DAY RESOURCE CENTER
VOLUNTEERS OF AMERICA
10390 GUILFORD ROAD
HOWARD COUNTY HOUSING COMMISSION
SITE DEVELOPMENT PLAN

GENERAL NOTES

1. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY STANDARDS AND SPECIFICATIONS. ALL WORK AND MATERIALS SHALL COMPLY WITH O.S.H.A. STANDARDS.
2. THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION WORK.
3. THE CONTRACTOR IS TO NOTIFY THE FOLLOWING UTILITIES OR AGENCIES AT LEAST FIVE DAYS BEFORE STARTING WORK ON THESE DRAWINGS:

MISS UTILITY:	1-800-257-7777
VERIZON:	1-800-743-0033
BUREAU OF UTILITIES:	410-313-4900
AT&T:	1-800-252-1133
B.G.&E. (CONSTRUCTION SERVICES):	410-637-8713
B.G.&E. (EMERGENCY):	410-685-0123
STATE HIGHWAY ADMINISTRATION:	410-531-5533
COLONIAL PIPELINE CO.:	410-795-1390

4. SITE ANALYSIS:
   TOTAL PROJECT AREA: 3.00 AC. PARCEL 365 (PARCEL A)
   PRESENT ZONING: CE-CLI
   USE OF STRUCTURE: TEMPORARY HOUSING FOR HOMELESS (35 UNITS)
   TOTAL BUILDING COVERAGE (INCLUDING 636 SF OUTDOOR PATIO AREA): 12,979 SF (0.30 AC. OR 9.93% OF GROSS AREA)
   TOTAL BUILDING AREA: 30,215 SF
   FIRST FLOOR AREA: 12,343 SF
   SECOND FLOOR AREA: 13,639 SF
   THIRD FLOOR AREA: 4,233 SF
   PAVED PARKING LOT/AREA ON SITE: 9,029 SF (0.21 AC. OR 11.92% OF GROSS AREA)
   AREA OF LANDSCAPE ISLAND: 482 SF (0.01 AC. OR 0.64% OF GROSS AREA)
   WETLANDS ON SITE: 0.36 AC.
   WETLAND BUFFERS ON SITE: 0.65 AC.
   STREAMS AND THEIR BUFFERS ON SITE: 0.11 AC.
   AREA OF ON-SITE 100 YEAR FLOODPLAIN: 0.61 AC.
   AREA OF EXISTING FOREST ON SITE: 3.00 AC.
   AREA OF STEEP SLOPES (15% OR GREATER): 0.00 AC
   AREA OF ERODIBLE SOILS: 0.09 AC. (WITHIN LOD)
   AREA MANAGED BY ESDV (*THIS PLAN): 0.75 AC.
   *IMPERVIOUS AREA : 0.51 AC.
   *GREEN AREA: 0.24 AC.
   LIMIT OF DISTURBED AREA: 1.18 AC
   CUT: 2,252 CY FILL: 3,190 CY
5. PROJECT BACKGROUND:
   LOCATION : LAUREL, MD.; TAX MAP 47, BLOCK 12, PARCEL 59, PARCEL A
   ZONING : CE-CLI
   SUBDIVISION : N/A
   SECTION/AREA : N/A
   SITE AREA : 3.00 AC.
   DEED/PLAT REFERENCES : L.11225/F.318, L.15118/F.116, PLAT 23547
   DPZ REFERENCES: BA-08-027V, BA-10-024V, SDP-96-098, ECP-14-074, WP-15-068.
6. 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 START OF WORK.
7. ANY DAMAGE TO PUBLIC RIGHT-OF-WAY, PAVING, OR EXISTING UTILITIES WILL BE CORRECTED AT THE CONTRACTOR'S EXPENSE.
8. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY, PLUS MSHA STANDARDS AND SPECIFICATIONS, IF APPLICABLE.
9. EXISTING UTILITIES LOCATED FROM ROAD CONSTRUCTION PLANS, FIELD SURVEYS, PUBLIC WATER AND SEWER EXTENSION PLANS AND AVAILABLE RECORD DRAWINGS. APPROXIMATE LOCATION OF EXISTING UTILITIES ARE SHOWN FOR THE CONTRACTORS INFORMATION. CONTRACTOR SHALL LOCATE EXISTING UTILITIES WELL IN ADVANCE OF CONSTRUCTION ACTIVITIES AND TAKE ALL NECESSARY PRECAUTIONS TO PROTECT THE EXISTING UTILITIES AND TO MAINTAIN UNINTERRUPTED SERVICE. ANY DAMAGE INCURRED DUE TO CONTRACTOR'S OPERATION SHALL BE REPAIRED IMMEDIATELY AT THE CONTRACTOR'S EXPENSE.
10. ALL REINFORCED CONCRETE FOR STORM DRAIN STRUCTURES SHALL HAVE A MINIMUM OF 28 DAYS STRENGTH OF 3,500 P.S.I.
11. ALL STORMDRAIN PIPE BEDDING IS TO BE CLASS 'C', AS REQUIRED BY AASHTO-180.
12. TRAFFIC CONTROL DEVICES, MARKINGS AND SIGNING SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD). ALL STREET AND REGULATORY SIGNS SHALL BE IN PLACE PRIOR TO THE PLACEMENT OF ANY ASPHALT.
13. THIS PROJECT IS SUBJECT TO COMPLIANCE WITH THE AMENDED FIFTH EDITION OF THE SUBDIVISION AND LAND DEVELOPMENT REGULATIONS. DEVELOPMENT OR CONSTRUCTION ON THIS PROPERTY MUST COMPLY WITH SETBACK AND BUFFER REGULATIONS IN EFFECT AT THE TIME OF SUBMISSION OF THE SITE DEVELOPMENT PLAN, WAIVER PETITION APPLICATION OR BUILDING/GRADING PERMIT APPLICATIONS.
14. ESTIMATES OF EARTHWORK QUANTITIES ARE PROVIDED SOLELY FOR THE PURPOSE OF CALCULATING FEES.
15. SOIL COMPACTION SPECIFICATIONS, REQUIREMENTS, METHODS AND MATERIALS ARE TO BE IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE PROJECT GEOTECHNICAL ENGINEER. GEOTECHNICAL ENGINEER TO CONFIRM ACCEPTABILITY OF PROPOSED PAVING SECTION, BASED ON SOIL TEST PRIOR TO CONSTRUCTION.
16. COORDINATES AND ELEVATIONS ARE BASED ON MARYLAND COORDINATE SYSTEM - NAD83(1991), AS PROJECTED BY HOWARD COUNTY GEODETIC CONTROL STATIONS 47F5 AND 48AB.
17. THE PROPERTY LINES SHOWN HEREON IS BASED ON A FIELD-RUN BOUNDARY SURVEY PERFORMED BY ROBERT H. VOGEL ENGINEERING, INC., DATED JUNE, 2007.
18. THE EXISTING TOPOGRAPHY SHOWN HEREON IS BASED ON FIELD RUN TOPOGRAPHICAL SURVEY PERFORMED BY ROBERT H. VOGEL, ENGINEERING, INC. DATED JULY, 2007.
19. FLOODPLAIN STUDY PROVIDED BY ROBERT H. VOGEL, ENGINEERING, INC. DATED FEBRUARY 2010.
20. GEOTECHNICAL REPORT PREPARED BY HILLIS-CARNES ENGINEERING ASSOCIATES, INC DATED OCTOBER 8, 2014.
21. THE GEOTECHNICAL ENGINEER TO CONFIRM PAVING SECTION PRIOR TO CONSTRUCTION. ALL PAVING TO BE MINIMUM HOWARD COUNTY STANDARD DETAIL P-2 PAVING UNLESS OTHERWISE NOTED (SEE DETAIL ON SHEET 3).
22. ALL CURB AND GUTTER TO BE HOWARD COUNTY STANDARD DETAIL 3.01 UNLESS OTHERWISE NOTED (SEE DETAIL ON SHEET 3).
23. WHERE DRAINAGE FLOWS AWAY FROM CURB, CONTRACTOR TO REVERSE THE GUTTER PAN.
24. ALL ELEVATIONS ARE TO FLOWLINE/BOTTOM OF CURB UNLESS OTHERWISE NOTED.
25. ALL DIMENSIONS ARE TO FACE OF CURB UNLESS OTHERWISE NOTED.
26. CONTRACTOR RESPONSIBLE FOR CONSTRUCTING ALL HANDICAP RAMPS AND HANDICAP ACCESS IN ACCORDANCE WITH CURRENT ADA REQUIREMENTS.
27. PUBLIC WATER AVAILABLE THROUGH CONTRACT NO. 652-W. PUBLIC SEWER AVAILABLE THROUGH CONTRACT NO. 235-S.
28. TRAFFIC STUDY PREPARED BY THE TRAFFIC GROUP, DATED SEPTEMBER 26, 2014; APPROVED 12/03/14.
29. THE SUBJECT PROPERTY IS ZONED CE-CLI PER THE OCTOBER 6, 2013 COMPREHENSIVE ZONING PLAN.
30. A NOISE STUDY IS NOT REQUIRED FOR THIS PROJECT.
31. WETLANDS SHOWN ON-SITE ARE BASED ON A FIELD INVESTIGATION PREPARED BY ESA, INC. DATED DECEMBER, 2007, UPDATED JULY 17, 2014. THERE ARE NO PROPOSED DISTURBANCES TO THE WETLANDS OR ASSOCIATED BUFFERS.
32. THERE ARE NO BURIAL GROUNDS, CEMETERIES, OR HISTORIC STRUCTURES LOCATED ON THIS PROPERTY.
33. NO GRADING, REMOVAL OF VEGETATIVE COVER OR TREES, PAVING AND NEW STRUCTURES SHALL BE PERMITTED WITHIN THE REQUIRED WETLANDS, STREAM(S) OR THEIR BUFFERS, FOREST CONSERVATION AREAS AND 100 YEAR FLOODPLAIN.
34. FOREST STAND DELINEATION PREPARED BY ESA, INC. DATED APRIL 2010 AND UPDATED 7/17/14.
35. THE FOREST CONSERVATION OBLIGATION FOR THIS PROJECT HAS BEEN SATISFIED BY THE RETENTION OF 0.76 ACRES (BREAK EVEN POINT) OF FOREST. THIS PROPERTY ALSO RETAINS AN ADDITIONAL 0.24 ACRES WHICH HAS BEEN ABANDONED FROM THE AVANTI-HASLUP PROPERTY, PARCELS B-1 AND B-2. THE TOTAL FOREST RETENTION EASEMENT AREA IS 1.00 ACREST. NO SURETY IS REQUIRED FOR THE ON-SITE RETENTION.
36. THERE IS NO SPECIMEN TREE LOCATED ON THE SUBJECT PROPERTY.
37. ANY EXISTING STREET TREES DAMAGED OR DESTROYED DURING CONSTRUCTION WILL BE REPLACED BY THE CONTRACTOR.
38. THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH THE PROVISIONS OF SECTION 16.124 OF THE HOWARD COUNTY CODE, THE LANDSCAPE MANUAL, AND AND THE NEW TOWN ALTERNATIVE COMPLIANCE PROVISIONS OF THE LANDSCAPE MANUAL.
39. FINANCIAL SURETY FOR THE REQUIRED LANDSCAPING HAS BEEN POSTED AS PART OF THE DEVELOPER'S AGREEMENT FOR THIS SITE DEVELOPMENT PLAN IN THE AMOUNT OF $6,600 FOR THE REQUIRED 16 SHADE TREES AND 12 EVERGREEN TREES.
40. EXISTING GUILFORD ROAD IS CLASSIFIED AS A MAJOR COLLECTOR.
41. THE PROPOSED BUILDING TO HAVE ROOF LEADERS WHICH EMPTY INTO STORM DRAIN SYSTEM.
42. THE PROPOSED BUILDING WILL HAVE AN INSIDE MEETING SETTING. THE BUILDING WILL ALSO HAVE AN AUTOMATIC FIRE PROTECTION SPRINKLER SYSTEM.
43. A KNOX BOX IS REQUIRED TO BE PLACED ON THE FRONT OF THE BUILDING. IT SHALL BE PLACED TO THE RIGHT OF THE MAIN ENTRANCE AT A RANGE OF 4-5' IN HEIGHT AND NO MORE THAN 6' LATERALLY FROMTHE DOOR. IT'S LOCATION IS SHOWN ON THESE PLANS. THE BOX SHALL BE ELECTRONICALLY SUPERVISED THE DOOR. IT'S LOCATION IS SHOWN ON THESE PLANS. THE BOX SHALL BE ELECTRONICALLY SUPERVISED TO NOTIFY THE OWNER THAT IT IS BEING ACCESSED (INTEGRATED WITH THE FIRE ALARM SYSTEM).
44. LANDSCAPING NOT PERMITTED WITHIN 7-1/2' OF EACH SIDE OF THE FIRE DEPARTMENT CONNECTION. PROVIDE A CLEAR UNOBSTRUCTED ACCESS PATH TO THE FIRE DEPARTMENT CONNECTION. NFPA-1 13.1.4
45. FIRE LANES SHOULD BE PROVIDED IN THIS SITE TO ALLOW EMERGENCY VEHICLE ACCESS. EITHER FIRE LANE SIGNAGE SHOULD BE INSTALLED, OR THE CURBS SHOULD BE PAINTED IN RED AND STENCILED TO IDENTIFY THE ROAD AS A FIRE LANE.
46. ALL SIGN POSTS USED FOR TRAFFIC CONTROL SIGNS INSTALLED IN THE COUNTY RIGHT-OF-WAY SHALL BE MOUNTED ON A 2" GALVANIZED STEEL, PERFORATED, SQUARE TUBE POST (14 GAUGE) INSERTED INTO A 2-1/2" GALVANIZED STEEL, PERFORATED, SQUARE TUBE SLEEVE (12 GAUGE) - 3' LONG. A GALVANIZED STEEL POLE CAP SHALL BE MOUNTED ON TOP OF EACH POST.
47. STREET LIGHT PLACEMENT AND THE TYPE OF FIXTURE AND POLE SHALL BE IN ACCORDANCE WITH THE HOWARD COUNTY DESIGN MANUAL, VOLUME III (2006), SECTION 5.5.A. A MINIMUM OF 20' SHALL BE MAINTAINED BETWEEN ANY STREET LIGHT AND ANY TREE.
48. ALL EXTERIOR LIGHTING TO COMPLY WITH THE REQUIREMENTS FOUND IN ZONING SECTION 134 OF THE HOWARD COUNTY ZONING REGULATIONS.
49. TRASH COLLECTION AND RECYCLABLES TO BE PRIVATE.
50. SIGNAGE SHALL BE PROVIDED ON THE BUILDING IDENTIFYING THE BUILDING ADDRESS.
51. STORMWATER MANAGEMENT FOR THIS PROJECT IS BEING PROVIDED BY ENVIRONMENTAL SITE DESIGN UTILIZING TWO MICRO-BIORETENTION FACILITIES AND A DRY WELLS CONSISTING OF A GRAVEL INFILTRATION TRENCH (M-5) TO ACCOMMODATE THE TOTAL ESD VOLUME REQUIRED. SWM FACILITIES TO BE PRIVATELY OWNED AND MAINTAINED.
52. BA-08-027V REQUESTED THE VARIANCE OF SECTION 127.2e.2.a.(1) OF THE ZONING REGULATIONS TO REDUCE THE SETBACK FOR RETAINING WALLS, EXTERIOR BUILDING EGRESS STAIRS AND WALKWAY FROM 20' TO A MINIMUM OF 4 FEET; SECTION 127.2.E.2.a.(2) OF THE ZONING REGULATIONS TO REDUCE THE SETBACK FOR PARKING SPACES AND LOADING FROM 40 FEET TO A MINIMUM OF 9 FEET ALONG MARYLAND ROUTE 32; SECTION 127.2.E.2.a(2) OF THE ZONING REGULATIONS TO REDUCE THE PARKING SPACES AND DRIVE AISLES FROM 40 FEET TO 15 FEET ALONG GUILFORD ROAD. THESE VARIENCES WERE GRANTED ON JULY 30, 2008.
53. BA-10-024V REQUESTED TO REDUCE THE 20 FOOT SETBACK FROM AN EXTERNAL PUBLIC STREET RIGHT OF WAY TO A MINIMUM OF 4 FEET FOR RETAINING WALLS, EXTERIOR STAIRS AND WALKWAYS (SECTION 127.E.2.a.(1)); TO REDUCE THE 40 FOOT SETBACK FROM THE MD 32 EXTERNAL PUBLIC STREET RIGHT OF WAY TO A MINIMUM OF 9 FEET FOR PARKING SPACES AND LOADING SPACES (SECTION 127.E.2.a(2)); AND TO REDUCE THE 40 FOOT SETBACK FROM THE GUILFORD ROAD PUBLIC STREET RIGHT OF WAY TO 15 FEET FOR PARKING USES (SECTION 127.E.2.a(2)). THESE VARIANCES WERE GRANTED 11/5/10.
54. PER AA CASE NO. AA-14-008, THE STRUCTURE AND USE SETBACK FOR A HOUSING COMMISSION HOUSING DEVELOPMENT ZONE TO AN M-2 ZONE (PARCEL 87) HAS BEEN REDUCED FROM 25' TO 20' FOR A PARKING LOT, A TRASH ENCLOSURE, AND THE STRUCTURE AND USE SETBACK HAS BEEN REDUCED FROM PUBLIC STREET RIGHT-OF-WAY FROM 30' TO 24' FOR A BUILDING (SECTION 128.J(1)(c)).
55. THIS PLAN IS SUBJECT TO WP-15-068, TO WAIVE SECTION 16.116(a)(2)(i) GRADING, REMOVAL OF VEGETATIVE COVER AND TREES, PAVING AND NEW STRUCTURES SHALL NOT BE PERMITTED WITHIN 50 FEET OF AN INTERMITTENT STREAM BANK, AND TO WAIVE SECTION 16.120(c)(1) THAT REQUIRES A MINIMUM FRONTAGE OF 60 FEET ON AN APPROVAL PUBLIC ROAD WHICH PROVIDES ACCESS TO THE PROPERTY; APPROVED 12/04/14, SUBJECT TO THE FOLLOWING CONDITIONS:
    A. COMPLIANCE WITH ALL SUBDIVISION REVIEW COMMITTEE COMMENTS FOR SDP-15-023.
    B. THE AREAS OF DISTURBANCE WITHIN THE STREAM BUFFER MUST BE STABILIZED UPON COMPLETION OF THE CONSTRUCTION ACTIVITY.
    C. THE WAIVER PETITION NUMBER (WP-15-068) AND ITS CONDITIONS OF APPROVAL MUST BE ADDED TO SDP-15-023, F-14-130 AND ALL FUTURE PLANS.

PARKING TABULATION

		REQUIRED
DAY RESOURCE CENTER (1ST FLOOR)		
2 EMPLOYEES AT ANY ONE TIME (1 SPACE/EMPLOYEE)		2 SPACES
10 VOLUNTEERS AT ANY ONE TIME (1 SPACE/EMPLOYEE)		10 SPACES
SINGLE EFFICIENCY APARTMENTS (2ND & 3RD FLOOR)		
4 EMPLOYEES AT ANY ONE TIME	1 SPACE/EMPLOYEE:	4 SPACES
35 SINGLE EFFICIENCY APARTMENTS (FORMERLY HOMELESS)	0 SPACE/APARTMENT:	0 SPACES
TOTAL SPACES REQUIRED:		16 SPACES
TOTAL SPACES PROVIDED:		18 SPACES INCLUDING 2 HANDICAP SPACES

PARKING NOTE:
1. ADDITIONAL PARKING TO BE PROVIDED ON PROPERTY TO BE ACQUIRED FROM SALVATION ARMY (APPROXIMATELY 255' WEST)
2. PER LETTER FROM HOWARD COUNTY HOUSING, DATED JANUARY 5, 2015, IT IS THEIR BELIEVE THAT THE MAJORITY OF THE RESIDENTS OF THIS FACILITY WILL NOT OWN CARS AND THAT THERE WILL BE A VAN SERVICE PROVIDED FOR RESIDENTS THAT REQUIRE TRANSPORTATION TO AND FROM WORK.

APPROVED BY PLANNING BOARD OF HOWARD COUNTY ON
June 4, 2015
DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	1.12.16 DATE
CHIEF, DIVISION OF LAND DEVELOPMENT	2-22-16 DATE
DIRECTOR	2-22-16 DATE

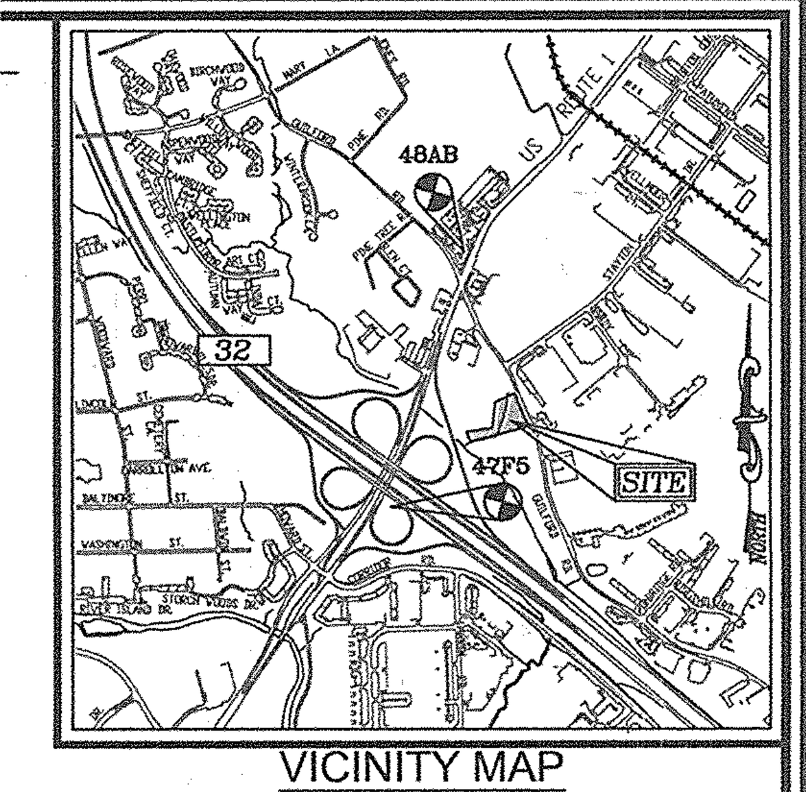
LEGEND

EXISTING CONTOUR	382
PROPOSED CONTOUR	382
EXISTING SPOT ELEVATION	+82.53
PROPOSED SPOT ELEVATION	+82.53
DIRECTION OF FLOW	
EXISTING TREES TO REMAIN	
LIGHT POLES	
SOIL TYPE	M1B2 / M1D3
CONCRETE	

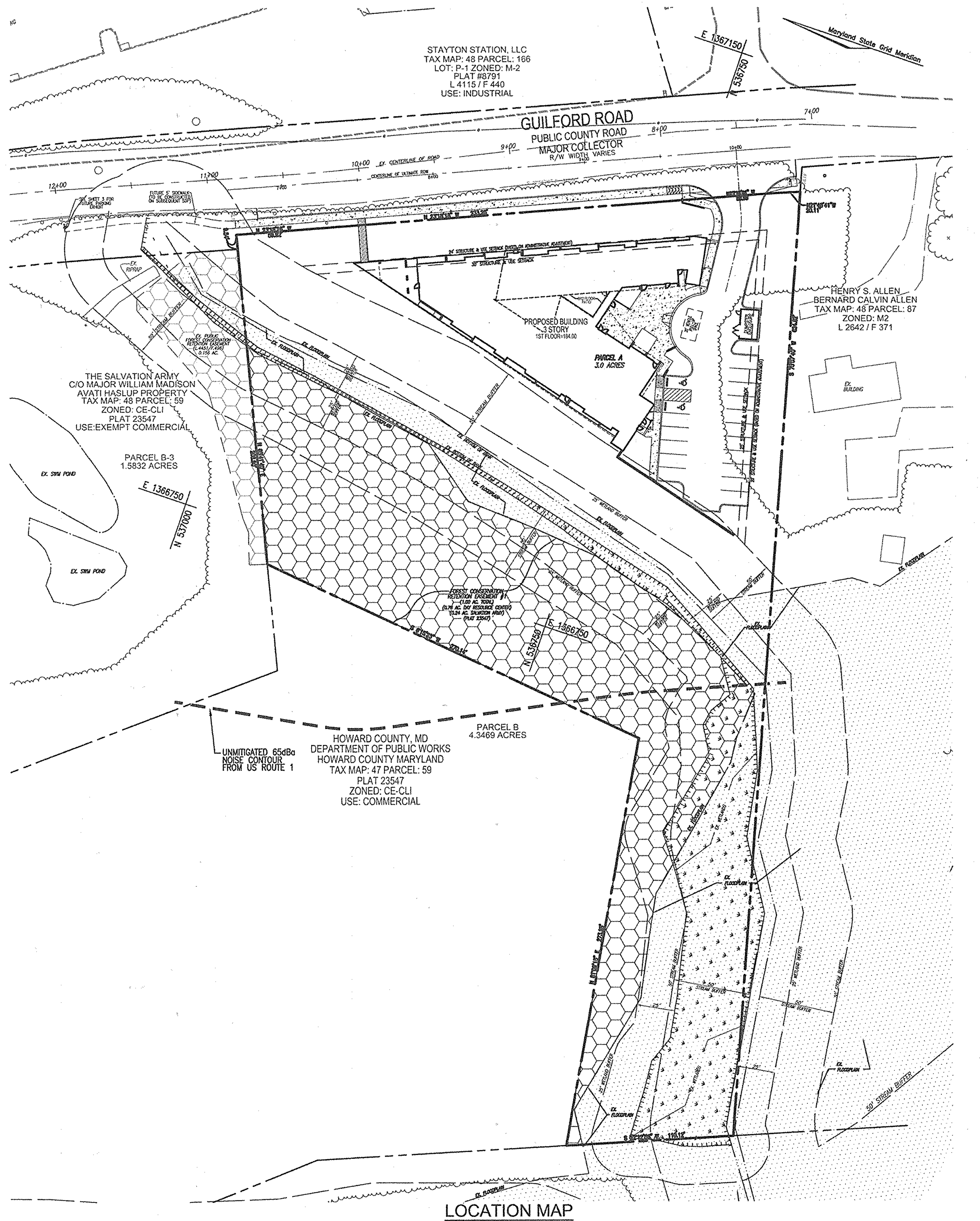
BENCHMARKS

HOWARD COUNTY BENCHMARK - 47F5 (CONC. MONUMENT)
N 535985.0412 E 1365653.4555 ELEV. 234.996

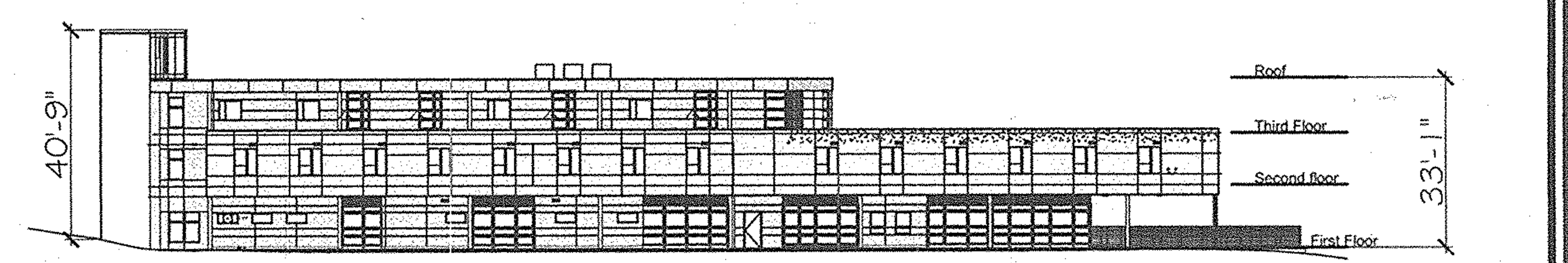
HOWARD COUNTY BENCHMARK - 48AB (CONC. MONUMENT)
N 538384.4474 E 1366415.7904 ELEV. 225.653



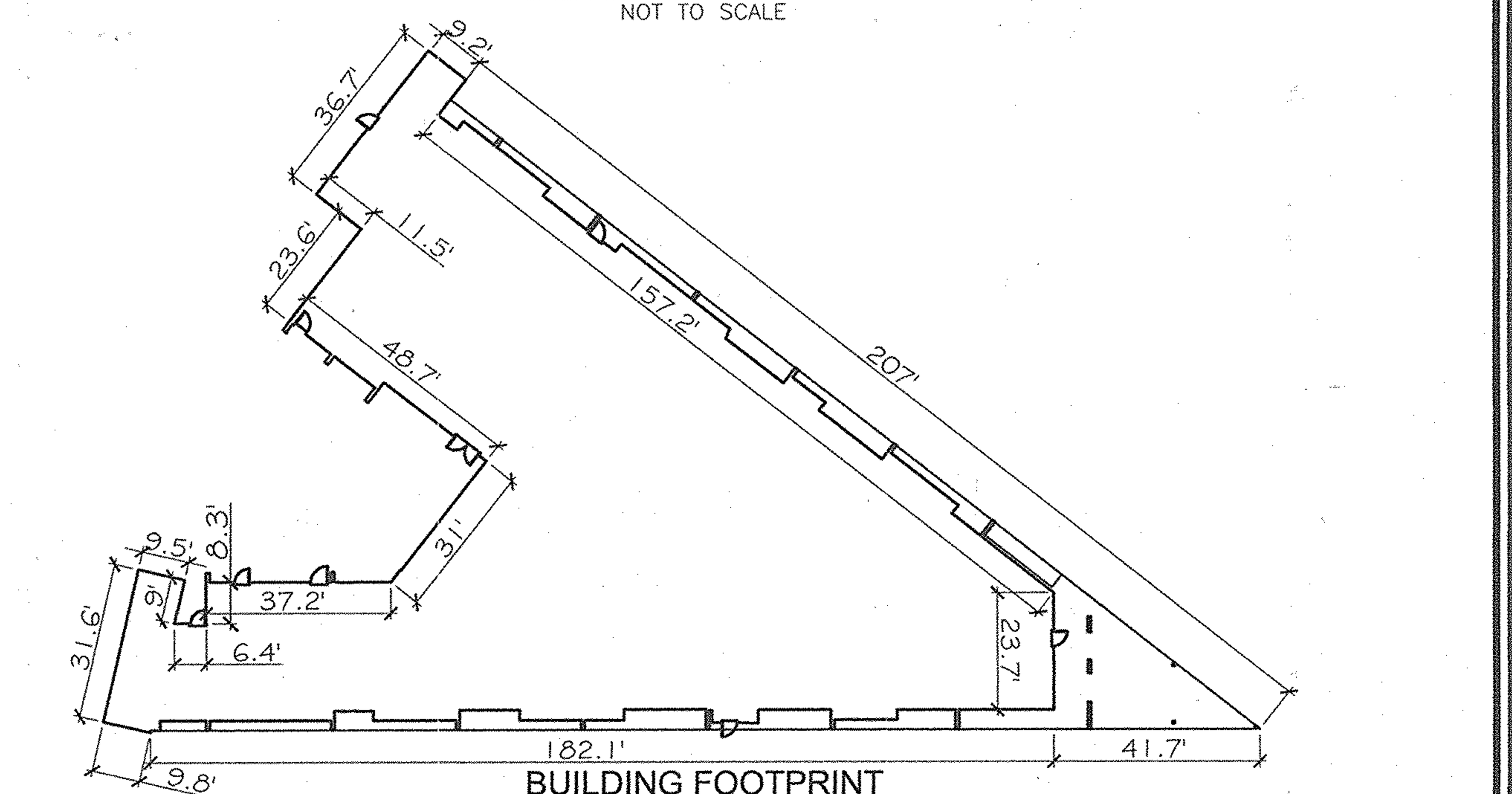
VICINITY MAP
SCALE: 1"=2000'
ADC MAP COORDINATE: 5054-A8



LOCATION MAP
SCALE: 1"=50'



BUILDING ELEVATION
NOT TO SCALE



BUILDING FOOTPRINT
NOT TO SCALE

SCALE 1"=50'
25' 0' 50'

DEVELOPER
VOLUNTEERS OF AMERICA, INC.
1660 DUKE STREET
ALEXANDRIA, VA. 22314
(410) 798 - 4267
c/o RICK DELLA

~~OWNER~~
~~HOWARD COUNTY, MD~~
~~DEPARTMENT OF PUBLIC WORKS~~
~~3430 COURT HOUSE DR.~~
~~ELLICOTT CITY, MD 21043~~
~~(410) 313-4401~~

OWNER
HOWARD COUNTY
HOUSING COMMISSION
6751 COLUMBIA GATEWAY DR., 3RD FLOOR
COLUMBIA, MD 21046
(410) 313-6320

NO.	REVISION	DATE

SITE DEVELOPMENT PLAN

COVER SHEET

DAY RESOURCE CENTER
VOLUNTEERS OF AMERICA
10390 GUILFORD ROAD
HOWARD COUNTY HOUSING COMMISSION

TAX MAP 47 GRID 12
6TH ELECTION DISTRICT
DPZ REF'S: L.15118/F.116, BA-08-027V
ZONED: CE-CLI
PARCEL 59, PARCEL A
HOWARD COUNTY, MARYLAND

ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET
ELLICOTT CITY, MD 21043
TEL: 410.461.7666
FAX: 410.461.8961

SHEET INDEX

ADDRESS CHART

LOT/PARCEL#	STREET ADDRESS
PARCEL 59, PARCEL D	10390 GUILFORD ROAD

PERMIT INFORMATION CHART

SUBDIVISION NAME				SECTION/AREA	LOTS/PARCEL #
DAY RESOURCE CENTER				N/A	PARCEL 59, PARCEL 'A'
PLAT # OR L/F	BLOCK NO.	ZONE	TAX MAP	ELECT. DIST.	CENSUS TR.
L.15118/F.113 PLAT 23547	12	CAC-CLI	47	6TH	6069.01
WATER CODE: B-02			SEWER CODE: 4250000		

STATE OF MARYLAND
ROBERT HARRIS VOGEL
NO. 16193
REGISTERED
PROFESSIONAL ENGINEER
12/22/15

ROBERT H. VOGEL, PE No.16193

DESIGN BY:	RHV/DZE
DRAWN BY:	DZE/KG
CHECKED BY:	RHV
DATE:	DECEMBER 2015
SCALE:	AS SHOWN
W.O. NO.:	06-72.01

PROFESSIONAL CERTIFICATE

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193 EXPIRATION DATE: 09-27-2016

SDP-15-023

K:\Projects\06-72\ENGR\dwg\SDP\01-COVER.dwg, 12/18/2015 5:29:27 PM

STAYTON STATION, LLC
TAX MAP: 48 PARCEL: 166
LOT: P-1 ZONED: M-2
PLAT #8791
L 4115 / F 440
USE: INDUSTRIAL

GUILFORD ROAD
PUBLIC COUNTY ROAD
MAJOR COLLECTOR
R/W WIDTH VARIES

THE SALVATION ARMY
C/O MAJOR WILLIAM MADISON
AVATI HASLUP PROPERTY
TAX MAP: 48 PARCEL: 59
ZONED: CE-CLI
PLAT 23547
USE:EXEMPT COMMERCIAL

PARCEL B-3
1.5832 ACRES

HENRY S. ALLEN
BERNARD CALVIN ALLEN
TAX MAP: 48 PARCEL: 87
ZONED: M2
L 2642 / F 371

PARCEL A
3.0 ACRES

PROPOSED BUILDING
3 STORY
1ST FLOOR=184.00

SWM#1 (M-6)
MICRO-BIORETENTION
(717 CF)

SWM#2 (M-6)
MICRO-BIORETENTION
(1607 CF)

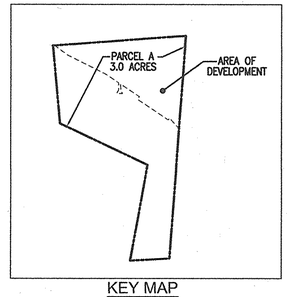
SWM#3 (M-5)
GRAVEL TRENCH
(1184 CF)
74'x10'

HOWARD COUNTY, MD
DEPARTMENT OF PUBLIC WORKS
HOWARD COUNTY MARYLAND
TAX MAP: 47 PARCEL: 59
PLAT 23547
ZONED: CE-CLI
USE: COMMERCIAL

PARCEL B
4.3469 ACRES

UNMITIGATED 65dBa
NOISE CONTOUR
FROM US ROUTE 1

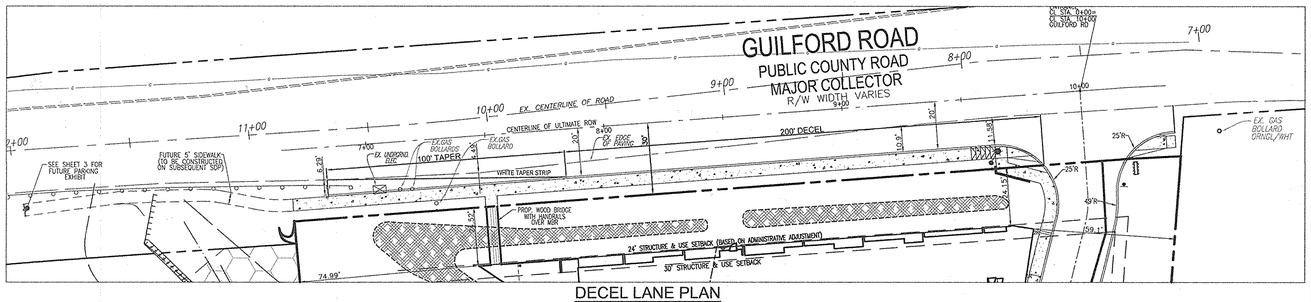
PLAN VIEW
SCALE: 1"=30'



KEY MAP
SCALE: 1"=200'

LEGEND:

- EXISTING OVERHEAD LINES
- EXISTING WATERLINE LINE
- EXISTING GAS LINE
- EXISTING GUARD RAIL
- EXISTING METAL FENCE
- EXISTING WOOD FENCE
- EXISTING ELECTRICAL BOX
- EXISTING POLE
- EXISTING LIGHT POLE WITH CONCRETE BASE
- EXISTING MAILBOX
- EXISTING SIGN
- EXISTING SANITARY MANHOLE
- EXISTING CLEANOUT
- EXISTING FIRE HYDRANT
- PROPOSED PARKING COUNT
- PROPOSED SANITARY LINE
- PROPOSED WATER LINE
- PROPERTY LINE
- ADJACENT PROPERTY LINE
- RIGHT-OF-WAY LINE
- EXISTING TREELINE
- PROPOSED TREELINE
- PROPOSED SIDEWALK
- EXISTING CURB AND GUTTER
- PROPOSED CURB AND GUTTER
- PROPOSED WHEEL STOP
- PROPOSED STORM DRAIN INLET
- PROPOSED STORM DRAIN
- PROP. MICRO BIORETENTION AREA (M-6)
- FOREST CONSERVATION EASEMENT RETENTION
- 10' CONSTRUCTION EASEMENT FOR RETAINING WALL
- RIGHT OF WAY DEDICATION



DECEL LANE PLAN
SCALE: 1"=30'

SCALE 1"=30'
15' 0' 30'

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 1.12.16
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 2-22-16
DIRECTOR	DATE 2-22-16

