THAN 1/3 MORTALITY. A 12 MONTH INSPECTION WILL BE PERFORMED BY THE COUNTY. NO INSPECTIONS SHALL BE FINALIZED FROM NOVEMBER 1ST TO MARCH 1ST.

TYPE 1 TREE SPECIFICATIONS, MAJOR TREES				
SPECIES EXCEPTIONS OR MODIFICATIONS MUST BE APPROVED				
CALIPER	MINIMUM NUMBER OF BRANCHES OFF OF MAIN STEM	HEIGHT RANGE	WIDTH	CLEARANCE FROM GROUND TO FIRST BRANCH
1 IN.	8	8-10 FT.	3 TO 4 FT.	3 FT.
2 IN.	16	12-14 FT.	5 TO 6 FT.	4 FT.
2.5 IN.	18	12-14 FT.	6 TO 8 FT.	5 FT.
3 IN.	36	14-16 FT.	6 TO 8 FT.	5 FT.
4 IN.	45	16-18 FT.	8 TO 10 FT.	5 FT.
5 IN.	SUBJECT TO REVIEW AT PLACE OF GROWTH, OR PHOTOGRAPH			

- ALL PLANTS (B&B OR CONTAINER) SHALL BE PROPERLY IDENTIFIED BY WEATHER-PROOF LABELS, SECURELY ATTACHED BEFORE DELIVERY TO PROJECT SITE. LABELS SHALL IDENTIFY PLANTS BY NAME, SPECIES, AND SIZE. LABELS SHALL NOT BE REMOVED UNTIL THE FINAL INSPECTION BY THE LANDSCAPE ARCHITECT OR AGENT IN CHARGE. CONTAINERIZED GROUND COVER SHALL BE PROVIDED IN SPECIFIED SIZE CONTAINERS, FULL GROWTH TO AT LEAST CONTAINER SIZE WITH FULLY DEVELOPED, BUT NOT POT BOUND ROOT SYSTEMS AND FREE OF INSECT OR FUNGUS INFESTATIONS.
- ANY MATERIAL AND/OR WORK MAY BE REJECTED BY THE LANDSCAPE ARCHITECT OR OWNER IF IT DOES NOT MEET THE REQUIREMENTS OF THESE NOTES AND THE PROJECT SCOPE AND SEQUENCE. ALL REJECTED MATERIALS SHALL BE REMOVED FROM THE SITE BY THE CONTRACTOR.
- NO SUBSTITUTIONS SHALL BE MADE WITHOUT WRITTEN CONSENT OF THE LANDSCAPE ARCHITECT.

CATEGORY	PERIMETER		TREES PROVIDED
	1	2	
Landscape Type	A	B	
Linear Feet of Roadway/Frontage/Perimeter	631'	550'	
Number of Plants Required			
Shade Trees	11	11	
Evergreen Trees	0	14	
Credit for Existing Vegetation	Y	N	
Shade Trees	1**	0	
Evergreen Trees	0	0	
Other (20' wide landscape buffer)	0	0	
Number of Plants Provided			
Shade Trees	1	3	4
Evergreen Trees	18	32	50
Ornamental Trees	37	0	37

\*\* CREDIT TAKEN FOR EXISTING 24" MAPLE TREE ALONG PERIMETER 1

KEY	QUANTITY	BOTANICAL NAME	SIZE	NOTE
RM	4	ACER RUBRUM RED MAPLE	2 1/2"-3" CAL.	B & B
GA	24	THUJA PLICATA GIANT ARBORVITAE GREEN GIANT	5'-6" HT.	CONT.
AH	10	ILEX OPACA AMERICAN HOLLY	5'-6" HT.	CONT.
LC	16	CUPPRESSOCYPARIS LEYLANDII LEYLAND CYPRESS	5'-6" HT.	CONT.
DW	37	CORNUS FLORIDA FLOWERING DOGWOOD	5'-6" HT.	CONT.

STREET TREE			
STREET NAME	LF REQUIRED	TREES REQUIRED	TREES PROVIDED
US ROUTE 1	374	30 (1 per 40 LF)	9
MONTGOMERY ROAD	177	30 (1 per 40 LF)	5

LANDSCAPE SCHEDULE (Street Planting)				
KEY	QUANTITY	BOTANICAL NAME	SIZE	NOTE
ZS	14	ZELKOVA SERRATA 'VILLAGE GREEN' VILLAGE GREEN JAPANESE ZELKOVA	2 1/2"-3" CAL.	B & B

PARKING LOT LANDSCAPING	
Number of Parking Spaces	15
Number of trees required 1 Shade Trees per 20 Spaces Shade Trees provided	1 1

LANDSCAPE SCHEDULE (Parking Lot Planting)				
KEY	QUANTITY	BOTANICAL NAME	SIZE	NOTE
GB	1	GINKGO BILOBA GINKGO (MALE ONLY)	2 1/2"-3" CAL.	B & B
DW	5	CORNUS FLORIDA FLOWERING DOGWOOD	5'-6" HT.	CONT.

*SWIM AS BUILT AS BUILT SURVEY BY CLS1 ON 5/4/2021 THERE IS NO AS BUILT INFORMATION PROVIDED ON THIS SHEET.*

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.  
License No. 20752 Expiration Date 05/10/2022



- FINANCIAL SURETY FOR THE REQUIRED LANDSCAPING WILL BE POSTED AS PART OF THE DEVELOPER'S AGREEMENT IN THE AMOUNT OF \$12,900 (18 SHADE TREES @ \$300.00 EACH; 50 EVERGREEN TREES @ \$150.00 EACH).
- LANDSCAPING HAS BEEN PROVIDED IN ACCORDANCE WITH SECTION 16.124 OF THE SUBDIVISION REGULATIONS, THE LANDSCAPE MANUAL, AND THE ROUTE 1 MANUAL.
- FOR PERIMETER 1 AND 2, 22 SHADE TREES ARE REQUIRED AND 14 EVERGREEN TREES ARE REQUIRED.
- BASED ON 15 PARKING SPACES, 1 TREE IS REQUIRED.
- STREET TREES REQUIRED: 9 ALONG US ROUTE 1 AND 5 ALONG MONTGOMERY ROAD

ENGINEERS  
PLANNERS  
SCIENTISTS  
CONSTRUCTION MANAGERS

**KCI TECHNOLOGIES**

11830 West Market Place  
Suite F  
Elkridge, MD 21075  
Telephone: (410) 792-8086  
Fax: (410) 792-7419

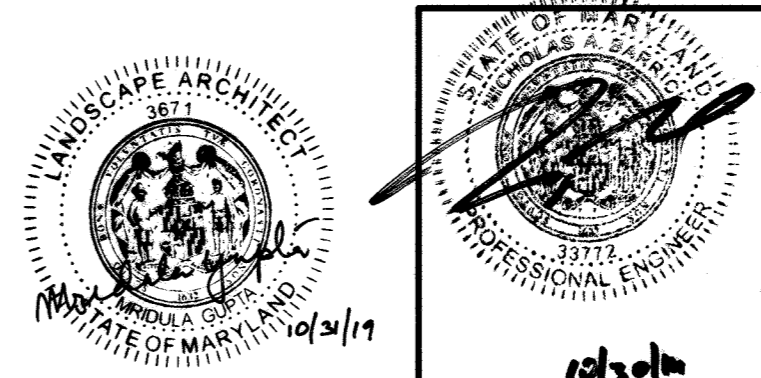
REVISIONS		
NO.	DATE	BY

OWNER/DEVELOPER:  
PATRICK DOUGAL DOUGAL & ASSOCIATES  
5695 MAIN STREET  
ELKBRIDGE, MD 21075  
(410)-379-6444

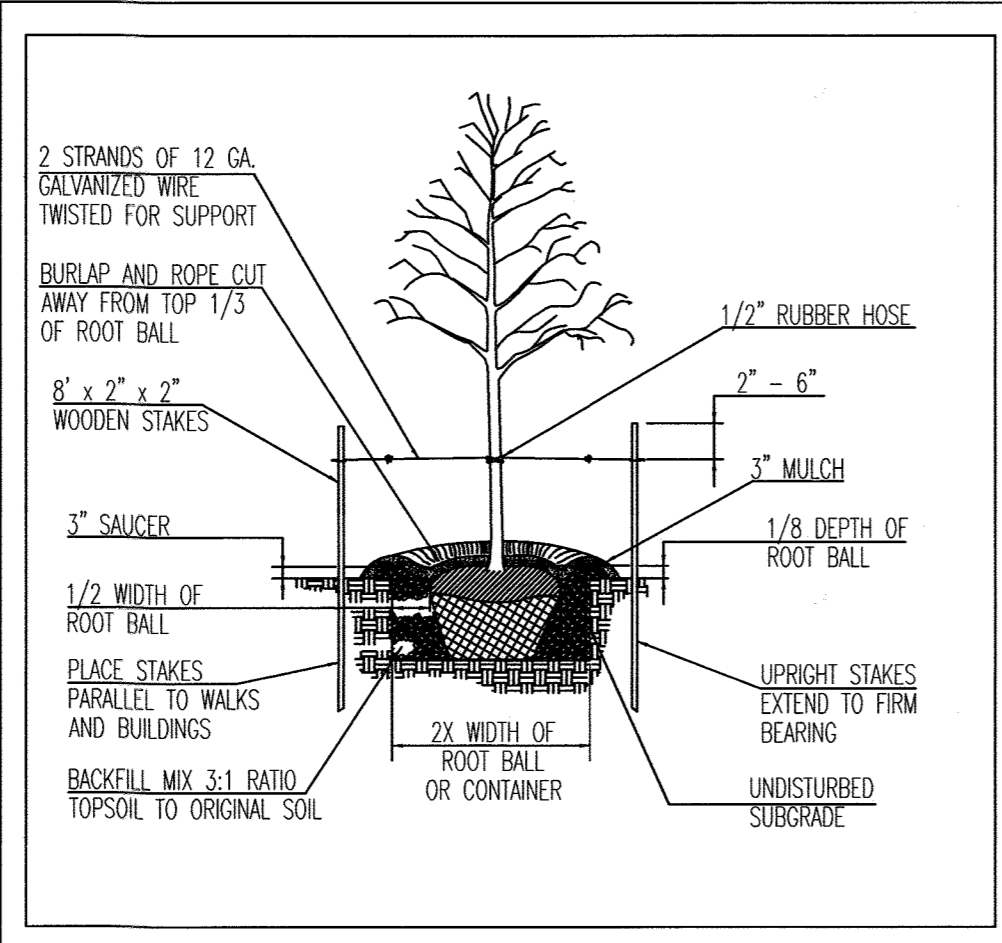
CUBESMART STORAGE  
6300 WASHINGTON BLVD. ELKBRIDGE, MD  
LANDSCAPING DETAILS AND NOTES

TAX MAP: 38 GRID: 08 PARCEL: 32  
ZONED: M-1  
ELECTION DISTRICT NO. 01 - HOWARD COUNTY MARYLAND

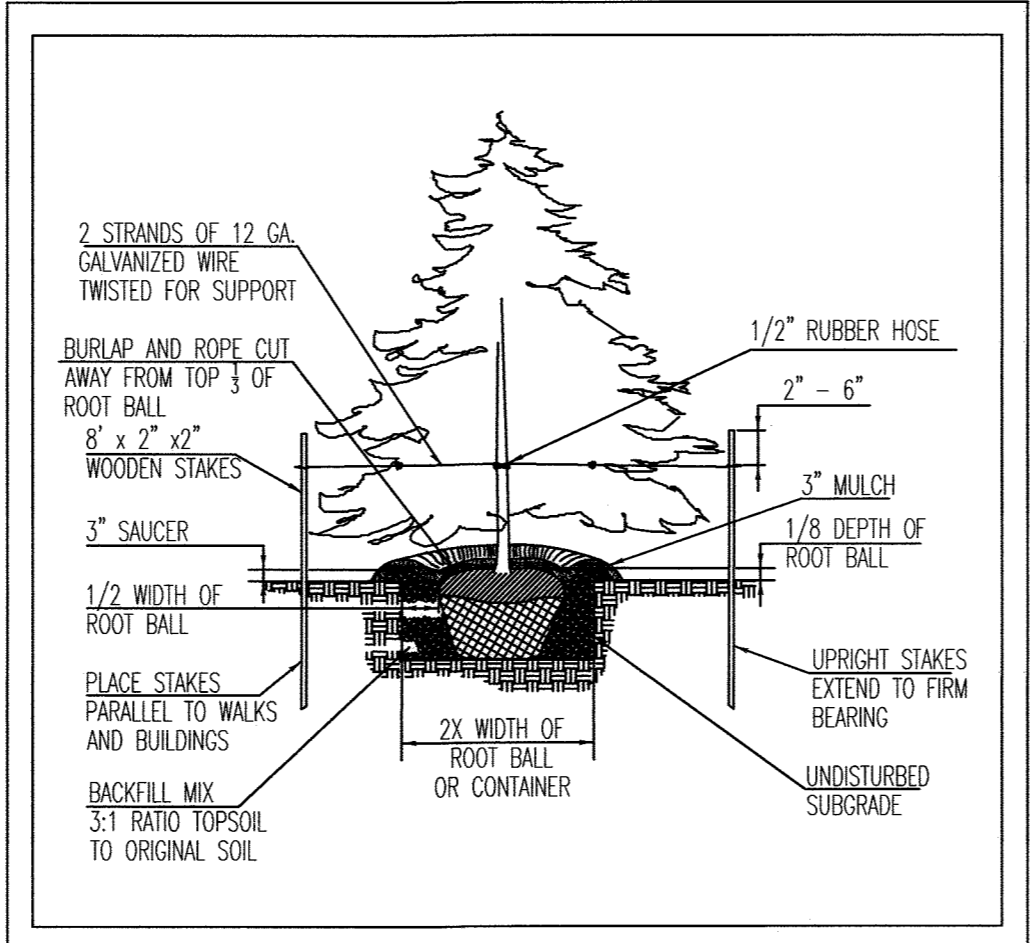
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DRAWN: BRA SCALE: VARIES SHEET NO. 8 OF 30



PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME AND THAT I AM DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 33772 EXP. DATE: 06/16/2021



DECIDUOUS TREE PLANTING DETAIL  
NOT TO SCALE



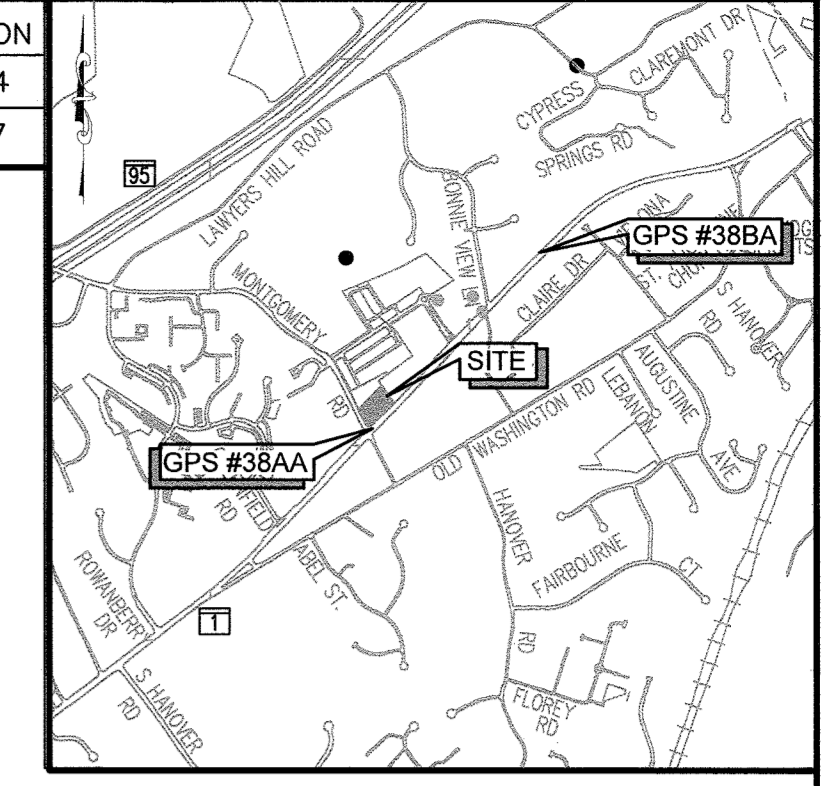
EVERGREEN TREE PLANTING DETAIL  
NOT TO SCALE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

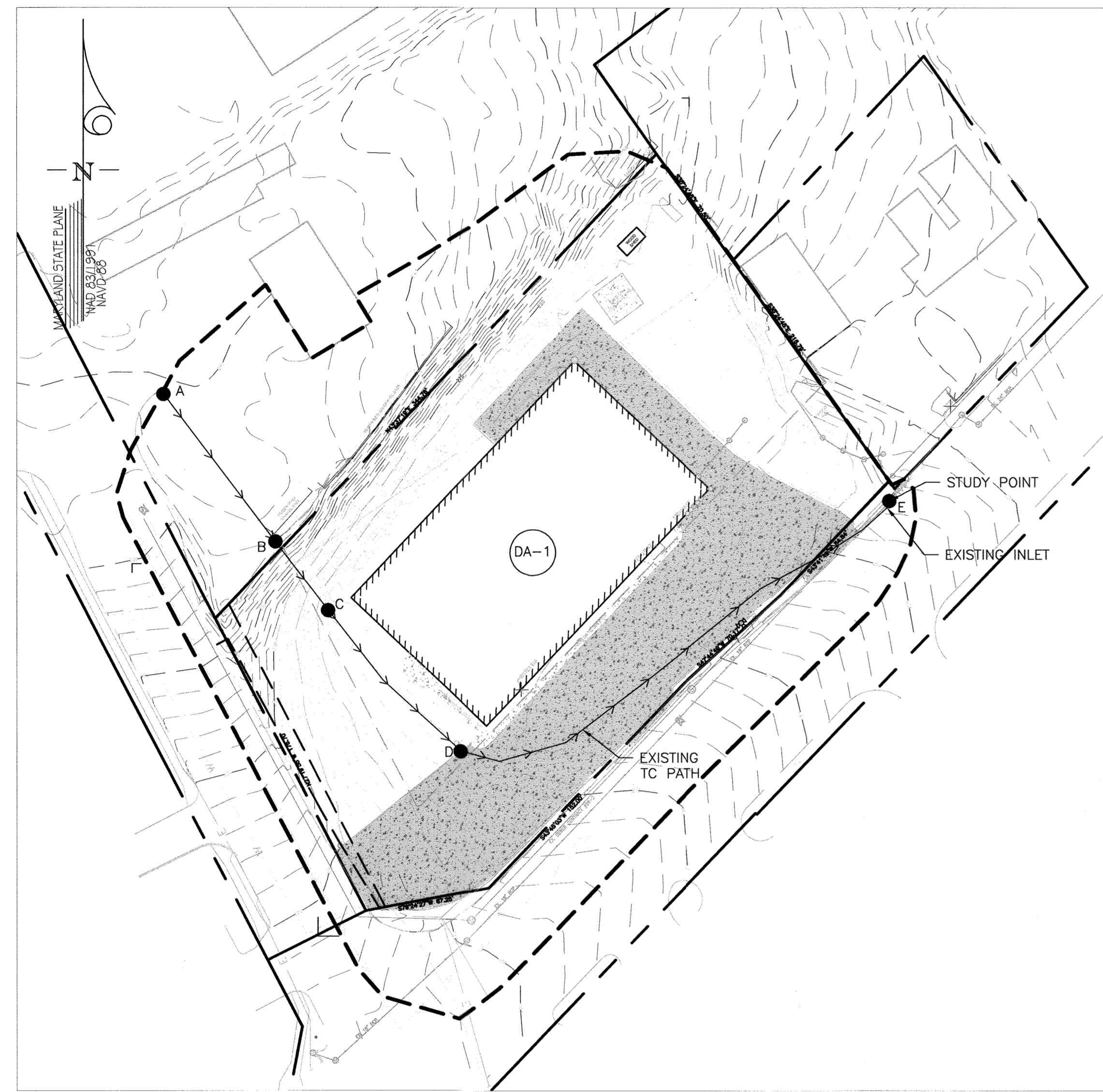
Chief, Division of Land Development DATE: 2/4/20  
Chief, Development Engineering Division DATE: 1-24-20  
DIRECTOR DATE: 2/5/20



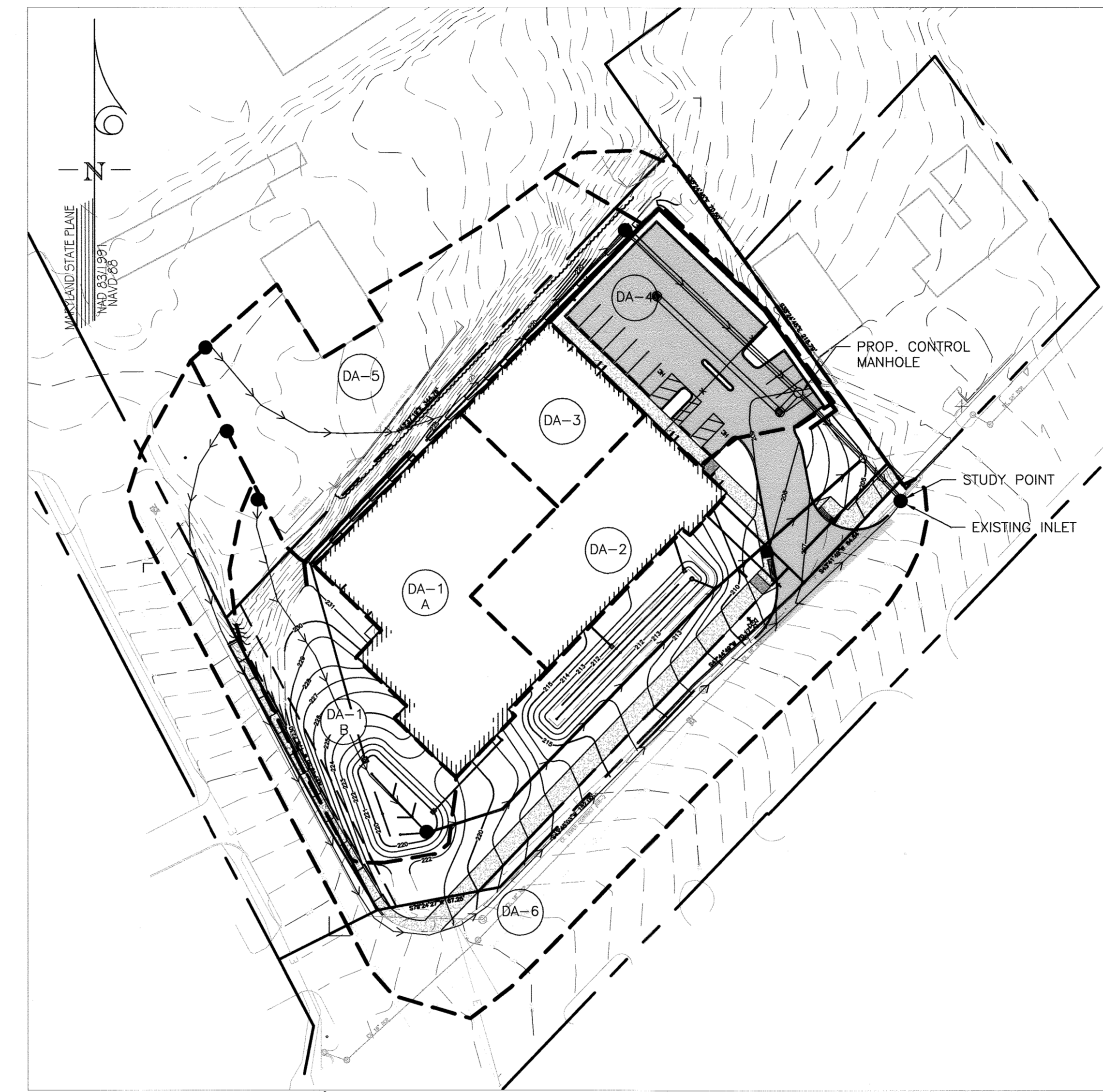
POINT	NORTHING	EASTING	ELEVATION
#38AA	561158.82	1389726.43	220.04
#38BA	562553.31	1390967.96	166.17



VICINITY MAP  
SCALE: 1" = 2000'  
ADC MAP 20, GRID A4



EXISTING DRAINAGE AREA  
SCALE: 1"=50'



PROPOSED DRAINAGE AREA  
SCALE: 1"=50'

**LEGEND**

- PROPERTY LINE
- - - 220 CONTOUR
- ==== CURB AND GUTTER
- FENCE LINE
- PROPOSED BUILDING
- PROPOSED STORM DRAIN
- PROPOSED WATER
- PROPOSED SEWER
- PROPOSED RETAINING WALL
- LOD LIMIT OF DISTURBANCE
- PROPOSED TREES
- PROPOSED ASPHALT PAVING
- PROPOSED CONCRETE SIDEWALK

10-YEAR MANAGEMENT TABLE

	CONDITION	AREA AC.	FLOW 2-YEAR	FLOW 10-YEAR
DA1	PRE-DEVELOPMENT	2.71	6.56 cfs	11.02 cfs
	POST-DEVELOPED	2.71	4.93 cfs	10.47 cfs

NOTE: SITE QUALIFIES FOR REDEVELOPMENT BASED ON AN EXISTING CONDITION OF 58% IMPERVIOUS AREA.

STORMWATER MANAGEMENT FACILITY TABLE

FACILITY	DRAINAGE AREA #	RCN	DRAINAGE AREA (SF)	IMPERVIOUS AREA (S.F.)	%	PROVIDED	
						PE	ESDv (C.F.)
SWM #1 (M-8) MICRO-BD	DA-1	90	24,800	14,000	56%	1.80"	1,566
SWM #2 (M-8) MICRO-BD	DA-2	98	9,500	9,500	100%	2.61"	1,077

STORMWATER MANAGEMENT TABLE

AREA OF DISTURBANCE (AC.)	PROPOSED IMPERVIOUS (AC.)	%	PE	QE	ESDv REQUIRED (CF)	ESDv PROVIDED (CF)
1.65	1.04	63	1.80"	1.11"	2,152	2,643

SHA RIGHT-OF-WAY

AREA OF DISTURBANCE IN SHA ROW	EXISTING IMPERVIOUS IN SHA ROW	PROPOSED IMPERVIOUS IN SHA ROW
1,815 SF	591 SF	790 SF

**KCI TECHNOLOGIES**  
ENGINEERS  
PLANNERS  
SCIENTISTS  
CONSTRUCTION MANAGERS  
11830 WEST MARKET PLACE  
SUITE F  
FULTON, MD 20759  
TELEPHONE: (410) 792-8086  
FAX: (410) 792-7419

EXISTING DRAINAGE AREA TABLE

DRAINAGE AREA	AREA (AC.)	IMPERVIOUS (AC.)	RCN	TC (HRS.)	Q2 (CFS)	Q10 (CFS)
DA-1	2.71	1.70	91	0.172	6.56	11.02
OUTFALL TOTAL					6.56	11.02

*SWM AS BUILT AS BUILT SURVEY BY CLS1 ON 5/4/2021 THERE IS NO AS BUILT INFORMATION PROVIDED ON THIS SHEET.*

PROPOSED DRAINAGE AREA TABLE

DRAINAGE AREA	AREA (AC.)	IMPERVIOUS (AC.)	RCN	TC (HRS.)	Q2 (CFS)	Q10 (CFS)
DA1 (A+B)	0.57	0.321	90	0.100	0.94	1.65
DA-2	0.22	0.218	98	0.100	0.63	0.88
DA-3	0.11	0.113	98	0.100	0.37*	0.57*
DA-4	0.25	0.222	96	0.100	0.82*	1.29*
DA-5	0.47	0.220	88	0.100	1.23*	2.14*
DA-6	1.09	0.677	91	0.100	3.16	5.29
FINAL OUTFALL					4.93	10.47

\*FLOW BEFORE STORAGE WEIR

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

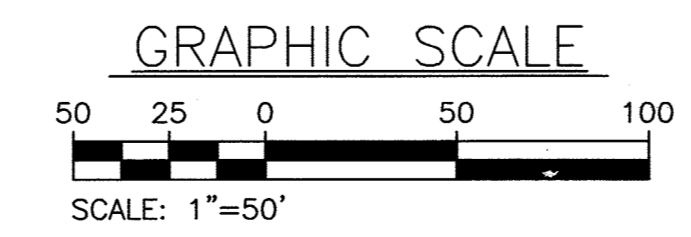
*Julia Sauer*  
CHIEF, DIVISION OF LAND DEVELOPMENT  
DATE: 2/4/20

*John Elmer*  
CHIEF, DEVELOPMENT ENGINEERING DIVISION  
DATE: 2/4/20

*John Elmer*  
DIRECTOR

SOILS TABLE

SYMBOL	DESCRIPTION	HYDROLOGIC SOILS GROUP	K-VALUE
UTD	URBAN LAND-UDORTHERTS COMPLEX, 0 TO 15 PERCENT SLOPES	D	0.28



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OWNER/DEVELOPER:  
PATRICK DOUGAL DOUGAL & ASSOCIATES  
5695 MAIN STREET  
ELKRIDGE, MD 21075  
(410)-379-6444

**CUBESMART STORAGE**  
6300 WASHINGTON BLVD. ELKRIDGE, MD  
STORMWATER MANAGEMENT  
DRAINAGE AREA MAPS

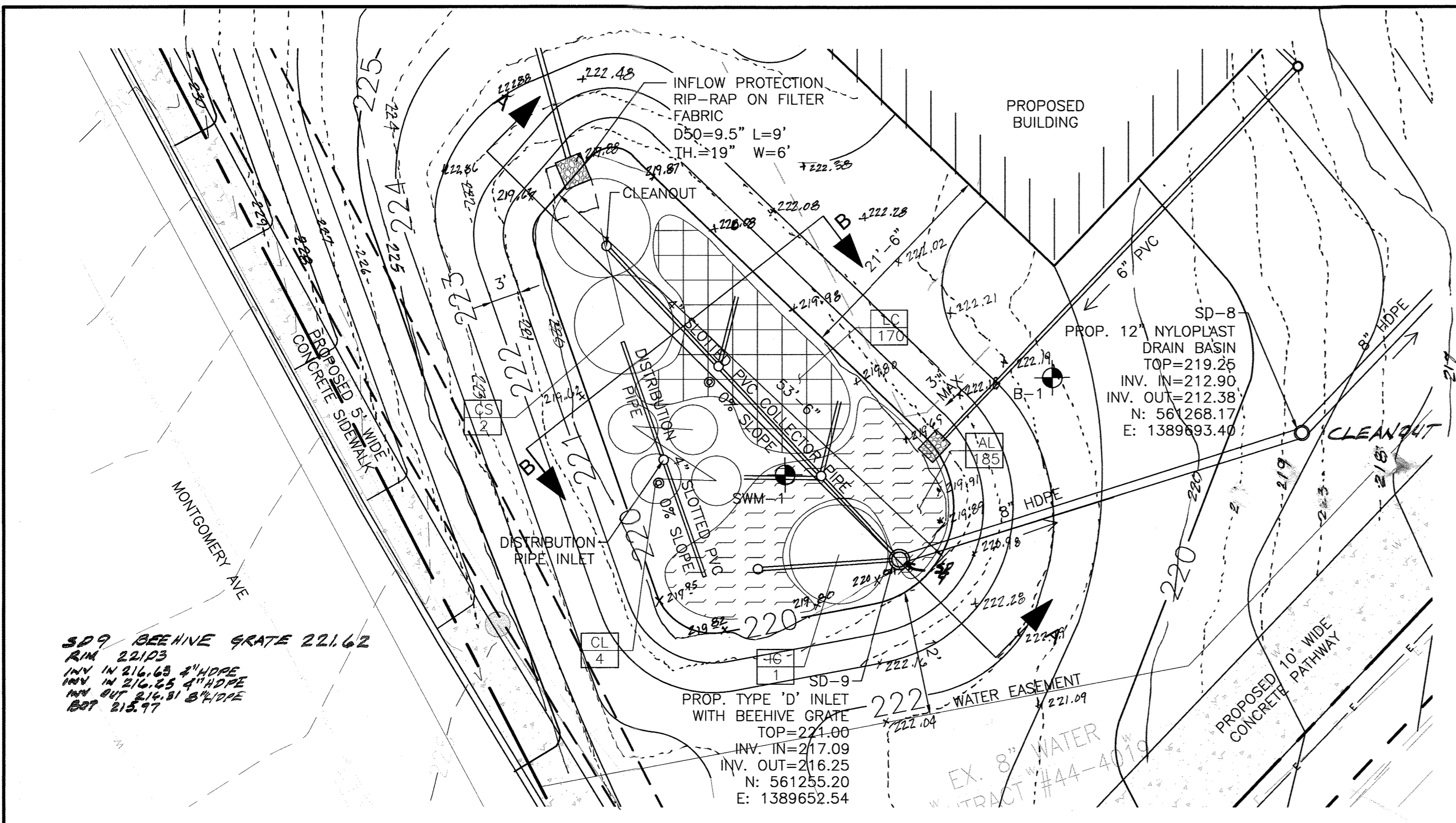
TAX MAP: 38 GRID: 08 PARCEL: 32  
ZONED: M-1  
ELECTION DISTRICT NO. 01 - HOWARD COUNTY MARYLAND

DESIGN: NAB DATE: 9/03/19  
DRAWN: BRA SCALE: 1"=50'

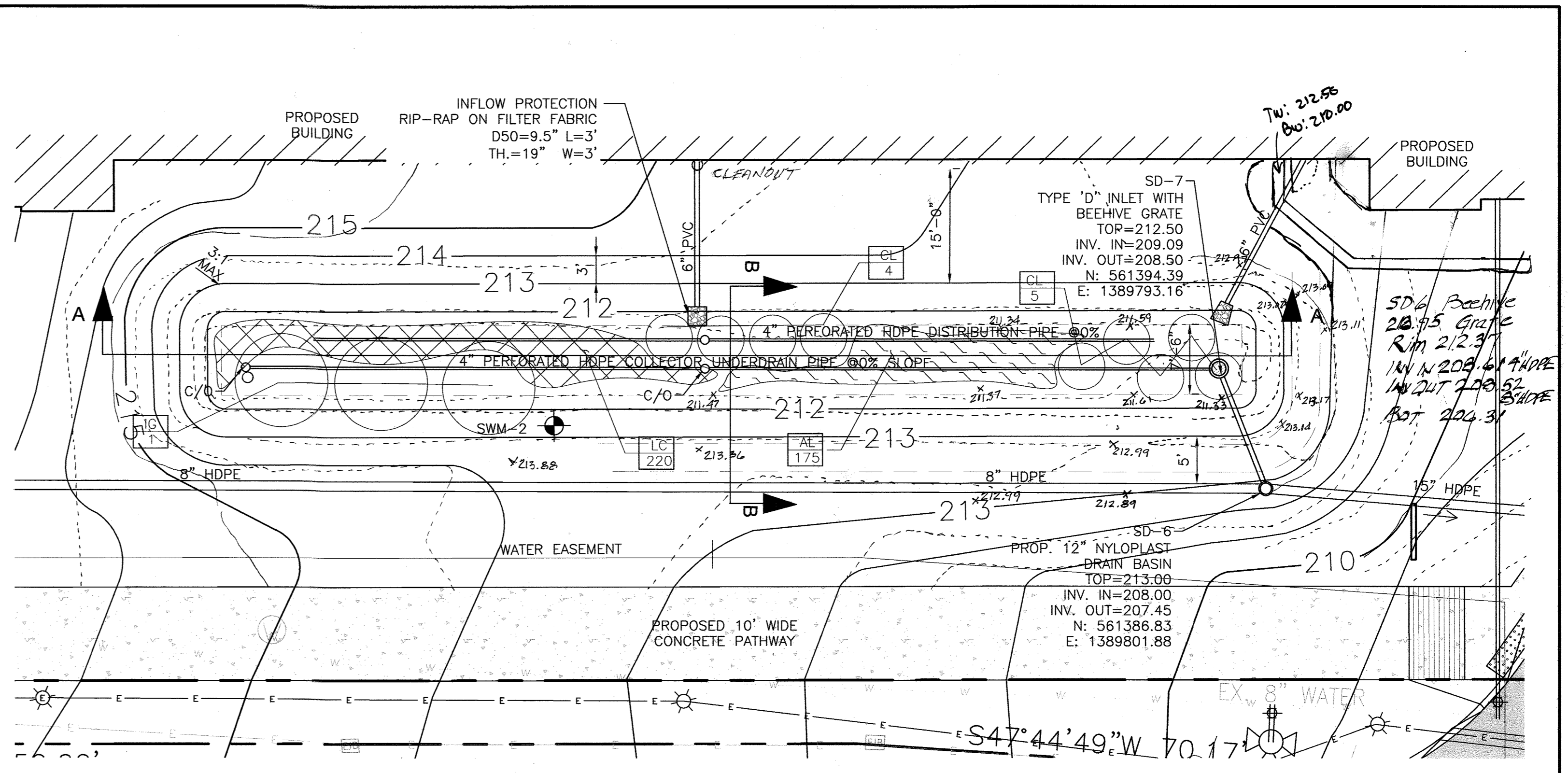
KCI PROJECT NO. 271700283  
SHEET NO. 9 OF 30

SHEET NO. C-2.00



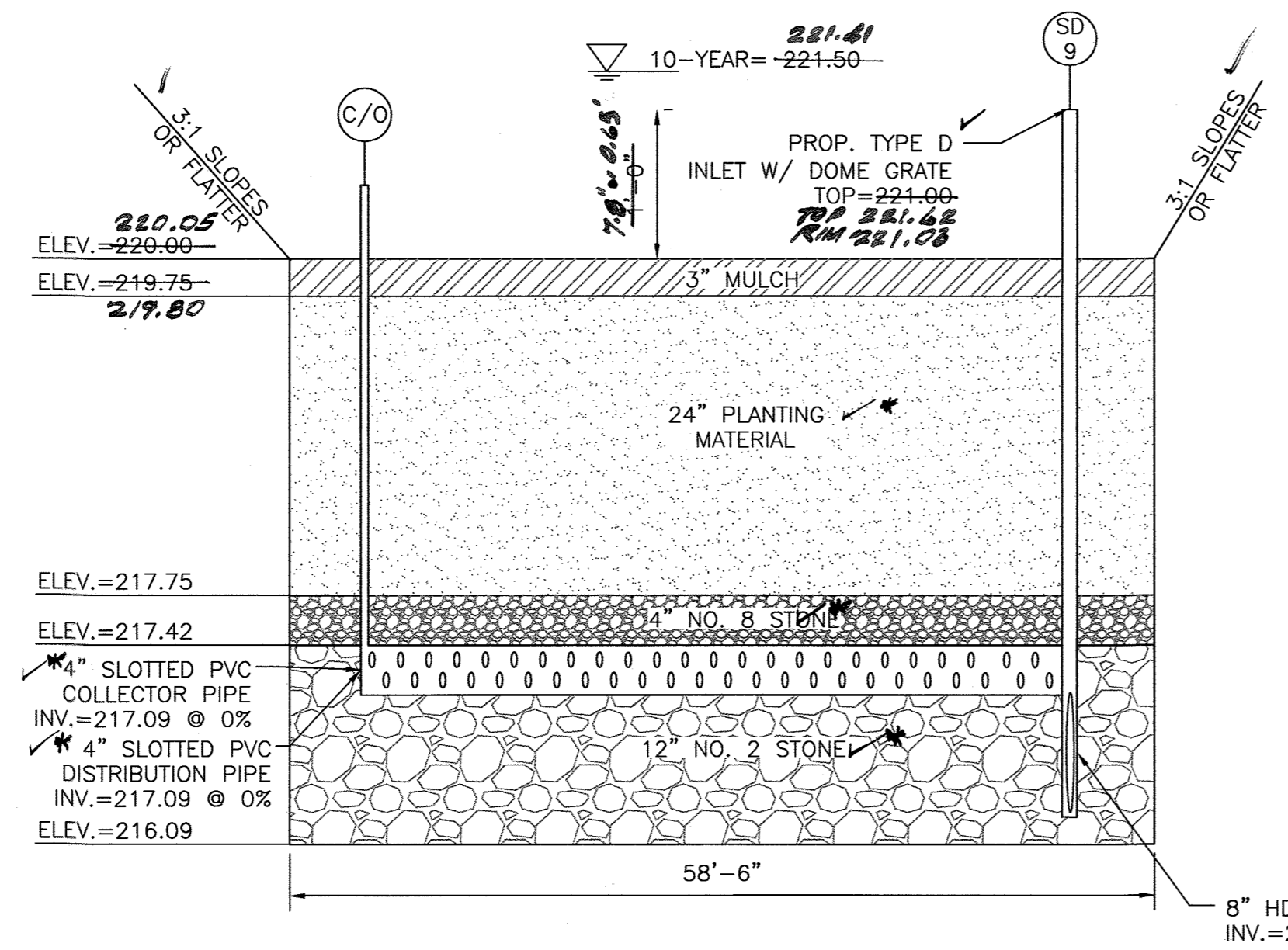


(SWM-1) M-6 MICRO-BIORETENTION FACILITY PLAN  
SCALE: 1" = 10'



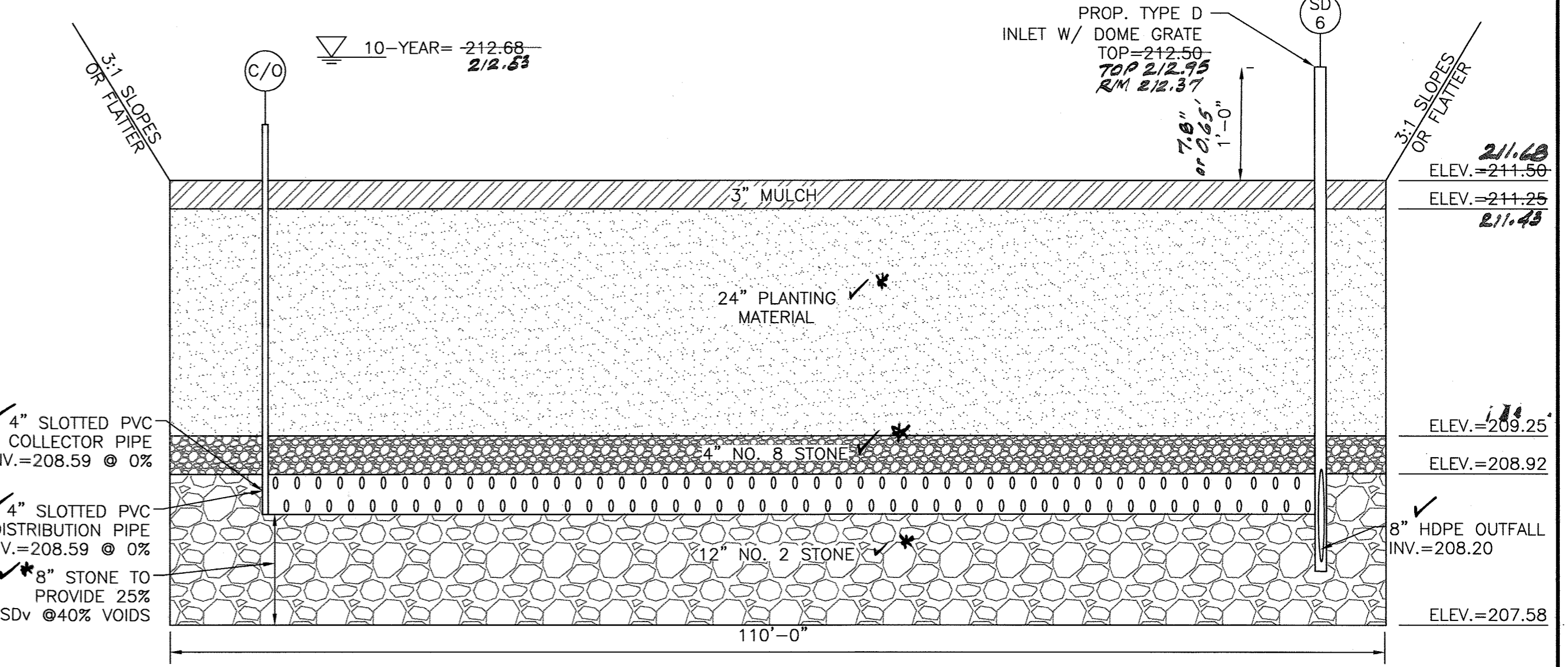
(SWM-2) M-6 MICRO-BIORETENTION FACILITY PLAN  
SCALE: 1" = 10'

- ### DESIGN SUMMARY
- FACILITY NUMBER: SWM-1
  - FACILITY TYPE: M-6 MICRO-BIORETENTION FACILITY
  - DRAINAGE AREA: 24,800 SQ. FT
  - BOTTOM ELEVATION: 220.00-220.05
  - TOP OF BANK ELEVATION: 222.00-222.05
  - STORAGE VOLUME PROVIDED: 4,180 CU. FT
  - WATER SURFACE ELEVATION: 220.54
  - DISCHARGE: 2.6 cfs
  - 25% ESDV STORAGE BELOW GROUND: 295 CU. FT.
  - OVERFLOW INLET SIZE & TYPE: TYPE 'D' INLET WITH BEEHIVE GRATE
  - CLEANOUT 6" ABOVE GRADE WITH WATERTIGHT SCREW LID.
  - FILTER FABRIC ADDED ON SIDES OF FACILITY ONLY
  - MAINTENANCE RESPONSIBILITY: THIS IS A PRIVATE FACILITY TO BE OWNED & MAINTAINED BY THE OWNER.
  - THIS FACILITY IS EXEMPT FROM MD378 GUIDELINES IN THAT THE IMPOUNDED DESIGN HIGHWATER DEPTH IS LESS THAN 3 FEET AT THE EMBANKMENT

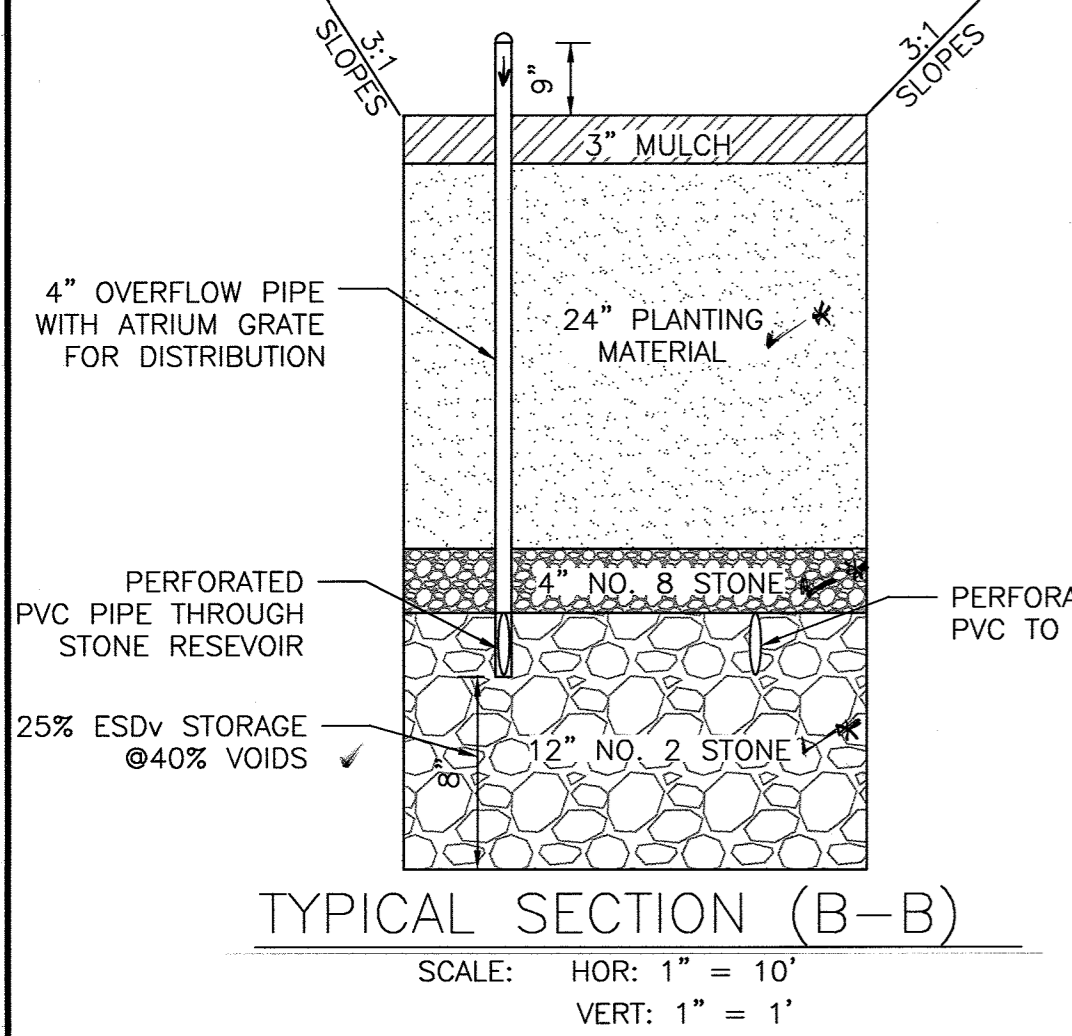


(SWM-1) M-6 MICRO-BIORETENTION FACILITY SECTION  
SCALE: HOR: 1" = 10', VERT: 1" = 1'

- ### DESIGN SUMMARY
- FACILITY NUMBER: SWM-2
  - FACILITY TYPE: M-6 MICRO-BIORETENTION FACILITY
  - DRAINAGE AREA: 9,500 SQ. FT
  - BOTTOM ELEVATION: 211.50-211.60
  - TOP OF BANK ELEVATION: 213.50-212.99
  - STORAGE VOLUME PROVIDED: 773 CU. FT
  - WATER SURFACE ELEVATION: 212.68
  - DISCHARGE: 1.0 cfs
  - 25% ESDV STORAGE BELOW GROUND: 193 CU. FT.
  - OVERFLOW INLET SIZE & TYPE: TYPE 'D' INLET WITH BEEHIVE GRATE
  - CLEANOUT 6" ABOVE GRADE WITH WATERTIGHT SCREW LID.
  - FILTER FABRIC ADDED ON SIDES OF FACILITY ONLY
  - MAINTENANCE RESPONSIBILITY: THIS IS A PRIVATE FACILITY TO BE OWNED & MAINTAINED BY THE OWNER.
  - THIS FACILITY IS EXEMPT FROM MD378 GUIDELINES IN THAT THE IMPOUNDED DESIGN HIGHWATER DEPTH IS LESS THAN 3 FEET AT THE EMBANKMENT



(SWM-2) M-6 MICRO-BIORETENTION FACILITY SECTION  
SCALE: NOT TO SCALE



TYPICAL SECTION (B-B)  
SCALE: HOR: 1" = 10', VERT: 1" = 1'

### (SWM-1) PLANT SCHEDULE

KEY	QTY	BOTANICAL NAME / COMMON NAME	SIZE	COND.	COMMENTS
SHRUBS					
IG	3	ILEX GLABRA / INKBERRY HOLLY	18" HT.	CONT.	PLANT AT 5' O.C.
CS	2	CORNUS SERICEA / REDOSIER DOGWOOD	18" HT.	CONT.	PLANT AT 5' O.C.
PERENNIALS / ORNAMENTAL GRASSES					
AL	185	ASCLEPIAS TUBEROSA / BUTTERFLY MILKWEED	2" HT.	PLUG	PLANT AT 18" O.C.
LC	170	LOBELIA CARDINALIS / CARDINAL FLOWER	2" HT.	PLUG	PLANT AT 18" O.C.
CL	4	CHASMANTHIUM LATIFOLIUM / NORTHERN SEA OATS	1 GAL.	CONT.	PLANT AT 3' O.C.

### (SWM-2) PLANT SCHEDULE

KEY	QTY	BOTANICAL NAME / COMMON NAME	SIZE	COND.	COMMENTS
SHRUBS					
IG	3	ILEX GLABRA / INKBERRY HOLLY	18" HT.	CONT.	PLANT AT 5' O.C.
PERENNIALS / ORNAMENTAL GRASSES					
AL	175	ASCLEPIAS TUBEROSA / BUTTERFLY MILKWEED	2" HT.	PLUG	PLANT AT 18" O.C.
LC	220	LOBELIA CARDINALIS / CARDINAL FLOWER	2" HT.	PLUG	PLANT AT 18" O.C.
CL	9	CHASMANTHIUM LATIFOLIUM / NORTHERN SEA OATS	1 GAL.	CONT.	PLANT AT 3' O.C.

