

GENERAL NOTES

- ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY STANDARDS AND SPECIFICATIONS FOR WORK AND MATERIALS WITH U.S.A. STANDARDS.
- THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7777 AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION WORK.
- 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
 BUREAU OF UTILITIES: 1-800-743-0033
 AT&T: 410-313-4800
 B.G.&E. (CONSTRUCTION SERVICES): 410-637-8713
 B.G.&E. (EMERGENCY): 410-635-0133
 STATE HIGHWAY ADMINISTRATION: 410-531-5533
 COLONIAL PIPELINE CO.: 410-795-1390
- SITE ANALYSIS:
 TOTAL PROJECT AREA: 3.4802 AC.
 PRESENT ZONING: D-2
 USE OF STRUCTURE:
 BUILDING A: AUTOMOBILE SALES AND SERVICE
 TOTAL BUILDING COVERAGE (FOOTPRINT AREA): 16,100 SF (0.37 AC. OR 10.62% OF GROSS AREA)
 BUILDING A (LOWER LEVEL): 16,100 SF
 SERVICE: 11,500 SF
 PARTS: 620 SF
 SALES: 3,980 SF
 BUILDING A (MEZZANINE): 2,400 SF
 PAVED PARKING LOT/AREA ON SITE: 97,016 SF (2.23 AC. OR 64.08% OF GROSS AREA)
 AREA OF LANDSCAPE ISLAND: 20,629 SF (0.47 AC. OR 13.50% OF GROSS AREA)
 LIMIT OF DISTURBED AREA: 3.37 AC
 CUT: 14,025 CY
- PROJECT BACKGROUND:
 LOCATION: CLARKSVILLE, MD.; TAX MAP 34, BLOCK 6, PARCEL 365, PARCEL E-7.
 ZONING: B-2
 SUBDIVISION: HOLWECK SUBDIVISION
 SECTION/AREA: N/A
 SITE AREA: 3.4802 AC.
 DEED/PLAT REFERENCES: L9929/F 90, L14177/F 86, PLAT 16013, PLAT 18119, PLAT 23575
 DPZ REFERENCES: F-04-36, F-03-14, WP-03-04, ZB-0476, F-05-025, ZB-1008M, F-01-29, WP-00-070, WP-01-020, F-01-025FC, F-03-202, WP-03-41, WP-03-112, F-06-079, WP-06-108, WP-07-004, EOP-14-033
- 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.
- ANY DAMAGE TO PUBLIC RIGHT-OF-WAY, PAVING, OR EXISTING UTILITIES WILL BE CORRECTED AT THE CONTRACTOR'S EXPENSE.
- ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY, PLUS MSHA STANDARDS AND SPECIFICATIONS, IF APPLICABLE.
- EXISTING UTILITIES LOCATED FROM ROAD CONSTRUCTION PLANS, FIELD SURVEYS, PUBLIC WATER AND AND SEWER EXTENSION PLANS AND AVAILABLE DRAWINGS. APPROXIMATE LOCATION OF EXISTING UTILITIES ARE SHOWN FOR THE CONTRACTOR'S INFORMATION. CONTRACTOR SHALL LOCATE EXISTING UTILITIES WELL IN ADVANCE OF CONSTRUCTION ACTIVITIES AND TAKE ALL NECESSARY PRECAUTIONS TO PROTECT THE EXISTING UTILITIES TO MAINTAIN UNINTERRUPTED SERVICE. ANY DAMAGE INCURRED DUE TO CONTRACTOR'S OPERATION SHALL BE REPAIRED IMMEDIATELY AT THE CONTRACTOR'S EXPENSE.
- ALL REINFORCED CONCRETE FOR STORM DRAIN STRUCTURES SHALL HAVE A MINIMUM OF 28 DAYS STRENGTH OF 3,500 P.S.I.
- 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.
- ESTIMATES OF EARTHWORK QUANTITIES ARE PROVIDED SOLELY FOR THE PURPOSE OF CALCULATING FEES.
- 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.
- COORDINATES AND ELEVATIONS ARE BASED ON MARYLAND COORDINATE SYSTEM - NAD83(1991) AS PROJECTED BY HOWARD COUNTY GEODETIC CONTROL STATIONS 34C2 (UPDATED 0044) AND 0013.
- THE PROPERTY LINES SHOWN HEREON IS BASED ON A FIELD-RUN BOUNDARY SURVEY PERFORMED BY ROBERT H. VOGEL ENGINEERING, INC. DATED MARCH 20, 2010.
- THE EXISTING TOPOGRAPHY SHOWN HEREON IS TAKEN FROM A FIELD RUN SURVEY WITH TWO FOOT CONTOUR INTERVALS WAS PREPARED BY ROBERT H. VOGEL ENGINEERING, INC. DATED AUGUST 24, 2006.
- TEST PIT REPORT PREPARED BY ROBERT H. VOGEL ENGINEERING, DATED APRIL 25, 2014.
- THE GEOTECHNICAL ENGINEER TO CONFIRM PAVING SECTION PRIOR TO CONSTRUCTION. ALL PAVING TO BE PER GEOTECHNICAL RECOMMENDATIONS.
- ALL CURB AND GUTTER TO BE HOWARD COUNTY STANDARD DETAIL 3.01 UNLESS OTHERWISE NOTED.
- WHERE DRAINAGE FLOWS AWAY FROM CURB, CONTRACTOR TO REVERSE THE GUTTER PAN.
- ALL ELEVATIONS ARE TO FLOWLINE/BOTTOM OF CURB UNLESS OTHERWISE NOTED.
- ALL DIMENSIONS ARE TO FACE OF CURB UNLESS OTHERWISE NOTED.
- CONTRACTOR RESPONSIBLE FOR CONSTRUCTING ALL HANDICAP RAMP AND HANDICAP ACCESS IN ACCORDANCE WITH CURRENT ADA REQUIREMENTS.
- PUBLIC WATER AVAILABLE THROUGH 44-3323-D. PUBLIC SEWER AVAILABLE THROUGH 30-3687-D.
- TRAFFIC STUDY PREPARED BY THE TRAFFIC GROUP, DATED FEBRUARY 20, 2014; APPROVED 06/17/14.
- THE SUBJECT PROPERTY IS ZONED B-2 IN ACCORDANCE WITH THE 10/06/13 COMPREHENSIVE ZONING PLAN.
- THERE ARE NO WETLANDS, STREAMS, THEIR BUFFERS, STEEP SLOPES, 100-YEAR FLOODPLAIN OR FOREST CONSERVATION EASEMENTS LOCATED ON SITE.
- A NOISE STUDY IS NOT REQUIRED FOR THIS PROJECT.
- ALL STORMDRAIN PIPE REQUIRED IS TO BE CLASS "C", AS REQUIRED BY AASHTO-180.
- THIS PLAN HAS BEEN PREPARED IN ACCORDANCE WITH THE PROVISIONS OF SECTION 16.124 OF THE HOWARD COUNTY CODE AND THE LANDSCAPE MANUAL.
- FINANCIAL SURETY FOR THE REQUIRED LANDSCAPING HAS BEEN POSED AS PART OF THE DEVELOPER'S AGREEMENT FOR THIS SITE DEVELOPMENT PLAN IN THE AMOUNT OF \$6,450 FOR THE REQUIRED 13 SHADE TREES, 3 EVERGREEN TREES, AND 70 SHRUBS.
- FOREST CONSERVATION REQUIREMENTS FOR PARCEL E-7 ARE PROVIDED IN CONJUNCTION WITH F-01-029. THE REQUIREMENT WAS FULFILLED WITH THE PURCHASE OF 5.28 ACRES OF AFFORESTATION CREDIT AT THE WINKLER FOREST MITIGATION BANK.
- THERE ARE NO SPECIMEN OR CHAMPION TREES WITHIN THE LOD.
- ANY EXISTING STREET TREES DAMAGED OR DESTROYED DURING CONSTRUCTION WILL BE REPLACED BY THE CONTRACTOR.
- 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.
- EXISTING AUTO DRIVE IS CLASSIFIED AS A LOCAL ROAD.
- 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.
- THE PROPOSED BUILDING WILL HAVE AN INSIDE MEETING SETTING. THE BUILDING WILL ALSO HAVE AN AUTOMATIC FIRE PROTECTION SPRINKLER SYSTEM.
- 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 FROM THE DOOR. ITS LOCATION IS SHOWN ON THESE PLANS. THE BOX SHALL BE ELECTRONICALLY SUPERVISED THE DOOR. ITS 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).
- 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-113.1.4
- 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.
- STREET LIGHT PLACEMENT AND THE TYPE OF FIXTURE AND POLE SHALL BE IN ACCORDANCE WITH THE HOWARD COUNTY DESIGN MANUAL, VOLUME II (2006), SECTION 5.5.A. A MINIMUM OF 20' SHALL BE MAINTAINED BETWEEN ANY STREET LIGHT AND ANY TREE.
- ALL EXTERIOR LIGHTING TO BE IN ACCORDANCE WITH ZONING SECTION 134.0 OF THE HOWARD COUNTY ZONING REGULATIONS.
- THERE ARE NO BURIAL GROUNDS, CEMETERIES, OR HISTORIC STRUCTURES LOCATED ON THIS PROPERTY.
- TRASH COLLECTION AND RECYCLABLES TO BE PRIVATE.
- SIGNAGE SHALL BE PROVIDED ON THE BUILDING IDENTIFYING THE BUILDING ADDRESS.
- 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.
- STORMWATER MANAGEMENT FOR THIS PROJECT IS BEING PROVIDED BY ENVIRONMENTAL SITE DESIGN UTILIZING MICRO-BIORETENTION (M-B) FACILITIES AND PERVIOUS PAVING (A-2) WITH ADDITIONAL STONE DEPTH) TO ACCOMMODATE THE TOTAL ES3 VOLUME REQUIRED. SWM FACILITIES TO BE PRIVATELY OWNED AND MAINTAINED.
- THE EXISTING TRAILER SHALL BE REMOVED, IN ACCORDANCE WITH HOWARD COUNTY REGULATIONS, PRIOR TO CONSTRUCTION.

ANTWERPEN HYUNDAI

PARCEL E-7, HOLWECK SUBDIVISION

ZONED: B-2

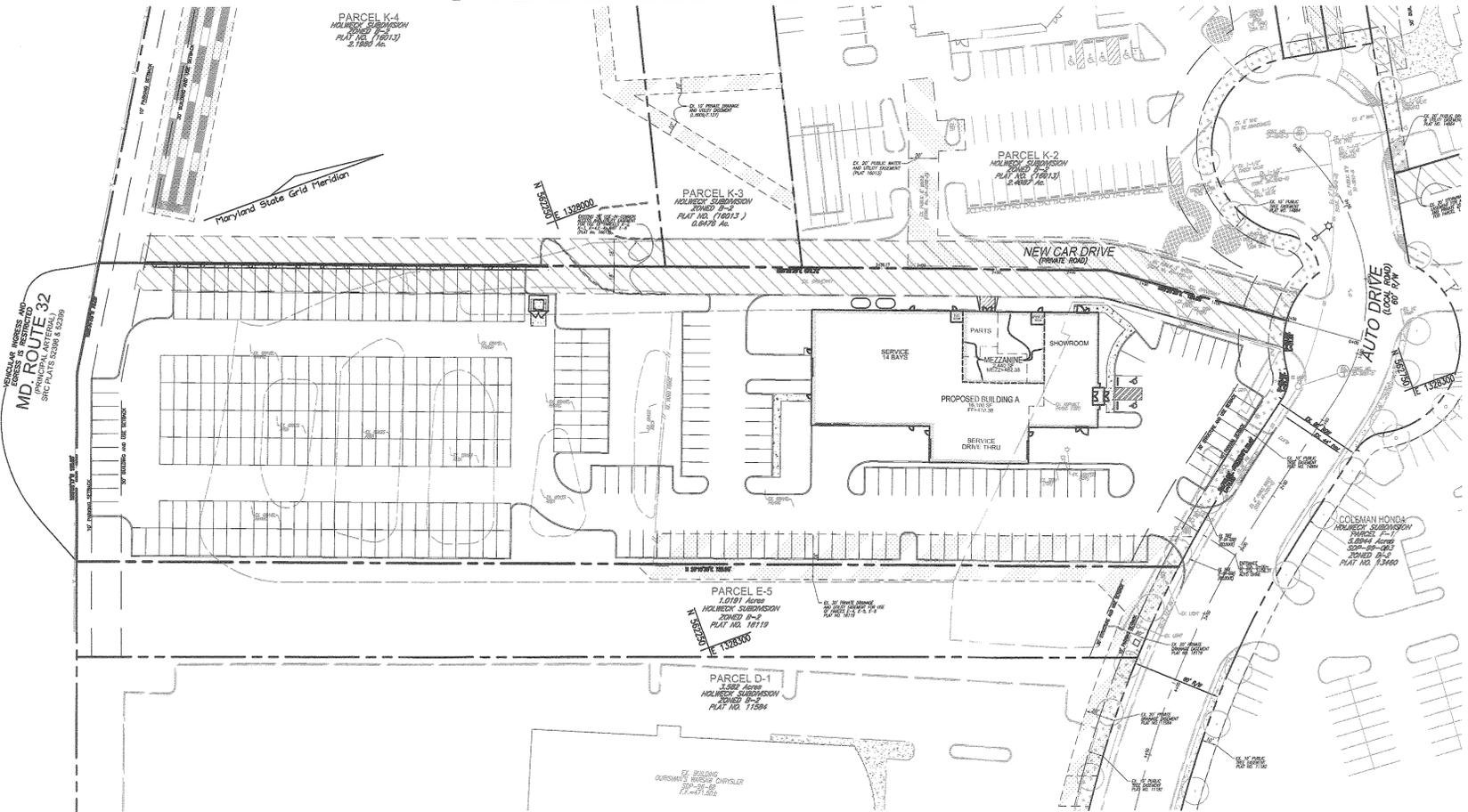
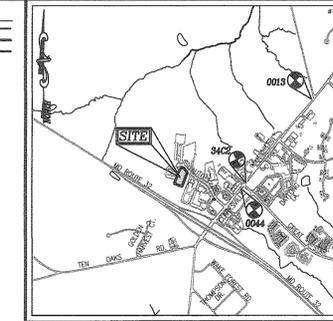
SITE DEVELOPMENT PLAN

LEGEND

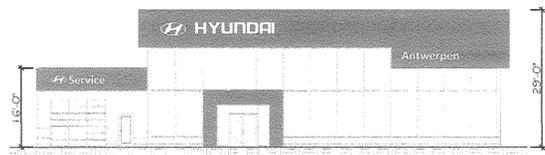
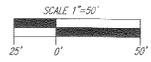
RIGHT-OF-WAY LINE
 PROPERTY LINE
 ADJACENT PROPERTY LINE

BENCHMARKS

HOWARD COUNTY BENCHMARK 34C2 (DESTROYED)
 N 56231.798 E 1329750.722
 UPDATED HOWARD COUNTY BENCHMARK 0044 (CONC. MON.)
 N 562176.474 E 1329641.868 ELEV. 485.252
 HOWARD COUNTY BENCHMARK 0013 (CONC. MON.)
 N 561285.946 E 1331309.715 ELEV. 494.671



LOCATION MAP
 SCALE: 1"=50'



BUILDING 'A' EAST ELEVATION
 NOT TO SCALE



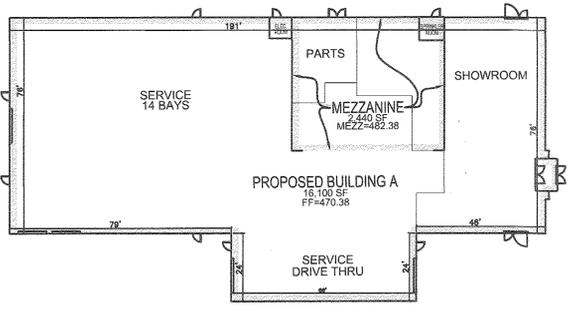
BUILDING 'A' SOUTH ELEVATION
 NOT TO SCALE

PARKING TABULATION

| | REQUIRED |
|---|---------------------------------------|
| BUILDING A: 16,100 SF | |
| SALES/SHOWROOM/OFFICE/PARTS: 4,600 SF @ 2 SPACE/1000 SF | 10 SPACES |
| SERVICE BAYS: 14 BAY AUTOMOBILE SERVICE AREA @ 3 SPACES/SERVICE BAY | 42 SPACES |
| BUILDING A (MEZZANINE) - 2,440 SF | |
| STORAGE - SPACES NOT REQUIRED | NOT REQUIRED |
| AUTOMOTIVE DISPLAY: 4,050 SF @ 1 SPACE/1000 SF | 5 SPACES |
| TOTAL SPACES REQUIRED: | 57 SPACES |
| TOTAL SPACES PROVIDED: | 73 SPACES INCLUDING 2 HANDICAP SPACES |
| TOTAL DISPLAY SPACES PROVIDED: | 25 SPACES |
| TOTAL CAR STORAGE SPACES PROVIDED: | 228 SPACES |

STORMWATER MANAGEMENT INFORMATION

| LOT/PARCEL # | FACILITY NAME & NUMBER | PRACTICE TYPE (QUANTITY) | PUBIC | PRIVATE | HOA MAINTAINS | MISC. |
|--------------|------------------------|--------------------------|-------|---------|---------------|-------|
| Parcel E-7 | SWMF #1 | A-2 Permeable Pavement | | X | Owner | |
| Parcel E-7 | SWMF #2 | A-2 Permeable Pavement | | X | Owner | |
| Parcel E-7 | SWMF #3 | A-2 Permeable Pavement | | X | Owner | |
| Parcel E-7 | SWMF #4 | M-6 Micro-Bioretenion | | X | Owner | |
| Parcel E-7 | SWMF #5 | M-6 Micro-Bioretenion | | X | Owner | |



BUILDING 'A' FOOTPRINT
 NOT TO SCALE

ADDRESS CHART

| BUILDING NO. | STREET ADDRESS |
|--------------|------------------|
| A | 12440 AUTO DRIVE |

PERMIT INFORMATION CHART

| SUBDIVISION NAME | SECTION/AREA | LOT/PARCEL NUMBER |
|---------------------|--------------|-------------------|
| HOLWECK SUBDIVISION | N/A | E-7 |

PLAT OR L/F: PLAT 23575
 GRID NO.: 6
 ZONING: B-2
 TAX MAP NO.: 34
 ELECT. DIST.: 5TH
 CENSUS TR.: 6051.01

WATER CODE: J07
 SEWER CODE: 6653500

SHEET INDEX

| DESCRIPTION | SHEET NO. |
|--|-----------|
| COVER SHEET | 1 OF 11 |
| SITE LAYOUT PLAN | 2 OF 11 |
| SITE NOTES AND DETAILS | 3 OF 11 |
| GRADING, SEDIMENT AND EROSION CONTROL PLAN; SOILS MAP | 4 OF 11 |
| SEDIMENT AND EROSION CONTROL NOTES AND DETAILS | 5 OF 11 |
| STORM DRAIN AND SWM DRAINAGE AREA MAPS AND SWM DETAILS | 6 OF 11 |
| STORM DRAIN PROFILES | 7 OF 11 |
| UTILITY DETAILS AND PROFILES | 8 OF 11 |
| LANDSCAPE PLAN | 9 OF 11 |
| RETAINING WALL | 10 OF 11 |
| RETAINING WALL | 11 OF 11 |

OWNER/PETITIONER
 ANTOY LLC
 12420 AUTO DRIVE
 CLARKSVILLE, MD. 21029
 (410) 531-5700

| NO. | REVISION | DATE |
|-----|---|----------|
| 2 | REVISE PLAN TO SHOW AS-BUILT CONDITION AT MH-1 | 8/9/16 |
| 1 | REVISE PLAN TO MODIFY THE BUILDING, PARKING LOT, UTILITIES AND SWM. | 04/07/16 |

REVISED SITE DEVELOPMENT PLAN

COVER SHEET

ANTWERPEN HYUNDAI
PARCEL E-7, HOLWECK SUBDIVISION

TAX MAP 34, BLOCK 06, PARCEL 365
 5TH ELECTION DISTRICT, 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



PROFESSIONAL CERTIFICATE

I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DAILY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND.
 EXPIRATION DATE: 03-27-2018

DESIGN BY: DZE
 DRAWN BY: DZE/KG
 CHECKED BY: RHV
 DATE: MAY 2016
 SCALE: AS SHOWN
 W.O. NO.: 12-48

1 OF 11 SHEET

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

Chief Development Engineering Division 6-1-16
 CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

Chief, Division of Land Development 6-9-16
 CHIEF, DIVISION OF LAND DEVELOPMENT DATE

Director 6-9-16
 DIRECTOR DATE

APPROVED: FOR PUBLIC WATER AND PUBLIC SEWERAGE SYSTEMS

County Health Officer 6/7/2016
 COUNTY HEALTH OFFICER DATE
 HOWARD COUNTY HEALTH DEPARTMENT

PARCEL K-4
HOLWECK SUBDIVISION
ZONED B-2
PLAT NO. 116013
2.1990 Ac.