DEVELOPER
VOLUNTEERS OF AMERICA, INC.
1660 DUKE STREET
ALEXANDRIA, VA 22314
(410) 798-4269
C/O RICK DELLA

OWNER
HOWARD COUNTY
HOUSING COMMISSION
6751 COLUMBIA GATEWAY DR., 3RD FLOOR
COLUMBIA, MD 21046
(410) 313-6320

NO.	REVISION	DATE

SITE DEVELOPMENT PLAN

SITE LAYOUT PLAN

DAY RESOURCE CENTER

VOLUNTEERS OF AMERICA
10390 GUILFORD ROAD
HOWARD COUNTY HOUSING COMMISSION
TAX MAP 47 GRID 12 — DPZ REF'S: L.1518/F.116, BA-08-027V — PARCEL 59, PARCEL A
6TH ELECTION DISTRICT — ZONED: CE-CLI — HOWARD COUNTY, MARYLAND

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ELLICOTT CITY, MD 21043
TEL: 410.461.7666
FAX: 410.461.8961

STATE OF MARYLAND — ROBERT HARRIS VOGEL — No 16193 — REGISTERED PROFESSIONAL ENGINEER — 1/12/16

ROBERT H. VOGEL, PE No.16193

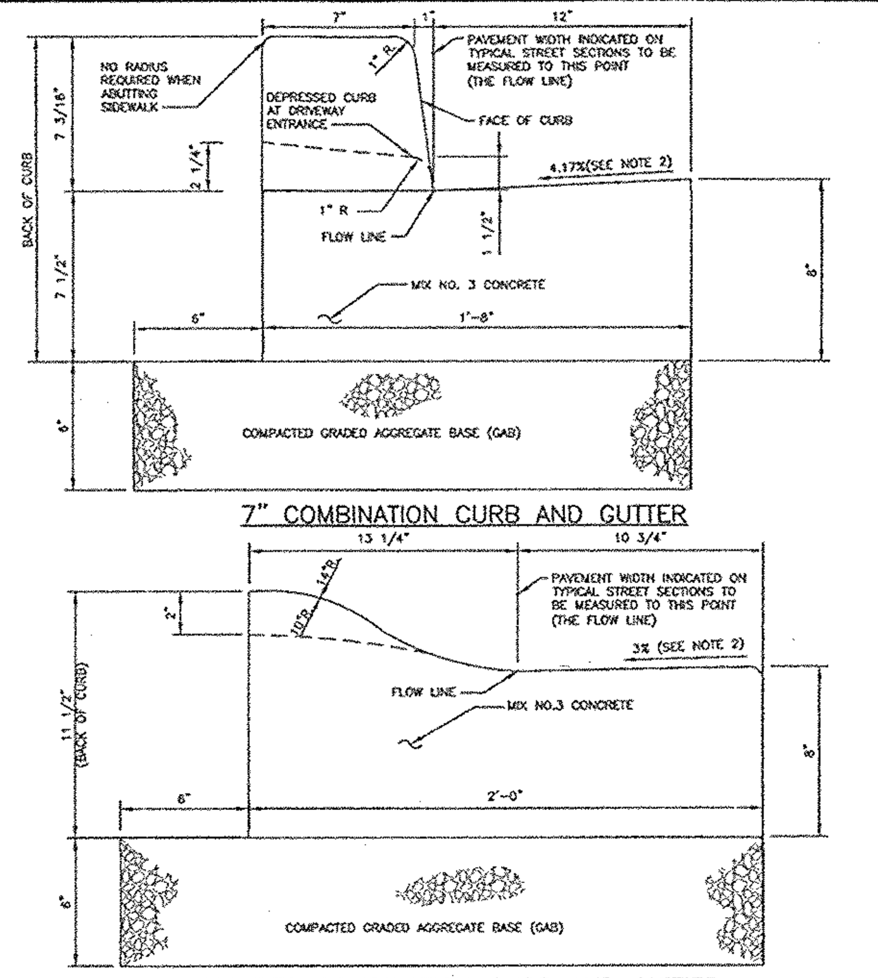
DESIGN BY:	RHV/DZE
DRAWN BY:	DZE/KG
CHECKED BY:	RHV
DATE:	DECEMBER 2015
SCALE:	AS SHOWN
W.O. NO.:	06-72.01

PROFESSIONAL CERTIFICATE

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193 EXPIRATION DATE: 09-27-2016

SHEET 2 OF 12

SDP-15-023



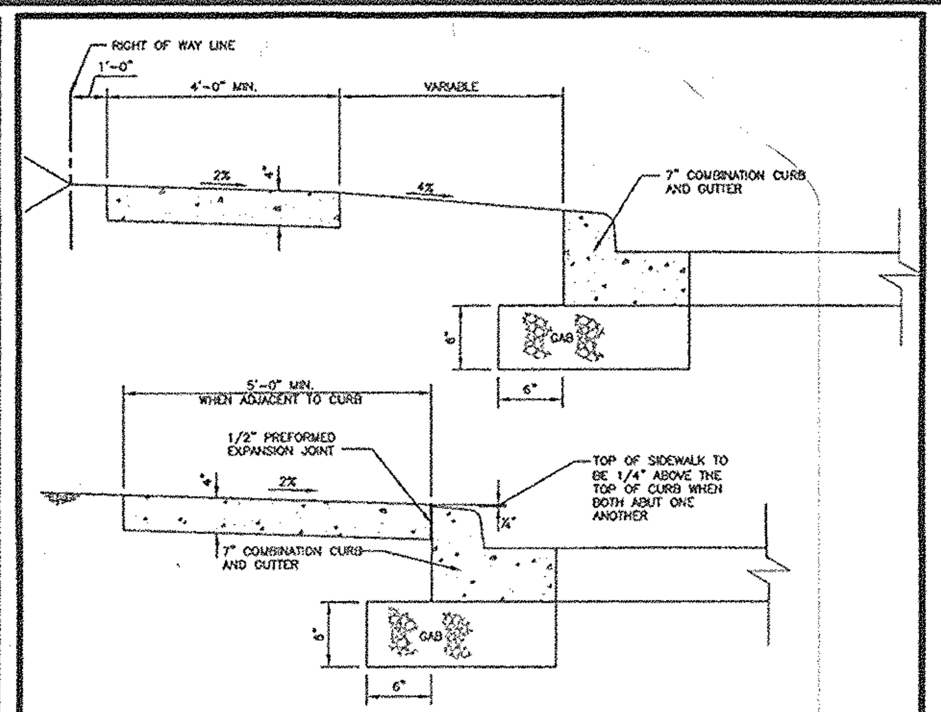
7" COMBINATION CURB AND GUTTER

MODIFIED COMBINATION CURB AND GUTTER

NOTE:

1. A REVERSE GUTTER PAN SHALL HAVE A GUTTER SLOPE OF 4.17% AWAY FROM THE FLOW LINE, AND SHALL NOT BE USED WHERE THIS DRAINAGE CREATES A HAZARDOUS CONDITION.
2. GUTTER PAN AT THE MEDIAN EDGE OF INTERMEDIATE ARTERIALS OR THE HIGH SIDE OF SUPERELEVATED SECTIONS SHALL BE SLOPED AT THE SAME RATE AND IN THE SAME DIRECTION AS THE PAVEMENT. MATCH PAVEMENT CROSS SLOPE WHEN CURB IS LOCATED ON THE LOW SIDE OF SUPERELEVATED SECTION AND THE RATE OF SUPERELEVATION IS GREATER THAN 3% FOR MODIFIED CURB & GUTTER.
3. A MINIMUM OF TWO (2) FEET OF COMPACTED STABILIZED EARTH, OR EQUIVALENT, SHALL SUPPORT THE ENTIRE BACK OF CURB.
4. POSITIVE DRAINAGE SHALL BE PROVIDED BOTH BEHIND THE CURB AND ALONG THE GUTTER AND FLOW LINE.

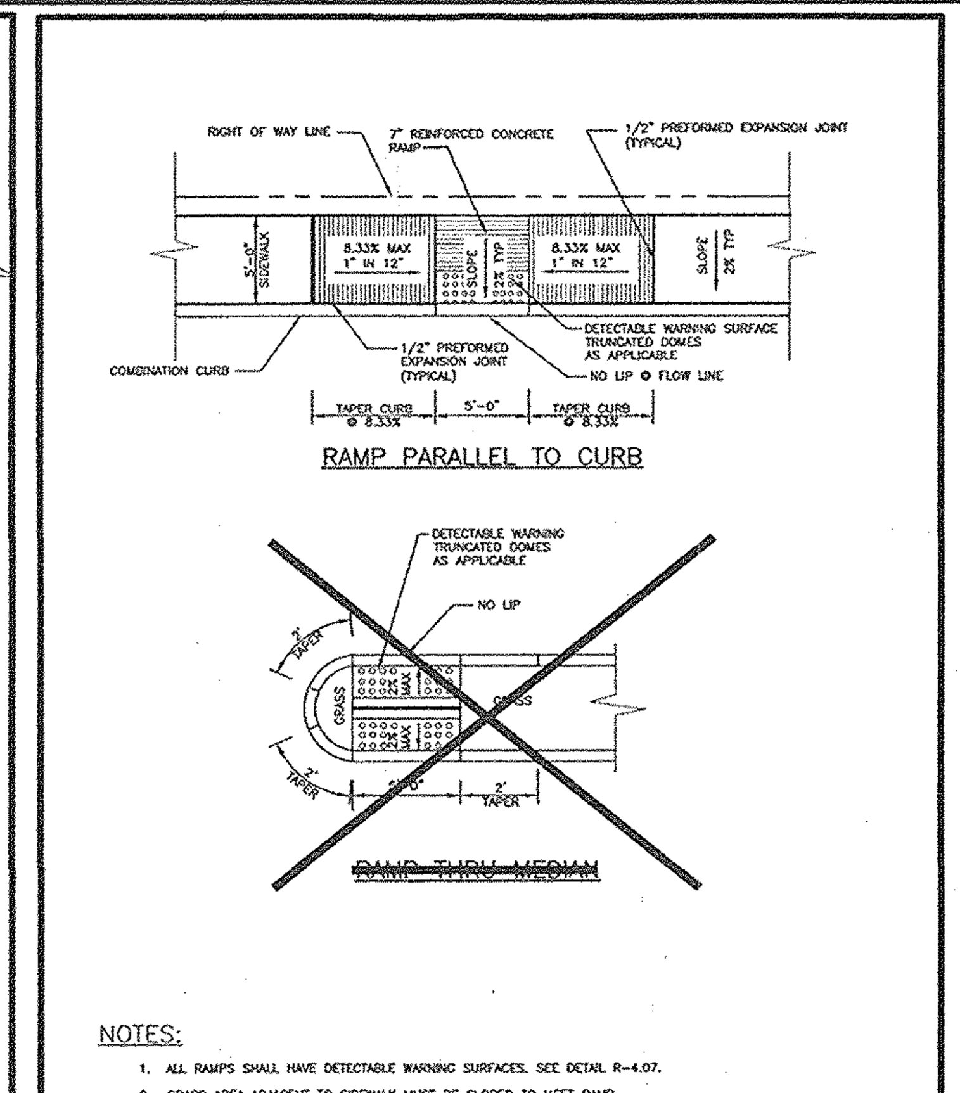
Howard County, Maryland Department of Public Works — CURB AND GUTTER 7" & Modified — Detail R-3.01



NOTES:

1. SIDEWALK TO BE SCRIBED IN 5'-0" MAXIMUM SQUARES.
2. EXPANSION JOINTS ACROSS THE SIDEWALK NOT TO BE MORE THAN 15' APART.
3. 1/2" PREFORMED EXPANSION MATERIAL IN EXPANSION JOINTS TO BE KEPT 1/4" BELOW SURFACE OF SIDEWALK.
4. CONCRETE TO BE MIX NO.3.
5. WHEN SIDEWALK ABUTS CURB, SIDEWALK SHALL BE 1/4" ABOVE CURB WITH 1/2" PREFORMED EXPANSION JOINT BETWEEN SIDEWALK AND CURB.
6. ON LONGITUDINAL SIDEWALK GRADES OF 5% OR GREATER, A CONCRETE HEADER, 6" THICK AND 6" DEEP BELOW THE NORMAL 4" SIDEWALK THICKNESS SHALL BE CONSTRUCTED FOR THE FULL WIDTH OF THE SIDEWALK AT INTERVALS OF 48 FEET. THE HEADERS SHALL BE PLACED AT THE EXPANSION JOINT LOCATIONS AND SHALL BE MONOLITHIC WITH THE SIDEWALK.
7. SIDEWALK WIDTH ADJACENT TO CURB SHALL BE 5'-0" MINIMUM EXCEPT SIDEWALK ADJACENT TO CURB IN CUL-DE-SAC BULBS MAY BE 4'-0" WIDE.
8. SIDEWALK LOCATED 2' OR MORE FROM CURB MAY BE 4'-0" IN WIDTH WITH A 5'x5' PAVED SECTION PLACED 200' APART.
9. 4'-0" SIDEWALK REQUIRES A PASSING AREA (SEE DETAIL R-4.01).

Howard County, Maryland Department of Public Works — Concrete Sidewalk — Detail R-3.05



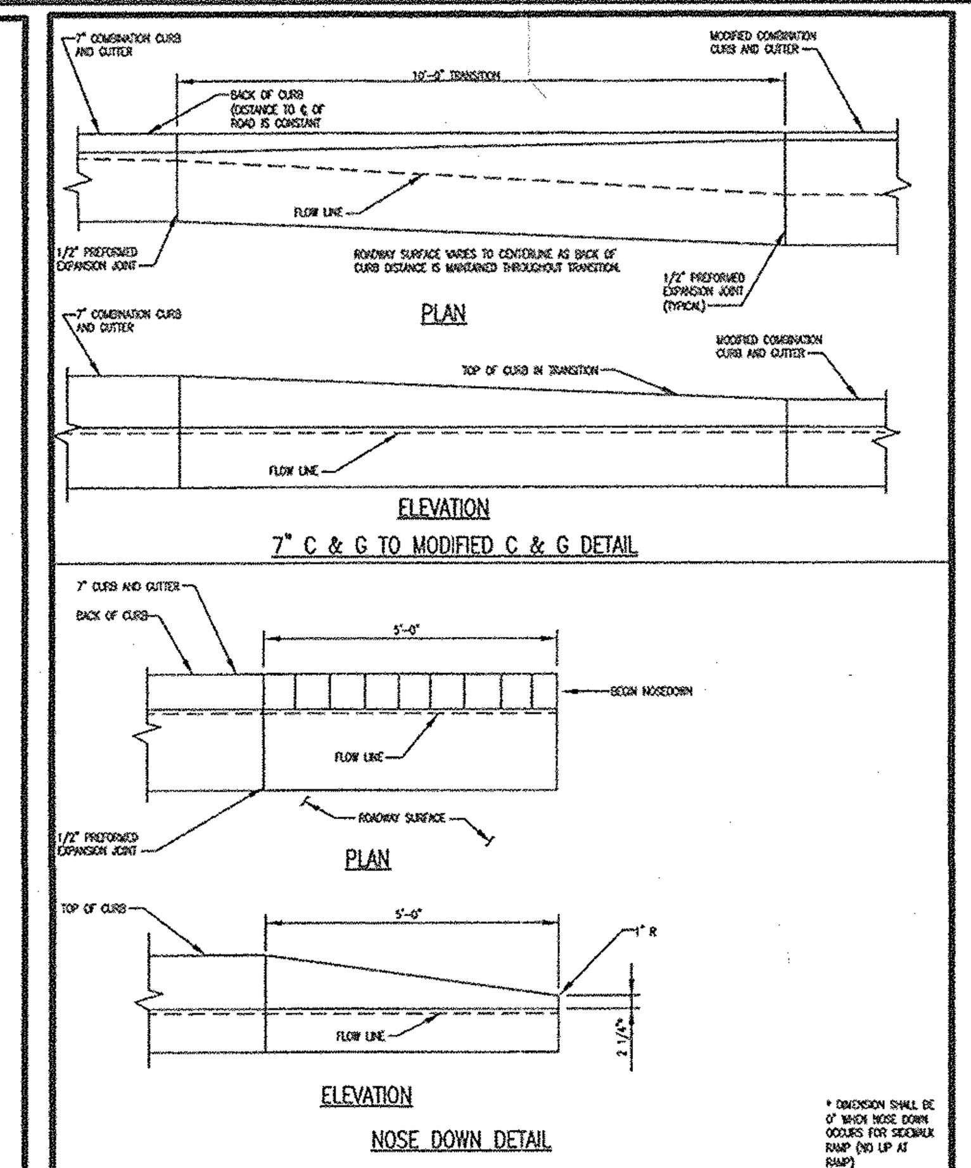
RAMP PARALLEL TO CURB

RAMP THRU MEDIAN

NOTES:

1. ALL RAMPS SHALL HAVE DETECTABLE WARNING SURFACES. SEE DETAIL R-4.07.
2. GRASS AREA ADJACENT TO SIDEWALK MUST BE SLOPED TO MEET RAMP.

Howard County, Maryland Department of Public Works — SIDEWALK RAMP Layout & Grading Parallel to Curb & Thru Median — Detail R-4.06



PLAN

ELEVATION

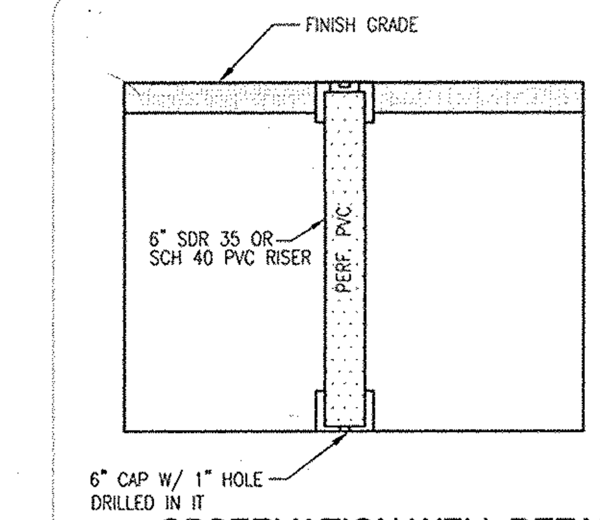
7" C & G TO MODIFIED C & G DETAIL

PLAN

ELEVATION

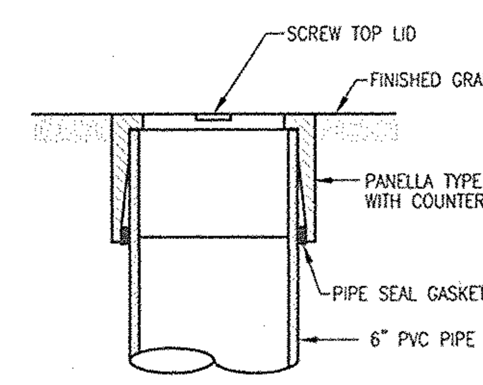
NOSE DOWN DETAIL

Howard County, Maryland Department of Public Works — CURB AND GUTTER 7" Transition to Modified & Nose Down — Detail R-3.02



OBSERVATION WELL DETAIL

NOT TO SCALE



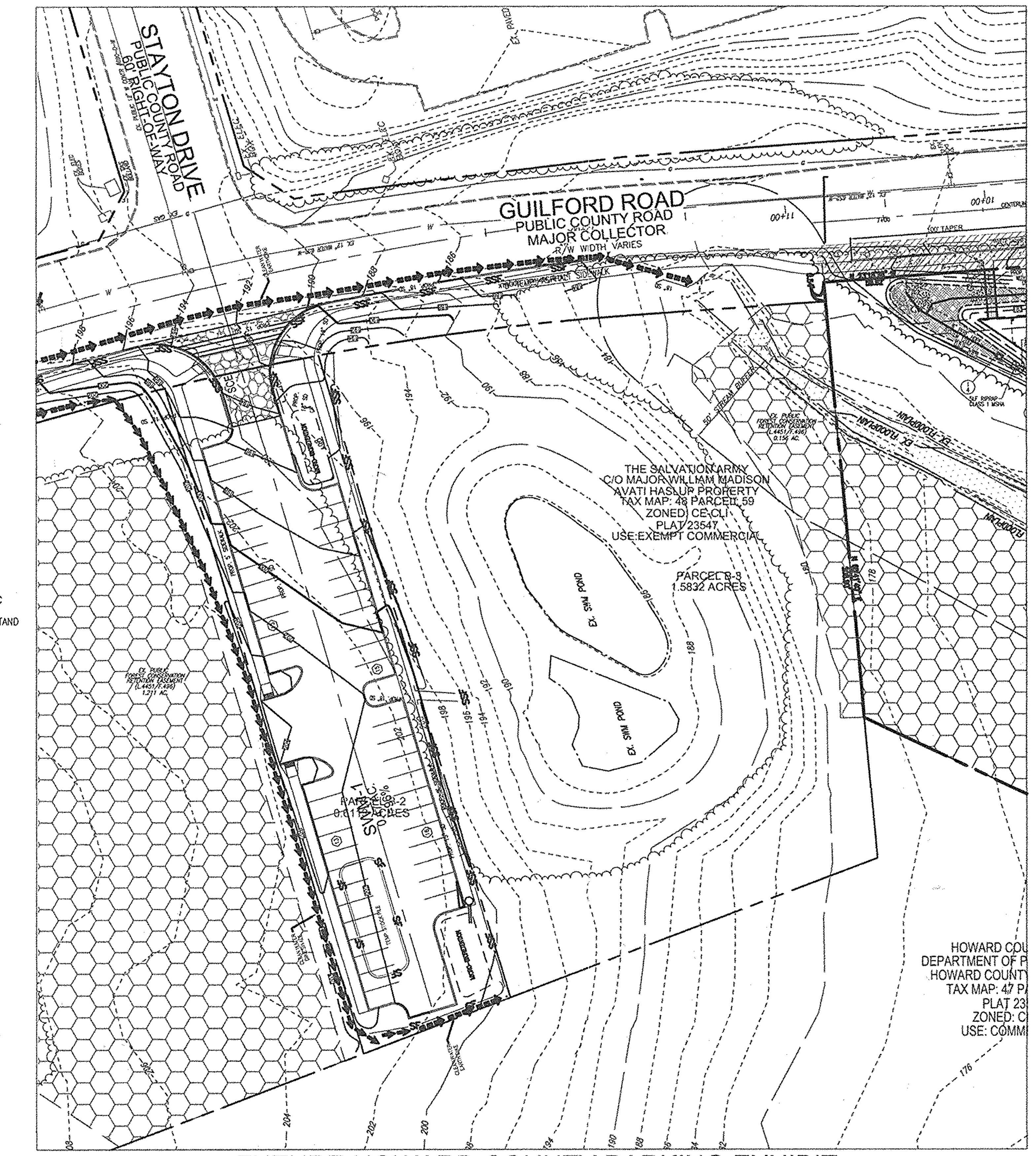
EACH OBSERVATION WELL / CLEANOUT SHALL INCLUDE THE FOLLOWING:

FOR AN UNDERGROUND FLUSH MOUNTED OBSERVATION WELL / CLEANOUT, PROVIDE A TUBE MADE OF NON-CORROSIVE MATERIAL, SCHEDULE 40 OR EQUAL, AT LEAST THREE FEET LONG WITH AN INSIDE DIAMETER OF AT LEAST 6 INCHES.

THE TUBE SHALL HAVE A FACTORY ATTACHED CAST IRON OR HIGH IMPACT PLASTIC COLLAR WITH RIBS TO PREVENT ROTATION WHEN REMOVING SCREW TOP LID. THE SCREW TOP LID SHALL BE CAST IRON OR HIGH IMPACT PLASTIC THAT WILL WITHSTAND ULTRAVIOLET RAYS.

CLEANOUT/OBSERVATION WELL CAP DETAIL

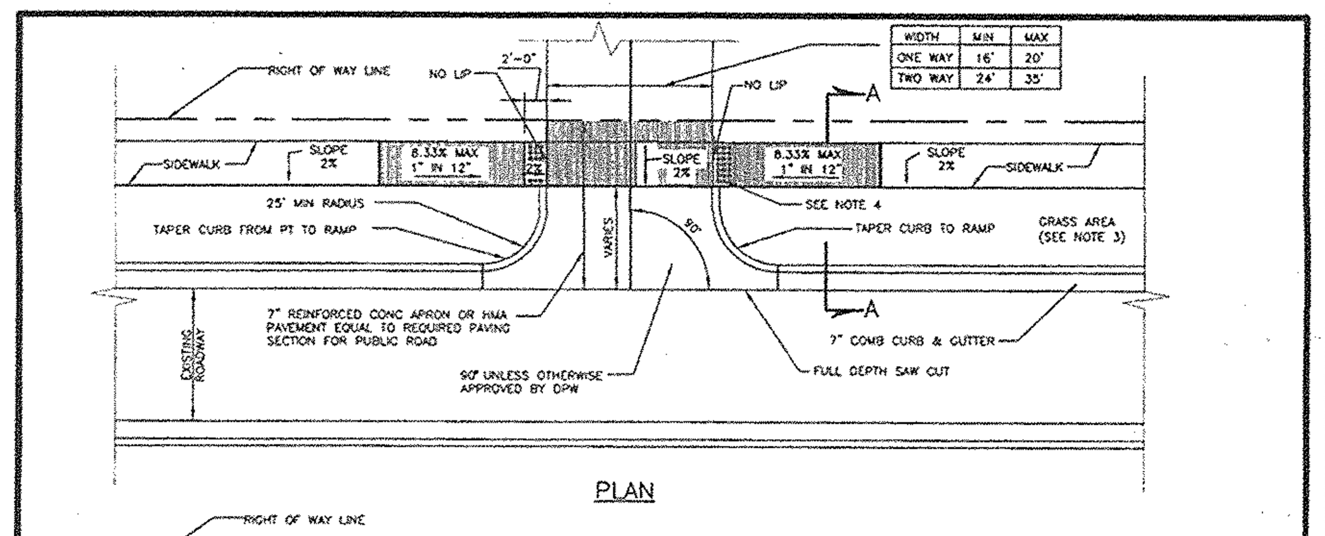
NOT TO SCALE



FUTURE HOWARD COUNTY PARKING EXHIBIT (NOT FOR CONSTRUCTION)

REFERENCE CAPITAL PROJECT J-4181

SCALE: 1"=50'



WIDTH	MIN	MAX
ONE WAY	16'	20'
TWO WAY	24'	35'

PLAN

SECTION A-A

NOTES:

1. ENTRANCE TO BE USED ONLY IF AUXILIARY LANES ARE NOT REQUIRED IN ACCORDANCE WITH DESIGN MANUAL VOL. III SECTION 2.5.B.5 AND SECTION 2.6.C.
2. WHEN PROPOSED ENTRANCE IS CONSTRUCTED ON AN EXISTING STREET WITH COMBINATION CURB OR CURB & GUTTER, THE CURB OR CURB & GUTTER SHALL BE REMOVED TO THE FIRST EXISTING JOINT ON EITHER SIDE OF THE PROPOSED ENTRANCE AND REPLACED BY NEW CONSTRUCTION.
3. GRASS AREA ADJACENT TO SIDEWALK MUST BE SLOPED TO MEET RAMP.
4. ALL RAMPS SHALL HAVE A WARNING TEXTURE EXTENDING THE FULL WIDTH OF THE CURB RAMP.

Howard County, Maryland Department of Public Works — COMMERCIAL-INDUSTRIAL-APARTMENT Entrance on Closed Section Roadway (<200 V.P.H.) — Detail R-6.09

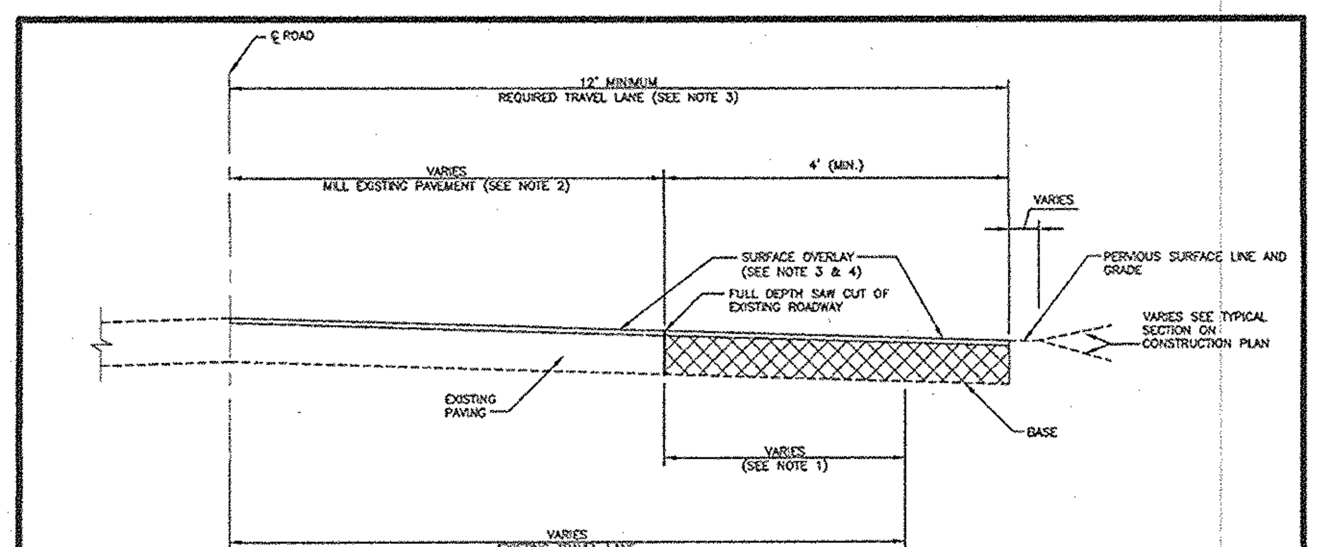
SECTION NUMBER	ROAD AND STREET CLASSIFICATION	CALIFORNIA BEARING RATIO (CBR) / PAVEMENT MATERIAL (INCHES)	MIN HMA WITH GAB 3 TO <5	MIN HMA WITH GAB 5 TO <7	MIN HMA WITH GAB ≥ 7	HMA WITH CONSTANT GAB 3 TO <5	HMA WITH CONSTANT GAB 5 TO <7	HMA WITH CONSTANT GAB ≥ 7
P-1	PARKING BAYS: RESIDENTIAL, [illegible] RESIDENTIAL; PARKING DRIVE AISLES: RESIDENTIAL AND NON-RESIDENTIAL WITH NO MORE THAN 2 HEAVY TRUCKS PER DAY	HMA SUPERPAVE FINAL SURFACE 9.5 MM, PG 64-22, LEVEL 1 (ESAL)	1.5	[illegible]	1.5	1.5	1.5	1.5
		HMA SUPERPAVE INTERMEDIATE SURFACE (NA)	NA	NA	NA	NA	NA	NA
		HMA SUPERPAVE BASE 19.0 MM, PG 64-22, LEVEL 1 (ESAL)	2.0	2.0	2.0	3.5	3.0	2.5
		GRADED AGGREGATE BASE (GAB)	8.5	7.0	5.0	[illegible]	[illegible]	4.0
P-2	PARKING DRIVE AISLES: RESIDENTIAL AND NON-RESIDENTIAL WITH NO MORE THAN 10 HEAVY TRUCKS PER DAY; LOCAL ROADS: ACESS PLACE, ACCESS STREET; CUL-DE-SACS: RESIDENTIAL	HMA SUPERPAVE FINAL SURFACE 9.5 MM, PG 64-22, LEVEL 1 (ESAL)	1.5	1.5	1.5	1.5	1.5	1.5
		HMA SUPERPAVE INTERMEDIATE SURFACE 9.5 MM, PG 64-22, LEVEL 1 (ESAL)	1.0	1.0	1.0	1.0	1.0	1.0
		HMA SUPERPAVE BASE 19.0 MM, PG 64-22, LEVEL 1 (ESAL)	2.0	2.0	2.0	3.5	2.0	2.0
		GRADED AGGREGATE BASE (GAB)	8.0	4.0	3.0	4.0	4.0	4.0
P-3	PARKING DRIVE AISLES: [illegible] AND NON-RESIDENTIAL WITH NO MORE THAN 10 [illegible]; LOCAL ROADS: ACCESS PLACE, ACCESS STREET; CUL-DE-SACS: NON-RESIDENTIAL; MINOR COLLECTORS: [illegible]	HMA SUPERPAVE FINAL SURFACE 9.5 MM, PG 64-22, LEVEL 1 (ESAL)	1.5	1.5	[illegible]	[illegible]	1.5	1.5
		HMA SUPERPAVE INTERMEDIATE SURFACE 9.5 MM, [illegible] (ESAL)	1.0	1.0	1.0	1.0	1.0	1.0
		HMA SUPERPAVE BASE 19.0 MM, PG 64-22, LEVEL 1 [illegible]	3.0	3.0	3.0	4.5	3.0	2.0
		GRADED AGGREGATE BASE (GAB)	10.0	[illegible]	[illegible]	6.0	6.0	6.0
P-4	MINOR COLLECTORS: [illegible]; MAJOR COLLECTORS	HMA SUPERPAVE FINAL SURFACE 12.5 MM, PG 64-22, LEVEL 2 (LOW ESAL)	2.0	2.0	[illegible]	[illegible]	2.0	2.0
		HMA SUPERPAVE INTERMEDIATE SURFACE 12.5 MM, [illegible] (LOW ESAL)	2.0	2.0	2.0	2.0	2.0	2.0
		HMA SUPERPAVE BASE 19.0 MM, PG 64-22, LEVEL 2 [illegible]	4.0	4.0	3.0	6.0	5.0	3.0
		GRADED AGGREGATE BASE (GAB)	13.0	[illegible]	[illegible]	[illegible]	6.0	6.0

Notes:
1) HEAVY TRUCKS ARE DEFINED AS THOSE WITH SIX (6) WHEELS OR MORE INCLUDING GARBAGE TRUCKS.
2) HMA SUPERPAVE LAYERS SHALL BE PLACED IN APPROPRIATE COMPACTED LIFT THICKNESS: 19.0 MM BASE (2.0" MIN TO 4.0" MAX), 12.5 MM SURFACE (1.5" MIN TO 3.0" MAX), AND 9.5 MM SURFACE (1.0" MIN TO 2.0" MAX)
3) GRADED AGGREGATE BASE (GAB) TO BE PLACED AND COMPACTED IN 6" MAX COMPACTED THICKNESS LAYERS.
4) THE INTERMEDIATE SURFACE COURSE LAYER MUST BE PLACED WITHIN 2 WEEKS OF PLACEMENT OF BASE COURSE, AND IS REQUIRED PRIOR TO SUBSTANTIAL COMPLETION INSPECTION AND BOND REDUCTION.
5) IN LIEU OF PLACING THE INTERMEDIATE SURFACE COURSE LAYER FOR COMMERCIAL/INDUSTRIAL ENTRANCE APRONS WITHIN THE COUNTY RIGHT-OF-WAY WHERE AUXILIARY LANES ARE NOT REQUIRED, THE THICKNESS OF THE INTERMEDIATE PAVEMENT LAYER CAN BE ADDED TO THE REQUIRED THICKNESS OF THE BASE ASPHALT LAYER.
6) THE CONSTRUCTION DRAWINGS SHALL SHOW THE PAVING SECTION, ROAD CLASSIFICATION AND CRB VALUE FOR EACH ROADWAY

HMA SUPERPAVE FINAL SURFACE / HMA SUPERPAVE INTERMEDIATE SURFACE / HMA SUPERPAVE BASE / GRADED AGGREGATE BASE (GAB)

Howard County, Maryland Department of Public Works — PAVING SECTIONS P-1 to P-4 — Detail R-2.01

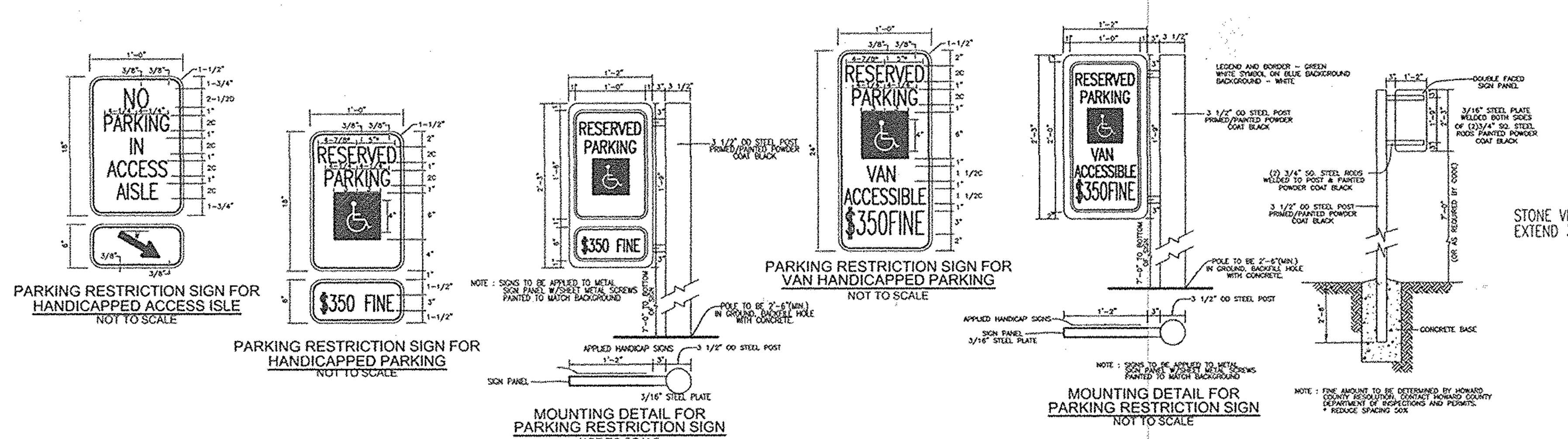
NOTE: PAVING SECTIONS ARE TO BE VERIFIED AND APPROVED BY THE GEOTECHNICAL ENGINEER PRIOR TO CONSTRUCTION.



NOTES:

1. WHEN EXISTING TRAVEL LANE IS LESS THAN THE REQUIRED 12' LANE CONTRACTOR SHALL REMOVE A MINIMUM OF 1' FULL DEPTH OF THE EXISTING ROADWAY. IF CURB AND GUTTER IS INSTALLED, PROVIDE A MINIMUM OF 4' OF WIDENING FROM FACE OF GUTTER PAN.
2. THE EXISTING PAVEMENT TO BE RESURFACED SHALL BE MILLED AT DEPTH OF 1 1/2" (MINIMUM).
3. THE RESURFACING SHALL BE PLACED TO THE CENTERLINE OF THE ROADWAY.
4. RESURFACING COURSE TO BE EQUAL TO THE SURFACE COURSE OF THE TYPICAL PAVEMENT SECTION.