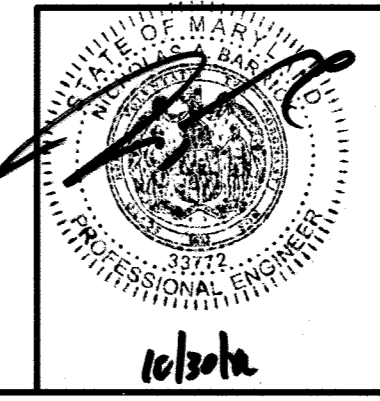
**AS BUILT SURVEY BY CLSI ON 5/4/2021**

**SWM AS BUILT**

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

License No. 22732, Expiration Date: 05/31/2022

GRAPHIC SCALE  
SCALE: 1"=10'



### REVISIONS

NO.	DATE	BY

OWNER/DEVELOPER:  
PATRICK DOUGAL DOUGAL & ASSOCIATES  
5695 MAIN STREET  
ELKRIDGE, MD 21075  
(410)-379-6444

CUBESMART STORAGE  
6300 WASHINGTON BLVD. ELKRIDGE, MD

TAX MAP: 38 GRID: 08 PARCEL: 32  
ZONED: M-1  
ELECTION DISTRICT NO. 01 - HOWARD COUNTY MARYLAND

DESIGN: NAB DATE: 9/03/19 KCI PROJECT NO. 271700283 SHEET NO. C-2.01  
DRAWN: BRA SCALE: 1"=10' SHEET NO. 10 OF 30

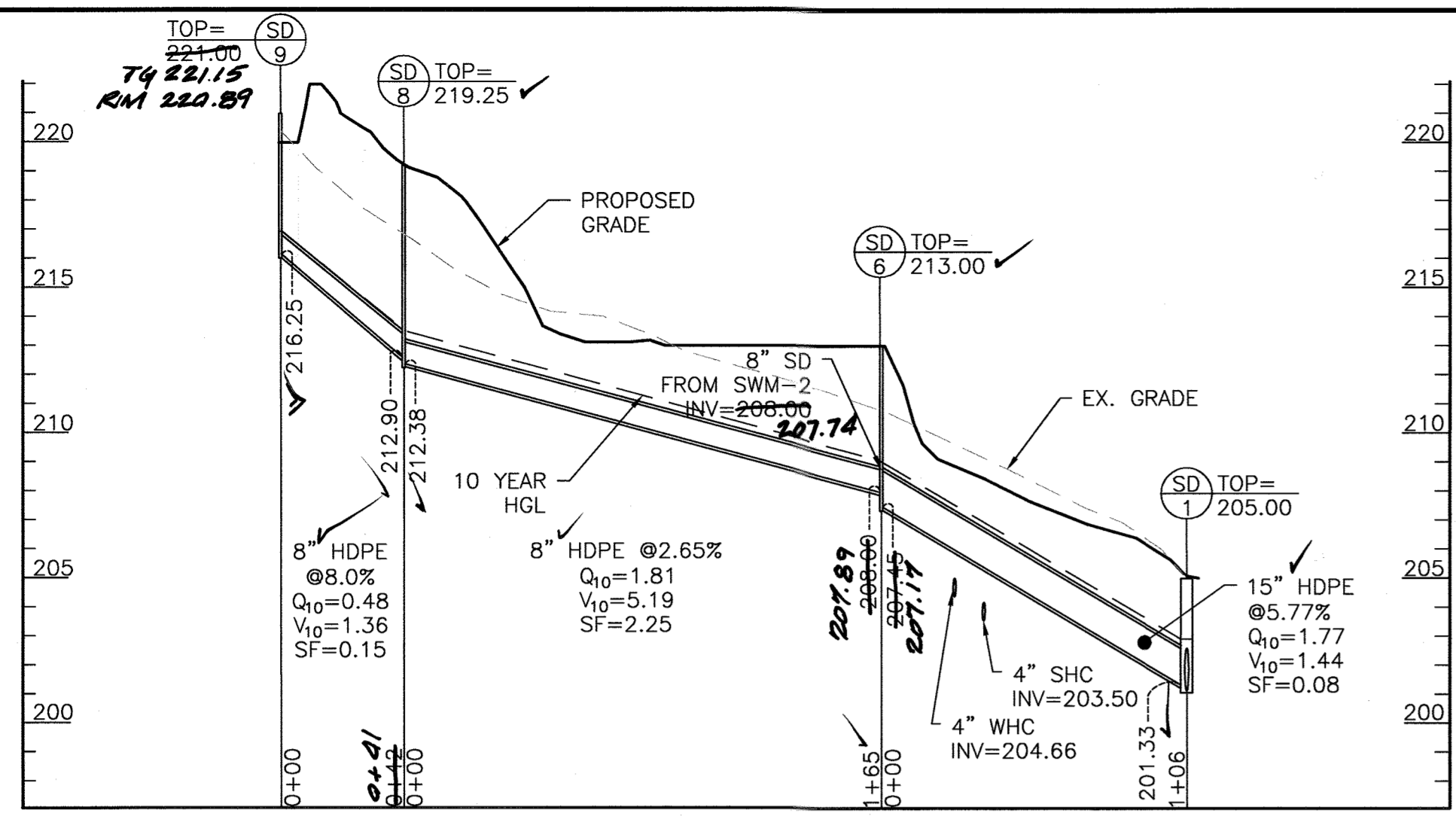
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

Chief, Division of Land Development: [Signature] DATE: 2/4/20

Chief, Development Engineering Division: [Signature] DATE: 1/24/20

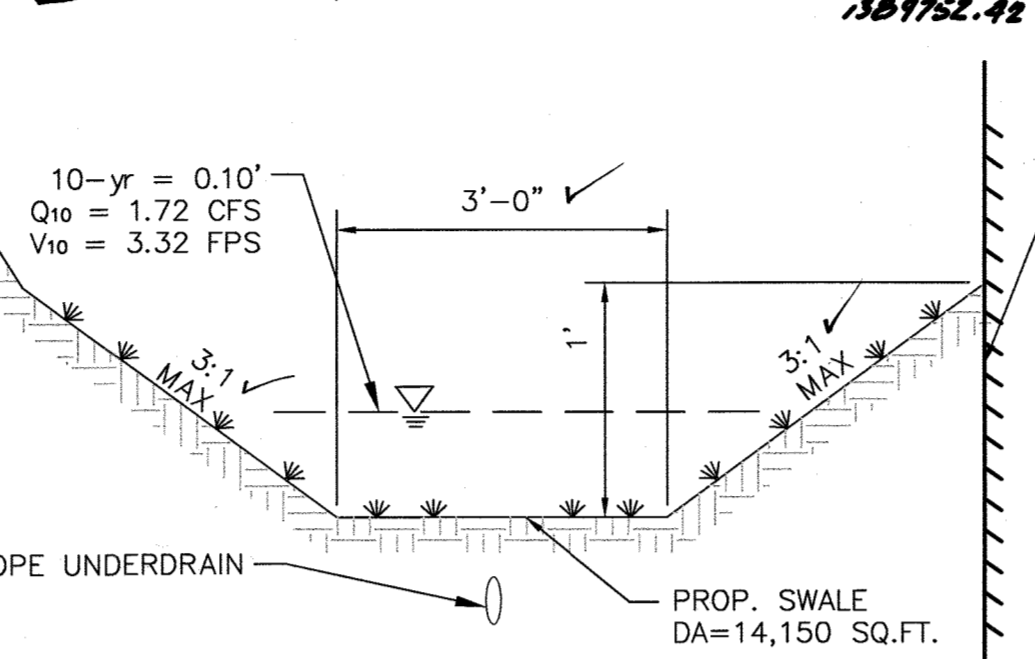
Director: [Signature] DATE: 2/4/20





SD-9 TO SD-1  
PROFILE  
SCALE: HOR: 1"=50'  
VERT: 1"=5'

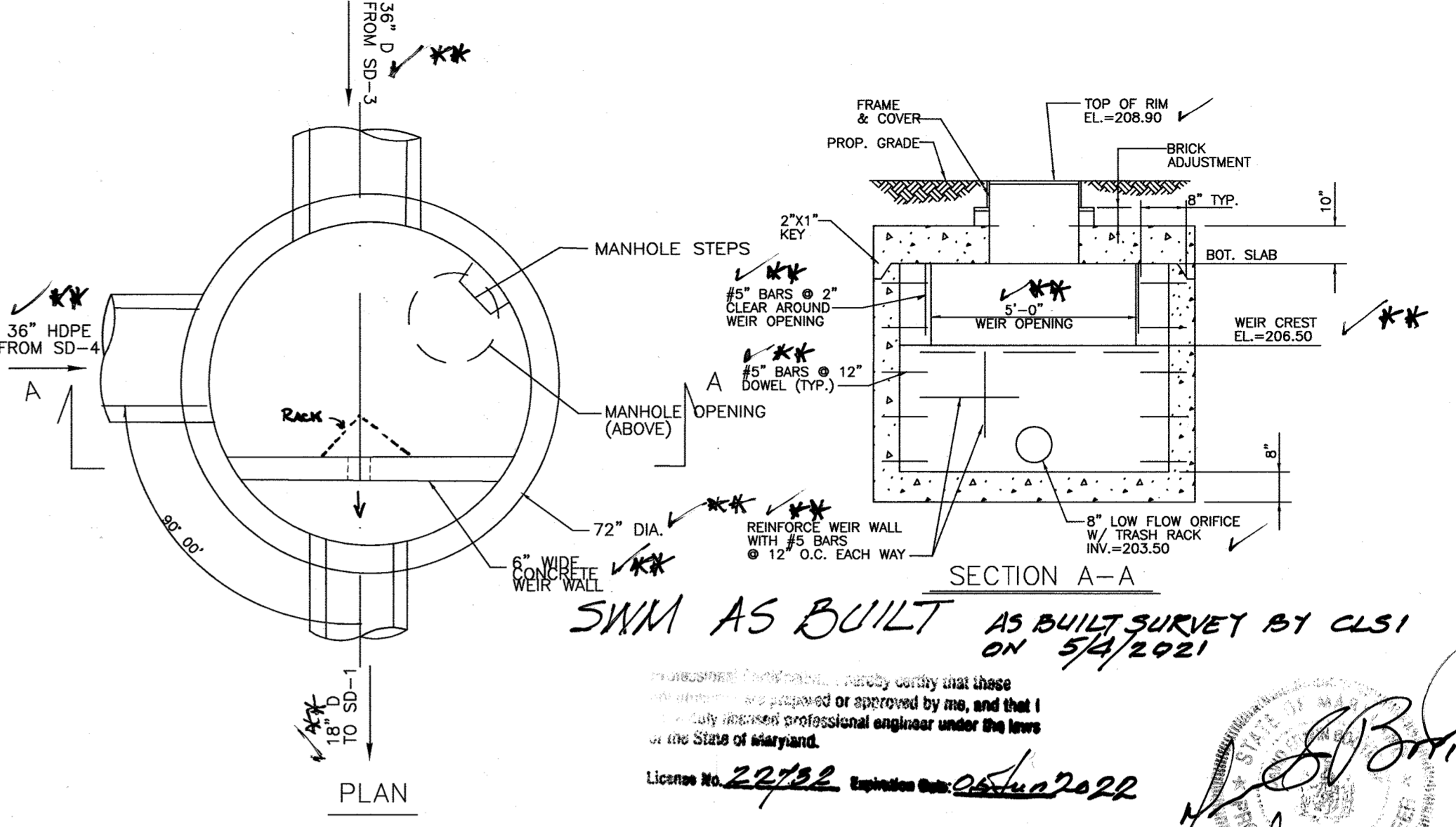
STRUCTURE NAME	TOP ELEVATION	INVERT IN	INVERT OUT	NORTHING	EASTING	DESCRIPTION
EX-1	203.00	199.60		561435.46	1389907.31	EX. 15" INLET
SD-1	205.00	201.33	201.18	561456.63	1389887.09	24" NYLOPLAST DRAIN BASIN W/ SOLID TOP
SD-2	208.90	203.50	203.40	561492.06	1389852.37	72" PRECAST CONC. MANHOLE DETAIL THIS SHEET
SD-3	216.85	211.40	203.50	561578.18	1389760.81	60" PRECAST CONC. MANHOLE (STD. DTL. G-5.13)
SD-4	208.25	203.50	203.40	561474.58	1389836.03	48" PRECAST CONC. WR INLET
SD-5	208.90	203.50	203.40	561530.56	1389777.84	48" PRECAST CONC. WR INLET
SD-6	213.00	208.75	208.76	561586.83	1389801.88	12" NYLOPLAST DRAIN BASIN W/ SOLID TOP
SD-7	212.75	208.75	208.76	561380.47	1389798.00	12" NYLOPLAST INLET W/ DOME GRATE
SD-8	219.25	212.90	212.38	561268.17	1389693.40	12" NYLOPLAST DRAIN BASIN W/ SOLID TOP
SD-9	221.00	221.00	216.25	561255.41	1389652.73	12" NYLOPLAST INLET W/ DOME GRATE



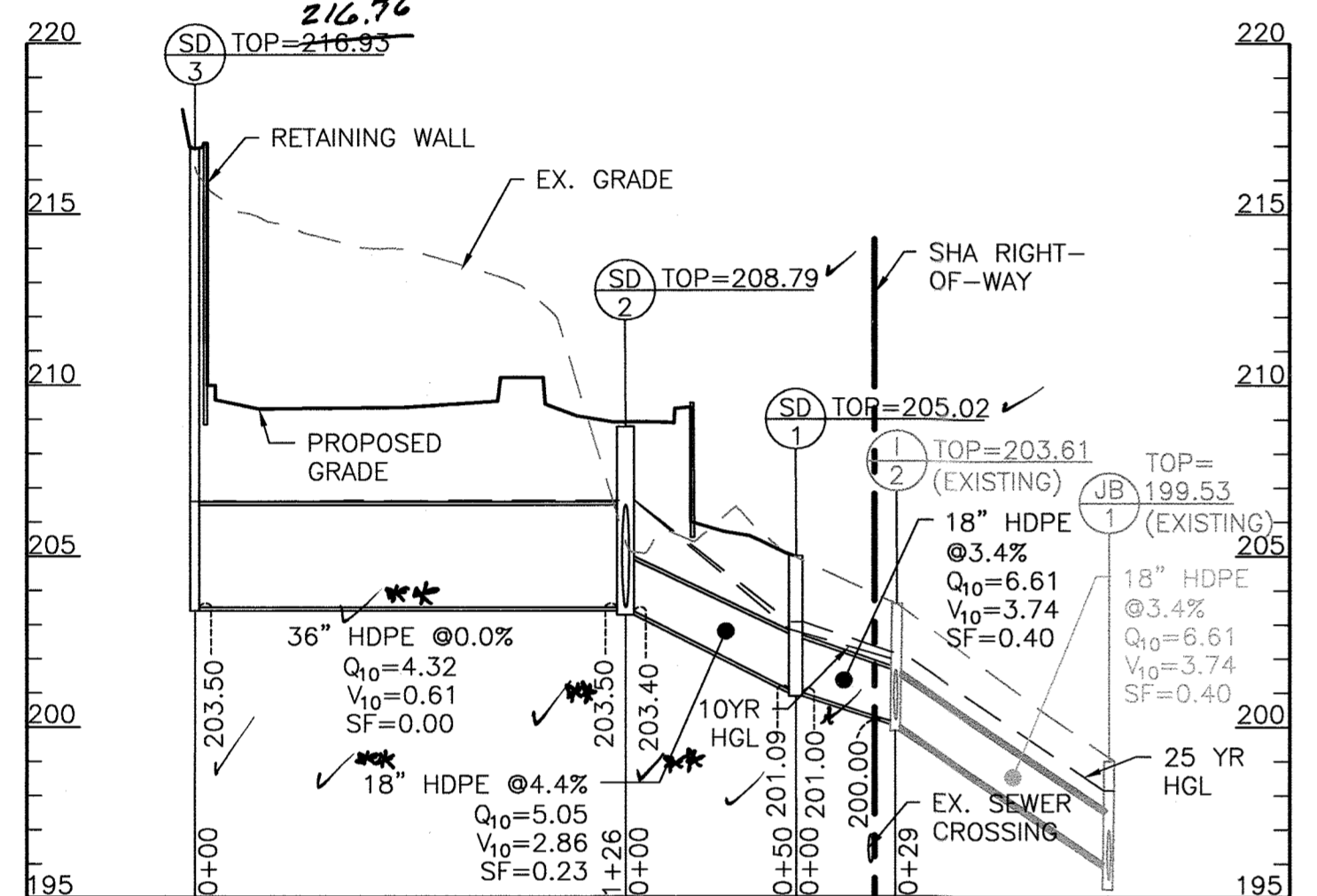
GRASS SWALE  
NOT TO SCALE

PIPE SUMMARY

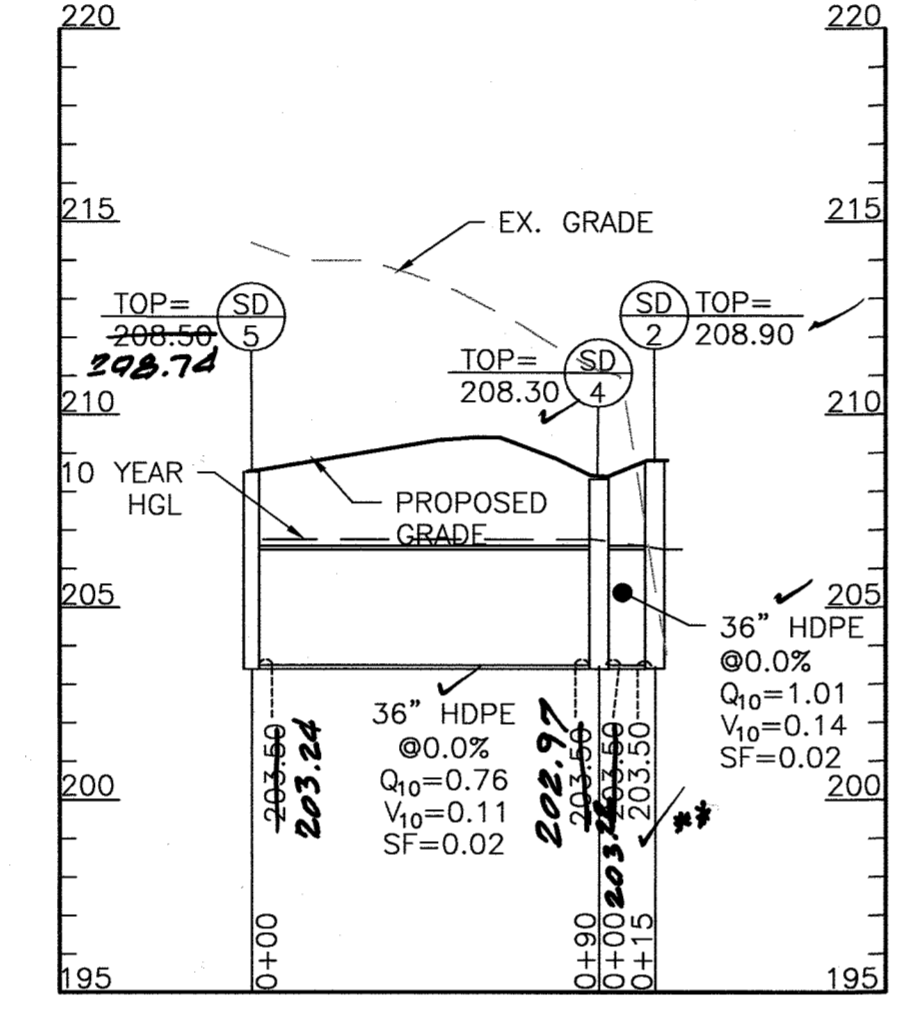
TYPE	LENGTH
36" HDPE	105'
18" HDPE	80'
15" HDPE	106'
8" HDPE	207'
6" HDPE	166'
6" PVC	293'
4" PERF. PVC	187'



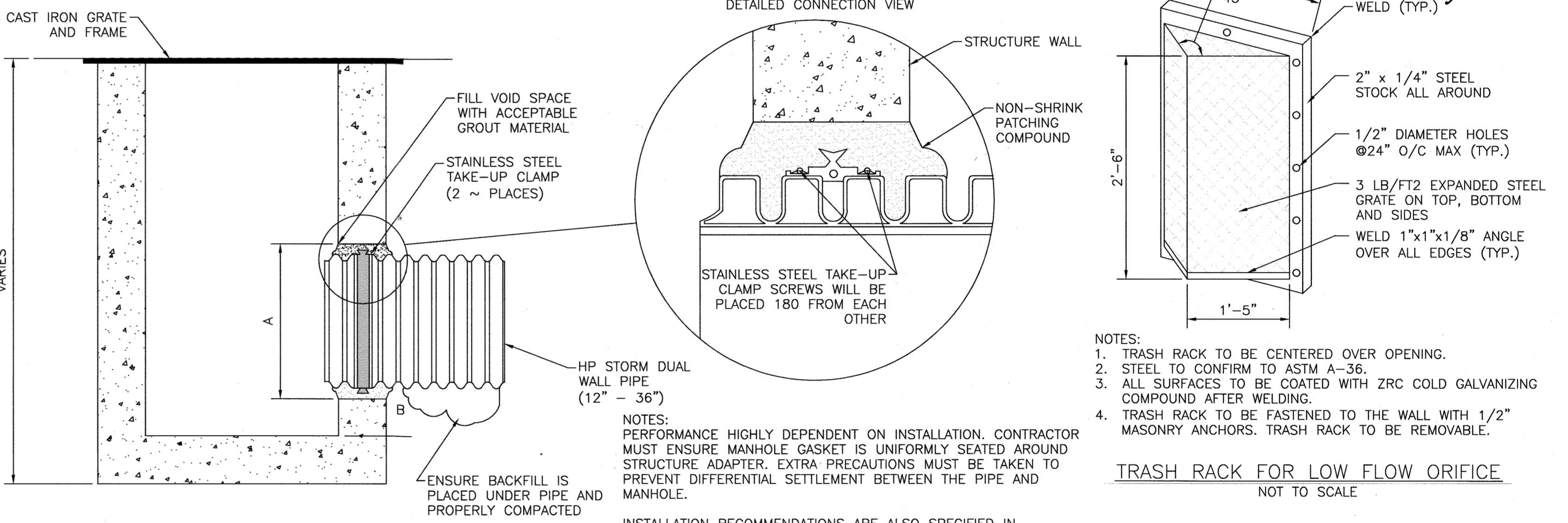
CONTROL MANHOLE DETAIL SD-2  
NOT TO SCALE



SD-3 TO SD-2  
PROFILE  
SCALE: HOR: 1"=50'  
VERT: 1"=5'

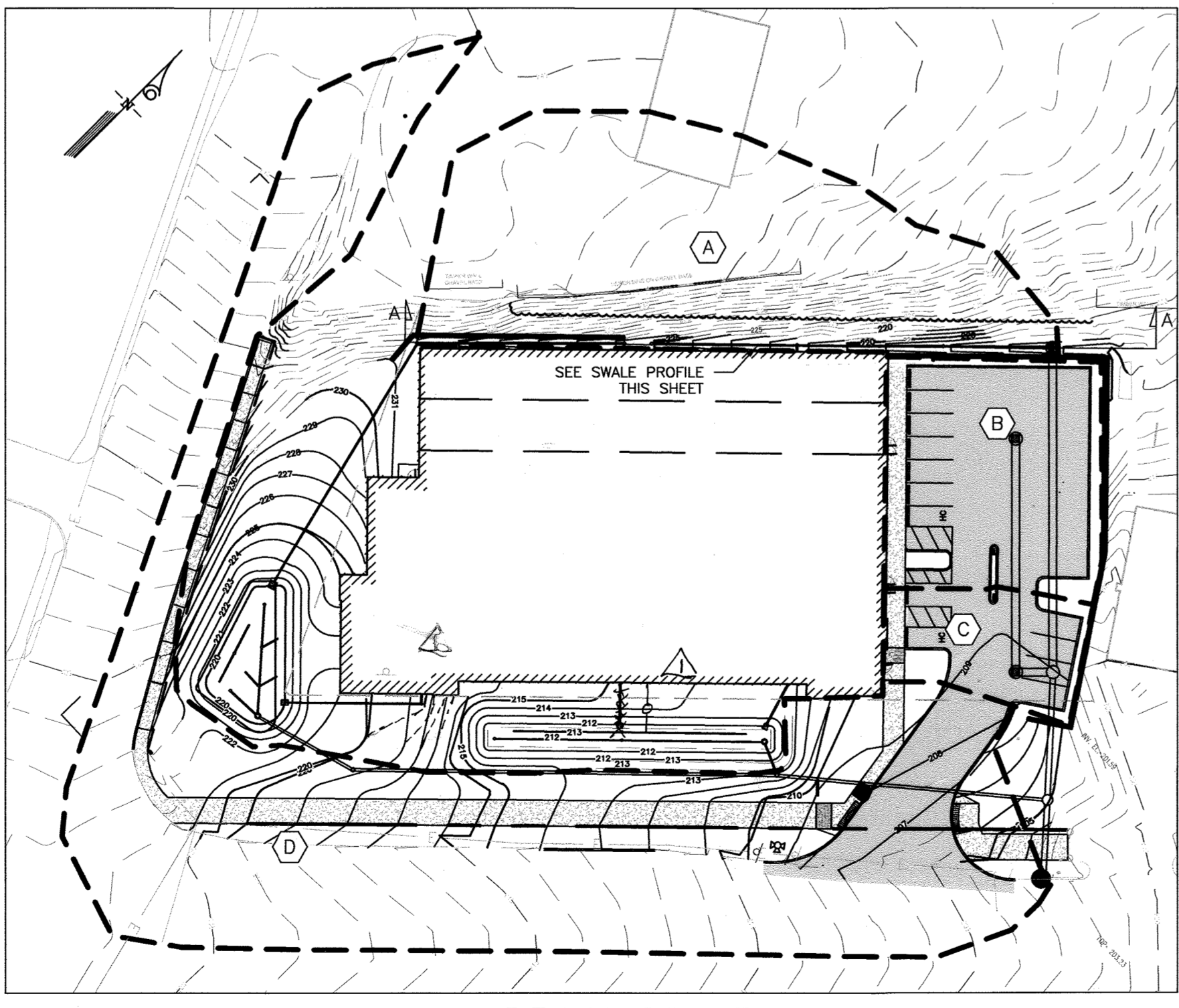


SD-5 TO SD-2  
PROFILE  
SCALE: HOR: 1"=50'  
VERT: 1"=5'

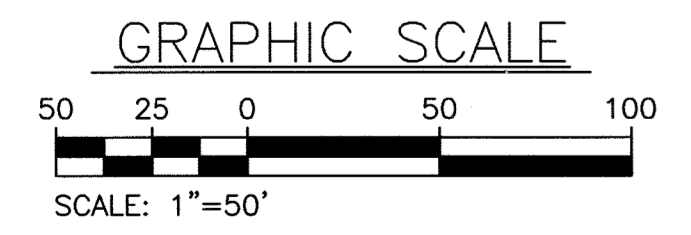


TRASH RACK FOR LOW FLOW ORIFICE  
NOT TO SCALE

INLET DRAINAGE AREAS				
DRAINAGE AREA NAME	INLET	AREA TO INLET (S.F.)	%	'C' FACTOR
A	SD-3	17,040	60%	69
B	SD-5	7,627	86%	86
C	SD-4	3,220	84%	84
D	EX-1	36,500	68%	74

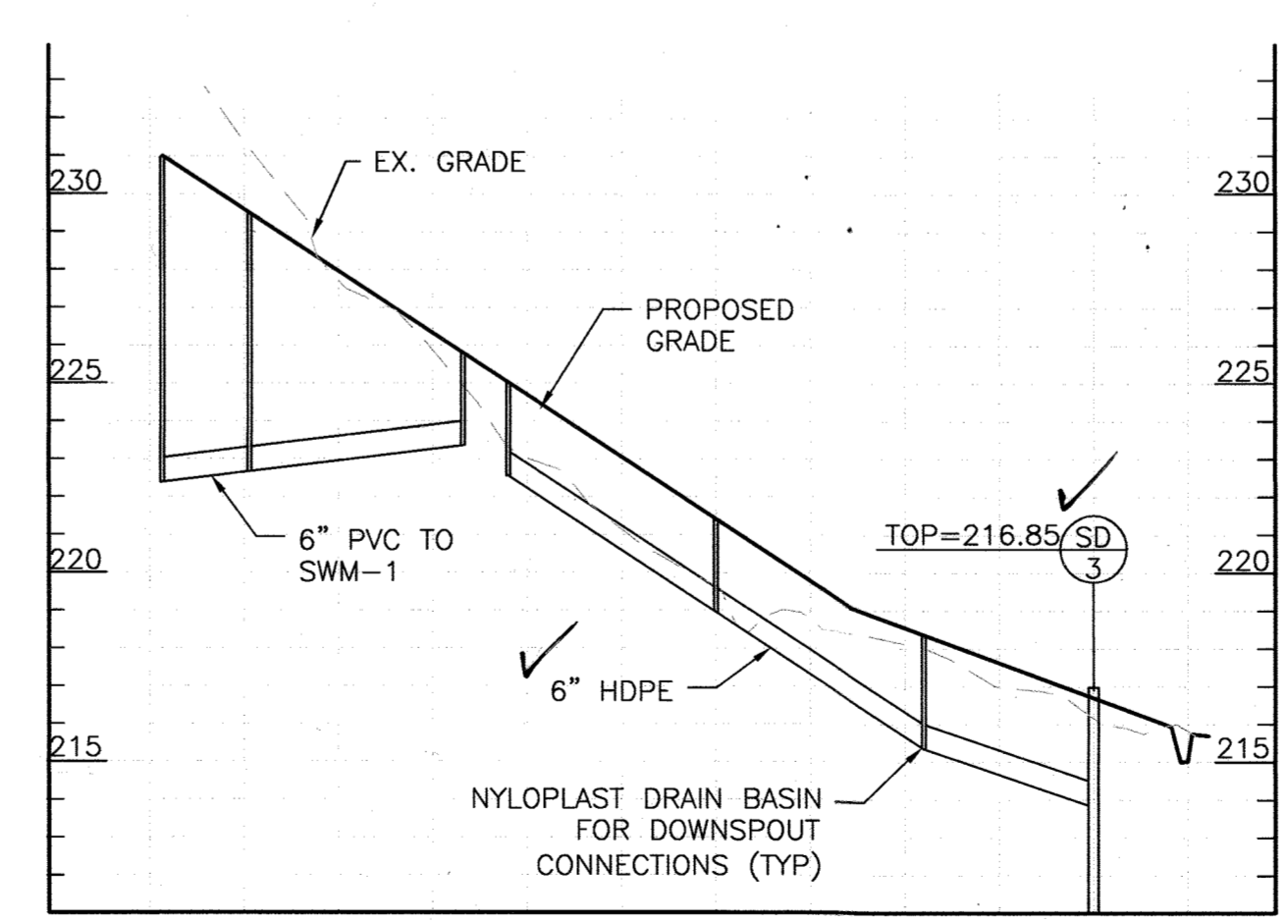


INLET DRAINAGE AREAS  
SCALE: 1"=50'

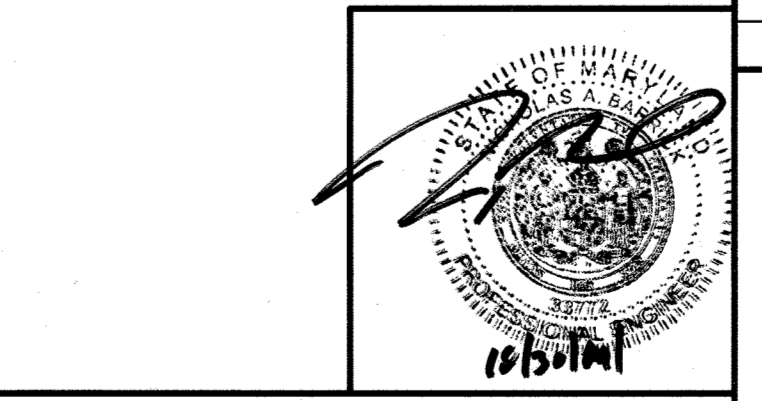
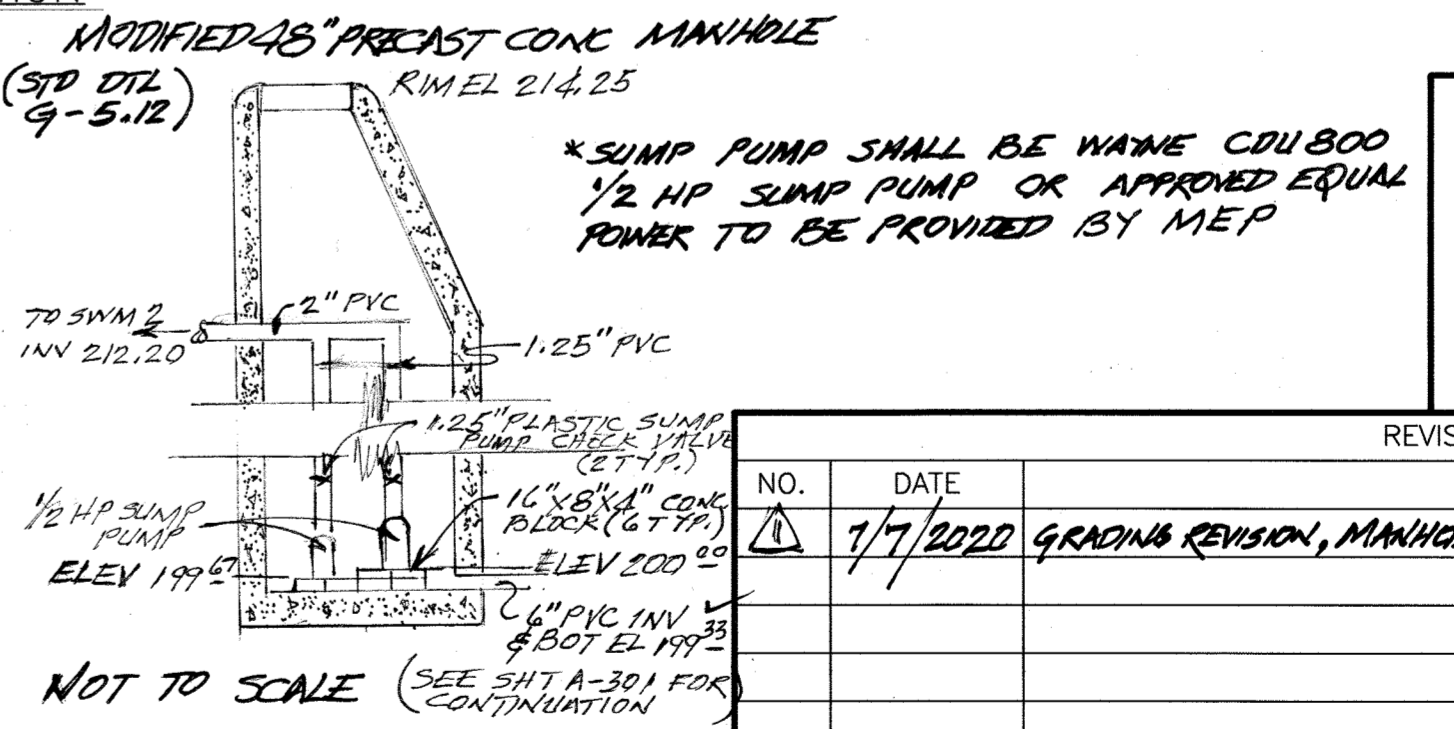


APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
 DATE: 1/24/20  
 DATE: 2/4/20

12-36" STORM WATERSTOP GROUDED MANHOLE CONNECTION  
NOT TO SCALE



SWALE PROFILE, A-A  
SCALE: HOR: 1"=50'  
VERT: 1"=5'



PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME AND THAT I AM DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 33772 EXP. DATE: 06/16/2021

ENGINEERS  
PLANNERS  
SCIENTISTS  
CONSTRUCTION MANAGERS

**KCI**  
TECHNOLOGIES

11830 WEST MARKET PLACE  
SUITE F  
ELKRDGE, MD 20759  
TELEPHONE: (410) 792-8086  
FAX: (410) 792-7419

OWNER/DEVELOPER:  
PATRICK DOUGAL  
& ASSOCIATES  
5695 MAIN STREET  
ELKRDGE, MD 21075  
(410)-379-6444

REVISIONS		
NO.	DATE	BY
1	1/7/2020	GRADING REVISION, MANHOLE & UNDERDRAIN ADDITIONS

PROJECT NO. 271700283

SHEET NO. 11 OF 30

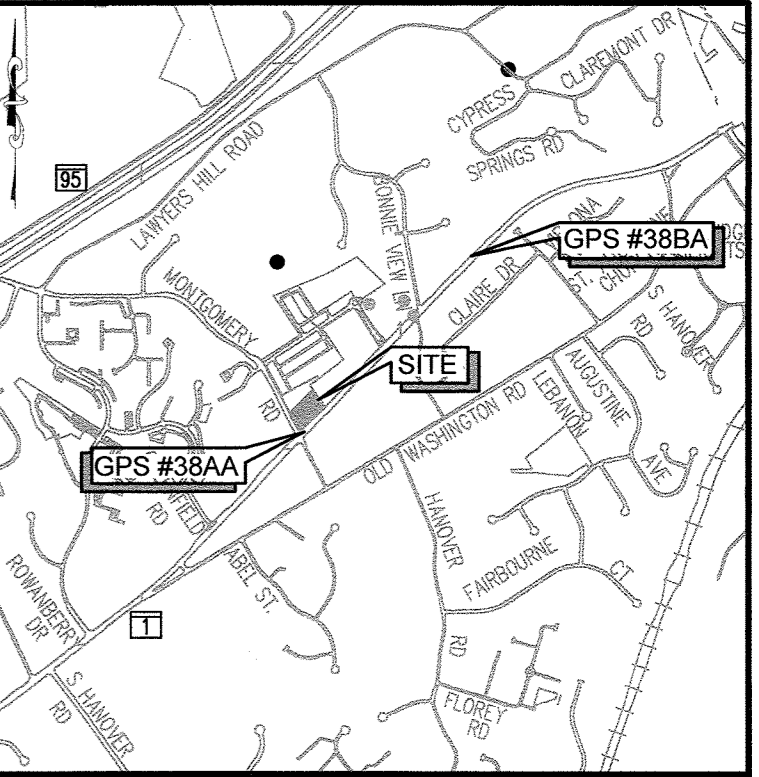
**CUBESMART STORAGE**  
6300 WASHINGTON BLVD. ELKRDGE, MD

**STORM DRAIN PROFILES**

TAX MAP: 38 GRID: 08 PARCEL: 32  
ZONED: M-1  
ELECTION DISTRICT NO. 01 - HOWARD COUNTY MARYLAND



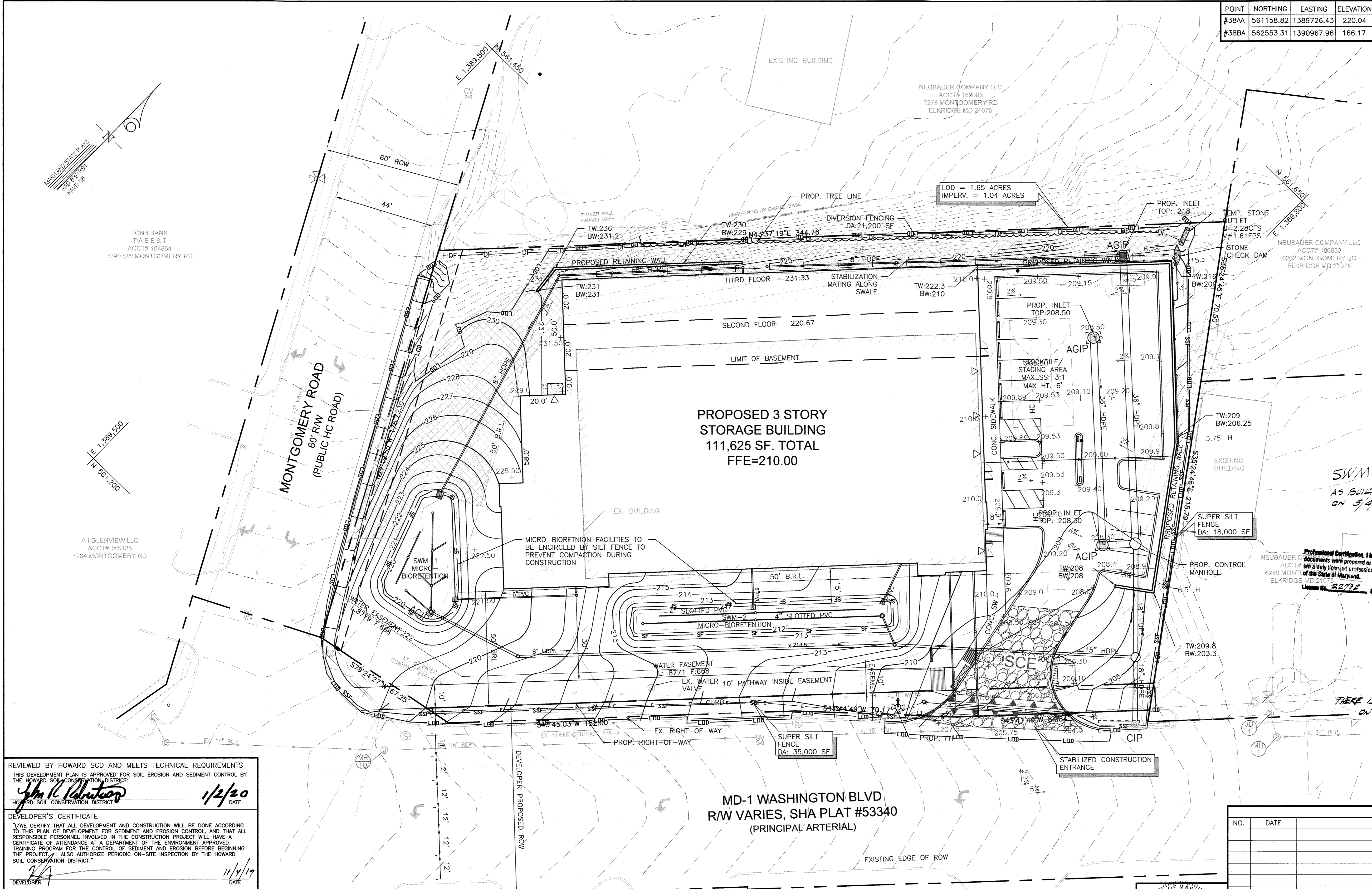
POINT	NORTHING	EASTING	ELEVATION
#38AA	561158.82	1389726.43	220.04
#38BA	562553.31	1390967.96	166.17



VICINITY MAP  
SCALE: 1" = 2000'  
ADC MAP 20, GRID A4

**LEGEND**

	PROPERTY LINE
	CONTOUR
	CURB AND GUTTER
	FENCE LINE
	PROPOSED BUILDING
	PROPOSED TREES
	LIMITS OF DISTURBANCE
	SILT FENCE
	AT GRADE INLET PROTECTION
	PROPOSED DRY WELL
	PROPOSED STORM DRAIN
	STABILIZATION MATTING



*SWM AS BUILT  
AS BUILT SURVEY BY CLS/  
ON 5/4/2021*

*Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.  
License No. 22712 Expiration Date: 05/16/2022*



*THERE IS NO AS BUILT INFORMATION PROVIDED ON THIS SHEET*

REVIEWED BY HOWARD SCD AND MEETS TECHNICAL REQUIREMENTS  
THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.  
*John K. Robertson* 1/2/20  
DATE

DEVELOPER'S CERTIFICATE  
I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN OF DEVELOPMENT FOR SOIL EROSION CONTROL, AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT.  
*PA* 11/4/19  
DATE

ENGINEER'S CERTIFICATE  
I HEREBY CERTIFY THAT THIS PLAN FOR SEDIMENT AND EROSION CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.  
*Patrick Dougal* 10/30/19  
DATE

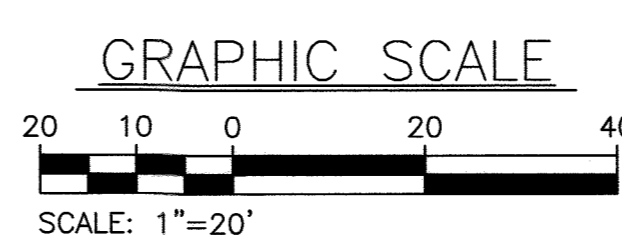
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
*John S. Starn* 2/4/20  
DATE  
*Patrick Dougal* 1-24-20  
DATE  
*Patrick Dougal* 2/15/20  
DATE

MD-1 WASHINGTON BLVD  
R/W VARIES, SHA PLAT #53340  
(PRINCIPAL ARTERIAL)

SEDIMENT & EROSION CONTROL PLAN  
SCALE: 1"=20'

**SOILS TABLE**

SYMBOL	DESCRIPTION	HYDROLOGIC SOILS GROUP	K-VALUE
URD	URBAN LAND-UDORTHERTS COMPLEX, 0 TO 15 PERCENT SLOPES	D	0.28



PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME AND THAT I AM DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 33772 EXP. DATE: 06/16/2021

REVISIONS		
NO.	DATE	BY

OWNER/DEVELOPER: PATRICK DOUGAL DOUGAL & ASSOCIATES 5695 MAIN STREET ELKCRIDGE, MD 21075 (410)-379-6444	<p><b>CUBESMART STORAGE</b> 6300 WASHINGTON BLVD. ELKCRIDGE, MD</p> <p><b>SEDIMENT &amp; EROSION CONTROL PLAN</b></p> <p>TAX MAP: 38 GRID: 08 PARCEL: 32 ZONED: M-1 ELECTION DISTRICT NO. 01 - HOWARD COUNTY MARYLAND</p> <p>DESIGN DATE: 9/03/19 DRAWN SCALE: 1"=20' KCI PROJECT NO. 271700283 SHEET NO. 12 OF 30</p> <p><b>C-3.00</b></p>
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**SEQUENCE OF CONSTRUCTION**

CONTRACTOR TO NOTIFY THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR, FIVE (5) DAYS PRIOR TO CONTRACTOR'S ANTICIPATED DATE TO BEGIN CONSTRUCTION.

FOLLOWING INITIAL SOIL DISTURBANCE OR REDISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN THREE (3) CALENDAR DAYS AS TO THE SURFACE OF ALL PERMANENT PERIMETER CONTROLS, DIKES, SWALES, DITCHES, PERIMETER SLOPES GREATER THAN 3:1, AND SEVEN (7) CALENDAR DAYS AS TO ALL OTHER DISTURBED AREA ON THE PROJECT SITE.

1. NOTIFY MISS UTILITY AT LEAST 48 HOURS IN ADVANCE OF BEGINNING WORK ON SITE. 1 DAY
2. PRIOR TO ANY CLEARING AND GRUBBING, LIMITS OF DISTURBANCE MUST BE CLEARLY MARKED IN THE FIELD. 1 DAY
3. CLEAR FOR AND INSTALL PERIMETER SEDIMENT CONTROL MEASURES (IE. SILT FENCE, SUPER SILT FENCE, TREE PROTECTION FENCING AND STONE CONSTRUCTION ENTRANCE). NOTIFY INSPECTOR UPON COMPLETION OF SEDIMENT CONTROL MEASURES INSTALLATION. WOODPILE ON NEIGHBORING PROPERTY IS TO BE MOVED OUT OF LOD. 10 DAYS
4. UPON INSTALLATION OF THE SEDIMENT CONTROL DEVICES, CONTRACTOR SHALL BEGIN TO CLEAR AND GRUB SITE TO PREPARE FOR ROUGH GRADING AND BUILDING DEMOLITION. DEMOLISH EXISTING BUILDING AND OTHER SITE FEATURES. BEGIN ROUGH GRADING WHEN DEMOLITION IS COMPLETED. SURROUND STORMWATER FACILITY AREAS WITH SILT FENCE TO PREVENT COMPACTION DURING CONSTRUCTION. 30 DAYS
5. AS THE SITE IS BEING ROUGH GRADED, BEGIN CONSTRUCTION OF RETAINING WALLS. THIS INCLUDES THE REAR BUILDING WALL WHICH IS NEEDS TO BE CONSTRUCTED WHILE EXCAVATING FOR THE BASEMENTS. 50 DAYS
6. INSTALL STORM DRAIN PIPES THROUGH PARKING LOT AND OTHER UTILITIES BASED ON THE PLANS. 5 DAYS
7. PERMANENTLY STABILIZE ALL SLOPES ALONG REAR OF BUILDING AND ALONG RETAINING WALLS. 150 DAYS
8. BEGIN GRADING FOR AND CONSTRUCT BUILDING PAD AND ROAD SUBBASE AND THEN CONSTRUCT BUILDING 12 DAYS
9. PERMANENTLY STABILIZE ALL DISTURBED AREAS OF THE SITE THEN CONSTRUCT THE TWO MICRO-BIORETENTION FACILITIES. INSTALL STORM DRAIN PIPES FROM BUILDING TO MICRO-BIORETENTION FACILITIES. 30 DAYS
10. APPLY FINAL SURFACE PAVING AND INSTALL FEATURES PER THE SITE PLAN. 3 DAYS
11. EROSION AND SEDIMENT CONTROL PRACTICES AND SITE IN GENERAL MUST BE INSPECTED WEEKLY AND AFTER EACH RAINFALL EVENT BY THE CONTRACTOR OR OTHER RESPONSIBLE PERSON AND ANY NEEDED MAINTENANCE PERFORMED IMMEDIATELY. ON-GOING
12. ONCE 95% GRASS COVER IS ATTAINED, REMOVE SEDIMENT CONTROLS 3 DAYS
13. SEDIMENT AND EROSION CONTROLS CANNOT BE REMOVED UNTIL THE SITE HAS ADEQUATE STABILIZATION. ONCE VEGETATION HAS BEEN ESTABLISHED, THE SITE SHALL HAVE 95% GROUND COVER TO BE CONSIDERED ADEQUATELY STABILIZED AND THE SEDIMENT CONTROL INSPECTOR HAVE APPROVED SUCH REMOVAL. ALL AREAS WHERE SEDIMENT AND EROSION CONTROL DEVICES HAVE BEEN REMOVED SHALL BE STABILIZED IMMEDIATELY WITH SEED AND MULCH. 1 DAY

**STANDARD SEDIMENT CONTROL NOTES**

1. A MINIMUM OF 48 HOURS NOTICE MUST BE GIVEN TO THE HOWARD COUNTY DEPARTMENT OF INSPECTIONS, LICENSES AND PERMITS, SEDIMENT CONTROL DIVISION PRIOR TO THE START OF ANY CONSTRUCTION (313-1855).
2. ALL VEGETATIVE AND STRUCTURAL PRACTICES ARE TO BE INSTALLED ACCORDING TO THE PROVISIONS OF THIS PLAN AND ARE TO BE IN CONFORMANCE WITH THE MOST CURRENT MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL AND REVISIONS THERETO.
3. FOLLOWING INITIAL SOIL DISTURBANCE OR RE-DISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN: A) 3 CALENDAR DAYS FOR ALL PERIMETER SEDIMENT CONTROL STRUCTURES, DIKES, PERIMETER SLOPES AND ALL SLOPES GREATER THAN 3:1; B) 7 DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE.
4. ALL DISTURBED AREAS MUST BE STABILIZED WITHIN THE TIME PERIOD SPECIFIED ABOVE IN ACCORDANCE WITH THE 2011 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL FOR PERMANENT SEEDING (SEC. B-4-5), TEMPORARY SEEDING (SEC. B-4-4) AND MULCHING (SEC.B-4-3). TEMPORARY STABILIZATION WITH MULCH ALONE CAN ONLY BE DONE WHEN RECOMMENDED SEEDING DATES DO NOT ALLOW FOR PROPER GERMINATION AND ESTABLISHMENT OF GRASSES.
5. ALL SEDIMENT CONTROL STRUCTURES ARE TO REMAIN IN PLACE AND ARE TO BE MAINTAINED IN OPERATIVE CONDITION UNTIL PERMISSION FOR THEIR REMOVAL HAS BEEN OBTAINED FROM THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.
6. SITE ANALYSIS:  
TOTAL AREA OF SITE 1.75 ACRES  
AREA DISTURBED 1.65 ACRES  
AREA TO BE ROOFED OR PAVED 1.04 ACRES  
AREA TO BE VEGETATIVELY STABILIZED 0.61 ACRES  
TOTAL CUT 8,069 CU. YDS.  
TOTAL FILL 1,530 CU. YDS.  
OFFSITE WASTE/BORROW ARE LOCATION EXCESS SOIL WILL BE HAULED TO SITE WITH ACTIVE GRADING PERMIT
7. ANY SEDIMENT CONTROL PRACTICE THAT IS DISTURBED BY GRADING ACTIVITY FOR PLACEMENT OF UTILITIES MUST BE REPAIRED ON THE SAME DAY OF DISTURBANCE.
8. ADDITIONAL SEDIMENT CONTROL MUST BE PROVIDED, IF DEEMED NECESSARY BY THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.
9. ON ALL SITES WITH DISTURBED AREAS IN EXCESS OF 2 ACRES, APPROVAL OF THE INSPECTION AGENCY SHALL BE REQUESTED UPON COMPLETION OF INSTALLATION OF PERIMETER EROSION AND SEDIMENT CONTROLS, BUT BEFORE PROCEEDING WITH ANY OTHER EARTH DISTURBANCE OR GRADING. OTHER BUILDING OR GRADING INSPECTION APPROVALS MAY NOT BE AUTHORIZED UNTIL THIS INITIAL APPROVAL BY THE INSPECTION AGENCY IS MADE.
10. TRENCHES FOR THE CONSTRUCTION OF UTILITIES IS LIMITED TO THREE PIPE LENGTHS OR THAT WHICH SHALL BE BACK-FILLED AND STABILIZED BY THE END OF EACH WORKDAY, WHICHEVER IS SHORTER.
11. ANY CHANGES OR REVISIONS TO THE SEQUENCE OF CONSTRUCTION MUST BE REVIEWED AND APPROVED BY THE PLAN APPROVAL AUTHORITY PRIOR TO PROCEEDING WITH CONSTRUCTION.
12. A PROJECT IS TO BE SEQUENCED SO THAT GRADING ACTIVITIES BEGIN ON ONE GRADING UNIT (MAXIMUM ACREAGE OF 20 AC. PER GRADING UNIT) AT A TIME. WORK MAY PROCEED TO A SUBSEQUENT GRADING UNIT WHEN AT LEAST 50 PERCENT OF THE DISTURBED AREA IN THE PRECEDING GRADING UNIT HAS BEEN STABILIZED AND APPROVED BY THE ENFORCEMENT AUTHORITY. UNLESS OTHERWISE SPECIFIED AND APPROVED BY THE APPROVAL AUTHORITY, NO MORE THAN 30 ACRES CUMULATIVELY MAY BE DISTURBED AT A GIVEN TIME.

REVIEWED BY HOWARD SCD AND MEETS TECHNICAL REQUIREMENTS

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT  
*John R. Robertson* 1/2/20  
HOWARD SOIL CONSERVATION DISTRICT DATE

DEVELOPER'S CERTIFICATE  
I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN OF DEVELOPMENT FOR SEDIMENT AND EROSION CONTROL, AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I/WE ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT.  
*NA* 11-4-19  
DEVELOPER DATE

ENGINEER'S CERTIFICATE  
I HEREBY CERTIFY THAT THIS PLAN FOR SEDIMENT AND EROSION CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IS WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.  
*10/20/20*  
ENGINEER DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
CHIEF, DIVISION OF LAND DEVELOPMENT 2/4/20 DATE  
CHIEF, DEVELOPMENT ENGINEERING DIVISION 1-24-20 DATE  
DIRECTOR 2/4/20 DATE

**STANDARDS AND SPECIFICATIONS FOR VEGETATIVE STABILIZATION**

**PURPOSE**

TO PROMOTE THE ESTABLISHMENT OF VEGETATION ON EXPOSED SOIL.