PARCEL K-3
HOLWECK SUBDIVISION
ZONED B-2
PLAT NO. 16013
0.6476 Ac.

PARCEL K-2
HOLWECK SUBDIVISION
ZONED B-2
PLAT NO. 116013
2.4987 Ac.

PARCEL E-5
1.0191 Acres
HOLWECK SUBDIVISION
ZONED B-2
PLAT NO. 18119

PARCEL D-1
3.582 Acres
HOLWECK SUBDIVISION
ZONED B-2
PLAT NO. 11584

COLEMAN HONDA
HOLWECK SUBDIVISION
PARCEL F-1
5.8944 Acres
SDP-99-093
ZONED B-2
PLAT NO. 13460

EX. BUILDING
CURISMAN'S WARSAW CHRYSLER
SDP-96-68
F.F.=471.50±

LAYOUT PLAN VIEW
SCALE: 1"=30'

LEGEND:

| | | | |
|--|--|--|---|
| | EXISTING CURB AND GUTTER | | PROPOSED SIDEWALK |
| | PROPOSED CURB AND GUTTER | | EXISTING TREE LINE |
| | EXISTING LIGHT POLE WITH CONCRETE BASE | | PROPOSED TREE LINE |
| | EXISTING MAILBOX | | EX. 20' DRAINAGE & UTILITY EASEMENT PLAT #16103 |
| | EXISTING SIGN | | EX. 20' WATER & UTILITY EASEMENT PLAT #16119 |
| | EXISTING SANITARY MANHOLE | | EX. 30' USE-IN-COMMON ACCESS EASEMENT PLAT #16103 |
| | EXISTING SANITARY LINE | | PROP. 20' PUBLIC WATER & UTILITY EASEMENT PLAT #16103 |
| | EXISTING CLEANOUT | | PROP. 20' FIRE HYDRANT AREA (M-6) |
| | EXISTING FIRE HYDRANT | | PROP. PVIOUS PAVEMENT (A-2) |
| | EXISTING WATER LINE | | EX. 10' PUBLIC TREE EASEMENT PLAT #14864 |
| | PROPOSED STORM DRAIN | | |
| | PROPOSED STORM DRAIN INLET | | |
| | EXISTING FENCE | | |
| | PROPERTY LINE | | |
| | RIGHT-OF-WAY LINE | | |

VEHICULAR INGRESS AND EGRESS IS RESTRICTED (PRINCIPAL ARTERIAL) SAC PLATS 52386 & 52389

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

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

Chief Clerk 6-1-16
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

Keith S. Lewis 6-9-16
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

Valerie J. Jaffe 6-9-16
DIRECTOR DATE

| | | |
|-----|---|----------|
| 2 | REVISE PLAN TO SHOW AS-BUILT CONDITION AT MH-1 | 6/9/16 |
| 1 | REVISE PLAN TO MODIFY THE BUILDING, PARKING LOT, UTILITIES AND SWM. | 04/07/16 |
| NO. | REVISION | DATE |

OWNER/PETITIONER
ANTOY LLC
12420 AUTO DRIVE
CLARKSVILLE, MD. 21029
(410) 531-5700

REVISED SITE DEVELOPMENT PLAN

SITE LAYOUT PLAN

ANTWERPEN HYUNDAI
PARCEL E-7, HOLWECK SUBDIVISION
PLAT 23575
ZONED: B-2

TAX MAP 34, BLOCK 06
5TH ELECTION DISTRICT

PARCEL 365
HOWARD COUNTY, MARYLAND

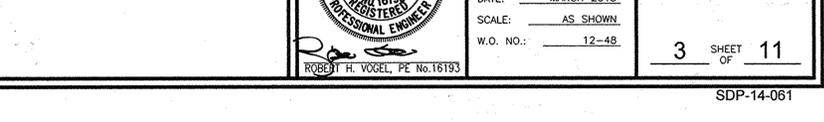
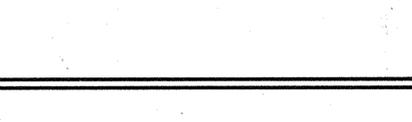
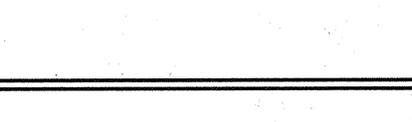
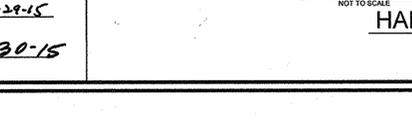
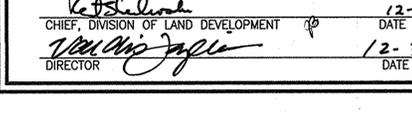
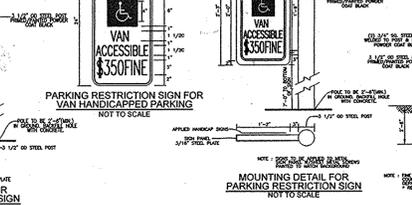
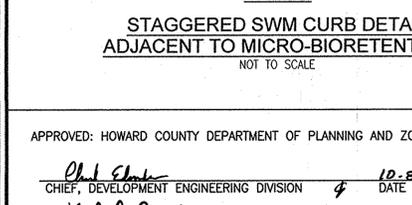
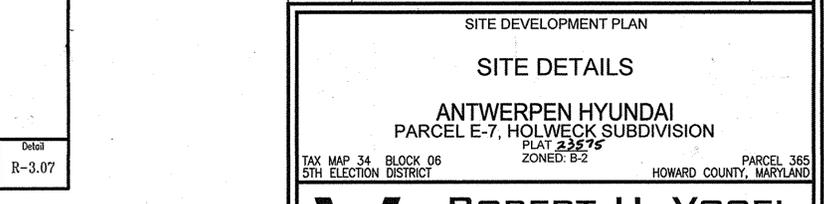
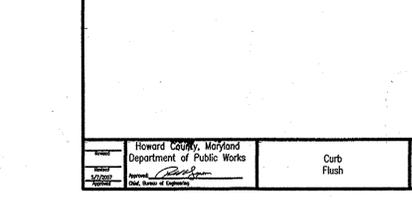
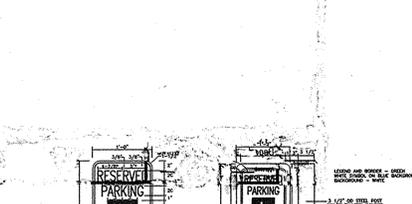
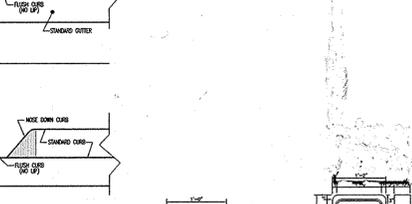
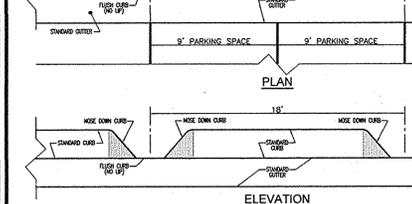
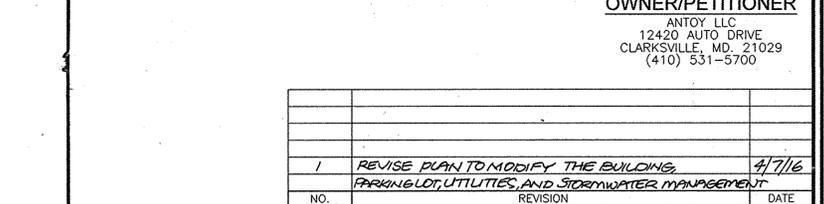
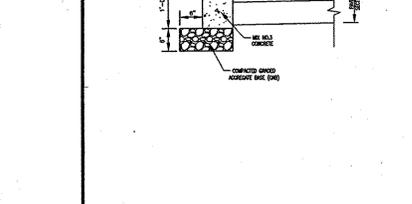
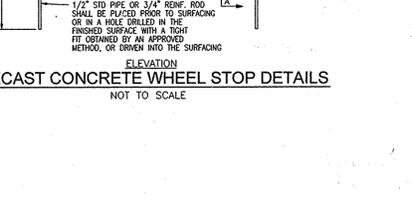
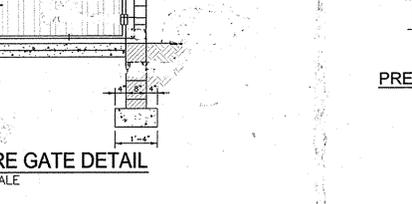
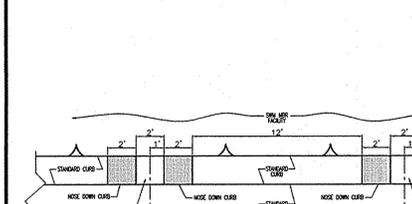
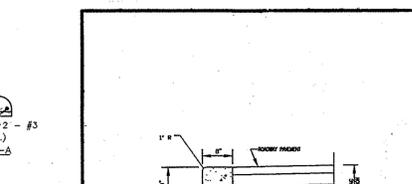
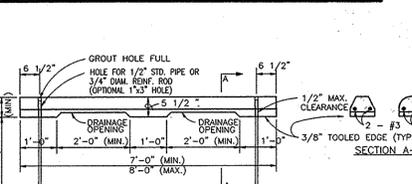
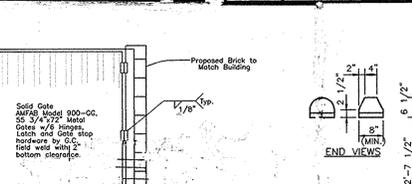
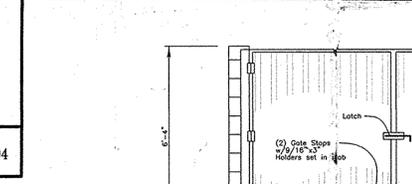
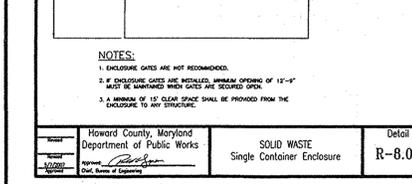
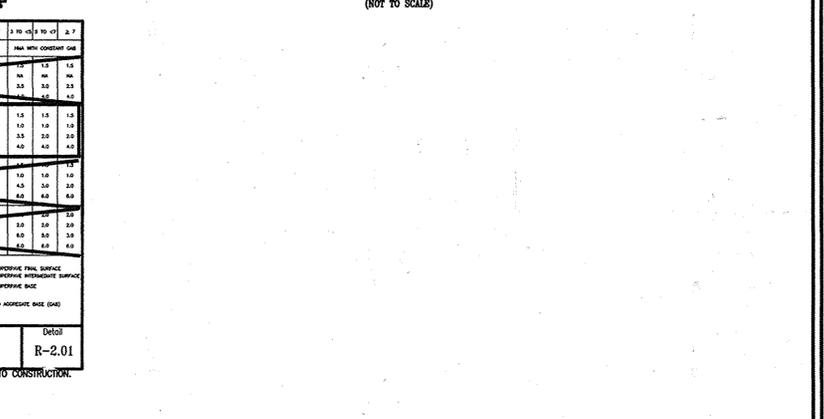
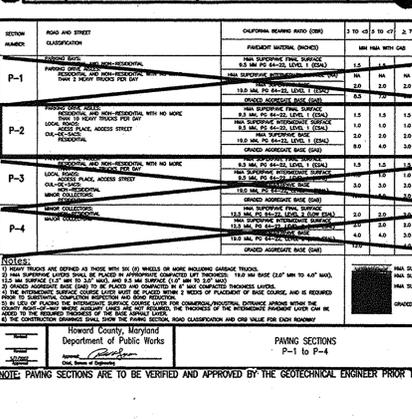
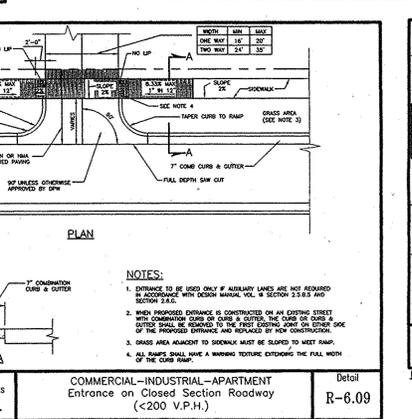
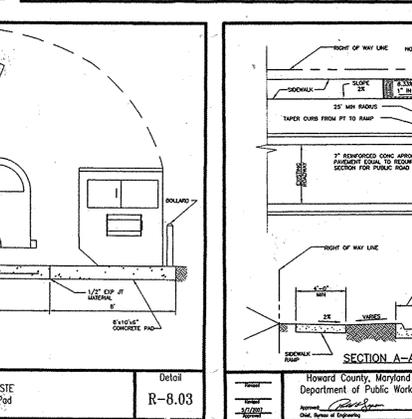
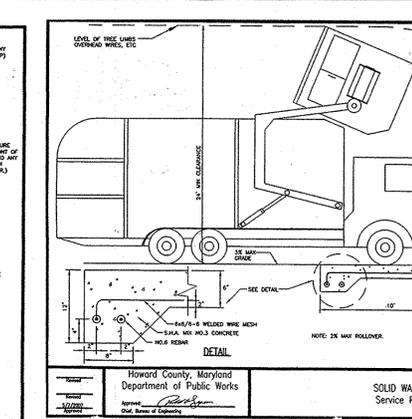
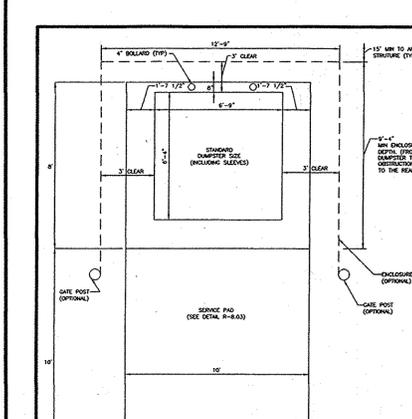
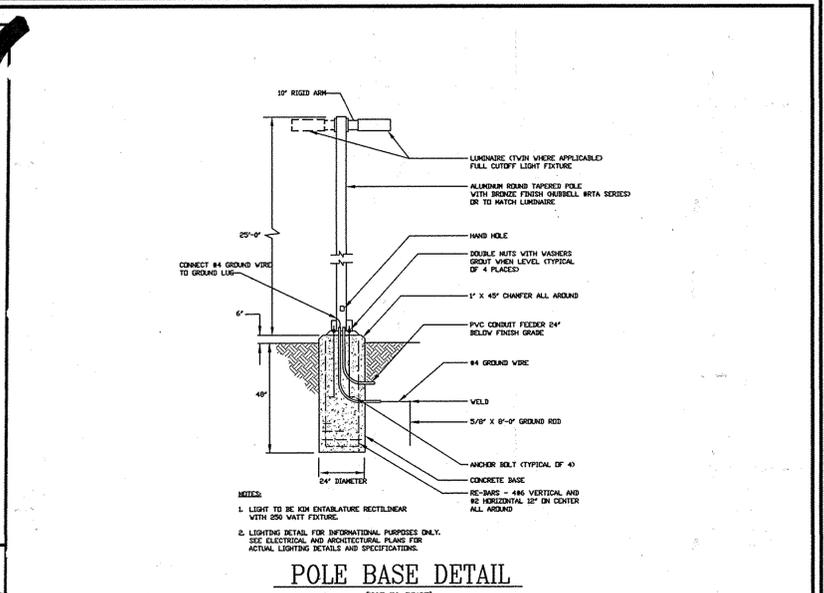
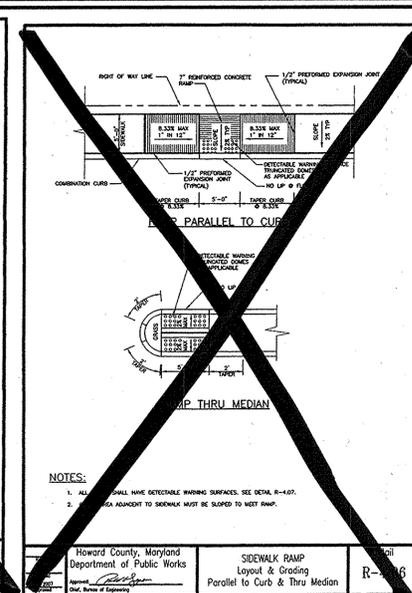
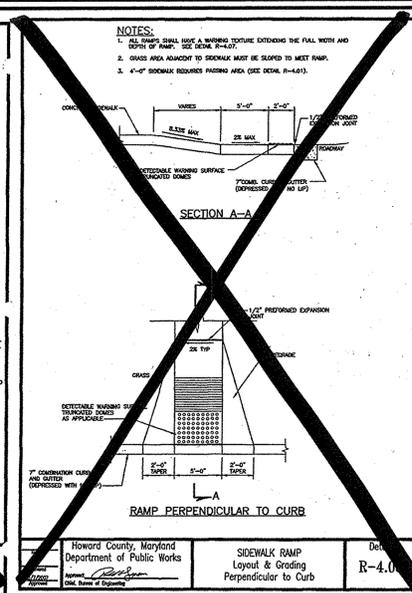
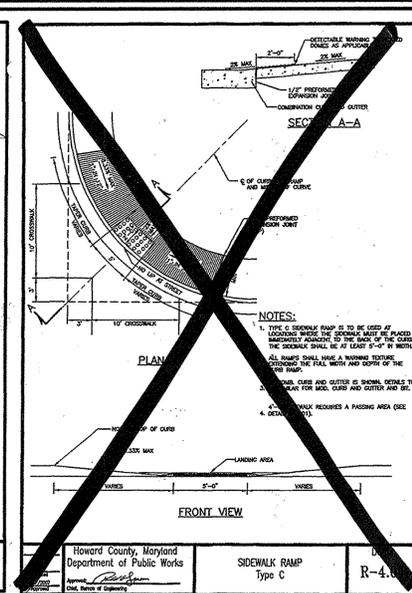
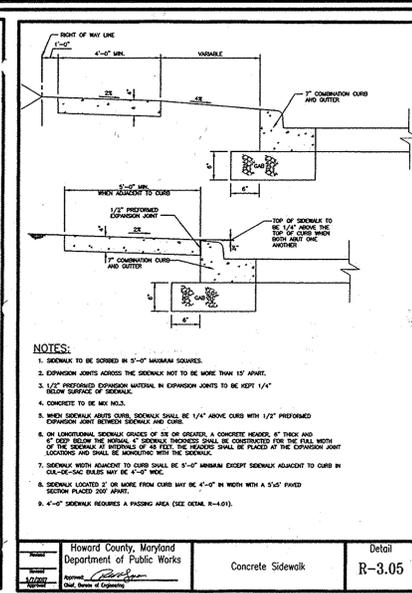
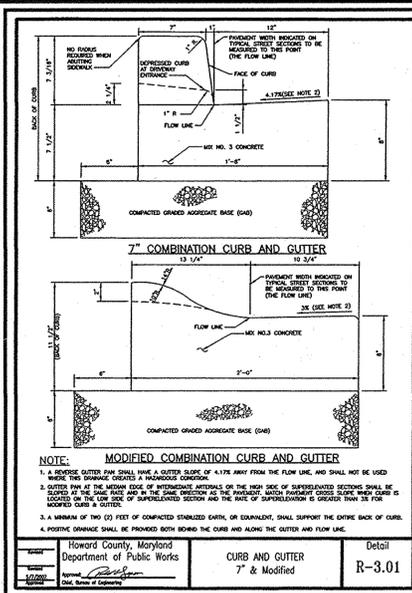
ROBERT H. VOGEL
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET
ELLICOTT CITY, MD 21043
TEL: 410.461.7666
FAX: 410.461.8961