Howard County, Maryland Department of Public Works — Existing Roadway Widening Strip — Detail R-1.08



PARKING RESTRICTION SIGN FOR HANDICAPPED ACCESS ISLE

PARKING RESTRICTION SIGN FOR HANDICAPPED PARKING

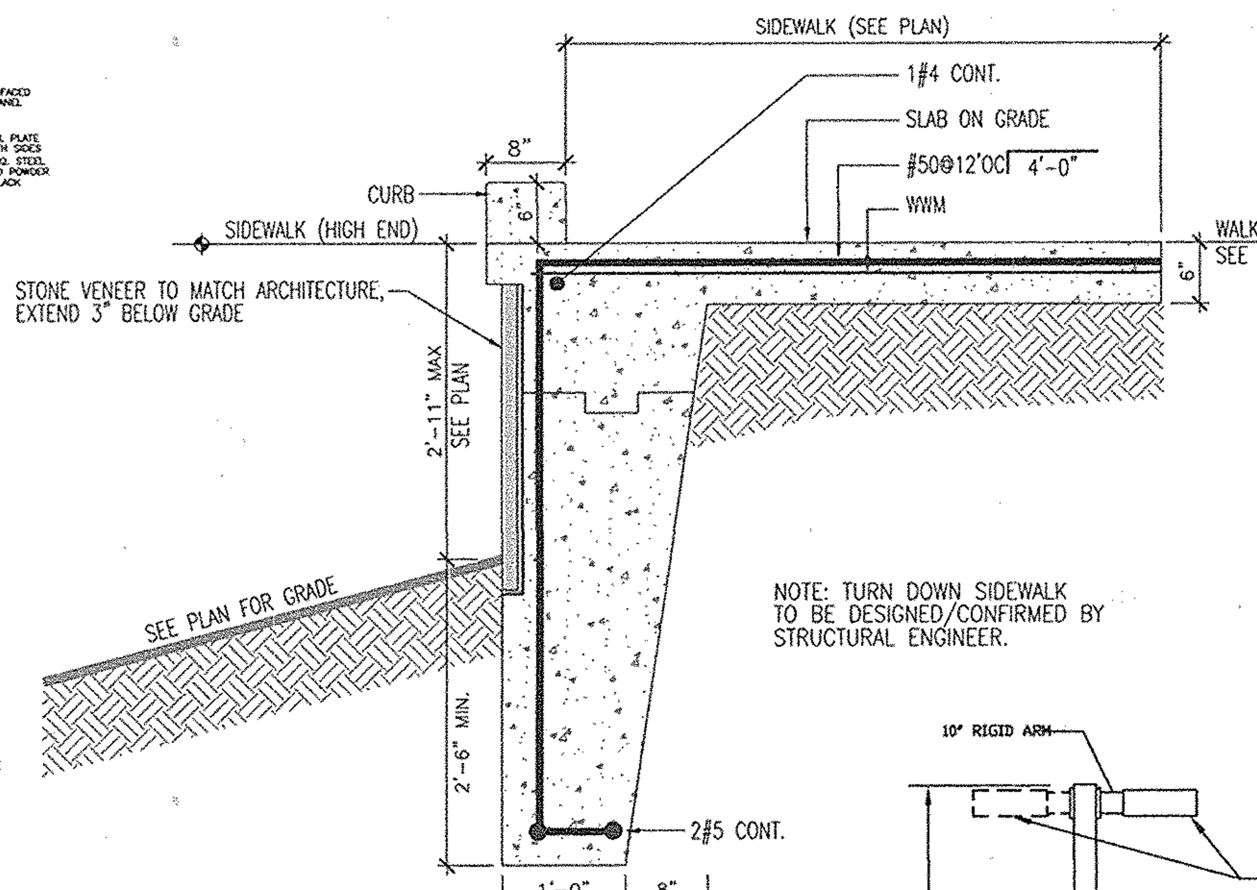
PARKING RESTRICTION SIGN FOR VAN HANDICAPPED PARKING

MOUNTING DETAIL FOR PARKING RESTRICTION SIGN

MOUNTING DETAIL FOR PARKING RESTRICTION SIGN

HANDICAP PARKING SIGNS

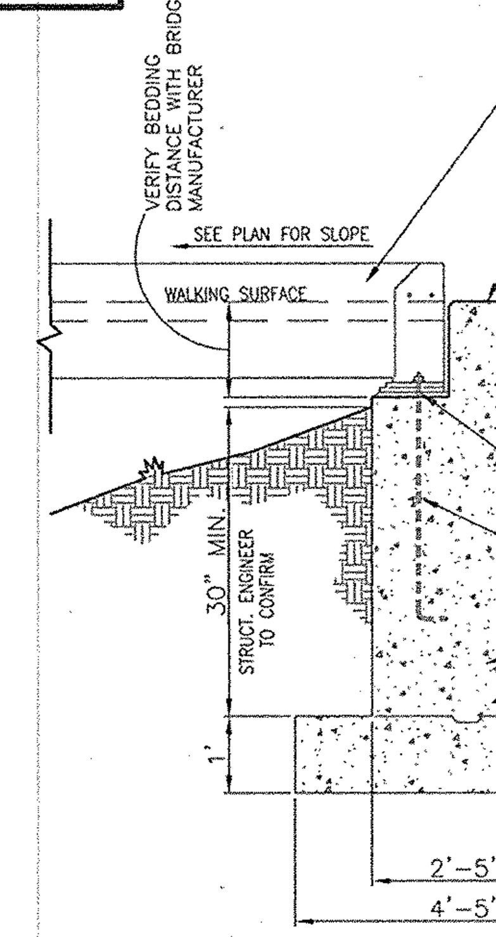
(NOT TO SCALE)



NOTE: TURN DOWN SIDEWALK TO BE DESIGNED/CONFIRMED BY STRUCTURAL ENGINEER.

TURN DOWN SIDEWALK TYPICAL DETAIL

NOT TO SCALE



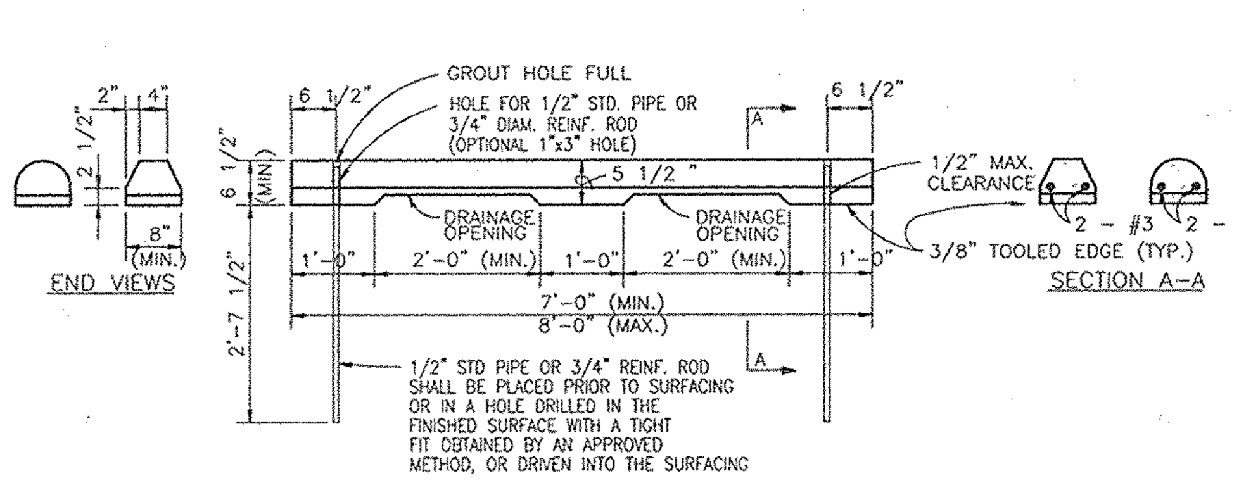
WOOD BRIDGE ABUTMENT DETAIL

NOT TO SCALE

DEVELOPER
VOLUNTEERS OF AMERICA, INC.
1660 DUKE STREET
ALEXANDRIA, VA 22314
(410) 798-4269
C/O RICK DELLA

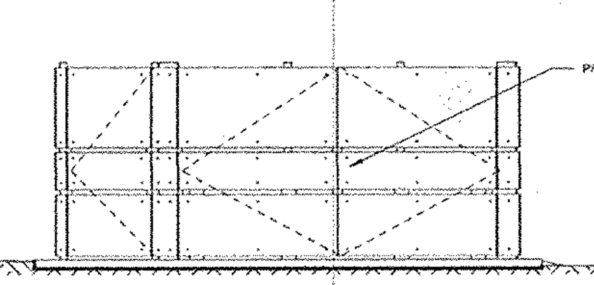
OWNER
HOWARD COUNTY HOUSING COMMISSION
6751 COLUMBIA GATEWAY DR., 3RD FLOOR
COLUMBIA, MD 21046
(410) 313-6320

NO.	REVISION	DATE

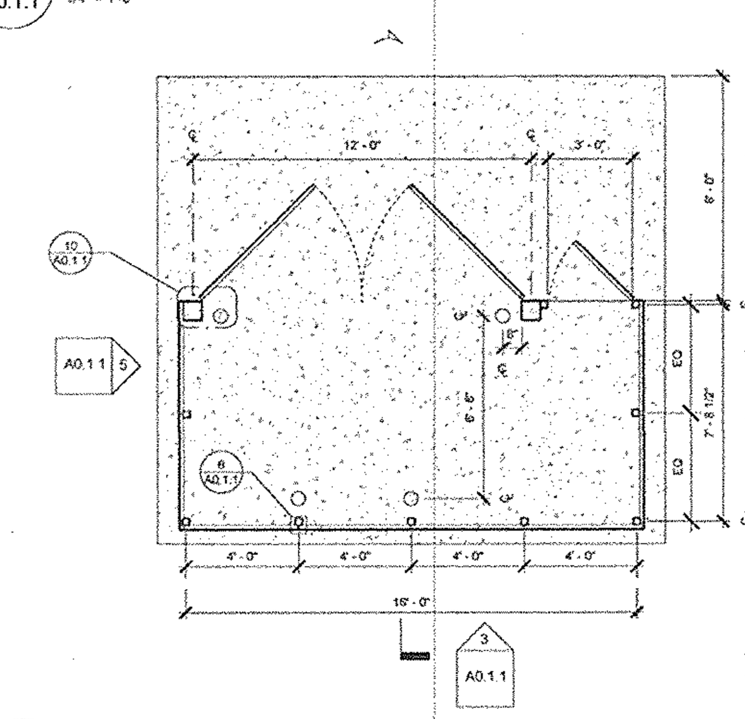


PRECAST CONCRETE WHEEL STOP DETAILS

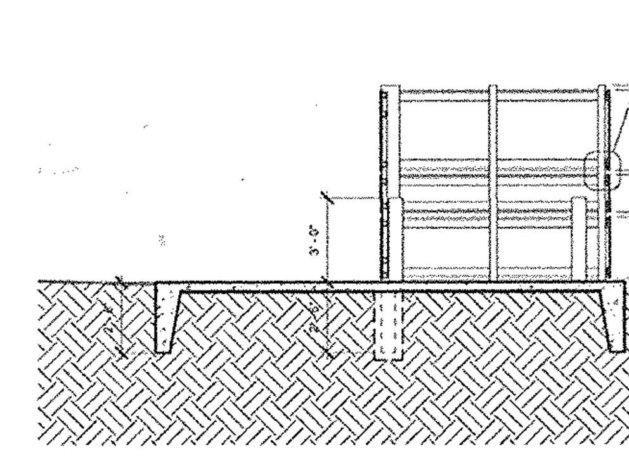
NOT TO SCALE



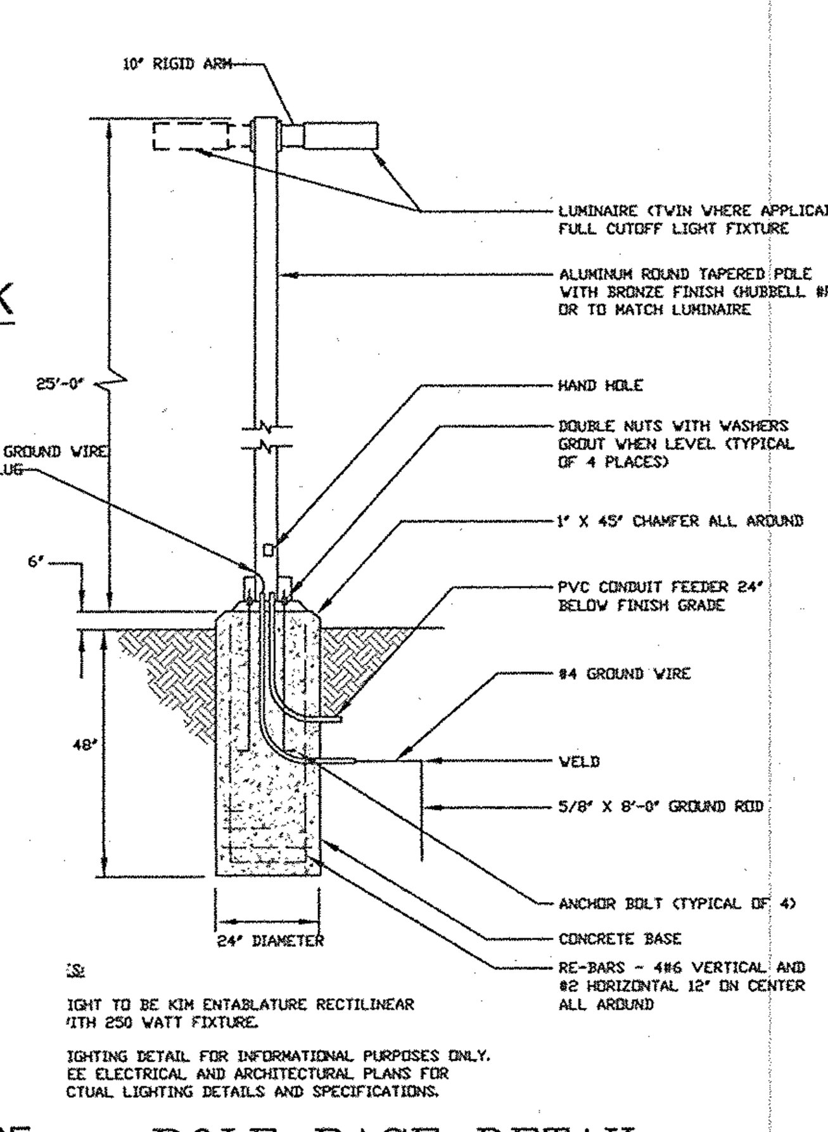
2 DUMPSTER ENCLOUSRE - NORTH



1 ENLARGED PLAN-DUMPSTER ENCLOUSRE

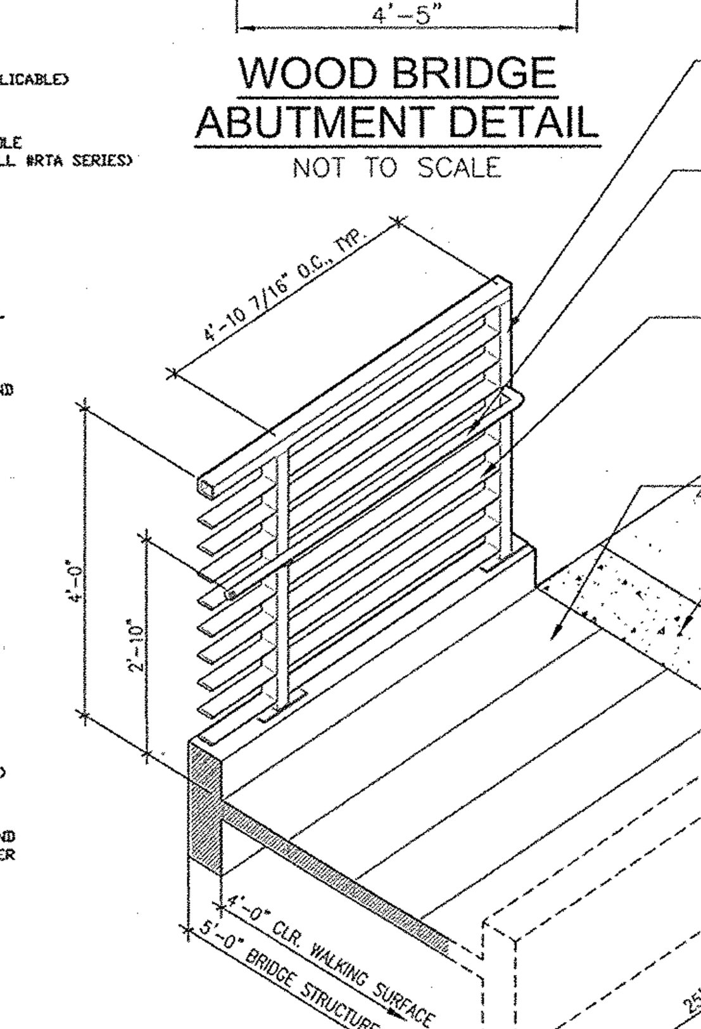


6 WALL SECTION - DUMPSTER ENCLOUSRE



POLE BASE DETAIL

(NOT TO SCALE)



WOOD BRIDGE/ RAILING DETAIL

NOT TO SCALE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 1-12-16

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 2-22-16

DIRECTOR — DATE 2-22-16

SITE DEVELOPMENT PLAN

SITE DETAILS

DAY RESOURCE CENTER

VOLUNTEERS OF AMERICA
10390 GUILFORD ROAD
HOWARD COUNTY HOUSING COMMISSION

TAX MAP 47 GRID 12
6TH ELECTION DISTRICT

DPZ REF'S: L.15118/F.116, BA-08-027V
ZONED: CE-CLI

PARCEL 59, PARCEL A
HOWARD COUNTY, MARYLAND

ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET
ELLICOTT CITY, MD 21043
TEL: 410.461.7666
FAX: 410.461.8961

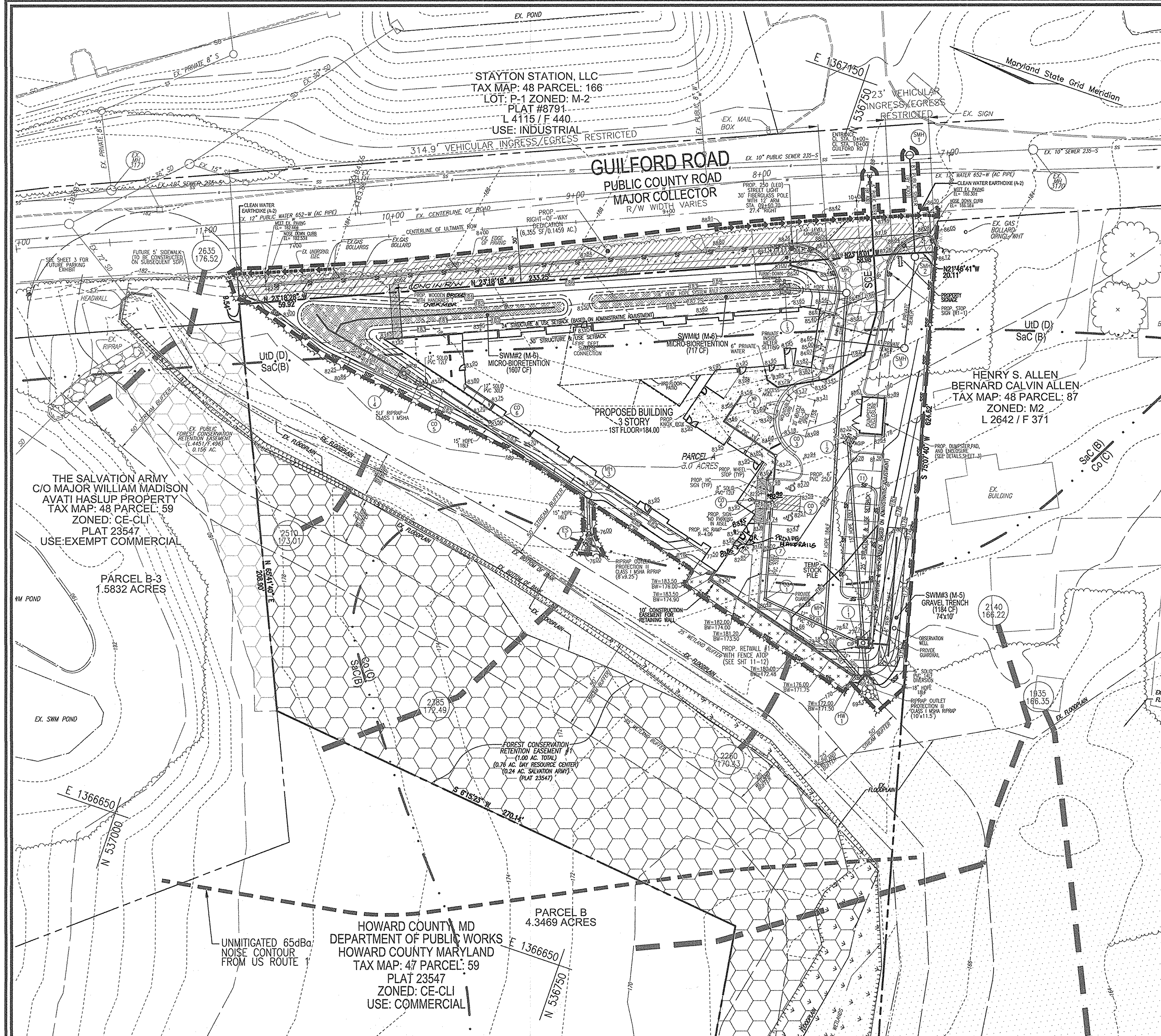
ROBERT H. VOGEL, PE No.16193

DESIGN BY:	RHV/DZE
DRAWN BY:	DZE/KG
CHECKED BY:	RHV
DATE:	DECEMBER 2015
SCALE:	AS SHOWN
W.O. NO.:	06-72.01

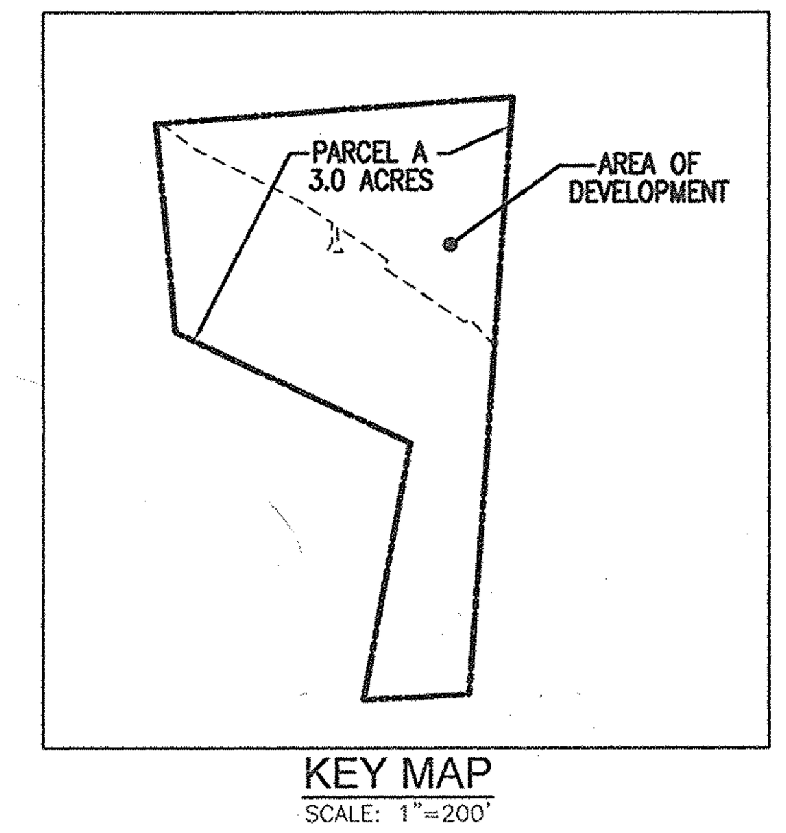
PROFESSIONAL CERTIFICATE

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193 EXPIRATION DATE: 09-27-2016

SDP-15-023



PLAN VIEW
SCALE: 1"=30'



KEY MAP
SCALE: 1"=200'

LEGEND:

Symbol	Description	Symbol	Description
218	PROPOSED CONTOUR		PROPOSED SIDEWALK
218	EXISTING CONTOUR		EXISTING CURB AND GUTTER
OH	EXISTING OVERHEAD LINES		PROPOSED CURB AND GUTTER
W	EXISTING WATERLINE LINE		PROPOSED WHEEL STOP
G	EXISTING GAS LINE		PROPOSED STORM DRAIN INLET
	EXISTING GUARD RAIL		PROPOSED STORM DRAIN
X	EXISTING METAL FENCE	SF	SILT FENCE
//	EXISTING WOOD FENCE	SSF	SUPER SILT FENCE
	EXISTING ELECTRICAL BOX	LOD	LIMIT OF DISTURBANCE
	EXISTING POLE	CIP	CURB INLET PROTECTION
	EXISTING LIGHT POLE WITH CONCRETE BASE	SIP	STANDARD INLET PROTECTION
	EXISTING MAILBOX	S C E	STABILIZED CONSTRUCTION ENTRANCE
	EXISTING SIGN		PROP. MICRO BIORETENTION AREA (M-6)
S	EXISTING SANITARY MANHOLE		FOREST CONSERVATION EASEMENT RETENTION
CO	EXISTING CLEANOUT		10' CONSTRUCTION EASEMENT FOR RETANING WALL
FH	EXISTING FIRE HYDRANT		RIGHT OF WAY DEDICATION
11	PROPOSED PARKING COUNT		
B-5	PROPOSED BORING		
	PROPOSED SANITARY LINE		
	PROPOSED WATER LINE		
M1B2 / M1D3	SOILS BOUNDARY		
	PROPERTY LINE		
	ADJACENT PROPERTY LINE		
	RIGHT-OF-WAY LINE		
	EXISTING TREELINE		
	PROPOSED TREELINE		

HILLIS - CARNES ENGINEERING ASSOCIATES, INC.
RECORD OF SOIL EXPLORATION

Project Name: Day Resource Center — Boring No. SWM-1
Location: Jessup, Maryland — Job # 14477A

SAMPLER: Datum MSL; Hammer Wt. 140 lbs.; Hole Diameter 3.25"; Foreman Viktor V.
Surf. Elev. 189.5 ft; Hammer Drop 30 in.; Rock Core Diameter N/A; Inspector W. Harris
Date Started 9/19/14; Pipe Size 2.0 in.; Boring Method HSA; Date Completed 9/19/14

Elevation/Depth	Soil Symbols/Sample Conditions	Description	Boring and Sampling Notes	Rec.	NM%	SPT Blows	N
0	D	Brown to Tan/Red-Brown, moist, medium dense to very dense silty SAND with fine gravel (SM)	1" of topsoil	14"		4-8-14	22
	D			15"		10-15-20	35
185 / 5	D		No groundwater encountered while drilling	10"		10-30-20	50
180 / 10	I	Red/Orange-Brown/Beige, dry very stiff CLAY (CL)		14"		7-12-14	26
		Bottom of boring at 10 ft	Boring backfilled after 24 hours				

SAMPLER TYPE: DRIVEN SPLIT SPOON UNLESS OTHERWISE; PT - PRESSED SHELBY TUBE; CA - CONTINUOUS FLIGHT AUGER; RC - ROCK CORE
SAMPLE CONDITIONS: D - DISINTEGRATED; I - INTACT; U - UNDISTURBED; L - LOST
GROUND WATER: AT COMPLETION Dry ft; AFTER 24 HRS. ___ ft; AFTER ___ HRS. ___ ft — CAVE IN DEPTH: 6.0 ft
BORING METHOD: HSA - HOLLOW STEM AUGERS; CFA - CONTINUOUS FLIGHT AUGERS; DC - DRIVING CASING; MD - MUD DRILLING
STANDARD PENETRATION TEST-DRIVING 2" O.D. SAMPLER 1" WITH 140# HAMMER FALLING 30". COUNT MADE AT 6" INTERVALS.

HILLIS - CARNES ENGINEERING ASSOCIATES, INC.
RECORD OF SOIL EXPLORATION

Project Name: Day Resource Center — Boring No. SWM-2
Location: Jessup, Maryland — Job # 14477A

SAMPLER: Datum MSL; Hammer Wt. 140 lbs.; Hole Diameter 3.25"; Foreman Viktor V.
Surf. Elev. 185.6 ft; Hammer Drop 30 in.; Rock Core Diameter N/A; Inspector W. Harris
Date Started 9/18/14; Pipe Size 2.0 in.; Boring Method HSA; Date Completed 9/18/14

Elevation/Depth	Soil Symbols/Sample Conditions	Description	Boring and Sampling Notes	Rec.	NM%	SPT Blows	N
185 / 0	D	Brown to Orange Brown, moist, loose to very dense silty SAND with fine gravel and roots (SM)	2" of topsoil	12"		1-4-6	10
	D			12"		14-30-31	61
180 / 5	I	Orange-Brown/Gray, moist, dense silty clayey SAND (SC-SM)	No groundwater encountered while drilling	12"		8-20-15	35
175 / 10	I	Brown, moist, medium dense silty SAND with clay (SM)		4"		7-9-12	21
		Bottom of boring at 10 ft	Boring backfilled after 24 hours				

GROUND WATER: AT COMPLETION Dry ft; AFTER 24 HRS. Dry ft — CAVE IN DEPTH: 7.0 ft; 7.0 ft

HILLIS - CARNES ENGINEERING ASSOCIATES, INC.
RECORD OF SOIL EXPLORATION

Project Name: Day Resource Center — Boring No. SWM-3
Location: Jessup, Maryland — Job # 14477A

SAMPLER: Datum MSL; Hammer Wt. 140 lbs.; Hole Diameter 3.25"; Foreman Viktor V.
Surf. Elev. 183.0 ft; Hammer Drop 30 in.; Rock Core Diameter N/A; Inspector W. Harris
Date Started 9/18/14; Pipe Size 2.0 in.; Boring Method HSA; Date Completed 9/18/14

Elevation/Depth	Soil Symbols/Sample Conditions	Description	Boring and Sampling Notes	Rec.	NM%	SPT Blows	N
0	D	Brown, moist, loose silty SAND with fine gravel and roots (SM)	2" of topsoil			2-3-5	8
180	D	Red/Orange and gray, moist, very stiff CLAY (CL)				5-8-10	18
5	D		No groundwater encountered while drilling			6-9-10	19
175 / 10	D					6-7-10	17
		Bottom of boring at 10 ft	Boring backfilled after 24 hours				

GROUND WATER: AT COMPLETION Dry ft; AFTER 24 HRS. Dry ft — CAVE IN DEPTH: 7.0 ft; 6.8 ft

HILLIS - CARNES ENGINEERING ASSOCIATES, INC.
RECORD OF SOIL EXPLORATION

Project Name: Day Resource Center — Boring No. SWM-4
Location: Jessup, Maryland — Job # 14477A

SAMPLER: Datum MSL; Hammer Wt. 140 lbs.; Hole Diameter 3.25"; Foreman Viktor V.
Surf. Elev. 171.1 ft; Hammer Drop 30 in.; Rock Core Diameter N/A; Inspector W. Harris
Date Started 9/22/14; Pipe Size 2.0 in.; Boring Method HSA; Date Completed 9/22/14

Elevation/Depth	Soil Symbols/Sample Conditions	Description	Boring and Sampling Notes	Rec.	NM%	SPT Blows	N
170 / 0	D	Brown, moist, medium dense silty SAND with fine to medium gravel (SM)	2" of topsoil	12"		4-5-7	12
	D			12"		9-10-10	20
165 / 5	I	Brown, moist, medium dense silty SAND with some clay (SM)	No groundwater encountered while drilling	8"		4-7-5	12
160 / 10	I	Light Gray, moist, medium stiff fine sandy CLAY (SC)		14"		4-3-5	8
		Bottom of boring at 10 ft	Boring backfilled at completion				

GROUND WATER: AT COMPLETION Dry ft — CAVE IN DEPTH: 8.0 ft

HILLIS - CARNES ENGINEERING ASSOCIATES, INC.
RECORD OF SOIL EXPLORATION

Project Name: Day Resource Center — Boring No. SWM-5
Location: Jessup, Maryland — Job # 14477A

SAMPLER: Datum MSL; Hammer Wt. 140 lbs.; Hole Diameter 3.25"; Foreman Viktor V.
Surf. Elev. 183.2 ft; Hammer Drop 30 in.; Rock Core Diameter N/A; Inspector W. Harris
Date Started 9/22/14; Pipe Size 2.0 in.; Boring Method HSA; Date Completed 9/22/14

Elevation/Depth	Soil Symbols/Sample Conditions	Description	Boring and Sampling Notes	Rec.	NM%	SPT Blows	N
0	D	Orange-Brown to Red-Brown, moist, medium dense to dense silty SAND with fine gravel (SM)	1" of topsoil	10"		1-7-12	19
180	D			16"		11-11-10	21
5	I	Red-brown, moist, dense to medium dense silty sand with gravel and ironstone fragments (SM)	No groundwater encountered while drilling	12"		20-20-24	44
175 / 10	I			16"		14-14-13	27
		Bottom of boring at 10 ft	Boring backfilled after 24 hours				

GROUND WATER: AT COMPLETION Dry ft — CAVE IN DEPTH: 7.0 ft

SEDIMENT CONTROL NOTES:
SEDIMENT CONTROLS INTERRUPTED BY THE INSTALLATION OF STORM DRAINS ARE TO BE REPAIRED IMMEDIATELY.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
[signature] DIRECTOR — 2-22-16 DATE
[signature] CHIEF, DEVELOPMENT ENGINEERING DIVISION — 1-12-16 DATE
[signature] CHIEF, DIVISION OF LAND DEVELOPMENT — 2-22-16 DATE

BY THE DEVELOPER:
"I/WE CERTIFY THAT ALL DEVELOPEMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN FOR SEDIMENT AND EROSION CONTROL, AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT."
[signature] SIGNATURE OF DEVELOPER — 12/21/2015 DATE

BY THE ENGINEER:
"I CERTIFY THAT THIS PLAN FOR EROSION AND SEDIMENT 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."
[signature] SIGNATURE OF ENGINEER — 12/22/15 DATE

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.
[signature] HOWARD S.C.D. — 1/5/16 DATE

DEVELOPER
VOLUNTEERS OF AMERICA, INC.
1660 DUKE STREET
ALEXANDRIA, VA 22314
(443) 798-4267
C/O RICK DELLA

~~OWNER~~
~~HOWARD COUNTY, MD~~
~~DEPARTMENT OF PUBLIC WORKS~~
~~3430 COURT HOUSE DR.~~
~~ELLICOTT CITY, MD 21043~~
~~(410) 313-4401~~

OWNER
HOWARD COUNTY
HOUSING COMMISSION
6751 COLUMBIA GATEWAY DR., 3RD FLOOR
COLUMBIA, MD 21046
(410) 313-6320

NO.	REVISION	DATE

SITE DEVELOPMENT PLAN

GRADING, SEDIMENT AND EROSION CONTROL PLAN

DAY RESOURCE CENTER
VOLUNTEERS OF AMERICA
10390 GUILFORD ROAD
HOWARD COUNTY HOUSING COMMISSION
TAX MAP 47 GRID 12 — DPZ REF'S: L.15118/F.116, BA-08-027V — PARCEL 59, PARCEL A
6TH ELECTION DISTRICT — ZONED: CE-CLI — HOWARD COUNTY, MARYLAND

ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET
ELLICOTT CITY, MD 21043
TEL: 410.461.7666
FAX: 410.461.8961

STATE OF MARYLAND — ROBERT HARRIS VOGEL — NO. 16193 REGISTERED PROFESSIONAL ENGINEER — 12/22/15
ROBERT H. VOGEL, PE No.16193

DESIGN BY: RHV/DZE
DRAWN BY: DZE/KG
CHECKED BY: RHV
DATE: DECEMBER 2015
SCALE: AS SHOWN
W.O. NO.: 06-72.01

PROFESSIONAL CERTIFICATE
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193 EXPIRATION DATE: 09-27-2016

SDP-15-023

K:\Projects\06-72\ENGR\dwg\SDP\04-GRADING.dwg, 12/18/2015 6:02:48 PM

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

DEFINITION
THE PROCESS OF PREPARING THE SOILS TO SUSTAIN ADEQUATE VEGETATIVE STABILIZATION.

PURPOSE
TO PROVIDE A SUITABLE SOIL MEDIUM FOR VEGETATIVE GROWTH.

CONDITIONS WHERE PRACTICE APPLIES
WHERE VEGETATIVE STABILIZATION IS TO BE ESTABLISHED.

CRITERIA
A. SOIL PREPARATION
1. 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 DISCHARROWS OR CHISEL PLOWS OR RIPPERS MOUNTED ON CONSTRUCTION EQUIPMENT. AFTER THE SOIL IS LOOSENED, 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:
I. SOIL PH BETWEEN 6.0 AND 7.0.
II. SOLUBLE SALTS LESS THAN 500 PARTS PER MILLION (PPM).
III. 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 30 PERCENT SILT PLUS CLAY) WOULD BE ACCEPTABLE.
IV. SOIL CONTAINS 1.5 PERCENT MINIMUM ORGANIC MATTER BY WEIGHT.
V. 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 LOOSENED 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.
E. 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.

B. TOPSOILING
1. 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 CONCEM HAVE LOW MOISTURE CONTENT, LOW NUTRIENT LEVELS, LOW PH, MATERIALS TOXIC TO PLANTS, AND/OR UNACCEPTABLE SOIL GRADATION.
2. TOPSOIL SALVAGED FROM AN EXISTING SITE MAY BE USED PROVIDED IT MEETS THE STANDARDS AS SET FORTH IN THESE SPECIFICATIONS. TYPICALLY, 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.
3. 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.
4. AREAS HAVING SLOPES STEEPER THAN 2:1 REQUIRE SPECIAL CONSIDERATION AND DESIGN.
5. 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 CINDERS, STONES, SLAG, COARSE FRAGMENTS, GRAVEL, STICKS, ROOTS, TRASH, OR OTHER MATERIALS LARGER THAN 1½ 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.
6. 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.

C. SOIL AMENDMENTS (FERTILIZER AND LIME SPECIFICATIONS)
1. 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 RECOGNIZED PRIVATE OR COMMERCIAL LABORATORY. SOIL SAMPLES TAKEN FOR ENGINEERING PURPOSES MAY ALSO BE USED FOR CHEMICAL ANALYSES.
2. 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.
3. 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 #20 MESH SIEVE. 4. 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.
5. 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.

B-4-4 STANDARDS AND SPECIFICATIONS FOR TEMPORARY STABILIZATION

DEFINITION
TO STABILIZE DISTURBED SOILS WITH VEGETATION FOR UP TO 6 MONTHS.

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 8.1 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 8.1 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.A.1.B AND MAINTAIN UNTIL THE NEXT SEEDING SEASON.

TEMPORARY SEEDING SUMMARY

HARDINESS ZONE (FROM FIGURE B.3): ZONE 6b SEED MIXTURE (FROM TABLE B.1): ________					FELIZER RATE (10-20-20)	LIME RATE
NO	SPECIES	APPLICATION RATE (LB/AC)	SEEDING DATES	SEEDING DEPTHS		
1	COOL SEASON ANNUAL RYEGRASS OR EQUAL	40 LB / AC	MAR 1 TO MAY 15 AUG 1 TO OCT 15	0.5 IN.	436 LB/AC (10 LB PER 1000 SF)	2 TONS/AC (90 LB PER 1000 SF)
2	WARM SEASON FOXTAIL MILLET OR EQUAL	30 LB / AC	MAY 16 TO JUL 31	0.5 IN.		

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

DEFINITION
THE APPLICATION OF SEED AND MULCH TO ESTABLISH VEGETATIVE COVER.

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
A. SEEDING
1. 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 THAWS.
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.
2. 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 8.1, PERMANENT SEEDING TABLE 8.3, 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 SEEDED 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; P205 (PHOSPHOROUS), 200 POUNDS PER ACRE; K20 (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 BURNT 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.

B. MULCHING
1. MULCH MATERIALS (IN ORDER OF PREFERENCE)
A. STRAW CONSISTING OF THOROUGHLY THRESHED WHEAT, LYE, 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.
2. 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.
3. 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 TAX 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.