**CONDITIONS WHERE PRACTICE APPLIES**

ON ALL DISTURBED AREAS NOT STABILIZED BY OTHER METHODS. THIS SPECIFICATION IS DIVIDED INTO SECTIONS ON INCREMENTAL STABILIZATION; SOIL PREPARATION, SOIL AMENDMENTS AND TOPSOILING; SEEDING AND MULCHING; TEMPORARY STABILIZATION; AND PERMANENT STABILIZATION.

**EFFECTS ON WATER QUALITY AND QUANTITY**

STABILIZATION PRACTICES ARE USED TO PROMOTE THE ESTABLISHMENT OF VEGETATION ON EXPOSED SOIL. WHEN SOIL IS STABILIZED WITH VEGETATION, THE SOIL IS LESS LIKELY TO ERODE AND MORE LIKELY TO ALLOW INFILTRATION OF RAINFALL, THEREBY REDUCING SEDIMENT LOADS AND RUNOFF TO DOWNSTREAM AREAS. PLANTING VEGETATION IN DISTURBED AREAS WILL HAVE AN EFFECT ON THE WATER BUDGET, ESPECIALLY ON VOLUMES AND RATES OF RUNOFF, INFILTRATION, EVAPORATION, TRANSPIRATION, PERCOLATION, AND GROUNDWATER RECHARGE. OVER TIME, VEGETATION WILL INCREASE ORGANIC MATTER CONTENT AND IMPROVE THE WATER HOLDING CAPACITY OF THE SOIL AND SUBSEQUENT PLANT GROWTH. VEGETATION WILL HELP REDUCE THE MOVEMENT OF SEDIMENT, NUTRIENTS, AND OTHER CHEMICALS CARRIED BY RUNOFF TO RECEIVING WATERS. PLANTS WILL ALSO HELP PROTECT GROUNDWATER SUPPLIES BY ASSIMILATING THOSE SUBSTANCES PRESENT WITHIN THE ROOT ZONE. SEDIMENT CONTROL PRACTICES MUST REMAIN IN PLACE DURING GRADING, SEEDBED PREPARATION, SEEDING, MULCHING, AND VEGETATIVE ESTABLISHMENT.

**ADEQUATE VEGETATIVE ESTABLISHMENT**

INSPECT SEEDED AREAS FOR VEGETATIVE ESTABLISHMENT AND MAKE NECESSARY REPAIRS, REPLACEMENTS, AND RESEEDINGS WITHIN THE PLANTING SEASON.

1. ADEQUATE VEGETATIVE STABILIZATION REQUIRES 95 PERCENT GROUND COVER.
2. IF AN AREA HAS LESS THAN 40 PERCENT GROUND COVER, RESTABILIZE FOLLOWING THE ORIGINAL RECOMMENDATIONS FOR LIME, FERTILIZER, SEEDBED PREPARATION, AND SEEDING.
3. IF AN AREA HAS BETWEEN 40 AND 94 PERCENT GROUND COVER, OVER-SEED AND FERTILIZE USING HALF OF THE RATES ORIGINALLY SPECIFIED.
4. MAINTENANCE FERTILIZER RATES FOR PERMANENT SEEDING ARE SHOWN IN TABLE B.6.

**STANDARDS AND SPECIFICATIONS FOR INCREMENTAL STABILIZATION**

**PURPOSE**

TO PROVIDE TIMELY VEGETATIVE COVER ON CUT AND FILL SLOPES AS WORK PROGRESSES.

**CONDITIONS WHERE PRACTICE APPLIES**

ANY CUT OR FILL SLOPE GREATER THAN 15 FEET IN HEIGHT. THIS PRACTICE ALSO APPLIES TO STOCKPILES.

**CRITERIA**

1. INCREMENTAL STABILIZATION - CUT SLOPES
  - A. EXCAVATE AND STABILIZE CUT SLOPES IN INCREMENTS NOT TO EXCEED 15 FEET IN HEIGHT. PREPARE SEEDBED AND APPLY SEED AND MULCH ON ALL CUT SLOPES AS THE WORK PROGRESSES.
  - B. CONSTRUCTION SEQUENCE EXAMPLE (REFER TO FIGURE B.1):
    - a. CONSTRUCT AND STABILIZE ALL TEMPORARY SWALES OR DIKES THAT WILL BE USED TO CONVEY RUNOFF AROUND THE EXCAVATION.
    - b. PERFORM PHASE 1 EXCAVATION, PREPARE SEEDBED, AND STABILIZE.
    - c. PERFORM PHASE 2 EXCAVATION, PREPARE SEEDBED, AND STABILIZE. OVERSEED PHASE 1 AREAS AS NECESSARY.
    - d. PERFORM FINAL PHASE EXCAVATION, PREPARE SEEDBED, AND STABILIZE. OVERSEED PREVIOUSLY SEEDD AREAS AS NECESSARY.

NOTE: ONCE EXCAVATION HAS BEGUN THE OPERATION SHOULD BE CONTINUOUS FROM GRUBBING THROUGH THE COMPLETION OF GRADING AND PLACEMENT OF TOPSOIL (IF REQUIRED) AND PERMANENT SEED AND MULCH. ANY INTERRUPTIONS IN THE OPERATION OR COMPLETING THE OPERATION OUT OF THE SEEDING SEASON WILL NECESSITATE THE APPLICATION OF TEMPORARY STABILIZATION.

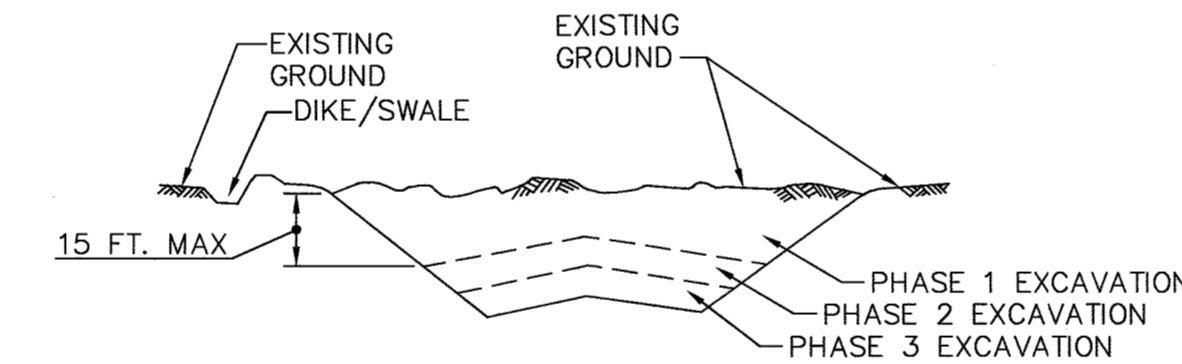


FIGURE B.1: INCREMENTAL STABILIZATION - CUT

1. INCREMENTAL STABILIZATION - FILL SLOPES
  - A. CONSTRUCT AND STABILIZE FILL SLOPES IN INCREMENTS NOT TO EXCEED 15 FEET IN HEIGHT. PREPARE SEEDBED AND APPLY SEED AND MULCH ON ALL SLOPES AS THE WORK PROGRESSES.
  - B. STABILIZE SLOPES IMMEDIATELY WHEN THE VERTICAL HEIGHT OF A LIFT REACHES 15 FEET, OR WHEN THE GRADING OPERATION CEASES AS PRESCRIBED IN THE PLANS.
  - C. AT THE END OF EACH DAY, INSTALL TEMPORARY WATER CONVEYANCE PRACTICE(S), AS NECESSARY, TO INTERCEPT SURFACE RUNOFF AND CONVEY IT DOWN THE SLOPE IN A NON-EROSIVE MANNER.
  - D. CONSTRUCTION SEQUENCE EXAMPLE (REFER TO FIGURE B.2):
    - a. CONSTRUCT AND STABILIZE ALL TEMPORARY SWALES OR DIKES THAT WILL BE USED TO DIVERT RUNOFF AROUND THE FILL. CONSTRUCT SILT FENCE ON LOW SIDE OF FILL UNLESS OTHER METHODS SHOWN ON THE PLANS ADDRESS THIS AREA.
    - b. AT THE END OF EACH DAY, INSTALL TEMPORARY WATER CONVEYANCE PRACTICE(S), AS NECESSARY, TO INTERCEPT SURFACE RUNOFF AND CONVEY IT DOWN THE SLOPE IN A NON-EROSIVE MANNER.
    - c. PLACE PHASE 1 FILL, PREPARE SEEDBED, AND STABILIZE.
    - d. PLACE PHASE 2 FILL, PREPARE SEEDBED, AND STABILIZE.
    - e. PLACE FINAL PHASE FILL, PREPARE SEEDBED, AND STABILIZE. OVERSEED PREVIOUSLY SEEDD AREAS AS NECESSARY.

NOTE: ONCE THE PLACEMENT OF FILL HAS BEGUN THE OPERATION SHOULD BE CONTINUOUS FROM GRUBBING THROUGH THE COMPLETION OF GRADING AND PLACEMENT OF TOPSOIL (IF REQUIRED) AND PERMANENT SEED AND MULCH. ANY INTERRUPTIONS IN THE OPERATION OR COMPLETING THE OPERATION OUT OF THE SEEDING SEASON WILL NECESSITATE THE APPLICATION OF TEMPORARY STABILIZATION.

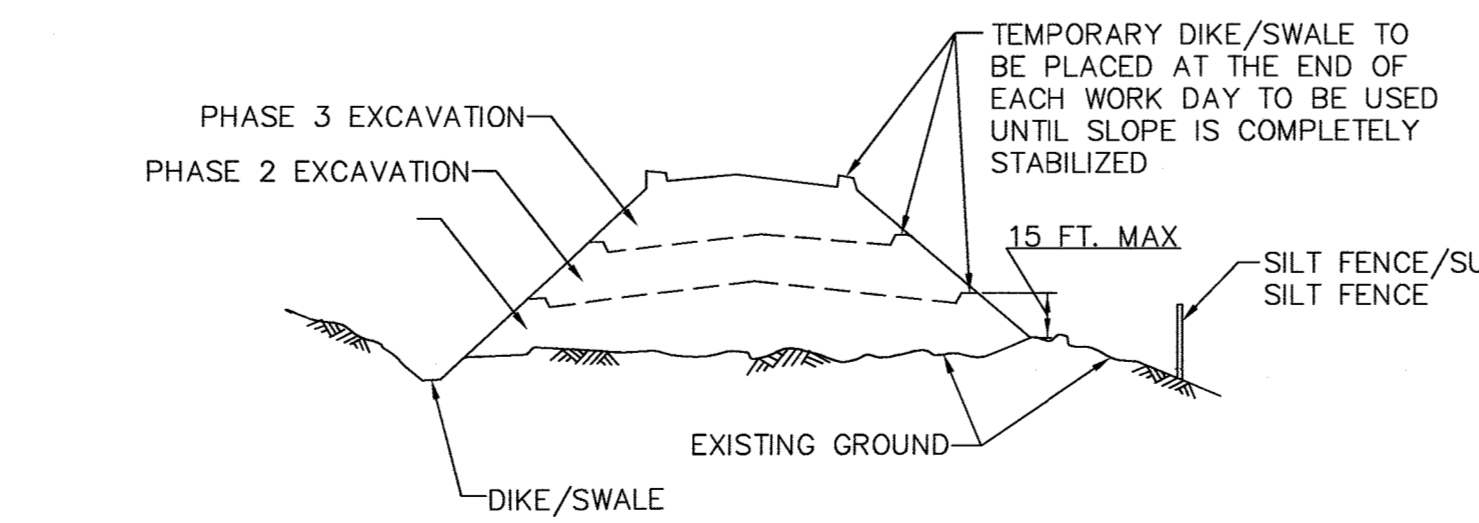


FIGURE B.2: INCREMENTAL STABILIZATION - FILL

**STANDARDS AND SPECIFICATIONS FOR SOIL PREPARATION, TOPSOILING, AND SOIL AMENDMENTS**

**PURPOSE**

TO PROVIDE A SUITABLE SOIL MEDIUM FOR VEGETATIVE GROWTH.

**CONDITIONS WHERE PRACTICE APPLIES**

WHERE VEGETATIVE STABILIZATION IS TO BE ESTABLISHED.

**CRITERIA**

1. SOIL PREPARATION
    - A. TEMPORARY STABILIZATION
      - a. SEEDBED PREPARATION CONSISTS OF LOOSENING SOIL TO A DEPTH OF 3 TO 5 INCHES BY MEANS OF SUITABLE AGRICULTURAL OR CONSTRUCTION EQUIPMENT, SUCH AS DISC HARROWS OR CHISEL PLOWS OR RIPPER MOUNTED ON CONSTRUCTION EQUIPMENT. AFTER THE SOIL IS LOOSENEED, IT MUST NOT BE ROLLED OR DRAGGED SMOOTH BUT LEFT IN THE ROUGHENED CONDITION. SLOPES 3:1 OR FLATTER ARE TO BE TRACKED WITH RIDGES RUNNING PARALLEL TO THE CONTOUR OF THE SLOPE.
      - b. APPLY FERTILIZER AND LIME AS PRESCRIBED ON THE PLANS.
      - c. INCORPORATE LIME AND FERTILIZER INTO THE TOP 3 TO 5 INCHES OF SOIL BY DISKING OR OTHER SUITABLE MEANS.
  2. PERMANENT STABILIZATION
    - A. A SOIL TEST IS REQUIRED FOR ANY EARTH DISTURBANCE OF 5 ACRES OR MORE. THE MINIMUM SOIL CONDITIONS REQUIRED FOR PERMANENT VEGETATIVE ESTABLISHMENT ARE:
      - a. SOIL PH BETWEEN 6.0 AND 7.0.
      - b. SOLUBLE SALTS LESS THAN 500 PARTS PER MILLION (PPM).
      - c. SOIL CONTAINS LESS THAN 40 PERCENT CLAY BUT ENOUGH FINE GRAINED MATERIAL (GREATER THAN 30 PERCENT SILT PLUS CLAY) TO PROVIDE THE CAPACITY TO HOLD A MODERATE AMOUNT OF MOISTURE. AN EXCEPTION: IF LOVEGRASS WILL BE PLANTED, THEN A SANDY SOIL (LESS THAN 50 PERCENT SILT PLUS CLAY) WOULD BE ACCEPTABLE.
      - d. SOIL CONTAINS 1.5 PERCENT MINIMUM ORGANIC MATTER BY WEIGHT.
      - e. SOIL CONTAINS SUFFICIENT PORE SPACE TO PERMIT ADEQUATE ROOT PENETRATION.
    - B. APPLICATION OF AMENDMENTS OR TOPSOIL IS REQUIRED IF ON-SITE SOILS DO NOT MEET THE ABOVE CONDITIONS.
    - C. GRADED AREAS MUST BE MAINTAINED IN A TRUE AND EVEN GRADE AS SPECIFIED ON THE APPROVED PLAN, THEN SCARIFIED OR OTHERWISE LOOSENEED TO A DEPTH OF 3 TO 5 INCHES.
    - D. APPLY SOIL AMENDMENTS AS SPECIFIED ON THE APPROVED PLAN OR AS INDICATED BY THE RESULTS OF A SOIL TEST.
      - a. MIX SOIL AMENDMENTS INTO THE TOP 3 TO 5 INCHES OF SOIL BY DISKING OR OTHER SUITABLE MEANS. RAKE LAWN AREAS TO SMOOTH THE SURFACE, REMOVE LARGE OBJECTS LIKE STONES AND BRANCHES, AND READY THE AREA FOR SEED APPLICATION. LOOSEN SURFACE SOIL BY DRAGGING WITH A HEAVY CHAIN OR OTHER EQUIPMENT TO ROUGHEN THE SURFACE WHERE SITE CONDITIONS WILL NOT PERMIT NORMAL SEEDBED PREPARATION. TRACK SLOPES 3:1 OR FLATTER WITH TRACKED EQUIPMENT LEAVING THE SOIL IN AN IRREGULAR CONDITION WITH RIDGES RUNNING PARALLEL TO THE CONTOUR OF THE SLOPE. LEAVE THE TOP 1 TO 3 INCHES OF SOIL LOOSE AND FRIABLE. SEEDBED LOOSENING MAY BE UNNECESSARY ON NEWLY DISTURBED AREAS.
2. TOPSOILING
  - A. TOPSOIL IS PLACED OVER PREPARED SUBSOIL PRIOR TO ESTABLISHMENT OF PERMANENT VEGETATION. THE PURPOSE IS TO PROVIDE A SUITABLE SOIL MEDIUM FOR VEGETATIVE GROWTH. SOILS OF CONCERN HAVE LOW MOISTURE CONTENT, LOW NUTRIENT LEVELS, LOW PH, MATERIALS TOXIC TO PLANTS, AND/OR UNACCEPTABLE SOIL GRADATION.
  - B. TOPSOIL SALVAGED FROM AN EXISTING SITE MAY BE USED PROVIDED IT MEETS THE STANDARDS AS SET FORTH IN THESE SPECIFICATIONS. THE DEPTH OF TOPSOIL TO BE SALVAGED FOR A GIVEN SOIL TYPE CAN BE FOUND IN THE REPRESENTATIVE SOIL PROFILE SECTION IN THE SOIL SURVEY PUBLISHED BY USDA-NRCS.
  - C. TOPSOILING IS LIMITED TO AREAS HAVING 2:1 OR FLATTER SLOPES WHERE:
    - a. THE TEXTURE OF THE EXPOSED SUBSOIL/PARENT MATERIAL IS NOT ADEQUATE TO PRODUCE VEGETATIVE GROWTH.
    - b. THE SOIL MATERIAL IS SO SHALLOW THAT THE ROOTING ZONE IS NOT DEEP ENOUGH TO SUPPORT PLANTS OR FURNISH CONTINUING SUPPLIES OF MOISTURE AND PLANT NUTRIENTS.
    - c. THE ORIGINAL SOIL TO BE VEGETATED CONTAINS MATERIAL TOXIC TO PLANT GROWTH.
    - d. THE SOIL IS SO ACIDIC THAT TREATMENT WITH LIMESTONE IS NOT FEASIBLE.
  - D. AREAS HAVING SLOPES STEEPER THAN 2:1 REQUIRE SPECIAL CONSIDERATION AND DESIGN.
  - E. TOPSOIL SPECIFICATIONS: SOIL TO BE USED AS TOPSOIL MUST MEET THE FOLLOWING CRITERIA:
    - a. TOPSOIL MUST BE A LOAM, SANDY LOAM, CLAY LOAM, SILT LOAM, SANDY CLAY LOAM, OR LOAMY SAND. OTHER SOILS MAY BE USED IF RECOMMENDED BY AN AGRONOMIST OR SOIL SCIENTIST AND APPROVED BY THE APPROPRIATE APPROVAL AUTHORITY. TOPSOIL MUST NOT BE A MIXTURE OF CONTRASTING TEXTURED SUBSOILS AND MUST CONTAIN LESS THAN 5 PERCENT BY VOLUME OF CINNERS, STONES, SLAG, COARSE FRAGMENTS, GRAVEL, STICKS, ROOTS, TRASH, OR OTHER MATERIALS LARGER THAN 1 1/2 INCHES IN DIAMETER.
    - b. TOPSOIL MUST BE FREE OF NOXIOUS PLANTS OR PLANT PARTS SUCH AS BERMUDA GRASS, QUACK GRASS, JOHNSON GRASS, NUT SEDGE, POISON IVY, THISTLE, OR OTHERS AS SPECIFIED.
    - c. TOPSOIL SUBSTITUTES OR AMENDMENTS, AS RECOMMENDED BY A QUALIFIED AGRONOMIST OR SOIL SCIENTIST AND APPROVED BY THE APPROPRIATE APPROVAL AUTHORITY, MAY BE USED IN LIEU OF NATURAL TOPSOIL.
  - F. TOPSOIL APPLICATION
    - a. EROSION AND SEDIMENT CONTROL PRACTICES MUST BE MAINTAINED WHEN APPLYING TOPSOIL.
    - b. UNIFORMLY DISTRIBUTE TOPSOIL IN A 5 TO 8 INCH LAYER AND LIGHTLY COMPACT TO A MINIMUM THICKNESS OF 4 INCHES. SPREADING IS TO BE PERFORMED IN SUCH A MANNER THAT SODDING OR SEEDING CAN PROCEED WITH A MINIMUM OF ADDITIONAL SOIL PREPARATION AND TILLAGE. ANY IRREGULARITIES IN THE SURFACE RESULTING FROM TOPSOILING OR OTHER OPERATIONS MUST BE CORRECTED IN ORDER TO PREVENT THE FORMATION OF DEPRESSIONS OR WATER POCKETS.
    - c. TOPSOIL MUST NOT BE PLACED IF THE TOPSOIL OR SUBSOIL IS IN A FROZEN OR MUDDY CONDITION, WHEN THE SUBSOIL IS EXCESSIVELY WET OR IN A CONDITION THAT MAY OTHERWISE BE DETRIMENTAL TO PROPER GRADING AND SEEDBED PREPARATION.
3. SOIL AMENDMENTS (FERTILIZER AND LIME SPECIFICATIONS)
  - A. SOIL TESTS MUST BE PERFORMED TO DETERMINE THE EXACT RATIOS AND APPLICATION RATES FOR BOTH LIME AND FERTILIZER ON SITES HAVING DISTURBED AREAS OF 5 ACRES OR MORE. SOIL ANALYSIS MAY BE PERFORMED BY A RECORDED PRIVATE OR COMMERCIAL LABORATORY. SOIL SAMPLES TAKEN FOR ENGINEERING PURPOSES MAY ALSO BE USED FOR CHEMICAL ANALYSES.
  - B. FERTILIZERS MUST BE UNIFORM IN COMPOSITION, FREE FLOWING AND SUITABLE FOR ACCURATE APPLICATION BY APPROPRIATE EQUIPMENT. MANURE MAY BE SUBSTITUTED FOR FERTILIZER WITH PRIOR APPROVAL FROM THE APPROPRIATE APPROVAL AUTHORITY. FERTILIZERS MUST ALL BE DELIVERED TO THE SITE FULLY LABELED ACCORDING TO THE APPLICABLE LAWS AND MUST BEAR THE NAME, TRADE NAME OR TRADEMARK AND WARRANTY OF THE PRODUCER.
  - C. LIME MATERIALS MUST BE GROUND LIMESTONE (HYDRATED OR BURNT LIME MAY BE SUBSTITUTED EXCEPT WHEN HYDROSEEDING) WHICH CONTAINS AT LEAST 50 PERCENT TOTAL OXIDES (CALCIUM OXIDE PLUS MAGNESIUM OXIDE). LIMESTONE MUST BE GROUND TO SUCH FINENESS THAT AT LEAST 50 PERCENT WILL PASS THROUGH A #100 MESH SIEVE AND 98 TO 100 PERCENT WILL PASS THROUGH A #250 MESH SIEVE.
  - D. LIME AND FERTILIZER ARE TO BE EVENLY DISTRIBUTED AND INCORPORATED INTO THE TOP 3 TO 5 INCHES OF SOIL BY DISKING OR OTHER SUITABLE MEANS.
  - E. WHERE THE SUBSOIL IS EITHER HIGHLY ACIDIC OR COMPOSED OF HEAVY CLAYS, SPREAD GROUND LIMESTONE AT THE RATE OF 4 TO 8 TONS/ACRE (200-400 POUNDS PER 1,000 SQUARE FEET) PRIOR TO THE PLACEMENT OF TOPSOIL.
  - F. RATE OF 4 TO 8 TONS/ACRE (200-400 POUNDS PER 1,000 SQUARE FEET) PRIOR TO THE PLACEMENT OF TOPSOIL.
  - G.

*SWM AS BUILT AS BUILT SURVEY BY CLSI ON 5/4/2021*

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.  
License No. 22732 Expires Date: 05/16/2022



*THERE IS NO AS BUILT INFORMATION PROVIDED ON THIS SHEET*

PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME AND THAT I AM DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 33772 EXP. DATE: 06/16/2021

**STANDARDS AND SPECIFICATIONS FOR LAND GRADING**

**DESIGN CRITERIA**

THE GRADING PLAN SHOULD BE BASED ON THE INCORPORATION OF BUILDING DESIGNS AND STREET LAYOUTS THAT FIT AND UTILIZE EXISTING TOPOGRAPHY AND DESIRABLE NATURAL SURROUNDINGS TO AVOID EXTREME GRADE MODIFICATIONS. INFORMATION SUBMITTED MUST PROVIDE SUFFICIENT TOPOGRAPHIC SURVEYS AND SOIL INVESTIGATIONS TO DETERMINE LIMITATIONS THAT MUST BE IMPOSED ON THE GRADING OPERATION RELATED TO SOIL STABILITY, ADJACENT PROPERTIES, DRAINAGE PATTERNS, MEASURES FOR WATER REMOVAL, AND VEGETATIVE TREATMENT, ETC.

MANY JURISDICTIONS HAVE REGULATIONS AND DESIGN PROCEDURES ALREADY ESTABLISHED FOR LAND GRADING THAT MUST BE FOLLOWED. THE PLAN MUST SHOW EXISTING AND PROPOSED CONTOURS FOR THE AREA(S) TO BE GRADED INCLUDING PRACTICES FOR EROSION CONTROL, SOIL STABILIZATION, AND SAFE CONVEYANCE OF RUNOFF (E.G., WATERWAYS, LINED CHANNELS, REVERSE BENCHES, GRADE STABILIZATION STRUCTURES). THE GRADING/CONSTRUCTION PLANS ARE TO INCLUDE THE PHASING OF THESE PRACTICES AND CONSIDERATION OF THE FOLLOWING:

1. PROVISIONS TO SAFELY CONVEY SURFACE RUNOFF TO STORM DRAINS, PROTECTED OUTLETS OR STABLE WATER COURSES TO ENSURE THAT SURFACE RUNOFF WILL NOT DAMAGE SLOPES OR OTHER GRADED AREAS.
2. CUT AND FILL SLOPES, STABILIZED WITH GRASSES, NO STEEPER THAN 2:1. (WHERE THE SLOPE IS TO BE MOWED, THE SLOPE SHOULD BE NO STEEPER THAN 3:1, BUT 4:1 IS PREFERRED BECAUSE OF SAFETY FACTORS RELATED TO MOWING STEEP SLOPES.) SLOPES STEEPER THAN 2:1 REQUIRE SPECIAL DESIGN AND STABILIZATION CONSIDERATIONS TO BE SHOWN ON THE PLANS.
3. BENCHING PER DETAIL B-3-1 WHENEVER THE VERTICAL INTERVAL (HEIGHT) OF ANY 2:1 SLOPE EXCEEDS 20 FEET; FOR 3:1 SLOPES, WHEN IT EXCEEDS 30 FEET; AND FOR 4:1 SLOPES, WHEN IT EXCEEDS 40 FEET. LOCATE BENCHES TO DIVIDE THE SLOPE FACE AS EQUALLY AS POSSIBLE AND TO CONVEY THE WATER TO A STABLE OUTLET, SOILS, SEEPS, ROCK OUTCROPS, ETC. ARE TO BE TAKEN INTO CONSIDERATION WHEN DESIGNING BENCHES.
  - A. PROVIDE BENCHES WITH A MINIMUM WIDTH OF SIX FEET FOR EASE OF MAINTENANCE.
  - B. DESIGN BENCHES WITH A REVERSE SLOPE OF 6:1 OR FLATTER TO THE TOE OF THE UPPER SLOPE AND WITH A MINIMUM OF ONE FOOT IN DEPTH OF THE LONGITUDINAL SLOPE OF THE BENCH BETWEEN 2 PERCENT AND 3 PERCENT, UNLESS ACCOMPANIED BY APPROPRIATE DESIGN AND COMPUTATIONS.
  - C. THE MAXIMUM ALLOWABLE FLOW LENGTH WITHIN A BENCH IS 800 FEET UNLESS ACCOMPANIED BY APPROPRIATE DESIGN AND COMPUTATIONS.
4. DIVERSION OF SURFACE WATER FROM THE FACE OF ALL CUT AND FILL SLOPES USING EARTH DIKES OR SWALES. CONVEY SURFACE WATER DOWN SLOPE USING A DESIGNED STRUCTURE, AND:
  - A. PROTECT THE FACE OF ALL GRADED SLOPES FROM SURFACE RUNOFF UNTIL THEY ARE STABILIZED.
  - B. DO NOT SUBJECT THE SLOPE'S FACE TO ANY CONCENTRATED FLOW OF SURFACE WATER SUCH AS FROM NATURAL DRAINAGE WAYS, GRADED SWALES, DOWNSPOUTS, ETC.
  - C. PROTECT THE FACE OF THE SLOPE BY SPECIAL EROSION CONTROL MATERIALS TO INCLUDE, BUT NOT BE LIMITED TO, APPROVED VEGETATIVE STABILIZATION PRACTICES, RIPRAP OR OTHER APPROVED STABILIZATION METHODS.
5. SERRATED SLOPE AS SHOWN IN DETAIL B-3-2. THE STEEPEST ALLOWABLE SLOPE FOR RIPABLE ROCK IS 1.5:1. FOR NON ROCK SURFACES, THE SLOPES ARE TO BE 2:1 OR FLATTER. THESE STEPS WILL WEATHER AND ACT TO HOLD MOISTURE AND SEED THUS PRODUCING A MUCH QUICKER AND LONGER LIVED VEGETATIVE COVER AND BETTER SLOPE STABILIZATION.
6. SUBSURFACE DRAINAGE PROVISIONS. PROVIDE SUBSURFACE DRAINAGE WHERE NECESSARY TO INTERCEPT SEEPAGE THAT WOULD OTHERWISE ADVERSELY AFFECT SOIL STABILITY OR CREATE EXCESSIVELY WET SITE CONDITIONS.
7. PROXIMITY TO ADJACENT PROPERTY. SLOPES MUST NOT BE CREATED CLOSE TO PROPERTY LINES WITHOUT ADEQUATE PROTECTION AGAINST SEDIMENTATION, EROSION, SLIPPAGE, SETTLEMENT, SUBSIDENCE, OR OTHER RELATED DAMAGES.
8. QUALITY OF FILL MATERIAL. FILL MATERIAL MUST BE FREE OF BRUSH, RUBBISH, LOGS, STUMPS, BUILDING DEBRIS, AND OTHER OBJECTIONABLE MATERIAL. DO NOT PLACE FROZEN MATERIALS IN THE FILL NOR PLACE THE FILL MATERIAL ON A FROZEN FOUNDATION.
9. STABILIZATION. STABILIZE ALL DISTURBED AREAS STRUCTURALLY OR VEGETATIVELY IN COMPLIANCE WITH SECTION B-4 STANDARDS AND SPECIFICATIONS FOR STABILIZATION PRACTICES.

**MAINTENANCE**

THE LINE, GRADE, AND CROSS SECTION OF BENCHING AND SERRATED SLOPES MUST BE MAINTAINED. BENCHES AND SERRATED SLOPES MUST CONTINUOUSLY MEET THE REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION.

**STOCKPILE AREA**

**PURPOSE**

TO PROVIDE A DESIGNATED LOCATION FOR THE TEMPORARY STORAGE OF SOIL THAT CONTROLS THE POTENTIAL FOR EROSION, SEDIMENTATION, AND CHANGES TO DRAINAGE PATTERNS.

**CRITERIA**

1. THE STOCKPILE LOCATION AND ALL RELATED SEDIMENT CONTROL PRACTICES MUST BE CLEARLY INDICATED ON THE EROSION AND SEDIMENT CONTROL PLAN.
2. THE FOOTPRINT OF THE STOCKPILE MUST BE SIZED TO ACCOMMODATE THE ANTICIPATED VOLUME OF MATERIAL AND BASED ON A SIDE SLOPE RATIO NO STEEPER THAN 2:1. BENCHING MUST BE PROVIDED IN ACCORDANCE WITH SECTION B-3 LAND GRADING.
3. RUNOFF FROM THE STOCKPILE AREA MUST DRAIN TO A SUITABLE SEDIMENT CONTROL PRACTICE.
4. ACCESS THE STOCKPILE AREA FROM THE UPGRADE SIDE.
5. CLEAR WATER RUNOFF INTO THE STOCKPILE AREA MUST BE MINIMIZED BY USE OF A DIVERSION DEVICE SUCH AS AN EARTH DIKE, TEMPORARY SWALE OR DIVERSION FENCE. PROVISIONS MUST BE MADE FOR DISCHARGING CONCENTRATED FLOW IN A NON-EROSIVE MANNER.
6. WHERE RUNOFF CONCENTRATES ALONG THE TOE OF THE STOCKPILE FILL, AN APPROPRIATE EROSION/SEDIMENT CONTROL PRACTICE MUST BE USED TO INTERCEPT THE DISCHARGE.
7. STOCKPILES MUST BE STABILIZED IN ACCORDANCE WITH THE 3/7 DAY STABILIZATION REQUIREMENT AS WELL AS STANDARD B-4-1 INCREMENTAL STABILIZATION AND STANDARD B-4-4 TEMPORARY STABILIZATION.
8. IF THE STOCKPILE IS LOCATED ON AN IMPERVIOUS SURFACE, A LINER SHOULD BE PROVIDED BELOW THE STOCKPILE TO FACILITATE CLEANUP. STOCKPILES CONTAINING CONTAMINATED MATERIAL MUST BE COVERED WITH IMPERMEABLE SHEETING.

**MAINTENANCE**

THE STOCKPILE AREA MUST CONTINUOUSLY MEET THE REQUIREMENTS FOR ADEQUATE VEGETATIVE ESTABLISHMENT IN ACCORDANCE WITH SECTION B-4 VEGETATIVE STABILIZATION. SIDE SLOPES MUST BE MAINTAINED AT NO STEEPER THAN A 2:1 RATIO. THE STOCKPILE AREA MUST BE KEPT FREE OF EROSION. IF THE VERTICAL HEIGHT OF A STOCKPILE EXCEEDS 20 FEET FOR 2:1 SLOPES, 30 FEET FOR 3:1 SLOPES, OR 40 FEET FOR 4:1 SLOPES, BENCHING MUST BE PROVIDED IN ACCORDANCE WITH SECTION B-3 LAND GRADING.

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**CUBESMART STORAGE**  
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**SEDIMENT & EROSION CONTROL**  
**NOTES & DETAILS**

TAX MAP: 38 GRID: 08 PARCEL: 32  
ZONED: M-1  
ELECTION DISTRICT NO. 01 - HOWARD COUNTY MARYLAND

DESIGN DATE: NAB 9/03/19  
DRAWN SCALE: BRA  
KCI PROJECT NO. 271700283  
SHEET NO. 13 OF 30

**C-3.01**



## STANDARDS AND SPECIFICATIONS FOR SEEDING AND MULCHING

## STANDARDS AND SPECIFICATIONS FOR TEMPORARY STABILIZATION

**PURPOSE**  
TO PROTECT DISTURBED SOILS FROM EROSION DURING AND AT THE END OF CONSTRUCTION.

**CONDITIONS WHERE PRACTICE APPLIES**  
TO THE SURFACE OF ALL PERIMETER CONTROLS, SLOPES, AND ANY DISTURBED AREA NOT UNDER ACTIVE GRADING.

**CRITERIA**

1. SEEDING

A. SPECIFICATIONS

a. ALL SEED MUST MEET THE REQUIREMENTS OF THE MARYLAND STATE SEED LAW. ALL SEED MUST BE SUBJECT TO RE-TESTING BY A RECOGNIZED SEED LABORATORY. ALL SEED USED MUST HAVE BEEN TESTED WITHIN THE 6 MONTHS IMMEDIATELY PRECEDING THE DATE OF SOWING SUCH MATERIAL ON ANY PROJECT. REFER TO TABLE B.4 REGARDING THE QUALITY OF SEED. SEED TAGS MUST BE AVAILABLE UPON REQUEST TO THE INSPECTOR TO VERIFY TYPE OF SEED AND SEEDING RATE.

b. MULCH ALONE MAY BE APPLIED BETWEEN THE FALL AND SPRING SEEDING DATES ONLY IF THE GROUND IS FROZEN. THE APPROPRIATE SEEDING MIXTURE MUST BE APPLIED WHEN THE GROUND THAWES.

c. INOCULANTS: THE INOCULANT FOR TREATING LEGUME SEED IN THE SEED MIXTURES MUST BE A PURE CULTURE OF NITROGEN FIXING BACTERIA PREPARED SPECIFICALLY FOR THE SPECIES. INOCULANTS MUST NOT BE USED LATER THAN THE DATE INDICATED ON THE CONTAINER. ADD FRESH INOCULANTS AS DIRECTED ON THE PACKAGE. USE FOUR TIMES THE RECOMMENDED RATE WHEN HYDROSEEDING. NOTE: IT IS VERY IMPORTANT TO KEEP INOCULANT AS COOL AS POSSIBLE UNTIL USED. TEMPERATURES ABOVE 75 TO 80 DEGREES FAHRENHEIT CAN WEAKEN BACTERIA AND MAKE THE INOCULANT LESS EFFECTIVE.

d. SOD OR SEED MUST NOT BE PLACED ON SOIL WHICH HAS BEEN TREATED WITH SOIL STERILANTS OR CHEMICALS USED FOR WEED CONTROL UNTIL SUFFICIENT TIME HAS ELAPSED (14 DAYS MIN.) TO PERMIT DISSIPATION OF PHYTO-TOXIC MATERIALS.

B. APPLICATION

a. DRY SEEDING: THIS INCLUDES USE OF CONVENTIONAL DROP OR BROADCAST SPREADERS.

i. INCORPORATE SEED INTO THE SUBSOIL AT THE RATES PRESCRIBED ON TEMPORARY SEEDING TABLE B.1, PERMANENT SEEDING TABLE B.3, OR SITE-SPECIFIC SEEDING SUMMARIES.

ii. APPLY SEED IN TWO DIRECTIONS, PERPENDICULAR TO EACH OTHER. APPLY HALF THE SEEDING RATE IN EACH DIRECTION. ROLL THE SEEDING AREA WITH A WEIGHTED ROLLER TO PROVIDE GOOD SEED TO SOIL CONTACT.

b. DRILL OR CULTIPACKER SEEDING: MECHANIZED SEEDERS THAT APPLY AND COVER SEED WITH SOIL.

i. CULTIPACKING SEEDERS ARE REQUIRED TO BURY THE SEED IN SUCH A FASHION AS TO PROVIDE AT LEAST 1/4 INCH OF SOIL COVERING. SEEDBED MUST BE FIRM AFTER PLANTING.

ii. APPLY SEED IN TWO DIRECTIONS, PERPENDICULAR TO EACH OTHER. APPLY HALF THE SEEDING RATE IN EACH DIRECTION.

c. HYDROSEEDING: APPLY SEED UNIFORMLY WITH HYDROSEEDER (SLURRY INCLUDES SEED AND FERTILIZER).

i. IF FERTILIZER IS BEING APPLIED AT THE TIME OF SEEDING, THE APPLICATION RATES SHOULD NOT EXCEED THE FOLLOWING: NITROGEN, 100 POUNDS PER ACRE TOTAL OF SOLUBLE NITROGEN; P2O5 (PHOSPHOROUS), 200 POUNDS PER ACRE; K2O (POTASSIUM), 200 POUNDS PER ACRE.

ii. LIME: USE ONLY GROUND AGRICULTURAL LIMESTONE (UP TO 3 TONS PER ACRE MAY BE APPLIED BY HYDROSEEDING). NORMALLY, NOT MORE THAN 2 TONS ARE APPLIED BY HYDROSEEDING AT ANY ONE TIME. DO NOT USE BURNED OR HYDRATED LIME WHEN HYDROSEEDING.

iii. MIX SEED AND FERTILIZER ON SITE AND SEED IMMEDIATELY AND WITHOUT INTERRUPTION.

iv. WHEN HYDROSEEDING DO NOT INCORPORATE SEED INTO THE SOIL.

**PURPOSE**  
TO USE FAST GROWING VEGETATION THAT PROVIDES COVER ON DISTURBED SOILS.

**CONDITIONS WHERE PRACTICE APPLIES**  
EXPOSED SOILS WHERE GROUND COVER IS NEEDED FOR A PERIOD OF 6 MONTHS OR LESS. FOR LONGER DURATION OF TIME, PERMANENT STABILIZATION PRACTICES ARE REQUIRED.

**CRITERIA**

1. SELECT ONE OR MORE OF THE SPECIES OR SEED MIXTURES LISTED IN TABLE B.1 FOR THE APPROPRIATE PLANT HARDINESS ZONE (FROM FIGURE B.3), AND ENTER THEM IN THE TEMPORARY SEEDING SUMMARY BELOW ALONG WITH APPLICATION RATES, SEEDING DATES AND SEEDING DEPTHS. IF THIS SUMMARY IS NOT PUT ON THE PLAN AND COMPLETED, THEN TABLE B.1 PLUS FERTILIZER AND LIME RATES MUST BE PUT ON THE PLAN.

2. FOR SITES HAVING SOIL TESTS PERFORMED, USE AND SHOW THE RECOMMENDED RATES BY THE TESTING AGENCY. SOIL TESTS ARE NOT REQUIRED FOR TEMPORARY SEEDING.

3. WHEN STABILIZATION IS REQUIRED OUTSIDE OF A SEEDING SEASON, APPLY SEED AND MULCH OR STRAW MULCH ALONE AS PRESCRIBED IN SECTION B-4-3.1.A.1.B AND MAINTAIN UNTIL THE NEXT SEEDING SEASON.

HARDINESS ZONE (FROM FIGURE B.3): 6B					FERTILIZER RATE (10-20-20)	LIME RATE
NO.	SPECIES	APPLICATION RATE (LB/AC)	SEEDING DATES	SEEDING DEPTHS		
1	BARLEY	96	3/1-5/31 8/1-10/15	1.0"	436 LB/AC (10LB/1000SF)	2 TONS/AC (90LB/1000SF)
2	CEREAL RYE	112	3/1-5/15 8/1-11/15	1.0"		
3	FOXTAIL MILLET	30	5/16-7/31	0.5"		

## STANDARDS AND SPECIFICATIONS FOR PERMANENT STABILIZATION

**PURPOSE**  
TO USE LONG-LIVED PERENNIAL GRASSES AND LEGUMES TO ESTABLISH PERMANENT GROUND COVER ON DISTURBED SOILS.

**CONDITIONS WHERE PRACTICE APPLIES**  
EXPOSED SOILS WHERE GROUND COVER IS NEEDED FOR 6 MONTHS OR MORE.

**CRITERIA**

1. SEED MIXTURES

A. GENERAL USE

a. SELECT ONE OR MORE OF THE SPECIES OR MIXTURES LISTED IN TABLE B.3 FOR THE APPROPRIATE PLANT HARDINESS ZONE (FROM FIGURE B.3) AND BASED ON THE SITE CONDITION OR PURPOSE FOUND ON TABLE B.2. ENTER SELECTED MIXTURE(S), APPLICATION RATES, AND SEEDING DATES IN THE PERMANENT SEEDING SUMMARY. THE SUMMARY IS TO BE PLACED ON THE PLAN.

b. ADDITIONAL PLANTING SPECIFICATIONS FOR EXCEPTIONAL SITES SUCH AS SHORELINES, STREAM BANKS, OR DUNES OR FOR SPECIAL PURPOSES SUCH AS WILDLIFE OR AESTHETIC TREATMENT MAY BE FOUND IN USDA-NRCS TECHNICAL FIELD OFFICE GUIDE, SECTION 342 - CRITICAL AREA PLANTING.

c. FOR SITES HAVING DISTURBED AREA OVER 5 ACRES, USE AND SHOW THE RATES RECOMMENDED BY THE SOIL TESTING AGENCY.

d. FOR AREAS RECEIVING LOW MAINTENANCE, APPLY UREA FORM FERTILIZER (46-0-0) AT 3 1/2 POUNDS PER 1000 SQUARE FEET (150 POUNDS PER ACRE) AT THE TIME OF SEEDING IN ADDITION TO THE SOIL AMENDMENTS SHOWN IN THE PERMANENT SEEDING SUMMARY.

B. TURFGRASS MIXTURES

a. AREAS WHERE TURFGRASS MAY BE DESIRED INCLUDE LAWNS, PARKS, PLAYGROUNDS, AND COMMERCIAL SITES WHICH WILL RECEIVE A MEDIUM TO HIGH LEVEL OF MAINTENANCE.

b. SELECT ONE OR MORE OF THE SPECIES OR MIXTURES LISTED BELOW BASED ON THE SITE CONDITIONS OR PURPOSE. ENTER SELECTED MIXTURE(S), APPLICATION RATES, AND SEEDING DATES IN THE PERMANENT SEEDING SUMMARY. THE SUMMARY IS TO BE PLACED ON THE PLAN.

i. KENTUCKY BLUEGRASS: FULL SUN MIXTURE: FOR USE IN AREAS THAT RECEIVE INTENSIVE MANAGEMENT. IRRIGATION REQUIRED IN THE AREAS OF CENTRAL MARYLAND AND EASTERN SHORE. RECOMMENDED CERTIFIED KENTUCKY BLUEGRASS CULTIVARS SEEDING RATE: 1.5 TO 2.0 POUNDS PER 1000 SQUARE FEET. CHOOSE A MINIMUM OF THREE KENTUCKY BLUEGRASS CULTIVARS WITH EACH RANGING FROM 10 TO 35 PERCENT OF THE TOTAL MIXTURE BY WEIGHT.

ii. KENTUCKY BLUEGRASS/PERENNIAL RYE: FULL SUN MIXTURE: FOR USE IN FULL SUN AREAS WHERE RAPID ESTABLISHMENT IS NECESSARY AND WHEN TURF WILL RECEIVE MEDIUM TO INTENSIVE MANAGEMENT. CERTIFIED PERENNIAL RYEGRASS CULTIVARS/CERTIFIED KENTUCKY BLUEGRASS SEEDING RATE: 2 POUNDS MIXTURE PER 1000 SQUARE FEET. CHOOSE A MINIMUM OF THREE KENTUCKY BLUEGRASS CULTIVARS WITH EACH RANGING FROM 10 TO 35 PERCENT OF THE TOTAL MIXTURE BY WEIGHT.

iii. TALL FESCUE/KENTUCKY BLUEGRASS: FULL SUN MIXTURE: FOR USE IN DROUGHT PRONE AREAS AND/OR FOR AREAS RECEIVING LOW TO MEDIUM MANAGEMENT IN FULL SUN TO MEDIUM SHADE. RECOMMENDED MIXTURE INCLUDES: CERTIFIED TALL FESCUE CULTIVARS 95 TO 100 PERCENT, CERTIFIED KENTUCKY BLUEGRASS CULTIVARS 0 TO 5 PERCENT. SEEDING RATE: 5 TO 8 POUNDS PER 1000 SQUARE FEET. ONE OR MORE CULTIVARS MAY BE BLENDED.

iv. KENTUCKY BLUEGRASS/FINE FESCUE: SHADE MIXTURE: FOR USE IN AREAS WITH SHADE IN BLUEGRASS LAWNS. FOR ESTABLISHMENT IN HIGH QUALITY, INTENSIVELY MANAGED TURF AREA. MIXTURE INCLUDES: CERTIFIED KENTUCKY BLUEGRASS CULTIVARS 30 TO 40 PERCENT AND CERTIFIED FINE FESCUE AND 60 TO 70 PERCENT. SEEDING RATE: 1 1/2 TO 3 POUNDS PER 1000 SQUARE FEET.

NOTES:  
SELECT TURFGRASS VARIETIES FROM THOSE LISTED IN THE MOST CURRENT UNIVERSITY OF MARYLAND PUBLICATION, AGRONOMY MEMO #77, "TURFGRASS CULTIVAR RECOMMENDATIONS FOR MARYLAND". CHOOSE CERTIFIED MATERIAL. CERTIFIED MATERIAL IS THE BEST GUARANTEE OF CULTIVAR PURITY. THE CERTIFICATION PROGRAM OF THE MARYLAND DEPARTMENT OF AGRICULTURE, TURF AND SEED SECTION, PROVIDES A RELIABLE MEANS OF CONSUMER PROTECTION AND ASSURES A PURE GENETIC LINE.

c. IDEAL TIMES OF SEEDING FOR TURF GRASS MIXTURES

WESTERN MD. MARCH 15 TO JUNE 1, AUGUST 1 TO OCTOBER 1 (HARDINESS ZONES: 5B, 6A)  
CENTRAL MD. MARCH 1 TO MAY 15, AUGUST 15 TO OCTOBER 15 (HARDINESS ZONE: 6B)  
SOUTHERN MD. EASTERN SHORE. MARCH 1 TO MAY 15, AUGUST 15 TO OCTOBER 15 (HARDINESS ZONES: 7A, 7B)

d. TILL AREAS TO RECEIVE SEED BY DISKING OR OTHER APPROVED METHODS TO A DEPTH OF 2 TO 4 INCHES. LEVEL AND RAKE THE AREAS TO PREPARE A PROPER SEEDBED. REMOVE STONES AND DEBRIS OVER 1/2 INCHES IN DIAMETER. THE RESULTING SEEDBED MUST BE IN SUCH CONDITION THAT FUTURE MOWING OF GRASSES WILL BE WITHOUT DIFFICULTY.

e. IF SOIL MOISTURE IS DEFICIENT, SUPPLY NEW SEEDINGS WITH ADEQUATE WATER FOR PLANT GROWTH (1/2 TO 1 INCH EVERY 3 TO 4 DAYS DEPENDING ON SOIL TEXTURE) UNTIL THEY ARE FIRMLY ESTABLISHED. THIS IS ESPECIALLY TRUE WHEN SEEDINGS ARE MADE LATE IN THE PLANTING SEASON, IN ABNORMALLY DRY OR HOT SEASONS, OR ON ADVERSE SITES.

HARDINESS ZONE (FROM FIGURE B.3): 6B					FERTILIZER RATE (10-20-20)			LIME RATE
NO.	SPECIES	APPLICATION RATE (LB/AC)	SEEDING DATES	SEEDING DEPTHS	N	P2O5	K2O	
4	DEERTONGUE CREEPING RED FESCUE VIRGINIA WILD RYE	15 20	3/1-5/15 5/16-6/15	0.5"	45LB/AC (1LB/ 1000SF)	90LB/AC (2LB/ 1000SF)	90LB/AC (2LB/ 1000SF)	2 TONS/AC (90LB/ 1000SF)
6	TALL FESCUE PERENNIAL RYEGRASS WHITE CLOVER	40 5	3/1-5/15 8/1-10/15	0.5"				
9	TALL FESCUE KENTUCKY BLUEGRASS	60 40	3/1-5/15 8/1-10/15	0.5"				

2. SOD: TO PROVIDE QUICK COVER ON DISTURBED AREAS (2:1 GRADE OR FLATTER).

A. GENERAL SPECIFICATIONS

a. CLASS OF TURFGRASS SOD MUST BE MARYLAND STATE CERTIFIED. SOD LABELS MUST BE MADE AVAILABLE TO THE JOB FOREMAN AND INSPECTOR.

b. SOD MUST BE MACHINE CUT AT A UNIFORM SOIL THICKNESS OF 1/4 INCH, PLUS OR MINUS 1/8 INCH, AT THE TIME OF CUTTING. MEASUREMENT FOR THICKNESS MUST EXCLUDE TOP GROWTH AND THATCH. BROKEN PADS AND TORN OR UNEVEN ENDS WILL NOT BE ACCEPTABLE.

c. STANDARD SIZE SECTIONS OF SOD MUST BE STRONG ENOUGH TO SUPPORT THEIR OWN WEIGHT AND RETAIN THEIR SIZE AND SHAPE WHEN SUSPENDED VERTICALLY WITH A FIRM GRASP ON THE UPPER 10 PERCENT OF THE SECTION.

d. SOD MUST NOT BE HARVESTED OR TRANSPORTED WHEN MOISTURE CONTENT (EXCESSIVELY DRY OR WET) MAY ADVERSELY AFFECT ITS SURVIVAL.

e. SOD MUST BE HARVESTED, DELIVERED, AND INSTALLED WITHIN A PERIOD OF 36 HOURS. SOD NOT TRANSPORTED WITHIN THIS PERIOD MUST BE APPROVED BY AN AGRONOMIST OR SOIL SCIENTIST PRIOR TO ITS INSTALLATION.

B. SOD INSTALLATION

a. DURING PERIODS OF EXCESSIVELY HIGH TEMPERATURE OR IN AREAS HAVING DRY SUBSOIL, LIGHTLY IRRIGATE THE SOIL IMMEDIATELY PRIOR TO LAYING THE SOD.

b. LAY THE FIRST ROW OF SOD IN A STRAIGHT LINE WITH SUBSEQUENT ROWS PLACED PARALLEL TO IT AND TIGHTLY WEDGED AGAINST EACH OTHER. STAGGER LATERAL JOINTS TO PROMOTE MORE UNIFORM GROWTH AND STRENGTH. ENSURE THAT SOD IS NOT STRETCHED OR OVERLAPPED AND THAT ALL JOINTS ARE BUTTED TIGHT IN ORDER TO PREVENT VOIDS WHICH WOULD CAUSE AIR DRYING OF THE ROOTS.

c. WHEREVER POSSIBLE, LAY SOD WITH THE LONG EDGES PARALLEL TO THE CONTOUR AND WITH STAGGERING JOINTS. ROLL AND TAMP, PEG OR OTHERWISE SECURE THE SOD TO PREVENT SLIPPAGE ON SLOPES. ENSURE SOIL CONTACT EXISTS BETWEEN SOD ROOTS AND THE UNDERLYING SOIL SURFACE.

d. WATER THE SOD IMMEDIATELY FOLLOWING ROLLING AND TAMPING UNTIL THE UNDERSIDE OF THE NEW SOD PAD AND SOIL SURFACE BELOW THE SOD ARE THOROUGHLY WET. COMPLETE THE OPERATIONS OF LAYING, TAMPING AND IRRIGATING FOR ANY PIECE OF SOD WITHIN EIGHT HOURS.

C. SOD MAINTENANCE

a. IN THE ABSENCE OF ADEQUATE RAINFALL, WATER DAILY DURING THE FIRST WEEK OR AS OFTEN AND SUFFICIENTLY AS NECESSARY TO MAINTAIN MOIST SOIL TO A DEPTH OF 4 INCHES. WATER SOD DURING THE HEAT OF THE DAY TO PREVENT WILTING.

b. AFTER THE FIRST WEEK, SOD WATERING IS REQUIRED AS NECESSARY TO MAINTAIN ADEQUATE MOISTURE CONTENT.

c. DO NOT MOW UNTIL THE SOD IS FIRMLY ROOTED. NO MORE THAN 1/3 OF THE GRASS LEAF MUST BE REMOVED BY THE INITIAL CUTTING OR SUBSEQUENT CUTTINGS. MAINTAIN A GRASS HEIGHT OF AT LEAST 3 INCHES UNLESS OTHERWISE SPECIFIED.