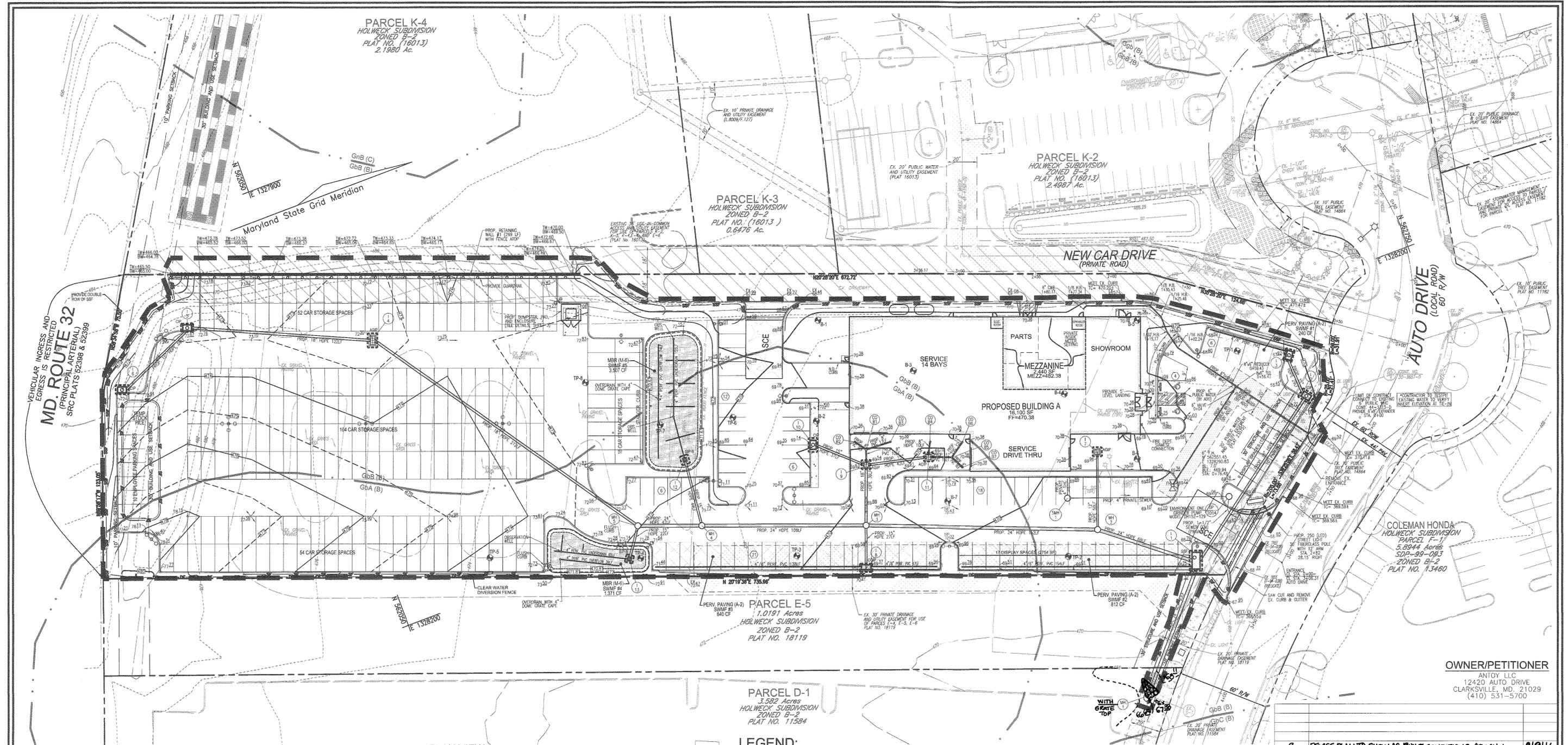
PROFESSIONAL CERTIFICATE
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A FULLY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 18193, EXPIRATION DATE: 08-27-2018

DESIGN BY: DZE
DRAWN BY: DZE/KO
CHECKED BY: RHV
DATE: MAY 2016
SCALE: AS SHOWN
W.O. NO.: 12-48

2 SHEET OF 11

ROBERT H. VOGEL, PE No. 18193





PARCEL K-4
HOLWECK SUBDIVISION
ZONED B-2
PLAT NO. (16013)
2.1980 Ac.

PARCEL K-3
HOLWECK SUBDIVISION
ZONED B-2
PLAT NO. (16013)
0.6476 Ac.

PARCEL K-2
HOLWECK SUBDIVISION
ZONED B-2
PLAT NO. (16013)
2.4987 Ac.

PARCEL E-5
1.0191 Acres
HOLWECK SUBDIVISION
ZONED B-2
PLAT NO. 18119

PARCEL D-1
3.582 Acres
HOLWECK SUBDIVISION
ZONED B-2
PLAT NO. 11584

COLEMAN HONDA
HOLWECK SUBDIVISION
PARCEL E-7
5.8944 Acres
SDP-99-083
ZONED B-2
PLAT NO. 13480

VEHICULAR INGRESS AND
EGRESS IS RESTRICTED
MD. ROUTE 32
(PRINCIPAL ARTERIAL)
SRC PLATS 52398 & 52399

NEW CAR DRIVE
(PRIVATE ROAD)

AUTO DRIVE
(LOCAL ROAD)
60' R/W

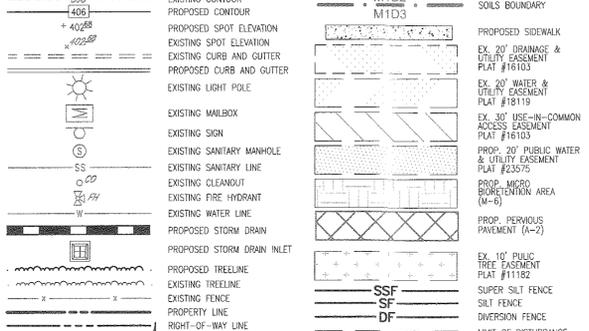
SOILS LEGEND
HOWARD COUNTY SOILS MAP #16

| SYMBOL | NAME / DESCRIPTION | GROUP |
|--------|---------------------------------------|-------|
| GbA | GLADSTONE LOAM, 0 TO 3 PERCENT SLOPES | B |
| GbB | GLADSTONE LOAM, 3 TO 8 PERCENT SLOPES | B |

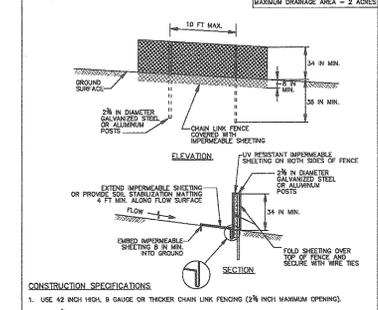
SEDIMENT CONTROL NOTE:
SEDIMENT CONTROLS INTERRUPTED BY THE INSTALLATION OF STORM DRAINS ARE TO BE REPAIRED IMMEDIATELY.

SCALE 1"=30'
NOTE:
*PROPOSED SETBACK TO BE APPROVED BY THE HOWARD COUNTY PLANNING BOARD.

LEGEND:



DETAIL C-9 DIVERSION FENCE



APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

[Signature] 6-1-16
CHIEF, DEVELOPMENT ENGINEERING DIVISION DATE

[Signature] 6-9-16
CHIEF, DIVISION OF LAND DEVELOPMENT DATE

[Signature] 6-9-16
DIRECTOR DATE

BY THE DEVELOPER:

[Signature] 4-5-16
SIGNATURE OF DEVELOPER DATE

BY THE ENGINEER:

[Signature] 5/24/16
SIGNATURE OF ENGINEER DATE

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

[Signature] 5/24/16
HOWARD S.C.D. DATE

OWNER/PETITIONER
ANTOY LLC
12420 AUTO DRIVE
CLARKSVILLE, MD. 21029
(410) 531-5700

| | | |
|-----|---|----------|
| 2 | REVISE PLAN TO SHOW AS-BUILT CONDITIONS AT MH-1 | 6/9/16 |
| 1 | REVISE PLAN TO MODIFY THE BUILDING, PARKING LOT, UTILITIES AND SWM. | 04/07/16 |
| NO. | REVISION | DATE |

REVISED SITE DEVELOPMENT PLAN
GRADING, SEDIMENT AND EROSION CONTROL PLAN; SOILS MAP
ANTWERPEN HYUNDAI
PARCEL E-7, HOLWECK SUBDIVISION
PLAT 23575
ZONED: B-2
TAX MAP 34 BLOCK 06 PARCEL 365
5TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND

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

PROFESSIONAL CERTIFICATE

DESIGN BY: DZE
DRAWN BY: DZE/KG
CHECKED BY: RHY
DATE: MAY 2016
SCALE: AS SHOWN
W.D. NO.: 12-48

STATE OF MARYLAND
ROBERT H. VOGEL
REGISTERED PROFESSIONAL ENGINEER
PE 16193

4 SHEET OF 11

B-2-4 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.

1. TEMPORARY STABILIZATION A. SEEDING PREPARATION CONSISTS OF LOOSENING SOIL TO A DEPTH OF 3 TO 5 INCHES BY MEANS OF SUBSOILERS OR CONSTRUCTION EQUIPMENT... B. APPLY FERTILIZER AND LIME PRESCRIBED ON THE PLANS. C. INCORPORATE LIME AND FERTILIZER INTO THE TOP 3 TO 5 INCHES OF SOIL BY DISKING OR OTHER SUITABLE METHOD.

2. PERMANENT STABILIZATION A. A SOIL TEST IS REQUIRED FOR ANY EARTH DISTURBANCE OF 5 ACRES OR MORE... B. SOIL TESTS MUST BE PERFORMED AT THE EXACT LOCATIONS AND APPLICATION RATES FOR BOTH LIME AND FERTILIZER ON SITES HAVING DISTURBED AREAS OF 5 ACRES OR MORE.

3. SOIL AMENDMENTS (FERTILIZER AND LIME SPECIFICATIONS) A. SOIL TESTS MUST DETERMINE THE EXACT RATIOS AND APPLICATION RATES FOR BOTH LIME AND FERTILIZER ON SITES HAVING DISTURBED AREAS OF 5 ACRES OR MORE.

4. SOIL AMENDMENTS (FERTILIZER AND LIME SPECIFICATIONS) A. SOIL TESTS MUST DETERMINE THE EXACT RATIOS AND APPLICATION RATES FOR BOTH LIME AND FERTILIZER ON SITES HAVING DISTURBED AREAS OF 5 ACRES OR MORE.

5. SOIL AMENDMENTS (FERTILIZER AND LIME SPECIFICATIONS) A. SOIL TESTS MUST DETERMINE THE EXACT RATIOS AND APPLICATION RATES FOR BOTH LIME AND FERTILIZER ON SITES HAVING DISTURBED AREAS OF 5 ACRES OR MORE.

Table 1: Temporary Seeding for Soil Stabilization. Columns: Plant Species, Seeding Rate, Seeding Depth, Recommended Seeding Dates by Plant Hardiness Zone.

6. SEEDING A. SEED MIXTURES MUST MEET THE REQUIREMENTS OF THE MARYLAND STATE SEED LAW... B. SEED MIXTURES MUST BE TESTED BY A RECOGNIZED SEED LABORATORY.

7. SEEDING A. SEED MIXTURES MUST MEET THE REQUIREMENTS OF THE MARYLAND STATE SEED LAW... B. SEED MIXTURES MUST BE TESTED BY A RECOGNIZED SEED LABORATORY.

8. SEEDING A. SEED MIXTURES MUST MEET THE REQUIREMENTS OF THE MARYLAND STATE SEED LAW... B. SEED MIXTURES MUST BE TESTED BY A RECOGNIZED SEED LABORATORY.

9. SEEDING A. SEED MIXTURES MUST MEET THE REQUIREMENTS OF THE MARYLAND STATE SEED LAW... B. SEED MIXTURES MUST BE TESTED BY A RECOGNIZED SEED LABORATORY.

B-2-3 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.

1. SEEDING A. SEED MIXTURES MUST MEET THE REQUIREMENTS OF THE MARYLAND STATE SEED LAW... B. SEED MIXTURES MUST BE TESTED BY A RECOGNIZED SEED LABORATORY.

2. MULCHING A. MULCH MATERIALS (IN ORDER OF PREFERENCE) 1. STRAW CONSISTING OF THOROUGHLY THRESHED WHEAT, WHEAT OAT, OR BARLEY AND REASONABLY BRIGHT IN COLOR... 2. WOOD CELLULOSE FIBER MULCH (WFCM) PREPARED FROM WOOD CELLULOSE.

3. MULCHING A. MULCH MATERIALS (IN ORDER OF PREFERENCE) 1. STRAW CONSISTING OF THOROUGHLY THRESHED WHEAT, WHEAT OAT, OR BARLEY AND REASONABLY BRIGHT IN COLOR... 2. WOOD CELLULOSE FIBER MULCH (WFCM) PREPARED FROM WOOD CELLULOSE.

4. MULCHING A. MULCH MATERIALS (IN ORDER OF PREFERENCE) 1. STRAW CONSISTING OF THOROUGHLY THRESHED WHEAT, WHEAT OAT, OR BARLEY AND REASONABLY BRIGHT IN COLOR... 2. WOOD CELLULOSE FIBER MULCH (WFCM) PREPARED FROM WOOD CELLULOSE.

5. MULCHING A. MULCH MATERIALS (IN ORDER OF PREFERENCE) 1. STRAW CONSISTING OF THOROUGHLY THRESHED WHEAT, WHEAT OAT, OR BARLEY AND REASONABLY BRIGHT IN COLOR... 2. WOOD CELLULOSE FIBER MULCH (WFCM) PREPARED FROM WOOD CELLULOSE.

6. MULCHING A. MULCH MATERIALS (IN ORDER OF PREFERENCE) 1. STRAW CONSISTING OF THOROUGHLY THRESHED WHEAT, WHEAT OAT, OR BARLEY AND REASONABLY BRIGHT IN COLOR... 2. WOOD CELLULOSE FIBER MULCH (WFCM) PREPARED FROM WOOD CELLULOSE.

7. MULCHING A. MULCH MATERIALS (IN ORDER OF PREFERENCE) 1. STRAW CONSISTING OF THOROUGHLY THRESHED WHEAT, WHEAT OAT, OR BARLEY AND REASONABLY BRIGHT IN COLOR... 2. WOOD CELLULOSE FIBER MULCH (WFCM) PREPARED FROM WOOD CELLULOSE.

B-2-5 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.

1. SEED MIXTURES A. SEED MIXTURES MUST MEET THE REQUIREMENTS OF THE MARYLAND STATE SEED LAW... B. SEED MIXTURES MUST BE TESTED BY A RECOGNIZED SEED LABORATORY.

2. SEED MIXTURES A. SEED MIXTURES MUST MEET THE REQUIREMENTS OF THE MARYLAND STATE SEED LAW... B. SEED MIXTURES MUST BE TESTED BY A RECOGNIZED SEED LABORATORY.

3. SEED MIXTURES A. SEED MIXTURES MUST MEET THE REQUIREMENTS OF THE MARYLAND STATE SEED LAW... B. SEED MIXTURES MUST BE TESTED BY A RECOGNIZED SEED LABORATORY.

4. SEED MIXTURES A. SEED MIXTURES MUST MEET THE REQUIREMENTS OF THE MARYLAND STATE SEED LAW... B. SEED MIXTURES MUST BE TESTED BY A RECOGNIZED SEED LABORATORY.

5. SEED MIXTURES A. SEED MIXTURES MUST MEET THE REQUIREMENTS OF THE MARYLAND STATE SEED LAW... B. SEED MIXTURES MUST BE TESTED BY A RECOGNIZED SEED LABORATORY.

6. SEED MIXTURES A. SEED MIXTURES MUST MEET THE REQUIREMENTS OF THE MARYLAND STATE SEED LAW... B. SEED MIXTURES MUST BE TESTED BY A RECOGNIZED SEED LABORATORY.

7. SEED MIXTURES A. SEED MIXTURES MUST MEET THE REQUIREMENTS OF THE MARYLAND STATE SEED LAW... B. SEED MIXTURES MUST BE TESTED BY A RECOGNIZED SEED LABORATORY.

B-2-6 STANDARDS AND SPECIFICATIONS FOR EARTH DIKE

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.

1. SEED MIXTURES A. SEED MIXTURES MUST MEET THE REQUIREMENTS OF THE MARYLAND STATE SEED LAW... B. SEED MIXTURES MUST BE TESTED BY A RECOGNIZED SEED LABORATORY.

2. SEED MIXTURES A. SEED MIXTURES MUST MEET THE REQUIREMENTS OF THE MARYLAND STATE SEED LAW... B. SEED MIXTURES MUST BE TESTED BY A RECOGNIZED SEED LABORATORY.

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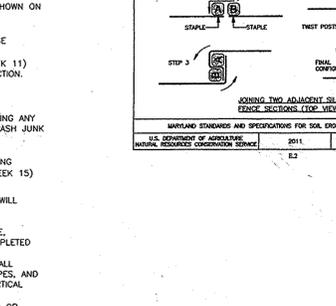
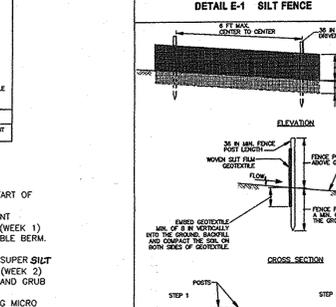
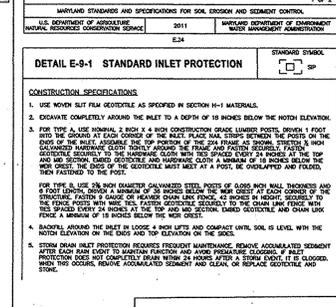
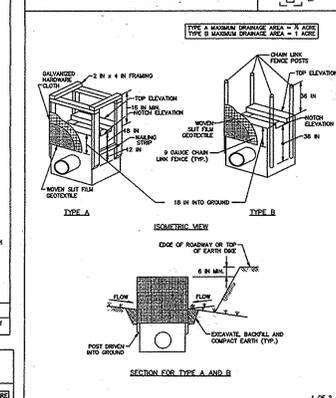
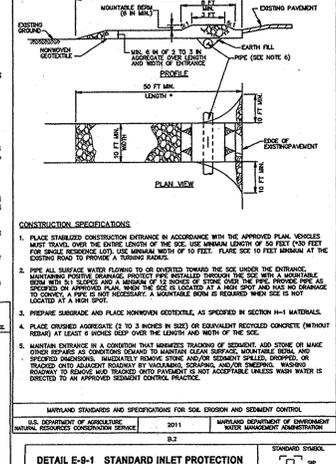
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5. SEED MIXTURES A. SEED MIXTURES MUST MEET THE REQUIREMENTS OF THE MARYLAND STATE SEED LAW... B. SEED MIXTURES MUST BE TESTED BY A RECOGNIZED SEED LABORATORY.