HOWARD SOIL CONSERVATION DISTRICT STANDARD SEDIMENT CONTROL NOTES

1. A MINIMUM OF 48 HOURS NOTICE MUST BE GIVEN TO THE HOWARD COUNTY DEPARTMENT OF INSPECTIONS, LICENSES AND PERMITS, SEDIMENT CONTROL DIVISION PRIOR TO THE START OF ANY CONSTRUCTION, (313-1855).
2. ALL VEGETATIVE AND STRUCTURAL PRACTICES ARE TO BE INSTALLED ACCORDING TO THE PROVISIONS OF THIS PLAN AND ARE TO BE IN CONFORMANCE WITH THE MOST CURRENT MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, AND REVISIONS THERETO.
3. FOLLOWING INITIAL SOIL DISTURBANCE OR RE-DISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN:
A) 3 CALENDAR DAYS FOR ALL PERIMETER SEDIMENT CONTROL STRUCTURES, DIKES, 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 SITE AREA	1.17 ACRES
AREA DISTURBED	1.18 ACRES
AREA TO BE ROOFED OR PAVED	1.62 ACRES
AREA TO BE VEGETATIVELY STABILIZED	1.56 ACRES
TOTAL CUT	2,252 CY*
TOTAL FILL	3,190 CY*
OFFSITE WASTE/BORROW LOCATION	TO BE DETERMINED **

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 CAN 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.

* ESTIMATE ONLY. CONTRACTOR SHALL VERIFY QUANTITIES TO HIS OWN SATISFACTION.
**TO BE DETERMINED BY CONTRACTOR, WITH PRE-APPROVAL OF THE SEDIMENT CONTROL INSPECTOR, WITH AN APPROVED AND ACTIVE GRADING PERMIT.

B-4-5 STANDARDS AND SPECIFICATIONS FOR PERMANENT STABILIZATION

DEFINITION
TO STABILIZE DISTURBED SOILS WITH PERMANENT VEGETATION.

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
A. SEED MIXTURES
1. GENERAL USE
A.SELECT ONE OR MORE OF THE SPECIES OR MIXTURES LISTED IN TABLE 8.3 FOR THE APPROPRIATE PLANT HARDINESS ZONE (FROM FIGURE 8.3) AND BASED ON THE SITE CONDITION OR PURPOSE FOUND ON TABLE 8.2. 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.
2. 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 35PERCENT 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: 1½ 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
WESTEM 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 1½ INCHES IN DIAMETER. THE RESULTING SEEDBED MUST BE IN SUCH CONDITION THAT FUTURE MOWING OF GRASSES WILL POSE NO 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.

PERMANENT SEEDING SUMMARY

HARDINESS ZONE (FROM FIGURE B.3): ZONE 6b SEED MIXTURE (FROM TABLE B.3): 9					FELIZER RATE (10-20-20)			LIME RATE
NO	SPECIES	APPLICATION RATE (LB/AC)	SEEDING DATES	SEEDING DEPTHS	N	P_2O_5	K_2O	
1	COOL SEASON TALL FESCUE & KENTUCKY BLUEGRASS OR EQUAL	T.F. 60 LB / AC K.B. 40 LB / AC	MAR 1 TO MAY 15 AUG 15 TO OCT 15	1/4-1/2 IN.	45 LB/AC (1 LB PER 1000 SF)	90 LB/AC (2 LB PER 1000 SF)	90 LB/AC (2 LB PER 1000 SF)	2 TONS/AC (90 LB PER 1000 SF)

B. SOD: TO PROVIDE QUICK COVER ON DISTURBED AREAS (2:1 GRADE OR FLATTER).
1. 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 3/4 INCH, PLUS OR MINUS ¼ INCH, AT THE TIME OF CUTTING. MEASUREMENT FOR THICKNESS MUST EXCLUDE TOP GROWTH AND THATCH. BROKEN PADS AND TOM 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 TRANSPLANTED 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 TRANSPLANTED WITHIN THIS PERIOD MUST BE APPROVED BY AN AGRONOMIST OR SOIL SCIENTIST PRIOR TO ITS INSTALLATION.
2. SOD INSTALLATION
A. DURING PERIODS OF EXCESSIVELY HIGH TEMPERATURE OR IN AREAS HAVING DRY SUBSOIL, LIGHTLY IRRIGATE THE SUBSOIL 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 SOLID 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.
3. 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.

Table B.1: Temporary Seeding for Site Stabilization

Plant Species	Seeding Rate [1/] lb/ac	Seeding Rate [1/] lb/1000 ft²	Seeding Depth [2/] (inches)	Recommended Seeding Dates by Plant Hardiness Zone [3/]: 5b and 6a	6b	7a and 7b
Cool-Season Grasses						
Annual Ryegrass (*Lolium perenne ssp. multiflorum*)	40	1.0	0.5	Mar 15 to May 31; Aug 1 to Sep 30	Mar 1 to May 15; Aug 1 to Oct 15	Feb 15 to Apr 30; Aug 15 to Nov 30
Barley (*Hordeum vulgare*)	96	2.2	1.0	Mar 15 to May 31; Aug 1 to Sep 30	Mar 1 to May 15; Aug 1 to Oct 15	Feb 15 to Apr 30; Aug 15 to Nov 30
Oats (*Avena sativa*)	72	1.7	1.0	Mar 15 to May 31; Aug 1 to Sep 30	Mar 1 to May 15; Aug 1 to Oct 15	Feb 15 to Apr 30; Aug 15 to Nov 30
Wheat (*Triticum aestivum*)	120	2.8	1.0	Mar 15 to May 31; Aug 1 to Sep 30	Mar 1 to May 15; Aug 1 to Oct 15	Feb 15 to Apr 30; Aug 15 to Nov 30
Cereal Rye (*Secale cereale*)	112	2.8	1.0	Mar 15 to May 31; Aug 1 to Oct 31	Mar 1 to May 15; Aug 1 to Nov 15	Feb 15 to Apr 30; Aug 15 to Dec 15
Warm-Season Grasses						
Foxtail Millet (*Setaria italica*)	30	0.7	0.5	Jun 1 to Jul 31	May 16 to Jul 31	May 1 to Aug 14
Pearl Millet (*Pennisetum glaucum*)	20	0.5	0.5	Jun 1 to Jul 31	May 16 to Jul 31	May 1 to Aug 14

FELIZER RATE (10-20-20)	LIME RATE
436 LB/AC (10 LB PER 1000 SF)	2 TONS/AC (90 LB PER 1000 SF)

NOTES:
1/ Seeding rates for the warm-season grasses are in pounds of Pure Live Seed (PLS). Actual planting rates shall be adjusted to reflect percent seed germination and purity, as tested. Adjustments are usually not needed for the cool-season grasses.

Seeding rates listed above are for temporary seedings, when planted alone. When planted as a nurse crop with permanent seed mixes, use 1/3 of the seeding rate listed above for barley, oats, and wheat. For smaller-seeded grasses (annual ryegrass, pearl millet, foxtail millet), do not exceed more than 5% (by weight) of the overall permanent seeding mix. Cereal rye generally should not be used as a nurse crop, unless planting will occur in very late fall beyond the seeding dates for other temporary seedings. Cereal rye has allelopathic properties that inhibit the germination and growth of other plants. If it must be used as a nurse crop, seed at 1/3 of the rate listed above.

Oats are the recommended nurse crop for warm-season grasses.

2/ For sandy soils, plant seeds at twice the depth listed above.
3/ The planting dates listed are averages for each Zone and may require adjustment to reflect local conditions, especially near the boundaries of the zone.

SEQUENCE OF CONSTRUCTION

1. OBTAIN HOWARD COUNTY GRADING PERMIT. (WEEK 1)
2. NOTIFY HOWARD COUNTY AT LEAST 48 HOURS PRIOR TO START OF CONSTRUCTION. (WEEK 1)
3. CONDUCT A PRE-CONSTRUCTION MEETING WITH THE SEDIMENT CONTROL INSPECTOR PRIOR TO ANY LAND DISTURBANCE. (WEEK 1)
4. INSTALL STABILIZED CONSTRUCTION ENTRANCE WITH MOUNTABLE BERM. (WEEK 2)
5. CLEARING AND GRUBBING AS NECESSARY FOR THE INSTALLATION OF PERIMETER CONTROLS. (2 DAYS)
6. INSTALL ALL PERIMETER CONTROLS INCLUDING SILT FENCE, SUPER SILT FENCE AND EARTH DIKES, AS INDICATED ON PLANS. (WEEK 2)
6. WITH APPROVAL OF SEDIMENT CONTROL INSPECTOR, CLEAR AND GRUB REMAINDER OF SITE. (WEEK 3)
7. BEGIN SITE GRADING AND UTILITY CONSTRUCTION. PROVIDE INLET PROTECTION AS AS SHOWN ON THESE PLANS (4 WEEKS)
8. AFTER STORM DRAIN IS COMPLETE FINE GRADE AS REQUIRED TO DIRECT RUNOFF TO INLETS.
9. BEGIN BUILDING CONSTRUCTION. (2 WEEKS)
10. WITH INSPECTOR'S APPROVAL, BEGIN INSTALLATION OF CURB AND GUTTER AND ON-SITE BASE COURSE PAVING. (3 WEEKS)
11. COMPLETE BUILDING AND UTILITY CONSTRUCTION.
12. COMPLETE ALL CURB & GUTTER CONSTRUCTION. (1 WEEK)
13. COMPLETE ALL BASE COURSE PAVEMENT CONSTRUCTION. (1 WEEK)
14. CONSTRUCT SURFACE COURSE PAVING AND SIDEWALKS. (1 WEEK)
15. WITH THE INSPECTOR'S APPROVALM, FINE GRADE AND STABILIZE ALL AREAS OF PARCEL INCLUDING ANY EXPOSED EARTH AREAS OUTSIDE THE LOD. REMOVE ALL TRASH JUNK AND DEBRIS FROM ENTIRE PARCEL. (1 WEEK)
16. INSTALL SITE LANDSCAPING. (WEEK 15)
17. FLUSH STORM DRAIN SYSTEM AND REMOVE ALL REMAINING SEDIMENT CONTROLS AFTER RECIEVING APPROVAL FROM THE SEDIMENT CONTROL INSPECTOR. STABILIZE ALL REMAINING DISTURBED AREAS.

NOTES:
1. DURING GRADING AND AFTER EACH RAINFALL, CONTRACTOR WILL INSPECT AND PROVIDE NECESSARY MAINTENANCE TO THE SEDIMENT CONTROL MEASURES ON THIS PLAN.
2. FOLLOWING INITIAL SOIL DISTURBANCES OR REDISTURBANCE, PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN:
A. THREE (3) CALENDAR DAYS AS TO THE SURFACE OF ALL PERIMETER DIKES, SWALES, DITCHES, PERIMETER SLOPES, AND ALL SLOPES STEEPER THAN 3 HORIZONTAL TO 1 VERTICAL (3:1); AND
B. SEVEN (7) CALENDAR DAYS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE NOT UNDER ACTIVE GRADING.

B-4-8 STANDARDS AND SPECIFICATIONS FOR STOCKPILE AREA

DEFINITION
A MOUND OR PILE OF SOIL PROTECTION BY APPROPRIATELY DESIGNED EROSION AND SEDIMENT CONTROL MEASURES.

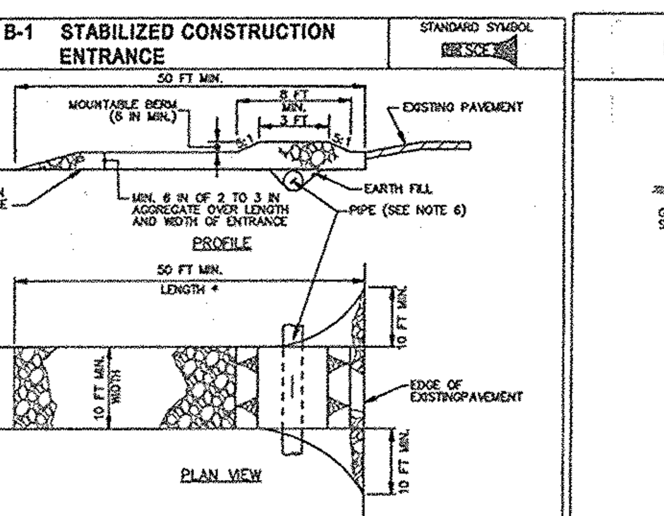
PURPOSE
TO PROVIDE A DESIGNATED LOCATION FOR THE TEMPORARY STORAGE OF SOIL THAT CONTROLS THE POTENTIAL FOR EROSION, SEDIMENTATION, AND CHANGES TO DRAINAGE PATTERNS.

CONDITIONS WHERE PRACTICE APPLIES
STOCKPILE AREAS ARE UTILIZED WHEN IT IS NECESSARY TO SALVAGE AND STORE SOIL FOR LATER USE.

CRITERIA
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.

DETAIL B-1 STABILIZED CONSTRUCTION ENTRANCE
STANDARD SYMBOL: SCE



CONSTRUCTION SPECIFICATIONS
1. PLACE STABILIZED CONSTRUCTION ENTRANCE IN ACCORDANCE WITH THE APPROVED PLAN. VEHICLES MUST TRAVEL OVER THE ENTIRE LENGTH OF THE SCE. USE MINIMUM LENGTH OF 50 FEET (*30 FEET FOR SINGLE RESIDENCE LOT). USE MINIMUM WIDTH OF 10 FEET. FLARE SCE 10 FEET MINIMUM AT THE EXISTING ROAD TO PROVIDE A TURNING RADIUS.
2. PIPE ALL SURFACE WATER FLOWING TO OR DIVERTED TOWARD THE SCE UNDER THE ENTRANCE, MAINTAINING POSITIVE DRAINAGE. PROTECT PIPE INSTALLED THROUGH THE SCE WITH A MOUNTABLE BERM WITH 5:1 SLOPES AND A MINIMUM OF 12 INCHES OF STONE OVER THE PIPE. PROVIDE PIPE AS SPECIFIED ON APPROVED PLAN. WHEN THE SCE IS LOCATED AT A HIGH SPOT AND HAS NO DRAINAGE TO CONVEY, A PIPE IS NOT NECESSARY. A MOUNTABLE BERM IS REQUIRED WHEN SCE IS NOT LOCATED AT A HIGH SPOT.
3. PREPARE SUBGRADE AND PLACE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS.
4. PLACE CRUSHED AGGREGATE (2 TO 3 INCHES IN SIZE) OR EQUIVALENT RECYCLED CONCRETE (WITHOUT REBAR) AT LEAST 6 INCHES DEEP OVER THE LENGTH AND WIDTH OF THE SCE.
5. MAINTAIN ENTRANCE IN A CONDITION THAT MINIMIZES TRACKING OF SEDIMENT. ADD STONE OR MAKE OTHER REPAIRS AS CONDITIONS DEMAND TO MAINTAIN CLEAN SURFACE, MOUNTABLE BERM, AND SPECIFIED DIMENSIONS. IMMEDIATELY REMOVE STONE AND/OR SEDIMENT SPILLED, DROPPED, OR TRACKED ONTO ADJACENT ROADWAY BY VACUUMING, SCRAPING, AND/OR SWEEPING. WASHING ROADWAY TO REMOVE MUD TRACKED ONTO PAVEMENT IS NOT ACCEPTABLE UNLESS WASH WATER IS DIRECTED TO AN APPROVED SEDIMENT CONTROL PRACTICE.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL
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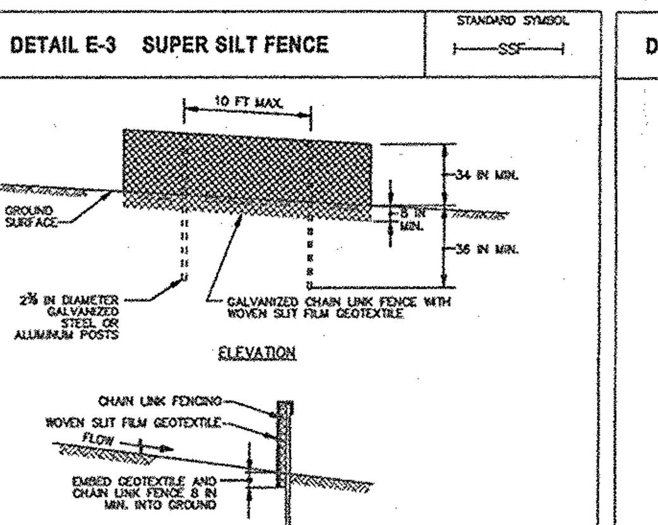
DETAIL E-3 SUPER SILT FENCE
STANDARD SYMBOL: SSF



CONSTRUCTION SPECIFICATIONS
1. INSTALL 2⅜ INCH DIAMETER GALVANIZED STEEL POSTS OF 0.095 INCH WALL THICKNESS AND SIX FOOT LENGTH SPACED NO FURTHER THAN 10 FEET APART. DRIVE THE POSTS A MINIMUM OF 36 INCHES INTO THE GROUND.
2. FASTEN 9 GAUGE OR HEAVIER GALVANIZED CHAIN LINK FENCE (2⅜ INCH MAXIMUM OPENING) 42 INCHES IN HEIGHT SECURELY TO THE FENCE POSTS WITH WIRE TIES OR HUG RINGS.
3. FASTEN WOVEN SLIT FILM GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS, SECURELY TO THE UPSLOPE SIDE OF CHAIN LINK FENCE WITH TIES SPACED EVERY 24 INCHES AT THE TOP AND MID SECTION. EMBED GEOTEXTILE AND CHAIN LINK FENCE A MINIMUM OF 8 INCHES INTO THE GROUND.
4. WHERE ENDS OF THE GEOTEXTILE COME TOGETHER, THE ENDS SHALL BE OVERLAPPED BY 6 INCHES, FOLDED, AND STAPLED TO PREVENT SEDIMENT BY PASS.
5. EXTEND BOTH ENDS OF THE SUPER SILT FENCE A MINIMUM OF FIVE HORIZONTAL FEET UPSLOPE AT 45 DEGREES TO THE MAIN FENCE ALIGNMENT TO PREVENT RUNOFF FROM GOING AROUND THE ENDS OF THE SUPER SILT FENCE.
6. PROVIDE MANUFACTURER CERTIFICATION TO THE INSPECTION/ENFORCEMENT AUTHORITY SHOWING THAT GEOTEXTILE USED MEETS THE REQUIREMENTS IN SECTION H-1 MATERIALS.
7. REMOVE ACCUMULATED SEDIMENT AND DEBRIS WHEN BULGES DEVELOP IN FENCE OR WHEN SEDIMENT REACHES 25% OF FENCE HEIGHT. REPLACE GEOTEXTILE IF TORN. IF UNDERMINING OCCURS, REINSTALL CHAIN LINK FENCING AND GEOTEXTILE.

MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL
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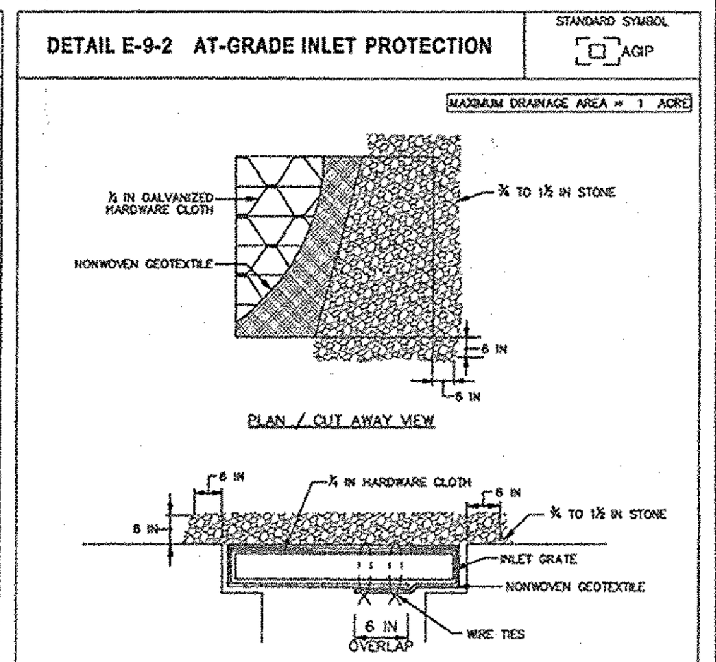
DETAIL E-9-2 AT-GRADE INLET PROTECTION
STANDARD SYMBOL: AGIP

MAXIMUM DRAINAGE AREA = 1 ACRE

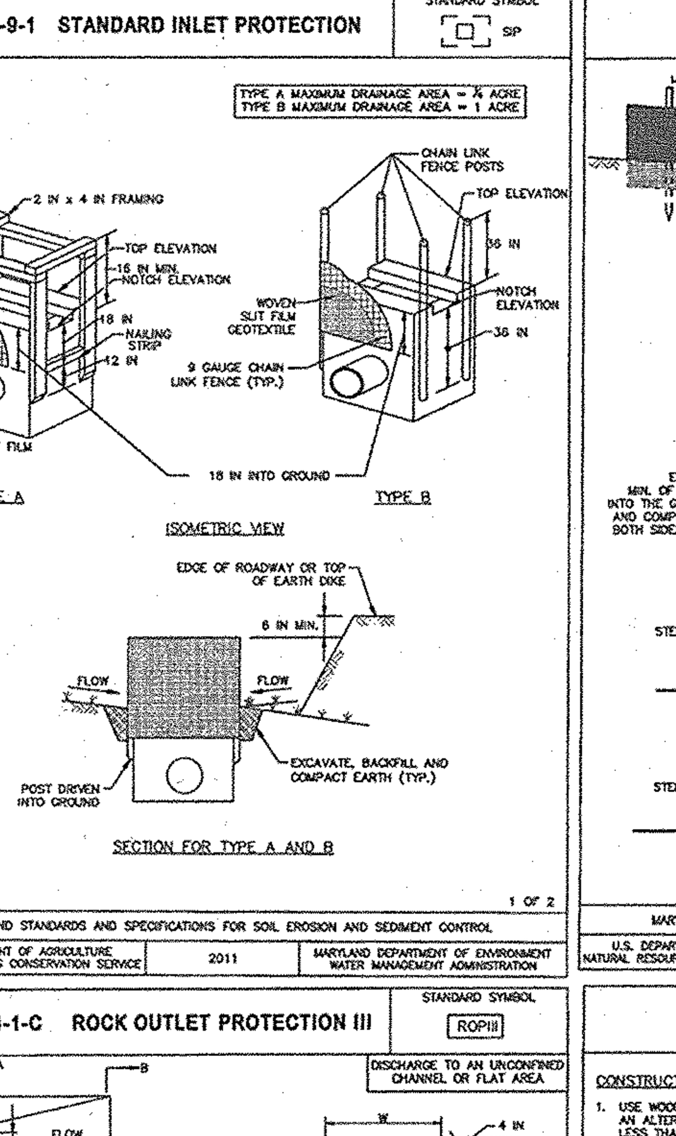


CONSTRUCTION SPECIFICATIONS
1. USE NONWOVEN GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS.
2. LIFT GRATE AND WRAP WITH NONWOVEN GEOTEXTILE TO COMPLETELY COVER ALL OPENINGS. SECURE WITH WIRE TIES AND SET GRATE BACK IN PLACE.
3. PLACE CLEAN ¾ TO 1½ INCH STONE OR EQUIVALENT RECYCLED CONCRETE 6 INCHES THICK ON THE GRATE.
4. STORM DRAIN INLET PROTECTION REQUIRES FREQUENT MAINTENANCE. REMOVE ACCUMULATED SEDIMENT AFTER EACH RAIN EVENT TO MAINTAIN FUNCTION AND AVOID PREMATURE CLOGGING. IF INLET PROTECTION DOES NOT COMPLETELY DRAIN WITHIN 24 HOURS AFTER A STORM EVENT, IT IS CLOGGED. WHEN THIS OCCURS, REMOVE ACCUMULATED SEDIMENT AND CLEAN, OR REPLACE GEOTEXTILE AND STONE.

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

DETAIL E-9-1 STANDARD INLET PROTECTION
STANDARD SYMBOL: SIP

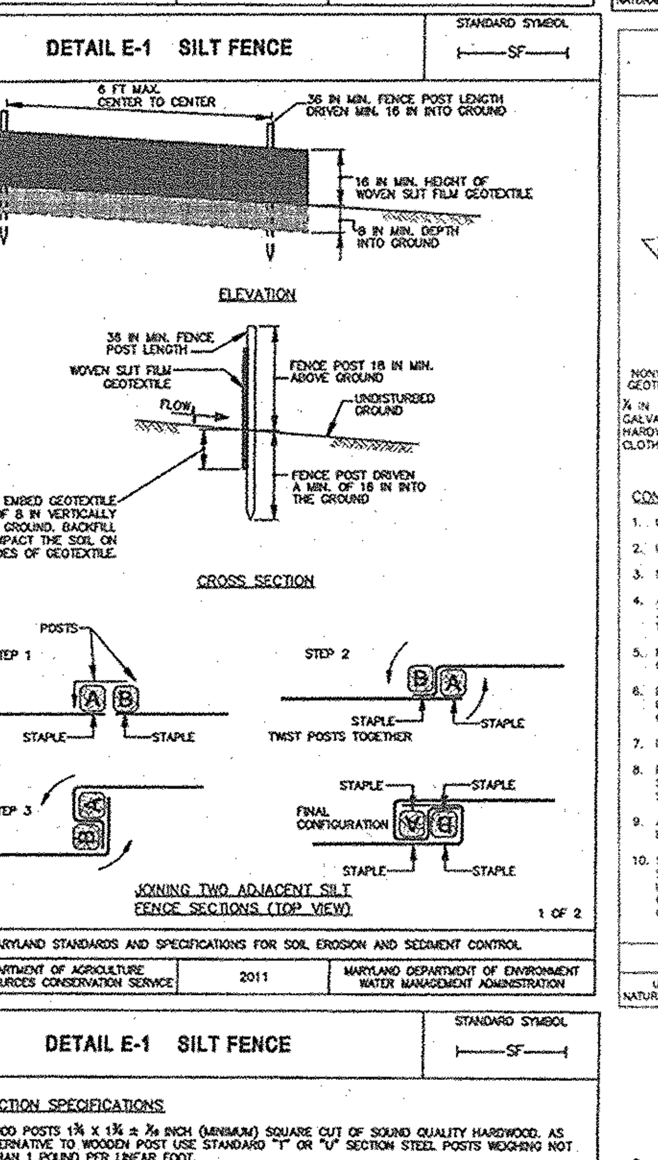
TYPE A MAXIMUM DRAINAGE AREA = ¼ ACRE
TYPE B MAXIMUM DRAINAGE AREA = 1 ACRE



1 OF 2

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

DETAIL E-1 SILT FENCE
STANDARD SYMBOL: SF

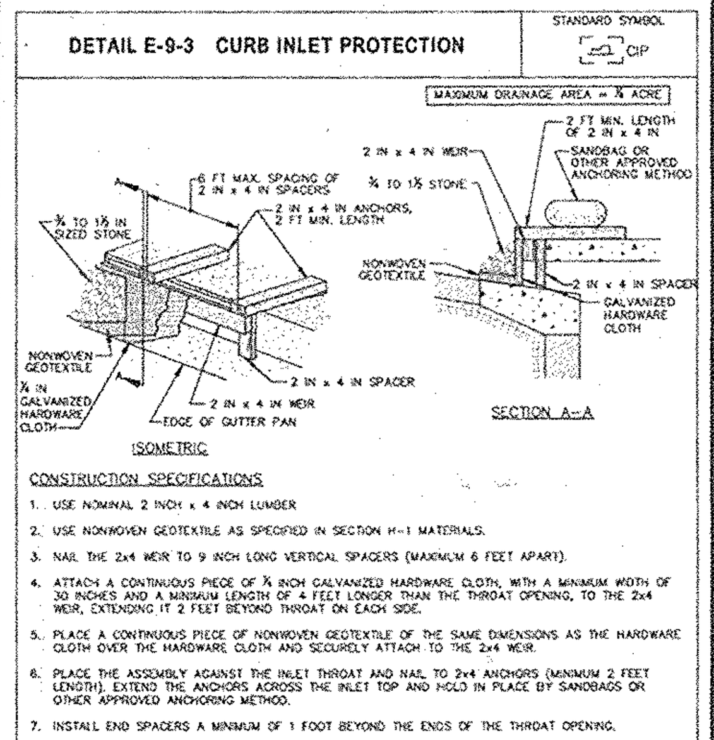


1 OF 2

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

DETAIL E-9-3 CURB INLET PROTECTION
STANDARD SYMBOL: CIP

MAXIMUM DRAINAGE AREA = ¼ ACRE

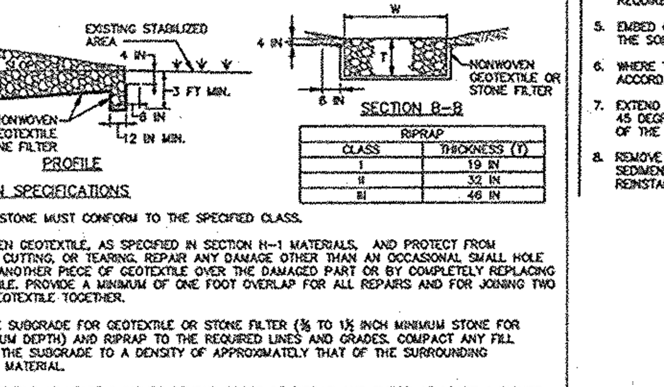


CONSTRUCTION SPECIFICATIONS
1. USE NOMINAL 2 INCH x 4 INCH LUMBER.
2. USE NONWOVEN GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS.
3. NAIL THE 2x4 WEIR TO 9 INCH LONG VERTICAL SPACERS (MAXIMUM 6 FEET APART).
4. ATTACH A CONTINUOUS PIECE OF ¼ INCH GALVANIZED HARDWARE CLOTH, WITH A MINIMUM WIDTH OF 30 INCHES AND A MINIMUM LENGTH OF 4 FEET LONGER THAN THE THROAT OPENING, TO THE 2x4 WEIR, EXTENDING IT 2 FEET BEYOND THROAT ON EACH SIDE.
5. PLACE A CONTINUOUS PIECE OF NONWOVEN GEOTEXTILE OF THE SAME DIMENSIONS AS THE HARDWARE CLOTH OVER THE HARDWARE CLOTH AND SECURELY ATTACH TO THE 2x4 WEIR.
6. PLACE THE ASSEMBLY AGAINST THE INLET THROAT AND NAIL TO 2x4 ANCHORS (MINIMUM 2 FEET LENGTH). EXTEND THE ANCHORS ACROSS THE INLET TOP AND HOLD IN PLACE BY SANDBAGS OR OTHER APPROVED ANCHORING METHOD.
7. INSTALL END SPACERS A MINIMUM OF 1 FOOT BEYOND THE ENDS OF THE THROAT OPENING.
8. FORM THE HARDWARE CLOTH AND THE GEOTEXTILE TO THE CONCRETE GUTTER AND FACE OF CURB TO SPAN THE INLET OPENING. COVER THE HARDWARE CLOTH AND GEOTEXTILE WITH CLEAN ¾ TO 1½ INCH STONE OR EQUIVALENT RECYCLED CONCRETE.
9. AT NON-SUMP LOCATIONS, INSTALL A TEMPORARY SANDBAG OR ASPHALT BERM TO PREVENT INLET BYPASS.
10. STORM DRAIN INLET PROTECTION REQUIRES FREQUENT MAINTENANCE. REMOVE ACCUMULATED SEDIMENT AFTER EACH RAIN EVENT TO MAINTAIN FUNCTION AND AVOID PREMATURE CLOGGING. IF INLET PROTECTION DOES NOT COMPLETELY DRAIN WITHIN 24 HOURS AFTER A STORM EVENT, IT IS CLOGGED. WHEN THIS OCCURS, REMOVE ACCUMULATED SEDIMENT AND CLEAN, OR REPLACE GEOTEXTILE AND STONE.

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

DETAIL D-4-1-C ROCK OUTLET PROTECTION III
STANDARD SYMBOL: ROPIII

DISCHARGE TO AN UNCONFINED CHANNEL OR FLAT AREA



RIPRAP	
CLASS	THICKNESS (T)
I	19 IN
II	32 IN
III	46 IN

CONSTRUCTION SPECIFICATIONS
1. RIPRAP AND STONE MUST CONFORM TO THE SPECIFIED CLASS.
2. USE NONWOVEN GEOTEXTILE, AS SPECIFIED IN SECTION H-1 MATERIALS, AND PROTECT FROM PUNCTURING, CUTTING, OR TEARING. REPAIR ANY DAMAGE OTHER THAN AN OCCASIONAL SMALL HOLE BY PLACING ANOTHER PIECE OF GEOTEXTILE OVER THE DAMAGED PART OR BY COMPLETELY REPLACING THE GEOTEXTILE. PROVIDE A MINIMUM OF ONE FOOT OVERLAP FOR ALL REPAIRS AND FOR JOINING TWO PIECES OF GEOTEXTILE TOGETHER.
3. PREPARE THE SUBGRADE FOR GEOTEXTILE OR STONE FILTER (⅜ TO 1½ INCH MINIMUM STONE FOR 6 INCH MINIMUM DEPTH) AND RIPRAP TO THE REQUIRED LINES AND GRADES. COMPACT ANY FILL REQUIRED IN THE SUBGRADE TO A DENSITY OF APPROXIMATELY THAT OF THE SURROUNDING UNDISTURBED MATERIAL.
4. EXTEND GEOTEXTILE AT LEAST 6 INCHES BEYOND EDGES OF RIPRAP AND EMBED AT LEAST 4 INCHES AT SIDES OF RIPRAP.
5. CONSTRUCT RIPRAP OUTLET TO FULL COURSE THICKNESS IN ONE OPERATION AND IN SUCH A MANNER AS TO AVOID DISPLACEMENT OF UNDERLYING MATERIALS. PLACE STONE FOR RIPRAP OUTLET IN A MANNER THAT WILL ENSURE THAT IT IS REASONABLY HOMOGENOUS WITH THE SMALLER STONES AND SPALLS FILLING THE VOIDS BETWEEN THE LARGER STONES. PLACE RIPRAP IN A MANNER TO PREVENT DAMAGE TO THE FILTER BLANKET OR GEOTEXTILE. HAND PLACE TO THE EXTENT NECESSARY.
6. WHERE NO ENDWALL IS USED, CONSTRUCT THE UPSTREAM END OF THE APRON SO THAT THE WIDTH IS TWO TIMES THE DIAMETER OF THE OUTLET PIPE, AND EXTEND THE STONE UNDER THE OUTLET BY A MINIMUM OF 18 INCHES.
7. CONSTRUCT APRON WITH 0% SLOPE ALONG ITS LENGTH AND WITHOUT OBSTRUCTIONS. PLACE STONE SO THAT IT BLENDS IN WITH EXISTING GROUND.
8. MAINTAIN LINE, GRADE, AND CROSS SECTION. KEEP OUTLET FREE OF EROSION. REMOVE ACCUMULATED SEDIMENT AND DEBRIS. AFTER HIGH FLOWS INSPECT FOR SCOUR AND RIPRAP DISLODGED RIPRAP. MAKE NECESSARY REPAIRS IMMEDIATELY.

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

DETAIL E-1 SILT FENCE
STANDARD SYMBOL: SF

CONSTRUCTION SPECIFICATIONS
1. USE WOOD POSTS 1¾ X 1¾ ± ⅛ INCH (MINIMUM) SQUARE CUT OF SOUND QUALITY HARDWOOD. AS AN ALTERNATIVE TO WOODEN POST USE STANDARD "T" OR "U" SECTION STEEL POSTS WEIGHING NOT LESS THAN 1 POUND PER LINEAR FOOT.
2. USE 36 INCH MINIMUM POSTS DRIVEN 16 INCH MINIMUM INTO GROUND NO MORE THAN 6 FEET APART.
3. USE WOVEN SLIT FILM GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS AND FASTEN GEOTEXTILE SECURELY TO UPSLOPE SIDE OF FENCE POSTS WITH WIRE TIES OR STAPLES AT TOP AND MID-SECTION.
4. PROVIDE MANUFACTURER CERTIFICATION TO THE AUTHORIZED REPRESENTATIVE OF THE INSPECTION/ENFORCEMENT AUTHORITY SHOWING THAT THE GEOTEXTILE USED MEETS THE REQUIREMENTS IN SECTION H-1 MATERIALS.
5. EMBED GEOTEXTILE A MINIMUM OF 8 INCHES VERTICALLY INTO THE GROUND. BACKFILL AND COMPACT THE SOIL ON BOTH SIDES OF FABRIC.
6. WHERE TWO SECTIONS OF GEOTEXTILE ADJOIN: OVERLAP, TWIST, AND STAPLE TO POST IN ACCORDANCE WITH THIS DETAIL.
7. EXTEND BOTH ENDS OF THE SILT FENCE A MINIMUM OF FIVE HORIZONTAL FEET UPSLOPE AT 45 DEGREES TO THE MAIN FENCE ALIGNMENT TO PREVENT RUNOFF FROM GOING AROUND THE ENDS OF THE SILT FENCE.
8. REMOVE ACCUMULATED SEDIMENT AND DEBRIS WHEN BULGES DEVELOP IN SILT FENCE OR WHEN SEDIMENT REACHES 25% OF FENCE HEIGHT. REPLACE GEOTEXTILE IF TORN. IF UNDERMINING OCCURS, REINSTALL FENCE.

H-5 STANDARDS AND SPECIFICATIONS FOR DUST CONTROL

Definition
Controlling the suspension of dust particles from construction activities.

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

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

Specifications
1. Mulches: See Section B-4-2 Soil Preparation, Topsoiling, and Soil Amendments, Section B-4-3 Seeding and Mulching, and Section B-4-4 Temporary Stabilization. Mulch must be anchored to prevent blowing.
2. Vegetative Cover: See Section B-4-4 Temporary Stabilization.
3. Tillage: Till to roughen surface and bring clods to the surface. Begin plowing on windward side of site. Chisel-type plows spaced about 12 inches apart, spring-toothed harrows, and similar plows are examples of equipment that may produce the desired effect.
4. Irrigation: Sprinkle site with water until the surface is moist. Repeat as needed. The site must not be irrigated to the point that runoff occurs.
5. Barriers: Solid board fences, silt fences, snow fences, burlap fences, straw bales, and similar material can be used to control air currents and soil blowing.
6. Chemical Treatment: Use of chemical treatment requires approval by the appropriate plan review authority.