ALL NUMERIC VALUES EXCEPT APPARENT OPENING SIZE (AOS) REPRESENT MINIMUM AVERAGE ROLL VALUES (MARV). MARV IS CALCULATED AS THE TYPICAL MINUS TWO STANDARD DEVIATIONS. MD IS MACHINE DIRECTION; CD IS CROSS DIRECTION.

VALUES FOR AOS REPRESENT THE AVERAGE MAXIMUM OPENING.

GEOTEXTILES MUST BE EVALUATED BY THE NATIONAL TRANSPORTATION PRODUCT EVALUATION PROGRAM (NTP) AND CONFORM TO THE VALUES IN TABLE H.1.

THE GEOTEXTILE MUST BE INERT TO COMMONLY ENCOUNTERED CHEMICALS AND HYDROCARBONS AND MUST BE ROT AND MILDEW RESISTANT. THE GEOTEXTILE MUST BE MANUFACTURED FROM FIBERS CONSISTING OF LONG CHAIN SYNTHETIC POLYMERS AND COMPOSED OF A MINIMUM OF 95 PERCENT BY WEIGHT OF POLYESTERS OR POLYESTERS AND FORMED INTO A STABLE NETWORK SO THE FILAMENTS OR YARNS RETAIN THEIR DIMENSIONAL STABILITY RELATIVE TO EACH OTHER, INCLUDING SELVAGES.

WHEN MORE THAN ONE SECTION OF GEOTEXTILE IS NECESSARY, OVERLAP THE SECTIONS BY AT LEAST ONE FOOT. THE GEOTEXTILE MUST BE PULLED TAUT OVER THE APPLIED SURFACE. EQUIPMENT MUST NOT RUN OVER EXPOSED FABRIC. WHEN PLACING RIPRAP ON GEOTEXTILE, DO NOT EXCEED A ONE FOOT DROP HEIGHT.

TYPE	SIZE RANGE	D50	D100	AASHTO	MIDSIZE WEIGHT <sup>3</sup>
NUMBER 57 <sup>1</sup>	3/8 TO 1-1/2 INCH	1/2 IN	1-1/2 IN	M-43	N/A
NUMBER 1	2 TO 3 INCH	2-1/2 IN	3 IN	M-43	N/A
RIPRAP <sup>2</sup> (CLASS 0)	4 TO 7 INCH	5-1/2 IN	7 IN	N/A	N/A
CLASS I	N/A	9-1/2 IN	15 IN	N/A	40 LB
CLASS II	N/A	16 IN	24 IN	N/A	200 LB
CLASS III	N/A	23 IN	34 IN	N/A	600 LB

1. THIS CLASSIFICATION IS TO BE USED ON THE UPSTREAM FACE OF STONE OUTLETS AND CHECK DAMS.

2. THIS CLASSIFICATION IS TO BE USED FOR GABIONS.

3. OPTIMUM GRADATION IS 50 PERCENT OF THE STONE BEING ABOVE AND 50 PERCENT BELOW THE MIDSIZE.

STONE MUST BE COMPOSED OF A WELL GRADED MIXTURE OF STONE SIZED SO THAT FIFTY (50) PERCENT OF THE PIECES BY WEIGHT ARE LARGER THAN THE SIZE DETERMINED BY USING THE CHARTS. A WELL GRADED MIXTURE, AS USED HEREIN, IS DEFINED AS A MIXTURE COMPOSED PRIMARILY OF LARGER STONE SIZES BUT WITH A SUFFICIENT MIXTURE OF OTHER SIZES TO FILL THE SMALLER VOIDS BETWEEN THE STONES. THE DIAMETER OF THE LARGEST STONE IN SUCH A MIXTURE MUST NOT EXCEED THE RESPECTIVE D100 SELECTED FROM TABLE H.2. THE D50 REFERS TO THE MEDIAN DIAMETER OF THE STONE. THIS IS THE SIZE FOR WHICH 50 PERCENT, BY WEIGHT, WILL BE SMALLER AND 50 PERCENT WILL BE LARGER.

NOTE: RECYCLED CONCRETE EQUIVALENT MAY BE SUBSTITUTED FOR ALL STONE CLASSIFICATIONS FOR TEMPORARY CONTROL MEASURES ONLY. CONCRETE BROKEN INTO THE SIZES MEETING THE APPROPRIATE CLASSIFICATION, CONTAINING NO STEEL REINFORCEMENT, AND HAVING A MINIMUM DENSITY OF 150 POUNDS PER CUBIC FOOT MAY BE USED AS AN EQUIVALENT.

**SWM AS BUILT IS BUILT SKIPPED BY CLS1 ON 5/4/2021**

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

**THERE IS NO AS BUILT INFORMATION PROVIDED ON THIS SHEET.**

2. MULCHING

A. MULCH MATERIALS (IN ORDER OF PREFERENCE)

a. STRAW CONSISTING OF THOROUGHLY THRESHED WHEAT, RYE, OAT, OR BARLEY AND REASONABLY BRIGHT IN COLOR. STRAW IS TO BE FREE OF NOXIOUS WEED SEEDS AS SPECIFIED IN THE MARYLAND SEED LAW AND NOT MUSTY, MOLDY, CAKED, DECAYED, OR EXCESSIVELY DUSTY. NOTE: USE ONLY STERILE STRAW MULCH IN AREAS WHERE ONE SPECIES OF GRASS IS DESIRED.

b. WOOD CELLULOSE FIBER MULCH (WCFM) CONSISTING OF SPECIALLY PREPARED WOOD CELLULOSE PROCESSED INTO A UNIFORM FIBROUS PHYSICAL STATE.

i. WCFM IS TO BE DYED GREEN OR CONTAIN A GREEN DYE IN THE PACKAGE THAT WILL PROVIDE AN APPROPRIATE COLOR TO FACILITATE VISUAL INSPECTION OF THE UNIFORMLY SPREAD SLURRY.

ii. WCFM, INCLUDING DYE, MUST CONTAIN NO GERMINATION OR GROWTH INHIBITING FACTORS.

iii. WCFM MATERIALS ARE TO BE MANUFACTURED AND PROCESSED IN SUCH A MANNER THAT THE WOOD CELLULOSE FIBER MULCH WILL REMAIN IN UNIFORM SUSPENSION IN WATER UNDER AGITATION AND WILL BLEND WITH SEED, FERTILIZER AND OTHER ADDITIVES TO FORM A HOMOGENEOUS SLURRY. THE MULCH MATERIAL MUST FORM A BLOTTER-LIKE GROUND COVER ON APPLICATION, HAVING MOISTURE ABSORPTION AND PERCOLATION PROPERTIES AND MUST COVER AND HOLD GRASS SEED IN CONTACT WITH THE SOIL WITHOUT INHIBITING THE GROWTH OF THE GRASS SEEDLINGS.

iv. WCFM MATERIAL MUST NOT CONTAIN ELEMENTS OR COMPOUNDS AT CONCENTRATION LEVELS THAT WILL BE PHYTO-TOXIC.

v. WCFM MUST CONFORM TO THE FOLLOWING PHYSICAL REQUIREMENTS: FIBER LENGTH OF APPROXIMATELY 10 MILLIMETERS, DIAMETER APPROXIMATELY 1 MILLIMETER, PH RANGE OF 4.0 TO 8.5, ASH CONTENT OF 1.6 PERCENT MAXIMUM AND WATER HOLDING CAPACITY OF 90 PERCENT MINIMUM.

B. APPLICATION

a. APPLY MULCH TO ALL SEEDED AREAS IMMEDIATELY AFTER SEEDING.

b. WHEN STRAW MULCH IS USED, SPREAD IT OVER ALL SEEDED AREAS AT THE RATE OF 2 TONS PER ACRE TO A UNIFORM LOOSE DEPTH OF 1 TO 2 INCHES. APPLY MULCH TO ACHIEVE A UNIFORM DISTRIBUTION AND DEPTH SO THAT THE SOIL SURFACE IS NOT EXPOSED. WHEN USING A MULCH ANCHORING TOOL, INCREASE THE APPLICATION RATE TO 2.5 TONS PER ACRE.

c. WOOD CELLULOSE FIBER USED AS MULCH MUST BE APPLIED AT A NET DRY WEIGHT OF 1500 POUNDS PER ACRE. MIX THE WOOD CELLULOSE FIBER WITH WATER TO ATTAIN A MIXTURE WITH A MAXIMUM OF 50 POUNDS OF WOOD CELLULOSE FIBER PER 100 GALLONS OF WATER.

C. ANCHORING

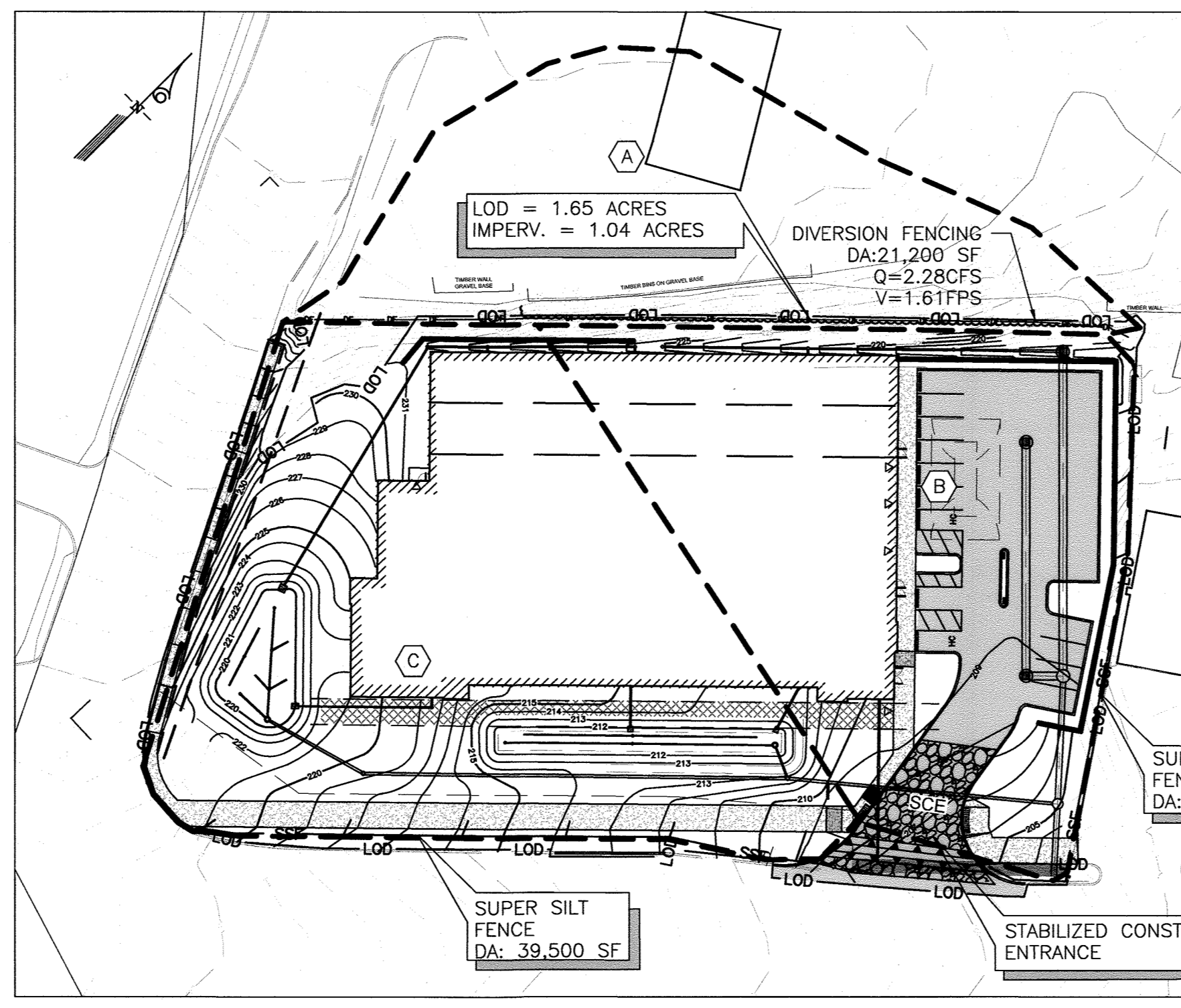
a. PERFORM MULCH ANCHORING IMMEDIATELY FOLLOWING APPLICATION OF MULCH TO MINIMIZE LOSS BY WIND OR WATER. THIS MAY BE DONE BY ONE OF THE FOLLOWING METHODS (LISTED BY PREFERENCE), DEPENDING UPON THE SIZE OF THE AREA AND EROSION HAZARD:

i. A MULCH ANCHORING TOOL IS A TRACTOR DRAWN IMPLEMENT DESIGNED TO PUNCH AND ANCHOR MULCH INTO THE SOIL SURFACE A MINIMUM OF 2 INCHES. THIS PRACTICE IS MOST EFFECTIVE ON LARGE AREAS, BUT IS LIMITED TO FLATTER SLOPES WHERE EQUIPMENT CAN OPERATE SAFELY. IF USED ON SLOPING LAND, THIS PRACTICE SHOULD FOLLOW THE CONTOUR.

ii. WOOD CELLULOSE FIBER MAY BE USED FOR ANCHORING STRAW. APPLY THE FIBER BINDER AT A NET DRY WEIGHT OF 750 POUNDS PER ACRE. MIX THE WOOD CELLULOSE FIBER WITH WATER AT A MAXIMUM OF 50 POUNDS OF WOOD CELLULOSE FIBER PER 100 GALLONS OF WATER.

iii. SYNTHETIC BINDERS SUCH AS ACRYLIC DLR (AGRO-TACK), DCA-70, PETROSET, TERRA TACK II, TERRA TACK AR OR OTHER APPROVED EQUAL MAY BE USED. FOLLOW APPLICATION RATES AS SPECIFIED BY THE MANUFACTURER. APPLICATION OF LIQUID BINDERS NEEDS TO BE HEAVIER AT THE EDGES WHERE WIND CATCHES MULCH, SUCH AS IN VALLEYS AND ON CRESTS OF BANKS. USE OF ASPHALT BINDERS IS STRICTLY PROHIBITED.

iv. LIGHTWEIGHT PLASTIC NETTING MAY BE STAPLED OVER THE MULCH ACCORDING TO MANUFACTURER RECOMMENDATIONS. NETTING IS USUALLY AVAILABLE IN ROLLS 4 TO 15 FEET WIDE AND 300 TO 3,000 FEET LONG.



REVIEWED BY HOWARD SCD AND MEETS TECHNICAL REQUIREMENTS  
THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.

*Howard SCD* 11/2/20

HOWARD SOIL CONSERVATION DISTRICT DATE

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

*Patrick Dougal* 11-4-19

DEVELOPER DATE

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

*Patrick Dougal* 11/2/20

ENGINEER DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
CHIEF DIVISION OF LAND DEVELOPMENT 2/4/20  
DATE

*Patrick Dougal* 1-24-20  
DATE

CHIEF, DEVELOPMENT ENGINEERING DIVISION  
DATE

*Patrick Dougal* 2/4/20  
DATE

DIRECTOR

PROPERTY	TEST METHOD	MINIMUM AVERAGE ROLL VALUE <sup>1</sup>					
		WOVEN SILT FILM GEOTEXTILE		WOVEN MONOFILAMENT GEOTEXTILE		NONWOVEN GEOTEXTILE	
		MD	CD	MD	CD	MD	CD
GRAB TENSILE STRENGTH	ASTM D-4632	200 LB	200 LB	370 LB	250 LB	200 LB	200 LB
GRAB TENSILE ELONGATION	ASTM D-4632	15%	10%	15%	15%	50%	50%
TRAPEZOIDAL TEAR STRENGTH	ASTM D-4533	75 LB	75 LB	100 LB	60 LB	80 LB	80 LB
PUNCTURE STRENGTH	ASTM D-6241	450 LB		900 LB		450 LB	
APPARENT OPENING SIZE <sup>2</sup>	ASTM D-4751	U.S. SIEVE 30 (0.59 mm)		U.S. SIEVE 70 (0.21 mm)		U.S. SIEVE 70 (0.21 mm)	
PERMITTIVITY	ASTM D-4491	0.05 SEC <sup>-1</sup>		0.28 SEC <sup>-1</sup>		1.1 SEC <sup>-1</sup>	
ULTRAVIOLET RESISTANCE RETAINED AT 500 HOURS	ASTM D-4355	70% STRENGTH		70% STRENGTH			

REVISIONS

NO.	DATE	BY

OWNER/DEVELOPER:  
PATRICK DOUGAL DOUGAL & ASSOCIATES  
5695 MAIN STREET  
ELK RIDGE, MD 21075  
(410)-379-6444

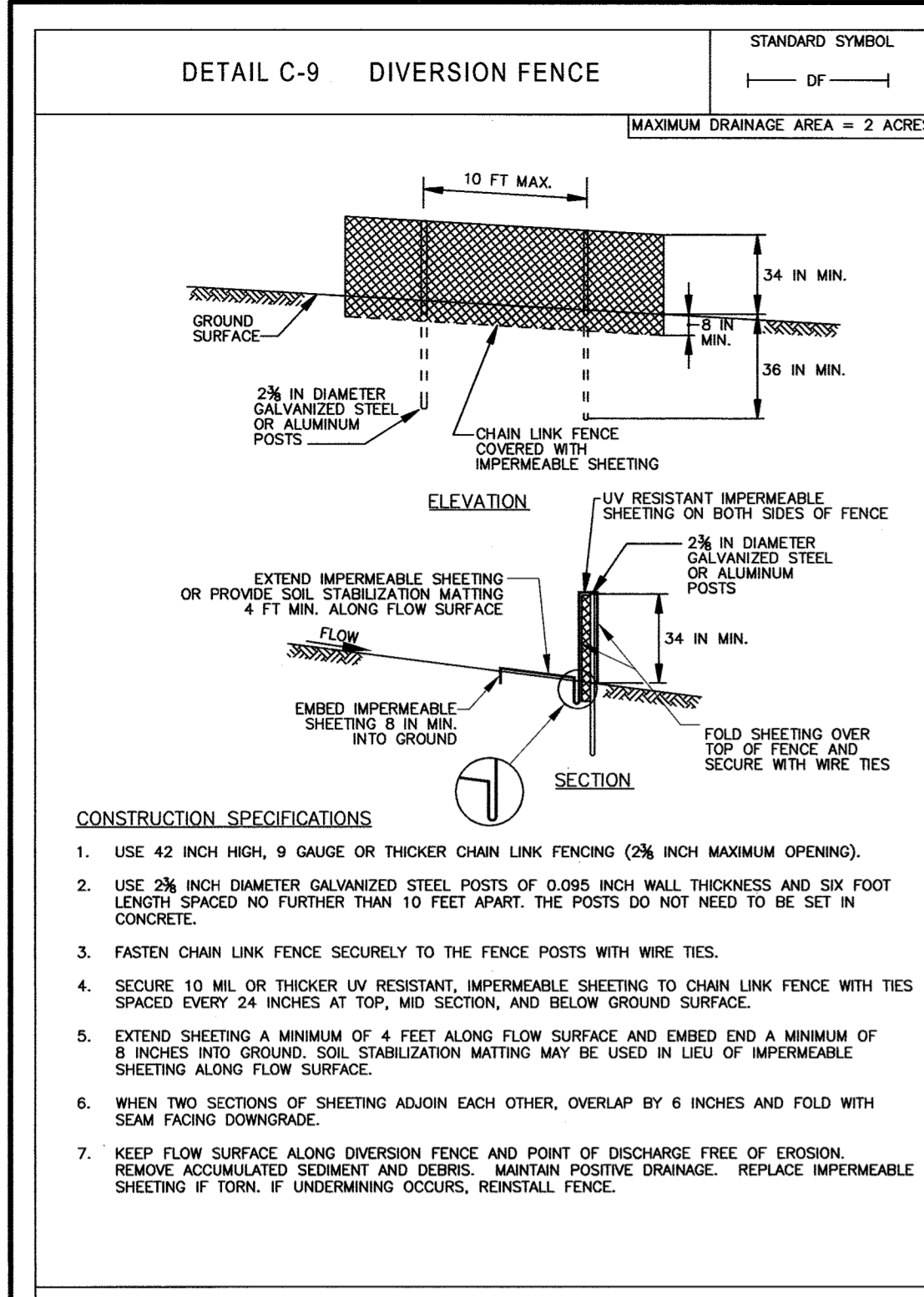
CUBESMART STORAGE  
6300 WASHINGTON BLVD. ELK RIDGE, MD  
SEDIMENT & EROSION CONTROL  
NOTES & DETAILS

TAX MAP: 38 GRID: 08 PARCEL: 32  
ZONED: M-1  
ELECTION DISTRICT NO. 01 - HOWARD COUNTY MARYLAND

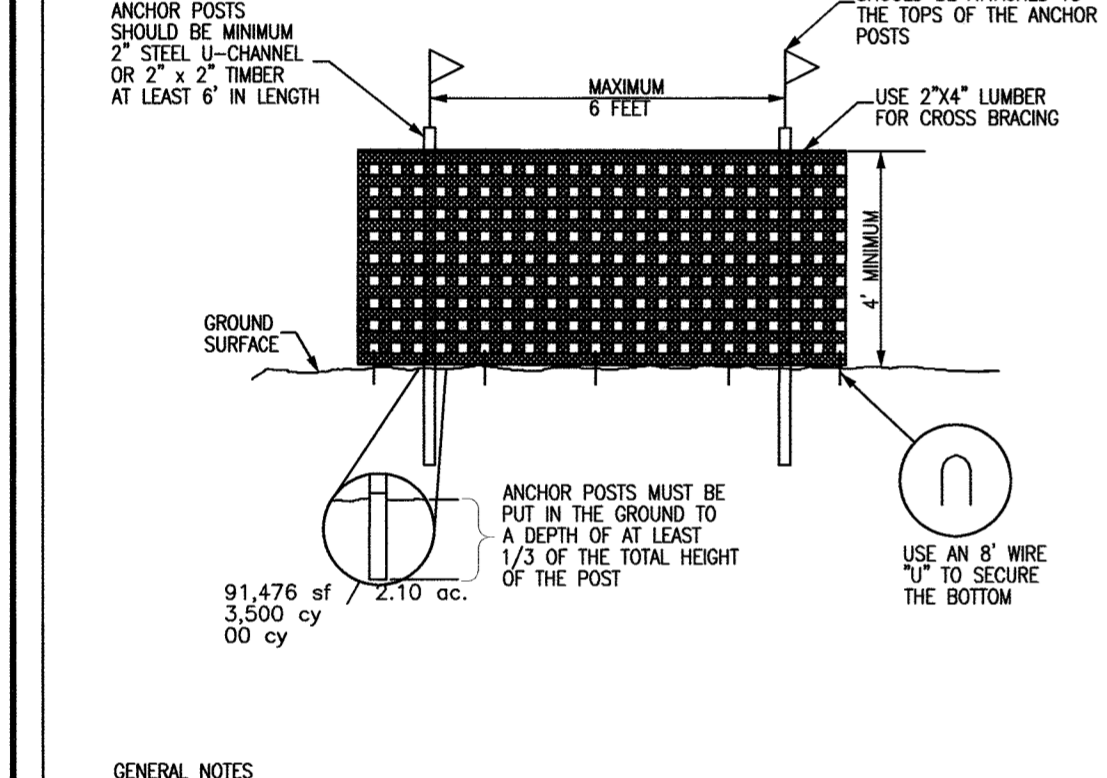
DESIGN NAB DATE 9/03/19 KCI PROJECT NO. 271700283 SHEET NO.  
DRAWN BRA SCALE SHEET NO. 14 OF 30 **C-3.02**

PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME AND THAT I AM DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 33772 EXP. DATE: 06/16/2021



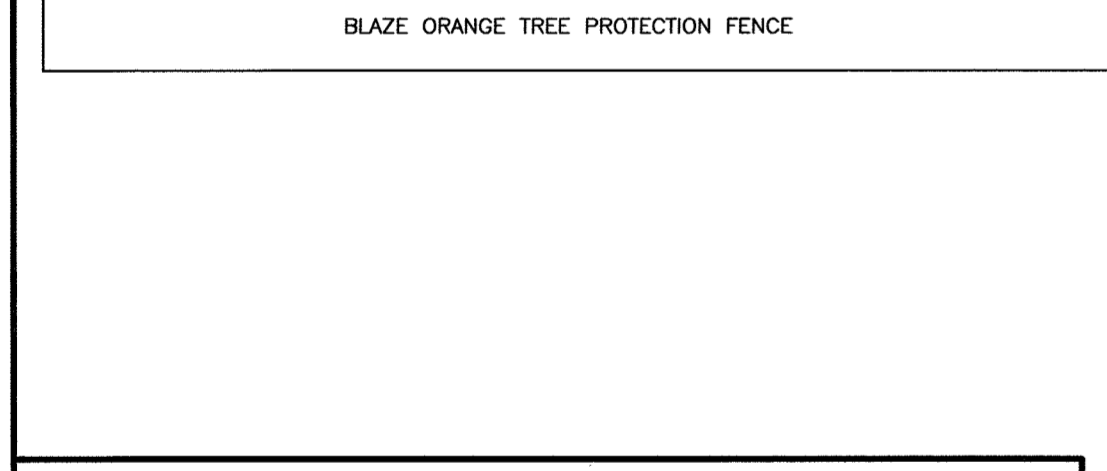


MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL	
U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011
MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION	



**GENERAL NOTES**

- LIMITS OF DISTURBANCE WILL BE SET AS PART OF THE REVIEW PROCESS FOR AN APPROVED TOP.
- THE BOUNDARIES OF THE LIMITS OF DISTURBANCE SHOULD BE STAKED OR FLAGGED PRIOR TO ERECTING THE PROTECTION DEVICE.
- ANCHOR POSTS SHOULD BE PLACED TO AVOID SEVERING OR DAMAGING LARGE TREE ROOTS.
- FENCING MATERIAL SHOULD BE FASTENED SECURELY TO THE ANCHOR POSTS, CROSS BRACING AND GROUND.

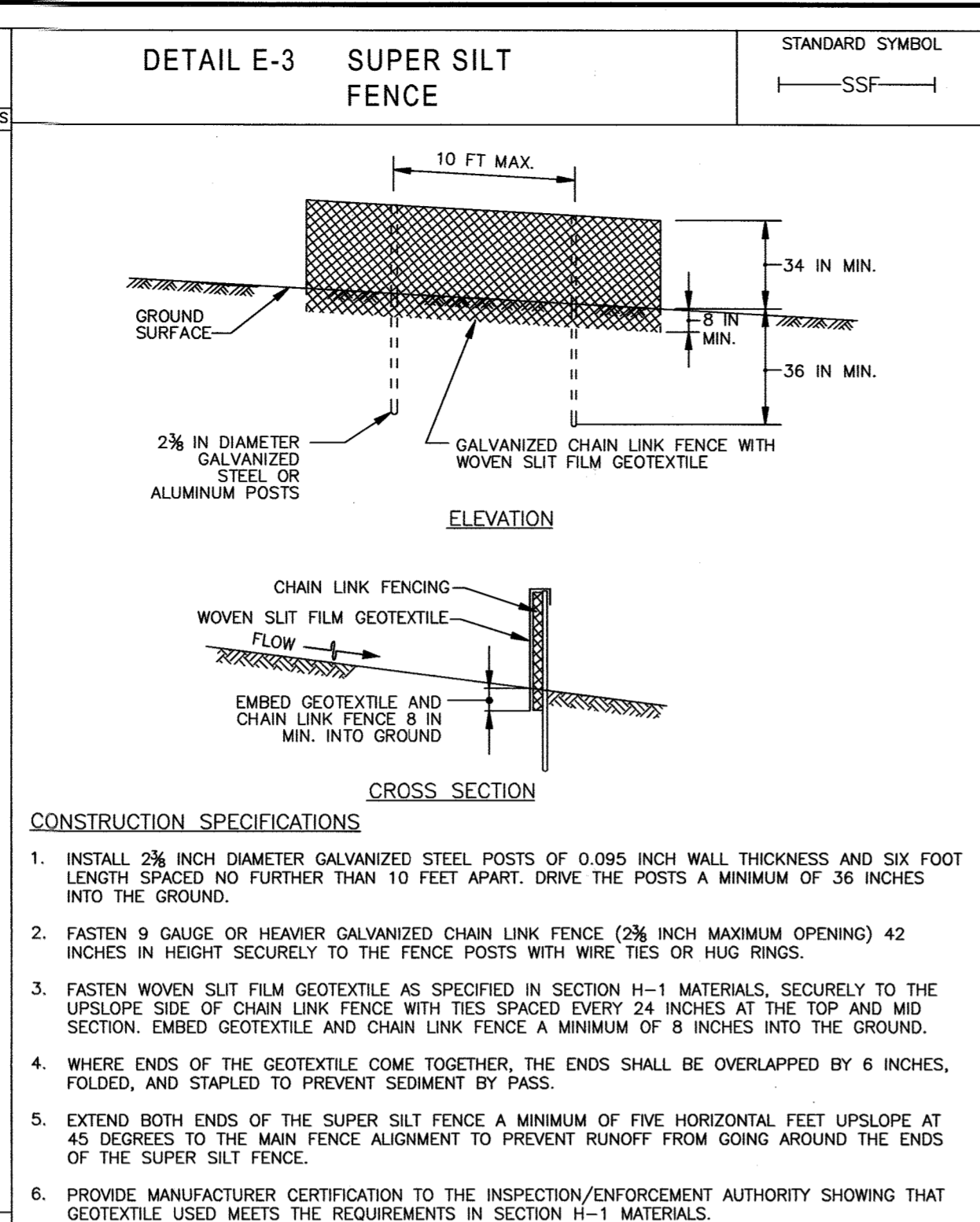


**REVIEWED BY HOWARD SCD AND MEETS TECHNICAL REQUIREMENTS**  
THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.  
*Howard SCD*  
HOWARD SOIL CONSERVATION DISTRICT  
DATE: 1/2/20

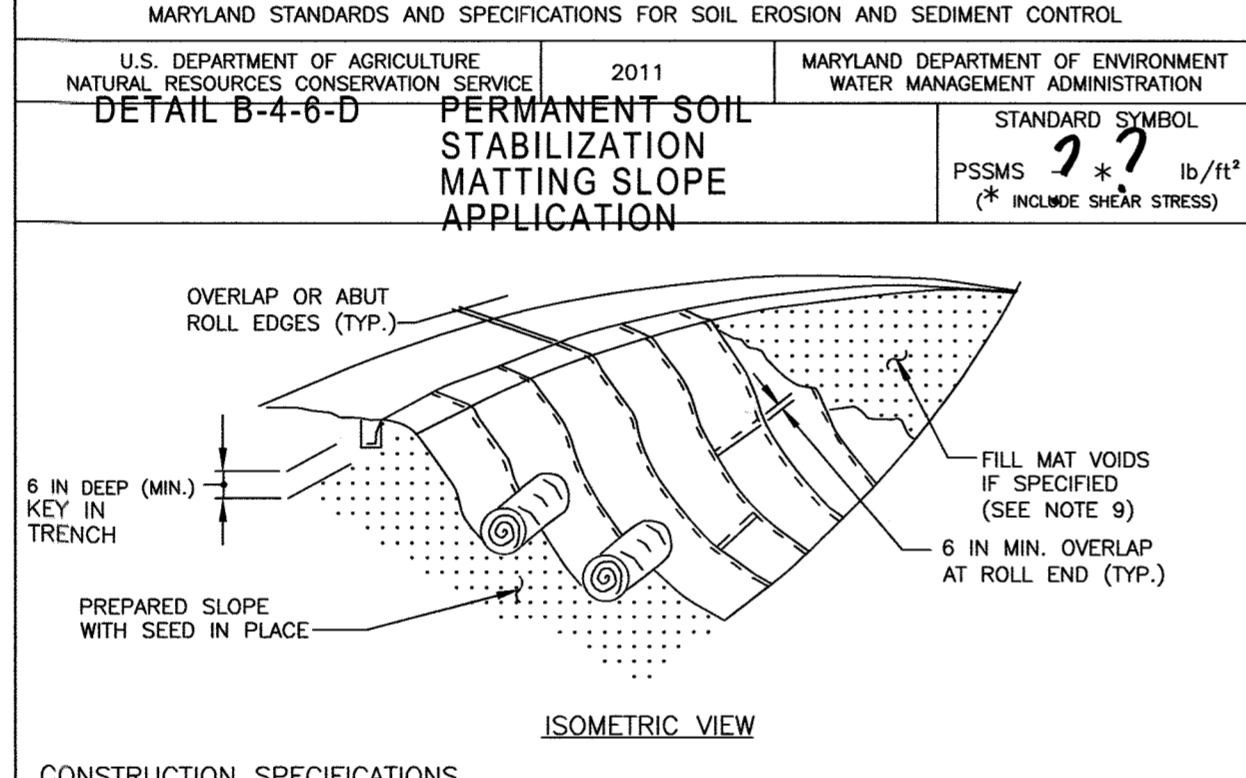
**DEVELOPER'S CERTIFICATE**  
I/WE CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN OF DEVELOPMENT FOR SEDIMENT AND EROSION CONTROL, AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT.  
*Patrick Dougal*  
DEVELOPER  
DATE: 11-1-19

**ENGINEER'S CERTIFICATE**  
I HEREBY CERTIFY THAT THIS PLAN FOR SEDIMENT AND EROSION CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IS WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.  
*Patrick Dougal*  
ENGINEER  
DATE: 10/24/19

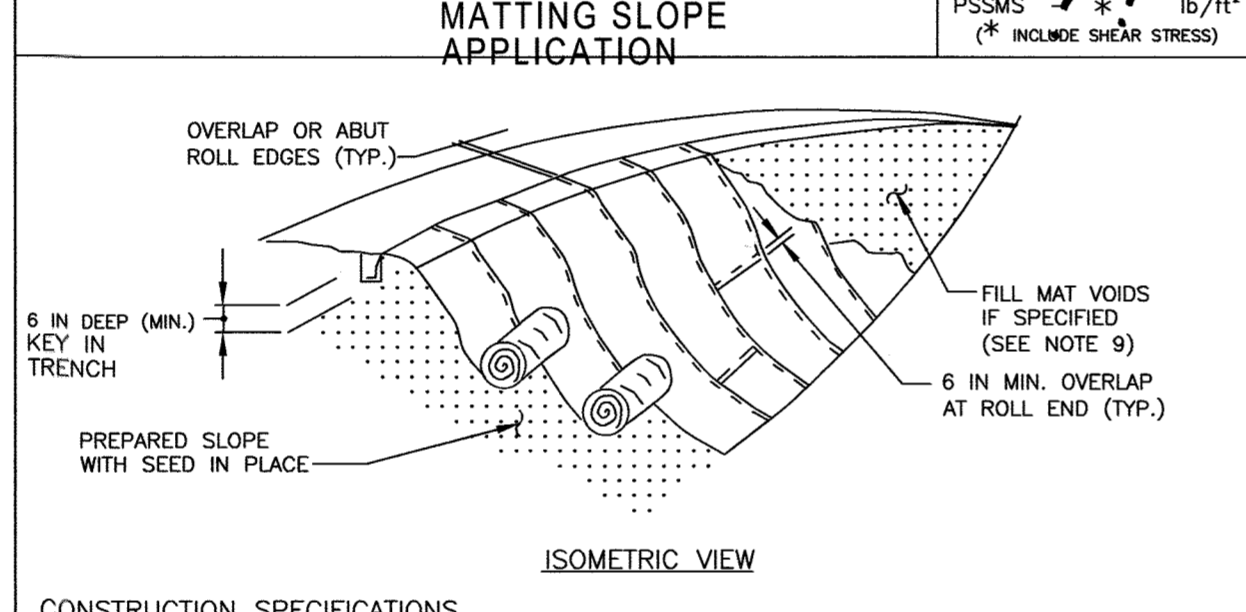
**APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING**  
CHIEF DIVISION OF LAND DEVELOPMENT  
*Patrick Dougal*  
DATE: 2/4/20  
CHIEF, DEVELOPMENT ENGINEERING DIVISION  
*Patrick Dougal*  
DATE: 2/4/20  
DIRECTOR



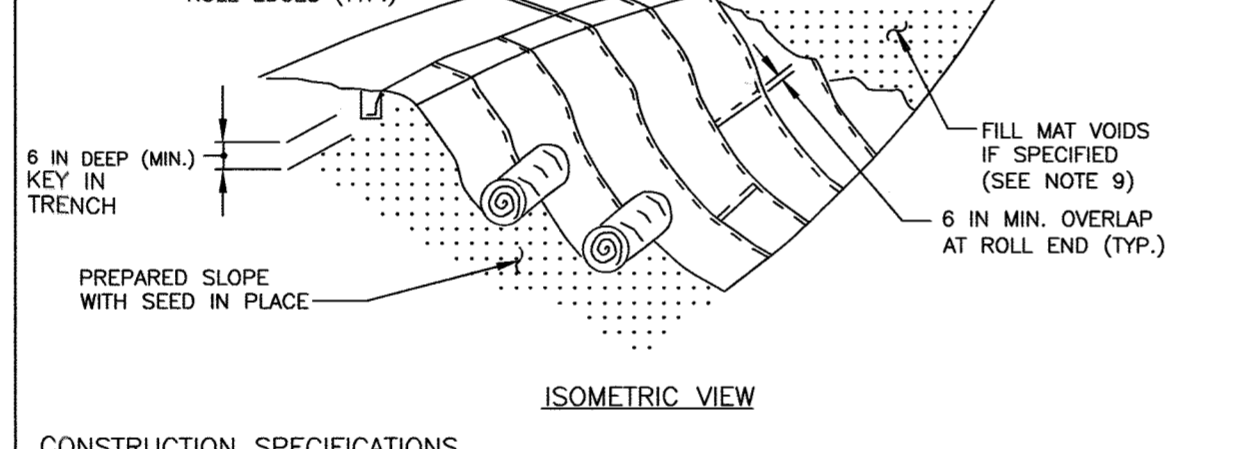
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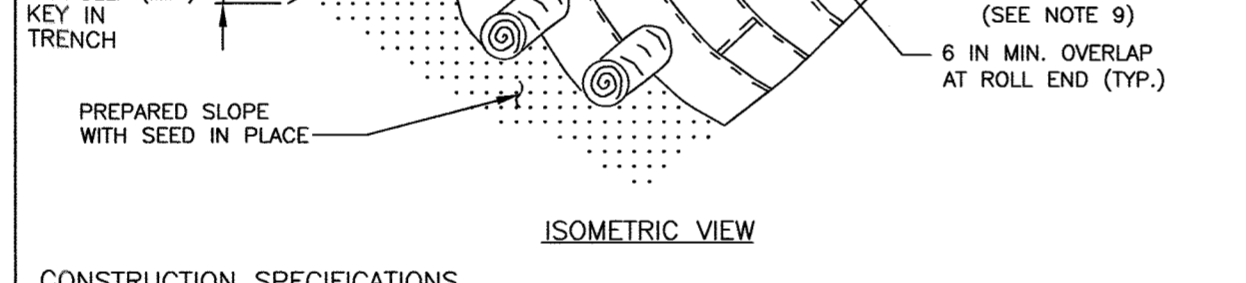
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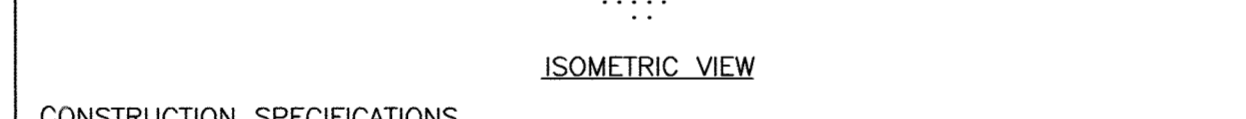
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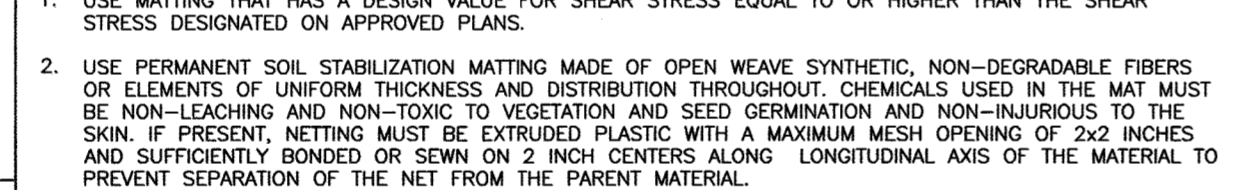
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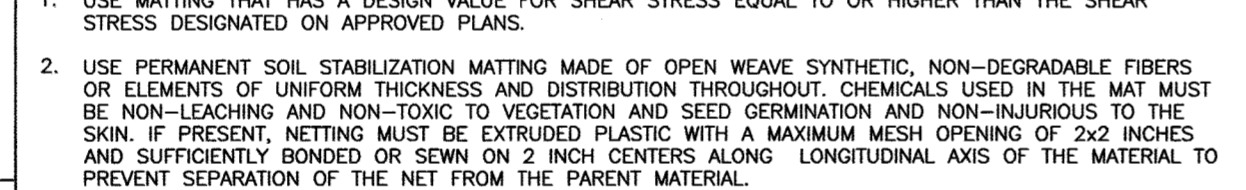
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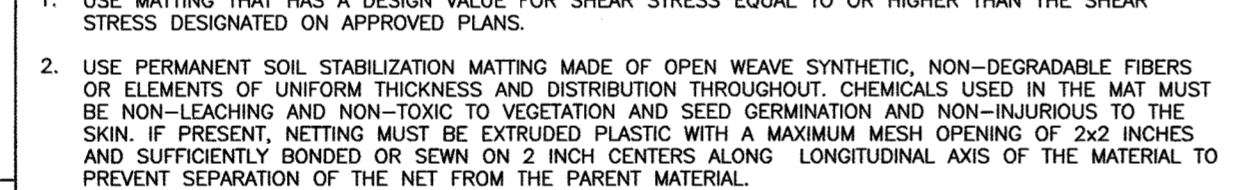
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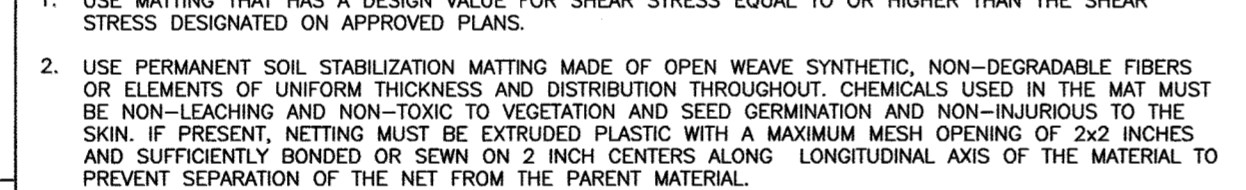
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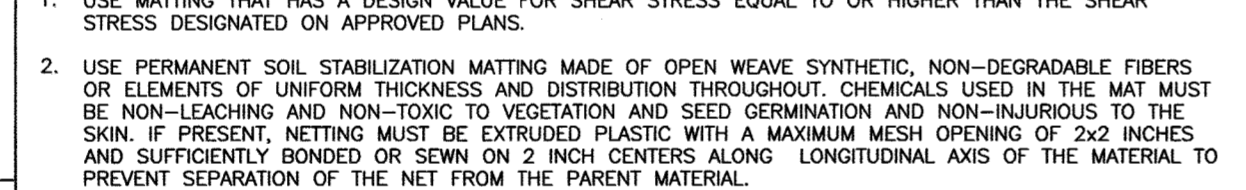
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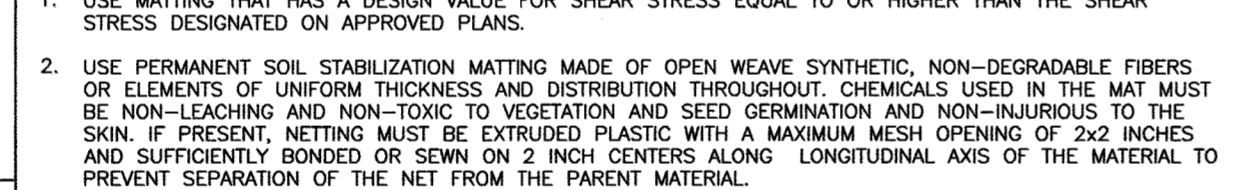
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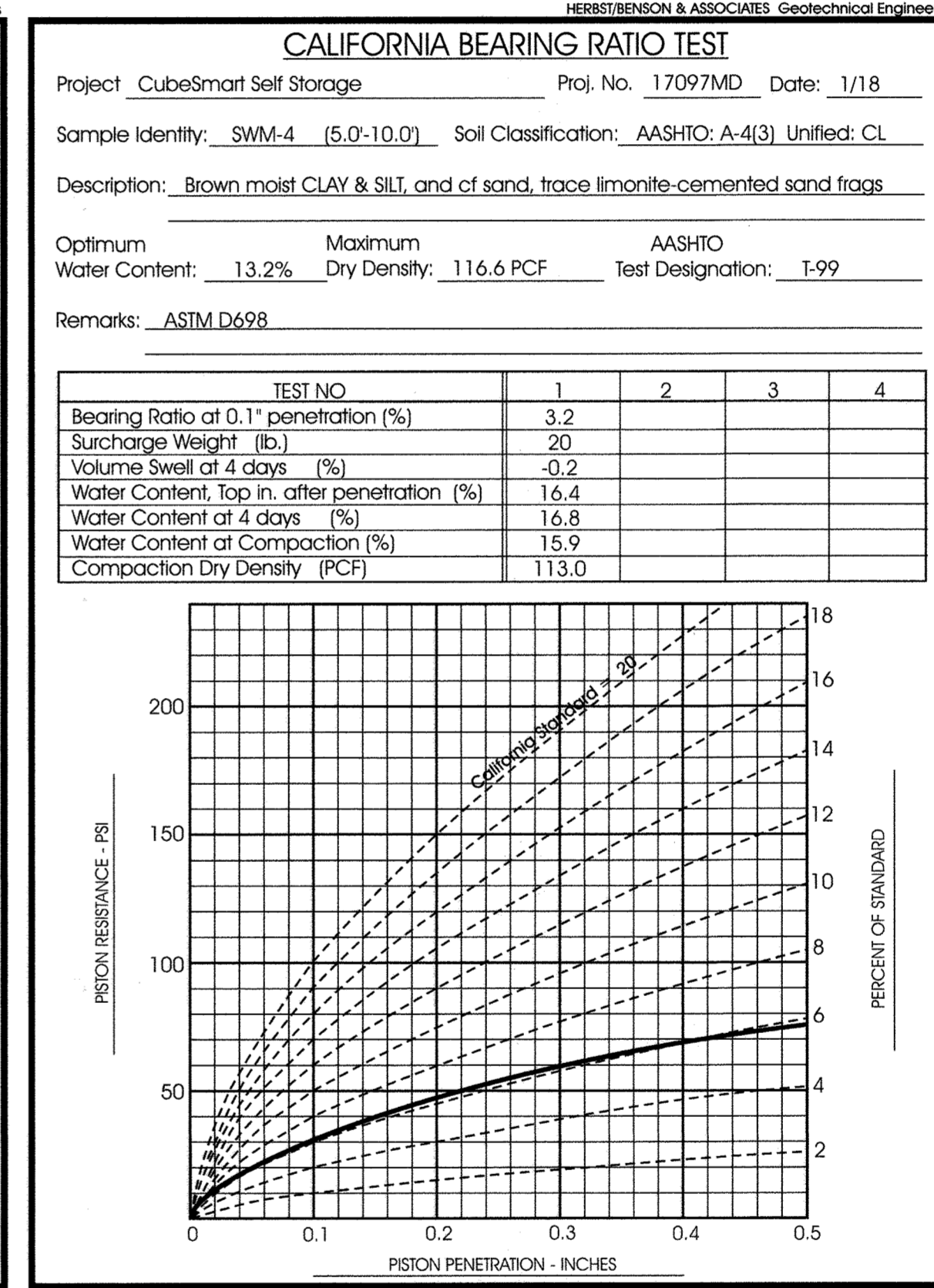
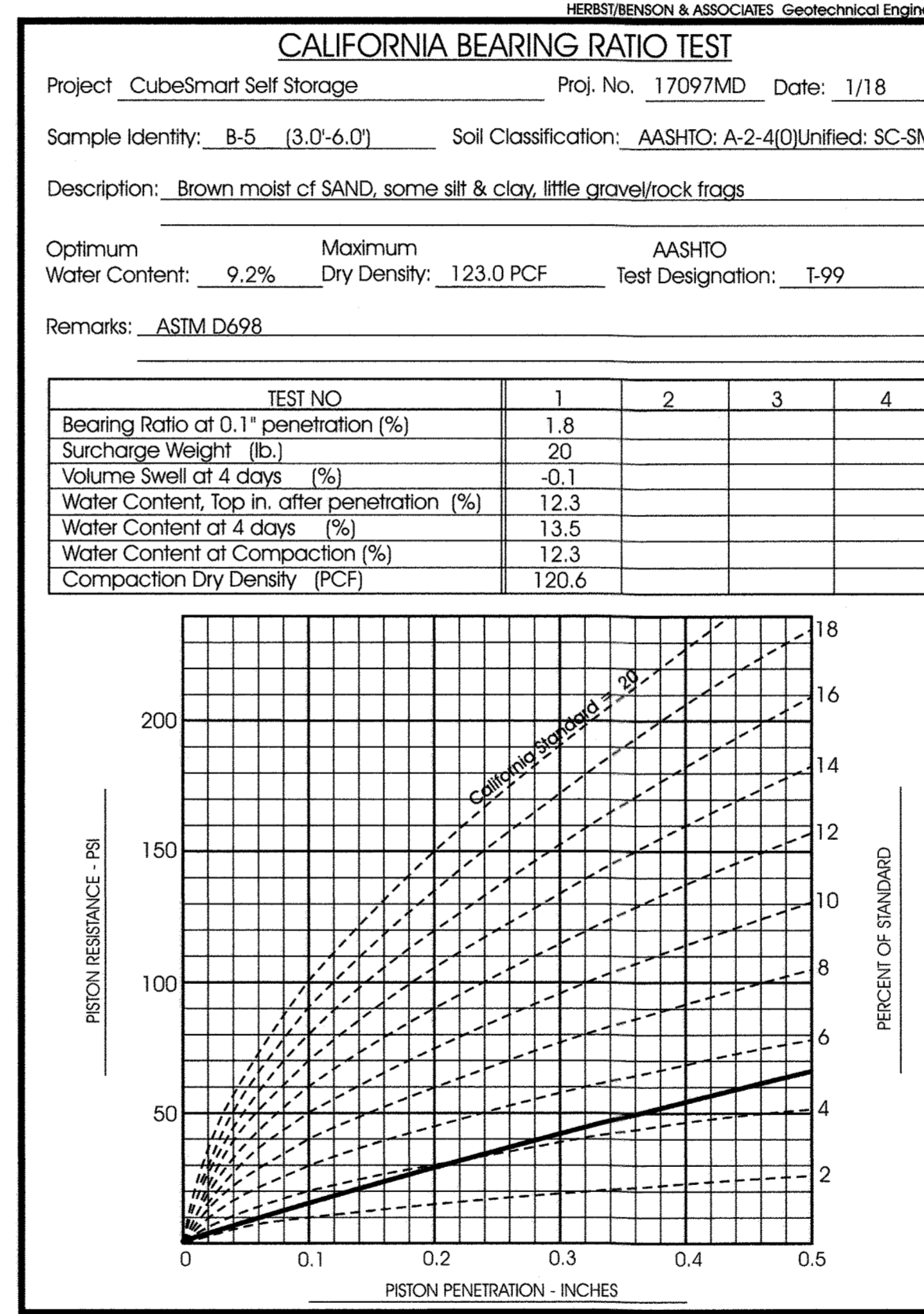
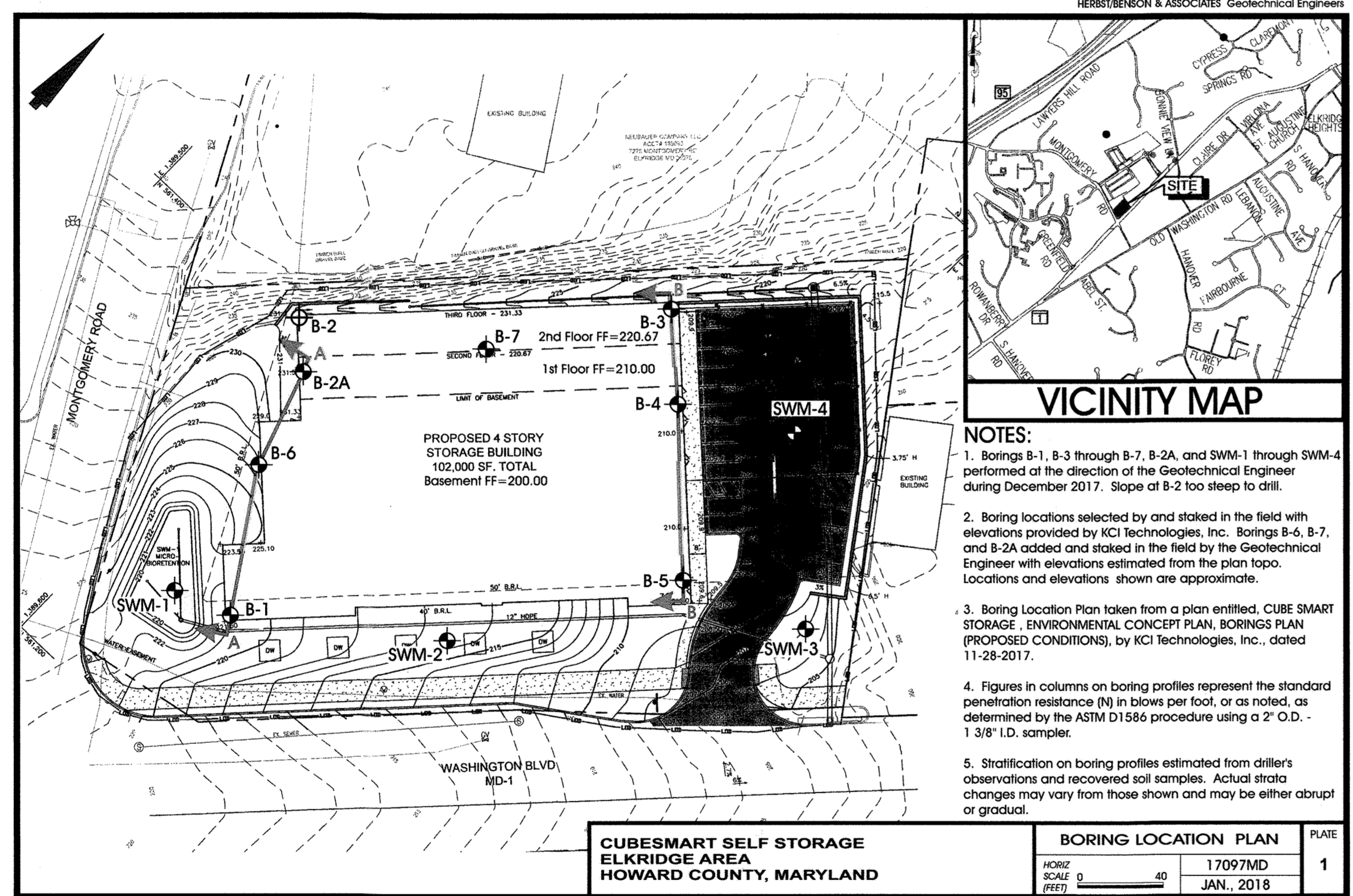
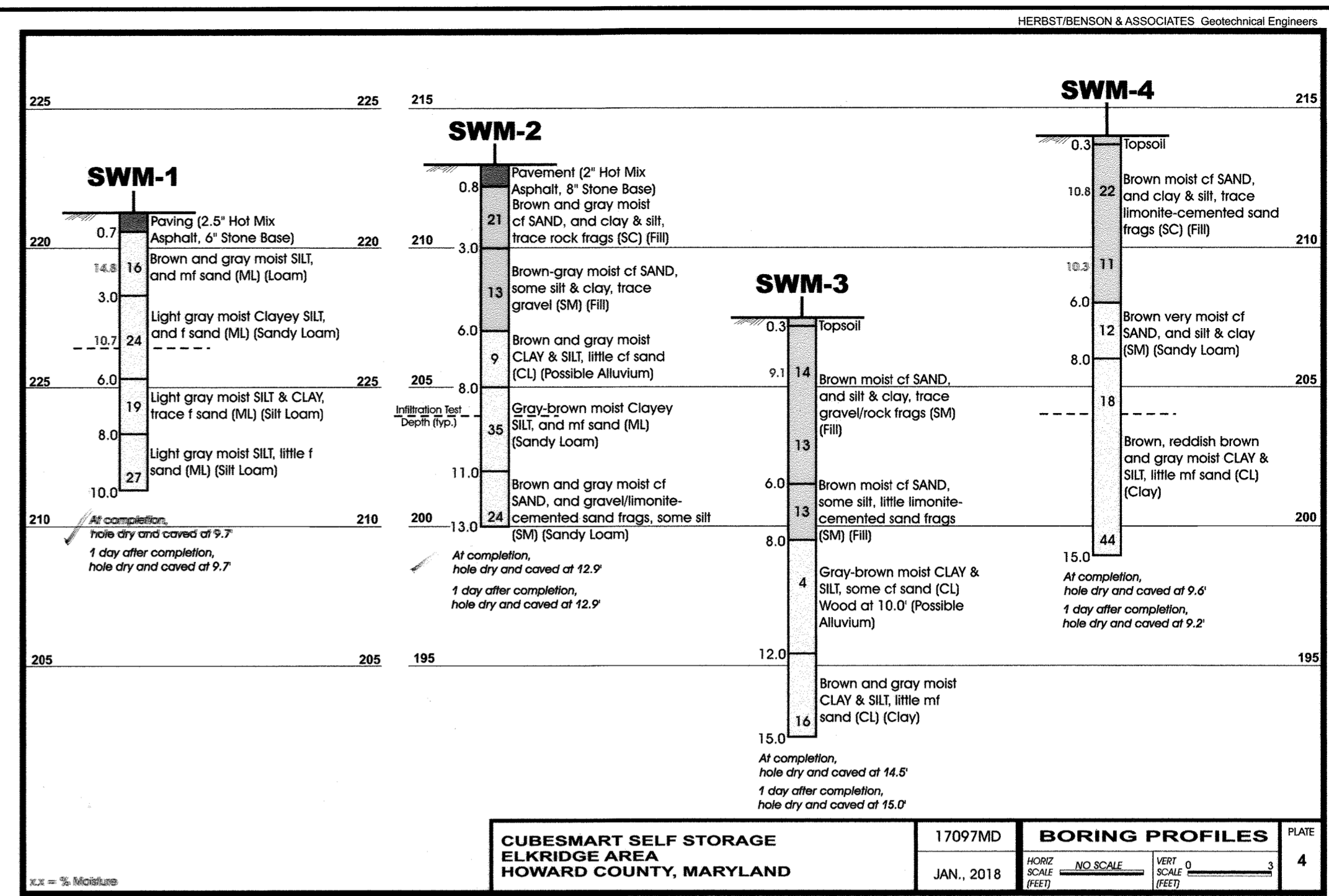
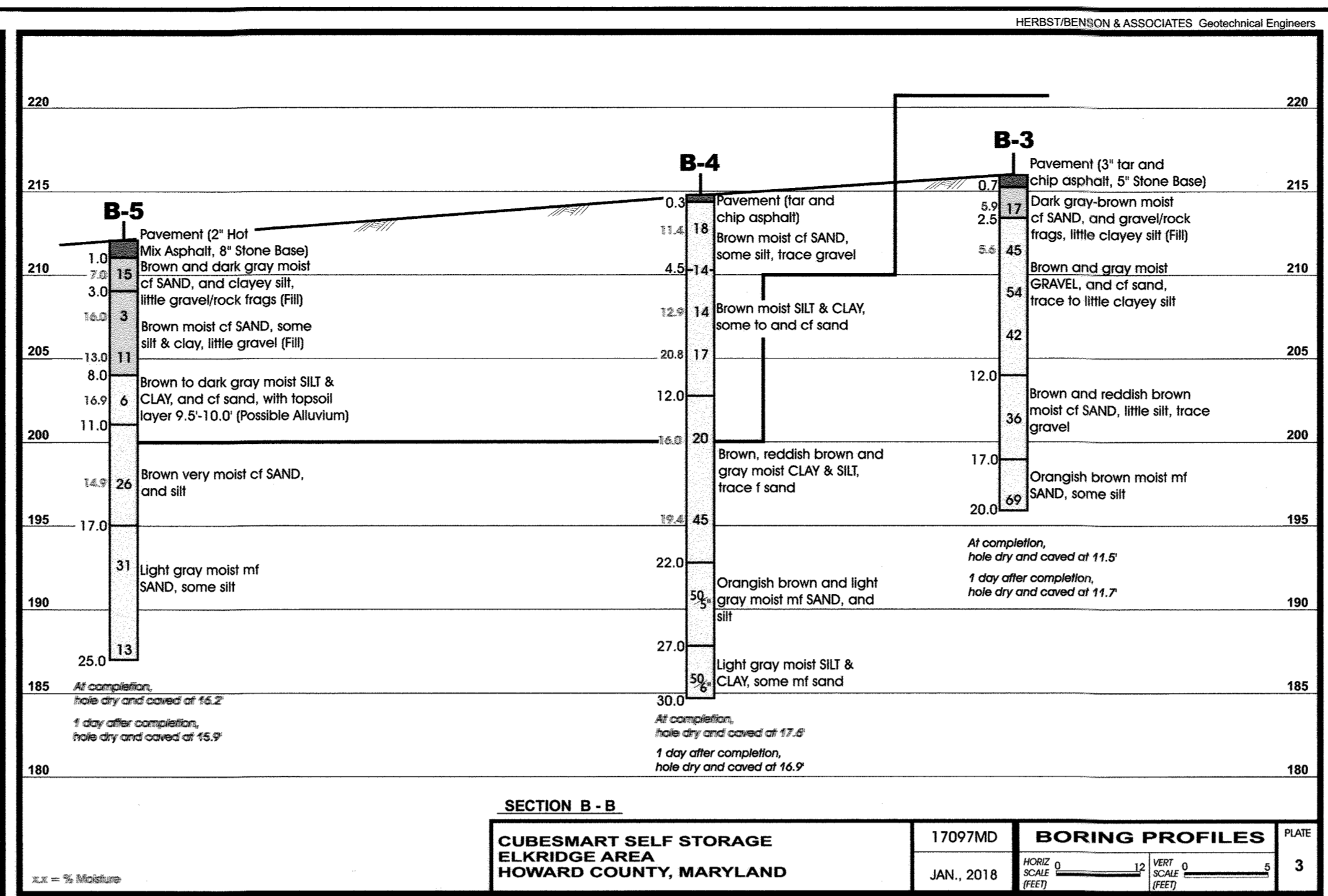
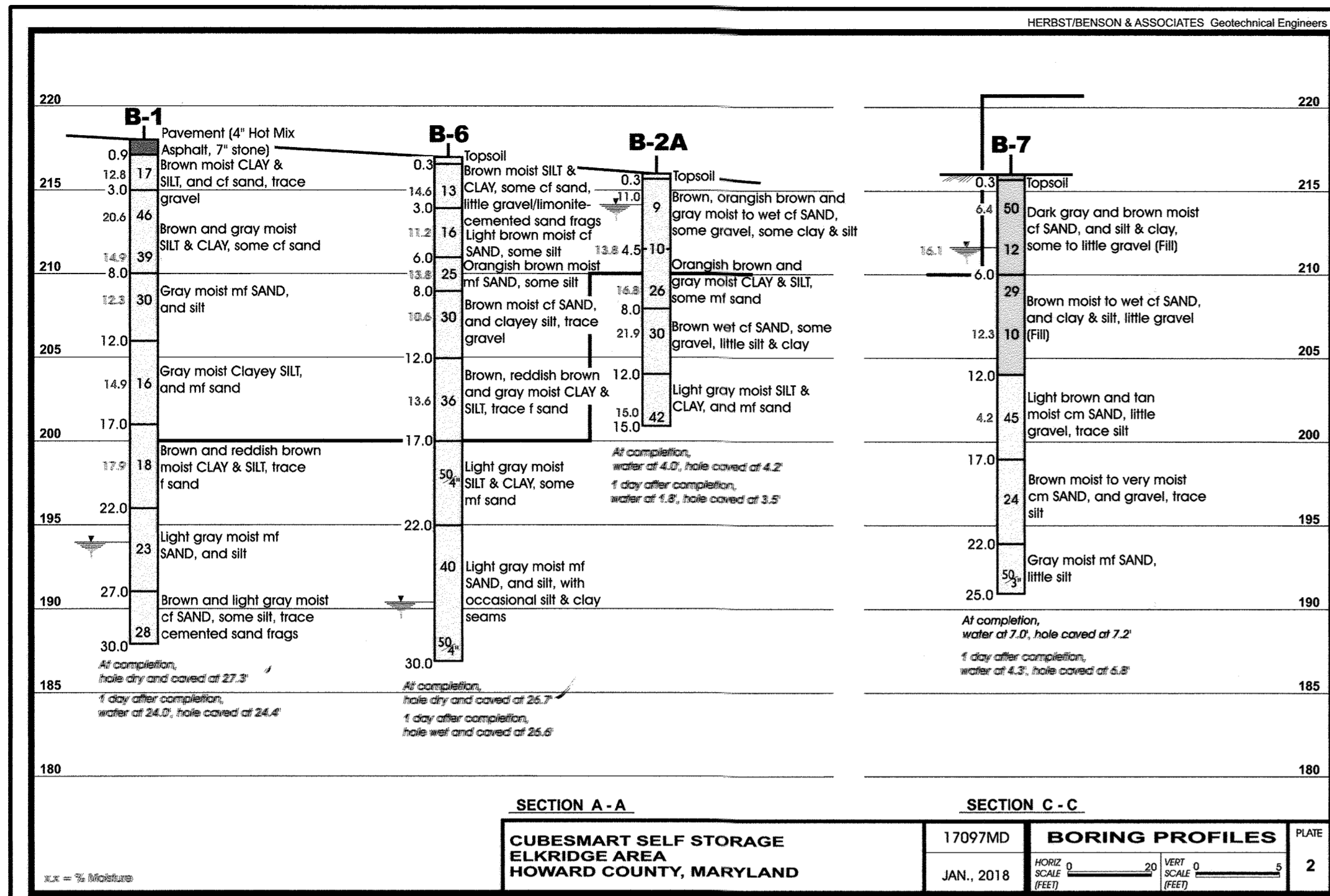
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MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL	
U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE	2011
MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION	







APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

*[Signature]* 2/4/20  
 CHIEF, DIVISION OF LAND DEVELOPMENT  
 DATE

*[Signature]* 1-24-20  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION  
 DATE

*[Signature]* 2/6/20  
 DIRECTOR  
 DATE

*SWM AS BUILT AS BUILT SURVEY BY CLSI ON 5/1/2021*

*THERE IS NO AS BUILT INFORMATION PROVIDED ON THIS SHEET.*

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

License No. 28132 Expiration Date: 05/31/2028



REVISIONS		
NO.	DATE	BY

OWNER/DEVELOPER:  
 PATRICK DOUGAL DOUGAL & ASSOCIATES  
 5695 MAIN STREET  
 ELK RIDGE, MD 21075  
 (410)-379-6444

**CUBESMART STORAGE**  
 6300 WASHINGTON BLVD. ELK RIDGE, MD

**SOIL BORING LOGS**

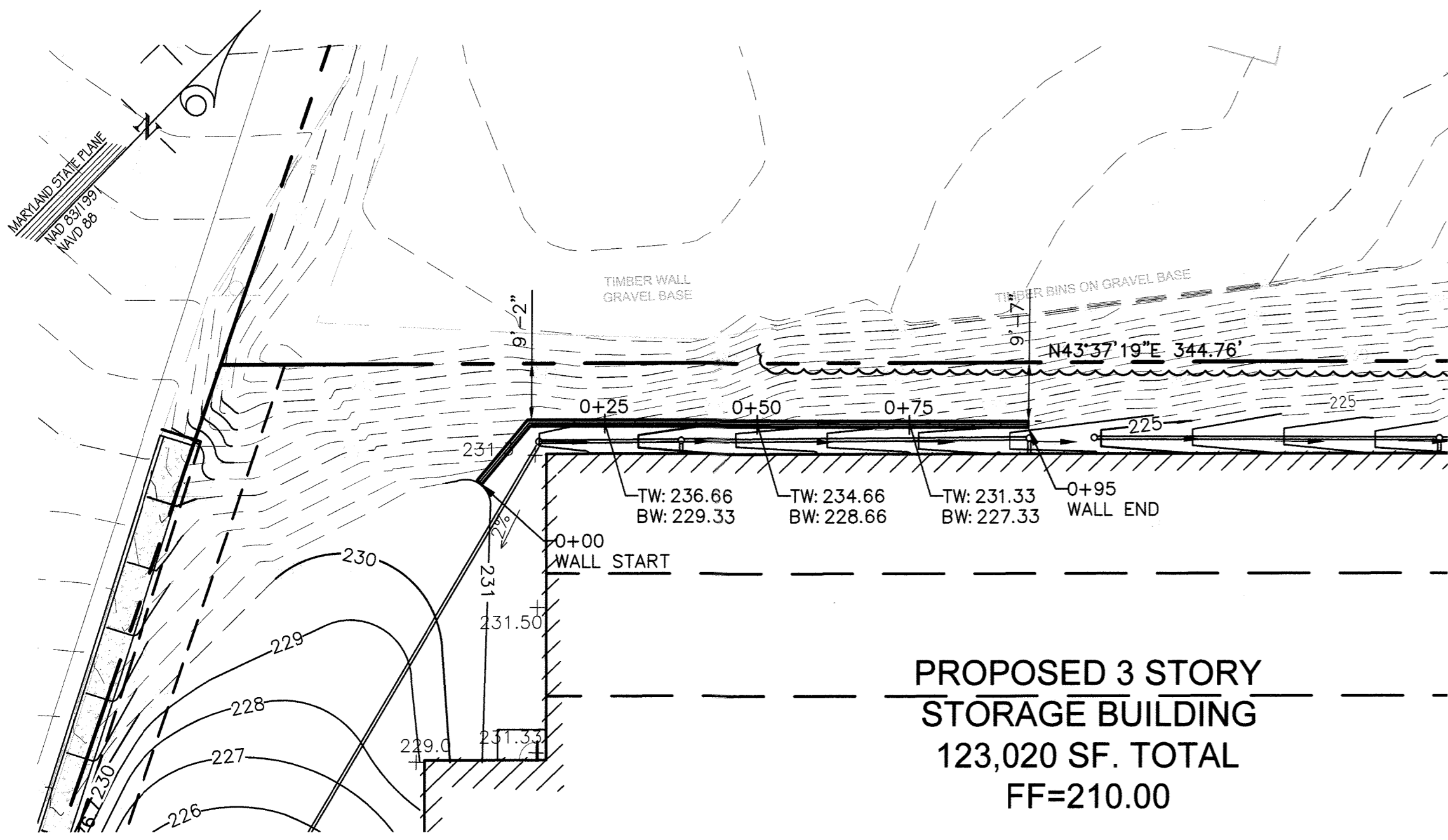
TAX MAP: 38 GRID: 08 PARCEL: 32  
 ZONED: M-1  
 ELECTION DISTRICT NO. 01 - HOWARD COUNTY MARYLAND

DESIGN: NAB DATE: 9/03/19  
 DRAWN: BRA SCALE: SHEET NO. 16 OF 30

KCI PROJECT NO. 271700283  
 SHEET NO. **C-3.04**

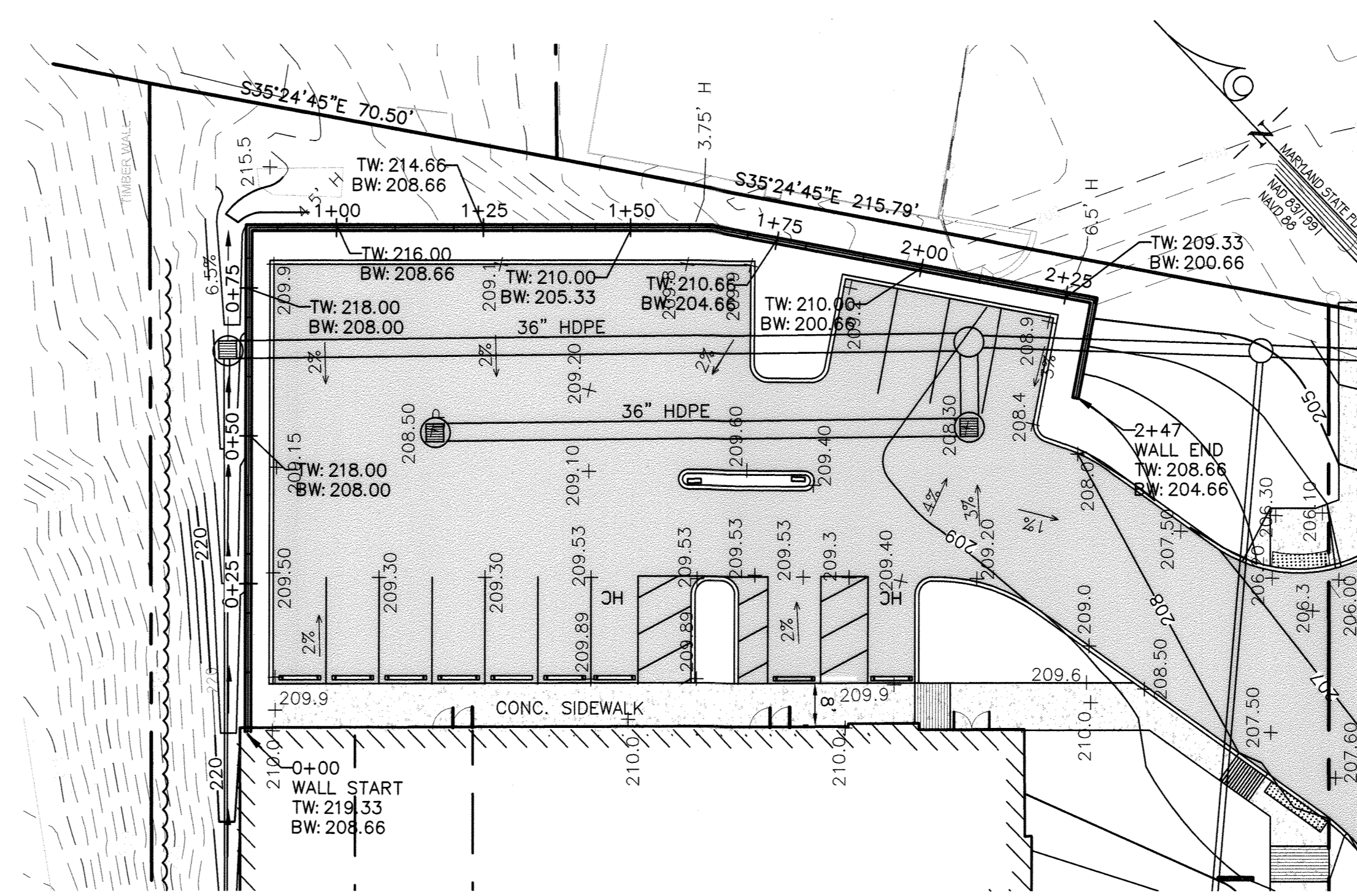
PROFESSIONAL CERTIFICATION: I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME AND THAT I AM DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 33772 EXP. DATE: 06/16/2021





PROPOSED 3 STORY  
STORAGE BUILDING  
123,020 SF. TOTAL  
FF=210.00

RETAINING WALL 'A'  
SITE PLAN  
SCALE: 1"=20'



RETAINING WALL 'B'  
SITE PLAN  
SCALE: 1"=20'

*SWM AS BUILT  
AS BUILT SURVEY BY  
CLS1 ON 5/4/2021*

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

License No. 22132, Expiration Date: 05 JUN 2022



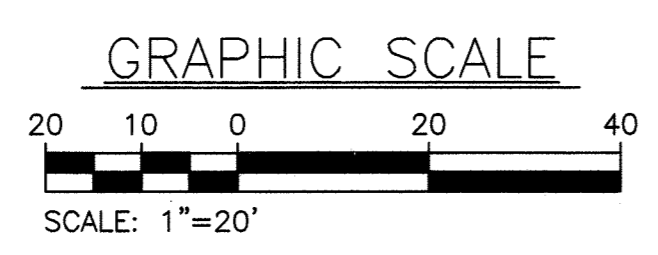
*THERE IS NO ASBUILT INFORMATION PROVIDED ON THIS SHEET.*

**KCI TECHNOLOGIES**  
ENGINEERS  
PLANNERS  
SCIENTISTS  
CONSTRUCTION MANAGERS  
11830 WEST MARKET PLACE  
SUITE F  
FULTON, MD 20759  
TELEPHONE: (410) 792-8086  
FAX: (410) 792-7419

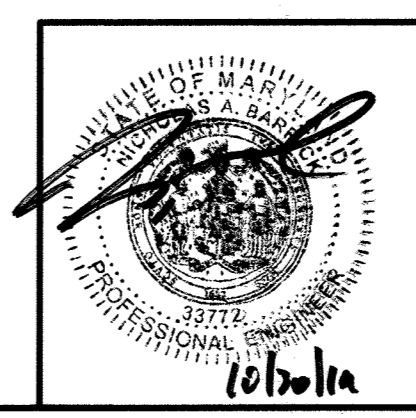
REVISIONS		
NO.	DATE	BY

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
 [Signature]  
 CHIEF DIVISION OF LAND DEVELOPMENT  
 [Signature]  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION  
 [Signature]  
 DIRECTOR

DATE: 2/4/20  
 DATE: 1-24-20  
 DATE: 2/4/20



PROFESSIONAL CERTIFICATION, I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME AND THAT I AM DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 33772 EXP. DATE: 06/16/2021



OWNER/DEVELOPER:  
PATRICK DOUGAL  
DOUGAL & ASSOCIATES  
5695 MAIN STREET  
ELKRIDGE, MD 21075  
(410)-379-6444

**CUBESMART STORAGE**  
6300 WASHINGTON BLVD. ELKRIDGE, MD  
**RETAINING WALL SITE PLANS**

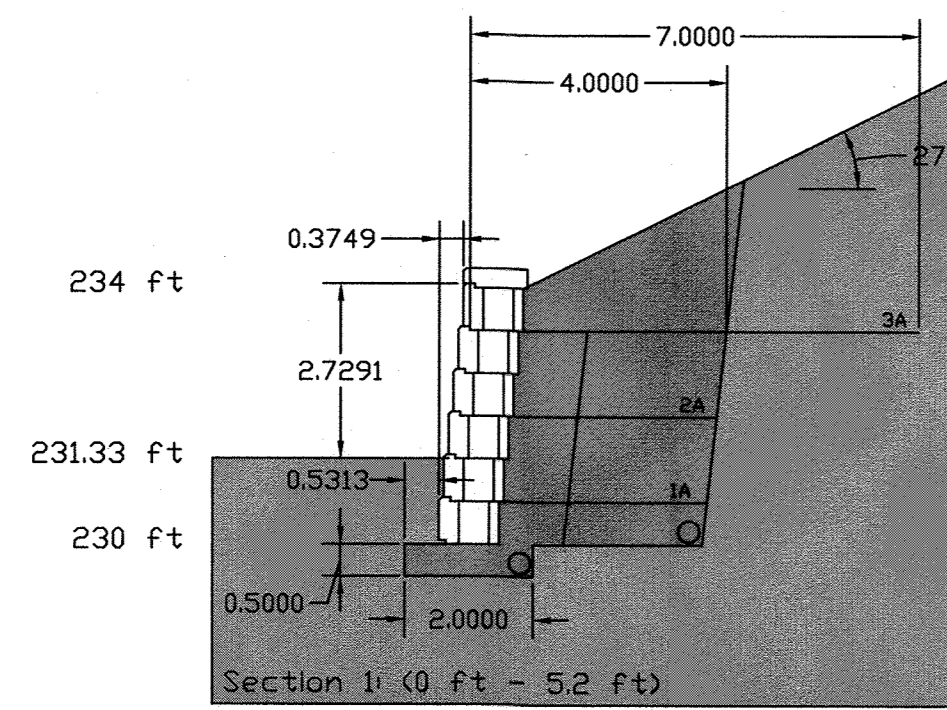
TAX MAP: 38 GRID: 08 PARCEL: 32  
ZONED: M-1  
ELECTION DISTRICT NO. 01 - HOWARD COUNTY MARYLAND

DESIGN NAB DATE 9/03/19 KCI PROJECT NO. 271700283 SHEET NO. 4.00  
DRAWN BRA SCALE SHEET NO. 17 OF 30

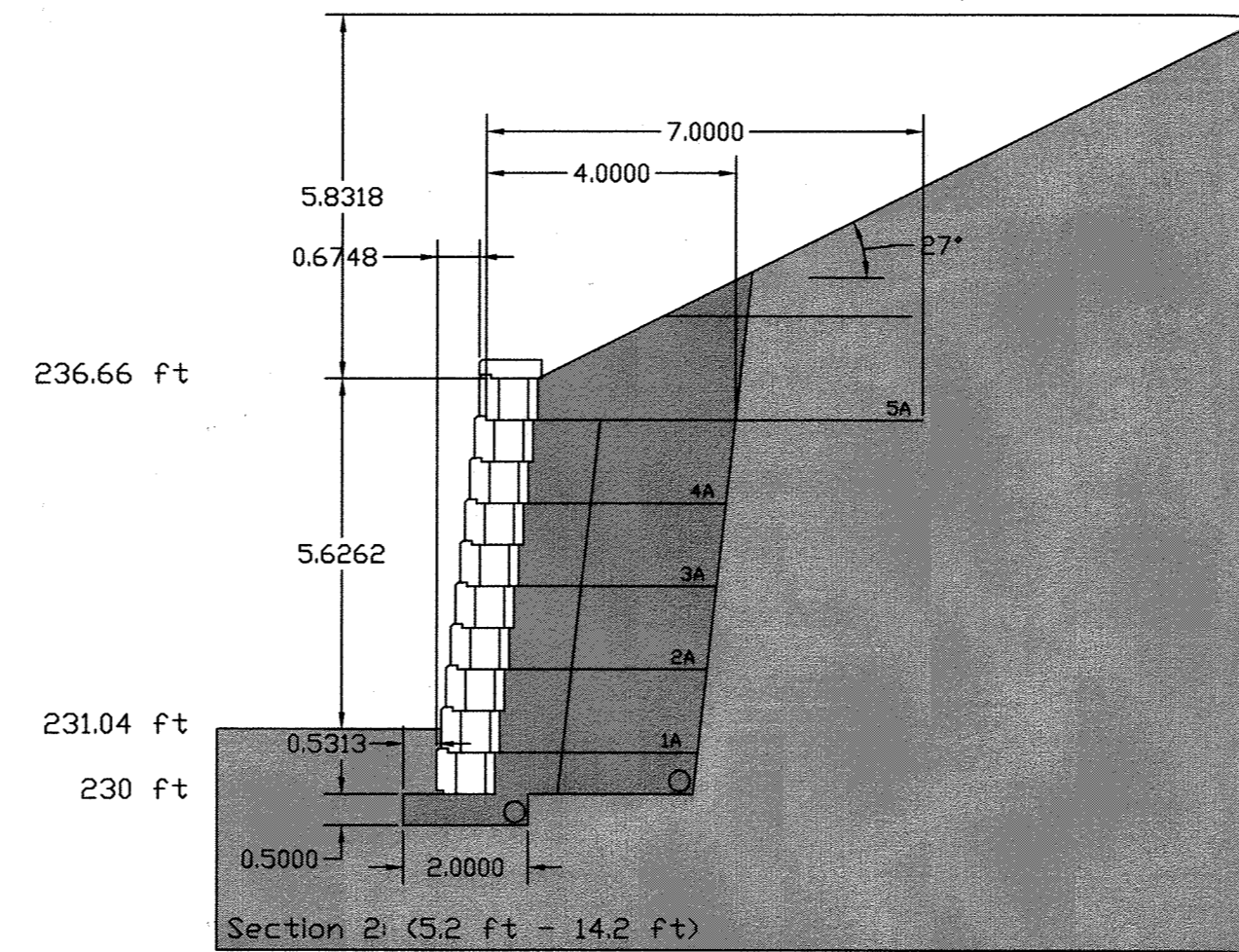


**CROSS SECTION NOTE**

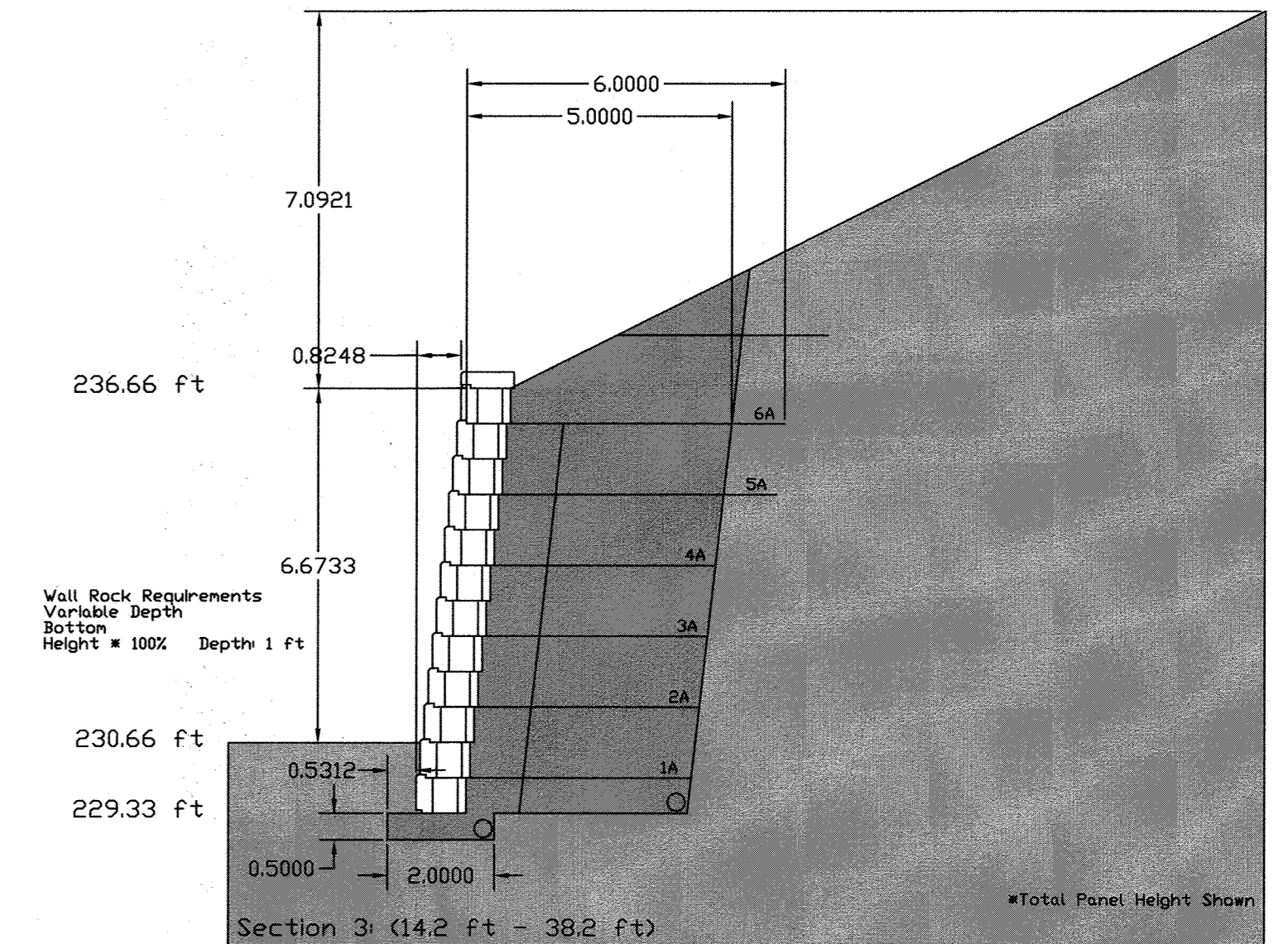
KCI TECHNOLOGIES DIVIDED THE WALL INTO MORE SECTIONS WITHIN ALLAN BLOCK SOFTWARE. FOR ADDITIONAL CROSS SECTIONS, PLEASE REFER TO CALCULATIONS WHICH CONTAIN PLAN SHEETS GENERATED BY ALLAN BLOCK SOFTWARE.



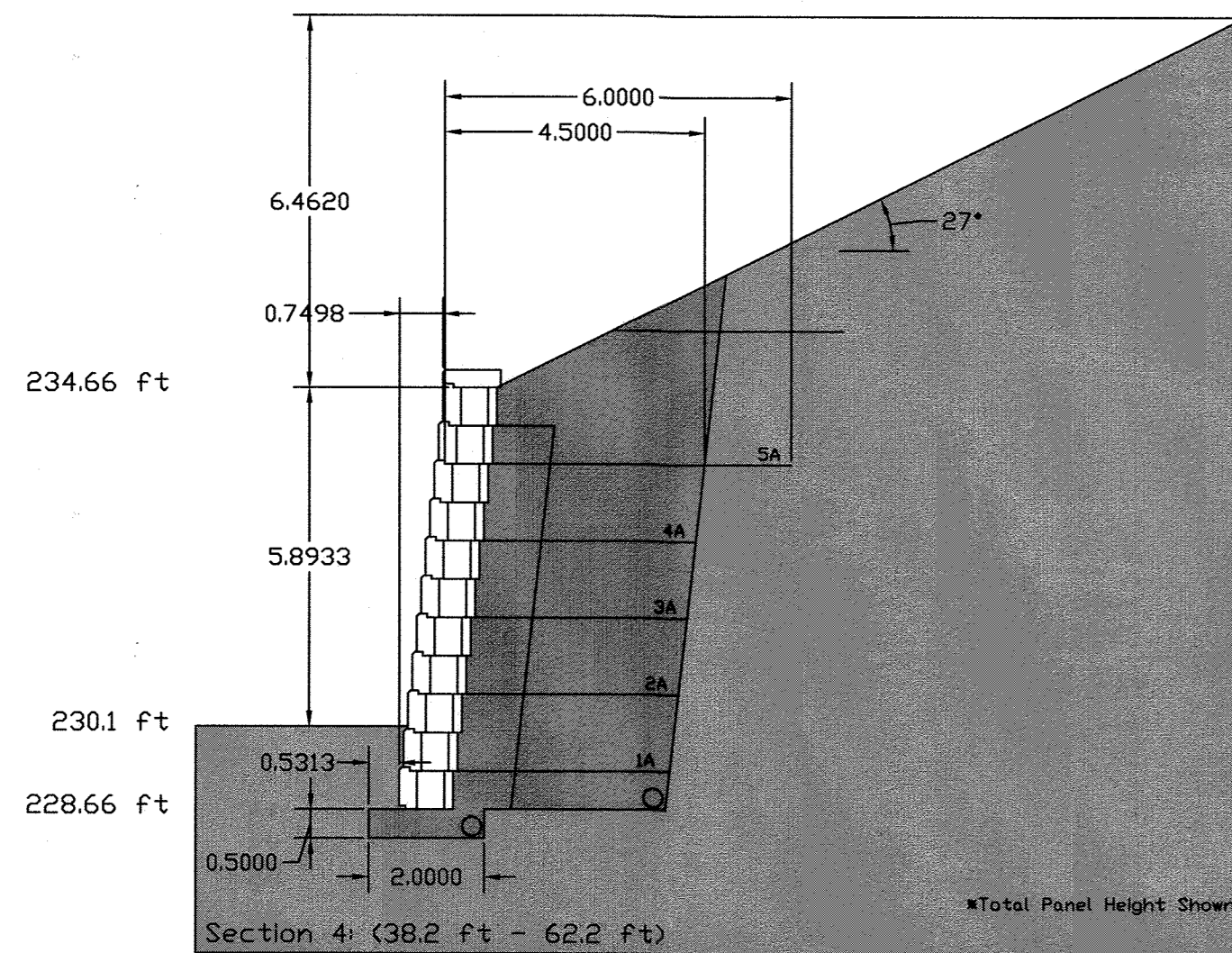
1  
S1|S2  
RETAINING WALL 'A'  
STA 0+00 - STA. 0+5.2  
N.T.S.



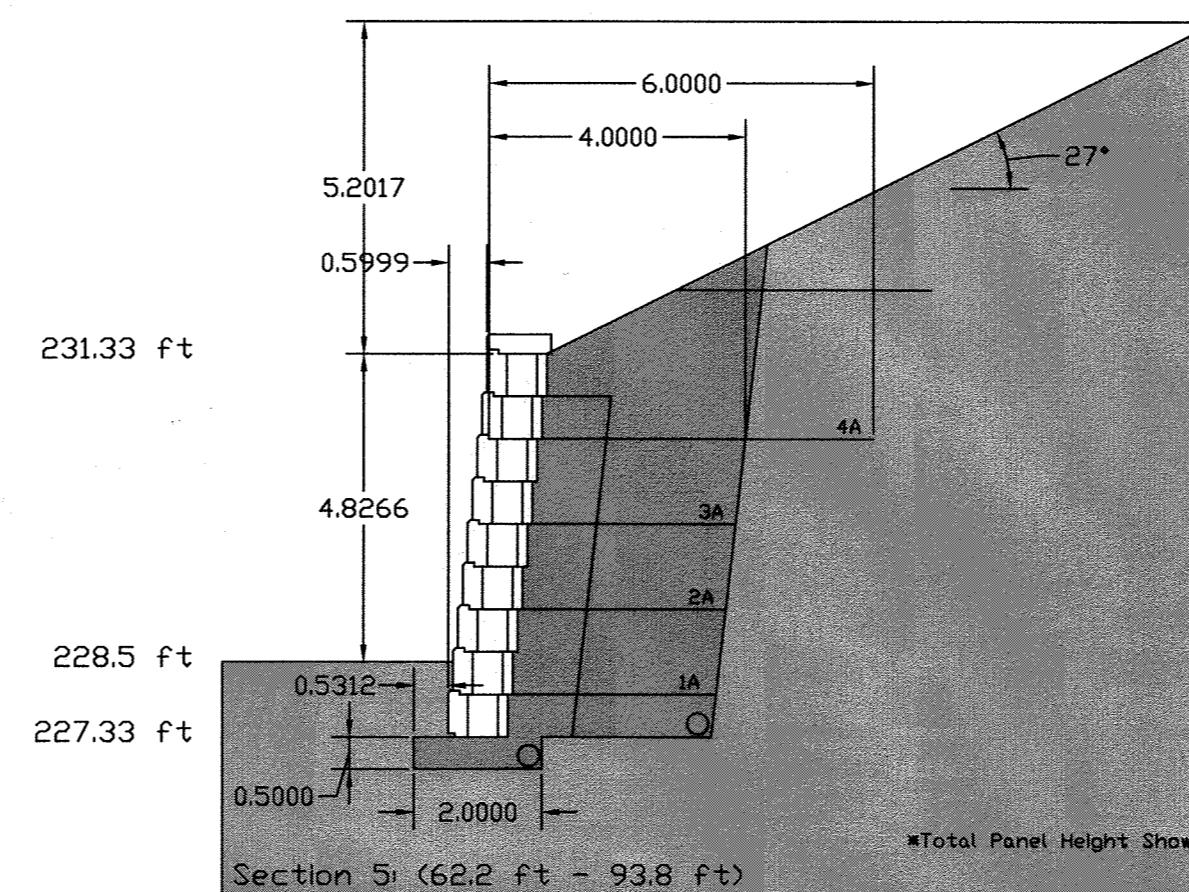
2  
S1|S2  
RETAINING WALL 'A'  
STA 0+5.2 - STA. 0+14.2  
N.T.S.



3  
S1|S2  
RETAINING WALL 'A'  
STA 0+14.2 - STA. 0+38.2  
N.T.S.



4  
S1|S2  
RETAINING WALL 'A'  
STA 0+38.2 - STA. 0+62.2  
N.T.S.



5  
S1|S2  
RETAINING WALL 'A'  
STA 0+62.2 - STA. 0+93.8  
N.T.S.

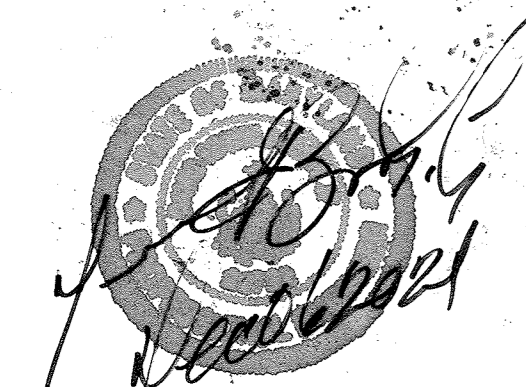
**DETAIL NOTES**

REFER TO DETAIL 1 ON SHEET D-1 FOR SPECIFIC PROFILE INFORMATION.  
REFER TO DETAIL 1 AND DETAIL 13 ON SHEET D-1 FOR FOUNDATION DETAIL.

**NOTE:**

FOR ALL AREAS, THERE MUST BE A MINIMUM OF 2 BLOCKS OR 12 INCHES (WHICHEVER IS GREATER) BURIED WITH THE EXCEPTION OF 10 FEET BEFORE AND AFTER LOCATIONS INDICATED ON SHEET S-1 WITH AN ASTERIX DENOTING A PIPE PLACED UNDER THE WALL. THESE LOCATIONS REQUIRE 3 BLOCKS OR 18 INCHES EMBEDMENT.

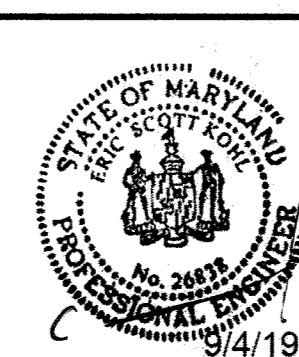
SWM AS BUILT AS BUILT SURVEY BY CLS1 ON 05/14/2021



THERE IS NO AS BUILT INFORMATION PROVIDED ON THIS SHEET.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
 DATE: 2/4/20  
 DATE: 1-24-20  
 DATE: 2/4/20

START POINT	END POINT	AVERAGE WALL HEIGHT	BASE WIDTH	BASE DEPTH	EMBEDMENT	GRID TYPE	MAX. SPACING B/W GRIDS	GRID LENGTH	ESTIMATED No. GRID LAYERS	GRID IN BACKSLOPE
0+00	0+5.2	2'-9"	2'-0"	6"	12" MIN.	3XT MIRAGRID	2 BLOCKS	7'-0" 4'-0"	1 2	NO
0+5.2	0+14.2	5'-8"	2'-0"	6"	12" MIN.	3XT MIRAGRID	2 BLOCKS	7'-0" 4'-0"	1 4	YES
0+14.2	0+38.2	6'-8"	2'-0"	6"	12" MIN.	3XT MIRAGRID	2 BLOCKS	6'-0" 5'-0"	2 4	YES
0+38.2	0+62.2	6'-0"	2'-0"	6"	12" MIN.	3XT MIRAGRID	2 BLOCKS	6'-0" 4'-6"	1 4	YES
0+62.2	0+93.8	4'-9"	2'-0"	6"	12" MIN.	3XT MIRAGRID	2 BLOCKS	6'-0" 4'-0"	1 3	YES



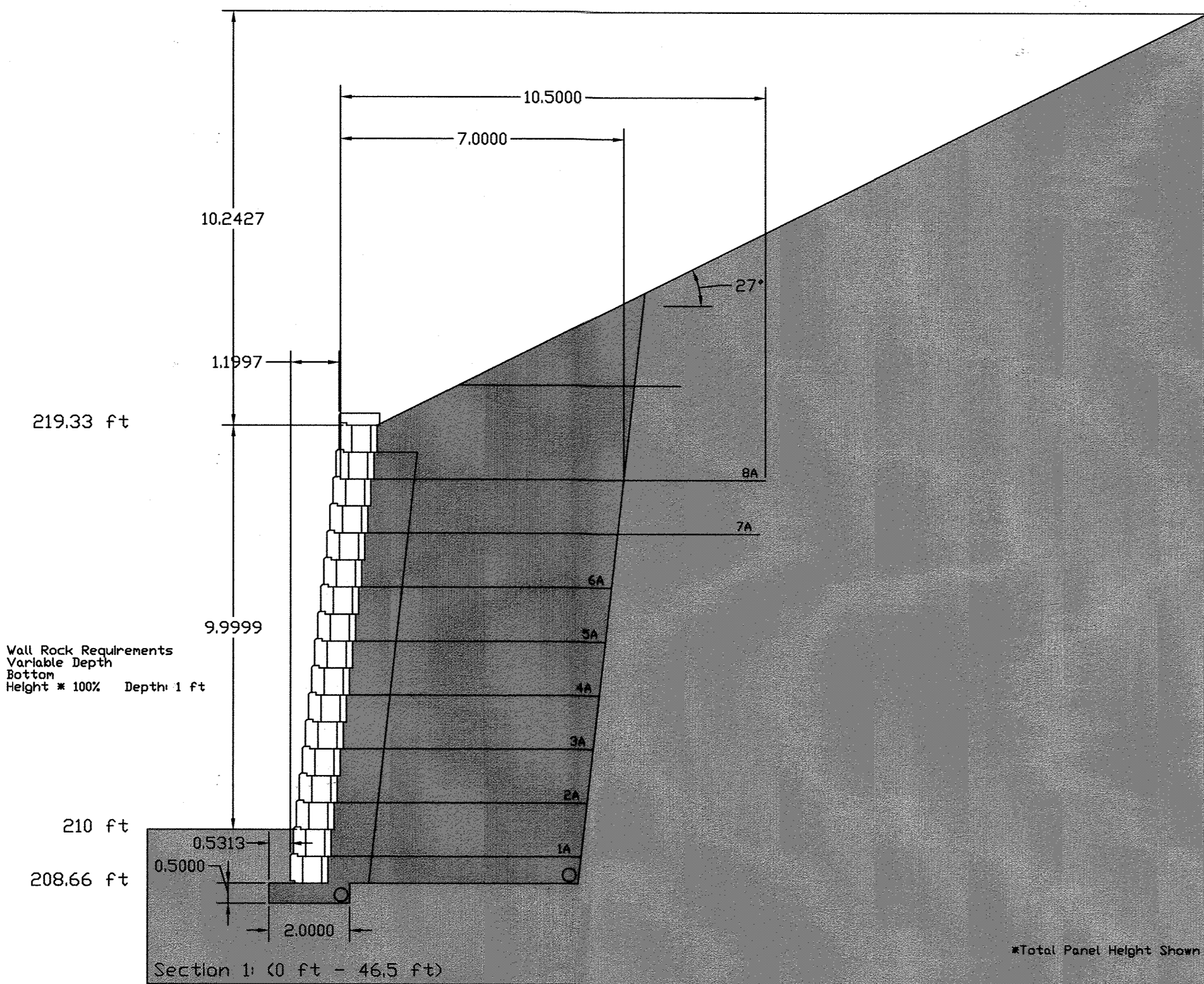
PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME AND THAT I AM DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 26838 EXP. DATE: 01/18/2020



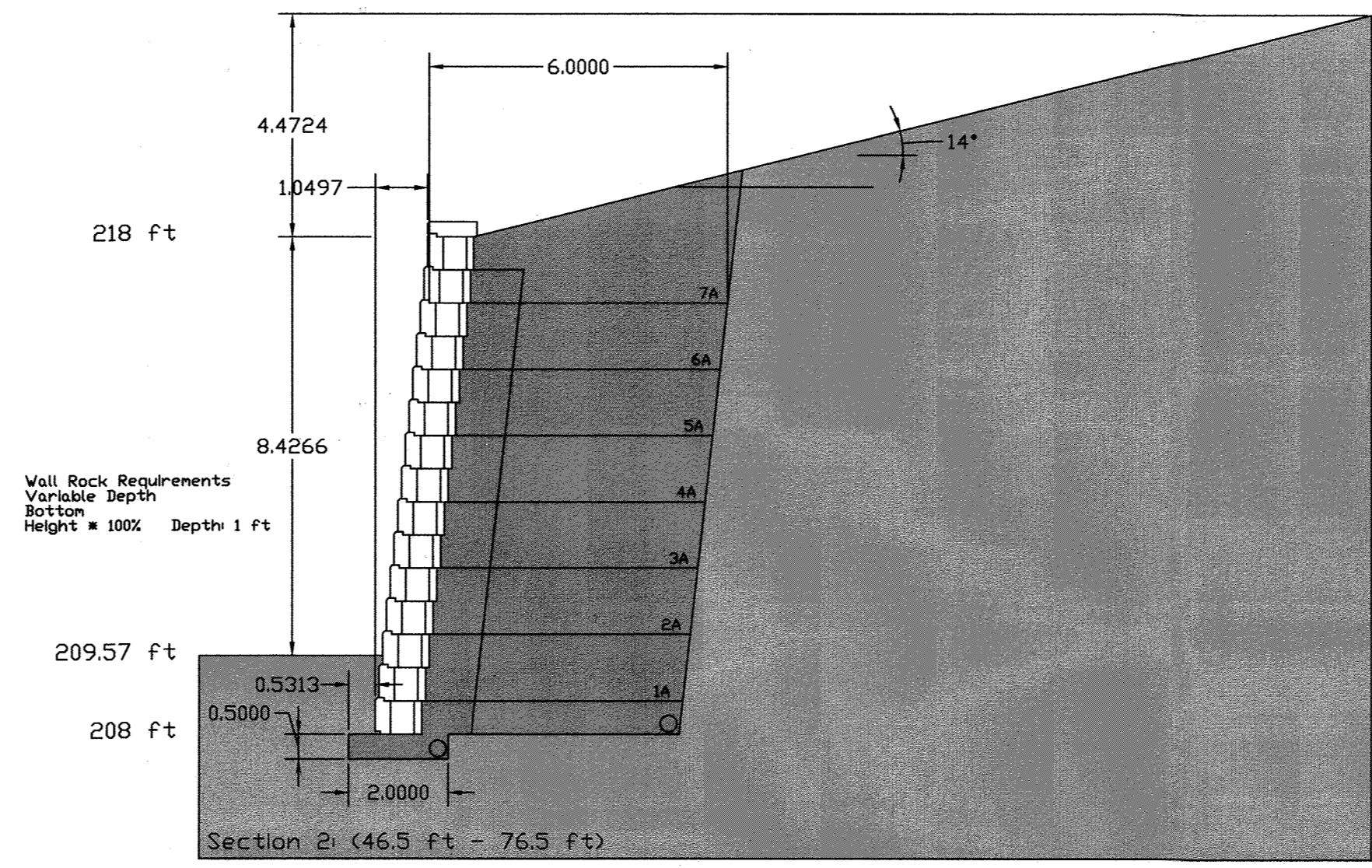
REVISIONS		
NO.	DATE	BY

OWNER/DEVELOPER: PATRICK DOUGAL DOUGAL & ASSOCIATES 5695 MAIN STREET ELK RIDGE, MD 21075 (410)-379-6444	<b>CUBESMART STORAGE</b> 6300 WASHINGTON BLVD. ELK RIDGE, MD <b>RETAINING WALL CROSS SECTIONS</b> TAX MAP: 38 GRID: 03 PARCEL: 39 ZONED: POR ELECTION DISTRICT NO. 01 - HOWARD COUNTY MARYLAND
DESIGN NAB DATE 9/03/19 DRAWN BRA SCALE	KCI PROJECT NO. 271700283 SHEET NO. 18 OF 30
SHEET NO. <b>C-4.01</b>	





1  
S1/S3  
RETAINING WALL 'B1'  
STA 0+00 - STA. 0+46.5  
N.T.S.

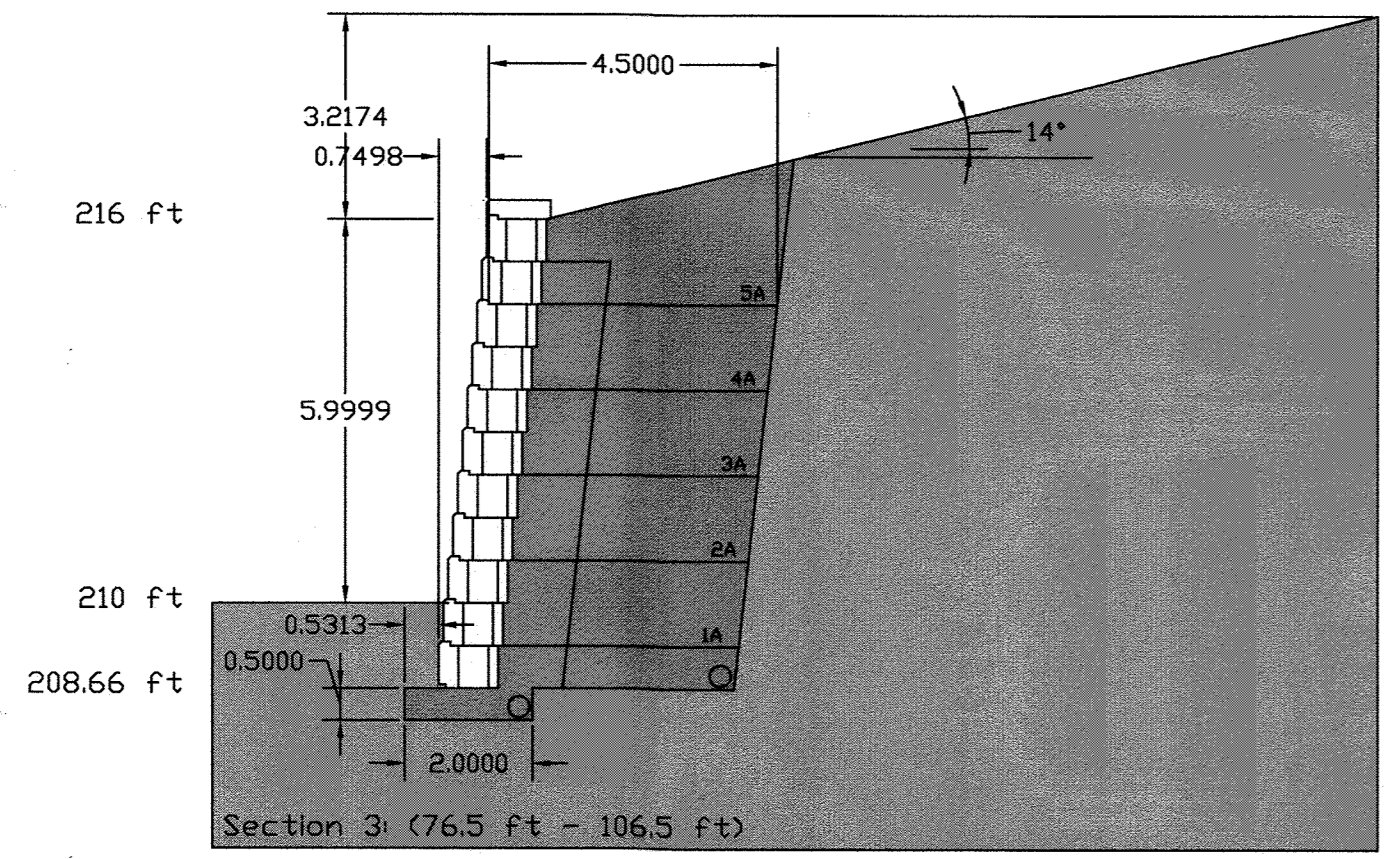


2  
S1/S3  
RETAINING WALL 'B1'  
STA 0+46.5 - STA. 0+76.5  
N.T.S.

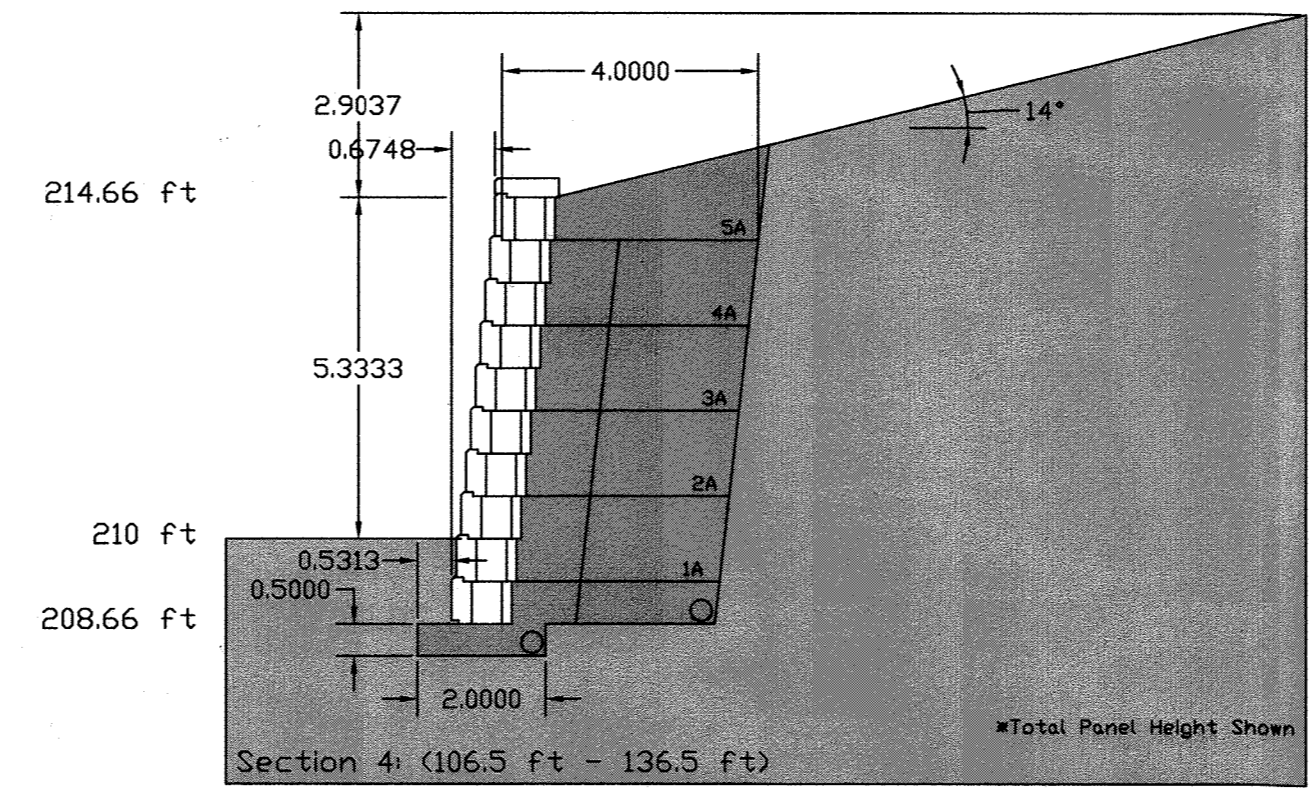
NOTE:  
FOR ALL AREAS, THERE MUST BE A MINIMUM OF 2 BLOCKS OR 12 INCHES (WHICHEVER IS GREATER) BURIED WITH THE EXCEPTION OF 10 FEET BEFORE AND AFTER LOCATIONS INDICATED ON SHEET S-1 WITH AN ASTERIX DENOTING A PIPE PLACED UNDER THE WALL. THESE LOCATIONS REQUIRE 3 BLOCKS OR 18 INCHES EMBEDMENT.

