

GENERAL NOTES

- ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST STANDARDS AND SPECIFICATIONS OF HOWARD COUNTY PLUS MEHA STANDARDS AND SPECIFICATIONS IF APPLICABLE.
- THE CONTRACTOR SHALL NOTIFY THE BUREAU OF ENGINEERING/CONSTRUCTION INSPECTION DIVISION AT (410) 315-1850 AT LEAST FIVE (5) WORKING DAYS PRIOR TO THE START OF WORK.
- THE CONTRACTOR SHALL NOTIFY "MISS UTILITY" AT 1-800-257-7771 AT LEAST 48-HOURS PRIOR TO ANY EXCAVATION WORK.
- PROJECT BACKGROUND:**
LOCATION: SEE VICINITY MAP IN THE TOP RIGHT CORNER OF THIS SHEET
TAX MAP: 47
ELECTION DISTRICT: 1
ZONING: R-SA-8 PER ZB-1078M DATED DECEMBER 1, 2004.
- AREA OF BUILDABLE PARCEL FOR THIS SITE DEVELOPMENT PLAN: 6.94 ACRES.
FOR OTHER SUBMISSIONS RELATED TO THIS SITE, SEE HOWARD COUNTY DEPT. OF PLANNING & ZONING FILE NO. RIVERWALK/SDP-07-060-01-166, ZB-1078M, F-10-70, F-11-004, F-10-43.
- 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 SLEEVE (2 GAUGE) - 3' LONG. A GALVANIZED STEEL POLE CAP SHALL BE MOUNTED ON TOP OF EACH POST.
- TRAFFIC CONTROL DEVICES, MARKINGS, AND SIGNING SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).
- ALL PLAN DIMENSIONS ARE TO THE FACE OF CURB OR FACE OF BUILDING UNLESS OTHERWISE NOTED. DIMENSIONS ARE MEASURED PERPENDICULAR OR RADIALLY BETWEEN ITEMS UNLESS OTHERWISE NOTED.
- EXISTING TOPOGRAPHY AND FEATURES COMPILED FROM TOPOGRAPHIC SURVEY FROM JOHN C. MELLENA SR., INC. LAND SURVEYORS DATED MAY 27, 2004.
- COORDINATES ARE BASED ON NAD83 MARYLAND COORDINATE SYSTEM AS PROJECTED BY HOWARD COUNTY GEODETIC CONTROL STATION NUMBERS 47EC & 47FB.
- STORMWATER MANAGEMENT IS PROVIDED ON-SITE BY A VARIETY OF NONSTRUCTURAL AND MICRO SCALE PRACTICES. SEE SHEETS 1-10 FOR ALL STORMWATER MANAGEMENT INFORMATION.
- PUBLIC WATER AND SEWER SHALL BE UTILIZED (CONTRACT NO. 24-4651-D) AND ARE WITHIN THE LITTLE PATUXENT SEWERAGE AREA. WATER METERS ARE LOCATED INSIDE THE SFA BUILDINGS.
- THE EXISTING UTILITIES SHOWN HEREIN WERE DERIVED FROM AVAILABLE PUBLIC RECORDS. THE CONTRACTOR MUST DIG TEST PITS (BY HAND) AT ALL UTILITY CROSSINGS AND CONNECTION POINTS TO VERIFY EXACT LOCATION. IMMEDIATELY NOTIFY THE ENGINEER OF ANY CONFLICTS.
- ALL ROADS ARE "PRIVATE" AND ARE PRIVATELY MAINTAINED BY A HOMEOWNER ASSOCIATION.
- ANY DAMAGE TO THE ADJACENT COUNTY OWNED RIGHT-OF-WAY AND PROPERTY SHALL BE CORRECTED AT THE CONTRACTOR'S EXPENSE.
- THE FOREST CONSERVATION REQUIREMENTS OF SECTION 16.1200 OF THE HOWARD COUNTY CODE AND THE FOREST CONSERVATION MANUAL HAS BEEN SATISFIED WITH A COMBINATION OF ON SITE FOREST CONSERVATION AND A FEE-IN-LIEU PAYMENT. A TOTAL OF 1.62 ACRES OF ON-SITE FOREST CONSERVATION EASEMENTS FOR 0.65 AC. OF CREDITED FOREST RETENTION AND 0.12 ACRES OF REFORESTATION HAS BEEN PROVIDED. THE REMAINDER OF THE FOREST CONSERVATION OBLIGATION FOR THIS SITE WHICH IS 1.83 AC/ 44,223 SQ. FT. OF REFORESTATION, HAS BEEN MET BY THE PAYMENT OF \$56,911.00 (44,223 SQ. FT. X \$0.1275 + \$56,911.00) TO THE MD. CO. FOREST CONSERVATION FUND. A FOREST CONSERVATION SURETY IN THE AMOUNT OF \$23,444.50 HAS BEEN POSTED WITH THE DEVELOPER'S AGREEMENT ASSOCIATED WITH THIS SDP. SEE SHEETS 15-14 FOR ADDITIONAL FOREST CONSERVATION INFORMATION FOR THIS SITE.
- THERE ARE NO GRAVE SITES, CEMETERIES, WETLANDS ON THE PARCEL SHOWN ON THIS SITE DEVELOPMENT PLAN.
- THE SCENIC ROADS MAP DOES NOT INDICATE ANY SCENIC ROADS WITHIN OR ADJACENT TO THE PROJECT LIMITS.
- NO GRADING, REMOVAL OF VEGETATIVE COVER OR TREES, PAVING AND NEW STRUCTURES SHALL BE PERMITTED WITHIN THE REQUIRED WETLANDS, STREAMS) OR THEIR BUFFERS, FOREST CONSERVATION EASEMENT AREAS AND 100 YEAR FLOODPLAIN. DRIVEWAYS SHALL BE PROVIDED TO INSURE A USE AND OCCUPANCY PERMIT FOR ANY NEW DWELLINGS TO INSURE SAFE ACCESS FOR FIRE AND EMERGENCY VEHICLES PER THE FOLLOWING MINIMUM REQUIREMENTS:
A. WIDTH - 12'14" SERVING MORE THAN ONE RESIDENCE
B. SURFACE - 6" OF COMPACTED CRUSHER RUN BASE WITH AN AND CRP COATINGS (1-1/2" MIN.)
C. GEOMETRY - MAX. 10% GRADE, MAX. 10% GRADE CHANGE AND MIN. 45' TURNING RADIUS
D. STRUCTURES (GALVANTS/BRIDGES) - CAPABLE OF SUPPORTING 25 GROSS TONS (HQS LOADINGS)
E. DRAINAGE ELEMENTS - CAPABLE OF SAFELY PASSING 100-YR. FLOOD WITH NO MORE THAN 1' FOOT DEPTH OVER DRIVEWAY SURFACE.
F. MAINTENANCE - SUFFICIENT TO INSURE ALL WEATHER USE.
- REFUSE PICKUP WILL BE PROVIDED AND WILL BE THE RESPONSIBILITY OF THE HOA.
- BAY WINDOWS, HINDON WELLS, CHIMNEYS, HEATING OR AIR CONDITIONING UNITS AND EXTERIOR STAIRWAYS IF NOT MORE THAN 16 FEET IN WIDTH MAY PROJECT NO MORE THAN 4 FEET INTO ANY REQUIRED SETBACK AREA IN ACCORDANCE WITH SECTION 120.1(A) OF THE ZONING REGULATIONS.
- PERIMETER LANDSCAPING AND REQUIRED STREET TREES HAS BEEN PROVIDED AND IN ACCORDANCE WITH THIS SDP. LANDSCAPE SURETY IN THE AMOUNT OF \$65,000 FOR THE PERIMETER PLAN ON SHEET 12 OF THIS PLAN HAS BEEN POSTED AS A PART OF A DEVELOPER'S AGREEMENT.
- THIS SITE REQUIRES 3 MANUS PER ZONING SECTION 110.2. UNITS 31, 41, 43, 46, 44 & 53 WILL BE HIBS. THE MODERATE INCOME HOUSING UNIT FOR SALE DWELLING UNITS HAS BEEN RECORDED IN THE HOWARD COUNTY LAND RECORDS BY LIBOR 132828 AND FLO 10 4572. THE MODERATE INCOME HOUSING UNIT COVENANT AND RESTRICTIONS FOR SALE DWELLING UNITS DOCUMENT WAS RECORDED IN THE HOWARD COUNTY LAND RECORDS BY LIBOR 132828 AND FLO 10 4572.
- ALL HWS ARE 15" UNLESS NOTED OTHERWISE.
- WETLAND AND FOREST STAND DELINEATION WAS PREPARED BY AMERICAN LAND DEVELOPMENT AND ENGINEERING DATED DEC. 12, 2006 AND APPROVED UNDER SDP-07-60 IN ACCORDANCE WITH SECTION 16.16(a) OF THE HOWARD COUNTY SUBDIVISION AND LAND DEVELOPMENT REGULATIONS.
- THE FLOODPLAIN STUDY WAS PREPARED BY DALE THOMPSON BUILDERS, INC. ON MARCH 3, 2007 AND APPROVED FOR RIVERWALK (SDP-07-60).
- THE APPO STUDY WAS PREPARED BY TRAFFIC GROUP DATED NOV. 5, 2004.
- 95% COMPACTION IN FILLED AREAS SHALL MEET AASHTO T-100 REQUIREMENTS.
- THIS PROJECT IS IN CONFORMANCE WITH THE LATEST HOWARD COUNTY STANDARDS UNLESS WAIVERS HAVE BEEN APPROVED.
- BOUNDARY INFORMATION IS FROM BOUNDARY SURVEYS PREPARED BY GUTSCHICK LITTLE AND WEBER, P.A. IN SEPTEMBER 2004.
- THIS PROPERTY IS WITHIN THE METROPOLITAN DISTRICT.
- VEHICULAR INGRESS AND EGRESS TO GORMAN ROAD IS PROHIBITED EXCEPT AS INDICATED.
- STREET LIGHT PLACEMENT AND THE TYPE OF FIXTURES AND POLES SHALL BE IN ACCORDANCE WITH THE HOWARD COUNTY DESIGN MANUAL VOLUME III (2006), SECTION 5.5.A. A MINIMUM OF 20' SHALL BE MAINTAINED BETWEEN ANY STREET LIGHT AND ANY TREE.
- ON DECEMBER 1, 2004, THE ZONING BOARD APPROVED THE REQUEST OF ZB-1078M TO REZONE THE SUBJECT PROPERTY FROM PSC TO R-SA-8.
- F-10-43, WAIVER REQUEST FROM SUBDIVISION SECTIONS.

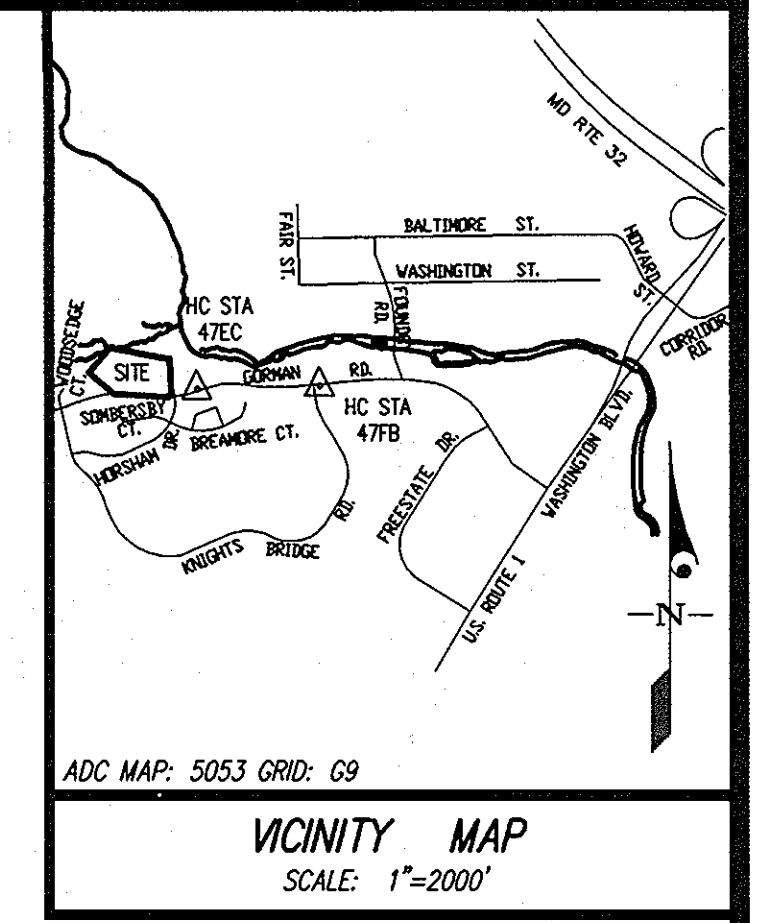
SITE DEVELOPMENT PLAN

RIVERWALK

SINGLE FAMILY ATTACHED TOWNHOMES

LOTS 1-58 AND

OPEN SPACE LOTS 59 & 60

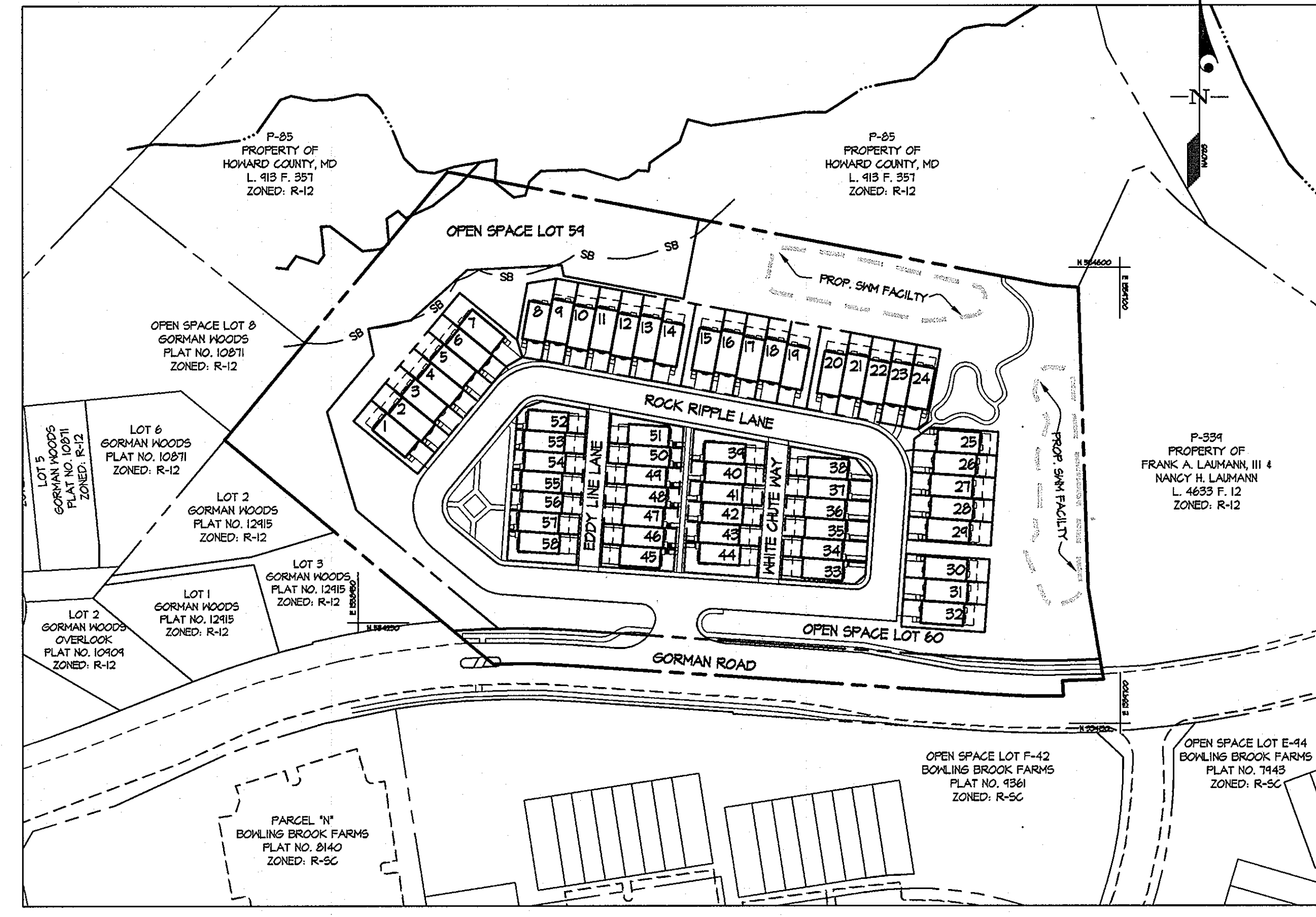


SITE DATA

- GENERAL SITE DATA
 - PRESENT ZONING: R-SA-8
 - PROPOSED USE OF SITE: SINGLE FAMILY ATTACHED (FEE SIMPLE LOTS)
- AREA TABULATION

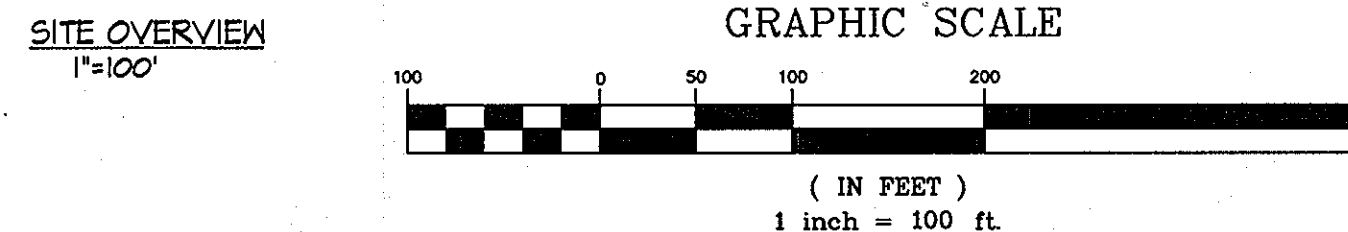
GROSS ACRE	1.481 AC.
FLOODPLAIN ACRE	0.051 AC.
STEEP SLOPE 25% OR GREATER*	0.111 AC.
NET ACRE	1.329 AC.

* STEEP SLOPES PER PREVIOUSLY APPROVED SDP-07-060
- AREA OF THIS SDP SUBMISSION: 1.481 AC.
- LIMIT OF GRADING DISTURBANCE: 6.211 AC.
- DEVELOPMENT DATA
 - PROPOSED NUMBER OF SFA BUILDINGS: 58 (6 DWELLING UNITS PER NET ACRE)
 - PARKING PROVIDED:
 - 2 CAR GARAGE SPACES X 58 = 116 SPACES
 - 2 CAR DRIVEWAY/TANDEM SPACES X 58 = 116 SPACES
 - TOTAL SPACES PROVIDED = 232 SPACES
 - OVERFLOW/PARKING REQUIREMENTS (PER DESIGN MANUAL VOLUME III, 2.4.B)
 - 58 SFA UNITS @ 0.3 SPACE PER UNIT = 18 SPACES REQUIRED ON STREET PARKING
 - 2 SPACES PROVIDED
- OPEN SPACE / RECREATION OPEN SPACE:
 - PER 16.120(a)(2) THE OPEN SPACE REQUIREMENT IS 25% OF THE GROSS AREA.
 - GROSS AREA = 1.48 AC.
 - OPEN SPACE REQUIRED = 1.81 AC
 - OPEN SPACE PROVIDED = 3.05 AC (SEE SHEET 3 FOR LOCATION)
- RECREATIONAL OPEN SPACE:
 - PER 16.120(a)(4)(v) THE RECREATIONAL OPEN SPACE REQUIREMENT IS 400 SF PER UNIT.
 - 58 UNITS X 400 SF = 23,200 SF
 - RECREATIONAL OPEN SPACE PROVIDED = 10,140 SF** SEE SHEET 3 FOR LOCATIONS.
 - **SEE F-10-043
- MINIMUM SETBACK REQUIREMENTS:
 - FROM COLLECTOR PUBLIC STREET RIGHT OF WAY:
 - STRUCTURES: 30 FEET
 - USES: 30 FEET
 - FROM R-12 DISTRICT: 100 FEET
 - MINIMUM DISTANCES BETWEEN SFA BUILDINGS:
 - A. FACE TO FACE: 30 FEET
 - B. FACE TO SIDE/REAR TO SIDE: 30 FEET
 - C. SIDE TO SIDE: 15 FEET
 - D. REAR TO REAR: 60 FEET
 - E. REAR TO FACE: 100 FEET



LEGEND

- EXIST. CURB & GUTTER/PAVEMENT
- STANDARD CURB & GUTTER
- EX 8" S. EXISTING SEWER MAIN
- EX 8" W. EXISTING WATER MAIN
- 8" S. PUBLIC SEWER MAIN
- 8" W. PUBLIC WATER MAIN
- 15" H/C
- PROPOSED STORM DRAIN
- PROPOSED SIDEWALK
- PROPOSED PAVING
- PROPOSED EASEMENT
- PROP BLDG DRIVEWAY LENGTH
- LOD PROP. LIMIT OF DISTURBANCE
- STRUCTURE NUMBER
- EXISTING CONTOUR
- PROP. CONTOUR
- EXISTING TREELINE
- PROPOSED TREELINE
- STREAM BANK BUFFER
- 100 YEAR FLOODPLAIN
- CENTERLINE OF STREAM
- STREET LIGHT LOCATION
- ON-SITE AFFORESTATION AREA
- FLOODPLAIN FOREST RETENTION (NO CREDIT FOR RETENTION)
- NET TRACT FOREST RETENTION



NOTE:
ALL ROADS AND ALLEYS IN THIS DEVELOPMENT ARE PRIVATELY OWNED AND TO BE MAINTAINED BY THE HOA.

- SHEET INDEX**
- COVER SHEET
 - SITE DEVELOPMENT PLAN
 - SITE DETAILS
 - PAVEMENT DELINEATION, PAVEMENT MARKING, CURB TRANSITION, LIGHTING AND SIGNAGE PLAN
 - SEDIMENT CONTROL PLAN
 - SEDIMENT CONTROL NOTES AND DETAILS
 - STORM DRAIN DRAINAGE AREA MAP
 - STORM DRAIN PROFILES
 - PROPOSED STORMWATER MANAGEMENT DRAINAGE AREA MAP
 - STORMWATER MANAGEMENT DETAILS
 - LANDSCAPE PLAN
 - LANDSCAPE DETAILS
 - FOREST CONSERVATION PLAN
 - FOREST CONSERVATION DETAILS
 - RETAINING WALL CONSTRUCTION DETAILS
 - ROCK RIPPLE LANE PLAN AND PROFILE
 - MAINTENANCE OF TRAFFIC PLAN - PHASE I
 - MAINTENANCE OF TRAFFIC PLAN - PHASE II
 - MAINTENANCE OF TRAFFIC PLAN - GENERAL NOTES

UNIT NUMBER	STREET ADDRESS	UNIT NUMBER	STREET ADDRESS
1	1340 ROCK RIPPLE LANE	30	4322 ROCK RIPPLE LANE
2	1388 ROCK RIPPLE LANE	31	4320 ROCK RIPPLE LANE
3	1386 ROCK RIPPLE LANE	32	4318 ROCK RIPPLE LANE
4	1384 ROCK RIPPLE LANE	33	4321 ROCK RIPPLE LANE
5	1382 ROCK RIPPLE LANE	34	4323 ROCK RIPPLE LANE
6	1380 ROCK RIPPLE LANE	35	4325 ROCK RIPPLE LANE
7	1378 ROCK RIPPLE LANE	36	4327 ROCK RIPPLE LANE
8	1374 ROCK RIPPLE LANE	37	4324 ROCK RIPPLE LANE
9	1372 ROCK RIPPLE LANE	38	4331 ROCK RIPPLE LANE
10	1370 ROCK RIPPLE LANE	39	4305 White Chute Way
11	1368 ROCK RIPPLE LANE	40	4305
12	1366 ROCK RIPPLE LANE	41	4307
13	1364 ROCK RIPPLE LANE	42	4304
14	1362 ROCK RIPPLE LANE	43	4311
15	1358 ROCK RIPPLE LANE	44	4313
16	1356 ROCK RIPPLE LANE	45	4401 Eddy Line Lane
17	1354 ROCK RIPPLE LANE	46	4403
18	1352 ROCK RIPPLE LANE	47	4405
19	1350 ROCK RIPPLE LANE	48	4407
20	1346 ROCK RIPPLE LANE	49	4404
21	1344 ROCK RIPPLE LANE	50	4411
22	1342 ROCK RIPPLE LANE	51	4413
23	1340 ROCK RIPPLE LANE	52	4365 ROCK RIPPLE LANE
24	1338 ROCK RIPPLE LANE	53	4367 ROCK RIPPLE LANE
25	1334 ROCK RIPPLE LANE	54	4364 ROCK RIPPLE LANE
26	1332 ROCK RIPPLE LANE	55	4391 ROCK RIPPLE LANE
27	1330 ROCK RIPPLE LANE	56	4345 ROCK RIPPLE LANE
28	1328 ROCK RIPPLE LANE	57	4345 ROCK RIPPLE LANE
29	1326 ROCK RIPPLE LANE	58	4347 ROCK RIPPLE LANE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

Thomas J. Buttle 4/27/11
Director Date

John S. Landwehr 4/27/11
Chief, Division of Land Development Date

William J. Johnson 5/26/11
Chief, Development Engineering Division Date

GLWGUTSCHICK LITTLE & WEBER, P.A.
CIVIL ENGINEERS, LAND SURVEYORS, LAND PLANNERS, LANDSCAPE ARCHITECTS
3909 NATIONAL DRIVE - SUITE 250 - BURTNSVILLE OFFICE PARK
BURTNSVILLE, MARYLAND 20866
TEL: 301-421-4024 BALT. 410-880-1820 DC/VA. 301-989-2524 FAX: 301-421-4186

DATE	REVISION	BY	APPR.

PREPARED FOR & OWNER:
CS RIVERWALK LLC
c/o CRAFTSTAR HOMES, INC.
6820 ELM STREET, SUITE 200
MCLEAN, VA 22101
M. COURTNEY TREUTH
703-827-5045

PROFESSIONAL CERTIFICATION
I HEREBY CERTIFY THAT THESE PLANS 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. 12975
EXPIRATION DATE: MAY 28, 2012

5-3-11

COVER SHEET
RIVERWALK
SINGLE FAMILY ATTACHED TOWNHOMES
LOTS 1-58 AND OPEN SPACE LOTS 59 & 60
Plat Numbers: 21025-21027

SCALE	ZONING	G. L. W. FILE NO.
AS SHOWN	R-SA-8	08039
DATE	TAX MAP - GRID	SHEET
MAY, 2011	47 - 16	1 OF 19

SUBDIVISION NAME:	RIVERWALK	SECTION/AREA	PARCEL
PLAT	21025-21027	ZONE	R-SA-8
TAX MAP	47	GRID	16
ELEC. DIST.	6	CENSUS TRACT	606402



APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

Thomas P. Butler 6/27/11
 Director Date

Keith Sheehy 6/27/11
 Chief, Division of Land Development Date

John C. Stegall 6/27/11
 Chief, Development Engineering Division Date

GLWGUTSCHICK LITTLE & WEBER, P.A.
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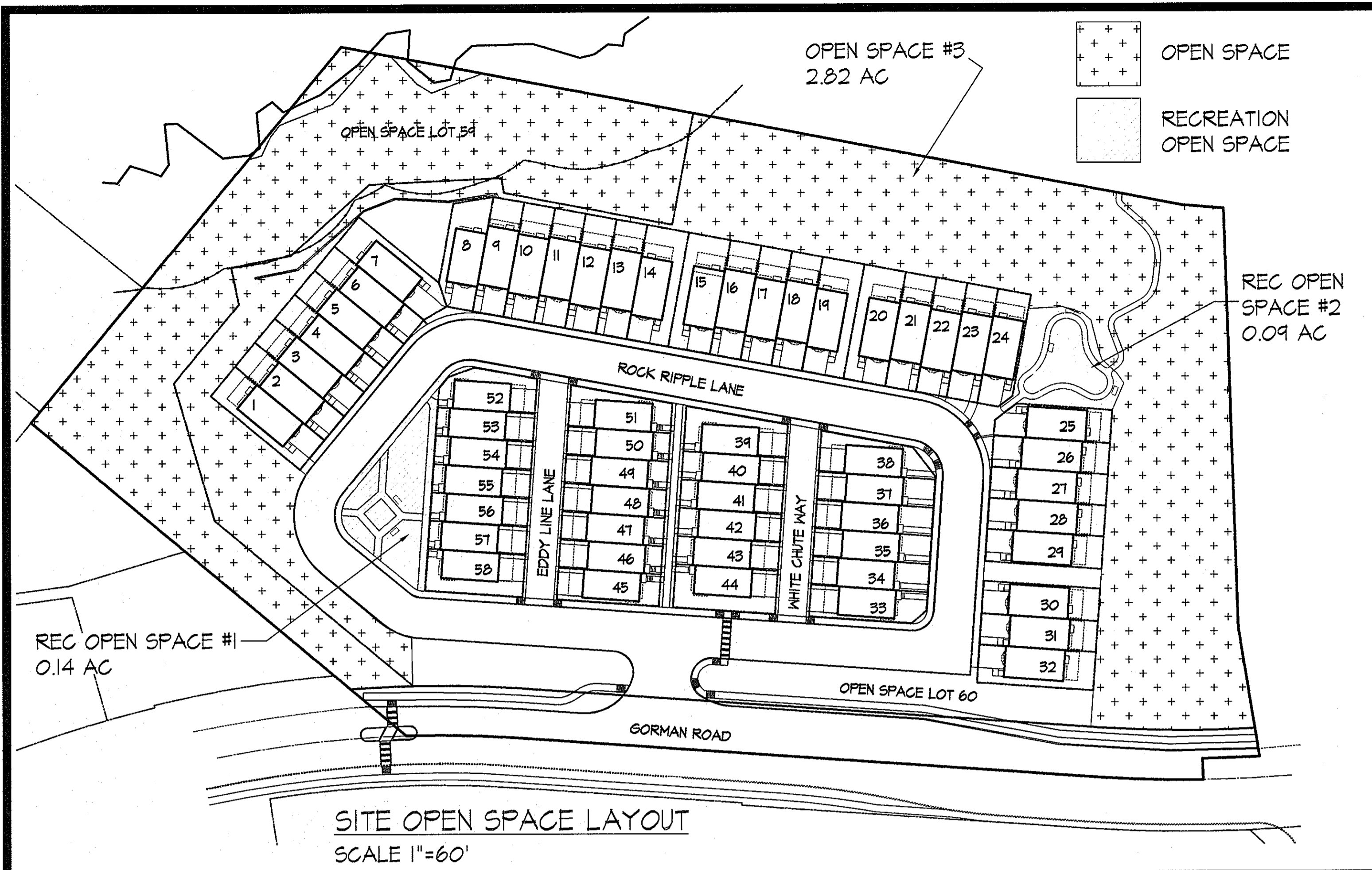
5-3-11 *[Signature]*

SITE DEVELOPMENT PLAN

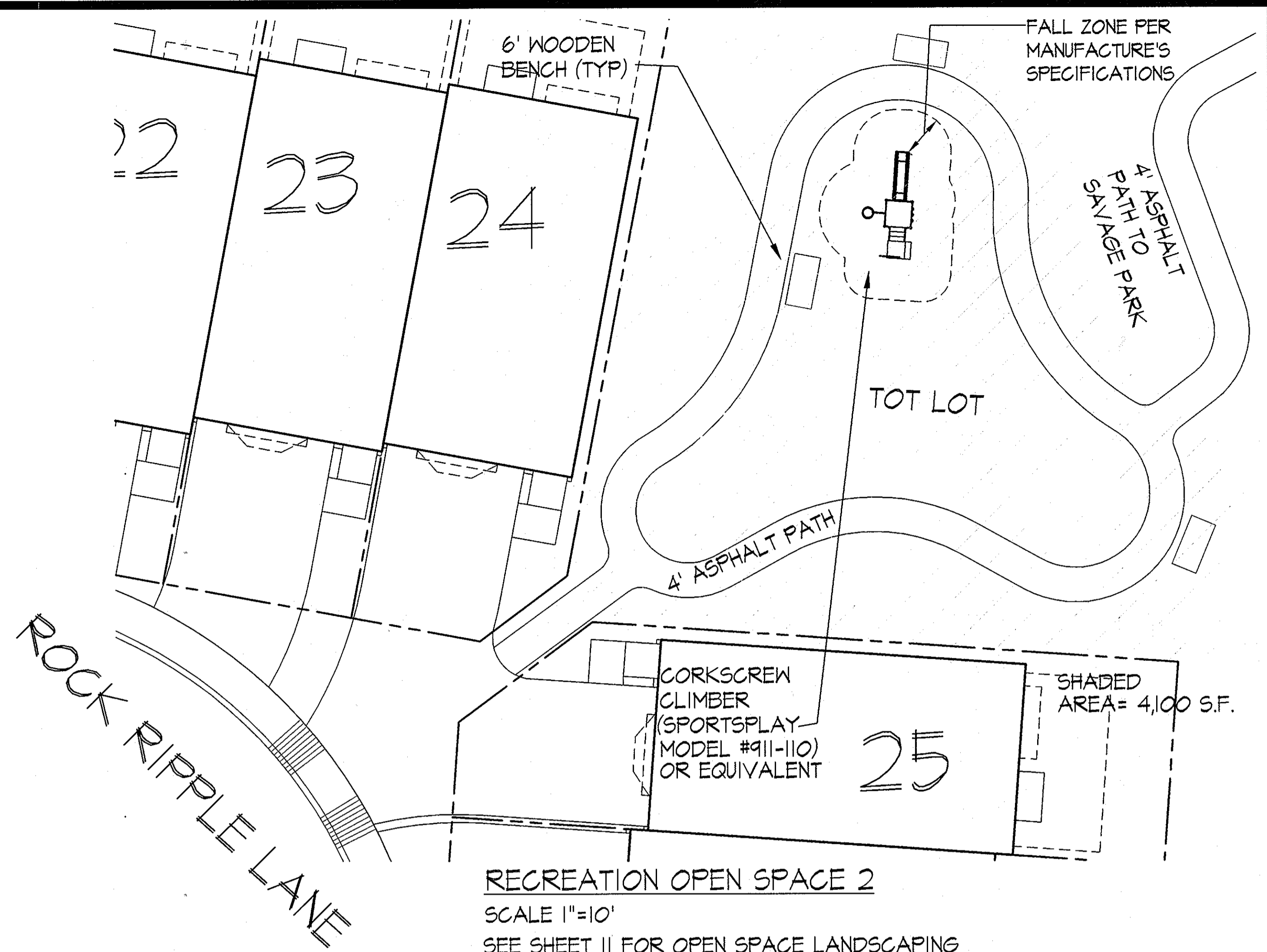
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HOWARD COUNTY, MARYLAND

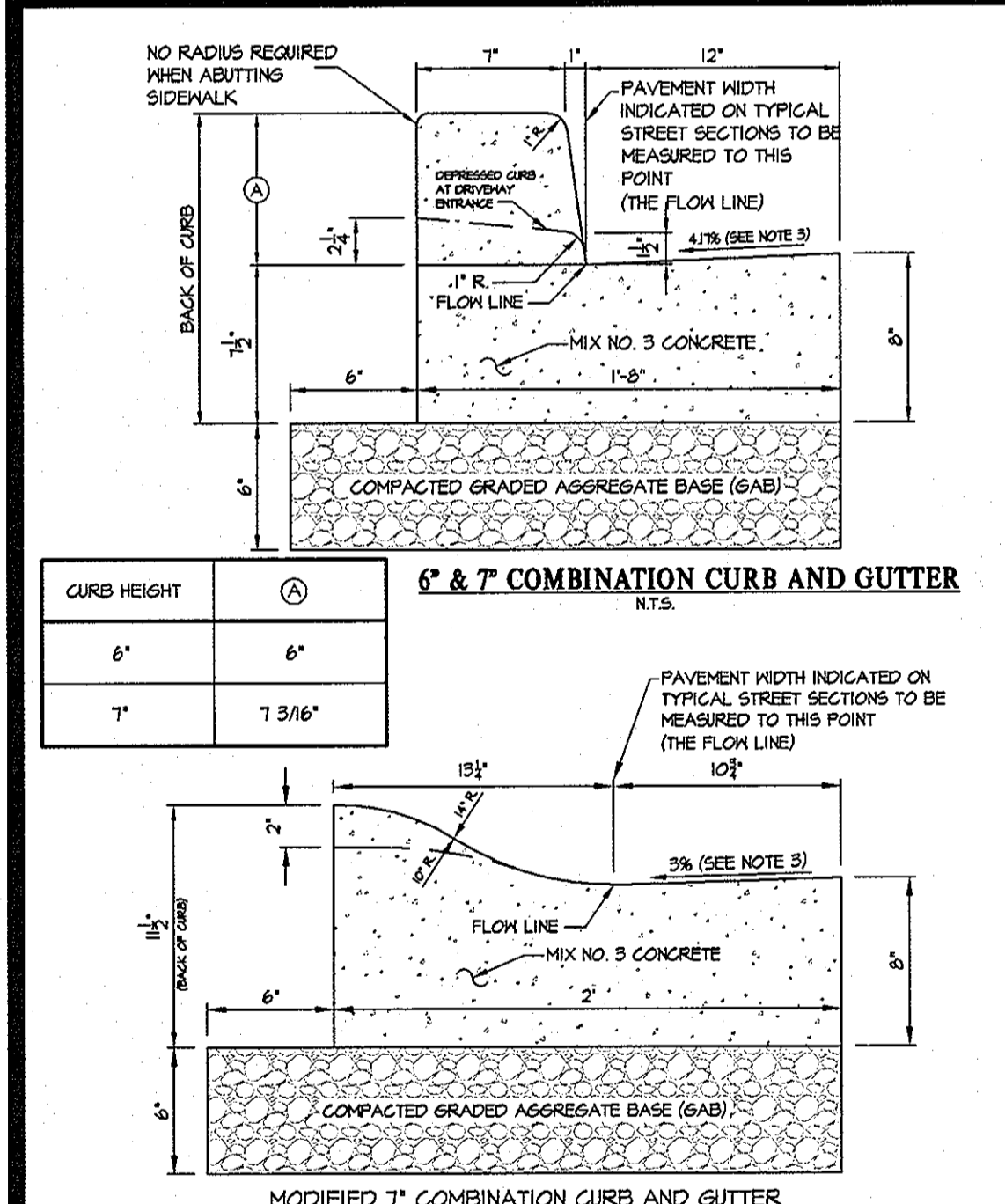
SCALE	ZONING	G. L. W. FILE NO.
1"=30'	R-SA-8	08039
DATE	TAX MAP - GRID	SHEET
MAY, 2011	47 - 16	2 OF 19