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ALEXANDRIA, VA. 22314
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C/O RICK DELLA

OWNER
HOWARD COUNTY HOUSING COMMISSION
6751 COLUMBIA GATEWAY DR., 3RD FLOOR
COLUMBIA, MD 21046
(410) 313-6320

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 1-12-16
CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 2-22-16
DIRECTOR — DATE 2-22-16

BY THE DEVELOPER:
"I/WE CERTIFY THAT ALL DEVELOPEMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN FOR SEDIMENT AND EROSION CONTROL, AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT."
SIGNATURE OF DEVELOPER — DATE 12/21/2015

BY THE ENGINEER:
"I CERTIFY THAT THIS PLAN FOR EROSION AND SEDIMENT 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."
SIGNATURE OF ENGINEER — DATE 12/22/15

THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.
HOWARD S.C.D. — DATE 1/5/16

NO.	REVISION	DATE

SITE DEVELOPMENT PLAN

SEDIMENT AND EROSION CONTROL NOTES AND DETAILS

DAY RESOURCE CENTER

VOLUNTEERS OF AMERICA
10390 GUILFORD ROAD
HOWARD COUNTY HOUSING COMMISSION

TAX MAP 47 GRID 12 — 6TH ELECTION DISTRICT
DPZ REF'S: L.15118/F.116, BA-08-027V — ZONED: CE-CLI
PARCEL 59, PARCEL A — HOWARD COUNTY, MARYLAND

ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET ELLICOTT CITY, MD 21043
TEL: 410.461.7666 FAX: 410.461.8961

STATE OF MARYLAND — ROBERT HARRIS VOGEL — NO. 16193 — REGISTERED PROFESSIONAL ENGINEER — 12/22/15
ROBERT H. VOGEL, PE No.16193

DESIGN BY:	RHV/DZE
DRAWN BY:	DZE/KG
CHECKED BY:	RHV
DATE:	DECEMBER 2015
SCALE:	AS SHOWN
W.O. NO.:	06-72.01

PROFESSIONAL CERTIFICATE
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193 EXPIRATION DATE: 09-27-2016

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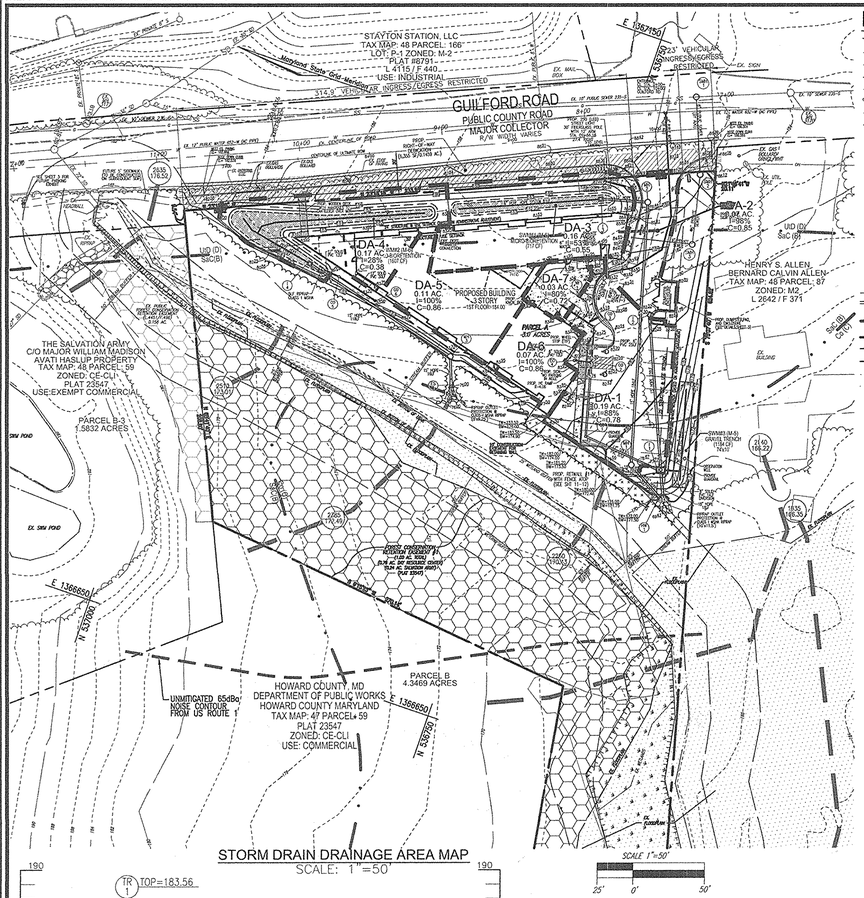
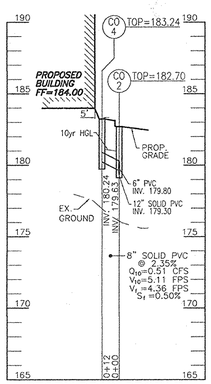


STORM DRAIN DRAINAGE AREA MAP
SCALE: 1"=50'

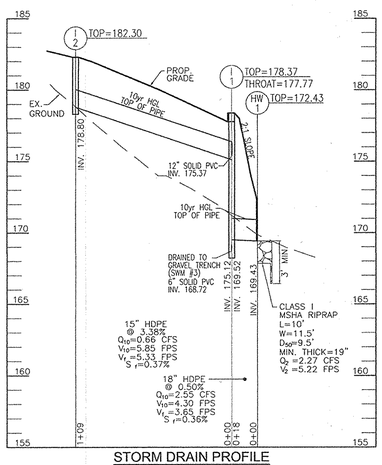
LEGEND:

- PROPOSED CONTOUR
- EXISTING CONTOUR
- EXISTING OVERHEAD LINES
- EXISTING WATERLINE LINE
- EXISTING GAS LINE
- EXISTING GUARD RAIL
- EXISTING METAL FENCE
- EXISTING WOOD FENCE
- EXISTING ELECTRICAL BOX
- EXISTING POLE
- EXISTING LIGHT POLE WITH CONCRETE BASE
- EXISTING MAILBOX
- EXISTING SIGN
- EXISTING SANITARY MANHOLE
- EXISTING CLEANOUT
- EXISTING FIRE HYDRANT
- PROPOSED PARKING COUNT
- PROPOSED BORING
- PROPOSED SANITARY LINE
- PROPOSED WATER LINE
- SOILS BOUNDARY
- PROPERTY LINE
- ADJACENT PROPERTY LINE
- RIGHT-OF-WAY LINE
- EXISTING TREELINE
- PROPOSED TREELINE
- PROPOSED SIDEWALK
- EXISTING CURB AND GUTTER
- PROPOSED CURB AND GUTTER
- PROPOSED WHEEL STOP
- PROPOSED STORM DRAIN INLET
- PROPOSED STORM DRAIN
- PROP. MICRO BIORETENTION AREA (M-6)
- FOREST CONSERVATION EASEMENT RETENTION
- 10' CONSTRUCTION EASEMENT FOR RETAINING WALL
- RIGHT OF WAY DEDICATION
- PROPOSED DRAINAGE DIVIDE

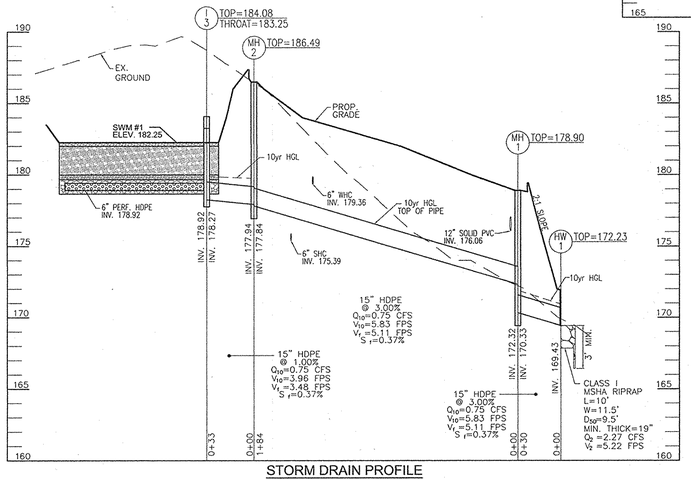
STORM DRAIN PROFILE
SCALE : HORIZONTAL – 1"=50'
VERTICAL – 1"=5'



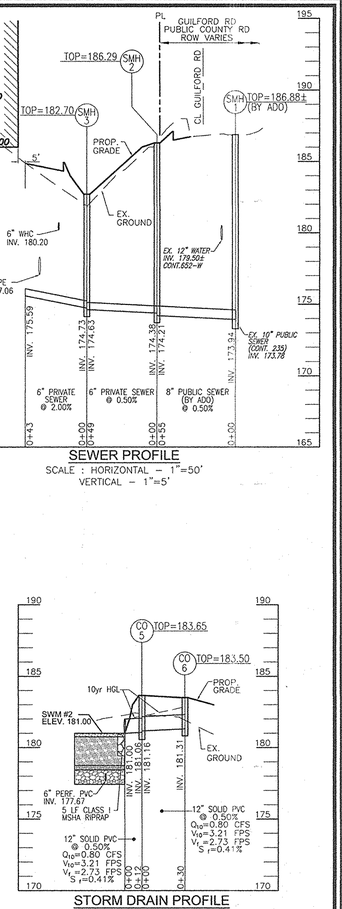
STORM DRAIN PROFILE
SCALE : HORIZONTAL – 1"=50'
VERTICAL – 1"=5'



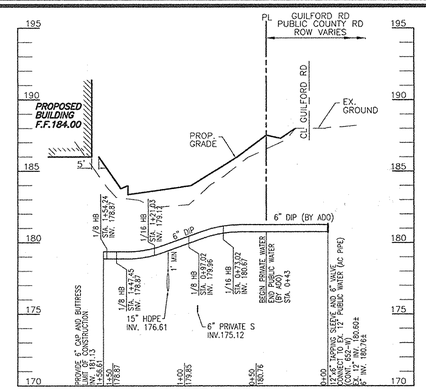
STORM DRAIN PROFILE
SCALE : HORIZONTAL – 1"=50'
VERTICAL – 1"=5'



STORM DRAIN PROFILE
SCALE : HORIZONTAL – 1"=50'
VERTICAL – 1"=5'

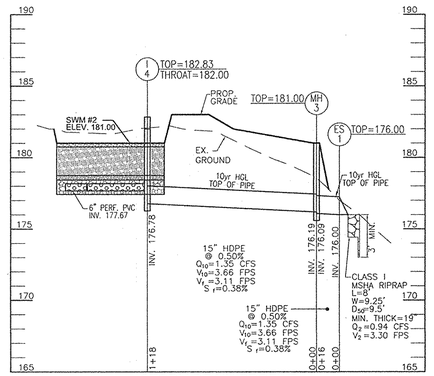


STORM DRAIN PROFILE
SCALE : HORIZONTAL – 1"=50'
VERTICAL – 1"=5'



WATER PROFILE
SCALE : HORIZONTAL – 1"=50'
VERTICAL – 1"=5'

SEWER PROFILE
SCALE : HORIZONTAL – 1"=50'
VERTICAL – 1"=5'



STORM DRAIN PROFILE
SCALE : HORIZONTAL – 1"=50'
VERTICAL – 1"=5'

STRUCTURE SCHEDULE

NO.	TYPE	LOCATION	TOP ELEV.	THROAT ELEV.	INV. IN	INV. OUT	COMMENTS
I–1	TYPE 'A–5' INLET	N 536652.5 E 1366865.5	178.37	177.77	175.37 175.12	169.52 168.72	HO. CO. STD SD–4.01
I–2	WR SINGLE INLET	N 536694.6 E 1366965.6	182.30	–	–	178.80	
I–3	'D' INLET	N 536753.6 E 1367031.1	184.08	183.25	178.92	178.27	
I–4	'D' INLET	N 536930.9 E 1366922.4	182.83	182.00	177.67	176.78	
MH–1	4'–0" STANDARD PRECAST MANHOLE	N 536672.9 E 1366862.1	178.90	–	172.32	170.33	HO. CO. STD. G–5.12
MH–2	4'–0" STANDARD PRECAST MANHOLE	N 536721.9 E 1367039.7	186.49	–	177.94	177.84	HO. CO. STD. S–2.22
MH–3	4'–0" STANDARD PRECAST MANHOLE	N 536817.2 E 1366892.9	181.00	–	176.19	176.09	HO. CO. STD. S–2.22
CO–1	CLEANOUT	N 536709.5 E 1366870.7	180.49	–	177.49	177.39	HO. CO. STD. S–2.22
CO–2	CLEANOUT	N 536722.8 E 1366920.9	182.70	–	179.80 179.63	179.30	HO. CO. STD. S–2.22
CO–3	CLEANOUT	N 536729.2 E 1366945.1	183.63	–	180.40	180.30	HO. CO. STD. S–2.22
CO–4	CLEANOUT	N 536734.6 E 1366918.4	183.24	–	–	180.24	HO. CO. STD. S–2.22
CO–5	CLEANOUT	N 536908.6 E 1366920.4	183.65	–	181.16	181.06	HO. CO. STD. S–2.22
CO–6	CLEANOUT	N 536879.4 E 1366912.7	183.50	–	–	181.31	HO. CO. STD. S–2.22
TR–1	ACO TRENCH DRAIN (SLOPED CHANNEL)	N 536761.2 E 1366953.5	183.56	–	183.07	181.06	KLASSIKDRAIN K1–K5
ES–1	END SECTION	N 536811.5 E 1366878.2	176.00	–	–	176.00	
HW–1	TYPE 'A' HEADWALL (18" PIPE)	N 536645.5 E 1366849.8	172.43	–	–	169.43	HO. CO. STD. S–2.22
SMH–1	4'–0" STANDARD PRECAST MANHOLE	N 536713.9 E 1367120.2	186.88	–	173.94	173.78	HO. CO. STD. G–5.12
SMH–2	4'–0" STANDARD PRECAST MANHOLE	N 536693.6 E 1367069.8	186.29	–	174.38	174.21	HO. CO. STD. G–5.12
SMH–3	4'–0" STANDARD PRECAST MANHOLE	N 536683.0 E 1367021.8	182.70	–	174.73	174.63	HO. CO. STD. G–5.12

NOTE : 1. TOP ELEVATIONS ARE AT CENTER TOP OF HEADPIECE FOR TYPE 'A–5', CENTER TOP OF MANHOLE FOR TYPE 'D' INLET, AND TOP OF MANHOLE COVER FOR PRECAST MANHOLES.
2. FOR TOP SLAB SLOPES SEE GRADING PLAN.
3. SEE ARCHITECTURAL PLANS FOR DOWNSPOUT AND ROOF DRAIN DETAILS.
4. ALL CUSTOM AND NON–STANDARD STRUCTURES TO BE DESIGNED BY A QUALIFIED STRUCTURAL ENGINEER.

PIPE SCHEDULE

SIZE	TYPE	LENGTH
6"	PRIVATE DIP WHC	117 LF
8"	PUBLIC DIP WATER (ADD)	43 LF
6"	PRIVATE PVC SEWER	92 LF
8"	PUBLIC PVC SEWER (ADD)	54 LF
6"	PERF. PVC (SWM)	64 LF
6"	PERF. HDPE (SWM)	201 LF
6"	SOLID PVC (SD)	72 LF
8"	SOLID PVC (SD)	12 LF
12"	SOLID PVC (SD)	151 LF
15"	HDPE (SD)	490 LF
18"	HDPE (SD)	18 LF

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 1-12-16
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 2-22-16
DIRECTOR	DATE 2-22-16

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COLUMBIA, MD 21046
(410) 313-6320

NO.	REVISION	DATE

SITE DEVELOPMENT PLAN

STORM DRAIN DRAINAGE AREA MAP AND UTILITY PROFILES

DAY RESOURCE CENTER

VOLUNTEERS OF AMERICA
10390 GUILFORD ROAD
HOWARD COUNTY HOUSING COMMISSION
TAX MAP 47 GRID 12 — DPZ REF'S: L.1511&F.116, BA-08-027V — PARCEL 59, PARCEL A
6TH ELECTION DISTRICT — ZONED: CE-CLI — HOWARD COUNTY, MARYLAND

ROBERT H. VOGEL ENGINEERING, INC.
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STATE OF MARYLAND — ROBERT HARRIS VOGEL — No. 16193 — REGISTERED PROFESSIONAL ENGINEER — 12/22/15

ROBERT H. VOGEL, PE No.16193

DESIGN BY:	RHV/DZE
DRAWN BY:	DZE/KG
CHECKED BY:	RHV
DATE:	DECEMBER 2015
SCALE:	AS SHOWN
W.O. NO.:	06-72.01

PROFESSIONAL CERTIFICATE

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193 EXPIRATION DATE: 09-27-2016

SHEET 6 OF 12

SDP-15-023

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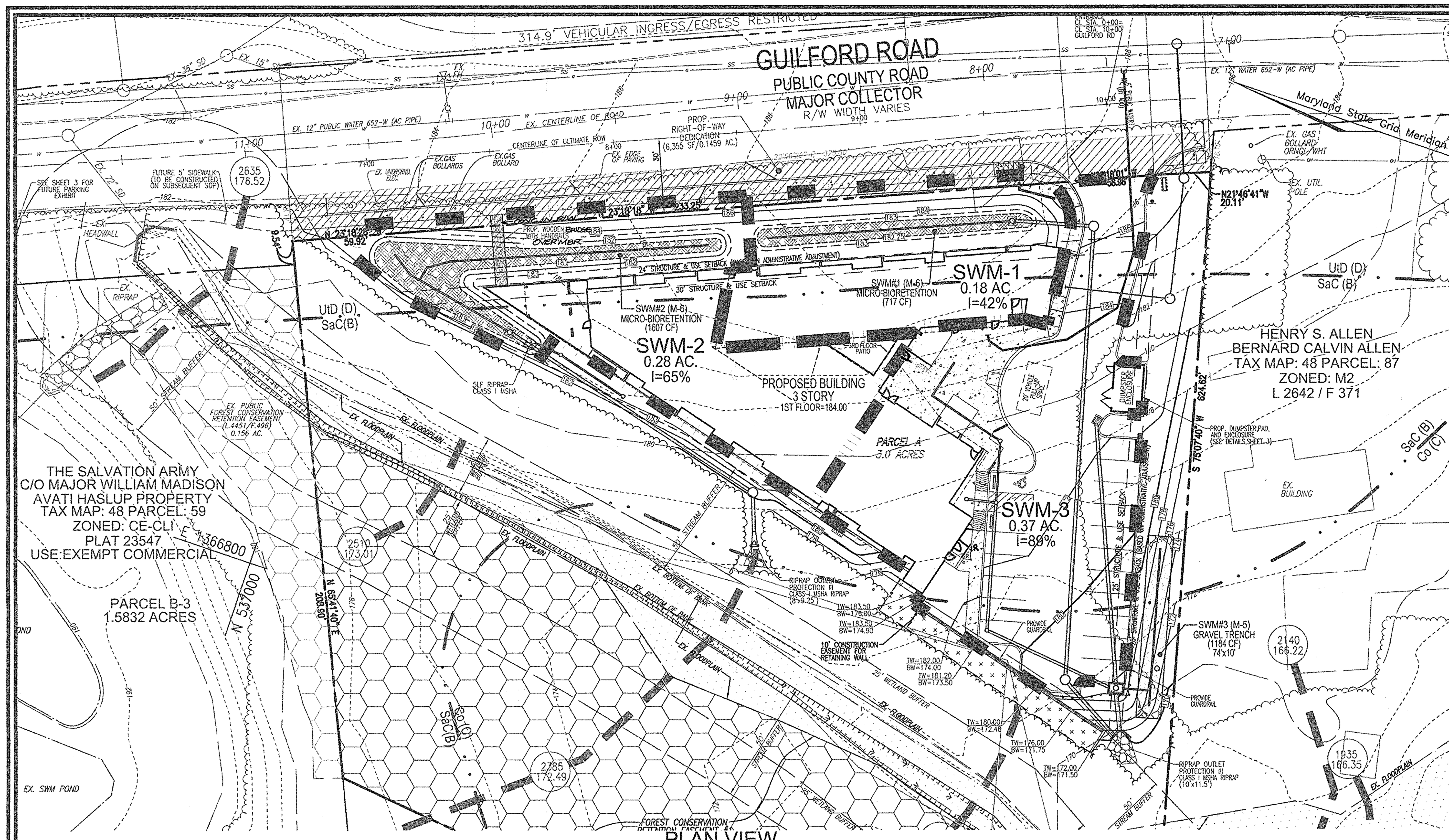

PLAN VIEW

SCALE: 1"=30'

SCALE 1"=30' 15' 0' 30'

SOILS LEGEND

HOWARD COUNTY SOILS MAP #16

SYMBOL	NAME / DESCRIPTION	GROUP	ERODIBLE
Co	CODORUS AND HATBORO SILT LOAMS, 0 TO 3 PERCENT SLOPES	C	YES
SaC	SASSAFRAS LOAM, 5 TO 10 PERCENT SLOPES	D	NO
UtD	URBAN LAND-UDORTHENTS COMPLEX, 0 TO 15 PERCENT SLOPES	D	NO

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

1. THE OWNER SHALL MAINTAIN THE PLANT MATERIAL, MULTCH LAYER AND SOIL LAYER ANNUALLY. MAINTENANCE OF MULCH AND SOIL IS LIMITED TO CORRECTING AREAS OF EROSION OR WASH OUT. ANY MULCH REPLACEMENT SHALL BE DONE IN THE SPRING. PLANT MATERIAL SHALL BE CHECKED FOR DISEASE AND INSECT INFESTATION AND MAINTENANCE WILL ADDRESS DEAD MATERIAL PRUNING. ACCEPTABLE REPLACEMENT PLANT MATERIAL IS LIMITED TO THE FOLLOWING: 2000 MARYLAND STORMWATER DESIGN MANUAL, VOLUME II, TABLE A.4.1 AND 2.

2. THE OWNER SHALL PERFORM A PLANT IN THE SPRING AND IN THE FALL OF EACH YEAR. DURING THE INSPECTION, THE OWNER SHALL REMOVE DEAD AND DISEASED VEGETATION CONSIDERED BEYOND TREATMENT, REPLACE DEAD PLANT MATERIAL WITH ACCEPTABLE REPLACEMENT PLANT MATERIAL, TREAT DISEASED TREES AND SHRUBS, AND REPLACE ALL DEFICIENT STAKES AND WIRES.

3. THE OWNER SHALL INSPECT THE MULCH EACH SPRING. THE MULCH SHALL BE REPLACED EVERY TWO TO THREE YEARS. THE PREVIOUS MULCH LAYER SHALL BE REMOVED BEFORE THE NEW LAYER IS APPLIED.

4. THE OWNER SHALL CORRECT SOIL EROSION ON AN AS NEEDED BASIS, WITH A MINIMUM OF ONCE PER MONTH AND AFTER EACH HEAVY STORM.

OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED STORMWATER INFILTRATION TRENCHES (M-5)

1. THE MONITORING WELLS AND STRUCTURES SHALL BE INSPECTED ON A QUARTERLY BASIS AND AFTER EVERY LARGE STORM EVENT.

2. WATER LEVELS AND SEDIMENT BUILD UP IN THE MONITORING WELLS SHALL BE RECORDED OVER A PERIOD OF SEVERAL DAYS TO INSURE TRENCH DRAINAGE.

3. A LOGBOOK SHALL BE MAINTAINED TO DETERMINE THE RATE AT WHICH THE FACILITY DRAINS.

4. WHEN THE FACILITY BECOMES CLOGGED SO THAT IT DOES NOT DRAIN DOWN WITHIN THE xxx HOUR TIME PERIOD, CORRECTIVE ACTION SHALL BE TAKEN.

5. THE MAINTENANCE LOGBOOK SHALL BE AVAILABLE TO HOWARD COUNTY FOR INSPECTION TO INSURE COMPLIANCE WITH OPERATION AND MAINTENANCE CRITERIA.

6. ONCE THE PERFORMANCE CHARACTERISTICS OF THE INFILTRATION FACILITY HAVE BEEN VERIFIED, THE MONITORING SCHEDULE CAN BE REDUCED TO AN ANNUAL BASIS UNLESS THE PERFORMANCE DATA INDICATES THAT A MORE FREQUENT SCHEDULE IS REQUIRED.

DRAINAGE AREA #	AREA TREATED (SF)	FACILITY NUMBER	ENVIRONMENTAL SITE DESIGN PRACTICE: PERMEABLE PAVEMENT (A-2)	ADD UNDER PERM. PAVE (A-2)	LANDSCAPE INFILTRATION (M-3)	PERVIOUS SIDEWALK (A-2)	BIO SWALE (M-8)	GRAVEL TRENCH (M-5)	MICRO BIO RETENTION (M-6)	ESDv VOLUME PROVIDED
1	6946	SWM#1	0	0	0	0	0	0	717	717
		SUBTOTAL 1	0	0	0	0	0	0	717	717
2	13105	SWM#2	0	0	0	0	0	0	1607	1607
		SUBTOTAL 1	0	0	0	0	0	0	1607	1607
3	15953	SWM#4	0	0	0	0	0	1184		1184
		SUBTOTAL 1	0	0	0	0	0	1184	0	1184

TOTAL AREA 36004 SF
0.83 AC

TOTAL ESDv PROVIDED: 3508

Pe= 1.80
ESDv=(PexRvxA)/12
Rv=0.05+0.009xI
V min=1.0" rainfall (1.0xRvxA)/12
Vmax= 1yr rainfall=2.6" (2.6xRvxA)/12

DA	% IMPERV	Rv	DA	ESDv REQ	MINIMUM VOLUME	MAXIMUM VOLUME	VOLUME PROVIDED *
1	47	0.48	0.16	497	276	718	717
2	60	0.59	0.30	1158	644	1673	1608
3	89	0.85	0.37	2040	1133	2947	1184
	TOTAL ESDv BY SUBAREA:			3,695			3,509

* Provided Volume is less than ESDv Require because Bio-retention utilized in subareas 1 and 2 at the rate of 75%.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION — DATE 1.12.16

CHIEF, DIVISION OF LAND DEVELOPMENT — DATE 2-22-16

DIRECTOR — DATE 2-22-16

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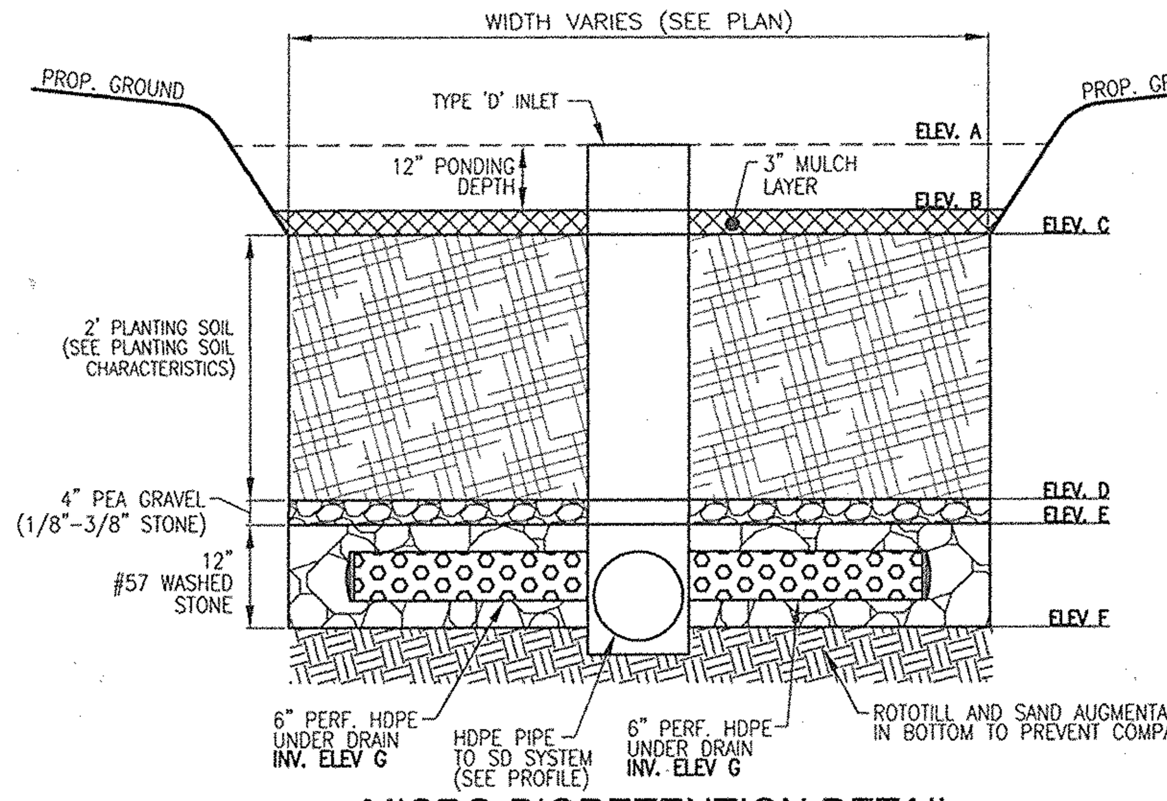


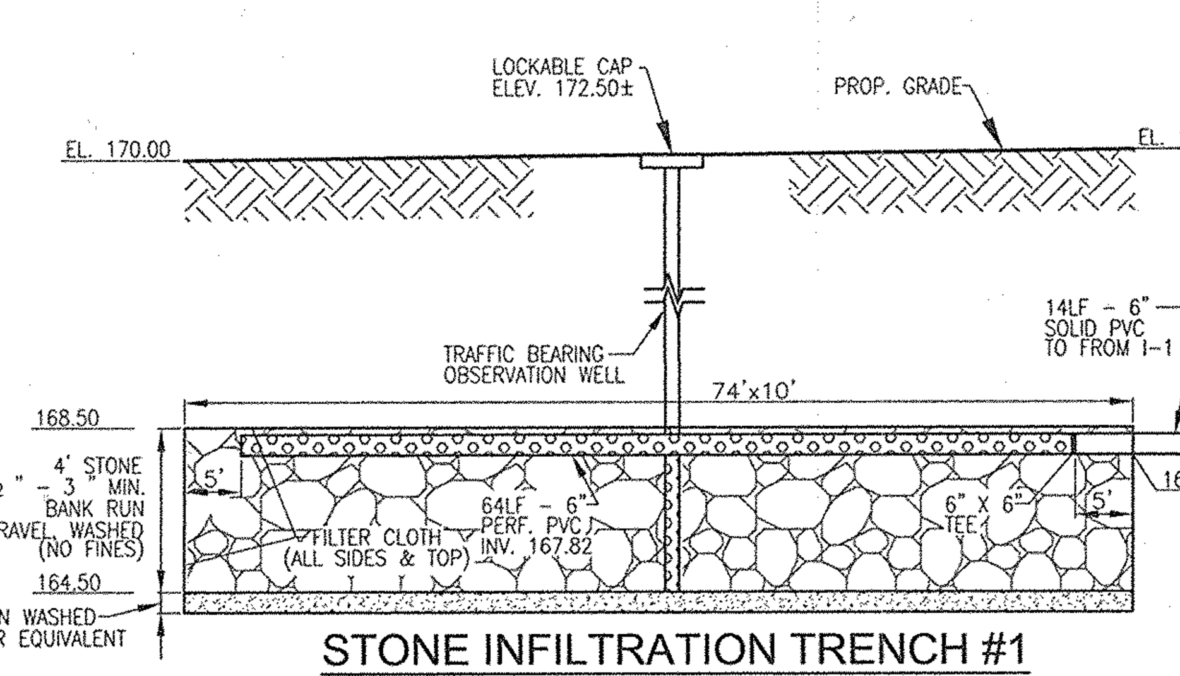
MICRO-BIORETENTION DETAIL

NOT TO SCALE

MICRO-BIORETENTION DATA CHART								
MBR Facility	Ponding Elevation ELEV. A	Top of Mulch ELEV. B	Bottom of Mulch ELEV. C	Bottom of Plant Mix ELEV. D	Bottom of Pea Gravel ELEV. E	Height of Stone (ft.)	Bottom of Stone ELEV. F	Invert of 6" Underdrain INV. ELEV. G
1	183.25	182.25	182.00	180.00	179.67	1.00	178.67	178.92
2	182.00	181.00	180.75	178.75	178.42	1.00	177.42	177.67

MICROBIORETENTION NOTES:

1. ONLY THE SIDES OF MICROBIORETENTION ARE TO BE WRAPPED IN FILTER FABRIC. FILTER FABRIC BETWEEN LAYER OR AT THE BOTTOM OF THE MICROBIORETNTION WILL CAUSE THE MBR TO FAIL, AND THERFORE SHALL NOT BE INSTALLED.
2. WRAP THE PERFORATED MBR UNDERDRAIN PIPE WITH 1/4" MESH (4x4) OR SMALLER GALVANIZED HARDWARE CLOTH.



STONE INFILTRATION TRENCH #1

NOT TO SCALE

APPENDIX B.4.C SPECIFICATIONS FOR MICRO-BIORETENTION. RAIN GARDEN, LANDSCAPE INFILTRATION & INFILTRATION BERMS

1. MATERIAL SPECIFICATIONS

THE ALLOWABLE MATERIALS TO BE USED IN THESE PRACTICES ARE DETAILED IN TABLE B.4.1.

2. FILTERING MEDIA OR PLANTING SOIL

THE SOIL SHALL BE A UNIFORM MIX, FREE OF STONES, STUMPS, ROOTS OR OTHER SIMILAR OBJECTS LARGER THAN TWO INCHES. NO OTHER MATERIALS OR SUBSTANCES SHALL BE MIXED OR DUMPED WITHIN THE MICRO-BIORETENTION PRACTICE THAT MAY BE HARMFUL TO PLANT GROWTH, OR PROVE A HINDRANCE TO THE PLANTING OR MAINTENANCE OPERATIONS. THE PLANTING SOIL SHALL BE FREE OF BERMUDA GRASS, QUACKGRASS, JOHNSON GRASS, OR OTHER NOXIOUS WEEDS AS SPECIFIED UNDER COMAR 15.08.01.05. THE PLANTING SOIL SHALL BE TESTED AND SHALL MEET THE FOLLOWING CRITERIA:

* SOIL COMPONENT – LOAMY SAND OR SANDY LOAM (USDA SOIL TEXTURAL CLASSIFICATION).
* ORGANIC CONTEN – MINIMUM 10% BY DRY WEIGHT (ASTM D 2974). IN GENERAL, THIS CAN BE MET WITH A MIXTURE OF LOAMY SAND (60%-65%) AND COMPOST (35% TO 40%) OR SANDY LOAM (30%), COARSE SAND (30%), AND COMPOST (40%).
* CLAY CONTENT – MEDIA SHALL HAVE A CLAY CONTENT OF LESS THAN 5%.
* PH RANGE – SHOULD BE BETWEEN 5.5 – 7.0. AMENDMENTS (E.G., LIME, IRON SULFATE PLUS SULFUR) MAY BE MIXED IN TO THE SOIL TO INCREASE OR DECREASE PH.

THERE SHALL BE AT LEAST ONE SOIL TEST PER PROJECT. EACH TEST SHALL CONSIST OF BOTH THE STANDARD SOIL TEST FOR PH, AND ADDITIONAL TESTS OF ORGANIC MATTER, AND SOLUBLE SALTS. A TEXTURAL ANALYSIS IS REQUIRED FROM THE SITE STOCKPILED TOPSOIL. IF TOPSOIL IS IMPORTED, THEN A TEXTURE ANALYSIS SHALL BE PERFORMED FOR EACH LOCATION WHERE THE TOPSOIL WAS EXCAVATED.

3. COMPACTION

IT IS VERY IMPORTANT TO MINIMIZE COMPACTION OF BOTH THE BASE OF BIORETENTION PRACTICES AND THE REQUIRED BACKFILL. WHEN POSSIBLE, USE EXCAVATION HOES TO REMOVE ORIGINAL SOIL. IF PRACTICES ARE EXCAVATED USING LOADER, THE CONTRACTOR SHOULD USE WIDE TRACK OR MARSH TRACK EQUIPMENT, OR LIGHT EQUIPMENT WITH TURF TYPE TIRES. USE OF EQUIPMENT WITH NARROW TRACKS OR NARROW TIRES, RUBBER TIRES WITH LARGE LUGS, OR HIGH-PRESSURE TIRES WILL CAUSE EXCESSIVE COMPACTION RESULTING IN REDUCED INFILTRATION RATES AND IS NOT ACCEPTABLE. COMPACTION WILL SIGNIFICANTLY CONTRIBUTE TO DESIGN FAILURE.

COMPACTION CAN BE ALLEVIATED AT THE BASE OF THE BIORETENTION FACILITY BY USING A PRIMARY TILLING OPERATION SUCH AS CHISEL PLOW, RIPPER, OR SUBSOILER. THESE TILLING OPERATIONS ARE TO REFRACTURE THE SOIL PROFILE THROUGH THE 12 INCH COMPACTION ZONE. SUBSTITUTE METHODS MUST BE APPROVED BY THE ENGINEER. ROTOTILLERS TYPICALLY DO NOT TILL DEEP ENOUGH TO REDUCE THE EFFECTS OF COMPACTION FROM HEAVY EQUIPMENT.

ROTOTILL 2 TO 3 INCHES OF SAND INTO THE BASE OF THE BIORETENION FACILITY BEFORE BACKFILLING THE OPTIONAL SAND LAYER. PUMP ANY PONDED WATER BEFORE PREPARING (ROTOTILLING) BASE. WHEN BACKFILLING THE TOPSOIL OVER THE SAND LAYER, FIRST PLACE 3 TO 4 INCHES OF TOPSOIL OVER THE SAND, THEN ROTOTILL THE SAND/TOPSOIL TO CREATE A GRADATION ZONE. BACKFILL THE REMAINDER OF THE TOPSOIL TO FINAL GRADE. WHEN BACKFILLING THE BIORETENTION FACILITY, PLACE SOIL IN LIFTS 12" TO 18". DO NOT USE HEAVY EQUIPMENT WITHIN THE BIORETENTION BASIN. HEAVY EQUIPMENT CAN BE USED AROUND THE PERIMETER OF THE BASIN TO SUPPLY SOILS AND SAND. GRADE BIORETENTION MATERIALS WITH LIGHT EQUIPMENT SUCH AS A COMPACT LOADER OR A DOZER/LOADER WITH MARSH TRACKS.

4. PLANT MATERIAL

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

5. PLANT INSTALLATION

COMPOST IS A BETTER ORGANIC MATERIAL SOURCE, IS LESS LIKELY TO FLOAT, AND SHOULD BE PLACED IN THE INVERT AND OTHER LOW AREAS. MULCH SHOULD BE PLACED IN SURROUNDING TO A UNIFORM THICKNESS OF 2" TO 3". SHREDDED OR CHIPPED HARDWOOD MULCH IS THE ONLY ACCEPTED MULCH. PINE MULCH AND WOOD CHIPS WILL FLOAT AND MOVE TO THE PERIMETER OF THE BIORETENTION AREA DURING A STORM EVENT AND ARE NOT ACCEPTABLE. SHREDDED MULCH MUST BE WELL AGED (6 TO 12 MONTHS) FOR ACCEPTANCE. ROOTSTOCK OF THE PLANT MATERIAL SHALL BE KEPT MOIST DURING TRANSPORT AND ON-SITE STORAGE. THE PLANT ROOT BALL SHOULD BE PLANTED SO 1/8TH OF THE BALL IS ABOVE FINAL GRADE SURFACE. THE DIAMETER OF THE PLANTING PIT SHALL BE AT LEAST SIX INCHES LARGER THAN THE DIAMETER OF THE PLANTING BALL. SET AND MAINTAIN THE PLANT STRAIGHT DURING THE ENTIRE PLANTING PROCESS. THOROUGHLY WATER GROUND BED COVER AFTER INSTALLATION. TREES SHALL BE BRACED USING 2" BY 2" STAKES ONLY AS NECESSARY AND FOR THE FIRST GROWING SEASON ONLY. STAKES ARE TO BE EQUALLY SPACED ON THE OUTSIDE OF THE TREE BALL. GRASSES AND LEGUME SEED SHOULD BE DRILLED INTO THE SOIL TO A DEPTH OF AT LEAST ONE INCH. GRASS AND LEGUME PLUGS SHALL BE PLANTED FOLLOWING THE NON-GRASS GROUND COVER PLANTING SPECIFICATIONS. THE TOPSOIL SPECIFICATIONS PROVIDE ENOUGH ORGANIC MATERIAL TO ADEQUATELY SUPPLY NUTRIENTS FROM NATURAL CYCLING. THE PRIMARY FUNCTION OF THE BIORETENTION STRUCTURE IS TO IMPROVE WATER QUALITY. ADDING FERTILIZERS DEFEATS, OR AT A MINIMUM, IMPEDES THIS GOAL. ONLY ADD FERTILIZER IF WOOD CHIPS OR MULCH ARE USED TO AMEND THE SOIL. ROTOTILL UREA FERTILIZER AT A RATE OF 2 POUNDS PER 1000 SQUARE FEET.