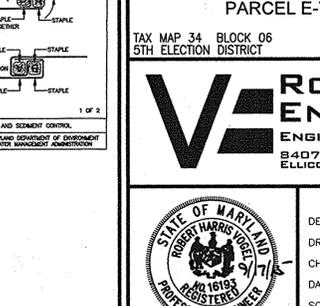
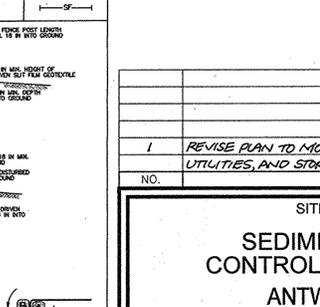
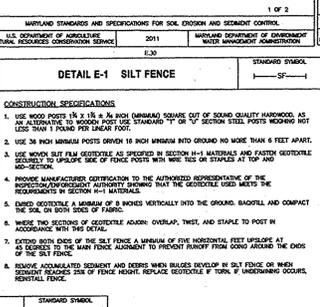
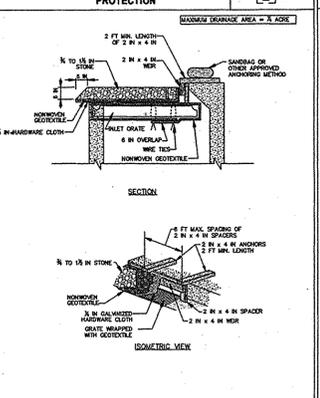
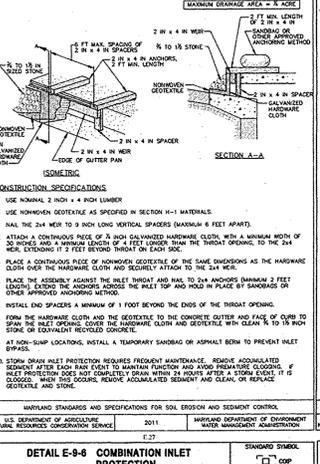
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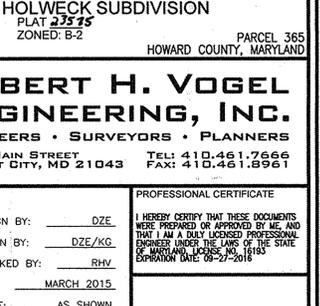
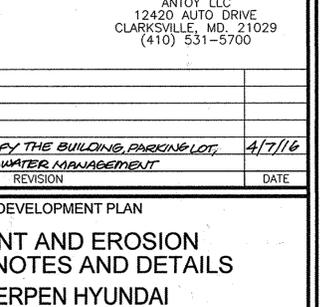
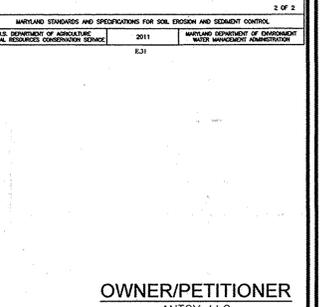
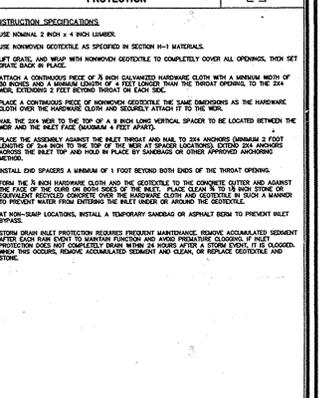
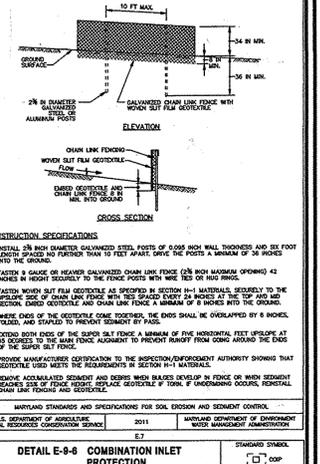
DETAIL B-1 STABILIZED CONSTRUCTION ENTRANCE



DETAIL E-3 CURB INLET PROTECTION



DETAIL E-3 SUPER SILT FENCE



APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING. Chief, Development Engineering Division. Date: 10-8-15.

BY THE DEVELOPER: [Signature] Date: 10-8-15. BY THE ENGINEER: [Signature] Date: 10-8-15.

BY THE ENGINEER: [Signature] Date: 10-8-15. HOWARD S.C.D.

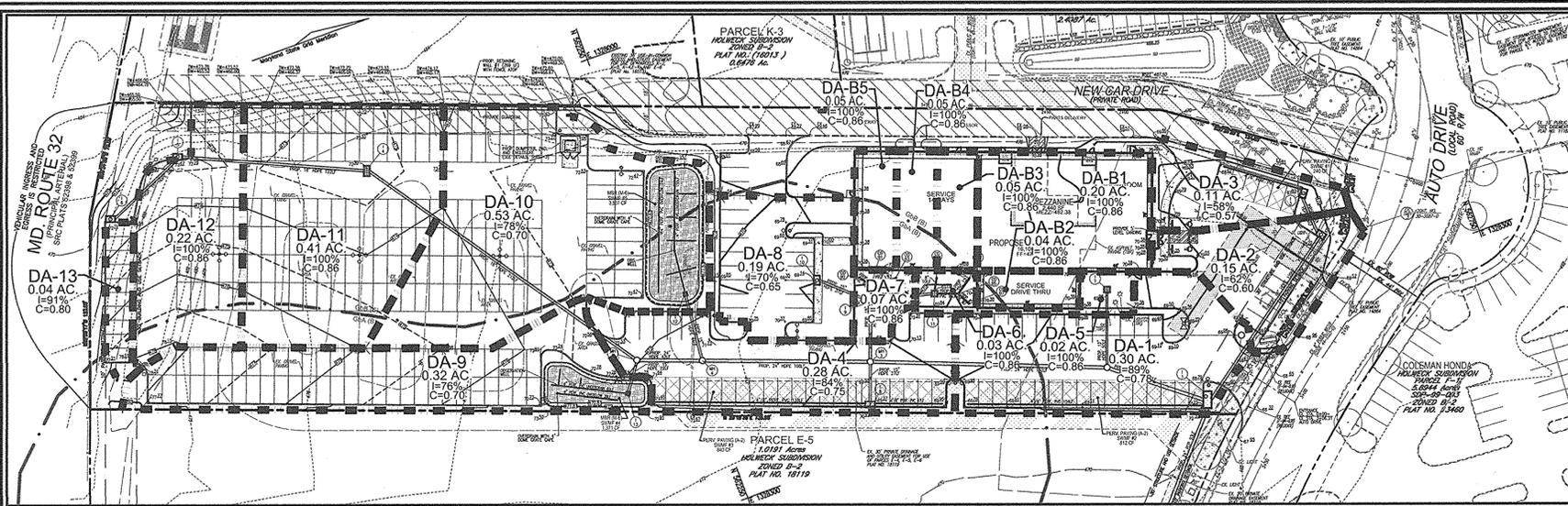
SEQUENCE OF CONSTRUCTION 1. OBTAIN HOWARD COUNTY GRADING PERMIT. (WEEK 1) 2. NOTIFY HOWARD COUNTY AT LEAST 48 HOURS PRIOR TO START OF CONSTRUCTION. (WEEK 1)

CONSTRUCTION SPECIFICATIONS 1. USE HAWKONN GEOTEXTILE AS SPECIFIED IN SECTION H-1 MATERIALS. 2. LIFT GRADE AND MIX WITH HAWKONN GEOTEXTILE TO COMPLETELY COVER ALL OPENINGS. SECURE WITH WIRE TIES AND SET GRADE BACK IN PLACE.

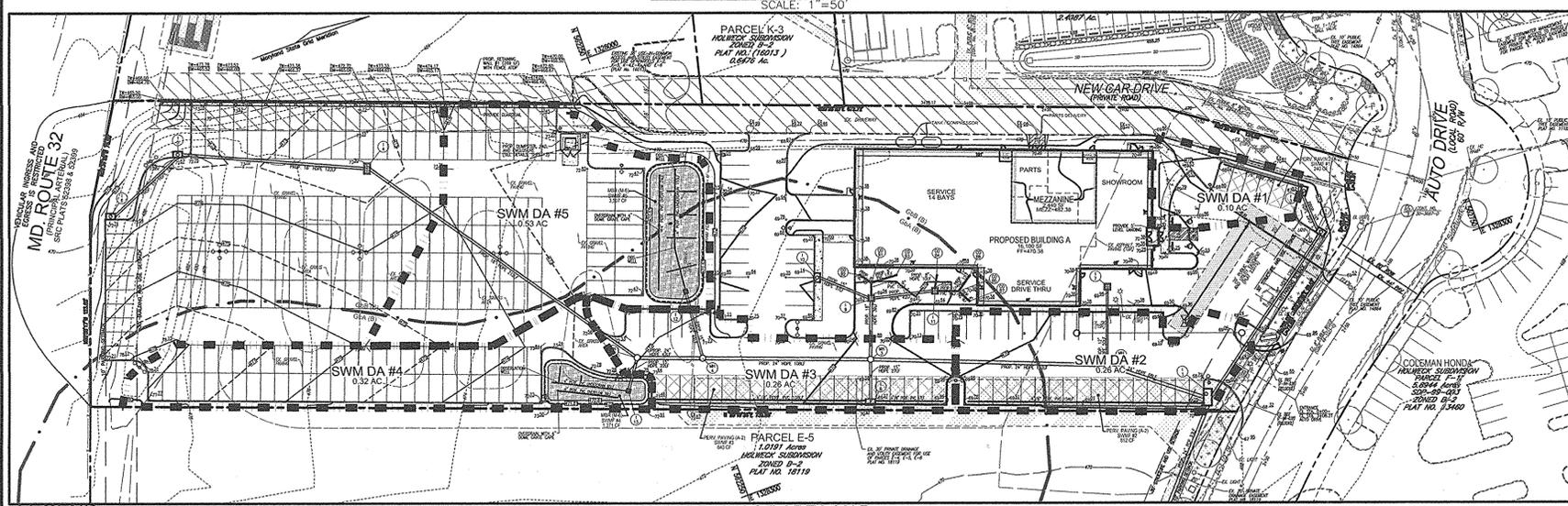
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OWNER/PARTY: ANTOY, LLC. 12420 AUTO DRIVE, CLARKSVILLE, MD. 21029. (410) 531-5700. SITE DEVELOPMENT PLAN: SEDIMENT AND EROSION CONTROL NOTES AND DETAILS.

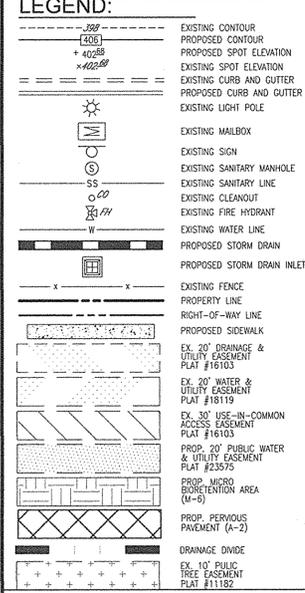
PROFESSIONAL CERTIFICATE: I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND. EXPIRATION DATE: 09-27-2018.



STORMDRAIN DRAINAGE AREA MAP
SCALE: 1"=50'



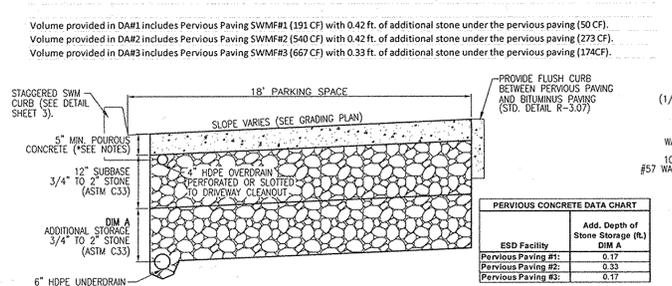
SWM DRAINAGE AREA MAP
SCALE: 1"=50'



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

| Material | Specification | Notes |
|--|--|--|
| Planting | Use Appendix A, Table A.4.1 | Plants are site specific |
| Flowering soil | Heavy sand (60-65%) & compost (35-40%) | USDA soil types sandy loam or sandy loess, clay content < 5% |
| Flowering soil | Light sand (50-55%) & compost (45-50%) | USDA soil types sandy loam or sandy loess, clay content < 5% |
| Flowering soil | Sandy loam (50%) & coarse sand (50%) & compost (50%) | USDA soil types sandy loam or sandy loess, clay content < 5% |
| Organic content | Min. 10% by dry weight (ASTM D 2922) | Min. 6 months, minimum no pine or wood chips |
| Mulch | Shredded hardwood | |
| Pee gravel diaphragm | see Appendix A, Table A.4.1 | |
| Curtain drain | emmanated stone: washed cobbles | stone: 3" to 5" |
| Gravel | ASTM M-43 | NO. 37 OR NO. 6 |
| Gravel (underdrains and infiltration berm) | ASTM M-43 | NO. 37 OR NO. 6 |
| Underdrain piping | F 758, Type PS 28 or AASHTO M-278 | 1" to 6" rigid schedule 40 PVC or SDR35 |
| Flashed in place concrete (if required) | MSHA Mix No. 3, F., 3500 psi (28 day strength), normal weight, air-entrained, reinforcing to meet ASTM A-639 | on-site testing of poured-in-place concrete required: 28 day strength and slump test; all concrete design (in-place or pre-cast) not using previously approved store or local materials requires design drawings sealed and approved by a professional structural engineer licensed in the State of Maryland & design to include meeting ACC Code 303.09, vertical loading (11-10 or 11-20); allowable horizontal loading (based on soil properties), and analysis of potential cracking |
| Sand | AASHTO M-6 or ASTM C-33 | 0.075 to 0.084" |

| DA | % IMPERV | Rv | DA | ESDv | MINIMUM VOLUME | MAXIMUM VOLUME | VOLUME PROVIDED* | ESD FACILITY | AREA SF | PERV AREA | IMP AREA | |
|---|----------|------|------|------|----------------|----------------|------------------|--------------|---------|-----------|----------|----------|
| 1 | 67 | 0.65 | 0.10 | 598 | 230 | 598 | 240 | PERV CONC. | 972 | 4233.35 | 1400.71 | 2832.64 |
| 2 | 91 | 0.87 | 0.26 | 2087 | 803 | 2087 | 812 | PERV CONC. | 2,754 | 11119.02 | 1033.62 | 10085.40 |
| 3 | 85 | 0.82 | 0.26 | 2017 | 776 | 2017 | 840 | PERV CONC. | 3,402 | 11398.67 | 1886.85 | 9711.82 |
| 4 | 76 | 0.74 | 0.32 | 2234 | 859 | 2234 | 1371 | MBR | 1,028 | 14013.55 | 3338.20 | 10675.35 |
| 5 | 78 | 0.75 | 0.53 | 3780 | 1454 | 3780 | 3507 | MBR | 2,630 | 23240.42 | 5147.51 | 18092.91 |
| TOTAL ESDv BY SUBAREA | | | | | | | | | | | | |
| 10716 4122 10716 6770 10,786 64005.01 12606.89 51398.12 | | | | | | | | | | | | |
| TOTAL AREA 64005 SF 1.47 AC | | | | | | | | | | | | |



PERVIOUS CONCRETE PARKING SPACES (TYPICAL)
(FOR ELEVATIONS AND INVERTS, SEE PROFILES)
NOT TO SCALE

PERVIOUS PAVING NOTE:
1. PAVEMENT CROSS SECTION TO BE CONFIRMED BY GEOTECHNICAL ENGINEER
2. POROUS CONCRETE SECTION TO CONFORM TO APPENDIX B.4.B (SPECIFICATIONS FOR PERVIOUS PAVEMENTS) AND DESIGNED BY THE PROJECT GEOTECHNICAL ENGINEER
3. UNDERDRAINS/OVERDRAINS SHALL CONNECT INTO A TRAFFIC BEARING CLEANOUT AS SHOWN ON THE PLANS.

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 CONTENT - 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 - 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.

THERE SHALL BE AT LEAST ONE SOIL TEST PER PLOT. 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 STOCKPILE 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 TIRE TIRES. USE OF EQUIPMENT WITH NARROW TRACKS OR NARROW TIRES, RUBBER TIRE TRACTORS, OR OTHER NOXIOUS WEEDS WILL CAUSE EXCESSIVE COMPACTION RESULTING IN REDUCED INFILTRATION RATES AND IS NOT ACCEPTABLE. COMPACTION WILL SIGNIFICANTLY CONTRIBUTE TO DESIGN FAILURE.

COMPACTION CAN BE ALLEVATED AT THE BASE OF THE BIORETENTION FACILITY BY USING A PRIMARY TILLING ORAN TWO INCHES. 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 TIRE TIRES. USE OF EQUIPMENT WITH NARROW TRACKS OR NARROW TIRES, RUBBER TIRE TRACTORS, OR OTHER NOXIOUS WEEDS WILL CAUSE EXCESSIVE COMPACTION RESULTING IN REDUCED INFILTRATION RATES AND IS NOT ACCEPTABLE. COMPACTION WILL SIGNIFICANTLY CONTRIBUTE TO DESIGN FAILURE.

ROTOTILL 2 TO 3 INCHES OF SAND INTO THE BASE OF THE BIORETENTION FACILITY BEFORE BACKFILLING THE OPTIONAL PLANTING MEDIA. BEFORE PLANTING (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 MOST DURING TRANSPORT AND ON-SITE STORAGE. THE PLANT ROOT BALL SHOULD BE PLANTED SO 1/8TH OF THE BALL IS ABOVE FINAL GRADE SURFACE. THE DIAMETER OF THE PLANTING PIT SHALL BE AT LEAST SIX INCHES LARGER THAN THE DIAMETER OF THE PLANTING BALL. SET AND MAINTAIN THE PLANT STRAIGHT DURING THE ENTIRE PLANTING PROCESS. THOROUGHLY WATER GROUND BED COVER AFTER INSTALLATION.

TREES SHALL BE BRACED USING 2" BY 2" STAKES ONLY AS NECESSARY AND FOR THE FIRST GROWING SEASON ONLY. STAKES ARE TO BE EQUALLY SPACED ON THE OUTSIDE OF THE TREE BALL.

GRASSES AND LEGUME SEED SHOULD BE DRILLED INTO THE SOIL TO A DEPTH OF AT LEAST ONE INCH. GRASS AND LEGUME PLUGS SHALL BE PLANTED FOLLOWING THE NON-GRASS GROUND COVER PLANTING SPECIFICATIONS.

THE TOPSOIL SPECIFICATIONS PROVIDE ENOUGH ORGANIC MATERIAL TO ADEQUATELY SUPPLY NUTRIENTS FROM NATURAL CYCLING. THE PRIMARY FUNCTION OF THE BIORETENTION STRUCTURE IS TO IMPROVE WATER QUALITY. ADDING FERTILIZERS DEFEATS, OR AT A MINIMUM, IMPEDES THIS GOAL. ONLY ADD FERTILIZER IF WOOD CHIPS OR MULCH ARE USED TO AMEND THE SOIL. ROTOTILL UREA FERTILIZER AT A RATE OF 2 POUNDS PER 1000 SQUARE FEET.