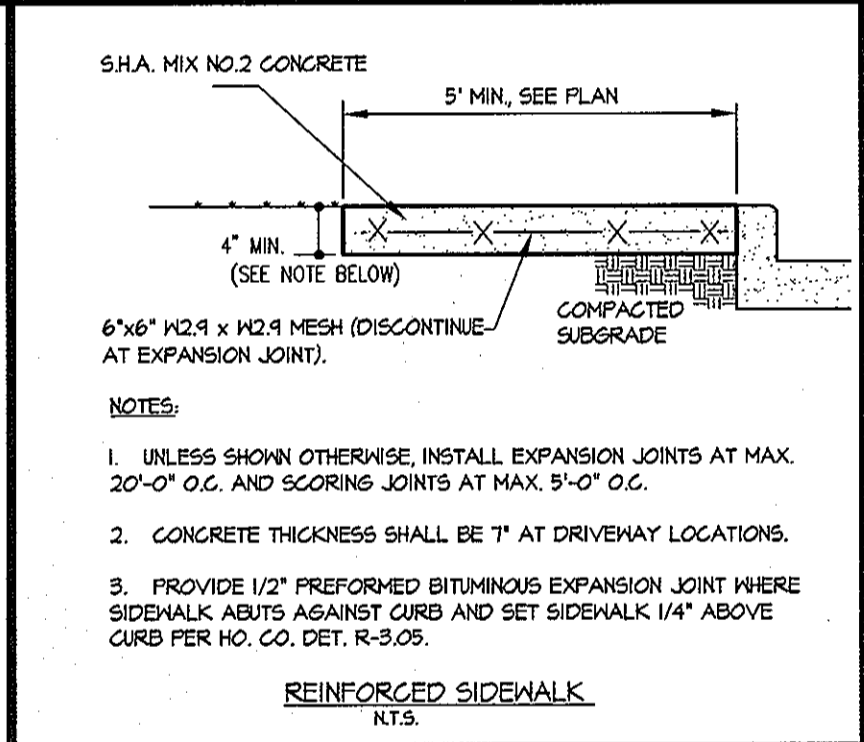
SITE OPEN SPACE LAYOUT
SCALE 1"=60'



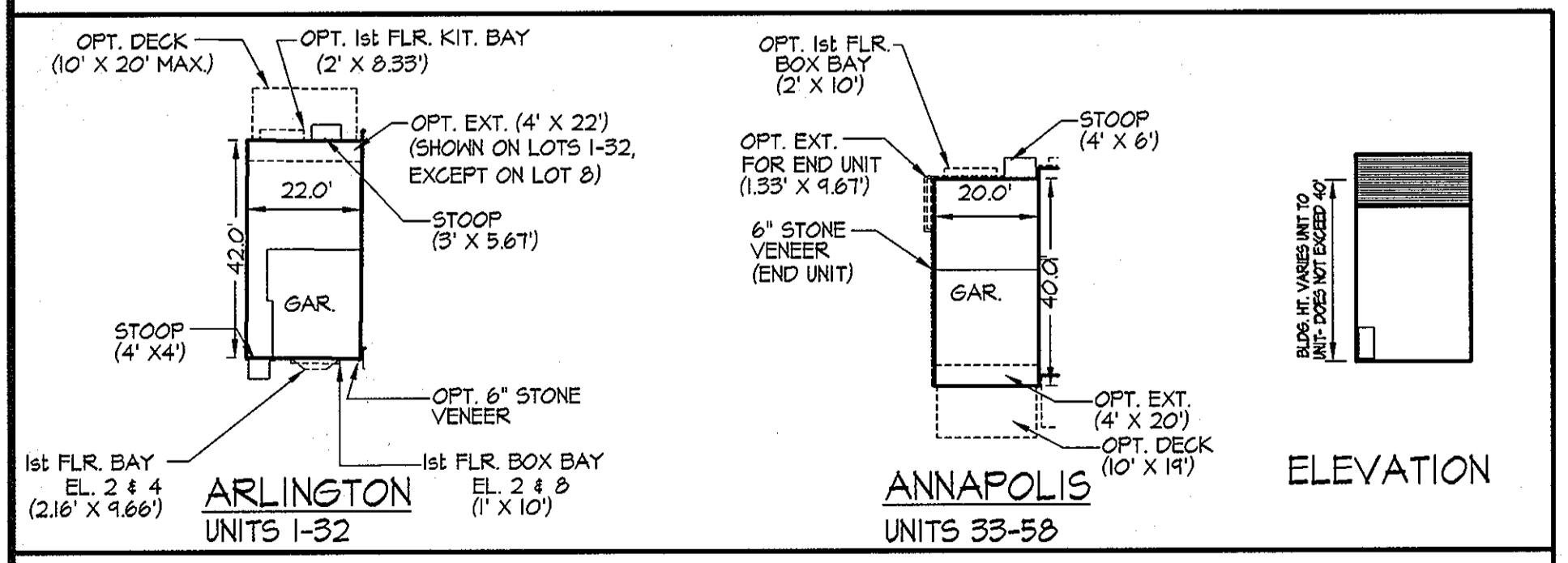
RECREATION OPEN SPACE 2
SCALE 1"=10'
SEE SHEET II FOR OPEN SPACE LANDSCAPING



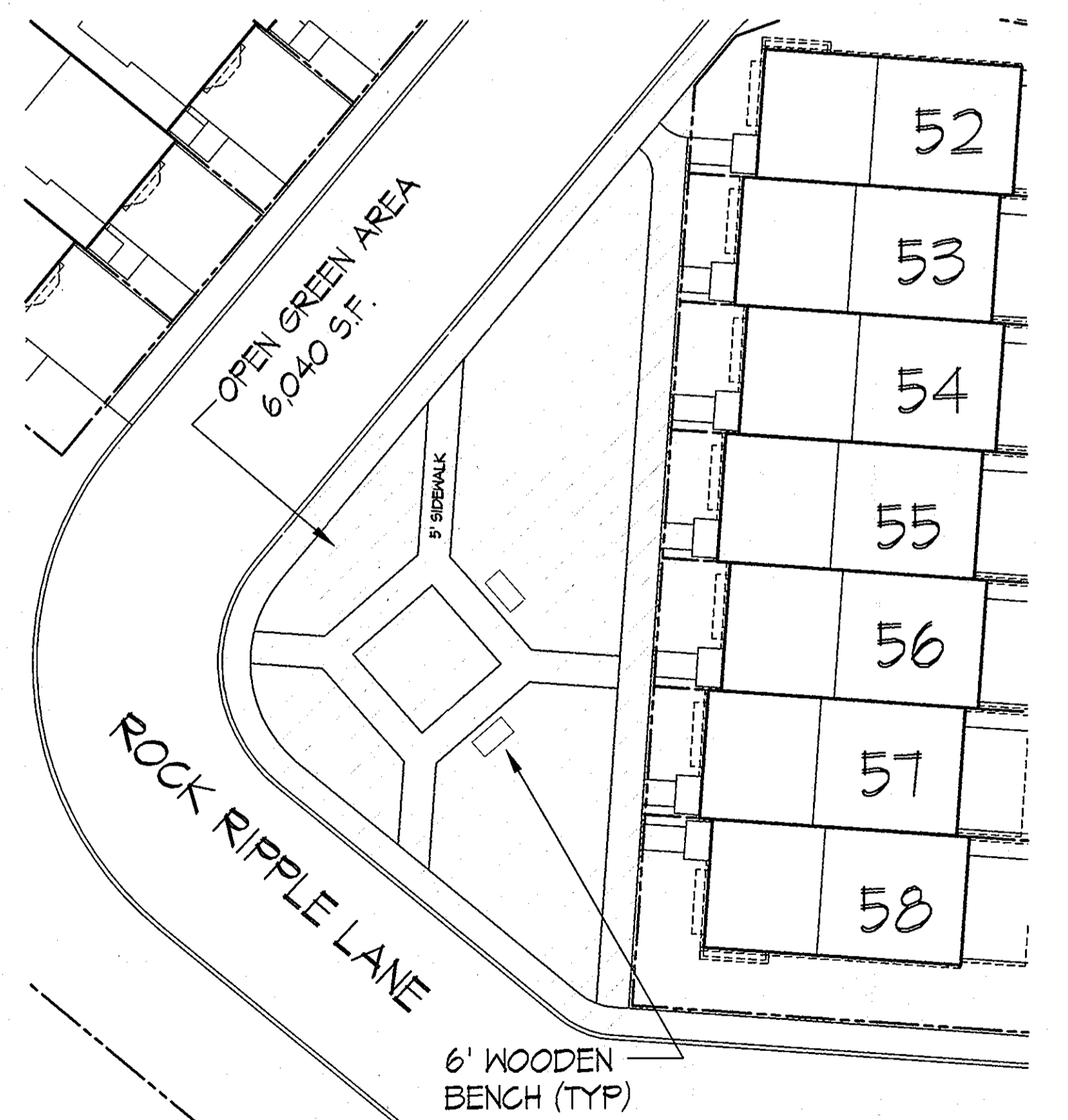
- NOTES:
- STANDARD 7' COMBINATION CURB AND GUTTER TO BE USED IN ALL PUBLIC RIGHTS OF WAY.
 - A REVERSE GUTTER PAN SHALL HAVE A GUTTER SLOPE OF 4/100 AWAY FROM THE FLOW LINE, AND SHALL NOT BE USED WHERE THIS DRAINAGE CREATES A HAZARDOUS CONDITION.
 - GUTTER PAN AT MEDIAN EDGE OF INTERMEDIATE ARTERIALS OR THE HIGH SIDE OF SUPERELEVATED SECTIONS SHALL BE SLOPED AT THE SAME RATE AND IN THE SAME DIRECTION AS THE PAVEMENT. MATCH PAVEMENT GROSS SLOPE WHEN CURB IS LOCATED ON THE LOW SIDE OF SUPERELEVATED SECTION AND THE RATE OF SUPERELEVATION IS GREATER THAN 3% FOR MODIFIED CURB AND GUTTER.
 - A MINIMUM OF TWO (2) FEET OF COMPACTED STABILIZED EARTH OR EQUIVALENT, SHALL SUPPORT THE ENTIRE BACK OF CURB.
 - POSITIVE DRAINAGE SHALL BE PROVIDED BOTH BEHIND THE CURB AND ALONG THE GUTTER AND FLOW LINE.



- NOTES:
- UNLESS SHOWN OTHERWISE, INSTALL EXPANSION JOINTS AT MAX. 20'-0" O.C. AND SCORING JOINTS AT MAX. 5'-0" O.C.
 - CONCRETE THICKNESS SHALL BE 7" AT DRIVEWAY LOCATIONS.
 - PROVIDE 1/2" PREFORMED BITUMINOUS EXPANSION JOINT WHERE CURB ABUTS AGAINST CURB AND SET SIDEWALK 1/4" ABOVE CURB PER NO. CO. DET. R-5-05.



TYPICAL HOUSE FOOTPRINTS SCALE: 1"=30'



RECREATION OPEN SPACE 1
SCALE 1"=20'
SEE SHEET II FOR OPEN SPACE LANDSCAPING

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

Thomas J. Buttle 4/27/11
Director Date

Kevin J. Duvall 4/27/11
Chief, Division of Land Development Date

John J. ... 5/26/11
Chief, Development Engineering Division Date

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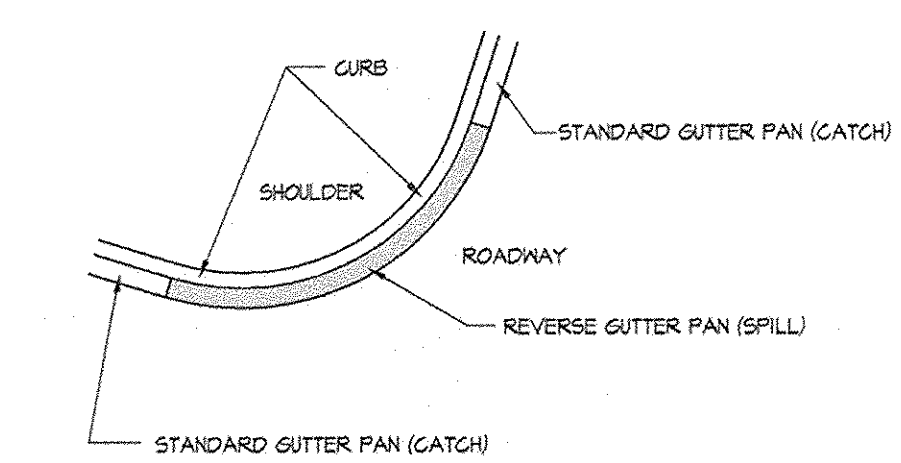
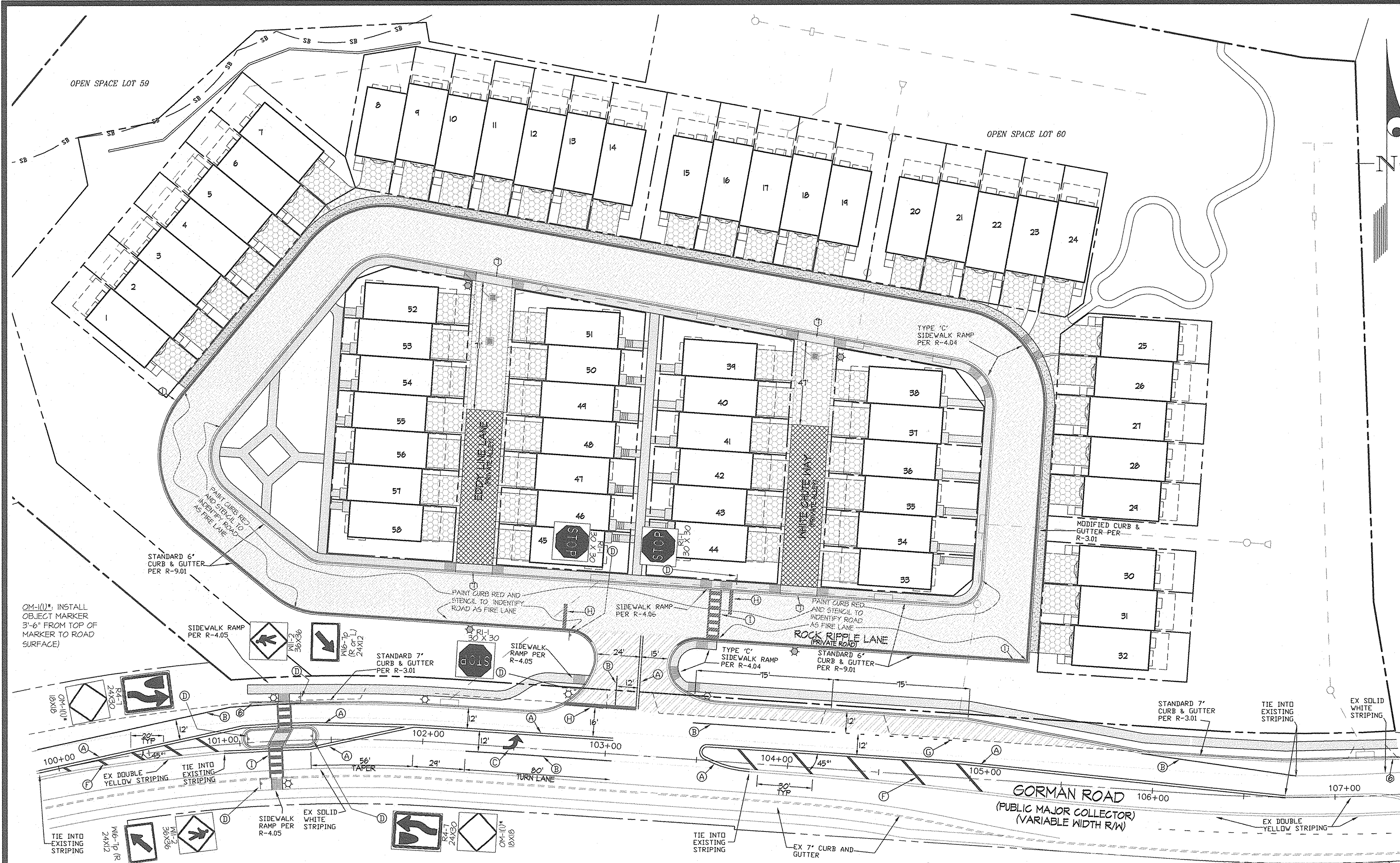
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5-3-11

SITE DETAILS

RIVERWALK
SINGLE FAMILY ATTACHED TOWNHOMES
LOTS 1-58 AND OPEN SPACE LOTS 59 & 60
Plat Numbers: 21625-21627

HOWARD COUNTY, MARYLAND

SCALE	ZONING	G. L. W. FILE NO.
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MAY, 2011	47 - 16	3 OF 19



CURB TRANSITION NOTES

- ① TRANSITION FROM 6" COMBINATION CURB AND GUTTER TO MODIFIED COMBINATION CURB AND GUTTER (10' MIN) PER R-3.02
- ② TRANSITION FROM 7" COMBINATION CURB AND GUTTER TO FLUSH CURB AND GUTTER (5' MIN) PER R-3.02
- ③ CURB AND GUTTER (DEPRESSED WITH NO LIP) PER R-3.01
- ④ TRANSITION FROM FLUSH CURB AND GUTTER TO MODIFIED COMBINATION CURB AND GUTTER (5' MIN) PER R-3.02
- ⑤ TRANSITION FROM FLUSH CURB AND GUTTER TO 6" COMBINATION CURB AND GUTTER (5' MIN) PER R-3.02
- ⑥ NOSE DOWN CURB PER R-3.02
- ⑦ ALLEY ENTRANCE PER R-6.02

*NOTE: ALL SIDEWALK RAMP SHALL HAVE A DETECTABLE WARNING SURFACE. SEE HOWARD COUNTY DETAIL R-4.07.

CONSTRUCTION DETAILS

- A. INSTALL 5" WIDE SOLID DOUBLE YELLOW PAVEMENT MARKING FOR CENTERLINE
- B. INSTALL 5" WIDE SOLID WHITE PAVEMENT MARKING FOR LANE LINE
- C. INSTALL PAVEMENT MARKING SYMBOL AS SHOWN
- D. INSTALL GROUND MOUNTED SIGN
- E. INSTALL LIGHT POLE MOUNTED SIGN
- F. INSTALL 12" WIDE YELLOW PAVEMENT MARKING FOR MEDIAN
- G. INSTALL 5" WIDE SOLID/BROKEN (2' SEGMENT - 6' GAP) WHITE PAVEMENT MARKING FOR RIGHT TURN LANE
- H. INSTALL 24" WIDE SOLID WHITE PAVEMENT MARKING FOR STOP BAR
- I. INSTALL CROSSWALK PER HOWARD COUNTY DETAIL T-7.03

SIGNING NOTES:

- 1. 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) - 5' LONG. A GALVANIZED STEEL POLE CAP SHALL BE MOUNTED ON TOP OF EACH POST.
- 2. ALL SIGN LOCATIONS WITHIN THE PUBLIC RIGHT OF WAY SHALL BE APPROVED BY THE HOWARD COUNTY TRAFFIC DIVISION (410-315-5752) PRIOR TO ANY INSTALLATIONS.
- 3. ADVANCE PEDESTRIAN SIGNS, W11-2 (36"X36") WITH AN "AHEAD" PANEL BELOW (W16-9p), WILL BE INSTALLED. HOWARD COUNTY WILL FIELD LOCATE BOTH LOCATIONS.

PAVEMENT MARKING NOTES

- 1. ALL LONG LINE MARKINGS TO BE APPLIED USING "SETFAST PREMIUM ALKYD TRAFFIC PAINT" BY SHERWIN WILLIAMS OR APPROVED EQUAL.
- 2. THE CROSSWALK AND ARROWS TO BE INSTALLED USING PREFORMED HEAT APPLIED TAPE OR THERMOPLASTIC.
- 3. ALL PAVEMENT MARKINGS ARE TO BE EITHER LOCATED OR APPROVED BY THE TRAFFIC DIVISION PRIOR TO THE PLACEMENT OF ANY MARKINGS
- 4. ALL EXISTING PAVEMENT MARKING IN CONFLICT WITH PROPOSED PAVEMENT MARKINGS ARE TO BE REMOVED BY GRINDING ONLY. HOWARD COUNTY TRAFFIC (410-315-5752) WILL DETERMINE WHICH EXISTING MARKINGS SHALL BE REMOVED.

GENERAL NOTES:

- 1. A 20' MINIMUM DISTANCE SHALL BE MAINTAINED BETWEEN ANY TREES LOCATED ALONG THE CURB LINE AND ANY STREET LIGHT.
- 2. A 5' MINIMUM DISTANCE SHALL BE MAINTAINED BETWEEN ANY STREET LIGHT AND A FIRE HYDRANT.

QX-101* INSTALL OBJECT MARKER 3'-6" FROM TOP OF MARKER TO ROAD SURFACE)

SIGN LEGEND

PROPOSED STREET SIGN

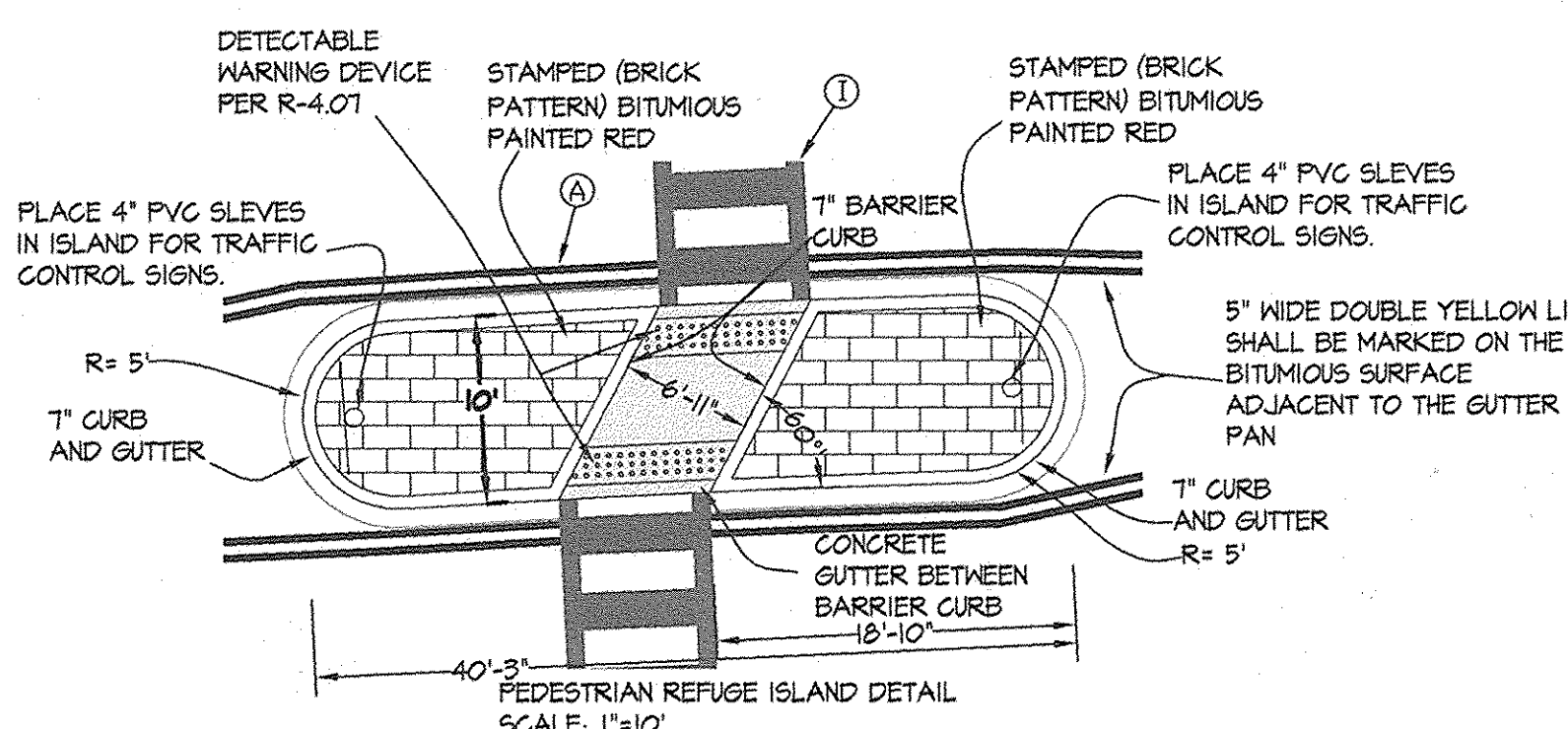
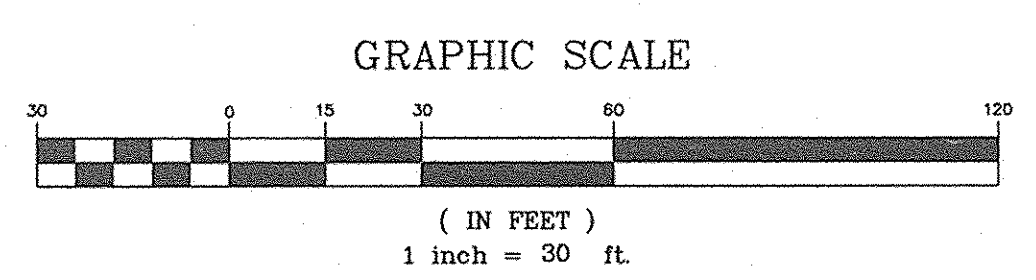
STREET LIGHT LEGEND

- PROPOSED PUBLIC STREET LIGHT. 150 WATT HIGH PRESSURE SODIUM VAPOR COLONIAL POST TOP FIXTURE MOUNTED ON A 14-FOOT BLACK FIBERGLASS EMBEDDED POLE
- PROPOSED PRIVATE STREET LIGHT. 100 WATT HIGH PRESSURE SODIUM VAPOR COLONIAL POST TOP FIXTURE MOUNTED ON A 14-FOOT BLACK FIBERGLASS EMBEDDED POLE



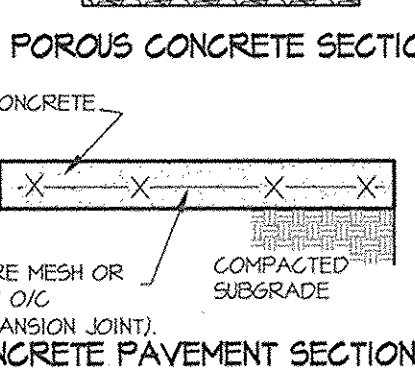
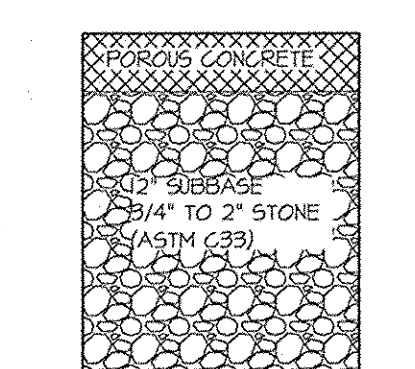
STREET LIGHT LOCATIONS

STREET	STATION	OFFSET
PUBLIC GORMAN ROAD	101+20	23' LEFT
GORMAN ROAD	101+25	23' RIGHT
GORMAN ROAD	102+00	23' LEFT
GORMAN ROAD	102+18	31' LEFT
GORMAN ROAD	103+54	35' RIGHT
PRIVATE ROCK RIPPLE LANE	N. 534,210	E. 1,354,174
ROCK RIPPLE LANE	N. 534,458	E. 1,354,173
ROCK RIPPLE LANE	N. 534,419	E. 1,354,510
ROCK RIPPLE LANE	N. 534,251	E. 1,354,352

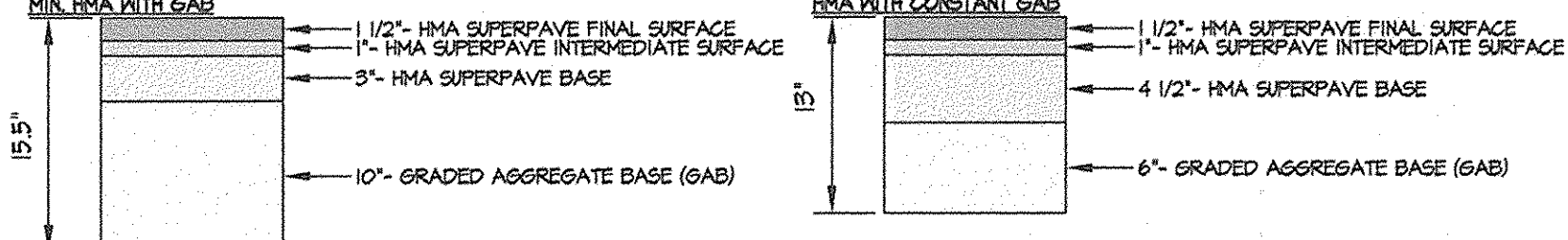


PAVEMENT LEGEND

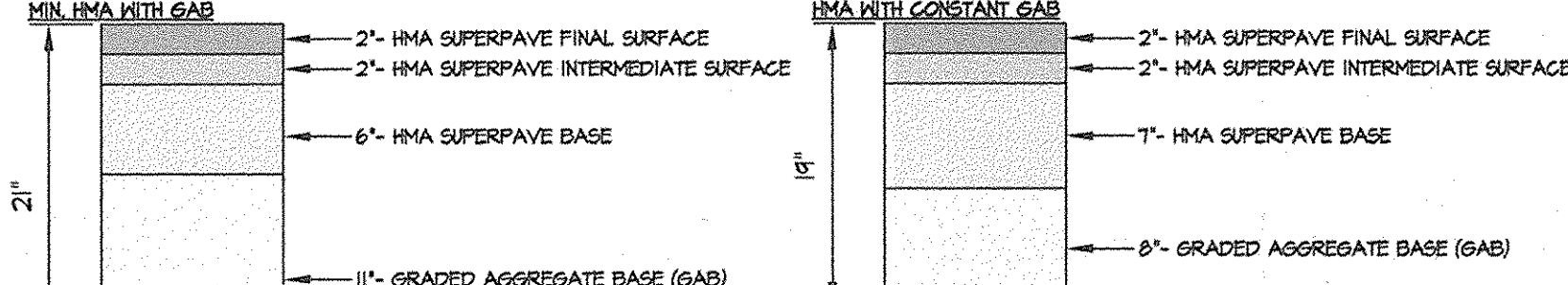
- P-3 (FER R-2.01)
- P-5 (FER R-2.03)
- SIDEWALK (FER R-3.05)
- REINFORCED SIDEWALK (SEE DETAIL SHEET 3)
- CONCRETE PAVEMENT
- POROUS CONCRETE PAVEMENT



P-3 PAVING SECTION



P-5 PAVING SECTION



Paving Sections N.T.S.

Note: Depending on the CER values obtained in the field, the paving sections may be revised, if approved by a professional soils engineer. These substitutions must also be approved by the Howard County Dept. of Public Works.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

Director: *Mona E. Rutler* Date: 6/27/11
 Chief, Division of Land Development: *Victor Sheehy* Date: 6/27/11
 Chief, Development Engineering Division: *John Deane* Date: 6/27/11

GLWGUTSCHICK LITTLE & WEBER, P.A.
 CIVIL ENGINEERS, LAND SURVEYORS, LAND PLANNERS, LANDSCAPE ARCHITECTS
 3909 NATIONAL DRIVE - SUITE 250 - BURTNSVILLE OFFICE PARK
 BURTNSVILLE, MARYLAND 20866
 TEL: 301-421-4024 BALT. 410-880-1820 DC/VA. 301-989-2524 FAX: 301-421-4186

PREPARED FOR & OWNER:
 CS RIVERWALK LLC
 c/o CRAFTSTAR HOMES, INC.
 6820 ELM STREET, SUITE 200
 MCLEAN, VA 22101
 M. COURTNEY TRELUTH
 703-827-5045

PROFESSIONAL CERTIFICATION
 I HEREBY CERTIFY THAT THESE PLANS 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. 12975 EXPIRATION DATE: May 26, 2017



PAVEMENT DELINEATION, PAVEMENT MARKING, CURB TRANSITION, LIGHTING, & SIGNAGE PLAN
RIVERWALK
 SINGLE FAMILY ATTACHED TOWNHOMES
 LOTS 1-58 AND OPEN SPACE LOTS 59 & 60
 Plat Numbers: 21025-21027
 ELECTION DISTRICT No. 6
 HOWARD COUNTY, MARYLAND

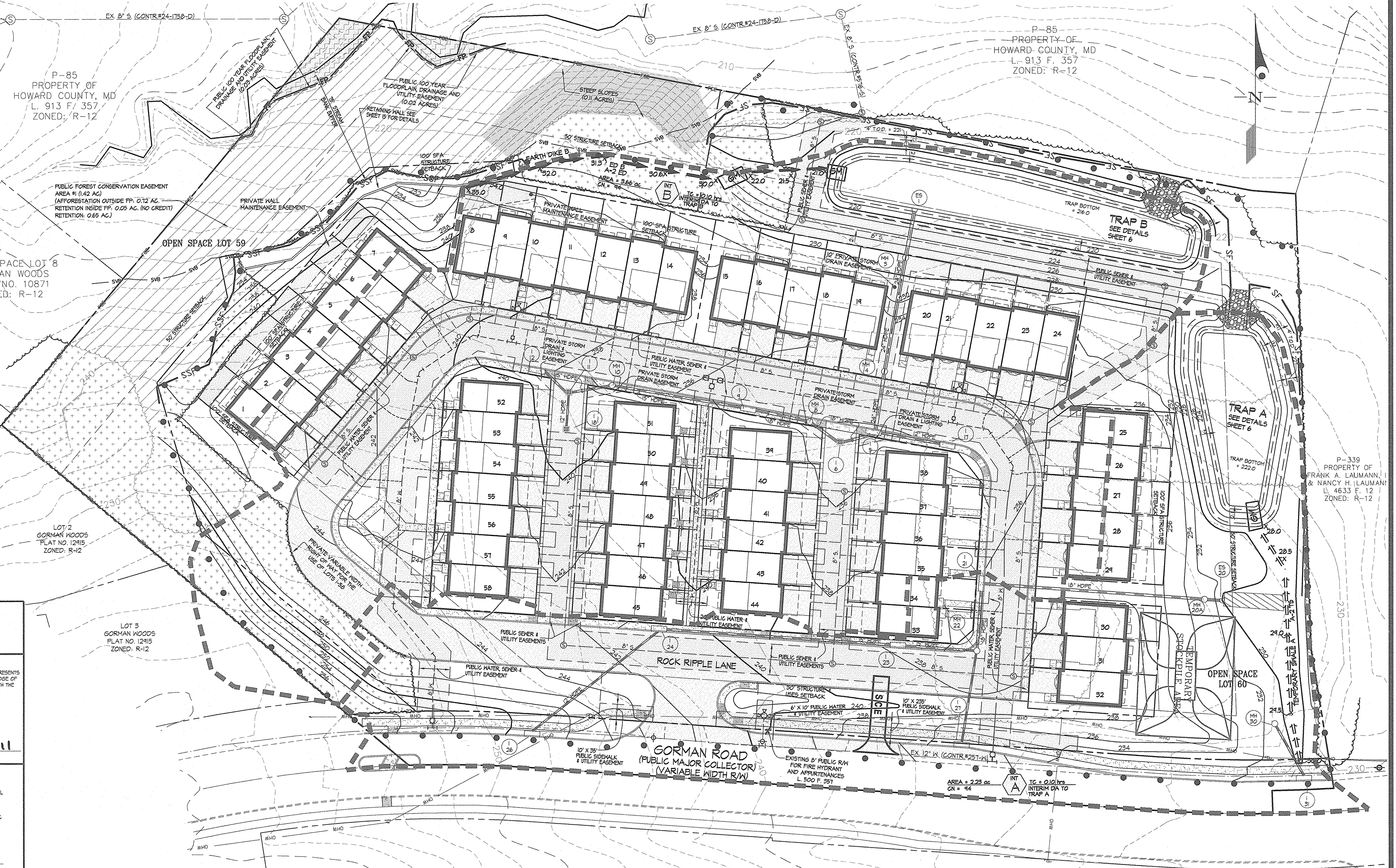
SCALE	ZONING	G. L. W. FILE NO.
1"=30'	R-SA-8	08039
DATE	TAX MAP - GRID	SHEET
MAY, 2011	47 - 16	4 OF 19

LEGEND

- EXISTING CONTOUR
- PROPOSED CONTOUR
- PROPOSED SUPER SILT FENCE
- PROPOSED SILT FENCE
- LIMIT OF DISTURBANCE
- TEMPORARY SWALE
- EARTH DIKE
- TEMPORARY DRAINAGE DITCH
- STABILIZED CONSTRUCTION ENTRANCE
- PROPOSED TEMPORARY STOCKPILE AREA
- EROSION CONTROL MATTING PER G-22-2

SEDIMENT AND EROSION CONTROL SEQUENCE OF CONSTRUCTION

- OBTAIN GRADING PERMIT AND ARRANGE PRE-CONSTRUCTION MEETING WITH SEDIMENT CONTROL INSPECTOR (1 DAY)
- INSTALL STABILIZED CONSTRUCTION ENTRANCE (SCE), SILT FENCE (SF), AND SUPER SILT FENCE (SSF). (2 DAYS)
- INSTALL RETAINING WALL ALONG STREAM BUFFER AND DO ENOUGH GRADING TO PROVIDE COVER OVER TIEBACKS. (14 DAYS)
- INSTALL TRAPS A & B (10 DAYS)
- INSTALL TEMPORARY SWALE A AND EARTH DIKE B (2 DAYS)
- ONCE PERMISSION HAS BEEN GRANTED FROM THE SEDIMENT CONTROL INSPECTOR, MASS GRADE SITE. (30 DAYS)
- INSTALL UTILITIES, DELAY INSTALLATION OF 1-3/4" MH-30 AND ALL CONNECTING PIPES UNTIL INSTALLATION OF STORMWATER MANAGEMENT FACILITIES. BLOCK LOW FLOW PIPES AT MH-3 AND MH-20A UNTIL STORMWATER FACILITIES ARE INSTALLED. (28 DAYS)
- BEGIN CONSTRUCTION OF HOUSES, CURBS, GUTTER, SIDEWALK, AND ALL PAVEMENT. (240 DAYS)
- ONCE ALL AREA DRAINING TO TRAP A HAS BEEN STABILIZED, AND WITH PERMISSION OF THE SEDIMENT CONTROL INSPECTOR, AND A 5 DAY CLEAR FORECAST FROM THE NATIONAL WEATHER SERVICE, REMOVE TRAP A AND INSTALL STORMWATER MANAGEMENT FACILITIES A-D. INSTALL 1-3/4" MH-30 AND CONNECT PIPES TO UNDER DRAIN SYSTEM. UNBLOCK LOW FLOW PIPES TO FACILITIES A-D. (5 DAYS)
- ONCE ALL AREA DRAINING TO TRAP B HAS BEEN STABILIZED, AND WITH PERMISSION OF THE SEDIMENT CONTROL INSPECTOR, AND A 5 DAY CLEAR FORECAST FROM THE NATIONAL WEATHER SERVICE, REMOVE TRAP B AND INSTALL STORMWATER MANAGEMENT FACILITIES E-H. REMOVE TEMPORARY 24" HDPE AND INSTALL PIPE FROM MH-3 TO ES-1. UNBLOCK LOW FLOW PIPES TO FACILITIES E-H (5 DAYS)



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

[Signature] 5/17/11
 HOWARD SOIL CONSERVATION DISTRICT DATE

ENGINEER'S CERTIFICATE

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

[Signature] 5-3-11
 ENGINEER'S SIGNATURE DATE

DEVELOPER'S/BUILDER'S CERTIFICATE

I/WE CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A MARYLAND 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 HSCD.