CROSS SECTION NOTE  
KCI TECHNOLOGIES DIVIDED THE WALL INTO MORE SECTIONS WITHIN ALLAN BLOCK SOFTWARE. FOR ADDITIONAL CROSS SECTIONS, PLEASE REFER TO CALCULATIONS WHICH CONTAIN PLAN SHEETS GENERATED BY ALLAN BLOCK SOFTWARE.

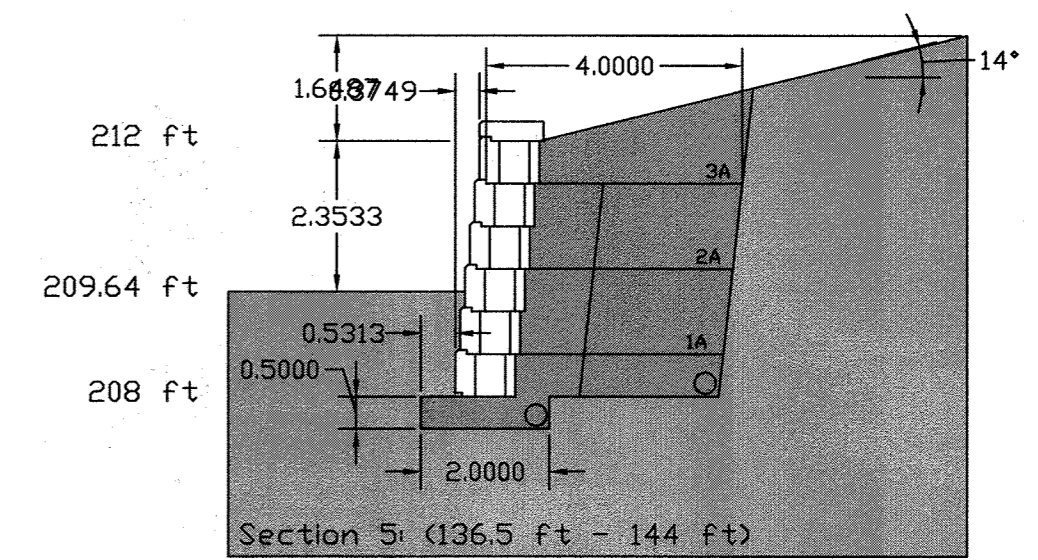
DETAIL NOTES  
REFER TO DETAIL 1 ON SHEET D-1 FOR SPECIFIC PROFILE INFORMATION.  
REFER TO DETAIL 1 AND DETAIL 13 ON SHEET D-1 FOR FOUNDATION DETAIL.



3  
S1/S3  
RETAINING WALL 'B1'  
STA 0+76.5 - STA. 1+06.5  
N.T.S.



4  
S1/S3  
RETAINING WALL 'B1'  
STA 1+06.5 - STA. 1+36.5  
N.T.S.



5  
S1/S3  
RETAINING WALL 'B1'  
STA 1+36.5 - STA. 1+44.0  
N.T.S.

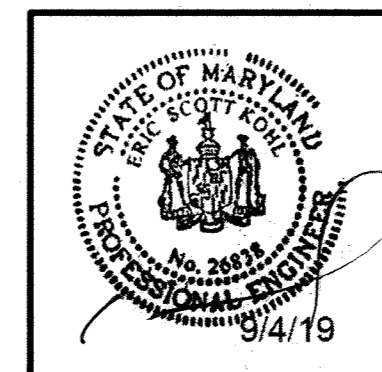
START POINT	END POINT	AVERAGE WALL HEIGHT	BASE WIDTH	BASE DEPTH	EMBEDMENT	GRID TYPE	MAX. SPACING B/W GRIDS	GRID LENGTH	ESTIMATED No. GRID LAYERS	GRID IN BACKSLOPE
0+00	0+46.5	10'-0"	2'-0"	6"	12" MIN.	3XT MIRAGRID	2 BLOCKS	10'-6" 7'-0"	2	YES
0+46.5	0+76.5	8'-6"	2'-0"	6"	12" MIN.	3XT MIRAGRID	2 BLOCKS	6'-0"	7	YES
0+76.5	1+06.5	6'-0"	2'-0"	6"	12" MIN.	3XT MIRAGRID	2 BLOCKS	4'-6"	5	NO
1+06.5	1+36.5	5'-4"	2'-0"	6"	12" MIN.	3XT MIRAGRID	2 BLOCKS	4'-0"	5	YES
1+36.5	1+44.0	2'-4"	2'-0"	6"	12" MIN.	3XT MIRAGRID	2 BLOCKS	4'-0"	3	NO

SWM AS BUILT  
AS BUILT SURVEY BY CLS1  
ON 5/2/2021

*[Signature]*  
2/4/2021

THERE IS NO AS-BUILT INFORMATION PROVIDED ON THIS SHEET

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
 CHIEF DIVISION OF LAND DEVELOPMENT DATE 2/4/20  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE 1-24-20  
 DIRECTOR DATE 2/4/20



PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME AND THAT I AM DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 26838 EXP. DATE: 01/18/2020

REVISIONS		
NO.	DATE	BY

OWNER/DEVELOPER:  
PATRICK DOUGAL DOUGAL & ASSOCIATES  
5695 MAIN STREET ELK RIDGE, MD 21075 (410)-379-6444

CUBESMART STORAGE  
6300 WASHINGTON BLVD. ELK RIDGE, MD  
RETAINING WALL CROSS SECTIONS

TAX MAP: 38 GRID: 03 PARCEL: 39  
ZONED: POR ELECTION DISTRICT NO. 01 - HOWARD COUNTY MARYLAND

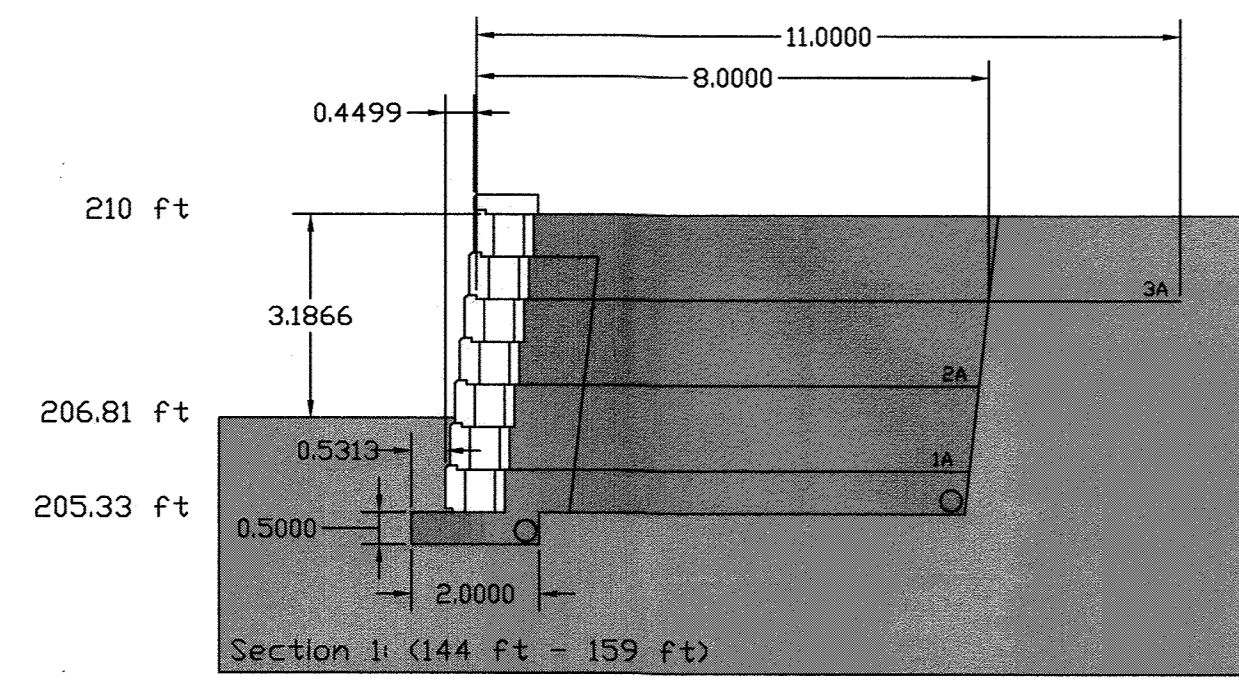
DESIGN NAB DATE 9/03/19 KCI PROJECT NO. 271700283 SHEET NO.  
DRAWN BRA SCALE SHEET NO. 19 OF 30 C-4.02



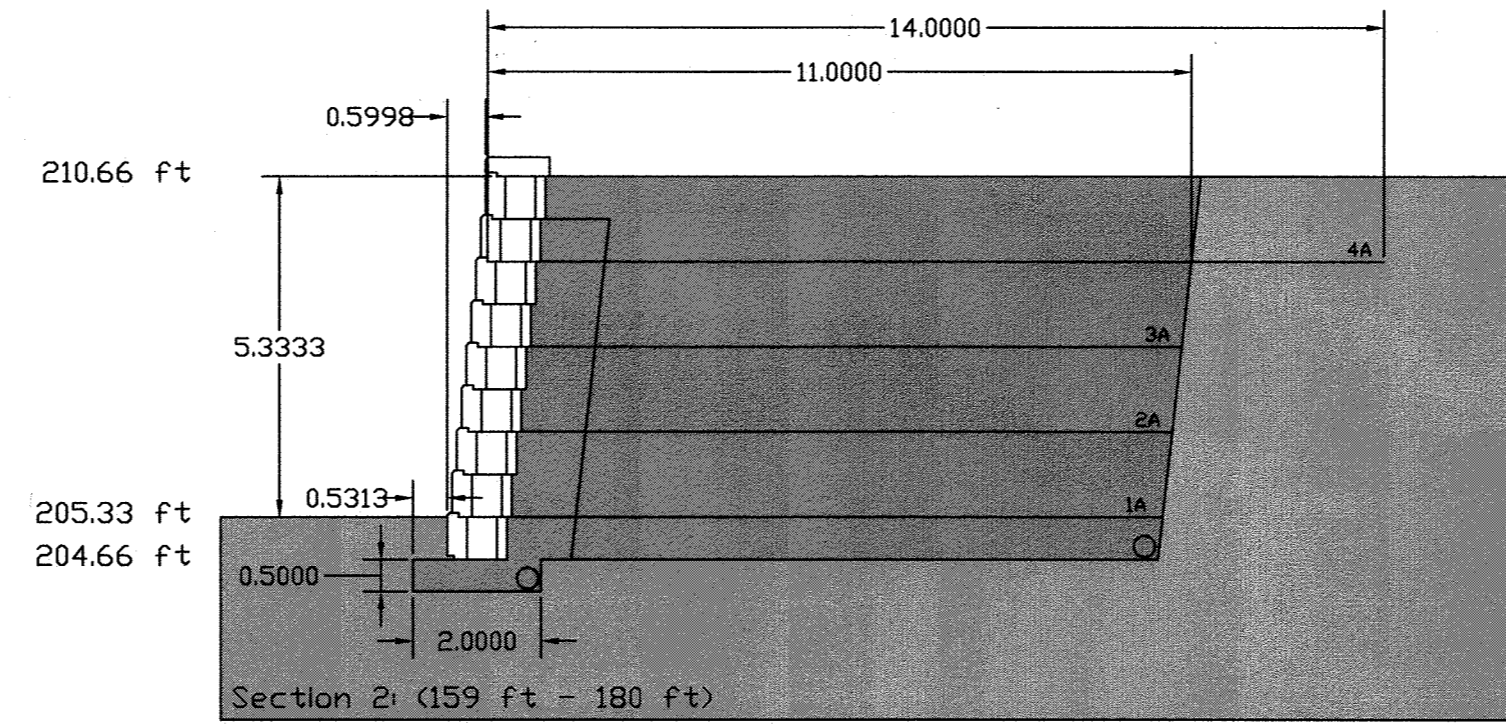


**CROSS SECTION NOTE**

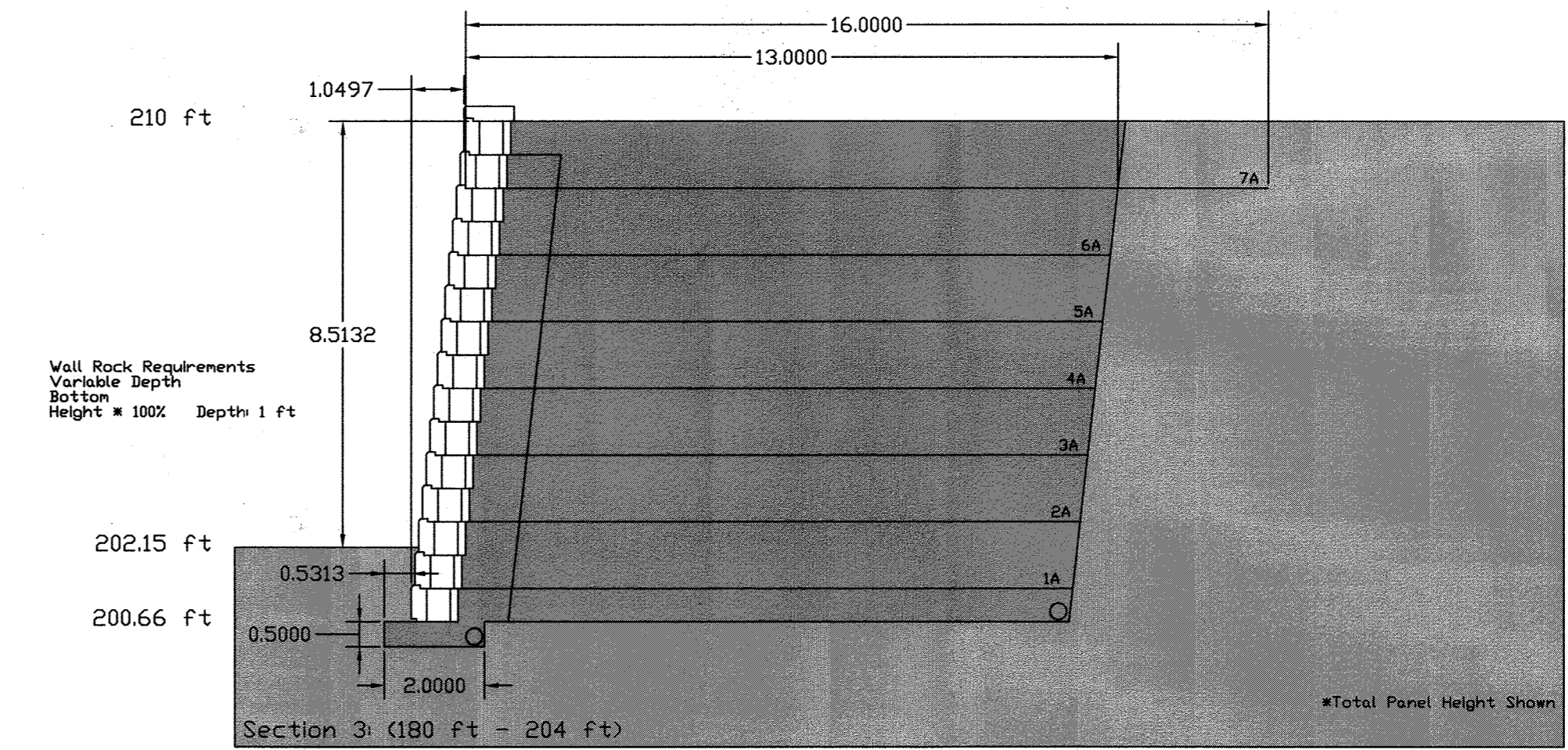
KCI TECHNOLOGIES DIVIDED THE WALL INTO MORE SECTIONS WITHIN ALLAN BLOCK SOFTWARE. FOR ADDITIONAL CROSS SECTIONS, PLEASE REFER TO CALCULATIONS WHICH CONTAIN PLAN SHEETS GENERATED BY ALLAN BLOCK SOFTWARE.



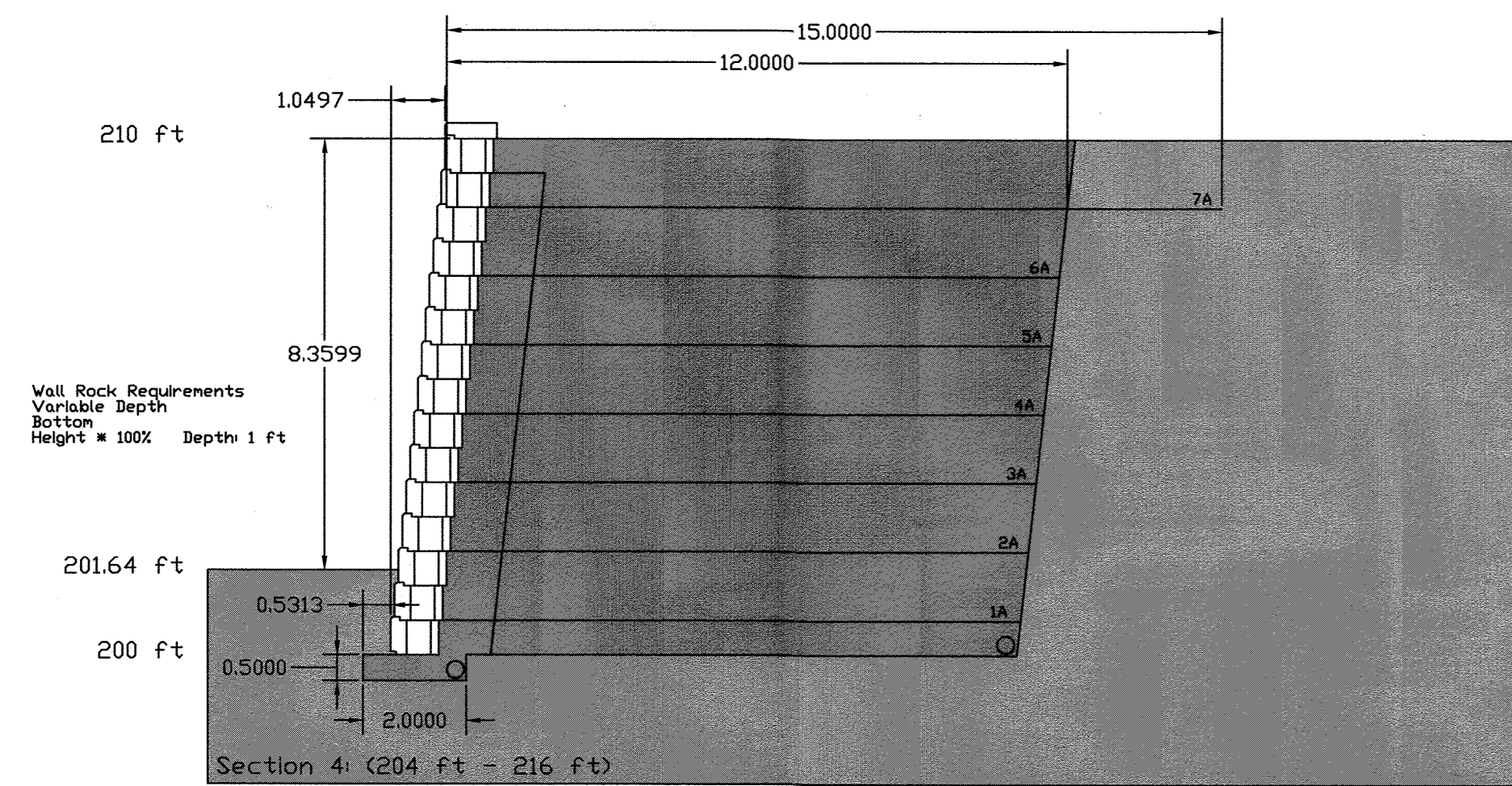
1 RETAINING WALL 'B2'  
STA 1+44.0 - STA. 1+59.0  
S1/S2 N.T.S.



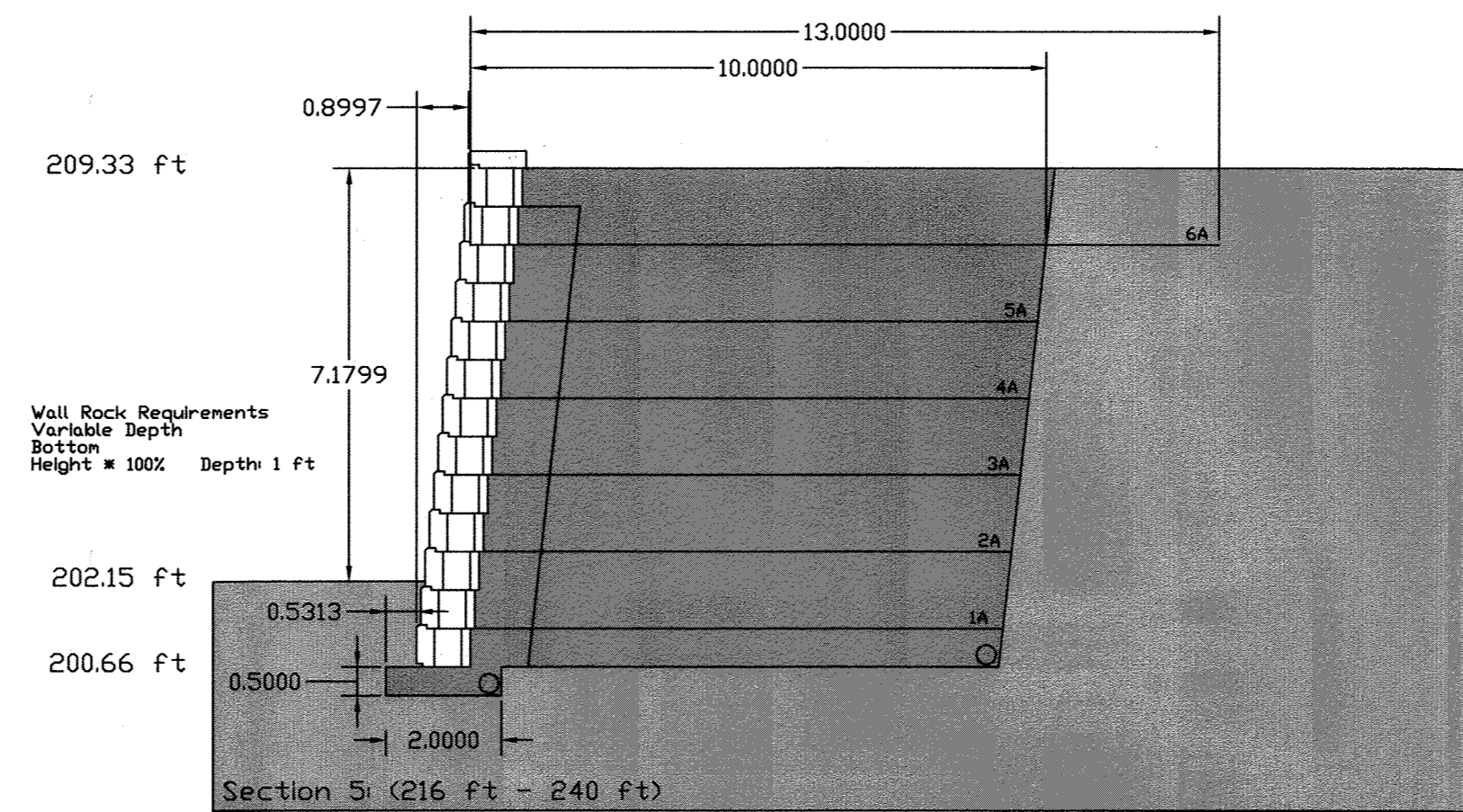
2 RETAINING WALL 'B2'  
STA 1+59.0 - STA. 1+80.0  
S1/S2 N.T.S.



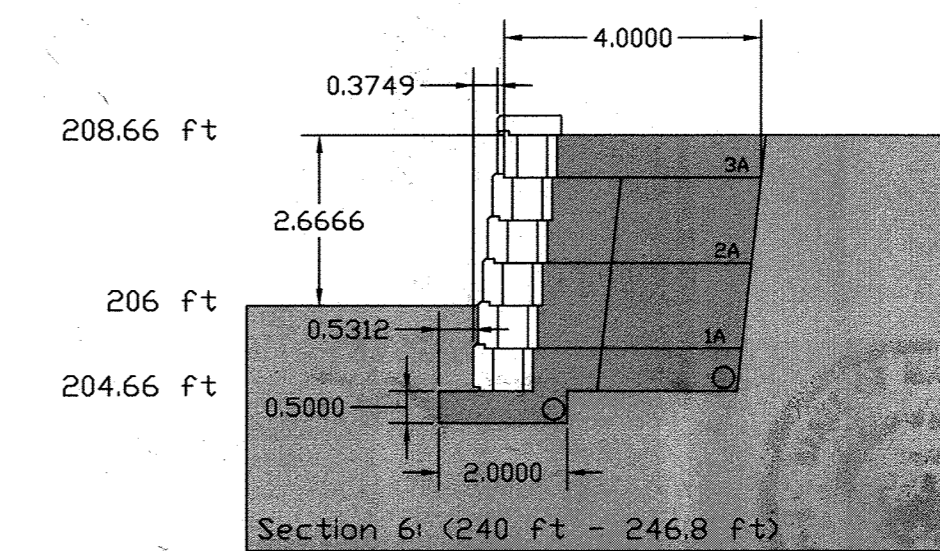
3 RETAINING WALL 'B2'  
STA 1+80.0 - STA. 2+04.0  
S1/S2 N.T.S.



4 RETAINING WALL 'B2'  
STA 2+04.0 - STA. 2+16.0  
S1/S2 N.T.S.



5 RETAINING WALL 'B2'  
STA 2+16.0 - STA. 2+40.0  
S1/S2 N.T.S.



6 RETAINING WALL 'B2'  
STA 2+40.0 - STA. 2+46.8  
S1/S2 N.T.S.

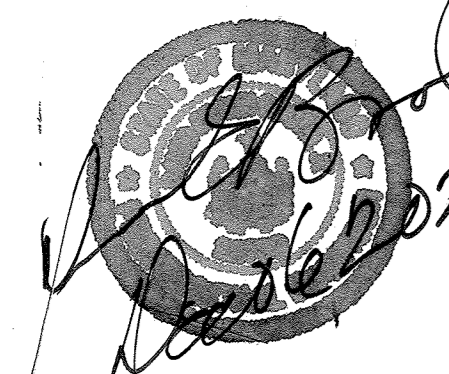
**DETAIL NOTES**

REFER TO DETAIL 1 ON SHEET D-1 FOR SPECIFIC PROFILE INFORMATION.  
REFER TO DETAIL 1 AND DETAIL 13 ON SHEET D-1 FOR FOUNDATION DETAIL.

**NOTE:**

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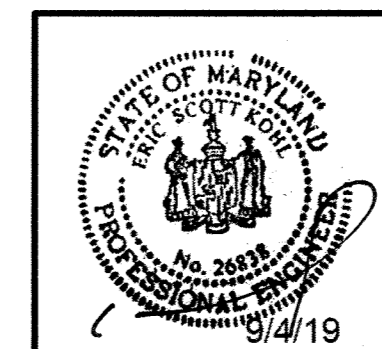
*SWM AS BUILT AS BUILT SURVEY BY CLS1 ON 5/4/2021*



*THERE IS NO AS BUILT INFORMATION PROVIDED ON THIS SHEET.*

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE: 2/4/20  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE: 1-24-20  
 DIRECTOR DATE: 2/4/20

START POINT	END POINT	AVERAGE WALL HEIGHT	BASE WIDTH	BASE DEPTH	EMBEDMENT	GRID TYPE	MAX. SPACING B/W GRIDS	GRID LENGTH	ESTIMATED No. GRID LAYERS	GRID IN BACKSLOPE
1+44.0	1+59.0	3'-3"	2'-0"	6"	12" MIN.	3XT MIRAGRID	2 BLOCKS	11'-0" 8'-0"	1 2	NO
1+59.0	1+80.0	5'-4"	2'-0"	6"	12" MIN.	3XT MIRAGRID	2 BLOCKS	14'-0" 11'-0"	1 3	NO
1+80.0	2+04.0	8'-6"	2'-0"	6"	12" MIN.	3XT MIRAGRID	2 BLOCKS	16'-0" 13'-0"	1 6	NO
2+04.0	2+16.0	8'-4"	2'-0"	6"	12" MIN.	3XT MIRAGRID	2 BLOCKS	15'-0" 12'-0"	1 6	NO
2+16.0	2+40.0	7'-3"	2'-0"	6"	12" MIN.	3XT MIRAGRID	2 BLOCKS	13'-0" 10'-0"	1 5	NO
2+40.0	2+46.8	2'-8"	2'-0"	6"	12" MIN.	3XT MIRAGRID	2 BLOCKS	4'-0"	3	NO



PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME AND THAT I AM DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 26838 EXP. DATE: 01/18/2020

REVISIONS		
NO.	DATE	BY

OWNER/DEVELOPER:  
 PATRICK DOUGAL DOUGAL & ASSOCIATES  
 5695 MAIN STREET ELK RIDGE, MD 21075 (410)-379-6444

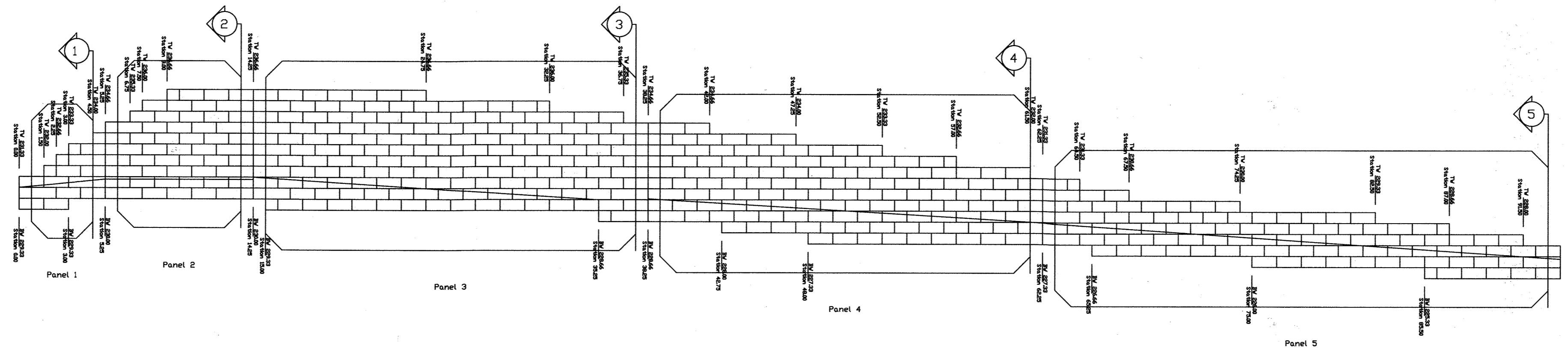
**CUBESMART STORAGE**  
 6300 WASHINGTON BLVD. ELK RIDGE, MD  
**RETAINING WALL CROSS SECTIONS**

TAX MAP: 38 GRID: 03 PARCEL: 39  
 ZONED: POR  
 ELECTION DISTRICT NO. 01 - HOWARD COUNTY MARYLAND

DESIGN NAB DATE 9/03/19 KCI PROJECT NO. 271700283 SHEET NO.  
 DRAWN BRA SCALE SHEET NO. 20 OF 30 **C-4.03**

**KCI TECHNOLOGIES**  
 ENGINEERS PLANNERS SCIENTISTS CONSTRUCTION MANAGERS  
 11830 WEST MARKET PLACE SUITE F FULTON, MD 20759 TELEPHONE: (410) 792-8086 FAX: (410) 792-7419

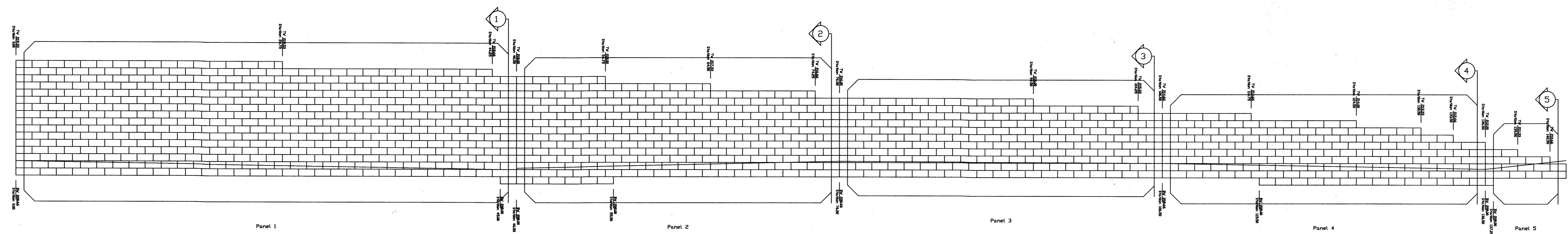




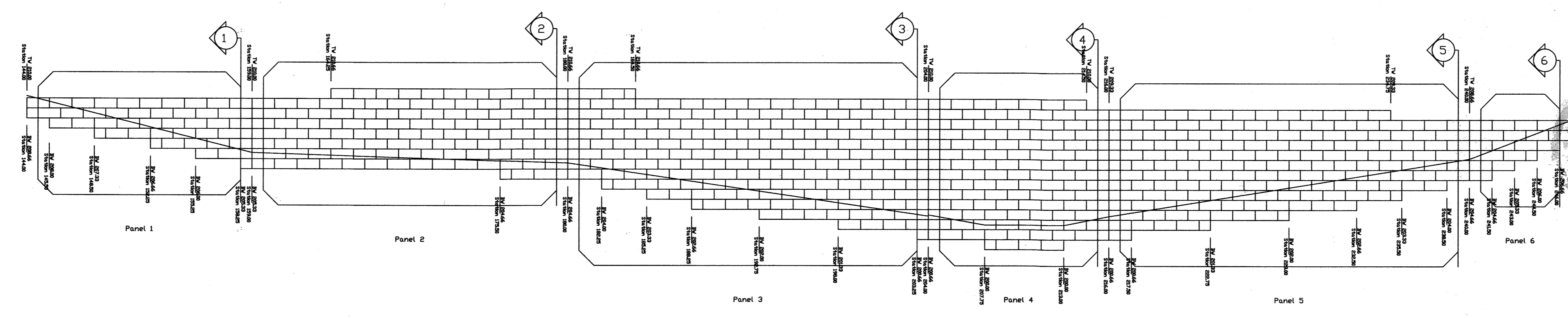
**ELEVATION NOTE**

PANEL SECTIONS COVER THE TOTAL OVER ALL HEIGHT OF EACH PANEL. SEE INDIVIDUAL PANEL SECTION DRAWINGS FOR GEGRID STRENGTH AND LENGTHS, WALL SURCHARGE AND SLOPE ABOVE INFORMATION.

1  
S2/S5  
RETAINING WALL 'A'  
ELEVATION  
N.T.S.



2  
S3/S5  
RETAINING WALL 'B1'  
ELEVATION  
N.T.S.



3  
S4/S5  
RETAINING WALL 'B2'  
ELEVATION  
N.T.S.

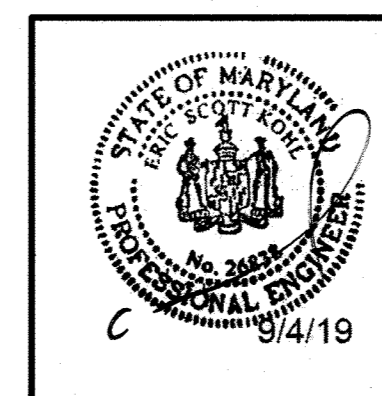
*SWM AS BUILT  
AS BUILT SURVEY BY CLSI ON  
5/4/2021*

*Dec 16 2021*

*THERE IS NO AS BUILT INFORMATION PROVIDED ON THIS SHEET*

**KCI TECHNOLOGIES**  
ENGINEERS  
PLANNERS  
SCIENTISTS  
CONSTRUCTION MANAGERS  
11830 WEST MARKET PLACE  
SUITE F  
FULTON, MD 20759  
TELEPHONE: (410) 792-8086  
FAX: (410) 792-7419

REVISIONS		
NO.	DATE	BY



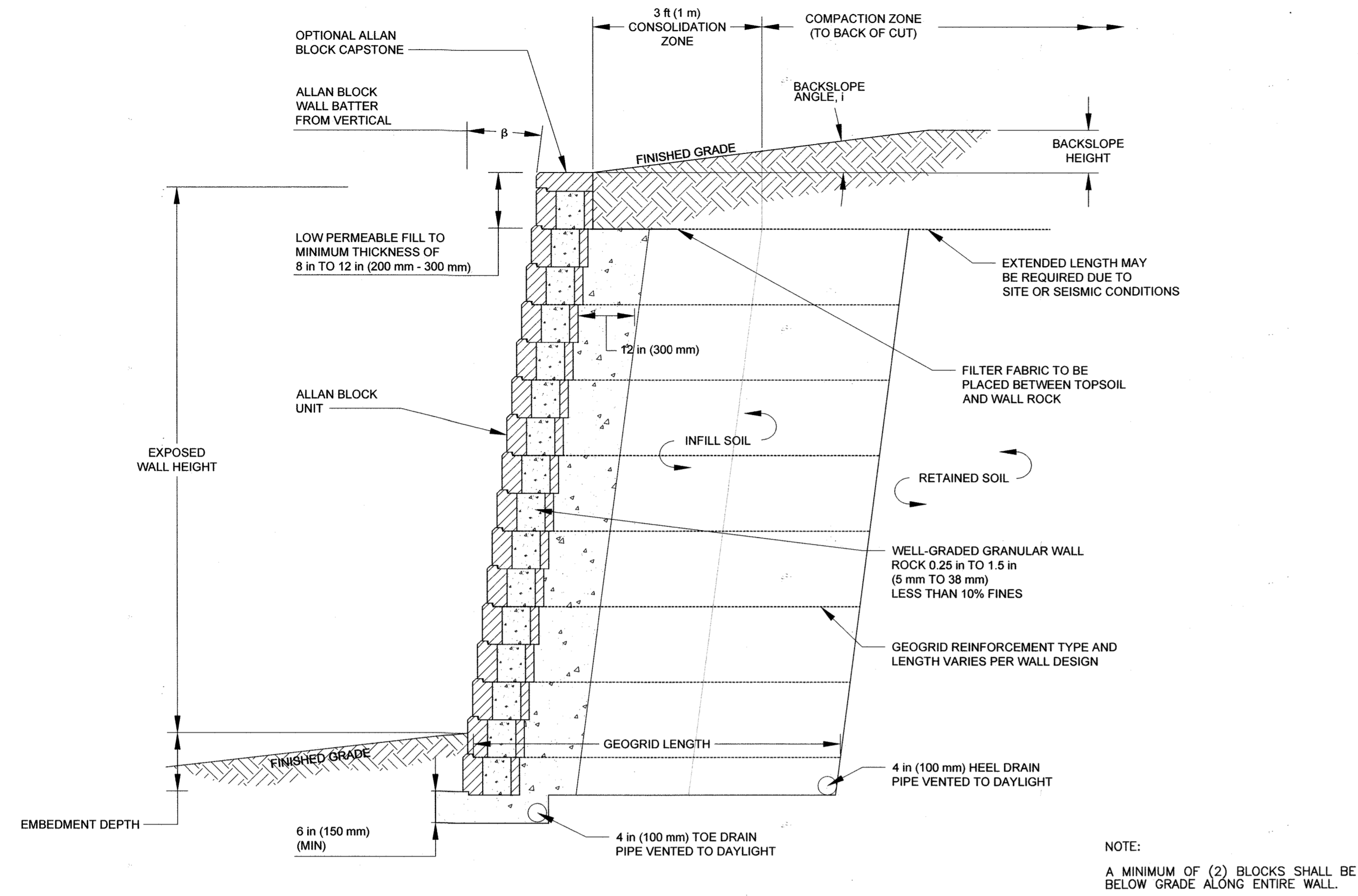
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OWNER/DEVELOPER: PATRICK DOUGAL DOUGAL & ASSOCIATES 5695 MAIN STREET ELKCRIDGE, MD 21075 (410)-379-6444	<b>CUBESMART STORAGE</b> 6300 WASHINGTON BLVD. ELKCRIDGE, MD <b>RETAINING WALL CROSS SECTIONS</b> TAX MAP: 38 GRID: 03 PARCEL: 39 ZONED: POR ELECTION DISTRICT NO. 01 - HOWARD COUNTY MARYLAND
DESIGN DATE: 9/03/19 DRAWN SCALE: NAB BRA	KCI PROJECT NO. 271700283 SHEET NO. 21 OF 30
SHEET NO. <b>C-4.04</b>	

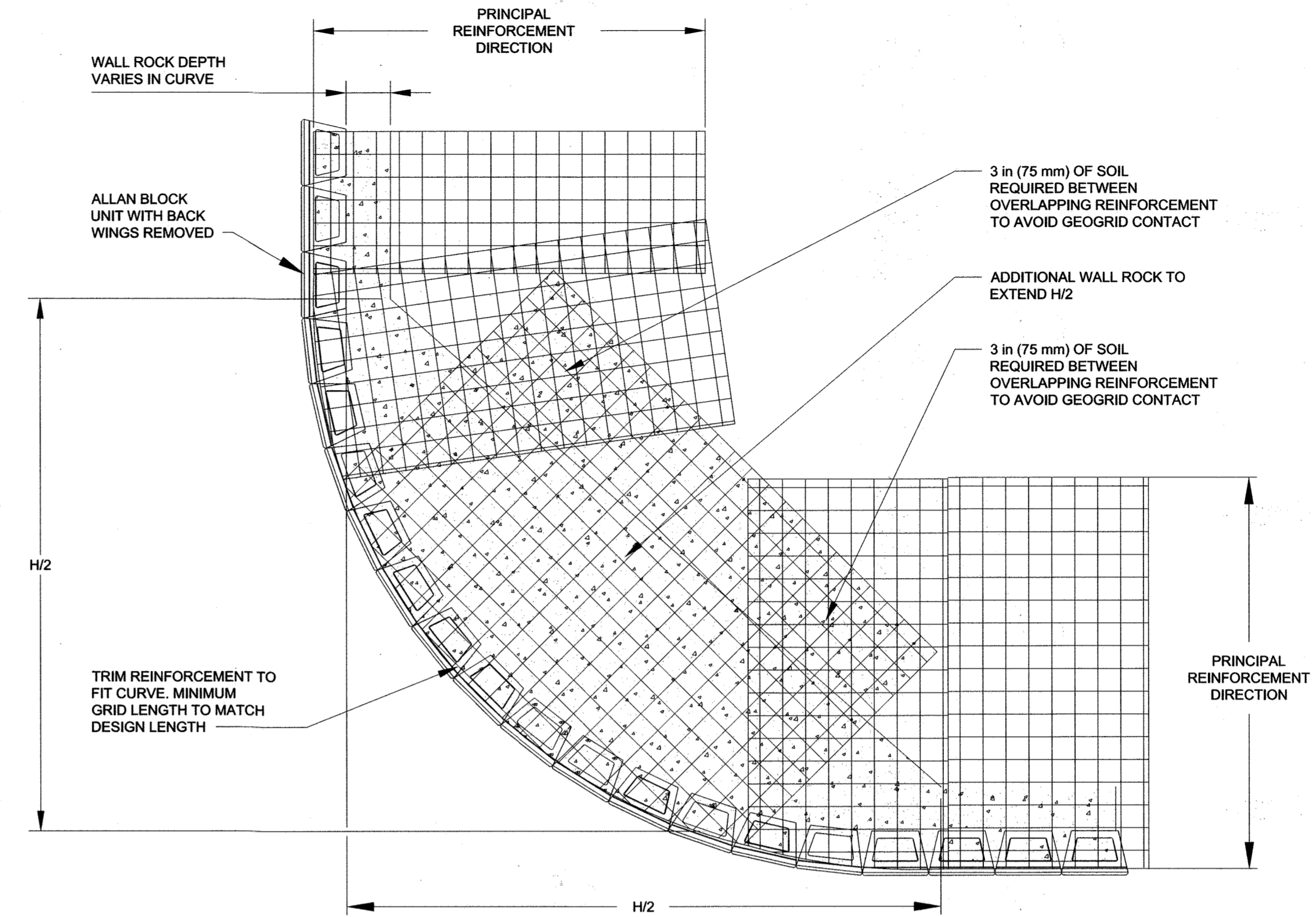
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
  
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE: 2/4/20  
  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE: 1-24-20  
  