6. UNDERDRAINS
UNDERDRAINS SHOULD MEET THE FOLLOWING CRITERIA:
• PIPE - SHOULD BE 4" TO 6" DIAMETER, SLOTTED OR PERFORATED RIGID PLASTIC PIPE (ASTM F 758, TYPE PS 28, OR AASHTO M-278) IN A GRAVEL LAYER. THE PREFERRED MATERIAL IS SLOTTED, 4" RIGID PIPE (E.G., PVC 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 (GHW) CHARACTERISTICS.
• GRAVEL - THE GRAVEL LAYER (NO. 57 STONE PREFERRED) SHALL BE AT LEAST 3" THICK ABOVE AND BELOW THE UNDERDRAIN.
• THE MAIN COLLECTOR PIPE SHALL BE AT A MINIMUM 0.5% SLOPE.
• A RIGID, NON-PERFORATED OBSERVATION WELL MUST BE PROVIDED (ONE PER EVERY 1,000 SQUARE FEET) TO PROVIDE A CLEAN-OUT PORT AND MONITOR PERFORMANCE OF THE FILTER.
• A 4" LAYER OF PEA GRAVEL (1/2" TO 3/8") SHALL BE LOCATED BETWEEN THE FILTER MEDIA AND UNDERDRAIN TO PREVENT MIGRATION OF FINES INTO THE UNDERDRAIN. THIS LAYER MAY BE CONSIDERED PART OF THE FILTER BED WHEN BED THICKNESS EXCEEDS 24".

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.4.D SPECIFICATIONS FOR PERMEABLE PAVEMENTS & REINFORCED TURF

THESE SPECIFICATIONS INCLUDE INFORMATION ON ACCEPTABLE MATERIALS FOR TYPICAL APPLICATIONS AND ARE NOT EXCLUSIVE OR LIMITING. THE DESIGNER IS RESPONSIBLE FOR DEVELOPING SPECIFICATIONS FOR INDIVIDUAL PROJECTS AND SPECIFIC CONDITIONS.

1. PERVIOUS CONCRETE SPECIFICATIONS
DESIGN THICKNESS - PERVIOUS CONCRETE APPLICATIONS SHALL BE DESIGNED SO THAT THE THICKNESS OF THE CONCRETE SLAB SHALL SUPPORT THE TRAFFIC AND VEHICLE TYPES THAT WILL BE CARRIED. APPLICATIONS MAY BE DESIGNED USING EITHER STANDARD PAVEMENT PROCEDURES (E.G., AASHTO AC 325.9R, AC 330R) OR USING STRUCTURAL VALUES DERIVED FROM FLEXIBLE PAVEMENT DESIGN PROCEDURES.
MIX & INSTALLATION - TRADITIONAL PORTLAND CEMENTS (ASTM C 150, C 1157) MAY BE USED IN PERVIOUS CONCRETE. HIGH STRENGTH PORTLAND CEMENTS MAY ALSO BE USED. MATERIALS SHOULD BE TESTED (E.G., TRIAL BATCHING) PRIOR TO CONSTRUCTION SO THAT CRITICAL PROPERTIES (E.G., SETTING TIME, RATE OF STRENGTH DEVELOPMENT, POROSITY, PERMEABILITY) CAN BE DETERMINED.
AGGREGATE - PERVIOUS CONCRETE CONTAINS A LIMITED FINE AGGREGATE CONTENT. COMMONLY USED GRADATIONS INCLUDE ASTM C 33 NO. 67 (3/4 IN. TO NO. 4), NO. 8 (3/8 IN. TO NO. 16) AND NO. 89 (3/8 IN. TO NO. 50) SIZES. SINGLE-SIZED AGGREGATE (UP TO 1 INCH) MAY ALSO BE USED.
WATER CONTENT - WATER-TO-CEMENT RATIOS BETWEEN 0.27 AND 0.30 ARE USED ROUTINELY WITH PROPER INCLUSION OF CHEMICAL ADMIXTURES. WATER QUALITY SHOULD MEET ACI 308. AS A GENERAL RULE, POTABLE WATER SHOULD BE USED ALTHOUGH RECYCLED CONCRETE PRODUCTION WATER MEETING ASTM C 94 OR AASHTO M 157 MAY ALSO BE USED.
ADMIXTURES - CHEMICAL ADMIXTURES (E.G., RETARDERS OR HYDRATION-STABILIZERS) ARE USED TO OBTAIN SPECIAL PROPERTIES IN PERVIOUS CONCRETE. USE OF ADMIXTURES SHOULD MEET ASTM C 494 (CHEMICAL ADMIXTURES) AND ASTM C 260 (AIR ENTRAINING ADMIXTURES) AND CLOSELY FOLLOW MANUFACTURER'S RECOMMENDATIONS. BASE COURSE - THE BASE COURSE SHALL BE AASHTO NO. 3 OR 4 COURSE AGGREGATE WITH AN ASSUMED OPEN PORE SPACE OF 30% (n=0.30).

2. PERMEABLE INTERLOCKING CONCRETE PAVEMENTS (PICP)
PAVER BLOCKS - BLOCKS SHOULD BE EITHER 3" IN. OR 4" IN. THICK, AND MEET ASTM C 936 OR CSA A231.2 REQUIREMENTS. APPLICATIONS SHOULD HAVE 20% OR MORE (40% PREFERRED) OF THE SURFACE AREA OPEN. INSTALLATION SHOULD FOLLOW MANUFACTURER'S INSTRUCTIONS, EXCEPT THAT INFILL AND BASE COURSE MATERIALS AND DIMENSIONS SPECIFIED IN THIS APPENDIX SHALL BE FOLLOWED.
INFILL MATERIALS AND LEVELING COURSE - OPENINGS SHALL BE FILLED WITH ASTM C-33 GRADED SAND OR SANDY LOAM. PICP BLOCKS SHALL BE PLACED ON A ONE-INCH THICK LEVELING COURSE OF ASTM C-33 SAND.
BASE COURSE - THE BASE COURSE SHALL BE AASHTO NO. 3 OR 4 COURSE AGGREGATE WITH AN ASSUMED OPEN PORE SPACE OF 30% (n=0.30).

3. REINFORCED TURF
REINFORCED GRASS PAVEMENT (RGP) - WHETHER USED WITH GRASS OR GRAVEL, THE RGP THICKNESS SHALL BE AT LEAST 1-3/4" THICK WITH A LOAD CAPACITY CAPABLE OF SUPPORTING THE TRAFFIC AND VEHICLE TYPES THAT WILL BE CARRIED.

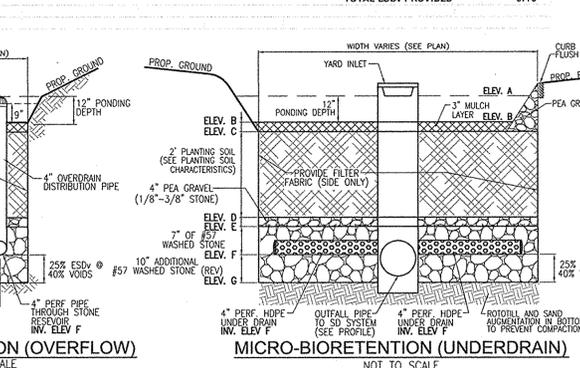
OPERATION AND MAINTENANCE SCHEDULE FOR LANDSCAPE INFILTRATION (M-3), MICRO-BIORETENTION (M-6), RAIN GARDENS (M-7), BIORETENTION SWALE (M-8), AND ENHANCED FILTERS (M-9)

1. THE OWNER SHALL MAINTAIN THE PLANT MATERIAL, MULCH LAYER AND SOIL LAYER ANNUALLY. 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. REMOVE DISEASED TREES AND SHRUBS, AND REPLACE ALL DEFICIENT STEMS AND WIRES.
3. THE OWNER SHALL INSPECT THE MULCH EACH SPRING. THE MULCH SHALL BE REPLACED EVERY TWO TO THREE YEARS. THE PERVIOUS 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 RAIN STORM.

OPERATION AND MAINTENANCE SCHEDULE FOR PRIVATELY OWNED AND MAINTAINED PERMEABLE PAVEMENT (A-2)

1. THE OWNER SHALL PERIODICALLY SWEEP OR VACUUM POROUS CONCRETE PAVEMENT. THE PAVEMENT SURFACES TO REDUCE SEDIMENT ACCUMULATION AND ENSURE CONTINUED SURFACE POROSITY. SWEEPING SHOULD BE PERFORMED AT LEAST TWICE ANNUALLY WITH A COMMERCIAL CLEANING UNIT. WASHING OR COMPRESSED AIR UNITS SHOULD NOT BE USED TO PERFORM SURFACE CLEANING.
2. THE OWNER SHALL PERIODICALLY CLEAN DRAINAGE PIPES, INLETS, STONE EDGE DRAINS AND OTHER STRUCTURES WITHIN OR DRAINING TO THE SUBBASE.
3. THE OWNER SHALL USE DECERS IN MODERATION. DECERS SHOULD BE NON-TOXIC AND BE APPLIED EITHER AS CALCIUM MAGNESIUM ACETATE OR AS PRETREATED SALT.
4. THE OWNER SHALL ENSURE SNOW PLOWING IS PERFORMED CAREFULLY WITH BLADES SET ONE INCH ABOVE THE SURFACE. PLOWED SNOW PILES AND SNOWMELT SHOULD NOT BE DIRECTED TO PERMEABLE PAVEMENT.

| DRAINAGE AREA # | AREA TREATED | FACILITY | ENVIRONMENTAL SITE DESIGN PRACTICE | | | | | | | | | |
|-----------------|--------------|------------|------------------------------------|-------------------------|--------------------|------------------------------|-------------|-------------|-------------------------|------------------|-----------|-------------|
| | | | PERMEABLE PAVEMENT (A-2) | PERVIOUS PAVEMENT (A-2) | BIORETENTION (M-3) | LANDSCAPE INFILTRATION (M-3) | SWALE (M-8) | TRUNK (M-9) | MICROBIORETENTION (M-6) | UNDERDRAIN (M-6) | MBR (M-6) | ESDv VOLUME |
| 1 | 4233 | SWM#1 | 191 | 122 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 313 |
| | | SUBTOTAL 1 | 191 | 50 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 240 |
| 2 | 11119 | SWM#2 | 540 | 273 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 812 |
| | | SUBTOTAL 2 | 540 | 273 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 812 |
| 3 | 11399 | SWM#3 | 667 | 174 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 840 |
| | | SUBTOTAL 3 | 667 | 174 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 840 |
| 4 | 14014 | SWM#4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1371 |
| | | SUBTOTAL 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1371 |
| 5 | 23240 | SWM#5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3507 |
| | | SUBTOTAL 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3507 |
| TOTALS: | | | 1397 | 496 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6770 |
| TOTAL AREA | | | 64005 SF | | | | | | | | | |
| | | | 1.47 AC | | | | | | | | | |

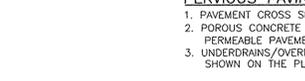


MICROBIORETENTION NOTES:
1. ONLY THE SIDES OF MICROBIORETENTION ARE TO BE WRAPPED IN FILTER FABRIC. FILTER FABRIC BETWEEN LAYER OR AT THE BOTTOM OF THE MICROBIORETENTION WILL CAUSE THE MBR TO FAIL, AND THEREFORE SHALL NOT BE INSTALLED.
2. WRAP THE PERFORATED MBR UNDERDRAIN PIPE WITH 1/4" MESH (4x4) OR SMALLER GALVANIZED HARDWARE CLOTH.
3. PROVIDE 5" MINIMUM SPACING BETWEEN UNDER DRAIN AND PERFORATED PIPE THROUGH STONE RESERVOIR OR SPACE PIPE EQUALLY ACROSS BOTTOM FOR SMALL BIOS. (SEE PLANS)

| MBR Facility | ESD Facility | ESD Facility Area | Volume Provided | MICROBIORETENTION DATA CHART | | | | | | | | | |
|--------------|--------------|-------------------|-----------------|------------------------------|-------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| | | | | Ponding (ft) | Top of Stone (ft) | Bottom of Stone (ft) |
| 4 | 1028 | 1371 | 471.81 | 470.81 | 470.56 | 468.56 | 468.23 | 0.58 | 467.65 | 467.65 | 0.83 | 466.82 | |
| 5 | 2030 | 3507 | 471.83 | 470.83 | 470.38 | 468.38 | 468.02 | 0.58 | 467.47 | 467.47 | 0.83 | 466.64 | |

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 Chief, Development Engineering Division
 Chief, Division of Land Development
 Director

6-1-16
 6-9-16
 6-9-16
 DATE



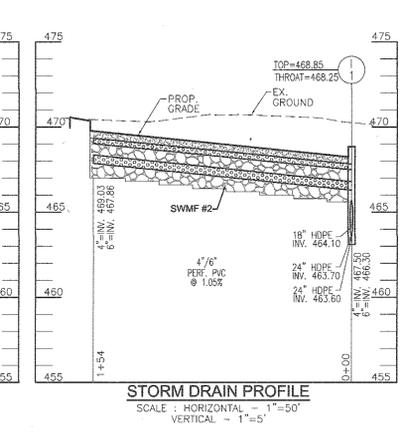
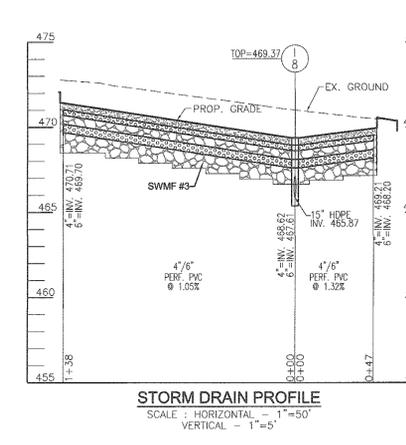
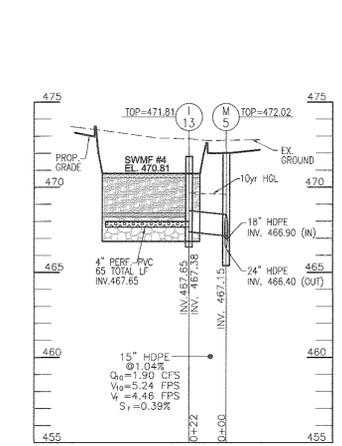
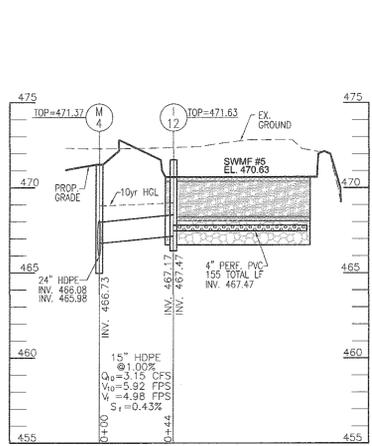
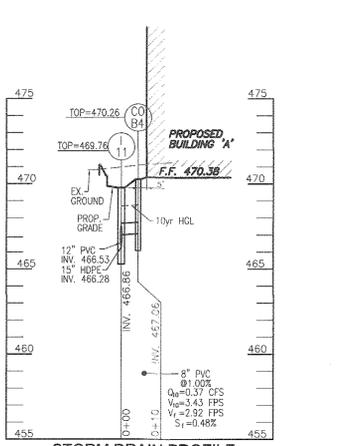
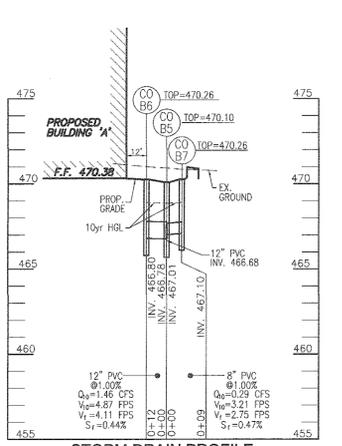
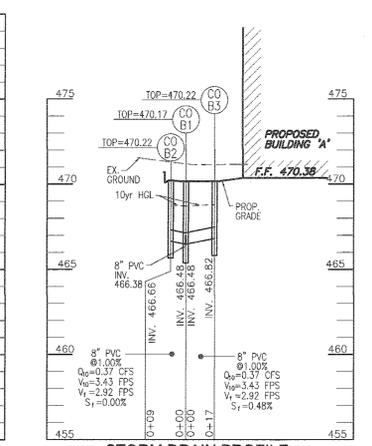
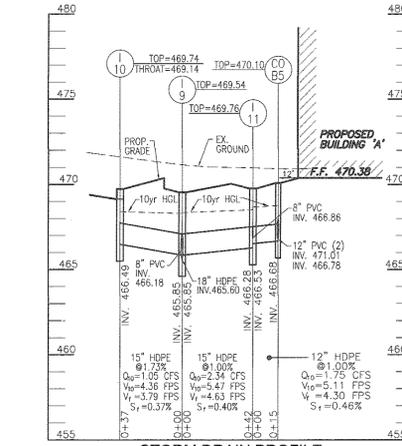
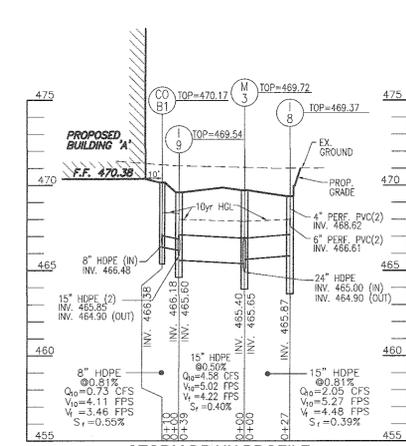
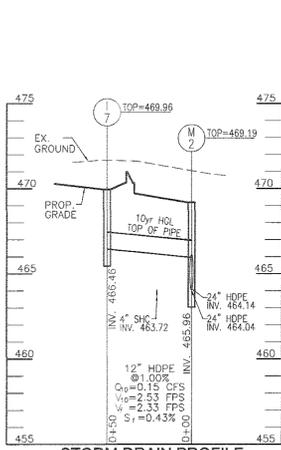
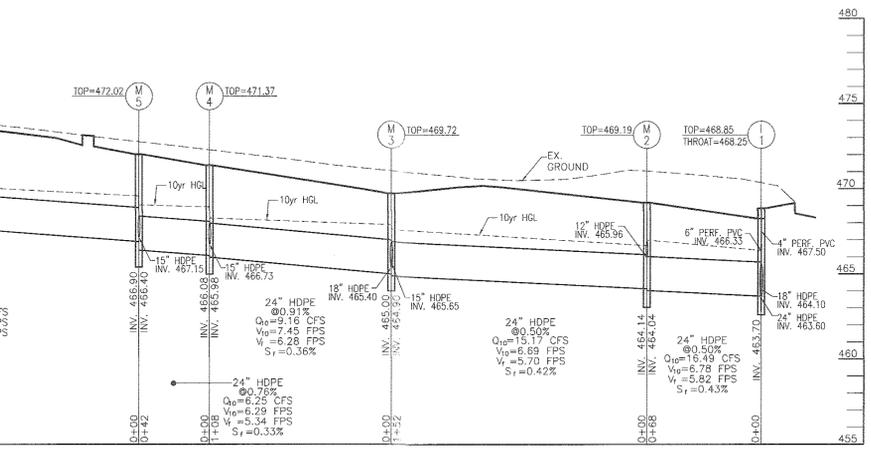
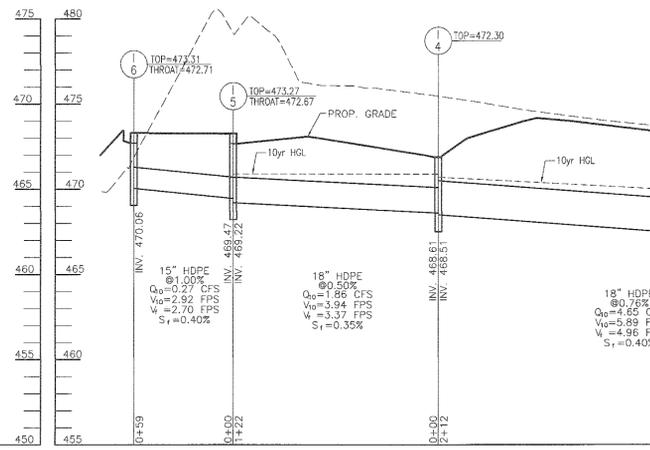
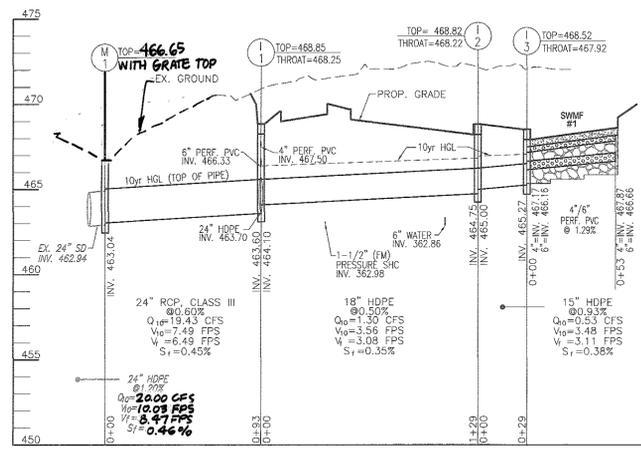
| TEST PIT # | DEPTH | COMMENTS |
|------------|-------|--------------------------|
| 1 | 9.5' | No Water (bottom trench) |
| 2 | 9' | No Water (bottom trench) |
| 3 | 9' | No Water (bottom trench) |
| 4 | 10' | No Water (bottom trench) |
| 5 | 10' | No Water (bottom trench) |
| 6 | 9.5' | No Water (bottom trench) |
| 7 | 9.5' | No Water (bottom trench) |
| 8 | 10.5' | No Water (bottom trench) |