[Signature] 5-3-11
 SIGNATURE OF DEVELOPER/BUILDER DATE

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

[Signature] 6/23/11
 Director Date

[Signature] 6/23/11
 Chief, Division of Land Development Date

[Signature] 5/26/11
 Chief, Development Engineering Division Date

GLWGUTSCHICK LITTLE & WEBER, P.A.
 CIVIL ENGINEERS, LAND SURVEYORS, LAND PLANNERS, LANDSCAPE ARCHITECTS
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DATE	REVISION	BY	APPR.



PREPARED FOR & OWNER:
 CS RIVERWALK LLC
 c/o CRAFTSTAR HOMES, INC.
 6820 ELM STREET, SUITE 200
 MCLEAN, VA 22101
 M. COURTNEY TREUTH
 703-827-5045

PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE PLANS 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. 12875, EXPIRATION DATE: MAY 25, 2012.

5-3-11 *[Signature]*



SEDIMENT AND EROSION CONTROL PLAN

RIVERWALK
 SINGLE FAMILY ATTACHED TOWNHOMES
 LOTS 1-58 AND OPEN SPACE LOTS 59 & 60
 Plat Numbers: 21015-21017

SCALE	ZONING	G. L. W. FILE NO.
1"=30'	R-SA-8	08039
DATE	TAX MAP - GRID	SHEET
MAY, 2011	47 - 16	5 OF 19

HOWARD COUNTY, MARYLAND

STANDARD AND SPECIFICATIONS FOR TOPSOIL

DEFINITION
PLACEMENT OF TOPSOIL OVER A PREPARED SUBSOIL PRIOR TO ESTABLISHMENT OF PERMANENT VEGETATION.

PURPOSE
TO PROVIDE A SUITABLE SOIL MEDIUM FOR VEGETATIVE GROWTH. SOILS OF CONCERN HAVE LOW MOISTURE CONTENT, LOW NITROGEN LEVELS, LOW PH, MATERIALS TOXIC TO PLANTS, AND/OR UNACCEPTABLE SOIL GRADATION.

CONDITIONS WHERE PRACTICE APPLIES
I. THIS PRACTICE IS LIMITED TO AREAS HAVING 2:1 OR FLATTER SLOPE WHERE:
A. THE TEXTURE OF THE EXPOSED SUBSOIL/PARENT MATERIAL IS NOT ADEQUATE TO PRODUCE VEGETATIVE GROWTH.
B. THE SOIL MATERIAL IS SO SHALLOW THAT THE ROOTING ZONE IS NOT DEEP ENOUGH TO SUPPORT PLANTS OR FURNISH CONTINUOUS SUPPLY OF MOISTURE AND PLANT NUTRIENTS.
C. THE ORIGINAL SOIL TO BE VEGETATED CONTAINS MATERIAL TOXIC TO PLANT GROWTH.
D. THE SOIL IS SO ACIDIC THAT TREATMENT WITH LIMESTONE IS NOT FEASIBLE.

CONSTRUCTION AND MATERIAL SPECIFICATIONS
I. TOPSOIL SALVAGED FROM THE EXISTING SITE MAY BE USED PROVIDED THAT IT MEETS THE STANDARDS SET FORTH IN THESE SPECIFICATIONS. TYPICALLY, THE DEPTH OF TOPSOIL TO BE SALVAGED FOR A GIVEN SOIL TYPE CAN BE FOUND IN THE RESPECTIVE SOIL PROFILE SECTION IN THE SOIL SURVEY PUBLISHED BY USDA-SCS IN COOPERATION WITH MARYLAND AGRICULTURAL EXPERIMENTAL STATION.

II. TOPSOIL SPECIFICATIONS - SOIL TO BE USED AS TOPSOIL MUST MEET THE FOLLOWING:
A. TOPSOIL SHALL BE A LOAM, SANDY LOAM, CLAY LOAM, SILT LOAM, SANDY CLAY LOAM, LOAMY SAND, OTHER SOILS MAY BE USED IF RECOMMENDED BY AN AGRONOMIST OR SOIL SCIENTIST AND APPROVED BY THE APPROPRIATE AGRICULTURAL AUTHORITY. REGARDLESS, TOPSOIL SHALL NOT BE A MIXTURE OF CONTRASTING TEXTURED SUBSOILS AND SHALL CONTAIN LESS THAN 5% BY VOLUME OF GROUND STONES, SLAG, COARSE FRAGMENTS, GRAVEL, STICKS, ROOTS, TRASH, OR OTHER MATERIALS LARGER THAN 1 1/2" IN DIAMETER.
B. TOPSOIL MUST BE FREE OF PLANT PARTS SUCH AS BERMUDA GRASS, QUACKGRASS, JOHNSONGRASS, NITSEDEGE, POISON IVY, THISTLE, OR OTHERS AS SPECIFIED.
C. WHERE THE SUBSOIL IS EITHER HIGHLY ACIDIC OR COMPOSED OF HEAVY CLAYS, GRASS LIMESTONE SHALL BE SPREAD AT THE RATE OF 4-8 TONS/ACRE (200-400 POUNDS PER 1000 SQUARE FEET) PRIOR TO THE PLACEMENT OF TOPSOIL. THE SOIL SHALL BE DISTRIBUTED UNIFORMLY OVER DESIGNATED AREAS AND WORKED INTO THE SOIL IN CONJUNCTION WITH TILLAGE OPERATIONS AS DESCRIBED IN THE FOLLOWING PROCEDURES.
III. FOR SITES HAVING DISTURBED AREAS UNDER 5 ACRES:
A. PLACE TOPSOIL (IF REQUIRED) AND APPLY SOIL AMENDMENTS AS SPECIFIED IN 2.0 VEGETATIVE STABILIZATION - SECTION I - VEGETATIVE STABILIZATION METHODS AND MATERIALS (SEE SEEDING NOTES).
IV. FOR SITES HAVING DISTURBED AREAS OVER 5 ACRES:
A. ON SOIL MEETINGS TOPSOIL SPECIFICATIONS, OBTAIN TEST RESULTS DICTATING FERTILIZER & LIME AMENDMENTS REQUIRED TO BRING THE SOIL INTO COMPLIANCE WITH THE FOLLOWING:
1. PH FOR TOPSOIL SHALL BE BETWEEN 6.0 AND 7.5. IF THE TESTED SOIL DEMONSTRATES A PH OF LESS THAN 6.0, SUFFICIENT LIME SHALL BE APPLIED TO RAISE THE PH TO 6.5 OR GREATER.
2. ORGANIC CONTENT OF TOPSOIL SHALL BE NOT LESS THAN 15 PERCENT BY WEIGHT.
3. TOPSOIL HAVING SOLUBLE SALT GREATER THAN 500 PARTS PER MILL SHALL NOT BE USED.
4. NO SOD OR SEED SHALL BE PLACED ON SOIL WHICH HAS BEEN WITH SOIL STERILANTS OR CHEMICALS USED FOR WEED CONTROL UNTIL SUFFICIENT TIME HAS ELAPSED (14 DAYS MIN) TO PERMIT DISSIPATION OF PHOTO-TOXIC MATERIALS.
NOTE: TOPSOIL SUBSTITUTES OR AMENDMENTS, AS RECOMMENDED BY A QUALIFIED AGRONOMIST OR SOIL SCIENTIST AND APPROVED BY THE APPROPRIATE APPROVAL AUTHORITY, MAY BE USED IN LIEU OF NATURAL TOPSOIL.
B. PLACE TOPSOIL (IF REQUIRED) AND APPLY SOIL AMENDMENTS AS SPECIFIED IN 2.0 VEGETATIVE STABILIZATION - SECTION I - VEGETATIVE STABILIZATION METHODS AND MATERIALS (SEE SEEDING NOTES).

V. TOPSOIL APPLICATION
A. WHEN TOPSOILING, MAINTAIN NEEDED EROSION AND SEDIMENT CONTROL PRACTICES SUCH AS EROSION GRADATION STABILIZATION STRUCTURES, EARTH DIKES, SLOPE SILT FENCE AND SEDIMENT TRAPS AND BASINS.
B. GRADES ON THE AREAS TO BE TOPSOILED, WHICH HAVE BEEN PREVIOUSLY ESTABLISHED, SHALL BE MAINTAINED, ALBEIT 4"-8" HIGHER IN ELEVATION.
C. TOPSOIL SHALL BE UNIFORMLY DISTRIBUTED IN A 4"-8" LAYER AND LIGHTLY COMPACTED TO A MINIMUM THICKNESS OF 4". SPREADINGS SHALL BE PERFORMED IN SUCH A MANNER THAT SOODING OR SEEDING SHALL PROCEED WITH A MINIMUM OF ADDITIONAL SOIL PREPARATION AND TILLAGE. ANY IRREGULARITIES IN THE SURFACE RESULTING FROM TOPSOILING OR OTHER OPERATIONS SHALL BE CORRECTED IN ORDER TO PREVENT THE FORMATION OF DEPRESSIONS OR WATER DITCHES. TOPSOIL SHALL NOT BE PLACED WHILE THE TOPSOIL OR SUBSOIL IS FROZEN OR MOIST CONDITION WHEN THE SUBSOIL IS EXCESSIVELY YET OR IN A CONDITION THAT MAY OTHERWISE BE DETRIMENTAL TO PROPER GRADING AND SEEDING PREPARATION.

VI. ALTERNATIVE FOR PERMANENT SEEDING - INSTEAD OF APPLYING THE FULL AMOUNTS OF LIME AND COMMERCIAL FERTILIZER, COMPOSTED SLUDGE AND AMENDMENTS MAY BE APPLIED AS SPECIFIED BELOW:
A. COMPOSTED SLUDGE MATERIAL FOR USE AS A SOIL CONDITIONER FOR SITES HAVING DISTURBED AREAS OVER 5 ACRES SHALL BE TESTED TO PRESCRIBE AMENDMENTS AND FOR SITES HAVING DISTURBED AREAS UNDER 5 ACRES SHALL CONFORM TO THE FOLLOWING REQUIREMENTS:
1. COMPOSTED SLUDGE SHALL BE SUPPLIED BY, OR ORIGINATE FROM, A PERSON OR PERSONS THAT ARE PERMITTED AT THE TIME OF ACQUISITION OF THE COMPOST BY THE MARYLAND DEPARTMENT OF THE ENVIRONMENT UNDER COMAR 26.04.06.
2. COMPOSTED SLUDGE SHALL CONTAIN AT LEAST 1 PERCENT NITROGEN, 15 PERCENT PHOSPHORUS, AND 0.2 PERCENT POTASSIUM AND HAVE A PH OF 1.0 TO 8.0. IF COMPOST DOES NOT MEET THESE REQUIREMENTS, THE APPROPRIATE CONSTITUENTS MUST BE ADDED TO MEET THE REQUIREMENTS PRIOR TO USE.
3. COMPOSTED SLUDGE SHALL BE APPLIED AT A RATE OF 1 TON/1000 SQUARE FEET.
B. COMPOSTED SLUDGE SHALL BE AMENDED WITH A POTASSIUM FERTILIZER APPLIED AT A RATE OF 4LB/1000 SQUARE FEET, AND 1/3 THE NORMAL LIME APPLICATION RATE.

REFERENCES: GUIDELINE SPECIFICATIONS, SOIL PREPARATION AND SOODING, MD-VA PUB. #, COOPERATIVE EXTENSION SERVICE, UNIVERSITY OF MARYLAND AND VIRGINIA POLYTECHNIC INSTITUTES. REVISED HTS.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
Director: *Thomas J. Buttle* Date: *6/26/11*
Chief, Division of Land Development: *Walt Schulz* Date: *6/27/11*
Chief, Development Engineering Division: *William* Date: *5/26/11*

GLWGUTSCHICK LITTLE & WEBER, P.A.
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3909 NATIONAL DRIVE - SUITE 250 - BURTNSVILLE OFFICE PARK
BURTNSVILLE, MARYLAND 20866
TEL: 301-421-4024 FAX: 301-421-4024

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SEDIMENT CONTROL NOTES

1. A MINIMUM OF 24 HOURS NOTICE MUST BE GIVEN TO THE HOWARD COUNTY OFFICE OF INSPECTION AND PERMITS PRIOR TO THE START OF ANY CONSTRUCTION. (410) 315-1655

2. ALL VEGETATIVE AND STRUCTURAL PRACTICES ARE TO BE INSTALLED ACCORDING TO THE PROVISIONS OF THIS PLAN AND ARE TO BE IN CONFORMANCE WITH THE 1994 HANDBOOK OF STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL AND REVISIONS THERETO.

3. FOLLOWING INITIAL SOIL DISTURBANCE OR REDISTURBANCE PERMANENT OR TEMPORARY STABILIZATION SHALL BE COMPLETED WITHIN: A) 1 CALENDAR DAYS FOR ALL PERIMETER SEDIMENT CONTROL STRUCTURES, DIKES AND PERIMETER SLOPES AND ALL SLOPES GREATER THAN 3:1, B) 14 DAYS AS TO ALL OTHER DISTURBED OR GRADED AREAS ON THE PROJECT SITE.

4. ALL SEDIMENT TRAP-BASINS SHOWN MUST BE FENCED AND WARNING SIGNS POSTED AROUND THEIR PERIMETER IN ACCORDANCE WITH VOL. 1, CHAPTER 12, OF THE HOWARD COUNTY DESIGN MANUAL, STORM DRAINAGE.

5. ALL DISTURBED AREAS MUST BE STABILIZED WITHIN THE TIME PERIOD SPECIFIED ABOVE IN ACCORDANCE WITH THE 1994 MARYLAND STANDARDS AND SPECIFICATIONS FOR SOIL EROSION AND SEDIMENT CONTROL, FOR PERMANENT SEEDINGS, 500, TEMPORARY SEEDINGS AND MULCHING (REG. 6), TEMPORARY STABILIZATION WITH MULCH ALONE, CAN ONLY BE DONE WHEN RECOMMENDED SEEDING DATES DO NOT ALLOW FOR PROPER GERMINATION AND ESTABLISHMENT OF GRASSES.

6. ALL SEDIMENT CONTROL STRUCTURES ARE TO REMAIN IN PLACE AND ARE TO BE MAINTAINED IN OPERATIVE CONDITION UNTIL PERMITS FOR THEIR REMOVAL HAS BEEN OBTAINED FROM THE HOWARD COUNTY SEDIMENT CONTROL INSPECTOR.

TOTAL AREA OF SITE	1.48 ± ACRES
AREA DISTURBED	6.20 ± ACRES
AREA TO BE ROOFED OR PAVED	3.5 ± ACRES
AREA TO BE VEGETATIVELY STABILIZED	4.18 ± ACRES
TOTAL CUT	14,000 ± CU YDS.
TOTAL FILL	14,000 ± CU YDS.
OFF-SITE WASTE/BORROW AREA LOCATION	NGNE

7. ANY SEDIMENT CONTROL PRACTICE WHICH IS DISTURBED BY GRADING ACTIVITY FOR PLACEMENT OF UTILITIES MUST BE REPAIRED ON THE SAME DAY OF DISTURBANCE.

8. ADDITIONAL SEDIMENT CONTROL MUST BE PROVIDED, IF DEEMED NECESSARY BY THE HOWARD COUNTY DPM SEDIMENT CONTROL INSPECTOR.

10. ON ALL SITES WITH DISTURBED AREAS IN EXCESS OF 2 ACRES, APPROVAL OF THE INSPECTION AGENCY SHALL BE REQUESTED UPON COMPLETION OF INSTALLATION OF PERIMETER EROSION AND SEDIMENT CONTROLS, BUT BEFORE PROCEEDING WITH ANY OTHER EARTH DISTURBANCE OR GRADING. OTHER BUILDINGS OR GRADING INSPECTION APPROVALS MAY NOT BE AUTHORIZED UNTIL THIS INITIAL APPROVAL BY THE INSPECTION AGENCY IS MADE.

II. TRENCHES FOR THE CONSTRUCTION OF UTILITIES IS LIMITED TO 3 PIPE LENGTHS OR THAT WHICH SHALL BE BACKFILLED AND STABILIZED WITHIN 1 WORKING DAY, WHICHEVER IS SHORTER.

PERMANENT SEEDING NOTES

APPLY TO GRADED OR CLEARED AREA NOT SUBJECT TO IMMEDIATE FURTHER DISTURBANCE WHERE A PERMANENT LONG-LIVED VEGETATIVE COVER IS NEEDED.
SEEDING PREPARATION: LOOSEN UPPER THREE INCHES OF SOIL BY RAKING, DISCS OR OTHER ACCEPTABLE MEANS BEFORE SEEDING (UNLESS PREVIOUSLY LOOSENED).
SOIL AMENDMENTS: IN LIEU OF SOIL TEST RECOMMENDATIONS, USE ONE OF THE FOLLOWING SCHEDULES:
1) PREFERRED - APPLY 2 TONS PER ACRE DOLOMITIC LIMESTONE (92 LBS/1000 SQUARE FEET) AND 600 LBS PER ACRE 10-10-10 FERTILIZER (4 LBS/1000 SQ FT) BEFORE SEEDING. HARROW OR DISC INTO UPPER THREE INCHES OF SOIL. AT TIME OF SEEDING, APPLY 400 LBS PER ACRE 30-0-0 UREA-FORM FERTILIZER (4 LBS/1000 SQ FT).
2) ACCEPTABLE - APPLY 2 TONS PER ACRE DOLOMITIC LIMESTONE (92 LBS/1000 SQ FT) AND 1000 LBS PER ACRE OF 10-10-10 FERTILIZER (25 LBS/1000 SQ FT) BEFORE SEEDING. HARROW OR DISC INTO UPPER THREE INCHES OF SOIL.

SEEDING: FOR THE PERIODS MARCH 1 THRU APRIL 30, AND AUGUST 1 THRU OCTOBER 15, SEED WITH 60 LBS PER ACRE (14 LBS/1000 SQ FT) OF KENTUCKY 31 TALL FESCUE. FOR THE PERIOD MAY 1 THRU JULY 31, SEED WITH 60 LBS KENTUCKY 31 TALL FESCUE PER ACRE AND 2 LBS PER ACRE (25 LBS/1000 SQ FT) OF KEEPING LOVEGRASS. DURING THE PERIOD OF OCTOBER 16 THRU FEBRUARY 29, PROTECT SITE BY: OPTION (1) 2 TONS PER ACRE OF WELL ANCHORED STRAW MULCH AND SEED AS SOON AS POSSIBLE IN THE SPRING. OPTION (2) USE SOD. OPTION (3) SEED WITH 60 LBS/ACRE KENTUCKY 31 TALL FESCUE AND MULCH WITH 2 TONS OF WELL ANCHORED STRAW MULCHING. APPLY 1/2 TO 2 TONS PER ACRE (10 TO 40 LBS/1000 SQ FT) OF UNROTTED STRAW MULCH IMMEDIATELY AFTER SEEDING. ANCHOR MULCH IMMEDIATELY AFTER APPLICATION USING MULCH ANCHORING TOOL OR 216 GALLONS PER ACRE (5 GALL/1000 SQ FT) OF EMULSIFIED ASPHALT ON FLAT AREAS. ON SLOPES 3 FT OR HIGHER, USE 348 GALLONS PER ACRE (8 GALL/1000 SQ FT) FOR ANCHORING.

MAINTENANCE: INSPECT ALL SEEDING AREAS AND MAKE NEEDED REPAIRS, REPLACEMENTS AND RESEEDINGS.

TEMPORARY SEEDING NOTES

APPLY TO GRADED OR CLEARED AREAS LIKELY TO BE REDISTURBED WHERE A SHORT-TERM VEGETATIVE COVER IS NEEDED.
SEEDING PREPARATION: LOOSEN UPPER THREE INCHES OF SOIL BY RAKING, DISCS OR OTHER ACCEPTABLE MEANS BEFORE SEEDING (UNLESS PREVIOUSLY LOOSENED).
SOIL AMENDMENTS: APPLY 600 LBS PER ACRE 10-10-10 FERTILIZER (4 LBS/1000 SQ FT).
SEEDING: FOR PERIODS MARCH 1 THRU APRIL 30 AND FROM AUGUST 15 THRU OCTOBER 15, SEED WITH 2-1/2 BUSHEL PER ACRE OF ANNUAL RYE (3.2 LBS/1000 SQ FT). FOR THE PERIOD MAY 1 THRU AUGUST 14, SEED WITH 3 LBS PER ACRE OF KEEPING LOVEGRASS (7 LBS/1000 SQ FT). FOR THE PERIOD NOVEMBER 16 THRU FEBRUARY 29, PROTECT SITE BY APPLYING 2 TONS PER ACRE OF WELL ANCHORED STRAW MULCH AND SEED AS SOON AS POSSIBLE IN THE SPRING, OR USE SOD.
MULCHING: APPLY 1/2 TO 2 TONS PER ACRE (10 TO 40 LBS/1000 SQ FT) OF UNROTTED WOOD-CHIP MULCH IMMEDIATELY AFTER SEEDING. ANCHOR MULCH IMMEDIATELY AFTER APPLICATION USING MULCH ANCHORING TOOL OR 216 GALLONS PER ACRE (5 GALL/1000 SQ FT) OF EMULSIFIED ASPHALT ON FLAT AREAS. ON SLOPES 3 FT OR HIGHER, USE 348 GALLONS PER ACRE (8 GALL/1000 SQ FT) FOR ANCHORING.

DEVELOPER'S/BUILDER'S CERTIFICATE
"I/WE CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE ACCORDING TO THIS PLAN, AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CERTIFICATE OF ATTENDANCE AT A MARYLAND 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 HSCD."

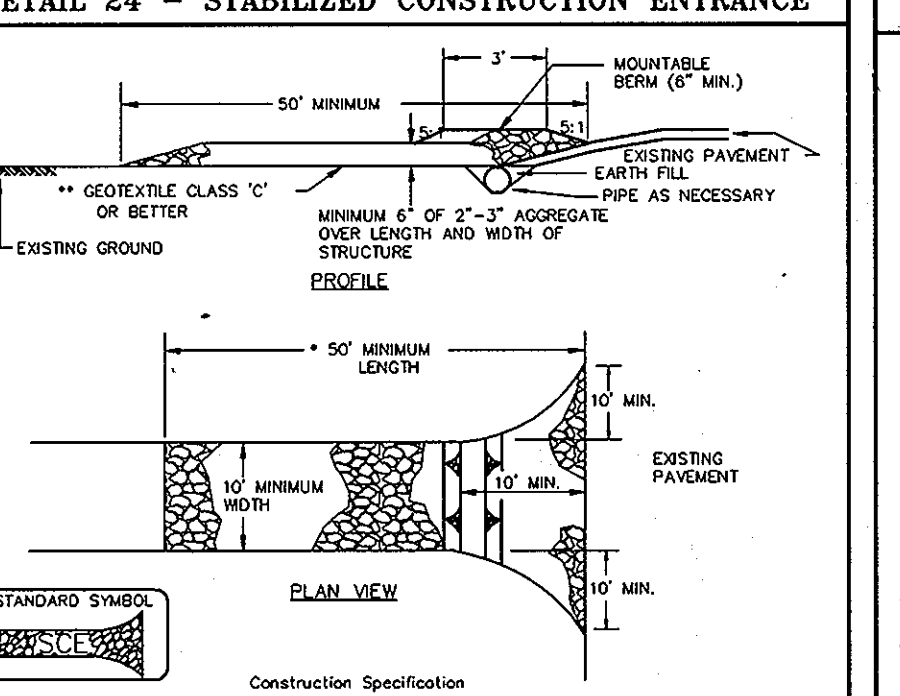
ENGINEER'S CERTIFICATE
"I CERTIFY THAT THIS PLAN FOR EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS AND THAT IT WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD COUNTY SOIL CONSERVATION DISTRICT."

DATE: 5-3-11
SIGNATURE OF DEVELOPER/BUILDER: *J. V. Abz*
DATE: 5-3-11
ENGINEER'S SIGNATURE: *John R. Hunter* DATE: 5/7/11

PREPARED FOR & OWNER: CS RIVERWALK LLC c/o CRAFTSTAR HOMES, INC. 6820 ELM STREET, SUITE 200 McLEAN, VA 22101 M. COURTNEY TREUTH 703-827-5045

PROFESSIONAL CERTIFICATION: I HEREBY CERTIFY THAT THESE PLANS 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. 12925 EXPIRATION DATE: May 25, 2017

DETAIL 24 - STABILIZED CONSTRUCTION ENTRANCE

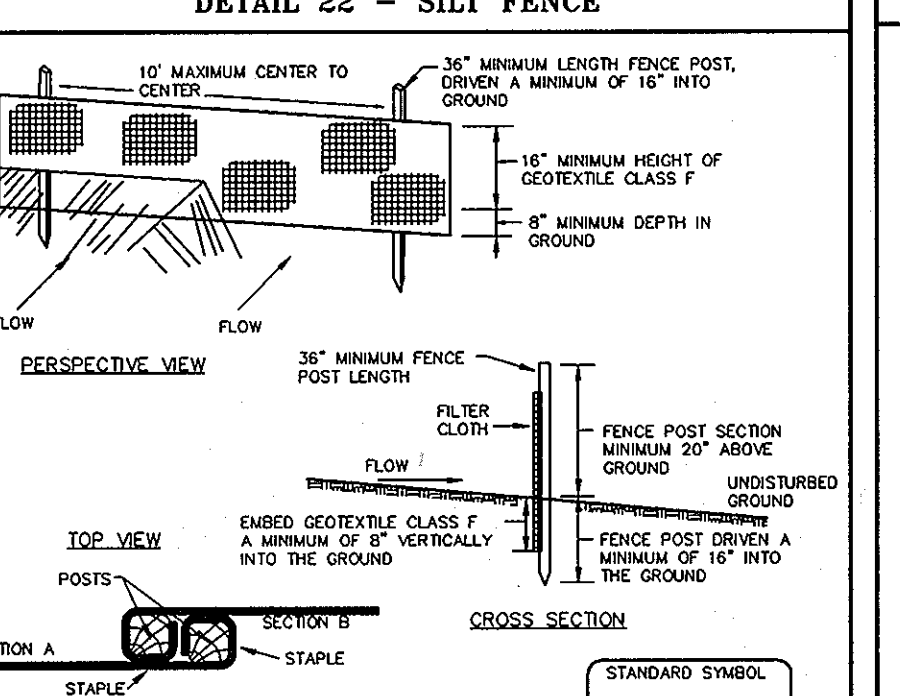


Construction Specifications
1. Length - minimum of 50' (30' for single radius).
2. Width - 10' minimum, should be flared at the existing road to provide a turning radius.

3. Geotextile fabric (filter cloth) shall be placed over the existing ground prior to placing stone. *The site approval authority may not require single family residences to use geotextile.
4. Stone - crushed aggregate (2" to 3") or reclaimed or recycled concrete equivalent shall be placed at least 6" deep over the length and width of the entrance.
5. Surface Water - all surface water flowing to or diverted toward construction entrances shall be piped through the entrance, maintaining positive drainage. Pipe installed through the stabilized construction entrance shall be protected with a reasonable berm with 5:1 slopes and a minimum of 6" of stone over the pipe. Pipe has to be sized according to the drainage. When the SDC is located at a high spot and has no drainage to convey a pipe will not be necessary. Pipe should be sized according to the amount of runoff to be conveyed. A 6" minimum will be required.
6. Location - A stabilized construction entrance shall be located at every point where construction traffic enters or leaves a construction site. Vehicles leaving the site must travel over the entire length of the stabilized construction entrance.

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DETAIL 22 - SILT FENCE

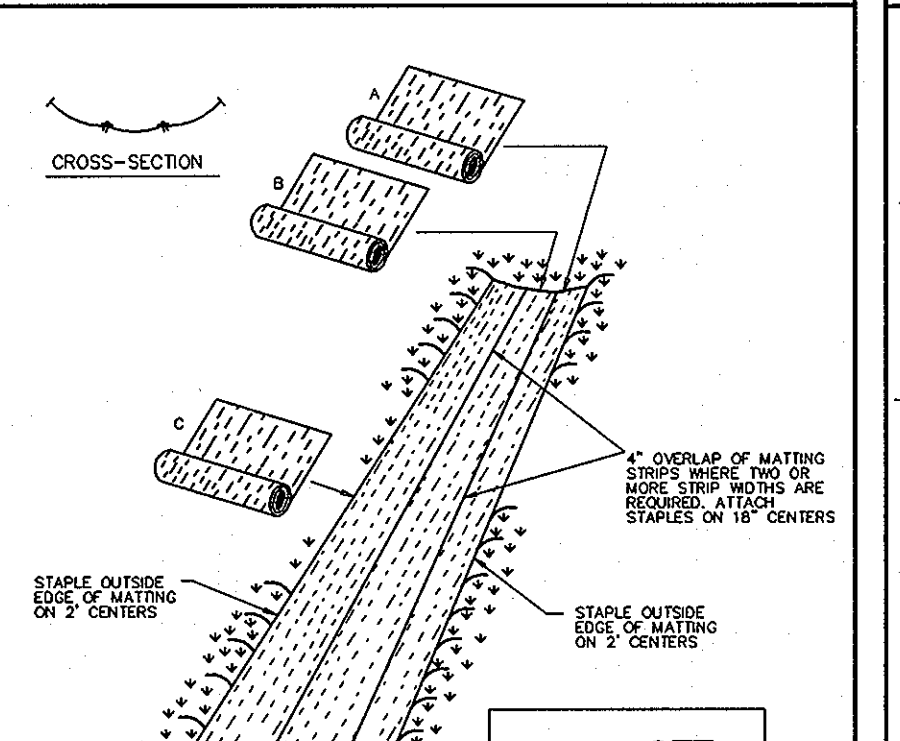


Construction Specifications
1. Fence posts shall be a minimum of 36" long driven 16" minimum into the ground. Wood posts shall be 1 1/2" x 1 1/2" square (minimum) and 1 3/4" diameter (minimum) round and shall be of sound quality hardwood. Steel posts will be standard "I" or "U" section, weighing not less than 1.00 pound per linear foot.
2. Geotextile shall be fastened securely to each fence post with wire ties or staples at top and mid-section and shall meet the following requirements for Geotextile Class F:
Tensile Strength 50 lbs/in (min.) Test: MSMT 509
Tensile Modulus 20 lbs/in (min.) Test: MSMT 509
Flow Rate 0.3 gal ft / minute (max.) Test: MSMT 322
Filtering Efficiency 75% (min.) Test: MSMT 322
3. Where ends of geotextile fabric come together, they shall be overlapped.
4. Silt fence shall be inspected after each rainfall event and maintained when built open or when sediment accumulation exceeds 50% of the fabric height.

5. Silt fence shall be installed in accordance with manufacturer's recommendations.
6. Gabions shall be installed in accordance with manufacturer's recommendations.
7. Gabion Inflow Protection shall be used where concentrated flow is present on slopes steeper than 4:1.

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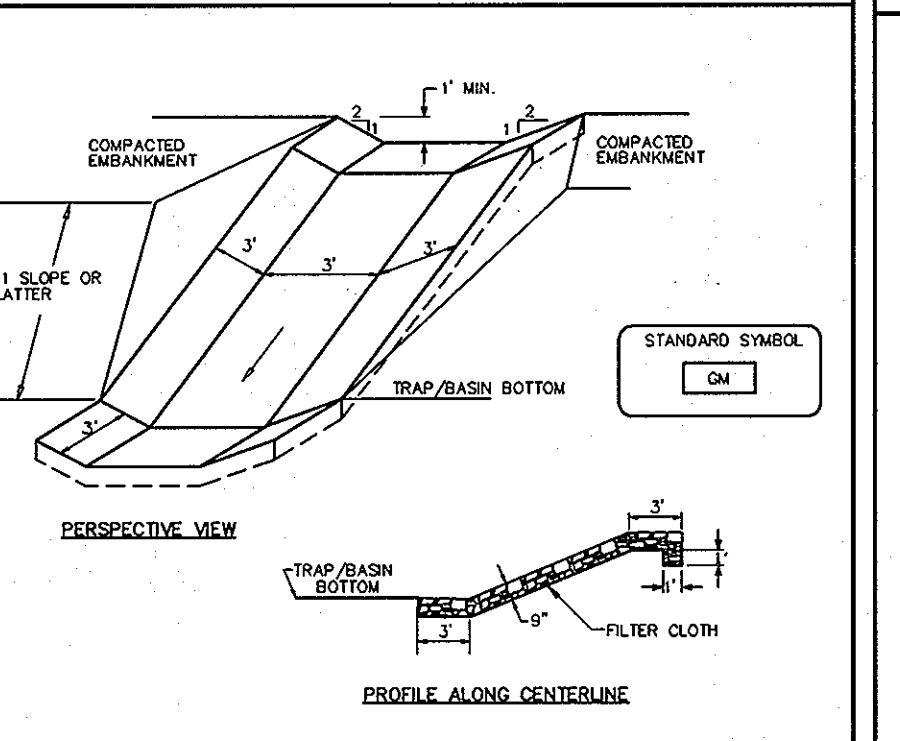
DETAIL 30 - EROSION CONTROL MATTING



Construction Specifications
1. Matting shall be applied to areas where a permanent long-lived vegetative cover is needed.
2. Matting shall be applied to areas where a short-term vegetative cover is needed.
3. Matting shall be applied to areas where a temporary vegetative cover is needed.

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DETAIL 6 - GABION INFLOW PROTECTION

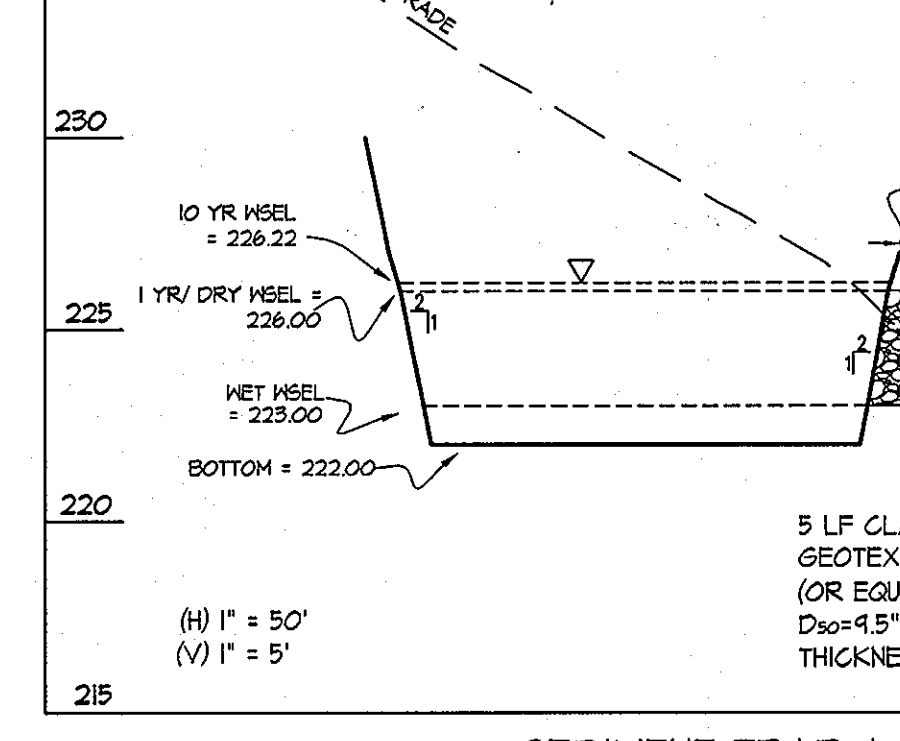


Construction Specifications
1. Gabion inflow protection shall be constructed of 6" x 6" x 6" gabion baskets forming a trapezoidal cross section 1' deep, with 2:1 side slopes, and a 3' bottom width.
2. Geotextile Class C shall be installed under all gabion baskets.
3. The stone used to fill the gabion baskets shall be 4" - 7".
4. Gabions shall be installed in accordance with manufacturer's recommendations.
5. Gabion Inflow Protection shall be used where concentrated flow is present on slopes steeper than 4:1.