6. UNDERDRAINS

UNDERDRAINS SHOULD MEET THE FOLLOWING CRITERIA:

* PIPE – SHOULD BE 4" TO 6" DIAMETER, SLOTTED OR PERFORATED RIGID PLASTIC PIPE (ASTMF 758, TYPE PS 28, OR AASHTO-M-278) IN A GRAVEL LAYER. THE PREFERRED MATERIAL IS SLOTTED, 4" RIGID PIPE (E.G., PVC OF HDPE).
* PERFORATIONS – IF PERFORATED PIPE IS USED, PERFORATIONS SHOULD BE 3/8" DIAMETER LOCATED 6" ON CENTER WITH A MINIMUM OF FOUR HOLES PER ROW. PIPE SHALL BE WRAPPED WITH A 1/4" (NO. 4 OR 4x4) GALVANIZED HARDWARE CLOTH.
* GRAVEL – THE GRAVEL LAYER (NO. 57 STONE PREFERRED) SHALL BE AT LEAST 3" THICK ABOVE AND BELOW THE UNDERDRAIN.
* THE MAIN COLLECTOR PIPE SHALL BE AT A MINIMUM 0.5% SLOPE.
* A RIGID, NON-PERFORATED OBSERVATION WELL MUST BE PROVIDED (ONE PER EVERY 1,0000 SQUARE FEET) TO PROVIDE A CLEAN-OUT PORT AND MONITOR PERFORMANCE OF THE FILTER.
* A 4" LAYER OF PEA GRAVEL (1/8" TO 3/8" STONE) SHALL BE LOCATED BETWEEN THE FILTER MEDIA AND UNDERDRAIN TO PREVENT MIGRATION OF FINES IN TO THE UNDERDRAIN. THIS LAYER MAY BE CONSIDERED PART OF THE FILTER BED WHEN BED THICKNESS EXCEEDS 24".

THIS MAIN COLLECTOR PIPE FOR UNDERDRAIN SYSTEMS SHALL BE CONSTRUCTED AT A MINIMUM SLOPE OF 0.5%. OBSERVATION WELLS AND/OR CLEAN-OUT PIPES MUST BE PROVIDED (ONE MINIMUM PER EVERY 1000 SQUARE FEET OF SURFACE AREA).

7. MISCELLANEOUS

THESE PRACTICES MAY NOT BE CONSTRUCTED UNTIL ALL CONTRIBUTING DRAINAGE AREA HAS BEEN STABILIZED.

APPENDIX B.2. CONSTRUCTION SPECIFICATIONS FOR INFILTRATION PRACTICES B.2.A INFILTRATION TRENCH GENERAL NOTES AND SPECIFICATIONS

AN INFILTRATION TRENCH MAY NOT RECEIVE RUN-OFF UNTIL THE ENTIRE CONTRIBUTING DRAINAGE AREA TO THE INFILTRATION TRENCH

1. HEAVY EQUIPMENT AND TRAFFIC SHALL BE RESTRICTED FROM TRAVELING OVER THE PROPOSED LOCATION OF THE INFILTRATION TRENCH OT MINIMIZE COMPACTION OF THE SOIL.

2. EXCAVATE THE INFILTRATION TRENCH TO THE DESIGN DEMENSIONS. EXCAVATED MATERIALS SHALL BE PLACED AWAY FROM THE TRENCH SIDES TO ENHANCE TRENCH WALL STABILITY. LARGE TREE ROOTS MUST BE TRIMMED FLUSH WITH THE TRENCH SIDES IN ORDER TO PREVENT FABRIC PUNCTURING OR TEARING OF THE FILTER FABRIC DURING SUBSEQUENT INSTALLATION PROCEDURES. THE SIDE WALLS OF THE TRENCH SHALL BE ROUGHENED WHERE SHEARED AND SEALED BY HEAVY EQUIPMENT.

3. A CLASS "C" GEOTEXTILE OR BETTER (SEE SECTION 24.0 , MATERIAL SPECIFICATIONS, 1994 STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, MDE, 1994) SHALL INTERFACE BETWEEN THE TRENCH SIDE WALLS AND BETWEEN THE STONE RESERVOIR AND GRAVEL FILTER LAYERS. A PARTIAL LIST OF NON-WOVEN FILTER FABRICS THAT MEET THE CLASS "C" CRITERIA FOLLOWS. ANY ALTERNATIVE FILTER FABRIC MUST BE APPROVED BY THE PLAN APPROVAL AUTHORITY.
   AMOCO 4552 — CARTHAGE FX-80S
   GEOLON N70 — MIRAFI 180-N
   WEBTEC N07

   THE WIDTH OF THE GEOTEXTILE MUST INCLUDE SUFFICIENT MATERIAL TO CONFORM TO TRENCH PERIMETER IRREGULARITIES AND FOR A 6-INCH MINIMUM TOP OVERLAP. THE FILTER FABRIC SHALL BE TUCKED UNDER THE SAND LAYER ON THE BOTTOM OF THE INFILTRATION TRENCH FOR A DISTANCE OF 6 TO 12 INCHES. STONES OR OTHER ANCHORING OBJECTS SHOULD BE PLACED ON THE FABRIC AT THE EDGE OF THE TRENCH TO KEEP THE TRENCH OPEN DURING WINDY PERIODS. WHEN OVERLAPS ARE REQUIRED BETWEEN ROLLS, THE UPHILL SHOULD LAP A MINIMUM OF 2 FEET OVER THE DOWNHILL ROLL IN ORDER TO PROVIDE A SHINGLED EFFECT.

4. IF A 6 INCH SAND FILTER LAYER IS PLACED ON THE BOTTOM OF THE INFILTRATION TRENCH, THE SAND FOR THE INFILTRATION TRENCH SHALL BE WASHED AND MEET AASHTO-M-43, SIZE NO. 9 OR NO. 10. ANY ALTERNATIVE SAND GRADATION MUST BE APPROVED BY THE PLAN APPROVAL AUTHORITY.

5. THE STONE AGGREGATE SHOULD BE PLACED IN A MAXIMUM LOOSE LIFT THICKNESS OF 12 INCHES. THE GRAVEL (ROUNDED "BANK RUN" GRAVEL IS PREFERRED) FOR THE INFILTRATION TRENCH SHALL BE WASHED AND MEET ON OF THE FOLLOWING AASHTO-M-43, SIZE NO. 2 OR NO. 3.

6. FOLLOWING THE STONE AGGREGATE PLACEMENT, THE FILTER FABRIC SHALL BE FOLDED OVER THE STONE AGGREGATE TO FORM A 6-INCH MINIMUM LONGITUDINAL LAP. THE DESIRED FILL SOIL OR STONE AGGREGATE SHALL BE PLACED OVER THE LAP AT SUFFICIENT INTERVALS TO MAINTAIN THE LAP DURING SUBSEQUENT BACKFILLING.

7. CARE SHALL BE EXERCISED TO PREVENT NATURAL OR FILL SOILS FROM INTERMIXING WITH THE STONE AGGREGATE. ALL CONTAMINATED STONE AGGREGATE SHALL BE REMOVED AND REPLACED WITH UNCONTAMINATED STONE AGGREGATE.

8. VOIDS MAY OCCUR BETWEEN THE FAVRIC AND THE EXCAVATION SIDES SHALL BE AVOIDED. REMOVING BOULDERS OR OTHER OBSTACLES FROM THE TRENCH WALLS IS ONE SOURCE OF SUCH VOIDS. THEREFORE, NATURAL SOILS SHOULD BE PLACED IN THESE VOIDS AT THE MOST CONVENIENT TIME DURING CONSTRUCTION TO ENSURE FABRIC CONFORMITY TO THE EXCAVATION SIDES.

9. VERTICALLY EXCAVATED WALLS MAY BE DIFFICULT TO MAINTAIN IN AREAS WHERE SOIL MOISTURE IS HIGH OR WHERE SOFT COHESIVE OR COHESIONLESS SOILS ARE DOMINANT. THESE CONDITIONS MAY REQUIRE LAYING BACK OF THE SIDE SLOPE TO MAINTAIN STABILITY.

10. PVC DISTRIBUTION PIPES ASHALL BE SCHEDULE 40 AND MEET ASTM-D-1785. ALL FITTINGS SHALL MEET ASTM-D-2729. PERFORATIONS SHALL BE 3/8 INCH IN DIAMETER. A PERFORATED PIPE SHALL BE PROVIDED ONLY WITHIN THE INFILTRATION TRENCH AND SHALL TERMINATE 1 FOOT SHORT OF THE INFILTRATION TRENCH WALL. THE END OF THE PVC PIPE SHALL BE CAPPED. NOTE: PVC PIPE WITH A WALL THICKNESS CLASSIFICATION OF SDR-35 MEETING ASTM-D-3034 IS AN ACCEPTABLE SUBSTITUTE FOR THE SCHEDULE 40 PIPE.

11. THE OBSERVATION WELL IS TO CONSIST OF 6-INCH DIAMETER PERFORATED PVC SCHEDULE 40 PIPE (M 278 OR F758, TYPE PS 28) WITH A CAP SET 6 INCHES ABOVE GROUND LEVEL AND IS TO BE LOCATED NEAR THE LONGITUDINAL CENTER F THE INFILTRATION TRENCH. THE PIPE SHALL HAVE A PLASTIC COLLAR WITH RIBS TO PREVENT ROTATION WHEN REMOVING THE CAP. THE SCREW TOP LID SHALL BE A CLEANOUT WITH A LOCKING MECHANISM OR SPECIAL BOLT TO DISCOURAGE VANDALISM. THE DEPTH TO THE INVERT SHALL BE MARKED ON THE LID. THE PIPE SHALL BE PLACED VERTICALLY WITHIN THE GRAVEL PORTION OF THE INFILTRATION TRENCH AND A COP PROVIDED AT THE BOTTOM OF THE PIPE. THE BOTTOM OF THE CAP SHALL REST ON THE INFILTRATION TRENCH BOTTOM.

12. CORRUGATED METAL DISTRIBUTION PIPES SHALL CONFORM TO AASHTO-M-36, AND SHALL BE ALUMINIZED IN ACCORDANCE WITH AASHTO-M-274. ALUMINIZED PIPE CONTACT WITH CONCRETE SHALL BE COATED WITH AND INERT COMPOUND CAPABLE OF PREVENTING THE DELETERIOUS EFFECT OF THE ALUMINUM ON THE CONCRETE. PERFORATED DISTRIBUTION PIPES SHALL CONFORM TO AASHTO-M-36, CLASS 2 AND SHALL BE PROVIDED ONLY WITHIN THE INFILTRATION TRENCH AND SHALL TERMINATE 1 FOOT SHORT OF THE INFILTRATION TRENCH WALL. AN ALUMINIZED METAL PLATE SHALL BE WELDED TO THE END OF THE PIPE.

13. IF A DISTRIBUTION STRUCTURE WITH A WET WELLIS USED, A 4-INCH DRAIN PIPE SHALL BE PROVIDED AT OPPOSITE ENDS OF THE INFILTRATION TRENCH DISTRIBUTION STRUCTURE. TWO (2) CUBIC FEET OF POROUS BACKFILL MEETING AASHTO-M-43, SIZE NO. 57 SHALL BE PROVIDED AT EACH DRAIN.

14. IF A DISTRIBUTION STRUCTURE IS USED, THE MANHOLE COVER SHALL BE BOLTED TO THE FRAME.

LEGEND:

- PROPOSED CONTOUR (218)
- EXISTING CONTOUR (218)
- EXISTING OVERHEAD LINES
- EXISTING WATERLINE LINE
- EXISTING GAS LINE
- EXISTING GUARD RAIL
- EXISTING METAL FENCE
- EXISTING WOOD FENCE
- EXISTING ELECTRICAL BOX
- EXISTING POLE
- EXISTING LIGHT POLE WITH CONCRETE BASE
- EXISTING MAILBOX
- EXISTING SIGN
- EXISTING SANITARY MANHOLE
- EXISTING CLEANOUT (CO)
- EXISTING FIRE HYDRANT (FH)
- PROPOSED PARKING COUNT (11)
- PROPOSED BORING (B-5)
- PROPOSED SANITARY LINE
- PROPOSED WATER LINE
- SOILS BOUNDARY (M1B2 / M1D3)
- PROPERTY LINE
- ADJACENT PROPERTY LINE
- RIGHT-OF-WAY LINE
- EXISTING TREELINE
- PROPOSED TREELINE
- PROPOSED SIDEWALK
- EXISTING CURB AND GUTTER
- PROPOSED CURB AND GUTTER
- PROPOSED WHEEL STOP
- PROPOSED STORM DRAIN INLET
- PROPOSED STORM DRAIN
- PROP. MICRO BIORETENTION AREA (M-6)
- FOREST CONSERVATION EASEMENT RETENTION
- 10' CONSTRUCTION EASEMENT FOR RETANING WALL
- RIGHT OF WAY DEDICATIN
- PROPOSED DRAINAGE DIVIDE

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

Table B.4.1 Materials Specifications for Micro-Bioretention, Rain Gardens & Landscape Infiltration-			
Material	**Specification**	**Size**	**Notes**
Plantings	see Appendix A, Table A.4	n/a	plantings are site-specific
Planting soil [2' to 4' deep]	loamy sand (60 - 65%) & compost (35 - 40%) or sandy loam (30%), coarse sand (30%) & compost (40%)	n/a	USDA soil types loamy sand or sandy loam; clay content < 5%
Organic content	Min. 10% by dry weight (ASTM D 2974)		
Mulch	shredded hardwood		aged 6 months, minimum; no pine or wood chips
Pea gravel diaphragm	pea gravel: ASTM-D-448	NO. 8 OR NO. 9 (1/8" TO 3/8")	
Curtain drain	ornamental stone: washed cobbles	stone: 2" to 5"	
Geotextile		n/a	PE Type I nonwoven
Gravel (underdrains and infiltration berms)	AASHTO M-43	NO. 57 OR NO. 6 AGGREGATE (3/8" to 3/4")	
Underdrain piping	F 758, Type PS 28 or AASHTO M-278	4" to 6" rigid schedule 40 PVC or SDR35	Slotted or perforated pipe; 3/8" perf. @ 6" on center, 4 holes per row; minimum of 3" of gravel over pipes; not necessary underneath pipes. Perforated pipe shall be wrapped with ¼-inch galvanized hardware cloth
Poured in place concrete (if required)	MSHA Mix No. 3; f'_c = 3500 psi @ 28 days, normal weight, air-entrained; reinforcing to meet ASTM-615-60	n/a	on-site testing of poured-in-place concrete required: 28 day strength and slump test; all concrete design (cast-in-place or pre-cast) *not using previously approved State or local standards* requires design drawings sealed and approved by a professional structural engineer licensed in the State of Maryland - design to include meeting ACI Code 350.R/89; vertical loading [H-10 or H-20]; allowable horizontal loading (based on soil pressures); and analysis of potential cracking
Sand	AASHTO-M-6 or ASTM-C-33	0.02" to 0.04"	Sand substitutions such as Diabase and Graystone (**AASHTO**) #10 are not acceptable. No calcium carbonated or dolomitic sand substitutions are acceptable. No "rock dust" can be used for sand.

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OWNER
HOWARD COUNTY
HOUSING COMMISSION
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COLUMBIA, MD 21046
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NO.	REVISION	DATE

SITE DEVELOPMENT PLAN

STORMWATER MANAGEMENT DRAINAGE AREA MAP; SWM NOTES AND DETAILS; SOILS MAP

DAY RESOURCE CENTER

VOLUNTEERS OF AMERICA
10390 GUILFORD ROAD
HOWARD COUNTY HOUSING COMMISSION
DPZ REF'S: L.15118/F.116, BA-08-027V
ZONED: CE-CLI

TAX MAP 47 GRID 12
6TH ELECTION DISTRICT

PARCEL 59, PARCEL A
HOWARD COUNTY, MARYLAND

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STATE OF MARYLAND — ROBERT HARRIS VOGEL — NO. 16193 — REGISTERED PROFESSIONAL ENGINEER — 12/22/15

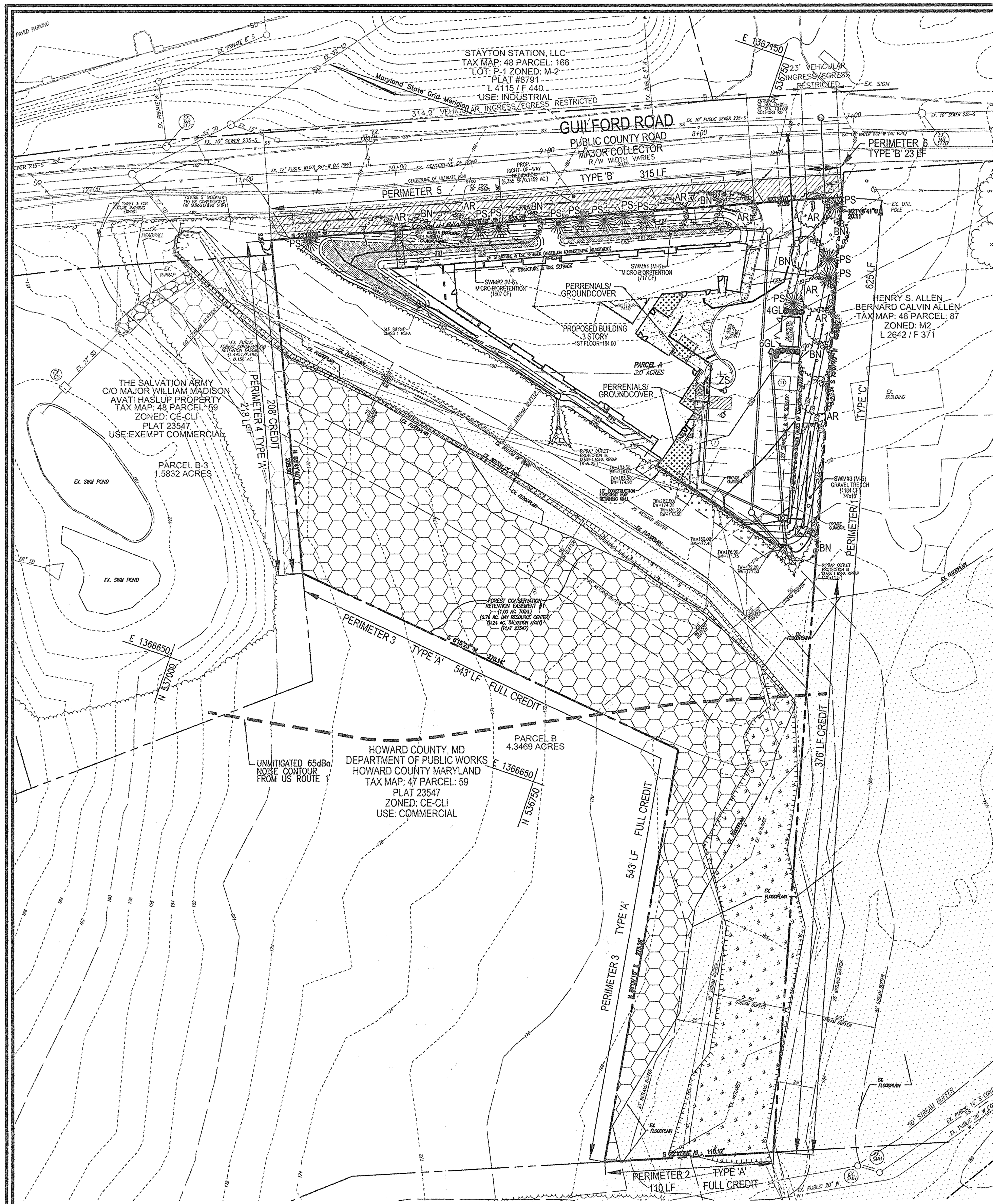
ROBERT H. VOGEL, PE No.16193

DESIGN BY: RHV/DZE
DRAWN BY: DZE/KG
CHECKED BY: RHV
DATE: DECEMBER 2015
SCALE: AS SHOWN
W.O. NO.: 06-72.01

PROFESSIONAL CERTIFICATE

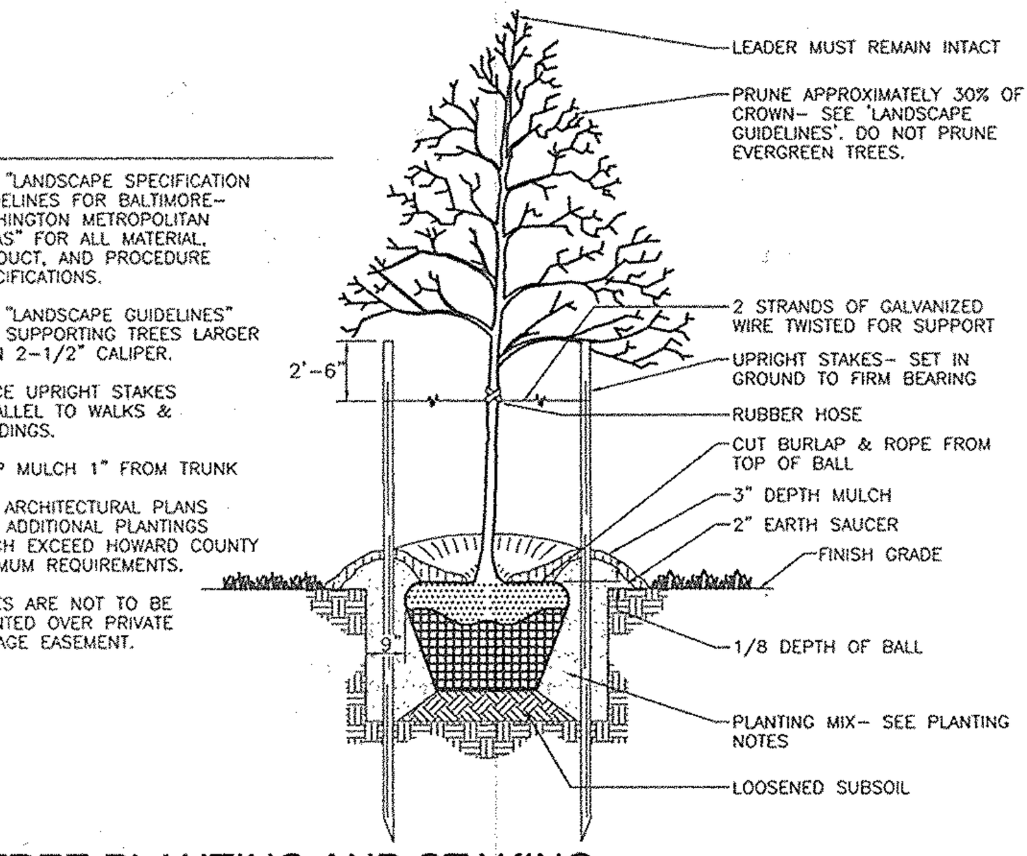
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193 EXPIRATION DATE: 09-27-2016

SDP-15-023

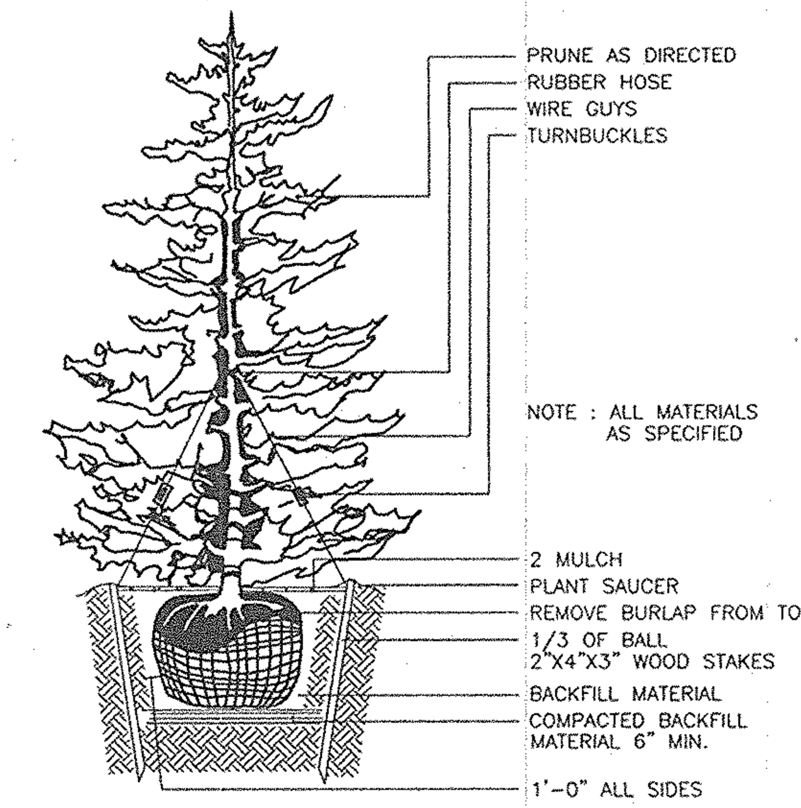


PLAN VIEW
SCALE: 1"=40'

NOTES
1. SEE "LANDSCAPE SPECIFICATION GUIDELINES FOR BALTIMORE-WASHINGTON METROPOLITAN AREAS" FOR ALL MATERIAL, PRODUCT, AND PROCEDURE SPECIFICATIONS.
2. SEE "LANDSCAPE GUIDELINES" FOR SUPPORTING TREES LARGER THAN 2-1/2" CALIPER.
3. PLACE UPRIGHT STAKES PARALLEL TO WALKS & BUILDINGS.
4. KEEP MULCH 1" FROM TRUNK
5. SEE ARCHITECTURAL PLANS FOR ADDITIONAL PLANTINGS WHICH EXCEED HOWARD COUNTY MINIMUM REQUIREMENTS.
6. TREES ARE NOT TO BE PLANTED OVER PRIVATE SEWAGE EASEMENT.



TREE PLANTING AND STAKING
DECIDUOUS TREES UP TO 2-1/2" CALIPER — NOT TO SCALE



TYPICAL EVERGREEN TREE PLANTING DETAIL
NOT TO SCALE

GENERAL NOTES:
1. THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH THE PROVISIONS OF SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL. THE REQUIRED PARKING AND PERIMETER LANDSCAPING WILL BE BONDED PER THIS SUBMISSION.
2. FINANCIAL SURETY FOR THE REQUIRED LANDSCAPING HAS BEEN POSTED AS PART OF THE DEVELOPER'S AGREEMENT IN THE AMOUNT OF $6,600.00 FOR THE REQUIRED 16 SHADE TREES AND 12 EVERGREEN TREES.

LANDSCAPE SCHEDULE NOTE:
1. ALL PLANT MATERIALS SHALL BE FULL AND HEAVY, BE WELL FORMED AND SYMMETRICAL, CONFORM TO THE MOST CURRENT AAN SPECIFICATIONS AND BE INSTALLED IN ACCORDANCE WITH HRD PLANTING SPECIFICATIONS.
2. CONTRACTOR SHALL VERIFY LOCATION OF ALL UNDERGROUND UTILITIES PRIOR TO DIGGING.
3. FINAL LOCATION OF PLANT MATERIAL MAY NEED TO VARY TO MEET FINAL FIELD CONDITIONS. TREES SHALL NOT BE PLANTED IN THE BOTTOM OF DRAINAGE SWALES.
4. CONTRACTOR SHALL VERIFY PLANT QUANTITIES PRIOR TO BIDDING. IF PLAN DIFFERS FROMLANDSCAPE SCHEDULE, THE PLAN SHALL GOVERN.
5. NO SUBSTITUTION SHALL BE MADE WITHOUT PRIOR APPROVAL FROM HOWARD COUNTY DPZ AND THE OWNER OR HIS REPRESENTATIVE.
6. AT THE TIME OF PLANT INSTALLATION, ALL SHRUBS AND TREES LISTED AND APPROVED ON THE LANDSCAPE PLAN, SHALL COMPLY WITH THE PROPER HEIGHT REQUIREMENT IN ACCORDANCE WITH THE HOWARD COUNTY LANDSCAPE MANUAL. IN ADDITION, NO SUSTITUTIONS OR RELOCATIONS OF THE REQUIRED PLANTINGS MAY BE MADE WITHOUT PRIOR REVIEW AND APPROVAL FROM THE DEPARTMENT OF PLANNNING AND ZONING. ANY DEVIATION FROM THE APPROVED LANDSCAPE PLAN MAY RESULT IN DENIAL IN THE RELEASE OF LANDSCAPE SURETY UNTIL SUCH TIME AS ALL REQUIRED MATERIALS ARE PLANTED AND/OR REVISIONS ARE MADE TO THE APPLICABLE PLANS.
7. THE OWNER, TENANTS AND/OR THEIR AGENTS SHALL BE RESPONSIBLE FOR MAINTENANCE OF THE REQUIRED LANDSCAPING INCLUDING BOTH PLANT MATERIALS AND BERMS, FENCES AND WALLS. ALL PLANT MATERIALS SHALL BE MAINTAINED IN GOOD GROWING CONDITION, AND WHEN NECESSARY, REPLACED WITH NEW MATERIAL TO ENSURE CONTINUED COMPLIANCE WITH APPLICABLE REGULATIONS. ALL OTHER REQUIRED LANDSCAPING SHALL BE PERMANENTLY MAINTAINED IN GOOD CONDITION, AND WHEN NECESSARY, REPAIRED OR REPLACED.
8. SHOULD ANY TREE DESIGNATED FOR PRESERVATION FOR WHICH LANDSCAPING CREDIT IS GIVEN DIE PRIOR TO RELEASE OF BONDS, THE OWNER WILL BE REQUIRED TO REPLACE THE TREE WITH THE EQUIVALENT SPECIES OR WITH A TREE WHICH WILL OBTAIN THE SAME HEIGHT, SPREAD AND GROWTH CHARACTERISTICS. THE REPLACEMENT TREE MUST BE A MINIMUM OF 3 INCHES IN CALIPER AND INSTALLED AS REQUIRED IN THE HOWARD COUNTY LANDSCAPE MANUAL.

LEGEND:

Symbol	Description
218	PROPOSED CONTOUR
218	EXISTING CONTOUR
OH	EXISTING OVERHEAD LINES
W	EXISTING WATERLINE LINE
G	EXISTING GAS LINE
	EXISTING GUARD RAIL
x	EXISTING METAL FENCE
//	EXISTING WOOD FENCE
	EXISTING ELECTRICAL BOX
	EXISTING POLE
	EXISTING LIGHT POLE WITH CONCRETE BASE
	EXISTING MAILBOX
	EXISTING SIGN
S	EXISTING SANITARY MANHOLE
CO	EXISTING CLEANOUT
FH	EXISTING FIRE HYDRANT
11	PROPOSED PARKING COUNT
B-5	PROPOSED BORING
	PROPOSED SANITARY LINE
	PROPOSED WATER LINE
M1B2 / M1D3	SOILS BOUNDARY
	PROPERTY LINE
	ADJACENT PROPERTY LINE
	RIGHT-OF-WAY LINE
	EXISTING TREELINE
	PROPOSED TREELINE
	PROPOSED SIDEWALK
	EXISTING CURB AND GUTTER
	PROPOSED CURB AND GUTTER
	PROPOSED WHEEL STOP
	PROPOSED STORM DRAIN INLET
	PROPOSED STORM DRAIN
	PROP. MICRO BIORETENTION AREA (M-6)
	FOREST CONSERVATION EASEMENT RETENTION
	10' CONSTRUCTION EASEMENT FOR RETANING WALL
	RIGHT OF WAY DEDICATION
	PROPOSED SHADE TREE
	PROPOSED EVERGREEN TREE
	PROPOSED SHRUBS

SCHEDULE 'A'
PERIMETER LANDSCAPE EDGE

CATEGORY	ADJACENT TO PERIMETER AND ROADWAYS							TOTALS
PERIMETER/FRONTAGE DESIGNATION LANDSCAPE TYPE	1 A	2 A	3 A	4 A	5 B	6 B	DUMPSTER C	
LINEAR FEET OF ROADWAY FRONTAGE/PERIMETER	625'	110'	543'	218'	315'	23'	45'	
CREDIT FOR EXISTING VEGETATION (YES, NO, LINEAR FEET DESCRIBE BELOW IF NEEDED)	376' YES	FULL CREDIT YES	FULL CREDIT YES	208' YES	No	No	No	
CREDIT FOR WALL, FENCE OR BERM (YES, NO, LINEAR FEET DESCRIBE BELOW IF NEEDED)	No	No	No	No	No	No	No	
NUMBER OF PLANTS REQUIRED SHADE TREES EVERGREEN TREES SHRUBS	249' 1:60 5 – –	1:60 0 – –	1:60 0 – –	10' 1:60 0 – –	1:50 7 1:40 8 –	1:50 1 1:40 1 –	1:40 2 1:20 3 –	15 12 0
NUMBER OF PLANTS PROVIDED SHADE TREES EVERGREEN TREES EX SHADE TREES OTHER TREES (2:1 SUBSTITUTION) SHRUBS (10:1 SUBSTITUTION) DESCRIBE PLANT SUBSTITUTION CREDITS BELOW IF NEEDED)	5 – – – –	0 – – – –	0 – – – –	0 – – – –	7 8 – – –	1 1 – – –	2 3 – – 10	15 12 – – 10

* SUBSTITUTE 5 EVERGREEN TREES FOR 50 SHRUBS.

LANDSCAPE SCHEDULE

KEY	QUAN.	BOTANICAL NAME	SIZE	CAT
AR	8	ACER RUBRUM 'AUTUMN FLAME' AUTUMN FLAME RED MAPLE	2 1/2"-3" CAL.	B & B
BN	7	BETULA NIGRA 'HERITAGE' HERITAGE CLUMP RIVER BIRCH	10'-12' HT.	B & B
ZS	1	ZELCOVA SERRATA 'VILLAGE GREEN' VILLAGE GREEN JAPANESE ZELCOVA	2 1/2"-3" CAL.	B & B
PS	12	PINUS STROBUS EASTERN WHITE PINE	6'-8' HT.	B & B
GL	10	IILEX CRENATA ' GREEN LUSTRE' GREEN LUSTRE HOLLY	2 1/2'-3' HT.	B & B

SCHEDULE B
PARKING LOT INTERNAL LANDSCAPING

NUMBER OF PARKING SPACES	18
NUMBER OF TREES REQUIRED	1
NUMBER OF TREES PROVIDED SHADE TREES OTHER TREES (2:1 SUBSTITUTION)	1 –

BIORETENTION PLANTING SCHEDULE (SHURB/ORNIMENTAL GRASSES)

LEGEND/KEY	QTY	BOTANICAL NAME/COMMON NAME	SIZE	REMARKS
IG	66	ILEX GLABRA 'SHAMROCK' INKBERRY HOLLEY	1 GALLON	18" O.C.
IV	66	ITEA VIRGINICA 'HENRY'S GARNETT' VIRGINIA SWEETSPIRE	1 GALLON	18" O.C.
HQ	41	HYDRANGEA QUERCIFOLIA OAKLEAF HYDRANGEA	1 GALLON	30" O.C.
LR	31	LEUCOTHEO RACEMOSA FETTERBUSH	1 GAL.	30" O.C.
PV	15	PANICUM VIRGATUM SWITCHGRASS	1 GAL.	36" O.C.

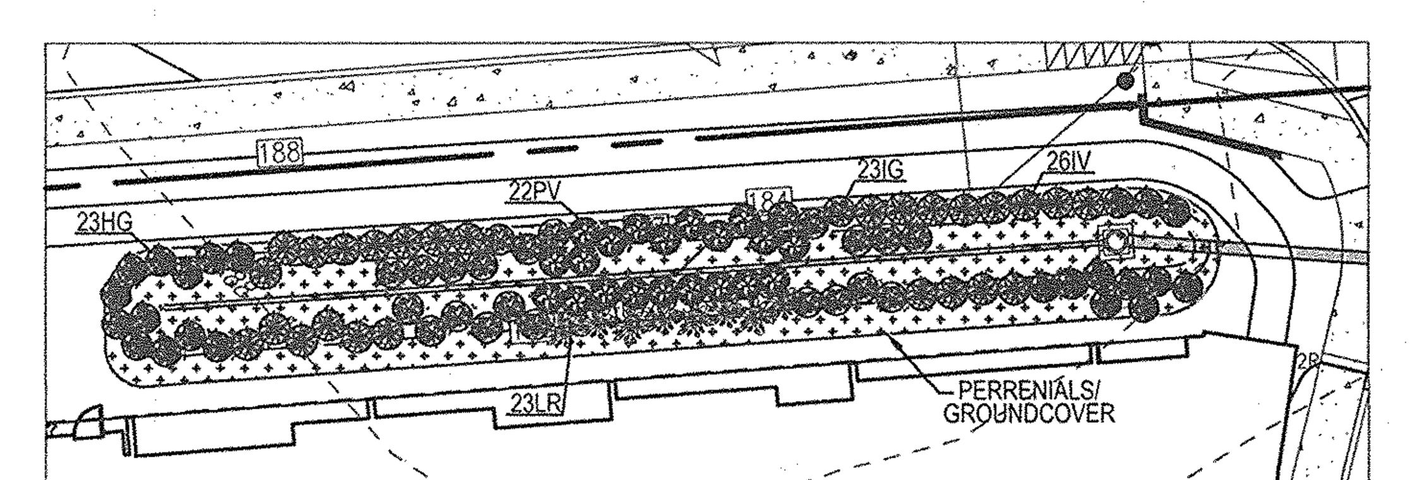
PERENNIALS/GROUNDCOVER PLANTING SCHEDULE

LEGEND	QTY	BOTANICAL NAME/COMMON NAME	SIZE	REMARKS
	217	BAPTISIA AUSTRALIS FALSE INDIGO	4" POT	12"-15" O.C. FOR SIDES AND BOTTOM OF MBR, MIX ALL VARIETIES IN A NATURALIZED RANDOM PATTERN THROUGHOUT, PLANT IN GROUPS OF NO LESS THAN 9 PLANTS PER CLUMP
	217	ACORUS GRAMINEUS 'OGON' GOLDEN VARIEGATED SWEET FLAG	1 QT.	