 DIRECTOR DATE: 2/4/20



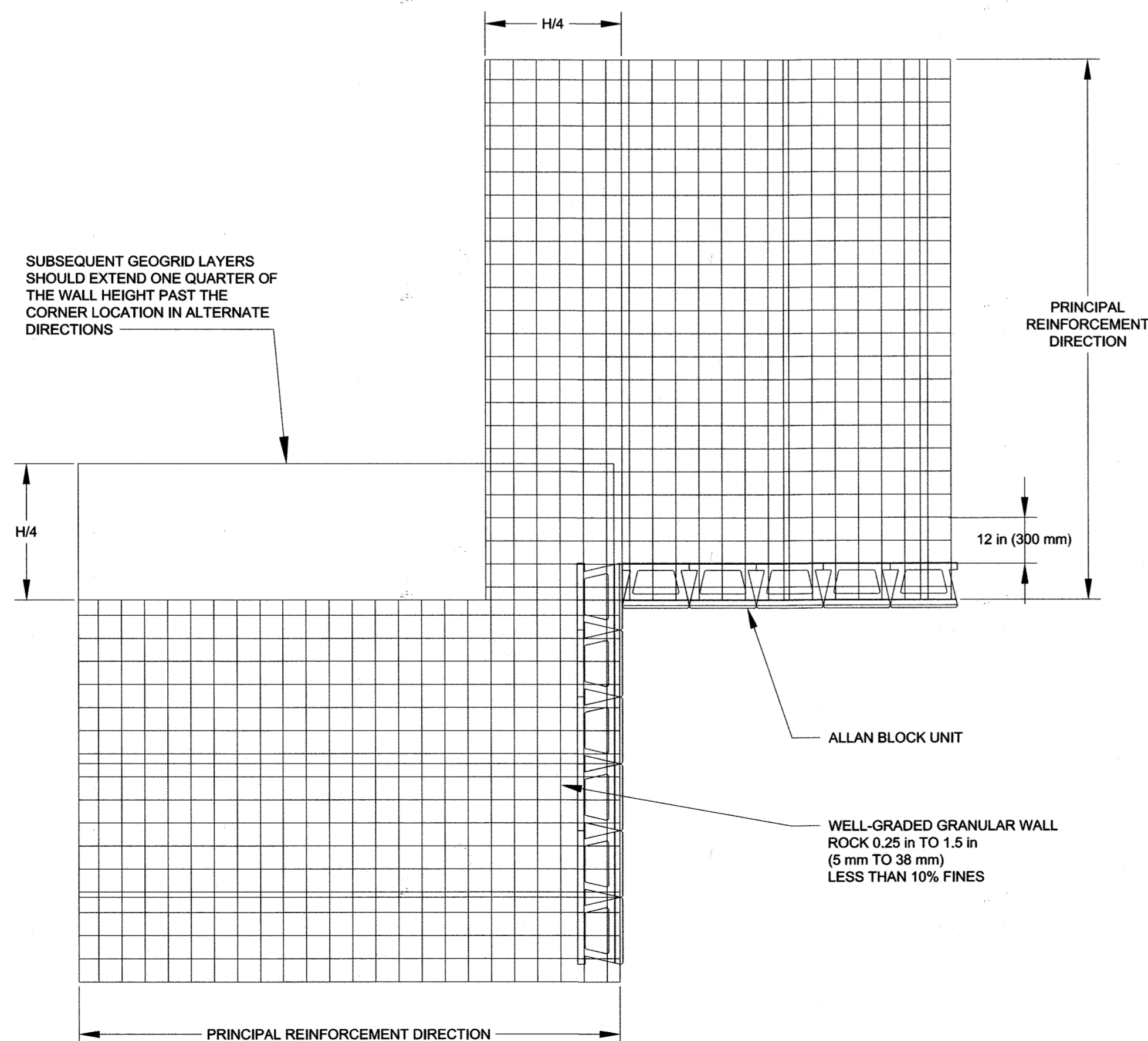
DETAIL 1: TYPICAL REINFORCED WALL APPLICATION



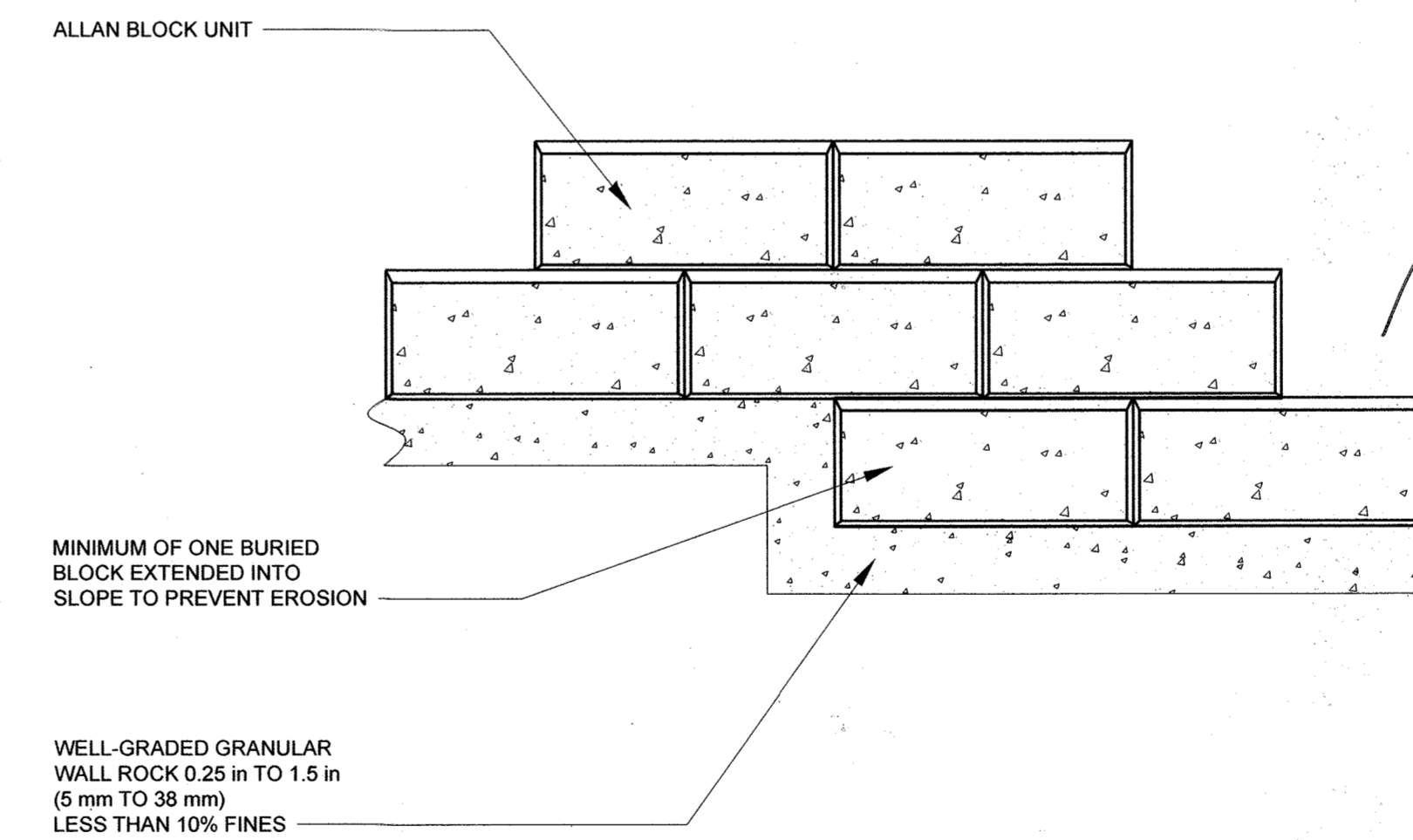
DETAIL 12: OUTSIDE CURVE GEOGRID OVERLAP



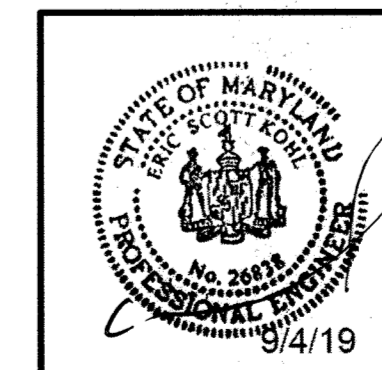
DETAIL 9: INSIDE CORNER GEOGRID OVERLAP



DETAIL 13: STEP UP AT BASE COURSE



APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
 CHIEF, DIVISION OF PLANNING AND DEVELOPMENT  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION  
 DATE: 2/11/20  
 DATE: 1-21-20  
 DATE: 2/1/20



PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME AND THAT I AM DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 26838 EXP. DATE: 01/18/2020

*SWM AS BUILT*  
*AS BUILT SURVEY BY CLSI ON 5/4/2021*  
 THERE IS NO AS BUILT INFORMATION PROVIDED ON THIS SHEET

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NO.	DATE	BY	

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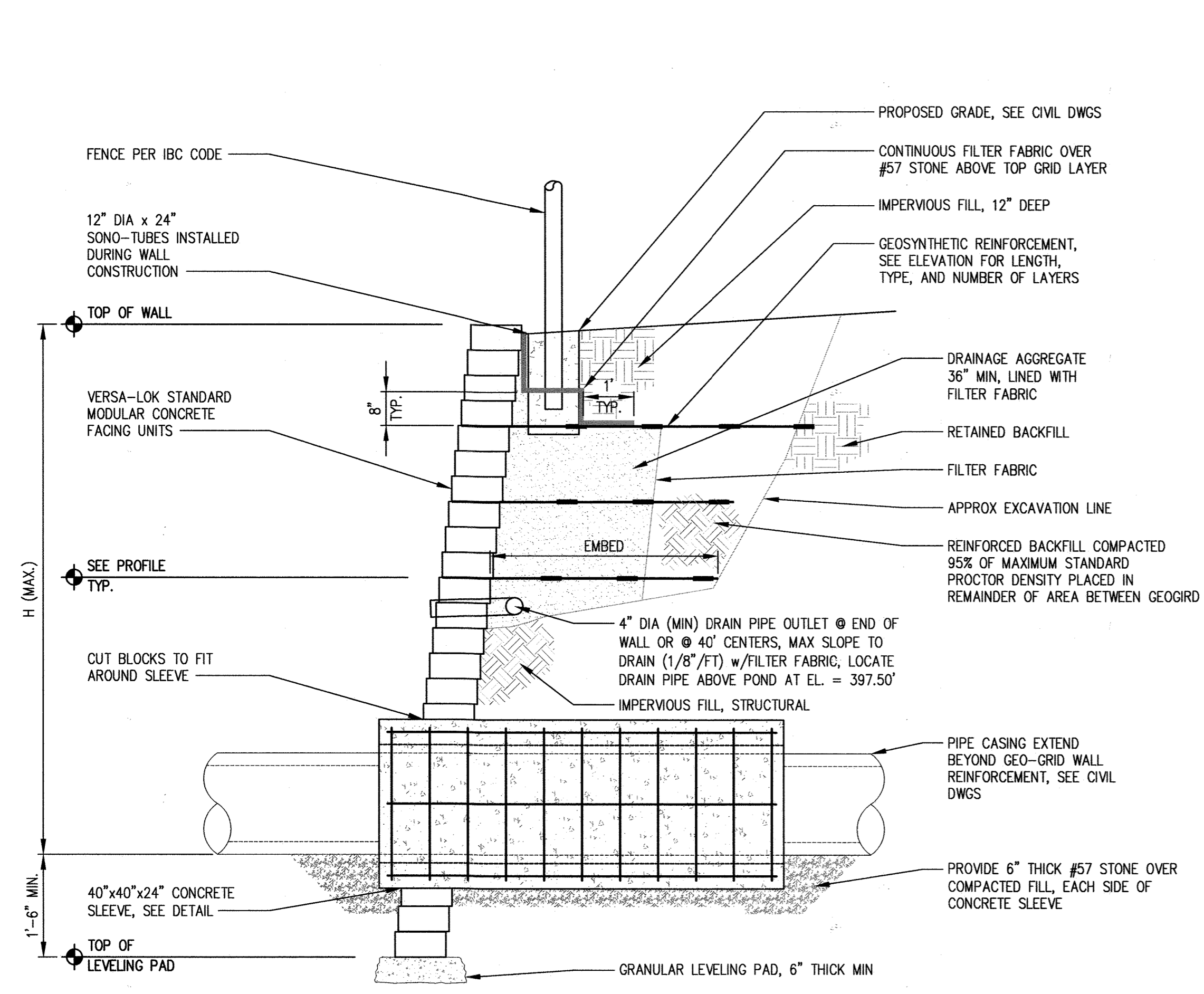
**CUBESMART STORAGE**  
 6300 WASHINGTON BLVD. ELK RIDGE, MD

**RETAINING WALL CROSS SECTIONS**

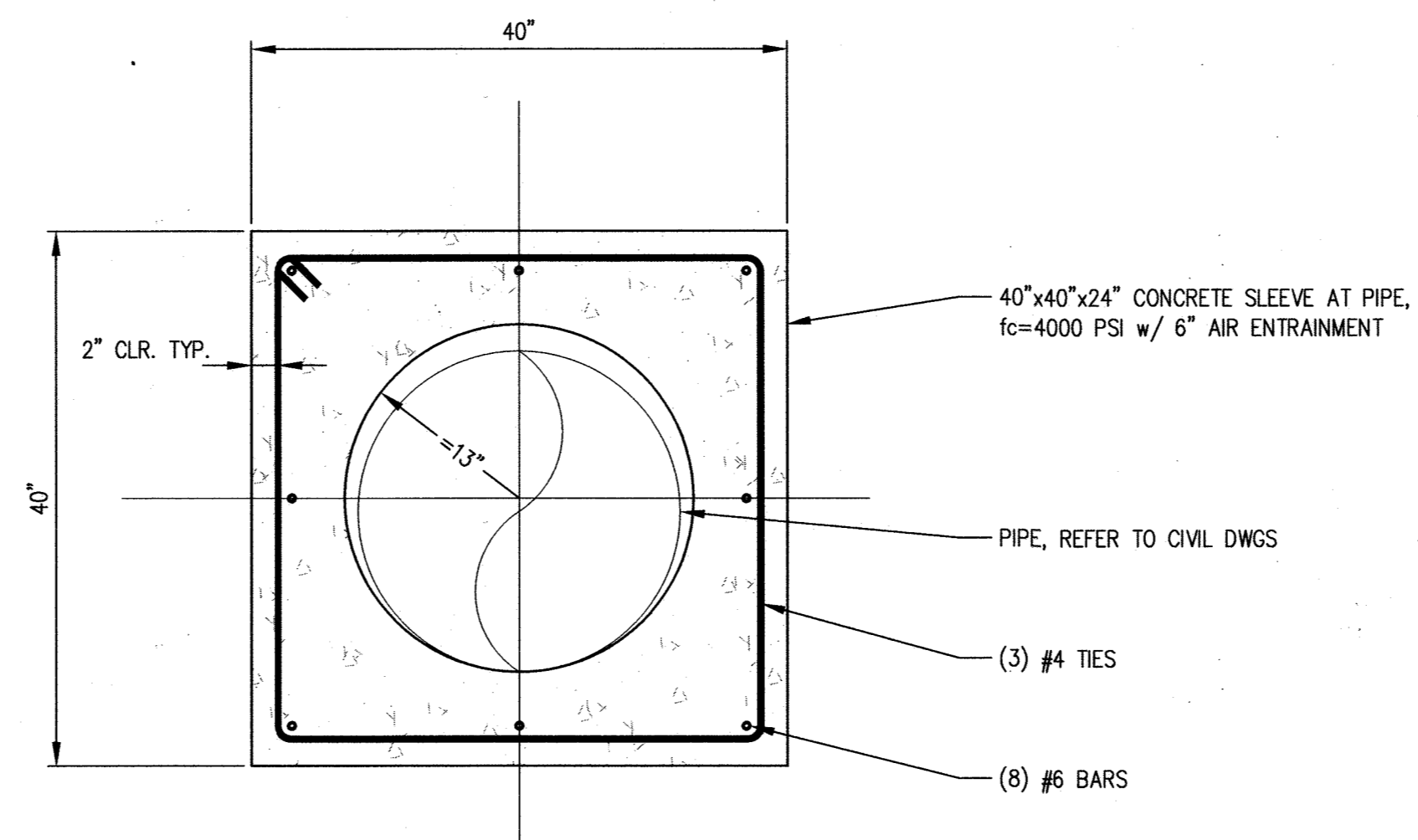
TAX MAP: 38 GRID: 03 PARCEL: 39  
 ZONED: POR  
 ELECTION DISTRICT NO. 01 - HOWARD COUNTY MARYLAND

DESIGN NAB DATE 9/03/19 KCI PROJECT NO. 271700283 SHEET NO. C-4.05  
 DRAWN BRA SCALE SHEET NO. 22 OF 30

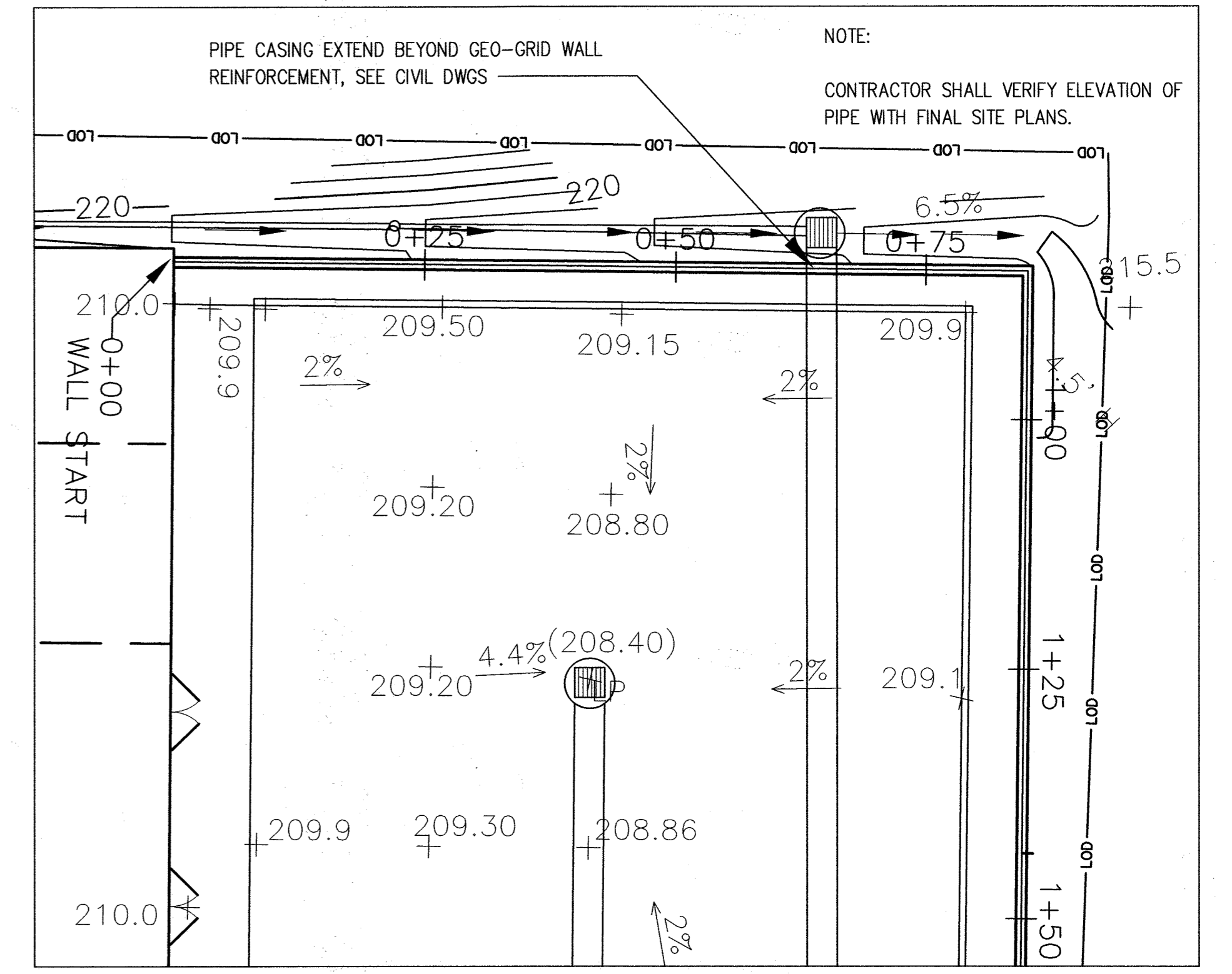




1 SECTION AT RETAINING WALL  
N.T.S.



2 CONCRETE SLEEVE DETAIL  
N.T.S.



3 PLAN AT PIPE LOCATION; TYP. OF 1  
N.T.S.

**STRUCTURAL NOTES:**

1. BUILDING CODES
  - A. THE 2015 INTERNATIONAL BUILDING CODE (IBC) AND ALL SUBSEQUENT SUPPLEMENTS
  - B. GOVERNING LOCAL BUILDING CODE
2. DESIGN LOADS
  - A. THE STRUCTURE IS DESIGNED FOR THE FOLLOWING SURCHARGE LOADS:
 

SLOPED SURFACE.
  - B. THE CONTRACTOR SHALL NOT STORE ANY CONSTRUCTION MATERIALS OR UNDERTAKE ANY CONSTRUCTION OPERATION WHICH WILL EXCEED THE DESIGN LIVE LOADINGS NOTED.
3. SEGMENTAL RETAINING WALLS
  - A. REFER TO "SEGMENTAL RETAINING WALL UNITS" SECTION FOR APPLICABLE CODES AND STANDARDS.
  - B. ASSUMED PARAMETERS FOR DESIGN ARE AS FOLLOWS:
    1. ASSUMED NET ALLOWABLE BEARING CAPACITY = 2000 PSF
    2. EQUIVALENT FLUID LATERAL EARTH PRESSURE = 45 PCF
  - C. CONTRACTOR TO SUPPLY OR VERIFY BACKFILL MATERIALS WITH THE FOLLOWING CHARACTERISTICS:
    1. DRY SOIL DENSITY: 120 PCF - 132 PCF (PER GEOTECHNICAL REPORT)
    2. INTERNAL FRICTION ANGLE: 30 - 32 DEGREES (PER GEOTECHNICAL REPORT)
    3. COHESION (C): 0 (PER GEOTECHNICAL REPORT)
    4. ACTIVE PRESSURE CONSTANT (Ka): 0.36 (PER GEOTECHNICAL REPORT)
  - D. ALL RETAINING WALLS ARE DESIGNED USING THE FOLLOWING FACTORS OF SAFETY:
    1. SLIDING = 1.5
    2. OVERTURNING = 2.0
  - E. THE ALLOWABLE SOIL BEARING PRESSURE SHALL BE FIELD VERIFIED BY A REGISTERED GEOTECHNICAL ENGINEER AND APPROVED PRIOR TO PLACING FOUNDATIONS. SHOULD THE ACTUAL SOIL BEARING PRESSURE BE LESS THAN 2000 PSF, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER.
4. SEGMENTAL RETAINING WALL (SRW) UNITS:
  - A. CODES AND STANDARDS:
    1. NOMA "SEGMENTED RETAINING WALL DESIGN MANUAL"
  - B. SUBMITTALS:
    1. MATERIAL CERTIFICATES FOR SRW UNITS AND GEOSYNTHETIC REINFORCEMENT, UNLESS BASIS OF DESIGN MANUFACTURER IS UTILIZED.
    2. ADDITIONAL SAMPLE SUBMITTALS MAY BE REQUIRED BY ARCHITECT/OWNER. REFER TO ARCHITECTURAL DRAWINGS.

- C. MATERIALS:
  1. SRW UNITS SHALL BE ALLAN BLOCK CLASSIC UNITS OR APPROVED EQUAL, CONSISTING OF MACHINE-FORMED, PORTLAND CEMENT CONCRETE BLOCKS (ASTM C 1372).
  2. NORMAL WEIGHT SRW UNITS: ASTM C 140 USING CONCRETE MEETING 28-DAY COMPRESSIVE STRENGTH OF 3000 PSI.
  3. GEOSYNTHETIC REINFORCEMENT SHALL BE TECATE (MIRAFI) MIRAGRID 3XT
  4. LEVELING PAD: COMPACTED SAND, GRAVEL, OR COMBINATION THEREOF (USCS SOIL TYPES GP, GW, SP, AND SW), OR CONCRETE.
- D. INSTALLATION:
  1. FOLLOW APPLICABLE PROVISIONS OF MANUFACTURER'S INSTALLATION INSTRUCTIONS AND WRITTEN SPECIFICATIONS.
  2. EXCAVATION:
    - a. STRIP VEGETATION AND ORGANIC SOIL FROM WALL AND GEOSYNTHETIC ALIGNMENT.
    - b. CONTRACTOR SHALL TAKE PRECAUTIONS TO MINIMIZE OVER-EXCAVATION. OVER-EXCAVATION SHALL BE FILLED WITH COMPACTED BACKFILL MATERIAL AND CONTRACTOR'S EXPENSE.
  3. LEVELING PAD SHALL BE COMPACTED TO FORM A SMOOTH, LEVEL BEARING SURFACE.
  4. ALL SRW UNITS TO BE INSTALLED WITH A MINIMUM EMBEDMENT AS INDICATED. COMPACT FILL IN FRONT OF EMBEDDED UNITS AT THE SAME TIME AS FILL BEHIND UNITS.
  5. FOLLOW MANUFACTURER'S INSTRUCTIONS FOR UNIT INSTALLATION.
  6. ALL GEOSYNTHETIC REINFORCEMENT SHALL BE PLACED WITH THE STRONGEST DIRECTION PERPENDICULAR TO THE WALL. FOLLOW MANUFACTURER'S WRITTEN INSTRUCTIONS AND SPECIFICATIONS.
  7. SRW CAPS SHALL BE PROPERLY ALIGNED AND GLUED TO UNDERLYING UNITS WITH CONCRETE ADHESIVE OR APPROVED EQUAL. CAPS SHALL OVERHANG THE TOP COURSE BY 3/4 TO 1 INCH, MAX.
5. MISCELLANEOUS
  - A. THE CONTRACTOR SHALL LOCATE ALL UTILITIES IN THE AREA OF CONSTRUCTION AND PREVENT DAMAGE TO THEM. SHOULD DAMAGE OCCUR TO ANY UTILITIES, THE CONTRACTOR IS REQUIRED TO REPAIR THE DAMAGE TO THE SATISFACTION OF THE OWNER AT HIS OWN EXPENSE.
  - B. THE CONTRACTOR SHALL REVIEW THE ARCHITECTURAL, CIVIL, MECHANICAL AND ELECTRICAL DRAWINGS FOR LOCATION AND DIMENSION OF CHASES, INSERTS, OPENINGS, SLEEVES, DEPRESSIONS AND OTHER PROJECT REQUIREMENTS WHICH IMPACT THE STRUCTURAL COMPONENTS.
  - C. THE CONTRACTOR SHALL CHECK AND VERIFY ALL DIMENSIONS SHOWN ON THE CONTRACT DRAWINGS BEFORE PROCEEDING WITH CONSTRUCTION.
  - D. SCALES SHOWN ON THE STRUCTURAL CONTRACT DRAWINGS ARE FOR GENERAL INFORMATION ONLY. DIMENSIONAL INFORMATION SHALL NOT BE OBTAINED BY SCALING THE DRAWINGS.

**SWM AS BUILT**  
**AS BUILT SURVEY BY CLSI ON 5/4/2021**

*[Signature]*  
APR 06 2021

**THERE IS NO AS BUILT INFORMATION PROVIDED ON THIS SHEET**

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

*[Signature]* 2/4/20  
CHIEF DIVISION OF LAND DEVELOPMENT DATE

*[Signature]* 1-24-20  
CHIEF DEVELOPMENT ENGINEERING DIVISION HSP DATE

*[Signature]* 2/4/20  
DIRECTOR DATE

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REVISIONS		
NO.	DATE	BY

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**CUBESMART STORAGE**  
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**RETAINING WALL  
CROSS SECTIONS**

TAX MAP: 38 GRID: 03 PARCEL: 39  
ZONED: POR  
ELECTION DISTRICT NO. 01 - HOWARD COUNTY MARYLAND

DESIGN NAB	DATE 9/03/19	KCI PROJECT NO. 271700283	SHEET NO.
DRAWN BRA	SCALE	SHEET NO. 23 OF 30	<b>C-4.06</b>



**Specification Guidelines: Allan Block Modular Retaining Wall Systems**

The following specifications provide Allan Block Corporation's typical requirements and recommendations. At the engineer of record's discretion these specifications may be revised to accommodate site specific design requirements.

**SECTION 1: ALLAN BLOCK MODULAR RETAINING WALL SYSTEMS**

**PART 1: GENERAL**

**1.1 Scope**

Work includes furnishing and installing modular concrete block retaining wall units to the lines and grades designated on the construction drawings and as specified herein.

**1.2 Applicable Sections of Related Work**

Section 2: Geogrid Wall Reinforcement

**1.3 Reference Standards**

- A. ASTM C1372 Standard Specification for Segmental Retaining Wall Units.
- B. ASTM D4595 - Tensile Properties of Geotextiles by the Wide-Width Strip Method
- C. ASTM D698 Moisture Density Relationship for Soils, Standard Method
- D. ASTM D422 Gradation of Soils
- E. ASTM C140 Sample and Testing concrete Masonry Units

**1.4 Delivery, Storage, and Handling**

- A. Contractor shall check the materials upon delivery to assure proper material has been received.
- B. Contractor shall prevent excessive mud, cementitious material, and like construction debris from coming in contact with the materials.
- C. Contractor shall protect the materials from damage. Damaged material shall not be incorporated in the project (ASTM C1372).

**PART 2: MATERIALS**

**2.1 Modular Wall Units**

- A. Wall units shall be Allan Block Retaining Wall units as produced by a licensed manufacturer.
- B. Wall units shall have minimum 28 day compressive strength of 3000 psi (20.7 MPa) in accordance with ASTM C1372. The concrete units shall have adequate freeze-thaw protection with an average absorption rate in accordance with ASTM C1372 or an average absorption rate of 7.5 lb/ft<sup>2</sup> (120 kg/m<sup>2</sup>) for northern climates and 10 lb/ft<sup>2</sup> (160 kg/m<sup>2</sup>) for southern climates.
- C. Exterior dimensions shall be uniform and consistent. Maximum dimensional deviations on the height of any two units shall be 0.125 in. (3 mm).
- D. Wall units shall provide a minimum of 110 lbs total weight per square foot of wall face area (555 kg/m<sup>2</sup>). Fill contained within the units may be considered 80% effective weight.
- E. Exterior face shall be textured. Color as specified by owner.
- F. Freeze Thaw Durability. Like all concrete products, dry-cast concrete SRW units are susceptible to freeze-thaw degradation with exposure to de-icing salts and cold temperature. This is a concern in northern tier states or countries that use deicing salts. Based on good performance experience by several agencies, ASTM C1372 or equivalent governing standard or public authority, Standard Specification for Segmental Retaining Wall Units should be used as a model, except that, to increase durability, the compressive strength for the units should be increased to a minimum of 4,000 psi (28 MPa) unless local requirements dictate higher levels. Also, maximum water absorption should be reduced and requirements for freeze-thaw testing increased.
  - a. Require a current passing ASTM C 1262 or equivalent governing standard or public authority, test report from material supplier in northern or cold weather climates.
  - b. Where de-icing chemicals land on a SRW retaining wall, consider a more durable capping unit. Durability concerns occur where there are saturated conditions in repeated freezing and thawing conditions.
  - c. In areas where SRW's are exposed to repeated exposure from snow removal equipment, consider sealants or water repelling chemicals periodically applied to the walls (alone and along with de-icing compounds).
- G. Freeze Thaw Testing Criteria
  - The need for higher levels of Freeze Thaw durability is primarily a regional requirement. In lieu of written criteria from a local governing body or public authority, the following provides testing criteria for areas considered negligible, moderate or severe (reference National Concrete Masonry Association):
  - Exposure Average Winter Low Temperature
  - Negligible > 32 deg F (0 degrees C)
  - Moderate > 32 deg and >20 deg F (0 and -7 C)
  - Severe < 20 deg F (-7 deg C)
  - a. Negligible: minimum compressive strength per design specifications. No freeze-thaw testing is required.
  - b. Moderate: If block units are not exposed to deicing salts: minimum compressive strength of 4000 psi (28 MPa). Less than 1% weight loss after 100 cycles for 5 specimens OR less than 1.5% weight loss after 150 cycles for 4 of 5 specimens. Tested using ASTM C1262 in tap water.
  - c. Moderate/Severe: If block units are exposed to deicing salts: minimum compressive strength of 5800 psi (40 MPa). Where units will be exposed to De-icing Salts: Less than 1% weight loss after 40 cycles for 5 of 5 specimens OR less than 1.5% weight loss after 50 cycles for 4 of 5 specimens. Tested using ASTM C1262 in 3% sodium solution.

In northern climates that are considered to be more arid, the environment that creates freeze-thaw durability issues may not be present. The local engineer of record needs to evaluate if continued wetting of the facing units creates an environment where durability concerns are warranted.

**2.2 Wall Rock**

- A. Material must be well-graded compactable aggregate, 0.25 in. to 1.5 in., (6 mm - 38 mm) with no more than 10% passing the #200 sieve (ASTM D422).
- B. Material behind and within the blocks may be the same material.

**2.3 Infill Soil**

- A. Infill material shall be site excavated soils when approved by the on-site soils engineer unless otherwise specified in the drawings. Unsuitable soils for backfill (heavy clays or organic soils) shall not be used in the reinforced soil mass. Fine grained cohesive soils (FC3) may be used in wall construction, but additional backfilling, compaction and water management efforts are required. Poorly graded sands, expansive clays and/or soils with a plasticity index (PI) >20 or a liquid limit (LL) >40 should not be used in wall construction.
- B. The infill soil used must meet or exceed the design friction angle and description noted on the design cross sections, and must be free of debris and consist of one of the following inorganic USCS soil types: GF, GW, SW, SF, GP, GM or SP-SM meeting the following gradation as determined in accordance with ASTM D422.
 

Sieve Size	Percent Passing
1 inch (25 mm)	100 - 75
No. 4 (4.75 mm)	100 - 20
No. 40 (0.425 mm)	0 - 60
No. 200 (0.075 mm)	0 - 35
- C. Where additional fill is required, contractor shall submit sample and specifications to the wall design engineer or the onsite soils engineer for approval and the approving engineer must certify that the soils proposed for use has properties meeting or exceeding original design standards.

**PART 3: WALL CONSTRUCTION**

**3.1 Contractor Requirements**

- A. Contractors shall be trained and certified by local manufacturer or equivalent accredited organization.
- B. Allan Block and NCMA have certification programs that are accredited. Identify when advanced certification levels are appropriate based on complexity and criticality of project application.
- C. Contractors shall provide a list of projects they have completed.

**3.2 Excavation**

- A. Contractor shall excavate to the lines and grades shown on the construction drawings. Contractor shall use caution not to over-excavate beyond the lines shown, or to disturb the base elevations beyond those shown.
- B. Contractor shall verify locations of existing structures and utilities prior to excavation. Contractor shall ensure all surrounding structures are protected from the effects of wall excavation.

**3.3 Foundation Soil Preparation**

- A. Foundation soil shall be defined as any soils located beneath a wall.
- B. Foundation soil shall be excavated as dimensioned on the plans and compacted to a minimum of 95% Standard Proctor (ASTM D698) prior to placement of the base material.
- C. Foundation soil shall be examined by the on-site soils engineer to ensure that the actual foundation soil strength meets or exceeds assumed design strength. Soil not meeting the required strength shall be removed and replaced with acceptable material.

**3.4 Base**

- A. The base material shall be the same as the Wall Rock material (Section 2.2) or a low permeable granular material.
- B. Base material shall be placed as shown on the construction drawing. Top of base shall be located to allow bottom wall units to be buried to proper depths as per wall heights and specifications.
- C. Base material shall be installed on undisturbed native soils or suitable replacement fills compacted to a minimum of 95% Standard Proctor (ASTM D698).
- D. Base shall be compacted at 95% Standard Proctor (ASTM D698) to provide a level hard surface on which to place the first course of blocks. The base shall be constructed to ensure proper wall embedment and the final elevation shown on the plans. Well-graded sand can be used to moisten the top 1/2 in. (13 mm) on the base material.
- E. Base material shall be a 4 in. (100 mm) minimum depth for walls under 4 ft (1.2 m) and a 6 in. (150 mm) minimum depth for walls over 4 ft (1.2 m).

**3.5 Unit Installation**

- A. Install units in accordance with the manufacturer's instructions and recommendations for the specific concrete retaining wall unit, and as specified herein.
- B. Ensure that units are in full contact with base. Proper care shall be taken to develop straight lines and smooth curves on base course as per wall layout.
- C. Fill all cores and cavities and a minimum of 12 in. (300 mm) behind the base course with wall rock. Use infill soils behind the wall rock and approved soils in front of the base course to firmly lock in place. Check again for level and alignment. Use a plate compactor to consolidate the area behind the base course. All excess material shall be swept from top of units.
- D. Install next course of wall units on top of base course. Position blocks to be offset from seams of blocks below. Perfect running bond is not essential, but a 3 in. (75 mm) minimum offset is recommended. Check each block for proper alignment and level. Fill all cavities in and around wall units and to a minimum of 12 in. (300 mm) depth behind block with wall rock. For taller wall application the depth of wall rock behind the block should be increased: walls from 15 ft (4.6 m) to 25 ft (7.6 m) should have a minimum of 2 ft (0.6 m) and walls above 25ft (7.6 m) should have a minimum of 3 ft (0.9 m). Spread infill soil in uniform lifts not exceeding 8 in. (200 mm) in uncompacted thickness and compact to 95% of Standard Proctor (ASTM D698) behind the consolidation zone.
- E. The consolidation zone shall be defined as 3 ft (0.9 m) behind the consolidation zone. Compaction within the consolidation zone shall be accomplished by using a hand operated plate compactor and shall begin by running the plate compactor directly on the block and then compacting in parallel paths from the wall face until the entire consolidation zone has been compacted. A minimum of two passes of the plate compactor are required with maximum lifts of 8 in. (200 mm). Expansive or fine-grained soils may require additional compaction passes and/or specific compaction equipment such as a sheepfoot roller. Maximum lifts of 4 inches (100 mm) may be required to achieve adequate compaction within the consolidation zone. Employ methods using lightweight compaction equipment that will not disrupt the stability or batter of the wall. Final compaction requirements in the consolidation zone shall be established by the engineer of record.
- F. Install each subsequent course in like manner. Repeat procedure to the extent of wall height.
- G. As with any construction work, some deviation from construction drawing alignments will occur. Variability in construction of SRWs is approximately equal to that of cast-in-place concrete retaining walls. As opposed to cast-in-place concrete walls, alignment of SRWs can be simply corrected or modified during construction. Based upon examination of numerous completed SRWs, the following recommended minimum tolerances can be achieved with good construction techniques.
  - Vertical Control - ±1.25 in. (32 mm) max. over 10 ft (3 m) distance
  - Horizontal Location Control - straight lines ±1.25 in. (32 mm) over a 10 ft (3 m) distance.
  - Rotation - from established plan wall batter: 2.0 Deg
  - Bulging - 1.0 in. (25 mm) over a 10 ft (3.0 m) distance

**3.6 Additional Construction Notes**

- A. When one wall branches into two terraced walls, it is important to note that the soil behind the lower wall is also the foundation soil beneath the upper wall. This soil shall be compacted to a minimum of 95% of Standard Proctor (ASTM D698) prior to placement of the base material. Achieving proper compaction in the soil beneath an upper terrace prevents settlement and deformation of the upper wall. One way is to replace the soil with wall rock and compact to 8 in. (200 mm) lifts. When using on-site soils, compact in maximum lifts of 8 in. (100 mm) or as required to achieve specified compaction.
- B. Filter fabric use is not suggested for use with cohesive soils. Clogging of such fabric creates unacceptable hydrostatic pressures in soil reinforced structures. When filtration is deemed necessary in cohesive soils, use a three dimensional filtration system of clean sand or filtration aggregate.
- C. Embankment protection fabric is used to stabilize rip rap and foundation soils in water applications and to separate infill materials from the retained soils. This fabric should permit the passage of fines to preclude clogging of the material. Embankment protection fabric shall be a high strength polypropylene monofilament material designed to meet or exceed typical Corps of Engineers plastic filter fabric specifications (CW-0221b), stabilize against ultraviolet (UV) degradation and typically exceeding the values in Table 1, page 7 of the AB Spec Book.
- D. Water management is of extreme concern during and after construction. Steps must be taken to ensure that drain pipes are properly installed and vented to daylight and a grading plan has been developed that routes water away from the retaining wall location. Site water management is required both during construction of the wall and after completion of construction.

**Specification Guidelines: Geogrid Reinforcement Systems**

The following specifications provide Allan Block Corporation's typical requirements and recommendations. At the engineer of record's discretion these specifications may be revised to accommodate site specific design requirements.

**SECTION 2**

**PART 1: GENERAL**

**1.1 Scope**

Work includes furnishing and installing geogrid reinforcement, wall block, and backfill to the lines and grades designated on the construction drawings and as specified herein.

**1.2 Applicable Sections of Related Work**

Section 1: Allan Block Modular Retaining Wall Systems.

**1.3 Reference Standards**

- A. ASTM D4595 - Tensile Properties of Geotextiles by the Wide-Width Strip Method
- B. ASTM D5282 - Test Method for Evaluating the Unconfined Creep Behavior of Geogrids
- C. ASTM D6838 Grid Connection Strength (SRW-U1)
- D. ASTM D6916 SRW Block Shear Strength (SRW-U2)
- E. GR1-G04 - Grid Long Term Allowable Design Strength (LTADS)
- F. ASTM D6706 - Grid Pullout of Soil

**1.4 Delivery, Storage, and Handling**

- A. Contractor shall check the geogrid upon delivery to assure that the proper material has been received.
- B. Geogrid shall be stored above -10 F (-23 C).
- C. Contractor shall prevent excessive mud, cementitious material, or other foreign materials from coming in contact with the geogrid material.

**PART 2: MATERIALS**

**2.1 Definitions**

- A. Geogrid products shall be of high density polyethylene or polyester yarns encapsulated in a protective coating specifically fabricated for use as a soil reinforcement material.
- B. Concrete retaining wall units are as detailed on the drawings and shall be Allan Block Retaining Wall Units.
- C. Drainage material is free draining granular material as defined in Section 1, 2.2 Wall Rock.
- D. Infill soil is the soil used as fill for the reinforced soil mass.
- E. Foundation soil is the in-situ soil.

**2.2 Products**

Geogrid shall be the type as shown on the drawings having the property requirements as described within the manufacturer's specifications.

**2.3 Acceptable Manufacturers**

A manufacturer's product shall be approved by the wall design engineer.

**PART 3: WALL CONSTRUCTION**

**3.1 Foundation Soil Preparation**

- A. Foundation soil shall be excavated to the lines and grades as shown on the construction drawings, or as directed by the on-site soils engineer.
- B. Foundation soil shall be examined by the on-site soils engineer to assure that the actual foundation soil strength meets or exceeds assumed design strength.
- C. Over-excavated areas shall be filled with compacted backfill material approved by on-site soils engineer.
- D. Contractor shall verify locations of existing structures and utilities prior to excavation. Contractor shall ensure all surrounding structures are protected from the effects of wall excavation.

**3.2 Wall Construction**

Wall construction shall be as specified under Section 1, Part 3, Wall Construction.

**3.3 Geogrid Installation**

- A. Install Allan Block wall to designated height of first geogrid layer. Backfill and compact the wall rock and infill soil in layers not to exceed 8 in. (200 mm) lifts behind wall to depth equal to designed grid length before grid is installed.
- B. Cut geogrid to designed embedment length and place on top of Allan Block to back edge of the raised front lip or within 1 in. (25 mm) of the concrete retaining wall face when using ABFD16stone. Extend away from wall approximately 3% above horizontal on compacted infill soils.
- C. Lay geogrid at the proper elevation and orientations shown on the construction drawings or as directed by the wall design engineer.
- D. Correct orientation of the geogrid shall be verified by the contractor and on-site soils engineer. Strength direction is typically perpendicular to wall face.
- E. Follow manufacturer's guidelines for overlap requirements. In curves and corners, layout shall be as specified in Design Detail 9-12: Using Grid with Corners and Curves, see page 14 of the AB Spec Book.
- F. Place next course of Allan Block on top of grid and fill block cores with wall rock to lock in place. Remove slack and folds in grid and stake to hold in place.
- G. Adjacent sheets of geogrid shall be butted against each other at the wall face to achieve 100 percent coverage.
- H. Geogrid lengths shall be continuous. Splicing parallel to the wall face is not allowed.

**3.4 Fill Placement**

- A. Infill soil shall be placed in lifts and compacted as specified under Section 1, Part 3.4, Unit Installation.
- B. Infill soil shall be placed, spread and compacted in such a manner that minimizes the development of slope or movement of the geogrid.
- C. Only hand-operated compaction equipment shall be allowed within 3 ft (0.9 m) behind the wall. This area shall be defined as the consolidation zone. Compaction in this zone shall begin by running the plate compactor directly on the block and then compacting in parallel paths to the wall face until the entire consolidation zone has been compacted. A minimum of two passes of the plate compactor are required with maximum lifts of 8 in. (200 mm). Section 1, Part 3.4, E, Page 3 of the AB Spec Book.
- D. When fill is placed and compaction cannot be defined in terms of Standard Proctor Density, then compaction shall be performed using ordinary compaction process and compacted so that no deformation is observed from the compaction equipment or to the satisfaction of the engineer of record or the site soils engineer.
- E. Tracked construction equipment shall not be operated directly on the geogrid. A minimum fill thickness of 6 in. (150 mm) is required prior to operation of tracked vehicles over the geogrid. Turning of tracked vehicles should be kept to a minimum to prevent tracks from displacing the fill and damaging the geogrid.
- F. Rubber-tired equipment may pass over the geogrid reinforcement at slow speeds, less than 10 mph (16 Km/h). Sudden braking and sharp turning shall be avoided.
- G. The infill soil shall be compacted to achieve 95% Standard Proctor (ASTM D698). Soil tests of the infill soil shall be submitted to the on-site soils engineer for review and approval prior to the placement of any material. The contractor is responsible for achieving the specified compaction requirements. The on-site soils engineer may direct the contractor to remove, correct or amend any soil found not in compliance with these written specifications.
- H. An independent testing firm should be hired by the owner to provide services.
- I. Independent firm to keep inspection log and provide written reports at predetermined intervals to the owner.
- J. Testing frequency should be set to establish a proper compaction protocol to consistently achieve the minimum compaction requirements set by the design requirements. If full time inspection and testing at 8 inch (20 cm) lifts is not provided, then the following testing frequency should be followed:
  - a. One test for every 8 inches (20 cm) of vertical fill placed and compacted, for every 25 linear feet (7.6 m) of retaining wall length, starting on the first course of block.
  - b. Vary compaction test locations to cover the entire area of reinforced zone; including the area compacted by the hand-operated compaction equipment.
  - c. Once protocol is deemed acceptable, testing can be conducted randomly at locations and frequencies determined by the on-site soils engineer.
- K. Slopes above the wall must be compacted and checked in a similar manner.

**3.5 Special Considerations**

- A. Geogrid can be interrupted by periodic penetration of a column, pier or footing structure.
  - B. Allan Block walls will accept vertical and horizontal reinforcing with rebar and grout.
  - C. If site conditions will not allow geogrid embedment length, consider the following alternatives: Masonry Reinforced Walls - Soil Nailing - Increased Wall Batter - Earth Anchors - Double Allan Block Wall - Rock Batts - No-Fines Concrete
- See Design Details Page 16 and 17 of the AB Spec Book.
- D. Allan Block may be used in a wide variety of water applications as indicated in Section 3, Part 1.8.

**SWM AS BUILT**  
**AS BUILT SURVEY BY CLSI ON 5/4/2021**

**22736**      **05 Jun 2022**

**THERE IS NO AS BUILT INFORMATION PROVIDED ON THIS SHEET**

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

*Patrick Dougal*      2/14/20  
DATE

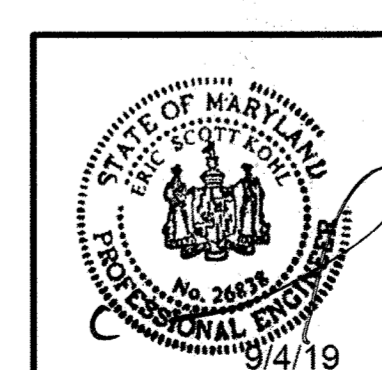
CHIEF DIVISION OF PLANNING AND ZONING

*Patrick Dougal*      1/24/20  
DATE

CHIEF, DEVELOPMENT ENGINEERING DIVISION

*Patrick Dougal*      2/16/20  
DATE

DIRECTOR



PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME AND THAT I AM DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 26638 EXP. DATE: 01/18/2020

REVISIONS			
NO.	DATE	DESCRIPTION	BY

OWNER/DEVELOPER: PATRICK DOUGAL DOUGAL & ASSOCIATES 5695 MAIN STREET ELK RIDGE, MD 21075 (410)-379-6444	<p style="text-align: center;"><b>CUBESMART STORAGE</b> 6300 WASHINGTON BLVD. ELK RIDGE, MD</p> <p style="text-align: center;"><b>RETAINING WALL CROSS SECTIONS</b></p> <p>TAX MAP: 38      GRID: 03      PARCEL: 39 ELECTION DISTRICT NO. 01 - HOWARD COUNTY MARYLAND</p> <p>KCI PROJECT NO. 271700283      SHEET NO. <b>C-4.07</b></p>
DESIGN: NAB      DATE: 9/03/19	SCALE:      SHEET NO. 24 OF 30



General Notes

Soil Notes

Soil loading considered in this design and calculations are based on the following parameters:

	Internal Friction Angle	Cohesion	Unit WT	Soil Type
	Deg.	psf	pcf	
Infill Soil	32	0	135	Well compacted silty, sandy clay
Retained Soil	30 - 32	0	120 - 135	Well compacted silty, sandy clay
Foundation Soil	32	0	135	Well compacted silty, sandy clay

Construction Notes

- Actual soil parameters must meet or exceed these listed conditions to be used in wall construction. In general, granular soils (friction angle greater than or equal to 32 degrees) are recommended as infill soil. Fine grained cohesive soils (friction angle less than 32 degrees) with low plasticity (PI less than 20) may be used in wall construction, but additional backfilling and compaction efforts are required. Allan Block Corporation has not verified these design conditions, and if required the soil parameters shall be confirmed by the Site Geotechnical Engineer or others prior to wall construction.
- Substitution of Infill Soils are strictly prohibited unless approved by the engineer of record.
- In this analysis, the effective friction angle without the addition of cohesion is used to determine the design strength of the soil when calculating lateral forces. At the discretion of the engineer of record, cohesion may be used when calculating the ultimate bearing capacity even though it is typically ignored.
- Global stability and seismic loading are not considered in this design.
- Hydrostatic loading is not considered in this analysis. Sufficient drainage must be provided such that hydrostatic loading (pore pressure) does not develop in the reinforced zone.
- Analysis assumes fill placement in 8 inch (200 mm) lifts compacted to 95% Standard Proctor Density. For any wall over 10 feet (3 meters), with a surcharge or contains cohesive soils, compaction test frequency and location shall be determined by the engineer of record or as otherwise specified.
- All fill placed above walls shall be placed and compacted in accordance with the requirements for all other reinforced material.
- Retaining wall units and installation shall conform to the Allan Block Modular Retaining Wall Systems Specification Guidelines, Geogrid Reinforcement Systems Specification Guidelines, and Water Management Specification Guidelines as published in the AB Spec Book and the AB Engineering Manual.
- Retaining walls must be installed and constructed according to the contract drawings. The retaining wall plan view is for wall identification only.
- Geogrid spacing is determined by structural cross-section design requirements. To insure proper geogrid placement, contractor must review both elevation view and cross sections prior to wall construction.
- Suggested Quality Assurance Requirements: A qualified engineer or technician shall supervise the wall construction to verify field and site soil conditions. In the event that the Site Geotechnical Engineer does not perform this work, a qualified Geotechnical Engineer/Technician shall be consulted to assure the Allan Block Wall is constructed with proper soil parameters.

Surface Drainage Notes

- Rainfall and other water sources such as irrigation activities can be defined as surface water. The retaining wall design shall take into consideration the management of this water.
- Site grading shall be designed to route surface water around and away from the wall.
- The internal drainage system of the retaining wall is designed to remove incidental water that infiltrates into the soil behind the wall. Adequate storm water drainage systems are required to completely drain the area around the retaining wall structure.
- Drain piping, toe drain, should be located at the back of the rock drain field behind the wall as close to the bottom of the wall as allowed while still maintaining a positive gradient for drainage to daylight, or to a storm water management system.
- A heel drain may be required at back of the cut to route water away from the reinforced soil mass during the construction process.
- Ground water can be present within the soil due to surface infiltration or water table fluctuation. If ground water is encountered during construction, an adequate drainage system must be installed or the wall design must consider the presence of water within the soil mass.
- All water collection devices such as roof downspouts, storm sewers, and curb gutters must be designed to accommodate maximum flow rates and outlet outside the retaining wall area.
- Retaining walls in conditions that allow standing water to seep the wall face are considered water applications. These walls require specific design and construction steps to ensure performance.

Specification Guidelines: Water Management

The following specifications provide Allan Block Corporation's typical requirements and recommendations. At the engineer of record's discretion these specifications may be revised to accommodate site specific design requirements

SECTION 3

PART 1: GENERAL DRAINAGE

1.1 Surface Drainage

- Rainfall or other water sources such as irrigation activities collected by the ground surface atop the retaining wall can be defined as surface water. Retaining wall design shall take into consideration the management of this water:
- At the end of each day's construction and at final completion, grade the backfill to avoid water accumulation behind the wall or in the reinforced zone.
  - Surface water must not be allowed to pond or be trapped in the area above the wall or at the toe of the wall.
  - Existing slopes adjacent to retaining wall or slopes created during the grading process shall include drainage details so that surface water will not be allowed to drain over the top of the slope face and/or wall. This may require a combination of berms and surface drainage ditches.
  - Irrigation activities at the site shall be done in a controlled and reasonable manner. If an irrigation system is employed, the design engineer or irrigation manufacturer shall provide details and specification for required equipment to ensure against over irrigation which could damage the structural integrity of the retaining wall system.
  - Surface water that cannot be diverted from the wall must be collected with surface drainage swales and drained laterally in order to disperse the water around the wall structure. Construction of a typical swale system shall be in accordance with Design Detail 5: Swales, of the AB Spec Book.

1.2 Grading

- The shaping and re-contouring of land in order to prepare it for site development is grading. Site grading shall be designed to route water around the walls:
- Establish final grade with a positive gradient away from the wall structure. Concentrations of surface water runoff shall be managed by providing necessary structures, such as paved ditches, drainage swales, catch basins, etc.
  - Grading designs must divert sources of concentrated surface flow, such as parking lots, away from the wall.

1.3 Drainage System

- The internal drainage systems of the retaining wall can be described as the means of eliminating the buildup of incidental water which infiltrates the soils behind the wall. Drainage system design will be a function of the water conditions on the site. Possible drainage facilities include Toe and Heel drainage collection pipes and blanket or chimney rock drains or others. Design engineer shall determine the required drainage facilities to completely drain the retaining wall structure for each particular site condition.
- All walls will be constructed with a minimum of 12 in. (300 mm) of wall rock directly behind the wall facing. The material shall meet or exceed the specification for wall rock outlined in Section 1, 2.2 Wall Rock.
  - The drainage collection pipe, drain pipe, shall be a 4 in. (100 mm) perforated or slotted PVC, or corrugated HDPE pipe as approved by engineer of record.
  - All walls will be constructed with a 4 in. (100 mm) diameter drain pipe placed at the lowest possible elevation within the 12 in. (300 mm) of wall rock. This drain pipe is referred to as a toe drain, Section 3, 1.4 Toe Drain.
  - Geogrid Reinforced Walls shall be constructed with an additional 4 in. (100 mm) drain pipe at the back bottom of the reinforced soil mass. This drain pipe is referred to as a heel drain, Section 3, 1.5 Heel Drain.

1.4 Toe Drain

- A toe drain pipe should be located at the back of the wall rock behind the wall as close to the bottom of the wall as allowed while still maintaining a positive gradient for drainage to daylight, or a storm water management system. Toe drains are installed for incidental water management not as a primary drainage system.
- For site configurations with bottoms of the base on a level plane it is recommended that a minimum one percent gradient be maintained on the placement of the pipe with outlets on 50 ft (15 m) centers, or 100 ft (30 m) centers if pipe is crowned between the outlets. This would provide for a maximum height above the bottom of the base in a flat configuration of no more than 6 in. (150 mm).
  - For rigid drain pipes with drain holes the pipes should be positioned with the holes located down. Allan Block does not require that toe drain pipes be wrapped when installed into base rock complying with the specified wall rock material.
  - Pipes shall be routed to storm drains where appropriate or through or under the wall at low points when the job site grading and site layout allows for routing. Appropriate details shall be included to prevent pipes from being crushed, plugged, or infested with rodents.
  - On sites where the natural drop in grade exceeds the one percent minimum, drain pipe outlets shall be on 100 foot (30 m) centers maximum. This will provide outlets in the event that excessive water flow exceeds the capacity of pipe over long stretches.
  - When the drain pipe must be raised to accommodate outlets through the wall face, refer to the Design Detail 4: Alternate Drain, Page 13 of the AB Spec Book.