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TRAP A Baffle Computation

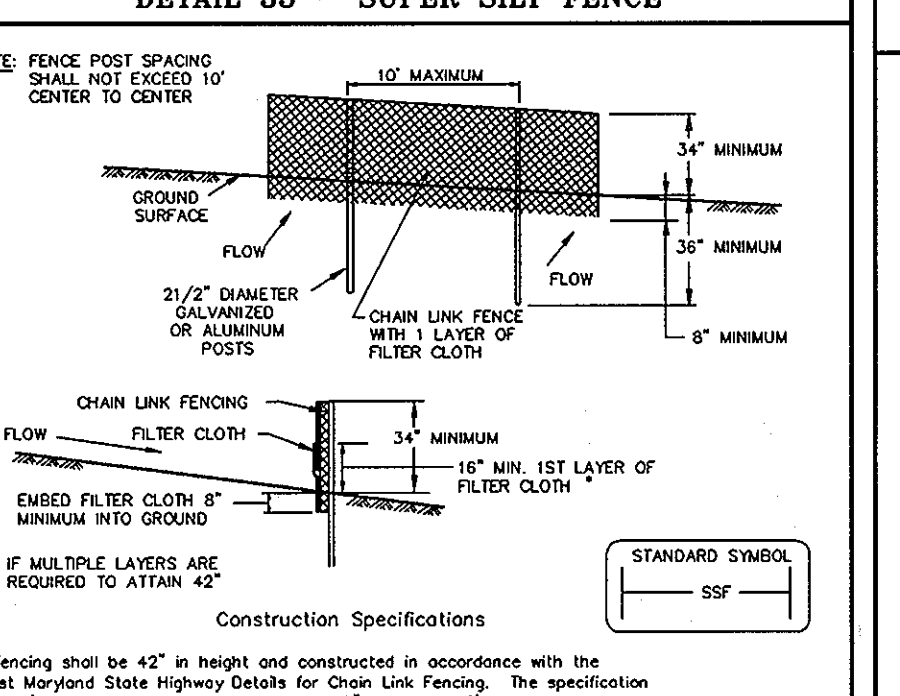
D = 115 FT.
A NET POOL = 6,521 SQ FT
W₆ = A/D = 57 FT
L₆ = 2W₆ = 114 FT
L₆ PROVIDED = 115 FT
No Baffles Required



SEDIMENT TRAP A PROFILE THROUGH PRINCIPAL SPILLWAY

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

DETAIL 33 - SUPER SILT FENCE

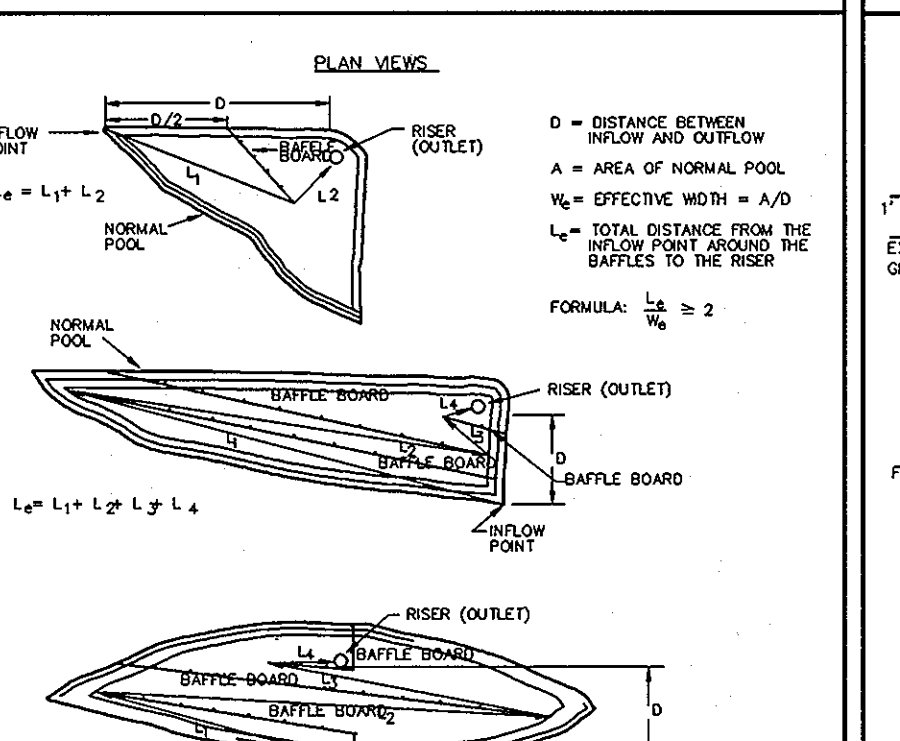


Construction Specifications
1. Fencing shall be 42" in height and constructed in accordance with the latest Maryland State Highway Details for Chain Link Fencing. The specification for a 4" fence shall be used, substituting 42" fabric and 6" length posts.
2. Chain link fence shall be fastened securely to the fence posts with wire ties. The lower tension wire, brace and cross rods, drive anchors and post caps are not required except on the ends of the fence.
3. Filter cloth shall be fastened securely to the chain link fence with wire ties or staples at top and mid section.
4. Filter cloth shall be embedded a minimum of 6" into the ground.
5. When two sections of filter cloth adjoin each other, they shall be overlapped by 6" and folded.
6. Maintenance shall be performed as needed and all bulges removed when "bulges" develop in the silt fence, or when all reaches 50% of fence height.
7. Filter cloth shall be fastened securely to each fence post with wire ties or staples at top and mid section and shall meet the following requirements for Geotextile Class F:
Tensile Strength 50 lbs/in (min.) Test: MSMT 509
Tensile Modulus 20 lbs/in (min.) Test: MSMT 509
Flow Rate 0.3 gal ft / minute (max.) Test: MSMT 322
Filtering Efficiency 75% (min.) Test: MSMT 322

8. All temporary earth dikes shall have uninterrupted positive grade to an outlet. Spot deviations may be necessary for grades less than 1%.
9. Runoff diverted from a disturbed area shall be conveyed to a sediment trapping device.
10. Runoff diverted from an undisturbed area shall outlet directly into an undisturbed, stabilized area at a non-erosive velocity.
11. All trees, brush, stumps, obstructions, and other objectionable material shall be removed and disposed of so as not to interfere with the proper functioning of the dike.
12. The dike shall be excavated or shaped to line, grade and cross section as required to meet the criteria specified herein and be free of bank projections or other irregularities which will impede normal flow.
13. Fill, if necessary, shall be compacted by each mowing equipment.
14. All earth removed and not needed for construction shall be placed so that it will not interfere with the functioning of the dike.
15. Inspection and maintenance must be provided periodically and after each rain event.

U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE	PAGE 8 - 28 - 3	MARYLAND DEPARTMENT OF ENVIRONMENT WATER MANAGEMENT ADMINISTRATION
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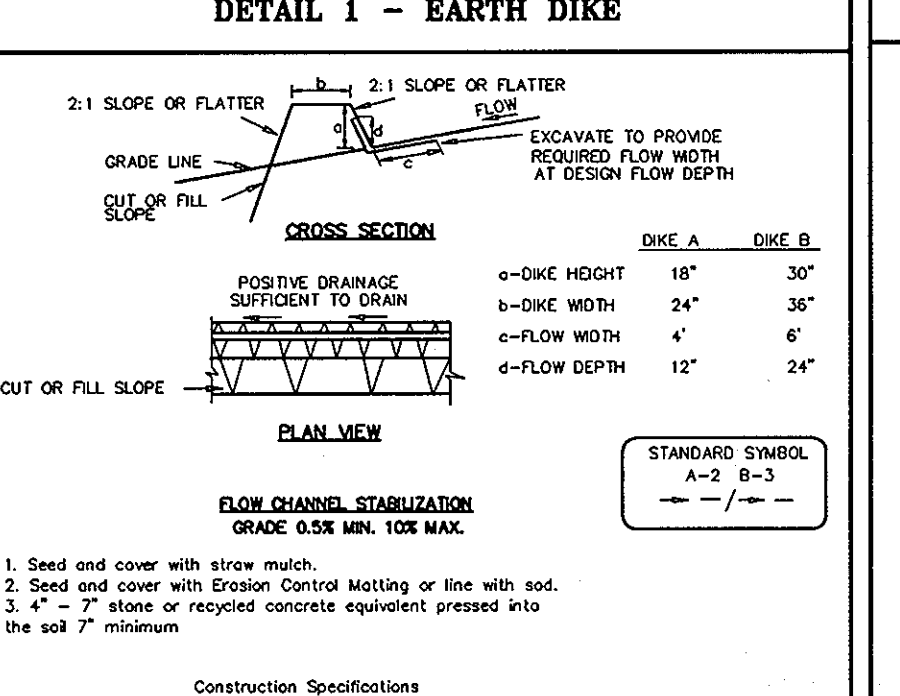
DETAIL 18 - SEDIMENT BASIN BAFFLES



Construction Specifications
1. Baffle boards shall be made of 2" x 4" x 8" exterior grade plywood or equivalent.
2. Baffle boards shall be spaced 4' to 7' apart.
3. Baffle boards shall be installed in accordance with manufacturer's recommendations.
4. Baffle boards shall be used where concentrated flow is present on slopes steeper than 4:1.

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DETAIL 1 - EARTH DIKE

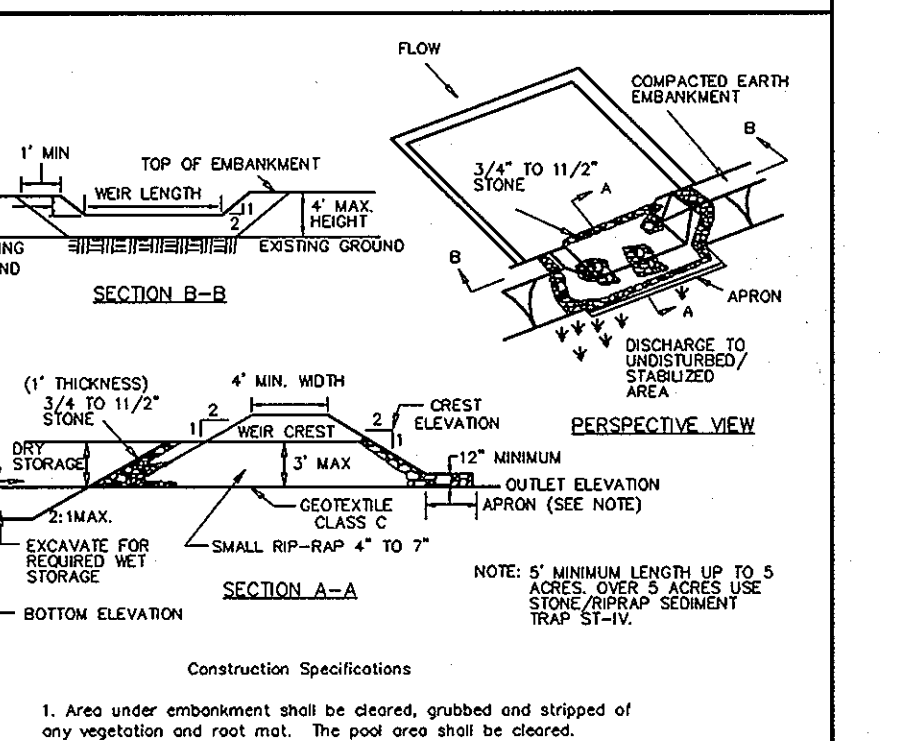


Construction Specifications
1. All temporary earth dikes shall have uninterrupted positive grade to an outlet. Spot deviations may be necessary for grades less than 1%.
2. Runoff diverted from a disturbed area shall be conveyed to a sediment trapping device.
3. Runoff diverted from an undisturbed area shall outlet directly into an undisturbed, stabilized area at a non-erosive velocity.
4. All trees, brush, stumps, obstructions, and other objectionable material shall be removed and disposed of so as not to interfere with the proper functioning of the dike.
5. The dike shall be excavated or shaped to line, grade and cross section as required to meet the criteria specified herein and be free of bank projections or other irregularities which will impede normal flow.
6. Fill, if necessary, shall be compacted by each mowing equipment.
7. All earth removed and not needed for construction shall be placed so that it will not interfere with the functioning of the dike.
8. Inspection and maintenance must be provided periodically and after each rain event.

9. Area under embankment shall be cleared, grubbed and stripped of any vegetation and root mat. The pool area shall be cleared.
10. The fill material for the embankment shall be free of roots and other woody vegetation as well as over-sized stones, rocks, organic material or other objectionable material. The embankment shall be compacted by troweling with equipment while it is being constructed.
11. All cut and fill slopes shall be 2:1 or flatter.
12. The stone used in the outlet shall be small rip-rap 4" to 7" in size with a 1" thick layer of 3/4" to 1 1/2" washed aggregate placed on the upstream face of the outlet. Stone facing shall be as necessary to prevent scouring. Geotextile Class C may be substituted for the stone facing by placing it on the inside face of the stone outlet.
13. Sediment shall be removed and hauled to its original dimensions when the sediment has accumulated to one half of the wet storage depth of the trap. Removed sediment shall be deposited in a suitable area and in such a manner that it will not erode.

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DETAIL 9 - STONE OUTLET SEDIMENT TRAP - ST II

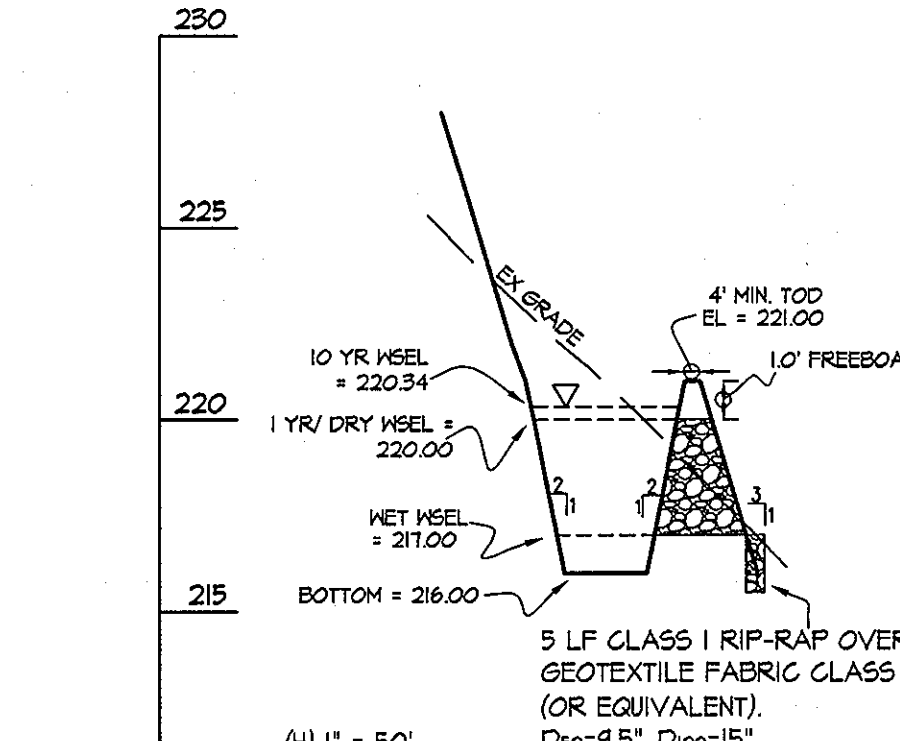


Construction Specifications
1. Area under embankment shall be cleared, grubbed and stripped of any vegetation and root mat. The pool area shall be cleared.
2. The fill material for the embankment shall be free of roots and other woody vegetation as well as over-sized stones, rocks, organic material or other objectionable material. The embankment shall be compacted by troweling with equipment while it is being constructed.
3. All cut and fill slopes shall be 2:1 or flatter.
4. The stone used in the outlet shall be small rip-rap 4" to 7" in size with a 1" thick layer of 3/4" to 1 1/2" washed aggregate placed on the upstream face of the outlet. Stone facing shall be as necessary to prevent scouring. Geotextile Class C may be substituted for the stone facing by placing it on the inside face of the stone outlet.
5. Sediment shall be removed and hauled to its original dimensions when the sediment has accumulated to one half of the wet storage depth of the trap. Removed sediment shall be deposited in a suitable area and in such a manner that it will not erode.

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TRAP B Baffle Computation (E5-1)

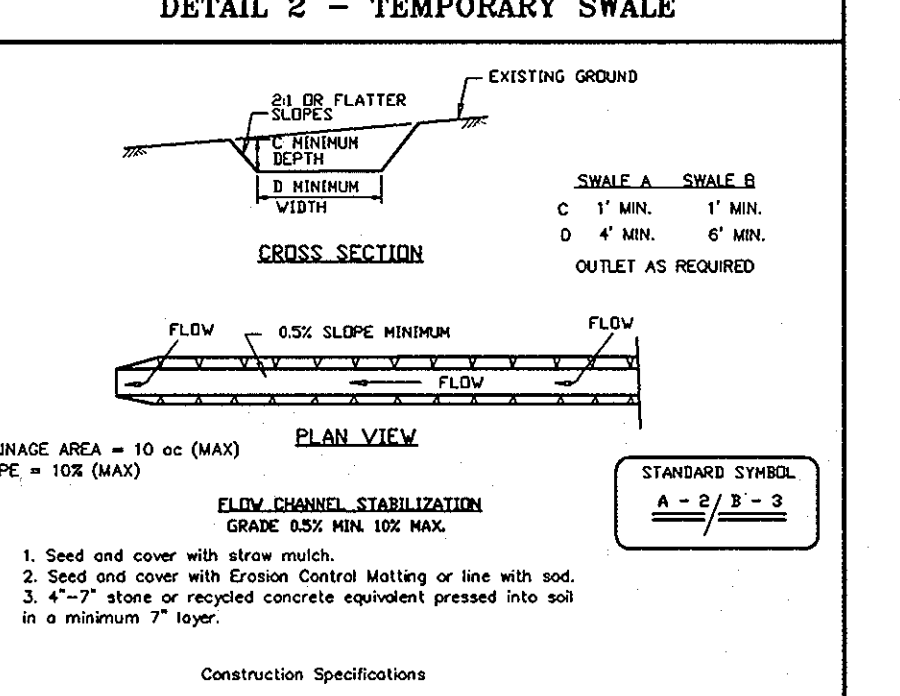
D = 150 FT.
A NET POOL = 10,060 SQ FT
W₆ = A/D = 67 FT
L₆ = 2W₆ = 134 FT
L₆ PROVIDED = 150 FT
No Baffles Required



SEDIMENT TRAP B PROFILE THROUGH PRINCIPAL SPILLWAY

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

DETAIL 2 - TEMPORARY SWALE



Construction Specifications
1. Seed and cover with straw mulch.
2. Seed and cover with Erosion Control Matting or lime with sod.
3. 4" - 7" stone or recycled concrete equivalent pressed into soil in a minimum 7" layer.

1. All temporary swales shall have uninterrupted positive grade to an outlet. Spot deviations may be necessary for grades less than 1%.
2. Runoff diverted from a disturbed area shall be conveyed to a sediment trapping device.
3. Runoff diverted from an undisturbed area shall outlet directly into an undisturbed, stabilized area at a non-erosive velocity.
4. All trees, brush, stumps, obstructions, and other objectionable material shall be removed and disposed of so as not to interfere with the proper functioning of the swale.
5. The swale shall be excavated or shaped to line, grade and cross section as required to meet the criteria specified herein and be free of bank projections or other irregularities which will impede normal flow.
6. Fill, if necessary, shall be compacted by each mowing equipment.
7. All earth removed and not needed for construction shall be placed so that it will not interfere with the functioning of the swale.
8. Inspection and maintenance must be provided periodically and after each rain event.

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SEDIMENT TRAP B DATA TABLE

EXISTING DRAINAGE AREA: 0.2 AC	Worst Case Interim Drainage Area: 3.66 AC
NET STORAGE VOL. REQUIRED: 0.15 AC-FT	NET STORAGE VOL. PROVIDED: 0.15 AC-FT
NET STORAGE ELEV.: 217.00	NET STORAGE ELEV.: 217.00
DRY STORAGE REQUIRED: 0.15 AC-FT	DRY STORAGE PROVIDED: 0.15 AC-FT
DRY STORAGE WEL: = 220.00	DRY STORAGE WEL: = 220.00
EXISTING Q-TYR = 0.15 cfs	INTERIM Q-TYR = 0.15 cfs
SAFE PASS OF 10-YR STORM PROVIDED Q _s = 12.18 cfs	10-YR WSEL = 220.34 ft
10-YR WSEL = 220.34 ft	BOTTOM ELEVATION: 216.50
EMERGENCY SPILLWAY ELEV: NONE	CLEANOUT ELEVATION: 216.50
EMBANKMENT TOP WIDTH: 4'	EMBANKMENT TOP WIDTH: 4'
SIDE SLOPES: 2:1 INTERIOR - 3:1 EXTERIOR	SIDE SLOPES: 2:1 INTERIOR - 3:1 EXTERIOR

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TRAP B Baffle Computation (E6)

DRAINAGE AREA SUMMARY TABLE

AREA	D.A. (ACRES)	% IMP.	C _v
I-5	0.31	41	0.85
I-6	0.24	41	0.85
I-4	0.51	41	0.85
I-11	0.06	41	0.85
I-12	0.84	10	0.66
I-17	0.36	41	0.85
I-18	0.28	41	0.85
I-21	0.22	41	0.85
I-23	0.21	41	0.85
I-24	0.35	50	0.52
I-26	0.24	41	0.85
I-27	0.21	41	0.85
I-31	0.21	41	0.85
RD	0.18	100	0.85

P-85
PROPERTY OF
HOWARD COUNTY, MD
L. 913 F. 391
ZONED: R-12

PUBLIC FOREST CONSERVATION EASEMENT
AREA #1 (1.42 AC)
(AFFORESTATION OUTSIDE FP: 0.12 AC,
RETENTION INSIDE FP: 0.05 AC, (NO CREDIT)
RETENTION: 0.85 AC)

OPEN SPACE LOT 6
GORMAN WOODS
PLAT NO. 12084
ZONED: R-12

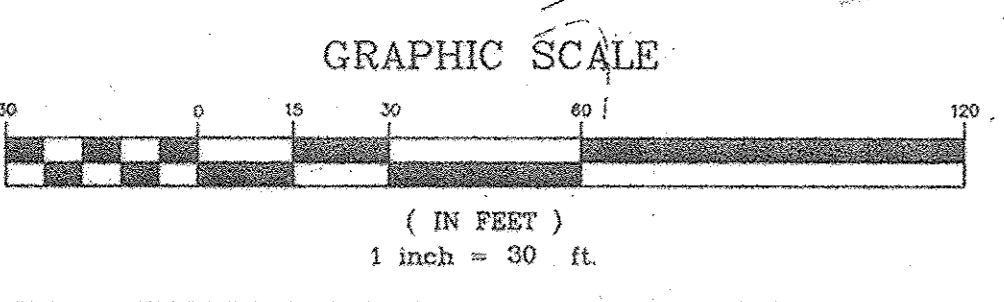
LOT 2
GORMAN WOODS
PLAT NO. 12415
ZONED: R-12

LOT 3
GORMAN WOODS
PLAT NO. 12415
ZONED: R-12

LOT 1
GORMAN WOODS
PLAT NO. 12415
ZONED: R-12

LEGEND
STORM DRAIN DRAINAGE DIVIDE

NOTES:
1. ALL SOIL ON SITE IS TYPE C.



APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
Thomas E. Butler Director Date: 6/27/11
Walt S. Doolittle Chief, Division of Land Development Date: 6/27/11
John J. Williams Chief, Development Engineering Division Date: 6/27/11

GLW GUTSCHICK LITTLE & WEBER, P.A.
 CIVIL ENGINEERS, LAND SURVEYORS, LAND PLANNERS, LANDSCAPE ARCHITECTS
 3909 NATIONAL DRIVE - SUITE 250 - BURTONSVILLE OFFICE PARK
 BURTONSVILLE, MARYLAND 20866
 TEL: 301-421-4024 FAX: 301-421-4186

DATE	REVISION	BY	APPR.

PREPARED FOR & OWNER:
 CS RIVERWALK LLC
 c/o CRAFTSTAR HOMES, INC.
 6820 ELM STREET, SUITE 200
 McLEAN, VA 22101
 M. COURTNEY TREUTH
 703-827-5045

PROFESSIONAL CERTIFICATION
 I HEREBY CERTIFY THAT THESE PLANS
 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. 12975
 EXPIRATION DATE: MAY 26, 2012

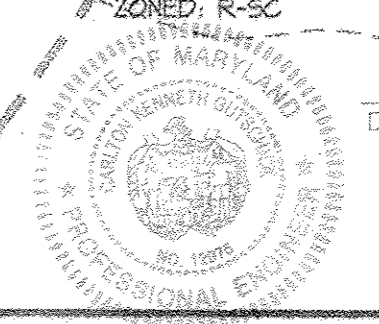


STORM DRAIN DRAINAGE AREA MAP

RIVERWALK
 SINGLE FAMILY ATTACHED TOWNHOMES
 LOTS 1-58 AND OPEN SPACE LOTS 59 & 60
 Plat Numbers: 21025-21027

SCALE	ZONING	G. L. W. FILE NO.
1"=30'	R-SA-8	08039
DATE	TAX MAP - GRID	SHEET
FEB 2015 MAY, 2011	47 - 16	7 OF 19

PROFESSIONAL CERTIFICATION
 I hereby certify that these documents were prepared or
 approved by me, and that I am a duly licensed professional
 engineer under the laws of the State of Maryland, License
 No. 12475, Expiration Date: May 26, 2016.
Carl K. Gutschick
 Professional Engineer
 Maryland Reg. No. 12475

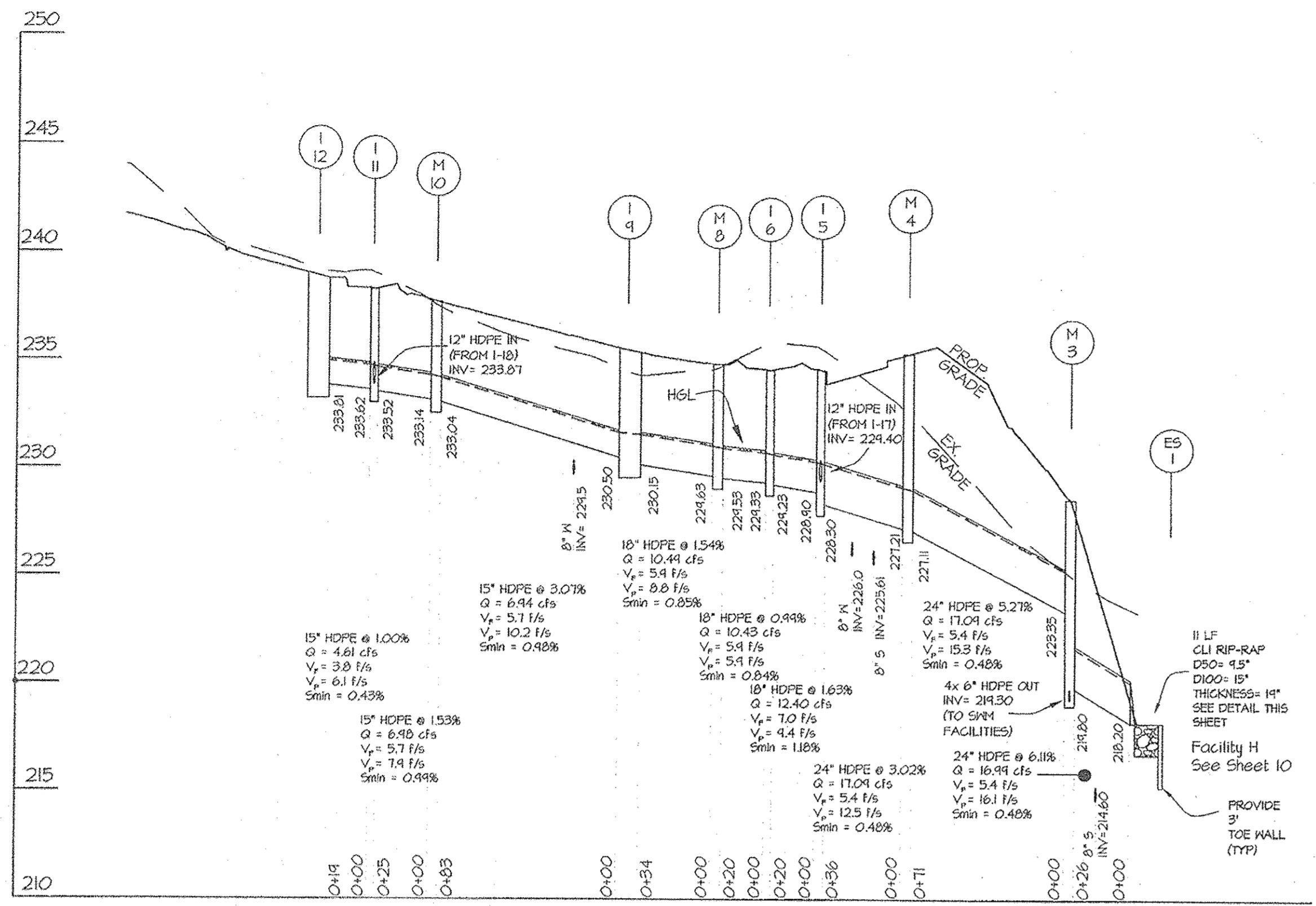


ASBUILT SHEET 2 OF 5



UCB
 FROM FRANK A. HANCOCK L. 146 ZONE

HORSHAM



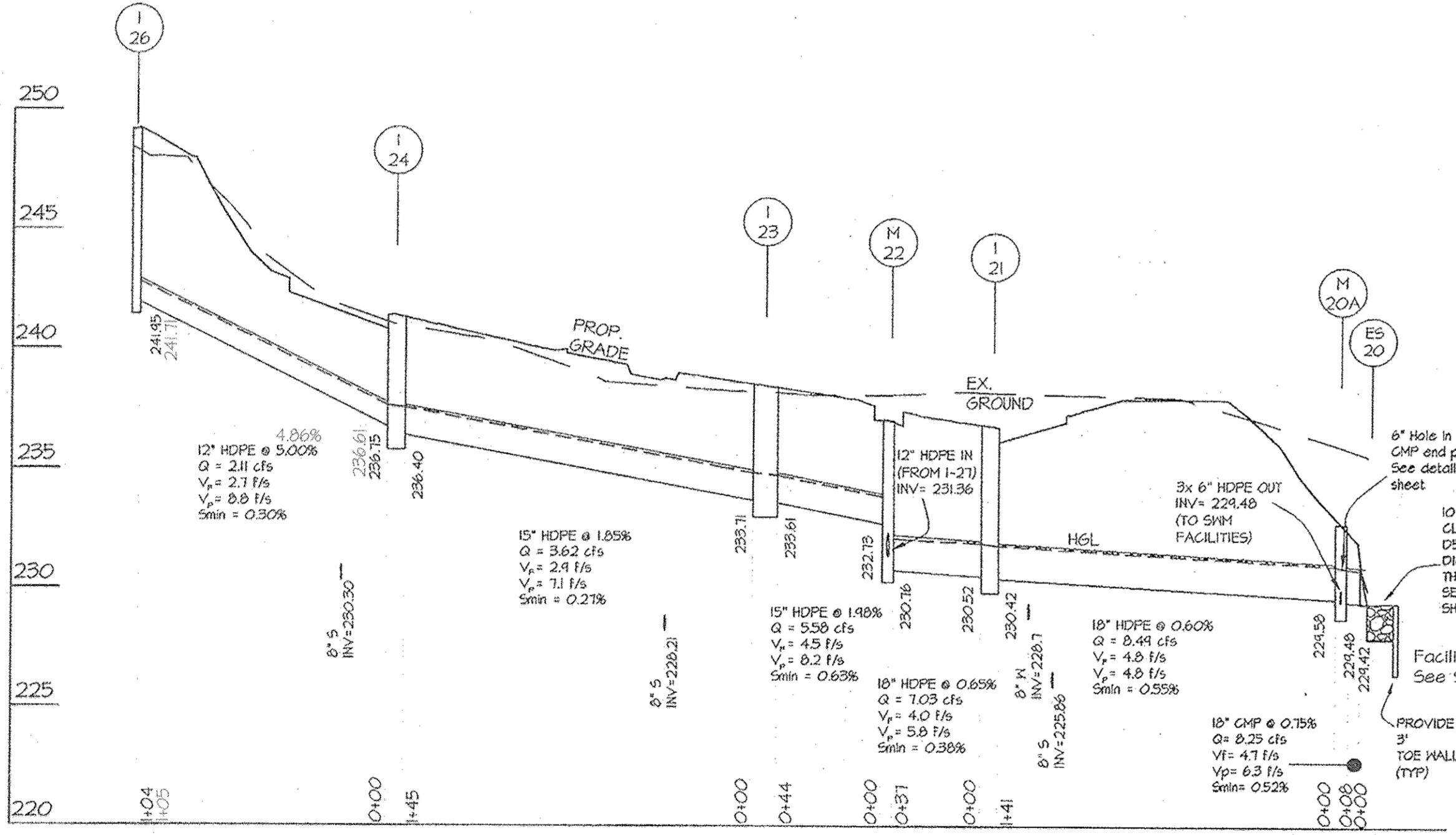
S.D. Pipe Summary Table
PRIVATELY OWNED AND MAINTAINED

Size (in.)	Type	Quantity (L.F.)	Remarks
12	HDPE	140	ADS N12 or equiv.
15	HDPE	316	ADS N12 or equiv.
18	HDPE	252	ADS N12 or equiv.
24	HDPE	184	ADS N12 or equiv.

S.D. STRUCTURE SCHEDULE

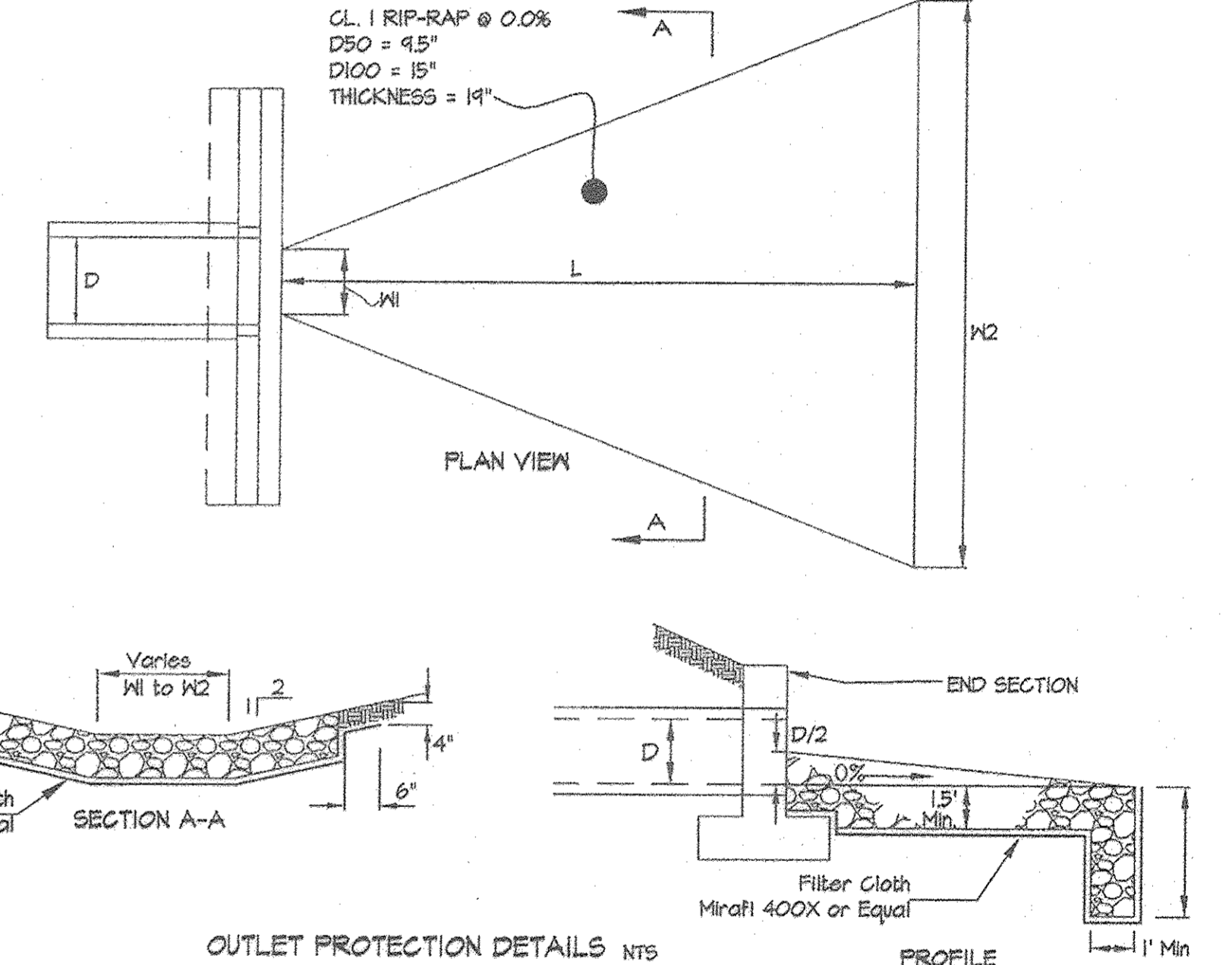
NO.	TYPE	WIDTH (INSIDE)	TOP ELEVATION		INVERT ELEVATION		STANDARD DETAIL	NOTES	LOCATION	OWNERSHIP & MAINTENANCE
			UPPER	LOWER	UPPER	LOWER				
E5-1	END SECTION	----	220.20	----	218.2	----	HO. CO. D. 5.51		N. 554.825 E. 1394.41	PRIVATE
M-3	MANHOLE	4'-0"	228.21	----	223.35	219.3	HO. CO. G. 5.12		N. 554.594 E. 1294.402	PRIVATE
M-4	MANHOLE	4'-0"	235.32	----	227.21	227.11	HO. CO. G. 5.12		TH442 24.05' Left RRL	PRIVATE
I-5	A-I0	3'-0"	234.42	234.42	224.40	228.30	HO. CO. D. 4.04		TH464 14' Right RRL	PRIVATE
I-6	'S'	2'-11/2"	234.55	----	224.33	224.23	HO. CO. D. 4.22		N. 554.44 E. 1294.363	PRIVATE
M-8	MANHOLE	4'-0"	234.81	----	224.63	224.53	HO. CO. G. 5.12		6+71.65 16.83' Right RRL	PRIVATE
I-4	A-I0	3'-0"	235.53	235.21	230.50	230.15	HO. CO. D. 4.04		6+26.43 14' Right RRL	PRIVATE
M-10	MANHOLE	4'-0"	231.12	----	223.14	233.04	HO. CO. G. 5.12		5+47.24 16.83' Right RRL	PRIVATE
I-11	'S'	2'-11/2"	238.28	----	233.87	233.52	HO. CO. D. 4.22		N. 554.452 E. 1294.07	PRIVATE
I-12	A-I0	3'-0"	238.44	238.15	233.81	terminal	HO. CO. D. 4.04		4+41.72 14' Right RRL	PRIVATE
I-17	A-I0	3'-0"	234.88	234.75	230.21	terminal	HO. CO. D. 4.04		7+68.14 14' Right RRL	PRIVATE
I-18	'S'	2'-11/2"	234.01	----	234.60	terminal	HO. CO. D. 4.22		N. 554.382 E. 1394.02	PRIVATE
E5-20	END SECTION	----	230.42	----	224.42	----	HO. CO. D. 5.51		N. 554.538 E. 1394.601	PRIVATE
M-20A	MANHOLE	4'-0"	232.15	----	224.58	224.48	HO. CO. G. 5.12		N. 554.428 E. 1294.385	PRIVATE
I-21	A-I0	3'-0"	236.80	236.65	230.52	230.42	HO. CO. D. 4.04		8+47.51 14' Right RRL	PRIVATE
M-22	MANHOLE	4'-0"	231.10	----	232.13	230.16	HO. CO. G. 5.12		9+51.04 10.34' Right RRL	PRIVATE
I-23	A-I0	3'-0"	238.51	238.36	233.71	233.61	HO. CO. D. 4.04		10+12.00 14' Right RRL	PRIVATE
I-24	A-I0	3'-0"	241.50	241.21	236.15	236.40	HO. CO. D. 4.04		0+23.10 14' Right RRL	PRIVATE
I-26	A-I0	3'-0"	244.45	248.86	241.45	terminal	HO. CO. D. 4.04		N. 554.221 E. 1394.35	PRIVATE PUBLIC
I-27	A-I0	3'-0"	235.42	235.11	231.65	terminal	HO. CO. D. 4.04		N. 554.220 E. 1394.442	PRIVATE PUBLIC
M-30	MANHOLE	4'-0"	233.50	----	226.46	226.36	HO. CO. G. 5.12		N. 554.235 E. 1394.41	PRIVATE PUBLIC
I-31	A-I0	3'-0"	234.43	231.43	224.70	terminal	HO. CO. D. 4.04		N. 554.78 E. 1394.64	PRIVATE

Note: RRL = Rock Ripple Lane



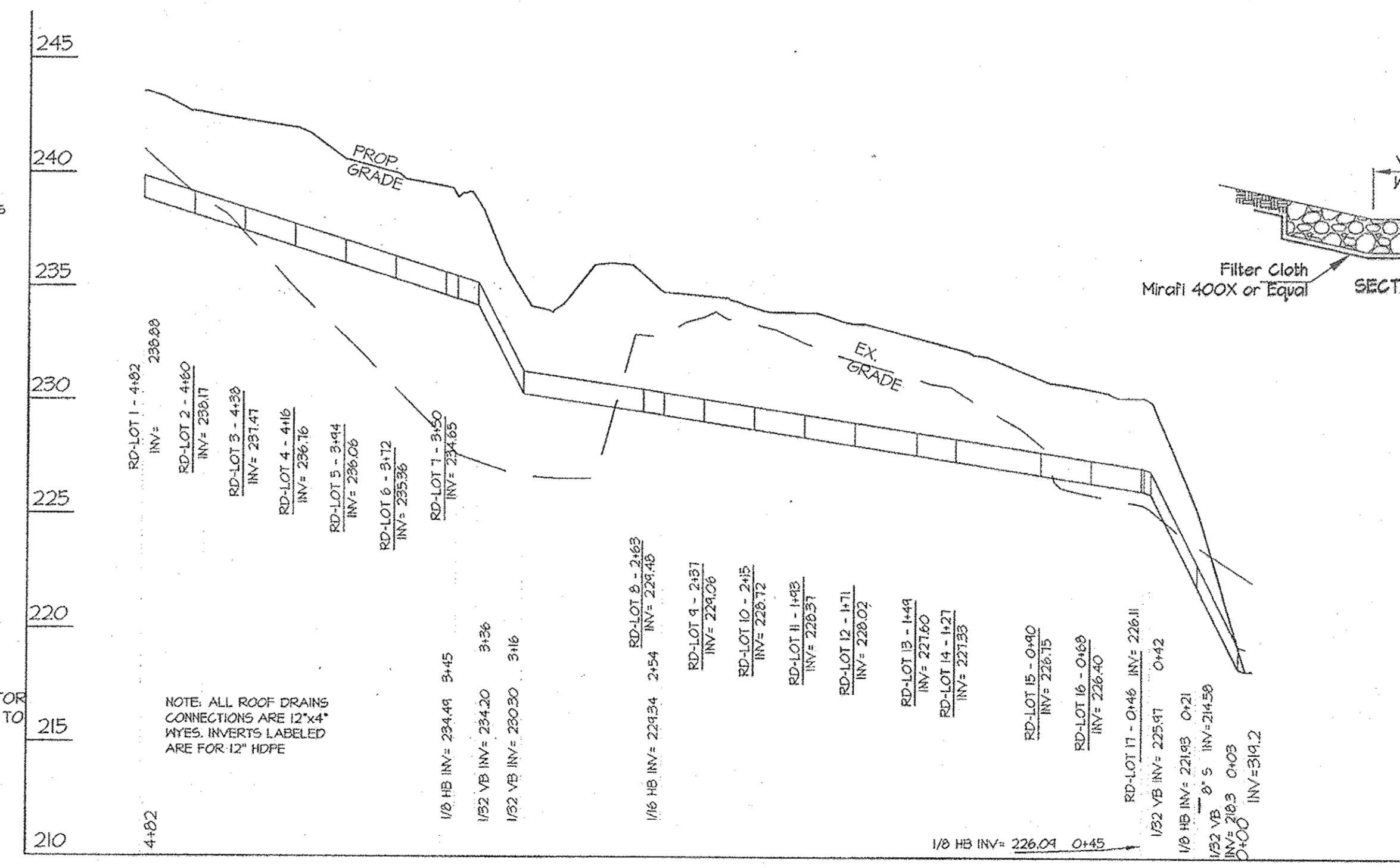
OUTFALL DIMENSIONS

OUTFALL	D (IN)	W1 (FT)	W2 (FT)	L (FT)	CLASS
E5-1	24	2	13	11	CL 1
E5-20	18	1.5	11.5	10	CL 1
HK E-2	24	2	14	12	CL 1



OUTLET PROTECTION DETAILS
NTS
PROFESSIONAL CERTIFICATION
I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 12975, Expiration Date: May 26 2016.