OWNER/PETITIONER
 ANXIOY, LLC
 12420 AUTO DRIVE
 CLARKSVILLE, MD 21029
 (410) 531-5700

REVISED SITE DEVELOPMENT PLAN
 DRAINAGE AREA MAPS;
 SWM NOTES AND DETAILS
 ANTWERPEN HYUNDAI
 PARCEL E-7, HOLWECK SUBDIVISION
 PLAT 23575
 ZONED: B-2
 TAX MAP 34 BLOCK 06
 5TH ELECTION DISTRICT
 PARCEL 365
 HOWARD COUNTY, MARYLAND

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

DESIGN BY: DZE
 DRAWN BY: DZE/KG
 CHECKED BY: RHV
 DATE: MAY 2016
 SCALE: AS SHOWN
 W.O. NO.: 12-48
 SHEET 11
 OF 11



| STRUCTURE SCHEDULE | | | | | | | |
|--------------------|--------------------------------|------------------------|-----------|--------------|---------|----------|---|
| NO. | TYPE | LOCATION | TOP ELEV. | THROAT ELEV. | INV. IN | INV. OUT | COMMENTS |
| I-1 | TYPE "A-10" INLET | N 562548.7 E 1328342.4 | 468.85 | 468.25 | 463.70 | 467.50 | 463.60 HO. CO. STD. D-403 |
| I-2 | TYPE "A-5" INLET | N 562653.6 E 1328267.4 | 468.82 | 468.22 | 465.00 | 464.75 | 464.75 HO. CO. STD. D-4.01 |
| I-3 | TYPE "A-5" INLET | N 562652.2 E 1328238.7 | 468.52 | 467.92 | 464.12 | 465.27 | 465.27 HO. CO. STD. D-4.01 |
| I-4 | DOUBLE "S" INLET | N 562092.5 E 1328018.6 | 472.30 | 468.81 | 468.51 | 468.51 | 468.51 HO. CO. STD. D-4.23 |
| I-5 | TYPE "A-5" INLET | N 561980.5 E 1327970.4 | 473.27 | 472.67 | 469.47 | 469.22 | 469.22 HO. CO. STD. D-4.01 |
| I-6 | TYPE "A-5" INLET | N 561926.5 E 1327993.1 | 472.71 | 472.11 | 470.06 | 470.06 | 470.06 HO. CO. STD. D-4.01 |
| I-7 | "S" INLET | N 562512.6 E 1328253.3 | 469.96 | - | 466.46 | 466.46 | 466.46 HO. CO. STD. SD-4.22 |
| I-8 | DOUBLE "WR" INLET | N 562344.6 E 1328269.8 | 469.37 | - | 466.62 | 466.62 | 466.62 HO. CO. STD. D-4.35 |
| I-9 | "S" INLET | N 562367.7 E 1328208.0 | 469.54 | - | 466.18 | 466.18 | 466.18 HO. CO. STD. SD-4.22 |
| I-10 | TYPE "A-5" INLET | N 562339.6 E 1328183.6 | 469.74 | 469.14 | 466.49 | 466.49 | 466.49 HO. CO. STD. D-4.01 |
| I-11 | "S" INLET | N 562407.7 E 1328217.6 | 469.76 | - | 466.86 | 466.86 | 466.86 HO. CO. STD. SD-4.22 |
| I-12 | YARD INLET | N 562257.3 E 1328162.9 | 469.76 | - | 467.47 | 467.17 | 467.17 HO. CO. STD. SD-4.14 |
| I-13 | YARD INLET | N 562200.8 E 1328210.5 | 471.81 | - | 467.65 | 467.38 | 467.38 HO. CO. STD. SD-4.14 |
| MH-1 | 4'-0" STANDARD PRECAST MANHOLE | N 562489.1 E 1328413.0 | 466.65 | - | 463.04 | 462.94 | 462.94 HO. CO. STD. G-5.12 W/GRATE TOP |
| MH-2 | 4'-0" STANDARD PRECAST MANHOLE | N 562495.4 E 1328300.5 | 469.19 | - | 465.98 | 464.04 | 464.04 HO. CO. STD. G-5.12 |
| MH-3 | 4'-0" STANDARD PRECAST MANHOLE | N 562353.9 E 1328244.7 | 469.72 | - | 466.59 | 464.90 | 464.90 HO. CO. STD. G-5.12 |
| MH-4 | 4'-0" STANDARD PRECAST MANHOLE | N 562252.9 E 1328207.1 | 471.37 | - | 466.73 | 465.98 | 465.98 HO. CO. STD. G-5.12 |
| MH-5 | 4'-0" STANDARD PRECAST MANHOLE | N 562213.6 E 1328192.3 | 472.02 | - | 466.55 | 466.40 | 466.40 HO. CO. STD. G-5.12 |
| SMH-1 | 4'-0" STANDARD PRECAST MANHOLE | N 562484.0 E 1328274.4 | 469.69 | - | 463.76 | 463.66 | 463.66 HO. CO. STD. G-5.12 |
| GP-2014 | ENVIRONMENT ONE GRINDER PUMP | N 562583.6 E 1328310.6 | 469.75 | - | 461.83 | 462.87 | 462.87 |
| CO-B1 | CLEANOUT | N 562371.2 E 1328198.6 | 470.17 | - | 466.48 | 466.38 | 466.38 HO. CO. STD. S-2.22 |
| CO-B2 | CLEANOUT | N 562365.9 E 1328191.4 | 470.22 | - | 466.66 | 466.56 | 466.56 HO. CO. STD. S-2.22 |
| CO-B3 | CLEANOUT | N 562387.9 E 1328199.6 | 470.22 | - | 466.82 | 466.72 | 466.72 HO. CO. STD. S-2.22 |
| CO-B4 | CLEANOUT | N 562412.3 E 1328208.7 | 470.26 | - | 467.06 | 466.96 | 466.96 HO. CO. STD. S-2.22 |
| CO-B5 | CLEANOUT | N 562421.9 E 1328222.9 | 470.10 | - | 466.78 | 466.68 | 466.68 HO. CO. STD. S-2.22 |
| CO-B6 | CLEANOUT | N 562432.0 E 1328216.1 | 470.26 | - | 466.80 | 466.70 | 466.70 HO. CO. STD. S-2.22 |
| CO-B7 | CLEANOUT | N 562426.3 E 1328231.4 | 470.26 | - | 467.10 | 467.00 | 467.00 HO. CO. STD. S-2.22 |

NOTE: 1. TOP ELEVATIONS ARE AT CENTER TOP OF HEADPIECE FOR TYPE "A-10", CENTER TOP OF MANHOLE FOR TYPE "S" 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 | SIZE | TYPE | LENGTH |
| 6" | DIP (PRIVATE) | 116 LF | 24" | HDPE (SD) | 370 LF |
| 6" | DIP (PUBLIC) | 81 LF | 24" | RCP, CLASS III (SD) | 93 LF |
| 8" | DIP (PUBLIC) | 59 LF | 8" | PVC (SD) | 45 LF |
| 4" | PVC (SEWER) | 118 LF | 12" | PVC (SD) | 27 LF |
| 1-1/2" | FM (SEWER) | 17 LF | 4" | PERF. PVC (SWM) | 571 LF |
| 12" | HDPE (SD) | 50 LF | 6" | PERF. PVC (SWM) | 238 LF |
| 15" | HDPE (SD) | 260 LF | | | |
| 18" | HDPE (SD) | 502 LF | | | |

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 [Signature] 6-1-16
 CHIEF, DEVELOPMENT ENGINEERING DIVISION
 [Signature] 6-9-16
 CHIEF, DIVISION OF LAND DEVELOPMENT
 [Signature] 6-9-16
 DIRECTOR

BY THE DEVELOPER:
 I HEREBY CERTIFY THAT ALL DEVELOPMENT AND CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN FOR SEDIMENT AND EROSION CONTROL, AND THAT ALL RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A DEPARTMENT OF THE ENVIRONMENT APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT.
 [Signature] 4/5/16
 SIGNATURE OF DEVELOPER 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.
 THIS DEVELOPMENT PLAN IS APPROVED FOR SOIL EROSION AND SEDIMENT CONTROL BY THE HOWARD SOIL CONSERVATION DISTRICT.
 [Signature] 5/24/16
 HOWARD S.C.D. DATE

OWNER/PETITIONER
 ANTOY LLC
 12420 AUTO DRIVE
 CLARKSVILLE, MD 21029
 (410) 531-5700

| NO. | REVISION | DATE |
|-----|----------|------|
| | | |
| | | |
| | | |
| | | |

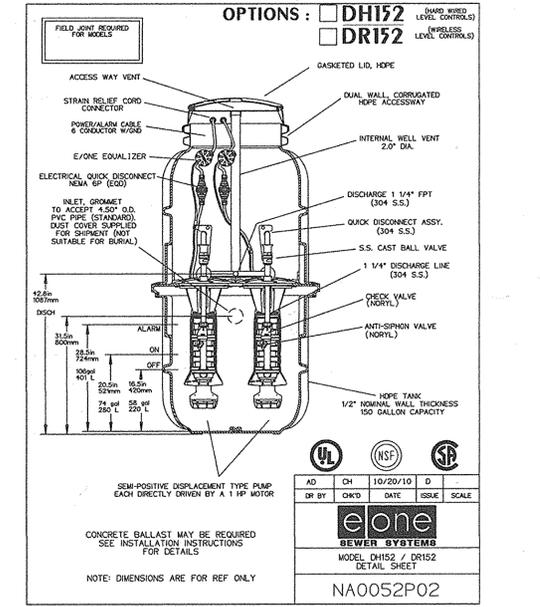
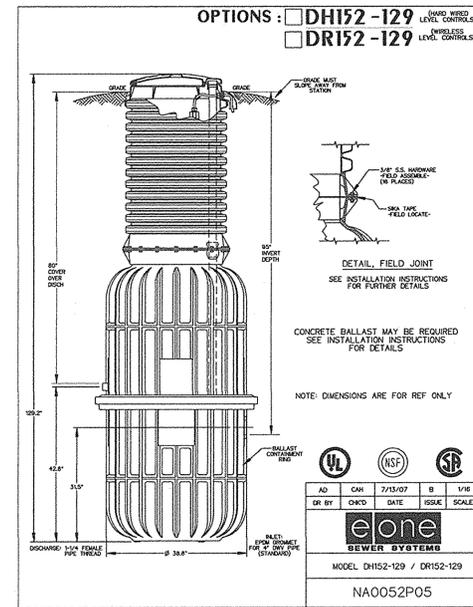
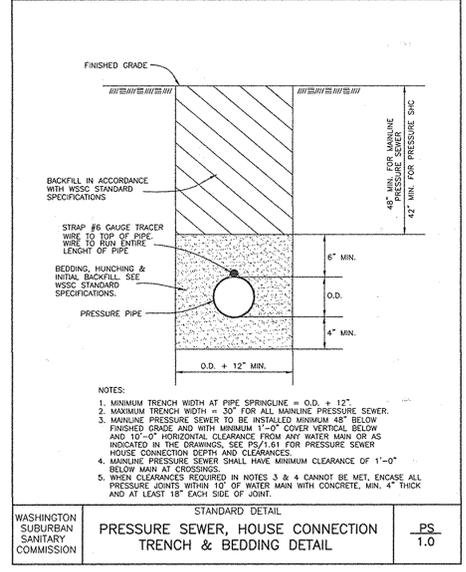
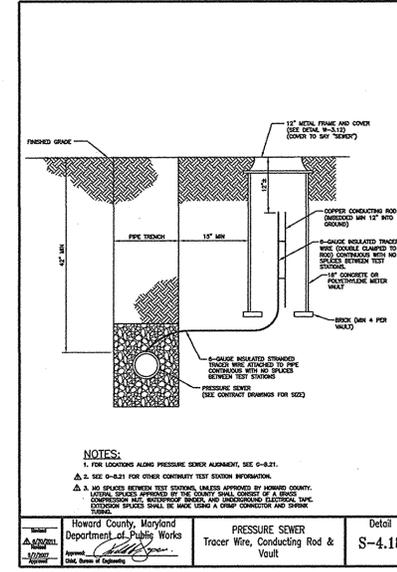
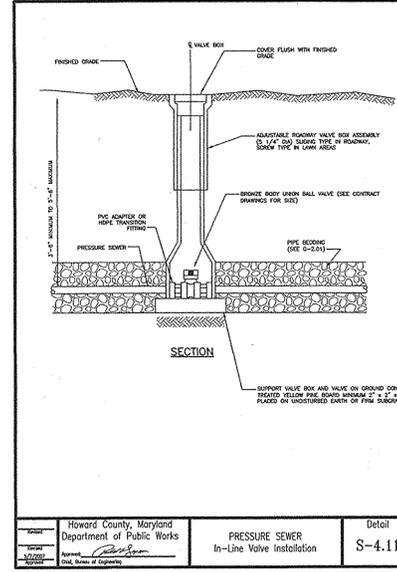
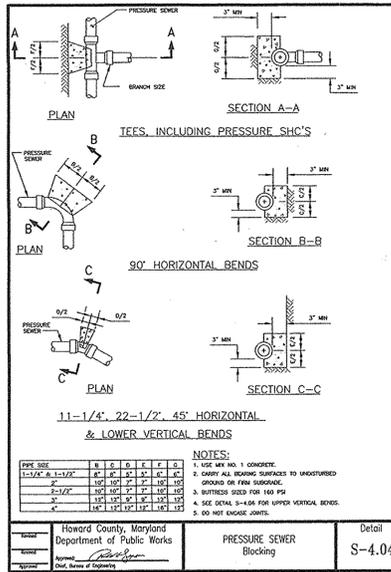
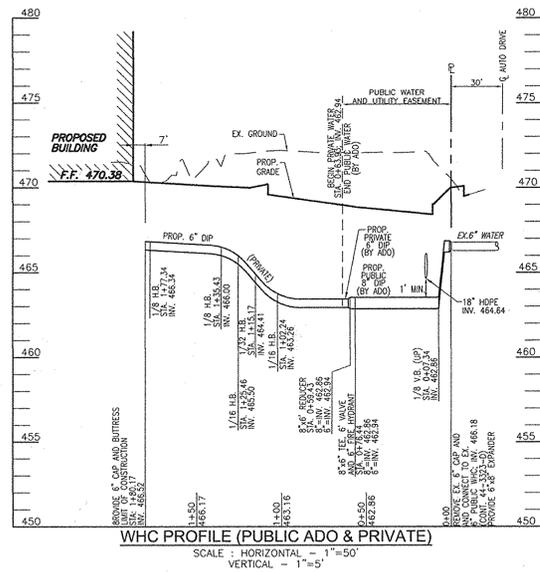
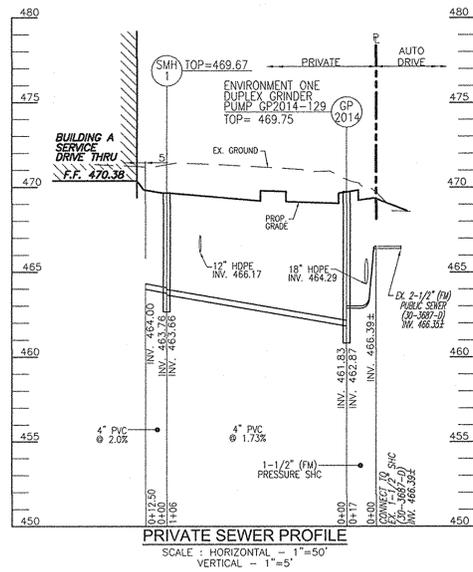
SITE DEVELOPMENT PLAN
STORM DRAIN PROFILES
 ANTWERPEN HYUNDAI
 PARCEL E-7, HOLWECK SUBDIVISION
 PLAT
 ZONED: B-2
 TAX MAP 34 BLOCK 06 PARCEL 365
 5TH ELECTION DISTRICT HOWARD COUNTY, MARYLAND

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

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. 11853, EXPIRATION DATE: 08-28-2018

DESIGN BY: DZE
 DRAWN BY: DZE/KG
 CHECKED BY: RHW
 DATE: MARCH 2015
 SCALE: AS SHOWN
 W.D. NO.: 12-48

7 SHEET OF 11



Howard County, Maryland
Department of Public Works
Pressure Sewer
Blocking
Detail
S-4.04

Howard County, Maryland
Department of Public Works
Pressure Sewer
In-Line Valve Installation
Detail
S-4.11

Howard County, Maryland
Department of Public Works
Pressure Sewer
Tracer Wire, Conducting Rod &
Vault
Detail
S-4.18

WASHINGTON SUBURBAN SANITARY COMMISSION
PRESSURE SEWER, HOUSE CONNECTION TRENCH & BEDDING DETAIL
PS
1.0

OWNER/PETITIONER
ANTOY LLC
12420 AUTO DRIVE
CLARKSVILLE, MD, 21029
(410) 531-5700

| NO. | REVISION | DATE |
|-----|---|----------|
| 1 | REVISE PLAN TO MODIFY THE BUILDING, PARKING LOT, UTILITIES AND SWM. | 04/07/16 |