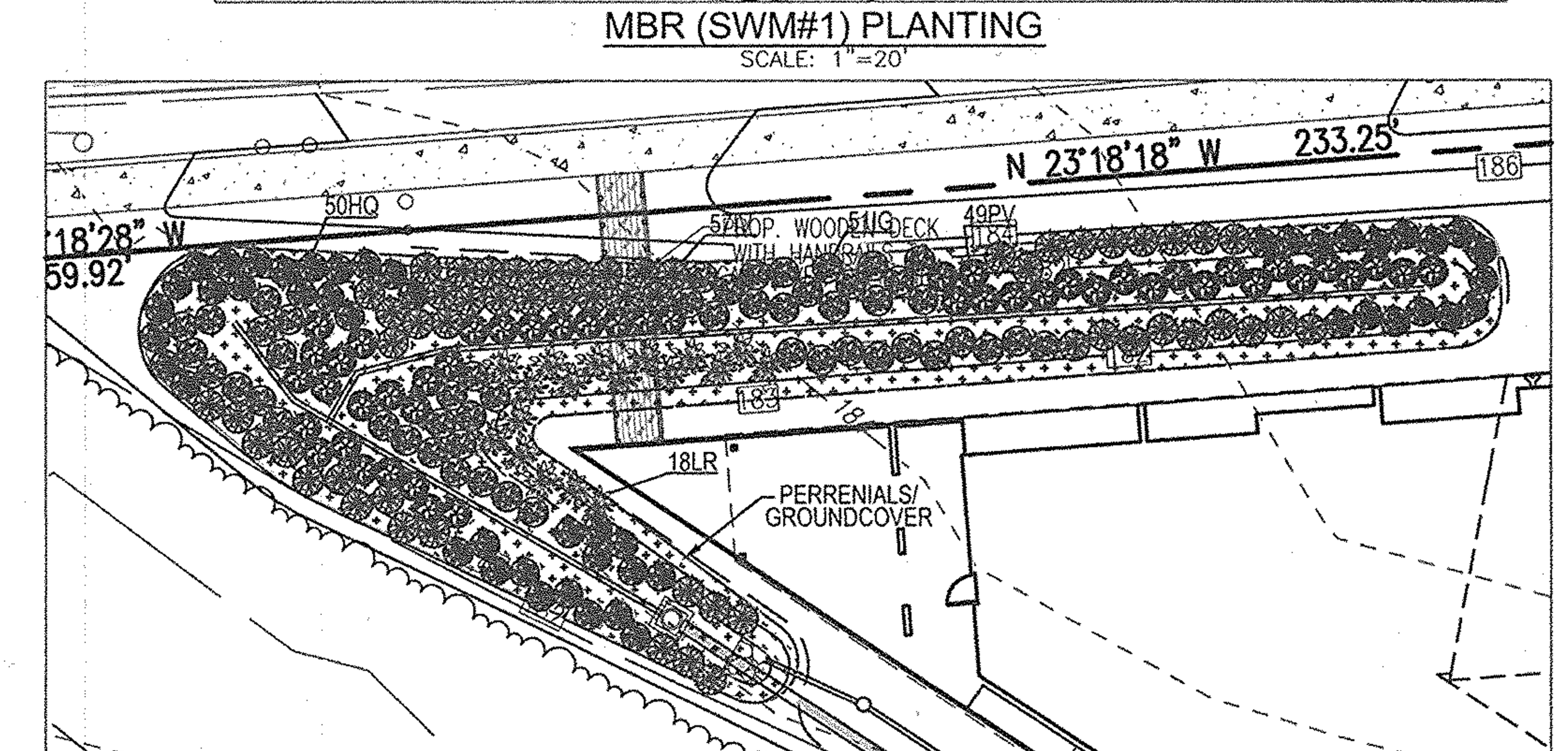
BIORETENTION PLANTING REQUIREMENTS

MBR	AREA	STEMS REQUIRED	STEMS PROVIDED
1	717 SF	22	102
2	1,607 SF	49	225

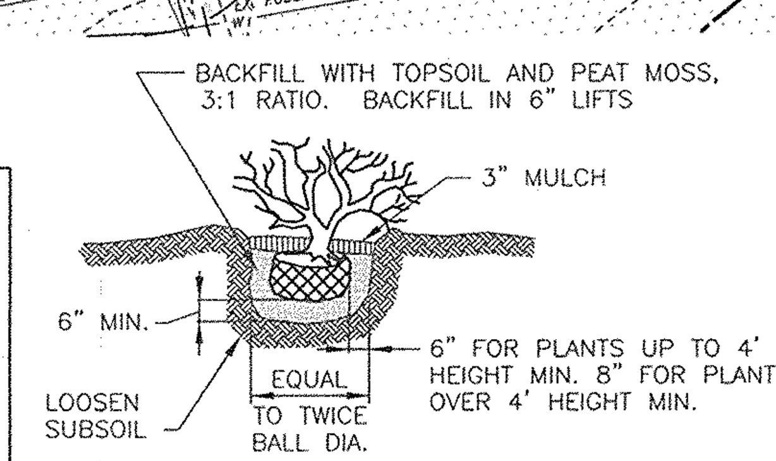
BIORETENTION AREAS ARE TO BE PLANTED BASED ON A MINIMUM DENSITY OF 1000 STEMS PER PLANTED ACRE (.0229 STEMS PER SQ. FT).



MBR (SWM#1) PLANTING
SCALE: 1"=20'



MBR (SWM#2) PLANTING
SCALE: 1"=20'



SHRUB PLANTING DETAIL
NOT TO SCALE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

Signature	Date
CHIEF, DEVELOPMENT ENGINEERING DIVISION (signed)	1.12.16
CHIEF, DIVISION OF LAND DEVELOPMENT (signed)	2-22-16
DIRECTOR (signed)	2-22-16

DEVELOPER'S/BUILDER'S CERTIFICATE

I/WE CERTIFY THAT THE LANDSCAPING SHOWN ON THIS PLAN WILL BE DONE ACCORDING TO THE PLAN, SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE HOWARD COUNTY LANDSCAPE MANUAL. I/WE FURTHER CERTIFY THAT UPON COMPLETION, A CERTIFICATION OF LANDSCAPE INSTALLATION, ACCOMPANIED BY AN EXECUTED ONE (1) YEAR GUARANTEE OF PLANT MATERIALS, WILL BE SUBMITTED TO THE DEPARTMENT OF PLANNING AND ZONING.

SIGNATURE OF DEVELOPER — DATE 12/21/2015

DEVELOPER
VOLUNTEERS OF AMERICA, INC.
1660 DUKE STREET
ALEXANDRIA, VA 22314
(443) 798-4267
c/o RICK DELLA

OWNER
HOWARD COUNTY
HOUSING COMMISSION
6751 COLUMBIA GATEWAY DR., 3RD FLOOR
COLUMBIA, MD 21046
(410) 313-6320

NO.	REVISION	DATE

SITE DEVELOPMENT PLAN

LANDSCAPE PLAN

DAY RESOURCE CENTER
VOLUNTEERS OF AMERICA
10390 GUILFORD ROAD
HOWARD COUNTY HOUSING COMMISSION
DPZ REF'S: L.15118/F.116, BA-08-027V
ZONED: CE-CLI
TAX MAP 47 GRID 12
6TH ELECTION DISTRICT
PARCEL 59, PARCEL A
HOWARD COUNTY, MARYLAND

ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET
ELLICOTT CITY, MD 21043
TEL: 410.461.7666
FAX: 410.461.8961

STATE OF MARYLAND — ROBERT HARRIS VOGEL — NO. 16193 — REGISTERED PROFESSIONAL ENGINEER
ROBERT H. VOGEL, PE No.16193

DESIGN BY: RHV/DZE
DRAWN BY: DZE/KG
CHECKED BY: RHV
DATE: DECEMBER 2015
SCALE: AS SHOWN
W.O. NO.: 06-72.01

PROFESSIONAL CERTIFICATE
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193 EXPIRATION DATE: 09-27-2016

SDP-15-023

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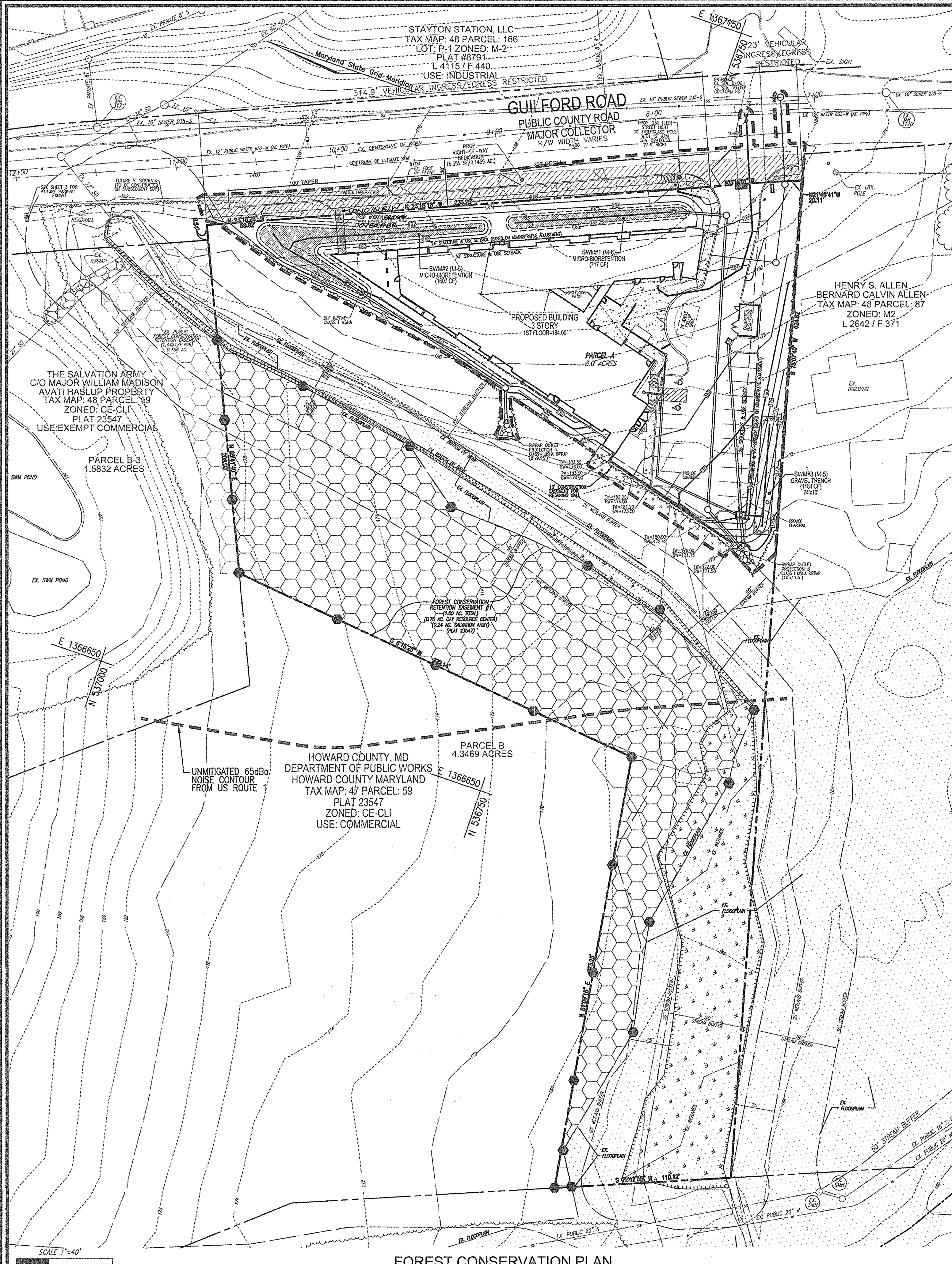


FOREST CONSERVATION PLAN

SCALE: 1"=40'

LEGEND:

- PROPOSED CONTOUR
- EXISTING CONTOUR
- EXISTING OVERHEAD LINES
- EXISTING WATERLINE LINE
- EXISTING GAS LINE
- EXISTING GUARD RAIL
- EXISTING METAL FENCE
- EXISTING WOOD FENCE
- EXISTING ELECTRICAL BOX
- EXISTING POLE
- EXISTING LIGHT POLE WITH CONCRETE BASE
- EXISTING MAILBOX
- EXISTING SIGN
- EXISTING SANITARY MANHOLE
- EXISTING CLEANOUT
- EXISTING FIRE HYDRANT
- PROPOSED PARKING COUNT
- PROPOSED BORING
- PROPOSED SANITARY LINE
- PROPOSED WATER LINE
- SOILS BOUNDARY
- PROPERTY LINE
- ADJACENT PROPERTY LINE
- RIGHT-OF-WAY LINE
- EXISTING TREELINE
- PROPOSED TREELINE
- PROPOSED SIDEWALK
- EXISTING CURB AND GUTTER
- PROPOSED CURB AND GUTTER
- PROPOSED WHEEL STOP
- PROPOSED STORM DRAIN INLET
- PROPOSED STORM DRAIN
- PROP. MICRO BIORETENTION AREA (M-6)
- FOREST CONSERVATION EASEMENT RETENTION
- 10' CONSTRUCTION EASEMENT FOR RETANING WALL
- RIGHT OF WAY DEDICATION

FOREST CONSERVATION NOTES:

PRE-CONSTRUCTION ACTIVITIES

1. PRIOR TO THE START OF ANY CONSTRUCTION DEFINE THE LIMITS OF DISTURBANCE AND THE SOIL PROTECTION ZONE (CRITICAL ROOT AREA) FOR THE FOREST RETENTION AREAS. (SEE APPENDIX 'G' OF THE HOWARD COUNTY FOREST CONSERVATION MANUAL).
2. PRIOR TO THE START OF ANY CONSTRUCTION (INCLUDING CLEARING) ADJACENT TO THE SOIL PROTECTION ZONE, INSTALL BLAZE ORANGE FENCE.
3. INSTALL ALL FOREST CONSERVATION AREA SIGNS AS SHOWN ON THIS SDP AND/OR FCP.
4. ALL SEDIMENT CONTROL DEVICES SHALL BE IN PLACE PRIOR TO CONSTRUCTION TO PREVENT SEDIMENT FROM ENTERING THE FOREST CONSERVATION AREAS. SUPER SILT FENCE SHALL BE INSTALLED ON THE UPHILL SIDE OF ALL FOREST RETENTION AREAS, AND ALSO IF THE LOD IS WITH 50 FEET OR LESS OF RETENTION AREA.
5. ALL FENCING, BLAZE-ORANGE OR "SUPER" SILT, SHALL BE CLEANED AND MAINTAINED IN GOOD CONDITION AND PROMPTLY REPAIRED OR RESTORED AS SITUATION WARRANTS ON A REGULAR BASIS THROUGH THE CONSTRUCTION PERIOD.
6. A QUALIFIED TREE CARE EXPERT SHALL DETERMINE IF ROOT PRUNING IS REQUIRED ALONG THE LIMIT OF DISTURBANCE. ROOT PRUNE TREES AS REQUIRED. WATER ANY ROOT-PRUNED TREES IMMEDIATELY AFTER ROOT-PRUNING AND MONITOR FOR SIGNS OF STRESS DURING CONSTRUCTION.

CONSTRUCTION PHASE

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

POST CONSTRUCTION

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

SEQUENCE OF CONSTRUCTION-FOREST CONSERVATION:

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

FOREST CONSERVATION NARRATIVE:

THIS PLAN PROPOSES CLEARING OF FOREST FOR THE CONSTRUCTION OF THE PROPOSED TEMPORARY HOUSING FOR HOMELESS AND ASSOCIATED PARKING. THIS PLAN PROPOSES RETENTION OF FOREST WITHIN TWO FOREST CONSERVATION EASEMENTS. THE FOREST RETENTION PROPOSED ARE IN PRIORITIES AREAS FOR PROTECTION OF THE SITE'S STREAM BUFFERS, WETLANDS, AND FORESTED AREAS OF AT LEAST 10,000 SF.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 1-12-16
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 2-22-16
DIRECTOR	DATE 2-22-16

DEVELOPER'S/BUILDER'S CERTIFICATE

I/WE CERTIFY THAT THE LANDSCAPING SHOWN ON THIS PLAN WILL BE DONE ACCORDING TO THE PLAN, SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE HOWARD COUNTY LANDSCAPE MANUAL. I/WE FURTHER CERTIFY THAT UPON COMPLETION, A CERTIFICATION OF LANDSCAPE INSTALLATION, ACCOMPANIED BY AN EXECUTED ONE (1) YEAR GUARANTEE OF PLANT MATERIALS, WILL BE SUBMITTED TO THE DEPARTMENT OF PLANNING AND ZONING.

SIGNATURE OF DEVELOPER — DATE 12/21/2015

Forest Stand Summary Analysis

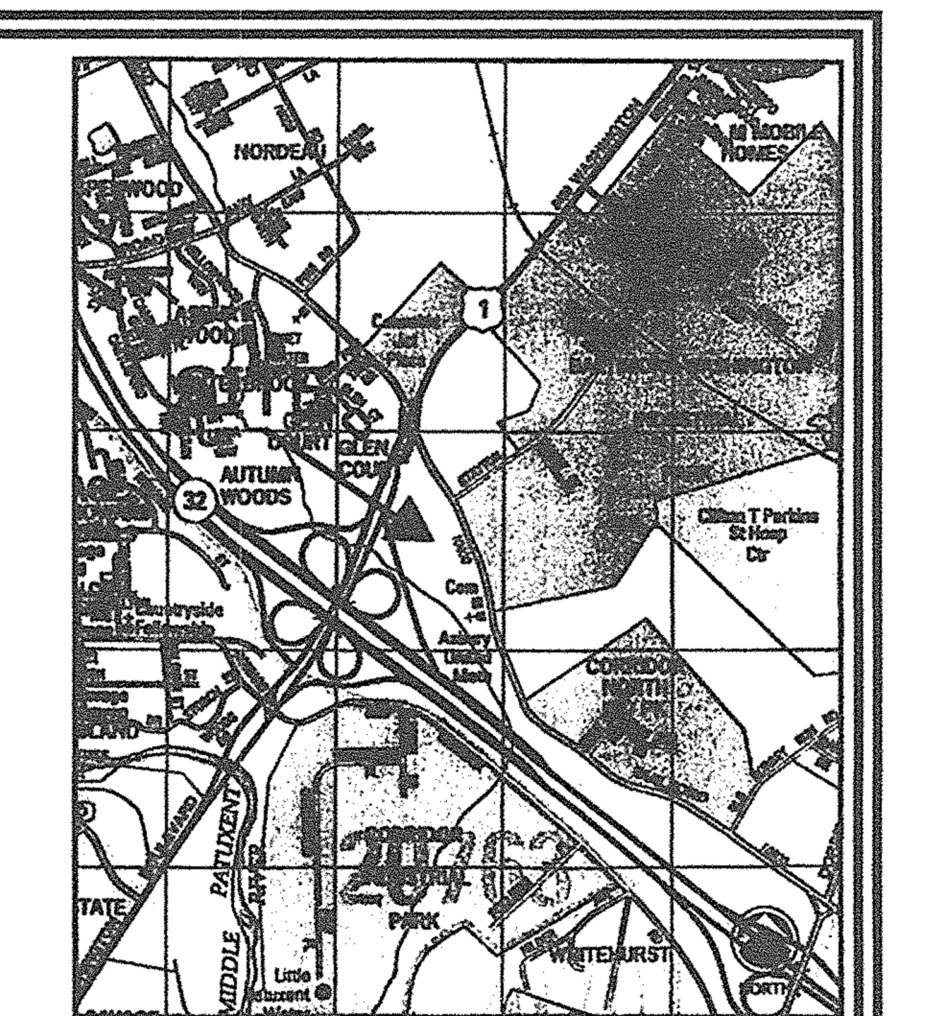
Tulip Poplar Association

Stand Number	Aerial Extent in Acres	Estimated Trees per Acres	Average Diameter (d.b.h.)	Basal Area per Acre₂	Stand Formation Type	Dominant Indicator Species	Dominant Species per Acre	Dominant Species Mean d.b.h.	Dominant % Frequency of Occurrence	Approximate Age of the Stand₃
P (pine)	4.27	241.7	8.7"	123.3 fully stocked	Mid Seral Pine Monoculture	Virginia Pine	151.9	10.9"	62.8	39.7 years (1971)
H (hardwoods)	3.33	196.0	9.2"	120.0 fully stocked	Mid Seral Riparian Hardwoods	Tulip Poplar	48.2	13.4"	24.6"	33.5 years (1977)
D (disturbed)	0.42	78.0	9.3"	-	Disturbed Hardwoods	Green Ash	-	6.0"	18.0"	31.0 years (1979)

1. A forest association is an assemblage of plants having ecologically similar requirements, and it includes one or more dominant species from which it derives a definite character. The *Tulip Poplar Forest Association (Vegetation Map of Maryland, The Existing Natural Forests, 1976, G.S. Brush, C. Lenk, S. Smith)* is characterized by the presence of tulip poplar in the absence of other characteristic species, elsewhere in the State. Common associated species include mixed oak (white and red), red maple, black gum, black cherry, mockernut, pignut hickory, sassafras, flowering dogwood, mapleleaf and arrowwood viburnum, greenbriar, poison ivy, lowbush blueberry and brambles. The entire tract is consistent with and typical of the tulip poplar association, which is the dominant forest type of the greater Baltimore/Washington area of central Maryland. First and second order streams occur on-site , which begin to develop into bottomland causing aspects of the coastal plain *River Birch-Sycamore Association* to also be expressed (with a prevalence/co-dominance of red maple as a common bottomland, 'disturbance' species). These forest associations have such a strong influence on local forest composition that over ecological time, it is expected that the forest cover would continue to express the regional association, from which it resides

2. Basal area is a measurement of the cross-section of a tree in square feet at breast height. Basal area (BA) of a forest stand is the sum of the basal areas of the individual trees and is reported as BA per acre. The BA value shown in this *Forest Analysis* equates to stocking which is a general description of the density of the forest stand as compared to the desirable density for best growth and management. Stands may be described as **understocked**; a stand of trees so widely spaced that, even with full growth potential realized, crown closure will not occur, **well stocked**; the situation in which a forest stand contains trees spaced widely enough to prevent competition, yet closely enough to utilize the entire site, and **overstocked**; the trees are so closely spaced that they are competing for resources, resulting in less than full growth potential for individual trees. Basal area per acre values are analyzed as non-stocked = 0 to 9, poorly stocked = 10 to 59, moderately stocked = 60 to 99, fully stocked = 100 to 129, and overstocked = 130 to 160. *Forestry Handbook, K.F. Wenger, 1984, pg. 318-321.* There is a correlation between stand density and canopy closure, typically recognized as understocked, under 40% crown closure, well stocked, 40-70% crown closure, overstocked, over 70% crown closure. *Essentials of Forestry Practice, C.H. Stoddard, 1968,* page 53.

3. Age dating methodology - *Valuation of Landscape Trees, Shrubs and other Plants. A Guide to the Methods and Procedures for Appraising Amenity Plants, International Society of Arboriculture, Seventh Edition, 1988,* pages 33, 34. The age of Stand 1 was determined by using red maple mean dbh.



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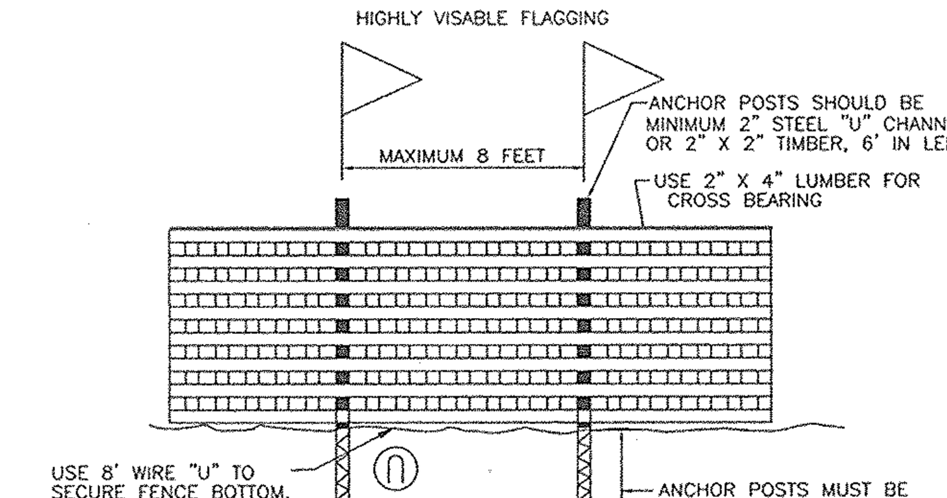
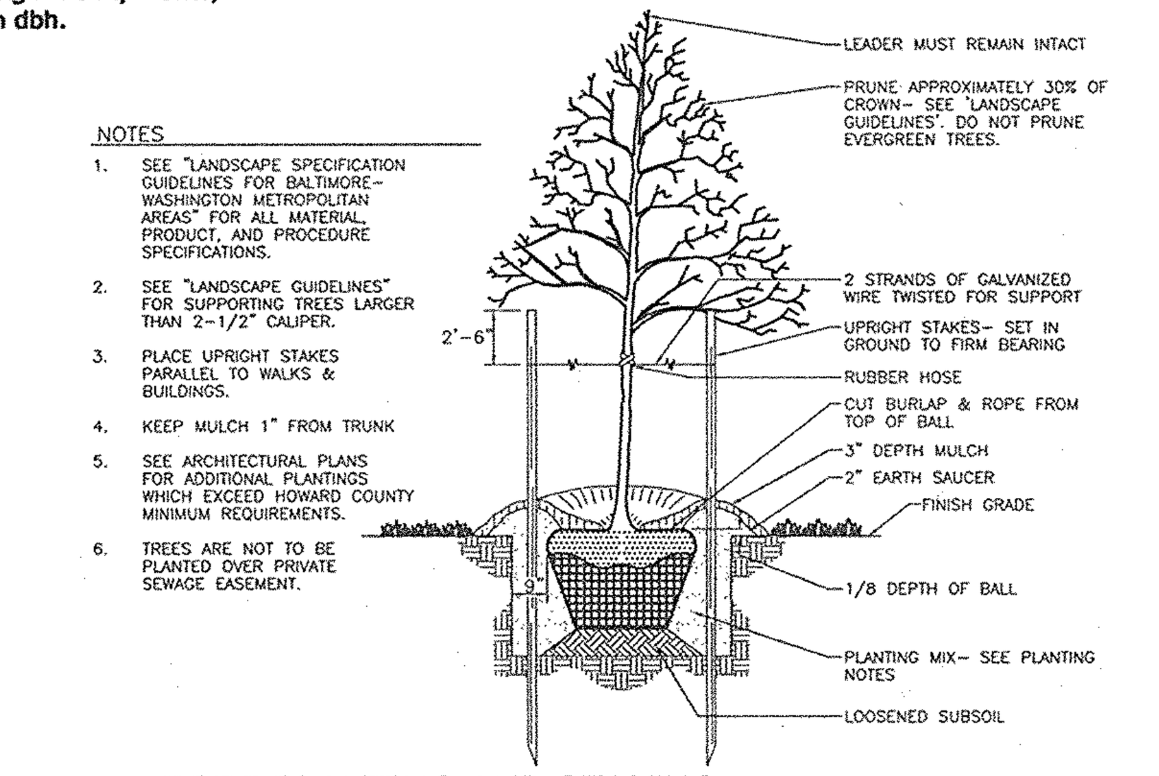


NOTES:
1. FOREST PROTECTION DEVICE ONLY.
2. RETENTION AREA WILL BE SET AS PART OF THE REVIEW PROCESS.
3. BOUNDARIES OF RETENTION AREA SHOULD BE STAKED AND FLAGGED PRIOR TO INSTALLING DEVICE.
4. ROOF DAMAGE SHOULD BE AVOIDED.

BLAZE ORANGE PLASTIC MESH

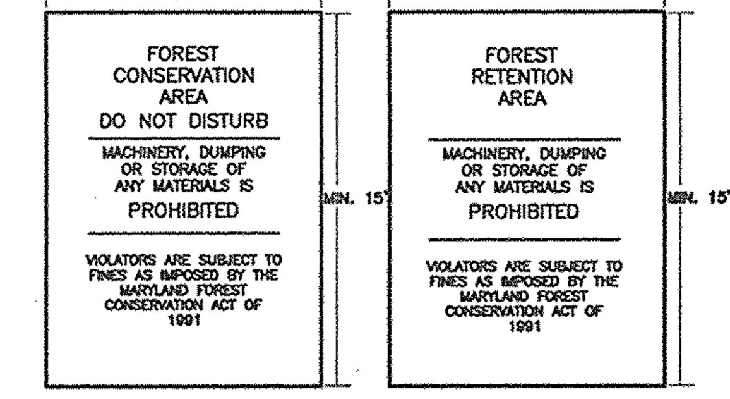
TYPICAL TREE PROTECTION FENCE DETAIL

NOTES
1. SEE "LANDSCAPE SPECIFICATION GUIDELINES FOR BALTIMORE-WASHINGTON METROPOLITAN AREAS" FOR ALL MATERIAL, PRODUCT, AND PROCEDURE SPECIFICATIONS.
2. SEE "LANDSCAPE GUIDELINES" FOR SUPPORTING TREES LARGER THAN 2-1/2" CALIPER.
3. PLACE UPRIGHT STAKES PARALLEL TO WALKS & BUILDINGS.
4. KEEP MULCH 1" FROM TRUNK
5. SEE ARCHITECTURAL PLANS FOR ADDITIONAL PLANTINGS WHICH EXCEED HOWARD COUNTY MINIMUM REQUIREMENTS.
6. TREES ARE NOT TO BE PLANTED OVER PRIVATE SEWAGE EASEMENT.



TREE PLANTING AND STAKING

DECIDUOUS TREES UP TO 2-1/2" CALIPER — NOT TO SCALE



NOTE:
1. BOTTOM OF SIGNS TO BE HIGHER THAN TOP OF TREE PROTECTION FENCE.
2. SIGNS TO BE PLACED AT A MAXIMUM SPACING OF 50-100 FEET. CONDITIONS ON-SITE AFFECTING VISIBILITY MAY WARRANT PLACING SIGNS CLOSER OR FARTHER APART.
3. ATTACHMENT OF SIGNS TO TREES IS PROHIBITED.
4. ● SIGN LOCATION SYMBOL.

SIGNAGE DETAIL

NOT TO SCALE

SITE DATA

LOCATION : LAUREL, MD.; TAX MAP 47, BLOCK 12, PARCEL 59, PARCEL D
6TH ELECTION DISTRICT
PRESENT ZONING : CE-CLI
SITE AREA : 3.00 AC.
DPZ REFERENCES: L.11225/F.318, BA-08-027V, BA-10-024V, SDP-96-098, ECP-14-074
USE OF STRUCTURES: TEMPORARY HOUSING FOR HOMELESS
TOTAL BUILDING COVERAGE: 14,303 SF (0.33 AC. OR 18.89% OF GROSS AREA)
PAVED PARKING LOT/AREA ON SITE: 9,029 SF (0.21 AC. OR 11.92% OF GROSS AREA)
AREA OF LANDSCAPE ISLAND: 482 SF (0.01 AC. OR 0.64% OF GROSS AREA)
LIMIT OF DISTURBED AREA: 1.18 AC
WETLANDS ON SITE: 0.36 AC.
WETLAND BUFFERS ON SITE: 0.65 AC.
STREAMS AND THEIR BUFFERS ON SITE: 0.11 AC.
AREA OF ON-SITE 100 YEAR FLOODPLAIN: 0.61 AC.
AREA OF EXISTING FOREST ON SITE: 3.00 AC.
AREA OF STEEP SLOPES (15% OR GREATER): 0.00 AC
AREA OF ERODIBLE SOILS: 0.09 AC. (WITHIN LOD)
AREA MANAGED BY ESDV (*THIS PLAN): 0.75 AC.
*IMPERVIOUS AREA : 0.51 AC.
*GREEN AREA: 0.24 AC.

DEVELOPER
VOLUNTEERS OF AMERICA, INC.
1660 DUKE STREET
ALEXANDRIA, VA. 22314
(443) 798-4267
C/O RICK DELLA

OWNER (crossed out)
HOWARD COUNTY, MD
DEPARTMENT OF PUBLIC WORKS
3430 COURT HOUSE DR.
ELLICOTT CITY, MD 21043
(410) 313-4401

OWNER
HOWARD COUNTY
HOUSING COMMISSION
6751 COLUMBIA GATEWAY DR., 3RD FLOOR
COLUMBIA, MD 21046
(410) 313-6320

Forest Conservation Worksheet 2.2

Net Tract Area				
A.	Total Tract Area		A =	3.00
B.	Deductions	(Floodplain)	B =	0.61
C.	Net Tract Area		C =	2.39
Land Use Category				
	Input the number "1" under the appropriate land use zoning, and limit to only one entry			
	ARA 0, MDR 0, IDA 0, HDR 0, MPD 0, CIA 1			
D.	Afforestation Threshold (Net Tract Area x 15%)		D =	0.36
E.	Conservation Threshold (Net Tract Area x 15%)		E =	0.36
Existing Forest Cover				
F.	Existing Forest Cover within the Net Tract Area		F =	2.39
G.	Area of Forest Above Conservation Threshold		G =	2.03
Break Even Point				
H.	Break Even Point		H =	0.76
I.	Forest Clearing Permitted Without Mitigation		I =	1.63
Proposed Forest Clearing				
J.	Total Area of Forest to be Cleared		J =	1.03
K.	Total Area of Forest to be Retained		K =	1.36
Planting Requirements				
L.	Reforestation for Clearing Above the Conservation Threshold		L =	0.00
M.	Reforestation for Clearing Below the Conservation Threshold		M =	0.00
N.	Credit for Retention above the Conservation Threshold		N =	0.00
P.	Total Reforestation Required		P =	0.00
Q.	Total Afforestation Required		Q =	0.00
R.	Total Planting Requirement		R =	0.00

THE FOREST CONSERVATION OBLIGATION FOR THIS PROJECT HAS BEEN SATISFIED BY THE RETENTION OF 0.76 ACRES (BREAK EVEN POINT) OF FOREST. THIS PROPERTY ALSO RETAINS AN ADDITIONAL 0.24 ACRES WHICH HAS BEEN ABANDONED FROM THE AVANTI-HASLUP PROPERTY, PARCELS B-1 AND B-2. THE TOTAL FOREST RETENTION EASEMENT AREA IS 1.00 ACRES. NO SURETY IS REQUIRED FOR THE ON-SITE RETENTION.

Environmental Systems Analysis, Inc.
Natural Resources Management
Ecological Restoration
162 West Street
Annapolis, MD 21401

NO.	REVISION	DATE

SITE DEVELOPMENT PLAN

FOREST CONSERVATION PLAN

DAY RESOURCE CENTER

VOLUNTEERS OF AMERICA
10390 GUILFORD ROAD
HOWARD COUNTY HOUSING COMMISSION

TAX MAP 47 GRID 12 — DPZ REF'S: L.15118/F.116, BA-08-027V — PARCEL 59, PARCEL A
6TH ELECTION DISTRICT — ZONED: CE-CLI — HOWARD COUNTY, MARYLAND

ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET, ELLICOTT CITY, MD 21043
TEL: 410.461.7666 FAX: 410.461.8961

STEPHANIE PRUETT NO. 3705 — 12/21/15

DESIGN BY: RHV/DZE
DRAWN BY: DZE/KG
CHECKED BY: SP
DATE: DECEMBER 2015
SCALE: AS SHOWN
W.O. NO.: 06-72.01

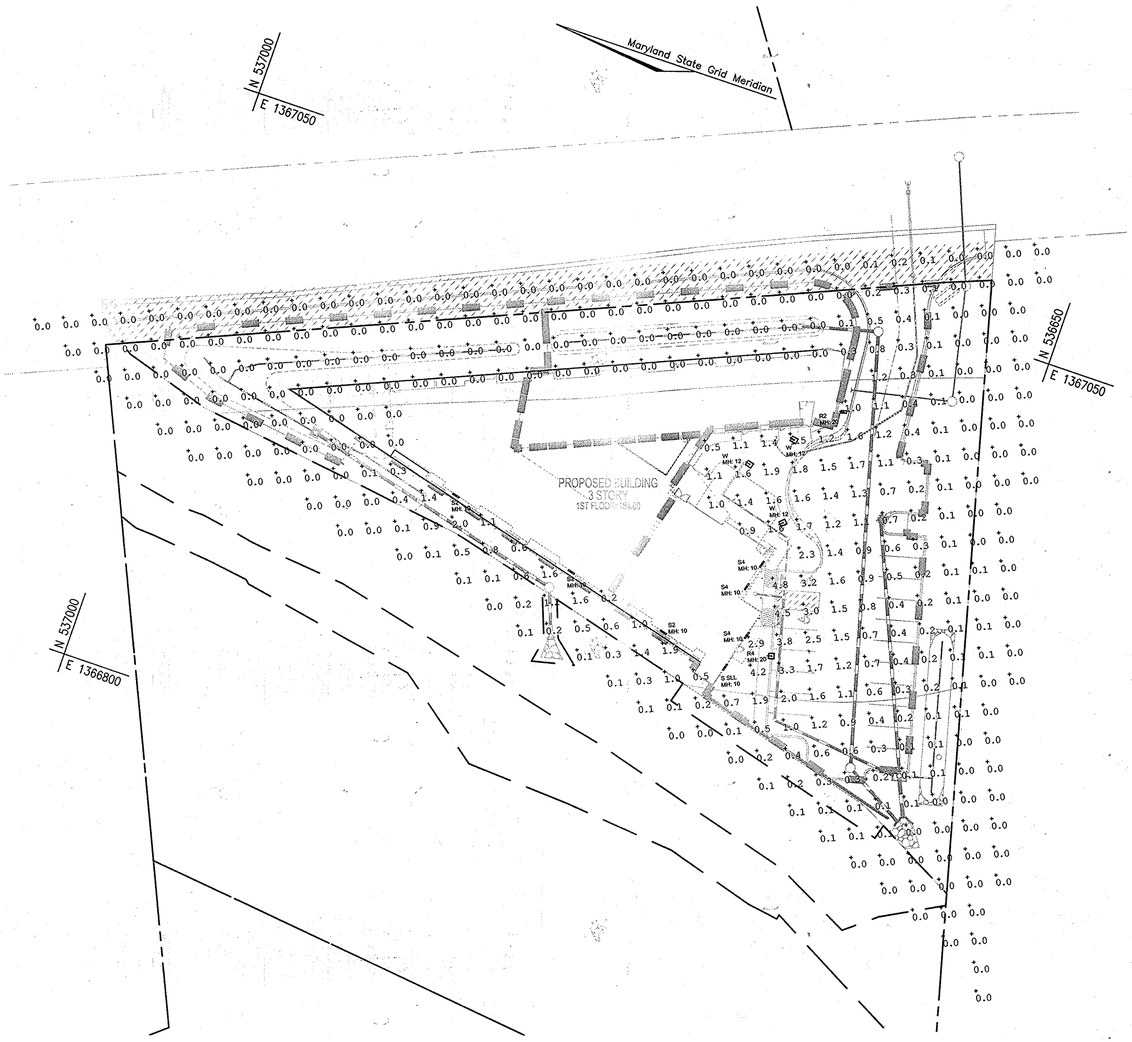
PROFESSIONAL CERTIFICATE
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED LANDSCAPE ARCHITECT UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 3705 EXPIRATION DATE: 11-30-2014

SDP-15-023

K:\Projects\06-72\ENGR\dwg\SDP\09-FORESTCON.dwg, 12/21/2015 10:37:19 AM

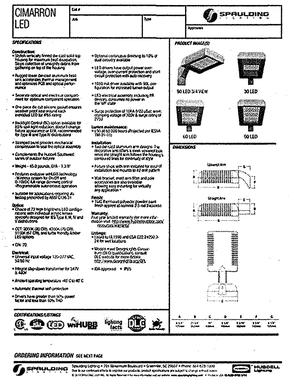
Luminaire Schedule					
Label	Manufacturer	Description	Catalog	Lum. Lumens	Lum. Watts
R2	SPAULDING LIGHTING	LED EXTERIOR POLE LIGHT, TYPE 2 WIDE DISTRIBUTION, 20 FOOT POLE	CL1-x-30L-1-3K-2-BC	3221	69.3
R4	SPAULDING LIGHTING	LED EXTERIOR POLE LIGHT, TYPE 4 FORWARD THROW, 20 FOOT POLE	CL1-30L-4K-4-BC	4882	70.9
S SLL	COOPER LIGHTING - McGRAW-EDISON	LED EXTERIOR WALLPACK, LEFT CUTOFF	IST-B01-LED-E1-SLL	1932	27
S2	COOPER LIGHTING - McGRAW-EDISON	LED EXTERIOR WALLPACK, TYPE 2 WIDE DISTRIBUTION	IST-B01-LED-E1-BL2	2177	27
S4	COOPER LIGHTING - McGRAW-EDISON	LED EXTERIOR WALLPACK, FORWARD THROW	IST-B01-LED-E1-BL4	2115	27
W	SPAULDING LIGHTING	LED EXTERIOR PEDESTRIAN POLE, 12 FOOT POLE	CL1S-A-16LU-3K-5W	2726	39.81

Calculation Summary							
Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Avg
Entire_Site	Illuminance	Fc	0.36	4.8	0.0	N.A.	N.A.
Parking Area	Illuminance	Fc	1.25	4.8	0.1	12.50	3.84

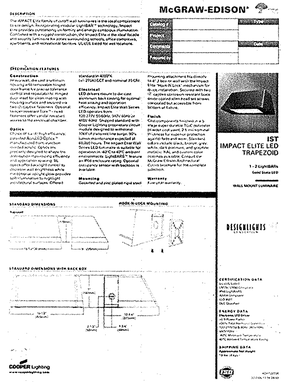


1 LIGHTING SITE PLAN
E0.0.1 1"= 30'

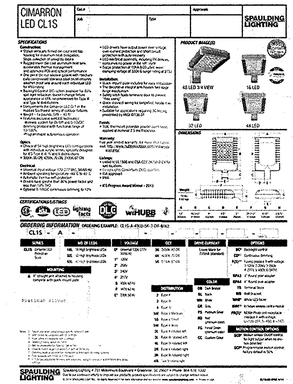
TYPE R2, R4



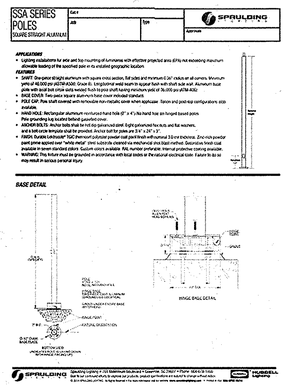
TYPE S SLL, S2, S4



TYPE W



SITE POLE - 20' FOR TYPE R2,R4
12' FOR TYPE W



APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE 1-12-16
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE 2-22-16
DIRECTOR	DATE 2-22-16

DEVELOPER
VOLUNTEERS OF AMERICA, INC.
10400 DUKE STREET
ALEXANDRIA, VA. 22314
(443) 798-4267
C/O RICK DELLA

~~OWNER~~
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6751 COLUMBIA GATEWAY DR., 3RD FLOOR
COLUMBIA, MD 21046
(410) 313-6320

NO.	REVISION	DATE

SITE DEVELOPMENT PLAN

LIGHTING SITE PLAN

DAY RESOURCE CENTER
VOLUNTEERS OF AMERICA
10390 GUILFORD ROAD
HOWARD COUNTY HOUSING COMMISSION
TAX MAP 47 GRID 12 PARCEL 59, PARCEL D
6TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND
DPZ REF'S: L 11225 / F 318, BA-08-027V
ZONED: CE-CLI

aspire engineering

DESIGN BY: CB
DRAWN BY: CB
CHECKED BY: CB/JS
DATE: OCTOBER 2014
SCALE: AS SHOWN
W.O. NO.: 06-72.01

PROFESSIONAL CERTIFICATE

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 36112 EXPIRATION DATE: 06/26/16

10 SHEET OF 12

SDP-15-023

SPECIFICATIONS
MODULAR CONCRETE BLOCK RETAINING WALL

PART 1: GENERAL

1.01 DESCRIPTION

A. WORK SHALL CONSIST OF FURNISHING AND CONSTRUCTION OF A MODULAR RETAINING WALL SYSTEM IN ACCORDANCE WITH THESE SPECIFICATIONS AND IN REASONABLY CLOSE CONFORMITY WITH THE LINES, GRADES, DESIGN, AND DIMENSIONS SHOWN ON THE PLANS.