2/18/15
Date
Carl K. Mitschick
Professional Engineer
Maryland Reg. No. 12975
WELD 8" END PLATE TO FACE OF 18" CMP. TOP OF PLATE ELEV = 230.15
METAL PLATE TO BE HOT DIPPED GALVANIZED, 14 GAUGE.
6" DIAMETER OPENING IN CMP END PLATE INV 6" OPENING = 229.48
END PLATE DETAIL AT MH-20A
NTS



ASBUILTS

ASBUILT SHEET 3 OF 5

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
Director: *Mona S. Rutter* 6/27/11
Chief, Division of Land Development: *Victor DeLeon* 6/27/11
Chief, Development Engineering Division: *John P. ...* 5/26/11

GLWGUTSCHICK LITTLE & WEBER, P.A.
CIVIL ENGINEERS, LAND SURVEYORS, LAND PLANNERS, LANDSCAPE ARCHITECTS
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BURTONSVILLE, MARYLAND 20886
TEL: 301-421-4024 BALT. 410-880-1820 DC/VA: 301-989-2524 FAX: 301-421-4166

DATE	REVISION	BY	APPR.

PREPARED FOR & OWNER:
CS RIVERWALK LLC
c/o CRAFTSTAR HOMES, INC.
6820 ELM STREET, SUITE 200
McLEAN, VA 22101
M. COURTNEY TREUTH
703-827-5045

PROFESSIONAL CERTIFICATION
I HEREBY CERTIFY THAT THESE PLANS 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. 12975, EXPIRATION DATE: May 26, 2016
5-3-11

PRIVATE STORM DRAIN PROFILES
RIVERWALK
SINGLE FAMILY ATTACHED TOWNHOMES
LOTS 1-58 AND OPEN SPACE LOTS 59 & 60
Plat Numbers: 21025-21027
ELECTION DISTRICT No. 6
HOWARD COUNTY, MARYLAND

SCALE	ZONING	G. L. W. FILE NO.
AS SHOWN	R-SA-8	08039
DATE	TAX MAP - GRID	SHEET
FEB, 2015 MAY, 2011	47 - 16	8 OF 19

TREATMENT DRAINAGE AREA SUMMARY TABLE

AREA	D.A. (SQ-FT)	TREATMENT TYPE	Pc PROVIDED	AREA DISCOUNTED FROM M.B.R. FACILITY DRAINAGE AREA (SQ-FT)
I-B	2634	PERVIOUS PAVEMENT	1.8'	2634
I-C	800			
I-D	53619			
2-B	21300	PERVIOUS PAVEMENT	1.8'	21300
2-C	14586	PERVIOUS PAVEMENT	1.8'	14586
2-D	12530	PERVIOUS PAVEMENT	1.8'	12530
2-E	2348			
2-F	1600			
2-G	41277			
A-1	11244			
A-2	1386			
B-1	5108			
B-2	424			
C-1	5444			
C-2	424			
D-1	9873			
D-2	462			
E-1	8148			
F-1	5652			
G-1	5573			
H-1	5208			
I-1	3685			
I-2	1766			

PUBLIC FOREST CONSERVATION EASEMENT AREA #1 (1.42 AC)
 AFFORESTATION OUTSIDE FP, 0.12 AC
 RETENTION INSIDE FP, 0.05 AC, (NO CREDIT)
 RETENTION: 0.65 AC

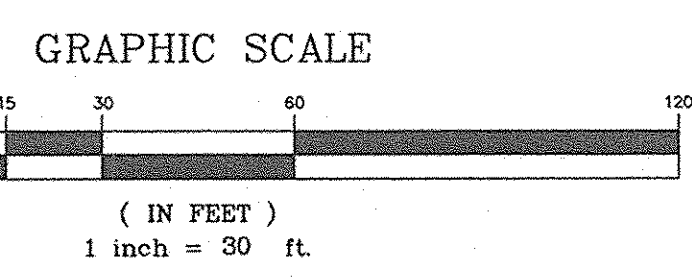
OPEN SPACE LOT 59
 1.115 AC
 (DEDICATED TO HOWARD COUNTY, MARYLAND)

OPEN SPAC LOT 60
 3.5049 AC

GORMAN ROAD
 (PUBLIC MAJOR COLLECTOR)
 (VARIABLE WIDTH R/W)

ROCK RIPPLE LANE
 (PRIVATE ROAD)

FACILITY I
 FACILITY H
 FACILITY G
 FACILITY F
 FACILITY E
 FACILITY D
 FACILITY C
 FACILITY B
 FACILITY A



LEGEND

- Overall Stormwater Drainage Divide
- Treatment Drainage Divide
- Drainage Area Fully Treated Prior to Micro-Bioretenation Facilities
- Drainage Area Partially Treated Prior to Micro-Bioretenation Facilities
- Porous Concrete Pavement

- NOTES**
- ALL SOILS ON SITE ARE TYPE C.
 - A Pc OF 1.8' IS REQUIRED FOR FULL TREATMENT

FACILITY	Area from Storm Drain (SF)	% Impervious	Area from Overland Flow (SF)	% Impervious	Total Area (SF)	Total % Impervious	ESDv Required (CF)	ESDv Provided (CF)
A	14148	61%	12630	18%	26778	37%	1553	1588
B	14148	61%	6632	14%	20780	46%	1446	1441
C	14148	61%	6423	14%	20571	46%	1441	1447
D	14148	61%	10335	4%	24483	37%	1402	1506
E	15146	64%	8148	0%	23294	42%	1483	1477
F	15146	64%	5652	20%	20798	52%	1617	1587
G	15146	64%	5573	21%	20719	52%	1622	1626
H	15146	64%	5208	9%	20354	50%	1524	1651
I	1766	100%	3685	18%	11451	71%	1184	1112
TOTAL	124442	65%	64286	18%	188728	46%	13281	13335

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

Mona S. Rutler 6/27/11
 Director Date

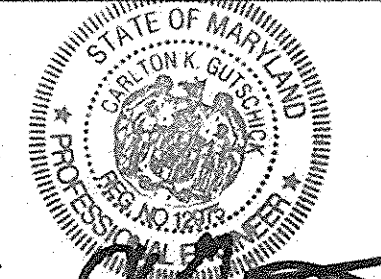
Scott D. Linder 6/27/11
 Chief, Division of Land Development Date

Michael J. ... 5/26/11
 Chief, Development Engineering Division Date

GLWGUTSCHICK LITTLE & WEBER, P.A.
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PREPARED FOR & OWNER:
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 c/o CRAFTSTAR HOMES, INC.
 6820 ELM STREET, SUITE 200
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 M. COURTNEY TREUTH
 703-827-5045

PROFESSIONAL CERTIFICATION
 I HEREBY CERTIFY THAT THESE PLANS 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. 12975
 EXPIRATION DATE: MAY 26, 2012

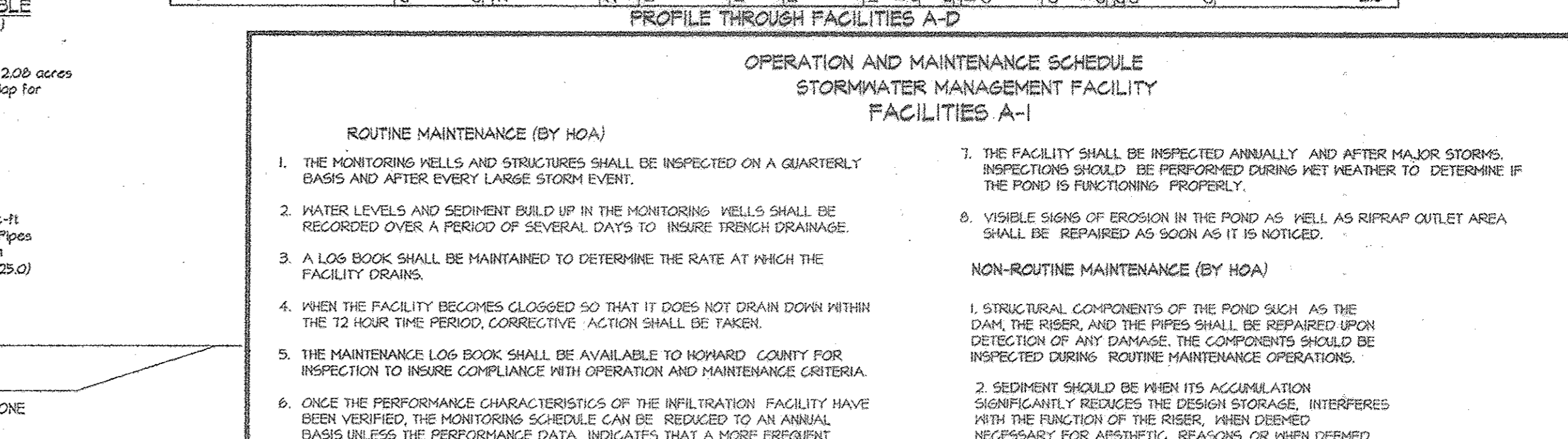
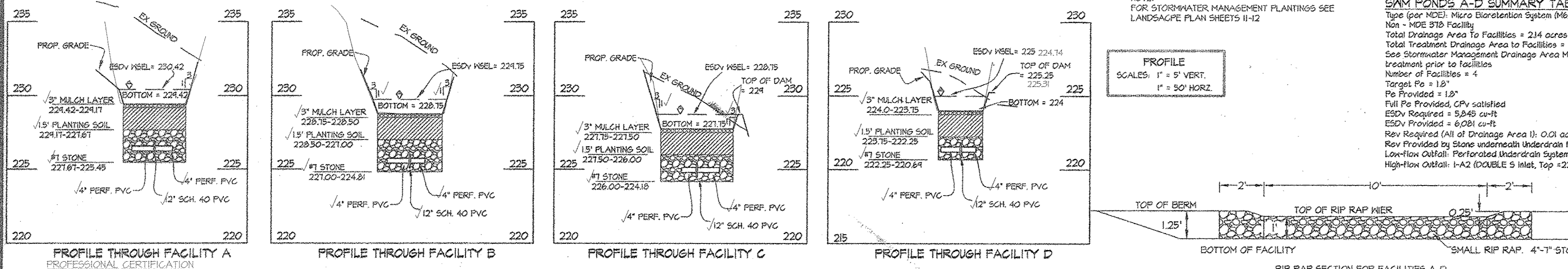
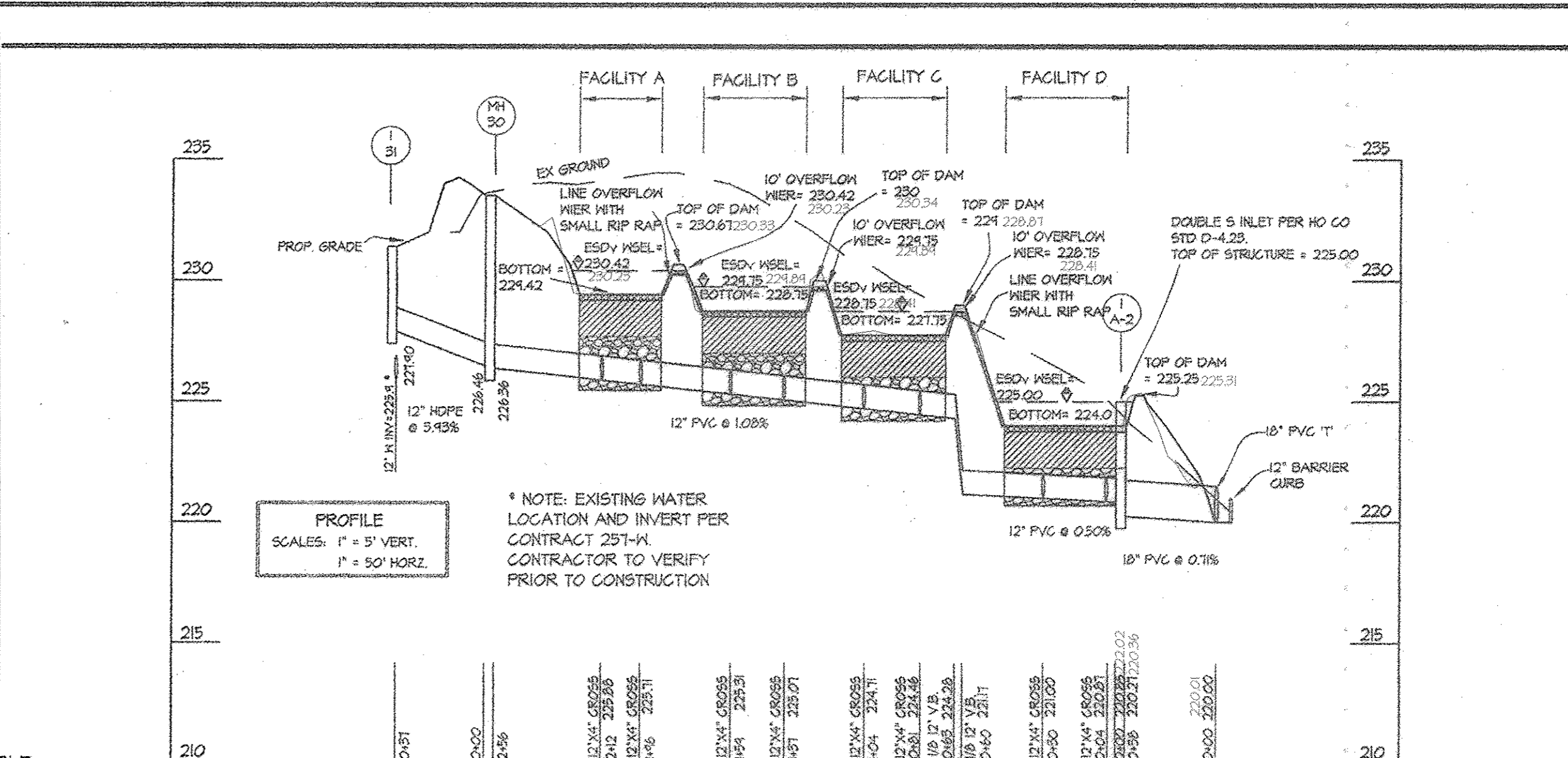
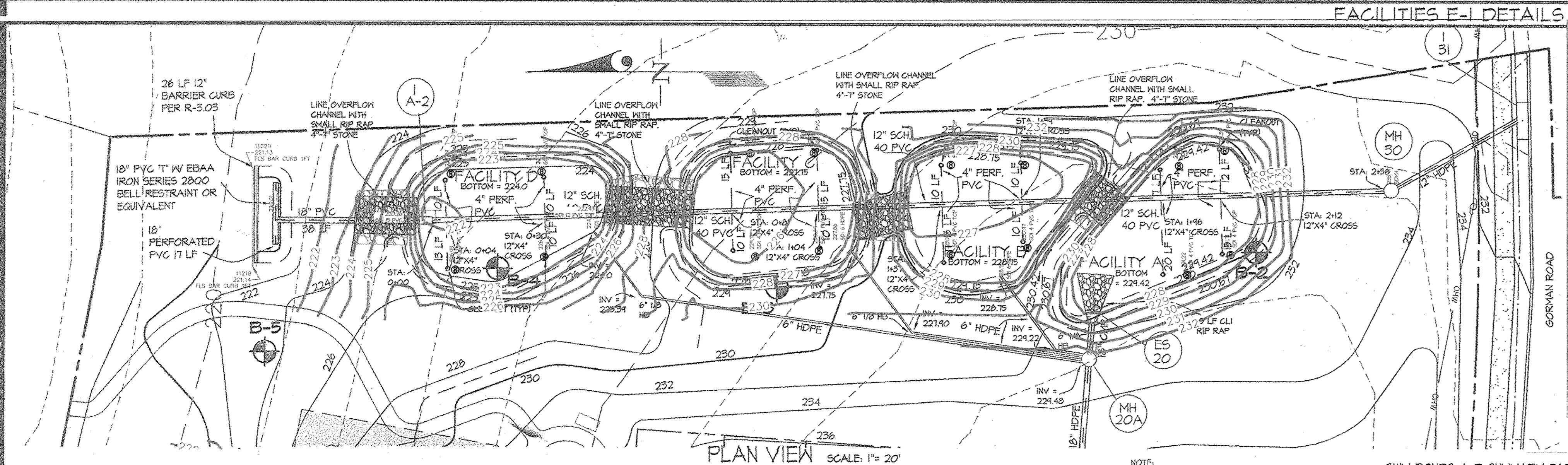
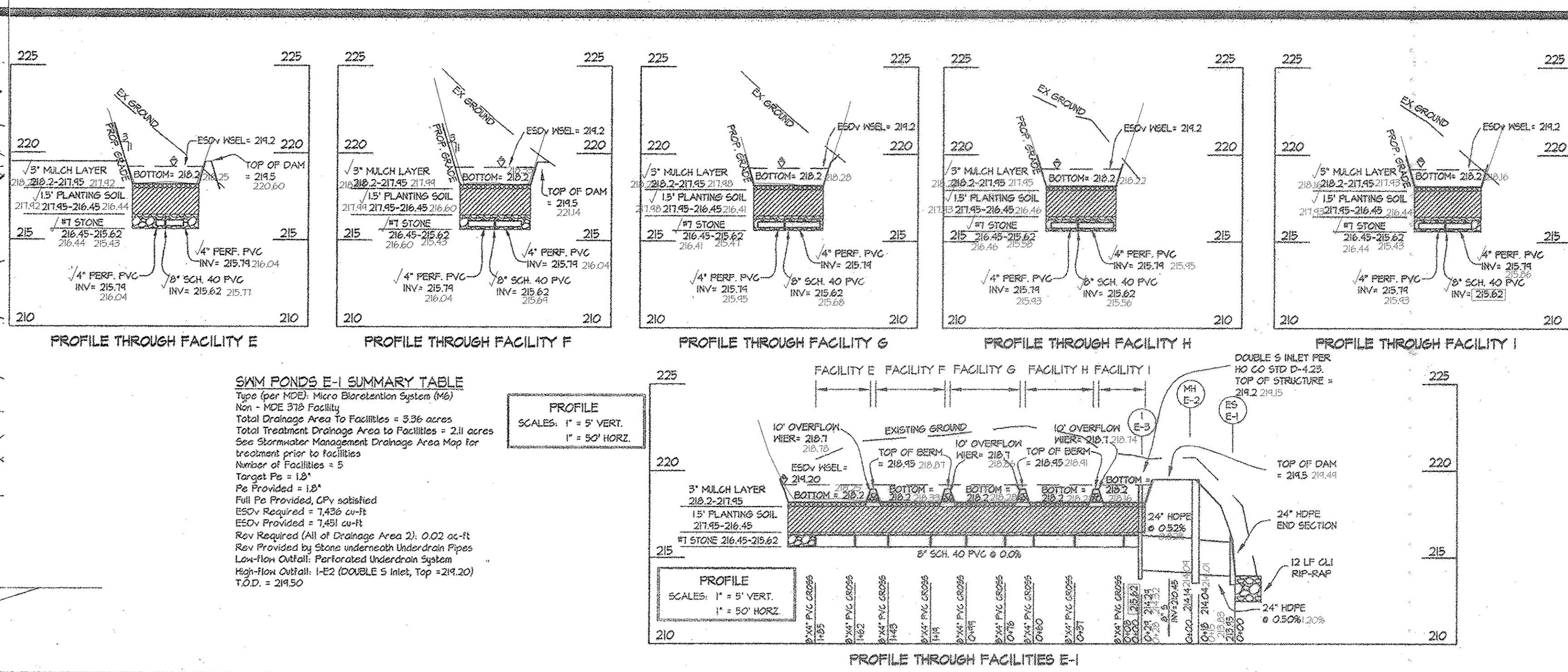
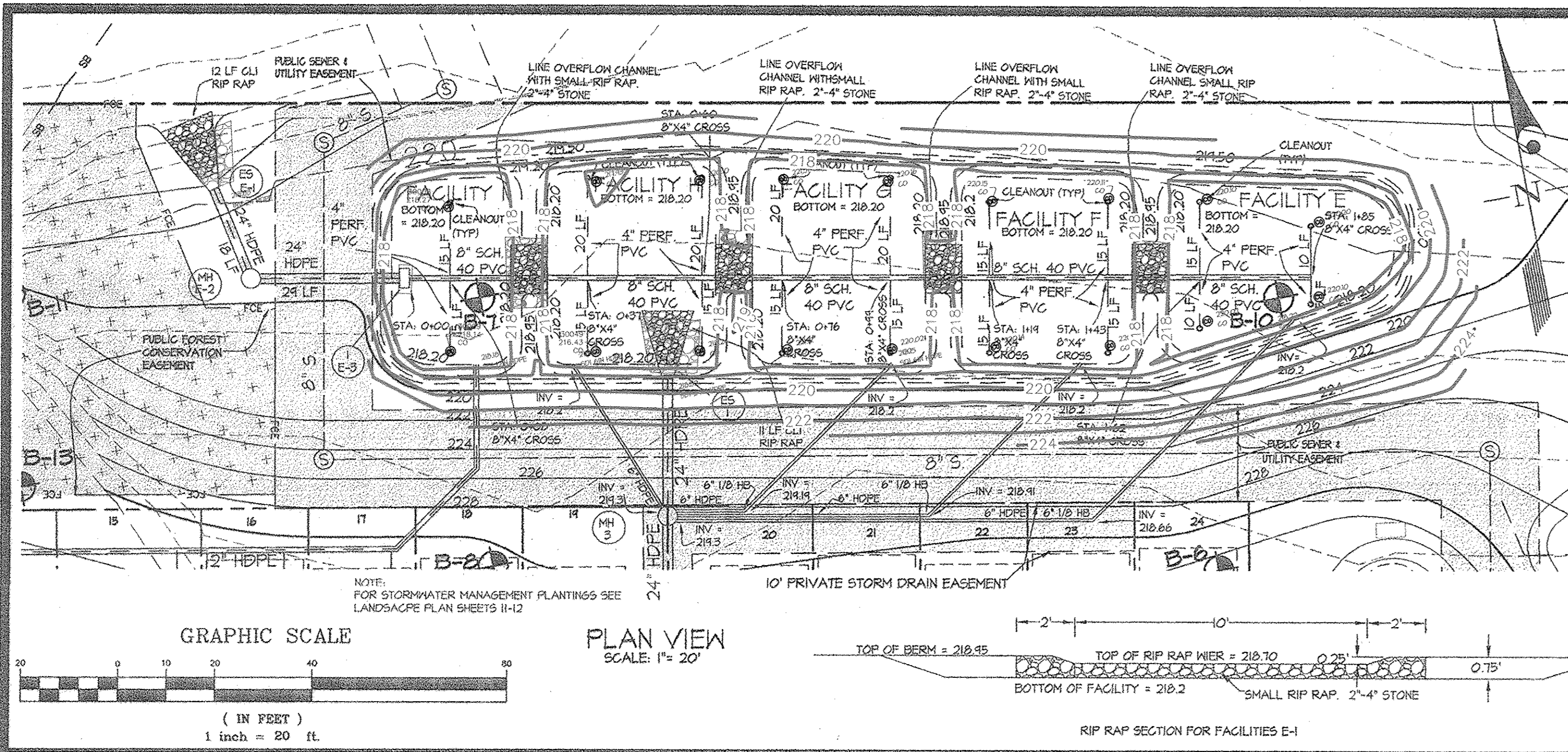


PROPOSED STORMWATER MANAGEMENT DRAINAGE AREA MAP

RIVERWALK
 SINGLE FAMILY ATTACHED TOWNHOMES
 LOTS 1-58 AND OPEN SPACE LOTS 59 & 60
 Plat Numbers: 21025 & 21027

HOWARD COUNTY, MARYLAND

SCALE	ZONING	G. L. W. FILE NO.
1"=30'	R-SA-8	08039
DATE	TAX MAP - GRID	SHEET
MAY, 2011	47 - 16	9 OF 19



PROFESSIONAL CERTIFICATION
I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 12475, Expiration Date: May 26 2016.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

Director: *Morgan & Hunter* Date: 6/23/11

Chief, Division of Land Development: *Ken Shindler* Date: 6/23/11

Chief, Development Engineering Division: *J.R. Stebbins* Date: 6/23/11

GENERAL NOTES

- MATERIAL SPECIFICATIONS**
THE ALLOWABLE MATERIALS TO BE USED IN BIORETENTION AREA ARE DETAILED IN TABLE B.3.2.
- 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 BIORETENTION AREA THAT MAY BE HARMFUL TO PLANT GROWTH OR PROVIDE 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 15.09.01.05.
- COMPACTION**
THE PLANTING SOIL SHALL BE TESTED AND SHALL MEET THE FOLLOWING CRITERIA:
P_n RANGE 5.2 - 1.0
ORGANIC MATTER 15 - 4% (BY WEIGHT)
MAGNESIUM 35 LB./AC
PHOSPHORUS (PHOSPHATE - P205) 75 LB./AC
POTASSIUM (POTASH - K2O) 85 LB./AC
SOLUBLE SALTS NOT TO EXCEED 500 PPM

ALL BIORETENTION AREAS SHALL HAVE A MINIMUM OF ONE TEST EACH TEST SHALL CONSIST OF BOTH THE STANDARD SOIL TEST FOR PHOSPHORUS, AND POTASSIUM AND ADDITIONAL TESTS OF ORGANIC MATTER AND SOLUBLE SALTS. A TEXTURAL ANALYSIS IS REQUIRED FROM THE SITE STOCKPILED TOPSOIL. IF TOPSOIL IS IMPORTED, THEN A TEXTURE ANALYSIS SHALL BE PERFORMED FOR EACH LOCATION WHERE THE TOP SOIL WAS EXCAVATED.

SINCE DIFFERENT LABS CALIBRATE THEIR TESTING EQUIPMENT DIFFERENTLY, ALL TESTING RESULTS SHALL COME FROM THE SAME TESTING FACILITY. SHOULD THE PH FALL OUT OF THE ACCEPTABLE RANGE, IT MAY BE MODIFIED (HIGHER) WITH LIME OR (LOWER) WITH IRON SULFATE PLUS SULFUR.

WHEN BACKFILLING THE BIORETENTION FACILITY, PLACE SOIL IN LIFTS 12" TO 16". 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.

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

ROTOTILL 2 TO 3 INCHES OF SAND INTO THE BASE OF THE BIORETENTION FACILITY BEFORE BACKFILLING THE OPTIONAL SAND LAYER. PUMP ANY PONDED WATER BEFORE PREPARING (ROTOTILLING) BASE.

WHEN BACKFILLING THE TOPSOIL, OVER THE SAND LAYER, FIRST PLACE 3 TO 4 INCHES OF TOPSOIL OVER THE SAND, THEN ROTOTILL THE SAND/TOPSOIL TO CREATE A GRADATION ZONE. BACKFILL THE REMAINDER OF THE TOPSOIL TO FINAL GRADE.

OPERATION AND MAINTENANCE SCHEDULE
STORMWATER MANAGEMENT FACILITY
FACILITIES A-I

ROUTINE MAINTENANCE (BY HOA)

- THE MONITORING WELLS AND STRUCTURES SHALL BE INSPECTED ON A QUARTERLY BASIS AND AFTER EVERY LARGE STORM EVENT.
- WATER LEVELS AND SEDIMENT BUILD UP IN THE MONITORING WELLS SHALL BE RECORDED OVER A PERIOD OF SEVERAL DAYS TO INSURE TRINCH DRAINAGE.
- A LOG BOOK SHALL BE MAINTAINED TO DETERMINE THE RATE AT WHICH THE FACILITY DRAINS.
- WHEN THE FACILITY BECOMES CLOGGED SO THAT IT DOES NOT DRAIN DOWN WITHIN THE 12 HOUR TIME PERIOD, CORRECTIVE ACTION SHALL BE TAKEN.
- THE MAINTENANCE LOG BOOK SHALL BE AVAILABLE TO HOWARD COUNTY FOR INSPECTION TO INSURE COMPLIANCE WITH OPERATION AND MAINTENANCE CRITERIA.
- WHEN THE PERFORMANCE CHARACTERISTICS OF THE INFILTRATION FACILITY HAVE BEEN VERIFIED, THE MONITORING SCHEDULE CAN BE REDUCED TO AN ANNUAL BASIS UNLESS THE PERFORMANCE DATA INDICATES THAT A MORE FREQUENT SCHEDULE IS REQUIRED.

NON-ROUTINE MAINTENANCE (BY HOA)

- STRUCTURAL COMPONENTS OF THE POND SUCH AS THE DAM, RISER, AND THE PIPES SHALL BE REPAIRED UPON DETECTION OF ANY DAMAGE. THE COMPONENTS SHOULD BE INSPECTED DURING ROUTINE MAINTENANCE OPERATIONS.
- SEDIMENT SHOULD BE WHEN ITS ACCUMULATION SIGNIFICANTLY REDUCES THE DESIGN STORAGE, INTERFERES WITH THE FUNCTION OF THE RISER, WHEN DEEMED NECESSARY FOR AESTHETIC REASONS, OR WHEN DEEMED NECESSARY.

THE TOPSOIL SPECIFICATIONS PROVIDE ORGANIC MATERIAL TO ADEQUATELY SUPPLY NUTRIENTS FROM NATURAL CYCLING. THE PRIMARY FUNCTION OF THE BIORETENTION FACILITY IS TO IMPROVE WATER QUALITY. ADDING FERTILIZERS, DEFECATS, OR AT A MINIMUM, IMPROVES THIS SOIL. 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 ARE TO BE PLACED ON A 3" O.D. WIDE SECTION OF FILTER CLOTH PIPE IS PLACED NEXT, FOLLOWED BY THE GRAVEL BEDDING. THE ENDS OF UNDERDRAIN PIPES NOT TERMINATING IN AN OBSERVATION WELL SHALL BE CAPPED.

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

7. MISCELLANEOUS
THE BIORETENTION FACILITY MAY NOT BE CONSTRUCTED UNTIL ALL CONTRIBUTING DRAINAGE AREA HAS BEEN STABILIZED.