1.5 Heel Drain

- The purpose of the heel drain is to pick up any water that migrates from behind the retaining wall structure at the cut and route the water away from the reinforced mass during the construction process and for incidental water for the life of the structure.
- The piping used at the back of the reinforced mass shall have a one percent minimum gradient over the length, but it is not critical for it to be positioned at the very bottom of the cut. Additionally the entire length of the pipe may be vented at one point and should not be tied into the toe drain.
  - The pipe may be a rigid pipe with holes at the bottom with an integral sock encasing the pipe or a corrugated perforated flexible pipe with a sock to filter out fines when required based on soil conditions. For infill soils with a high percentage of sand and/or gravel the heel drain pipe does not need to be surrounded by wall rock. When working with soils containing fine grained cohesive soils having a PI of greater than 6 and LL of 30 or greater, 1 cubic foot (0.03 cubic meter) of drainage rock is required around the pipe for each 1 ft. (30 cm) of pipe length.

1.6 Ground Water

- Ground water can be defined as water that occurs within the soil. It may be present because of surface infiltration or water table fluctuation. Ground water movement must not be allowed to come in contact with the retaining wall.
- If water is encountered in the area of the wall during excavation or construction, a drainage system (chimney, composite or blanket) must be installed as directed by the wall design engineer.
  - Standard retaining wall designs do not include hydrostatic forces associated with the presence of ground water. If adequate drainage is not provided the retaining wall design must consider the presence of the water.
  - When non-free draining soils (soils with friction angles less than 30 degrees) are used in the reinforced zone, the incorporation of a chimney and blanket drain should be added to minimize the water penetration into the reinforced mass. Refer to Design Detail 6: Chimney and Blanket Drain, Page 13 of the AB Spec Book.
  - Drain material to be consistent with wall rock material. For more information on wall rock material see Specification Guidelines: Allan Block Modular Retaining Wall Systems, section 2.1.
  - Manufactured chimney and blanket drains to be approved by the geotechnical and/or the local engineer of record prior to use.

1.7 Concentrated Water Sources

- All collection devices such as roof downspouts, storm sewers, and curb gutters are concentrated water sources. They must be designed to accommodate maximum flow rates and to vent outside of the wall area.
- All roof downspouts of nearby structures shall be sized with adequate capacity to carry storm water from the roof away from the wall area. They shall be connected to a drainage system in closed pipe and routed around the retaining wall area.
  - Site layout must take into account locations of retaining wall structures and all site drainage paths. Drainage paths should always be away from retaining wall structures.
  - Storm sewers and catch basins shall be located away from retaining wall structures and designed so as not to introduce any incidental water into the reinforced soil mass.
  - A path to route storm sewer overflow must be incorporated into the site layout to direct water away from the retaining wall structure.

1.8 Water Application

- Retaining walls constructed in conditions that allow standing or moving water to come in contact with the wall face are considered water applications. These walls require specific design and construction steps to ensure performance. Refer to Design Detail 7 and 8: Water Applications, Page 13 of the AB Spec Book.
- The wall rock should be placed to the limits of the geogrid lengths up to a height equal to 12 inches (30 cm) higher than the determined high water mark. If the high water mark is unknown, the entire infill zone should be constructed with wall rock.
  - The drain pipe should be raised to the low water elevation to aid in the evacuation of water from the reinforced mass as water level fluctuates.
  - Embankment protection fabric should be used under the infill mass and up the back of the infill mass to a height of 12 inches (30 cm) higher than the determined high water mark.
    - Embankment protection fabric is used to stabilize rip rap and foundation soils in water applications and to separate infill materials from the retained soils. This fabric should permit the passage of fines to preclude clogging of the material. Embankment protection fabric shall be a high strength polypropylene monofilament material designed to meet or exceed typical NIPPE specifications; stabilized against ultraviolet (UV) degradation and typically meets or exceeds the values in Table 1.
- Table 1: Embankment Protection Fabric Specifications
- | Mechanical Property                                     | Determination Method |
|---|----------------------|
| Tensile Strength = 225 lbs/ft (30.4 kN/m)               | ASTM D-4595          |
| Puncture Strength = 950 lbs (4228 N)                    | ASTM D-5241          |
| Apparent Opening Size (AOS) = U.S. Sieve #70 (0.212 mm) | ASTM D-4751          |
| Trapezoidal Tear = 100 lbs. (445 N)                     | ASTM D-4533          |
| Percent Open Area = 4%                                  | COE-02215            |
| Permeability = 0.01 cm/sec                              | ASTM D-4491          |
- For walls having moving water or wave action, natural or manufactured rip-rap in front of the wall to protect the toe of the wall from scour effects is recommended.

*SWM AS BUILT  
AS BUILT SURVEY BY CLSI ON 5/4/2021*

*Professional Engineer's Stamp: 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. 227132, Expires 05/31/2022. Date: 05/16/2021*

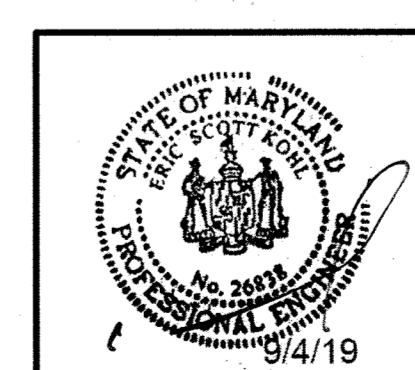
*THERE IS NO AS BUILT INFORMATION PROVIDED ON THIS SHEET.*

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

*[Signature]* 2/4/20  
DATE

*[Signature]* 1-24-20  
DATE

*[Signature]* 2/4/20  
DATE



PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME AND THAT I AM DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 26838 EXP. DATE: 01/18/2020

REVISIONS			
NO.	DATE		BY

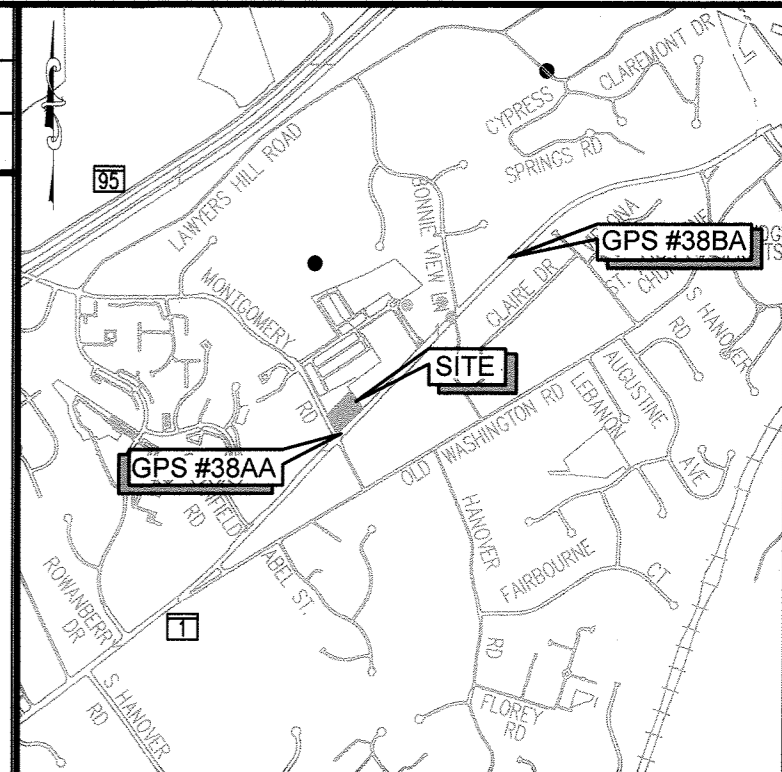
OWNER/DEVELOPER: PATRICK DOUGAL DOUGAL & ASSOCIATES 5695 MAIN STREET ELKRRIDGE, MD 21075 (410)-379-6444	<b>CUBESMART STORAGE</b> 6300 WASHINGTON BLVD. ELKRRIDGE, MD <b>RETAINING WALL</b> <b>CROSS SECTIONS</b> TAX MAP: 38 GRID: 03 PARCEL: 39 ZONED: POR ELECTION DISTRICT NO. 01 - HOWARD COUNTY MARYLAND		
DESIGN NAB	DATE 9/03/19	KCI PROJECT NO. 271700283	SHEET NO. <b>C-4.08</b>
DRAWN BRA	SCALE	SHEET NO. 25 OF 30	







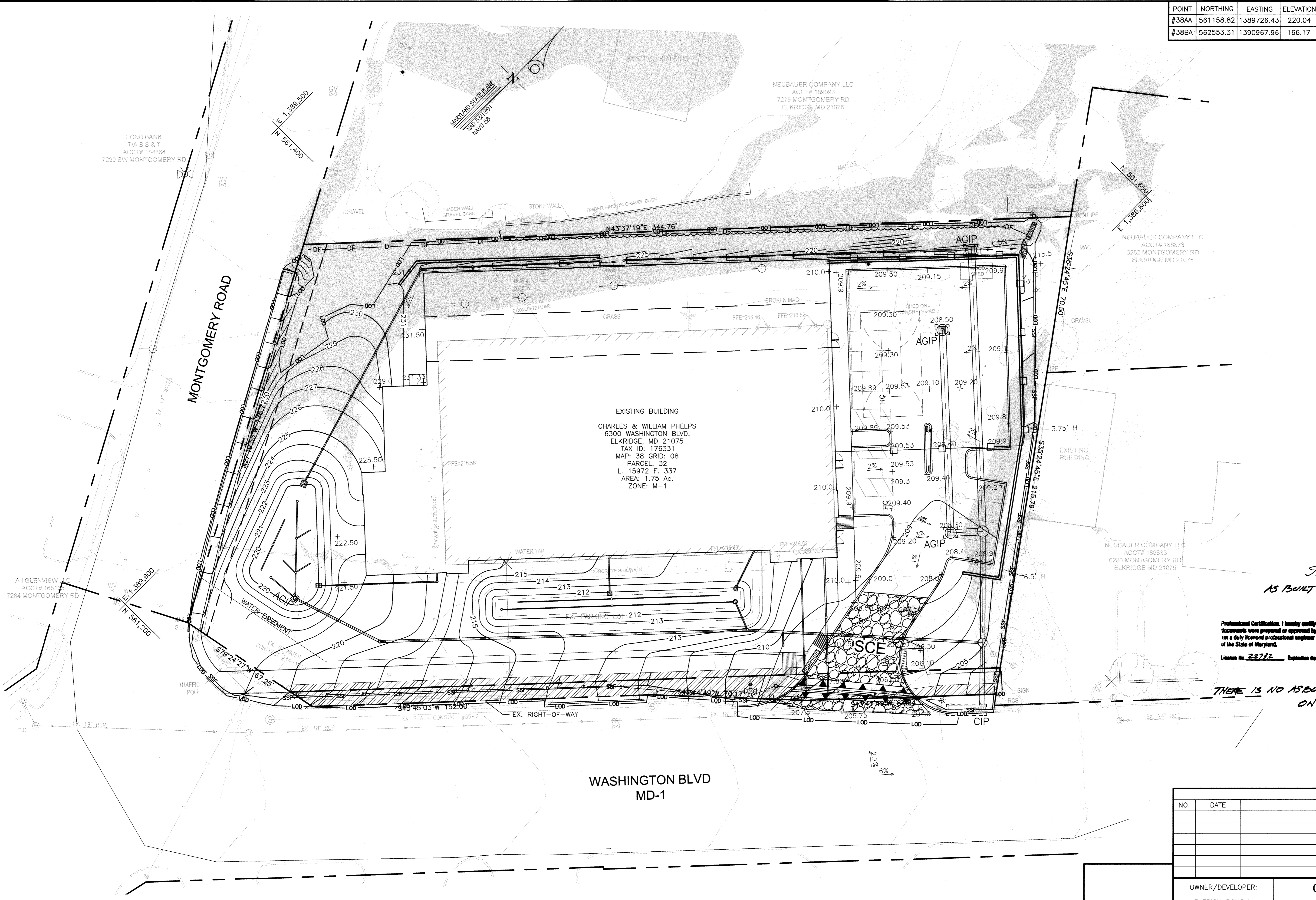
POINT	NORTHING	EASTING	ELEVATION
#38AA	561158.82	1389726.43	220.04
#38BA	562553.31	1390967.96	166.17



VICINITY MAP  
SCALE: 1" = 2000'  
ADC MAP 20, GRID A4

LEGEND

- LOD — LIMIT OF DISTURBANCE
- SSF — SUPER SILT FENCE
- — PROPERTY LINE
- - - - EX. CONTOUR
- - - - 215 — PROPOSED CONTOUR
- - - - DF — DIVERSION FENCE
- — — — PROPOSED DRAIN
- — — — EDGE OF ROAD
- — — — FENCE LINE
- — — — SIDEWALK
- — — — EXISTING TREES
- — STEEP SLOPES 15-25%
- — STEEP SLOPES 25% & GREATER



SWIM AS BUILT  
AS BUILT SURVEY BY CLSI ON 5/4/20

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.  
License No. 22732 Expiration Date: 05/31/2022



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

ENGINEERS  
PLANNERS  
SCIENTISTS  
CONSTRUCTION MANAGERS

**KCI**  
TECHNOLOGIES

11830 WEST MARKET PLACE  
SUITE F  
ELKRIDGE, MD 21075  
TELEPHONE: (410) 792-8086  
FAX: (410) 792-7419

REVISIONS		
NO.	DATE	BY

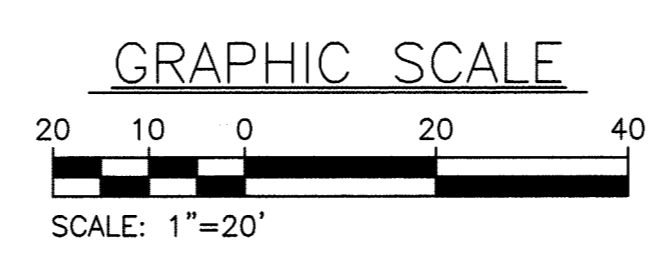
OWNER/DEVELOPER: PATRICK DOUGAL DOUGAL & ASSOCIATES 5695 MAIN STREET ELKRIDGE, MD 21075 (410)-379-6444	<b>CUBESMART STORAGE</b> 6300 WASHINGTON BLVD. ELKRIDGE, MD
<b>FOREST CONSERVATION PLAN</b>	
TAX MAP: 38 GRID: 08 PARCEL: 32 ZONED: M-1 ELECTION DISTRICT NO. 01 - HOWARD COUNTY MARYLAND	
DESIGN NAB DATE 9/03/19 DRAWN BRA SCALE 1"=20'	KCI PROJECT NO. 271700283 SHEET NO. <b>FCP-01</b> SHEET NO. 27 OF 30

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

*Howard County Seal*  
DATE 2/4/20  
1-24-20

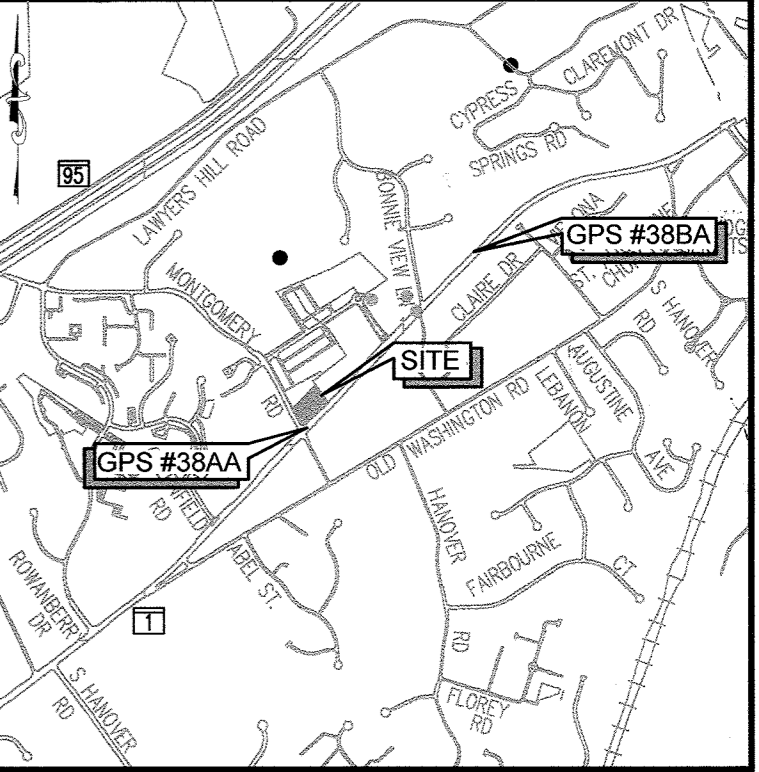
THIS PLAN WAS PREPARED BY:  
JENNIFER BIRD  
KCI TECHNOLOGIES, INC.  
MDNR QUALIFIED PROFESSIONAL  
(SEPTEMBER 2011)

*Jennifer Bird*  
SIGNATURE  
DATE SEPTEMBER 2019





POINT	NORTHING	EASTING	ELEVATION
#38AA	561158.82	1389726.43	220.04
#38BA	562553.31	1390967.96	166.17



VICINITY MAP  
SCALE: 1" = 2000'  
ADC MAP 20, GRID A4

SOILS TABLE				
Soil Symbol	Soil Unit Name	Percent Slope	K <sub>s</sub> value	Hydric (Y/N)
UD	Urban land-Udorthents complex	0-15	N/A	No

**FOREST CONSERVATION WORKSHEET**  
VERSION 2.0  
(Enter in Yellow Cells)

Project Name: Cube Smart Storage Date: 11/7/2018

**NET TRACT AREA:**

A. Total tract area.....=	1.75
B. Area within 100 year floodplain.....=	0.00
C. Area to remain in agricultural production.....=	0.00
D. Net tract area.....=	1.75

**LAND USE CATEGORY:** (from table 3.2.1, page 40, Manual)

Input the number "1" under the appropriate land use zoning, and limit to only one entry.

ARA	MDR	IDA	HDR	MPD	CIA
0	0	0	0	0	1

E. Afforestation Threshold.....	15% x D =	0.30
F. Conservation Threshold.....	15% x D =	0.30

**EXISTING FOREST COVER:**

G. Existing forest cover (excluding floodplain).....=	0.00
H. Area of forest above afforestation threshold.....=	0.00
I. Area of forest above conservation threshold.....=	0.00

**BREAK EVEN POINT (BEP):**

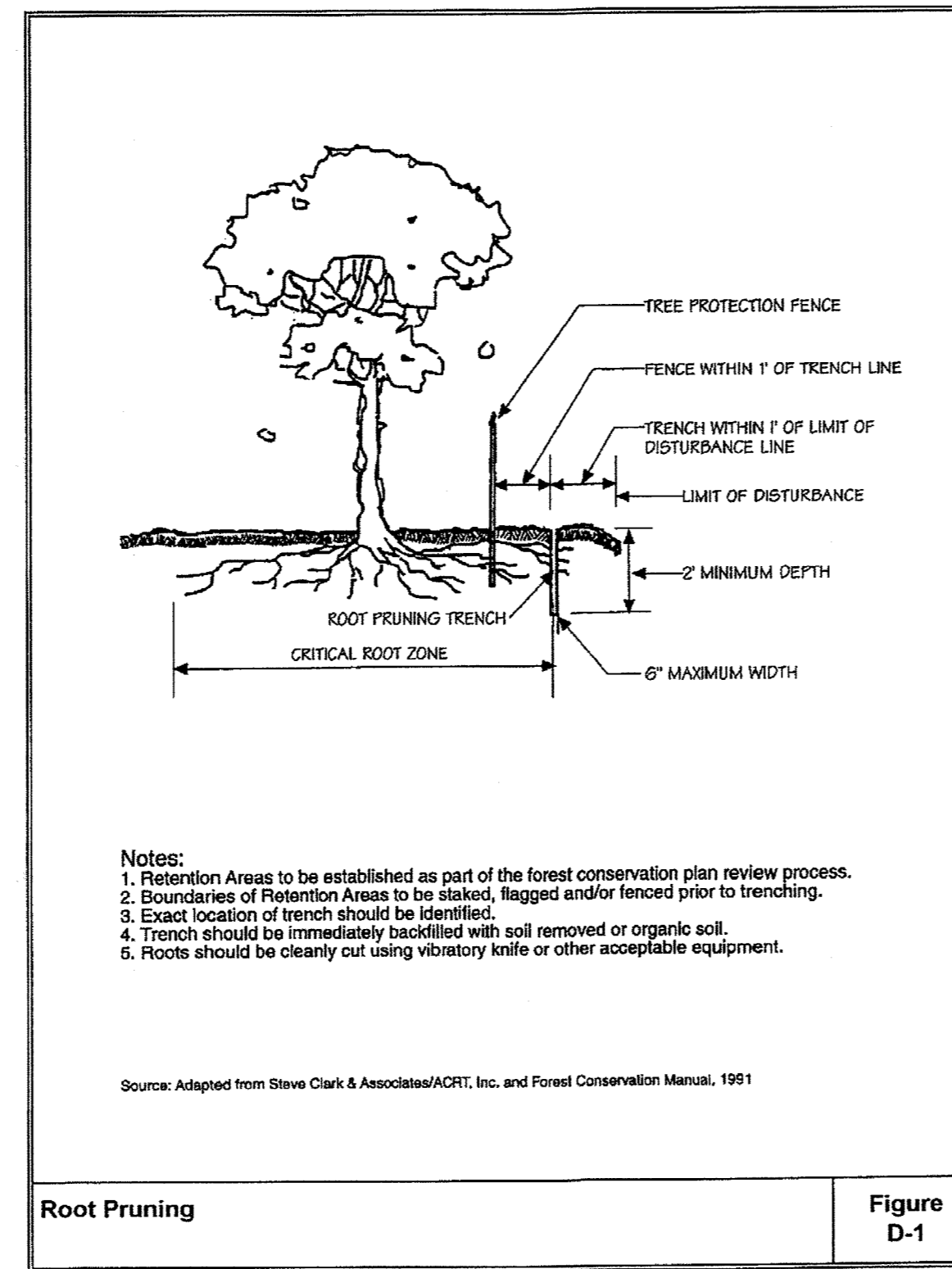
J. Forest retention above threshold with no mitigation (BEP).....=	0.00
K. Clearing permitted without mitigation.....=	0.00

**PROPOSED FOREST CLEARING:**

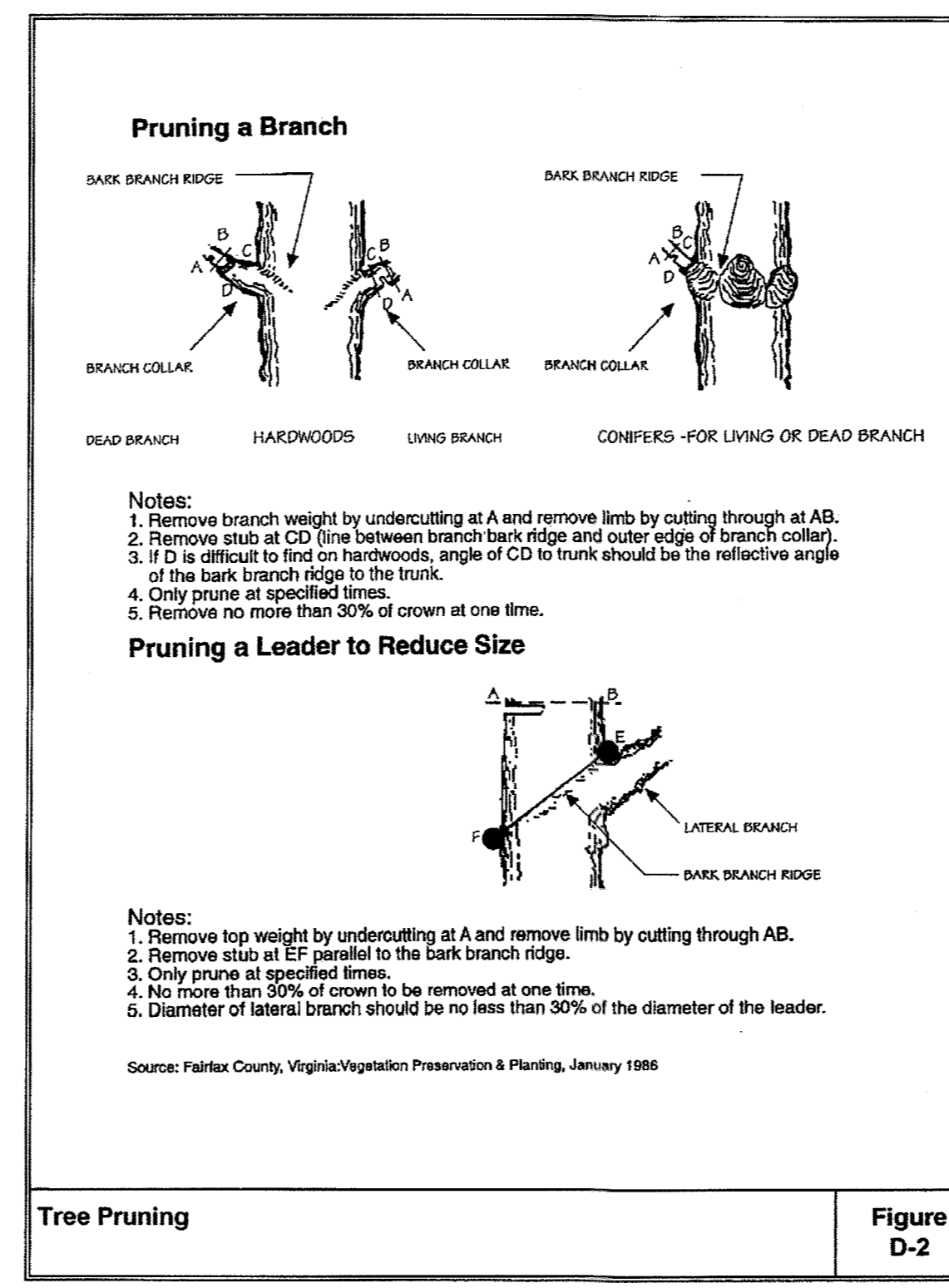
L. Total area of forest to be cleared.....=	0.00
M. Total area of forest to be retained.....=	0.00

**PLANTING REQUIREMENTS:**

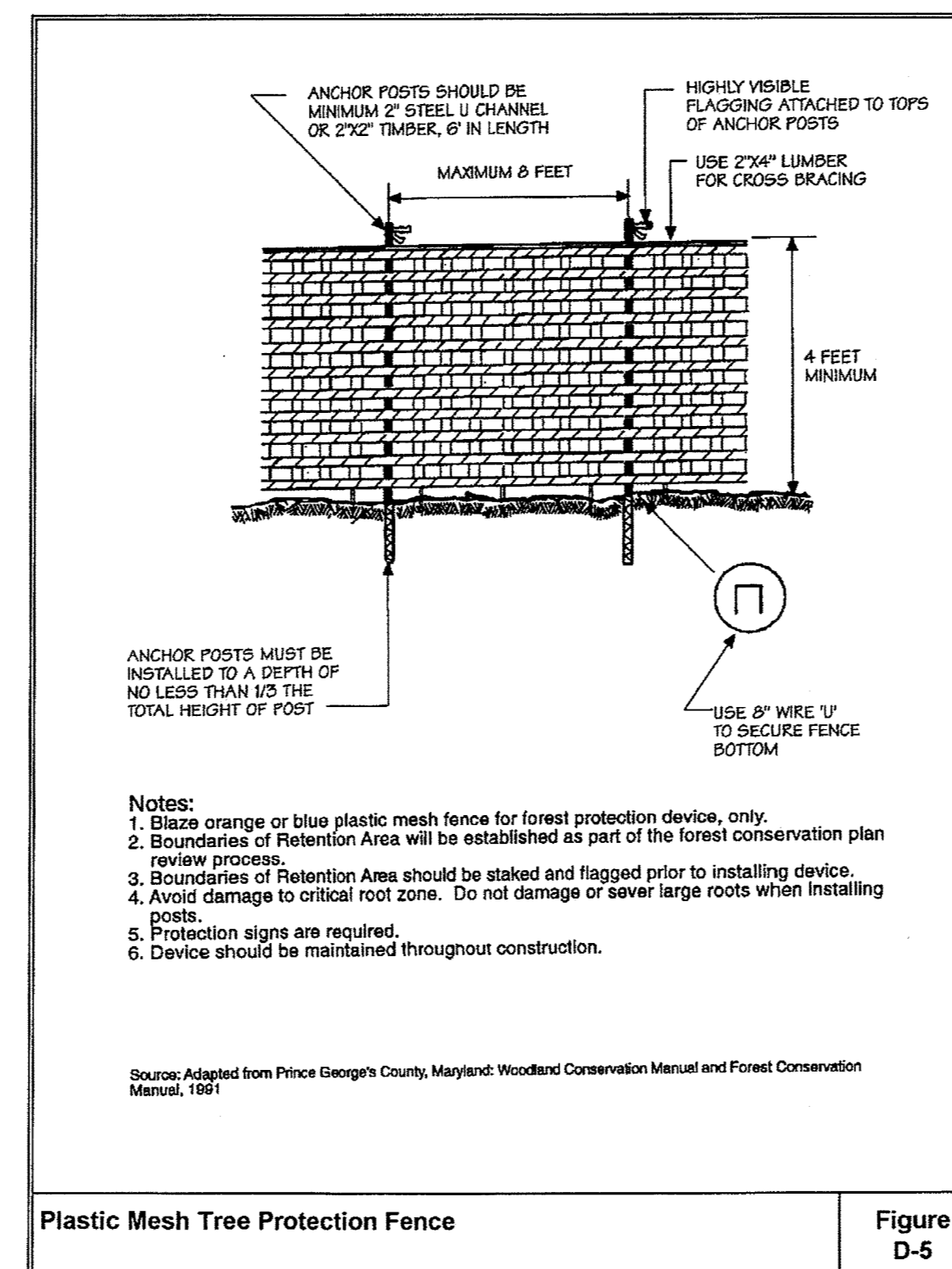
N. Reforestation for clearing above conservation threshold...=	0.00
P. Reforestation for clearing below conservation threshold...=	0.00
Q. Credit for retention above conservation threshold.....=	0.00
R. Total reforestation required.....=	0.00
S. Total afforestation required.....=	0.30
T. Total reforestation and afforestation required.....=	0.30



Root Pruning Figure D-1



Tree Pruning Figure D-2



Plastic Mesh Tree Protection Fence Figure D-5

**FOREST STAND DELINEATION NOTES**

- KCI TECHNOLOGIES, INC (KCI) IS ASSISTING WITH THE DEVELOPMENT OF THE CUBE SMART PROPERTY, AT THE INTERSECTION OF WASHINGTON BOULEVARD AND MONTGOMERY ROAD IN ELKRIDGE, HOWARD COUNTY, MARYLAND. AS PART OF THIS EFFORT, KCI DEVELOPED A SIMPLIFIED FOREST STAND DELINEATION (FSD) IN ORDER TO CLASSIFY THE NATURAL RESOURCES WITHIN THE PROPERTY. KCI IDENTIFIED AND DELINEATED FOREST STANDS THROUGHOUT THE STUDY AREA IN ACCORDANCE WITH THE METHODOLOGIES OUTLINED IN THE STATE FOREST CONSERVATION TECHNICAL MANUAL, THIRD EDITION (MDNR, 1997), AND THE HOWARD COUNTY FOREST CONSERVATION MANUAL (HODP&Z, 1999).
- THE FIELD INVESTIGATION WAS PERFORMED ON JANUARY 4, 2018, AND CONFIRMED THAT NO FOREST STANDS WERE IDENTIFIED WITHIN THE PROJECT AREA. TREE LINES ARE PRESENT ALONG THE EASTERN AND NORTHERN PROPERTY BOUNDARIES. TREES NOTED ONSITE INCLUDE RED MAPLE (ACER RUBRUM), BLACK WALNUT (JUGLANS NIGRA), AND AMERICAN SYCAMORE (PLATANUS OCCIDENTALIS) IN THE 6-19.9" SIZE CLASSES, BLACK GUM (NYSSA SYLVATICA), BLACK LOCUST (ROBINIA PSEUDOACACIA), BLACK OAK (QUERCUS VELUTINA), BOXELDER (ACER NEGUNDO), NORTHERN RED OAK (QUERCUS RUBRA), TREE OF HEAVEN (AILANTHUS ALTISSIMA), JAPANESE HONEYSUCKLE (LONICERA JAPONICA), ENGLISH IVY (HEDERA HELIX), ORIENTAL BITTERSWEET (CELASTRUS ORBICULATUS), MULTIFLORA ROSE (ROSA MULTIFLORA), AND COMMON GREENBRIER (SMILAX ROTUNDIFOLIA) ARE THE DOMINANT SAPLING AND SHRUB SPECIES. HERBACEOUS VEGETATION INCLUDES BY ENGLISH IVY, JAPANESE HONEYSUCKLE, AND MEADOW GARLIC (ALLIUM CANADENSE).
- NO SPECIMEN TREES WERE IDENTIFIED WITHIN THE STUDY AREA.
- THERE IS NO 100-YEAR FEMA FLOODPLAIN WITHIN THE STUDY AREA.
- THE ENTIRE PROJECT AREA IS WITHIN THE URBAN LAND-UDROTHENTS COMPLEX (UD) SOIL UNIT.

**FOREST CONSERVATION PLAN NOTES**

- ALL EFFORTS TO MINIMIZE THE AREA OF DISTURBANCE WILL BE MADE.
- THE 0.3 ACRES OF FOREST MITIGATION WILL BE SATISFIED THROUGH FEE-IN-LIEU. FEE-IN-LIEU WILL BE PAID AT \$0.75/SF. (13,068 SF. X \$0.75 = \$9,801.00)

**GENERAL NOTES**

- PROPERTY INFORMATION:  
MAP 38, GRID 8, PARCEL 32  
TAX ACCOUNT ID: 01176331
- EXISTING ZONING: M-1 (MANUFACTURING: LIGHT)
- EXISTING LAND USE: INDUSTRIAL
- NO WETLANDS OR WATERS OF THE U.S. WERE IDENTIFIED WITHIN THE PROJECT AREA.

**KCI TECHNOLOGIES**  
ENGINEERS  
PLANNERS  
SCIENTISTS  
CONSTRUCTION MANAGERS  
11830 West Market Place  
Suite F  
Fulton, MD 20759  
Telephone: (410) 792-8086  
Fax: (410) 792-7419

REVISIONS		
NO.	DATE	BY

OWNER/DEVELOPER:  
PATRICK DOUGAL  
DOUGAL & ASSOCIATES  
5695 MAIN STREET  
ELKRIDGE, MD 21075  
(410)-379-6444

**CUBESMART STORAGE**  
6300 WASHINGTON BLVD. ELKRIDGE, MD

**FOREST CONSERVATION PLAN**  
NOTES & DETAILS

TAX MAP: 38 GRID: 08 PARCEL: 32  
ZONED: M-1  
ELECTION DISTRICT NO. 01 - HOWARD COUNTY MARYLAND

DESIGN: NAB DATE: 9/03/19 KCI PROJECT NO. 271700283 SHEET NO.  
DRAWN: BRA SCALE: N.T.S. SHEET NO. 28 OF 30

**FCP ND-01**

*SWM AS BUILT AS BUILT SURVEY BY CLSI ON 5/4/2021*

*THERE IS NO AS BUILT INFORMATION PROVIDED ON THIS SHEET.*



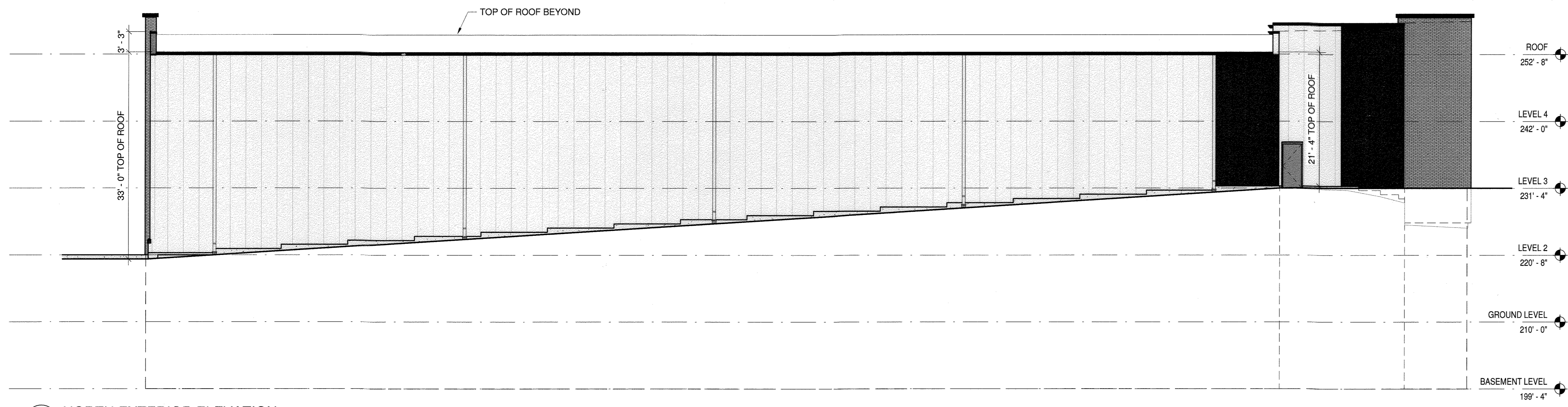
Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.  
License No. 28736 Expiration Date 05/16/2022

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
DATE: 2/4/20  
1-24-20  
2/4/22

THIS PLAN WAS PREPARED BY:  
JENNIFER BIRD  
KCI TECHNOLOGIES, INC.  
MDNR QUALIFIED PROFESSIONAL  
(SEPTEMBER 2011)

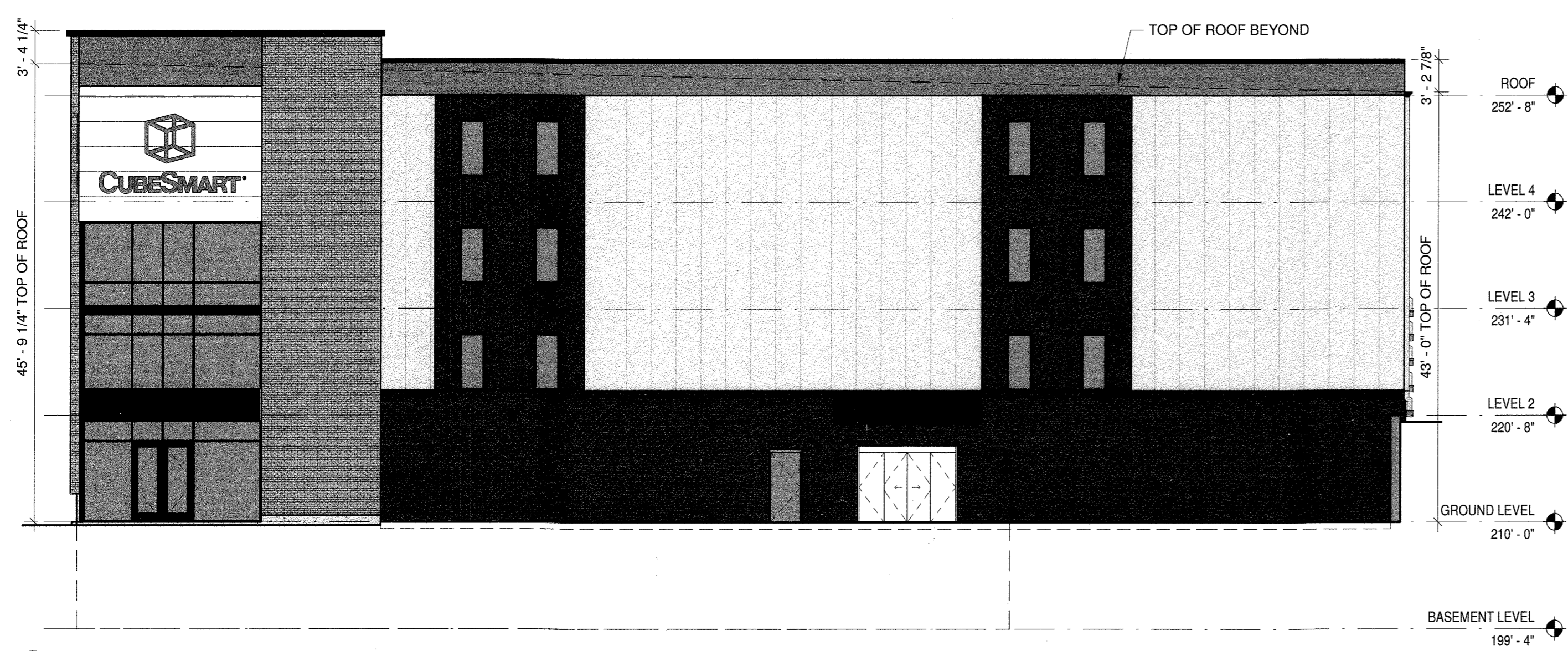
DATE: SEPTEMBER 2019



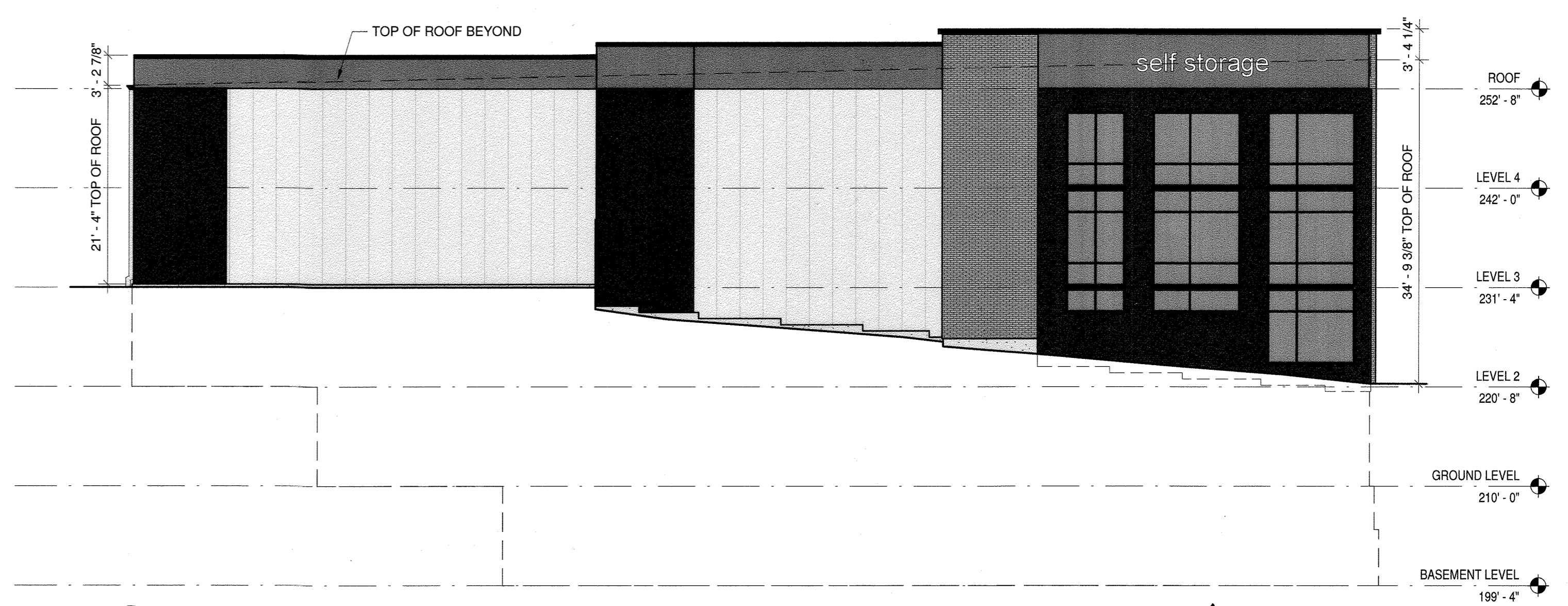


1 NORTH EXTERIOR ELEVATION  
SCALE: 3/32" = 1'-0"

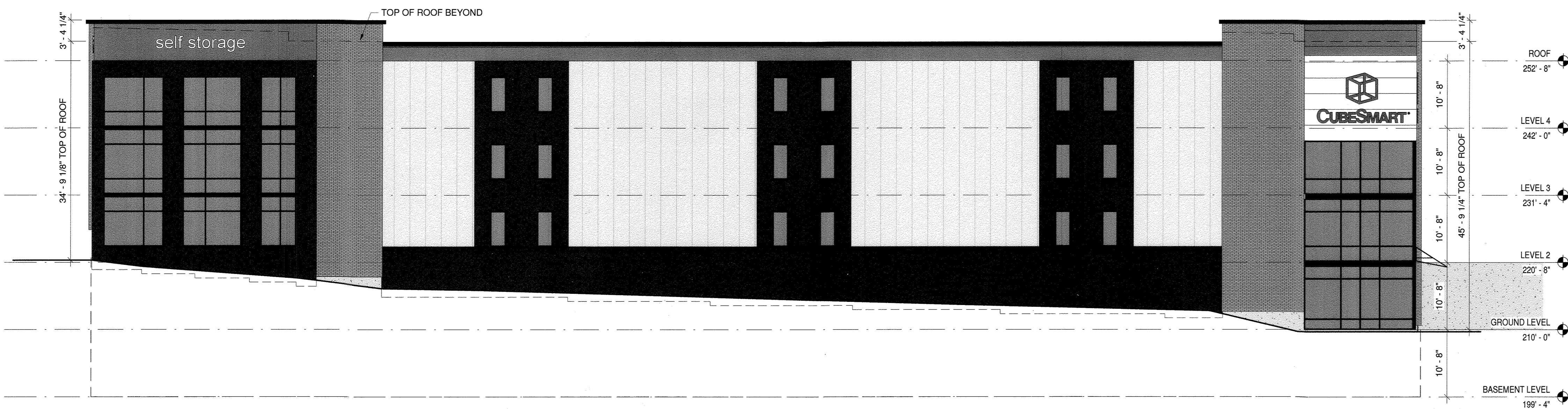
AVERAGE BUILDING HEIGHT TO TOP OF ROOF: 27'-2"



2 EAST EXTERIOR ELEVATION  
SCALE: 3/32" = 1'-0" AVERAGE BUILDING HEIGHT TO TOP OF ROOF: 44'-5"



3 WEST EXTERIOR ELEVATION - MONTGOMERY ROAD  
SCALE: 3/32" = 1'-0" AVERAGE BUILDING HEIGHT TO TOP OF ROOF: 28'-11"



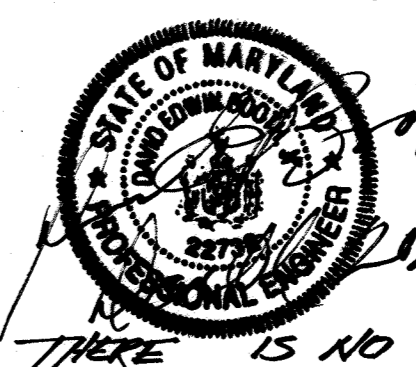
4 SOUTH EXTERIOR ELEVATION - WASHINGTON BLVD  
SCALE: 3/32" = 1'-0" AVERAGE BUILDING HEIGHT TO TOP OF ROOF: 40'-4"

**OVERALL AVERAGE BUILDING HEIGHT TO TOP OF ROOF: 35'-0"**

*SWM AS BUILT AS BUILT SURVEY BY CLSI ON 5/4/2021*

Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.  
License No. 22732. Expiration Date: 06/30/2022

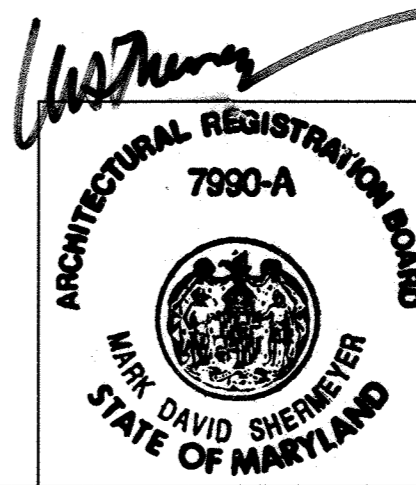
*THERE IS NO AS BUILT INFORMATION PROVIDED ON THIS SHEET.*



**SAA architects**  
Client centered Smart solutions  
600 North Hartley Street, Suite 150 York, PA 17404  
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FAX: (410) 792-7419

REVISIONS		
NO.	DATE	BY



OWNER/DEVELOPER:  
PATRICK DOUGAL DOUGAL & ASSOCIATES  
5695 MAIN STREET  
ELKCRIDGE, MD 21075  
(410)-379-8444

**CUBESMART STORAGE**  
6300 WASHINGTON BLVD. ELKCRIDGE, MD

**BUILDING ELEVATIONS**

TAX MAP: 38 GRID: 08 PARCEL: 32  
ZONED: M-1  
ELECTION DISTRICT NO. 01 - HOWARD COUNTY MARYLAND

DESIGN DATE: NAB 9/03/19  
DRAWN SCALE: BRA

KCI PROJECT NO. 271700283  
SHEET NO. 29 OF 30

SHEET NO. **C-6.00**

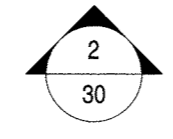
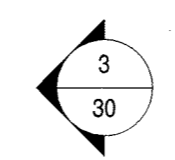
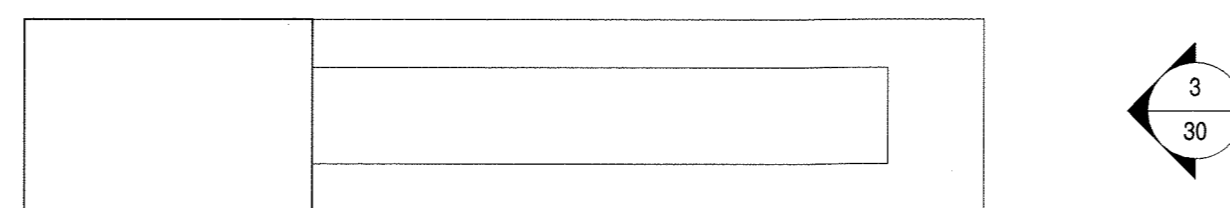
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

*Carla Shaw* 2/11/20  
CHIEF DIVISION OF LAND DEVELOPMENT DATE

*Paul Church* 1-24-20  
CHIEF DEVELOPMENT ENGINEERING DIVISION DATE

*Paul* 2/1/20  
DIRECTOR DATE

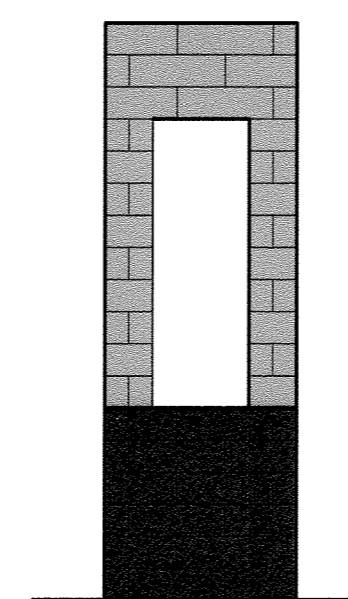




1 MONUMENT SIGN - PLAN  
SCALE: 3/4" = 1'-0"

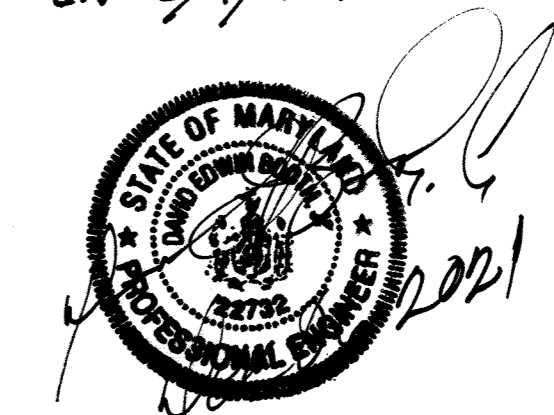


2 MONUMENT SIGN - FRONT ELEVATION  
SCALE: 3/4" = 1'-0"



3 MONUMENT SIGN - SIDE ELEVATION  
SCALE: 3/4" = 1'-0"

*SWM AS BUILT  
AS BUILT SURVEY BY CLSI  
ON 5/4/2021*



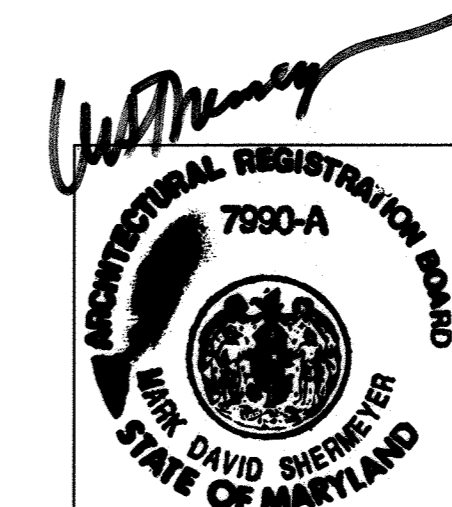
Professional Certification. I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.  
License No. 22732 Expiration Date: 05/31/2028

*THERE IS NO AS BUILT INFORMATION PROVIDED ON THIS SHEET*

**SAA**architects  
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REVISIONS		
NO.	DATE	BY



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**CUBESMART STORAGE**  
6300 WASHINGTON BLVD. ELKRIDGE, MD  
**CUBESMART SIGN DETAIL**  
TAX MAP: 38 GRID: 08 PARCEL: 32  
ZONED: M-1  
ELECTION DISTRICT NO. 01 - HOWARD COUNTY MARYLAND

DESIGN NAB	DATE 9/03/19	KCI PROJECT NO. 271700283	SHEET NO. <b>C-6.01</b>
DRAWN BRA	SCALE	SHEET NO. 30 OF 30	

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING  
  
 CHIEF, DEVELOPMENT ENGINEERING DIVISION  
 DATE: 1-24-20  
  
 DIRECTOR  
 DATE: 2/4/22