B. WORK INCLUDES PREPARING FOUNDATION SOIL, FURNISHING AND INSTALLING LEVELING PAD, UNIT DRAINAGE FILL AND BACKFILL TO THE LINES AND GRADES SHOWN ON THE CONSTRUCTION DRAWINGS.

C. WORK INCLUDES FURNISHING AND INSTALLING GEOGRID SOIL REINFORCEMENT OF THE TYPE, SIZE, LOCATION, AND LENGTHS DESIGNATED ON THE CONSTRUCTION DRAWINGS.

1.02 DELIVERY, STORAGE AND HANDLING

A. CONTRACTOR SHALL CHECK ALL MATERIALS UPON DELIVERY TO ASSURE THAT THE PROPER TYPE, GRADE, COLOR, AND CERTIFICATION HAS BEEN RECEIVED.

B. CONTRACTOR SHALL PROTECT ALL MATERIALS FROM DAMAGE DUE TO JOB SITE CONDITIONS AND IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. DAMAGED MATERIALS SHALL NOT BE INCORPORATED INTO THE WORK.

PART 2: PRODUCTS

2.01 MODULAR CONCRETE RETAINING WALL UNITS

A. MODULAR CONCRETE UNITS SHALL CONFORM TO THE FOLLOWING ARCHITECTURAL REQUIREMENTS:

FACE COLOR - COLOR MAY BE SPECIFIED BY THE OWNER.

FACE FINISH - SCULPTURED ROCK FACE IN ANGULAR TRI-PLANER OR FLAT CONFIGURATION. OTHER FACE FINISHES WILL NOT BE ALLOWED WITHOUT WRITTEN APPROVAL OF OWNER.

BOND CONFIGURATION - RUNNING WITH BONDS NOMINALLY LOCATED AT MIDPOINT VERTICALLY ADJACENT UNITS, IN BOTH STRAIGHT AND CURVED ALIGNMENTS.

EXPOSED SURFACES OF UNITS SHALL BE FREE OF CHIPS, CRACKS OR OTHER IMPERFECTIONS WHEN VIEWED FROM A DISTANCE OF 10 FEET UNDER DIFFUSED LIGHTING.

B. MODULAR CONCRETE MATERIALS SHALL CONFORM TO THE REQUIREMENTS OF ASTM C1372 - STANDARD SPECIFICATIONS FOR SEGMENTAL RETAINING WALL UNITS.

C. MODULAR CONCRETE UNITS SHALL CONFORM TO THE FOLLOWING STRUCTURAL AND GEOMETRIC REQUIREMENTS MEASURED IN ACCORDANCE WITH APPROPRIATE REFERENCES:

COMPRESSIVE STRENGTH = 3000 PSI MINIMUM; ABSORPTION = 8% MAXIMUM (6% IN NORTHERN STATES) FOR STANDARD WEIGHT AGGREGATES;

DIMENSIONAL TOLERANCES = ±1/8" FROM NOMINAL UNIT DIMENSIONS NOT INCLUDING ROUGH SPLIT FACE, ±1/16"

UNIT HEIGHT - TOP AND BOTTOM PLANES; UNIT SIZE - 8" (H) X 18" (W) X 18" (D) MINIMUM;

UNIT WEIGHT - 100 LBS/UNIT MINIMUM FOR STANDARD WEIGHT AGGREGATES;

INTER-UNIT SHEAR STRENGTH - 1000 PLF MINIMUM AT 2 PSI NORMAL PRESSURE; AT 2 PSI NORMAL FORCE.

GEOGRID/UNIT PEAK CONNECTION STRENGTH - 1000 PLF MINIMUM

D. MODULAR CONCRETE UNITS SHALL CONFORM TO THE FOLLOWING CONSTRUCTABILITY REQUIREMENTS: (IF APPLICABLE)

VERTICAL SETBACK = 1/8"± PER COURSE (NEAR VERTICAL) OR 1"+ PER COURSE PER THE DESIGN; ALIGNMENT AND GRID POSITIONING MECHANISM - FIBERGLASS PINS, TWO PER UNIT MINIMUM;

MAXIMUM HORIZONTAL GAP BETWEEN ERECTED UNITS SHALL BE - 1/2 INCH.

2.02 SHEAR CONNECTORS (IF APPLICABLE)

A. SHEAR CONNECTORS SHALL BE 1/2 INCH DIAMETER THERMOSET ISOPTHALIC POLYESTER RESIN-PROTRUDED FIBERGLASS REINFORCEMENT RODS OR EQUIVALENT TO PROVIDE CONNECTION BETWEEN VERTICALLY AND HORIZONTALLY ADJACENT UNITS. STRENGTH OF SHEAR CONNECTORS BETWEEN VERTICAL ADJACENT UNITS SHALL BE APPLICABLE OVER A DESIGN TEMPERATURE OF 10 DEGREES F TO + 100 DEGREES F. B. SHEAR CONNECTORS SHALL BE CAPABLE OF HOLDING THE GEOGRID IN THE PROPER DESIGN POSITION DURING GRID PRE-TENSIONING AND BACKFILLING.

2.03 BASE LEVELING PAD MATERIAL

A. MATERIAL SHALL CONSIST OF A COMPACTED #57 CRUSHED STONE BASE AS SHOWN ON THE CONSTRUCTION DRAWINGS.

2.04 UNIT DRAINAGE FILL

A. UNIT DRAINAGE FILL SHALL CONSIST OF #57CRUSHED STONE

2.05 REINFORCED BACKFILL

A. REINFORCED BACKFILL SHALL TYPE SM, BE FREE OF DEBRIS AND MEET THE FOLLOWING GRADATION TESTED IN ACCORDANCE WITH ASTM D-422 AND MEET OTHER PROPERTIES SHOWN ON THE PLAN:

SIEVE SIZE	PERCENT PASSING
2 INCH	100-75
3/4 INCH	100-75
NO. 40	0-60
NO. 200	0-35

PLASTICITY INDEX (PI) <10 AND LIQUID LIMIT <35 PER ASTM D-4318.

B. MATERIAL CAN BE SITE EXCAVATED SOILS WHERE THE ABOVE REQUIREMENTS CAN BE MET. UNSUITABLE SOILS FOR BACKFILL (HIGH PLASTIC CLAYS OR ORGANIC SOILS) SHALL NOT BE USED IN THE REINFORCED SOIL MASS.

2.06 GEOGRID SOIL REINFORCEMENT

A. GEOSYNTHETIC REINFORCEMENT SHALL CONSIST OF GEOGRIDS MANUFACTURED SPECIFICALLY FOR SOIL REINFORCEMENT APPLICATIONS AND SHALL BE MANUFACTURED FROM HIGH TENACITY POLYESTER YARN.

2.07 DRAINAGE PIPE

A. THE DRAINAGE PIPE SHALL BE PERFORATED CORRUGATED HDPE PIPE MANUFACTURED IN ACCORDANCE WITH ASTM D-1248.

PART 3 EXECUTION

3.01 EXCAVATION

A. CONTRACTOR SHALL EXCAVATE TO THE LINES AND GRADES SHOWN ON THE CONSTRUCTION DRAWINGS. OWNER'S REPRESENTATIVE SHALL BE RESPONSIBLE FOR INSPECTING AND APPROVING THE EXCAVATION PRIOR TO PLACEMENT OF LEVELING MATERIAL OR FILL SOILS.

3.02 BASE LEVELING PAD

A. LEVELING PAD MATERIAL SHALL BE PLACED TO THE LINES AND GRADES SHOWN ON THE CONSTRUCTION DRAWINGS, TO A MINIMUM THICKNESS OF 6 INCHES AND EXTEND LATERALLY A MINIMUM OF 6" IN FRONT AND BEHIND THE MODULAR WALL UNIT.

B. LEVELING PAD SHALL BE PREPARED TO INSURE FULL CONTACT TO THE BASE SURFACE OF THE CONCRETE UNITS.

3.03 MODULAR UNIT INSTALLATION

A. FIRST COURSE OF UNITS SHALL BE PLACED ON THE LEVELING PAD AT THE APPROPRIATE LINE AND GRADE. ALIGNMENT AND LEVEL SHALL BE CHECKED IN ALL DIRECTIONS AND INSURE THAT ALL UNITS ARE IN FULL CONTACT WITH THE BASE AND PROPERLY SEATED.

B. PLACE THE FRONT OF UNITS SIDE-BY-SIDE. DO NOT LEAVE GAPS BETWEEN ADJACENT UNITS. LAYOUT OF CORNERS AND CURVES SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

C. INSTALL SHEAR/CONNECTING DEVICES PER MANUFACTURER'S RECOMMENDATIONS.

D. PLACE AND COMPACT DRAINAGE FILL WITHIN AND BEHIND WALL UNITS. PLACE AND COMPACT BACKFILL SOIL BEHIND DRAINAGE FILL. FOLLOW WALL ERECTION AND DRAINAGE FILL CLOSELY WITH STRUCTURE BACKFILL.

E. MAXIMUM STACKED VERTICAL HEIGHT OF WALL UNITS, PRIOR TO UNIT DRAINAGE FILL AND BACKFILL PLACEMENT AND COMPACTION, SHALL NOT EXCEED THREE COURSES.

3.04 STRUCTURAL GEOGRID INSTALLATION

A. GEOGRID SHALL BE ORIENTED WITH THE HIGHEST STRENGTH AXIS PERPENDICULAR TO THE WALL ALIGNMENT.

B. GEOGRID REINFORCEMENT SHALL BE PLACED AT THE STRENGTHS, LENGTHS, AND ELEVATIONS SHOWN ON THE CONSTRUCTION DESIGN DRAWINGS OR AS DIRECTED BY THE ENGINEER.

C. THE GEOGRID SHALL BE LAID HORIZONTALLY ON COMPACTED BACKFILL AND ATTACHED TO THE MODULAR WALL UNITS. PLACE THE NEXT COURSE OF MODULAR CONCRETE UNITS OVER THE GEOGRID. THE GEOGRID SHALL BE PULLED TAUT, AND ANCHORED PRIOR TO BACKFILL PLACEMENT ON THE GEOGRID.

D. GEOGRID REINFORCEMENTS SHALL BE CONTINUOUS THROUGHOUT THEIR EMBEDMENT LENGTHS AND PLACED SIDE-BY-SIDE TO PROVIDE 100% COVERAGE AT EACH LEVEL. SPLICED CONNECTIONS BETWEEN SHORTER PIECES OF GEOGRID OR GAPS BETWEEN ADJACENT PIECES OF GEOGRID ARE NOT PERMITTED.

3.05 REINFORCED BACKFILL PLACEMENT

A. REINFORCED BACKFILL SHALL BE PLACED, SPREAD, AND COMPACTED IN SUCH A MANNER THAT MINIMIZES THE DEVELOPMENT OF SLACK IN THE GEOGRID AND INSTALLATION DAMAGE.

B. REINFORCED BACKFILL SHALL BE PLACED AND COMPACTED IN LIFTS NOT TO EXCEED 6 INCHES WHERE HAND COMPACTION IS USED, OR 8 - 10 INCHES WHERE HEAVY COMPACTION EQUIPMENT IS USED. LIFT THICKNESS SHALL BE DECREASED TO ACHIEVE THE REQUIRED DENSITY AS REQUIRED.

C. REINFORCED BACKFILL SHALL BE COMPACTED TO 95% OF THE MAXIMUM DENSITY AS DETERMINED BY ASTM D698. THE MOISTURE CONTENT OF THE BACKFILL MATERIAL PRIOR TO AND DURING COMPACTION SHALL BE UNIFORMLY DISTRIBUTED THROUGHOUT EACH LAYER AND SHALL BE + 3% TO - 3% OF OPTIMUM.

D. ONLY LIGHTWEIGHT HAND-OPERATED EQUIPMENT SHALL BE ALLOWED WITHIN 3 FEET FROM THE TAIL OF THE MODULAR CONCRETE UNIT.

E. TRACKED CONSTRUCTION EQUIPMENT SHALL NOT BE OPERATED DIRECTLY UPON THE GEOGRID REINFORCEMENT. A MINIMUM FILL THICKNESS OF 6 INCHES IS REQUIRED PRIOR TO OPERATION OF TRACKED VEHICLES OVER THE GEOGRID. TRACKED VEHICLE TURNING SHOULD BE KEPT TO A MINIMUM TO PREVENT TRACKS FROM DISPLACING THE FILL AND DAMAGING THE GEOGRID.

F. RUBBER TIRED EQUIPMENT MAY PASS OVER GEOGRID REINFORCEMENT AT SLOW SPEEDS, LESS THAN 10 MPH. SUDDEN BRAKING AND SHARP TURNING SHALL BE AVOIDED.

G. AT THE END OF EACH DAY'S OPERATION, THE CONTRACTOR SHALL SLOPE THE LAST LIFT OF REINFORCED BACKFILL AWAY FROM THE WALL UNITS TO DIRECT RUNOFF AWAY FROM WALL FACE. THE CONTRACTOR SHALL NOT ALLOW SURFACE RUNOFF FROM ADJACENT AREAS TO ENTER THE WALL CONSTRUCTION SITE.

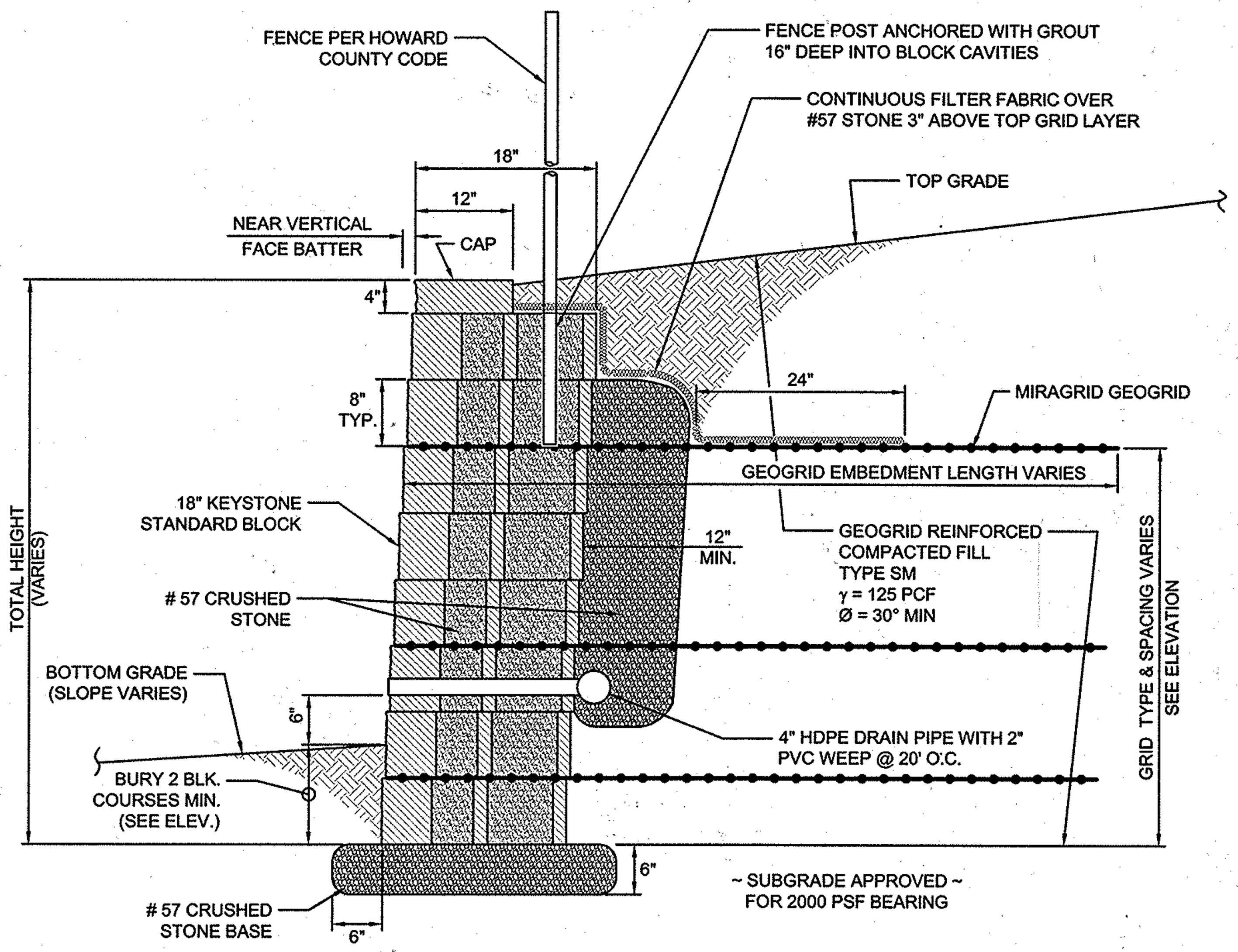
3.06 CAP INSTALLATION

A. CAP UNITS SHALL BE GLUED TO UNDERLYING UNITS WITH AN ALL-WEATHER ADHESIVE RECOMMENDED BY THE MANUFACTURER.

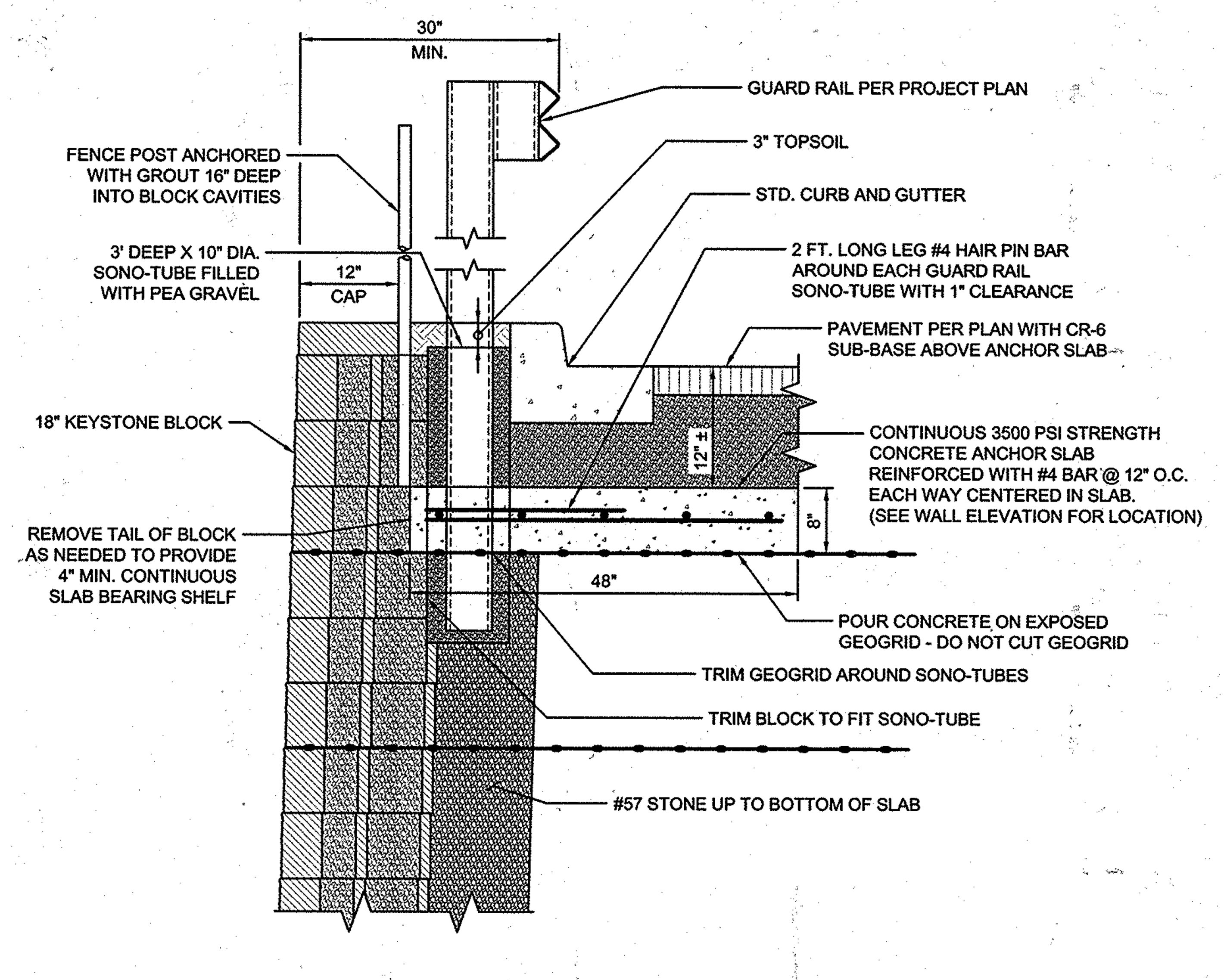
3.07 FIELD QUALITY CONTROL

A. THE OWNER SHALL ENGAGE INSPECTION AND TESTING SERVICES, INCLUDING INDEPENDENT LABORATORIES, TO PROVIDE QUALITY ASSURANCE AND TESTING SERVICES DURING CONSTRUCTION.

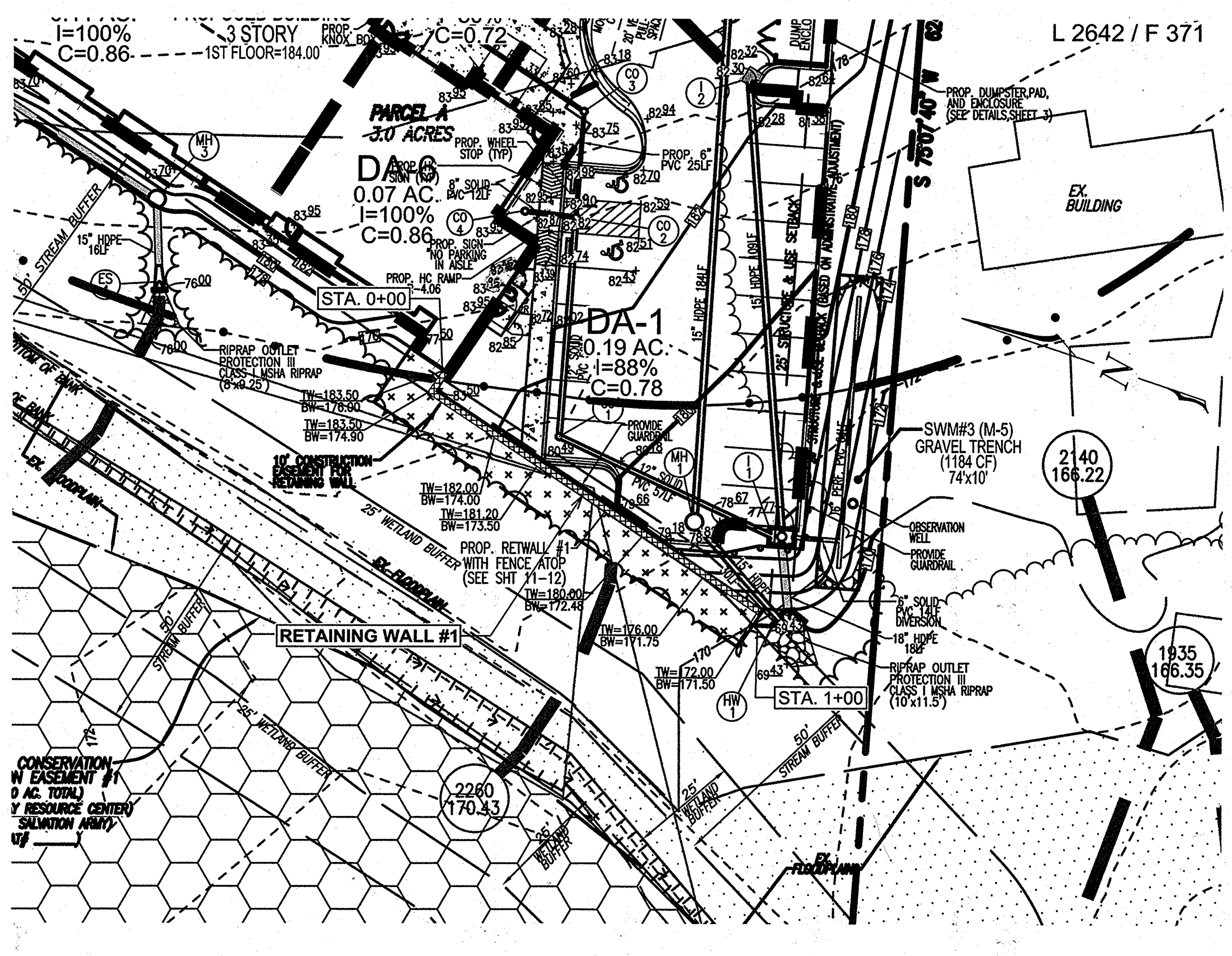
B. AS A MINIMUM, QUALITY ASSURANCE TESTING SHOULD INCLUDE FOUNDATION SOIL INSPECTION, SOIL AND BACKFILL TESTING, VERIFICATION OF DESIGN PARAMETERS, AND OBSERVATION OF CONSTRUCTION FOR GENERAL COMPLIANCE WITH DESIGN DRAWINGS AND SPECIFICATIONS.



TYPICAL WALL SECTION
N.T.S.



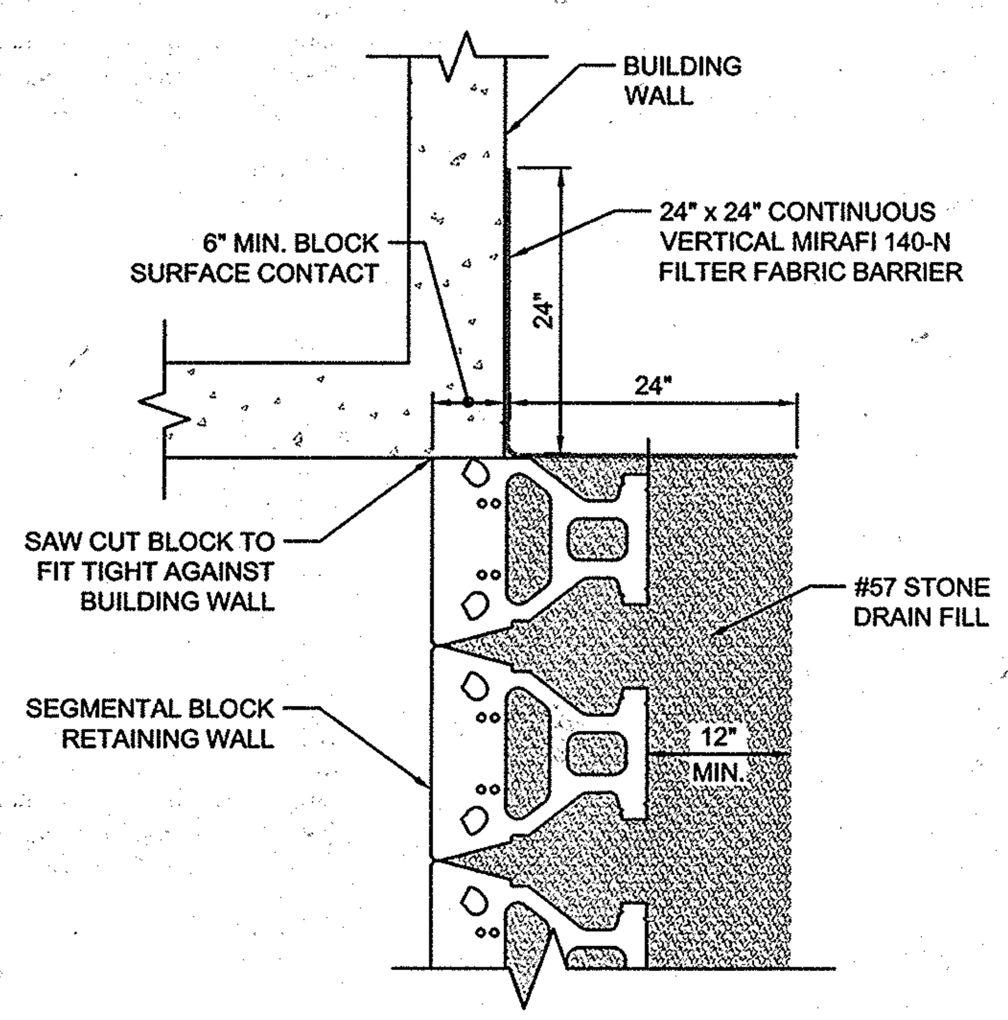
TYPICAL ANCHOR SLAB DETAIL
N.T.S.



WALL LOCATION PLAN
1" = 20'

HOWARD COUNTY NOTES:

1. NO TREES SHALL BE PLANTED WITHIN 10 FEET OF THE TOP OF THE RETAINING WALL.
2. RETAINING WALLS SHALL ONLY BE CONSTRUCTED UNDER THE OBSERVATION OF A REGISTERED PROFESSIONAL ENGINEER AND A (NICET, WACEL, OR EQUIVALENT) CERTIFIED SOILS TECHNICIAN .
3. THE REQUIRED BEARING PRESSURE BENEATH THE WALL SYSTEM SHALL BE VERIFIED IN THE FIELD BY A CERTIFIED SOILS TECHNICIAN. TESTING DOCUMENTATION MUST BE PROVIDED TO THE HOWARD COUNTY INSPECTOR PRIOR TO START OF CONSTRUCTION. THE REQUIRED BEARING TEST SHALL BE THE DYNAMIC CONE PENETROMETER TEST ASTM STP-399.
4. THE SUITABILITY OF FILL MATERIAL SHALL BE CONFIRMED BY THE ON-SITE SOILS TECHNICIAN. EACH 8" LIFT MUST BE COMPACTED TO A MINIMUM OF 95% STANDARD PROCTOR DENSITY AND THE TESTING REPORT SHALL BE MADE AVAILABLE TO THE HOWARD COUNTY INSPECTOR UPON COMPLETION OF CONSTRUCTION.
5. WALLS SHALL NOT BE CONSTRUCTED ON UNCERTIFIED FILL MATERIALS.
6. WALLS SHALL NOT BE CONSTRUCTED WITHIN A HOWARD COUNTY RIGHT-OF-WAY OR EASEMENT.



PLAN VIEW AT WALL STA. 0+00
N.T.S.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

[signature]	1.12.16
CHIEF, DEVELOPMENT ENGINEERING DIVISION	DATE
[signature]	2-22-16
CHIEF, DIVISION OF LAND DEVELOPMENT	DATE
[signature]	2-22-16
DIRECTOR	DATE

DEVELOPER
VOLUNTEERS OF AMERICA, INC.
1660 DUKE STREET
ALEXANDRIA, VA 22314
(410) 798-4269
C/O RICK DELLA

OWNER
HOWARD COUNTY
HOUSING COMMISSION
6751 COLUMBIA GATEWAY DR., 3RD FLOOR
COLUMBIA, MD 21046
(410) 313-6320

NO.	REVISION	DATE

RETAINING WALL PLAN AND CONSTRUCTION DETAILS

DAY RESOURCE CENTER
VOLUNTEERS OF AMERICA
10390 GUILFORD ROAD
HOWARD COUNTY HOUSING COMMISSION
DPZ REF'S: L.15118/F.116, BA-08-027V
ZONED: CE-CLI

TAX MAP 47 GRID 12
6TH ELECTION DISTRICT

PARCEL 59, PARCEL A
HOWARD COUNTY, MARYLAND

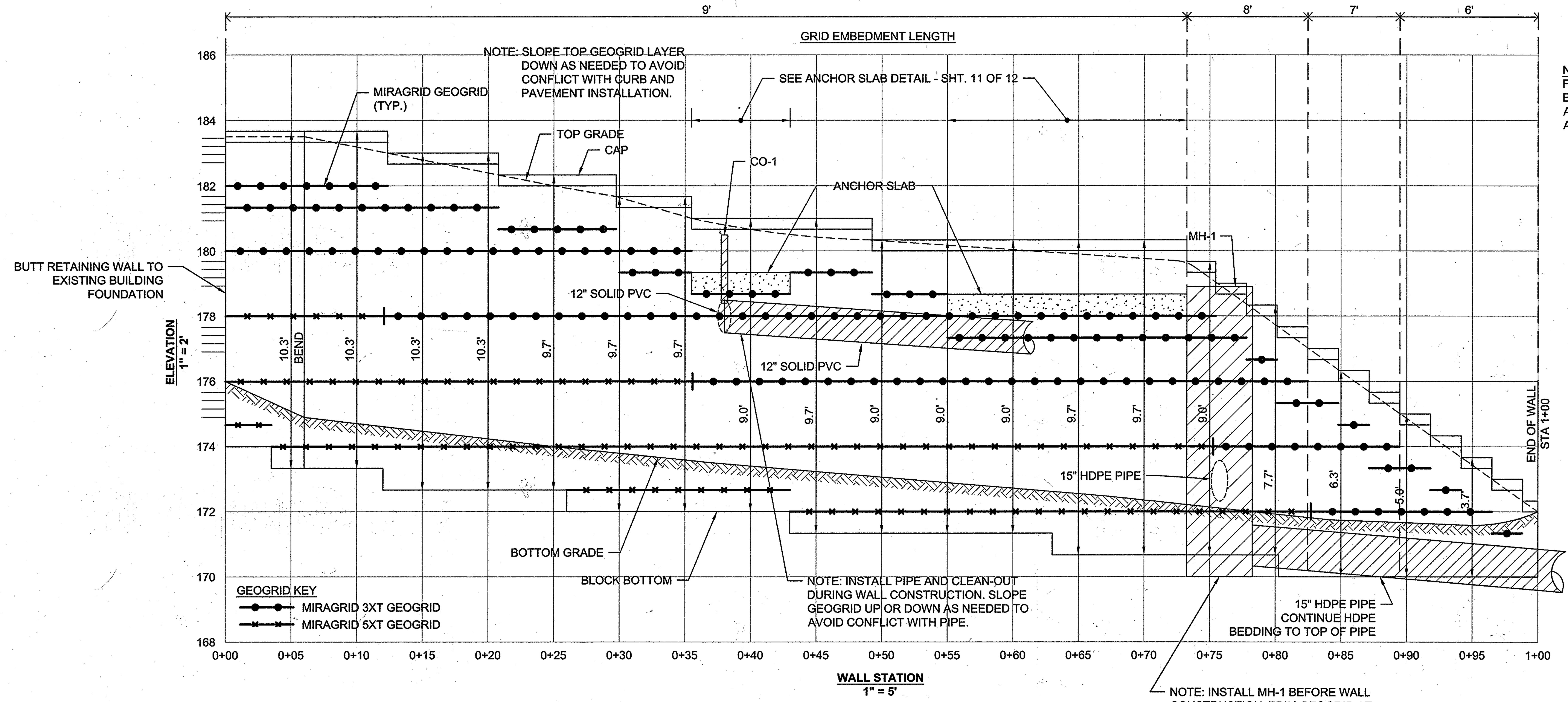
HILLIS-CARNES
ENGINEERING ASSOCIATES
10975 Guilford Road, Suite A Annapolis Junction, Maryland
(410) 880-4788 WWW.HCEA.COM Fax: (410) 880-4098

STATE OF MARYLAND RICHARD W. STURDIVANT No. 14434 PROFESSIONAL ENGINEER

DESIGN BY:	HM
DRAWN BY:	HM
CHECKED BY:	RWS
DATE:	JANUARY 2016
SCALE:	AS SHOWN
HCEA NO.:	15552-A

PROFESSIONAL CERTIFICATE

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 14434 EXPIRATION DATE: 05/13/17



RETAINING WALL #1 ELEVATION

NOTE:
FIELD CONFIRM FINAL TOP AND BOTTOM WALL GRADES AND ADJUST WALL BLOCK LOCATION AND ELEVATION ACCORDINGLY.

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12 SHEET OF 12

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

CHIEF, DEVELOPMENT ENGINEERING DIVISION	1-12-16 DATE
CHIEF, DIVISION OF LAND DEVELOPMENT	2-22-16 DATE
DIRECTOR	2-22-16 DATE

SDP-15-023