GLWG SCHICK LITTLE & WEBER, P.A.
CIVIL ENGINEERS, LAND SURVEYORS, LAND PLANNERS, LANDSCAPE ARCHITECTS
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BURTOWNSVILLE, MARYLAND 20896
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STORMWATER MANAGEMENT DETAILS

RIVERWALK
SINGLE FAMILY ATTACHED TOWNHOMES
LOTS 1-58 AND OPEN SPACE LOTS 59 & 60
Plat Numbers: 21025 - 21027

ASBUILT SHEET 4 OF 5

SCALE: AS SHOWN
ZONING: R-SA-8
G. L. W. FILE NO.: 08039

DATE: FEB. 2015
TAX MAP - GRID: 47 - 16
SHEET: 10 OF 19

HOWARD COUNTY, MARYLAND

ASBUILT SHEET 4 OF 5

DATE: FEB. 2015
TAX MAP - GRID: 47 - 16
SHEET: 10 OF 19

HOWARD COUNTY, MARYLAND



- LEGEND**
- PROPOSED SHADE TREE
 - PROPOSED STREET TREE IN OPEN SPACE
 - PROPOSED STREET TREE
 - PROPOSED ORNAMENTAL TREE
 - PROPOSED EVERGREEN TREE
 - PROPOSED SHRUBS
 - EXISTING BUILDINGS
 - PROPOSED BUILDINGS
 - EXISTING CONTOURS
 - PROPOSED CONTOURS
 - EXISTING TREE LINES
 - STREAM
 - STREAM BUFFER
 - FLOOD PLAIN
 - SLOPES 25% AND STEEPER
 - FOREST CONSERVATION EASEMENT

PUBLIC FOREST CONSERVATION EASEMENT AREA #1 (1.42 AC) (AFFORESTATION OUTSIDE FF: 0.12 AC, RETENTION INSIDE FF: 0.05 AC, (NO CREDIT) RETENTION: 0.85 AC)

OPEN SPACE LOT 8 GORMAN WOODS PLAT NO. 10871 ZONED: R-12

P-85 PROPERTY OF HOWARD COUNTY, MD L. 913 F. 351 ZONED: R-12

P-85 PROPERTY OF HOWARD COUNTY, MD L. 913 F. 351 ZONED: R-12

PERIMETER E - 303 LINEAR FEET OF LANDSCAPE BUFFER TYPE 'C'

P-534 PROPERTY OF FRANK A. LAUMANN, III & NANCY H. LAUMANN L. 4635 F. 12 ZONED: R-12

STATE OF MARYLAND
Michael B. Tran
REGISTERED
LANDSCAPE ARCHITECT
933

LOT 3 GORMAN WOODS PLAT NO. 12415 ZONED: R-12

LOT 1 GORMAN WOODS PLAT NO. 12415 ZONED: R-12

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

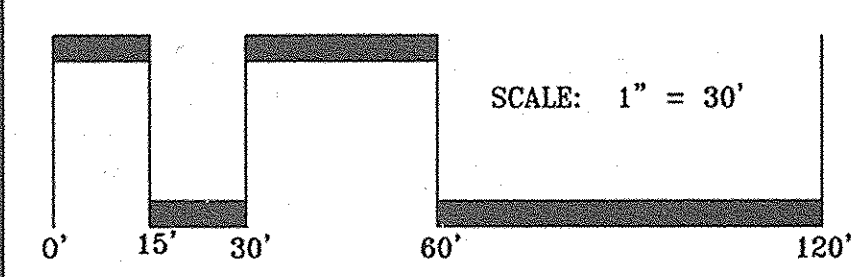
Manoel S. Butler 6/27/11
Director Date

Vicki Sheehan 6/27/11
Chief, Division of Land Development Date

John J. R. 5/26/11
Chief, Development Engineering Division Date

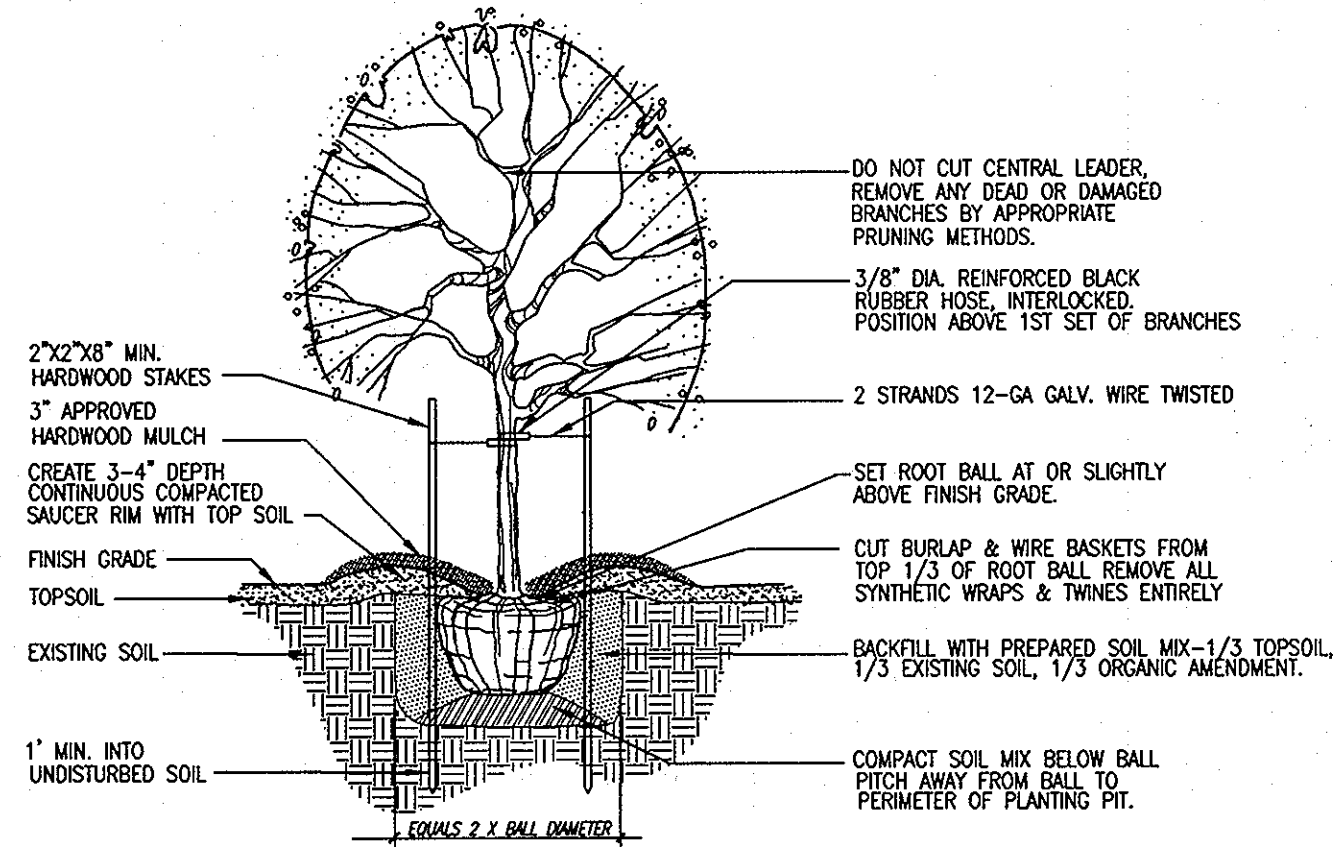
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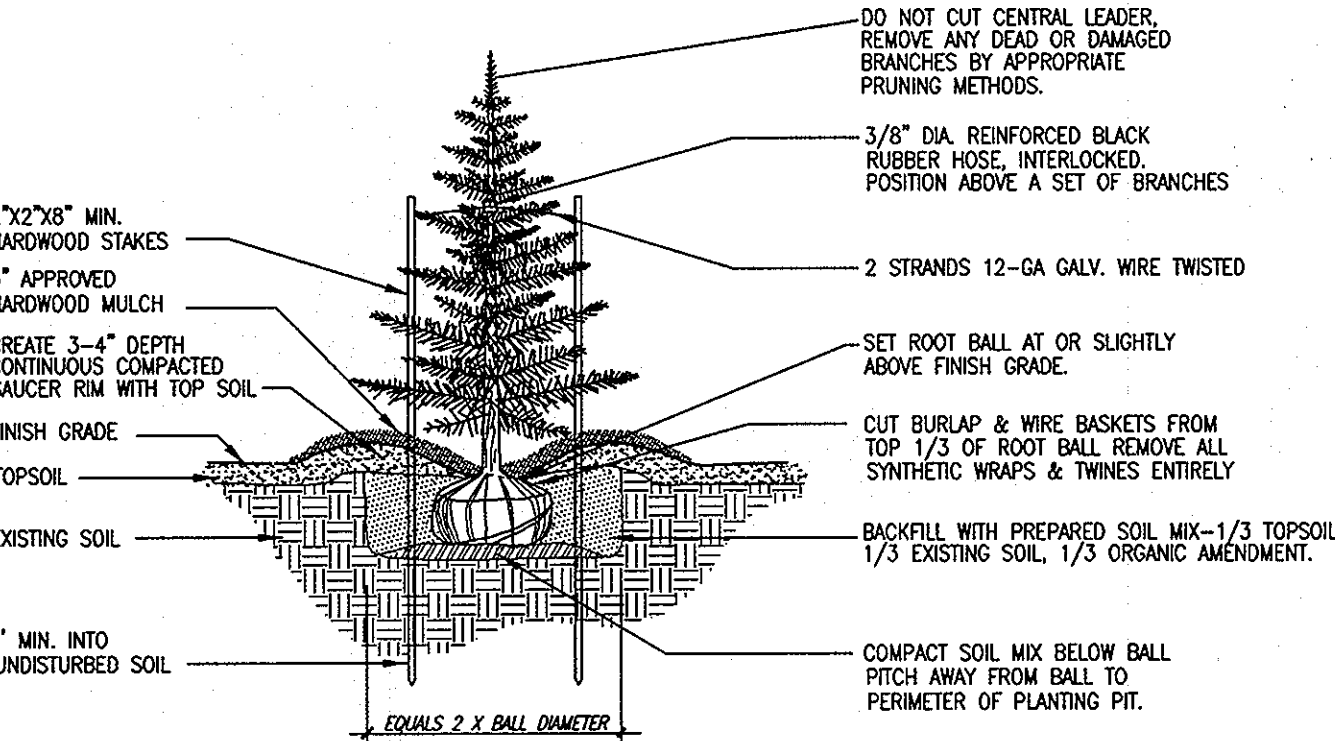


LANDSCAPE PLAN
RIVERWALK
SINGLE FAMILY ATTACHED TOWNHOMES
LOTS 1-58 AND OPEN SPACE LOTS 59 & 60
Plat Numbers: 21025 - 21027

SCALE	ZONING	G. L. W. FILE NO.
1"=30'	R-SA-8	08039
DATE	TAX MAP - GRID	SHEET
MAY, 2011	47 - 16	11 OF 19



DECIDUOUS TREE PLANTING DETAIL FOR PLANTING MATERIAL UP TO 3 1/2" CALIPER NTS



EVERGREEN TREE PLANTING DETAIL NTS

PLANT MATERIALS AND PLANTING METHODS

A. Plant Materials

The landscape contractor shall furnish and install and/or dig, ball, burlap and transplant all of the plant materials called for on drawings and/or listed in the Plant Schedule.

1. Plant Names

Plant names used in the Plant Schedule shall conform with "Standardized Plant Names," latest edition.

2. Plant Standards

All plant material shall be equal to or better than the requirements of the "USA Standard for Nursery Stock" latest edition, as published by the American Association of Nurserymen (hereafter referred to as AAN Standards). All plants shall be typical of their species and variety, shall have a normal habit of growth and shall be first quality, sound, vigorous, well-branched and with healthy, well-furnished root systems. They shall be free of disease, insect pests and mechanical injuries.

All plants shall be nursery grown and shall have been grown under the same climate conditions as the location of this project for at least two years before planting. Neither heeled-in plants nor plants from cold storage will be accepted.

3. Plant Measurements

All plants shall conform to the measurements specified in the Plant Schedule as approved by the ARC.

- a. Caliper measurements shall be taken six inches (6") above grade for trees under four-inch (4") caliper and twelve (12") above grade for trees four inches (4") in caliper and over.
 - b. Minimum branching height for all trees shall be six feet (6'), maximum eight feet (8').
 - c. Minimum size for planting shade trees shall be 3-3" caliper, 14'-16" in height.
 - d. Minimum size for planting minor or intermediate focus trees (pines, cypripines, etc.) shall be 3-3" caliper, 10'-12" in height.
 - e. Minimum size for planting shrubs shall be 18"-24" spread unless noted otherwise.
 - f. Caliper, height, spread and size of ball shall be generally as follows:
- | CALIPER | HEIGHT | SPREAD | SIZE OF BALL |
|-----------|---------|---------|--------------|
| 3" - 3.5" | 14'-16' | 8'-8' | 32" diameter |
| 3.5" - 4" | 14'-16' | 8'-10' | 36" diameter |
| 4" - 4.5" | 16'-18' | 8'-10' | 40" diameter |
| 4.5" - 5" | 16'-17' | 10'-12' | 44" diameter |
| 5" - 5.5" | 18'-20' | 10'-12' | 48" diameter |
| 5.5" - 6" | 18'-20' | 12'-14' | 52" diameter |

All plant material shall generally average the median for the size ranges indicated above as indicated in the "AAN Standards".

4. Plant Identification

Legible labels shall be attached to all shade trees, minor trees, specimen shrubs and bundles or boxes of other plant material giving the botanical and common names, size and quantity of each. Each shipment of plants shall bear certificates of inspection as required by Federal, State and County authorities.

5. Plant Inspection

The ARC may, upon request by the builder or developer, at least ten (10) days prior to the installation of any proposed plant material, inspect all proposed plant material at the source of origin.

B. Planting Methods

All proposed plant materials that meet the specifications in Section A are to be planted in accordance with the following methods during the proper planting seasons as described in the following:

1. Planting Seasons

The planting of deciduous trees, shrubs and vines shall be from March 1st to June 15th and from September 15th to December 15th. Planting of deciduous material may be continued during the winter months providing there is no frost in the ground and frost-free topsoil planting mixtures are used.

The planting of evergreen material shall be from March 15th to June 15th and from August 15th to December 1st. No planting shall be done when ground is frozen or excessively moist. No frozen or wet topsoil shall be used at any time.

2. Digging

All plant material shall be dug, balled and burlapped (B&B) in accordance with the "AAN Standards".

3. Excavation of Plant Pits

The landscaping contractor shall excavate all plant pits, vine pits, hedge trenches and shrub beds in accordance with the following schedule:

- a. Locations of all proposed plant material shall be staked and approved in the field by the landscape architect before any of the proposed plant material is installed by the landscape contractor.
- b. All pits shall be generally circular in outline, vertical sides; depth shall not be less than 6" deeper than the root ball, diameter shall not be less than two times the diameter of the root ball as set forth in the following schedule.

c. If areas are designated as shrub beds or hedge trenches, they shall be excavated to at least 18" depth minimum. Areas designated for ground covers and vines shall be excavated to at least 12" in depth minimum.

d. Diameter and depth of tree pits shall generally be as follows:

PLANT SIZE	ROOT BALL	DIAMETER	PIT DEPTH
3" - 3.5" col.	32"	64"	28"
3.5" - 4" col.	36"	72"	32"
4" - 4.5" col.	40"	80"	36"
4.5" - 5" col.	44"	88"	40"
5" - 5.5" col.	48"	96"	44"
5.5" - 6" col.	52"	104"	48"

A 20% compaction figure of the soil to be removed is assumed and will be allowed in calculation of extra topsoil. The tabulated pit sizes are for purposes of uniform calculation and shall not override the specified depths below the bottoms of the root balls.

4. Staking, Guying and Wrapping

All plant material shall be staked or guyed, and wrapped in accordance with the following specifications:

- a. Stakes: Shall be sound wood 2" x 2" rough sawn oak or similar durable woods, or lengths, minimum 7'-0" for major trees and 5'-0" minimum for minor trees.
- b. Wire and Cable: Wire shall be #10 galvanized or bethanized annealed steel wire. For trees over 3" caliper, provide 5/16" turn buckles, eye and eye with 4" lock-up. For trees over 5" caliper, provide 3/16", 7 strand cable codium plated steel, with galvanized "eye" thimbles of wire and hose on trees up to 3" in caliper.
- c. Hose: Shall be new 2 ply reinforced rubber hose, minimum 1/2" I.D. "Plastic Lock Ties" or "Paul's Tree Braces" may be used in place of wire and hose on trees up to 3" in caliper.
- d. All trees under 3" in caliper are to be planted and staked in accordance with the attached "Typical Tree Staking Detail". All trees over 3" in caliper are to be planted and guyed in accordance with the attached "Typical Tree Guying Detail".

5. Plant Pruning, Edging and Mulching

a. Each tree, shrub or vine shall be pruned in an appropriate manner to its particular requirements, in accordance with accepted standard practice. Broken or bruised branches shall be removed with clean cuts flush with the adjacent trunk or branches. All cuts over 1" in diameter shall be pointed with an approved antiseptic tree wound dressing.

b. All trenches and shrub beds shall be edged and cultivated to the lines shown on the drawing. The areas around isolated plants shall be edged and cultivated to the full diameter of the pit. Sod which has been removed and stockpiled shall be used to trim the edges of all excavated areas to the neat lines of the plant pit saucers, the edges of shrub areas, hedge trenches and vine pockets.

c. After cultivation, all plant materials shall be mulched with a 2" layer of fine, shredded pine bark, peat moss, or another approved material over the entire area of the bed or saucer.

6. Plant Inspection and Acceptance

The ARC shall be responsible for inspecting all planting projects on a periodic basis to assure that all work is proceeding in accordance with the approved plans and specifications.

7. Plant Guarantee

All plant material shall be guaranteed for the duration of one full growing season, after final inspection and acceptance of the work in the planting project. Plants shall be alive and in satisfactory growing condition at the end of the guarantee period.

a. For this purpose, the "growing season" shall be that period between the end of the "Spring" planting season, and the commencement of the "Fall" planting season.

b. Guarantee for planting performed after the specified end of the "Spring" planting season, shall be extended through the end of the next following "Spring" planting season.

Sodding

All sodding shall be in accordance to the "Landscape Specification Guidelines for Baltimore-Washington Metropolitan Area" latest edition, approved by the Landscape Contractors Association of Metropolitan Washington and the American Society of Landscape Architects.

All sod shall be strongly rooted sod, not less than two years old and free of weeds and undesirable native grasses. Provide only sod capable of growth development when planted and in strips not more than 18" wide x 4" long. Provide and composed principally of improved strain Kentucky bluegrass, such as, Columbia, Victo, or Escort.

SYMBOL	QTY.	NAMES (BOTANICAL / SCIENTIFIC)	SIZE/COMMENTS
SHADE TREES			
AP	10	ACER PLATANOIDES 'CRIMSON SENTRY' / CRIMSON SENTRY MAPLE	2.5 - 3" CAL. MIN.
CL	23	CLADRASTIS LUTEA / AMERICAN YELLOW WOOD	2.5 - 3" CAL. MIN.
FG	15	FAGUS GRANDIFOLIA / AMERICAN BEECH	2.5 - 3" CAL. MIN.
NS	14	NYSSA SYLVATICA / BLACK GUM	2.5 - 3" CAL. MIN.
QA	3	QUERCUS ACUTISSIMA / SAWTOOTH OAK	2.5 - 3" CAL. MIN.
QP	6	QUERCUS PHELLOS / WILLOW OAK	2.5 - 3" CAL. MIN.
TA	3	TILIA AMERICANA / AMERICAN LINDEN	2.5 - 3" CAL. MIN.
ORNAMENTAL TREES			
AC	3	AMALANCHIER CANADENSIS / SERVICEBERRY	6-8 FT. HT. MIN, MULTISTEMMED
BN	9	BETULA NIGRA 'HERITAGE' / HERITAGE RIVER BIRCH	6-8 FT. HT. MIN, MULTISTEMMED
CC	8	CERCIS CANADENSIS 'FOREST PANSY' / FOREST PANSY REDBUD	6-8 FT. HT. MIN, MULTISTEMMED
CV	8	CRATAEGUS VIRIDIS 'WINTER KING' / WINTER KING HAWTHORN	2 1/2" CAL. MIN.
KP	13	KOELREUTERIA PANICULATA / GOLDEN RAINTREE	2 1/2" CAL. MIN.
MS	62	MALUS 'SENTINEL' / SENTINEL CRABTREE	2 1/2" CAL. MIN.
EVERGREEN TREES			
IO	5	ILEX OPACA / AMERICAN HOLLY	7-8 FT. HT. MIN.
JV	11	JUNIPERUS VIRGINIANA/EASTERN RED CEDAR	7-8 FT. HT. MIN.
MV	18	MAGNOLIA VIRGINIANA / SWEETBAY MAGNOLIA	7-8 FT. HT. MIN.
PA	12	PICEA ABIES / NORWAY SPRUCE	7-8 FT. HT. MIN.
PP	27	PICEA PUNGENS 'FAT ALBERT' / FAT ALBERT BLUE SPRUCE	7-8 FT. HT. MIN.
TO	24	THUJA OCCIDENTALIS / EASTERN ARBORVITAE	7-8 FT. HT. MIN.
SHRUBS/ORNAMENTAL GRASS			
HF	44	HYPERICUM FRONDOSUM / ST. JOHNSWORT	24"-36" HT. - CONT.
MC	20	MUHLENBERGIA CAPILLARIS / PINK MUHLY GRASS	24"-36" HT. - CONT.
ND	20	NANDINA DOMESTICA 'GULFSTREAM' / HEAVENLY BAMBOO	24"-36" HT. - CONT.
WF	52	WEIGELA FLORIDA 'MINUTE' / OLD FASHIONED WEIGELA	24"-36" HT. - CONT.

SCHEDULE A	BUFFER 'A'	BUFFER 'B'	BUFFER 'C'	BUFFER 'D'	BUFFER 'E'
PERIMETER LANDSCAPE CATEGORY	BUFFER REAR BUILDING FROM OTHER USE	BUFFER REAR BUILDING FROM SFD	BUFFER SIDE OF BUILDING FROM ROAD	BUFFER SIDE OF BUILDING FROM ROAD	BUFFER REAR BUILDING FROM ADJ. PROP.
BUFFER TYPE	A	C	C	C	C
SIDE/REAR BUILDING LENGTH	1464	303	199	400	368
CREDIT FOR EXISTING VEGETATION (YES/NO, LINEAR FEET) (DESCRIBE BELOW IF NEEDED)	YES, EXISTING FOREST 548 LINEAR FEET	NONE	NONE	NONE	NONE
CREDIT FOR WALL, FENCE, OR BERM (YES/NO, LINEAR FEET) (DESCRIBE BELOW IF NEEDED)	NONE	NONE	NONE	NONE	NONE
PLANTINGS REQUIRED					
SHADE TREES	1:60 = 15	1:40 = 8	1:40 = 5	1:40 = 10	1:40 = 10
EVERGREEN TREES	0	1:20 = 15	1:20 = 10	1:20 = 20	1:20 = 14
SHRUBS	0	0	0	0	0
PLANTINGS PROVIDED					
SHADE TREES	15	8	2	3	10
EVERGREEN TREES	0	15	10	19	19
OTHER TREES	0	0	4	12	0
SHRUBS	0	0	0	10	0
SHRUBS SUBSTITUTIONS					
OTHER (2:1 SUB.)					
SHRUBS (1:1 SUB.)			4 ORN. FOR 2 SHADE 10 SHRUBS FOR 1 SHADE	12 ORN. FOR 6 SHADE 10 SHRUBS FOR 1 SHADE	

LANDSCAPING NOTES

1. This plan has been prepared in accordance with Section 16.124 of the Howard County Code of the Howard County Landscape Manual.
2. Contractor shall notify all utilities at least (5) five days before starting work. All General Notes, especially those regarding utilities, on Sheet 1 shall apply.
3. Field verify underground utility locations and existing conditions before starting planting work. Contact engineer / landscape architect if any relocations are required.
4. Plant quantities shown on Plant List are provided for the convenience of the contractor only. If discrepancies exist between quantities shown on the plan and those shown on the plant list, the quantities on the plan shall take precedence.
5. All plant material shall be full, heavy, well formed, and symmetrical, and conform to the A.A.N. Specifications, and be installed in accordance with project specifications.
6. No substitution shall be made without written consent of the owner or his representative.
7. All areas disturbed by construction activities but not otherwise planted, paved, or mulched shall be seeded or sodded in accordance with the project specifications.
8. The contractor shall notify the owner in writing if he/she encounters soil drainage conditions which may be detrimental to the growth of the plants.
9. All exposed earth within limits of planting beds shall be mulched with shredded hardwood mulch per Planting Details.
10. Do not plant within the public water, sewer, or utility easements.
11. Financial surety for the required landscaping has been posted in the amount of \$63,300.00.
12. Planting provided:
Shade Trees (proposed): 71
Ornamental Trees (proposed): 82
Evergreen Trees (proposed): 48
Shrubs (proposed): 20
Private Street Trees: 58
Public Street Trees: 15

THIS PLAN IS FOR LANDSCAPING PURPOSES ONLY!

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
 Director: *Thomas J. Butler* 6/27/11
 Chief, Division of Land Development: *Vest Shandor* 6/27/11
 Chief, Development Engineering Division: *John J. ...* 5/26/11

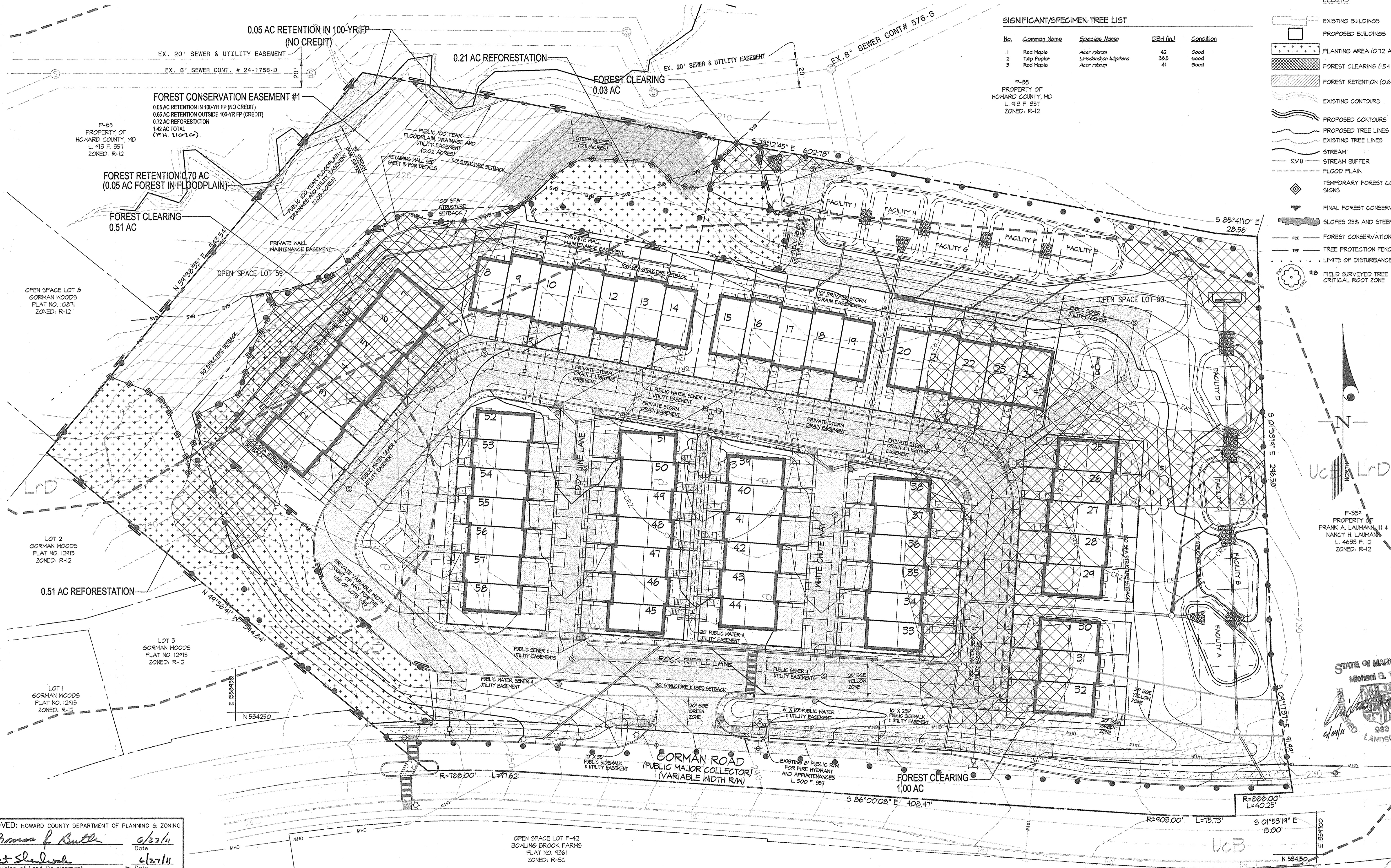
STATE OF MARYLAND
 Michael B. Tran
 938 LANDSCAPE ARCHITECT
 6/29/11

GLWGUTSCHICK LITTLE & WEBER, P.A.
 CIVIL ENGINEERS, LAND SURVEYORS, LAND PLANNERS, LANDSCAPE ARCHITECTS
 3909 NATIONAL DRIVE - SUITE 250 - BURTONSVILLE OFFICE PARK
 BURTONSVILLE, MARYLAND 20866
 TEL: 301-421-4024 BALT: 410-880-1820 DC/VA: 301-989-2524 FAX: 301-421-4186

PREPARED FOR & OWNER:
 CS RIVERWALK LLC
 c/o CRAFTSTAR HOMES, INC.
 6620 ELM STREET, SUITE 200
 McLEAN, VA 22101
 M. COURTNEY TREUTH
 703-827-5045

LANDSCAPE DETAILS
RIVERWALK
 SINGLE FAMILY ATTACHED TOWNHOMES
 LOTS 58 AND OPEN SPACE LOTS 59 & 60
 Plat Numbers: 21025-21027
 ELECTION DISTRICT No. 6

SCALE	ZONING	G. L. W. FILE No.
NTS	R-SA-8	08039
DATE	TAX MAP - GRID	SHEET
MAY, 2011	47 - 16	12 OF 19



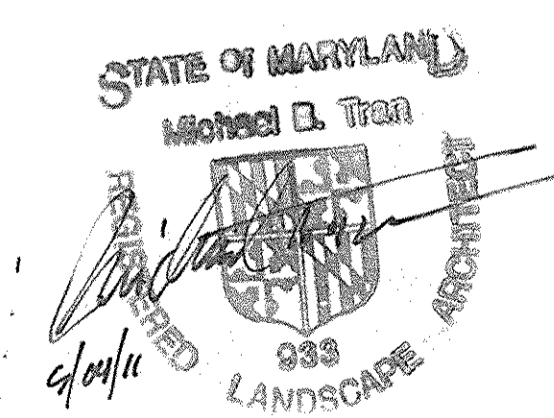
SIGNIFICANT/SPECIMEN TREE LIST

No.	Common Name	Species Name	DBH (in.)	Condition
1	Red Maple	<i>Acer rubrum</i>	42	Good
2	Tulip Poplar	<i>Liriodendron tulipifera</i>	39.5	Good
3	Red Maple	<i>Acer rubrum</i>	41	Good

- LEGEND**
- EXISTING BUILDINGS
 - PROPOSED BUILDINGS
 - PLANTING AREA (0.72 AC)
 - FOREST CLEARING (1.54 AC)
 - FOREST RETENTION (0.65 AC)
 - EXISTING CONTOURS
 - PROPOSED CONTOURS
 - PROPOSED TREE LINES
 - EXISTING TREE LINES
 - STREAM
 - STREAM BUFFER
 - FLOOD PLAIN
 - TEMPORARY FOREST CONSERVATION SIGNS
 - FINAL FOREST CONSERVATION SIGNS
 - SLOPES 25% AND STEEPER
 - FOREST CONSERVATION EASEMENT
 - TREE PROTECTION FENCE
 - LIMITS OF DISTURBANCE
 - FIELD SURVEYED TREE CRITICAL ROOT ZONE

P-85
PROPERTY OF
HOWARD COUNTY, MD
L. 913 F. 351
ZONED: R-12

P-534
PROPERTY OF
FRANK A. LAUMANN III &
NANCY H. LAUMANN
L. 4633 F. 12
ZONED: R-12



APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

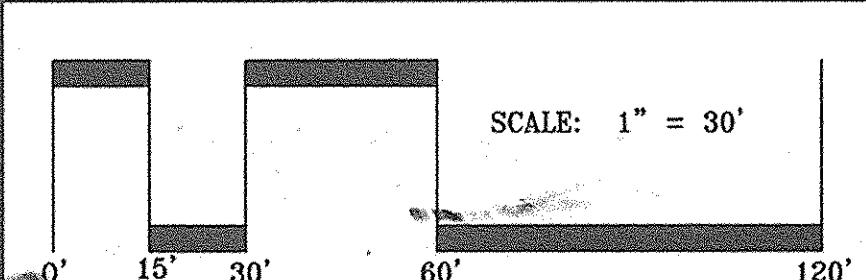
Mona F. Butler 6/23/11
Director Date

Pat Shulman 6/27/11
Chief, Division of Land Development Date

John P. ... 6/20/11
Chief, Development Engineering Division Date

GLWGUTSCHICK LITTLE & WEBER, P.A.
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703-827-5045



FOREST CONSERVATION PLAN

RIVERWALK
SINGLE FAMILY ATTACHED TOWNHOMES
LOTS 1-58 AND OPEN SPACE LOTS 59 & 60
Plat Numbers: 21025-21027

SCALE	ZONING	G. L. W. FILE No.
1" = 30'	R-SA-8	08039
DATE	TAX MAP - GRID	SHEET
MAY, 2011	47 - 16	13 OF 19

FOREST CONSERVATION WORKSHEET

Project Name: Riverwalk		DPZ File No.:
1 Site Data		
A. Gross Site Area		7.480
B. Area within 100-yr floodplain, if any		0.050
C. Area of existing easement for major utility transmission lines, if any		0.000
D. Area of external public road (frontage) dedication, if any		0.000
E. Net Tract Area		7.430
F. Land Use Category		HDR
2 Input Data		
A. Net Tract Area		7.430
B. Reforestation Threshold (percent of net tract = 20%)		1.486
C. Afforestation Threshold (percent of net tract = 15%)		1.115
D. Existing Forest on Net Tract Area		2.190
E. Forest Clearing on Net Tract Area		1.540
F. Forest Retention on Net Tract Area		0.650
3 Reforestation and/or Afforestation Calculations		
A. Net tract forest clearing above reforestation threshold, if applicable		0.704
B. Net tract forest clearing below reforestation threshold, if applicable		0.836
C. Planting up to afforestation threshold, if applicable		0.000
D. Reforestation planting required for clearing above threshold (3A x 0.25)		0.176
E. Reforestation planting required for clearing below threshold (3B x 2.0)		1.672
F. Net tract forest retention above reforestation threshold (2F-2B, available credit)		0.000
G. Total reforestation planting required (3C+3D+3E - 3F)		1.848
4 Break Even Point (BEP) Calculations		
A. Maximum clearing allowed with no reforestation planting (2D-2B)/1.25		0.563
B. Minimum net tract retention at BEP 0.20(2D-2B)+2B or 2D-4A		1.627
5 Forest Conservation Required		
A. Forest Retention Area (2F)		0.650
B. Forest Planting Area (3D)		1.848
C. Total minimum FCE required for retention and reforestation		2.498

*NOTE: 0.72 AC of on-site reforestation and 0.65 AC of credited on-site retention has been provided and a fee-in-lieu payment of \$36,917.10 has been made to the Howard County Forest Conservation Fund for the outstanding 1.13 AC of reforestation (1.13 AC = 44,222.8 SF x \$0.75 = \$36,917.10).

Information for Forest Conservation Calculations

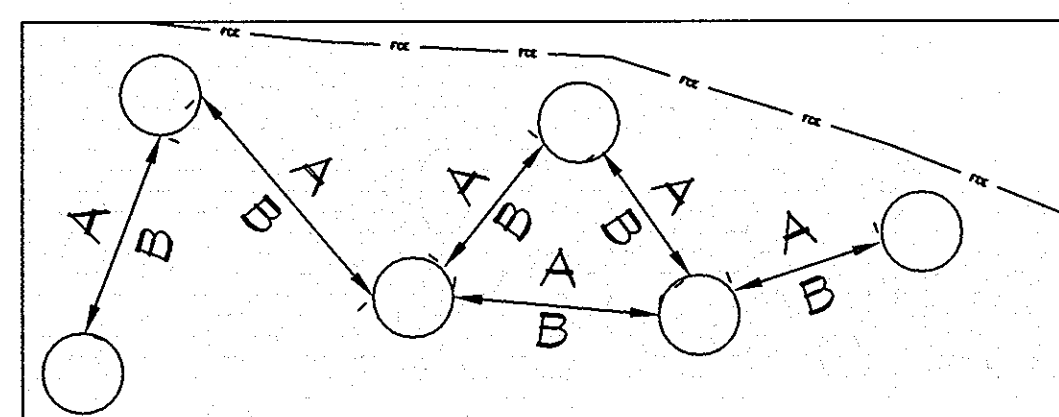
1 Project Name:	Riverwalk	
2 Land Use Category	Residential - Suburban	
Forest Conservation Thresholds (Reforestation / Afforestation) = 20 % 15 %		
3 Gross Site Area	325,829 s.f.	7,480 ac.
4 Area within 100-yr floodplain, if any	2,178 s.f.	0.050 ac.
5 Area of existing easement for major utility transmission lines (if any, see note below)	0 s.f.	0.000 ac.
6 Area of external public road (frontage) dedication (if any see note below)	0 s.f.	0.000 ac.
7 Existing Forest on Net Tract Area	95,396 s.f.	2.190 ac.
8 Forest Clearing on Net Tract Area	67,082 s.f.	1.540 ac.

Notes:
#5 - Existing easement or RW for major utilities that are not directly serving the site (such as overhead transmission lines or gas pipelines) can be deducted from the gross tract area. (DPZ Guidelines, Item #13, June 1994).

Forest Conservation Surety Calculations

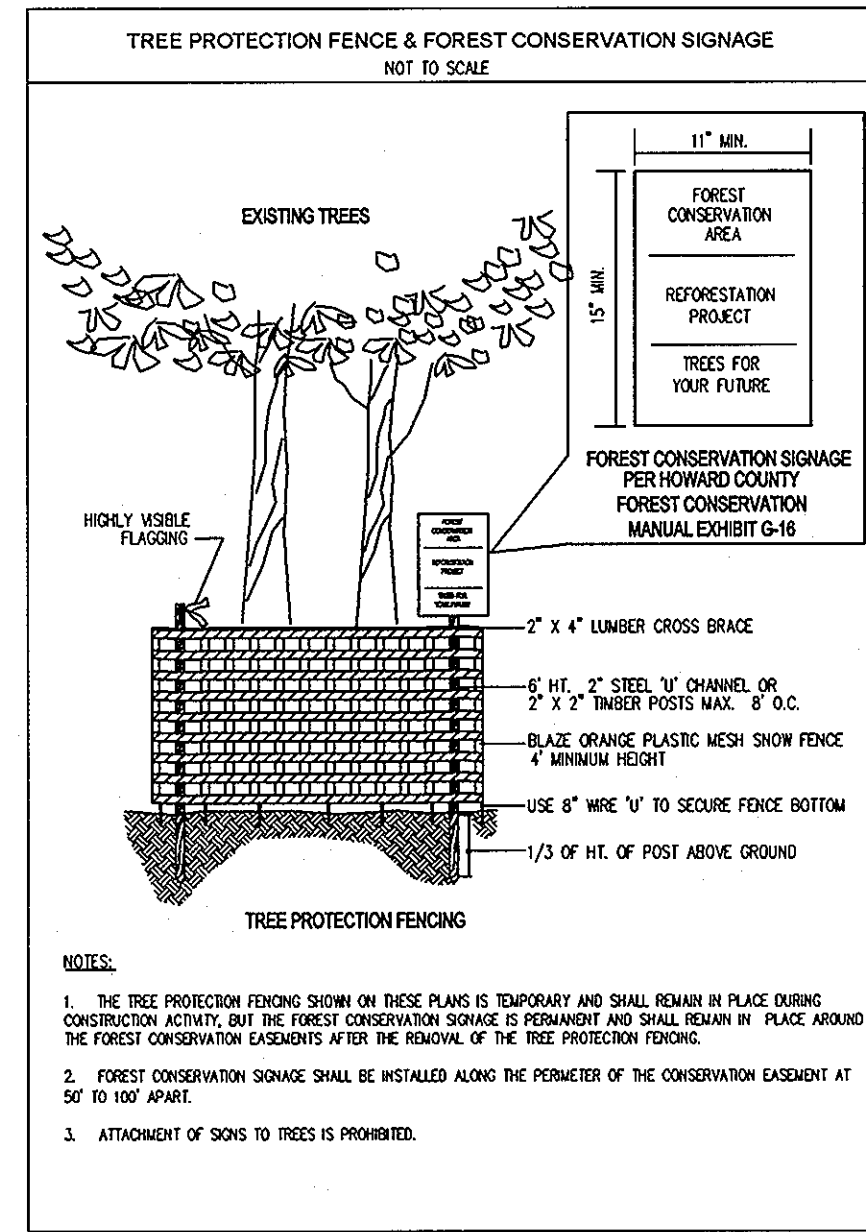
Type of Forest Conservation	Quantity		Unit price per square foot	Surety Amount
	Acres	Square Feet		
Provided credited forest retention	0.650	28,314	\$0.20	\$5,662.80
Provided reforestation	0.720	31,363	\$0.50	\$15,681.50
Total Forest Conservation Surety required:				\$21,344.30

NOTE: FOREST CONSERVATION SURETY IN THE AMOUNT OF \$21,344.30 FOR THE ONSITE FCE HAS BEEN POSTED AS A PART OF THE DEVELOPER'S AGREEMENT FOR THIS PLAN.



POSSIBLE AFFORESTATION PLANTING PATTERN NTS

NOTE: AFFORESTATION PLANTING IS TO BE AT RANDOM WITH REQUIRED SPACING BETWEEN TREES
A SPACING = 10'± FOR 1" CALIPER TREES
B SPACING = 20'± FOR 2" CALIPER TREES



NOTES:
1. THE TREE PROTECTION FENCING SHOWN ON THESE PLANS IS TEMPORARY AND SHALL REMAIN IN PLACE DURING CONSTRUCTION ACTIVITY. THE FOREST CONSERVATION SIGNAGE IS PERMANENT AND SHALL REMAIN IN PLACE AROUND THE FOREST CONSERVATION EASEMENT AFTER THE REMOVAL OF THE TREE PROTECTION FENCING.
2. FOREST CONSERVATION SIGNAGE SHALL BE INSTALLED ALONG THE PERIMETER OF THE CONSERVATION EASEMENT AT 50 TO 100 FEET.
3. ATTACHMENT OF SIGNS TO TREES IS PROHIBITED.