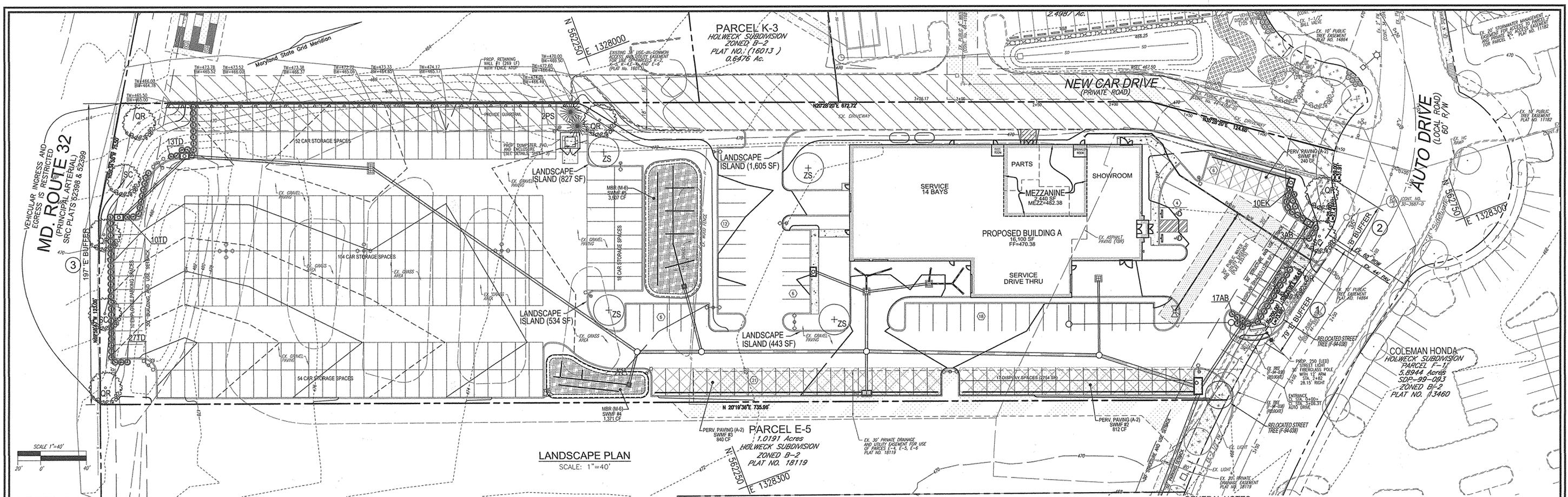
REVISED SITE DEVELOPMENT PLAN
UTILITY DETAILS AND PROFILES
ANTWERPEN HYUNDAI
PARCEL E-7, HOLWECK SUBDIVISION
PLAT 23575
TAX MAP 34 BLOCK 06 5TH ELECTION DISTRICT
ZONED: B-2 PARCEL 365 HOWARD COUNTY, MARYLAND

ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET ELLICOTT CITY, MD 21043
TEL: 410.461.7666 FAX: 410.461.8966

PROFESSIONAL CERTIFICATE
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A LEGALLY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193, EXPIRATION DATE: 08-27-2018.
DESIGN BY: DZE
DRAWN BY: DZE/KG
CHECKED BY: RHY
DATE: MAY 2016
SCALE: AS SHOWN
W.O. NO.: 12-48
8 SHEET OF 11

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
Chief, Development Engineering Division
Chief, Division of Land Development
Director

K:\Projects\12-48\ENR\DWG\SDP\REPLACEMENT\REPLACEMENT.dwg, PROFILE.dwg, 5/4/2016 3:02:59 PM



LEGEND:

EXISTING CONTOUR
PROPOSED CONTOUR
EXISTING SPOT ELEVATION
PROPOSED SPOT ELEVATION
EXISTING CURB AND GUTTER
PROPOSED CURB AND GUTTER
EXISTING LIGHT POLE
EXISTING MAILBOX
EXISTING SIGN
EXISTING SANITARY MANHOLE
EXISTING SANITARY LINE
EXISTING CLEANOUT
EXISTING FIRE HYDRANT
EXISTING WATER LINE
PROPOSED STORM DRAIN
PROPOSED STORM DRAIN INLET
PROPOSED TREELINE
EXISTING TREELINE
EXISTING FENCE
PROPERTY LINE
RIGHT-OF-WAY LINE
SOLS BOUNDARY
PROPOSED SIDEWALK

EX. 20' DRAINAGE & UTILITY EASEMENT PLAT #16103
EX. 20' WATER & UTILITY EASEMENT PLAT #18119
EX. 30' USE-IN-COMMON ACCESS EASEMENT PLAT #16103
PROP. 20' PUBLIC WATER & UTILITY EASEMENT PLAT #23575
PROP. MICRO BIOTENTION AREA (M-6)
PROP. PAVEMENT (A-2)
EX. 10' PUBLIC TREE EASEMENT PLAT #11182

SCHEDULE 'A' PERIMETER LANDSCAPE EDGE

| CATEGORY | ADJACENT TO PERIMETER AND ROADWAYS (REQUIRED) | | | | DUMPSTER | TOTALS |
|--|---|-----|------|------|----------|--------|
| | 1 | 2 | 3 | 4 | | |
| PERIMETER/FRONTAGE DESIGNATION | E | B | E | D | | |
| LINEAR FEET OF ROADWAY FRONTAGE/PERIMETER | 79' | 35' | 197' | 21' | | |
| CREDIT FOR EXISTING VEGETATION (YES, NO, LINEAR FEET DESCRIBE BELOW IF NEEDED) | NO | NO | NO | NO | | |
| CREDIT FOR WALL, FENCE OR BERM (YES, NO, LINEAR FEET DESCRIBE BELOW IF NEEDED) | NO | NO | NO | NO | | |
| NUMBER OF PLANTS REQUIRED | 1:40 | 2 | 1:50 | 1:40 | 5 | 1:60 |
| SHADE TREES | 1 | 2 | 1 | 1 | 2 | 3 |
| EVERGREEN TREES | 1:4 | 20 | 1:4 | 50 | 1 | 70 |
| NUMBER OF PLANTS PROVIDED | | | | | | |
| SHADE TREES | 2 | 1 | 5 | 1 | 9 | |
| EVERGREEN TREES | 0 | 0 | 0 | 2 | 2 | |
| OTHER TREES (2:1 SUBSTITUTION) | 0 | 0 | 0 | 0 | 0 | |
| SHRUBS (10:1 SUBSTITUTION) | 20 | 10 | 50 | 0 | 80 | |

* 10 SHRUBS PLANTED IN SUBSTITUTION OF 1 EVERGREEN TREE IN PERIMETER 2.

LANDSCAPE SCHEDULE

| KEY | QUAN. | BOTANICAL NAME | SIZE | CAT. |
|-----|-------|---|----------------|-------|
| OR | 6 | QUERCUS RUBRA NORTHERN RED OAK | 2 1/2"-3" CAL. | B & B |
| SC | 3 | PRUNUS SARGENTII SARGENT CHERRY | 2 1/2"-3" CAL. | B & B |
| ZS | 4 | ZELCOVA SEROTINA VILAGE GREEN VILAGE GREEN JAPANESE ZELCOVA | 2 1/2"-3" CAL. | B & B |
| PS | 2 | PINUS STROBUS EASTERN WHITE PINE | 6"-8" HT. | B & B |
| AB | 20 | AZALEA 'BLAAS'S PINK' BLAAS'S PINK AZALEA | 18"-24" SPREAD | B & B |
| EK | 10 | EUONYMUS KAUTSCHOWICUS 'MANHATTAN' MANHATTAN EUONYMUS | 2 1/2" -3" HT. | B & B |
| TD | 50 | TAXUS MEDIA 'DESIFORMIS' DENIFORMIS YEW | 2 1/2" -3" HT. | B & B |

SCHEDULE B PARKING LOT INTERNAL LANDSCAPING

| NUMBER OF PROPOSED PARKING SPACES | NUMBER OF TREES REQUIRED (1/20 SPACES) | NUMBER OF TREES PROVIDED |
|-----------------------------------|--|--------------------------|
| 73 | 4 | 4 |
| 4 | 0 | 0 |

BIOTENTION PLANTING SCHEDULE

| KEY | QTY | BOTANICAL NAME/COMMON NAME | SIZE | REMARKS |
|-----|-----|--|----------|---------|
| IG | 13 | ILEX GLABRA 'SHAMROCK' INKBERRY HOLLEY | 1 GALLON | |
| IV | 17 | ITEA VIRGINICA 'HENRY'S GARNETT' VIRGINIA SWEETSPIRE | 1 GALLON | |
| HQ | 19 | HYDRANGEA QUERCIFOLIA OAKLEAF HYDRANGEA | 1 GALLON | |
| LR | 25 | LEUCOTHEO RACEMOSA FETTERBUSH | 1 GAL. | |
| PV | 32 | PANICUM VIRGATUM SWITCHGRASS | 1 GAL. | |
| | 127 | BAPTISIA AUSTRALIS FALSE INDIGO | 4" POT | |
| | 127 | ACORUS GRAMINEUS 'OOGON' GOLDEN VAREGATED SWEET FLAG | 1 QT. | |

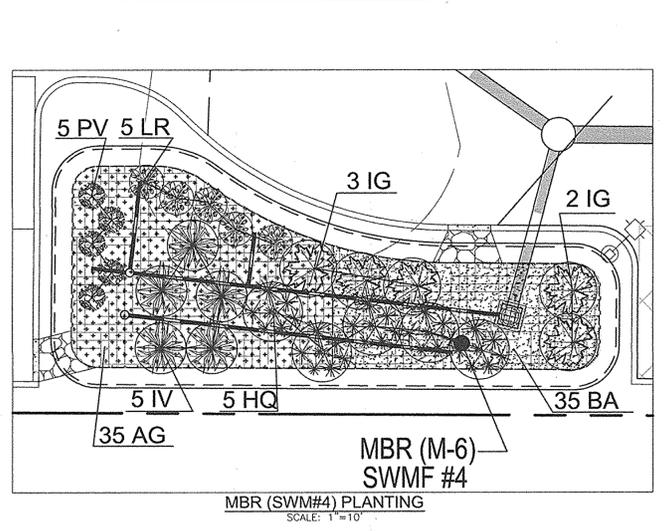
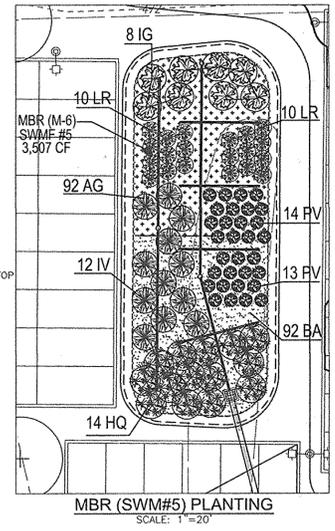
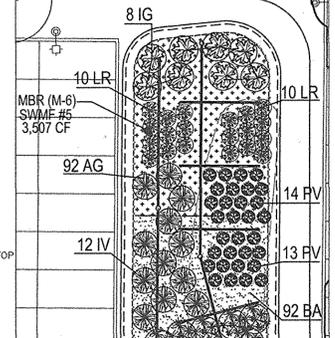
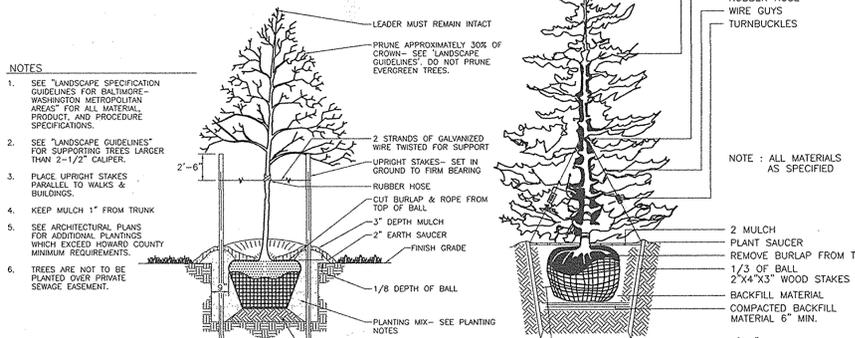
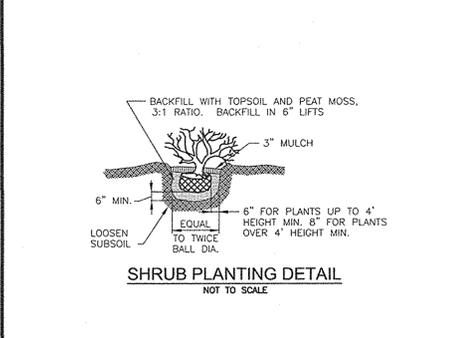
GENERAL NOTES:

- 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 FOR THIS SUBDIVISION.
- FINANCIAL SURETY FOR THE REQUIRED LANDSCAPING HAS BEEN POSTED AS PART OF THE DEVELOPER'S AGREEMENT IN THE AMOUNT OF \$2,450 FOR THE REQUIRED 13 SHADE TREES, 3 EVERGREEN TREES, AND 70 SHRUBS.

LANDSCAPE SCHEDULE NOTE:

- ALL PLANT MATERIALS SHALL BE FULL AND HEAVY, BE WELL FORMED AND SYMMETRICAL, CONFORM TO THE MOST CURRENT ANY SPECIFICATIONS AND BE INSTALLED IN ACCORDANCE WITH HED PLANTING SPECIFICATIONS.
- CONTRACTOR SHALL VERIFY LOCATION OF ALL UNDERGROUND UTILITIES PRIOR TO DIGGING.
- FINAL LOCATION OF PLANT MATERIAL MAY NEED TO VARY TO MEET FINAL FIELD CONDITIONS. TREES SHALL NOT BE PLANTED IN THE BOTTOM OF DRAINAGE SWALES.
- CONTRACTOR SHALL VERIFY PLANT QUANTITIES PRIOR TO BIDDING. IF PLAN OFFERS FROM LANDSCAPE SCHEDULE, THE PLAN SHALL GOVERN.
- NO SUBSTITUTION SHALL BE MADE WITHOUT PRIOR APPROVAL FROM HOWARD COUNTY DPZ AND THE OWNER OR HIS REPRESENTATIVE.
- 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 SUBSTITUTIONS OR RELOCATIONS OF THE REQUIRED PLANTINGS MAY BE MADE WITHOUT PRIOR REVIEW AND APPROVAL FROM THE DEPARTMENT OF PLANNING 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.
- 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.

OWNER/PETITIONER
ANTOY LLC
12420 AUTO DRIVE
CLARKSVILLE, MD, 21029
(410) 531-5700



APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

6-1-16
6-9-16
6-9-16

DATE
DATE
DATE

| NO. | REVISION | DATE |
|-----|---|----------|
| 1 | REVISE PLAN TO MODIFY THE BUILDING, PARKING LOT, UTILITIES AND SWM. | 04/07/16 |

REVISED SITE DEVELOPMENT PLAN

LANDSCAPE PLAN, NOTES AND DETAILS

ANTWERPEN HYUNDAI
PARCEL E-7, HOLWECK SUBDIVISION
PLAT 23575
ZONED: B-2

TAX MAP 34 BLOCK 06
5TH ELECTION DISTRICT

PARCEL 365
HOWARD COUNTY, MARYLAND

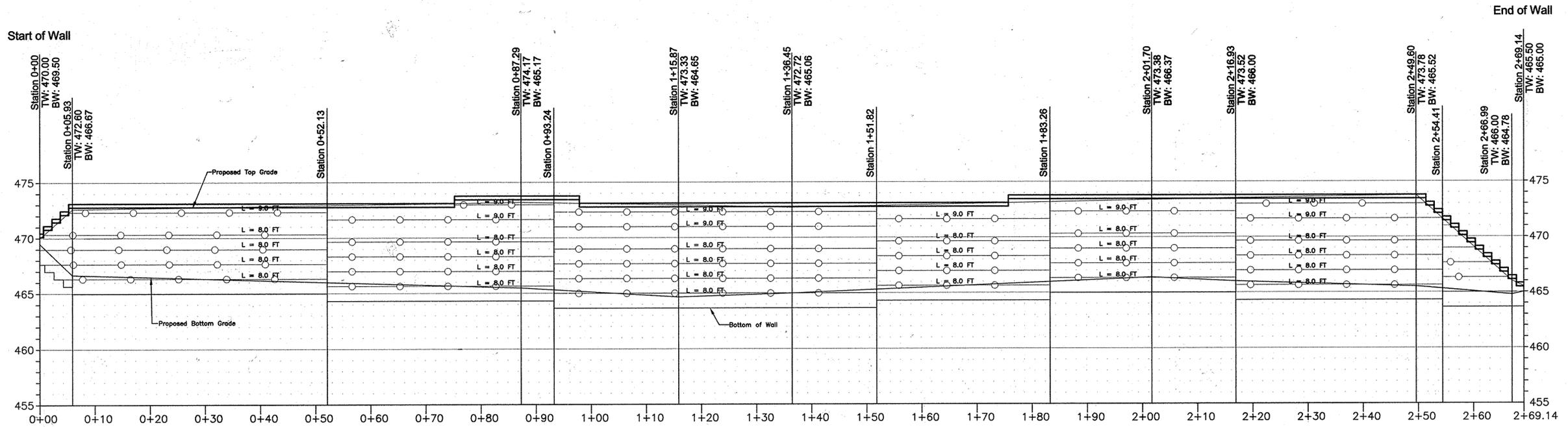
ROBERT H. VOGEL ENGINEERING, INC.
ENGINEERS • SURVEYORS • PLANNERS
8407 MAIN STREET
ELLCOTT CITY, MD 21043
TEL: 410.461.7666
FAX: 410.461.8961

PROFESSIONAL CERTIFICATE

DESIGN BY: DZE
DRAWN BY: DZE/KG
CHECKED BY: RHY
DATE: MAY 2016
SCALE: AS SHOWN
W.O. NO.: 12-48

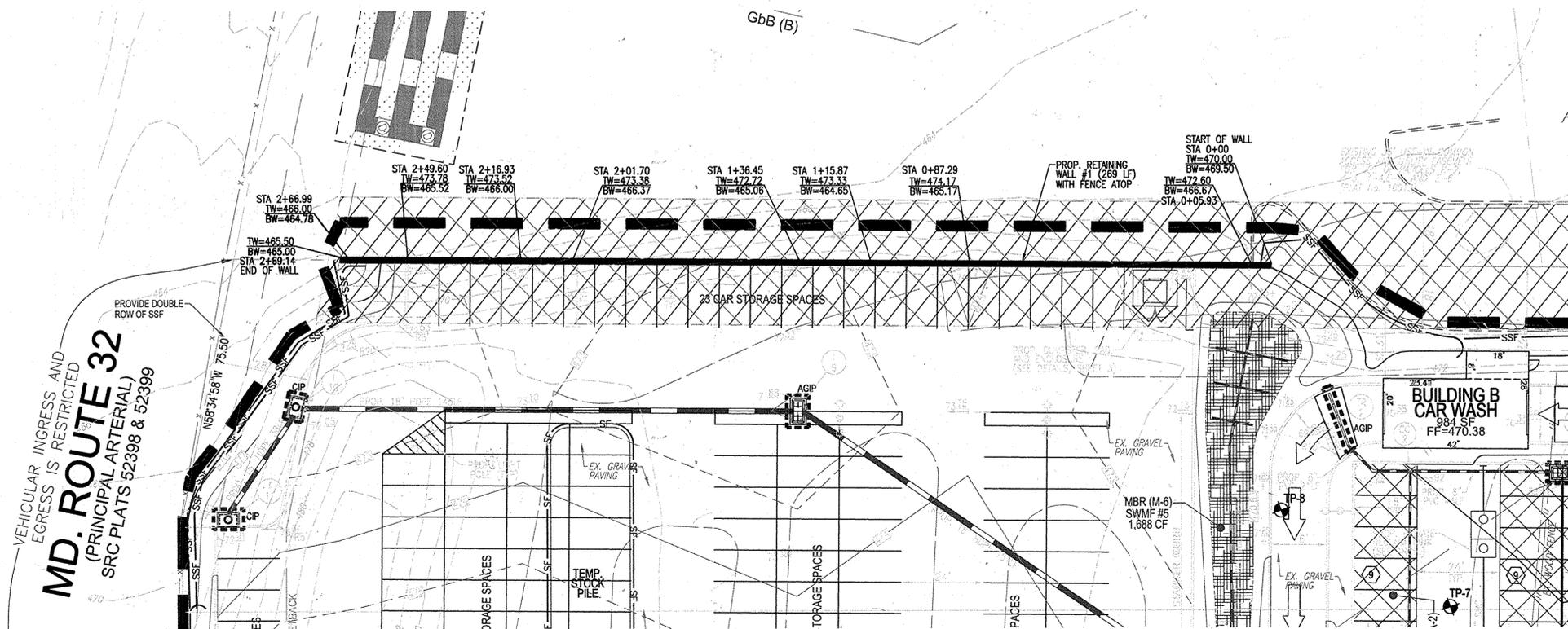
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A FULLY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 16193, EXPIRATION DATE 08-27-2018.