TREE PLANTING AND MAINTENANCE CALENDAR

TASKS	MONTHS											
	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
TRANSPLANT OF 2" DIA OR GREATER TREES FOR YOUR FUTURE	[Bar chart showing planting periods from May to October]											
MINIMUM MONITORING	[Bar chart showing monitoring from May to October]											
FERTILIZER (IF NEEDED)	[Bar chart showing fertilization from May to October]											
WATER ++	[Bar chart showing watering from May to October]											
PRUNING	[Bar chart showing pruning from May to October]											

KEY:
* ACTIVITIES DURING THESE MONTHS ARE DEPENDENT UPON GROUND CONDITIONS
[Bar with diagonal lines] GREATLY RECOMMENDED
[Bar with horizontal lines] RECOMMENDED WITH ADDITIONAL CARE
[Bar with vertical lines] RECOMMENDED
+ DEPENDENT UPON SITE CONDITIONS
++ DEPENDENT UPON SITE CONDITIONS; WEEKLY WATERING IS GREATLY RECOMMENDED FROM MAY THROUGH OCTOBER UNLESS WEEKLY RAINFALL EQUALS 1"

NOTE: THE PLANTING AND CARE OF TREES IS MOST SUCCESSFUL WHEN COORDINATED WITH THE LOCAL CLIMATIC CONDITIONS. THIS CALENDAR SUMMARIZES SOME OF THE RECOMMENDED TIME FRAMES FOR BASIC REFORESTATION AND STRESS REDUCTION ACTIVITIES.

SOURCE: ADAPTED FROM THE MARYLAND STATE FOREST CONSERVATION MANUAL.

FOREST CONSERVATION EASEMENT AREA TABULATION

FOREST CONSERVATION EASEMENT (FCE) AREA	I	TOTAL
FOREST CONSERVATION EASEMENT (FCE) AREA		
PARCEL WHERE FCE IS LOCATED	A	
CREDITED FOREST RETENTION AREA ON NET TRACT (IN AC.)	0.65	0.65
NON-CREDITED FOREST RETENTION AREA ON NET TRACT (IN AC.)	0.05	0.05
FOREST PLANTING AREA (IN AC.)	0.72	0.72
NATURAL REGENERATION AREA (IN AC.)	N/A	N/A
MINIMUM TOTAL AREA IN CONSERVATION EASEMENT (IN AC.)	1.42	1.42*

*NOTE: 0.72 AC of on-site reforestation and 0.65 AC of credited on-site retention has been provided and a fee-in-lieu payment of \$36,917.10 has been made to the Howard County Forest Conservation Fund for the outstanding 1.13 AC of reforestation (1.13 AC = 44,222.8 SF x \$0.75 = \$36,917.10).

FOREST CONSERVATION PLANTING QUANTITY SCHEDULE

FOREST CONSERVATION LOCATION	I	TOTAL
FOREST PLANTING AREA (IN AC.)	0.72	
TOTAL ACREAGE OF AFFORESTATION PROVIDED (IN AC.)	0.72	
BASE QUANTITY OF 2" CAL. TREES REQUIRED (AT 100 TREES/AC.)	72	
CREDIT FOR LANDSCAPE TREES IN FCE (20% MAXIMUM)	14	
REQUIRED QUANTITY OF 2" CAL. TREES TO BE PLANTED*	58	

* FOR PLANTING WITH 1" CAL. TREES, THE REQUIRED QUANTITY SHALL BE DOUBLED.

NOTE: THE QUANTITY SHOWN ABOVE IS FOR PLANTING WITH 2" CAL. TREES AT 20' X 20' SPACING.

FOREST CONSERVATION PLANT LIST

PLANT NAME (BOTANICAL/COMMON)	#
CARYA OVATA / SHAGBARK HICKORY (2" CALIPER)	10
ACER RUBRUM / RED MAPLE (2" CALIPER)	9
BETULA NIGRA / RIVER BIRCH (2" CALIPER)	10
NYSSA SYLVATICA / BLACK GUM (2" CALIPER)	10
PLATANUS OCCIDENTALIS / SYCAMORE (2" CALIPER)	9
CHIONANTHUS VIRGINICUS / FRINGE-TREE (2" CALIPER)	10
TOTAL	58

FOREST CONSERVATION FEE IN LIEU

REFORESTATION AT \$0.75/SF X (1.13 AC X 43,560 SF/AC) = \$36,917.10
TOTAL FOREST CONSERVATION SURETY = \$36,917.10

NOTE: A FEE-IN-LIEU PAYMENT OF \$36,917.10 HAS BEEN MADE TO THE HOWARD COUNTY FOREST CONSERVATION FUND FOR THE 1.13 AC OF OUTSTANDING AFFORESTATION OBLIGATION FOR THIS PLAN.

STATE OF MARYLAND
Michael B. Tran
933
LANDSCAPE ARCHITECT
5/20/11

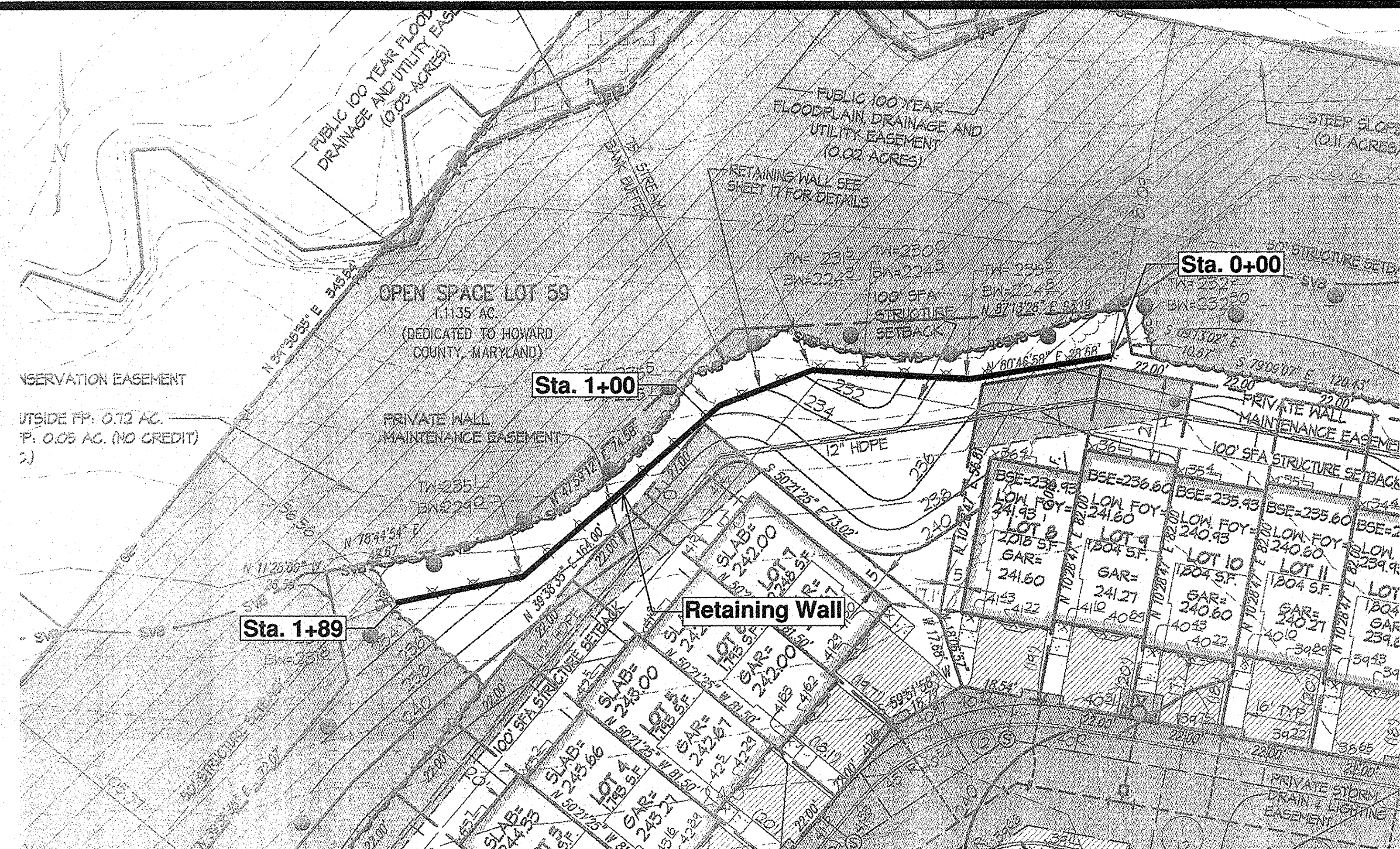
APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
Thomas J. Butler 4/22/11
Director Date
Kurt S. DeLorenzo 4/27/11
Chief, Division of Land Development Date
John J. DeLorenzo 5/20/11
Chief, Development Engineering Division Date

GLWGUTSCHICK LITTLE & WEBER, P.A.
CIVIL ENGINEERS, LAND SURVEYORS, LAND PLANNERS, LANDSCAPE ARCHITECTS
3909 NATIONAL DRIVE - SUITE 250 - BURTONSVILLE OFFICE PARK
BURTONSVILLE, MARYLAND 20866
TEL: 301-421-4024 BALT. 410-880-1820 DC/WA. 301-999-2524 FAX: 301-421-4186

PREPARED FOR & OWNER:
CS RIVERWALK LLC
c/o CRAFTSTAR HOMES, INC.
6820 ELM STREET, SUITE 200
McLEAN, VA 22101
M. COURTNEY TREUTH
703-827-5045

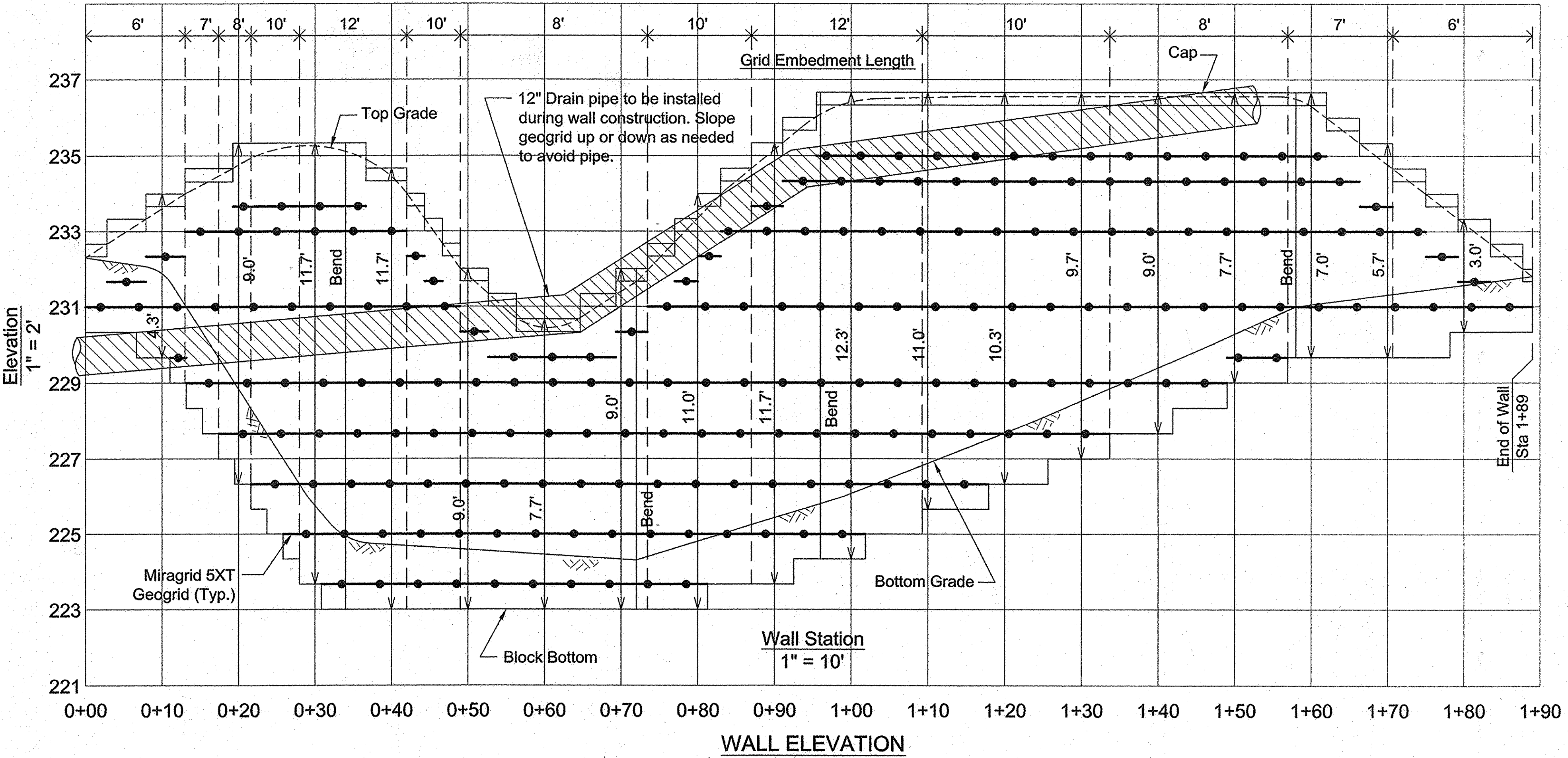
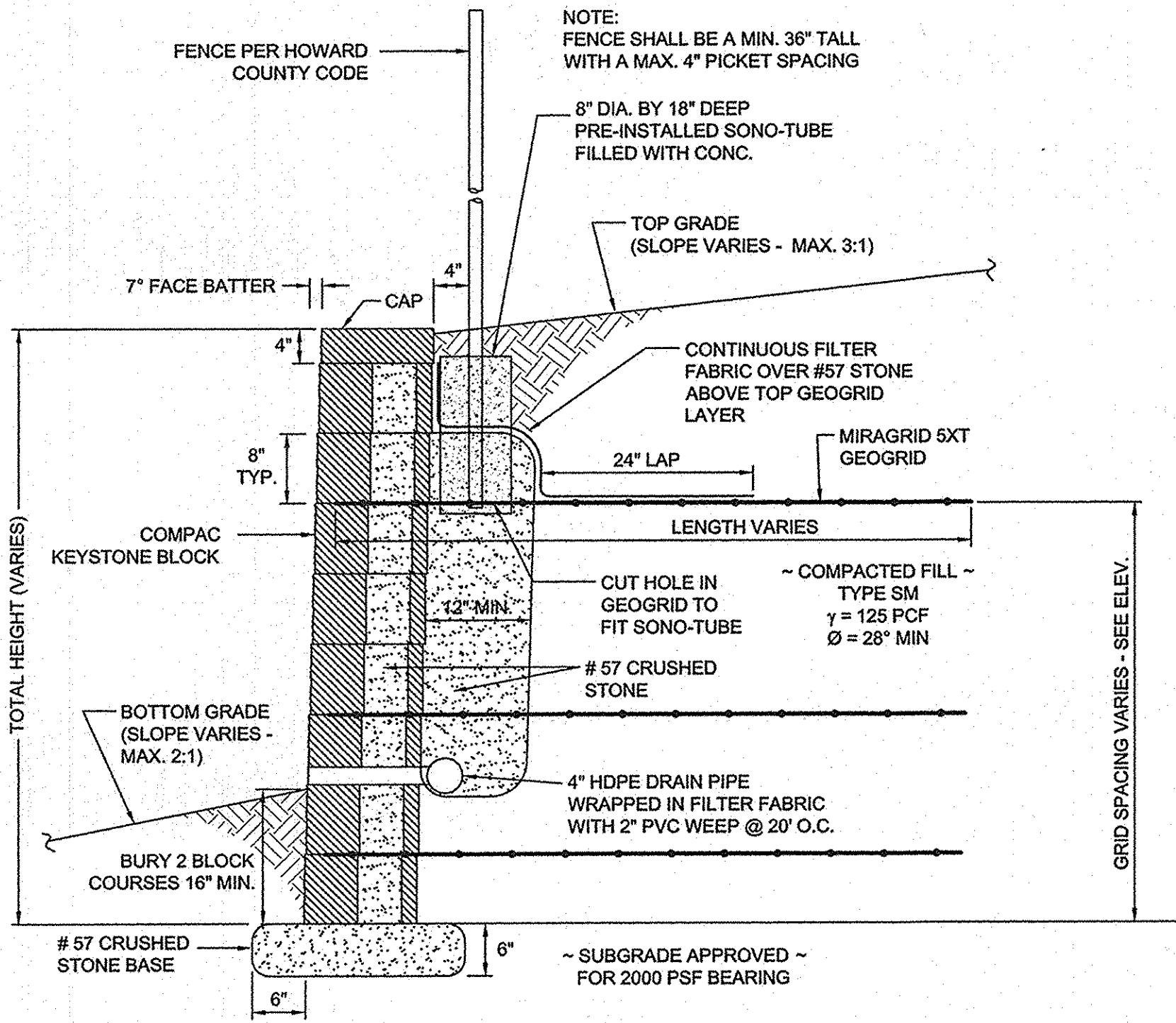
FOREST CONSERVATION PLAN
RIVERWALK
SINGLE FAMILY ATTACHED TOWNHOMES
LOTS 1-58 AND OPEN SPACE LOTS 59 & 60
Plat Numbers: 21627-21627
ELECTION DISTRICT No. 6
HOWARD COUNTY, MARYLAND

SCALE	ZONING	G. L. W. FILE No.
NTS	R-SA-8	08039
DATE	TAX MAP - GRID	SHEET
MAY, 2011	47 - 16	14 OF 19



WALL LOCATION PLAN
1" = 20'

- NOTES:**
- No trees shall be planted within 10 feet of the top of the retaining wall.
 - Retaining walls shall only be constructed under the observation of a registered professional engineer and a (NICET, WACEL, or equiv.) certified soils technician.
 - One soil boring shall be required every one hundred feet along the entire length of the wall. Copies of all boring reports shall be provided to the Howard County Inspector Prior to the start of construction.
 - The required bearing pressure beneath the wall system shall be verified in the field by a certified soils technician. Testing documentation must be provided to the Howard County Inspector prior to start of construction. The required bearing test shall be the Dynamic Cone Penetrometer test ASTM STP-399.
 - The suitability of fill material shall be confirmed by the on-site soils technician. Each 8" lift must be compacted to a minimum 95% standard proctor density and the testing report shall be made available to the Howard County Inspector upon completion of construction.
 - Walls shall not be constructed on uncertified fill materials.
 - Walls shall not be constructed within a Howard Co. right-of-way or easement.



SPECIFICATIONS
KEYSTONE MODULAR CONCRETE BLOCK RETAINING WALL

- PART 1: GENERAL**
- 1.01 Description**
A. Work shall consist of furnishing and construction of a KEYSTONE Retaining Wall System in accordance with these specifications and in reasonably close conformity with the lines, grades, design, and dimensions shown on the plans.
B. Work includes preparing foundation soil, furnishing and installing leveling pad, unit drainage fill and backfill to the lines and grades shown on the construction drawings.
C. Work includes furnishing and installing geogrid soil reinforcement of the type, size, location, and lengths designated on the construction drawings.
- 1.02 Delivery, Storage and Handling**
A. Contractor shall check all materials upon delivery to assure that the proper type, grade, color, and certification has been received.
B. Contractor shall protect all materials from damage due to job site conditions and in accordance with manufacturer's recommendations. Damaged materials shall not be incorporated into the work.
- PART 2: PRODUCTS**
- 2.01 Modular Concrete Retaining Wall Units**
A. Modular concrete units shall conform to the following architectural requirements:
face color - concrete gray - standard manufacturers' color may be specified by the Owner.
face finish - sculptured rock face in angular tri-planer configuration. Other face finishes will not be allowed without written approval of Owner.
bond configuration - running with bonds nominally located at midpoint vertically adjacent units, in both straight and curved alignments.
exposed surfaces of units shall be free of chips, cracks or other imperfections when viewed from a distance of 10 feet under diffused lighting.
B. Modular concrete materials shall conform to the requirements of ASTM C1372 - Standard Specifications for Segmental Retaining Wall Units.
C. Modular concrete units shall conform to the following structural and geometric requirements measured in accordance with appropriate references:
compressive strength = 3000 psi minimum;
absorption = 8% maximum (6% in northern states) for standard weight aggregates;
dimensional tolerances = ± 1/8" from nominal unit dimensions not including rough split face, ± 1/16" unit height - top and bottom planes;
unit size - 8" (H) x 16" (W) x 12" (D) minimum;
unit weight - 75 lbs/unit minimum for standard weight.
- 2.02 Shear Connectors**
A. Shear connectors shall be 1/2 inch diameter thermoset isophthalic polyester resin-protuded fiberglass reinforcement rods or equivalent to provide connection between vertically and horizontally adjacent units.
Strength of shear connectors between vertical adjacent units shall be applicable over a design temperature of 10 degrees F to + 100 degrees F.
B. Shear connectors shall be capable of holding the geogrid in the proper design position during grid pre-tensioning and backfilling.
- 2.03 Base Leveling Pad Material**
A. Material shall consist of a compacted #57 crushed stone base as shown on the construction drawings.
- 2.04 Unit Drainage Fill**
A. Unit drainage fill shall consist of #57 crushed stone.
- 2.05 Reinforced Backfill**
A. Reinforced backfill shall type SM, be free of debris and meet the following gradation tested in accordance with ASTM D-422 and meet other properties shown on the plan:

Sieve Size	Percent Passing
2 inch	100-75
3/4 inch	100-75
No. 40	0-60
No. 200	0-40

Plasticity Index (PI) <10 and Liquid Limit <40 per ASTM D-4318.
B. Material can be site excavated soils where the above requirements can be met. Unsuitable soils for backfill (high plastic clays or organic soils) shall not be used in the reinforced soil mass.
- 2.06 Geogrid Soil Reinforcement**
- A. Geosynthetic reinforcement shall consist of geogrids manufactured specifically for soil reinforcement applications and shall be manufactured from high tenacity polyester yarn.
- 2.07 Drainage Pipe**
A. The drainage pipe shall be perforated corrugated HDPE pipe manufactured in accordance with ASTM D-1248.
- PART 3 EXECUTION**
- 3.01 Excavation**
A. Contractor shall excavate to the lines and grades shown on the construction drawings. Owner's representative shall be responsible for inspecting and approving the excavation prior to placement of leveling material or fill soils.
- 3.02 Base Leveling Pad**
A. Leveling pad material shall be placed to the lines and grades shown on the construction drawings, to a minimum thickness of 6 inches and extend laterally a minimum of 6' in front and behind the modular wall unit.
B. Leveling pad shall be prepared to insure full contact to the base surface of the concrete units.
- 3.03 Modular Unit Installation**
A. First course of units shall be placed on the leveling pad at the appropriate line and grade. Alignment and level shall be checked in all directions and insure that all units are in full contact with the base and properly seated.
B. Place the front of units side-by-side. Do not leave gaps between adjacent units. Layout of corners and curves shall be in accordance with manufacturer's recommendations.
C. Install shear/connecting devices per manufacturer's recommendations.
D. Place and compact drainage fill within and behind wall units. Place and compact backfill soil behind drainage fill. Follow wall erection and drainage fill closely with structure backfill.
E. Maximum stacked vertical height of wall units, prior to unit drainage fill and backfill placement and compaction, shall not exceed three courses.
- 3.04 Structural Geogrid Installation**
A. Geogrid shall be oriented with the highest strength axis perpendicular to the wall alignment.
B. Geogrid reinforcement shall be placed at the strengths, lengths, and elevations shown on the construction design drawings or as directed by the Engineer.
C. The geogrid shall be laid horizontally on compacted backfill and attached to the modular wall units. Place the next course of modular concrete units over the geogrid. The geogrid shall be pulled taut, and anchored prior to backfill placement on the geogrid.
D. Geogrid reinforcements shall be continuous throughout their embedment lengths and placed side-by-side to provide 100% coverage at each level. Spliced connections between shorter pieces of geogrid or gaps between adjacent pieces of geogrid are not permitted.
- 3.05 Reinforced Backfill Placement**
A. Reinforced backfill shall be placed, spread, and compacted in such a manner that minimizes the development of slack in the geogrid and installation damage.
B. Reinforced backfill shall be placed and compacted in lifts not to exceed 6 inches where hand compaction is used, or 8 - 10 inches where heavy compaction equipment is used. Lift thickness shall be decreased to achieve the required density as required.
C. Reinforced backfill shall be compacted to 95% of the maximum density as determined by ASTM D698. The moisture content of the backfill material prior to and during compaction shall be uniformly distributed throughout each layer and shall be + 3% to - 3% of optimum.
D. Only lightweight hand-operated equipment shall be allowed within 3 feet from the tail of the modular concrete unit.
E. Tracked construction equipment shall not be operated directly upon the geogrid reinforcement. A minimum lift thickness of 6 inches is required prior to operation of tracked vehicles over the geogrid. Tracked vehicle turning should be kept to a minimum to prevent tracks from displacing the fill and damaging the geogrid.
F. Rubber tired equipment may pass over geogrid reinforcement at slow speeds, less than 10 MPH. Sudden braking and sharp turning shall be avoided.
G. At the end of each day's operation, the Contractor shall slope the last lift of reinforced backfill away from the wall units to direct runoff away from wall face. The Contractor shall not allow surface runoff from adjacent areas to enter the wall construction site.
- 3.06 Cap Installation**
A. Cap units shall be glued to underlying units with an all-weather adhesive recommended by the manufacturer.
- 3.07 Field Quality Control**
A. The Owner shall engage inspection and testing services, including independent laboratories, to provide quality assurance and testing services during construction.
B. As a minimum, quality assurance testing should include foundation soil inspection, soil and backfill testing, verification of design parameters, and observation of construction for general compliance with design drawings and specifications.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

Mona E. Suttler 6/22/14
Director Date

Kevin Sheppard 6/22/14
Chief, Division of Land Development Date

John D. ... 6/22/14
Chief, Development Engineering Division Date

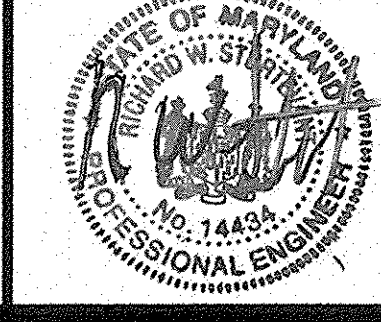
HILLIS-CARNES
ENGINEERING ASSOCIATES

10975 Guilford Road, Suite A Annapolis Junction, MD
(410) 880-4788 Fax: (410) 880-4098

DES. AM	DRN. AM	CHK. RWS	DATE	REVISION	BY	APPR.

PREPARED FOR & OWNER:
CS RIVERWALK LLC
c/o CRAFTSTAR HOMES, INC.
6820 ELM STREET, SUITE 200
MCLEAN, VA 22101
M. COURTNEY TREUTH
703-827-5045

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



RETAINING WALL CONSTRUCTION DETAILS

RIVERWALK
SINGLE FAMILY ATTACHED TOWNHOMES
LOTS 1-58 AND OPEN SPACE LOTS 59 & 60
PLAT NUMBERS 21025-21027

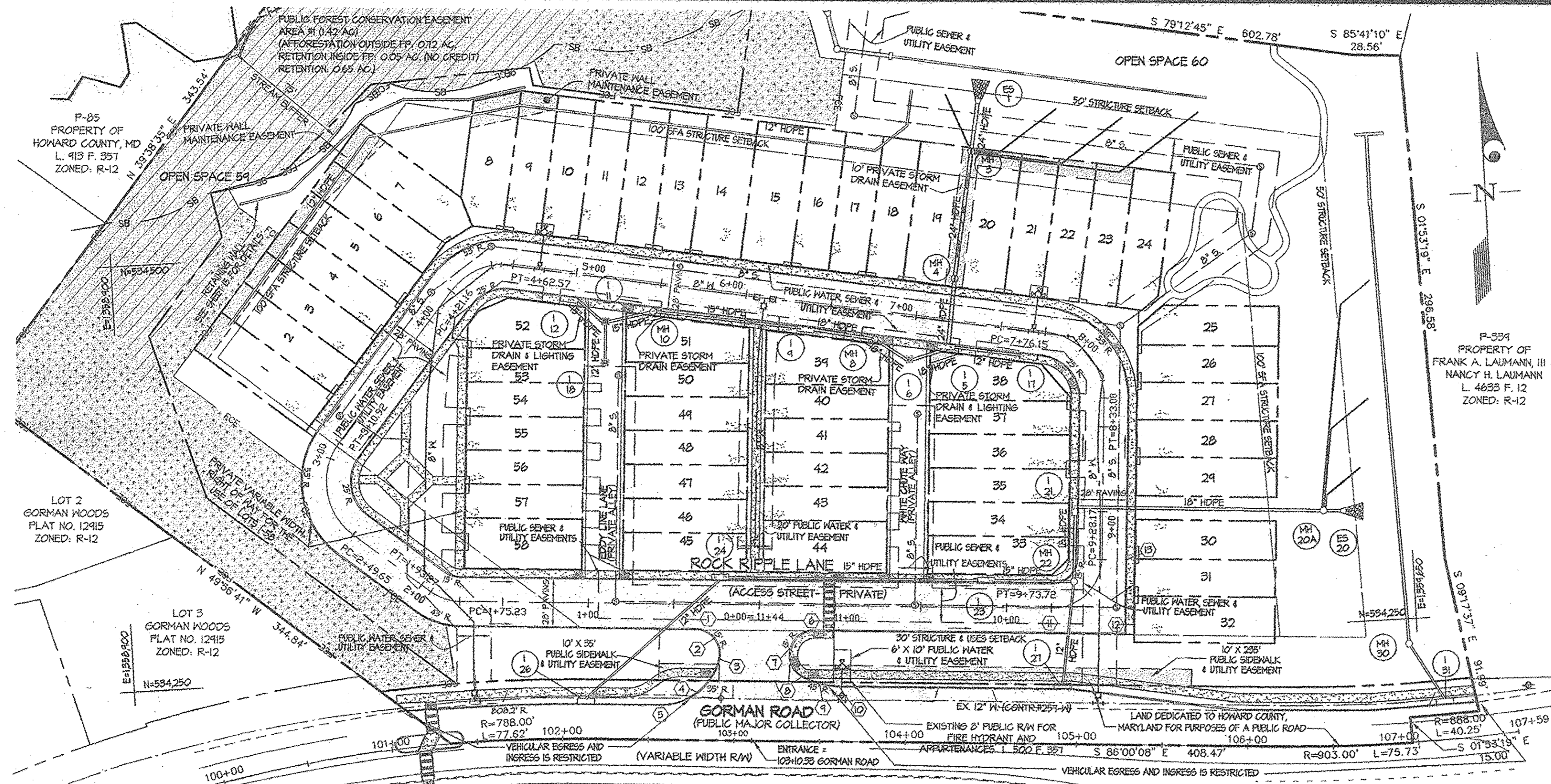
ELECTION DISTRICT No. 6

SCALE	ZONING	HCEA PROJECT NO.
AS SHOWN	R-SA-8	06765-B
DATE	TAX MAP - GRID	SHEET
MAY, 2011	47 - 16	15 OF 19

PT. NO.	STATION	ROAD	OFFSET	ELEV.	ASBUILTS
(1)	0+51.35	RRL	14' L	241.94	241.94
(2)	N. 534,262.41 E. 1,354,240.51	ENTRANCE	-----	241.92	242.11
(3)	N. 534,249.66 E. 1,354,242.68	ENTRANCE	-----	242.53	242.64
(4)	N. 534,230.68 E. 1,354,224.11	ENTRANCE	-----	244.20	244.44
(5)	102+56.74	GORMAN RD	20.15' L	245.88	246.14
(6)	111.53	RRL	14' L	240.38	240.61
(7)	N. 534,253.71 E. 1,354,204.02	ENTRANCE	-----	240.84	240.91
(8)	N. 534,236.38 E. 1,354,240.03	ENTRANCE	-----	240.63	240.75
(9)	N. 534,231.38 E. 1,354,300.31	ENTRANCE	-----	240.28	240.15
(10)	103+61.07	GORMAN RD	32.15' L	239.58	239.56
(11)	9+13.12	RRL	14' L	238.12	238.15
(12)	9+50.95	RRL	31.81' L	238.52	238.24
(13)	9+28.17	RRL	14' L	237.45	237.41

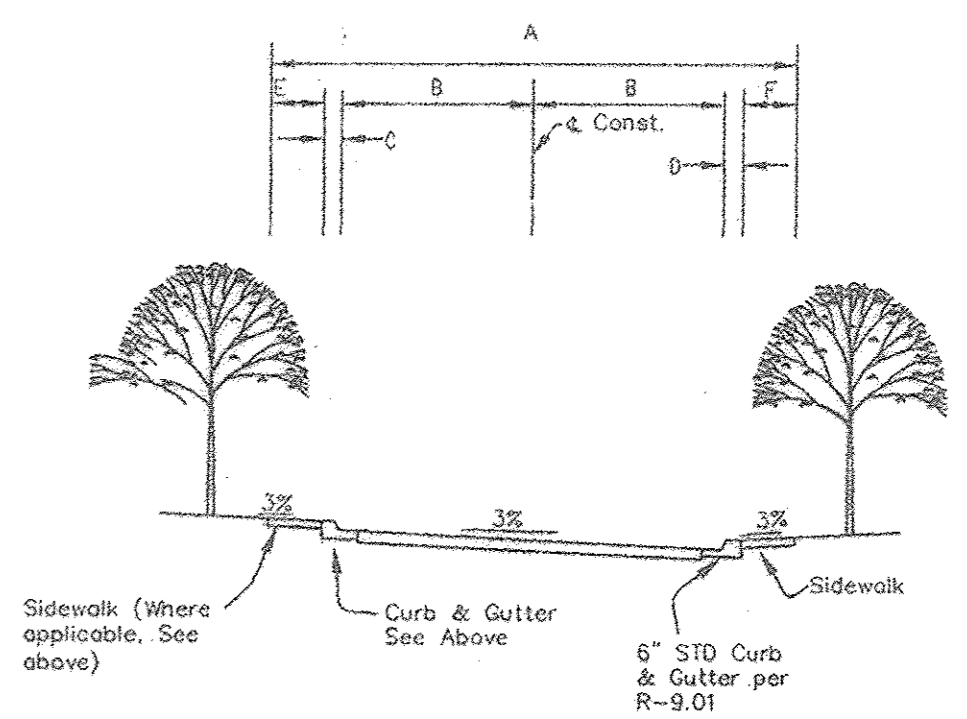
NOTE: RRL = ROCK RIPPLE LANE

- NOTES:
- ALL SIDEWALK RAMP SURFACE SHALL CONFORM TO ADAAG 4.24 FOR DETECTABLE WARNINGS. ADAAG 4.24 STATES "DETECTABLE WARNINGS SHALL CONSIST OF RAISED TRUNCATED CONES WITH A DIAMETER OF NOMINAL 0.4" A HEIGHT OF NOMINAL 0.2" AND A CENTER TO CENTER SPACING OF NOMINAL 2.35" AND CONTRAST VISUALLY WITH ADJOINING SURFACES. EITHER LIGHT ON DARK OR DARK ON LIGHT. CONTRACTOR SHALL COORDINATE WITH OWNER & ARCHITECT ON COLOR SELECTION FOR ALL CURB RAMPS. SEE MD-655.40
 - FOR STREET LIGHT LOCATIONS SEE SHEET 4, FOR STREET TREE LOCATIONS SEE SHEET 11.
 - ALL ROADS, CURB, SIDEWALK, ALLEYS, STORM DRAIN & RETAINING WALLS ON OPEN SPACE LOT 60 SHALL BE PRIVATELY OWNED AND MAINTAINED.
 - FOR CURB TRANSITIONS & SIDEWALK RAMPS, SEE SHEET 4.



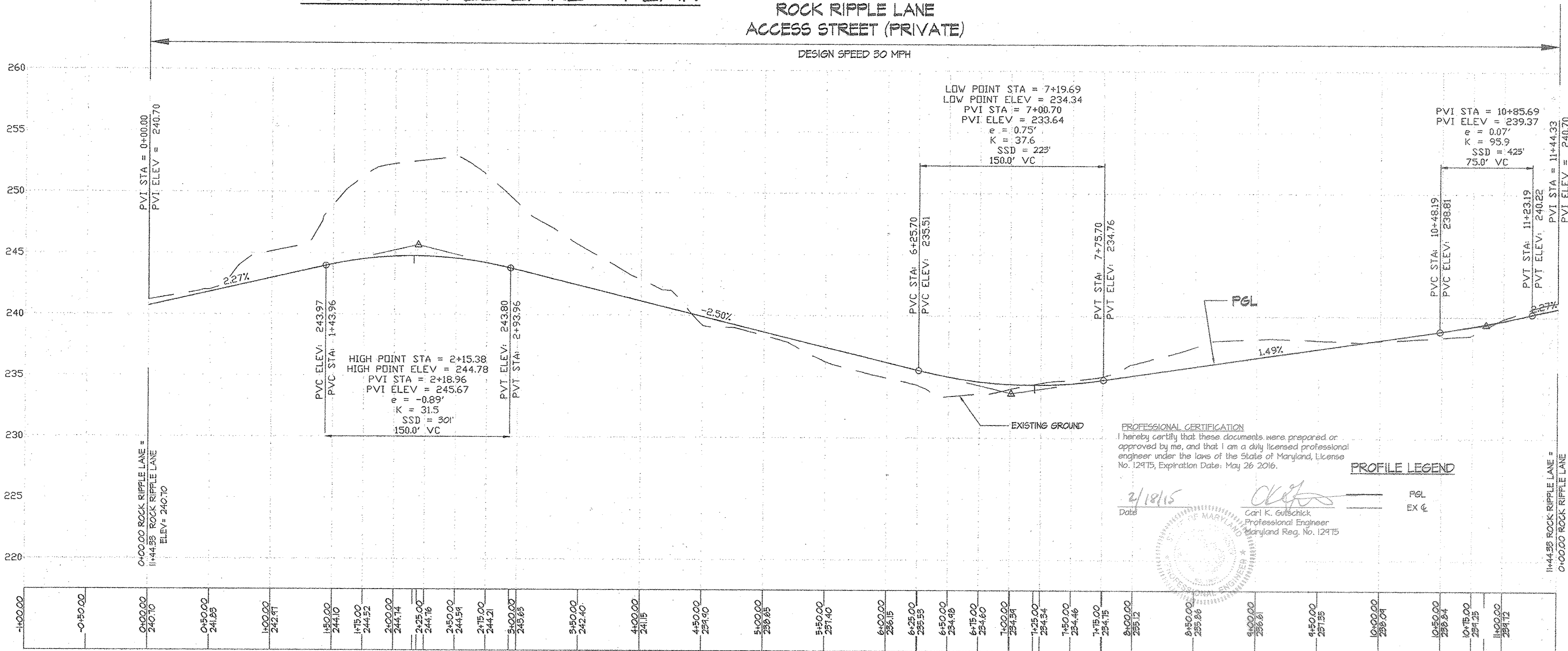
ROCK RIPPLE LANE - PLAN SCALE: 1" = 50'

ROAD NAME	STATION	ROAD CLASSIFICATION	DESIGN SPEED	A	B	C	D	E	F	PAVING SECTION	LEFT CURB TYPE	LEFT SIDEWALK
Rock Ripple Lane	0+00 TO 3+14.55	ACCESS STREET	30 MPH	38"	14"	8"	8"	4'-4"	4'-4"	P-3	Standard	No
Rock Ripple Lane	3+14.55 TO 9+50.85	ACCESS STREET	30 MPH	38"	14"	13 1/4"	8"	3'-10.75"	4'-4"	P-3	Modified	Yes
Rock Ripple Lane	9+50.85 TO 11+44.33	ACCESS STREET	30 MPH	38"	14"	8"	8"	4'-4"	4'-4"	P-3	Standard	No



TYPICAL PUBLIC ROAD SECTION NOT TO SCALE

STREET NAME	P.C. STA.	P.T. STA.	RADIUS	ARC	TANGENT	CHORD	BEARINGS	DELTA
ROCK RIPPLE LANE	1+75.23	1+93.21	24.00'	18.04'	4.32'	34.00'	N. 68° 10' 46" W	39° 38' 43"
ROCK RIPPLE LANE	2+44.65	3+10.92	34.00'	31.26'	24.00'	35.15'	N. 05° 21' 38" W	40° 00' 00"
ROCK RIPPLE LANE	4+21.46	4+62.57	34.00'	41.41'	22.40'	34.42'	N. 70° 32' 41" E	60° 50' 12"
ROCK RIPPLE LANE	7+16.15	8+33.00	34.00'	56.85'	34.82'	31.85'	S. 57° 45' 41" E	83° 31' 06"
ROCK RIPPLE LANE	9+28.17	9+13.12	24.00'	45.55'	28.00'	41.01'	S. 48° 54' 52" W	40° 00' 00"



ROCK RIPPLE LANE - PROFILE SCALE: (H) 1" = 50' (V) 1" = 5'

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING
 Director: *Mona S. Gutter* 6/27/11
 Chief, Division of Land Development: *Val De Lunde* 6/27/11
 Chief, Development Engineering Division: *DR* 5/26/11

PROFESSIONAL CERTIFICATION
 I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 12475, Expiration Date: May 26 2016.
 PROFILE LEGEND
 PGL
 EX

GLWGUTSCHICK LITTLE & WEBER, P.A.
 CIVIL ENGINEERS, LAND SURVEYORS, LAND PLANNERS, LANDSCAPE ARCHITECTS
 3909 NATIONAL DRIVE - SUITE 230 - BURTONSVILLE OFFICE PARK
 BURTONSVILLE, MARYLAND 20886
 TEL: 301-421-4024 BALT: 410-880-1820 DC/VA: 301-989-2524 FAX: 301-421-4186

DATE	REVISION	BY	APPR.

PREPARED FOR & OWNER:
 CS RIVERWALK LLC
 c/o CRAFTSTAR HOMES, INC.
 6820 ELM STREET, SUITE 200
 MCLEAN, VA 22101
 M. COURTNEY TREUTH
 703-827-5045

PROFESSIONAL CERTIFICATION
 I HEREBY CERTIFY THAT THESE PLANS 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. 12475, EXPIRATION DATE: MAY 26, 2016.
 5-3-11

ROCK RIPPLE LANE PLAN AND PROFILE
 RIVERWALK
 SINGLE FAMILY ATTACHED TOWNHOMES
 LOTS 1-58 AND OPEN SPACE LOTS 59 & 60
 Plat Numbers: 21025 - 21027
 HOWARD COUNTY, MARYLAND
 ELECTION DISTRICT No. 6

SCALE	ZONING	G. L. W. FILE NO.
AS SHOWN	R-SA-8	08039
DATE	TAX MAP - GRID	SHEET
FEB 2015 MAY, 2011	47 - 16	16 OF 19



TEMPORARY TRAFFIC CONTROL TYPICAL APPLICATION

IMPORTANT:
THIS DRAWING SHALL BE USED IN COMBINATION WITH THE GENERAL NOTES NO 104.02-01 - MD 104.02-18 AND STANDARD DETAILS MD 104.01-01 - MD 104.01-01

NOTES:
SHOULDER CLOSED SIGNS ARE REQUIRED IN PLACE OF SHOULDER WORK SIGNS WHEN THE SHOULDER IS CLOSED BY POSITIVE PROTECTION SIGNS OR DEVICES. REFER TO STANDARD NO. 104.02-02 FOR APPLICATIONS.
WHEN WORK INVOLVES A PAVEMENT EDGE DROP-OFF, REFER TO STANDARD NO. 104.02-02 FOR APPLICATIONS.
THERE SHALL BE A MINIMUM OF SEVEN CHANNELIZING DEVICES IN THE SHOULDER TAPER.
THE ENGINEER SHOULD CONSIDER ADDITIONAL ADJACENT LANE CLOSURES WHEN THE POSSIBILITY OF UNPLANNED TRAVELER ENCROACHMENTS EXIST.

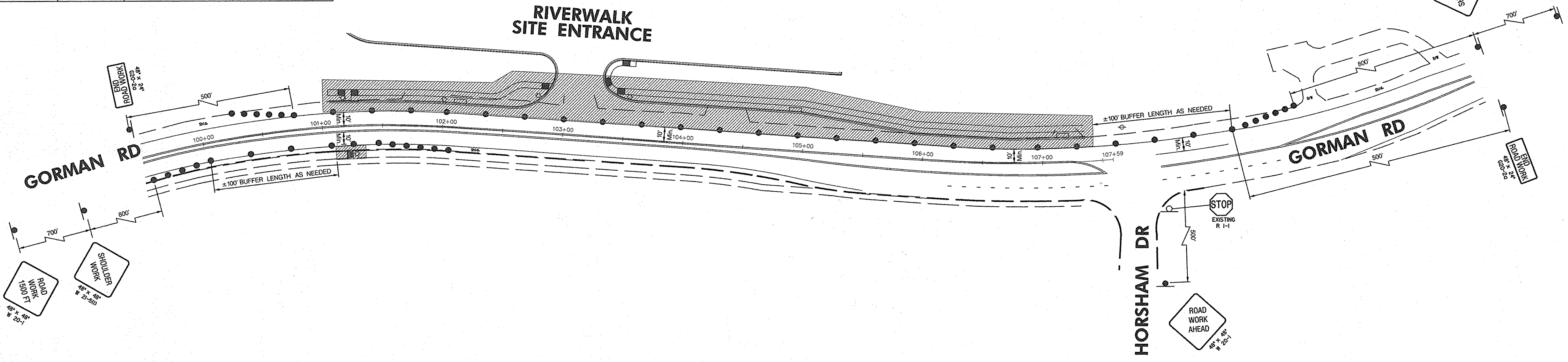
KEY:
 □ CHANNELIZING DEVICES
 □ SIGN SUPPORT
 → FACE OF SIGN
 ↑ DIRECTION OF TRAFFIC
 ■ WORK SITE
 □ FLAGGER
 □ ROAD WORK AHEAD (OPTIONAL FOR 15 MIN-12 HRS. OR DAYTIME APPLICATIONS)
 □ ROAD WORK STOP (OPTIONAL FOR 15 MIN-12 HRS. OR DAYTIME APPLICATIONS)
 □ ROAD WORK STOP (OPTIONAL FOR 15 MIN-12 HRS. OR DAYTIME APPLICATIONS)

Specification 104
 CATEGORY CODE ITEMS
 APPROVED
 DEPUTY CHIEF ENGINEER - TRAFFIC DATE

Maryland Department of Transportation
 STATE HIGHWAY ADMINISTRATION
 STANDARDS FOR HIGHWAY AND INCIDENTAL STRUCTURES
 SHOULDERS FOR 2-LANE, 2-WAY
 EQUAL OR LESS THAN 40 MPH
 STANDARD NO. MD 104.02-02

APPROVAL - SHA	APPROVAL - FEDERAL HIGHWAY ADMINISTRATION
APPROVAL 8-20-03	APPROVAL 1-22-03
REVISION 8-21-09	REVISION 10-5-09
REVISION	REVISION

Drop Off Policy
 Contractor to maintain less than 2.5 in. of drop-off during periods of non-construction. Use appropriate standard. See General Note No: 13.



- SEQUENCE OF OPERATION PHASE I**
1. INSTALL ADVANCE WARNING SIGNS AND SET TEMPORARY TRAFFIC CONTROL DEVICES (BARRELS) PER MD-SHA TYPICAL MD 104.02-02 FOR SHOULDER WORK.
 2. FOR THE NORTH SIDE OF GORMAN ROAD EXCAVATE AS NECESSARY THE EXISTING SHOULDER. INSTALL CURB AND GUTTER AND NECESSARY ROADWAY MATERIALS. INSTALL RAMP AT STATION 101+23 (20 LEFT) PER GLW PLAN.
 3. FOR THE SOUTH SIDE OF GORMAN ROAD EXCAVATE AS NECESSARY THE EXISTING CURB AND SIDEWALK AT STATION 101+23 (21 RIGHT). INSTALL RAMP PER GLW PLAN.
 4. CHANNELIZING DEVICES SHALL REMAIN ADJACENT TO THE WORK AREA FOR THE DURATION OF CONSTRUCTION. ALL DRIVEWAYS AND ROADWAYS SHALL REMAIN OPEN AND UNOBSTRUCTED BY ANY CHANNELIZING DEVICES. CHANNELIZATION DEVICES SHALL BE REMOVED AT THE END OF THE CONSTRUCTION PHASE. CHANNELIZATION DEVICES SHALL NOT BE STORED ALONG ROADWAY PER GENERAL NOTE 7.5 (SHEET 19 OF 19).

KEY

- ▨ Area of Construction
- Direction of Traffic
- Channelizing Device (Drum)
- Temporary Construction Sign
- - - Existing Geometrics
- Proposed Geometrics

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

Howard County
 Chief, Development Engineering Division 5/26/11 Date

Kevin S. DeLeon
 Chief, Division of Land Development 6/27/11 Date

Thomas J. Butler
 Director 6/27/11 Date



The Traffic Group, Inc.
 Suite II
 9000 Franklin Square Drive
 Baltimore, Maryland 21236
 410-931-6600 1-800-583-8411 Fax: 410-931-6601
 www.trafficgroup.com
 "Merging Innovation and Excellence"

DES.	JES	DRN.	JES	CHK.	DATE	REVISION	BY	APPR.

PREPARED FOR:
 OWNER
 CS RIVERWALK LLC
 C/O CRAFTSTAR HOMES, INC.
 6820 ELM STREET, SUITE 200
 McLEAN, VA 22101
 M. COURNEY INCHU
 703-827-5045

PROFESSIONAL CERTIFICATION
 I HEREBY CERTIFY THAT THESE PLANS 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. 20761, EXPIRATION DATE: 3/7/13

MAINTENANCE OF TRAFFIC PLAN - PHASE I

RIVERWALK
 SINGLE FAMILY ATTACHED TOWNHOMES
 LOTS 1-58 AND OPEN SPACE LOTS 59 & 60
 PLAT NUMBERS 21025-21027
 6TH ELECTION DISTRICT
 HOWARD COUNTY, MARYLAND

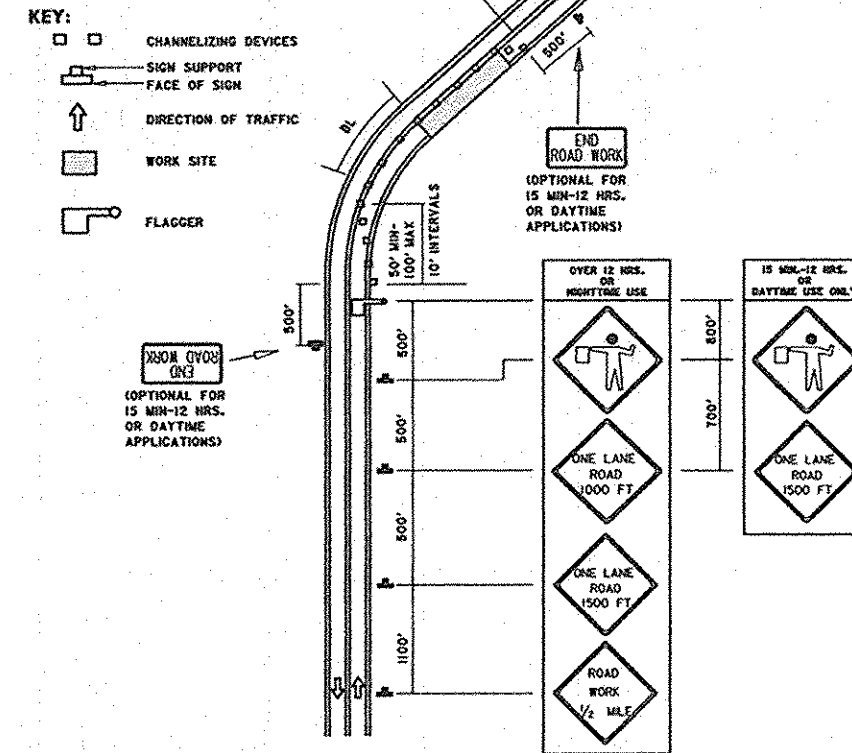
SCALE	ZONING	TTG FILE No.
1" = 50'	R-SA-8	2009-1003
DATE	TAX MAP - GRID	SHEET
MAY, 2011	47 - 16	17 of 19



TEMPORARY TRAFFIC CONTROL TYPICAL APPLICATION

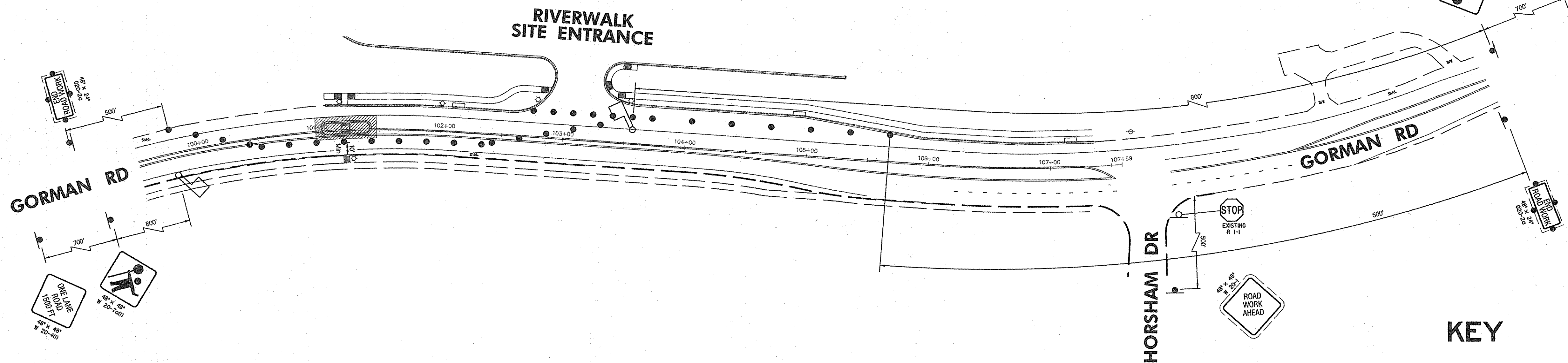
IMPORTANT: THIS SYSTEM SHALL BE USED TO CONTROL TRAFFIC TO THE GENERAL CONSTRUCTION AREA. SEE MD SHA TYPICAL STANDARD DETAILS MD 104.02-10 AND MD 104.02-11.

NOTES:
1. CHANNELIZING DEVICES SHALL NEVER BE STATIONED MORE THAN 1000' FROM THE FACE OF WORK.
2. THE CONTRACTOR SHALL CONSIDER ADDITIONAL ADJACENT LANE TO MAINTAIN THE MOBILITY OF OVERLAPPING TRAVELWAY ENCROACHMENTS EXIST.



SPECIFICATION	CATEGORY	CODE	ITEMS
104			
Maryland Department of Transportation STATE HIGHWAY ADMINISTRATION STANDARDS FOR HIGHWAY AND INCIDENTAL STRUCTURES FLAGGING OPERATION-2-LANE, 2-WAY EQL/LESS THAN 40 MPH			
APPROVED			
DEPUTY CHIEF ENGINEER - TRAFFIC		DATE	
APPROVAL	DATE	APPROVAL	DATE
APPROVAL	8-15-03	APPROVAL	1-23-03
REVISION	8-15-10	REVISION	7-29-10
REVISION		REVISION	
REVISION		REVISION	
STANDARD NO. MD 104.02-10			

Drop Off Policy
Contractor to maintain less than 2.5 in. of drop-off during periods of non-construction. Use appropriate standard. See General Note No: 13.



KEY

- Area of Construction
- Direction of Traffic
- Channelizing Device (Drum)
- Temporary Construction Sign
- Existing Geometrics
- Proposed Geometrics
- Flag Person
- Existing Construction sign to remain from Phase I.
- Existing Construction sign to be relocated from Phase I.

SEQUENCE OF OPERATION PHASE II

1. INSTALL ADVANCE WARNING SIGNS AND SET TEMPORARY TRAFFIC CONTROL DEVICES (BARRELS) PER MD-SHA TYPICAL MD 104.02-10 FOR FLAGGING OPERATION. RELOCATE ADVANCE WARNING SIGNS FROM PHASE I AS NOTED.
2. EXCAVATE ROADWAY IN WORK AREA FOR PURPOSES OF INSTALLING REFUGE ISLAND.
3. INSTALL REFUGE ISLAND INCLUDING CURB AND GUTTER WITH PEDESTRIAN CUT-THROUGH.
4. CHANNELIZING DEVICES SHALL REMAIN ADJACENT TO THE WORK AREA FOR THE DURATION OF CONSTRUCTION. ALL DRIVEWAYS AND ROADWAYS SHALL REMAIN OPEN AND UNOBSTRUCTED BY ANY CHANNELIZING DEVICES. CHANNELIZATION DEVICES SHALL BE REMOVED AT THE END OF THE CONSTRUCTION PHASE. CHANNELIZATION DEVICES SHALL NOT BE STORED ALONG ROADWAY PER GENERAL NOTE 7.5 (SHEET 19 OF 19).
5. UPON COMPLETION OF THE REFUGE ISLAND FINAL PAVEMENT MARKINGS SHALL BE INSTALLED. REFERENCE THE "PAVEMENT DELINEATION, PAVEMENT MARKING, CURB TRANSITION, LIGHTING, & SIGNAGE PLAN" PREPARED BY GLW.

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

Howard 5/26/11
Chief, Development Engineering Division Date

Kat 6/27/11
Chief, Division of Land Development Date

Butler 6/27/11
Director Date



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"Merging Innovation and Excellence"

DES.	JES	DRN.	JES	CHK.	DATE	REVISION	BY	APPR.

PREPARED FOR:
OWNER
CS RIVERWALK LLC
C/O CRAFTSTAR HOMES, INC.
6820 ELM STREET, SUITE 200
MCLEAN, VA 22101
M. COURTNEY IRUTH
703-827-5045

PROFESSIONAL CERTIFICATION
I HEREBY CERTIFY THAT THESE PLANS
WERE PREPARED OR APPROVED BY ME,
AND THAT I AM A DULY LICENSED
PROFESSIONAL ENGINEER UNDER THE
LAWS OF THE STATE OF MARYLAND,
LICENSED NO. 20761
EXPIRATION DATE: 3/7/13

MAINTENANCE OF TRAFFIC PLAN - PHASE II

RIVERWALK
SINGLE FAMILY ATTACHED TOWNHOMES
LOTS 1-56 AND OPEN SPACE LOTS 59 & 60
PLAT NUMBERS 21025-21027
HOWARD COUNTY, MARYLAND

SCALE	ZONING	TTG FILE No.
1" = 50'	R-SA-8	2009-1003
DATE	TAX MAP - GRID	SHEET
MAY, 2011	47 - 16	18 of 19

GENERAL NOTES
TEMPORARY TRAFFIC CONTROL TYPICAL APPLICATIONS (TTCTA)

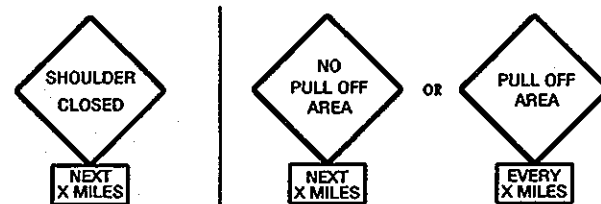
1.0 INTRODUCTION

- The General Notes (GN) supplement the Standard Details and the TTCTAs, and have been assembled to provide additional direction on the installation and application of traffic control devices shown in these standards. The GNs also provide additional guidelines and other useful information that will facilitate the installation of appropriate temporary traffic controls. Users of these standards shall also comply with provisions of FHWA's Manual on Uniform Traffic Control Devices (MUTCD) and SHA's Supplement to the MUTCD, Standard Specifications for Construction and Materials, and General Provisions for Construction Contracts.
- The TTCTA show the minimum requirements necessary to plan for the safety of workers, motorists, pedestrians, and other system users throughout the temporary traffic control zone for various types of work activities. Typically, more traffic control devices are required for long-term stationary work activities than for short-term stationary work activities. Additional temporary traffic control devices may be necessary because of other traffic factors, such as the roadway's accident history, expected traffic backups, high truck traffic, roadway geometrics or characteristics, and other conditions that may adversely affect the flow of traffic. Users of these TTCTA should review the temporary traffic control setup once in place to ensure that traffic is traveling smoothly throughout the traffic control zone, driver expectancy is being met, and no other adjustments to the temporary traffic control devices are necessary. This review is to be repeated on a regular basis as noted elsewhere.
- The TTCTA address a wide variety of different conditions; however, every situation could not be shown. Therefore, charts have been provided showing standard devices to be used for the proposed work zone activity and the placement of these devices for certain roadway conditions and work durations. The user is expected to combine the information from these charts into a workable traffic control plan.
- In applying these standards and guidelines, questions about applications and interpretations should be referred to the State Highway Administration's Assistant District Engineer - Traffic, County Engineer, City Traffic Engineer, Public Works Engineer, or other responsible party, who has expertise in traffic engineering and has jurisdiction on the appropriate roadways. Such consultation may be required, for example, to determine the appropriate TTCTA for the work zone condition.

4.0 SIGNS

- Signs should be spaced at the distances shown on the TTCTA diagrams.
- See the "Sign and Buffer Spacing Charts/Standard Temporary Traffic Control Operations" for the appropriate spacing of the advance warning signs for lower speed highway facilities.
- At locations where queues extend beyond the first advance warning sign, additional advance warning signs (static and/or PCMS) shall be placed in advance of the longest observed queue.
- When bus and/or truck volumes are high, an initial advance warning sign may be placed on the left side of a multi-lane undivided roadway.
- As of December 31, 2003, Fluorescent Orange High Performance Wide Angle (FHPWA) Retroreflective Sign Sheeting material shall be used on all temporary post-mounted warning signs erected in work zones.
- FHPWA Retroreflective Sign Sheeting material may be used for maintenance work along freeways and major expressways at the discretion of the Engineer.
- Approved temporary roll-up signs may be used for maintenance work along all roadways.
- When work zone speed limits along 65 and 60 mph roadways are reduced, temporary regulatory speed signing shall be posted for work activities of one-hour duration or longer, unless otherwise directed by the Engineer. These signs are to be placed as directed in Standard Nos. MD 104.01-06 and MD 104.01-07.
- Sign designations and messages for the signs most commonly used in work zones are shown within these General Notes. See Specification 104.08-03 for information on other temporary traffic signs.
- G95-4 (flat and shovel) signs shall be used for projects lasting greater than two months in duration, unless otherwise specified by the Engineer.
- Along streets in urban areas where the prevailing speed is 35 mph or less, and along secondary roads where the Average Daily Traffic (ADT) is less than 1000 vehicles, the minimum sign size of 36" x 36" may be used.
- For utility operations, the word "AHEAD" may be used on warning signs in lieu of distance messages for warning signs placed up to and including 1500 feet in advance of the work area. At greater distances, the correct distance messages shall be used on such warning signs. Also, the message UTILITY WORK may be used in lieu of ROAD WORK or SHOULDER WORK. ROAD WORK AHEAD signs may also be used in lieu of distance messages on side streets and entrance ramps that intersect roads where work is being performed (as shown in the Typical Applications) and on the main road during mobile and moving operations.
- ROAD WORK AHEAD signs shall be installed on all side streets and entrance ramps that intersect roads within work zones. The signing shall be placed along the intersection approach to the right of the travel lane. Refer to Standard Detail 104.01-02 for guidance on sign placement. For side streets intersecting roads outside of work zone boundaries, no advance signing should be installed.
- Warning signs mounted on wood posts, and those mounted on approved portable supports, shall be mounted in conformance with Standard No. MD 104.01-17. Signs mounted on concrete barriers shall be installed using clamps that are on the Office of Traffic & Safety's Approved Product List.
- For shoulder closures greater than a half (1/2) mile in length, advance warning signs should be placed as follows:

- A NEXT XX MILES supplemental plate should be provided with the first SHOULDER CLOSED sign in the sequence
- The second SHOULDER CLOSED sign in the sequence should be replaced with either:
 - a NO PULL OFF AREA warning sign with NEXT XX MILES supplemental plate, if there are no pull off areas throughout the work area, or
 - a PULL OFF AREA warning sign with EVERY XX MILES supplemental plate, if pull off areas are provided (see MD 104.06-14).



- A BUMP sign should be placed when there is a temporary pavement wedge along a transverse joint, a transverse construction trench with temporary backfill, or a similar transverse disturbance. Signs should be placed according to Shoulder Work Typical Applications for the appropriate prevailing speed and work duration, with BUMP signs replacing the SHOULDER WORK signs.

- TRUCK CROSSING (W11-100) signs shall only be used during the following two situations:
 - A work area entrance is allowed along a controlled access highway.
 - A work area entrance is provided along highways other than controlled access, the entrance does not have adequate decision sight distance for approaching traffic, and the entrance cannot be relocated to provide adequate decision sight distance. Refer to Standard No. MD 104.00-03 of the General Notes for decision sight distance criteria.

TRUCK CROSSING signs shall be placed according to the Shoulder Work Typical Applications, with TRUCK CROSSING signs replacing all SHOULDER WORK signs.

Any distances to be displayed on the TRUCK CROSSING sign shall be installed using supplemental distance plaques.



5.0 PORTABLE VARIABLE MESSAGE SIGNS (PVMS)

- The PVMS shall not replace standard traffic control devices, but is to supplement these devices.
- PVMS shall be used where a new traffic signal has been installed along State routes having a prevailing speed of 50 mph or greater.
- PVMS shall display a message regarding new traffic signal installation up to 3 days prior to signal turn-on. PVMS shall be removed no later than 7 days after the signal is operational.
- When PVMS are used to advise/warn motorists regarding a new traffic signal installation, they shall be installed along all the major approaches to the intersection, and shall be used in such a way as to supplement the standard traffic control devices required for a new traffic signal installation.
- No more than two displays shall be used within any message cycle unless approved by the District Engineer or ADE-T.
- For a list of standard messages/abbreviations, contact appropriate District Engineer or ADE-T. All customized messages shall be approved by the ADE-T.
- A single message shall be displayed for 2-3 seconds with an "off" interval of 0.5 to 1.0 second. When two messages comprise a message cycle, neither message shall exceed 2 seconds duration. The second message shall follow the first message immediately without any "off" interval. If an off-interval is used between the first and second messages, it shall not exceed 0.5 second.
- The text of the message shall not scroll or travel (horizontally or vertically) across the face of the sign.
- A PVMS should not be used for more than 14 continuous days as part of the same application. A PVMS should be used 3 to 5 days in advance of planned roadwork, if needed.
- PVMS should be used if there is significant change in traffic patterns, unexpected road conditions, or safety concerns that may result in delays/queues and may require caution/diversion.
- PVMS should not be used in place of an arrow panel. The PVMS should be visible from 0.5 mile under day and night conditions and should be legible from a minimum distance of 650 feet.
- PVMS should be placed on the shoulder of the roadway or, if practical, farther from the traveled lane (Standard MD 104.01-22).
- In order to reduce the effect of sun behind the PVMS, the PVMS should be placed so that the sun is not directly behind it (such as during sunrise or sunset).
- The entire message should be readable at least twice at the off-peak 85th-percentile speed prior to work starting or the anticipated prevailing speed.

6.0 ARROW PANELS

- Arrow panels that are installed along roadways with prevailing speeds greater than 40 mph shall be provided with a minimum shoulder closure taper of 1/3 the taper length, (see 7.0 Channelizing Devices). For all other roadways a 100-foot minimum shoulder closure taper shall be used.

7.0 CHANNELIZING DEVICES

7.1 Taper Formulas:

$$L = WS \text{ for speeds greater than } (V) 40 \text{ mph}$$

$$L = WS^2/60 \text{ for speeds equal to or less than } (V) 40 \text{ mph}$$

Where: L = minimum length of taper (ft)
S = numerical value of prevailing travel speed or speed limit (MPH), whichever is higher, prior to work starting.
W = width of offset (ft)

7.2 Maximum spacing between channelizing devices:

- Taper Channelization: equal in feet to the posted speed limit.
 - Tangent Channelization: equal in feet to twice the posted speed limit.
- At horizontal or vertical curves, channelizing devices should be extended to a point where they are visible to approaching traffic. On two-lane, two-way roadways, a full taper length shall always be provided in advance of curves.
 - Drums, not cones, should always be used to form the taper on roadways having a prevailing travel speed greater than 40 MPH.
 - Storing channelizing devices within 30 feet of the edge of open section roadway or 15 feet of a closed section roadway along any roadway is prohibited without approval of the Engineer.
 - Type 3 object markers (VP-1) are required for barrier flare / tangent points.
 - The appropriate channelizing devices (including approved barrier) to separate opposing traffic shall be as shown on the plans or as directed by the Engineer.
 - On straight sections of roadway with full dimension center and / or lane lines, but without edge lines, channelizing drums shall be used to delineate the edge of the roadway, except at locations designated by the Engineer. Examples would include roadways with curbs, parking, bicycle lanes, or other markings. The channelizing drums may be spaced up to 500' apart where no undue hazards exist unless otherwise directed by the Engineer. On curves, these spacings shall be reduced to a value equal to the posted speed limit, unless otherwise directed by the Engineer.

8.0 PAVEMENT MARKINGS

- Temporary pavement markings should be installed according to Section 104.02-03(F), Specific Requirements for Temporary Pavement Markings, from the Standard Specifications for Construction and Materials and from SHA's "Pavement Marking Policy and Guidelines" issued by OOTS.
- Pavement markings that are no longer applicable shall be completely removed or obliterated. Temporary markings shall be used as necessary. Operations less than 12 hours or undertaken during the daytime may require that the permanent markings be temporarily covered with black tape as specified in Section 8.3.
- Pavement marking lines adjacent to any long duration lane transition or lane closure taper shall be removed (or covered with SHA approved black pavement marking tape), unless otherwise directed by the Engineer. Pavement marking lines shall be re-installed (or uncovered) prior to re-opening the closed lanes.
- Temporary markings on intermediate pavement surfaces (e.g. base course) shall be placed to full dimensions per the Contract Documents (i.e. continuous double yellow center lines; single dashed yellow center line @ 10' segments, 30' gaps where passing is allowed; lane lines @ 10' segments, 30' gaps).

- Guidance on UNMARKED PAVEMENT signing:
 - Daytime: If the pavement is not marked to SHA's standards/specifications during the daytime, no sign is needed, provided item #3 below is adhered to.
 - Nighttime: If, due to unforeseen circumstances as determined by the Engineer, the pavement is left in a condition overnight that does not meet SHA pavement marking standards/specifications, then UNMARKED PAVEMENT signing shall be used.
 - In all instances where less than standard markings are in place (permanent or short-term), appropriate channelizing devices and other traffic control devices shall be used to guide traffic through the work zone in an effective, safe, and positive manner.

9.0 FLAGGING

- Where two or more flaggers are used and are unable to see each other, two-way radio communications shall be used.
 - If the entire work area is visible from one station, a single flagger may be used, subject to other safety considerations.
 - Guidance on flagging at signalized intersections:
 - Issues regarding flagging at signalized intersections should be discussed in the planning/design stages of the project and the recommended intersection control strategy should be specified in the contract documents.
 - At the pre-construction conference, SHA staff and the contractor should discuss the need for flagging operations. MSP (or local police) should meet the Standard Operating Procedures to request signal operating mode modifications (if needed).
 - In general, all persons (contractors, maintenance, and utility) should contact the Assistant District Engineer - Traffic (ADE-T) to determine the best method for temporary traffic control at a signalized intersection from the following two (2) cases:
 - Case 1: The signal is turned to flashing mode during flagging operation.
 - Case 2: The signal is turned off (dark mode) during flagging operation.
- Note: Except for police, flagging shall not occur at a signalized intersection operating in a full-color stop-and-go mode (Normal Operation).

10.0 VEHICLES

- If work vehicles need to be stopped in a lane beyond a horizontal curve or a vertical curve (hill), nonessential vehicles are to be pulled as far off the road as possible or be otherwise parked in a manner as to inhibit the movement of traffic as little as possible. If no protection vehicle is available, channelizing devices shall be placed as specified in 7.0, Channelizing Devices.
- Work vehicles should not occupy any part of the buffer area.
- Vehicle safety lights (amber in color) shall be from the Office of Traffic & Safety's Approved Products list.
- A protection vehicle with a rear truck-mounted-attenuator (TMA) is required for all freeway work operations that have no formal lane closure. A formal lane closure is one that includes a full complement of advance warning devices and a lane closure taper and a work area delineated by channelizing devices placed in accordance with these TTCTAs.

- A protection vehicle is also required for highway marking operations and may be required under other traffic and work conditions in conformance with SHA policy or as directed by the Engineer. The protection vehicle may be considered as a substitute for the initial advance warning sign for some mobile work operations. A protection vehicle should also be used in advance of a work operation that is located beyond a horizontal and/or vertical curve. Consideration should also be given to placing an additional temporary advance warning sign or truck mounted variable message sign no less than 500' and no more than 1500' (1/2 mile for expressway conditions) in advance of the protection vehicle, when one or more of the traffic factors listed under General Notes 1.2 exist.

- When a police vehicle is required, the vehicle shall not be located in the buffer and/or taper, but should be located as directed by the Engineer, depending on the type of work. It is sometimes preferable to deploy the police vehicle in advance of the work zone or queue (if queue exists) to encourage speed reduction prior to the work zone.

11.0 WORK HOUR RESTRICTIONS

- Unless otherwise specified in the Contract Document or permitted by the Engineer, work within a lane, within 15 feet of the nearest edge line (open section roadway), or within 2 feet of the face of curb (closed section roadway), is prohibited during peak hours 6 a.m. - 9 a.m. and 3 p.m. - 7 p.m., Monday - Friday. Also, such work is not permitted on Saturdays, Sundays, National or State holidays, or days preceding and following said holidays.

13.0 PAVEMENT DROP-OFF

- When pavement drop-offs are present, the placement of temporary traffic control devices, including signs, channelizing devices, and barriers, as well as slope fillet wedges, shall follow SHA Standard Nos. MD 104.06-11, MD 104.06-12, MD 104.06-13, MD 104.06-14, MD 104.06-15, and MD 104.01-28. The Engineer may recommend alternative methods to protect the pavement edge drop-off, considering factors such as pedestrian, bicycle, and traffic volumes, vehicle speeds, size of work zone, duration of work, etc.

18.0 TRAFFIC CONTROL PLANS

- Alternate traffic control plans may be presented to the SHA District Office for approval in conformance with Section 104.01 of the Standard Specifications for Construction and Materials.
- For emergency repair operations, a lesser number of traffic control devices (TCDs) than the full complement may be used. This generally will consist of one sign per direction, flashing lights on the vehicle, and minimum number of channelizing devices, flags, or high level warning devices. Additional TCDs such as arrow panels, additional signing, etc., shall be placed as soon as possible in accordance with the standard TTCTA.
- Where closely spaced work zones create conflicting traffic patterns (e.g. left-lane closure followed by right-lane closure), they should be no closer than 1.5 miles apart (sign to first sign). Where work zones are closely spaced, but where traffic patterns are not significantly altered and no conflicts exist, no minimum spacing is required; however, care should be exercised to present appropriate and non-conflicting guidance to the public.
- All signs, channelizing devices, and other traffic control devices shall be in conformance with the latest edition of the MUTCD.

TEMPORARY TRAFFIC CONTROL TYPICAL APPLICATION SIGN SPACING CHART

MINIMUM DISTANCE FROM SIGN TO SIDE STREET SIGN DISTANCE	ADDITIONAL SIGNS IN SERIES TO BE SPACED AT A MINIMUM	MINIMUM COMBINED ADVANCE WARNING
600'	0	600'
500'	1	600'
400'	2	600'
300'	3	600'
200'	4	600'
100'	5	600'
60'	6	600'

BELOW EXAMPLE: TWO LANES, ONE-WAY ROADWAY (SPEED LIMIT IS 35 MPH / PREVAILING SPEED IS 38 MPH (USE 40 MPH))

SHA logo and Maryland Department of Transportation State Highway Administration logo.

APPROVED: [Signature] DEPUTY CHIEF ENGINEER - TRAFFIC DATE: [Date]

STANDARD NO. MD 104.01-02

APPROVED: HOWARD COUNTY DEPARTMENT OF PLANNING & ZONING

[Signature] 5/26/11
Chief, Development Engineering Division

[Signature] 6/27/11
Chief, Division of Land Development

[Signature] 6/27/11
Director

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MCLEAN, VA 22101
M. COURTNEY TREVITH
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PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE PLANS 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. 20761 EXPIRATION DATE: 3/17/18

MAINTENANCE OF TRAFFIC PLAN - GENERAL NOTES

RIVERWALK
SINGLE FAMILY ATTACHED TOWNHOMES
LOTS 1-58 AND OPEN SPACE LOTS 59 & 60
PLAT NUMBERS 21015-21017
6TH ELECTION DISTRICT

SCALE	ZONING	TTG FILE No.
N/A	R-SA-8	2009-1003
DATE	TAX MAP - GRID	SHEET
MAY, 2011	47 - 16	19 of 19

HOWARD COUNTY, MARYLAND