9 SHEET OF 11



WALL PROFILE
 HORIZONTAL SCALE: 1"=10'
 VERTICAL SCALE: 1"=5'

NOTE: ALL GEOGRIDS CONSIST OF MIRAFI 5XT



PLAN (BASED ON SITE DEVELOPMENT PLAN)
 PROVIDED BY ROBERT H. VOGEL ENGINEERING, INC)
 SCALE: 1"=20'

OWNER/PETITIONER

ANTWERPEN HYUNDAI
 12420 ALTO DRIVE
 CLARKSVILLE, MD. 21029
 (410) 531-6700

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING

Robert H. Vogel
 CHIEF, DEVELOPMENT ENGINEERING DIVISION 10-8-15
 DATE
Kurt Schaefer
 CHIEF, DIVISION OF LAND DEVELOPMENT 12-29-15
 DATE
Nicholas J. Joplin
 DIRECTOR 12-30-15
 DATE

| NO. | REVISION | DATE |
|--|--------------------------|---|
| SITE DEVELOPMENT PLAN | | |
| ANTWERPEN HYUNDAI | | |
| PARCEL E-7, HOLWECK SUBDIVISION | | |
| TAX MAP 34 BLOCK 06 5TH ELECTION DISTRICT | PLAT 23875 ZONED: B-2 | PARCEL 365 HOWARD COUNTY, MARYLAND |
| ECS | | 1340 CHARWOOD ROAD SUITE A HANOVER, MARYLAND 21076 PHONE: (410) 859-4300 FAX: (410) 859-4324 |
| | | PROFESSIONAL CERTIFICATE I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A FULLY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 29553, EXPIRATION DATE 12-31-2015. |
| DRAWN BY: [Blank] CHECKED BY: [Blank] DATE: MARCH, 2015 SCALE: AS SHOWN W.D. NO.: 7351 | | 10 SHEET OF 11 |

RETAINING WALL SPECIFICATION GUIDELINES

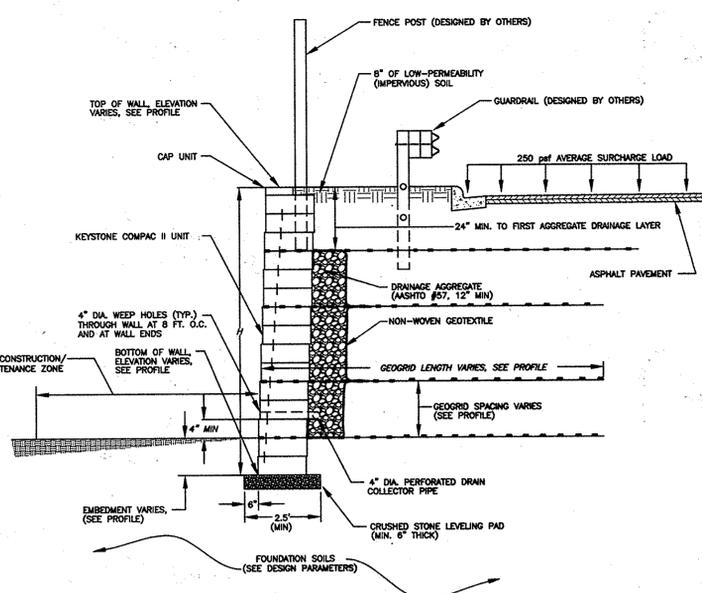
PART 1: GENERAL
1.01 Description
 A. Retaining walls must be constructed under the supervision of a Maryland Registered Professional Engineer.
 B. Work includes furnishing and installing concrete modular block retaining wall units to the lines and grades shown on the construction drawings and as specified herein.
 C. Work includes preparing foundation soil, furnishing and installing leveling pad, unit fill and reinforced backfill to the lines and grades shown on the construction drawings.
 D. Work includes furnishing and installing all related materials required for construction of the retaining wall as shown on the construction drawings.
1.02 Reference Standards
 A. ASTM C 90 Load Bearing Concrete Masonry Units.
 B. ASTM C 140 Sampling and Testing Concrete Masonry Units.
 C. ASTM D 448 Sizes of Aggregate for Road and Bridge Construction.
 D. ASTM D 698 Laboratory Compaction Characteristics using Standard Effort.
1.03 Delivery, Storage and Handling
 A. Contractor shall check the materials upon delivery to assure that proper materials have been received.
 B. Contractor shall prevent excessive mud, wet cement, epoxy, and similar materials (which may affect themselves) from coming in contact with the materials.
 C. Contractor shall protect the materials from damage and exposure to sunlight. Damaged materials shall not be incorporated into the retaining wall structure and backfill.
1.04 Quality Assurance
 A. Owner will be responsible for soil testing and construction observations for quality control during earthwork and retaining wall construction operations.

PART 2: MATERIALS
2.01 Definitions
 A. Modular Wall Units - KEYSTONE modular concrete facing and corner units, machine made from portland cement, water, and mineral aggregates.
 B. Structural Geogrid - a structural geogrid formed by a regular network of integrity connected tensile elements with apertures of sufficient size to allow interlocking with surrounding soil, rock, or earth and function primarily as reinforcement.
 C. Unit Fill/Drainage Aggregate - drainage aggregate, such as No. 57 Stone, which is placed within the cells of the modular concrete units and immediately behind the units to a width of at least 12 inches.
 D. Reinforced Backfill - Compacted soil which is within the reinforced soil volume as shown on the plans.
 E. Excavation Face - The interface between the reinforced backfill and the retained fill. During construction, measures shall be taken to avoid developing a shear plane at this interface.
 F. Retained Backfill - On-site material located behind the reinforced zone of soil.
2.02 Concrete Units
 A. Concrete segmental units shall conform to the requirements of NCMA TEK 2-4 and have a minimum 28-day compression strength of 4,000 psi. The units shall also pass 150 freeze thaw cycles in water with less than 1% weight loss for samples tested in accordance with ASTM C-1202.
 B. Wall Face Units for general wall construction shall be KEYSTONE Compac II Units. Sculptured face or straight (flat) face may be used.
 C. Top of wall Cap Units shall be KEYSTONE Cap Units with fiberglass connecting pins.
 D. KEYSTONE Compac II Units shall be tan in color, based on manufacturer's availability.
2.03 Fiberglass Connecting Pins
 A. Connecting pins shall be 1/2" diameter thermostat isophthalic polyester resin-pultruded fiberglass reinforcement rods supplied by the unit manufacturer.
2.04 Construction Adhesive
 A. Construction adhesive for top of wall cap blocks shall be KEYSTONE KapSealTM. Material shall conform to ASTM 2339 and shall be supplied by the block unit supplier.
2.06 Soil Fill Materials
A. Base Leveling and Pad Material
 1. Material shall consist of crushed stone (GA S/B) as shown on the construction drawing. The leveling pad shall be, at a minimum, 6-inches thick. MSHA No. 57 Stone or pea gravel is not permitted.
B. Unit Fill/Drainage Aggregate
 1. Fill for units shall be free draining crushed stone or gravel, with a maximum aggregate size of 1/2" to 3/4" and no more than 5% passing the No. 50 sieve and conforming to ASTM D 448. Gradation of the unit fill shall be approved by the Geotechnical Engineer. Pea gravel shall not be used. MSHA No. 57 stone may be used.
C. Reinforced Backfill
 1. Material shall consist of soil classified as SM or more granular soils per USCS with minimum soil parameters as indicated under design parameters. The backfill material shall contain no particles greater than 2.5 inches in diameter. The backfill material shall contain at least 30 percent by weight retained on the US Standard No. 200 sieve. Other backfill materials may be approved by the Geotechnical Engineer.
D. Impervious Soil
 1. Material may be imported or site excavated soils exhibiting a USCS designation of a lean clay (CL) or clayey sand (SC). The material shall contain no less than 40 percent by weight passing the US Standard No. 200 sieve and exhibit a plasticity index no less than 4 and no greater than 20. Other materials may be approved by the Geotechnical Engineer.
E. Sample Submittal
 1. The contractor shall submit samples and material specifications of the proposed backfill soils (unit fill, pad material, reinforced backfill) to the Geotechnical Engineer for approval.
 2. Soil must meet or exceed the friction angle specified in design parameters.
2.07 Structural Geogrid
 A. The geogrid identified for the retaining wall consists of the following:
 Mirafi 5XT.
 B. The material shall be protected from sunlight and weather while stored on site in accordance with the manufacturer's recommendation.
2.08 Geotextile
 A. A non-woven geotextile shall be utilized as shown on the plans to provide a filter between the unit fill/drainage aggregate and the reinforced backfill.
 B. The geotextile shall consist of a Mirafi 140N.
 C. Where geotextiles are located, the geotextile shall be placed as illustrated on the plans. At junctions and ends, the geotextile shall be overlapped at least 12 inches. The geotextile shall be placed so that intimate contact is made between the geotextile and the backfill material.
 D. Ripped or otherwise damaged material shall not be used. The material shall be protected from sunlight and weather while stored on site in accordance with the manufacturer's recommendation.

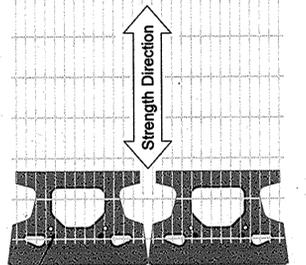
PART 3: INSTALLATION
3.01 Excavation
 A. Contractor shall excavate to the lines and grades shown on the construction drawings. Contractor shall be careful not to disturb embankment and foundation materials beyond lines shown.
 B. All existing topsoil, roots and other soft or unsuitable materials shall, at a minimum, be removed from the footprint of the retained soil mass.
 C. If groundwater is encountered during the excavation of the backslope, a backslope drainage system shall be utilized. The system shall be into the internal wall drainage system to provide adequate release of any water which accumulates behind the reinforced zone.
3.02 Foundation Preparation
 A. Foundation shall be excavated as required for leveling pad dimensions shown on the construction drawings, or as directed by the Geotechnical Engineer.
 B. The required bearing pressure beneath the footing of the wall must be verified in the field by a Geotechnical Engineer.
 C. Unsuitable soils shall be removed and replaced with approved material.
 D. Over-excavated areas shall be backfilled with approved, compacted backfill material or as approved by the Geotechnical Engineer.
3.03 Base Leveling Pad
 A. The first course of concrete modular units shall be placed upon an approved foundation as shown on the construction drawings to a minimum thickness of 8 inches.
 B. Aggregate material shall be compacted to provide a dense, level surface on which to place the first course of modular units. Compaction shall be to at least 95% of the maximum dry density as determined by the Standard Proctor compaction test (ASTM D 698). Leveling pad shall be prepared and leveled to ensure complete contact of retaining wall unit with base.
3.04 Unit Installation
 A. The first course of concrete modular units shall be carefully placed on the base leveling pad. Each unit shall be checked for level (in both directions) and alignment.
 B. Install fiberglass connecting pins and fill all voids in and around the modular units with unit fill material.
 C. Tamp or rod unit fill to ensure that all voids are completely filled.
 D. Sweep excess material from top of units and install the next course. Ensure that the units of each course are completely filled, backfilled and compacted prior to proceeding to next course.
 E. Place each subsequent course, ensuring that pins protrude into adjoining courses a minimum of 1 inch. Two pins are required per unit. Pull each unit forward to obtain the desired offset (as noted on the plans).
 F. Repeat procedure to the extent of wall height. Wall construction shall not exceed 2 courses in height before reinforced backfill is placed.
 G. Follow wall erection and unit fill placement closely with any other backfilling required. Compaction of all soils shall be to 95% of the maximum dry density as determined in accordance with ASTM D 698.
 H. As appropriate where the wall changes elevation, units can be stepped with the grade or turned into the embankment with a convex return end. Provide appropriate buried units on compacted leveling pad in area of convex return end.
3.05 Geogrid Installation
 A. The geogrid type and length (direction perpendicular to the wall face) shall conform to those indicated on the construction drawings. Geogrid shall be laid continuously at the proper elevations and orientation as shown on the construction drawings or as directed by the Geotechnical Engineer.
 B. Correct orientation (roll direction) of the geogrid shall be verified by the Contractor.
 C. The geogrid shall be connected to the modular wall units by placing the geogrid over fiberglass pins and laying the grid back to the fill side.
 D. A filtering, non-woven geotextile shall be located between the drainage aggregate/unit fill and the reinforced backfill. The geotextile shall be folded back parallel, above and below the geogrid as necessary to ensure continuous grid placement.
 E. The geogrid shall be pulled taut to set the geogrid against the fiberglass pins and to eliminate loose folds in the material. The fill surface shall be level. To tension the geogrid, backfill shall be placed over the geogrid from immediately behind the wall to the back end of the geogrid.
 F. No geogrid overlap will be allowed in any length of geogrid perpendicular to the wall face except at corners or angled locations. The geogrid shall overlap rather than provide no coverage. A minimum of 4 inches of soil cover is required between overlapping layers of geogrid.
3.06 Drainage Installation
 A. Provide 4-inch weep holes every 8 feet along the wall.
3.07 Fill Placement
 A. Backfill material shall be placed in 8 inch loose lifts and compacted to at least 95% of the maximum dry density as determined by ASTM D 698. The in-place moisture content shall be in the range of at the optimum moisture content to 2 percentage points higher than the optimum moisture content, as determined in accordance with ASTM D 698.
 B. Backfill shall be placed, spread and compacted in such a manner that minimizes the development of slack or loss of pretension of the geogrid. Backfill shall be placed in horizontal layers. The excavation face shall be stepped or notched to provide compaction of backfill on a level surface and to increase the interlock between the retained soils and the reinforced backfill.
 C. Only hand-operated compaction equipment shall be allowed within 5 feet of the back surface of the KEYSTONE or equivalent units.
 D. Backfill shall be placed from immediately behind the wall towards the excavation face/retained soils and compacted to the specifications presented herein with appropriate compaction equipment.
 E. Tracked construction equipment shall not be operated directly on the geogrid. A minimum backfill thickness of 6 inches is required prior to operation of tracked vehicles over the geogrid. Turning of tracked vehicles shall not be permitted over the geogrid.
 F. Rubber-tired equipment may pass over the geogrid reinforcement at slow speeds (less than 10 mph). Avoid sudden braking and sharp turning.
 G. The suitability of the fill material must be confirmed by a Geotechnical Engineer.
 H. The upper 8 inches of wall backfill shall consist of impervious soil, compacted to at least 95% of the maximum dry density as determined by ASTM D 698. The in-place moisture content shall be in the range of at the optimum moisture content to 2 percentage points higher than the optimum moisture content, as determined in accordance with ASTM D 698.
3.08 Cap Installation
 A. Provide permanent mechanical connection to wall units with KEYSTONE KapSealTM.
 B. Apply adhesive to top surface of lower unit and place cap unit atop adhesive.
 C. Place Cap Units over projecting pins from the units below. Pull forward to setback position.
 D. Backfill and compact to finished grade.

DESIGN PARAMETERS

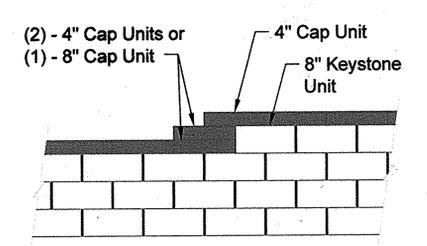
| Characteristics: | Configuration: | Soil Parameters: | Minimum Friction Angle | Minimum Unit Weight (pcf) |
|---|----------------------------|--|------------------------|---------------------------|
| Battered face wall (4 DEG.) | 10'-6" / 3,000 | Soil Type | | |
| Maximum Exposed Wall Height / Minimum Allowable Bearing Pressure (psf): | Varies (3H:1V maximum) | Reinforced fill (SM, SC, or more granular) | 30 | 120 |
| Backslope Angle: | Varies (10H:1V maximum) | Retained soils | 28 | 120 |
| Toe Slope Angle: | Varies (12 inches minimum) | Foundation soils | 28 | 120 |
| Wall Embedment: | Varies (See Profile) | | | |



Typical Reinforced Wall Section
Standard Unit - 1' Setback



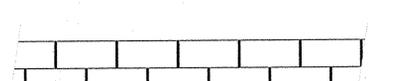
Grid & Pin Connection



Compac II Elevation

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

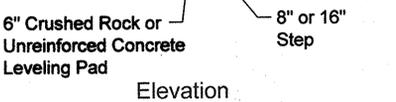
Top of Wall Steps



Compac II Plan

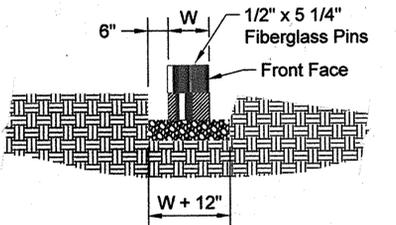
Compac II Unit

*Dimensions May Vary by Region



Cap Unit Elevation

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

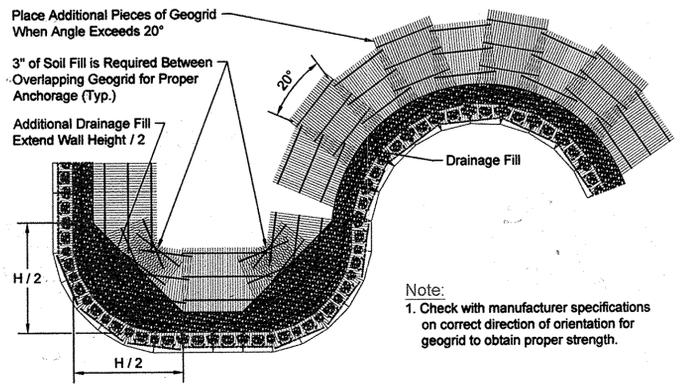


Cap Unit Plan

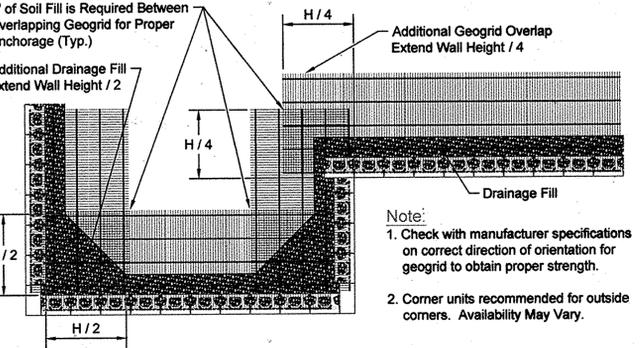
Straight Split Cap Unit Option

Leveling Pad Detail

OWNER/PETITIONER



Geogrid Installation on Curves



Geogrid Installation at Corners

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING AND ZONING
 [Signature] 10.8.15
 CHIEF, DEVELOPMENT ENGINEERING DIVISION
 [Signature] 12.29.15
 CHIEF, DIVISION OF LAND DEVELOPMENT
 [Signature] 12.30.15
 DIRECTOR

| NO. | REVISION | DATE |
|-----|----------|------|
| | | |
| | | |
| | | |

SITE DEVELOPMENT PLAN

ANTWERPEN HYUNDAI
PARCEL E-7, HOLWECK SUBDIVISION
 PLAT 235-20
 ZONED: B-2

TAX MAP 34 BLOCK 06
 5TH ELECTION DISTRICT

PARCEL 365
 HOWARD COUNTY, MARYLAND

ECS

1340 CHARWOOD ROAD
 SUITE A
 HANOVER, MARYLAND 21076
 PHONE: (410) 859-4300
 FAX: (410) 859-4324

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. 23553 EXPIRATION DATE: 12-31-2018

DESIGN BY: [Signature]
 CHECKED BY: [Signature]
 DATE: MARCH 2015
 SCALE: AS SHOWN

11 SHEET OF 11

SDP-14-061